

CONTRACTORS SUPPLY

METAL*AIRE DISTRIBUTOR

METAL*AIRE®

Revised: May 11, 2007



At METAL*AIRE®, we continually work to improve our products. Product descriptions, dimensions, and performance are subject to change without notice. For the most current available literature visit our web page at www.metalaire.com. Contact your local METAL*AIRE® representative to verify product or performance details.



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METAL^{*}AIRE®

QUICK SELECT

"AIR DISTRIBUTION SELECTION MADE EASY"

The METAL^{*}AIRE Quick Select Catalog is designed to save you time selecting air distribution equipment. This catalog is a condensed version of our InfoSource catalogs and contains the dimensions and performance of the most used grilles, registers, diffusers and air terminal units.

The Quick Select Catalog is divided into productlines. Each section begins with a summary that includes all our available models along with features and benefits of our products.

To obtain product information not included in the Quick Select Catalog, simply go to our web site at www.metalaire.com, or refer to our InfoSource catalogs.

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At METAL^{*}AIRE®, we continually work to improve our products. Product descriptions, dimensions, and performance are subject to change without notice. For the most current available literature visit our web page at www.metalaire.com. Contact your local METAL^{*}AIRE® representative to verify product or performance details.

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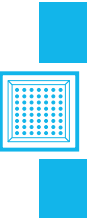


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PSD • PLENUM SLOT DIFFUSERS

PSD —

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ARP —

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LBG

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IND —

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SEC —

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ACC

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DIFFUSER



**ROUND
CEILING DIFFUSERS**

ROUND
CEILING DIFFUSERS



Model 900
Pg. 14

Fixed Round Diffusers - Aluminum - Multi-Cone - Model 900

- ✦ Economical high performance diffuser
- ✦ Damper available (900D)



Model 3000
(Flush Face Shown)
Pg. 16

Adjustable Round Diffusers - Aluminum - 3-Cone - Series 3000

- ✦ High induction/capacity 3 cone adjustable diffuser
- ✦ Fully adjustable from horizontal to vertical discharge
- ✦ Low profile flush face or dropped face designs are available

Adjustable	
3000-1	Flush
3000-2	Dropped



Model 3100
(Flush Face Shown)
Pg. 18

Fixed/Adjustable Round Diffusers - Aluminum/Steel - Multi-Cone - Series 3100

- ✦ High induction/capacity 2 cone diffuser
- ✦ Can be adjusted for vertical or horizontal discharge
- ✦ Low profile flush face or dropped face designs are available

	Aluminum		Steel	
Adjustable	3100A-1 Flush	3100A-2 Dropped	3100S-A-1 Flush	3100S-A-2 Dropped
Fixed	3100-1 Flush	3100-2 Dropped	3100S-1 Flush	3100S-2 Dropped

Series 3100 - Aluminum
Series 3100S - Steel



Model 3200
Pg. 20

Adjustable Round Diffusers - Steel - Model 3200

- ✦ Excellent choice for high capacity applications such as factories, gymnasiums, theaters, and convention halls
- ✦ Discharge pattern is easily adjusted from vertical to horizontal with adjustment ring
- ✦ Diffuser can effectively be applied for either spot heating or cooling
- ✦ In the horizontal setting the unit provides tight ceiling patterns excellent for VAV applications
- ✦ Outer cone design guards against ceiling smudging in horizontal position



Model R5750
Additional product
information available
at www.metalaire.com

Round Architectural Ceiling Diffuser - Steel - Model R5750

- ✦ Architectural pleasing round diffuser blends well into the ceiling surface
- ✦ Fixed horizontal throw pattern
- ✦ Designed for surface mounting applications
- ✦ Excellent in both heating and cooling applications
- ✦ The R5750 is an excellent choice for VAV applications

RCD - Round Ceiling Diffusers

5/2007

➔ Fixed Round Diffusers ➔ Model 900 ➔ Aluminum

Product Details

- ★ Economical high performance diffuser
- ★ Damper available (900D)

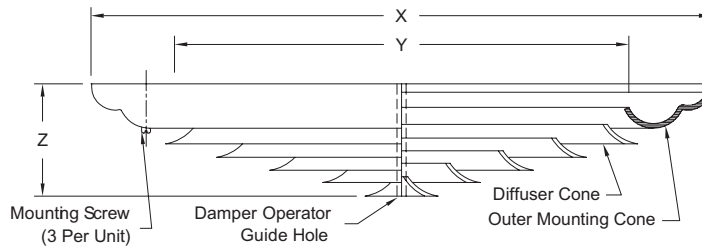


Model 900-1 Shown

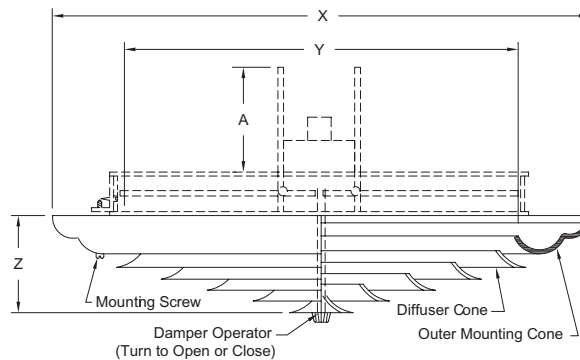
Standard Finish: 01 White

Dimensions are in inches

Fixed Round Diffuser - Multi Cone
Surface Mount
Model 900-1



Fixed Round Diffuser - Multi Cone - With Damper
Surface Mount
Model 900D-1



Diffuser Size	X	Y	Z	Number of Cones
6	10 1/8	5 7/8	1 7/8	4
8	12 1/8	7 7/8	2 3/16	5
10	14 1/8	9 7/8	2 1/2	6
12	16 1/8	11 7/8	2 13/16	7
14	18 1/8	13 7/8	3 1/8	8

Damper Size	A
6	3
8	4
10	5
12	6
14	6 1/4

1. Available Finishes	2. Available Accessories	3. Construction Details
Standard Finish: 01 White Optional Finish 02 Aluminum 28 Custom Color	900D - Round Damper220 Replacement Knobs	• Sizes only as listed

Round Ceiling Diffusers
RCD



For more product information visit us at www.metalaires.com



RCD - Round Ceiling Diffusers

Round Ceiling Diffusers



RCD

Model 900 - Performance

Neck Size	fpm	200	300	400	500	600	700	800	900	1000
		Pt	.005	.010	.015	.025	.035	.050	.065	.080
6"	CFM	37	55	75	90	110	130	145	165	185
	Throw NC	3-5 <	3-5 <	3-6 <	3-6 <	4-6 20	4-6 23	4-6 25	5-7 25	5-7 30
8"	CFM	65	100	135	165	200	230	265	300	330
	Throw NC	4-6 <	4-6 <	4-6 <	5-7 20	5-8 25	5-8 25	5-8 28	5-9 30	6-10 35
10"	CFM	105	160	210	265	315	370	420	475	525
	Throw NC	4-7 <	5-8 <	5-9 <	5-10 20	6-11 25	6-12 30	7-13 30	7-14 35	7-14 35
12"	CFM	150	230	305	380	455	535	610	685	760
	Throw NC	5-8 <	5-9 <	6-10 20	6-11 25	6-12 25	7-13 30	7-14 30	6-16 35	10-18 35
14"	CFM	200	310	415	520	625	730	830	935	1040
	Throw NC	6-9 <	7-11 <	8-13 20	9-14 25	11-15 30	12-17 30	13-19 35	15-21 35	18-23 40

Performance Notes for Series 900:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

CFM - Cubic feet per minute (air)

fpm - Velocity of air stream in feet per minute

Pt - Total pressure (inches of water column)

Throw - Throw distance in feet at terminal velocities of 150 - 100 fpm with a supply air temperature 20°F cooler than room temperature

NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE:10E-12 watts minus a 10 dB room attenuation in all octave bands

Round Damper for Series 900 ➔ Aluminum ➔ Model 900D

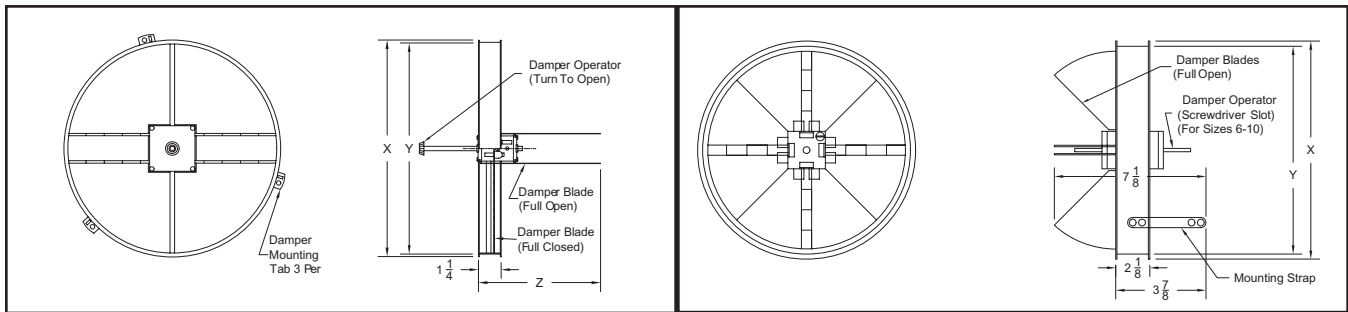
- ★ For attachment to Model 900
- ★ 2 butterfly style blades for 6" - 12" sizes
- ★ 8 blade radial style for 14" size
- ★ Blades adjusted through diffuser face
- ★ Damper supplied with mounting hardware



Dimensions are in inches

Butterfly Damper - Size 12 and Under - Aluminum

Opposed Blade Damper - Size 14 for Series 900 - Aluminum



900D Models			
Diffuser Sizes	X	Y	Z
6	5 15/16	5 5/8	3
8	7 15/16	7 5/8	4
10	9 15/16	9 5/8	5
12	11 15/16	11 5/8	6
14	13 15/16	13 5/8	7

RCD - Round Ceiling Diffusers

5/2007

Adjustable Round Diffusers Series 3000 Aluminum

Product Details

- High induction/capacity 3 cone adjustable diffuser
- Fully adjustable from horizontal to vertical discharge
- Low profile flush face, or dropped face designs are available

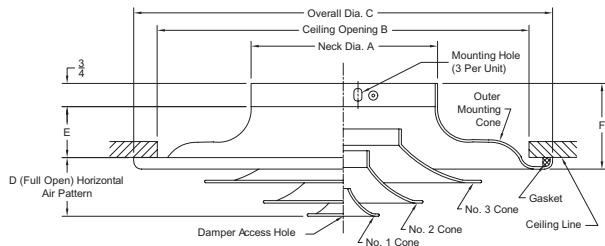


Model 3000-1 Shown

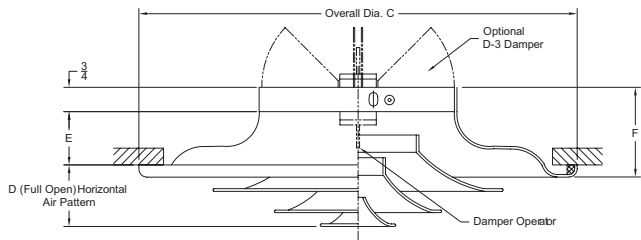
Standard Finish: 01 White

Dimensions are in inches

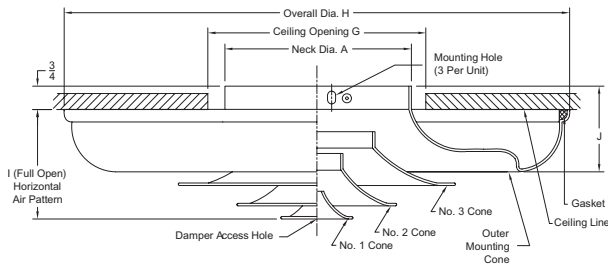
Adjustable Round Diffuser - 3 Cone Flush Cone Model 3000-1



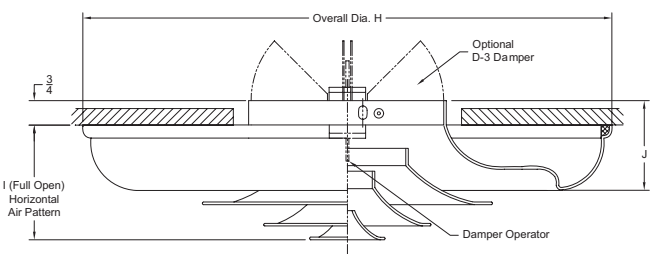
Adjustable Round Diffuser - 3 Cone Flush Cone - With D3 Damper Model 3000-1D



Adjustable Round Diffuser - 3 Cone Drop Cone Model 3000-2



Adjustable Round Diffuser - 3 Cone Drop Cone - With D3 Damper Model 3000-2D



Neck Size	A	B	C	D	E	F	G	H	I	J
6	5 7/8	12	13 1/2	2 1/4	1 5/8	2 3/4	7	16 5/16	3 7/8	2 3/4
8	7 7/8	16	18	2 5/8	2 1/8	3 3/8	9	23 3/16	4 3/4	3 3/8
10	9 7/8	20	22 1/2	2 15/16	2 5/8	4	11	27 3/16	5 9/16	4
12	11 7/8	24	27	3 1/2	3 1/4	4 5/8	13	31 13/16	6 3/4	4 5/8
14	13 7/8	28	31 1/2	4 1/4	3 3/4	5 1/4	15	36 7/8	8	5 1/4
16	15 7/8	32	36	4 5/8	4 1/4	6	17	42 1/4	8 7/8	6
18	17 7/8	36	40 1/2	5	4 7/8	6 5/8	19	47 9/16	9 7/8	6 5/8
20	19 7/8	40	45	5 3/8	5 3/8	7 1/4	21	52 3/8	10 3/4	7 1/4
24	23 7/8	40	45	5 3/8	5 3/8	7 1/4	25	52 3/8	10 3/4	7 1/4

RCD - Round Ceiling Diffusers

Round Ceiling Diffusers
RCD

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 01 White Optional Finish 02 Aluminum paint 03 Black 24 Mill finish 28 Custom color	Shipped Unattached D3 - Aluminum Radial Opposed Blade Damper . . .220 SD3 - Steel Radial Opposed Blade Damper220 G3 - Equalizing Grid220 GD3 - Combination Grid/Damper220 BDS - Butterfly Damper220 RSD - Radial Shutter Damper220	Safety Chain	• Sizes only as listed

Series 3000 - Performance

Models 3000 (-1, -2)

Neck Size	Neck Area in Sq. Ft.	fpm Neck Vel.										
		Pv	400	500	600	700	800	900	1000	1200	1400	1600
		Ps Horiz. Ps Vert.	0.011 0.019	0.018 0.03	0.026 0.043	0.035 0.058	0.046 0.075	0.059 0.096	0.072 0.115	0.105 0.17	0.145 0.225	0.190 0.3
6"	0.2	CFM Throw NC	80 1-3 <	100 2-4 <	110 2-5 <	140 3-6 20	160 3-7 24	180 3-8 27	200 4-8 36	240 4-9 36	280 5-10 39	320 6-12 44
8"	0.35	CFM Throw NC	140 2-4 <	175 2-5 <	210 3-6 <	245 3-7 20	280 4-8 24	315 4-10 27	350 5-11 31	420 5-13 36	490 6-14 39	560 7-16 44
10"	0.55	CFM Throw NC	220 2-5 <	270 3-6 <	330 3-7 <	380 4-8 21	435 5-10 25	490 6-11 28	545 6-12 32	655 7-14 37	765 8-18 40	870 9-21 45
12"	0.79	CFM Throw NC	315 3-7 <	390 3-8 <	470 4-10 20	550 5-11 22	630 6-13 26	710 7-15 29	785 8-17 33	940 9-19 38	1100 10-21 41	1260 12-25 46
14"	1.07	CFM Throw NC	425 3-8 <	535 4-9 <	640 5-11 20	750 6-13 23	855 7-16 27	965 8-18 31	1070 9-20 34	1285 11-13 40	1500 13-26 43	1710 15-30 48
16"	1.4	CFM Throw NC	560 4-9 <	700 5-10 <	840 5-13 21	980 6-15 24	1120 7-17 28	1260 9-21 33	1400 10-23 36	1680 12-27 41	1960 14-30 44	2240 16-35 49
18"	1.77	CFM Throw NC	710 4-10 <	885 5-12 <	1060 6-15 21	1240 7-17 25	1420 9-21 29	1595 11-23 34	1770 13-26 37	2120 15-31 42	2480 16-34 45	2830 18-38 51
20"	2.18	CFM Throw NC	875 4-11 <	1090 6-14 20	1310 7-16 22	1525 8-19 26	1745 9-23 30	1965 11-23 36	2180 13-28 39	2620 15-33 44	3060 18-38 47	3490 20-42 53
24"	3.14	CFM Throw NC	1255 12-24 22	1570 13-26 26	1885 14-28 28	2200 15-30 31	2510 16-33 35	2825 17-35 38	3140 18-37 41	3770 20-40 47	4395 23-45 51	5025 25-50 55

Performance Notes for Series 3000:

1. Tabulated radial throw in feet is based on a 9' ceiling height, ambient supply air, MAX Throw @ Vt = 75 fpm, MIN Throw @ Vt = 150 fpm, and the diffuser inner cones in down position for 360° horizontal air distribution pattern.
2. For vertical down protection air pattern with cooling supply air temperature 20° below room temperature and diffuser inner cones in up position: multiply the tabulated radial throw values by a factor of 0.80 to obtain vertical down projection distances at MIN and MAX (Vt) terminal velocities.
3. For vertical down projection air pattern with heating supply air temperatures 20° above room temperature and diffuser inner cones in up position; multiply the tabulated radial throw values by a factor of 0.60 to obtain vertical down projection distances at MIN and MAX (Vt) terminal velocities.
4. Velocity Pressure (Pv) and Static Pressure (Ps) are in inches of water.
5. Series 3000 Diffusers are tested in accordance with ASHRAE 70-1991. Sound data are calculated in accordance with International Standard ISO 3741 comparison method. The NC values are based on a room absorption of 10 dB for sound power level (Lw) RE: 10E-12 watts. < symbol indicated NC less than 20. The NC data are for single diffusers; for results of throttling a volume damper, see table below.
6. All data are applicable for exposed duct mounting or ceiling installation.

Damper Throttling Correction Factors

% Register Damper Open	Add To Listed NC (1)*	Factor Times Listed Pt (2)*
100%	0 dB	1.0
82%	4 dB	1.5
70%	8 dB	2.0
50%	16 dB	4.0

(1) NC Addition to listed NC value.
 (2) Pt Multiplier times listed Pt value.



RCD - Round Ceiling Diffusers

5/2007

Round Ceiling Diffusers



RCD

➔ Fixed/Adjustable Round Diffusers ➔ Series 3100 ➔ Aluminum
➔ Series 3100S ➔ Steel

Product Details

- ★ High induction/capacity 2 cone diffuser
- ★ Can be adjusted for vertical or horizontal discharge
- ★ Available 3100 aluminum construction or 3100S steel construction
- ★ Low profile flush face or dropped face designs are available
- ★ 30" and 36" units are available in non-adjustable models only



Model 3100-1 Shown

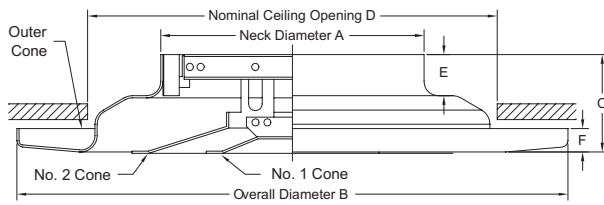
Standard Finish: 01 White

Dimensions are in inches

Fixed Round Ceiling Diffuser - 2 Cone

Flush Cone

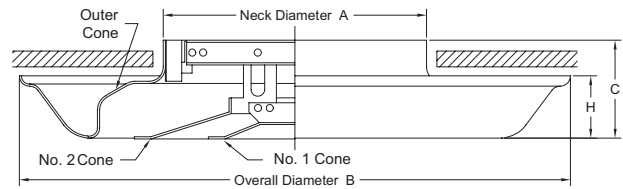
Model 3100-1 - Aluminum
Model 3100S-1 - Steel



Fixed Round Ceiling Diffuser - 2 Cone

Drop Cone

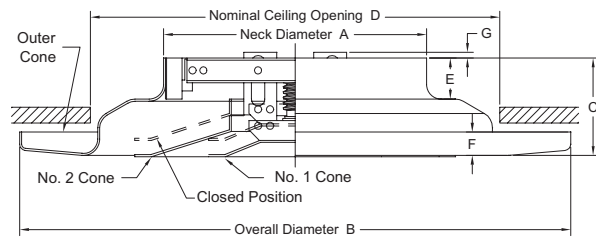
Model 3100-2 - Aluminum
Model 3100S-2 - Steel



Adjustable Round Ceiling Diffuser - 2 Cone

Flush Cone

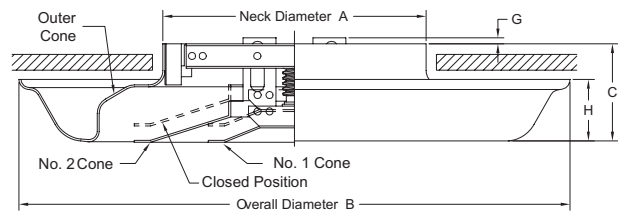
Model 3100A-1 - Aluminum
Model 3100AS-1 - Steel



Adjustable Round Ceiling Diffuser - 2 Cone

Drop Cone

Model 3100A-2 - Aluminum
Model 3100SA-2 - Steel



Dimensions								
Size	A	B	C	D	E	F	G	H
6	5 3/4	16 5/8	2 15/16	12	1 1/4	5/8	3/4	1 7/8
8	7 3/4	16 5/8	2 15/16	12	1 1/4	5/8	3/4	1 7/8
10	9 3/4	22 3/16	3 5/16	17	1 1/4	7/8	3/4	2 1/2
12	11 3/4	22 3/16	3 5/16	17	1 1/4	7/8	3/4	2 1/2
14	13 3/4	29 1/4	4 3/16	23	1 1/4	7/8	1 9/16	3 1/2
16	15 3/4	29 1/4	4 3/16	23	1 1/4	7/8	1 9/16	3 3/8
18	17 3/4	34 1/2	4 5/8	28	1 1/4	1	1 9/16	3 3/4
20	19 3/4	34 1/2	4 5/8	28	1 1/4	1	1 9/16	3 3/4
24	23 3/4	40 1/2	5 1/4	34	1 1/4	1	1 9/16	4 1/4
30	29 3/4	49 1/2	6 1/8	41	2 1/4	1 3/8	2 1/16	5 1/8
36	35 3/4	58 3/8	7 1/8	50	2 1/4	1 3/8	2 1/16	6 1/8

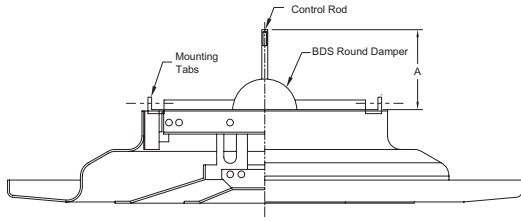
30" and 36" units are available in non-adjustable models only

For more product information visit us at www.metalaire.com

RCD - Round Ceiling Diffusers

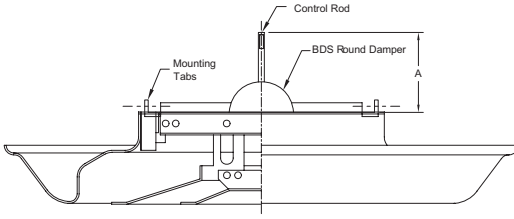


Fixed Round Ceiling Diffuser - 2 Cone
Flush Cone - With Damper
 Model 3100-1D - Aluminum
 Model 3100S-1D - Steel



Dimensions	
Size	A
6	2 1/2
8	3 1/2
10	4 1/2
12	5 1/2
14	6 1/2
16	7 1/2

Fixed Round Ceiling Diffuser - 2 Cone
Drop Cone - With Damper
 Model 3100-2D - Aluminum
 Model 3100S-2D - Steel



Dimensions	
Size	A
6	2 1/2
8	3 1/2
10	4 1/2
12	5 1/2
14	6 1/2
16	7 1/2

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 01 White Optional Finish 02 Aluminum paint 03 Black 24 Mill finish 28 Custom color	Shipped Unattached D3 - Aluminum Radial Opposed Blade Damper . . .220 SD3 - Steel Radial Opposed Blade Damper220 G3 - Equalizing Grid220 GD3 - Combination Grid/Damper220 BDS - Butterfly Damper220 RSD - Radial Shutter Damper220	Safety Chain	• Sizes only as listed

Series 3100 - Performance

Models 3100 (-1, -2), 3100S (-1, -2)

Neck Size	Neck Area in Sq. Ft.	fpm Neck Vel.	400	500	600	700	800	900	1000	1200	1400	1600	
			Pv	0.01	0.016	0.023	0.031	0.04	0.051	0.063	0.09	0.122	0.16
			Ps Horiz. Ps Vert.	0.025 0.049	0.039 0.076	0.056 0.109	0.076 0.149	0.1 0.194	0.126 0.247	0.156 0.305	0.225 0.44	0.304 0.594	0.398 0.777
6"	0.188	CFM Throw NC	75 2-3-6 <18	94 3-4-8 <18	113 3-5-9 <18	132 4-5-11 18	151 4-6-12 19	169 5-7-14 23	188 5-8-16 26	226 6-9-19 32	264 7-11-22 36	301 9-13-26 40	
8"	0.338	CFM Throw NC	135 3-5-9 19	169 3-5-10 19	203 4-6-12 19	237 4-7-13 20	271 5-8-15 24	304 6-9-17 28	338 7-10-20 31	406 8-12-25 37	474 10-14-29 42	541 10-15-30 46	
10"	0.769	CFM Throw NC	213 4-16-12 20	266 4-7-13 20	319 5-7-15 23	372 5-8-17 26	425 6-9-18 29	479 7-10-20 31	532 7-11-23 34	638 9-14-27 40	745 11-16-32 45	851 12-18-36 49	
12"	1.05	CFM Throw NC	308 5-7-15 19	385 5-8-16 22	461 6-9-18 25	538 7-10-20 28	615 7-11-22 31	692 8-12-24 34	769 9-13-26 37	923 11-16-32 42	1077 12-19-37 47	1231 14-21-43 51	
14"	1.375	CFM Throw NC	420 6-9-18 22	525 6-10-19 25	630 7-11-21 28	735 8-12-23 31	840 8-13-25 34	945 9-14-28 37	1050 10-15-30 39	1260 12-18-36 44	1470 14-21-43 48	1680 17-25-57 52	
16"	1.743	CFM Throw NC	550 7-10-21 24	687 7-11-22 27	825 8-12-25 30	962 9-14-27 32	1100 10-15-30 35	1237 11-17-33 38	1375 12-18-37 40	1649 14-22-43 45	1924 17-25-50 50	2194 19-29-57 54	
18"	2.154	CFM Throw NC	697 8-12-24 25	871 9-13-27 28	1046 11-15-32 31	1220 11-16-32 33	1394 12-17-35 36	1568 13-19-38 39	1743 14-20-43 41	2091 16-24-48 46	2440 18-28-55 50	2788 21-32-64 54	
20"	3.109	CFM Throw NC	862 9-13-27 27	1077 10-15-30 30	1293 11-16-32 32	1508 12-18-36 35	1724 13-20-39 37	1939 14-22-43 39	2154 16-24-47 41	2585 19-28-56 45	3016 22-33-65 50	3447 24-36-72 54	
24"	3.109	CFM Throw NC	1224 12-18-36 28	1554 13-20-40 31	1885 15-22-45 33	2176 16-25-49 36	2487 18-27-54 38	2798 20-30-59 40	3109 21-32-64 42	3731 25-37-75 46	4353 28-42-84 50	4974 31-47-93 54	
30"	4.868	CFM Throw NC	1947 17-26-51 30	2434 19-29-54 32	2921 21-32-64 35	3408 24-35-71 37	3894 26-39-78 39	4381 28-42-85 41	4868 31-46-92 43	5842 35-53-105 47	6815 39-58-117 51	7789 42-63-126 54	
36"	7.02	CFM Throw NC	2808 24-36-72 31	3510 27-40-81 33	4212 30-45-90 36	4914 33-49-99 38	5616 36-54-108 40	6318 39-59-118 42	7020 42-63-127 44	8423 48-72-144 48	9827 53-79-158 57	11231 58-84-168 54	

30" and 36" units are available in non-adjustable models only

See Page RCD-22 for Performance Notes



RCD - Round Ceiling Diffusers

5/2007

Adjustable Round Diffusers Model 3200 Steel

Product Details

- ★ Excellent choice for high capacity applications such as factories, gymnasiums, theaters, and convention halls
- ★ Discharge pattern is easily adjusted from vertical to horizontal with adjustment ring
- ★ Diffuser can effectively be applied for either spot heating or cooling
- ★ In the horizontal setting the unit provides tight ceiling patterns excellent for VAV applications
- ★ Outer cone design guards against ceiling smudging in horizontal position

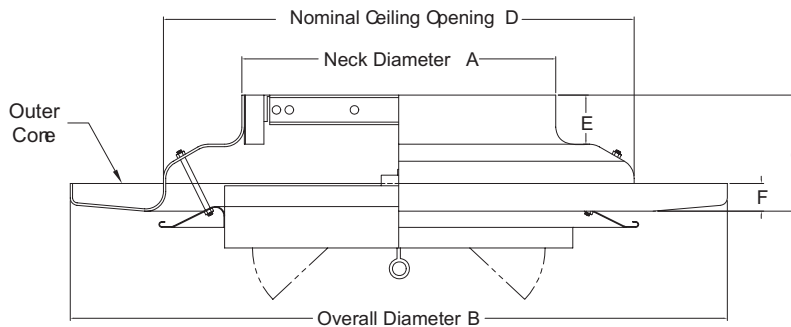


Model 3200-1

Standard Finish: 01 White

Dimensions are in inches

Round Diffuser - High Capacity - Adjustable - Pole Operated - Vertical to Horizontal Pattern
Model 3200-1



Dimensions						
Size	A	B	C	D	E	F
6	5 3/4	17 1/4	2 1/8	6 3/4	1 1/8	1 1/8
8	7 3/4	17 1/4	2 1/8	8 3/4	1 1/8	1 1/4
10	9 3/4	20 1/4	2 5/8	10 3/4	1 1/4	1 3/4
12	11 3/4	22 1/4	2 5/8	12 3/4	1 1/4	1 3/4
14	13 3/4	29 1/2	2 5/8	14 3/4	1 1/4	2 3/8
16	15 3/4	29 1/2	2 3/4	16 3/4	1 1/4	2 3/8
18	17 3/4	33 1/2	3 5/8	18 3/4	1 1/4	2 1/2
20	19 3/4	36 1/2	3 5/8	20 3/4	1	2 1/2
24	23 3/4	40 1/2	3 5/8	24 3/4	1	2 1/2

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 01 White Optional Finish 02 Aluminum paint 03 Black 24 Mill finish 28 Custom color	G3 - Equalizing Grid 220	Safety Chain	• Sizes only as listed • Units 14" and greater are shipped with a factory installed safety chain

RCD - Round Ceiling Diffusers

Model 3200 - Performance

Neck Velocity		400	500	600	700	800	900	1000	1200	1400	1600
Velocity Pressure		0.010	0.016	0.022	0.031	0.040	0.050	0.062	0.090	0.122	0.160
6" Dia	Air Flow Rate, CFM	80	100	120	135	155	175	195	235	275	315
	Static Pressure, H	0.004	0.007	0.010	0.013	0.017	0.022	0.027	0.039	0.052	0.069
	Total Pressure, H	0.014	0.022	0.032	0.044	0.057	0.072	0.089	0.128	0.175	0.228
	Static Pressure, V	0.020	0.032	0.046	0.062	0.081	0.103	0.127	0.182	0.248	0.324
	Total Pressure, V	0.030	0.047	0.068	0.093	0.121	0.153	0.189	0.272	0.371	0.484
	NC, H	<	<	15	16	17	19	21	24	26	29
	NC, V	<	<	<	13	15	16	18	22	25	29
	Throw, H, cooling	1-1-3	1-2-3	1-2-4	1-2-4	2-2-5	2-3-6	2-3-6	2-4-7	3-4-9	3-5-9
	Throw, V, cooling	2-4-8	4-5-11	4-6-13	5-7-14	5-8-16	6-9-19	7-10-21	8-12-25	10-15-29	11-17-33
	Throw, V, heating	0-1-3	1-2-4	1-2-4	1-2-5	2-3-6	2-3-6	2-4-7	3-4-8	3-5-10	4-6-11
8" Dia	Air Flow Rate, CFM	140	175	210	245	280	315	350	420	490	560
	Static Pressure, H	0.003	0.004	0.006	0.009	0.011	0.014	0.018	0.026	0.035	0.046
	Total Pressure, H	0.013	0.020	0.029	0.039	0.051	0.065	0.080	0.115	0.157	0.205
	Static Pressure, V	0.012	0.018	0.026	0.036	0.046	0.059	0.073	0.104	0.142	0.186
	Total Pressure, V	0.022	0.034	0.049	0.066	0.086	0.109	0.135	0.194	0.264	0.345
	NC, H	<	16	18	20	21	23	25	28	31	34
	NC, V	<	<	<	<	<	17	19	24	28	32
	Throw, H, cooling	1-2-3	1-2-4	2-2-5	2-3-6	2-3-7	2-4-7	3-4-8	3-5-10	4-6-12	4-7-12
	Throw, V, cooling	3-6-11	5-7-14	6-8-17	8-10-19	7-11-22	8-13-25	9-14-28	11-17-33	13-19-39	15-22-45
	Throw, V, heating	1-1-4	1-2-5	1-3-6	2-3-7	3-4-8	3-4-9	3-5-9	4-6-11	4-7-13	5-8-15
10" Dia	Air Flow Rate, CFM	220	275	325	380	435	490	545	655	765	875
	Static Pressure, H	0.003	0.004	0.006	0.009	0.011	0.014	0.018	0.026	0.035	0.046
	Total Pressure, H	0.013	0.020	0.029	0.039	0.051	0.065	0.080	0.115	0.157	0.205
	Static Pressure, V	0.012	0.018	0.026	0.036	0.046	0.059	0.073	0.104	0.142	0.186
	Total Pressure, V	0.022	0.034	0.049	0.066	0.086	0.109	0.135	0.194	0.264	0.345
	NC, H	<	16	17	19	20	22	23	26	29	32
	NC, V	<	<	<	<	<	15	17	23	27	31
	Throw, H, cooling	1-2-4	2-3-5	2-3-6	2-4-7	3-4-8	3-5-9	3-5-10	4-6-12	5-7-14	6-8-15
	Throw, V, cooling	4-7-14	6-9-18	7-10-21	8-12-24	9-14-28	10-16-31	12-17-35	14-21-42	16-24-49	19-28-56
	Throw, V, heating	1-2-5	1-3-6	2-4-7	2-4-8	3-5-9	4-5-11	4-6-12	5-7-14	6-8-17	6-9-19
12" Dia	Air Flow Rate, CFM	315	395	470	550	630	705	785	940	1100	1255
	Static Pressure, H	0.003	0.004	0.006	0.009	0.011	0.014	0.018	0.026	0.035	0.046
	Total Pressure, H	0.013	0.020	0.029	0.039	0.051	0.065	0.080	0.115	0.157	0.205
	Static Pressure, V	0.011	0.017	0.025	0.034	0.044	0.056	0.069	0.099	0.134	0.175
	Total Pressure, V	0.021	0.033	0.047	0.064	0.084	0.106	0.131	0.188	0.257	0.335
	NC, H	<	15	17	19	23	26	29	35	40	43
	NC, V	<	<	<	17	20	23	27	32	37	41
	Throw, H, cooling	2-2-5	2-3-6	2-4-7	3-4-9	3-5-10	4-6-11	4-6-12	5-7-15	6-9-17	7-10-19
	Throw, V, cooling	4-8-17	7-10-21	8-12-25	10-15-29	11-17-33	12-19-37	14-21-42	17-25-50	19-29-58	22-33-67
	Throw, V, heating	1-2-6	1-3-7	2-4-8	3-5-10	4-6-11	4-6-13	5-7-14	6-8-17	7-10-20	8-11-23
14" Dia	Air Flow Rate, CFM	430	535	640	750	855	960	1070	1285	1495	1710
	Static Pressure, H	0.003	0.004	0.006	0.009	0.011	0.014	0.018	0.026	0.035	0.046
	Total Pressure, H	0.013	0.020	0.029	0.039	0.051	0.065	0.080	0.115	0.157	0.205
	Static Pressure, V	0.011	0.017	0.024	0.033	0.043	0.055	0.068	0.097	0.133	0.173
	Total Pressure, V	0.021	0.033	0.047	0.064	0.083	0.105	0.13	0.187	0.255	0.333
	NC, H	<	16	21	25	29	32	36	41	44	46
	NC, V	<	15	19	23	27	30	33	38	42	45
	Throw, H, cooling	2-3-6	2-4-7	3-4-9	3-5-10	4-6-12	4-6-13	5-7-14	6-9-17	7-10-20	8-12-22
	Throw, V, cooling	1-3-13	2-5-21	3-7-28	5-10-33	6-13-38	7-17-43	9-21-48	13-29-57	18-33-67	24-38-71
	Throw, V, heating	1-2-5	1-3-7	2-4-8	3-5-9	4-5-11	4-6-12	4-7-13	5-8-16	6-9-19	7-11-22
16" Dia	Air Flow Rate, CFM	560	700	840	975	1115	1255	1395	1675	1955	2235
	Static Pressure, H	0.003	0.004	0.006	0.009	0.011	0.014	0.018	0.026	0.035	0.046
	Total Pressure, H	0.013	0.020	0.029	0.039	0.051	0.065	0.080	0.115	0.157	0.205
	Static Pressure, V	0.010	0.016	0.024	0.032	0.042	0.053	0.066	0.094	0.129	0.168
	Total Pressure, V	0.02	0.032	0.046	0.063	0.082	0.104	0.128	0.184	0.251	0.328
	NC, H	15	20	25	29	33	37	40	45	48	50
	NC, V	16	20	24	28	31	35	38	43	47	49
	Throw, H, cooling	2-3-7	3-4-8	3-5-10	4-6-12	4-7-13	5-7-15	6-8-17	7-10-20	8-12-23	9-13-25
	Throw, V, cooling	2-4-14	3-6-23	4-8-30	5-11-35	6-14-40	8-18-45	10-22-50	14-30-60	20-35-69	26-40-79
	Throw, V, heating	1-2-6	1-3-8	2-4-9	2-5-11	3-6-12	4-7-14	5-8-16	6-9-19	7-11-22	8-12-25

See Page RCD-22 for Performance Notes

Round Ceiling Diffusers
RCD



Model 3200 - Performance

Neck Velocity		400	500	600	700	800	900	1000	1200	1400	1600
Velocity Pressure		0.010	0.016	0.022	0.031	0.040	0.050	0.062	0.090	0.122	0.160
18" Dia	Air Flow Rate, CFM	705	885	1060	1235	1415	1590	1765	2120	2475	2825
	Static Pressure, H	0.003	0.004	0.006	0.009	0.011	0.014	0.018	0.026	0.035	0.046
	Total Pressure, H	0.013	0.02	0.029	0.039	0.051	0.065	0.08	0.115	0.157	0.205
	Static Pressure, V	0.01	0.016	0.023	0.031	0.041	0.051	0.064	0.092	0.125	0.163
	Total Pressure, V	0.02	0.031	0.045	0.062	0.081	0.102	0.126	0.181	0.247	0.322
	NC, H	<	19	23	27	31	35	38	44	50	54
	NC, V	<	16	21	25	30	34	37	43	49	52
	Throw, H, cooling	2-4-7	3-5-9	4-6-11	4-7-13	5-7-15	6-8-17	6-9-19	7-11-22	9-13-26	10-15-28
	Throw, V, cooling	2-4-14	3-6-23	4-8-32	5-11-37	6-14-43	8-18-48	10-23-53	14-32-64	20-37-74	26-43-85
	Throw, V, heating	1-1-5	1-2-8	1-3-11	2-4-12	2-5-14	3-6-16	4-8-18	5-11-21	7-12-25	9-14-28
20" Dia	Air Flow Rate, CFM	875	1090	1310	1525	1745	1965	2180	2620	3055	3490
	Static Pressure, H	0.003	0.004	0.006	0.009	0.011	0.014	0.018	0.026	0.035	0.046
	Total Pressure, H	0.013	0.02	0.029	0.039	0.051	0.065	0.08	0.115	0.157	0.205
	Static Pressure, V	0.01	0.015	0.022	0.029	0.038	0.049	0.06	0.087	0.118	0.154
	Total Pressure, V	0.02	0.031	0.044	0.06	0.078	0.099	0.123	0.176	0.24	0.314
	NC, H	<	19	25	29	34	38	41	48	53	57
	NC, V	<	<	20	25	30	35	39	45	50	52
	Throw, H, cooling	3-4-8	3-5-10	4-6-12	5-7-14	6-8-17	6-9-19	7-10-21	8-12-25	10-14-29	11-17-31
	Throw, V, cooling	2-4-14	2-6-22	4-8-32	5-11-41	6-14-47	8-18-53	10-22-59	14-32-71	19-41-83	25-47-95
	Throw, V, heating	0-1-4	1-1-6	1-2-9	1-3-12	2-4-15	2-5-18	3-6-19	4-9-23	5-12-27	7-15-31
24" Dia	Air Flow Rate, CFM	1255	1570	1885	2200	2515	2825	3140	3770	4400	5025
	Static Pressure, H	0.002	0.004	0.005	0.007	0.009	0.012	0.015	0.021	0.029	0.038
	Total Pressure, H	0.012	0.019	0.028	0.038	0.049	0.062	0.077	0.111	0.151	0.197
	Static Pressure, V	0.009	0.014	0.021	0.028	0.037	0.047	0.058	0.083	0.113	0.148
	Total Pressure, V	0.019	0.03	0.043	0.059	0.077	0.097	0.12	0.173	0.236	0.308
	NC, H	<	19	25	31	36	40	44	50	54	56
	NC, V	<	17	23	28	32	37	40	47	52	56
	Throw, H, cooling	3-5-10	4-6-12	5-7-15	6-9-17	7-10-20	7-11-22	8-12-25	10-15-30	12-17-35	13-20-37
	Throw, V, cooling	2-4-17	3-7-27	4-10-38	6-13-50	8-17-57	10-21-64	12-27-71	17-38-85	23-50-99	30-57-109
	Throw, V, heating	1-1-5	1-2-7	1-3-10	2-3-14	2-5-18	3-6-21	3-7-23	5-10-28	6-14-33	8-18-37

Performance Notes for Model 3200-1:

1. Tabulated throw in feet is based on a 9' ceiling, with supply air temperature 20°F cooler than room temperature, heating air temperature is 20°F above room temperature MAX Throw @ Vt = 50 fpm, MIN Throw @ Vt = 150 fpm, and the diffuser/inner cones in down position for 360° horizontal air distribution pattern.

Example: 9-13-27

| | |Distance @ 50 fpm Term. Vel.
 | | |Distance @ 100 fpm Term. Vel.
 | | |Distance @ 150 fpm Term. Vel.

2. Velocity Pressure (Pv) and Static Pressure (Ps) are in inches of water. Pv + Ps = Pt (total pressure).
3. Series 3200 Round Adjustable Diffusers are tested in accordance with ASHRAE 70-1991. Sound data are calculated in accordance with International Standard ISO 3741 comparison method. The NC values are based on a room absorption of 10 dB for sound power level (Lw) RE: 10E-12 watts. < symbol indicates NC less than 15. The NC data is for a single diffusers; for results of throttling a volume damper, see table below.
4. All data is applicable for exposed duct mounting or ceiling installation.

Performance Notes for Series 3100:

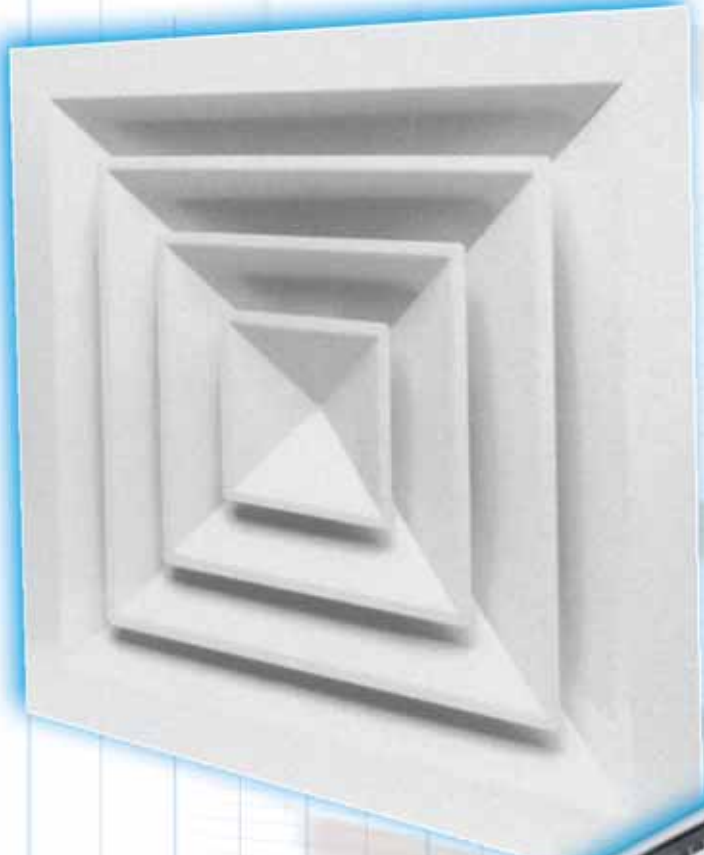
1. Tabulated throw in feet is based on a 9' ceiling, with supply air temperature 20°F cooler than room temperature, MAX Throw @ Vt = 50 fpm, MIN Throw @ Vt = 150 fpm, and the diffuser/inner cones in down position for 360° horizontal air distribution pattern.

Example: 9-13-27

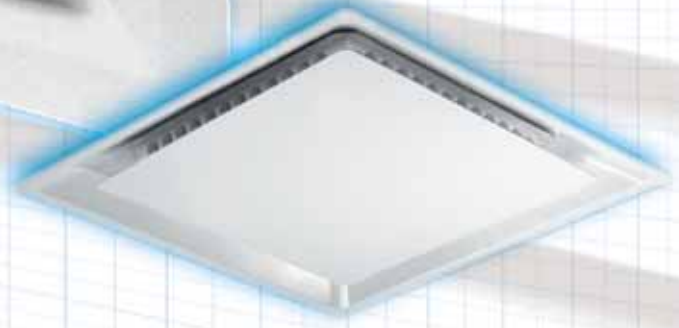
| | |Distance @ 50 fpm Term. Vel.
 | | |Distance @ 100 fpm Term. Vel.
 | | |Distance @ 150 fpm Term. Vel.

For vertical Ak values, multiply Ak by 0.76.

2. For vertical down projection air pattern with cooling supply air temperature 20° below room temperature, and diffuser inner cones in up position: multiply the tabulated radial throw values by a factor of 0.80 to obtain vertical down projection distances at MIN and MAX (Vt) terminal velocities.
3. For vertical down projection air pattern with heating supply air temperatures 20° above room temperature, and diffuser inner cones in up position: multiply the tabulated radial throw values by a factor of 0.60 to obtain vertical down projection distances at MIN and MAX (Vt) terminal velocities.
4. Velocity Pressure (Pv) and Static Pressure (Ps) are in inches of water. Pv + Ps = Pt (total pressure).
5. Series 3100 Round Adjustable Diffusers are tested in accordance with ASHRAE 70-1991. Sound data are calculated in accordance with International Standard ISO 3741 comparison method. The NC values are based on a room absorption of 10 dB for sound power level (Lw) RE: 10E-12 watts. < symbol indicates NC less than 20. The NC data are for single diffusers; for results of throttling a volume damper, see table below.
6. All data are applicable for exposed duct mounting or ceiling installation.



D
C
D



**DIRECTIONAL
CEILING DIFFUSERS**

DIRECTIONAL
CEILING DIFFUSERS



Model 5000
Aluminum
(Border 1
Surface Mount Shown)
Pg. 28



Square/Rectangular Louver Face Ceiling Diffusers - Aluminum - Series 5000

- ★ Available in 1-way, 2-way opposite, 2-way corner, 3-way, and 4-way directional air patterns
- ★ Cores are easy to remove with spring loaded latches — no tools required
- ★ Series 5000 deflector blades are straight and do not include a horizontal lip, making this diffuser an excellent choice for high capacity applications
- ★ The series 5000 is an excellent choice for VAV applications
- ★ The series 5000 is available with optional induction vanes

Available Border Styles	
5000-1 Surface Mount	5000-6 T-bar Lay-in
5000-2 V-Beveled Drop Surface Mounting	5000-7 Concealed T-bar
5000-4 Drop Face Surface Mount	5000-8 Tegular T-bar
5000-46 Drop Face T-bar Lay-in	5000-9 Donn Finline



Model 5500
Aluminum
(Border 6
T-bar Lay-in Shown)
Pg. 30



Square/Rectangular Louver Face Ceiling Diffusers - Aluminum - Series 5500

- ★ Available in 1-way, 2-way opposite, 2-way corner, 3-way, and 4-way directional air patterns
- ★ Cores are easy to remove with spring loaded latches — no tools required
- ★ Series 5500 deflector blades include a horizontal lip, making this diffuser an excellent choice for high induction applications
- ★ The series 5500 is an excellent choice for VAV applications
- ★ The series 5500 is available with optional induction vanes

Available Border Styles	
5500-1 Surface Mount	5500-6 T-bar Lay-in
5500-2 V-Beveled Drop Surface Mounting	5500-7 Concealed T-bar
5500-4 Drop Face Surface Mount	5500-8 Tegular T-bar
5500-46 Drop Face T-bar Lay-in	5500-9 Donn Finline



Model 5500S
Steel
(Border 6
T-bar Lay-in Shown)
Pg. 32



Square/Rectangular Louver Face Ceiling Diffusers - Steel - Series 5500S

- ★ Available in 1-way, 2-way opposite, 2-way corner, 3-way, and 4-way directional air patterns
- ★ Cores are easy to remove with spring loaded latches — no tools required
- ★ Series 5500S deflector blades include a horizontal lip, making this diffuser an excellent choice for high induction applications
- ★ The series 5500S is an excellent choice for VAV applications
- ★ The series 5500S is also available with optional induction vanes.

Available Border Styles	
5500S-1 Surface Mount	5500SR-1 Flush Mount w/Integral Round Neck
5500S-2 V-Beveled Drop Surface Mounting	5500SR-2 V-Beveled Drop Surface Mounting - Round Neck
5500S-6 T-bar Lay-in	5500SR-6 T-bar Lay-in w/Integral Round Neck
5500S-8 Tegular T-bar	5500SR-8 Tegular T-bar - Round Neck
5500S-9 Donn Finline	5500SR-9 Donn Finline - Round Neck



Model 5200
Pg. 38

Square/Rectangular Diffusers - Economical Square Diffusers - Aluminum - Series 5200

- ★ Removable core for concealed mounting
- ★ Optional built-in opposed blade damper
- ★ Available in 1 way, 2 way opposite, 2 way corner, 3 way, and 4 way directional air patterns

Available Border Styles	
5200-1 Surface Mount	
5200-2 Beveled Drop Surface Mounting	
5200-6 T-bar Lay-in	

DCD - Directional Ceiling Diffusers



Model 5700
Pg. 40

Series 5700 - Fixed
Series 5700A - Adjustable

Square Face Diffusers - Round Neck 2-Cone - Steel/Aluminum/Aluminized Steel Adjustable/Non-Adjustable - Series 5700

- ★ The series 5700 provides a tight horizontal 360° discharge pattern for superior induction and occupant comfort
- ★ Series 5700 can be converted in the field to a 3 cone diffuser with the addition of the optional Snap-58
- ★ Lay-in border designed to be installed in standard 15/16" wide tees
- ★ T-bar Lay-in border 6 can be used in surface mounting applications by adding optional T-bar plaster frame (TBPF)
- ★ Cores are easy to remove without tools
- ★ The series 5700 is an excellent choice for VAV applications

Steel	Aluminized Steel	Aluminum
5700-1 Surface Mount	5700-1 AS Surface Mount	5700-1 AL Surface Mount
5700-6 T-bar Lay-in	5700-6 AS T-bar Lay-in	5700-6 AL T-bar Lay-in
5700-6P T-bar Lay-in Panel		
5700-7 Concealed T-bar	5700-7 AS Concealed T-bar	
5700-9 Donn Finline	5700-9 AS Donn Finline	
Metric/Steel	Metric/Aluminized Steel	Metric/Aluminum
M5700-6 T-bar Lay-in 600mm x 600mm	M5700-6 AS T-bar Lay-in 600mm x 600mm	M5700-6 AL T-bar Lay-in 600mm x 600mm

Adjustable/Steel	Adjustable/Aluminized Steel	Adjustable/Aluminum
5700A-1 Surface Mount	5700A-1 AS Surface Mount	
5700A-6 T-bar Lay-in	5700A-6 AS T-bar Lay-in	5700A-6 AL T-bar Lay-in
5700A-7 Concealed T-bar	5700A-7 AS Concealed T-bar	



Model 5750
Pg. 44

Square Panel Face Diffusers - Round Neck - Uni-Flo - Steel/Aluminized Steel - Series 5750

- ★ Attractive single panel design blends well with all ceilings
- ★ The series 5750 provides a tight 360° discharge pattern for superior induction and occupant comfort
- ★ T-bar Lay-in border type 6 designed to be installed in standard 15/16" wide tees
- ★ Border type 6 can be used in surface mounting applications by adding optional T-bar plaster frame (TBPF)
- ★ Face panel is easy to remove without tools
- ★ The series 5750 is an excellent choice for VAV applications

Steel	Aluminized Steel
5750-1 Surface Mount	5750-1 AS Surface Mount
5750-6 T-bar Lay-in	5750-6 AS T-bar Lay-in
5750-7 Concealed T-bar	5750-7 AS Concealed T-bar
5750-9 Donn Finline	5750-9 AS Donn Finline

Metric/Steel	Metric/Aluminized Steel
M5750-6 T-bar Lay-in - 600mm x 600mm	M5750-6 AS T-bar Lay-in - 600mm x 600mm



Model 5800
Pg. 48

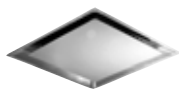
Series 5800 - Fixed
Series 5800A - Adjustable

Square Face Diffusers - Round Neck 3-Cone - Steel/Aluminum/Aluminized Steel Adjustable/Non-Adjustable - Series 5800

- ★ The series 5800 provides a tight 360° discharge pattern for superior induction and occupant comfort
- ★ T-bar Lay-in border type 6 is designed to be installed in standard 15/16" wide tees
- ★ border type 6 can be used in surface mounting applications by adding optional T-bar plaster frame (TBPF)
- ★ Cores are easy to remove without tools
- ★ The Series 5800 is an excellent choice for VAV applications

Steel	Aluminized Steel	Aluminum
5800-1 Surface Mount	5800-1 AS Surface Mount	5800-1 AL Surface Mount
5800-6 T-bar Lay-in	5800-6 AS T-bar Lay-in	5800-6 AL T-bar Lay-in
5800-6P T-bar Lay-in Panel		
5800-7 Concealed T-bar	5800-7 AS Concealed T-bar	
Metric/Steel	Metric/Aluminized Steel	Metric/Aluminum
M5800-6 T-bar Lay-in 600mm x 600mm	M5800-6 AS T-bar Lay-in 600mm x 600mm	M5800-6 AL T-bar Lay-in 600mm x 600mm

Adjustable/Steel	Adjustable/Aluminized Steel
5800A-1 Surface Mount	5800A-1 AS Surface Mount
5800A-6 T-bar Lay-in	5800A-6 AS T-bar Lay-in



Series Phenomenator®

Pg. 52

Square Panel Face Diffusers - Round Neck - Ultra High Performance - Series Phenomenator®

- ✦ The highest induction ratio of any commercial air diffuser available
- ✦ Excellent selection for providing exceptional comfort, especially in executive offices, conference rooms, and board rooms
- ✦ Can improve productivity by maintaining draft-free comfort in many applications
- ✦ Designed for applications calling for minimal temperature differences in a space
- ✦ Solves comfort problems in applications such as reception areas and entrance ways
- ✦ Diffuser can be applied in critical applications requiring minimal temperature gradients

Steel	Aluminized Steel	Metric/Steel	Metric/Aluminized Steel
Phenom-1 Surface Mount	Phenom-1 AS Surface Mount	M-Phenom-6 T-bar Lay-in - 600mm x 600mm	M-Phenom-6 AS T-bar Lay-in - 600mm x 600mm
Phenom-6 T-bar Lay-in	Phenom-6 AS T-bar Lay-in		
Phenom-7 Concealed T-bar	Phenom-7 AS Concealed T-bar		
Phenom-9 Donn Finline	Phenom-9 AS Donn Finline		



Model

5500 DAF-CC5

Additional product information available at www.metalaire.com

Concentric Supply/Return Ceiling Diffusers - Louvered Face - Cube Core Series 5500 DAF-CC5

- ✦ 5500 DAF-CC5 concentric supply/return diffuser is designed for high capacity application
- ✦ Cube core return
- ✦ 4-way air patterns only
- ✦ Choice of 6 mounting frames
- ✦ Snap-in/out core - simplifies installation
- ✦ Sizes to handle full range of standard tonnage roof-top units
- ✦ Supply/Return plenums are by others

Available Border Styles
5500 DAF-CC5-1 Surface Mount
5500 DAF-CC5-2 V-Beveled Drop Surface Mounting
5500 DAF-CC5-4 Deep Drop Frame
5500 DAF-CC5-6 T-bar Lay-in
5500 DAF-CC5-7 Concealed T-bar
5500 DAF-CC5-8 Tegular T-bar Lay-in



Model 9000

Pg. 56

Square/Rectangular Diffusers - Modular Core - Supply - Extruded Aluminum - Series 9000 Mod-Flo

- ✦ The series 9000 is a directional ceiling diffuser available in a wide range of field capabilities
- ✦ Modular cores can be adjusted to obtain 1-way, 2-way opposite, 2-way corner, 3-way, and 4-way air patterns
- ✦ Cores are easy to remove with spring loaded latches - no tools required
- ✦ T-bar Lay-in border type 6 can be used in surface mounting applications by adding optional T-bar plaster frame (TBPf)
- ✦ The series 9000 is an excellent choice for VAV applications

Available Styles
9000-1 Surface Mount
9000-2 Beveled Frame
9000-6 T-bar Lay-in
9000-7 Concealed Spline
9000-8 Tegular T-bar
9000-9 Donn Finline

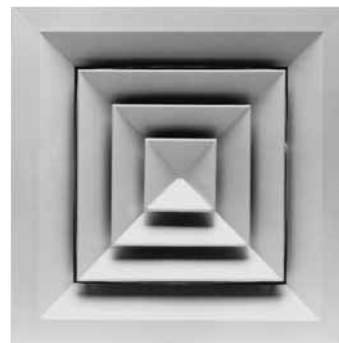
DCD - Directional Ceiling Diffusers

5/2007

➔ Square/Rectangular Louver Face ➔ Series 5000 ➔ Extruded Aluminum

Product Details

- Available in 1, 2-way opposite, 2-way corner, 3, and 4-way directional air patterns
- Cores are easy to remove with spring loaded latches - no tools required
- 5000 series deflector blades are straight and do not include a horizontal lip, making this diffuser an excellent choice for high capacity applications
- The 5000 series is an excellent choice for VAV applications
- The 5000 series is available with optional induction vanes

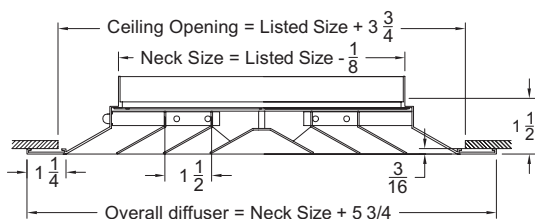


Model 5000-1 S4 Shown

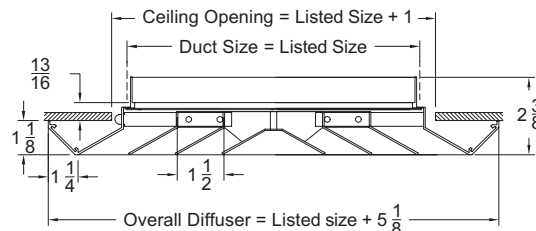
Standard Finish: 01 White

Dimensions are in inches

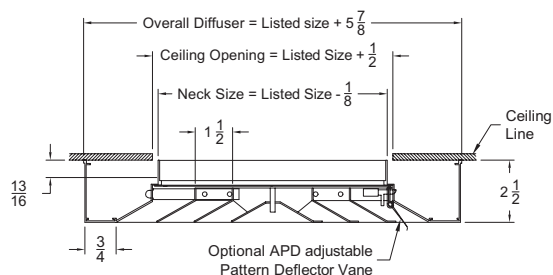
Square/Rectangular Louver Face Ceiling Diffusers Surface Mount - Removable Core Model 5000-1



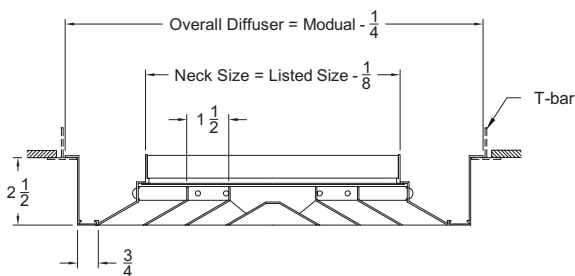
Square/Rectangular Louver Face Ceiling Diffusers V-Beveled Drop Surface Mounting - Removable Core Model 5000-2



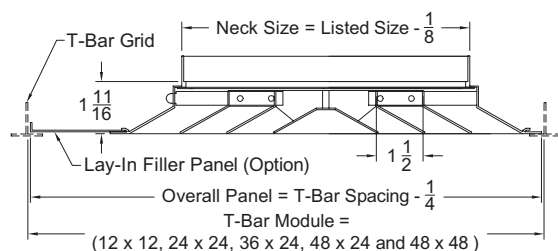
Square/Rectangular Louver Face Ceiling Diffusers Drop Face Surface Mount - Removable Core Model 5000-4



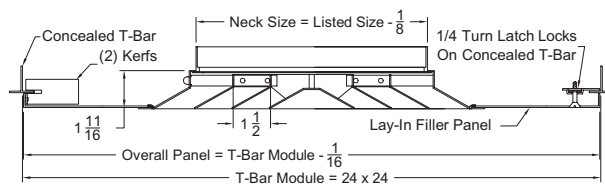
Square/Rectangular Louver Face Ceiling Diffusers Drop Face - T-bar Lay-in - Removable Core Model 5000-46



Square/Rectangular Louver Face Ceiling Diffusers T-bar Lay-in - Removable Core Model 5000-6



Square/Rectangular Louver Face Ceiling Diffusers Concealed Spline - Removable Core Model 5000-7



Directional Ceiling Diffusers

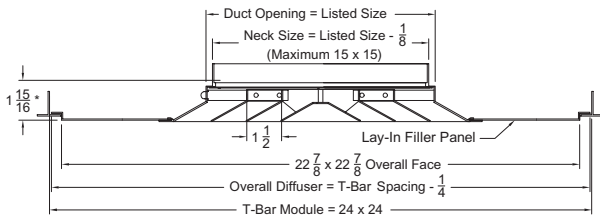


DCD

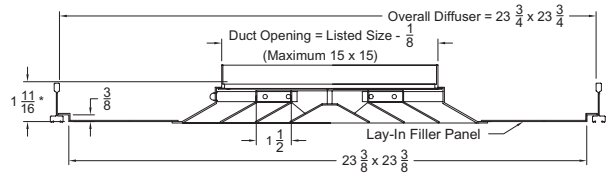
DCD - Directional Ceiling Diffusers



Square/Rectangular Louver Face Ceiling Diffusers
 Tegalur T-bar - Removable Core
 Model 5000-8



Square/Rectangular Louver Face Ceiling Diffusers
 Donn Finline - Removable Core
 Model 5000-9



Air Patterns - (Square) Louver Face Ceiling Diffusers

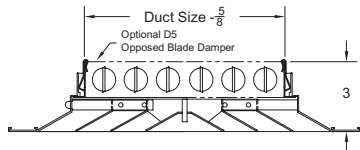
S1 - One Way	S2 - Two Way Opposite	SC - Two Way Corner	S3 - Three Way	S4 - Four Way

Air Patterns - (Rectangular)

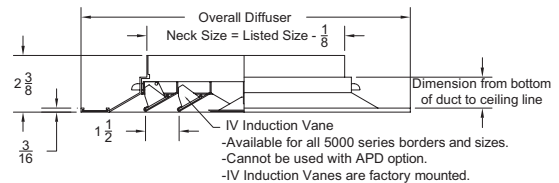
Short Louver Face Ceiling Diffusers				Long Louver Face Ceiling Diffusers		
R1 - One Way	R2S - Two Way Opposite	R3S - Three Way	R4 - Four Way	R1L - One Way	R2L - Two Way	R3L - Three Way

Options and Accessories

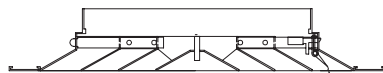
Square/Rectangular Louver Face Ceiling Diffusers
 Option: D5 Opposed Blade Damper



Square/Rectangular Louver Face Ceiling Diffusers
 Option: IV Induction Vane (see page DCD-37 for performance)



Option: APD Air Pattern Controller allows adjustment from horizontal to vertical from the face of the diffuser



Optional APD Adjustable Pattern Deflector Vane
 - Available for all 5000 series borders and sizes,
 - Cannot be used with IV Induction Vanes option,
 - APDs are factory mounted.

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish 02 Aluminum paint 03 Black 24 Mill finish 28 Custom color</p> <p>Note: Anodized Finish not available</p>	<p>Square and Rectangular Neck: D5 - Opposed Blade Damper- Steel221 D5A - Opposed Blade Damper- Aluminum221 L9 - Equalizing Grid221 TR - Square to Round Transition220 TR DEEP - Square to Round Transition - Deep221</p> <p>Round Neck: G3 - Equalizing Grid220 BDS - Butterfly Damper220 RSD - Radial Shutter Damper220</p>	<p>Factory Mounted: IV - Induction Vanes APD - Air Pattern Deflectors allows adjustment from horizontal to vertical air pattern from the face of the diffuser</p> <p>Note: IV (Induction Vanes) can not be used with APD (Air Pattern Deflector) option and vice-versa</p>	<ul style="list-style-type: none"> Available air patterns: S1, S2, S3, S4, R1S, R1L, R2S, R2L, R3S, R3L, R4 and SC For 5000-6 (D5) models only: 21" x 21" neck in 24" x 24" module is available in S4 pattern only

DCD - Directional Ceiling Diffusers

5/2007

➔ Square/Rectangular Louver Face ➔ Series 5500 ➔ Aluminum

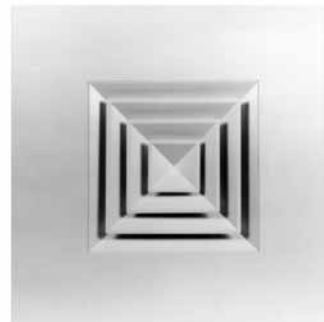
Directional Ceiling Diffusers



DCD

Product Details

- ★ Available in 1, 2-way opposite, 2-way corner, 3, and 4-way directional air patterns
- ★ Cores are easy to remove with spring loaded latches - no tools required
- ★ 5500 series deflector blades include a horizontal lip, making this diffuser an excellent choice for high induction applications
- ★ The 5500 series is an excellent choice for VAV applications
- ★ The 5500 series is available with optional induction vanes

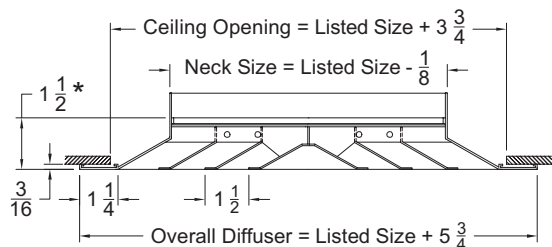


Model 5500-2 S4 Shown

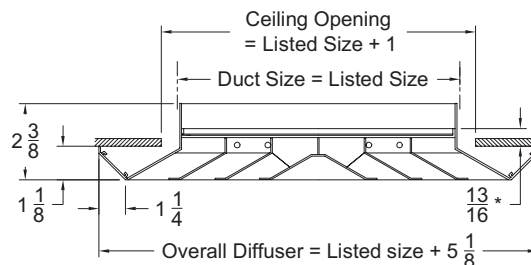
Standard Finish: 01 White

Dimensions are in inches

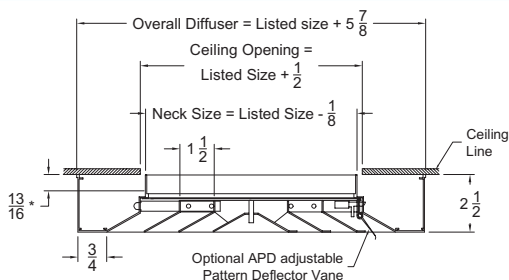
Square/Rectangular Louver Face Ceiling Diffusers Surface Mount Model 5500-1



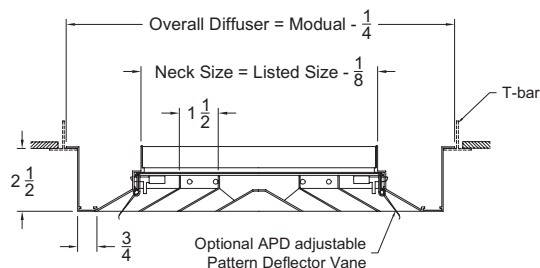
Square/Rectangular Louver Face Ceiling Diffusers V-Beveled Drop Surface Mounting Model 5500-2



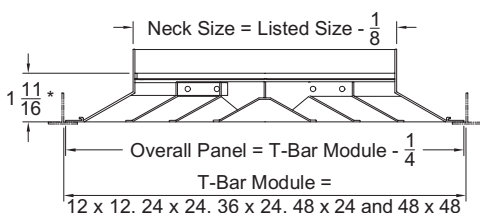
Square/Rectangular Louver Face Ceiling Diffusers Drop Face Surface Mount Model 5500-4



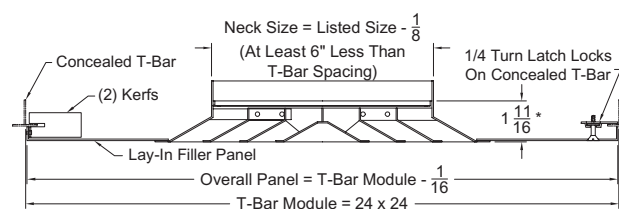
Square/Rectangular Louver Face Ceiling Diffusers Drop Face T-bar Lay-in Model 5500-46



Square/Rectangular Louver Face Ceiling Diffusers T-bar Lay-in Model 5500-6



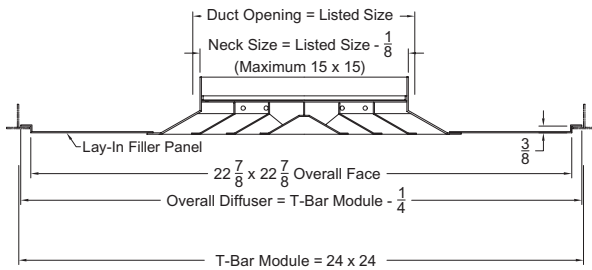
Square/Rectangular Louver Face Ceiling Diffusers Concealed Spine Model 5500-7



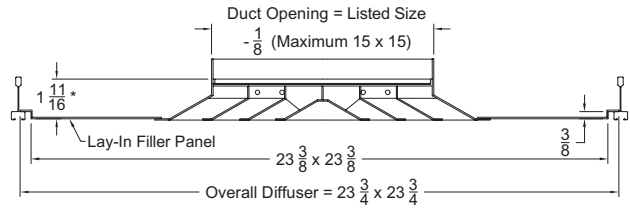
DCD - Directional Ceiling Diffusers



Square/Rectangular Louver Face Ceiling Diffusers
Tegular T-bar
 Model 5500-8



Square/Rectangular Louver Face Ceiling Diffusers
Donn Fineline
 Model 5500-9



Air Patterns - (Square) Louver Face Ceiling Diffusers

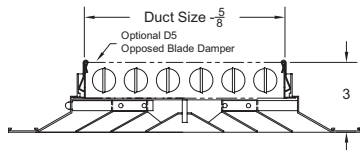
S1 - One Way	S2 - Two Way Opposite	SC - Two Way Corner	S3 - Three Way	S4 - Four Way

Air Patterns - (Rectangular)

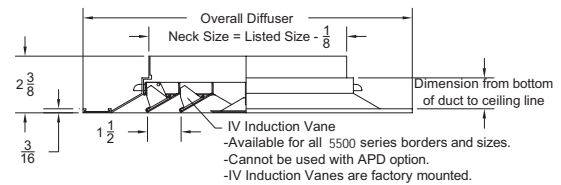
Short Louver Face Ceiling Diffusers				Long Louver Face Ceiling Diffusers		
R1 - One Way	R2S - Two Way Opposite	R3S - Three Way	R4 - Four Way	R1L - One Way	R2L - Two Way	R3L - Three Way

Options and Accessories

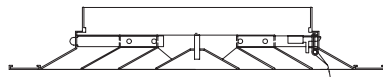
Square/Rectangular Louver Face Ceiling Diffusers
 Option: D5 Opposed Blade Damper



Square/Rectangular Louver Face Ceiling Diffusers
 Option: IV Induction Vane (see page DCD-37 for performance)



Option: APD Air Pattern Controller allows adjustment from horizontal to vertical from the face of the diffuser



Optional APD Adjustable Pattern Deflector Vane
 - Available for all 5000 series borders and sizes,
 - Cannot be used with IV Induction Vanes option,
 - APDs are factory mounted.

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish 02 Aluminum paint 03 Black 24 Mill finish 28 Custom color</p> <p>Note: Anodized Finish not available</p>	<p>(Shipped Unattached)</p> <p>Square and Rectangular Neck: D5 - Opposed Blade Damper - Steel221 D5A - Opposed Blade Damper - Aluminum . . .221 L9 - Equalizing Grid221 TR - Square to Round Transition220</p> <p>Round Neck: G3 - Equalizing Grid220 BDS - Butterfly Damper220 RSD - Radial Shutter Damper220</p>	<p>Factory Mounted: IV - Induction Vanes</p> <p>APD - Air Pattern Deflectors allows adjustment from horizontal to vertical air pattern from the face of the diffuser</p> <p>Note: IV (Induction Vanes) can not be used with APD (Air Pattern Deflector) option and vice-versa</p>	<ul style="list-style-type: none"> Available air patterns: S1, S2, S3, S4, R1S, R1L, R2S, R2L, R3S, R3L, R4 and SC (Type) For 5500-6 models only: 21" x 21" neck in 24" x 24" module is available in S4 pattern only



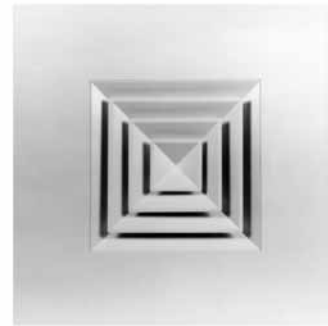
DCD - Directional Ceiling Diffusers

5/2007

➔ Square/Rectangular Louver Face ➔ Series 5500S ➔ Steel

Product Details

- Available in 1, 2-way opposite, 2-way corner, 3, and 4-way directional air patterns
- Cores are easy to remove with spring loaded latches - no tools required
- 5500S series deflector blades include a horizontal lip, making this diffuser an excellent choice for high induction applications
- The 5500S series is an excellent choice for VAV applications
- The 5500S is also available with optional induction vanes

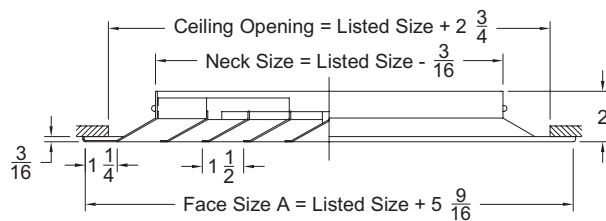


Model 5500S-6 S4 Shown

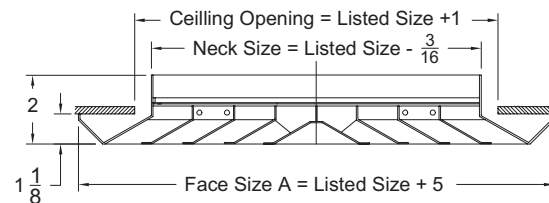
Standard Finish: 01 White

Dimensions are in inches

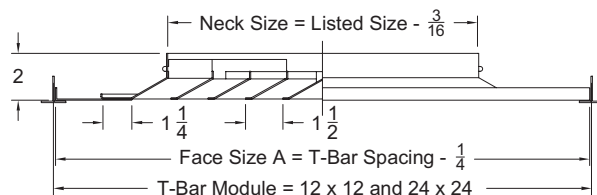
Square/Rectangular Louver Face Ceiling Diffusers
Surface Mount - Steel
Model 5500S-1



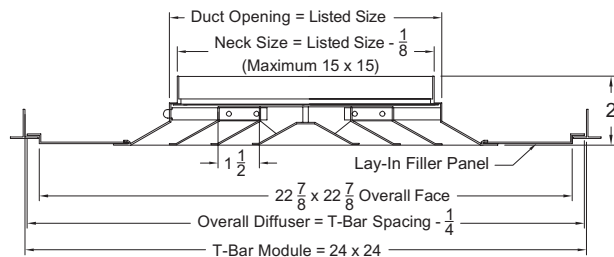
Square/Rectangular Louver Face Ceiling Diffusers
V-Beveled Drop Surface Mounting - Steel
Model 5500S-2



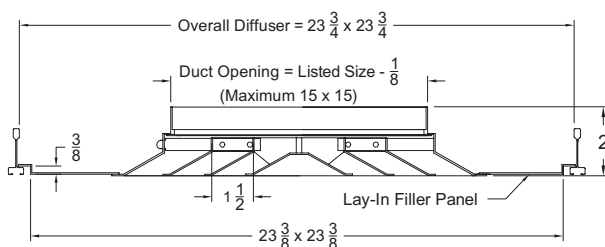
Square/Rectangular Louver Face Ceiling Diffusers
T-bar Lay-in - Steel
Model 5500S-6



Square/Rectangular Louver Face Ceiling Diffusers
Tegular T-bar - Steel
Model 5500S-8



Square/Rectangular Louver Face Ceiling Diffusers
Donn Finelilne - Steel
Model 5500S-9



Directional Ceiling Diffusers



DCD

DCD - Directional Ceiling Diffusers

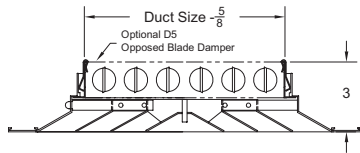


Air Patterns - (Square) Louver Face Ceiling Diffusers				
S1 - One Way	S2 - Two Way Opposite	SC - Two Way Corner	S3 - Three Way	S4 - Four Way

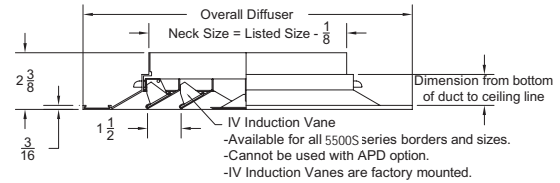
Air Patterns - (Rectangular)						
Short Louver Face Ceiling Diffusers				Long Louver Face Ceiling Diffusers		
R1 - One Way	R2S - Two Way Opposite	R3S - Three Way	R4 - Four Way	R1L - One Way	R2L - Two Way	R3L - Three Way

Options and Accessories

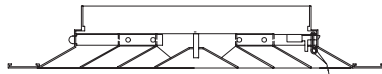
Square/Rectangular Louver Face Ceiling Diffusers
Option: D5 Opposed Blade Damper



Square/Rectangular Louver Face Ceiling Diffusers
Option: IV Induction Vane (see page DCD-37 for performance)



Option: APD Air Pattern Controller allows adjustment from horizontal to vertical from the face of the diffuser



Optional APD Adjustable Pattern Deflector Vane
- Available for all 5000 series borders and sizes,
- Cannot be used with IV Induction Vanes option,
- APDs are factory mounted.

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish 02 Aluminum 03 Black 28 Custom Color</p>	<p>(Shipped Unattached)</p> <p>Square and Rectangular Neck: D5 - Opposed Blade Damper - Steel221 D5A - Opposed Blade Damper - Aluminum . . .221 L9 - Equalizing Grid221 TR - Square to Round Transition220</p> <p>Round Neck: G3 - Equalizing Grid220 BDS - Butterfly Damper220 RSD - Radial Shutter Damper220</p>	<p>Factory Mounted: IV - Induction Vanes APD - Air Pattern Deflectors allows adjustment from horizontal to vertical air pattern from the face of the diffuser</p> <p>Note: IV (Induction Vanes) can not be used with APD (Air Pattern Deflector) option and vice-versa</p>	<ul style="list-style-type: none"> Available air patterns: S1, S2, S3, S4, R1S, R1L, R2S, R2L, R3S, R3L, R4 and SC For 5500S-6 models only: 21x21 neck in 24x24 module is available in S4 pattern only

See Page DCD-52 for Performance Notes

DCD - Directional Ceiling Diffusers

5/2007

Series 5500/5500S - Performance

Models 5500 (frame styles: -1, -2, -4, -46, -6, -7, -8, -9)
 Models 5500S (frame styles: -1, -2, -4, -46, -6, -7, -8, -9)
 (S1) 1-Way Square Air Pattern

Directional Ceiling Diffusers



DCD

NECK SIZE Ak	Ps Pt	NECK VELOCITY					
		200	300	400	500	600	700
		.018 .020	.040 .046	.071 .081	.111 .127	.160 .182	.218 .248
6 x 6 Ak = .087	TOTAL CFM THROW NC	50 5-9 -	75 8-15 -	100 13-20 -	125 18-26 -	150 22-31 23	175 26-37 28
9 x 9 Ak = .197	TOTAL CFM THROW NC	113 8-16 -	169 12-21 -	225 17-27 -	281 22-32 24	338 27-38 29	394 31-44 34
12 x 12 Ak = .350	TOTAL CFM THROW NC	200 11-22 -	300 16-27 -	400 21-33 22	500 26-38 27	600 31-44 32	700 35-50 37
15 x 15 Ak = .546	TOTAL CFM THROW NC	313 12-24 -	469 17-30 -	625 23-35 24	781 28-41 29	938 33-47 34	1094 37-52 39
18 x 18 Ak = .787	TOTAL CFM THROW NC	450 14-26 -	675 22-32 20	900 33-45 25	1125 36-48 30	1350 38-52 35	1575 40-56 40
21 x 21 Ak = 1.071	TOTAL CFM THROW NC	613 16-28 -	919 26-34 21	1225 33-43 26	1531 37-51 31	1837 40-55 36	2144 42-58 41
24 x 24 Ak = 1.399	TOTAL CFM THROW NC	800 19-29 -	1200 28-36 22	1600 39-45 27	2000 40-53 32	2400 41-59 37	2800 44-61 42
27 x 27 Ak = 1.770	TOTAL CFM THROW NC	1013 21-31 -	1519 30-39 23	2025 35-49 28	2531 41-55 33	3037 43-60 38	3544 46-64 43

Models 5500 (-1, -2, -4, -46, -6, -7, -8, -9)
 Models 5500S (-1, -2, -4, -46, -6, -7, -8, -9)
 (SC) 2-Way Adjacent or or (S2) Opposite Pattern

NECK SIZE Ak	Ps Pt	NECK VELOCITY					
		200	300	400	500	600	700
		.018 .020	.040 .046	.071 .081	.111 .127	.160 .182	.218 .248
6 x 6 Ak = .087	TOTAL CFM CFM/SIDE THROW NC	50 25 3-6 -	75 38 7-12 -	100 50 11-17 -	125 63 16-23 -	150 75 20-28 23	175 88 24-34 28
9 x 9 Ak = .197	TOTAL CFM CFM/SIDE THROW NC	113 56 5-10 -	169 84 9-15 -	225 113 13-21 -	281 141 18-27 24	338 169 23-32 29	394 197 27-38 34
12 x 12 Ak = .350	TOTAL CFM CFM/SIDE THROW NC	200 100 7-14 -	300 150 12-20 -	400 200 16-26 22	500 250 21-31 27	600 300 26-37 32	700 350 30-42 37
15 x 15 Ak = .546	TOTAL CFM CFM/SIDE THROW NC	313 156 10-19 -	469 234 14-25 -	625 313 19-30 24	781 391 25-36 29	938 469 30-41 34	1094 547 33-47 39
18 x 18 Ak = .787	TOTAL CFM CFM/SIDE THROW NC	450 225 12-23 -	675 338 16-28 20	900 450 22-34 25	1125 563 27-39 30	1350 675 32-45 35	1575 788 36-51 40
21 x 21 Ak = 1.071	TOTAL CFM CFM/SIDE THROW NC	613 306 12-24 -	919 459 17-30 21	1225 613 23-35 26	1531 766 28-41 31	1837 919 33-47 36	2144 1072 37-52 41
24 x 24 Ak = 1.399	TOTAL CFM CFM/SIDE THROW NC	800 400 12-22 -	1200 600 16-28 22	1600 800 21-34 27	2000 1000 27-39 32	2400 1200 32-45 37	2800 1400 36-50 42
27 x 27 Ak = 1.770	TOTAL CFM CFM/SIDE THROW NC	1013 506 8-15 -	1519 759 12-21 23	2025 1013 17-27 28	2531 1266 22-32 33	3037 1519 27-38 38	3544 1772 31-43 43

See Page DCD-36 for Performance Notes

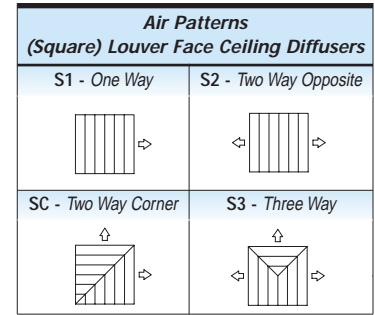
DCD - Directional Ceiling Diffusers

Series 5500/5500S - Performance

Models 5500 (-1, -2, -4, -46, -6, -7, -8, -9)
 Models 5500S (-1, -2, -4, -46, -6, -7, -8, -9)
 (S3) 3 Way Square Pattern

NECK SIZE Ak	Ps Pt Side Designation	NECK VELOCITY													
		200		300		400		500		600		700			
		.013 .016	A B	.030 .036	A B	.053 .063	A B	.083 .099	A B	.120 .142	A B	.163 .194	A B		
6 x 6 Ak = .100	TOTAL CFM CFM/SIDE THROW NC	50 19 13 3-5 0	75 28 19 6-11 0	100 38 25 10-16 0	125 47 31 15-22 0	150 56 38 20-28 23	175 66 44 24-33 28	9 x 9 Ak = .225	TOTAL CFM CFM/SIDE THROW NC	113 42 28 4-8 0	169 63 42 8-14 0	225 84 56 12-19 0	281 105 70 17-25 24	338 127 84 22-31 29	394 148 98 26-36 34
12 x 12 Ak = .400	TOTAL CFM CFM/SIDE THROW NC	200 75 50 6-12 0	300 113 75 10-17 0	400 150 100 15-23 22	500 188 125 20-29 27	600 225 150 24-34 32	700 263 175 28-40 37	15 x 15 Ak = .625	TOTAL CFM CFM/SIDE THROW NC	313 75 50 6-12 0	469 176 117 12-22 0	625 234 156 17-27 24	781 293 195 23-33 29	938 352 234 27-38 34	1094 410 273 31-44 39
18 x 18 Ak = .900	TOTAL CFM CFM/SIDE THROW NC	450 169 113 10-20 0	675 253 169 15-25 20	900 338 225 20-31 25	1125 422 281 25-37 30	1350 506 338 30-42 35	1575 591 394 34-48 40	21 x 21 Ak = 1.225	TOTAL CFM CFM/SIDE THROW NC	613 230 153 12-23 0	919 345 230 16-28 21	1225 459 306 22-34 26	1531 574 383 27-40 31	1837 689 459 32-45 36	2144 804 536 36-51 41
24 x 24 Ak = 1.600	TOTAL CFM CFM/SIDE THROW NC	800 300 200 12-24 0	1200 450 300 17-30 22	1600 600 400 23-35 27	2000 750 500 28-41 32	2400 900 600 33-47 37	2800 1050 700 37-52 42	27 x 27* Ak = 2.025	TOTAL CFM CFM/SIDE THROW NC	1013 380 253 12-23 0	1519 570 380 17-29 23	2025 759 506 22-34 28	2531 949 633 27-40 33	3037 1139 759 32-46 38	3544 1329 886 36-51 43

See Page DCD-36 for Performance Notes



Directional Ceiling Diffusers



DCD

DCD - Directional Ceiling Diffusers

5/2007

Series 5500/5500S - Performance

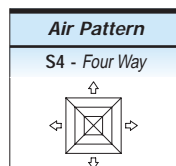
Models 5500 (-1, -2, -4, -46, -6, -7, -8, -9 frame styles)
 Models 5500S (-1, -2, -4, -46, -6, -7, -8, -9 frame styles)
 (S4) 4-Way Square Pattern

Directional Ceiling Diffusers



DCD

NECK SIZE Ak	Ps Pt	NECK VELOCITY					
		200	300	400	500	600	700
		.013 .016	.030 .036	.053 .063	.083 .099	.120 .142	.163 .194
6 x 6 Ak = .100	TOTAL CFM	50	75	100	125	150	175
	CFM/SIDE	13	19	25	31	38	44
	THROW NC	2-4	6-10	10-16	15-21	19-27	23-32
9 x 9 Ak = .225	TOTAL CFM	113	169	225	281	338	394
	CFM/SIDE	28	42	56	70	84	98
	THROW NC	3-6	7-12	11-18	16-23	21-29	24-34
12 x 12 Ak = .400	TOTAL CFM	200	300	400	500	600	700
	CFM/SIDE	50	75	100	125	150	175
	THROW NC	5-9	8-15	13-20	18-26	22-31	26-37
15 x 15 Ak = .625	TOTAL CFM	313	469	625	781	938	1094
	CFM/SIDE	78	117	156	195	234	273
	THROW NC	6-12	10-18	15-23	20-29	25-35	29-40
18 x 18 Ak = .900	TOTAL CFM	450	675	900	1225	1350	1575
	CFM/SIDE	113	169	225	306	338	394
	THROW NC	8-16	12-21	17-27	22-32	27-38	31-44
21 x 21 Ak = 1.225	TOTAL CFM	613	919	1225	1531	1837	2144
	CFM/SIDE	153	230	306	383	459	536
	THROW NC	10-19	14-24	19-30	24-36	29-41	33-47
24 x 24 Ak = 1.600	TOTAL CFM	800	1200	1600	2000	2400	2800
	CFM/SIDE	200	300	400	500	600	700
	THROW NC	11-22	16-27	21-33	26-38	31-44	35-50
27 x 27* Ak = 2.025	TOTAL CFM	1013	1519	2025	2531	3037	3544
	CFM/SIDE	253	380	506	633	759	886
	THROW NC	12-24	17-29	22-35	28-40	33-46	37-52
33 x 33* Ak = 3.025	TOTAL CFM	1513	2269	3025	3781	4537	5294
	CFM/SIDE	378	567	756	945	1134	1323
	THROW NC	12-23	17-29	22-34	27-40	33-46	36-51



Series 5500/5500S - Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic feet per minute (air)
- fpm - Velocity of air stream in feet per minute
- Pv - Velocity pressure (inches of water column)
- Pt - Total pressure (inches of water column)
- Ps - Static pressure = Pt - Pv (inches of water column)
- Throw - Cataloged throw is horizontal distances in feet to the terminal velocities of 150 - 50 fpm with ambient supply air temperature.
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak - Area Factor

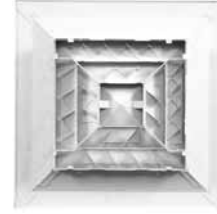
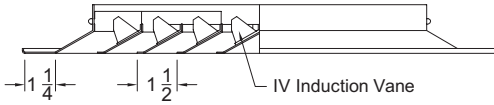
DCD - Directional Ceiling Diffusers

Optional IV

Optional IV Induction Vane

- Model 5000 - Aluminum
- Model 5500 - Aluminum
- Model 5500S - Steel

IV Vanes increase the induction rate of the diffuser providing higher mixing and comfort in the occupied zone



IV Induction Vane Shown (back side of diffuser)

Directional Ceiling Diffusers

Optional IV - Performance

Performance Data		5000-IV Performance - Neck Velocity, fpm						5500-IV Performance - Neck Velocity, fpm							
		200		300		400		500		600		700		800	
		A	B	A	B	A	B	A	B	A	B	A	B	A	B
Size	Pv in Inches H2O	.003	.006	.010	.016	.022	.030	0.002	0.006	0.010	0.016	0.022	0.022	0.022	
	Ps in Inches H2O	.015	.030	.050	.078	.110	.150	0.008	0.017	0.031	0.049	0.070	0.095	0.124	
6" x 6"	Total CFM	50	75	100	125	150	175	50	75	100	125	150	175	200	
	1-Way	2	4	7	8	10	11	2	4	5	6	7	8	10	
	2-Way	1	3	4	6	7	8	3	7	5	6	7	8	10	
	3-Way	1	2	2	3	4	4	6	11	7	8	9	10	11	
	4-Way	1	2	2	3	4	6	7	13	9	10	12	13	15	
	NC	<	<	<	<	<	23	<10	<15	16	18	25	28	33	
9" x 9"	Total CFM	110	170	225	280	335	390	115	170	225	280	340	395	450	
	1-Way	4	7	10	11	12	16	3	10	5	12	7	13	11	
	2-Way	2	5	7	8	11	12	4	11	7	13	9	15	11	
	3-Way	1	2	3	5	6	7	9	11	9	16	11	19	12	
	4-Way	2	3	5	6	7	9	11	19	13	23	15	27	19	
	NC	<	<	<	<	23	28	<10	<15	17	20	27	31	35	
12" x 12"	Total CFM	200	300	400	500	600	700	200	300	400	500	600	700	800	
	1-Way	6	10	12	15	17	20	3	10	6	12	8	14	11	
	2-Way	4	7	9	12	13	15	5	12	8	14	9	16	11	
	3-Way	2	3	5	7	8	10	8	14	10	17	12	20	14	
	4-Way	2	5	7	8	9	11	12	20	14	24	16	28	18	
	NC	<	<	<	23	28	33	<10	<15	18	22	27	32	36	
15" x 15"	Total CFM	310	470	625	780	935	1090	315	470	625	780	940	1095	1250	
	1-Way	8	11	14	17	20	25	4	13	6	15	8	18	13	
	2-Way	5	8	11	12	15	17	6	14	8	18	11	20	13	
	3-Way	3	4	7	8	10	12	14	16	8	18	13	22	16	
	4-Way	3	6	8	10	12	14	14	25	18	31	20	35	23	
	NC	<	<	<	23	28	33	<10	17	23	29	34	39	45	
18" x 18"	Total CFM	450	675	900	1125	1350	1575	450	675	900	1125	1350	1575	1800	
	1-Way	9	12	16	20	22	27	4	14	7	17	9	19	12	
	2-Way	7	10	12	15	17	22	6	16	9	19	12	22	14	
	3-Way	4	5	8	9	11	14	15	18	9	19	14	23	16	
	4-Way	4	8	10	11	14	16	16	27	19	33	22	38	25	
	NC	<	<	<	23	28	33	<15	19	25	30	35	40	46	
21" x 21"	Total CFM	610	920	1225	1530	1835	2140	615	920	1225	1530	1840	2145	2450	
	1-Way	10	14	18	22	25	30	4	14	7	18	9	21	12	
	2-Way	7	11	14	17	20	26	6	17	9	21	12	24	15	
	3-Way	5	6	9	10	12	15	17	22	9	21	14	25	17	
	4-Way	5	9	11	13	15	18	17	29	21	36	24	42	29	
	NC	<	<	<	28	33	38	<15	20	25	31	36	41	47	

Optional IV - Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic feet per minute (air)
- fpm - Velocity of air stream in feet per minute
- Pv - Velocity pressure (inches of water column)
- Pt - Total pressure (inches of water column)
- Ps - Static pressure = Pt - Pv (inches of water column)
- Throw - Catalog throw is horizontal distances in feet to the terminal velocities of 150 - 50 fpm with ambient supply air temperature.
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak - Area Factor



DCD

DCD - Directional Ceiling Diffusers

5/2007

➔ Economical Square Diffusers ➔ Series 5200 ➔ Aluminum

Product Details

- ✪ Removable core for concealed mounting
- ✪ Optional built-in opposed blade damper
- ✪ Available in 1 way, 2 way opposite, 2 way corner, 3 way and 4 way directional air patterns



Model 5200-2 Shown

Standard Finish: 01 White

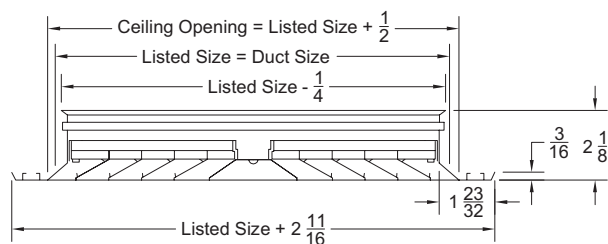
Directional Ceiling Diffusers



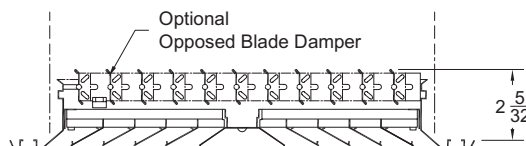
DCD

Dimensions are in inches

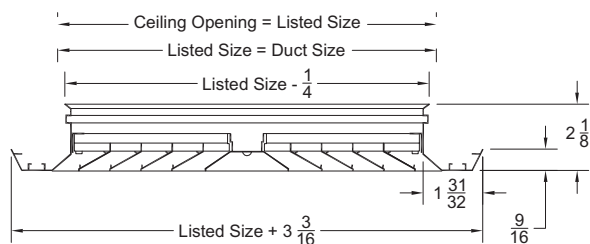
Economical Square Diffusers - Surface Mount Model 5200-1



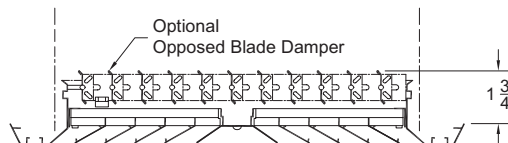
Economical Square Diffusers - Surface Mount With Opposed Blade Damper Model 5200-1 D



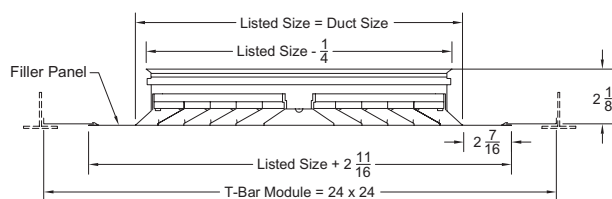
Economical Square Diffusers - V-Beveled Drop Surface Mounting Model 5200-2



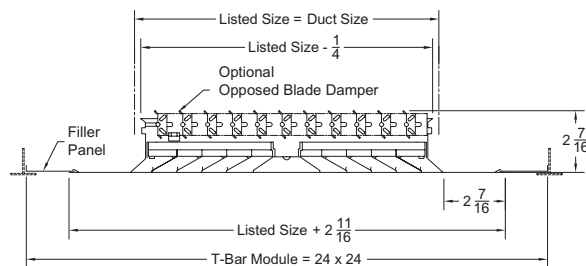
Economical Square Diffusers - V-Beveled Drop Surface Mounting With Opposed Blade Damper Model 5200-2 D



Economical Square Diffusers - T-bar Lay-in Model 5200-6



Economical Square Diffusers - T-bar Lay-in With Opposed Blade Damper Model 5200-6 D



DCD - Directional Ceiling Diffusers

Air Patterns - Square Economical Face Ceiling Diffusers					
S1 - One Way	S2 - Two Way Opposite	SC - Two Way Corner	S3 - Three Way	S4 - Four Way	Available Sizes
					6" x 6" 8" x 8" 10" x 10" 12" x 12" 14" x 14" 16" x 16" 18" x 18" 20" x 20" 22" x 22" 24" x 24"

1. Available Finishes	2. Available Accessories	3. Construction Details
Standard Finish: 01 White Optional Finish: 02 Aluminum 28 Custom Color	DA - Opposed Blade Damper - Aluminum337	Available Air Pattern: S1, S2, S3, S4 and SC Units are shipped with screw holes as standard

Series 5200 - Performance

Models 5200 (-1, -2, -6, -1D, -2D, -6D)

CFM	Outlet Size	6 x 6	8 x 8	10 x 10	12 x 12	14 x 14	16 x 16	20 x 20	22 x 22	24 x 24
100	Neck Velocity	400	225	114	100					
	Ps Throw	.004 12 17 14 12	.001 17 14 12 10	.001 14 12 10 9	.001 12 10 8 7					
200	Neck Velocity	800	450	288	200	147				
	Ps Throw	.014 33 27 23 20	.004 27 22 19 16	.002 23 19 16 14	.001 21 17 14 12	.001 18 15 13 11				
300	Neck Velocity		675	432	300	220				
	Ps Throw		.008 35 30 25 22	.004 35 30 25 22	.002 27 22 19 15	.001 24 20 17 15				
400	Neck Velocity		900	576	400	294				
	Ps Throw		.019 47 39 32 29	.008 40 34 28 24	.004 35 30 25 22	.002 32 27 22 19				
600	Neck Velocity			864	600	441	216			
	Ps Throw			.017 52 43 36 32	.008 43 36 30 26	.003 41 34 28 25	.001 30 25 21 19			
800	Neck Velocity				800	588	450	288	238	200
	Ps Throw				.018 57 48 40 35	.008 51 43 36 31	.005 47 39 32 29	.002 40 34 28 24	.001 35 29 24 21	.001 33 27 23 20
1000	Neck Velocity					735	563	360	298	250
	Ps Throw					.014 63 52 43 38	.009 57 48 40 35	.003 49 41 34 30	.002 40 34 28 25	.001 38 32 26 23
1200	Neck Velocity					882	675	432	357	300
	Ps Throw					.019 70 58 48 42	.012 64 53 44 39	.004 55 46 38 33	.002 46 38 32 28	.001 43 36 30 26
1400	Neck Velocity						787	504	417	350
	Ps Throw						.014 63 52 43 38	.005 60 50 41 36	.003 51 43 35 31	.002 48 40 33 29
1600	Neck Velocity						900	576	476	400
	Ps Throw						.020 76 63 52 46	.006 65 54 45 40	.005 61 51 42 37	.003 57 48 40 35
1800	Neck Velocity							648	536	450
	Ps Throw							.006 65 54 45 40	.011 78 65 54 48	.006 76 61 51 45
2000	Neck Velocity							720	595	500
	Ps Throw							.007 70 58 48 42	.008 70 58 48 42	.004 66 55 45 40
2200	Neck Velocity							792	655	550
	Ps Throw							.014 79 66 55 48	.009 47 62 51 45	.005 70 58 48 42

Series 5200 - Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

Neck Velocity - The neck velocity is in feet per minute (fpm).

Ps - Static pressure = Pt - Pv (inches of water column).

Throw - Throws indicated are based on total number of feet of projected air when a terminal velocity of 50 fpm is reached.
Numbers reported in chart are, from left to right, for 1,2,3, and 4-way throw patterns.

DCD - Directional Ceiling Diffusers

5/2007

Directional Ceiling Diffusers



DCD

- ➔ Square Face Diffuser ➔ 2-Cone ➔ Round Neck ➔ Series 5700 ➔ Steel
- ➔ Series 5700 AS ➔ Aluminized Steel
- ➔ Series 5700 AL ➔ Steel

Product Details

- ★ The 5700 provides a tight horizontal 360° discharge pattern for superior induction and occupant comfort
- ★ 5700 can be converted in the field to a 3 cone diffuser with the addition of the optional Snap-58
- ★ Available in metric 600mm x 600mm lay-in
- ★ Model 5700A is adjustable from horizontal to vertical discharge
- ★ Lay-in T-bar border 6 can be used in surface mounting applications by adding optional T-bar Plaster Frame (TBPF)
- ★ Cores are easy to remove without tools
- ★ The 5700 series is an excellent choice for VAV applications



Model 5700-6 Shown

Standard Finish: 01 White

Aluminized Steel

METALAIRE is proud to announce the availability of aluminized steel for our square Directional Ceiling Diffusers. In environments which demand aluminum's corrosion resistance, the aluminized coated steel offers the protection of aluminum and the strength of steel. The use of aluminized steel results in a product that ships better and that handle better during installation.

What is Aluminized Steel?

Aluminized steel is continuously hot-dip coated in a bath of commercially pure aluminum to provide a metallurgical bond between the steel substrate and the aluminum coating. The aluminum bath contains 5% to 11% silicon, which is added to minimize growth of a brittle iron-aluminum inter-metallic layer and thus promote coating adherence during forming. This process melds the best features of both metallic materials; the strength and other mechanical properties of the steel substrate and the surface characteristics and corrosion resistance of the aluminum coating.

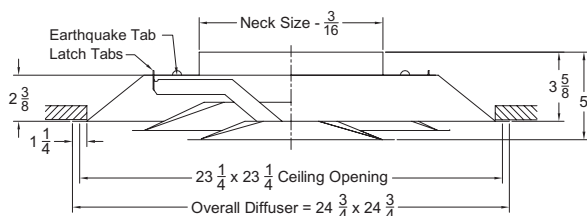
Aluminized steel has been subjected to long-term testing for resistance to atmospheric corrosion and is proven superior to any other metallic-coated steel. Over forty years of exposure tests in a mild industrial atmosphere show the coating on aluminized steel still protecting the base metal with virtually no detectable loss of the original coating.

Non - Adjustable

Dimensions are in inches

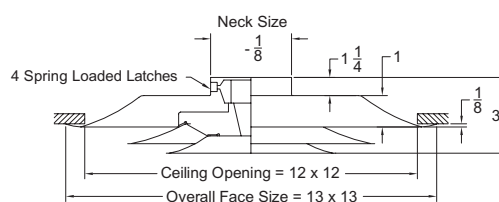
Square Face Diffusers - Surface Mount - 24" x 24"

- Model 5700-1 - Steel
- Model 5700-1 AS - Aluminized Steel
- Model 5700-1 AL - Aluminum



Square Face Diffusers - Surface Mount - 12" x 12"

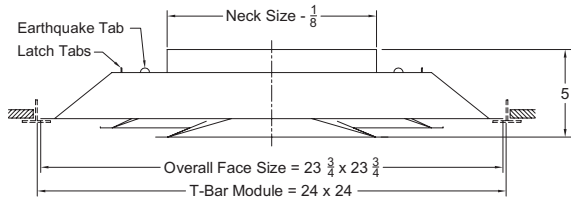
- Model 5700-1 - Steel
- Model 5700-1 AS - Aluminized Steel
- Model 5700-1 AL - Aluminum



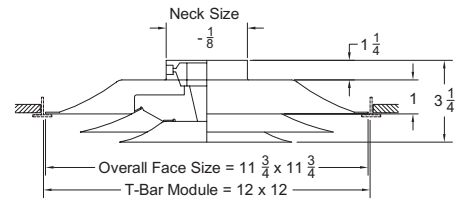
DCD - Directional Ceiling Diffusers



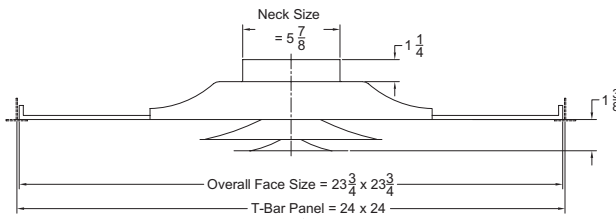
Square Face Diffusers - T-Bar Lay-in - 24" x 24"
 Model 5700-6 - Steel
 Model 5700-6 AS - Aluminized Steel
 Model 5700-6 AL - Aluminum



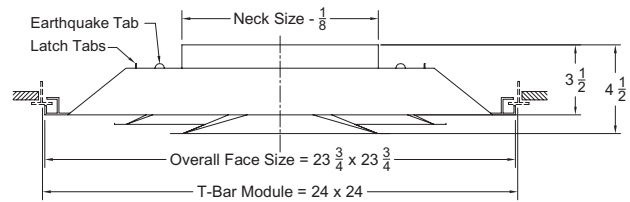
Square Face Diffusers - T-bar Lay-ins - 12" x 12"
 Model 5700-6 - Steel
 Model 5700-6 AS - Aluminized Steel
 Model 5700-6 AL - Aluminum



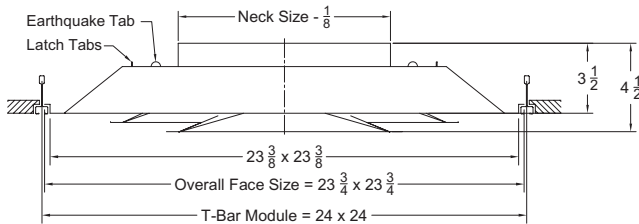
Square Face Diffusers - T-bar Lay-in Panel - Steel
 Model 5700-6P



Square Face Diffusers - Concealed Spline - 24" x 24"
 Model 5700-7 - Steel
 Model 5700-7 AS - Aluminized Steel



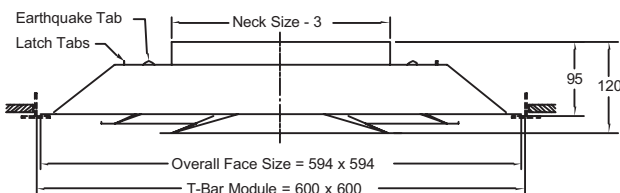
Square Face Diffusers - Donn Finline - 24" x 24"
 Model 5700-9 - Steel
 Model 5700-9 AS - Aluminized Steel



Metric

Dimensions are in millimeters

Square Face Diffusers - Metric - T-bar Lay-in - Steel
 Model M5700-6 - 600mm x 600mm
 Model M5700-6 AS - 600mm x 600mm
 Model M5700-6 AL - 600mm x 600mm



DCD - Directional Ceiling Diffusers

5/2007

Directional Ceiling Diffusers



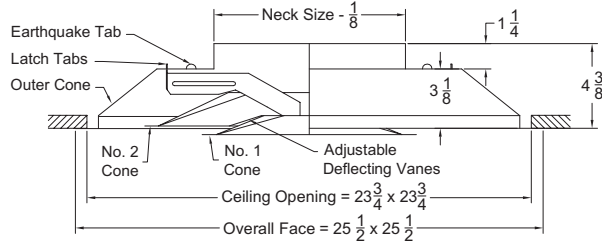
DCD

Adjustable

Dimensions are in inches

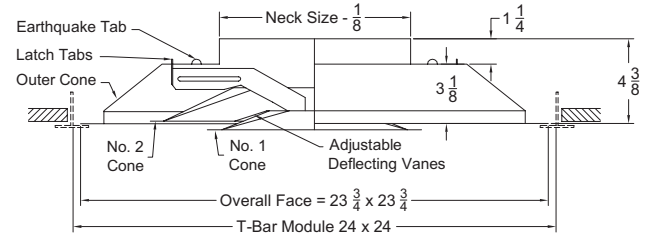
Square Face Diffusers - Surface Mount

Model 5700A-1 - Steel
 Model 5700A-1 AS- Aluminized Steel
 Model 5700A-1 AL- Aluminum



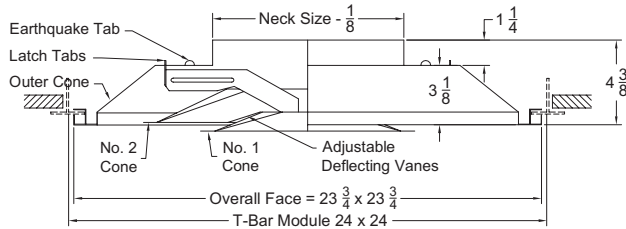
Square Face Diffusers - T-bar Lay-in

Model 5700A-6 - Steel
 Model 5700A-6 AS- Aluminized Steel
 Model 5700A-6 AL- Aluminum



Square Face Diffusers - Concealed Spline

Model 5700A-7 - Steel
 Model 5700A-7 AS- Aluminized Steel



1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish 03 Black 28 Custom color</p>	<p>D3 - Round Opposed Blade Damper - Steel220 SD3 - Round Opposed Blade Damper - Aluminum . . .220 G3 - Equalizing Grid220 BDS - Butterfly Damper220 RSD - Radial Shutter Damper220 SNAP 58 - Converts 5700 from 2 to 3 Cones) BAF - Directional Baffles</p> <p>Note: All Accessories Shipped Unattached</p>	<ul style="list-style-type: none"> Sizes only as listed Available Neck Sizes: 6, 8, 10, 12, 14 and 15

DCD - Directional Ceiling Diffusers

Series 5700 - Performance

Models 5700 (-1, -6, -7, -9), 5700-6P, 5700 AS (-1,-6,-7,-9), 5700 AL (-1, -6), 5700A (-1, -6, -7), 5700A-1, 5700A-6P

Listed Size	Neck Size Ak	fpm Neck Velocity Pv	400 0.010	500 0.016	600 0.022	700 0.031	800 0.040	900 0.050	1000 0.062	1200 0.090	1400 0.122	2000 0.249
12" x 12"	6 Ak = 0.093	CFM Ps Pt Throw* Throw NC	80 0.021 0.031 2-3-6 3-4-6 -	100 0.033 0.049 3-4-7 3-5-7 <15	120 0.048 0.071 3-5-7 4-5-7 18	135 0.061 0.091 3-5-8 4-6-8 20	155 0.080 0.120 4-6-8 5-6-8 23	175 0.102 0.153 4-6-9 5-6-9 26	195 0.127 0.189 5-7-9 6-7-9 28	235 0.184 0.274 6-7-10 6-7-10 33	275 0.253 0.375 6-8-11 6-8-11 36	395 0.521 0.770 8-9-13 8-10-13 44
		CFM Ps Pt Throw* Throw NC	140 0.029 0.039 3-4-8 3-5-8 -	175 0.046 0.062 3-5-9 4-6-9 <15	210 0.066 0.089 4-6-10 5-7-10 19	245 0.090 0.121 5-7-11 6-7-11 22	280 0.118 0.158 5-8-11 7-8-11 25	315 0.149 0.199 6-8-12 7-8-12 28	350 0.184 0.246 7-9-13 8-10-14 31	420 0.265 0.354 8-10-14 8-10-14 36	490 0.360 0.482 9-11-15 9-11-15 40	700 0.735 0.984 10-13-18 10-13-18 46
24" x 24"	6 Ak = .077	CFM Ps Pt Throw* Throw NC	80 0.014 0.024 2-2-5 2-4-7 -	100 0.021 0.037 2-3-5 3-5-8 -	120 0.031 0.053 2-4-6 4-6-9 -	135 0.039 0.069 3-4-6 4-6-10 -	155 0.051 0.091 3-4-6 5-7-10 -	175 0.065 0.116 4-5-7 5-8-11 16	195 0.081 0.143 4-5-7 6-8-12 18	235 0.118 0.207 5-6-8 7-9-13 23	275 0.161 0.283 5-6-8 8-10-14 27	395 0.332 0.582 6-7-10 10-12-17 43
		CFM Ps Pt Throw* Throw NC	140 0.016 0.026 2-3-6 3-5-10 -	175 0.025 0.040 3-4-7 4-6-11 -	210 0.036 0.058 3-5-7 5-7-12 -	245 0.048 0.079 4-6-8 6-9-13 -	280 0.063 0.103 4-6-9 6-10-14 <15	315 0.080 0.131 5-6-9 7-10-15 18	350 0.099 0.161 5-7-10 8-11-16 21	420 0.142 0.232 6-7-10 10-12-17 26	490 0.194 0.316 7-8-11 11-13-18 30	700 0.395 0.645 8-10-13 13-16-22 55
	8 Ak = 0.136	CFM Ps Pt Throw* Throw NC	220 0.019 0.029 3-4-8 4-6-12 -	275 0.030 0.046 3-5-8 5-8-14 -	325 0.042 0.064 4-6-9 6-9-15 -	380 0.057 0.088 5-7-10 7-11-16 <15	435 0.075 0.115 5-8-11 8-12-17 16	490 0.096 0.146 6-8-11 8-12-17 20	545 0.118 0.181 7-8-12 9-13-18 24	655 0.171 0.261 8-9-13 10-14-19 30	765 0.233 0.355 8-10-14 13-16-23 35	1090 0.473 0.722 10-12-17 16-19-28 63
		CFM Ps Pt Throw* Throw NC	430 0.026 0.036 4-6-11 6-9-17 -	535 0.041 0.056 5-7-12 7-11-19 -	640 0.058 0.081 6-9-13 8-13-21 <15	750 0.080 0.110 7-10-14 10-15-23 <15	855 0.104 0.144 8-11-15 11-17-24 18	960 0.131 0.181 9-11-16 13-18-26 23	1070 0.163 0.225 10-12-17 14-19-27 28	1285 0.234 0.324 11-13-18 17-21-30 35	1495 0.317 0.440 11-14-20 19-23-32 40	2140 0.650 0.900 14-17-24 22-27-39 57
	10 Ak = 0.213	CFM Ps Pt Throw* Throw NC	490 0.032 0.042 4-6-11 6-9-18 -	615 0.051 0.066 5-8-13 8-11-21 -	735 0.072 0.095 6-9-14 9-14-23 <15	860 0.099 0.130 7-11-15 11-16-24 16	980 0.129 0.169 8-11-16 12-18-26 22	1105 0.164 0.214 9-12-17 14-20-28 27	1225 0.201 0.263 10-13-18 15-21-29 31	1475 0.292 0.381 11-14-20 18-23-32 39	1720 0.396 0.519 12-15-21 20-24-35 46	2455 0.808 1.057 15-18-25 24-29-41 68
		CFM Ps Pt Throw* Throw NC	490 0.032 0.042 4-6-11 6-9-18 -	615 0.051 0.066 5-8-13 8-11-21 -	735 0.072 0.095 6-9-14 9-14-23 <15	860 0.099 0.130 7-11-15 11-16-24 16	980 0.129 0.169 8-11-16 12-18-26 22	1105 0.164 0.214 9-12-17 14-20-28 27	1225 0.201 0.263 10-13-18 15-21-29 31	1475 0.292 0.381 11-14-20 18-23-32 39	1720 0.396 0.519 12-15-21 20-24-35 46	2455 0.808 1.057 15-18-25 24-29-41 68

Series 5700 - Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic Feet per Minute (air)
- fpm - Velocity of air stream in Feet Per Minute
- Pv - Velocity pressure (inches of water column)
- Pt - Total pressure (inches of water column)
- Ps - Static pressure = Pt - Pv (inches of water column)
- Throw* - Non-isothermal horizontal throw (supply air temperature 15°F colder than average room air temperature) values are for 150 fpm - 100 fpm - 50 fpm velocities
- Throw - Isothermal horizontal throw (supply air temperature the same as average room air temperature) values are for 150 fpm - 100 fpm - 50 fpm velocities
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak - Area Factors



Directional Ceiling Diffusers



DCD



- ➔ Square Panel Face ➔ Series 5750 ➔ Steel
- ➔ Series 5750 AS ➔ Aluminized Steel

Product Details

- ★ Attractive single panel design blends well with all ceilings
- ★ The 5750 provides a tight 360° discharge pattern for superior induction and occupant comfort
- ★ Available in metric lay-in 600mm x 600mm
- ★ Lay-in T-bar border 6 can be used in surface mounting applications by adding optional T-bar Plaster Frame (TBPF)
- ★ Face panel is easy to remove without tools
- ★ The 5750 is an excellent choice for VAV applications



Model 5750-6 Shown
Standard Finish: 01 White

Aluminized Steel

METALAIRE is proud to announce the availability of aluminized steel for our square Directional Ceiling Diffusers. In environments which demand aluminum's corrosion resistance, the aluminized coated steel offers the protection of aluminum and the strength of steel. The use of aluminized steel results in a product that ships better and that handle better during installation.

What is Aluminized Steel?

Aluminized steel is continuously hot-dip coated in a bath of commercially pure aluminum to provide a metallurgical bond between the steel substrate and the aluminum coating. The aluminum bath contains 5% to 11% silicon, which is added to minimize growth of a brittle iron-aluminum inter-metallic layer and thus promote coating adherence during forming. This process melds the best features of both metallic materials; the strength and other mechanical properties of the steel substrate and the surface characteristics and corrosion resistance of the aluminum coating.

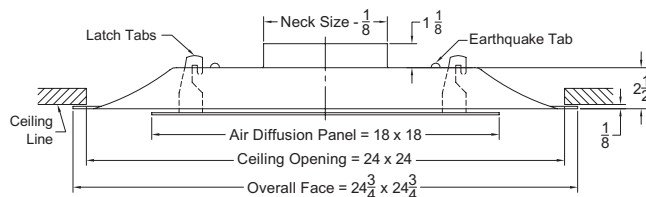
Aluminized steel has been subjected to long-term testing for resistance to atmospheric corrosion and is proven superior to any other metallic-coated steel. Over forty years of exposure tests in a mild industrial atmosphere show the coating on aluminized steel still protecting the base metal with virtually no detectable loss of the original coating.

Dimensions are in inches

Square Face - Round Neck - Uni-Flow Panel Face

Surface Mount - 24" x 24"

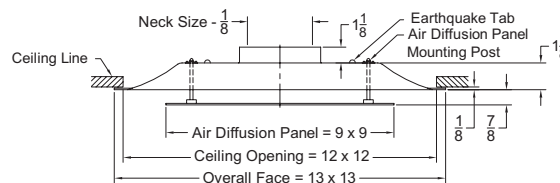
Model 5750-1 - Steel
Model 5750-1 AS - Aluminized Steel



Square Face - Round Neck - Uni-Flow Panel Face

Surface Mount - 12" x 12"

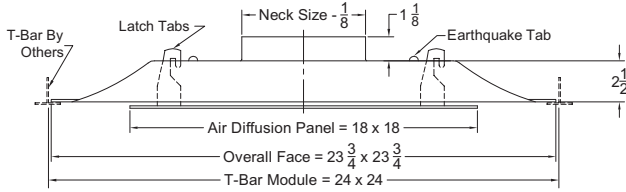
Model 5750-1 - Steel
Model 5750-1 AS - Aluminized Steel



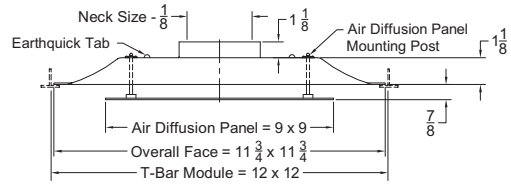
DCD - Directional Ceiling Diffusers



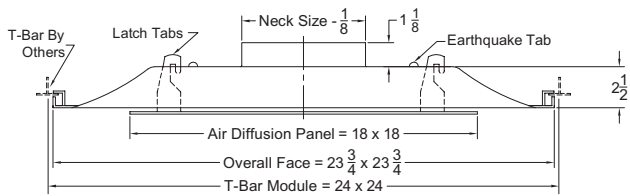
Square Face - Round Neck - Uni-Flow Panel Face
T-bar Lay-in - 24" x 24"
 Model 5750-6 - Steel
 Model 5750-6 AS - Aluminized Steel



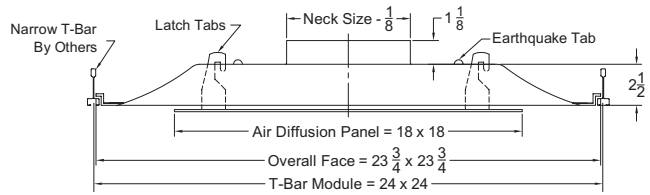
Square Face - Round Neck - Uni-Flow Panel Face
T-bar Lay-in - 12" x 12"
 Model 5750-6 - Steel
 Model 5750-6 AS - Aluminized Steel



Square Face - Round Neck - Uni-Flow Panel Face
Concealed Spline - 24" x 24"
 Model 5750-7 - Steel
 Model 5750-7 AS - Aluminized Steel



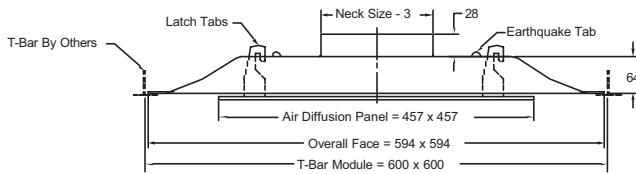
Square Face - Round Neck - Uni-Flow Panel Face
Donn Finline - 12" x 12"
 Model 5750-9 - Steel
 Model 5750-9 AS - Aluminized Steel



Metric

Dimensions are in millimeters

Square Face - Round Neck - Uni-Flow Panel Face - Metric
T-bar Lay-in
 Model M5750-6 - Steel
 Model M5750-6 AS - Aluminized Steel



1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish 03 Black 28 Custom color</p>	<p>G3 - Equalizing Grid220 BDS - Butterfly Damper220 RSD - Radial Shutter Damper220 BAF - Directional Baffles BO - Blank off for 5750</p> <p>Note: All Accessories Shipped Unattached</p>	<ul style="list-style-type: none"> Sizes only as listed Available Neck Sizes: 6" and 8" for 12" x 12" Module 6", 8", 10", 12", 14", and 15" for 24" x 24" Module.

DCD - Directional Ceiling Diffusers

Series 5750 - Performance

Models 5750 (-1, -2, -7, -9) 5750 AS (-1, -6, -7, -9)

Directional Ceiling Diffusers



DCD

Listed Size	Neck Size Ak	fpm Neck Velocity Pv	400 0.010	500 0.016	600 0.022	700 0.031	800 0.040	900 0.050	1000 0.062	1200 0.090	1400 0.122	2000 0.249
12" x 12"	6 Ak = 0.093	CFM Ps Pt Throw* Throw NC	80 0.009 0.019 3-4-7 3-4-7 <15	100 0.014 0.030 3-5-7 4-5-7 <15	120 0.021 0.043 4-6-8 4-6-8 <15	135 0.024 0.054 4-6-9 5-6-9 16	155 0.032 0.072 5-6-9 5-7-9 18	175 0.041 0.092 6-7-10 6-7-10 21	195 0.051 0.114 6-7-10 6-7-10 23	235 0.075 0.165 6-8-11 7-8-11 27	275 0.104 0.226 7-9-12 7-9-12 31	315 0.137 0.297 8-9-13 8-9-13 34
	8 Ak = 0.165	CFM Ps Pt Throw* Throw NC	140 0.017 0.027 3-5-9 4-6-9 <15	175 0.027 0.043 4-7-10 5-7-10 <15	210 0.039 0.061 5-8-11 6-8-11 17	245 0.053 0.083 6-8-11 7-8-12 20	280 0.069 0.109 7-9-12 7-9-13 22	315 0.087 0.138 8-9-13 8-9-13 25	350 0.108 0.170 8-10-14 8-10-14 27	420 0.155 0.245 9-11-15 9-11-15 31	490 0.212 0.334 10-12-17 10-12-17 34	560 0.276 0.436 10-13-18 10-13-18 37
24" x 24"	6 Ak = .077	CFM Ps Pt Throw* Throw NC	80 0.003 0.013 0-1-4 1-2-5 <15	100 0.004 0.020 1-2-6 1-3-6 <15	120 0.006 0.029 1-2-7 2-4-7 <15	135 0.006 0.036 1-3-8 2-4-8 <15	155 0.008 0.048 2-4-8 3-5-9 15	175 0.011 0.061 2-5-9 4-5-9 18	195 0.014 0.076 3-5-9 4-6-10 21	235 0.021 0.110 4-7-10 5-7-11 26	275 0.029 0.151 5-8-11 6-8-12 31	315 0.039 0.198 6-9-12 6-9-13 35
	8 Ak = 0.136	CFM Ps Pt Throw* Throw NC	140 0.007 0.017 1-1-6 1-2-6 <15	175 0.012 0.027 1-2-7 2-4-8 <15	210 0.017 0.039 1-3-9 2-5-10 <15	245 0.023 0.053 2-4-10 3-6-11 17	280 0.030 0.070 3-6-11 4-6-12 21	315 0.038 0.088 3-7-12 5-7-13 25	350 0.047 0.109 4-7-13 5-8-13 28	420 0.067 0.157 6-9-14 6-10-14 34	490 0.091 0.213 7-10-15 7-11-16 39	560 0.119 0.279 8-11-16 9-12-17 42
	10 Ak = 0.213	CFM Ps Pt Throw* Throw NC	220 0.016 0.026 1-2-7 1-3-8 <15	275 0.025 0.040 1-3-9 2-5-10 <15	325 0.034 0.056 2-4-11 3-6-12 15	380 0.047 0.077 2-5-13 4-7-14 21	435 0.061 0.101 3-7-14 5-8-15 26	490 0.078 0.128 4-8-15 6-9-16 30	545 0.096 0.159 5-9-16 7-10-17 33	655 0.139 0.229 7-11-17 8-12-18 37	765 0.190 0.313 9-13-19 9-14-20 41	875 0.249 0.409 10-14-20 11-15-21 43
	12 Ak = 0.307	CFM Ps Pt Throw* Throw NC	315 0.027 0.037 1-2-9 2-4-10 <15	395 0.042 0.058 1-3-11 2-6-12 <15	470 0.059 0.082 2-5-13 4-7-14 17	550 0.081 0.112 3-7-15 5-8-17 22	630 0.107 0.146 4-9-17 6-10-18 27	705 0.133 0.183 5-10-18 7-11-19 30	785 0.165 0.227 6-11-19 8-12-20 33	940 0.236 0.326 8-13-21 10-14-22 38	1100 0.324 0.446 10-15-23 11-17-23 42	1255 0.422 0.581 12-17-24 13-18-25 45
	14 Ak = 0.418	CFM Ps Pt Throw* Throw NC	430 0.031 0.041 1-3-10 2-4-11 <15	535 0.049 0.064 2-4-13 3-6-14 <15	640 0.069 0.092 2-6-15 4-8-17 20	750 0.095 0.126 3-8-18 6-10-19 25	855 0.124 0.164 4-10-20 7-11-21 30	960 0.156 0.206 6-12-21 8-13-22 33	1070 0.194 0.256 7-13-22 9-14-23 36	1285 0.280 0.370 10-15-24 11-17-25 40	1495 0.378 0.501 12-18-26 13-19-27 44	1710 0.495 0.655 14-20-28 15-21-29 46
	15 Ak = 0.479	CFM Ps Pt Throw* Throw NC	490 0.038 0.048 1-3-11 2-4-12 <15	615 0.060 0.076 2-4-14 3-7-15 <15	735 0.086 0.108 3-6-16 4-9-18 20	860 0.117 0.148 4-8-19 6-10-21 27	980 0.152 0.192 5-11-21 8-12-22 32	1105 0.194 0.244 6-12-23 9-13-24 35	1225 0.238 0.300 7-14-24 10-15-25 37	1475 0.345 0.435 11-17-26 12-18-27 41	1720 0.469 0.592 13-19-28 14-21-29 44	1965 0.613 0.772 15-21-30 16-22-31 47

Series 5750 - Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic Feet per Minute (air)
- fpm - Velocity of air stream in Feet Per Minute
- Pv - Velocity pressure (inches of water column)
- Pt - Total pressure (inches of water column)
- Ps - Static pressure = Pt - Pv (inches of water column)
- Throw* - Non-isothermal horizontal throw (supply air temperature 15°F colder than average room air temperature) values are for 150 fpm - 100 fpm - 50 fpm velocities
- Throw - Isothermal horizontal throw (supply air temperature the same as average room air temperature) values are for 150 fpm - 100 fpm - 50 fpm velocities
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak - Area Factors

DCD - Directional Ceiling Diffusers

5/2007

Directional Ceiling Diffusers



DCD

- ➔ Square Louver Face ➔ Series 5800 ➔ Steel
- ➔ Series 5800 AS ➔ Aluminized Steel
- ➔ Series 5800 AL ➔ Aluminum

Product Details

- ★ The 5800 provides a tight 360° discharge pattern for superior induction and occupant comfort
- ★ Available in metric 600mm x 600mm lay-in
- ★ 5800A can be adjusted from horizontal to vertical discharge
- ★ Lay-in T-bar border 6 can be used in surface mounting applications by adding optional T-bar Plaster Frame (TBPF)
- ★ Cores are easy to remove without tools
- ★ The 5800 is an excellent choice for VAV applications



Model 5800-6 Shown
Standard Finish: 01 White

Aluminized Steel

METALAIRE is proud to announce the availability of aluminized steel for our square Directional Ceiling Diffusers. In environments which demand aluminum's corrosion resistance, the aluminized coated steel offers the protection of aluminum and the strength of steel. The use of aluminized steel results in a product that ships better and that handles better during installation.

What is Aluminized Steel?

Aluminized steel is continuously hot-dip coated in a bath of commercially pure aluminum to provide a metallurgical bond between the steel substrate and the aluminum coating. The aluminum bath contains 5% to 11% silicon, which is added to minimize growth of a brittle iron-aluminum inter-metallic layer and thus promote coating adherence during forming. This process melds the best features of both metals; the strength and other mechanical properties of the steel substrate and the surface characteristics and corrosion resistance of aluminum.

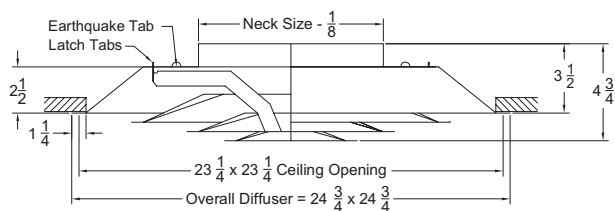
Aluminized steel has been subjected to long-term testing for resistance to atmospheric corrosion and is proven superior to any other metallic-coated steel. Over forty years of exposure tests in a mild industrial atmosphere show the coating on aluminized steel still protecting the base metal with virtually no detectable loss of the original coating.

Non-Adjustable

Dimensions are in inches

Square Face - Round Neck - 3 Cone - Surface Mount - 24" x 24"

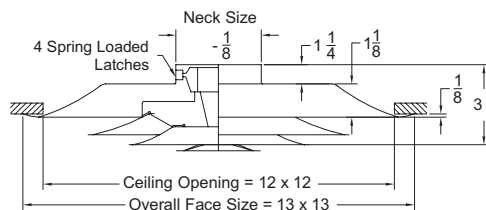
- Model 5800-1 - Steel
- Model 5800-1 AS - Aluminized Steel
- Model 5800-1 AL - Aluminum



Available Neck Sizes 6, 8, 10, 12, 14, 15

Square Face - Round Neck - 3 Cone - Surface Mount - 12" x 12"

- Model 5800-1 - Steel
- Model 5800-1 AS - Aluminized Steel



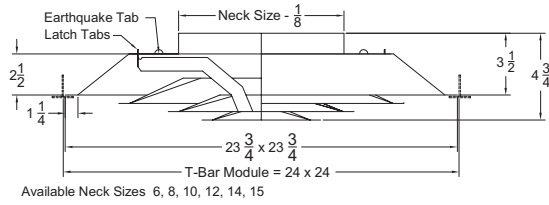
Available Neck Sizes 6, 8

DCD - Directional Ceiling Diffusers



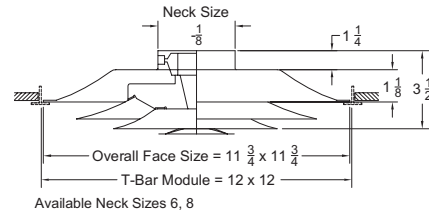
Square Face - Round Neck - 3 Cone - T-bar Lay-in - 24" x 24"

Model 5800-6 - Steel
 Model 5800-6 AS - Aluminized Steel
 Model 5800-6 AL - Aluminum



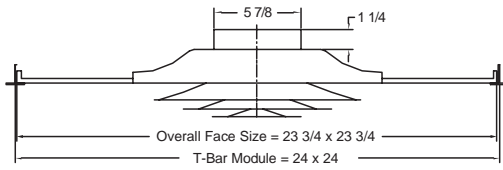
Square Face - Round Neck - 3 Cone - T-bar Lay-in - 12" x 12"

Model 5800-6 - Steel
 Model 5800-6 AS - Aluminized Steel



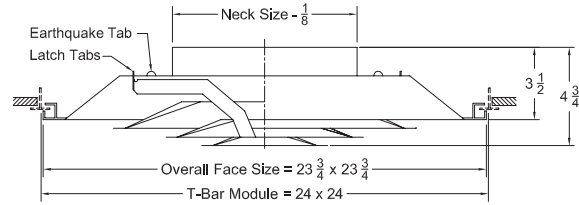
Square Face - Round Neck - 3 Cone - T-bar Lay-in Panel - 24" x 24"

Model 5800-6P - Steel



Square Face - Round Neck - 3 Cone - Concealed Spline - 24" x 24"

Model 5800-7 - Steel
 Model 5800-7 AS - Aluminized Steel

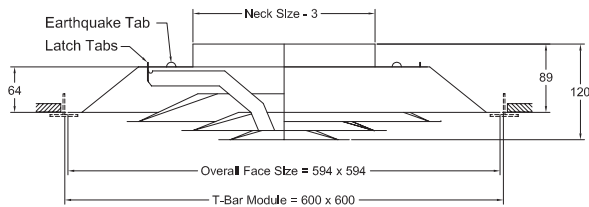


Metric

Dimensions are in millimeters

Square Face - Round Neck - 3 Cone - T-bar Lay-in - Metric

Model M5800-6 - Steel
 Model M5800-6 AS - Aluminized Steel
 Model M5800-6 AS - Aluminized Steel



DCD - Directional Ceiling Diffusers

5/2007

Directional Ceiling Diffusers



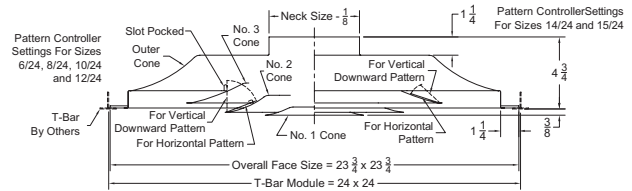
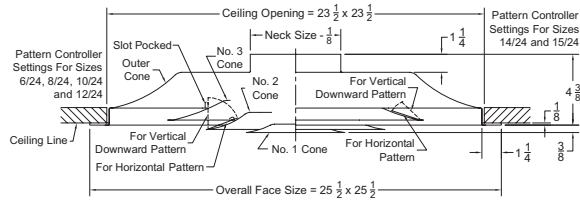
DCD

Adjustable

Dimensions are in inches

Square Face - Round Neck - 3 Cone - Surface Mount - Adjustable
 Model 5800A-1 - Steel
 Model 5800A-1 AS - Aluminized Steel

Square Face - Round Neck - 3 Cone - T-bar Lay-in - Adjustable
 Model 5800A-6 - Steel
 Model 5800A-6 AS - Aluminized Steel



1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish 03 Black 28 Custom color</p>	<p>G3 - Equalizing Grid220 BDS - Butterfly Damper220 RSD - Radial Shutter Damper220 BAF - Directional Baffles</p> <p>Note: All Accessories Shipped Unattached</p>	<ul style="list-style-type: none"> Sizes only as listed Available Neck Sizes: 6, 8, 10, 12, 14 and 15 Available Neck Sizes: 6" and 8" for 12" x 12" Module

DCD - Directional Ceiling Diffusers

Series 5800 - Performance

Models 5800 (-1, -6, -7), 5800-6P, 5800 AS (-1,-6, -7), 5800 AL (-1, -6)

Listed Size	Neck Size Ak	fpm Neck Velocity Pv	400 0.010	500 0.016	600 0.022	700 0.031	800 0.040	900 0.050	1000 0.062	1200 0.090	1400 0.122	2000 0.249	
12" x 12"	6 Ak = 0.093	CFM	80	100	120	135	155	175	195	235	275	315	
		Ps	0.026	0.040	0.058	0.073	0.097	0.123	0.153	0.223	0.305	0.400	
		Pt	0.036	0.056	0.080	0.104	0.137	0.174	0.216	0.312	0.427	0.559	
		Throw*	3-4-6	3-5-7	4-5-7	4-6-8	5-6-8	5-6-9	5-7-9	6-7-10	6-8-11	7-9-12	
12" x 12"	8 Ak = 0.165	CFM	140	175	210	245	280	315	350	420	490	560	
		Ps	0.026	0.041	0.059	0.080	0.104	0.132	0.163	0.235	0.319	0.417	
		Pt	0.036	0.056	0.081	0.110	0.144	0.182	0.225	0.324	0.442	0.577	
		Throw*	3-5-8	4-6-9	5-7-10	6-8-11	7-8-11	7-9-12	7-9-13	8-10-14	9-11-15	9-11-16	
24" x 24"	6 Ak = .077	CFM	80	100	120	135	155	175	195	235	275	315	
		Ps	0.013	0.020	0.029	0.037	0.048	0.061	0.076	0.111	0.152	0.199	
		Pt	0.023	0.036	0.051	0.067	0.088	0.112	0.139	0.201	0.274	0.359	
		Throw*	3-4-5	3-4-6	4-5-7	4-5-7	4-5-7	5-6-8	5-6-8	5-6-9	6-7-10	6-7-11	
	6 Ak = .077	Throw	3-4-7	3-5-8	4-6-9	5-7-10	5-7-10	6-8-11	7-8-11	7-9-13	8-10-14	8-10-15	
		NC	-	-	-	<15	<15	18	21	25	28	31	
		8 Ak = 0.136	CFM	140	175	210	245	280	315	350	420	490	560
			Ps	0.014	0.022	0.032	0.043	0.056	0.071	0.088	0.126	0.172	0.225
	Pt		0.024	0.038	0.054	0.074	0.096	0.122	0.150	0.216	0.294	0.384	
	Throw*		4-5-7	5-6-8	5-6-9	5-7-9	6-7-10	6-7-11	6-8-11	7-9-12	8-9-13	8-10-14	
	8 Ak = 0.136	Throw	4-5-10	4-7-11	5-8-12	6-9-13	7-10-14	8-10-15	9-11-15	10-12-17	10-13-18	11-14-19	
		NC	-	-	-	<15	17	21	24	30	34	35	
		10 Ak = 0.213	CFM	220	275	325	380	435	490	545	655	765	875
			Ps	0.018	0.028	0.039	0.053	0.070	0.088	0.109	0.158	0.215	0.282
	Pt		0.028	0.043	0.061	0.084	0.110	0.139	0.172	0.248	0.337	0.441	
	Throw*		5-6-9	6-7-10	6-8-11	7-8-12	7-9-12	8-9-13	8-10-14	9-11-15	9-12-16	10-12-18	
	10 Ak = 0.213	Throw	4-7-12	6-8-14	7-10-15	8-11-16	9-12-17	10-13-18	11-14-19	12-15-21	13-16-23	14-17-24	
		NC	-	-	-	<15	19	23	27	33	38	40	
		12 Ak = 0.307	CFM	315	395	470	550	630	705	785	940	1100	1255
			Ps	0.022	0.035	0.049	0.067	0.088	0.111	0.137	0.197	0.270	0.351
	Pt		0.032	0.050	0.072	0.098	0.128	0.161	0.200	0.287	0.392	0.511	
	Throw*		6-7-11	7-8-12	7-9-13	8-10-14	9-11-15	9-11-16	10-12-17	11-13-18	11-14-20	12-15-21	
	12 Ak = 0.307	Throw	5-8-15	7-10-16	8-12-18	9-14-19	11-15-21	12-15-22	13-16-23	15-18-25	16-19-27	17-21-29	
		NC	-	-	<15	16	21	26	30	36	41	43	
14 Ak = 0.418		CFM	430	535	640	750	855	960	1070	1285	1495	1710	
		Ps	0.032	0.049	0.071	0.097	0.126	0.159	0.198	0.285	0.386	0.505	
	Pt	0.042	0.065	0.093	0.128	0.166	0.210	0.260	0.375	0.508	0.665		
	Throw*	7-9-12	8-10-14	9-11-15	9-12-16	10-12-17	11-13-18	11-14-19	12-15-21	13-16-23	14-17-25		
14 Ak = 0.418	Throw	6-9-17	8-12-19	9-14-21	11-16-22	12-17-24	14-18-25	15-19-27	17-21-29	18-22-32	20-24-34		
	NC	-	-	<15	17	22	27	32	39	44	47		
	15 Ak = 0.479	CFM	490	615	735	860	980	1105	1225	1475	1720	1965	
		Ps	0.036	0.056	0.080	0.109	0.142	0.181	0.222	0.322	0.438	0.571	
Pt		0.046	0.072	0.102	0.140	0.182	0.231	0.284	0.412	0.560	0.731		
Throw*		7-9-13	9-10-15	9-11-16	10-12-17	11-13-19	11-14-20	12-15-21	13-16-23	14-17-25	15-19-26		
15 Ak = 0.479	Throw	7-10-18	8-12-20	10-15-22	12-17-24	13-18-26	15-19-27	17-20-29	18-22-32	20-24-34	21-26-36		
	NC	-	-	<15	18	23	29	33	41	46	49		

Series 5800 - Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic Feet per Minute (air)
- fpm - Velocity of air stream in Feet Per Minute
- Pv - Velocity pressure (inches of water column)
- Pt - Total pressure (inches of water column)
- Ps - Static pressure = Pt - Pv (inches of water column)
- Throw* - Non-isothermal horizontal throw (supply air temperature 15°F colder than average room air temperature) values are for 150 fpm - 100 fpm - 50 fpm velocities
- Throw - Isothermal horizontal throw (supply air temperature the same as average room air temperature) values are for 150 fpm - 100 fpm - 50 fpm velocities
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak - Area Factors





- ➔ Square Panel Face ➔ Series Phenomenator® ➔ Steel
- ➔ Series Phenomenator® AS ➔ Aluminized Steel

Product Details

- ✦ The highest induction ratio of any commercial air diffuser available
- ✦ Excellent selection for providing exceptional comfort, especially in executive offices, conference rooms, and board rooms
- ✦ Can improve productivity by maintaining draft-free comfort in many applications
- ✦ Designed for applications calling for minimal temperature differences in a space
- ✦ Solves comfort problems in applications such as reception areas and entrance ways
- ✦ Diffuser can be applied in critical applications requiring minimal temperature gradients



Model Phenomenator® Shown
Standard Finish: 01 White

Aluminized Steel

METALAIRES is proud to announce the availability of aluminized steel for our square Directional Ceiling Diffusers. In environments which demand aluminum's corrosion resistance, the aluminized coated steel offers the protection of aluminum and the strength of steel. The use of aluminized steel results in a product that ships better and that handle better during installation.

What is Aluminized Steel?

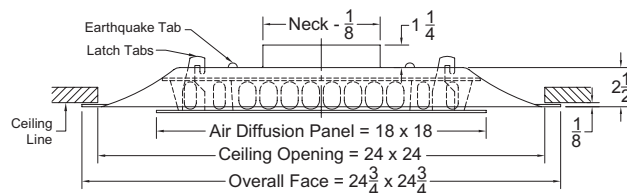
Aluminized steel is continuously hot-dip coated in a bath of commercially pure aluminum to provide a metallurgical bond between the steel substrate and the aluminum coating. The aluminum bath contains 5% to 11% silicon, which is added to minimize growth of a brittle iron-aluminum inter-metallic layer and thus promote coating adherence during forming. This process melds the best features of both metallic materials; the strength and other mechanical properties of the steel substrate and the surface characteristics and corrosion resistance of the aluminum coating.

Aluminized steel has been subjected to long-term testing for resistance to atmospheric corrosion and is proven superior to any other metallic-coated steel. Over forty years of exposure tests in a mild industrial atmosphere show the coating on aluminized steel still protecting the base metal with virtually no detectable loss of the original coating.

Dimensions are in inches

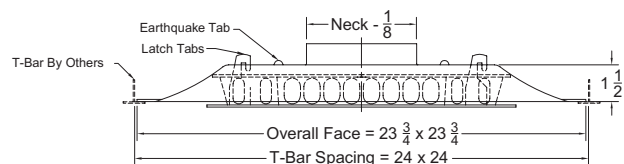
Square Face Ceiling Diffusers - Round Neck - Ultra High Performance Surface Mount

- Model Phenom-1 - Steel
- Model Phenom-1 AS - Aluminized Steel



Square Face Ceiling Diffusers - Round Neck - Ultra High Performance T-bar Lay-in

- Model Phenom-6 - Steel
- Model Phenom-6 AS - Aluminized Steel

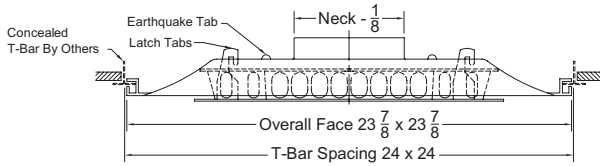


DCD - Directional Ceiling Diffusers



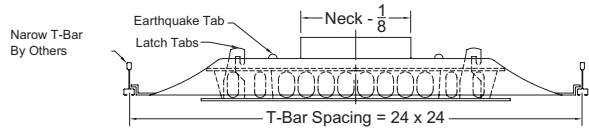
Square Face Ceiling Diffusers - Round Neck - Ultra High Performance Concealed Spline

Model Phenom-7 - Steel
 Model Phenom-7 AS - Aluminized Steel



Square Face Ceiling Diffusers - Round Neck - Ultra High Performance Donn Finline

Model Phenom-9 - Steel
 Model Phenom-9 AS - Aluminized Steel

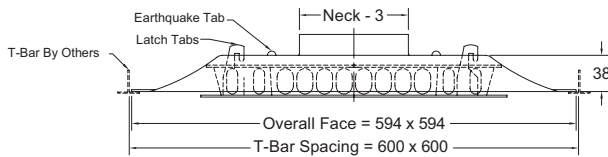


Metric

Dimensions are in millimeters

Square Face Ceiling Diffusers - Round Neck - Ultra High Performance T-bar Lay-in

Model Phenom-6 - Steel
 Model Phenom-6 AS - Aluminized Steel



1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish 03 Black 28 Custom color</p>	<p>G3 - Equalizing Grid220 BDS - Butterfly Damper220 RSD - Radial Shutter Damper220 BO - Blank off</p> <p>Note: All Accessories Shipped Unattached</p>	<ul style="list-style-type: none"> Sizes only as listed Available Neck Sizes: 6", 8", 10", 12", 14", and 15"

DCD - Directional Ceiling Diffusers

Series Phenomenator® - Performance

Model Phenom (-1, -6, -7, -9), Phenom AS (-1, -6, -7, -9)

Nominal Neck Size	Neck Velocity, fpm Velocity Pressure	400 0.010	500 0.016	600 0.022	700 0.031	800 0.040	900 0.050	1000 0.062	1200 0.090
6"	Volumetric Flow Rate, CFM			120	135	155	175	195	215
	Static Pressure, Ps (in. w.c.)			0.020	0.026	0.034	0.044	0.054	0.066
	Total Pressure, Ps (in. w.c.)			0.042	0.057	0.074	0.094	0.116	0.141
	Isothermal Throw			1-1-2	1-2-3	2-2-4	2-3-5	3-4-6	3-5-7
	Non-Isothermal Throw*			1-1-1	1-1-2	1-1-3	1-2-4	2-3-5	3-4-6
Noise Criteria, NC			<20	20	21	24	26	29	
8"	Volumetric Flow Rate, CFM	140	175	210	245	280	315	350	385
	Static Pressure, Ps (in. w.c.)	0.020	0.031	0.045	0.061	0.080	0.101	0.125	0.152
	Total Pressure, Ps (in. w.c.)	0.030	0.047	0.067	0.092	0.114	0.151	0.187	0.218
	Isothermal Throw	1-2-3	2-3-5	2-5-6	3-6-7	4-6-8	5-7-10	6-8-12	7-9-13
	Non-Isothermal Throw*	1-1-2	1-2-4	1-4-5	2-5-6	3-5-7	4-6-9	5-7-10	6-7-11
Noise Criteria, NC	<20	21	25	29	32	35	37	40	
10"	Volumetric Flow Rate, CFM	220	275	325	380	435	490	545	600
	Static Pressure, Ps (in. w.c.)	0.036	0.080	0.090	0.108	0.142	0.180	0.223	0.270
	Total Pressure, Ps (in. w.c.)	0.046	0.096	0.110	0.139	0.182	0.300	0.285	0.345
	Isothermal Throw	4-6-9	6-8-10	7-9-12	8-10-13	8-10-14	9-12-16	11-14-17	12-15-18
	Non-Isothermal Throw*	3-5-7	5-7-9	5-8-11	6-9-12	7-9-13	8-11-15	10-13-15	11-13-17
Noise Criteria, NC	20	24	27	31	35	38	41	44	
12"	Volumetric Flow Rate, CFM	315	395	470	550	630	705	785	870
	Static Pressure, Ps (in. w.c.)	0.061	0.096	0.136	0.186	0.240	0.306	0.380	0.423
	Total Pressure, Ps (in. w.c.)	0.071	0.112	0.156	0.217	0.280	0.356	0.442	0.495
	Isothermal Throw	4-7-11	7-10-13	9-11-14	11-13-16	13-15-18	15-18-20	16-20-22	18-21-24
	Non-Isothermal Throw*	3-6-10	6-9-12	7-10-13	9-11-14	11-14-16	12-15-18	13-17-20	15-19-22
Noise Criteria, NC	22	27	32	36	40	43	46	52	
14"	Volumetric Flow Rate, CFM	430	535	640	750	860	975	1095	1220
	Static Pressure, Ps (in. w.c.)	0.089	0.138	0.166	0.271	0.284	0.293	0.306	0.336
	Total Pressure, Ps (in. w.c.)	0.099	0.154	0.188	0.297	0.318	0.343	0.360	0.441
	Isothermal Throw	9-10-13	11-14-15	13-15-18	14-17-21	16-19-23	17-21-25	19-23-27	23-26-29
	Non-Isothermal Throw*	6-7-11	7-11-13	11-14-15	12-15-17	16-18-20	18-20-22	20-22-24	21-23-26
Noise Criteria, NC	30	35	40	44	50	56	62	68	
15"	Volumetric Flow Rate, CFM	490	615	735	875	1020	1165		
	Static Pressure, Ps (in. w.c.)	0.112	0.177	0.253	0.337	0.355	0.364		
	Total Pressure, Ps (in. w.c.)	0.122	0.193	0.275	0.368	0.395	0.414		
	Isothermal Throw	10-12-14	13-15-17	13-16-20	16-19-22	19-21-25	21-23-27		
	Non-Isothermal Throw*	8-10-12	10-12-14	11-14-17	12-16-19	15-19-22	17-21-23		
Noise Criteria, NC	33	39	44	50	56	62			

Series Phenom - Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991

1. All pressures are in inches of water.
2. Isothermal throw values are given for velocities of 150, 100 and 50 feet per minute (room and supply air temperature are within 2°)
3. Throw* values are given for velocities of 150, 100 and 50 feet per minute with supply air 15°F cooler than room air temperature.
4. Data were collected in accordance to ASHRAE Standard 70-1991 "Method of Testing for Rating of Air Outlets and Inlets."
5. Each NC value represents the noise criteria curve for the octave bands, with a room absorption of 10 dB, re 10⁻¹² Watts.
6. Actual throw and noise performance may vary from cataloged values with the field use of flexible duct inlets.

Directional Ceiling Diffusers



DCD

DCD - Directional Ceiling Diffusers

5/2007

➔ Square/Rectangular Modular Core ➔ Series 9000 ➔ Aluminum

Product Details

- ★ The 9000 is a highly flexible directional mounting applications ceiling diffuser available in a wide range of border types
- ★ Modular cores can be adjusted to obtain 1, 2 way opposite, 2 way corner, 3 or 4 way air patterns
- ★ Cores are easy to remove with spring loaded latches - no tools required
- ★ Lay-in T-bar border 6 can be used in surface mounting applications by adding optional T-bar Plaster Frame (TBPf)
- ★ The 9000 is an excellent choice for VAV applications



Model 9000-1 Shown
Standard Finish: 01 White

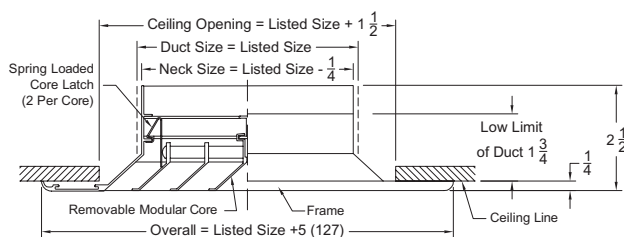
Directional Ceiling Diffusers



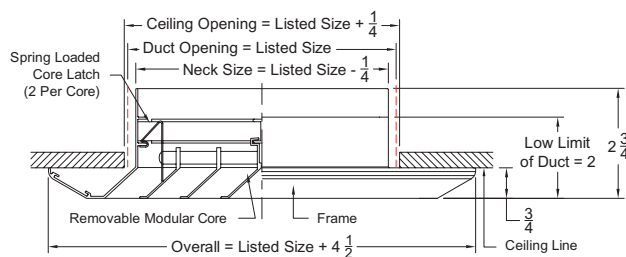
DCD

Dimensions are in inches

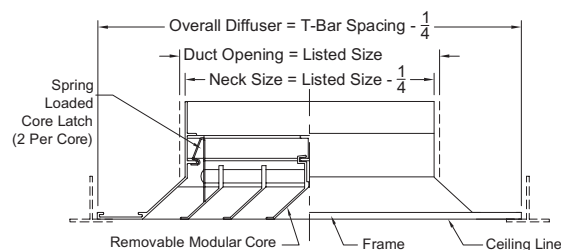
Square/Rectangular Modular Core Ceiling Diffusers Surface Mount Model 9000-1



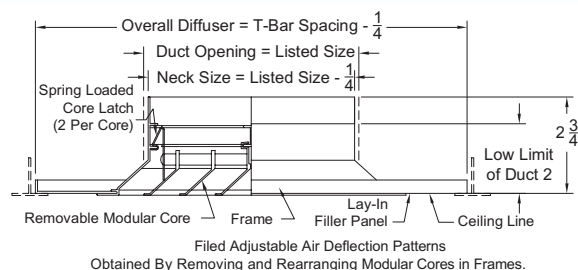
Square/Rectangular Modular Core Ceiling Diffusers Beveled Surface Mount Model 9000-2



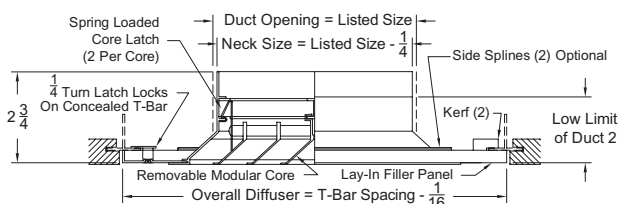
Square/Rectangular Modular Core Ceiling Diffusers T-bar Lay-in Model 9000-6



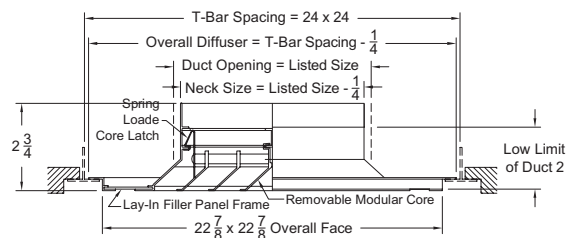
Square/Rectangular Modular Core Ceiling Diffusers T-bar Lay-in Panel Model 9000-6P



Square/Rectangular Modular Core Ceiling Diffusers Concealed Spline Model 9000-7



Square/Rectangular Modular Core Ceiling Diffusers Tegular T-bar Model 9000-8



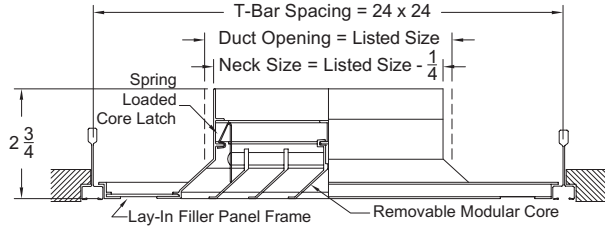
DCD - Directional Ceiling Diffusers

Directional Ceiling Diffusers



DCD

Square/Rectangular Modular Core Ceiling Diffusers
 Donn Finline
 Model 9000-9



Air Patterns - Square Face Ceiling Diffusers

One Way	Two Way Corner	Two Way Opposite	Three Way	Four Way

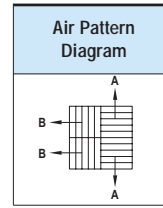
1. Available Finishes	2. Available Accessories
<p>Standard Finish: 01 White</p> <p>Optional Finish 02 Aluminum paint 03 Black 28 Custom color</p>	<p>(Shipped Unattached)</p> <p>OBD - Opposed Blade Damper - Steel221 OBDA - Opposed Blade Damper - Aluminum221 L9 - Equalizing Grid221 TR Deep - Square to Round Transition - Deep221</p>

DCD - Directional Ceiling Diffusers

Series 9000 - Performance

4 Core - Models 9000-1, 9000-2, 9000-6, 9000-6P, 9000-7, 9000-8, 9000-9

Listed Size & Neck Area Sq. Ft.	Effective Area AK Sq. Ft.	Vn Neck Velocity fpm Vk Outlet Velocity fpm Pt Total Pressure Side Designation	200 450 0.013		300 675 0.028		400 900 0.050		500 1125 0.079		600 1350 0.114		700 1575 0.155		
			A	B	A	B	A	B	A	B	A	B	A	B	
6" X 6" 0.25	0.112	CFM NC	50 <20	75 <20	100 <20	125 20	150 26	175 31							
		Throw	4-Way	2-3	3-4	4-5	4-6	5-7	6-8						
			3-Way	2-3 3-4	3-4 4-6	4-5 6-7	4-6 8-10	5-7 7-10	6-8 8-11	6-8 8-11					
8" x 8" 0.44	0.196	CFM NC	90 <20	130 <20	175 <20	220 23	265 28	310 33							
		Throw	4-Way	3-4	4-5	5-7	6-8	6-9	7-10						
			3-Way	3-4 4-6	4-5 6-7	5-7 7-10	6-8 8-11	6-9 8-13	7-10 10-14	7-10 10-14					
10" x 10" 0.69	0.312	CFM NC	140 <20	205 <20	275 <20	345 23	415 28	485 33							
		Throw	4-Way	4-5	5-7	6-9	7-10	8-12	9-13						
			3-Way	4-5 6-7	5-7 7-10	6-9 8-13	7-10 10-14	8-12 11-17	9-13 13-18	9-13 13-18					
12" x 12" 1.00	0.444	CFM NC	200 <20	300 <20	400 <20	500 25	600 31	700 36							
		Throw	4-Way	4-6	6-8	7-10	8-12	9-14	10-15						
			3-Way	4-6 6-8	6-8 8-11	7-10 10-14	8-12 11-17	9-14 13-20	10-15 14-21	10-15 14-21					
14" x 14" 1.36	0.604	CFM NC	270 <20	405 <20	545 21	680 27	815 33	950 38							
		Throw	4-Way	5-7	7-10	8-12	10-14	11-17	12-18						
			3-Way	5-7 7-10	7-10 10-14	8-12 11-17	10-14 14-20	11-17 16-24	12-18 17-25	12-18 17-25					
16" x 16" 1.78	0.792	CFM NC	355 20	530 20	710 21	885 28	1070 33	1245 38							
		Throw	4-Way	5-8	8-11	9-14	11-16	12-19	13-20						
			3-Way	5-8 7-11	8-11 11-16	9-14 13-20	11-16 16-22	12-19 17-27	13-20 18-28	13-20 18-28					
18" x 18" 2.25	0.996	CFM NC	450 <20	670 <20	900 22	1120 29	1345 34	1570 39							
		Throw	4-Way	6-9	9-12	10-15	12-18	13-21	15-23						
			3-Way	6-9 8-13	9-12 13-17	10-15 14-21	12-18 17-25	13-21 18-30	15-23 21-32	15-23 21-32					
20" x 20" 2.78	1.236	CFM NC	555 <20	830 <20	1110 23	1390 30	1670 35	1945 40							
		Throw	4-Way	7-10	10-13	12-16	13-20	15-23	16-24						
			3-Way	7-10 10-14	10-13 14-18	12-16 17-22	13-20 18-28	15-23 21-32	16-24 22-34	16-24 22-34					
22" x 22" 3.36	1.492	CFM NC	670 <20	1010 <20	1345 23	1680 31	2015 36	2350 41							
		Throw	4-Way	7-11	11-15	13-18	15-22	16-25	18-27						
			3-Way	7-11 10-16	11-15 16-21	13-18 18-25	15-22 21-31	16-25 22-35	18-27 25-38	18-27 25-38					
24" x 24" 4.00	1.776	CFM NC	800 <20	1200 <20	1600 26	2000 32	2400 38	2800 42							
		Throw	4-Way	8-12	12-16	14-20	16-24	18-28	20-30						
			3-Way	8-12 11-17	12-16 17-22	14-20 20-28	16-24 22-34	18-28 25-39	20-30 28-42	20-30 28-42					



Directional Ceiling Diffusers

DCD



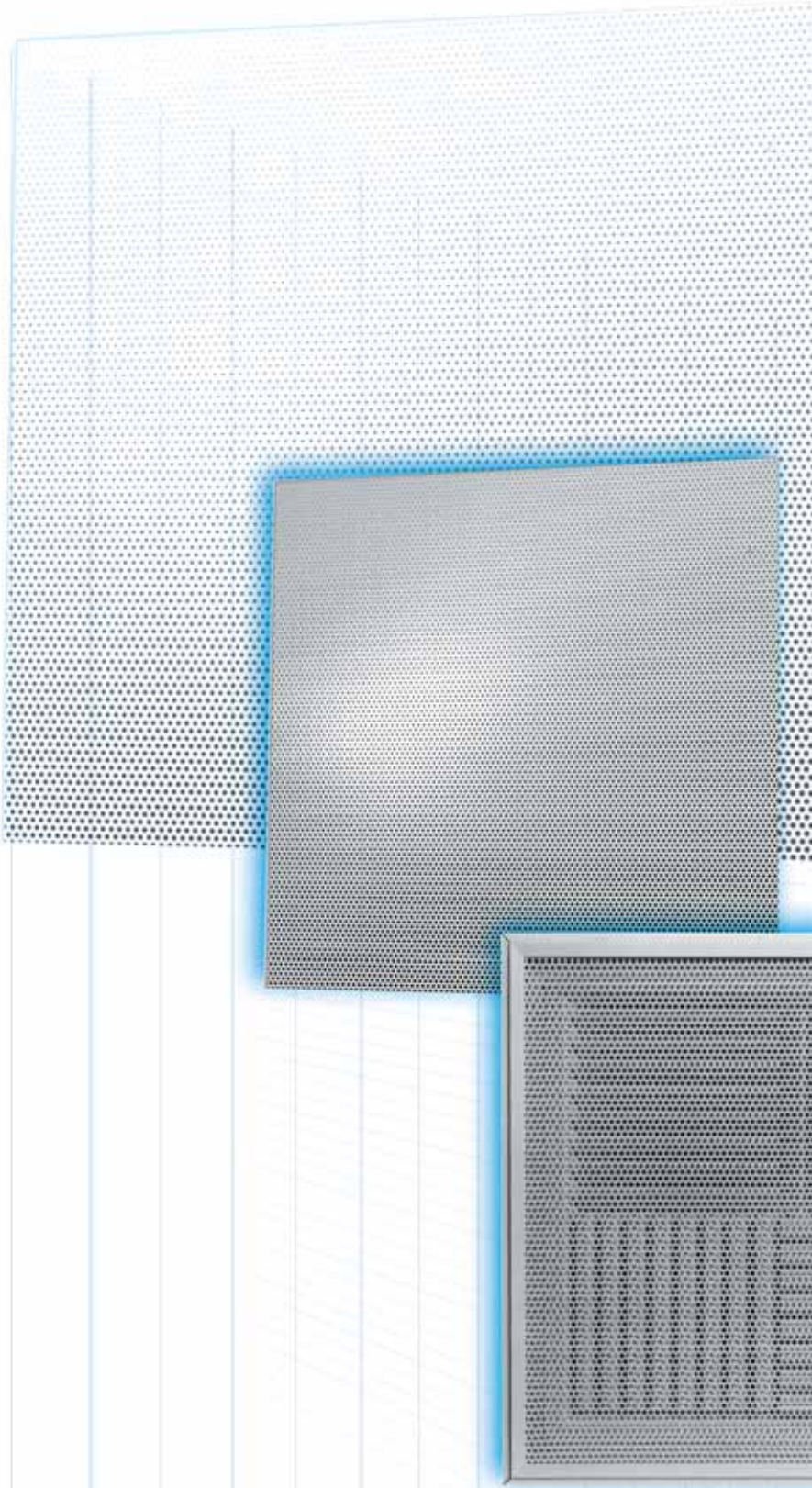
Series 9000 - Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic Feet per Minute (air)
- fpm - Velocity of air stream in Feet Per Minute
- Pv - Velocity pressure (inches of water column)
- Pt - Total pressure (inches of water column)
- Ps - Static pressure = Pt - Pv (inches of water column)
- Throw - Cataloged throw is horizontal distances in feet to the terminal velocities of 150 and 100 fpm with supply air temperature 20° F below room air temperature
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- AK - Area Factor

PERFORATED
CEILING
DIFFUSERS



**PERFORATED
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CEILING DIFFUSERS



Model 7000

Additional product information available at www.metalaire.com

Series 7000 - Supply
Series 7000R - Return

Perforated Supply - Extruded Aluminum - Curved Blade Pattern Controller - Series 7000

- ★ The series 7000 is an aluminum, perforated supply diffuser with curved blade pattern controllers mounted in the neck of the diffuser. Pattern controllers are adjustable from a horizontal to vertical discharge pattern
- ★ The face is secured with spring clips making removal and access to the pattern controllers easy
- ★ Units are available in 1-way, 2-way opposite, 2-way corner, 3-way, and 4-way patterns
- ★ The Series 7000 generates a "star pattern" directional discharge of air maximizing induction and room air mixing
- ★ T-bar Lay-in border type 6 is designed to be installed in standard 15/16" tee. This border type 6 can be used in surface mounting applications by adding optional T-bar plaster frame (TBPF)
- ★ Matching returns available: 7000R
- ★ The series 7000 is an excellent choice for VAV applications

Supply		Return	
7000-1 Surface Mount	7000-8 Tegular T-bar	7000R-1 Surface Mount	7000R-8 Tegular T-bar
7000-6 T-bar Lay-in	7000-9 Donn Finline	7000R-6 T-bar Lay-in	7000R-9 Donn Finline
7000-7 Concealed T-bar		7000R-7 Concealed T-bar	



Model PRTB

Additional product information available at www.metalaire.com

Series PRTB - Aluminum
Series SPRTB - Steel

Perforated Screen - Non-Ducted - Return - Aluminum/Steel - Series PRTB

- ★ The series PRTB is an economical choice for non-duct plenum return applications and is shipped without pattern controllers
- ★ Unit can be used in surface mounting applications by adding optional T-bar plaster frame (TBPF)

Aluminum	Steel
PRTB-6 T-bar Lay-in	SPRTB-6 T-bar Lay-in
PRTB-8 Tegular T-bar	SPRTB-8 Tegular T-bar
PRTB-9 Donn Finline	SPRTB-9 Donn Finline



Model 7300

Additional product information available at www.metalaire.com

Perforated Supply/Return Diffuser - Fiberglass Backpan - Series 7300

- ★ The series 7300 perforated supply diffuser is an economical diffuser with a fiberglass plenum designed to allow field installation of the inlet collar (by others). The face of the diffuser is non-removable and includes a pattern controller set for a circular 360° degree round discharge pattern
- ★ The series 7300 provides a 360° tight horizontal circular pattern along the ceiling
- ★ The series 7300 includes a T-bar Lay-in border type 6 which is designed to be installed in standard 15/16" tee
- ★ Border type 6 can be used in surface mounting applications by adding optional T-bar plaster frame (TBPF)
- ★ Matching returns available: 7300R
- ★ The series 7300 is an excellent choice for VAV applications

T-bar Lay-in
7300-6 Fixed Steel Face
7300-6 AF Fixed Aluminum Face



Model 7350

Additional product information available at www.metalaire.com

Perforated Supply/Return Diffuser - Fiberglass Backpan - Series 7350

- ★ The series 7350 perforated supply diffuser is an economical diffuser with a fiberglass plenum designed to allow field installation of the inlet collar (by others)
- ★ The face diffuser includes a hinged removable face and 4 pattern controllers that can adjusted for a 1-way, 2-way opposite, 2-way corner, 3-way, and 4-way discharge air patterns
- ★ Set in a 4-way pattern, the 7350 provides a 360° tight horizontal circular pattern along the ceiling
- ★ The series 7350 includes a T-bar Lay-in border type 6 designed to be installed in standard 15/16" tee
- ★ Border type 6 can be used in surface mounting applications by adding optional T-bar Plaster Frame (TBPF)
- ★ Matching returns available: 7350R
- ★ The series 7350 is an excellent choice for VAV applications

	Supply	Return
T-bar Lay-in	7350-6 Hinged Steel Removable Face	7350R-6 Hinged Steel Removable Face
	7350-6 AF Hinged Aluminum Removable Face	7350R-6 AF Hinged Aluminum Removable Face
Tegular T-bar	7350-8 Hinged Steel Removable Drop Face	7350R-8 Hinged Steel Removable Drop Face

PCD - Perforated Ceiling Diffusers



Model 7500

Pg. 64

Round Neck
Series 7500 - Supply
Series 7500R - Return

Square Neck
Series 7550 - Supply
Series 7550R - Return

Perforated Ceiling Diffuser - Face Mounted Adjustable Pattern Controller - Series 7500

- ✪ The series 7500 and 7550 perforated supply diffusers have 4 adjustable pattern controllers mounted on the face of the diffuser.
- ✪ Series 7500 are round neck diffusers; series 7550 are square neck diffusers
- ✪ The hinged, fully removable face allow access to the pattern controllers
- ✪ Unit can be adjusted for 1-way, 2-way opposite, 2-way corner, 3-way, and 4-way patterns
In 4-way pattern, Series 7500 provides a 360° tight horizontal circular pattern along the ceiling
- ✪ T-bar Lay-in border type 6 is designed to be installed in standard 15/16" tee
- ✪ Border type 6 can be used in surface mounting applications by adding optional T-bar plaster frame (TBPF)
- ✪ Matching returns available: 7500R (round neck) and 7550R (square neck)
- ✪ The series 7500 and 7550 are excellent choices for VAV applications

Round Neck			
Supply		Return	
7500-1 Surface Mount	7500-8 Tegular T-bar	7500R-1 Surface Mount	7500R-8 Tegular T-bar
7500-1 DF Surface Mount - Drop Face	7500-8 AF Tegular T-bar - Aluminum Face	7500R-1 DF Surface Mount - Drop Face	7500R-8 AF Tegular T-bar - Aluminum Face
7500-1 AF Surface Mount - Aluminum Face	7500-8 AL Tegular T-bar -All Aluminum	7500R-1 AF Surface Mount - Aluminum Face	7500R-8 AL Tegular T-bar - All Aluminum
7500-6 T-bar Lay-in	7500-9 Donn Fineline	7500R-6 T-bar Lay-in	7500R-9 Donn Fineline
7500-6 AF T-bar Lay-in - Aluminum Face	Metric	7500R-6 AF T-bar Lay-in - Aluminum Face	Metric
7500-6 AL T-bar Lay-in - All Aluminum	M-7000-6 T-bar Lay-in - 600mm x 600mm	7500R-6 AL T-bar Lay-in - All Aluminum	M-7500R-6 T-bar Lay-in - 600mm x 600mm

Square Neck			
Supply		Return	
7550-1 Surface Mount	7550-8 Tegular T-bar	7550R-1 Surface Mount	7550R-8 Tegular T-bar
7550-1 DF Surface Mount - Drop Face	7550-8 AF Tegular T-bar - Aluminum Face	7550R-1 DF Surface Mount - Drop Face	7550R-8 AF Tegular T-bar - Aluminum Face
7550-1 AF Surface Mount - Aluminum Face	7550-8 AL Tegular T-bar - All Aluminum	7550R-1 AF Surface Mount - Aluminum Face	7550R-8 AL Tegular T-bar - All Aluminum
7550-6 T-bar Lay-in	7550-9 Donn Fineline	7550R-6 T-bar Lay-in	7550R-9 Donn Fineline
7550-6 AF T-bar Lay-in - Aluminum Face	Metric	7550R-6 AF T-bar Lay-in - Aluminum Face	Metric
7550-6 AL T-bar Lay-in - All Aluminum	M-7550-6 T-bar Lay-in - 600mm x 600mm	7550R-6 AL T-bar Lay-in - All Aluminum	M-7550R-6 T-bar Lay-in - 600mm x 600mm

Perforated Ceiling Diffuser - Curved Blade - Neck Mounted Pattern Controller - Series 7600



Model 7600

Pg. 70

Round Neck
Series 7600 - Supply
Series 7600R - Return

Square Neck
Series 7650 - Supply
Series 7650R - Return

- ✪ The Series 7600 and 7650 perforated supply diffusers have curved blade pattern controllers mounted in the neck of the diffuser. Pattern controllers are adjustable from a horizontal to vertical discharge pattern
- ✪ Series 7600 are round neck diffusers; series 7650 are square neck diffusers
- ✪ The hinged, fully removable face allow access to the pattern controllers
- ✪ Units are available in 1-way, 2-way opposite, 2-way corner, 3-way, and 4-way patterns. The 4-way core can be set for corner or side discharge patterns. The series 7600 and 7650 provide a "star pattern" directional discharge of air maximizing induction and room air mixing
- ✪ T-bar Lay-in border type 6 is designed to be installed in standard 15/16" tee
- ✪ Border type 6 can be used in surface mounting applications by adding optional T-bar plaster frame (TBPF)
- ✪ Matching returns available: 7600R (round neck) and 7650R (square neck)
- ✪ The series 7600 and 7650 are excellent choices for VAV applications

Round Neck			
Supply		Return	
7600-1 Surface Mount	7600-8 Tegular T-bar	7600R-1 Surface Mount	7600R-8 Tegular T-bar
7600-1 DF Surface Mount - Drop Face	7600-8 AF Tegular T-bar - Aluminum Face	7600R-1 DF Surface Mount - Drop Face	7600R-8 AF Tegular T-bar - Aluminum Face
7600-1 AF Surface Mount - Aluminum Face	7600-8 AL Tegular T-bar - All Aluminum	7600R-1 AF Surface Mount - Aluminum Face	7600R-8 AL Tegular T-bar - All Aluminum
7600-6 T-bar Lay-in	7600-9 Donn Fineline	7600R-6 T-bar Lay-in	7600R-9 Donn Fineline
7600-6 AF T-bar Lay-in - Aluminum Face	Metric	7600R-6 AF T-bar Lay-in - Aluminum Face	Metric
7600-6 AL T-bar Lay-in - All Aluminum	M-7600-6 T-bar Lay-in - 600mm x 600mm	7600R-6 AL T-bar Lay-in - All Aluminum	M-7600R-6 T-bar Lay-in - 600mm x 600mm

Square Neck			
Supply		Return	
7650-1 Surface Mount	7650-8 Tegular T-bar	7650R-1 Surface Mount	7650R-8 Tegular T-bar
7650-1 DF Surface Mount - Drop Face	7650-8 AF Tegular T-bar - Aluminum Face	7650R-1 DF Surface Mount - Drop Face	7650R-8 AF Tegular T-bar - Aluminum Face
7650-1 AF Surface Mount - Aluminum Face	7650-8 AL Tegular T-bar - All Aluminum	7650R-1 AF Surface Mount - Aluminum Face	7650R-8 AL Tegular T-bar - All Aluminum
7650-6 T-bar Lay-in	7650-9 Donn Fineline	7650R-6 T-bar Lay-in	7650R-9 Donn Fineline
7650-6 AF T-bar Lay-in - Aluminum Face	Metric	7650R-6 AF T-bar Lay-in - Aluminum Face	Metric
7650-6 AL T-bar Lay-in - All Aluminum	M-7650-6 T-bar Lay-in - 600mm x 600mm	7650R-6 AL T-bar Lay-in - All Aluminum	M-7650R-6 T-bar Lay-in - 600mm x 600mm



Model 7900

Additional product information available at www.metalaire.com

Perforated Face Modular Core Diffuser - Aluminum - Series 7900

- ✦ The series 7900 is an aluminum, perforated modular core supply diffuser. Modular cores can be field adjusted for 1-way, 2-way opposite, 2-way corner, 3-way, and 4-way air discharge patterns
- ✦ The perforated face is secured with spring clips making removal and access to the modular core pattern controllers easy
- ✦ T-bar Lay-in border type 6 is designed to be installed in standard 15/16" tee
- ✦ Border type 6 can be used in surface mounting applications by adding optional T-bar plaster frame (TBPF)
- ✦ Matching returns available: 7900R
- ✦ The series 7900 is an excellent choice for VAV applications

Supply	
7900-1	Surface Mount
7900-6	T-bar Lay-in
7900-7	Concealed Spline
7900-8	Tegular T-bar



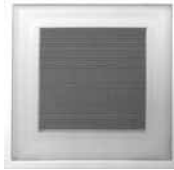
Model 7950

Pg. 76

Perforated Face Modular Core Diffuser - Aluminum Deflectors/Steel Backpan - Square Neck - Series 7950

- ✦ The series 7950 perforated modular core supply diffuser with a steel backpan. Modular cores can be field adjusted for 1-way, 2-way opposite, 2-way corner, 3-way, and 4-way air discharge patterns
- ✦ The perforated face is secured with spring clips making removal and access to the modular core pattern controllers easy
- ✦ T-bar Lay-in border type 6 is designed to be installed in standard 15/16" tee
- ✦ Border type 6 can be used in surface mounting applications by adding optional T-bar plaster frame (TBPF)
- ✦ Matching returns available: 7950R
- ✦ The 7950 is an excellent choice for VAV applications

Supply			
7950-1	Surface Mount	7950-8	Tegular T-bar
7950-1 DF	Surface Mount - Drop Face	7950-8 AF	Tegular T-bar - Aluminum Face
7950-1 AF	Surface Mount - Aluminum Face	7950-9	Donn Finline
7950-6	T-bar Lay-in		
7950-6 AF	T-bar Lay-in - Aluminum Face		



Model 7550R-F

Additional product information available at www.metalaire.com

Perforated Filter Return Diffuser - Square Neck - Steel Series 7550R-F/7650R-F

- ✦ Unit can be used in surface mounting applications by adding optional T-bar plaster frame (TBPF)
- ✦ T-bar Lay-in border type 6 is designed to be installed in standard 15/16" tee
- ✦ The hinged, perforated face, allows access to the filter (by others)

Filter Return			
7550R-1 F	Surface Mount - Filter Back	7650R-1 F	Surface Mount - Filter Back
7550R-6 F	T-bar Lay-in - Filter Back	7650R-6 F	T-bar Lay-in - Filter Back
7550R-8 F	Tegular T-bar - Filter Back	7650R-8 F	Tegular T-bar - Filter Back

PCD - Perforated Ceiling Diffusers

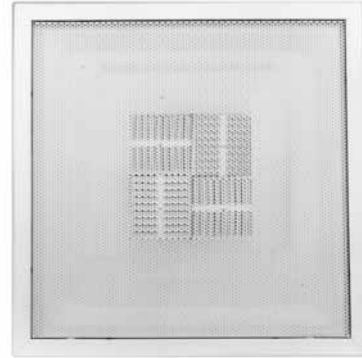
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- ➔ Supply/Return Perforated Ceiling Diffusers ➔ Round Neck
- ➔ Face Mounted Adjustable Pattern Controllers

Product Details

- ★ Series 7500 perforated supply diffusers have 4 adjustable pattern controllers mounted on the face of the diffuser.
- ★ Series 7500 are round neck diffusers
- ★ The hinged, fully removable face allows access to the pattern controllers
- ★ Unit can be adjusted for 1-way, 2-way opposite, 2-way corner, 3-way, and 4-way patterns. In 4-way pattern, Series 7500 provides a 360° tight horizontal circular pattern along the ceiling
- ★ Border type 6 can be used in surface mounting applications by adding optional T-bar plaster frame (TBPF)
- ★ Matching returns available: 7500R (round neck) and 7550R (square neck)
- ★ The series 7500 is an excellent choices for VAV applications
- ★ Also available in square neck series 7550

Series 7500	
7500	Steel Backpan & Face
7500 AF	Steel Backpan & Aluminum Face
7500 AL	Aluminum Backpan & Face



Model 7500-1
Standard Finish: 01 White

Perforated Ceiling Diffusers



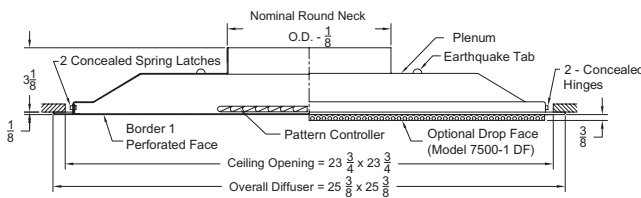
PCD

Supply

Dimensions are in inches

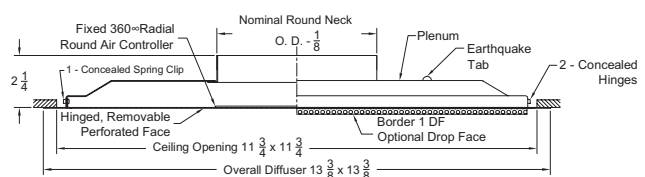
Supply - Round Neck - Adjustable - Surface Mount - 24" x 24"

Model 7500-1 - Steel backpan & face
Model 7500-1 AF - Steel backpan & aluminum face
Model 7500-1 DF - Steel backpan & face - drop face



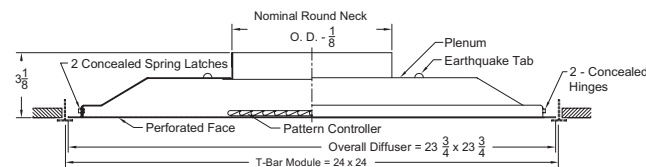
Supply - Round Neck - Adjustable - Surface Mount - 12" x 12"

Model 7500-1 - Steel backpan & face
Model 7500-1 AF - Steel backpan & aluminum face
Model 7500-1 DF - Steel backpan & face - drop face



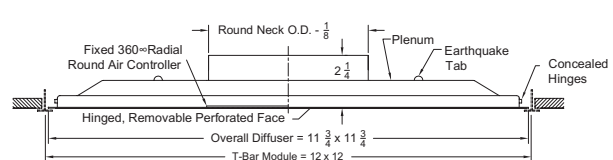
Supply - Round Neck - Adjustable - T-bar Lay-in - 24" x 24"

Model 7500-6 - Steel backpan & face
Model 7500-6 AF - Steel backpan & aluminum face
Model 7500-6 AL - Aluminum backpan & face



Supply - Round Neck - Adjustable - T-bar Lay-in - 12" x 12"

Model 7500-6 - Steel backpan & face
Model 7500-6 AF - Steel backpan & aluminum face
Model 7500-6 AL - Aluminum backpan & face

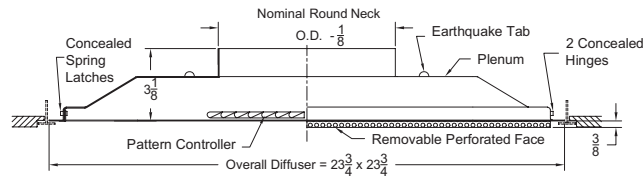


PCD - Perforated Ceiling Diffusers



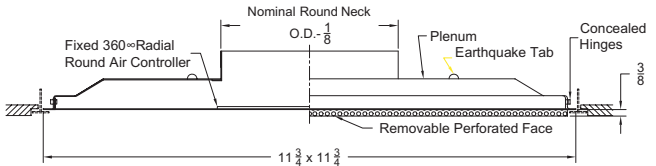
Supply - Round Neck - Adjustable - Tegular T-bar - 24" x 24"

Model 7500-8 - Steel backpan & face
 Model 7500-8 AF - Steel backpan & aluminum face
 Model 7500-8 AL - Aluminum backpan & face



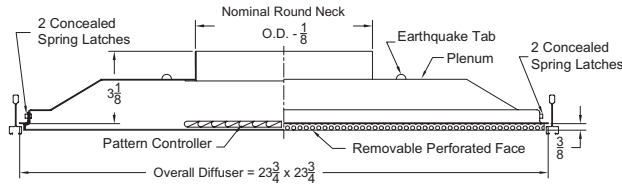
Supply - Round Neck - Adjustable - Tegular T-bar - 12" x 12"

Model 7500-8 - Steel backpan & face
 Model 7500-8 AF - Steel backpan & aluminum face



Supply - Round Neck - Adjustable - Donn Finline - 24" x 24"

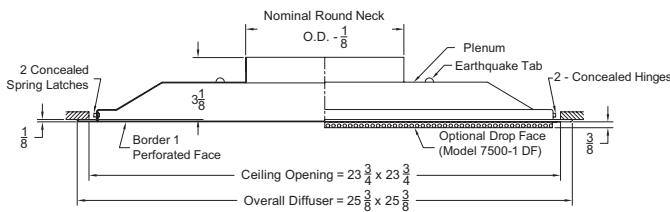
Model 7500-9 - Steel backpan & face
 Model 7500-9 AF - Steel backpan & aluminum face



Return

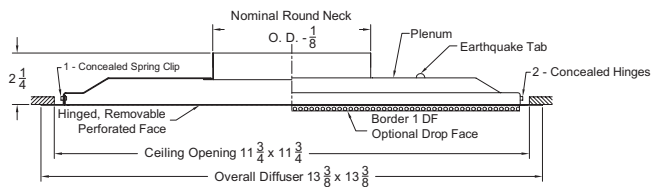
Return - Round Neck - Surface Mount - 24" x 24"

Model 7500R-1 - Steel backpan & face
 Model 7500R-1 AF - Steel backpan & aluminum face
 Model 7500R-1 DF - Steel backpan & face - drop face



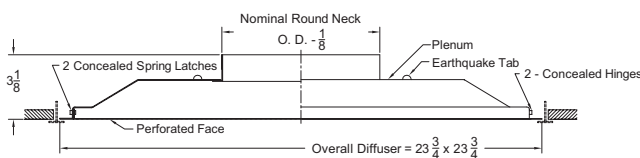
Return - Round Neck - Surface Mount - 12" x 12"

Model 7500R-1 - Steel backpan & face
 Model 7500R-1 AF - Steel backpan & aluminum face
 Model 7500R-1 DF - Steel backpan & face - drop face



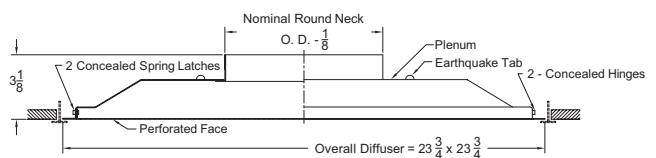
Return - Round Neck - T-bar Lay-in - 24" x 24"

Model 7500R-6 - Steel backpan & face
 Model 7500R-6 AF - Steel backpan & aluminum face
 Model 7500R-6 AL - Aluminum backpan & face



Return - Round Neck - Face Mounted - T-bar Lay-in - 12" x 12"

Model 7500R-6 - Steel backpan & face
 Model 7500R-6 AF - Steel backpan & aluminum face
 Model 7500R-6 AL - Aluminum backpan & face



PCD - Perforated Ceiling Diffusers

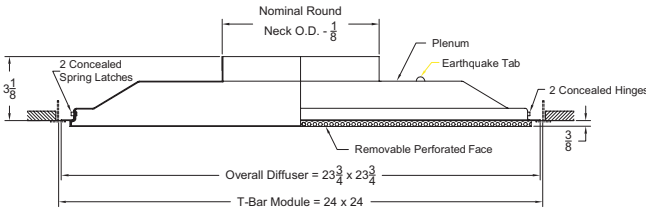
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Perforated Ceiling Diffusers

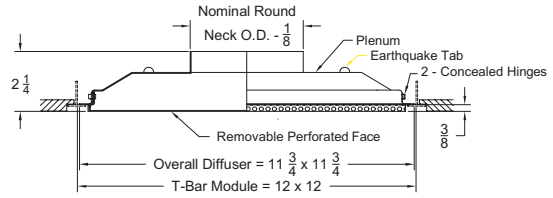


PCD

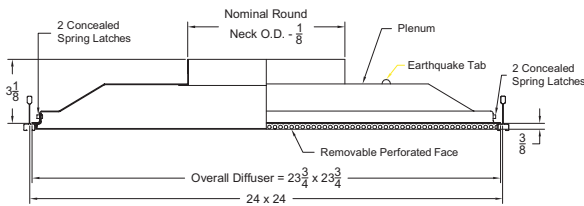
Return - Round Neck - Face Mounted - T-bar Lay-in - 24" x 24"
 Model 7500R-8 - Steel backpan & face
 Model 7500R-8 AF - Steel backpan & aluminum face
 Model 7500R-8 AL - Aluminum backpan & face



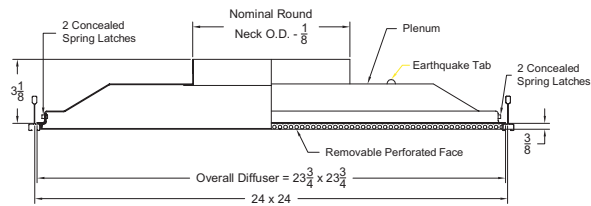
Return - Round Neck - Face Mounted - T-bar Lay-in - 12" x 12"
 Model 7500R-8 - Steel backpan & face
 Model 7500R-8 AF - Steel backpan & aluminum face
 Model 7500R-8 AL - Aluminum backpan & face



Return - Round Neck - Face Mounted - Donn Finline - 24" x 24"
 Model 7500R-9 - Steel backpan & face
 Model 7500R-9 AF - Steel backpan & aluminum face



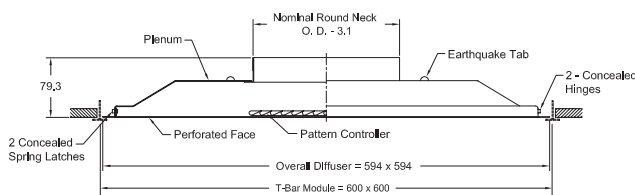
Return - Round Neck - Face Mounted - Donn Finline - 24" x 24"
 Model 7500R-9 - Steel backpan & face
 Model 7500R-9 AF - Steel backpan & aluminum face



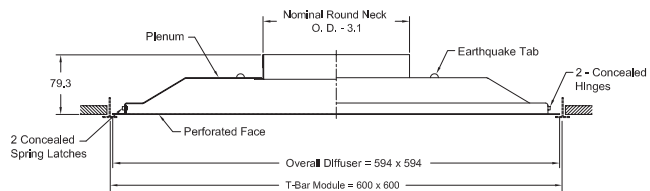
Metric

Dimensions are in millimeters

Supply - Round Neck - T-bar Lay-in
 Model M7500-6



Return - Round Neck - T-bar Lay-in
 Model M7500R-6



Notes for Models 7500 (-1, -6, -8, -9) 7500-1 DF, 7500 AF (-1, -6, -8), 7500 AL (-6, -8)

1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White (border only for 7500-1)</p> <p>Optional Finish 02 Aluminum paint 03 Black 22 (BBP) Black back pan/white face & border 28 Custom color</p>	<p>All accessories shipped unattached</p> <p>Round Neck: G3 - Equalizing grid 220 BDS - Butterfly damper 220 RSD - Radial Shutter damper 220</p>	<ul style="list-style-type: none"> Available only in listed sizes Pattern controllers are mounted on the back side of the perforated face and can be adjusted to 1, 2, 3 or 4 way pattern Seismic tabs standard on all units Pattern controller on 12" x 12" unit is a non adjustable disc on the perforated face 7500 series have 3/16" diameter holes on 1/4" staggered centers

Notes for Models 7500R (-1, -6, -8, -9) 7500R-1 DF, 7500R AF (-1, -6, -8, -9) 7500R AL (-6, -8)

1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish 02 Aluminum paint 03 Black 22 (BBP) Black back pan/white face & border and white border (for 7500R-1 models only) 28 Custom color</p>	<p>All accessories shipped unattached</p> <p>Square Necks: OBD - Opposed blade damper - Steel 221 OBDA - Opposed blade damper - Aluminum 221</p> <p>Round Neck: BDS - Butterfly damper 220 RSD - Radial Shutter damper 220</p>	<ul style="list-style-type: none"> Available only in listed sizes 7500R series have 3/16" diameter holes on 1/4" staggered centers

PCD - Perforated Ceiling Diffusers

Series 7500 - Performance/Flush Face - Round Neck

Models 7500 (-1, -6), 7500 AF (-1, -6), 7500 AL (-6)

Listed Size	Neck Size	fpm Neck Velocity Pv	300 0.006	400 0.010	500 0.016	600 0.022	700 0.031	800 0.040	1000 0.062	1200 0.090	
12" x 12"	6"	CFM Pt	60 0.011	80 0.019	100 0.030	120 0.043	135 0.054	155 0.072	195 0.114	235 0.165	
		Throw	4*-Way	1-2-3	1-2-5	2-3-5	2-3-6	3-4-6	3-4-6	4-5-7	5-6-8
	4-Way		1-2-4	1-2-5	2-3-6	2-4-6	3-4-7	3-5-7	4-6-8	5-6-9	
	3-Way		1-2-4	1-3-5	2-3-6	3-4-6	3-5-7	4-5-7	4-6-8	5-6-9	
	2-Way		1-2-5	2-3-5	3-4-6	3-5-6	4-5-7	4-5-7	5-6-8	5-6-9	
	1-Way		1-2-5	2-3-5	3-4-6	3-5-7	4-5-7	4-5-8	5-6-8	5-7-9	
	NC	-	-	<15	17	21	25	31	36		
	8"	CFM Pt	105 0.015	140 0.027	175 0.043	210 0.061	245 0.083	280 0.109	350 0.170	420 0.245	
		Throw	4*-Way	1-2-5	2-3-6	3-4-7	3-5-7	4-5-8	4-6-9	5-7-10	6-7-11
			4-Way	1-2-5	2-3-6	3-4-7	3-5-8	4-6-9	4-6-9	5-7-11	6-8-12
3-Way			1-2-5	2-4-7	3-5-8	4-5-8	4-6-9	5-7-10	6-8-11	7-8-12	
2-Way			2-3-6	3-4-7	4-5-8	4-6-9	5-7-9	6-7-10	6-8-11	7-9-12	
1-Way			2-3-6	3-4-7	4-5-8	4-6-9	5-7-9	6-7-10	7-8-11	7-9-12	
NC		-	-	<15	20	25	30	37	43		
24" x 24"	6"	CFM Pt	60 0.010	80 0.019	100 0.029	120 0.042	135 0.053	155 0.070	195 0.110	235 0.160	
		Throw	4*-Way	1-2-4	1-2-5	2-3-5	2-4-6	3-4-6	3-5-7	4-5-8	5-6-8
	4-Way		1-2-4	1-3-5	2-3-6	3-4-7	3-4-7	3-5-7	4-6-8	5-6-9	
	3-Way		1-2-4	1-3-5	2-4-6	3-4-7	3-5-7	4-5-8	5-6-8	5-7-9	
	2-Way		1-3-5	2-3-6	3-4-6	3-5-7	4-5-7	4-5-8	5-6-9	5-7-9	
	1-Way		1-3-5	2-3-6	3-4-6	3-5-7	4-5-7	4-6-8	5-6-9	6-7-10	
	NC	-	-	<15	17	21	25	31	36		
	8"	CFM Pt	105 0.016	140 0.028	175 0.043	210 0.063	245 0.085	280 0.111	350 0.174	420 0.250	
		Throw	4*-Way	1-2-5	2-3-6	3-4-7	3-5-8	4-6-9	4-6-9	5-7-10	6-8-11
			4-Way	1-2-5	2-3-7	3-4-8	3-5-9	4-6-9	4-7-10	6-8-11	7-9-12
			3-Way	1-2-6	2-4-7	3-5-8	4-6-9	4-7-10	5-7-10	6-8-11	7-9-12
			2-Way	2-3-6	3-5-7	4-6-8	5-6-9	5-7-10	6-7-10	7-8-12	7-9-13
			1-Way	2-3-7	3-5-8	4-6-8	5-7-9	5-7-10	6-8-11	7-8-12	8-9-13
		NC	-	-	<15	20	25	30	37	43	
	10"	CFM Pt	165 0.023	220 0.041	275 0.064	325 0.090	380 0.123	435 0.161	545 0.252	655 0.365	
		Throw	4*-Way	1-3-6	2-4-8	3-5-9	4-6-10	5-7-11	5-8-11	7-9-13	8-10-14
			4-Way	1-3-6	2-4-8	3-5-10	4-6-11	5-7-12	5-8-12	7-10-14	8-11-15
			3-Way	1-3-7	2-5-9	3-6-10	4-7-11	5-8-12	6-9-13	8-10-14	9-11-16
			2-Way	2-4-8	4-6-9	5-7-10	6-8-11	7-9-12	7-9-13	8-10-14	9-11-16
			1-Way	2-4-8	4-6-9	5-7-11	6-8-11	7-9-12	7-9-13	9-11-15	9-12-16
		NC	-	<15	15	22	28	33	42	48	
	12"	CFM Pt	235 0.025	315 0.044	395 0.070	470 0.099	550 0.135	630 0.177	785 0.275	940 0.395	
		Throw	4*-Way	1-3-7	3-5-10	4-6-11	5-7-12	6-8-13	6-10-14	8-11-15	10-12-17
			4-Way	1-3-7	3-5-10	4-6-12	5-7-13	6-9-14	7-10-15	8-12-17	10-13-18
3-Way			1-3-8	3-6-11	4-7-12	6-8-13	7-10-14	8-11-15	9-12-17	11-13-19	
2-Way			3-5-9	5-7-11	6-8-12	7-9-13	8-10-15	9-11-16	10-12-17	11-13-19	
1-Way			3-5-10	5-7-11	6-8-13	7-10-14	8-11-15	9-11-16	10-13-18	11-14-20	
NC		-	<15	17	24	31	37	45	52		
14"	CFM Pt	320 0.033	430 0.059	535 0.091	640 0.131	750 0.179	855 0.233	1070 0.365	1285 0.527		
	Throw	4*-Way	2-4-8	3-6-11	5-7-13	6-8-14	7-10-15	7-11-16	9-13-18	11-14-20	
		4-Way	2-4-9	3-6-12	5-7-14	6-9-15	7-10-16	8-12-17	10-14-19	12-15-21	
		3-Way	2-4-10	3-7-13	5-8-14	7-10-15	8-12-17	9-13-18	11-14-20	13-15-22	
		2-Way	3-6-11	5-8-13	7-10-14	8-11-16	9-12-17	10-13-18	12-14-20	13-16-22	
		1-Way	3-6-11	5-8-13	7-10-15	8-11-16	9-12-17	10-13-19	12-15-21	13-16-23	
	NC	-	<15	18	27	34	41	50	56		
16"	CFM Pt	420 0.040	560 0.071	700 0.110	840 0.159	975 0.214	1115 0.280	1395 0.438	1675 0.631		
	Throw	4*-Way	2-4-10	4-6-13	5-8-14	6-10-16	7-11-17	8-13-18	11-14-20	13-16-22	
		4-Way	2-4-10	3-7-13	5-8-16	7-10-17	8-12-19	9-13-20	11-16-22	13-17-24	
		3-Way	2-4-11	3-8-14	5-9-16	8-11-18	9-13-19	10-14-20	13-16-23	14-18-25	
		2-Way	4-7-13	6-9-15	8-11-16	9-13-18	10-14-19	12-15-21	13-16-23	15-18-25	
		1-Way	4-7-13	6-9-15	8-11-17	9-13-18	10-14-20	12-15-21	14-17-24	15-18-26	
	NC	-	<15	20	29	36	43	52	60		

See Page PCD-69 for Series 7500 Performance Notes



PCD - Perforated Ceiling Diffusers

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Series 7500 - Performance/Drop Face - Round Neck

Models 7500 (-8, -9), 7500 AF (-8, -9), 7500 DF (-1), 7500 AL (-8)

Perforated Ceiling Diffusers



PCD

Listed Size	Neck Size	fpm Neck Velocity Pv	300 0.006	400 0.010	500 0.016	600 0.022	700 0.031	800 0.040	1000 0.062	1200 0.090	
12" x 12"	6"	CFM Pt	60 0.011	80 0.020	100 0.031	120 0.045	135 0.057	155 0.075	195 0.119	235 0.172	
		Throw	4*-Way	1-1-2	1-2-3	1-2-4	2-2-4	2-3-4	2-3-5	3-4-5	3-4-6
	4-Way		1-2-4	1-3-5	2-3-6	3-4-7	3-5-7	4-5-8	4-6-9	5-7-10	
	3-Way		1-2-4	2-3-5	2-3-6	3-4-7	3-5-7	4-5-8	4-6-9	5-7-10	
	2-Way		1-2-5	2-3-6	3-4-6	3-5-7	4-5-7	4-6-8	5-6-9	6-7-10	
	1-Way		2-3-5	3-4-6	3-5-7	4-5-7	4-5-8	5-6-8	5-7-9	6-7-10	
	NC	-	-	-	<15	17	21	28	32		
	8"	CFM Pt	105 0.014	140 0.025	175 0.038	210 0.055	245 0.075	280 0.098	350 0.153	420 0.221	
		Throw	4*-Way	1-2-3	1-2-4	2-3-5	2-3-5	2-4-6	3-4-6	3-5-7	4-5-7
			4-Way	1-2-5	2-4-7	3-5-8	4-5-9	4-6-10	5-7-11	6-8-12	7-9-13
3-Way			1-3-5	2-4-7	3-5-8	4-5-9	4-6-10	5-7-11	6-8-12	7-9-13	
2-Way			2-3-6	3-4-8	4-5-9	4-6-9	5-7-10	6-8-11	7-9-12	8-9-13	
1-Way			2-4-7	3-5-8	4-6-9	5-7-10	6-7-10	6-8-11	7-9-12	8-10-13	
NC		-	-	-	<15	20	25	32	36		
24" x 24"	6"	CFM Pt	60 0.011	80 0.020	100 0.031	120 0.045	135 0.057	155 0.075	195 0.119	235 0.172	
		Throw	4*-Way	1-1-3	1-2-3	1-2-4	2-3-4	2-3-4	2-3-5	3-4-5	3-4-6
	4-Way		1-2-4	2-3-6	2-4-7	3-4-7	3-5-8	4-6-8	5-7-9	6-7-10	
	3-Way		1-2-4	2-3-6	2-4-7	3-4-7	3-5-8	4-6-8	5-7-9	6-7-10	
	2-Way		1-3-5	2-3-6	3-4-7	3-5-7	4-6-8	4-6-8	5-7-9	6-7-10	
	1-Way		2-3-5	3-4-6	3-5-7	4-5-8	4-6-8	5-6-9	6-7-10	6-8-11	
	NC	-	-	-	<15	17	21	28	32		
	8"	CFM Pt	105 0.014	140 0.025	175 0.038	210 0.055	245 0.075	280 0.098	350 0.153	420 0.221	
		Throw	4*-Way	1-2-3	1-2-4	2-3-5	2-3-6	3-4-6	3-4-6	4-5-7	4-6-8
			4-Way	1-2-6	2-4-8	3-5-9	4-6-10	4-7-10	5-8-11	6-9-12	8-10-14
			3-Way	1-3-6	2-4-8	3-5-9	4-6-10	4-7-10	5-8-11	6-9-12	8-10-14
			2-Way	2-3-7	3-5-8	4-6-9	5-7-10	5-8-11	6-8-11	7-9-13	8-10-14
			1-Way	2-4-7	3-5-8	4-6-9	5-7-10	6-8-11	7-8-12	7-9-13	8-10-14
		NC	-	-	-	<15	20	25	32	36	
	10"	CFM Pt	165 0.016	220 0.029	275 0.046	325 0.064	380 0.087	435 0.114	545 0.179	655 0.259	
		Throw	4*-Way	1-2-4	2-3-6	2-3-6	3-4-7	3-5-7	4-5-8	5-6-9	5-7-10
			4-Way	1-3-7	2-5-10	4-6-11	5-7-12	5-8-13	6-9-14	8-11-16	9-12-17
			3-Way	2-3-7	3-5-10	4-6-11	5-7-12	5-8-13	6-9-14	8-11-16	9-12-17
			2-Way	2-4-8	4-6-10	5-7-11	6-8-12	7-9-13	7-10-14	9-11-16	10-12-17
			1-Way	3-5-9	4-7-10	5-8-11	6-9-12	8-10-14	8-10-14	9-11-16	10-13-18
		NC	-	-	<15	16	22	28	37	42	
	12"	CFM Pt	235 0.021	315 0.037	395 0.059	470 0.083	550 0.113	630 0.149	785 0.231	940 0.331	
		Throw	4*-Way	1-2-5	2-3-7	3-4-8	3-5-8	4-6-9	4-7-10	5-8-11	7-8-12
			4-Way	2-4-8	3-6-11	5-7-13	6-8-14	7-10-16	8-11-17	9-13-19	11-14-20
3-Way			2-4-8	3-6-11	5-7-13	6-8-14	7-10-16	8-11-17	9-13-19	11-14-20	
2-Way			3-5-10	5-7-12	6-8-13	7-10-15	8-11-16	9-12-17	11-13-19	12-15-21	
1-Way			3-6-11	5-8-12	7-10-14	8-11-15	9-11-16	10-12-17	11-14-19	12-15-21	
NC		-	-	<15	17	25	31	40	43		
14"	CFM Pt	320 0.023	430 0.041	535 0.063	640 0.091	750 0.124	855 0.162	1070 0.253	1285 0.365		
	Throw	4*-Way	2-3-6	3-4-8	3-5-9	4-6-10	4-7-11	5-8-11	6-9-13	8-10-14	
		4-Way	2-4-10	3-7-13	5-8-15	7-10-17	8-12-18	9-13-19	11-15-22	13-17-24	
		3-Way	2-5-10	4-7-13	6-8-15	7-10-17	8-12-18	9-13-19	11-15-22	13-17-24	
		2-Way	3-6-12	5-8-14	7-10-16	8-12-17	9-13-19	10-14-20	13-16-22	14-17-24	
		1-Way	4-7-12	6-9-14	8-11-16	9-12-18	11-13-19	12-14-20	13-16-23	14-18-25	
	NC	-	-	<15	19	27	34	45	50		
16"	CFM Pt	420 0.025	560 0.045	700 0.070	840 0.100	975 0.135	1115 0.177	1395 0.276	1675 0.398		
	Throw	4*-Way	2-3-7	3-4-9	4-6-10	4-7-11	5-8-12	6-9-13	7-10-14	9-11-16	
		4-Way	2-5-11	4-8-15	6-9-18	8-11-19	9-13-21	10-15-22	13-18-25	15-19-27	
		3-Way	2-5-11	4-8-15	6-9-18	8-11-19	9-13-21	10-15-22	13-18-25	15-19-27	
		2-Way	4-7-14	6-9-16	8-11-18	9-14-20	10-15-21	12-16-23	15-18-25	16-20-28	
		1-Way	4-8-14	7-10-16	9-13-18	10-14-20	12-15-22	13-16-23	15-18-26	16-20-28	
	NC	-	-	<15	21	29	36	48	54		

See Page PCD-69 for Series 7500 Performance Notes

PCD - Perforated Ceiling Diffusers

Series 7500R - Performance

Models 7500R (-1, -6, -8, -9), 7500R AF (-1, -6, -8, -9), 7500R DF (-1), 7500R AL (-6, -8, -9)

Nominal Neck Diameter	fpm Inlet Velocity Ps	300 -.01	400 -.02	500 -.03	600 -.04	700 -.05	800 -.06	900 -.08	1000 -.10
6	CFM	60	80	100	115	135	155	175	195
8	CFM	105	140	175	210	245	280	315	350
10	CFM	165	220	270	325	380	435	490	545
12	CFM	235	315	390	470	550	630	705	785
14	CFM	320	425	535	640	750	855	9300	1070
16	CFM	420	560	700	835	975	1115	1255	1395
18	CFM	520	700	870	1045	1220	1395	1570	1740

Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic feet per minute (air)
- fpm - Velocity of air stream in feet per minute
- Pv - Velocity pressure (inches of water column)
- Pt - Total pressure (inches of water column)
- Ps - Static pressure = Pt - Pv (inches of water column)
- Throw* - Non-isothermal horizontal throw (supply air temperature 15°F colder than average room air temperature) values are for 150 fpm - 100 fpm - 50 fpm velocities
- Throw - Isothermal horizontal throw (supply air temperature the same as average room air temperature) values are for 150 fpm - 100 fpm - 50 fpm velocities
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak - Area Factors



PCD - Perforated Ceiling Diffusers

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Perforated Ceiling Diffusers



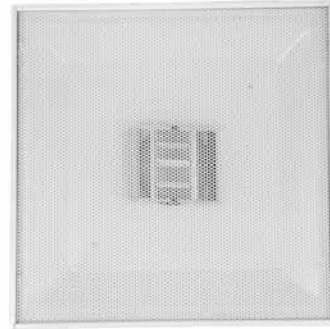
PCD

- ➔ Supply/Return Perforated Ceiling Diffuser ➔ Round Neck
- ➔ Neck Mounted Curved Blade Pattern Controllers

Product Details

- ★ The 7600 perforated supply diffuser has curved blade pattern controllers mounted in the neck of the diffuser. Pattern controllers are adjustable from a horizontal to vertical discharge pattern
- ★ The hinged face allows access to the pattern controllers
- ★ Units are available in 1, 2-way opposite, 2-way corner, 3, and 4-way patterns. The 4-way core can be set for corner or side discharge patterns
- ★ Border 6, T-bar Lay-in can be used in surface mounting applications by adding optional T-bar Plaster Frame (TBPF)
- ★ Matching returns available: 7600R (round neck)
- ★ The 7600 is an excellent choice for VAV applications
- ★ Also available in square neck series 7650

Series 7600	
7600	Steel Backpan & Face
7600 AF	Steel Backpan & Aluminum Face
7600 AL	Aluminum Backpan & Face



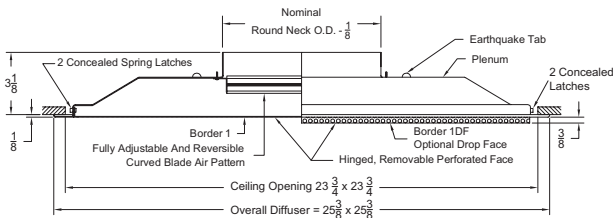
Model 7600-6 4W Shown

Standard Finish: 01 White

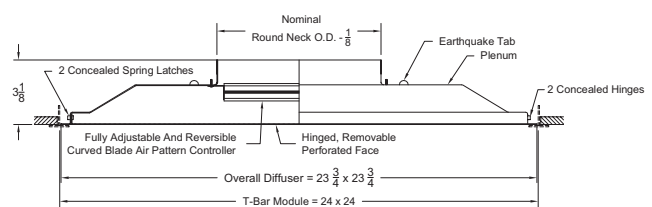
Supply - 24" x 24"

Dimensions are in inches

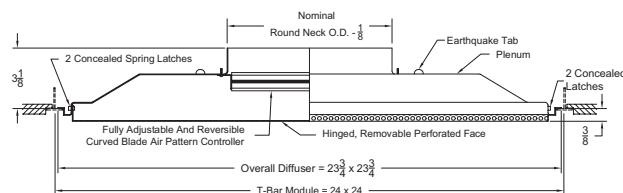
Supply - Round Neck - Neck Mounted - Adjustable - Surface Mount
 Model 7600-1 - Steel backpan & face
 Model 7600-1 AF - Steel backpan & aluminum face
 Model 7600-1 DF - Steel backpan & face - drop face



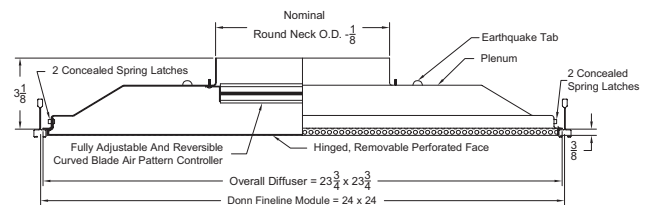
Supply - Round Neck - Neck Mounted - Adjustable - T-bar Lay-in
 Model 7600-6 - Steel backpan & face
 Model 7600-6 AF - Steel backpan & aluminum face
 Model 7600-6 AL - Aluminum backpan & face



Supply - Round Neck - Face Mounted - Adjustable - Tegular T-bar
 Model 7600-8 - Steel backpan & face
 Model 7600-8 AF - Steel backpan & aluminum face
 Model 7600-8 AL - Aluminum backpan & face



Supply - Round Neck - Face Mounted - Adjustable - Donn Finline
 Model 7600-9 - Steel backpan & face
 Model 7600-9 AF - Steel backpan & aluminum face



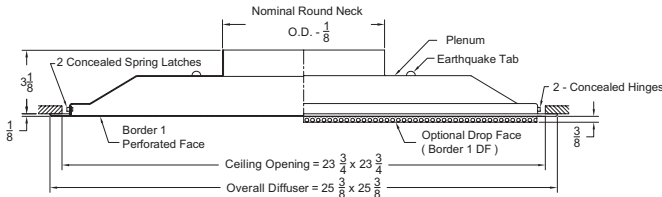
Available Round In lets (For All Models): 6, 8, 10, 12, 14, 16

PCD - Perforated Ceiling Diffusers

Return

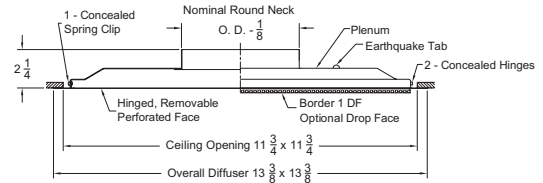
Return - Round Neck - Surface Mount - 24" x 24"

- Model 7600R-1 - Steel backpan & face
- Model 7600R-1 DF - Steel backpan & face - drop face
- Model 7600R-1 AF - Steel backpan & aluminum face



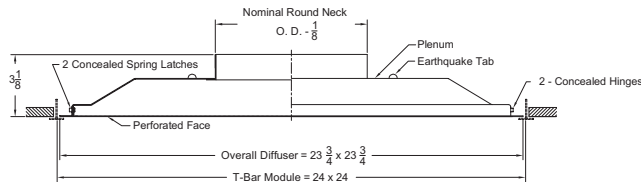
Return - Round Neck - Surface Mount - 12" x 12"

- Model 7600R-1 - Steel backpan & face
- Model 7600R-1 AF - Steel backpan & aluminum face
- Model 7600R-1 AL - Aluminum backpan & face



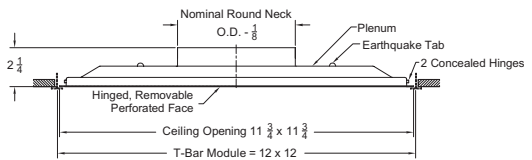
Return - Round Neck - T-bar Lay-in - 24" x 24"

- Model 7600R-6 - Steel backpan & face
- Model 7600R-6 AF - Steel backpan & aluminum face
- Model 7600R-6 AL - Aluminum backpan & face



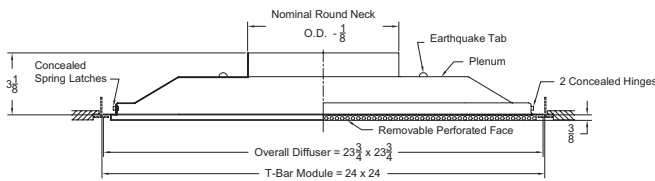
Return - Round Neck - T-bar Lay-in - 12" x 12"

- Model 7600R-6 - Steel backpan & face
- Model 7600R-6 AF - Steel backpan & aluminum face
- Model 7600R-6 AL - Aluminum backpan & face



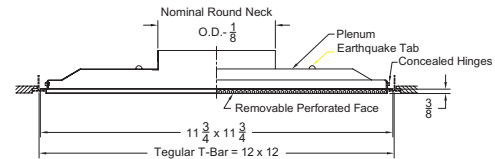
Return - Round Neck - Tegular T-bar - 24" x 24"

- Model 7600R-8 - Steel backpan & face
- Model 7600R-8 AF - Steel backpan & aluminum face
- Model 7600R-8 AL - Aluminum backpan & face



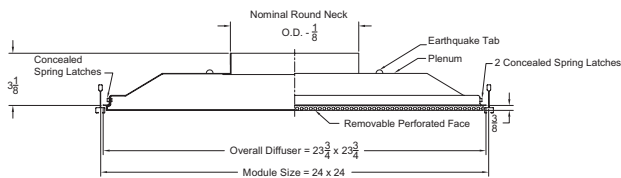
Return - Round Neck - Tegular T-bar - 12" x 12"

- Model 7600R-8 - Steel backpan & face
- Model 7600R-8 AF - Steel backpan & aluminum face
- Model 7600R-8 AL - Aluminum backpan & face



Return - Round Neck - Donn Finline - 24" x 24"

- Model 7600R-9 - Steel backpan & face
- Model 7600R-9 AF - Steel backpan & aluminum face



PCD - Perforated Ceiling Diffusers

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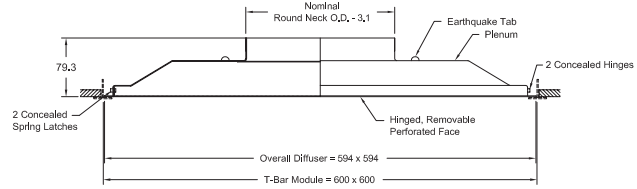
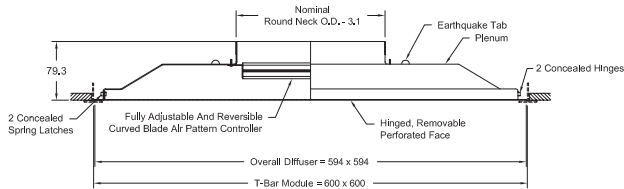
Perforated Ceiling Diffusers

Metric

Dimensions are in millimeters

Supply - Round Neck - T-bar Lay-in
Model M7500-6

Return - Round Neck - T-bar Lay-in
Model M7500R-6



Notes for Models 7600 (-1, -6, -8, -9) 7600-1 DF, 7600 AF (-1, -6, -8, -9) 7600 AL (-6, -8)

1. Available Finishes	2. Available Accessories	3. Construction Details
Standard Finish: 01 White Optional Finish 02 Aluminum paint 03 Black 22 (BBP) Black back pan/white face 28 Custom color	All accessories shipped unattached Round Neck: G3 - Equalizing grid218 BDS - Butterfly damper218 RSD - Radial Shutter damper218	<ul style="list-style-type: none"> • Pattern controllers are mounted on the back side of the perforated face and can be adjusted to 1, 2, 3 or 4 way pattern • Seismic tabs standard on all units • 7600 has 3/16" diameter holes in 1/4" centers

Notes for Models 7600R (-1, -6, -8, -9), 7600R-1 DF, 7600R AF (-1, -6, -8, -9) 7600R AL (-6, -8)

1. Available Finishes	2. Available Accessories	3. Construction Details
Standard Finish: 01 White Optional Finish 02 Aluminum paint 03 Black 22 (BBP) Black back pan/white face 28 Custom color	Round Neck: BDS - Butterfly damper218 RSD - Radial Shutter damper218	<ul style="list-style-type: none"> • Seismic tabs standard on all units • 7600R has 3/16" diameter holes in 1/4" centers



PCD

PCD - Perforated Ceiling Diffusers

Series 7600 - Performance / Flush Face - Round Neck

Models 7600 (-1, -6), 7600 AF (-1, -6), 7600 AL (-6)

Listed Size	Neck Size	fpm Neck Velocity Pv	300 0.006	400 0.010	500 0.016	600 0.022	700 0.031	800 0.040	1000 0.062	1200 0.090	
24 x 24	6	CFM Pt	60 0.015	80 0.026	100 0.041	120 0.060	135 0.075	155 0.099	195 0.157	235 0.229	
		Throw	4*-Way	1-1-2	1-2-3	1-2-4	2-2-5	2-3-6	2-3-6	3-4-7	3-5-7
			4-Way	1-2-5	2-3-6	3-4-6	3-5-7	3-5-7	4-5-8	5-6-9	6-7-10
			3-Way	2-3-5	2-3-6	3-4-7	3-5-7	4-6-8	4-6-9	5-7-10	6-7-10
			2-Way	2-3-5	2-4-7	3-5-8	4-5-8	4-6-9	5-7-10	6-8-11	7-8-12
	1-Way NC		4-6-9 -	6-8-11 -	7-8-12 <15	8-9-13 19	8-10-14 23	9-10-15 26	10-12-17 30	11-13-18 35	
	8	CFM Pt	105 0.016	140 0.028	175 0.044	210 0.063	245 0.086	280 0.112	350 0.175	420 0.252	
		Throw	4*-Way	1-2-3	1-2-4	2-3-5	2-3-7	3-4-7	3-4-8	4-5-9	4-7-10
			4-Way	2-3-6	3-4-7	3-5-8	4-6-9	5-7-10	5-7-10	7-8-12	7-9-13
			3-Way	2-3-7	3-4-8	4-5-9	4-7-10	5-8-11	6-8-11	7-9-13	8-10-14
			2-Way	2-4-7	3-5-9	4-6-10	5-7-11	6-8-12	6-9-13	8-10-14	9-11-16
	1-Way NC		5-8-12 -	7-10-14 -	9-11-16 <15	10-12-17 19	11-13-19 24	11-14-20 27	13-16-22 31	14-17-24 37	
	10	CFM Pt	165 0.017	220 0.030	275 0.047	325 0.066	380 0.090	435 0.118	545 0.186	655 0.268	
		Throw	4*-Way	1-2-4	2-3-5	2-3-7	3-4-8	3-5-9	4-5-10	5-7-11	5-8-12
			4-Way	2-4-8	3-5-9	4-6-10	5-7-11	6-9-12	7-9-13	8-10-15	9-11-16
			3-Way	3-4-8	4-6-10	5-7-11	5-8-12	6-9-13	7-10-14	9-11-16	10-12-18
			2-Way	3-4-9	4-6-11	5-7-13	6-9-14	7-10-15	8-11-16	10-13-18	11-14-20
	1-Way NC		7-10-15 -	9-12-18 -	11-14-20 <15	12-15-21 20	13-16-23 25	14-18-25 29	16-20-28 34	18-21-30 39	
	12	CFM Pt	235 0.018	315 0.033	395 0.052	470 0.074	550 0.101	630 0.133	785 0.206	940 0.295	
		Throw	4*-Way	2-2-5	2-3-7	3-4-8	3-5-10	4-6-11	4-7-12	5-8-13	7-10-15
			4-Way	3-5-9	4-6-11	5-8-12	6-9-13	7-10-15	8-11-16	10-12-17	11-13-19
			3-Way	3-5-10	4-7-12	5-8-14	7-10-15	8-11-16	9-12-17	11-14-19	12-15-21
			2-Way	4-5-11	5-7-14	6-9-15	7-11-17	8-12-18	9-14-19	12-15-21	14-17-23
	1-Way NC		8-12-18 -	11-15-21 <15	14-17-24 15	15-18-26 22	16-20-28 27	17-21-30 31	19-24-33 36	21-26-36 42	
14	CFM Pt	320 0.017	430 0.031	535 0.048	640 0.068	750 0.094	855 0.122	1070 0.191	1285 0.276		
	Throw	4*-Way	2-3-6	3-4-8	3-5-10	4-6-11	4-7-13	5-8-14	6-10-16	8-11-17	
		4-Way	3-5-11	5-7-13	6-9-14	7-11-16	8-12-17	9-13-18	12-14-20	13-16-22	
		3-Way	4-6-11	5-8-14	6-10-16	8-11-17	9-13-19	10-14-20	13-16-22	14-17-25	
		2-Way	4-6-12	6-8-16	7-10-18	8-12-19	10-15-21	11-16-22	14-18-25	16-19-27	
1-Way NC		9-14-21 -	13-17-25 <15	16-19-27 16	17-21-30 24	19-23-33 29	20-25-35 33	22-27-39 38	25-30-43 44		
16	CFM Pt	420 0.019	560 0.033	700 0.052	840 0.075	975 0.101	1115 0.132	1395 0.206	1675 0.297		
	Throw	4*-Way	2-3-7	3-4-9	4-5-11	4-7-13	5-8-15	6-9-16	7-11-18	9-13-20	
		4-Way	4-6-12	5-8-15	7-10-16	8-12-18	9-14-19	11-15-21	13-16-23	15-18-25	
		3-Way	4-7-13	6-9-16	7-11-18	9-13-20	10-15-21	12-16-23	15-18-26	16-20-28	
		2-Way	5-7-14	6-9-18	8-12-20	9-14-22	11-17-24	13-18-26	16-20-29	18-22-31	
1-Way NC		10-16-24 -	15-20-28 <15	18-22-31 17	20-24-34 25	21-26-37 30	23-28-40 34	26-31-44 39	28-34-49 46		

See Page PCD-75 for Series 7600 Performance Notes



PCD - Perforated Ceiling Diffusers

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Series 7600 - Performance / Drop Face - Round Neck

Models 7600 (-8, -9), 7600-1 DF, 7600 AF (-8, -9), 7600 AL (-8)

Listed Size	Neck Size	fpm Neck Velocity Pv	300 0.006	400 0.010	500 0.016	600 0.022	700 0.031	800 0.040	1000 0.062	1200 0.090	
24 x 24	6	CFM Pt	60 0.015	80 0.026	100 0.041	120 0.060	135 0.075	155 0.099	195 0.157	235 0.229	
		Throw	4*-Way	1-1-3	1-2-3	1-2-4	2-3-4	2-3-4	2-3-5	3-4-5	3-4-6
			4-Way	1-2-3	1-2-5	2-3-5	2-3-6	3-4-6	3-4-6	4-5-7	4-6-8
			3-Way	1-2-4	2-3-5	2-4-5	3-4-6	3-4-6	4-4-6	4-5-7	5-6-8
			2-Way	3-4-7	4-5-8	5-6-8	5-7-9	6-7-10	6-7-11	7-8-12	8-9-13
	1-Way NC		4-5-7 -	5-6-9 -	6-7-10 -	6-7-11 <15	6-8-11 17	7-8-12 20	8-9-13 26	9-10-15 32	
	8	CFM Pt	105 0.016	140 0.028	175 0.044	210 0.063	245 0.086	280 0.112	350 0.175	420 0.252	
		Throw	4*-Way	1-2-3	2-2-4	2-3-5	2-3-5	3-4-6	3-4-6	4-5-7	4-5-8
			4-Way	1-2-4	2-3-6	2-4-7	3-4-7	3-5-8	4-6-9	5-7-10	6-7-10
			3-Way	1-3-5	2-4-6	3-5-7	4-5-7	4-6-8	5-6-9	5-7-10	6-7-10
			2-Way	4-6-9	5-7-10	6-8-11	7-9-12	8-9-13	8-10-14	9-11-16	10-12-17
	1-Way NC		5-7-10 -	6-8-11 -	7-9-13 <15	8-10-14 15	9-11-15 19	9-11-16 22	10-13-18 28	11-14-20 34	
	10	CFM Pt	165 0.017	220 0.030	275 0.047	325 0.066	380 0.090	435 0.118	545 0.186	655 0.268	
		Throw	4*-Way	1-2-4	2-3-5	2-4-6	3-4-7	3-5-7	4-5-8	5-6-9	5-7-9
			4-Way	1-3-6	2-4-7	3-5-8	4-6-9	4-6-10	5-7-11	6-8-12	7-9-13
			3-Way	2-4-7	3-5-8	4-6-8	5-6-9	5-7-10	6-8-11	7-8-12	8-9-13
			2-Way	5-7-11	6-9-13	8-10-14	9-11-15	10-12-17	10-13-18	11-14-20	13-15-22
	1-Way NC		6-9-12 -	8-10-14 -	9-11-16 <15	10-12-17 16	11-13-19 21	12-14-20 24	13-16-22 31	14-17-25 38	
	12	CFM Pt	235 0.018	315 0.033	395 0.052	470 0.074	550 0.101	630 0.133	785 0.206	940 0.295	
		Throw	4*-Way	1-3-5	2-3-7	3-4-7	3-5-8	4-6-9	5-7-9	6-7-10	7-8-11
			4-Way	1-3-7	3-4-9	4-6-10	4-7-11	5-8-12	6-9-13	7-10-14	9-11-16
			3-Way	2-4-8	4-6-9	5-7-10	6-8-11	7-8-12	7-9-13	8-10-14	9-11-16
			2-Way	6-8-13	8-11-15	9-12-17	11-13-18	11-14-20	12-15-21	14-17-24	15-18-26
	1-Way NC		7-10-15 -	9-12-17 -	11-14-19 <15	12-15-21 17	13-16-23 22	14-17-24 25	16-19-27 32	17-21-29 40	
14	CFM Pt	320 0.017	430 0.031	535 0.048	640 0.068	750 0.094	855 0.122	1070 0.191	1285 0.276		
	Throw	4*-Way	2-3-6	3-4-8	3-5-9	4-6-9	5-7-10	5-8-11	7-9-12	8-9-13	
		4-Way	2-4-8	3-5-10	4-6-12	5-8-13	6-9-14	7-10-15	9-12-17	10-13-18	
		3-Way	2-5-9	4-7-11	5-8-12	7-9-13	8-10-14	9-11-15	10-12-17	11-13-18	
		2-Way	7-10-15	9-12-18	11-14-20	12-15-21	13-16-23	14-18-25	16-20-28	18-22-30	
1-Way NC		8-12-17 -	11-14-20 -	13-16-22 <15	14-17-24 18	15-19-26 23	16-20-28 27	18-22-31 34	20-24-34 43		
16	CFM Pt	420 0.019	560 0.033	700 0.052	840 0.075	975 0.101	1115 0.132	1395 0.206	1675 0.297		
	Throw	4*-Way	2-3-7	3-5-9	4-6-10	5-7-11	5-8-12	6-9-12	8-10-14	9-11-15	
		4-Way	2-4-9	3-6-12	5-7-13	6-9-15	7-10-16	8-12-17	10-13-19	12-15-21	
		3-Way	3-6-10	5-7-12	6-9-13	7-10-15	9-11-16	10-12-17	11-13-19	12-15-21	
		2-Way	8-11-17	10-14-20	13-16-22	14-17-25	15-19-26	16-20-28	18-22-32	20-25-35	
1-Way NC		9-14-20 -	12-16-23 -	15-18-25 <15	16-20-28 20	17-21-30 24	19-23-32 29	21-25-36 36	23-28-39 45		

See Page PCD-75 for Series 7600 Performance Notes

Perforated Ceiling Diffusers



PCD

PCD - Perforated Ceiling Diffusers

Series 7600R Round Neck

All models for Series 7600R

Nominal Neck Diameter	fpm Inlet Velocity Ps	300 -.01	400 -.02	500 -.03	600 -.04	700 -.05	800 -.06	900 -.08	1000 -.10
6	CFM	60	80	100	115	135	155	175	195
8	CFM	105	140	175	210	245	280	315	350
10	CFM	165	220	270	325	380	435	490	545
12	CFM	235	315	390	470	550	630	705	785
14	CFM	320	425	535	640	750	855	9300	1070
16	CFM	420	560	700	835	975	1115	1255	1395
18	CFM	520	700	870	1045	1220	1395	1570	1740

Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic feet per minute (air)
- fpm - Velocity of air stream in feet per minute
- Pv - Velocity pressure (inches of water column)
- Pt - Total pressure (inches of water column)
- Ps - Static pressure = Pt - Pv (inches of water column)
- Throw* - Non-isothermal horizontal throw (supply air temperature 15°F colder than average room air temperature) values are for 150 fpm - 100 fpm - 50 fpm velocities
- Throw - Isothermal horizontal throw (supply air temperature the same as average room air temperature) values are for 150 fpm - 100 fpm - 50 fpm velocities
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak - Area Factors



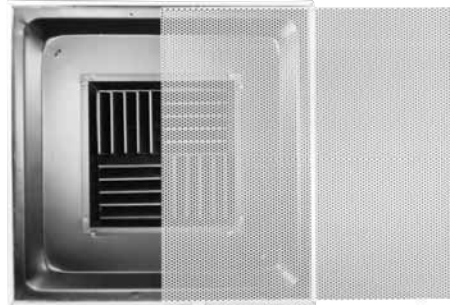
PCD - Perforated Ceiling Diffusers

5/2007

➔ Supply Diffusers ➔ Perforated Face Modular Core ➔ Square Neck ➔ Series 7950

Product Details

- ✪ The 7950 is a perforated modular core supply diffuser with a steel backpan. Modular cores can be field adjusted for 1, 2-way opposite, 2-way corner, 3, or 4 way air discharge patterns
- ✪ The perforated face is secured with spring clips making removal and access to the modular core pattern controllers easy
- ✪ Border 6, T-bar Lay-in can be used in surface mounting applications by adding optional T-bar Plaster Frame (TBPF)
- ✪ Matching returns available: 7950R
- ✪ The 7950 is an excellent choice for VAV applications



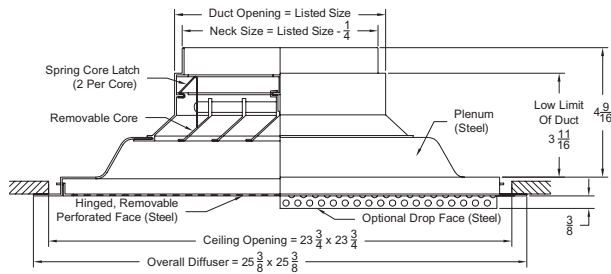
Model 7950-6 Shown

Standard Finish: 22 BBP White Perforated Face - Black Backpan and Core

Dimensions are in inches

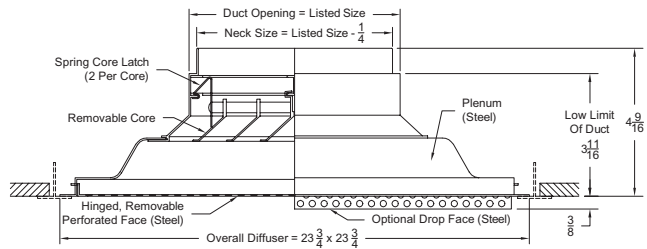
Supply - Square Neck - Neck Mounted - Adjustable - Surface Mount

Model 7950-1 - Steel backpan & face
 Model 7950-1 DF - Steel backpan & face - drop face
 Model 7950-1 AF - Steel backpan & aluminum face



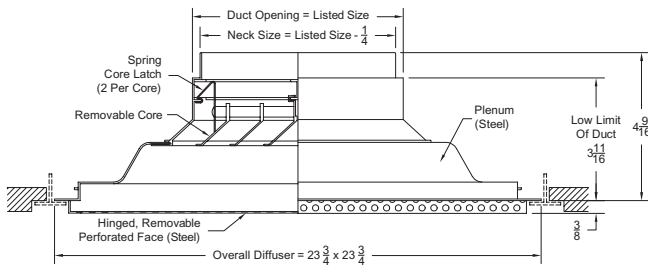
Supply - Square Neck - Neck Mounted - Adjustable - T-bar Lay-in

Model 7950-6 - Steel backpan & face
 Model 7950-6 AF - Steel backpan & aluminum face - drop face



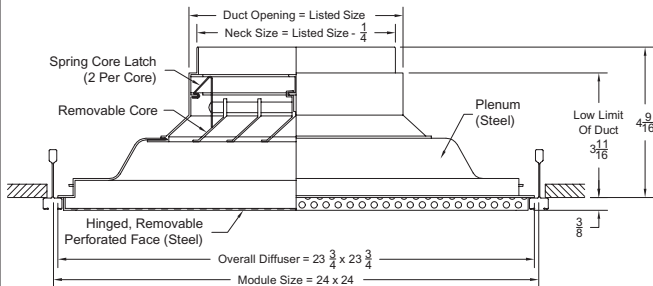
Supply - Square Neck - Neck Mounted - Adjustable - Tegular T-bar

Model 7950-8 - Steel backpan & face
 Model 7950-8 AF - Steel backpan & aluminum face



Supply - Square Neck - Neck Mounted - Adjustable - Donn Finline

Model 7950-9 - Steel backpan & face
 Model 7950-9 AF - Steel backpan & aluminum face

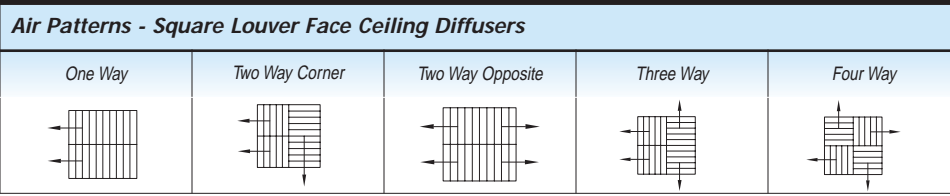


Perforated Ceiling Diffusers



PCD

PCD - Perforated Ceiling Diffusers



1. Available Finishes	2. Available Accessories	3. Construction Details
Standard Finish: 01 White (for 7950-1) 22 (BBP) White perforated face with black backpan and cores Optional Finish 03 Black 28 Custom color	OBD - Opposed blade damper - Steel 221 OBDA - Opposed blade damper - Aluminum 221 L9 - Equalizing grid 221 TR DEEP - Square to round transition - deep 221	<ul style="list-style-type: none"> All modules have 4 cores for possible 1, 2, 3 or 4 way air patterns Series 7950 have 3/16" diameter holes on 1/4" staggered centers

All models for Series 7950 (-1, -6, -8, -9), 7950-1 DF, 7950 AF (-1, -6, -8, -9)

Listed Size (ft.) & Neck Area Sq. Ft.	Neck Velocity fpm Outlet Velocity fpm Side Designation	200 305		300 460		400 615		500 770		600 925	
		A	B	A	B	A	B	A	B	A	B
6" x 6"	CFM	50	75	100	125	150					
	NC	-	-	-	20	24					
	Pt. Total Pressure (in. w.c)	0.006	0.016	0.032	0.049	0.065					
Throw	4-Way	1-3	1-4	2-6	3-9	4-12					
	3-Way	1-3 2-4	1-4 2-6	2-6 3-8	3-9 4-13	4-12 6-17					
	2-Way	2-4	2-6	3-8	4-13	6-17					
	1-Way	2-6	2-8	4-12	6-18	12-24					
8" x 8"	CFM	90	135	175	225	265					
	NC	-	-	18	24	30					
	Pt. Total Pressure (in. w.c)	0.012	0.025	0.042	0.069	0.080					
Throw	4-Way	1-3	2-6	3-9	4-12	5-15					
	3-Way	1-3 2-4	2-6 3-8	3-9 4-13	4-12 6-17	5-15 7-21					
	2-Way	2-4	3-8	4-13	6-17	7-21					
	1-Way	2-6	4-12	6-18	8-24	10-30					
10" x 10"	CFM	140	205	275	345	415					
	NC	-	-	22	25	31					
	Pt. Total Pressure (in. w.c)	0.012	0.027	0.019	0.076	0.110					
Throw	4-Way	1-3	2-7	3-9	5-15	7-20					
	3-Way	1-3 2-4	2-7 3-10	3-9 4-13	5-15 7-21	7-20 10-28					
	2-Way	2-4	3-10	4-13	7-21	10-28					
	1-Way	2-6	4-14	6-18	10-30	14-40					
12" x 12"	CFM	200	300	400	500	600					
	NC	-	-	23	26	32					
	Pt. Total Pressure (in. w.c)	0.014	0.030	0.054	0.085	0.122					
Throw	4-Way	1-4	2-7	4-11	6-17	8-23					
	3-Way	1-4 2-6	2-7 3-10	4-11 6-16	6-17 8-24	8-23 11-32					
	2-Way	2-6	3-10	6-16	8-24	11-32					
	1-Way	2-8	4-14	8-22	12-34	16-46					
14" x 14"	CFM	275	410	545	680	815					
	NC	-	-	-	-	33					
	Pt. Total Pressure (in. w.c)	0.014	0.032	0.067	0.009	0.129					
Throw	4-Way	1-4	3-9	5-15	8-24	11-32					
	3-Way	1-4 2-6	3-9 4-13	5-15 7-21	8-23 11-32	10-29 14-41					
	2-Way	2-6	4-13	7-21	11-32	14-41					
	1-Way	2-8	6-18	10-30	16-46	20-58					
16" x 16"	CFM	355	530	710	890	1065					
	NC	-	-	25	33	38					
	Pt. Total Pressure (in. w.c)	0.016	0.034	0.061	0.095	0.137					
Throw	4-Way	1-5	3-9	5-15	8-21	11-32					
	3-Way	1-5 2-7	3-9 4-13	5-15 7-21	8-24 11-34	11-32 16-45					
	2-Way	2-7	4-13	7-21	11-34	16-45					
	1-Way	2-10	6-18	10-30	16-48	22-64					
18" x 18"	CFM	450	675	900	1125	1350					
	NC	-	-	26	35	39					
	Pt. Total Pressure (in. w.c)	0.016	0.036	0.065	0.102	0.149					
Throw	4-Way	1-6	3-10	5-16	9-27	12-35					
	3-Way	1-6 2-8	3-10 4-14	5-16 7-23	9-27 13-38	12-35 17-49					
	2-Way	2-8	1-14	7-23	13-38	17-49					
	1-Way	2-11	6-20	10-32	18-54	24-70					
20" x 20"	CFM	555	835	1110	1385	1665					
	NC	-	-	27	37	40					
	Pt. Total Pressure (in. w.c)	0.016	0.038	0.068	0.106	0.158					
Throw	4-Way	1-5	3-9	5-15	8-24	11-32					
	3-Way	1-5 2-7	3-9 4-13	5-15 7-21	8-24 11-34	11-32 16-45					
	2-Way	2-7	4-13	7-21	11-34	16-45					
	1-Way	2-10	6-18	10-30	16-48	22-64					

Series 7950 Performance Notes:

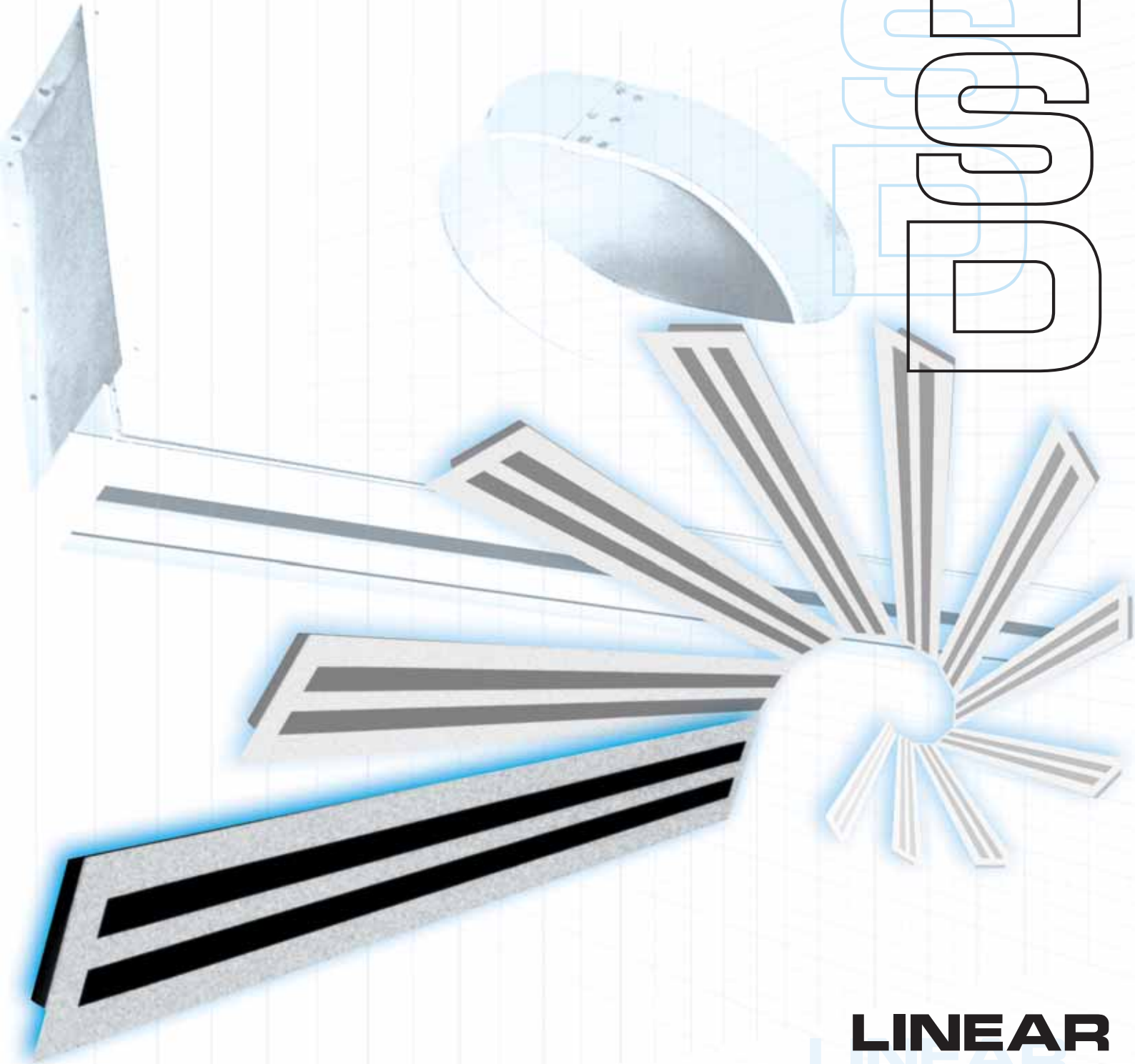
All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic feet per minute (air)
- fpm - Velocity of air stream in feet per minute
- Pt - Total pressure (inches of water column)
- Throw - Non-isothermal horizontal throw (supply air temperature 20°F colder than average room air temperature) values are for 150 fpm - 50 fpm velocities
- NC - Noise criterion, sound pressure level.
NC ratings are based on sound power level (Lw)
RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands



LINEAR
SLOT
DIFFUSERS



**LINEAR
SLOT DIFFUSERS**



Model 6600

Pg. 82

Supply/Return Linear Slot Diffuser w/ Integral Volume/Directional Pattern Controllers - Aluminum Series 6600/6600R

- ✪ Available in 1 to 8 slots with 1/2", 3/4", or 1" slot width
- ✪ Excellent choice for continuous linear slot applications. Units are available in a single section up to 8'. This feature gives a clean appearance and makes installation easier with fewer joints to line up
- ✪ Pattern controllers on supply units are aluminum and are adjustable from the face of the diffuser and can be set to adjust volume or throw direction from vertical to horizontal
- ✪ Available for T-bar Lay-in, Surface mount, Narrow Tee, Dropped Face, Concealed Spline, or Concealed Spline/Plaster Frame
- ✪ Optional BP factory supplied boot plenums are available
- ✪ The series 6600 is an excellent selection for variable volume systems supplying a tight horizontal pattern from maximum to minimum throws
- ✪ The series 6600R is designed for return applications. The unit is supplied without pattern controllers to reduce pressure and noise
- ✪ Series 6600 is Patent Pending

	Supply				
	T-bar Lay-in	Surface Mount	Concealed Spline	Drop Face	Narrow Tee
Screw Mounted		6600-11-1 1 1/8" Border			
Concealed Mounting Hardware	6600-12-6 1 1/8" Border	6600-12-1 1 1/8" Border	6600-42-7 25/32" Border		
No Mounting Hardware	6600-10-6 1 1/8" Border		6600-40-7 25/32" Border	6600-40-8 25/32" Border	6600-40-9 25/32" Border
	6600-20-6 3/4" Border				
	6600-30-6 1/2" Border				

Concealed Spline/Plaster Mounting Frame	Concealed Wall Mounted Spline/Plaster Mounting Frame
6600-22-73 3/4" Border	6600-22-74 3/4" Border

	Return				
	T-bar Lay-in	Surface Mount	Concealed Spline	Drop Face	Narrow Tee
Screw Mounted		6600R-11-1 1 1/8" Border			
Concealed Mounting Hardware	6600R-12-6 1 1/8" Border	6600R-12-1 1 1/8" Border	6600R-42-7 25/32" Border		
No Mounting Hardware	6600R-10-6 1 1/8" Border		6600R-40-7 25/32" Border	6600R-40-8 25/32" Border	6600R-40-9 25/32" Border
	6600R-20-6 3/4" Border				
	6600R-30-6 1/2" Border				

Concealed Spline/Plaster Mounting Frame	Concealed Wall Mounted Spline/Plaster Mounting Frame
6600R-22-73 3/4" Border	6600R-22-74 3/4" Border

Supply/Return Linear Slot Diffuser for Spiral Pipe - Aluminum - Series 6600SP/6600SPR

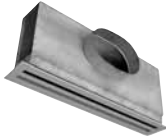


Model 6610SP

Pg. 99

- ✪ The series 6600SP is designed to integrate into exposed spiral duct systems
- ✪ Series 6600SP pattern controllers are fully adjustable and can be set from horizontal to vertical discharge
- ✪ The series 6600SP operates effectively from minimum to maximum flow making this diffuser an excellent selection for variable volume systems
- ✪ Series 6600SPR is designed for return applications. The unit is supplied without pattern controllers to reduce pressure and noise

Supply	Return
6610SP-11-1 Screw Mounted - 1 1/8" Border	6610SPR-11-1 Screw Mounted - 1 1/8" Border
6610SP-12-1 Concealed Mounting Hardware - 1 1/8" Border	6610SPR-12-1 Concealed Mounting Hardware - 1 1/8" Border



Model BP

Pg. 100

Boot Plenums - Insulated/Non-Insulated for 6600 - Series BP

- ★ The series BP (non-insulated) and BPI (insulated) boot plenums are designed to connect the Series 6600 linear slot diffusers to the ducted supply or return system
- ★ Units provide an even distribution of air into the series 6600 diffuser to maximize induction and occupant comfort
- ★ The series BPI boot plenum is fully insulated — including the end caps
- ★ Units can be used for both ducted and plenum returns
- ★ Factory tested and manufactured BP/BPI plenums are built to fit securely into the series 6600 of diffusers reducing installation cost and minimizing leakage
- ★ Available with an optional quadrant locking damper
- ★ Series BP & BPI are shipped separate from series 6600 linear slot diffusers and require field attachment

	Non Insulated				
	T-bar Lay-in	Surface Mount	Concealed Spline	Drop Face	Narrow Tee
Screw Mounted		BP-11-1 1 1/8" Border			
Concealed Mounting Hardware	BP-12-6 1 1/8" Border	BP-12-1 1 1/8" Border	BP-42-7 25/32" Border		
No Mounting Hardware	BP-10-6 1 1/8" Border		BP-40-7 25/32" Border	BP-40-8 25/32" Border	BP-40-9 25/32" Border
	BP-20-6 3/4" Border				
	BP-30-6 1/2" Border				

Concealed Spline/Plaster Mounting Frame	Concealed Wall Mounted Spline/Plaster Mounting Frame
BP-22-73 3/4" Border	BP-22-74 3/4" Border

	Insulated				
	T-bar Lay-in	Surface Mount	Concealed Spline	Drop Face	Narrow Tee
Screw Mounted		BPI-11-1 1 1/8" Border			
Concealed Mounting Hardware	BPI-12-6 1 1/8" Border	BPI-12-1 1 1/8" Border	BPI-42-7 25/32" Border		
No Mounting Hardware	BPI-10-6 1 1/8" Border		BPI-40-7 25/32" Border	BPI-40-8 25/32" Border	BPI-40-9 25/32" Border
	BPI-20-6 3/4" Border				
	BPI-30-6 1/2" Border				

Concealed Spline/Plaster Mounting Frame	Concealed Wall Mounted Spline/Plaster Mounting Frame
BP-22-73 3/4" Border	BPI-22-74 3/4" Border



Model L-5000

Pg. 109

Linear Louver Diffusers - Series L-5000

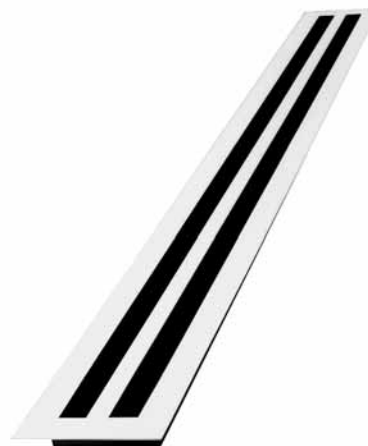
- ★ The series L-5000 is a fixed pattern, high induction architectural linear slot diffuser. This diffuser is constructed from heavy aluminum extrusions and is available with either 1-way or 2-way opposite air discharge patterns
- ★ The series L-5000 generates a tight, high induction discharge of air maximizing room air mixing and occupant comfort. With the optional IV induction vanes, mixing and performance is further increased reducing temperature gradients and increasing room air circulation
- ★ Also available is an optional plenum that allows the 2-way opposite unit to become a supply/return diffuser. The optional L-5000 BP-SR has a dividing section built into the plenum making an effective choice for perimeter supply/return applications
- ★ T-bar Lay-in units available in 18", 24", 30", 36" or 42" and in surface mounting applications up to 48"
- ★ 1-way units available in 3", 6", 9", 12" and 15" widths
- ★ 2-way opposite units available in 6" and 12" widths
- ★ The louvered face is secured with spring clips making removal easy for installation
- ★ The series L-5000 is an excellent choice for VAV applications

Surface Mount	L-5000-1
T-bar Lay-in	L-5000-6

➔ Linear Slot ➔ Series 6600 ➔ Aluminum

Product Details

- ✦ Available in 1 to 8 slots with 1/2", 3/4", or 1" slot width
- ✦ Excellent choice for continuous linear slot applications. Units are available in a single section up to 8'. This feature gives a clean appearance and makes installation easier with fewer joints to line up
- ✦ Pattern controllers on supply units are aluminum and are adjustable from the face of the diffuser and can be set to adjust volume or throw direction from vertical to horizontal
- ✦ Available for T-bar Lay-in, surface mount, narrow tee, dropped face, concealed spline, or concealed spline/plaster frame
- ✦ Optional BP factory supplied boot plenums are available
- ✦ The 6600 series is an excellent selection for variable volume systems supplying a tight horizontal pattern from maximum to minimum throws
- ✦ The 6600R is designed for return applications. The unit is supplied without pattern controllers to reduce pressure and noise



Model 6600 Shown

Finish: 20 White Border
with Black Pattern Controller

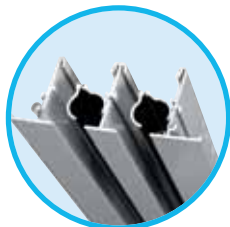
About The 6600 (Patent Pending)

The 6600 is an excellent choice for continuous linear applications such as perimeter office space where the diffuser can direct air along the perimeter wall or glass and towards the occupied area to maximize comfort. Other applications for the 6600 linear slot diffuser include large public areas that demand superior comfort such as airport terminals, convention centers, or shopping malls. The flexibility of the 6600 allows the diffuser to be installed in a variety of applications to maximize occupant comfort.

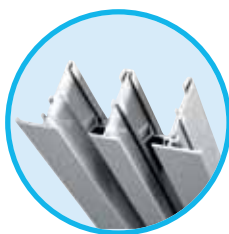
The Series 6600 pattern controllers can be adjusted from the face to obtain vertical to horizontal throw. Pattern can be field set for "left" or "right" horizontal throw direction. Multiple slot units can be field set for one or two-way opposite horizontal throw.

In the horizontal setting, the diffuser produces a tight air pattern from maximum to minimum flow, making the 6600 an excellent choice for variable volume systems.

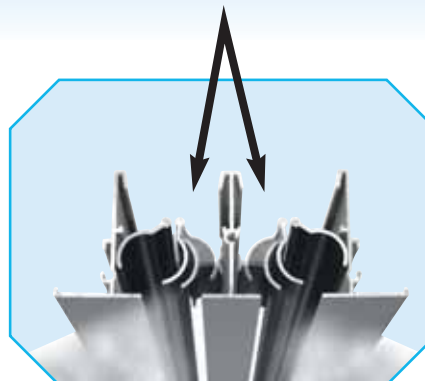
Model 6600 - Supply



Model 6600 - Return



6600 Pattern Controllers can be field-adjusted to vary discharge volume while maintaining a tight horizontal pattern

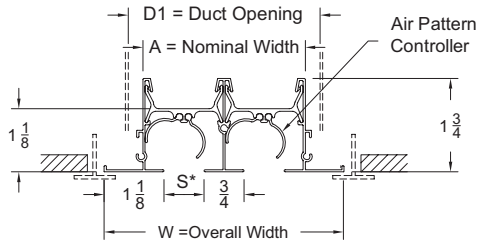


LSD - Linear Slot Diffusers

Dimensions are in inches

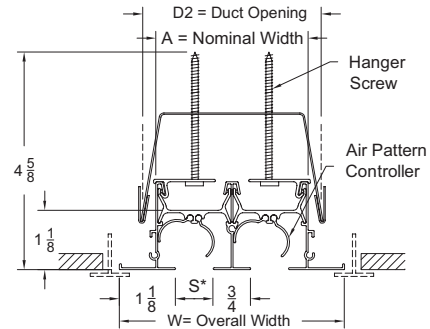
Series 6600-10-6
T-bar Lay-in \Rightarrow 1 1/8" Border

Supply - 1 1/8" Border - T-bar Lay-in
Model 6650-10-6 - 1/2" Slot Width
Model 6675-10-6 - 3/4" Slot Width
Model 6610-10-6 - 1" Slot Width

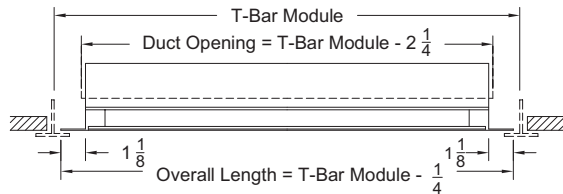
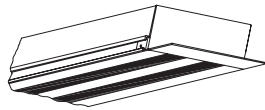


Series 6600-12-6
T-bar Lay-in \Rightarrow 1 1/8" Border \Rightarrow Concealed Mount

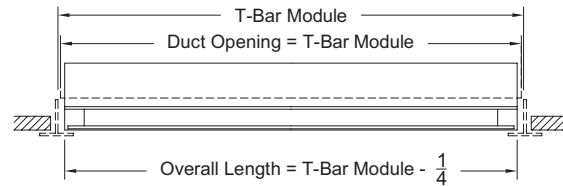
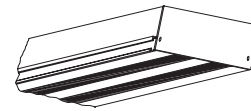
Supply - 1 1/8" Border - T-bar Lay-in
Model 6650-12-6 - 1/2" Slot Width
Model 6675-12-6 - 3/4" Slot Width
Model 6610-12-6 - 1" Slot Width



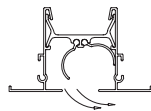
End Border
Models 6600-10-6 & 6600-12-6



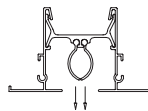
End Cap
Models 6600-10-6 & 6600-12-6



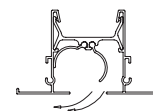
Air Deflection Patterns



Right Horizontal



Vertical Projection



Left Horizontal

Model 6650 (6650-10-6 & 6650-12-6)								
S = 1/2" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 1/4	2 1/2	3 3/4	5	6 1/4	7 1/2	8 3/4	10
D1	1 5/8	2 7/8	4 1/8	5 3/8	6 5/8	7 7/8	9 1/8	10 3/8
D2	1 7/8	3 1/8	4 3/8	5 5/8	6 7/8	8 1/8	9 3/8	10 5/8
W	2 3/4	4	5 1/4	6 1/2	7 3/4	9	10 1/4	11 1/2

Model 6610 (6610-10-6 & 6610-12-6)								
S = 1" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 3/4	3 1/2	5 1/4	7	8 3/4	10 1/2	12 1/4	14
D1	2 1/8	3 7/8	5 5/8	7 3/8	9 1/8	10 7/8	12 5/8	14 3/8
D2	2 3/8	4 1/8	5 7/8	7 5/8	9 3/8	11 1/8	12 7/8	14 5/8
W	3 1/4	5	6 3/4	8 1/2	10 1/4	12	13 3/4	15 1/2

Model 6675 (6675-10-6 & 6675-12-6)								
S = 3/4" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 1/2	3	4 1/2	6	7 1/2	9	10 1/2	12
D1	1 7/8	3 3/8	4 7/8	6 3/8	7 7/8	9 3/8	10 7/8	12 3/8
D2	2 1/8	3 5/8	5 1/8	6 5/8	8 1/8	9 5/8	11 1/8	12 5/8
W	3	4 1/2	6	7 1/2	9	10 1/2	12	13 1/2

6600R return has same dimensions as 6600 supply but provided without pattern controllers to reduce sound and pressure drop

For more product information visit us at www.metalaire.com



LSD - Linear Slot Diffusers

5/2007

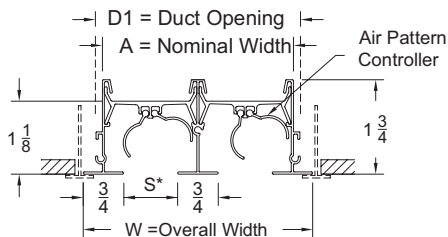
Linear Slot Diffusers

LSD

Series 6600-20-6 T-bar Lay-in → 3/4" Border

Supply - 3/4" Border - T-bar Lay-in

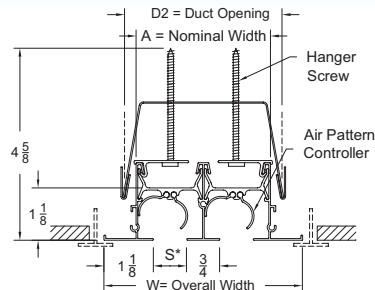
Model 6650-20-6 - 1/2" Slot Width
Model 6675-20-6 - 3/4" Slot Width
Model 6610-20-6 - 1" Slot Width



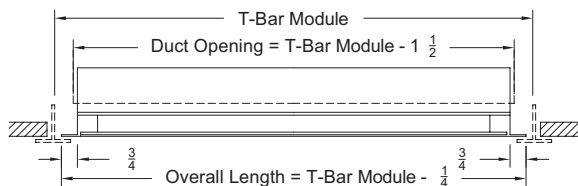
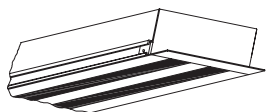
Series 6600-22-6 T-bar Lay-in → 3/4" Border

Supply - 3/4" Border - T-bar Lay-in

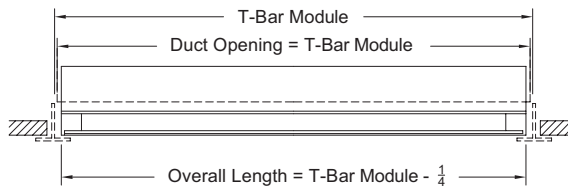
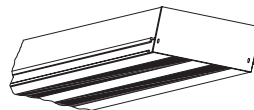
Model 6650-22-6 - 1/2" Slot Width
Model 6675-22-6 - 3/4" Slot Width
Model 6610-22-6 - 1" Slot Width



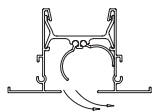
End Border Model 6600-20-6



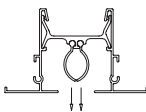
End Cap Model 6600-20-6



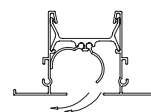
Air Deflection Patterns



Right Horizontal



Vertical Projection



Left Horizontal

Model 6650								
S = 1/2" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 1/4	2 1/2	3 3/4	5	6 5/16	7 1/2	8 3/4	10
D1	1 5/8	2 7/8	4 1/8	5 3/8	6 5/8	7 7/8	9 1/8	10 3/8
W	2	3 1/4	4 1/2	5 3/4	7	8 1/4	9 1/2	10 3/4

Model 6610								
S = 1" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 3/4	3 1/2	5 1/4	7	8 3/4	10 1/2	12 1/4	14
D1	2 1/8	3 7/8	5 5/8	7 3/8	9 1/8	10 7/8	12 5/8	14 3/8
W	2 1/2	4 1/4	6	7 3/4	9 1/2	11 1/4	13	14 3/4

Model 6675								
S = 3/4" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 1/2	3	4 1/2	6	7 1/2	9	10 1/2	12
D1	1 7/8	3 3/8	4 7/8	6 3/8	7 7/8	9 3/8	10 7/8	12 3/8
W	2 1/4	3 3/4	5 1/4	6 3/4	8 1/4	9 3/4	11 1/4	12 3/4

6600R return has same dimensions as 6600 supply but provided without pattern controllers to reduce sound and pressure drop

LSD - Linear Slot Diffusers

Linear Slot Diffusers

LSD



Series 6600-30-6
T-bar Lay-in ➔ 1/2" Border

Supply - 1/2" Border - T-bar Lay-in
Model 6650-30-6 - 1/2" Slot Width
Model 6675-30-6 - 3/4" Slot Width
Model 6610-30-6 - 1" Slot Width

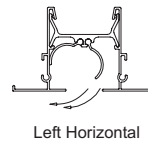
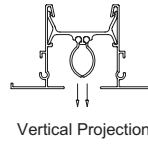
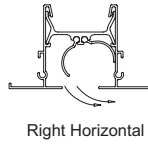
Series 6600-32-6
T-bar Lay-in ➔ 1/2" Border

Supply - 1/2" Border - T-bar Lay-in
Model 6650-32-6 - 1/2" Slot Width
Model 6675-32-6 - 3/4" Slot Width
Model 6610-32-6 - 1" Slot Width

End Border
Model 6600-30-6

End Cap
Model 6600-30-6

Air Deflection Patterns



Model 6650								
S = 1/2" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 1/4	2 1/2	3 3/4	5	6 5/16	7 1/2	8 3/4	10
D1	1 5/8	2 7/8	4 1/8	5 3/8	6 5/8	7 7/8	9 1/8	10 3/8
W	1 1/2	2 3/4	4	5 1/4	6 1/2	7 3/4	9	10 1/4

Model 6610								
S = 1" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 3/4	3 1/2	5 1/4	7	8 3/4	10 1/2	12 1/4	14
D1	2 1/8	3 7/8	5 5/8	7 3/8	9 1/8	10 7/8	12 5/8	14 3/8
W	2	3 3/4	5 1/2	7 1/4	9	10 3/4	12 1/2	14 1/4

Model 6675								
S = 3/4" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 1/2	3	4 1/2	6	7 1/2	9	10 1/2	12
D1	1 7/8	3 3/8	4 7/8	6 3/8	7 7/8	9 3/8	10 7/8	12 3/8
W	1 3/4	3 1/4	4 3/4	6 1/4	7 3/4	9 1/4	10 3/4	12 1/4

6600R return has same dimensions as 6600 supply but provided without pattern controllers to reduce sound and pressure drop



For more product information visit us at www.metalair.com



LSD - Linear Slot Diffusers

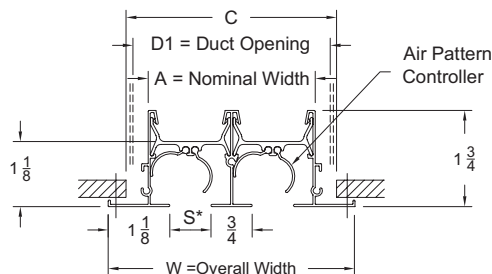
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Linear Slot Diffusers

LSD

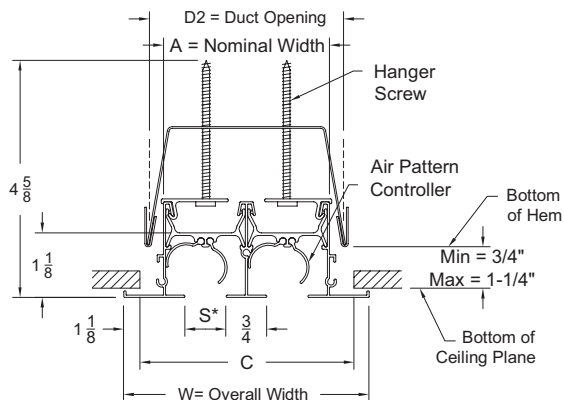
Series 6600-11-1 1 1/8" Border → Face Screw Mounting

Supply - 1 1/8" Border
Model 6650-11-1 - 1/2" Slot Width
Model 6675-11-1 - 3/4" Slot Width
Model 6610-11-1 - 1" Slot Width



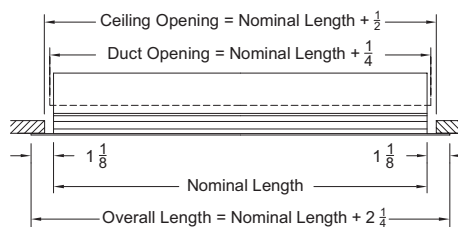
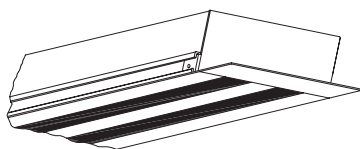
Series 6600-12-1 1 1/8" Border → Concealed Surface Mount

Supply - 1 1/8" Border
Model 6650-12-1 - 1/2" Slot Width
Model 6675-12-1 - 3/4" Slot Width
Model 6610-12-1 - 1" Slot Width

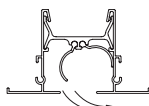


End Border

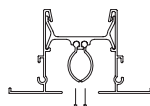
Note: For the 6600-12-1, the BP/BPI plenum must be installed with 3/4" minimum/ 1-1/4" Maximum opening between the bottom of the ceiling plane and the bottom of the hem of the BP/BPI plenum



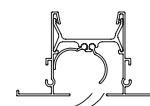
Air Deflection Patterns



Right Horizontal



Vertical Projection



Left Horizontal

Model 6650 (6650-11-1 & 6650-12-1)	
S = 1/2" Slot	Number of Air Slots
A	1 1/4 2 1/2 3 3/4 5 6 1/4 7 1/2 8 3/4 10
D1	1 5/8 2 7/8 4 1/8 5 3/8 6 5/8 7 7/8 9 1/8 10 3/8
D2	1 7/8 3 1/8 4 3/8 5 5/8 6 7/8 8 1/8 9 3/8 10 5/8
C	2 3 1/4 4 1/2 5 3/4 7 8 1/4 9 1/2 10 3/4
W	2 3/4 4 5 1/4 6 1/2 7 3/4 9 10 1/4 11 1/2

Model 6610 (6610-11-1 & 6610-12-1)	
S = 1" Slot	Number of Air Slots
A	1 3/4 3 1/2 5 1/4 7 8 3/4 10 1/2 12 1/4 14
D1	2 1/8 3 7/8 5 5/8 7 3/8 9 1/8 10 7/8 12 5/8 14 3/8
D2	2 3/8 4 1/8 5 7/8 7 5/8 9 3/8 11 1/8 12 7/8 14 5/8
C	2 1/2 4 1/4 6 7 3/4 9 1/2 11 1/4 13 14 3/4
W	3 1/4 5 6 3/4 8 1/2 10 1/4 12 13 3/4 15 1/2

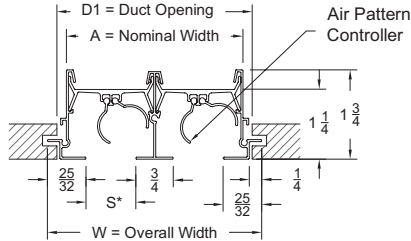
Model 6675 (6675-11-1 & 6675-12-1)	
S = 3/4" Slot	Number of Air Slots
A	1 1/2 3 4 1/2 6 7 1/2 9 10 1/2 12
D1	1 7/8 3 3/8 4 7/8 6 3/8 7 7/8 9 3/8 10 7/8 12 3/8
D2	2 1/8 3 5/8 5 1/8 6 5/8 8 1/8 9 5/8 11 1/8 12 5/8
C	2 1/4 3 3/4 5 1/4 6 3/4 8 1/4 9 3/4 11 1/4 12 3/4
W	3 4 1/2 6 7 1/2 9 10 1/2 12 13 1/2

6600R return has same dimensions as 6600 supply but provided without pattern controllers to reduce sound and pressure drop

LSD - Linear Slot Diffusers

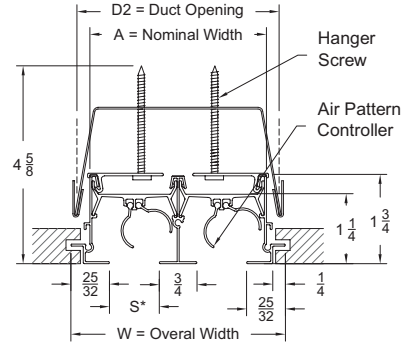
Series 6600-40-7
25/32" Border → Concealed Spline

Supply - Concealed Spline
 Model 6650-40-7 - 1/2" Slot Width
 Model 6675-40-7 - 3/4" Slot Width
 Model 6610-40-7 - 1" Slot Width

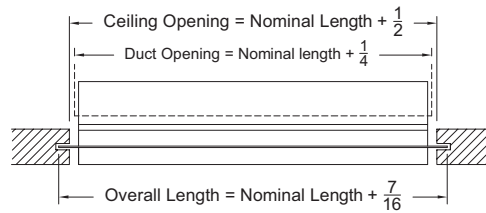
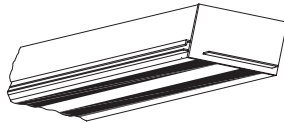


Series 6600-42-7
25/32" Border → Concealed Spline → Concealed Mount

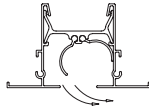
Supply - Concealed Spline
 Model 6650-42-7 - 1/2" Slot Width
 Model 6675-42-7 - 3/4" Slot Width
 Model 6610-42-7 - 1" Slot Width



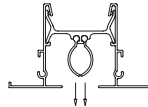
End Border
Model 6600-40-7 & 6600-42-7



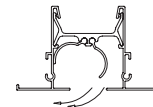
Air Deflection Patterns



Right Horizontal



Vertical Projection



Left Horizontal

Model 6650 (6650-40-7 & 6650-42-7)								
S = 1/2" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 1/4	2 1/2	3 3/4	5	6 1/4	7 1/2	8 3/4	10
D1	1 5/8	2 7/8	4 1/8	5 3/8	6 5/8	7 7/8	9 1/8	10 3/8
D2	1 7/8	3 1/8	4 3/8	5 5/8	6 7/8	8 1/8	9 3/8	10 5/8
W	2 1/16	3 5/16	4 9/16	5 13/16	7 1/16	8 5/16	9 9/16	10 13/16

Model 6610 (6610-40-7 & 6610-42-7)								
S = 1" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 3/4	3 1/2	5 1/4	7	8 3/4	10 1/2	12 1/4	14
D1	2 1/8	3 7/8	5 5/8	7 3/8	9 1/8	10 7/8	12 5/8	14 3/8
D2	2 3/8	4 1/8	5 7/8	7 5/8	9 3/8	11 1/8	12 7/8	14 5/8
W	2 9/16	4 5/16	6 1/16	7 13/16	9 9/16	11 5/16	13 1/16	14 13/16

Model 6675 (6675-40-7 & 6675-42-7)								
S = 3/4" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 1/2	3	4 1/2	6	7 1/2	9	10 1/2	12
D1	1 7/8	3 3/8	4 7/8	6 3/8	7 7/8	9 3/8	10 7/8	12 3/8
D2	2 1/8	3 5/8	5 1/8	6 5/8	8 1/8	9 5/8	11 1/8	12 5/8
W	2 5/16	3 13/16	5 5/16	6 13/16	8 5/16	9 13/16	11 5/16	12 13/16

6600R return has same dimensions as 6600 supply but provided without pattern controllers to reduce sound and pressure drop

LSD - Linear Slot Diffusers

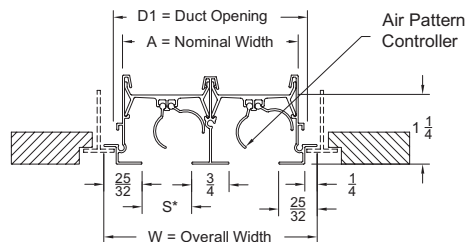
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Linear Slot Diffusers

LSD

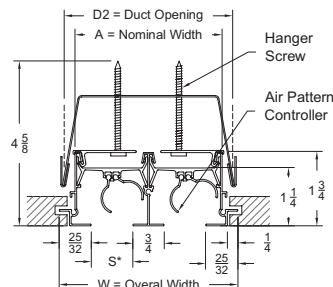
Series 6600-40-8 Drop Face

Supply - Drop Face
 Model 6650-40-8 - 1/2" Slot Width
 Model 6675-40-8 - 3/4" Slot Width
 Model 6610-40-8 - 1" Slot Width

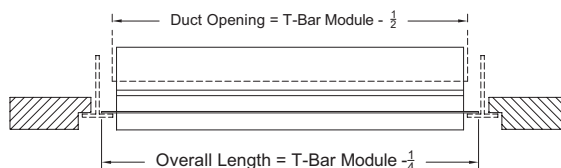
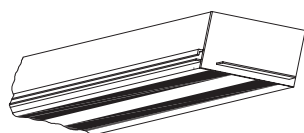


Series 6600-42-8 Drop Face

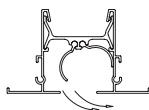
Supply - Drop Face
 Model 6650-42-8 - 1/2" Slot Width
 Model 6675-42-8 - 3/4" Slot Width
 Model 6610-42-8 - 1" Slot Width



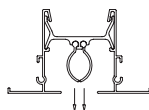
End Border Model 6600-40-8



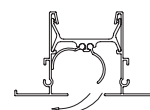
Air Deflection Patterns



Right Horizontal



Vertical Projection



Left Horizontal

Model 6650 (6650-40-8)									
S = 1/2" Slot	Number of Air Slots								
	1	2	3	4	5	6	7	8	
A	1 1/4	2 1/2	3 3/4	5	6 1/4	7 1/2	8 3/4	10	
D1	1 5/8	2 7/8	4 1/8	5 3/8	6 5/8	7 7/8	9 1/8	10 3/8	
D2	1 7/8	3 1/8	4 3/8	5 5/8	6 7/8	8 1/8	9 3/8	10 5/8	
W	2 1/16	3 5/16	4 9/16	5 13/16	7 1/16	8 5/16	9 9/16	10 13/16	

Model 6610 (6610-40-8)									
S = 1" Slot	Number of Air Slots								
	1	2	3	4	5	6	7	8	
A	1 3/4	3 1/2	5 1/4	7	8 3/4	10 1/2	12 1/4	14	
D1	2 1/8	3 7/8	5 5/8	7 3/8	9 1/8	10 7/8	12 5/8	14 3/8	
D2	2 3/8	4 1/8	5 7/8	7 5/8	9 3/8	11 1/8	12 7/8	14 5/8	
W	2 9/16	4 5/16	6 1/16	7 13/16	9 9/16	11 5/16	13 1/16	14 13/16	

Model 6675 (6675-40-8)									
S = 3/4" Slot	Number of Air Slots								
	1	2	3	4	5	6	7	8	
A	1 1/2	3	4 1/2	6	7 1/2	9	10 1/2	12	
D1	1 7/8	3 3/8	4 7/8	6 3/8	7 7/8	9 3/8	10 7/8	12 3/8	
D2	2 1/8	3 5/8	5 1/8	6 5/8	8 1/8	9 5/8	11 1/8	12 5/8	
W	2 5/16	3 13/16	5 5/16	6 13/16	8 5/16	9 13/16	11 5/16	12 13/16	

6600R return has same dimensions as 6600 supply but provided without pattern controllers to reduce sound and pressure drop

LSD - Linear Slot Diffusers

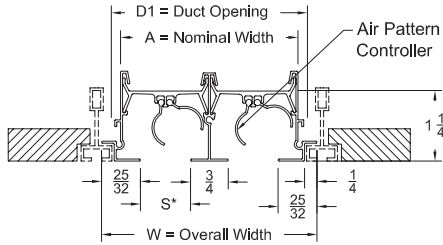
Linear Slot Diffusers

LSD



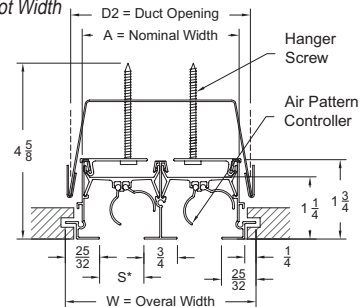
Series 6600-40-9
Narrow Tee

Supply - Narrow Tee - 9/16" Face
Model 6650-40-9 - 1/2" Slot Width
Model 6675-40-9 - 3/4" Slot Width
Model 6610-40-9 - 1" Slot Width

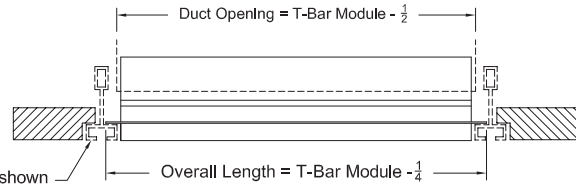
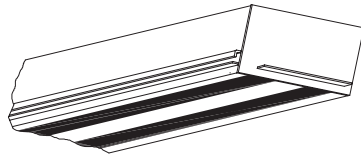


Series 6600-42-9
Narrow Tee

Supply - Narrow Tee - 9/16" Face
Model 6650-42-9 - 1/2" Slot Width
Model 6675-42-9 - 3/4" Slot Width
Model 6610-42-9 - 1" Slot Width

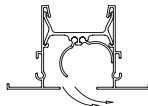


End Border
Model 6600-40-9

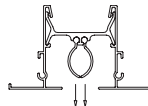


6600-40-9 Model shown with Bolt Grid as an alternate application

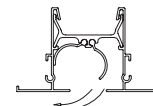
Air Deflection Patterns



Right Horizontal



Vertical Projection



Left Horizontal

Model 6650 (6650-40-9)		Number of Air Slots							
S = 1/2" Slot	1	2	3	4	5	6	7	8	
A	1 1/4	2 1/2	3 3/4	5	6 1/4	7 1/2	8 3/4	10	
D1	1 5/8	2 7/8	4 1/8	5 3/8	6 5/8	7 7/8	9 1/8	10 3/8	
W	2 1/16	3 5/16	4 9/16	5 13/16	7 1/16	8 5/16	9 9/16	10 13/16	

Model 6610 (6610-40-9)		Number of Air Slots							
S = 1" Slot	1	2	3	4	5	6	7	8	
A	1 3/4	3 1/2	5 1/4	7	8 3/4	10 1/2	12 1/4	14	
D1	2 1/8	3 7/8	5 5/8	7 3/8	9 1/8	10 7/8	12 5/8	14 3/8	
W	2 9/16	4 5/16	6 1/16	7 13/16	9 9/16	11 5/16	13 1/16	14 13/16	

Model 6675 (6675-40-9)		Number of Air Slots							
S = 3/4" Slot	1	2	3	4	5	6	7	8	
A	1 1/2	3	4 1/2	6	7 1/2	9	10 1/2	12	
D1	1 7/8	3 3/8	4 7/8	6 3/8	7 7/8	9 3/8	10 7/8	12 3/8	
W	2 5/16	3 13/16	5 5/16	6 13/16	8 5/16	9 13/16	11 5/16	12 13/16	

6600R return has same dimensions as 6600 supply but provided without pattern controllers to reduce sound and pressure drop

LSD - Linear Slot Diffusers

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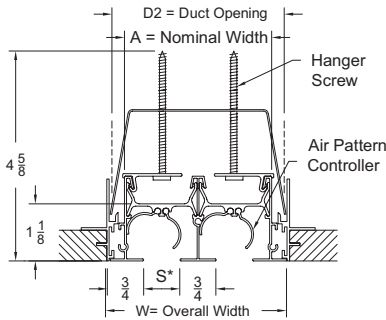
Linear Slot Diffusers

LSD

Series 6600-22-73-1

Concealed Spline/Plaster Frame ➔ 3/4" Border w/ Concealed Mount

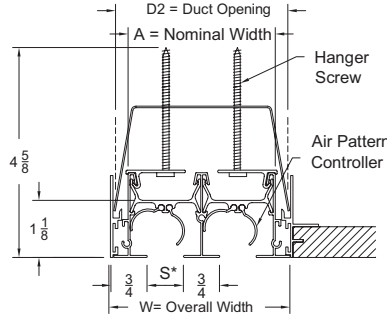
Supply - 3/4" Border - Concealed Spline/Plaster Frame
 Model 6650-22-73 - 1/2" Slot Width
 Model 6675-22-73 - 3/4" Slot Width
 Model 6610-22-73 - 1" Slot Width



Series 6600-22-74-1

Wall Concealed Spline /Plaster Frame ➔ 3/4" Border w/ Concealed Mount

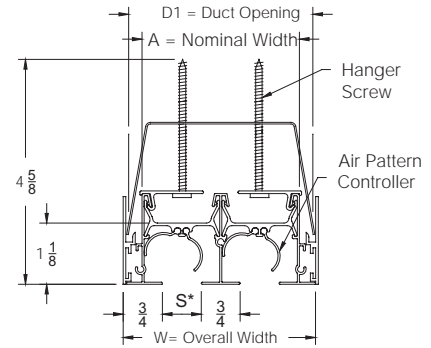
Supply - 3/4" Border - Concealed Spline/Plaster & Wall Frame
 Model 6650-22-74 - 1/2" Slot Width
 Model 6675-22-74 - 3/4" Slot Width
 Model 6610-22-74 - 1" Slot Width



Series 6600-22-75-1

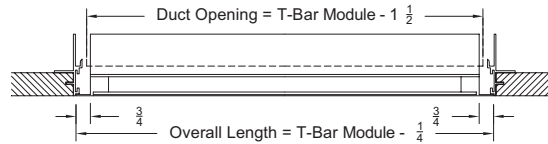
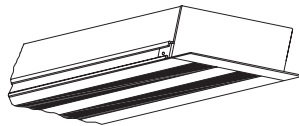
Wall Concealed Spline/Plaster Frame ➔ 3/4" Border w/ Concealed Mount

Supply - 3/4" Border - Concealed Spline/Plaster & Wall Frame
 Model 6650-22-75 - 1/2" Slot Width
 Model 6675-22-75 - 3/4" Slot Width
 Model 6610-22-75 - 1" Slot Width

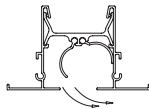


End Border

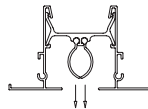
Models 6600-22-73 & 6600-22-74



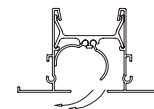
Air Deflection Patterns



Right Horizontal



Vertical Projection



Left Horizontal

Model 6650								
S = 1/2" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 1/4	2 1/2	3 3/4	5	6 1/4	7 1/2	8 3/4	10
D1	1 5/8	2 7/8	4 1/8	5 3/8	6 5/8	7 7/8	9 1/5	10 3/8
W	2	3 1/4	4 1/4	5 3/4	7	8 1/4	9 1/2	10 3/4

Model 6675								
S = 3/4" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 1/2	3	4 1/2	6	7 1/2	9	10 1/2	12
D1	1 7/8	3 3/8	4 7/8	6 3/8	7 7/8	9 3/8	10 7/8	12 3/8
W	2 1/4	3 3/4	5 1/4	6 3/4	8 1/4	9 3/4	11 1/4	12 3/4

Model 6610								
S = 1" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 3/4	3 1/2	5 1/4	7	8 3/4	10 1/2	12 1/4	14
D1	2 1/8	3 7/8	5 5/8	7 3/8	9 1/8	10 7/8	12 5/8	14 3/8
W	2 1/2	4 1/4	6	7 3/4	9 1/2	11 1/4	13	14 3/4

6600R return has same dimensions as 6600 supply but provided without pattern controllers to reduce sound and pressure drop

Notes for Series 6600

1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 20 White frame with black pattern controller</p> <p>Optional Finish 21 Clear anodized with black pattern controller 28 Custom color</p>	<p>Mitered Corners (45°, 90° and 135°) 95</p> <p>Replacement End Caps</p> <p>Insulated Boot Plenums</p> <p>Non-Insulated Boot Plenums</p> <p>Note: BP Boot Plenums are shipped separate for field installation</p>	<ul style="list-style-type: none"> Sizes available in only 1-8 slots Slot widths available 1/2" (6650), 3/4" (6675), and 1" (6610) Longest single section is 8 feet Continuous lengths are made in sections

LSD - Linear Slot Diffusers

Series 6600 - Performance

6650 1/2" Slot - CFM Per Linear Foot

Slots	Static Pressure	Horizontal Vertical	0.005	0.021	0.047	0.083	0.130	0.188	0.255	0.334	0.422	0.521
			0.004	0.015	0.033	0.058	0.091	0.132	0.179	0.234	0.295	0.365
1		CFM/LF	5	10	15	20	25	30	35	40	45	50
		Horizontal Throw, ft	1-1-6	3-6-12	6-10-14	10-12-17	11-13-19	12-14-20	13-16-22	14-17-24	14-18-25	15-19-26
		Vertical Throw, ft	2	7	9	11	12	13	14	15	16	17
		Horizontal NC	<15	<15	<15	17	22	27	30	34	36	38
		Vertical NC	<15	<15	<15	<15	<15	15	18	22	24	26
2		CFM/LF	10	20	30	40	50	60	70	80	90	100
		Horizontal Throw, ft	1-2-8	4-8-17	8-14-20	14-17-24	15-19-26	17-20-29	18-22-31	19-24-33	20-25-35	22-36-37
		Vertical Throw, ft	3	9	13	15	17	18	20	21	23	24
		Horizontal NC	<15	<15	<15	20	25	30	33	37	39	41
		Vertical NC	<15	<15	<15	<15	<15	18	21	25	27	29
3		CFM/LF	15	30	45	60	75	90	105	120	135	150
		Horizontal Throw, ft	2-4-13	6-13-20	13-18-25	17-20-29	19-23-32	20-25-35	22-27-38	18-22-31	19-24-33	20-25-35
		Vertical Throw, ft	5	11	16	18	21	23	24	26	28	29
		Horizontal NC	<15	<15	15	22	27	32	35	39	41	43
		Vertical NC	<15	<15	<15	<15	15	20	23	27	29	31
4		CFM/LF	20	40	60	80	100	120	140	160	180	200
		Horizontal Throw, ft	3-6-15	10-15-24	15-20-29	19-24-33	22-26-37	24-29-41	26-31-44	27-33-47	29-35-50	31-37-53
		Vertical Throw, ft	5	13	18	21	24	26	28	30	32	34
		Horizontal NC	<15	<15	17	24	29	33	36	40	42	44
		Vertical NC	<15	<15	<15	<15	17	21	24	28	30	32
5		CFM/LF	25	50	75	100	125	150	175	200	225	250
		Horizontal Throw, ft	3-7-16	11-16-25	16-23-32	22-26-35	24-30-42	26-32-46	29-35-49	31-37-53	32-40-56	34-42-59
		Vertical Throw, ft	6	19	23	26	29	32	34	37	39	41
		Horizontal NC	<15	<15	19	26	31	35	37	41	43	45
		Vertical NC	<15	<15	<15	<15	19	23	25	29	31	33
6		CFM/LF	30	60	90	120	150	180	210	240	270	300
		Horizontal Throw, ft	4-8-20	14-20-29	20-25-35	24-29-41	26-32-46	29-35-50	31-38-54	33-41-58	35-43-61	37-56-65
		Vertical Throw, ft	6	16	23	26	29	32	34	37	39	41
		Horizontal NC	<15	17	20	27	32	36	38	42	44	46
		Vertical NC	<15	<15	<15	15	20	24	26	30	32	35
7		CFM/LF	35	70	105	140	175	210	245	280	315	350
		Horizontal Throw, ft	5-9-18	12-18-31	18-27-38	24-31-44	29-35-49	31-38-54	34-41-59	36-44-63	38-47-66	40-49-70
		Vertical Throw, ft	7	17	24	28	31	34	37	40	42	45
		Horizontal NC	<15	18	21	28	33	37	39	43	45	47
		Vertical NC	<15	<15	<15	16	21	25	37	331	33	35
8		CFM/LF	40	80	120	160	200	240	280	320	360	400
		Horizontal Throw, ft	6-10-19	13-19-33	19-29-41	26-33-47	31-37-53	33-41-58	36-44-63	39-47-67	41-50-71	43-53-75
		Vertical Throw, ft	7	18	26	30	34	37	40	43	45	48
		Horizontal NC	<15	20	22	29	34	39	40	44	46	48
		Vertical NC	<15	<15	<15	17	22	27	28	32	34	36

Linear Slot Diffusers



LSD

See Page LSD-95 for Performance Notes

LSD - Linear Slot Diffusers

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Series 6600 - Performance

6675 3/4" Slot - CFM Per Linear Foot

Slots	Static Pressure	Horizontal Vertical	0.011 0.007	0.024 0.014	0.042 0.025	0.066 0.040	0.095 0.057	0.129 0.077	0.168 0.101	0.213 0.128	0.263 0.158	0.318 0.191
1	CFM/LF		10	15	20	25	30	35	40	45	50	55
	Horizontal Throw, ft		1-2-6	2-4-14	3-6-22	4-10-24	6-14-27	9-19-29	11-22-31	14-26-33	18-24-35	20-26-36
	Vertical Throw, ft		2	6	10	12	13	14	15	16	17	18
	Horizontal NC		<15	<15	<15	15	19	23	25	28	31	33
2	CFM/LF		20	30	40	50	60	70	80	90	100	110
	Horizontal Throw, ft		1-3-10	3-6-22	5-10-29	7-16-35	10-22-38	14-26-41	19-29-44	22-33-46	25-35-49	27-36-51
	Vertical Throw, ft		4	8	14	17	18	20	21	23	24	25
	Horizontal NC		<15	<15	<15	18	22	26	28	31	34	36
3	CFM/LF		30	45	60	75	90	105	120	135	150	165
	Horizontal Throw, ft		1-3-13	3-7-27	6-13-36	9-20-41	13-27-44	17-32-48	23-36-51	27-39-54	30-41-57	33-43-60
	Vertical Throw, ft		4	10	17	21	23	24	26	28	29	31
	Horizontal NC		<15	<15	<15	20	24	28	30	33	35	37
4	CFM/LF		40	60	80	100	120	140	160	180	200	220
	Horizontal Throw, ft		4-10-24	10-18-36	16-24-42	20-30-47	24-36-51	28-39-55	32-42-59	36-44-63	38-47-66	40-49-70
	Vertical Throw, ft		5	11	20	24	26	28	30	32	34	35
	Horizontal NC		<15	15	16	22	25	30	31	35	37	39
5	CFM/LF		50	75	100	125	150	175	200	225	250	275
	Horizontal Throw, ft		10-15-30	15-23-41	20-30-47	25-37-52	30-41-57	35-44-62	38-47-66	41-50-70	43-52-74	45-55-78
	Vertical Throw, ft		6	13	22	27	29	31	34	36	38	39
	Horizontal NC		<15	16	17	23	26	32	33	36	38	40
6	CFM/LF		60	90	120	150	180	210	240	270	300	330
	Horizontal Throw, ft		10-15-29	15-22-44	20-29-51	24-37-57	29-44-63	34-48-68	39-51-73	44-54-77	47-57-81	49-60-85
	Vertical Throw, ft		6	14	24	29	32	34	37	39	41	43
	Horizontal NC		<15	17	19	24	28	33	34	37	39	41
7	CFM/LF		70	105	140	175	210	245	280	315	350	385
	Horizontal Throw, ft		11-16-32	16-24-48	21-32-55	26-40-63	32-48-68	37-52-73	42-55-78	48-59-83	51-62-88	53-65-92
	Vertical Throw, ft		7	15	26	31	34	37	40	42	45	47
	Horizontal NC		16	18	20	24	29	34	35	38	40	42
8	CFM/LF		80	120	160	200	240	280	320	360	400	440
	Horizontal Throw, ft		11-17-34	17-25-51	23-34-59	28-42-66	34-51-73	40-55-78	45-59-84	51-63-89	54-66-94	57-70-9
	Vertical Throw, ft		7	16	28	34	37	40	43	45	48	50
	Horizontal NC		18	19	22	25	30	35	37	39	41	43
9	CFM/LF		90	135	180	225	270	315	360	405	450	495
	Horizontal Throw, ft		11-18-36	18-27-54	24-36-60	30-45-75	36-54-84	42-60-90	48-66-96	54-72-99	57-75-99	60-78-102
	Vertical Throw, ft		7	17	30	36	39	42	45	48	51	54
	Horizontal NC		18	20	23	27	32	37	39	42	44	46

See Page LSD-95 for Performance Notes

Linear Slot Diffusers

LSD

LSD - Linear Slot Diffusers

Series 6600 - Performance

6610 1" Slot - CFM Per Linear Foot

Slots	Static Pressure	Horizontal Vertical	0.008	0.030	0.047	0.068	0.092	0.120	0.152	0.188	0.227	0.270
			0.003	0.012	0.020	0.028	0.037	0.04	0.061	0.076	0.092	0.109
1		CFM/LF	10	20	25	30	35	40	45	50	55	60
		Horizontal Throw, ft	1-2-6	3-6-22	4-10-24	6-14-27	9-19-29	11-22-31	14-23-33	18-24-35	20-26-36	22-27-38
		Vertical Throw, ft	2	10	12	13	14	15	16	17	18	18
		Horizontal NC	<15	<15	<15	<15	19	22	24	26	28	30
		Vertical NC	<15	<15	<15	<15	<15	<15	<15	<15	16	18
2		CFM/LF	20	40	50	60	70	80	90	100	110	120
		Horizontal Throw, ft	1-3-10	5-10-29	7-16-35	10-22-38	14-26-41	19-29-44	22-33-46	25-35-49	27-36-51	29-38-54
		Vertical Throw, ft	4	14	17	18	20	21	23	24	25	26
		Horizontal NC	<15	<15	<15	<15	21	25	27	29	31	33
		Vertical NC	<15	<15	<15	<15	<15	<15	15	17	19	21
3		CFM/LF	30	60	75	90	105	120	135	150	165	180
		Horizontal Throw, ft	3-7-18	12-18-36	15-23-41	18-27-44	21-32-48	24-26-51	27-39-54	30-41-57	33-43-60	36-44-63
		Vertical Throw, ft	4	17	21	23	24	26	28	29	31	32
		Horizontal NC	<15	<15	<15	17	22	27	28	30	32	34
		Vertical NC	<15	<15	<15	<15	<15	15	16	18	20	22
4		CFM/LF	40	80	100	120	140	160	180	200	220	240
		Horizontal Throw, ft	4-10-24	16-24-42	20-30-47	24-36-51	28-39-55	32-42-59	36-44-63	38-47-66	40-49-70	42-51-73
		Vertical Throw, ft	5	20	24	26	28	30	32	34	35	37
		Horizontal NC	<15	<15	15	19	24	29	30	32	34	36
		Vertical NC	<15	<15	<15	<15	<15	17	18	20	22	24
5		CFM/LF	50	100	125	150	175	200	225	250	275	300
		Horizontal Throw, ft	10-15-30	20-30-47	25-37-52	30-41-57	35-44-62	38-47-66	41-50-70	43-52-74	45-55-78	47-57-81
		Vertical Throw, ft	6	24	29	32	34	37	39	41	43	45
		Horizontal NC	<15	<15	16	21	25	31	32	34	35	37
		Vertical NC	<15	<15	<15	<15	<15	19	20	22	23	25
6		CFM/LF	60	120	150	180	210	240	270	300	330	360
		Horizontal Throw, ft	10-15-29	20-29-51	24-37-57	29-44-63	34-48-68	39-51-73	44-54-77	47-57-81	49-60-85	51-63-89
		Vertical Throw, ft	6	24	29	32	34	37	39	41	43	45
		Horizontal NC	<15	15	17	22	27	33	34	35	36	38
		Vertical NC	<15	<15	<15	<15	<15	21	22	23	24	26
7		CFM/LF	70	140	175	210	245	280	315	350	385	420
		Horizontal Throw, ft	11-16-32	21-32-55	26-40-62	32-48-68	37-52-73	42-55-78	48-59-83	51-62-88	53-65-92	55-68-96
		Vertical Throw, ft	7	26	31	34	37	40	42	45	47	49
		Horizontal NC	<15	16	18	24	28	34	36	37	37	39
		Vertical NC	<15	<15	<15	<15	16	22	24	25	25	27
8		CFM/LF	80	160	200	240	280	320	360	400	440	480
		Horizontal Throw, ft	11-17-34	23-34-59	28-42-66	34-51-73	40-55-78	45-59-84	51-63-89	54-66-94	57-70-98	59-73-103
		Vertical Throw, ft	7	28	34	37	40	43	45	48	50	52
		Horizontal NC	<15	16	20	26	30	35	37	38	39	41
		Vertical NC	<15	<15	<15	<15	18	23	25	26	27	29

See Page LSD-95 for Performance Notes

Linear Slot Diffusers
LSD



For more product information visit us at www.metalair.com



LSD - Linear Slot Diffusers

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Series 6600 - Performance

6650R - 1/2" Slot Width

Number of Slots	Negative Ps Inches of Water	.02	.04	.06	.08	.10	.15
1	CFM/Ft.	15	20	25	30	35	40
Ak/Ft=.03	NC	-	20	27	32	37	41
2	CFM/Ft.	35	50	60	70	80	95
Ak/Ft=.06	NC	-	22	27	32	37	41
3	CFM/Ft.	55	80	95	110	125	150
Ak/Ft=.09	NC	-	23	28	33	37	42
4	CFM/Ft.	70	100	120	140	155	190
Ak/Ft=.12	NC	-	24	30	34	37	44
5	CFM/Ft.	90	135	155	180	200	245
Ak/Ft=.15	NC	-	25	30	34	37	44
6	CFM/Ft.	110	155	195	220	245	300
Ak/Ft=.18	NC	-	26	33	37	40	96
7	CFM/Ft.	130	185	225	260	290	355
Ak/Ft=.21	NC	-	27	33	37	41	47
8	CFM/Ft.	140	200	245	280	310	385
Ak/Ft=.24	NC	-	28	34	38	42	48

6675R - 3/4" Slot Width

Number of Slots	Negative Ps Inches of Water	.02	.04	.06	.08	.10	.15
1	CFM/Ft.	25	35	45	50	55	70
Ak/Ft=.02	NC	-	21	29	32	35	42
2	CFM/Ft.	55	80	90	100	110	135
Ak/Ft=.08	NC	-	25	29	32	35	42
3	CFM/Ft.	90	115	140	160	180	220
Ak/Ft=.12	NC	-	26	32	36	40	46
4	CFM/Ft.	100	140	175	200	225	275
Ak/Ft=.12	NC	-	27	34	38	41	47
5	CFM/Ft.	140	185	225	260	290	360
Ak/Ft=.16	NC	-	28	34	38	42	48
6	CFM/Ft.	160	225	275	320	360	440
Ak/Ft=.20	NC	-	29	35	40	43	49
7	CFM/Ft.	175	250	305	350	395	480
Ak/Ft=.24	NC	-	30	36	40	44	50
8	CFM/Ft.	200	285	350	400	450	545
Ak/Ft=.32	NC	-	31	37	41	45	51

6610R - 1" Slot Width

Number of Slots	Negative Ps Inches of Water	.02	.04	.06	.08	.10	.15
1	CFM/Ft.	35	50	60	70	80	95
Ak/Ft=.06	NC	-	25	31	36	40	45
2	CFM/Ft.	70	100	125	140	155	190
Ak/Ft=.11	NC	-	27	33	37	41	47
3	CFM/Ft.	105	150	185	210	235	285
Ak/Ft=.17	NC	-	29	35	39	43	49
4	CFM/Ft.	140	200	250	280	310	380
Ak/Ft=.23	NC	-	31	37	41	45	51
5	CFM/Ft.	175	250	300	350	390	475
Ak/Ft=.28	NC	-	32	38	42	46	52
6	CFM/Ft.	210	300	375	420	465	570
Ak/Ft=.33	NC	-	33	40	43	47	53
7	CFM/Ft.	245	350	425	490	545	665
Ak/Ft=.39	NC	-	34	41	44	47	54
8	CFM/Ft.	280	400	475	560	620	760
Ak/Ft=.44	NC	-	35	42	45	48	55

See Page LSD-95 for Performance Notes

Linear Slot Diffusers

LSD

Series 6600 - Performance Notes

Performance Notes:

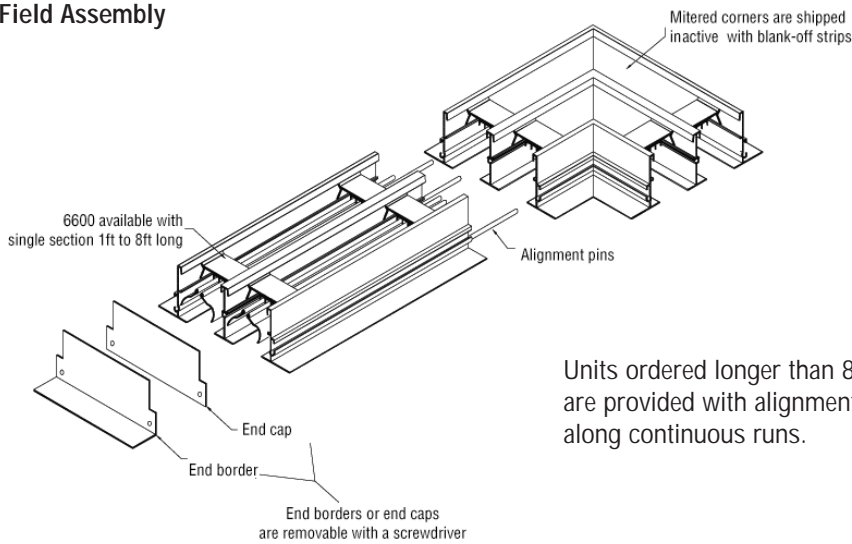
- On units without BP/BPI plenums, pressure drop reported is across the diffuser element only. The field supply plenum pressure drop should be included when determining system fan requirements. A good approximation of the static pressure requirements can be calculated by adding the velocity pressure through the plenum inlet to the diffuser section pressure drop.
- NC is based on a 4 ft section of diffuser. The following table should be used to calculate sound levels for lengths other than 4 ft.
- To correct throws for lengths other than the 4 ft lengths used in determining catalog performance, throws should be adjusted per the following table:

NC Correction for Length					
Length (feet)	2	4	6	8	10
NC Correction	-2	+0	+2	+3	+5
Throw Correction Multiplier for Length					
Length (feet)	2	4	8	10	12
Throw Correction	.7	1.0	1.5	1.7	1.8

- All pressures are in inches of water
- Isothermal throws are given for terminal velocities of 150, 100 and 50 fpm, based upon 4 ft section
- Vertical throw values are based on a 50 fpm terminal velocity
- For Vertical supply, subtract one NC
- For Returns minus pattern controllers, deduct 12 NC.
- Throw values are based on a 1-way discharge from the slot. For 2-way discharges, throw is based upon the number and size of the slots throwing in each direction, with the total supply air flow split equally between all slots in the unit.
- Data were collected in accordance to ASHRAE Standard 70-1991 "Method of Testing for Rating the Performance of Air Outlets and Inlets."

Series 6600 - Installation

Field Assembly

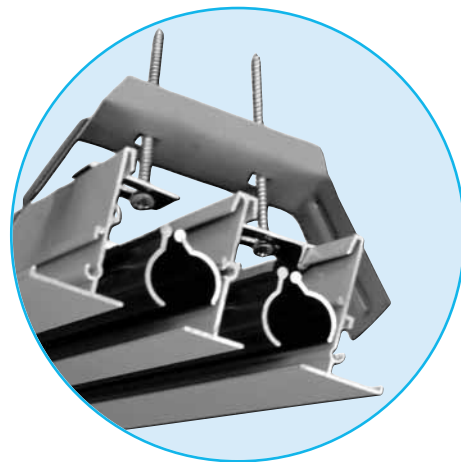
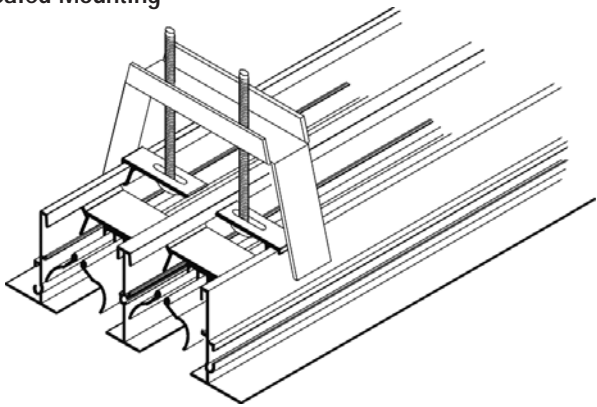


Units ordered longer than 8ft are shipped in multiple sections. Units are provided with alignment pins to keep the 6600 diffusers straight along continuous runs.

Linear Slot Diffusers

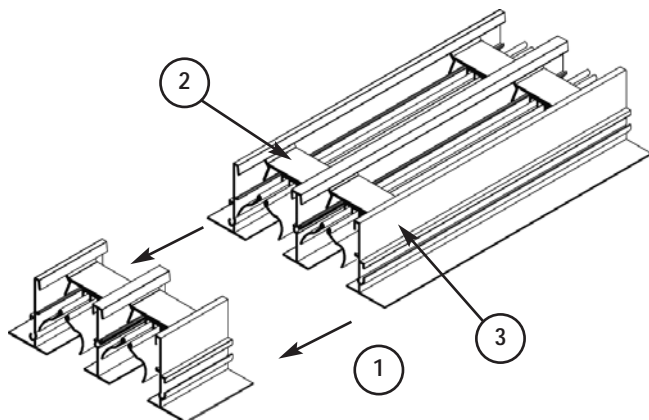
LSD

Concealed Mounting



- Concealed Mounting makes installation easy
- Units are inserted into hemmed plenum and secured in place by tightening screws through the face

Field Cutting

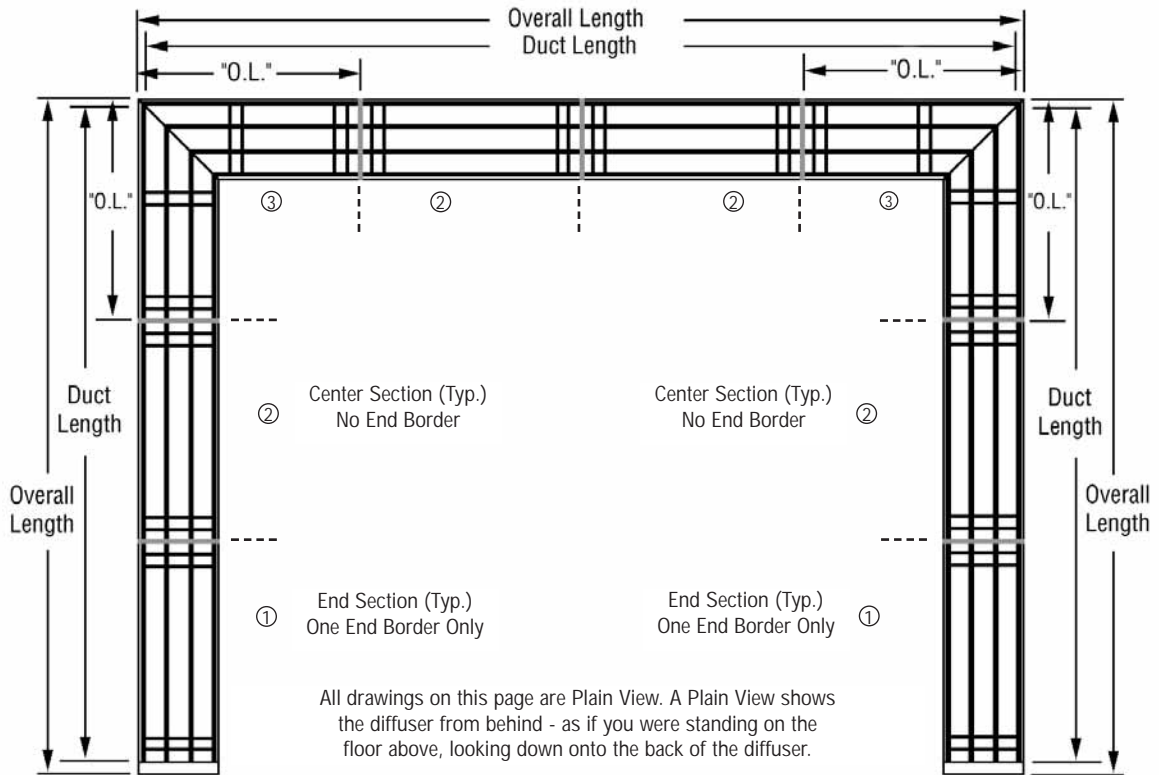


- 1 6600 can be field-cut to fit job conditions
- 2 Spacer is inserted to support pattern controllers
- 3 Screw or crimp to secure spacer in-place

LSD - Linear Slot Diffusers

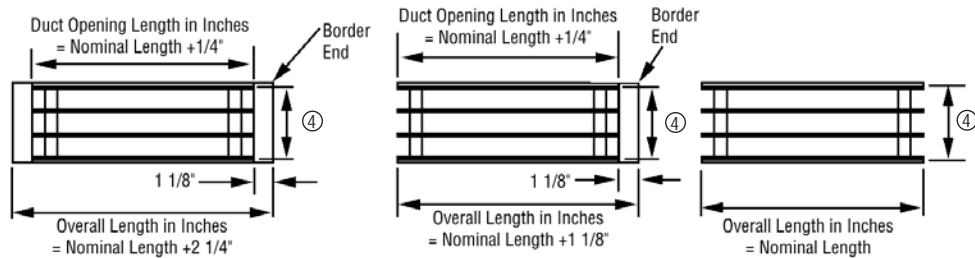
Series 6600 - Continuous Run Dimensions

MODELS 6650-11-1 - Surface Mount
 MODELS 6650-12-1 - Concealed Mounting



Linear Slot Diffusers
LSD

Single Section, Two End Borders (Not Shown) ① **End Section, One End Border** ② **Center Section, No End Borders**



- ③ See Page LSD-98 for 90° Mitered Corner Dimensions ("O.L.")
- ④ Note: For Duct Opening, Ceiling Opening, and Overall Width, see page LSD-83 - 90

Series 6600 - Mitered Corners

45° Angle

Dimensions are in inches

Mitered Corners - 45° Angle - Extruded Aluminum

Slots: 1/2" (6650), 3/4" (6675) and 1" (6610)

Model MC6600-11-1 - 1 1/8" Border - Face Screw Mounting

Model MC6600-12-1 - 1 1/8" Border - Surface Mounting

Model MC6600-10-6 - 1 1/8" Border - T-bar Lay-in

Model MC6600-12-6 - 1 1/8" Border - T-bar Lay-in

Model MC6600-20-6 - 3/4" Border - T-bar Lay-in

Model MC6600-30-6 - 1/2" Border - T-bar Lay-in

Model MC6600-22-73 - 3/4" Border - Concealed Spline

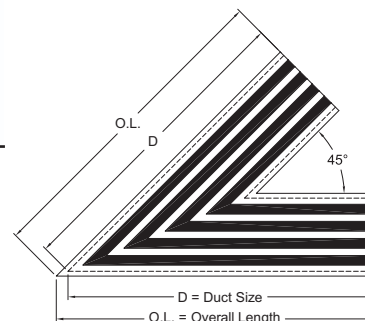
Model MC6600-22-74 - 3/4" Border - Concealed Spline

Model MC6600-40-7 - 25/32" Border - Concealed Spline

Model MC6600-42-7 - 25/32" Border - Concealed Mounting

Model MC6600-40-8 - 25/32" Border - Drop Face

Model MC6600-40-9 - 25/32" Border - Donn Finline



Number of Slots	Duct Size (All Models)	Mitered Corner Models (1/2", 3/4" or 1" Slot)				
		MC6600-11-1 MC6600-12-1 MC6600-10-6 MC6600-12-6	MC6600-20-6 MC6600-22-73 MC6600-22-74	MC6600-30-6	MC6600-40-7 MC6600-42-7 MC6600-40-8	MC6600-40-9
		O.L.	O.L.	O.L.	O.L.	O.L.
1 - 2	24	24-3/4	24-27/32	24-5/16	24-29/32	24-29/32
3 - 5	36	36-3/4	36-27-32	36-5/16	36-29/32	36-29/32
6 - 8	48	48-3/4	48-27-32	48-5/16	48-29/32	48-29/32

Linear Slot Diffusers

LSD

90° Angle

Mitered Corners - 90° Angle - Extruded Aluminum

Slots: 1/2" (6650), 3/4" (6675) and 1" (6610)

Model MC6600-11-1 - 1 1/8" Border - Face Screw Mounting

Model MC6600-12-1 - 1 1/8" Border - Surface Mounting

Model MC6600-10-6 - 1 1/8" Border - T-bar Lay-in

Model MC6600-12-6 - 1 1/8" Border - T-bar Lay-in

Model MC6600-20-6 - 3/4" Border - T-bar Lay-in

Model MC6600-30-6 - 1/2" Border - T-bar Lay-in

Model MC6600-22-73 - 3/4" Border - Concealed Spline

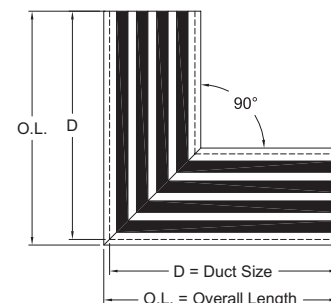
Model MC6600-22-74 - 3/4" Border - Concealed Spline

Model MC6600-40-7 - 25/32" Border - Concealed Spline

Model MC6600-42-7 - 25/32" Border - Concealed Mounting

Model MC6600-40-8 - 25/32" Border - Drop Face

Model MC6600-40-9 - 25/32" Border - Donn Finline



Number of Slots	Duct Size (All Models)	Mitered Corner Models (1/2", 3/4" or 1" Slot)				
		MC6600-11-1 MC6600-12-1 MC6600-10-6 MC6600-12-6	MC6600-20-6 MC6600-22-73 MC6600-22-74	MC6600-30-6	MC6600-40-7 MC6600-42-7 MC6600-40-8	MC6600-40-9
		O.L.	O.L.	O.L.	O.L.	O.L.
1 - 3	12	12 23/32	12 11/32	12 1/8	12 3/8	12 3/8
4 - 8	24	24 23/32	24 11/32	24 1/8	24 3/8	24 3/8

135° Angle

Mitered Corners - 135° Angle - Extruded Aluminum

Slots: 1/2" (6650), 3/4" (6675) and 1" (6610)

Model MC6600-11-1 - 1 1/8" Border - Face Screw Mounting

Model MC6600-12-1 - 1 1/8" Border - Surface Mounting

Model MC6600-10-6 - 1 1/8" Border - T-bar Lay-in

Model MC6600-12-6 - 1 1/8" Border - T-bar Lay-in

Model MC6600-20-6 - 3/4" Border - T-bar Lay-in

Model MC6600-30-6 - 1/2" Border - T-bar Lay-in

Model MC6600-22-73 - 3/4" Border - Concealed Spline

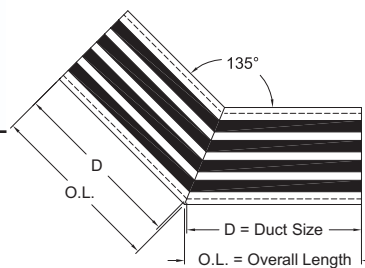
Model MC6600-22-74 - 3/4" Border - Concealed Spline

Model MC6600-40-7 - 25/32" Border - Concealed Spline

Model MC6600-42-7 - 25/32" Border - Concealed Mounting

Model MC6600-40-8 - 25/32" Border - Drop Face

Model MC6600-40-9 - 25/32" Border - Donn Finline



Number of Slots	Duct Size (All Models)	Mitered Corner Models (1/2", 3/4" or 1" Slot)				
		MC6600-11-1 MC6600-12-1 MC6600-10-6 MC6600-12-6	MC6600-20-6 MC6600-22-73 MC6600-22-74	MC6600-30-6	MC6600-40-7 MC6600-42-7 MC6600-40-8	MC6600-40-9
		O.L.	O.L.	O.L.	O.L.	O.L.
1 - 3	12	12-13/32	12-1/4	12-5/32	12-9/32	12-9/32
4 - 8	24	24-13-32	24-1/4	24-5/32	24-9/32	24-9/32

LSD - Linear Slot Diffusers

➔ Linear Slot for Spiral Pipe ➔ Aluminum ➔ Series 6600SP ➔ Supply
 ➔ Series 6600SPR ➔ Return

Product Details

- ★ The series 6600SP is designed to integrate into exposed spiral duct systems
- ★ Series 6600SP pattern controllers are fully adjustable and can be set from horizontal to vertical discharge
- ★ The series 6600SP operates effectively from minimum to maximum flow making this diffuser an excellent selection for variable volume systems
- ★ Series 6600SPR is designed for return applications. The unit is supplied without pattern controllers to reduce pressure and noise



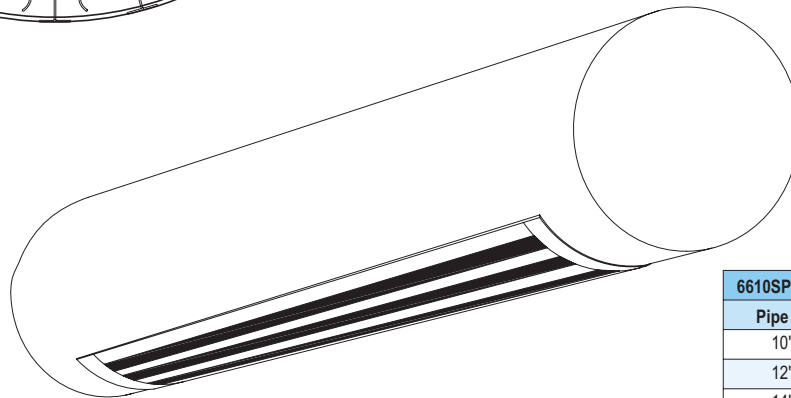
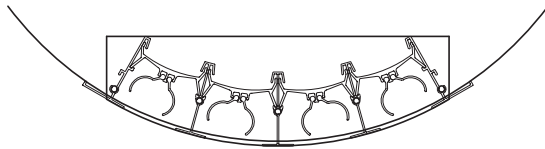
Model 6610SP Shown
 Standard Finish: 20 White Border
 with Black Pattern Controller

Linear Slot Diffusers



LSD

Linear Slot for Spiral Pipe - Aluminum - Surface Mount - 1 1/8" Border - Series 6600SP/6600SPR
 Model 6610SP-11-1 - Supply - Screw Mounted
 Model 6610SPR-11-1 - Return - Screw Mounted
 Model 6610SP-12-1 - Supply - Concealed Mounting Hardware
 Model 6610SPR-12-1 - Return - Concealed Mounting Hardware



6610SP is available only in a 1" Slot Width	
Pipe Diameter	Available Slots
10" Round	1, 2
12" Round	1, 2, 3
14" Round	1, 2, 3
16" Round	1, 2, 3, 4
18" Round	1, 2, 3, 4
20" Round	1, 2, 3, 4
24" Round	1, 2, 3, 4
30" Round	1, 2, 3, 4

Notes for Models 6610SP (50,75,10)-([10-6,12-6,20-6,30-6], [11-1,12-1], [40-7,42-7], [40-8], [40-9], [22-73,22-74])

1. Available Finishes	2. Construction Details
<p>Standard Finish: 20 White frame with black pattern controller</p> <p>Optional Finish 21 Clear anodized with black pattern controller 28 Custom color</p>	<ul style="list-style-type: none"> • Sizes available in only 1-4 slots • Slot widths 1" • Longest single section is 6 feet

➔ Boot Plenums ➔ Insulated/Non-Insulated ➔ Series BP ➔ Steel

Product Details

- ✦ The series BP (non-insulated) and BPI (insulated) boot plenums are designed to connect the series 6600 linear slot diffusers to the ducted supply or return system
- ✦ Units provide an even distribution of air into the series 6600 diffuser to maximize induction and occupant comfort
- ✦ The series BPI boot plenum is fully insulated — including the end caps
- ✦ Units can be used for both ducted and plenum returns
- ✦ Factory tested and manufactured BP/BPI plenums are built to fit securely into the series 6600 of diffusers reducing installation cost and minimizing leakage
- ✦ Available with an optional quadrant locking damper
- ✦ Series BP & BPI are shipped separate from series 6600 linear slot diffusers and require field attachment



**Model BP Shown w/
6600 Series Linear Slot Diffuser**
(BP & BPI are shipped separate for field installation)

Linear Slot Diffusers

LSD

	Non Insulated				
	T-bar Lay-in	Surface Mount	Concealed Spline	Drop Face	Narrow Tee
Screw Mounted		BP-11-1 1 1/8" Border			
Concealed Mounting Hardware	BP-12-6 1 1/8" Border	BP-12-1 1 1/8" Border	BP-42-7 25/32" Border		
No Mounting Hardware	BP-10-6 1 1/8" Border		BP-40-7 25/32" Border	BP-40-8 25/32" Border	BP-40-9 25/32" Border
	BP-20-6 3/4" Border				
	BP-30-6 1/2" Border				

Concealed Spline/Plaster Mounting Frame	Concealed Wall Mounted Spline/Plaster Mounting Frame
BP-22-73 3/4" Border	BP-22-74 3/4" Border

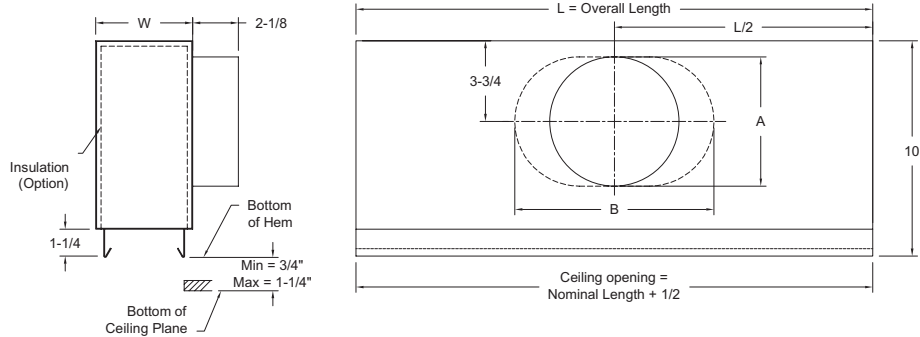
	Insulated				
	T-bar Lay-in	Surface Mount	Concealed Spline	Drop Face	Narrow Tee
Screw Mounted		BPI-11-1 1 1/8" Border			
Concealed Mounting Hardware	BPI-12-6 1 1/8" Border	BPI-12-1 1 1/8" Border	BPI-42-7 25/32" Border		
No Mounting Hardware	BPI-10-6 1 1/8" Border		BPI-40-7 25/32" Border	BPI-40-8 25/32" Border	BPI-40-9 25/32" Border
	BPI-20-6 3/4" Border				
	BPI-30-6 1/2" Border				

Concealed Spline/Plaster Mounting Frame	Concealed Wall Mounted Spline/Plaster Mounting Frame
BPI-22-73 3/4" Border	BPI-22-74 3/4" Border

LSD - Linear Slot Diffusers

Non Insulated/Insulated Boot Plenums
Steel - Hemmed Plenums

- Model BP (BPI)-12-1 - *Surface Mount - 1 1/8" Border*
- Model BP (BPI)-12-6 - *T-bar Lay-in - 1 1/8" Border*
- Model BP (BPI)-22-73 - *Concealed Spline - 3/4" Border*
- Model BP (BPI)-22-74 - *Concealed Spline - 3/4" Border*
- Model BP (BPI)-42-7 - *Concealed Spline - 25/32" Border*



Available Nominal Lengths	24	36	48	60
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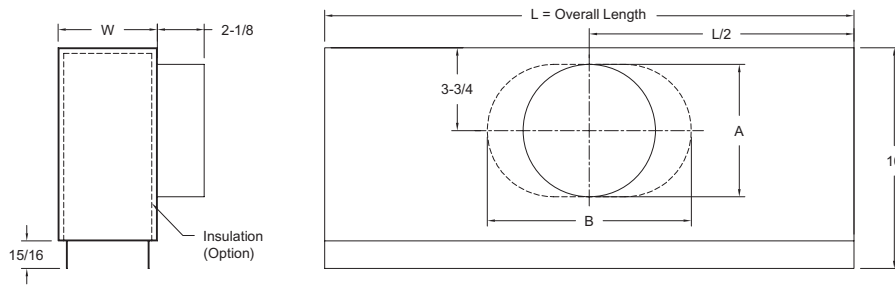
Model 6650 (1/2" Slot Width)				Model 6675 (3/4" Slot Width)				Model 6610 (1" Slot Width)			
Width (W)				Width (W)				Width (W)			
1 Slot	2 Slot	3 Slot	4 Slot	1 Slot	2 Slot	3 Slot	4 Slot	1 Slot	2 Slot	3 Slot	4 Slot
2 5/8	3 7/8	5 1/8	6 3/8	2 7/8	4 3/8	5 7/8	7 3/8	3 1/8	4 7/8	6 5/8	8 3/8
5 Slot	6 Slot	7 Slot	8 Slot	5 Slot	6 Slot	7 Slot	8 Slot	5 Slot	6 Slot	7 Slot	8 Slot
7 5/8	8 7/8	10 1/8	11 3/8	8 7/8	10 3/8	11 7/8	13 3/8	10 1/8	11 7/8	13 5/8	15 3/8

Models	Overall Length (L)
BP (BPI)-12-1	N.L. - 1/16
BP (BPI)-12-6	N.L. - 2 7/16
BP (BPI)-22-73	N.L. - 1 1/4
BP (BPI)-22-74	N.L. - 1 1/4
BP (BPI)-42-7	N.L. - 9/16

Available Inlets	Round Dim. (A)	Oval Dim. (A x B)
6	5 7/8	-
8	-	5 7/8 x 8 15/16
10	-	5 7/8 x 12 1/16
12	-	5 7/8 x 15 1/4
14	-	5 7/8 x 18 7/16

Non Insulated/Insulated Boot Plenums
Steel - Straight Plenums

- Model BP (BPI)-10-6 - *T-bar Lay-in 1/8" Border*
- Model BP (BPI)-20-6 - *T-bar Lay-in 3/4" Border*
- Model BP (BPI)-30-6 - *T-bar Lay-in 1/2" Border*
- Model BP (BPI)-11-1 - *Surface Mount 1 1/8" Border*
- Model BP (BPI)-40-7 - *Concealed Spline - 25/32" Border*
- Model BP (BPI)-40-8 - *Drop Face - 25/32" Border*
- Model BP (BPI)-40-9 - *Donn Finline - 25/32" Border*



Available Nominal Lengths	24	36	48	60
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Model 6650 (1/2" Slot Width)				Model 6675 (3/4" Slot Width)				Model 6610 (1" Slot Width)			
Width (W)				Width (W)				Width (W)			
1 Slot	2 Slot	3 Slot	4 Slot	1 Slot	2 Slot	3 Slot	4 Slot	1 Slot	2 Slot	3 Slot	4 Slot
2 1/8	3 3/8	4 5/8	5 7/8	2 3/8	3 7/8	5 3/8	6 7/8	2 5/8	4 3/8	6 1/8	7 7/8
5 Slot	6 Slot	7 Slot	8 Slot	5 Slot	6 Slot	7 Slot	8 Slot	5 Slot	6 Slot	7 Slot	8 Slot
7 1/8	8 3/8	9 5/8	10 7/8	8 3/8	9 7/8	11 3/8	12 7/8	9 5/8	11 3/8	13 1/8	14 7/8

Models	Overall Length (L)
BP (BPI)-11-1	N.L. - 1/16
BP (BPI)-10-6	N.L. - 2 7/16
BP (BPI)-20-6	N.L. - 1 7/16
BP (BPI)-30-6	N.L. - 15/16
BP (BPI)-40-7	N.L. - 9/16
BP (BPI)-40-8	N.L. - 9/16
BP (BPI)-40-9	N.L. - 9/16

Available Inlets	Round Dim. (A)	Oval Dim. (A x B)
6	5 7/8	-
8	-	5 7/8 x 8 15/16
10	-	5 7/8 x 12 1/16
12	-	5 7/8 x 15 1/4
14	-	5 7/8 x 18 7/16



LSD - Linear Slot Diffusers

Series 6650 BP/BPI - Performance

6650 - 1 Slot Performance Data

6" Inlet 1 Slot	2' Length	CFM	15	30	45	60	75	90	105
		Static Pressure	0.010	0.038	0.086	0.153	0.240	0.345	0.470
		Horizontal Throw, ft	1-3-9	6-9-18	9-13-23	12-18-27	15-21-30	18-23-33	20-25-35
	4' Length	NC	<15	20	28	35	41	45	47
		CFM	30	60	90	120	150	180	210
		Static Pressure	0.016	0.063	0.142	0.252	0.394	0.567	0.772
8" Inlet 1 Slot	2' Length	Horizontal Throw, ft	2-4-7	5-7-15	7-11-21	10-15-24	12-18-27	15-21-30	17-23-32
		NC	<15	24	34	41	45	46	49
		CFM	40	70	100	130	160	190	220
	4' Length	Static Pressure	0.018	0.056	0.115	0.194	0.294	0.415	0.556
		Horizontal Throw, ft	3-5-10	6-9-17	8-12-22	11-16-25	13-20-28	16-22-31	18-23-33
		NC	<15	24	33	39	43	45	45
10" Inlet 1 Slot	2' Length	CFM	30	45	60	75	90	105	120
		Static Pressure	0.056	0.126	0.225	0.351	0.505	0.688	0.899
		Horizontal Throw, ft	6-9-18	9-13-23	12-18-27	15-21-30	18-23-33	20-25-35	22-27-38
	4' Length	NC	<15	22	29	34	39	42	43
		CFM	60	90	120	150	180	210	240
		Static Pressure	0.036	0.082	0.146	0.227	0.328	0.446	0.582
12" Inlet 1 Slot	2' Length	Horizontal Throw, ft	5-7-15	7-11-21	10-15-22	12-18-27	15-21-30	17-23-32	20-24-35
		NC	19	27	34	40	45	48	51
		CFM	45	60	75	90	105	120	135
	4' Length	Static Pressure	0.047	0.083	0.129	0.186	0.254	0.331	0.419
		Horizontal Throw, ft	9-13-23	12-18-27	15-21-30	18-23-33	20-25-35	22-27-38	23-28-40
		NC	24	28	32	35	39	42	45
4' Length	CFM	90	120	150	180	210	240	270	
	Static Pressure	0.098	0.175	0.273	0.393	0.535	0.699	0.884	
	Horizontal Throw, ft	7-11-21	10-15-24	12-18-27	15-21-30	17-23-32	20-24-35	21-26-37	
4' Length	NC	23	30	36	41	45	48	51	

6650 - 2 Slot Performance Data

6" Inlet 2 Slot	2' Length	CFM	20	40	60	80	100	120	140
		Static Pressure	0.007	0.028	0.064	0.114	0.178	0.256	0.349
		Horizontal Throw, ft	1-2-8	4-8-17	8-12-25	11-17-31	14-21-35	17-25-38	19-29-41
	4' Length	NC	<15	15	25	32	38	43	46
		CFM	30	60	90	120	150	180	210
		Static Pressure	0.010	0.041	0.093	0.166	0.259	0.373	0.507
8" Inlet 2 Slot	2' Length	Horizontal Throw, ft	1-2-5	3-5-10	5-8-16	7-10-21	9-13-26	10-16-30	12-18-32
		NC	<15	<15	24	32	37	41	43
		CFM	25	45	65	85	105	125	145
	4' Length	Static Pressure	0.007	0.023	0.049	0.084	0.128	0.181	0.244
		Horizontal Throw, ft	1-3-10	5-9-19	9-14-27	12-18-32	15-22-35	17-26-39	20-29-42
		NC	<15	<15	23	29	35	39	43
10" Inlet 2 Slot	2' Length	CFM	50	90	130	170	210	250	290
		Static Pressure	0.014	0.045	0.094	0.161	0.245	0.348	0.468
		Horizontal Throw, ft	3-4-9	5-8-16	8-11-23	10-15-29	12-18-32	14-22-35	17-25-38
	4' Length	NC	<15	20	29	36	41	45	46
		CFM	35	55	75	95	115	135	155
		Static Pressure	0.013	0.032	0.059	0.095	0.139	0.191	0.252
12" Inlet 2 Slot	2' Length	Horizontal Throw, ft	3-6-15	7-11-23	10-16-30	13-20-34	16-24-37	19-28-40	21-30-43
		NC	<15	17	23	29	34	38	41
		CFM	70	110	150	190	230	270	310
	4' Length	Static Pressure	0.019	0.047	0.088	0.142	0.207	0.286	0.377
		Horizontal Throw, ft	4-6-12	6-10-19	9-13-26	11-16-31	13-20-34	16-23-37	18-27-39
		NC	<15	21	29	35	40	43	45
12" Inlet 2 Slot	2' Length	CFM	50	70	90	110	130	150	170
		Static Pressure	0.024	0.047	0.078	0.117	0.163	0.217	0.279
		Horizontal Throw, ft	6-10-21	10-15-29	12-19-33	15-23-36	18-27-39	21-30-42	24-32-45
	4' Length	NC	<15	<15	17	21	24	28	31
		CFM	100	140	180	220	260	300	340
		Static Pressure	0.027	0.053	0.087	0.130	0.181	0.241	0.310
4' Length	Horizontal Throw, ft	6-9-17	8-12-24	10-16-30	13-19-33	15-23-36	17-26-39	20-29-41	
	NC	16	23	29	34	38	41	43	

See Page LSD-95 for Performance Notes

LSD - Linear Slot Diffusers

Series 6650 BP/BPI - Performance

6650 3 Slot Performance Data

6" Inlet 3 Slot	2' Length	CFM	25	50	75	100	125	150	175
		Static Pressure	0.008	0.033	0.073	0.130	0.203	0.293	0.398
		Horizontal Throw, ft	1-2-7	3-7-17	7-13-25	11-17-34	14-21-39	17-25-42	20-30-46
	4' Length	NC	<15	15	24	31	36	40	43
		CFM	40	75	115	150	190	225	265
		Static Pressure	0.015	0.054	0.127	0.216	0.347	0.486	0.674
8" Inlet 3 Slot	2' Length	Horizontal Throw, ft	1-2-6	4-5-11	5-8-16	7-11-21	9-13-27	11-16-32	12-19-36
		NC	<15	<15	23	29	36	40	44
		CFM	35	55	80	105	130	155	180
	4' Length	Static Pressure	0.009	0.022	0.046	0.079	0.122	0.173	0.233
		Horizontal Throw, ft	2-3-12	4-9-19	8-14-27	12-18-35	15-22-39	18-26-43	20-31-46
		NC	<15	<15	21	28	33	37	41
10" Inlet 3 Slot	2' Length	CFM	70	110	160	210	260	310	360
		Static Pressure	0.021	0.052	0.109	0.188	0.289	0.410	0.553
		Horizontal Throw, ft	3-5-10	5-8-16	8-11-23	10-15-30	12-18-36	15-22-39	17-25-42
	4' Length	NC	<15	18	27	34	39	44	47
		CFM	45	65	90	115	140	165	190
		Static Pressure	0.011	0.023	0.044	0.072	0.106	0.147	0.195
12" Inlet 3 Slot	2' Length	Horizontal Throw, ft	3-6-15	5-11-22	10-15-31	13-20-37	16-24-41	19-28-44	21-32-48
		NC	<15	<15	21	27	32	36	39
		CFM	90	130	180	230	280	330	380
	4' Length	Static Pressure	0.023	0.048	0.091	0.149	0.221	0.307	0.407
		Horizontal Throw, ft	4-6-13	6-9-18	8-13-25	11-16-33	13-20-36	16-23-39	18-27-42
		NC	<15	20	27	33	38	42	45
12" Inlet 3 Slot	2' Length	CFM	65	85	110	135	160	185	210
		Static Pressure	0.022	0.038	0.063	0.095	0.133	0.178	0.229
		Horizontal Throw, ft	5-11-22	9-14-29	12-19-36	15-23-40	18-27-44	21-31-47	24-35-50
	4' Length	NC	<15	16	20	23	26	29	32
		CFM	130	170	220	270	320	370	420
		Static Pressure	0.027	0.046	0.077	0.117	0.164	0.219	0.282
		Horizontal Throw, ft	6-9-18	8-12-24	10-16-31	13-19-37	15-23-40	17-26-43	20-30-46
		NC	17	22	27	33	37	41	44

6650 4 Slot Performance Data

6" Inlet 4 Slot	2' Length	CFM	40	65	90	115	140	165	190
		Static Pressure	0.018	0.047	0.090	0.147	0.218	0.302	0.401
		Horizontal Throw, ft	1-3-12	3-8-19	7-13-26	11-17-34	14-21-41	16-24-44	19-28-48
	4' Length	NC	<15	16	24	30	36	39	42
		CFM	60	100	135	175	210	250	285
		Static Pressure	0.031	0.087	0.159	0.267	0.385	0.546	0.709
8" Inlet 4 Slot	2' Length	Horizontal Throw, ft	1-3-7	4-6-12	6-8-17	7-11-21	9-13-26	10-15-31	12-17-35
		NC	<15	16	24	31	35	37	37
		CFM	50	80	110	140	170	200	230
	4' Length	Static Pressure	0.014	0.036	0.069	0.112	0.164	0.228	0.301
		Horizontal Throw, ft	2-5-15	5-12-24	10-16-32	14-21-41	17-25-45	20-29-49	23-34-53
		NC	<15	17	24	30	35	39	42
10" Inlet 4 Slot	2' Length	CFM	75	120	165	210	255	300	345
		Static Pressure	0.022	0.056	0.107	0.173	0.255	0.353	0.467
		Horizontal Throw, ft	2-5-9	5-7-15	7-10-20	9-13-26	10-16-31	12-18-37	14-21-42
	4' Length	NC	<15	16	23	29	34	38	40
		CFM	60	90	120	150	180	210	240
		Static Pressure	0.014	0.032	0.056	0.088	0.127	0.173	0.226
12" Inlet 4 Slot	2' Length	Horizontal Throw, ft	3-7-18	7-13-26	12-18-35	15-22-42	18-26-46	21-31-50	24-35-54
		NC	<15	17	23	29	33	37	41
		CFM	95	135	180	225	270	315	360
	4' Length	Static Pressure	0.021	0.043	0.077	0.120	0.174	0.236	0.308
		Horizontal Throw, ft	4-6-12	6-8-17	7-11-22	9-14-28	11-17-33	13-19-38	15-22-41
		NC	<15	16	23	28	33	36	39
12" Inlet 4 Slot	2' Length	CFM	80	120	160	200	240	280	320
		Static Pressure	0.018	0.041	0.073	0.114	0.164	0.223	0.292
		Horizontal Throw, ft	5-12-24	12-18-35	16-24-44	20-29-49	24-35-54	27-41-58	31-44-62
	4' Length	NC	<15	<15	20	24	28	32	35
		CFM	120	180	240	300	360	420	480
		Static Pressure	0.018	0.040	0.071	0.111	0.159	0.217	0.283
		Horizontal Throw, ft	5-7-15	7-11-22	10-15-29	12-18-37	15-22-42	17-26-46	20-29-49
		NC	<15	19	25	31	35	39	42

See Page LSD-95 for Performance Notes

LSD - Linear Slot Diffusers

Series 6675 BP/BPI - Performance

6675 1 Slot Performance Data

Linear Slot Diffusers	6" Inlet 1 Slot	2' Length	CFM	20	35	50	65	80	95	110
			Static Pressure	0.014	0.043	0.088	0.148	0.224	0.316	0.424
			Horizontal Throw, ft	1-3-10	4-8-17	8-12-24	10-16-28	13-19-31	15-23-34	18-26-36
		NC	<15	18	26	32	37	41	45	
		4' Length	CFM	30	52.5	75	97.5	120	142.5	165
			Static Pressure	0.009	0.026	0.054	0.091	0.137	0.194	0.259
	Horizontal Throw, ft		2-3-6	4-5-11	5-8-15	7-10-20	8-12-24	10-14-27	11-17-29	
	8" Inlet 1 Slot	2' Length	CFM	25	40	55	70	85	100	115
			Static Pressure	0.036	0.093	0.175	0.284	0.419	0.580	0.767
			Horizontal Throw, ft	2-5-12	6-10-19	9-13-26	11-17-29	14-20-32	16-24-35	18-26-37
		NC	<15	17	24	30	35	39	41	
		4' Length	CFM	40	60	85	105	130	150	175
Static Pressure			0.014	0.032	0.065	0.099	0.152	0.202	0.275	
Horizontal Throw, ft	3-4-8		4-6-12	6-9-17	7-11-21	9-13-25	10-15-27	12-18-30		
10" Inlet 1 Slot	2' Length	CFM	35	45	55	65	75	85	95	
		Static Pressure	0.085	0.140	0.210	0.293	0.390	0.501	0.625	
		Horizontal Throw, ft	4-8-17	7-11-22	9-13-26	10-16-28	12-18-30	14-20-32	15-23-34	
	NC	<15	17	22	26	30	33	35		
	4' Length	CFM	55	70	85	100	115	130	145	
		Static Pressure	0.028	0.045	0.066	0.092	0.122	0.155	0.193	
Horizontal Throw, ft		4-6-11	5-7-14	6-9-17	7-10-20	8-12-23	9-13-25	10-15-27		
12" Inlet 1 Slot	2' Length	CFM	65	85	110	135	160	185	210	
		Static Pressure	0.022	0.038	0.063	0.095	0.133	0.178	0.229	
		Horizontal Throw, ft	5-11-22	9-14-29	12-19-36	15-23-40	18-27-44	21-31-47	24-35-50	
	NC	<15	16	20	23	26	29	32		
	4' Length	CFM	130	170	220	270	320	370	420	
		Static Pressure	0.027	0.046	0.077	0.117	0.164	0.219	0.282	
Horizontal Throw, ft		6-9-18	8-12-24	10-16-31	13-19-37	15-23-40	17-26-43	20-30-46		
NC	17	22	27	33	37	41	44			

6675 2 Slot Performance Data

LSD	6" Inlet 2 Slot	2' Length	CFM	30	55	80	105	130	155	180
			Static Pressure	0.009	0.029	0.061	0.105	0.161	0.228	0.308
			Horizontal Throw, ft	1-3-10	4-9-19	8-14-27	12-18-35	15-22-39	18-26-43	20-31-46
		NC	<15	18	27	33	39	42	44	
		4' Length	CFM	45	85	120	160	195	235	270
			Static Pressure	0.009	0.033	0.065	0.116	0.172	0.250	0.330
	Horizontal Throw, ft		1-3-6	4-6-12	6-8-17	8-11-23	9-14-28	11-17-33	13-19-37	
	8" Inlet 2 Slot	2' Length	CFM	45	65	85	105	125	145	165
			Static Pressure	0.007	0.023	0.049	0.084	0.128	0.181	0.244
			Horizontal Throw, ft	1-3-10	5-9-19	9-14-27	12-18-32	15-22-35	17-26-39	20-29-42
		NC	<15	<15	23	29	35	39	43	
		4' Length	CFM	70	100	130	160	190	220	250
			Static Pressure	0.014	0.028	0.047	0.071	0.100	0.135	0.174
	Horizontal Throw, ft		3-5-10	5-7-14	6-9-18	8-11-23	9-13-27	10-16-31	12-18-35	
	10" Inlet 2 Slot	2' Length	CFM	50	70	90	110	130	150	170
			Static Pressure	0.023	0.045	0.074	0.111	0.155	0.207	0.265
			Horizontal Throw, ft	3-7-17	6-12-24	10-15-31	12-19-36	15-22-39	17-25-42	19-29-45
		NC	<15	17	22	27	32	35	38	
4' Length		CFM	75	105	135	165	195	225	255	
		Static Pressure	0.025	0.050	0.082	0.123	0.171	0.228	0.293	
	Horizontal Throw, ft	4-5-11	5-7-15	6-10-19	8-12-23	9-14-28	11-16-32	12-18-36		
12" Inlet 2 Slot	2' Length	CFM	73	95	120	145	170	195	220	
		Static Pressure	0.021	0.036	0.058	0.084	0.116	0.152	0.194	
		Horizontal Throw, ft	7-12-25	11-16-32	14-20-38	16-25-42	19-29-45	22-33-48	25-36-51	
	NC	<15	18	21	25	28	31	34		
	4' Length	CFM	110	145	180	220	255	295	330	
		Static Pressure	0.025	0.044	0.068	0.102	0.137	0.183	0.229	
Horizontal Throw, ft		5-8-16	7-10-21	8-13-25	10-16-31	12-18-36	14-21-38	16-23-41		
NC	<15	20	24	29	33	36	39			

See Page LSD-95 for Performance Notes

Series 6675 BP/BPI - Performance

6675 3 Slot Performance Data

6" Inlet 3 Slot	2' Length	CFM	45	70	95	120	145	170	195
		Static Pressure	0.012	0.029	0.053	0.084	0.122	0.168	0.221
		Horizontal Throw, ft	1-3-12	3-8-19	6-13-26	10-17-33	13-20-40	16-24-45	18-27-48
	4' Length	NC	<15	17	24	30	35	39	41
		CFM	70	105	145	180	220	255	295
		Static Pressure	0.017	0.037	0.071	0.110	0.165	0.221	0.296
8" Inlet 3 Slot	2' Length	Horizontal Throw, ft	2-4-8	4-6-12	6-8-17	7-10-21	8-13-25	10-15-29	11-17-34
		NC	<15	17	24	29	34	38	41
		CFM	55	85	115	145	175	205	235
	4' Length	Static Pressure	0.012	0.029	0.054	0.082	0.124	0.171	0.224
		Horizontal Throw, ft	2-5-15	5-11-24	9-16-32	13-20-40	16-24-46	19-28-50	22-33-53
		NC	<15	18	25	30	35	39	42
10" Inlet 3 Slot	2' Length	CFM	85	130	175	220	265	310	355
		Static Pressure	0.013	0.031	0.057	0.090	0.130	0.178	0.233
		Horizontal Throw, ft	2-5-10	5-8-15	7-10-20	8-13-25	10-15-31	12-18-36	14-20-41
	4' Length	NC	<15	18	24	30	34	39	42
		CFM	65	100	130	160	190	220	250
		Static Pressure	0.015	0.037	0.062	0.094	0.132	0.177	0.229
12" Inlet 3 Slot	2' Length	Horizontal Throw, ft	3-7-18	7-14-28	12-18-36	15-22-44	18-26-48	20-30-51	23-35-55
		NC	<15	19	25	30	34	38	41
		CFM	100	150	195	240	285	330	375
	4' Length	Static Pressure	0.018	0.041	0.070	0.105	0.149	0.199	0.257
		Horizontal Throw, ft	3-6-12	6-9-17	8-11-23	9-14-28	11-16-33	13-19-38	14-22-42
		NC	<15	18	24	29	34	37	40
12" Inlet 3 Slot	2' Length	CFM	85	120	155	190	225	260	295
		Static Pressure	0.022	0.043	0.072	0.108	0.152	0.203	0.261
		Horizontal Throw, ft	5-11-24	10-17-33	14-21-43	18-26-48	21-31-2	24-36-56	27-41-59
	4' Length	NC	<15	<15	18	22	26	30	33
		CFM	130	180	235	285	340	390	445
		Static Pressure	0.016	0.031	0.053	0.078	0.111	0.146	0.190
12" Inlet 3 Slot	2' Length	Horizontal Throw, ft	5-8-15	7-10-21	9-14-27	11-16-33	13-20-39	15-23-44	17-26-47
		NC	<15	18	24	29	33	37	39
		CFM	100	150	200	250	300	350	400
	4' Length	Static Pressure	0.014	0.028	0.046	0.069	0.096	0.128	0.164
		Horizontal Throw, ft	5-8-15	7-11-21	9-14-27	11-17-33	13-20-39	15-23-45	17-26-50
		NC	<15	19	24	28	32	36	39

Linear Slot Diffusers



LSD

6675 4 Slot Performance Data

6" Inlet 4 Slot	2' Length	CFM	50	80	110	140	170	200	230
		Static Pressure	0.011	0.029	0.055	0.089	0.131	0.181	0.239
		Horizontal Throw, ft	1-3-10	3-6-19	5-12-26	9-17-34	13-20-41	16-24-48	18-28-53
	4' Length	NC	<15	16	23	30	35	39	43
		CFM	75	120	165	210	255	300	345
		Static Pressure	0.016	0.042	0.079	0.129	0.190	0.263	0.348
8" Inlet 4 Slot	2' Length	Horizontal Throw, ft	1-3-8	3-6-12	6-8-17	7-11-21	9-13-26	10-15-30	12-17-35
		NC	<15	16	23	29	34	37	39
		CFM	70	100	130	160	190	220	250
	4' Length	Static Pressure	0.016	0.042	0.079	0.129	0.190	0.263	0.348
		Horizontal Throw, ft	2-5-11	5-8-15	7-10-20	8-12-24	10-14-29	11-17-33	13-19-38
		NC	<15	17	23	28	32	36	39
10" Inlet 4 Slot	2' Length	CFM	80	110	140	170	200	230	260
		Static Pressure	0.014	0.027	0.044	0.065	0.090	0.119	0.152
		Horizontal Throw, ft	3-6-19	5-12-26	8-1-34	13-20-41	16-24-48	18-28-53	21-31-56
	4' Length	NC	<15	17	23	27	32	35	38
		CFM	125	165	210	255	300	345	390
		Static Pressure	0.017	0.030	0.049	0.072	0.099	0.131	0.167
12" Inlet 4 Slot	2' Length	Horizontal Throw, ft	3-6-13	6-8-17	7-11-21	9-13-26	10-15-20	12-17-35	13-20-39
		NC	<15	16	22	26	30	34	37
		CFM	100	140	180	220	260	300	340
	4' Length	Static Pressure	0.007	0.014	0.023	0.034	0.047	0.063	0.081
		Horizontal Throw, ft	4-10-24	9-17-34	14-22-43	18-26-51	21-31-56	24-36-60	27-41-64
		NC	<15	16	20	23	26	29	32
12" Inlet 4 Slot	2' Length	CFM	150	210	270	330	390	450	510
		Static Pressure	0.014	0.028	0.046	0.069	0.096	0.128	0.164
		Horizontal Throw, ft	5-8-15	7-11-21	9-14-27	11-17-33	13-20-39	15-23-45	17-26-50
	4' Length	NC	<15	19	24	28	32	36	39
		CFM	100	150	200	250	300	350	400
		Static Pressure	0.014	0.028	0.046	0.069	0.096	0.128	0.164

See Page LSD-95 for Performance Notes



For more product information visit us at www.metalaire.com



LSD - Linear Slot Diffusers

Series 6610 BP/BPI - Performance

6610 1 Slot Performance Data

6" Inlet 1 Slot	2' Length	CFM	30	45	60	75	90	105	120
		Static Pressure	0.013	0.029	0.052	0.082	0.117	0.160	0.209
		Horizontal Throw, ft	2-5-12	5-9-19	8-12-25	10-16-30	12-19-33	15-22-35	17-25-38
	4' Length	NC	16	23	30	35	40	44	46
		CFM	45	70	90	115	135	160	180
		Static Pressure	0.012	0.029	0.048	0.078	0.107	0.151	0.191
8" Inlet 1 Slot	2' Length	Horizontal Throw, ft	2-4-8	4-6-12	5-8-16	7-10-20	8-12-23	9-14-28	10-16-30
		NC	16	23	29	34	39	43	46
		CFM	40	50	65	80	95	110	125
	4' Length	Static Pressure	0.032	0.051	0.085	0.129	0.182	0.244	0.316
		Horizontal Throw, ft	4-8-17	6-10-21	9-14-27	11-17-31	13-20-34	15-23-36	17-26-39
		NC	17	22	28	33	38	40	42
10" Inlet 1 Slot	2' Length	CFM	60	75	100	120	145	165	190
		Static Pressure	0.017	0.026	0.047	0.068	0.099	0.128	0.170
		Horizontal Throw, ft	3-5-10	4-6-13	6-9-17	7-10-21	8-13-25	10-14-29	11-16-31
	4' Length	NC	17	21	28	32	37	40	43
		CFM	40	55	70	85	100	115	130
		Static Pressure	0.044	0.083	0.134	0.197	0.273	0.361	0.461
12" Inlet 1 Slot	2' Length	Horizontal Throw, ft	4-8-17	7-11-23	10-15-29	12-18-32	14-21-35	16-24-37	18-27-39
		NC	16	24	30	35	38	39	39
		CFM	60	85	105	130	150	175	195
	4' Length	Static Pressure	0.016	0.033	0.050	0.076	0.102	0.138	0.172
		Horizontal Throw, ft	3-5-10	5-7-15	6-9-18	8-11-23	9-13-26	10-15-30	11-17-31
		NC	<15	21	26	31	35	39	41
12" Inlet 1 Slot	2' Length	CFM	48	65	80	95	110	125	140
		Static Pressure	0.018	0.033	0.050	0.071	0.095	0.123	0.154
		Horizontal Throw, ft	5-10-20	9-14-27	11-17-31	13-20-34	15-23-36	17-26-39	19-29-41
	4' Length	NC	<15	<15	19	23	26	29	32
		CFM	70	100	120	145	165	190	210
		Static Pressure	0.029	0.058	0.084	0.123	0.159	0.211	0.258
		Horizontal Throw, ft	4-6-12	6-9-17	7-10-21	8-13-25	10-14-29	11-16-31	12-18-32
		NC	<15	21	25	30	33	35	37

6610 2 Slot Performance Data

6" Inlet 2 Slot	2' Length	CFM	30	55	80	105	130	155	180
		Static Pressure	0.006	0.020	0.042	0.072	0.110	0.156	0.211
		Horizontal Throw, ft	1-2-7	2-6-16	5-12-24	9-15-31	13-19-38	15-23-43	18-26-46
	4' Length	NC	<15	18	27	33	39	42	44
		CFM	45	85	120	160	195	235	270
		Static Pressure	0.009	0.031	0.061	0.109	0.162	0.235	0.310
8" Inlet 2 Slot	2' Length	Horizontal Throw, ft	1-2-6	3-5-10	5-7-15	7-10-20	8-12-24	10-14-29	11-17-33
		NC	<15	18	25	33	37	41	43
		CFM	45	65	85	105	125	145	165
	4' Length	Static Pressure	0.017	0.035	0.059	0.090	0.128	0.172	0.223
		Horizontal Throw, ft	2-4-13	3-8-19	6-12-25	9-15-31	12-18-37	14-21-42	16-24-44
		NC	<15	18	24	29	33	37	40
10" Inlet 2 Slot	2' Length	CFM	70	100	130	160	190	220	250
		Static Pressure	0.014	0.028	0.047	0.071	0.100	0.135	0.174
		Horizontal Throw, ft	2-4-9	4-6-12	5-8-16	7-10-20	8-12-23	9-13-27	10-15-31
	4' Length	NC	<15	17	23	28	33	37	39
		CFM	50	70	90	110	130	150	170
		Static Pressure	0.023	0.045	0.074	0.111	0.155	0.207	0.265
12" Inlet 2 Slot	2' Length	Horizontal Throw, ft	2-5-15	4-9-21	7-13-26	10-16-32	13-19-38	15-22-42	17-25-45
		NC	<15	17	22	27	32	35	38
		CFM	75	105	135	165	195	225	255
	4' Length	Static Pressure	0.012	0.024	0.039	0.059	0.082	0.109	0.140
		Horizontal Throw, ft	2-5-9	4-6-13	6-8-17	7-10-20	8-12-24	9-14-28	10-16-31
		NC	<15	16	21	26	30	34	37
12" Inlet 2 Slot	2' Length	CFM	60	90	120	150	180	210	240
		Static Pressure	0.014	0.032	0.058	0.090	0.130	0.176	0.230
		Horizontal Throw, ft	3-7-18	7-13-26	12-18-35	15-22-42	18-26-46	21-31-50	24-35-54
	4' Length	NC	<15	17	21	26	29	33	36
		CFM	90	135	180	225	270	315	360
		Static Pressure	0.017	0.038	0.068	0.106	0.153	0.208	0.272
		Horizontal Throw, ft	3-6-11	6-8-17	7-11-22	9-14-28	11-17-33	13-19-39	15-22-42
		NC	<15	18	24	30	34	38	41

See Page LSD-95 for Performance Notes

LSD - Linear Slot Diffusers

Series 6610 BP/BPI - Performance

6610 3 Slot Performance Data

6" Inlet 3 Slot	2' Length	CFM	40	65	90	115	140	165	190
		Static Pressure	0.007	0.019	0.036	0.058	0.087	0.120	0.160
		Horizontal Throw, ft	1-2-6	2-4-16	4-8-22	6-13-28	9-17-34	12-20-40	15-23-46
	4' Length	NC	<15	16	23	29	34	38	41
		CFM	60	100	135	175	210	250	285
		Static Pressure	0.011	0.030	0.055	0.093	0.134	0.190	0.247
8" Inlet 3 Slot	2' Length	Horizontal Throw, ft	1-2-6	2-5-10	4-7-14	6-9-18	7-11-21	8-13-25	10-14-29
		NC	<15	16	22	28	33	37	40
		CFM	50	80	110	140	170	200	230
	4' Length	Static Pressure	0.010	0.026	0.049	0.080	0.117	0.162	0.215
		Horizontal Throw, ft	1-3-10	3-6-19	5-12-26	9-17-34	13-20-41	16-24-48	18-28-53
		NC	<15	17	24	29	34	38	42
10" Inlet 3 Slot	2' Length	CFM	75	120	165	210	255	300	345
		Static Pressure	0.008	0.022	0.041	0.066	0.098	0.135	0.179
		Horizontal Throw, ft	1-3-8	3-6-12	6-8-17	7-11-21	9-13-26	10-15-30	12-17-35
	4' Length	NC	<15	17	23	28	33	38	41
		CFM	60	110	140	170	200	230	260
		Static Pressure	0.008	0.028	0.045	0.066	0.092	0.122	0.155
12" Inlet 3 Slot	2' Length	Horizontal Throw, ft	2-4-14	5-12-26	9-17-34	13-20-41	16-24-48	18-28-53	21-31-56
		NC	<15	21	27	32	36	39	42
		CFM	90	165	210	255	300	345	390
	4' Length	Static Pressure	0.008	0.026	0.042	0.062	0.086	0.113	0.145
		Horizontal Throw, ft	2-4-9	6-8-17	7-11-21	9-13-26	10-15-30	12-17-35	13-20-39
		NC	<15	20	26	31	35	38	40
12" Inlet 3 Slot	2' Length	CFM	80	120	160	200	240	280	320
		Static Pressure	0.010	0.022	0.038	0.060	0.086	0.118	0.154
		Horizontal Throw, ft	3-6-19	6-14-29	11-19-38	16-24-48	19-29-54	22-34-58	26-38-62
	4' Length	NC	<15	<15	19	23	28	31	35
		CFM	120	180	240	300	360	420	480
		Static Pressure	0.009	0.021	0.038	0.059	0.084	0.115	0.150
		Horizontal Throw, ft	3-6-12	6-9-18	8-12-24	10-15-30	12-18-36	14-21-42	16-24-48
		NC	<15	18	25	30	35	38	41

6610 4 Slot Performance Data

6" Inlet 4 Slot	2' Length	CFM	50	80	110	140	170	200	230
		Static Pressure	0.009	0.022	0.042	0.069	0.101	0.140	0.185
		Horizontal Throw, ft	1-2-6	2-4-17	3-8-23	6-13-29	8-18-35	12-21-42	15-24-48
	4' Length	NC	<15	16	23	30	35	39	43
		CFM	75	120	165	210	255	300	345
		Static Pressure	0.012	0.032	0.060	0.098	0.144	0.200	0.264
8" Inlet 4 Slot	2' Length	Horizontal Throw, ft	1-2-6	2-5-10	4-7-14	6-9-18	7-11-22	9-13-26	10-15-30
		NC	<15	16	23	29	34	37	39
		CFM	70	100	130	160	190	220	250
	4' Length	Static Pressure	0.017	0.035	0.059	0.090	0.126	0.169	0.219
		Horizontal Throw, ft	1-3-13	3-6-21	5-11-27	7-17-33	10-20-39	14-23-46	17-26-52
		NC	<15	18	24	29	33	37	39
10" Inlet 4 Slot	2' Length	CFM	105	150	195	240	285	330	375
		Static Pressure	0.013	0.027	0.045	0.068	0.096	0.129	0.166
		Horizontal Throw, ft	2-4-9	3-6-13	5-8-17	7-10-21	8-12-25	10-14-29	11-16-32
	4' Length	NC	<15	19	26	32	36	40	42
		CFM	80	120	160	200	240	280	320
		Static Pressure	0.010	0.022	0.038	0.060	0.086	0.118	0.154
12" Inlet 4 Slot	2' Length	Horizontal Throw, ft	2-4-17	4-9-25	7-17-33	12-21-42	17-25-50	19-29-58	22-33-62
		NC	<15	19	26	32	36	40	42
		CFM	125	180	240	300	360	420	480
	4' Length	Static Pressure	0.012	0.025	0.044	0.069	0.100	0.136	0.178
		Horizontal Throw, ft	2-5-11	5-8-16	7-10-21	9-13-26	10-16-31	12-18-36	14-21-42
		NC	<15	18	25	30	35	39	42
12" Inlet 4 Slot	2' Length	CFM	90	140	190	240	290	340	390
		Static Pressure	0.007	0.017	0.031	0.050	0.073	0.101	0.132
		Horizontal Throw, ft	2-5-19	6-13-29	10-20-39	17-25-50	20-30-59	24-35-64	27-41-68
	4' Length	NC	<15	16	21	25	28	32	35
		CFM	135	210	285	360	435	510	585
		Static Pressure	0.008	0.020	0.038	0.060	0.088	0.120	0.158
		Horizontal Throw, ft	3-6-12	6-9-18	8-12-25	10-16-31	13-19-38	15-22-44	17-25-51
		NC	<15	19	25	30	35	39	42

See Page LSD-95 for Performance Notes

LSD - Linear Slot Diffusers

Series BP/BPI - Return Air Performance

Return Air Performance 1/2" Slots (Duct Connected)

Number of Slots	Negative Ps Inches of Water	.02	.04	.06	.08	.10	.15
1	CFM/Ft.	15	20	25	30	35	40
Ak/Ft=.03	NC	--	20	27	32	37	41
2	CFM/Ft.	35	50	60	70	80	95
Ak/Ft=.06	NC	--	22	27	32	37	41
3	CFM/Ft.	55	80	95	110	125	150
Ak/Ft=.09	NC	--	23	28	33	37	42
4	CFM/Ft.	70	100	120	140	155	190
Ak/Ft=.12	NC	--	24	30	34	37	44
5	CFM/Ft.	90	135	155	180	200	245
Ak/Ft=.15	NC	--	25	30	34	37	44
6	CFM/Ft.	110	155	195	220	245	300
Ak/Ft=.18	NC	--	26	33	37	40	96
7	CFM/Ft.	130	185	225	260	290	355
Ak/Ft=.21	NC	--	27	33	37	41	47
8	CFM/Ft.	140	200	245	280	310	385
Ak/Ft=.24	NC	--	28	34	38	42	48

Return Air Performance 3/4" Slots (Duct Connected)

Number of Slots	Negative Ps Inches of Water	.02	.04	.06	.08	.10	.15
1	CFM/Ft.	25	35	45	50	55	70
Ak/Ft=.02	NC	--	21	29	32	35	42
2	CFM/Ft.	55	80	90	100	110	135
Ak/Ft=.08	NC	--	25	29	32	35	42
3	CFM/Ft.	90	115	140	160	180	220
Ak/Ft=.12	NC	--	26	32	36	40	46
4	CFM/Ft.	100	140	175	200	225	275
Ak/Ft=.12	NC	--	27	34	38	41	47
5	CFM/Ft.	140	185	225	260	290	360
Ak/Ft=.16	NC	--	28	34	38	42	48
6	CFM/Ft.	160	225	275	320	360	440
Ak/Ft=.20	NC	--	29	35	40	43	49
7	CFM/Ft.	175	250	305	350	395	480
Ak/Ft=.24	NC	--	30	36	40	44	50
8	CFM/Ft.	200	285	350	400	450	545
Ak/Ft=.32	NC	--	31	37	41	45	51

6610R 1" Slot Width

Number of Slots	Negative Ps Inches of Water	.02	.04	.06	.08	.10	.15
1	CFM/Ft.	35	50	60	70	80	95
Ak/Ft=.06	NC	--	25	31	36	40	45
2	CFM/Ft.	70	100	125	140	155	190
Ak/Ft=.11	NC	--	27	33	37	41	47
3	CFM/Ft.	105	150	185	210	235	285
Ak/Ft=.17	NC	--	29	35	39	43	49
4	CFM/Ft.	140	200	250	280	310	380
Ak/Ft=.23	NC	--	31	37	41	45	51
5	CFM/Ft.	175	250	300	350	390	475
Ak/Ft=.28	NC	--	32	38	42	46	52
6	CFM/Ft.	210	300	375	420	465	570
Ak/Ft=.33	NC	--	33	40	43	47	53
7	CFM/Ft.	245	350	425	490	545	665
Ak/Ft=.39	NC	--	34	41	44	47	54
8	CFM/Ft.	280	400	475	560	620	760
Ak/Ft=.44	NC	--	35	42	45	48	55

See Page LSD-95 for Performance Notes

Linear Slot Diffusers

LSD

➔ Linear Louver Diffuser ➔ Model L-5000 ➔ Aluminum

Product Details

- ✦ The series L-5000 is a fixed pattern, high induction architectural linear slot diffuser. This diffuser is constructed from heavy aluminum extrusions and is available with either 1-way or 2-way opposite air discharge patterns
- ✦ Also available is an optional plenum that allows the 2-way opposite unit to become a supply/return diffuser.
- ✦ T-bar Lay-in units available in 18", 24", 30", 36" or 42" and in surface mounting applications up to 48"
- ✦ 1-way units available in 3", 6", 9", 12" and 15" widths
- ✦ 2-way opposite units available in 6" and 12" widths
- ✦ The louvered face is secured with spring clips making removal easy for installation
- ✦ The series L-5000 is an excellent choice for VAV applications
- ✦ L-5000 surface mount diffuser available



Model L-5000 Shown

Standard Finish: 01 White

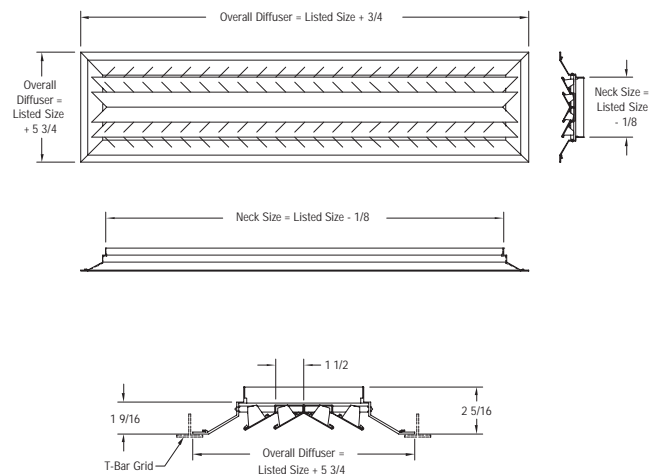


Surface Mount

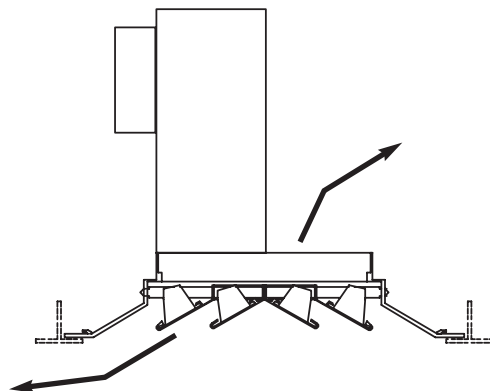
Dimensions are in inches

Series L-5000

Model L-5000-1 - Dimensions same as above (with screw holes)



The L-5000 can be used for combination Supply/Return applications.
Unit shown above with optional boot plenum.



Model L-5000 - Performance

Size in inches	Neck Velocity (VN) fpm	400	450	500	550	600	650	700
	Total Pressure	.057	.072	0.94	.110	.130	.168	.180
42 x 3 An .875	CFM ea. side	350	394	480	481	535	568	610
	Throw in ft.	11	12	14	15	15	17	18
42 x 4.5 An 1.312	CFM ea. side	525	591	656	722	788	853	919
	Throw in ft.	13	14	16	17	19	20	22

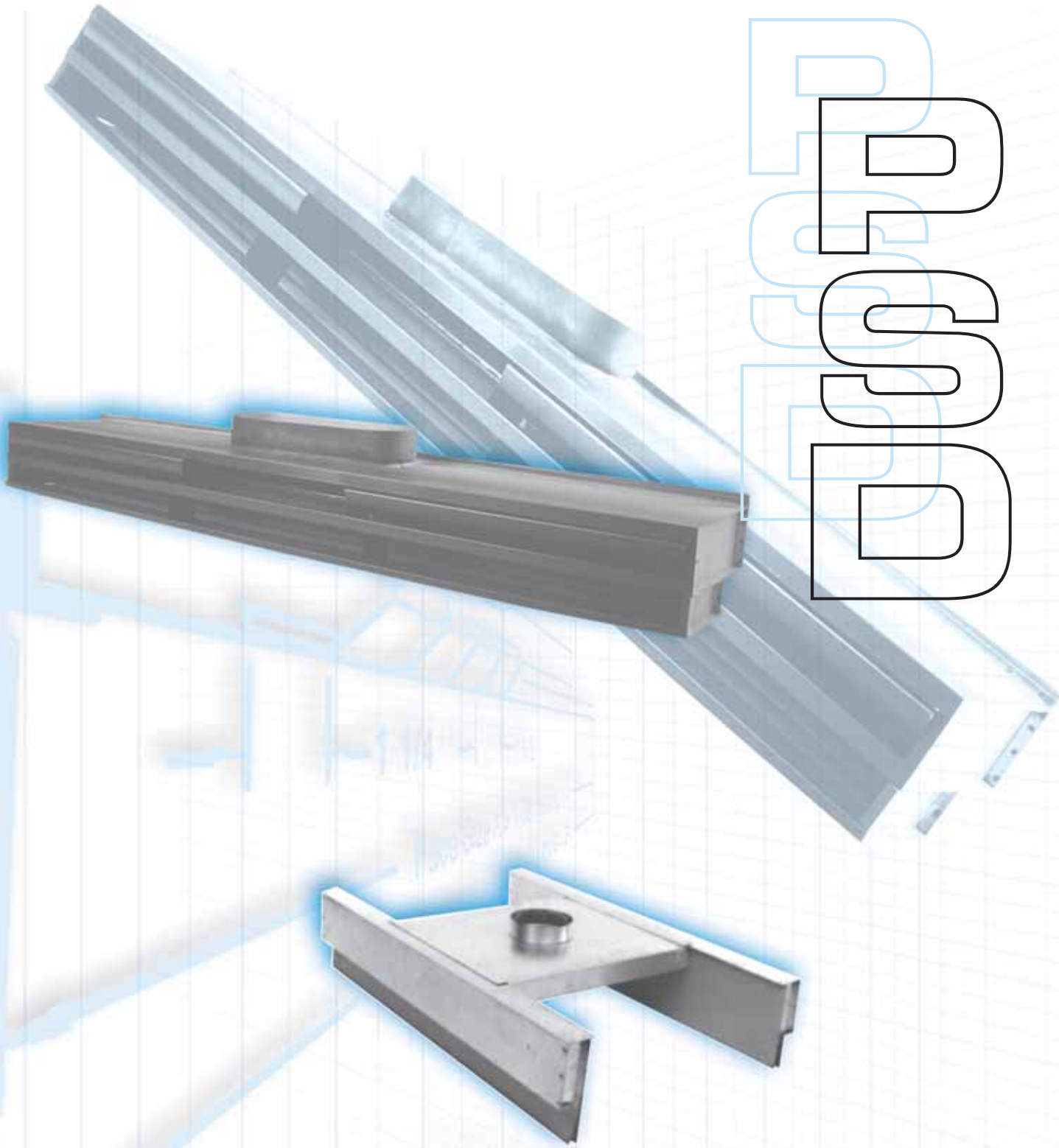
All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic feet per minute (air)
- fpm - Velocity of air stream in feet per minute
- Pt - Total pressure (inches of water column)
- Throw - Cataloged throw is horizontal distances in feet to the terminal velocities of 50 fpm with ambient supply air temperature.
- An - Neck area



PLENUM
SLOT
DIFFUSERS



**PLENUM
SLOT DIFFUSERS**



Series PHP
Pg. 114

Plenum Slot Diffusers - Adjustable Pattern Controller - Series PHP

- ★ Heavy duty extruded aluminum pattern controller and gasket for tight horizontal discharge pattern
- ★ Field adjustable pattern controllers allow adjustable horizontal and vertical throw
- ★ Units available in 1 to 4 slots to meet a wide range of applications and capabilities
- ★ Double hem face construction for rigidity and straightness
- ★ PHPR return model offers low pressure drop return; Integral light shield hides interior of unit
- ★ One-piece plenum construction ensures tight fit in ceiling grid
- ★ Optional 1/4" insulation on PHPI-6 units
- ★ Lay-in (type 6) integrates into 1" T-bar ceiling

	T-bar Lay-in		Fineline Ceilings			
	Supply	Return	Supply		Return	
Insulated	PHPSI-6	PHPRI-6	PHPSI-9 Supply w/ Center Tee	PHNSI-9 Supply w/ hat section	PHPRI-9 Return w/ Center Tee	PHNRI-9 Return w/ hat section
Non-Insulated	PHPS-6	PHPR-6	PHPS-9 Supply w/ Center Tee	PHNS-9 Supply w/ hat section	PHPR-9 Return w/ Center Tee	PHNR-9 Return w/ hat section

Linear Slot Diffusers



Series PHC

Additional product information available at www.metalair.com

High Capacity Plenum Slot Diffusers - Fixed Pattern Controller - Series PHC

- ★ Aerodynamically shaped, heavy duty extruded aluminum curved blade pattern controller generates a tight horizontal discharge pattern
- ★ Excellent selection for perimeter applications, especially in cold climates because of its high induction ratio
- ★ Available with integral return, a low cost and efficient solution to return air into the ceiling plenum
- ★ Optional 1/4" insulation on PHCSI-6, PHCRI-6, PHCSI-DB-6, and PHCRI-DB-6

T-bar Lay-in				
Insulated	PHCSI-6 Supply	PHCRI-6 Supply - with Return	PHCSI-DB-6 Supply - with Down Blow	PHCRI-DB-6 Supply - with Down Blow & Return
Non-Insulated	PHCS-6 Supply	PHCR-6 Supply - with Return	PHCS-DB-6 Supply - with Down Blow	PHCR-DB-6 Supply - with Down Blow & Return

LSD



Series LT

Additional product information available at www.metalair.com

Light Troffer Diffusers - Fixed Pattern Controller - Series LT

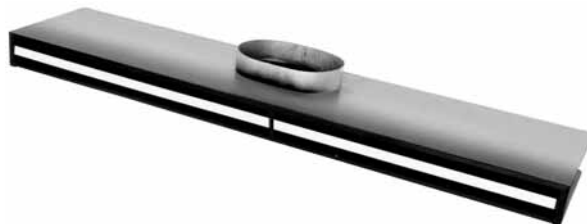
- ★ Architecturally pleasing; Reduces ceiling clutter by integrating the ceiling diffuser into the light fixture
- ★ Each unit is customized to fit the specified light fixture ensuring a tight seal for optimum performance
- ★ Optional 1/2" internal insulation available
- ★ Available with single or double-sided supply configurations
- ★ Model DS-LT-6 double-sided diffusers are available with side or top inlet for installation flexibility
- ★ Matching single-sided plenum return unit model SSR-LT-6 is available

T-bar Lay-in				
Insulated	SSI-LT-6 Single Side	DSI-LT-6 Double Side - Side Inlet	DSTI-LT-6 Double Side - Top Inlet	SSRI-LT-6 Single Side Return
Non-Insulated	SS-LT-6 Single Side	DS-LT-6 Double Side - Side Inlet	DST-LT-6 Double Side - Top Inlet	SSR-LT-6 Single Side Return

➔ Plenum Slot Diffusers ➔ Supply/Return ➔ Series PHP

Product Details

- ★ Heavy duty extruded aluminum pattern controller and gasket for tight horizontal discharge pattern
- ★ Field adjustable pattern controllers allow adjustable horizontal and vertical throw
- ★ Units available in 1 to 4 slots to meet a wide range of applications and capabilities
- ★ Double hem face construction for rigidity and straightness
- ★ PHPR return model offers low pressure drop return; Integral light shield hides interior of unit
- ★ One-piece plenum construction ensures tight fit in ceiling grid
- ★ Optional 1/4" insulation on PHPI-6 units
- ★ Lay-in (type 6) integrates into 1" T-bar ceiling



Model PHP-6 Shown

Finish: 25 - WT - White Tees with Black Borders & Plenum Interior

Plenum Slot Diffusers

PSD

T-bar Lay-in - Supply

Dimensions are in inches

Adjustable Pattern Controller

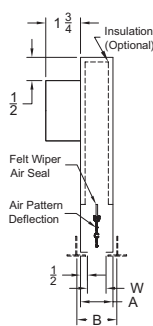
Non Insulated

Model PHPS-50-6 - 1/2" Slot Width
 Model PHPS-75-6 - 3/4" Slot Width
 Model PHPS-10-6 - 1" Slot Width
 Model PHPS-15-6 - 1 1/2" Slot Width

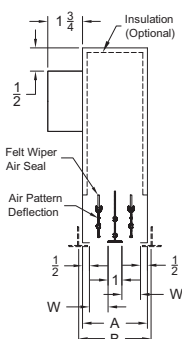
Insulated

Model PHPSI-50-6 - 1/2" Slot Width
 Model PHPSI-75-6 - 3/4" Slot Width
 Model PHPSI-10-6 - 1" Slot Width
 Model PHPSI-15-6 - 1 1/2" Slot Width

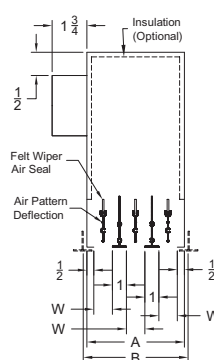
1 Slot



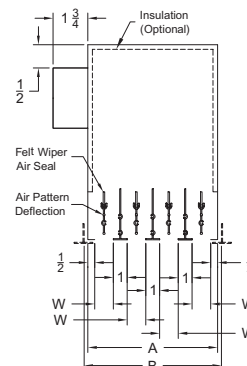
2 Slot



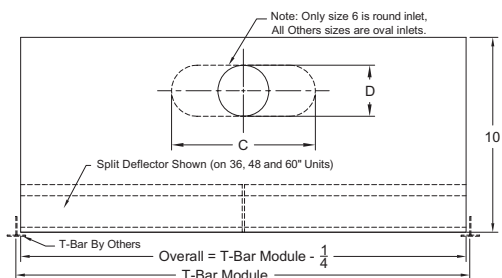
3 Slot



4 Slot



Supply - Plenum Slot Diffusers - Steel - Face View Series PHPS(I)-6 - T-bar Lay-in



PSD - Plenum Slot Diffusers

T-bar Lay-in - Return

Dimensions are in inches

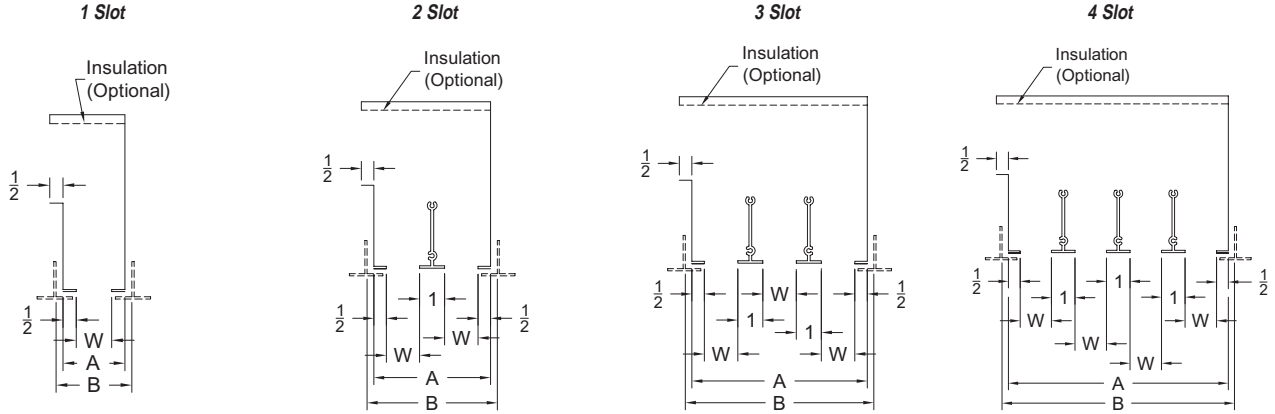
No Pattern Controller

Non Insulated

Model PHPR-50-6 - 1/2" Slot Width
 Model PHPR-75-6 - 3/4" Slot Width
 Model PHPR-10-6 - 1" Slot Width
 Model PHPR-15-6 - 1 1/2" Slot Width

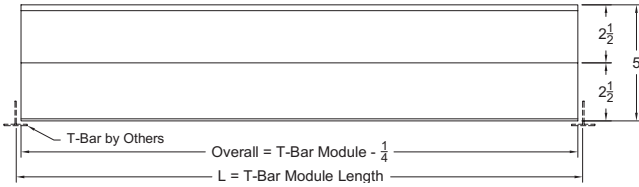
Insulated

Model PHPRI-50-6 - 1/2" Slot Width
 Model PHPRI-75-6 - 3/4" Slot Width
 Model PHPRI-10-6 - 1" Slot Width
 Model PHPRI-15-6 - 1 1/2" Slot Width



Return- Plenum Slot Diffusers - Face View

Series PHPR(I)-6 - T-bar Lay-in



Plenum Slot Diffusers

PSD

Inlet Size	C	D
6 Round	-	5 7/8
8 Oval	8 15/16	6
10 Oval	12 1/16	6
12 Oval	15 1/4	6

Models		L	W	1 Slot		2 Slots		3 Slots		4 Slots	
Supply	Return			A	B	A	B	A	B	A	B
PHPS(I)-50-6	PHPR(I)-50-6	24, 36, 48, 60	1/2	1 1/2	1 3/4	3	3 1/4	4 1/2	4 3/4	6	6 1/4
PHPS(I)-75-6	PHPR(I)-75-6	24, 36, 48, 60	3/4	1 3/4	2	3 1/2	3 3/4	5 1/4	5 1/2	7	7 1/4
PHPS(I)-10-6	PHPR(I)-10-6	24, 36, 48, 60	1	2	2 1/4	4	4 1/4	6	6 1/4	8	8 1/4
PHPS(I)-15-6	PHPR(I)-15-6	24, 36, 48, 60	1 1/2	2 1/2	2 3/4	5	5 1/4	7 1/2	7 3/4	10	10 1/4

PSD - Plenum Slot Diffusers

5/2007

Plenum Slot Diffusers

Donn Finline Ceiling - Supply - Adjustable Pattern Controller

Non Insulated

Model PHPS-75-9 - 3/4" Slot Width
 Model PHPS-10-9 - 1" Slot Width
 Model PHPS-15-9 - 1 1/2" Slot Width

Insulated

Model PHPSI-75-9 - 3/4" Slot Width
 Model PHPSI-10-9 - 1" Slot Width
 Model PHPSI-15-9 - 1 1/2" Slot Width

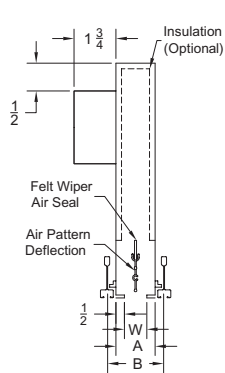
Non Insulated

Model PHNS-75-9 - 3/4" Slot Width
 Model PHNS-10-9 - 1" Slot Width
 Model PHNS-15-9 - 1 1/2" Slot Width

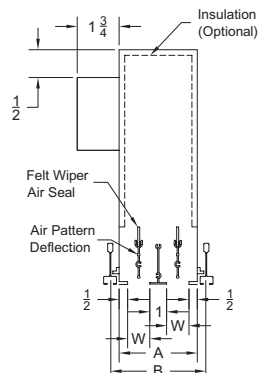
Insulated

Model PHNSI-75-9 - 3/4" Slot Width
 Model PHNSI-10-9 - 1" Slot Width
 Model PHNSI-15-9 - 1 1/2" Slot Width

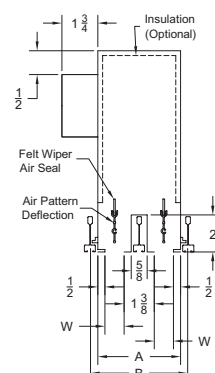
1 Slot



2 Slot - Center Tee

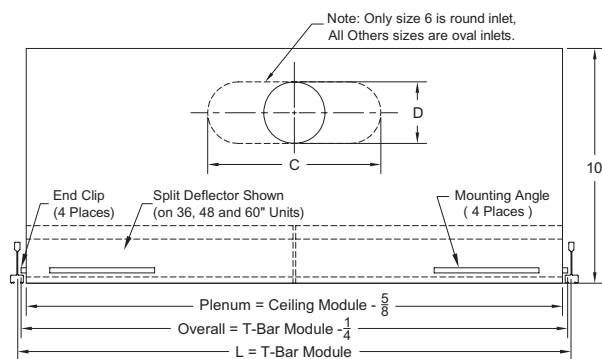


2 Slot - Hat Section



Supply- Plenum Slot Diffusers - Face View

Series PHPS(I)-9 - Donn Fline Ceiling



Inlet Size	C	D
6 Round	-	5 7/8
8 Oval	8 15/16	6
10 Oval	12 1/16	6
12 Oval	15 1/4	6

Supply	L	W	1 Slot w/ Center Tee		2 Slots w/ Center Tee		2 Slots w/ Hat Section	
			A	B	A	B	A	B
PHPS(I)-75-9	24, 48	3/4	1 3/4	2 3/8	3 1/2	4 1/8	-	-
PHPS(I)-10-9	24, 48	1	2	2 5/8	4	4 5/8	-	-
PHPS(I)-15-9	24, 48	1 1/2	2 1/2	3 1/8	5	4 5/8	-	-
PHPS(I)-75-9	24, 48	-	-	-	-	-	3 7/8	4 1/4
PHPS(I)-10-9	24, 48	-	-	-	-	-	4 3/8	5
PHPS(I)-15-9	24, 48	-	-	-	-	-	5 3/8	6

PSD

PSD - Plenum Slot Diffusers

Donn Finline Ceiling - Return - No Pattern Controller

Non Insulated

Model PHPR-75-9 - 3/4" Slot Width
 Model PHPR-10-9 - 1" Slot Width
 Model PHPR-15-9 - 1 1/2" Slot Width

Insulated

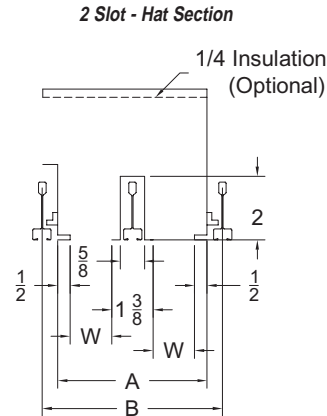
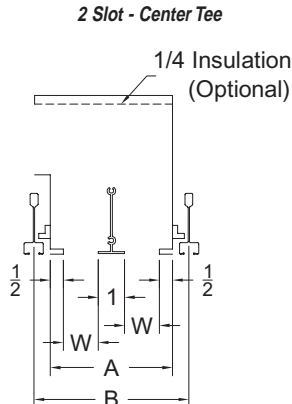
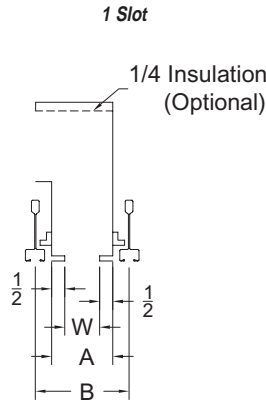
Model PHPRI-75-9 - 3/4" Slot Width
 Model PHPRI-10-9 - 1" Slot Width
 Model PHPRI-15-9 - 1 1/2" Slot Width

Non Insulated

Model PHNR-75-9 - 3/4" Slot Width
 Model PHNR-10-9 - 1" Slot Width
 Model PHNR-15-9 - 1 1/2" Slot Width

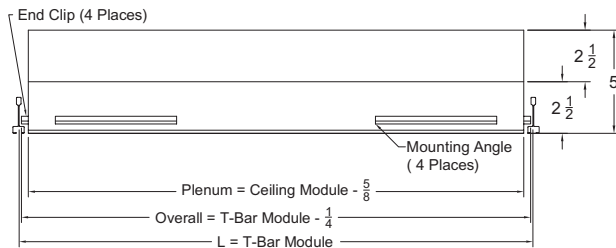
Insulated

Model PHNRI-75-9 - 3/4" Slot Width
 Model PHNRI-10-9 - 1" Slot Width
 Model PHNRI-15-9 - 1 1/2" Slot Width



Return- Plenum Slot Diffusers - Face View

Series PHPR(I)-9 - Donn Finline Ceiling



Inlet Size	C	D
6 Round	-	5 7/8
8 Oval	8 15/16	6
10 Oval	12 1/16	6
12 Oval	15 1/4	6

Return	L	W	1 Slot w/ Center Tee		2 Slots w/ Center Tee		2 Slots w/ Hat Section	
			A	B	A	B	A	B
PHPR(I)-75-9	24, 48	3/4	1 3/4	2 3/8	3 1/2	4 1/8	-	-
PHPR(I)-10-9	24, 48	1	2	2 5/8	4	4 5/8	-	-
PHPR(I)-15-9	24, 48	1 1/2	2 1/2	3 1/8	5	4 5/8	-	-
PHPR(I)-75-9	24, 48	-	-	-	-	-	3 7/8	4 1/4
PHPR(I)-10-9	24, 48	-	-	-	-	-	4 3/8	5
PHPR(I)-15-9	24, 48	-	-	-	-	-	5 3/8	6

1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 25-WT White Tees with Black Borders</p> <p>Optional Finish 26 White Tees and Borders 27 Black Tees and Borders</p>	<p>CN - (For units over 24") LQ - Locking quadrant damper T-1 - One outside tee T-2 - Two outside tee TC-1 - One outside tee TC-2 - Bar clips both ends TC-3 - One T-bar clip/One outside tee EN - End Notch EN-2 - End notch/Two outer tees</p>	<ul style="list-style-type: none"> Extruded aluminum pattern controller (supply) No pattern controller on return units One-piece electrogalvanized steel plenum with double hem face Internal insulation is 1/4" on one slot units

1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 25-WT White Tees with Black Borders</p> <p>Optional Finish 26 White Tees and Borders 27 Black Tees and Borders</p>	<p>CN - HS center hat section for 2 slot units (see PHNS models) LQ - Locking quadrant damper</p>	<ul style="list-style-type: none"> Extruded aluminum pattern controller on supply units, no pattern controller on return units One-piece electrogalvanized steel plenum with double hem face All -9 units over 24" have a standard cross-notch Internal insulation is 1/4" on one slot units Available in lengths and slot widths as shown

Plenum Slot Diffusers

PSD

PSD - Plenum Slot Diffusers

5/2007

Model PHPS-6 and PHPSI-6 One Slot - Performance

				CFM/LF											
				10	15	25	40	60	75	90	120				
Plenum Slot Diffusers	1/2" Slot Width	2' Length 6" Inlet	Horizontal	CFM	20	30	50	80	120	150	180	240			
			Ps	0.01	0.023	0.064	0.163	0.367	0.574	0.826	1.469				
		Pt	0.011	0.024	0.068	0.174	0.39	0.61	0.879	1.562					
		Throw	2 3 6	3 5 8	5 7 10	7 9 12	9 11 15	10 12 17	11 13 19	12 15 22					
		NC	-	<10	17	29	39	43	47	56					
		Vertical	Ps	0.013	0.029	0.082	0.209	0.471	0.736	1.06	1.885				
	Pt	0.014	0.031	0.086	0.22	0.495	0.773	1.113	1.978						
	Throw	1 1 3	1 2 4	2 3 7	4 5 11	5 8 16	7 10 20	8 12 24	11 16 32						
	NC	-	<10	15	29	38	42	45	52						
	4' Length 6" Inlet	Horizontal	CFM	40	60	100	160	240	300	360	-				
			Ps	0.01	0.023	0.063	0.16	0.36	0.563	0.81	-				
		Pt	0.013	0.028	0.079	0.201	0.453	0.708	1.02	-					
Throw		2 3 7	3 5 10	6 8 14	9 12 18	12 15 22	14 17 24	15 19 26	-						
NC		-	<10	20	32	42	46	50	-						
Vertical		Ps	0.013	0.029	0.08	0.205	0.462	0.722	1.039	-					
Pt	0.015	0.035	0.096	0.247	0.555	0.867	1.249	-							
Throw	2 3 5	3 4 8	4 6 13	7 10 20	10 15 30	13 19 38	15 23 46	-							
NC	-	<10	18	32	41	45	48	-							
5' Length 8" Inlet	Horizontal	CFM	50	75	125	200	300	375	450	-					
		Ps	0.01	0.022	0.061	0.157	0.353	0.551	0.794	-					
	Pt	0.011	0.025	0.07	0.18	0.405	0.633	0.912	-						
	Throw	3 4 8	4 6 12	7 11 16	11 14 20	14 17 24	16 19 27	17 21 29	-						
	NC	<10	11	22	34	44	48	52	-						
	Vertical	Ps	0.013	0.028	0.079	0.201	0.453	0.707	1.018	-					
Pt	0.014	0.032	0.088	0.224	0.505	0.789	1.136	-							
Throw	2 3 7	3 5 10	5 8 16	9 13 26	13 20 40	16 25 49	20 30 59	-							
NC	<10	12	26	39	46	50	55	-							
3/4" Slot Width	2' Length 8" Inlet	Horizontal	CFM	20	30	50	80	120	150	180	240				
			Ps	0.007	0.015	0.041	0.104	0.235	0.367	0.528	0.939				
		Pt	0.007	0.015	0.042	0.108	0.243	0.38	0.973	-					
		Throw	2 3 5	3 4 7	4 6 9	7 8 12	8 10 14	9 11 16	10 12 17	12 14 20					
	NC	-	-	<10	23	32	37	40	47						
	Vertical	Ps	0.008	0.017	0.048	0.123	0.277	0.433	0.623	1.108					
		Pt	0.008	0.018	0.05	0.127	0.285	0.446	0.642	1.141					
	Throw	1 1 2	1 2 3	2 3 5	3 4 9	4 7 13	5 8 16	7 10 20	9 13 26						
	NC	-	-	<10	24	36	41	45	54						
	4' Length 8" Inlet	Horizontal	CFM	40	60	100	160	240	300	360	-				
			Ps	0.006	0.014	0.04	0.102	0.23	0.36	0.518	-				
		Pt	0.007	0.016	0.046	0.117	0.264	0.412	0.593	-					
Throw		2 3 6	3 4 8	5 7 13	7 11 16	11 14 20	13 16 22	14 17 25	-						
NC	-	<10	15	26	35	40	43	-							
Vertical	Ps	0.008	0.017	0.047	0.121	0.272	0.424	0.611	-						
	Pt	0.008	0.019	0.053	0.136	0.305	0.477	0.686	-						
Throw	1 2 4	2 3 6	3 5 10	6 8 17	8 12 25	10 15 31	12 19 37	-							
NC	-	10	12	27	39	44	48	-							
5' Length 8" Inlet	Horizontal	CFM	50	75	125	200	300	375	450	-					
		Ps	0.006	0.014	0.039	0.1	0.226	0.353	0.508	-					
	Pt	0.008	0.017	0.048	0.124	0.278	0.434	0.626	-						
	Throw	2 4 7	4 6 11	6 9 14	10 13 18	13 16 22	14 18 25	16 19 27	-						
NC	-	<10	17	28	37	42	45	-							
Vertical	Ps	0.007	0.017	0.046	0.118	0.266	0.416	0.599	-						
	Pt	0.009	0.02	0.055	0.142	0.319	0.498	0.717	-						
Throw	2 3 5	3 4 8	4 7 13	7 11 22	11 16 32	13 20 40	16 24 48	-							
NC	-	<10	14	29	41	46	50	-							

See Page PSD-125 for performance data notes

PSD - Plenum Slot Diffusers

Model PPHP-6 and PPHSI-6 One Slot - Performance

			CFM/LF											
			10	15	25	40	60	75	90	120	160			
1" Slot Width	2' Length 8" Inlet	Horizontal	CFM	20	30	50	80	120	150	180	240	320		
			Ps	0.005	0.010	0.028	0.073	0.163	0.255	0.368	0.654	1.162		
			Pt	0.005	0.011	0.030	0.076	0.172	0.268	0.387	0.687	1.222		
		Throw	3 4 6	4 5 7	5 6 9	6 8 11	8 10 14	9 11 15	10 12 17	11 14 19	13 16 23			
		NC	-	<10	10	23	32	36	39	44	53			
		Vertical	Ps	0.007	0.016	0.044	0.113	0.254	0.396	0.571	1.015	1.804		
	Pt		0.007	0.016	0.046	0.116	0.262	0.410	0.590	1.048	1.864			
	Throw		0 1 1	1 1 2	1 2 4	2 3 6	3 4 9	4 5 11	4 7 13	6 9 18	8 12 23			
	NC	-	-	<10	22	35	40	43	47	55				
	4' Length 8" Inlet	Horizontal	CFM	40	60	100	160	240	300	360	480	-		
			Ps	0.004	0.010	0.028	0.071	0.160	0.250	0.361	0.641	-		
			Pt	0.005	0.012	0.034	0.086	0.194	0.303	0.436	0.775	-		
		Throw	1 2 4	2 3 7	4 5 11	6 9 16	9 13 19	11 15 22	13 17 24	16 19 28	-			
		NC	-	<10	13	26	35	39	42	47	-			
		Vertical	Ps	0.007	0.016	0.043	0.111	0.249	0.389	0.560	0.995	-		
	Pt		0.008	0.018	0.049	0.125	0.282	0.441	0.635	1.129	-			
	Throw		1 2 3	2 2 5	3 4 8	4 6 13	6 10 19	8 12 24	10 14 29	13 19 38	-			
	NC	-	-	<10	5	8	10	11	13	15	-			
5' Length 10" Inlet	Horizontal	CFM	50	75	125	200	300	375	450	600	-			
		Ps	0.004	0.010	0.027	0.070	0.157	0.245	0.353	0.628	-			
		Pt	0.005	0.011	0.032	0.082	0.184	0.287	0.413	0.735	-			
	Throw	5 6 9	6 8 11	8 10 14	10 13 18	13 15 22	14 17 24	15 19 27	18 22 31	-				
	NC	-	<10	15	28	37	41	44	49	-				
	Vertical	Ps	0.007	0.015	0.042	0.108	0.244	0.381	0.549	0.975	-			
Pt		0.008	0.017	0.047	0.120	0.271	0.423	0.609	1.082	-				
Throw		1 2 4	2 3 7	4 5 11	6 9 18	9 13 26	11 16 33	13 20 39	18 26 53	-				
NC	-	<10	11	27	40	45	48	52	-					
1-1/2" Slot Width	2' Length 8" Inlet	Horizontal	CFM	20	30	50	80	120	150	180	240	320		
			Ps	0.004	0.010	0.027	0.069	0.155	0.242	0.349	0.620	1.102		
			Pt	0.005	0.010	0.028	0.073	0.163	0.255	0.368	0.654	1.162		
		Throw	1 2 3	2 2 5	3 4 8	4 6 11	6 9 13	8 10 15	9 11 16	11 13 18	12 15 21			
		NC	-	-	<10	13	22	29	34	42	50			
		Vertical	Ps	0.003	0.007	0.020	0.052	0.117	0.183	0.263	0.468	0.831		
	Pt		0.003	0.008	0.022	0.056	0.125	0.196	0.282	0.501	0.891			
	Throw		0 1 1	1 1 2	1 1 3	1 2 4	2 3 7	3 4 8	3 5 10	4 7 13	6 9 17			
	NC	-	-	-	<10	19	25	30	37	45				
	4' Length 8" Inlet	Horizontal	CFM	40	60	100	160	240	300	360	480	640		
			Ps	0.004	0.009	0.026	0.068	0.152	0.237	0.342	0.608	1.081		
			Pt	0.005	0.012	0.032	0.082	0.186	0.290	0.417	0.742	1.319		
		Throw	2 2 5	2 3 7	4 6 12	6 9 15	9 13 18	12 15 21	13 16 23	15 18 26	17 21 30			
		NC	-	-	<10	16	25	32	37	45	53			
		Vertical	Ps	0.003	0.007	0.020	0.051	0.115	0.179	0.258	0.458	0.815		
	Pt		0.004	0.009	0.026	0.066	0.148	0.231	0.333	0.593	1.054			
	Throw		1 1 2	1 2 4	2 3 6	3 5 10	5 7 14	6 9 18	7 11 21	10 14 29	13 19 38			
	NC	-	-	<10	12	22	28	33	40	48				
5' Length 10" Inlet	Horizontal	CFM	50	75	125	200	300	375	450	600	800			
		Ps	0.004	0.009	0.026	0.066	0.149	0.233	0.335	0.596	1.059			
		Pt	0.005	0.011	0.031	0.078	0.176	0.275	0.395	0.703	1.249			
	Throw	3 4 8	4 6 10	7 9 13	10 12 17	12 15 21	13 16 23	15 18 25	17 21 29	19 24 34				
	NC	-	-	<10	18	27	34	39	47	55				
	Vertical	Ps	0.003	0.007	0.020	0.050	0.112	0.176	0.253	0.449	0.799			
Pt		0.004	0.009	0.024	0.062	0.139	0.217	0.313	0.556	0.989				
Throw		1 2 3	2 2 5	3 4 8	4 7 13	7 10 20	8 12 25	10 15 30	13 20 40	18 27 53				
NC	-	-	<10	14	24	30	35	42	50					

See Page PSD-125 for performance data notes

Plenum Slot Diffusers



PSD

PSD - Plenum Slot Diffusers

5/2007

Model PHPS-6 and PHPSI-6 - Two Slot - Performance

		CFM/LF										
		10	15	25	40	60	75	90	120	160		
Plenum Slot Diffusers	2' Length 8" Inlet	Horizontal	CFM 20	30	50	80	120	150	180	240	320	
		Ps	0.005	0.012	0.032	0.083	0.186	0.291	0.419	0.745	1.324	
		Pt	0.005	0.012	0.034	0.086	0.195	0.304	0.438	0.778	1.383	
		Throw	1 2 3	2 2 5	3 4 8	4 6 13	6 9 17	8 12 19	9 14 21	13 17 24	16 20 28	
		NC	-	-	<10	15	26	32	37	43	51	
		Vertical	CFM 20	30	50	80	120	150	180	240	320	
	Ps	0.005	0.011	0.029	0.075	0.169	0.264	0.380	0.675	1.200		
	Pt	0.005	0.011	0.031	0.079	0.177	0.277	0.398	0.708	1.259		
	Throw	0 0 2	0 1 3	1 2 6	3 5 9	5 7 14	6 9 17	7 10 21	9 14 28	12 19 37		
	NC	-	-	<10	14	26	33	37	44	51		
	1/2" Slot Width	4' Length 8" Inlet	Horizontal	CFM 40	60	100	160	240	300	360	480	640
			Ps	0.005	0.011	0.032	0.081	0.183	0.285	0.411	0.730	1.298
Pt			0.006	0.014	0.038	0.096	0.216	0.338	0.486	0.864	1.536	
Throw			1 2 4	2 3 7	4 5 11	6 9 18	9 13 24	11 16 27	13 20 30	18 24 34	23 28 39	
NC			-	-	<10	18	29	35	40	46	54	
Vertical			CFM 40	60	100	160	240	300	360	480	640	
Ps	0.005	0.010	0.029	0.074	0.165	0.258	0.372	0.662	1.176			
Pt	0.006	0.012	0.035	0.088	0.199	0.311	0.448	0.796	1.415			
Throw	0 1 2	1 1 5	2 3 8	4 7 13	7 10 20	8 12 24	10 15 29	13 20 39	17 26 52			
NC	-	-	<10	17	29	36	40	47	54			
5' Length 10" Inlet	Horizontal	CFM	50	75	125	200	300	375	450	600	800	
		Ps	0.005	0.011	0.031	0.079	0.179	0.279	0.402	0.715	1.272	
		Pt	0.006	0.013	0.036	0.091	0.206	0.321	0.463	0.822	1.462	
		Throw	2 3 5	3 4 8	4 6 13	7 10 21	10 16 27	13 19 30	16 23 33	21 27 38	25 31 44	
		NC	-	-	<10	20	31	37	42	48	56	
		Vertical	CFM 50	75	125	200	300	375	450	600	800	
Ps	0.005	0.010	0.028	0.072	0.162	0.253	0.365	0.648	1.153			
Pt	0.005	0.012	0.033	0.084	0.189	0.295	0.425	0.755	1.343			
Throw	0 1 3	1 2 6	2 5 10	5 8 16	8 12 24	10 15 31	12 18 37	16 24 49	22 33 65			
NC	-	-	<10	19	31	38	42	49	56			
PSD	2' Length 8" Inlet	Horizontal	CFM 20	30	50	80	120	150	180	240	320	
		Ps	0.004	0.008	0.023	0.059	0.133	0.208	0.299	0.532	0.946	
		Pt	0.004	0.009	0.025	0.063	0.141	0.221	0.318	0.565	1.005	
		Throw	1 2 3	2 2 5	3 4 8	4 6 12	6 9 17	8 11 19	9 14 21	12 17 24	16 20 28	
		NC	-	-	-	<10	20	26	31	38	44	
		Vertical	CFM 20	30	50	80	120	150	180	240	320	
	Ps	0.003	0.008	0.021	0.054	0.122	0.191	0.275	0.490	0.871		
	Pt	0.004	0.008	0.023	0.058	0.131	0.204	0.294	0.523	0.930		
	Throw	0 0 2	0 1 3	1 2 6	3 5 9	5 7 14	6 9 17	7 10 21	9 14 27	12 18 37		
	NC	-	-	-	<10	17	26	31	37	42		
	3/4" Slot Width	4' Length 8" Inlet	Horizontal	CFM 40	60	100	160	240	300	360	480	640
			Ps	0.004	0.008	0.023	0.058	0.130	0.204	0.293	0.521	0.927
Pt			0.005	0.010	0.028	0.073	0.164	0.256	0.369	0.656	1.165	
Throw			2 3 5	3 4 8	4 7 13	7 11 20	11 16 24	13 19 27	16 21 30	20 24 34	23 28 39	
NC			-	-	<10	14	23	29	34	41	47	
Vertical			CFM 40	60	100	160	240	300	360	480	640	
Ps	0.003	0.008	0.021	0.053	0.120	0.188	0.270	0.480	0.854			
Pt	0.004	0.010	0.027	0.068	0.154	0.240	0.346	0.614	1.092			
Throw	0 1 2	1 1 5	1 3 8	4 6 13	6 10 19	8 12 24	10 14 29	13 19 38	17 25 51			
NC	-	-	-	<10	20	29	34	40	45			
5' Length 10" Inlet	Horizontal	CFM	50	75	125	200	300	375	450	600	800	
		Ps	0.003	0.008	0.022	0.056	0.125	0.196	0.282	0.501	0.890	
		Pt	0.004	0.009	0.026	0.067	0.152	0.237	0.342	0.607	1.080	
		Throw	2 3 5	3 4 8	4 6 13	7 10 21	10 15 27	13 19 30	15 23 33	21 27 38	25 31 44	
		NC	-	-	<10	16	25	31	36	43	49	
		Vertical	CFM 50	75	125	200	300	375	450	600	800	
Ps	0.003	0.007	0.020	0.051	0.115	0.180	0.259	0.461	0.819			
Pt	0.004	0.009	0.025	0.063	0.142	0.222	0.319	0.568	1.009			
Throw	0 1 3	1 2 6	2 5 10	5 8 15	8 12 23	10 15 29	12 17 35	15 23 46	21 31 62			
NC	-	-	-	<10	22	31	36	42	47			

See Page PSD-125 for performance data notes

PSD - Plenum Slot Diffusers

Model PHPS-6 and PHPSI-6 - Two Slot - Performance

		CFM/LF									
		10	15	25	40	60	75	90	120	160	
1" Slot Width	2' Length 8" Inlet	Horizontal	CFM 20	30	50	80	120	150	180	240	320
		Ps 0.002	0.005	0.014	0.035	0.080	0.124	0.179	0.318	0.566	
		Pt 0.002	0.005	0.015	0.039	0.088	0.137	0.198	0.352	0.626	
		Throw 1 1 3	1 2 4	2 4 7	4 6 12	6 9 17	7 11 19	9 13 21	12 17 24	15 20 28	
		NC -	-	-	<10	17	24	29	35	40	
		Vertical	Ps 0.002	0.005	0.013	0.034	0.077	0.120	0.172	0.306	0.545
	Pt 0.002	0.005	0.015	0.038	0.085	0.133	0.191	0.340	0.604		
	Throw 0 0 1	0 0 2	0 1 4	1 3 6	3 5 9	4 6 12	5 7 14	6 9 19	8 12 25		
	NC -	-	-	<10	16	24	30	37	42		
	4' Length 8" Inlet	Horizontal	CFM 40	60	100	160	240	300	360	480	640
		Ps 0.002	0.005	0.014	0.035	0.078	0.122	0.176	0.312	0.555	
		Pt 0.003	0.007	0.019	0.050	0.112	0.174	0.251	0.446	0.793	
		Throw 1 2 4	2 3 6	4 5 11	6 9 17	9 13 24	11 16 27	13 19 30	17 24 34	23 28 39	
		NC -	-	-	<10	20	27	32	38	43	
		Vertical	Ps 0.002	0.005	0.013	0.033	0.075	0.117	0.169	0.300	0.534
	Pt 0.003	0.007	0.019	0.048	0.109	0.170	0.244	0.435	0.772		
	Throw 0 0 1	0 1 2	1 2 5	2 4 9	4 7 13	5 8 16	7 10 20	9 13 26	12 18 35		
	NC -	-	-	<10	19	27	33	40	45		
5' Length 10" Inlet	Horizontal	CFM 50	75	125	200	300	375	450	600	800	
	Ps 0.002	0.005	0.013	0.034	0.076	0.118	0.170	0.303	0.538		
	Pt 0.003	0.006	0.018	0.046	0.102	0.160	0.230	0.410	0.728		
	Throw 2 2 5	2 4 7	4 6 12	7 10 20	10 15 27	12 18 30	15 22 33	20 27 38	25 31 44		
	NC -	-	<10	11	22	29	34	40	45		
	Vertical	Ps 0.002	0.005	0.013	0.032	0.073	0.114	0.164	0.291	0.518	
Pt 0.003	0.006	0.017	0.044	0.100	0.156	0.224	0.398	0.708			
Throw 0 0 1	0 1 3	1 2 7	3 5 11	5 8 16	7 10 20	8 12 24	11 16 32	14 21 43			
NC -	-	-	<10	21	29	35	42	47			
1-1/2" Slot Width	2' Length 8" Inlet	Horizontal	CFM 20	30	50	80	120	150	180	240	320
		Ps 0.001	0.002	0.007	0.018	0.040	0.062	0.089	0.159	0.282	
		Pt 0.001	0.003	0.008	0.021	0.048	0.075	0.108	0.192	0.342	
		Throw 1 1 3	1 2 4	2 3 7	4 5 11	5 8 16	7 10 19	8 12 21	11 16 24	14 20 28	
		NC -	-	-	<10	12	17	21	29	37	
		Vertical	Ps 0.001	0.002	0.006	0.014	0.033	0.051	0.073	0.130	0.232
	Pt 0.001	0.003	0.007	0.018	0.041	0.064	0.092	0.164	0.291		
	Throw 0 0 0	0 0 1	0 0 2	1 1 4	1 3 7	2 4 8	3 5 10	4 7 13	6 9 18		
	NC -	-	-	-	<10	10	15	23	30		
	4' Length 10" Inlet	Horizontal	CFM 40	60	100	160	240	300	360	480	640
		Ps 0.001	0.002	0.007	0.017	0.039	0.060	0.087	0.154	0.274	
		Pt 0.002	0.003	0.010	0.025	0.056	0.087	0.125	0.223	0.396	
		Throw 2 2 5	2 3 7	4 6 12	6 9 19	9 14 24	12 17 27	14 21 30	19 24 34	23 28 39	
		NC -	-	-	<10	15	20	24	32	40	
		Vertical	Ps 0.001	0.002	0.005	0.014	0.032	0.049	0.071	0.127	0.225
	Pt 0.001	0.003	0.008	0.022	0.049	0.076	0.110	0.195	0.347		
	Throw 0 0 0	0 0 1	0 1 2	1 1 6	1 3 9	2 5 11	3 7 14	6 9 18	8 12 20		
	NC -	-	-	-	<10	13	18	26	33		
5' Length 12" Inlet	Horizontal	CFM 50	75	125	200	300	375	450	600	800	
	Ps 0.001	0.002	0.006	0.016	0.037	0.058	0.083	0.148	0.263		
	Pt 0.001	0.003	0.009	0.024	0.053	0.083	0.120	0.213	0.378		
	Throw 2 2 5	2 4 7	4 6 12	6 9 19	9 14 27	12 18 30	14 21 33	19 27 38	25 31 44		
	NC -	-	<10	11	17	22	26	34	42		
	Vertical	Ps 0.001	0.002	0.005	0.014	0.030	0.047	0.068	0.122	0.216	
Pt 0.001	0.003	0.008	0.021	0.047	0.073	0.105	0.186	0.331			
Throw 0 0 1	0 0 1	0 1 4	1 2 8	2 6 12	4 7 15	6 9 18	8 12 23	10 16 31			
NC -	-	-	<10	11	15	20	28	35			

See Page PSD-125 for performance data notes

Plenum Slot Diffusers

PSD

PSD - Plenum Slot Diffusers

5/2007

Model PHPS-6 and PHPSI-6 - Three Slot - Performance

		CFM/LF											
		25	40	60	80	100	120	160	200	250			
Plenum Slot Diffusers	2' Length 8" Inlet	Horizontal	CFM	50	80	120	160	200	240	320	400	500	
			Ps	0.012	0.030	0.068	0.121	0.188	0.271	0.483	0.754	1.178	
			Pt	0.013	0.034	0.076	0.136	0.212	0.305	0.542	0.847	1.324	
		Throw	4 6 12	6 9 15	9 13 19	12 15 21	14 17 24	15 19 26	18 21 30	20 24 34	22 27 38		
		NC	-	<10	16	23	29	34	41	48	55		
		Vertical	Ps	0.009	0.023	0.052	0.092	0.144	0.207	0.368	0.576	0.900	
	Pt		0.010	0.027	0.060	0.107	0.167	0.241	0.428	0.669	1.045		
	Throw		0 1 3	1 2 7	2 4 11	3 7 15	5 9 18	7 11 21	10 15 25	12 18 27	15 22 31		
	1/2" Slot Width	4' Length 8" Inlet	Horizontal	CFM	100	160	240	320	400	480	640	800	1000
				Ps	0.012	0.030	0.067	0.118	0.185	0.266	0.473	0.739	1.155
				Pt	0.017	0.044	0.100	0.178	0.278	0.400	0.712	1.112	1.737
			Throw	4 6 12	6 9 19	9 14 26	13 19 30	16 24 34	19 26 37	25 30 43	28 34 48	31 38 54	
NC			<10	11	19	26	32	37	44	51	58		
Vertical			Ps	0.009	0.023	0.051	0.090	0.141	0.203	0.361	0.564	0.882	
	Pt	0.015	0.037	0.084	0.150	0.234	0.337	0.600	0.937	1.464			
	Throw	0 1 4	1 3 10	3 6 15	4 10 21	7 13 26	10 15 30	14 21 35	17 26 39	21 31 43			
5' Length 10" Inlet	5' Length 10" Inlet	Horizontal	CFM	125	200	300	400	500	600	800	1000	1250	
			Ps	0.011	0.029	0.065	0.116	0.181	0.261	0.464	0.724	1.132	
			Pt	0.016	0.041	0.092	0.163	0.255	0.368	0.654	1.021	1.596	
		Throw	4 6 13	7 10 20	10 15 29	13 20 34	17 25 38	20 29 42	27 34 48	31 38 54	35 42 60		
		NC	<10	13	21	28	34	39	46	53	60		
		Vertical	Ps	0.009	0.022	0.050	0.089	0.138	0.199	0.354	0.553	0.864	
Pt	0.013		0.034	0.077	0.136	0.213	0.306	0.544	0.850	1.328			
Throw	1 1 5		1 3 12	3 7 18	6 12 24	9 15 30	12 18 34	16 24 39	21 31 43	25 34 49			
PSD	2' Length 8" Inlet	Horizontal	CFM	50	80	120	160	200	240	320	400	500	
			Ps	0.008	0.022	0.049	0.087	0.135	0.195	0.346	0.541	0.845	
			Pt	0.010	0.025	0.057	0.101	0.159	0.228	0.406	0.634	0.991	
		Throw	3 5 9	5 8 15	8 11 19	10 15 21	13 17 24	15 19 26	18 21 30	20 24 34	22 27 38		
		NC	-	-	<10	18	23	27	34	40	45		
		Vertical	Ps	0.006	0.016	0.037	0.066	0.103	0.148	0.263	0.411	0.643	
	Pt		0.008	0.020	0.045	0.081	0.126	0.182	0.323	0.504	0.788		
	Throw		0 0 2	1 1 5	1 3 9	2 5 13	3 7 16	5 9 19	8 13 25	10 16 27	13 20 31		
	3/4" Slot Width	4' Length 10" Inlet	Horizontal	CFM	100	160	240	320	400	480	640	800	1000
				Ps	0.008	0.021	0.048	0.085	0.133	0.191	0.339	0.530	0.829
				Pt	0.011	0.029	0.065	0.115	0.180	0.259	0.461	0.720	1.126
			Throw	5 7 15	8 12 21	12 18 26	16 21 30	19 24 34	21 26 37	25 30 43	28 34 48	31 38 54	
NC			-	<10	15	21	26	30	37	43	48		
Vertical			Ps	0.006	0.016	0.036	0.065	0.101	0.145	0.258	0.403	0.630	
	Pt	0.009	0.024	0.053	0.095	0.148	0.214	0.380	0.593	0.927			
	Throw	1 2 7	2 5 13	5 10 19	8 13 25	11 16 27	13 19 30	17 25 35	21 27 39	25 31 43			
5' Length 10" Inlet	5' Length 10" Inlet	Horizontal	CFM	125	200	300	400	500	600	800	1000	1250	
			Ps	0.008	0.021	0.047	0.083	0.130	0.187	0.333	0.520	0.812	
			Pt	0.013	0.033	0.074	0.131	0.204	0.294	0.523	0.817	1.276	
		Throw	6 8 17	9 13 24	13 20 29	18 24 34	22 27 38	24 29 42	28 34 48	31 38 54	35 42 60		
		NC	<10	10	17	23	28	32	39	45	50		
		Vertical	Ps	0.006	0.016	0.036	0.063	0.099	0.142	0.253	0.395	0.617	
Pt	0.011		0.028	0.062	0.111	0.173	0.249	0.443	0.692	1.081			
Throw	1 3 10		3 7 16	7 12 23	10 16 27	13 19 31	16 23 34	21 27 39	25 31 43	28 34 49			

See Page PSD-125 for performance data notes

PSD - Plenum Slot Diffusers

Model PHPS-6 and PHPSI-6 - Three Slot - Performance

		CFM/LF										
		25	40	60	80	100	120	160	200	250		
1" Slot Width	2' Length 10" Inlet	Horizontal	CFM	50	80	120	160	200	240	320	400	500
			Ps	0.005	0.013	0.029	0.052	0.081	0.117	0.208	0.325	0.507
			Pt	0.006	0.015	0.033	0.060	0.093	0.134	0.238	0.372	0.581
		Throw	3 4 8	4 7 13	7 10 19	9 13 21	11 16 24	13 19 26	17 21 30	20 24 34	22 27 38	
		NC	-	-	<10	17	25	31	39	46	54	
		Vertical	Ps	0.004	0.010	0.022	0.039	0.062	0.089	0.158	0.247	0.386
	Pt		0.005	0.012	0.026	0.047	0.074	0.106	0.188	0.294	0.460	
	Throw		0 0 2	0 1 4	1 2 7	2 4 9	3 6 11	4 7 14	6 9 18	8 11 23	10 14 29	
	NC	-	-	<10	14	21	27	35	41	45		
	4' Length 10" Inlet	Horizontal	CFM	100	160	240	320	400	480	640	800	1000
			Ps	0.005	0.013	0.029	0.051	0.080	0.115	0.204	0.318	0.497
			Pt	0.008	0.020	0.046	0.081	0.127	0.183	0.325	0.508	0.794
		Throw	3 5 10	5 8 16	8 12 24	11 16 30	13 20 34	16 24 37	21 30 43	27 34 48	31 38 54	
		NC	-	<10	11	20	28	34	42	49	57	
		Vertical	Ps	0.004	0.010	0.022	0.039	0.060	0.087	0.155	0.242	0.378
	Pt		0.007	0.017	0.039	0.069	0.108	0.156	0.276	0.432	0.675	
	Throw		0 1 3	1 2 7	2 4 11	3 7 14	5 9 18	7 11 21	9 14 28	12 18 36	15 22 43	
	NC	-	-	<10	17	24	30	38	44	48		
5' Length 12" Inlet	Horizontal	CFM	125	200	300	400	500	600	800	1000	1250	
		Ps	0.005	0.012	0.028	0.050	0.078	0.112	0.200	0.312	0.487	
		Pt	0.008	0.020	0.044	0.079	0.123	0.177	0.315	0.492	0.768	
	Throw	4 6 11	6 9 18	9 13 26	12 18 34	15 22 38	18 26 42	24 34 48	29 38 54	35 42 60		
	NC	-	<10	13	22	30	36	44	51	59		
	Vertical	Ps	0.004	0.009	0.021	0.038	0.059	0.085	0.152	0.237	0.370	
Pt		0.007	0.017	0.038	0.067	0.104	0.150	0.267	0.417	0.651		
Throw		1 1 5	1 3 9	3 7 14	6 9 19	8 12 24	9 14 28	13 19 38	16 24 43	20 29 49		
NC	-	<10	12	19	26	32	40	46	50			
1-1/2" Slot Width	2' Length 10" Inlet	Horizontal	CFM	50	80	120	160	200	240	320	400	500
			Ps	0.003	0.006	0.015	0.026	0.041	0.058	0.104	0.162	0.254
			Pt	0.003	0.008	0.019	0.034	0.052	0.076	0.134	0.210	0.328
		Throw	2 3 6	3 5 10	5 7 15	7 10 20	8 12 24	10 15 26	13 20 30	16 24 34	21 27 38	
		NC	-	-	<10	11	15	19	27	33	40	
		Vertical	Ps	0.002	0.005	0.011	0.020	0.031	0.044	0.079	0.123	0.193
	Pt		0.003	0.007	0.015	0.027	0.043	0.062	0.109	0.171	0.267	
	Throw		0 0 1	0 1 3	1 2 4	1 3 6	2 4 7	3 4 9	4 6 12	5 7 15	6 9 18	
	NC	-	-	-	-	-	<10	16	20	24		
	4' Length 12" Inlet	Horizontal	CFM	100	160	240	320	400	480	640	800	1000
			Ps	0.002	0.006	0.014	0.025	0.040	0.057	0.102	0.159	0.249
			Pt	0.004	0.011	0.025	0.044	0.069	0.099	0.175	0.274	0.428
		Throw	2 3 7	4 5 11	5 8 16	7 11 22	9 14 27	11 16 32	14 22 43	18 27 48	23 34 5	
		NC	-	-	<10	14	18	22	30	36	43	
		Vertical	Ps	0.002	0.005	0.011	0.019	0.030	0.044	0.077	0.121	0.189
	Pt		0.004	0.009	0.021	0.038	0.059	0.085	0.151	0.236	0.369	
	Throw		0 0 2	1 1 4	1 3 6	2 4 9	3 5 11	4 6 13	6 9 17	7 11 22	9 14 27	
	NC	-	-	-	-	<10	13	19	23	27		
5' Length 12" Inlet	Horizontal	CFM	125	200	300	400	500	600	800	1000	1250	
		Ps	0.002	0.006	0.014	0.025	0.039	0.056	0.100	0.156	0.244	
		Pt	0.005	0.013	0.030	0.054	0.084	0.121	0.215	0.336	0.524	
	Throw	3 4 9	5 7 14	7 11 22	10 14 29	12 18 36	14 22 42	19 29 48	24 36 54	30 42 60		
	NC	-	<10	12	16	20	24	32	38	45		
	Vertical	Ps	0.002	0.005	0.011	0.019	0.030	0.043	0.076	0.119	0.185	
Pt		0.005	0.012	0.027	0.048	0.075	0.107	0.191	0.298	0.466		
Throw		0 1 3	1 2 6	2 4 9	4 6 11	5 7 14	6 9 17	8 11 23	9 14 28	12 18 35		
NC	-	-	-	<10	11	15	21	25	29			

See Page PSD-125 for performance data notes

Plenum Slot Diffusers

PSD

PSD - Plenum Slot Diffusers

5/2007

Model PHPS-6 and PHPSI-6 Four Slot - Performance

		CFM/LF											
		50	75	80	100	150	175	200	250	300			
Plenum Slot Diffusers	1/2" Slot Width	2' Length 8" Inlet	Horizontal	CFM	100	150	160	200	300	350	400	500	-
				Ps	0.033	0.074	0.084	0.131	0.295	0.401	0.524	0.819	-
				Pt	0.039	0.087	0.099	0.154	0.347	0.473	0.617	0.965	-
		Vertical	Throw	9 12 16	12 14 20	12 15 21	13 16 23	16 20 28	18 22 30	19 23 33	21 26 36	-	
			NC	<10	15	17	23	35	39	42	48	-	
			Ps	0.029	0.066	0.075	0.117	0.262	0.357	0.466	0.729	-	
	4' Length 10" Inlet	Horizontal	CFM	200	300	320	400	600	700	800	1000	-	
			Ps	0.032	0.072	0.082	0.129	0.289	0.394	0.514	0.803	-	
			Pt	0.044	0.099	0.113	0.176	0.396	0.539	0.704	1.100	-	
		Vertical	Throw	12 16 23	16 20 28	17 21 29	19 23 33	23 28 40	25 30 43	27 33 46	30 36 51	-	
			NC	<10	18	20	26	38	42	45	51	-	
			Ps	0.029	0.064	0.073	0.114	0.257	0.350	0.457	0.714	-	
5' Length 10" Inlet	Horizontal	CFM	250	375	400	500	750	875	1000	1250	-		
		Ps	0.031	0.071	0.081	0.126	0.283	0.386	0.504	0.787	-		
		Pt	0.050	0.113	0.128	0.200	0.450	0.613	0.801	1.251	-		
	Vertical	Throw	13 18 26	18 22 31	19 23 33	21 26 36	26 31 45	28 34 48	30 36 51	33 41 58	-		
		NC	11	20	22	28	40	44	47	53	-		
		Ps	0.028	0.063	0.072	0.112	0.252	0.343	0.448	0.700	-		
3/4" Slot Width	2' Length 8" Inlet	Horizontal	CFM	100	150	160	200	300	350	400	500	600	
			Ps	0.025	0.057	0.065	0.101	0.228	0.311	0.406	0.634	0.913	
			Pt	0.031	0.070	0.080	0.125	0.281	0.382	0.499	0.780	1.123	
		Vertical	Throw	9 12 16	12 14 20	12 15 21	13 16 23	16 20 28	18 22 30	19 23 33	21 26 36	23 28 40	
			NC	-	-	<10	18	29	33	36	42	46	
			Ps	0.025	0.057	0.065	0.101	0.227	0.310	0.404	0.632	0.910	
	4' Length 10" Inlet	Horizontal	CFM	200	300	320	400	600	700	800	1000	1200	
			Ps	0.025	0.056	0.064	0.099	0.224	0.305	0.398	0.622	0.895	
			Pt	0.037	0.083	0.094	0.147	0.331	0.450	0.588	0.919	1.323	
		Vertical	Throw	6 12 23	12 19 28	13 20 29	17 23 33	23 28 40	25 30 43	27 33 46	30 36 51	33 40 56	
			NC	<10	14	15	21	32	36	39	45	49	
			Ps	0.025	0.056	0.063	0.099	0.223	0.304	0.396	0.620	0.892	
5' Length 10" Inlet	Horizontal	CFM	250	375	400	500	750	875	1000	1250	1500		
		Ps	0.024	0.055	0.062	0.097	0.219	0.299	0.390	0.609	0.877		
		Pt	0.043	0.097	0.110	0.172	0.386	0.526	0.687	1.073	1.546		
	Vertical	Throw	15 18 26	18 22 31	19 23 33	21 26 36	26 31 45	28 34 48	30 36 51	33 41 58	36 45 63		
		NC	<10	16	17	23	34	38	41	47	51		
		Ps	0.024	0.055	0.062	0.097	0.219	0.297	0.389	0.607	0.874		
Vertical	Pt	0.043	0.096	0.110	0.171	0.386	0.525	0.686	1.071	1.543			
	Throw	4 8 16	8 12 22	9 13 23	11 16 25	16 22 31	19 24 33	21 25 36	23 28 40	25 31 44			
	NC	<10	12	14	21	34	38	42	46	49			

See Page PSD-125 for performance data notes

PSD - Plenum Slot Diffusers

Model PHPS-6 and PHPSI-6 Four Slot - Performance

		CFM/LF										
		50	75	80	100	150	175	200	250	300		
1" Slot Width	2' Length 10" Inlet	Horizontal	CFM	100	150	160	200	300	350	400	500	600
			Ps	0.017	0.039	0.045	0.070	0.157	0.213	0.279	0.435	0.627
			Pt	0.020	0.046	0.052	0.082	0.183	0.250	0.326	0.510	0.734
		Throw	8 12 16	12 14 20	12 15 21	13 16 23	16 20 28	18 22 30	19 23 33	21 26 36	23 28 40	
		NC	-	-	<10	16	29	33	36	41	44	
		Vertical	Ps	0.017	0.037	0.042	0.066	0.149	0.203	0.265	0.414	0.596
	Pt	0.020	0.044	0.050	0.078	0.176	0.239	0.312	0.488	0.703		
	Throw	1 2 6	2 3 9	2 4 9	3 6 11	6 9 17	7 10 20	8 11 23	10 14 25	11 17 28		
	NC	-	-	<10	13	26	31	34	39	43		
	4' Length 10" Inlet	Horizontal	CFM	200	300	320	400	600	700	800	1000	1200
			Ps	0.017	0.038	0.044	0.068	0.154	0.209	0.273	0.427	0.615
			Pt	0.029	0.065	0.074	0.116	0.261	0.355	0.463	0.724	1.042
		Throw	11 16 23	16 20 28	17 21 29	19 23 33	23 28 40	25 30 43	27 33 46	30 36 51	33 40 56	
		NC	<10	11	13	19	32	36	39	46	47	
		Vertical	Ps	0.016	0.037	0.042	0.065	0.146	0.199	0.260	0.406	0.584
	Pt	0.028	0.063	0.072	0.112	0.253	0.344	0.450	0.703	1.012		
	Throw	1 3 9	3 6 13	3 7 14	5 9 18	9 13 27	10 16 30	12 18 32	15 22 36	18 27 39		
	NC	-	-	<10	16	29	34	37	42	46		
5' Length 12" Inlet	Horizontal	CFM	250	375	400	500	750	875	1000	1250	1500	
		Ps	0.017	0.038	0.043	0.067	0.151	0.205	0.268	0.418	0.602	
		Pt	0.028	0.063	0.072	0.112	0.252	0.343	0.447	0.699	1.007	
	Throw	11 17 26	17 22 31	18 23 33	21 26 36	26 31 45	28 34 48	30 36 51	33 41 58	36 45 63		
	NC	<10	13	15	21	34	38	41	46	49		
	Vertical	Ps	0.016	0.036	0.041	0.064	0.143	0.195	0.254	0.398	0.572	
Pt	0.027	0.061	0.069	0.109	0.244	0.332	0.434	0.678	0.977			
Throw	2 5 12	5 9 18	6 9 19	8 12 24	12 18 31	14 21 33	16 24 36	20 28 40	24 31 44			
NC	<10	10	12	18	31	36	39	44	48			
1-1/2" Slot Width	2' Length 10" Inlet	Horizontal	CFM	100	150	160	200	300	350	400	500	600
			Ps	0.016	0.037	0.042	0.066	0.148	0.202	0.264	0.412	0.593
			Pt	0.019	0.044	0.050	0.078	0.175	0.238	0.311	0.486	0.700
		Throw	6 10 16	10 14 20	10 15 21	13 16 23	16 20 28	18 22 30	19 23 33	21 26 36	23 28 40	
		NC	-	-	<10	10	19	23	27	33	38	
		Vertical	Ps	0.012	0.028	0.032	0.050	0.112	0.152	0.198	0.310	0.446
	Pt	0.015	0.035	0.039	0.061	0.138	0.188	0.246	0.384	0.553		
	Throw	1 1 3	1 2 4	1 2 5	2 3 6	3 4 9	3 5 10	4 6 12	5 7 15	6 9 18		
	NC	-	-	-	<10	12	17	21	27	31		
	4' Length 12" Inlet	Horizontal	CFM	200	300	320	400	600	700	800	1000	1200
			Ps	0.016	0.036	0.041	0.065	0.145	0.198	0.258	0.404	0.581
			Pt	0.023	0.053	0.060	0.093	0.210	0.286	0.373	0.583	0.840
		Throw	4 8 21	8 16 28	10 17 29	14 21 33	21 28 40	25 30 43	27 33 46	30 36 51	33 40 56	
		NC	-	-	<10	13	22	26	30	36	41	
		Vertical	Ps	0.012	0.027	0.031	0.049	0.109	0.149	0.194	0.304	0.437
	Pt	0.019	0.044	0.050	0.077	0.174	0.237	0.309	0.483	0.696		
	Throw	1 2 4	2 3 6	2 3 7	3 4 9	4 6 13	5 8 15	6 9 17	7 11 22	9 13 26		
	NC	-	-	<10	15	20	24	24	30	34		
5' Length 12" Inlet	Horizontal	CFM	250	375	400	500	750	875	1000	1250	1500	
		Ps	0.016	0.036	0.041	0.063	0.142	0.194	0.253	0.396	0.570	
		Pt	0.027	0.061	0.069	0.108	0.244	0.331	0.433	0.676	0.974	
	Throw	7 14 26	14 21 31	15 22 33	19 26 36	26 31 45	28 34 48	30 36 51	33 41 58	36 45 63		
	NC	<10	11	12	15	24	28	32	38	43		
	Vertical	Ps	0.012	0.027	0.030	0.048	0.107	0.146	0.191	0.298	0.429	
Pt	0.023	0.052	0.059	0.093	0.208	0.283	0.370	0.578	0.833			
Throw	1 3 6	3 4 9	3 5 9	4 6 11	6 9 17	7 10 20	8 11 23	9 14 28	11 17 34			
NC	-	-	-	<10	17	22	26	32	36			

Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic feet per minute (air)
 - Pt - Total pressure (inches of water column)
 - Ps - Static pressure = Pt - Pv (inches of water column)
 - Throw - Isothermal horizontal throw (supply air temperature the same as average room air temperature) values are for 150 fpm - 100 fpm - 50 fpm velocities
 - NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Two-way throw can be determined by dividing the supply air volume in each direction and using the One-way throw values listed. (See example below)

EXAMPLE:

PHPS-10-6, 10" inlet 1" Slot, 4-Slot, 4', 2-Way

Determine Ps, NC, and Throw at 600 CFM

1. Find Ps and NC using PHPS-10-6, 1" Slot, 4', 4-Slot data:

Ps = .154

NC = 32

For 2-way throw use PHPS-10-6, 1" Slot, 4', 10" inlet, 1-way, 2-Slot data at 300 CFM.

Horizontal Throw = 11-16-27 in each direction



For more product information visit us at www.metalair.com



Plenum Slot Diffusers

PSD

PSD - Plenum Slot Diffusers

5/2007

Models PHPR-6, PHPR-9, PHNR-9 - Performance

Plenum Slot Diffusers

			CFM/LF									
			Negative Ps	10	15	20	25	30	35	40	45	50
			0.016	0.032	0.052	0.076	0.103	0.134	0.168	0.206	0.246	
1/2" Slot Width	2' Length	1 Slot	Airflow	20	30	40	50	60	70	80	90	100
			NC	<15	<15	<15	<15	16	20	24	28	32
		2 Slot	Airflow	40	60	80	100	120	140	160	180	200
			NC	<15	<15	<15	15	19	23	27	31	35
	3 Slot	Airflow	60	90	120	150	180	210	240	270	300	
			NC	<15	<15	<15	16	21	25	29	33	36
		4 Slot	Airflow	80	120	160	200	240	280	320	360	400
			NC	<15	<15	<15	18	22	26	30	34	38
	4' Length	1 Slot	Airflow	40	60	80	100	120	140	160	180	200
			NC	<15	<15	<15	<15	18	22	26	30	34
		2 Slot	Airflow	80	120	160	200	240	280	320	360	400
			NC	<15	<15	<15	17	21	25	29	33	37
3 Slot	Airflow	120	180	240	300	360	420	480	540	600		
		NC	<15	<15	<15	18	23	27	31	35	38	
	4 Slot	Airflow	160	240	320	400	480	560	640	720	800	
		NC	<15	<15	15	20	24	28	32	36	40	
5' Length	1 Slot	Airflow	50	75	100	125	150	175	200	225	250	
		NC	<15	<15	<15	15	19	23	27	31	35	
	2 Slot	Airflow	100	150	200	250	300	350	400	450	500	
		NC	<15	<15	<15	18	22	26	30	34	38	
3 Slot	Airflow	150	225	300	375	450	525	600	675	750		
		NC	<15	<15	15	19	24	28	32	36	39	
	4 Slot	Airflow	200	300	400	500	600	700	800	900	1000	
		NC	<15	<15	16	21	25	29	33	37	41	

PSD

			CFM/LF									
			Negative Ps	10	15	20	25	30	40	50	60	70
			0.012	0.024	0.040	0.058	0.079	0.129	0.189	0.257	0.334	
3/4" Slot Width	2' Length	1 Slot	Airflow	20	30	40	50	60	80	100	120	140
			NC	<15	<15	<15	<15	<15	17	24	29	35
		2 Slot	Airflow	40	60	80	100	120	160	200	240	280
			NC	<15	<15	<15	<15	<15	20	27	32	38
	3 Slot	Airflow	60	90	120	150	180	240	300	360	420	
			NC	<15	<15	<15	<15	15	22	28	34	39
		4 Slot	Airflow	80	120	160	200	240	320	400	480	560
			NC	<15	<15	<15	<15	17	23	30	35	41
	4' Length	1 Slot	Airflow	40	60	80	100	120	160	200	240	280
			NC	<15	<15	<15	<15	<15	19	26	31	37
		2 Slot	Airflow	80	120	160	200	240	320	400	480	560
			NC	<15	<15	<15	<15	16	22	29	34	40
3 Slot	Airflow	120	180	240	300	360	480	600	720	840		
		NC	<15	<15	<15	<15	17	24	30	36	41	
	4 Slot	Airflow	160	240	320	400	480	640	800	960	1120	
		NC	<15	<15	<15	15	19	25	32	37	43	
5' Length	1 Slot	Airflow	50	75	100	125	150	200	250	300	350	
		NC	<15	<15	<15	<15	<15	20	27	32	38	
	2 Slot	Airflow	100	150	200	250	300	400	500	600	700	
		NC	<15	<15	<15	<15	17	23	30	35	41	
3 Slot	Airflow	150	225	300	375	450	600	750	900	1050		
		NC	<15	<15	<15	15	18	25	31	37	42	
	4 Slot	Airflow	200	300	400	500	600	800	1000	1200	1400	
		NC	<15	<15	<15	16	20	26	33	38	44	

PSD - Plenum Slot Diffusers

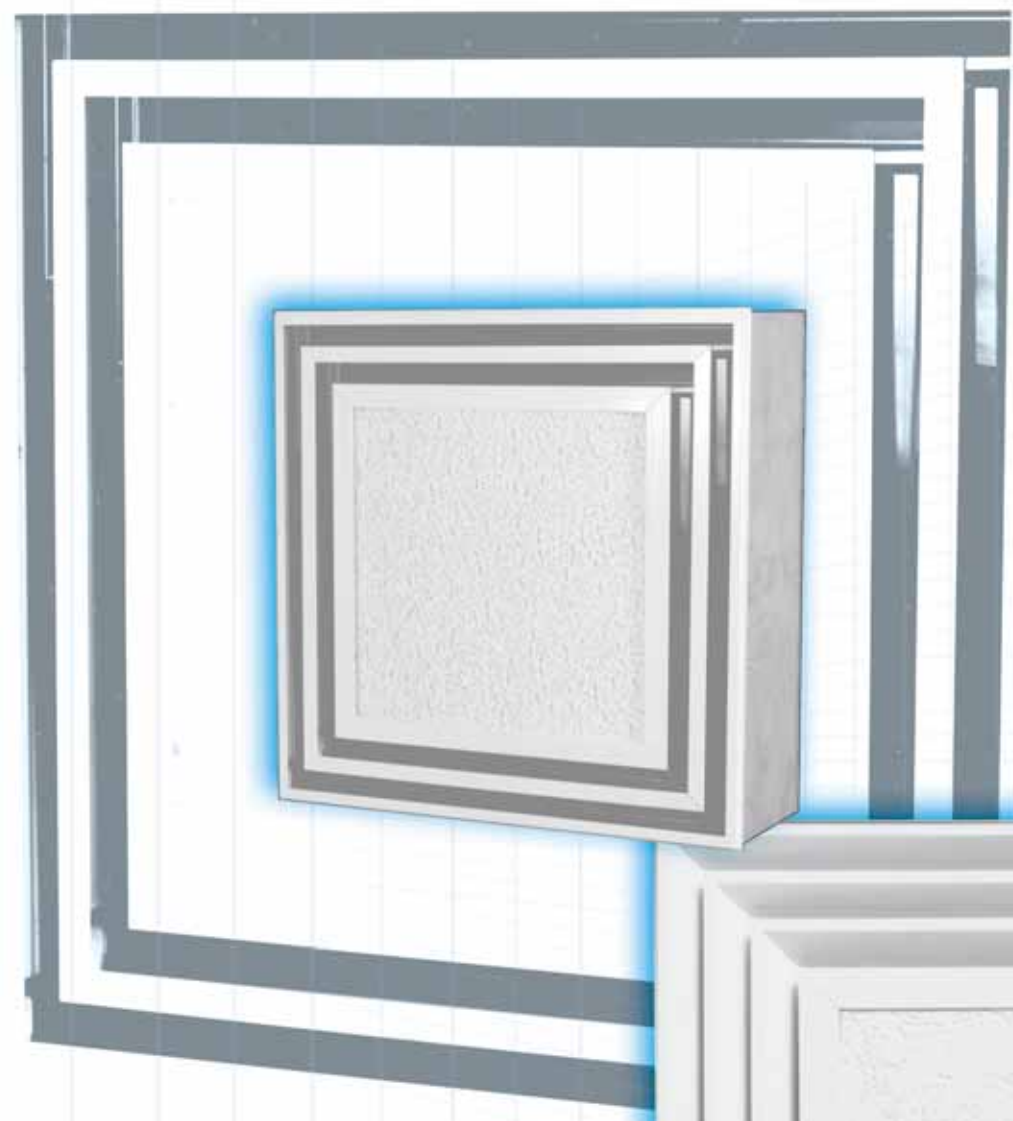
Models PHPR-6, PHPR-9, PHNR-9 - Performance

			CFM/LF									
			Negative Ps	20	30	40	50	60	70	80	90	100
1" Slot Width	2' Length	1 Slot	Airflow	40	60	80	100	120	140	160	180	200
		NC	<15	<15	<15	15	19	23	26	30	34	
		2 Slot	Airflow	80	120	160	200	240	280	320	360	400
		NC	<15	<15	<15	18	22	26	29	33	37	
		3 Slot	Airflow	120	180	240	300	360	420	480	540	600
		NC	<15	<15	15	19	23	27	31	35	38	
	4 Slot	Airflow	160	240	320	400	480	560	640	720	800	
	NC	<15	<15	16	21	25	29	32	36	40		
	4' Length	1 Slot	Airflow	80	120	160	200	240	280	320	360	400
		NC	<15	<15	<15	17	21	25	28	32	36	
		2 Slot	Airflow	160	240	320	400	480	560	640	720	800
		NC	<15	<15	15	20	24	28	31	35	39	
3 Slot		Airflow	240	360	480	600	720	840	960	1080	1200	
NC		<15	<15	17	21	25	29	33	37	40		
4 Slot	Airflow	320	480	640	800	960	1120	1280	1440	1600		
NC	<15	<15	18	23	27	31	34	38	42			
5' Length	1 Slot	Airflow	100	150	200	250	300	350	400	450	500	
	NC	<15	<15	<15	18	22	26	29	33	37		
	2 Slot	Airflow	200	300	400	500	600	700	800	900	1000	
	NC	<15	<15	16	21	25	29	32	36	40		
	3 Slot	Airflow	300	450	600	750	900	1050	1200	1350	1500	
	NC	<15	<15	18	22	26	30	34	38	41		
4 Slot	Airflow	400	600	800	1000	1200	1400	1600	1800	2000		
NC	<15	<15	15	19	24	28	32	35	39	43		

			CFM/LF									
			Negative Ps	20	30	40	50	60	80	100	125	150
1-1/2" Slot Width	2' Length	1 Slot	Airflow	40	60	80	100	120	160	200	250	300
		NC	<15	<15	<15	<15	17	25	31	39	45	
		2 Slot	Airflow	80	120	160	200	240	320	400	500	600
		NC	<15	<15	<15	<15	17	25	31	39	45	
		3 Slot	Airflow	120	180	240	300	360	480	600	750	900
		NC	<15	<15	<15	15	19	26	33	40	47	
	4 Slot	Airflow	160	240	320	400	480	640	800	1000	1200	
	NC	<15	<15	<15	17	20	28	34	42	48		
	4' Length	1 Slot	Airflow	80	120	160	200	240	320	400	500	600
		NC	<15	<15	<15	<15	16	24	30	38	44	
		2 Slot	Airflow	160	240	320	400	480	640	800	1000	1200
		NC	<15	<15	<15	16	19	27	33	41	47	
3 Slot		Airflow	240	360	480	600	720	960	1200	1500	1800	
NC		<15	<15	<15	17	21	28	35	42	49		
4 Slot	Airflow	320	480	640	800	960	1280	1600	2000	2400		
NC	<15	<15	15	19	22	30	36	44	50			
5' Length	1 Slot	Airflow	100	150	200	250	300	400	500	625	750	
	NC	<15	<15	<15	<15	17	25	31	39	45		
	2 Slot	Airflow	200	300	400	500	600	800	1000	1250	1500	
	NC	<15	<15	<15	17	20	28	34	42	48		
	3 Slot	Airflow	300	450	600	750	900	1200	1500	1875	2250	
	NC	<15	<15	<15	18	22	29	36	43	50		
4 Slot	Airflow	400	600	800	1000	1200	1600	2000	2500	3000		
NC	<15	<15	16	20	23	31	37	45	51			

Plenum Slot Diffusers

PSD



ARCHITECTURAL
DIFFUSERS

**ARCHITECTURAL
DIFFUSERS**



Model 5500DD

Additional product information available at www.metalaire.com

Louvered Face - Fixed Deflection - Aluminum - Series 5500DD

- ★ Series 5500DD offers an architectural air diffuser designed to excel in both performance and aesthetic appeal
- ★ The unique horizontal lip on all sides of the diffuser face provides a horizontal air pattern that is tight to the ceiling. This attribute makes the series 5500DD ideally suited for maximum occupant comfort, even in variable volume systems
- ★ The series 5500DD is shipped fully assembled and is designed to allow the ceiling tile to be installed (by others) from the face without having to remove the plenum. This means the center tile can be installed after the diffuser has been installed in the ceiling
- ★ The series 5500DD, available in both supply and return models, is offered in a wide variety of border styles and slot configurations, allowing for maximum design flexibility
- ★ Supply unit constructed with extruded aluminum face and steel backpan. Return units include steel light shield/baffle
- ★ Available with 1 to 4 slots
- ★ The series 5500DD is an excellent choice for VAV applications

	Louvered Face			
	Supply		Return	
Insulated	5500DDI-6 T-bar Lay-in	5500DDI-8 Tegalur T-bar		
	5500DDI-9 24x24 Donn Finline			
Non-Insulated	5500DD-6 T-bar Lay-in	5500DD-8 Tegalur T-bar	5500DDR-6 T-bar Lay-in	5500DDR-8 Tegalur T-bar
	5500DD-9 24x24 Donn Finline		5500DDR-9 Fine LIne	

Architectural Rating Products



ARP




Model 6600SQ

Additional product information available at www.metalaire.com

Modular Slot - Aluminum- Series 6600SQ

- ★ The series 6600SQ provides outstanding operation flexibility. The supply units are shipped with pattern controllers that are individually adjustable from the face of the diffuser. This feature allows the direction of air flow to be adjusted a full 180°. The return is shipped without pattern controller to minimize sound and pressure drop
- ★ The series 6600SQ is shipped fully assembled and is designed to allow the ceiling tile to be installed after the diffuser has been installed in the ceiling
- ★ The series 6600SQ, available in both supply and return models, is offered in a wide variety of border styles and slot configurations, allowing for maximum design flexibility
- ★ Supply unit constructed with extruded aluminum face and pattern controllers, with a steel backpan. Return units include steel light shield/baffle
- ★ Available with 1 to 4 slots
- ★ The series 6600SQ is an excellent choice for VAV applications

	Modular Slot			
	Supply		Return	
Insulated	6600SQI-6 T-bar Lay-in	6600SQI-8 Tegalur T-bar		
	6600SQI-9 Donn Finline			
Non-Insulated	6600SQ-6 T-bar Lay-in	6600SQ-8 Tegalur T-bar	6600SQR-6 T-bar Lay-in	6600SQR-8 Tegalur T-bar
	6600SQ-9 Donn Finline		6600SQR-9 Donn Finline	



DIFFUSERS

**ENVIRONMENTAL/
HOSPITAL DIFFUSERS**



Model HPL-CL
Additional product information available at www.metalaire.com

Environmental/Hospital Diffusers - Laminar Flow - Series HPL-CL

- ✦ The HPL laminar flow diffusers are engineered for supply air distribution in critical environments such as hospital operating rooms and clean rooms. The diffusers are engineered to supply a low velocity vertical "piston" of conditioned air
- ✦ The HPL-CL laminar is easy to clean and sterilize. The face and core assembly can be removed from the face for cleaning. With the face and core assembly removed, the interior of the backpan and inlet collar are free of obstructions and easy to access
- ✦ The diffuser is available with a choice of three free areas for the perforated face: 23%, 40% and 51% maximizing the range of capacities for the HPL. The HPL is also available in aluminum or stainless steel construction

	Laminar Flow		
	Surface Mount	T-bar Lay-in	Special 1 1/2" T-bar Lay-in
Aluminum	HPL-CL-AL-1	HPL-CL-AL-6	HPL-CL-AL-6M
Stainless Steel	HPL-CL-SS-1	HPL-CL-SS-6	HPL-CL-SS-6M
SS Face/Aluminum Backpan	HPL-CL-SA-1	HPL-CL-SA-6	HPL-CL-SA-6M



Model HPL-HA
Additional product information available at www.metalaire.com

Environmental/Hospital Diffusers - Laminar Flow - w/HEPA Filter Cell - Series HPL-HA

- ✦ When the application calls for the HEPA filters to be located in the supply diffuser, the HPL-HA is an excellent choice. The series HPL-HA laminar flow diffusers are engineered for supply air distribution in critical environments such as hospital operating rooms and clean rooms. The diffusers are engineered to supply a low velocity vertical "piston" of conditioned air
- ✦ The series HPL-HA design includes a HEPA filter cell accessible from the face of the diffuser. The face and core assembly can be removed from the face for cleaning. This feature allows the filters to be removed and replaced from the diffuser face
- ✦ The diffuser is available with a choice of three free areas for the perforated face: 23%, 40% and 51% maximizing the range of capacities for the HPL. The HPL is also available in aluminum or stainless steel construction
- ✦ Optional HEPA filters are available

	Laminar Flow		
	Surface Mount	T-bar Lay-in	Special 1 1/2" T-bar Lay-in
Aluminum	HPL-HA-AL-1	HPL-HA-AL-6	HPL-CL-HA-6M
Stainless Steel	HPL-HA-SS-1	HPL-HA-SS-6	HPL-CL-HA-6M
SS Face/Aluminum Backpan	HPL-HA-SA-1	HPL-HA-SA-6	HPL-CL-HA-6M



Model HPL-PR
Additional product information available at www.metalaire.com

Environmental/Hospital Diffusers - Laminar Flow - Patient Isolation Applications - Series HPL-PR

- ✦ The series HPL-PR is specifically engineered to improve patient comfort in critical health care applications such as isolation rooms and trauma centers. The unique design provides a "tent" of conditioned air around the patient
- ✦ The unique design of the HPL-PR provides filtered air to protect the patient and at the same time minimize the air velocities that impact the patient. This device provides a high level of comfort
- ✦ Series HPL-PR includes a HEPA filter section. Optional HEPA filters are available. HPL-PR configuration minimizes induction, distributing low velocity air with minimum aspiration
- ✦ Unit is aluminum construction and is available for Surface Mount and T-bar Lay-in applications, and is also available for special 1 1/2" wide T-bar Lay-in applications

	Laminar Flow - Patient Isolation Applications		
	Surface Mount	T-bar Lay-in	Special 1 1/2" T-bar Lay-in
Aluminum	HPL-PR-AL-1	HPL-PR-AL-6	HPL-PR-AL-6M
Stainless Steel	HPL-PR-SS-1	HPL-PR-SS-6	HPL-PR-SS-6M
SS Face/Aluminum Backpan	HPL-PR-SA-1	HPL-PR-SA-6	

Environmental/Hospital Diffusers

EHD

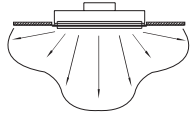


Model HRD-CL

Additional product information available at www.metalaire.com

Environmental/Hospital Diffusers - Radial Discharge Pattern - Removable Face - Series HRD-CL

- ★ The HRD-CL radial discharge pattern diffusers are engineered for supply air distribution in critical environments such as chemistry labs and clean rooms. The diffusers are engineered to supply a low velocity of conditioned air in a radial pattern from the ceiling
- ★ The HRD-CL radial discharge pattern diffusers are easy to clean and sterilize. The face and core assembly can be removed from the face for cleaning. With the face and core assembly removed, the interior of the backpan and inlet collar are free of obstructions and easy to access
- ★ The diffuser is available in stainless steel or heavy aluminum construction. Units available in 90° or 180° throw



	Radial Discharge		
	Flush Mount	T-bar Lay-in	Special 1 1/2" T-bar Lay-in
Aluminum	HRD-CL-AL-1	HRD-CL-AL-6	HRD-CL-AL-6M
Stainless Steel	HRD-CL-SS-1	HRD-CL-SS-6	HRD-CL-SS-6M
SS Face/Aluminum Backpan	HRD-CL-SA-1	HRD-CL-SA-6	HRD-CL-SA-6M

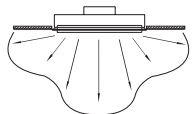


Model HRD-HA

Additional product information available at www.metalaire.com

Environmental/Hospital Diffusers - Radial Discharge Pattern - Removable Face w/HEPA Filter Series HRD-HA

- ★ The series HRD-HA radial discharge pattern diffusers includes a HEPA filter section and are engineered for supply air distribution in critical environments such as chemistry labs and clean rooms. The diffusers are engineered to supply a low velocity of conditioned air in a radial pattern from the ceiling
- ★ The series HRD-HA design includes a HEPA filter cell accessible from the face of the diffuser. The face and core assembly can be removed from the face for cleaning. This feature allows the filters to be removed and replaced from the diffuser face. Optional HEPA filters are available
- ★ The HRD-HA Radial Discharge Pattern Diffusers are easy to clean and sterilize. The face and core assembly can be removed from the face for cleaning. With the face and core assembly removed, the interior of the backpan and inlet collar are free of obstructions and easy to access
- ★ The diffuser is available in stainless steel or heavy aluminum construction. Units available in 90° or 180° throw
- ★ Optional HEPA Filters are available



	Radial Discharge - w/HEPA Filter Cell		
	Flush Mount	T-bar Lay-in	Special 1 1/2" T-bar Lay-in
Aluminum	HRD-HA-AL-1	HRD-HA-AL-6	HRD-HA-AL-6M
Stainless Steel	HRD-HA-SS-1	HRD-HA-SS-6	HRD-HA-SS-6M
SS Face/Aluminum Backpan	HRD-HA-SA-1	HRD-HA-SA-6	HRD-HA-SA-6M





Model Periflow

Additional product information available at www.metalair.com

Environmental/Hospital Diffusers - Laminar Flow - Operating Room Systems - Series Periflow

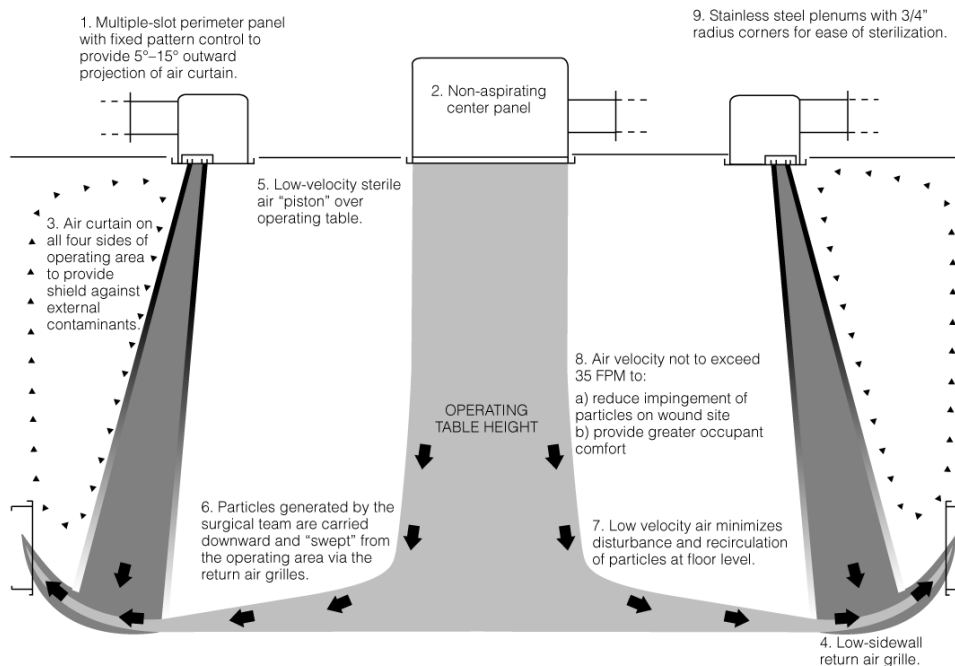
- ✦ The Periflow operating room air distribution system provides control over particulate matter within the operating room environment
- ✦ The system has been tested in accordance with the guidelines set forth by the Committee on Operating Room Environments of the American College of Surgeons as published in the January 1976 Bulletin and meets Class 1 Microbiological Air Cleanliness guidelines. The system provides the highest standard of air cleanliness for patients undergoing minor procedures or surgeries as critical as organ transplants
- ✦ The system is in either stainless steel or heavy aluminum construction to ensure long-term durability and resistance to strong germicidal solutions. In addition, each system is custom designed and precisely fabricated to accommodate the specialized medical, mechanical, and electrical considerations of today's operating room environments
- ✦ By its compact yet efficient design, the Periflow system allows the designer the flexibility to properly provide for all the various components competing for space above the operating room ceiling

Flush Mount
Periflow Laminar Flow Panels w/Perimeter Air Curtain

Environmental/Hospital Diffusers



EHD





LEB
G

LINEAR BAR GRILLES

LINEAR BAR GRILLES



Series 2000
Pg. 138

Linear Bar Grilles & Registers - Series 2000

- ✦ Series 2000 linear bar grilles and registers are engineered for supply and return air distribution in heating, cooling, and ventilating applications, and are designed for sidewall, floor, sill, and ceiling installation
- ✦ Constructed of high-grade aluminum extrusions
- ✦ Bar grille frames are available in three border widths: 3/16", 1/2", 1"
- ✦ A complete line of accessories is available for series 2000 bar grilles and registers; including mitered corners, opposed blade dampers, adjustable extractors and grids, access doors, and debris screens

Series 2000 1" Borders - 7/32" Bars - 1/2" Center	Grilles - 1" Border		
	0° Deflection	15° Deflection	30° Deflection
Wall Mounting	2000 1" Border	2015 1" Border	2030 1" Border
Core Only	2000CO 1" Border	2015CO 1" Border	2030CO 1" Border
Floor Mounting	2000F 1" Border	2015F 1" Border	2030F 1" Border
Floor or Sill Mounting	2000FP 1" Border	2015FP 1" Border	2030FP 1" Border
Concealed Mounting Hanger	2000H 1" Border	2015H 1" Border	2030H 1" Border
For Plaster Wall & Ceilings	2000HP 1" Border	2015HP 1" Border	2030HP 1" Border

Series 2100 1/2" Borders - 7/32" Bars - 1/2" Center	Grilles - 1/2" Border		
	0° Deflection	15° Deflection	30° Deflection
Wall Mounting	2100 1/2" Border	2115 1/2" Border	2130 1/2" Border
Concealed Mounting Hanger	2100H 1/2" Border	2115H 1/2" Border	2130H 1/2" Border
Concealed Spline Subframe	2100HP 1/2" Border	2115HP 1/2" Border	2130HP 1/2" Border
Narrow Subframe	2100HW 1/2" Border	2115HW 1/2" Border	2130HW 1/2" Border
Combination Subframe	2100HC 1/2" Border	2115HC 1/2" Border	2130HC 1/2" Border

Series 2200 3/16" Border - 7/32" Bars - 1/2" Center	Grilles - 3/16" Border		
	0° Deflection	15° Deflection	30° Deflection
Non-Flanged Floor Mounting	2200F Floor Frame	2215F Floor Frame	2230F Floor Frame
Non-Flanged Floor Mounting - Pencil Proof	2200FP Floor Frame	2215FP Floor Frame	2230FP Floor Frame

Series 2300 1" Border - 1/8" Bars - 1/4" Center	Grilles - 1" Border		
	0° Deflection	15° Deflection	30° Deflection
Wall Mounting	2300 1" Border	2315 1" Border	2330 1" Border
Core Only - 1/8" Bars - 1/4" Centers	2300CO 1" Border - Core Only	2315CO 1" Border - Core Only	2330CO 1" Border - Core Only
Concealed Mounting Hangers	2300H 1" Border	2315H 1" Border	2330H 1" Border
Concealed Spline Mounting Frame	2300HP 1" Border	2315HP 1" Border	2330HP 1" Border

Series 2400 1/2" Border - 1/8" Bars - 1/4" Center	Grilles - 1/2" Border		
	0° Deflection	15° Deflection	30° Deflection
Wall Mounting	2400 1/2" Border	2415 1/2" Border	2430 1/2" Border
Concealed Mounting Hangers	2400H 1/2" Border	2415H 1/2" Border	2430H 1/2" Border
Concealed Spline Mounting Frame	2400HP 1/2" Border	2415HP 1/2" Border	2430HP 1/2" Border
Narrow Mounting Frame	2400HW 1/2" Border	2415HW 1/2" Border	2430HW 1/2" Border
Combination Narrow Mounting Frame	2400HC 1/2" Border	2415HC 1/2" Border	2430HC 1/2" Border

	Border	Bars	Centers
2000	1"	7/32"	1/2"
2100	1/2"	7/32"	1/2"
2200	3/16"	7/32"	1/2"
2300	1"	1/8"	1/4"
2400	1/2"	1/8"	1/4"

Linear Bar Grilles



LBG

Linear Bar Grilles & Registers Series 2000 Extruded Aluminum

Product Details

- Series 2000 linear bar grilles and registers are engineered for supply and return air distribution in heating, cooling, and ventilating applications, and are designed for sidewall, floor, sill, and ceiling installation
- Constructed of high-grade aluminum extrusions
- Bar grille frames are available in three border widths: 3/16", 1/2", 1"
- A complete line of accessories are available for series 2000 bar grilles and registers; including mitered corners, opposed blade dampers, adjustable extractors and grids, access doors, and debris screens



Model 2000 Shown

Standard Finish: 01 White

Series 2000 - 1" Borders • 7/32" Bars • 1/2" Centers

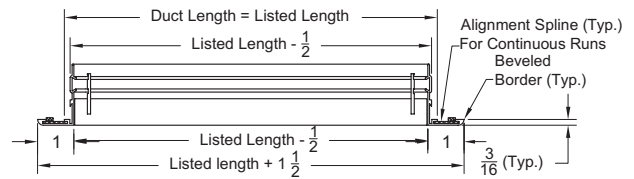
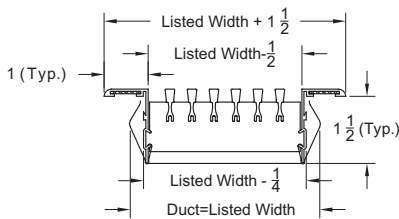
Sideview, dimensions are in inches

Wall Mounted - 1" Border/7/32" Bars/1/2" Centers - Extruded Aluminum - Series 2000

Model 2000 - 0° Deflection

Model 2015 - 15° Deflection

Model 2030 - 30° Deflection

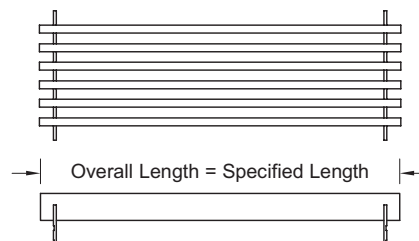
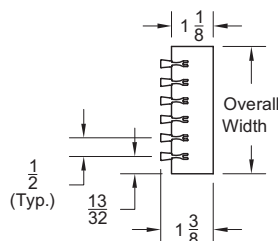


Core Only - 1" Border/7/32" Bars/1/2" Centers - Extruded Aluminum - Series 2000

Model 2000CO - 0° Deflection

Model 2015CO - 15° Deflection

Model 2030CO - 30° Deflection



Linear Bar Grilles

LBG

LBG - Linear Bar Grilles

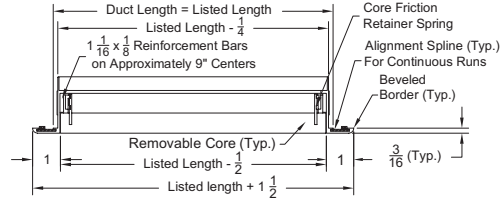
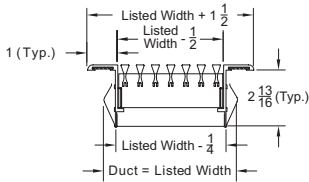
1" Border/7/32" Bars/1/2" Centers - Extruded Aluminum - Series 2000

Floor Mounted

Model 2000F - 0° Deflection
 Model 2015F - 15° Deflection
 Model 2030F - 30° Deflection

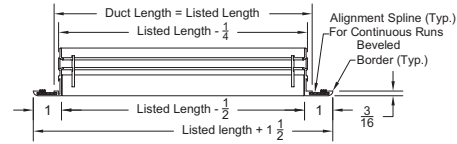
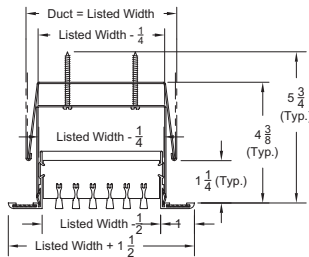
Floor Mounted/Pencil Proof

Model 2000FP - 0° Deflection
 Model 2015FP - 15° Deflection
 Model 2030FP - 30° Deflection



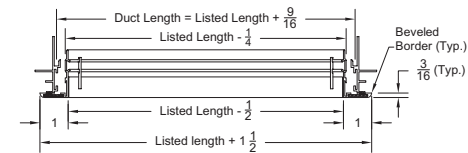
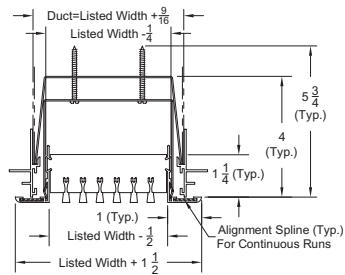
Concealed Mounting Hanger - 1" Border/7/32" Bars/1/2" Centers - Extruded Aluminum - Series 2000

Model 2000H - 0° Deflection
 Model 2015H - 15° Deflection
 Model 2030H - 30° Deflection



Plaster Wall & Ceiling - 1" Border/7/32" Bars/1/2" Centers - Extruded Aluminum - Series 2000

Model 2000HP - 0° Deflection
 Model 2015HP - 15° Deflection
 Model 2030HP - 30° Deflection



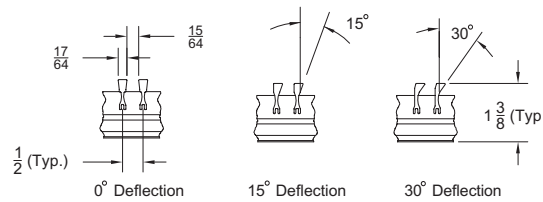
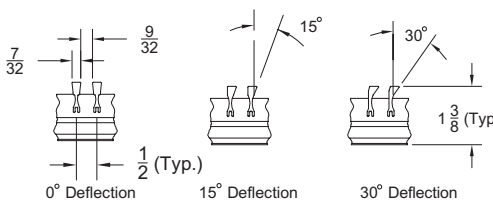
Deflection Angles

Models

2000/2000CO/2000F/2000H/2000HP

Models

2000FP Pencil Proof



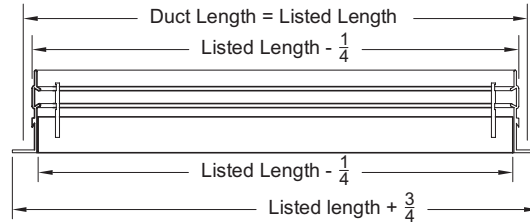
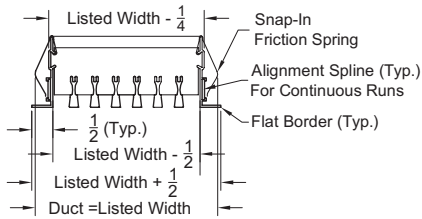
LBG - Linear Bar Grilles

5/2007

Series 2100 - 1/2" Borders • 7/32" Bars • 1/2" Centers

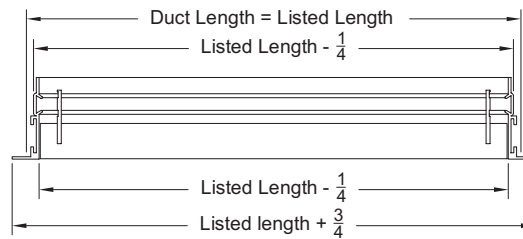
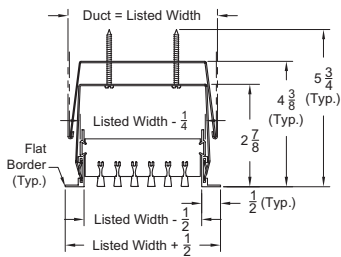
Wall Mounted - 1/2" Border/7/32" Bars/1/2" Centers - Extruded Aluminum - Series 2100

Model 2100 - 0° Deflection
 Model 2115 - 15° Deflection
 Model 2130 - 30° Deflection



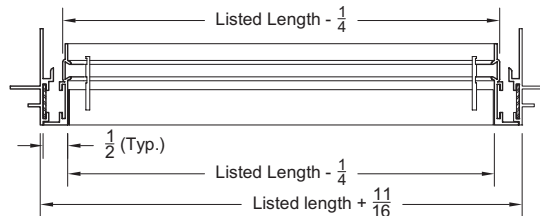
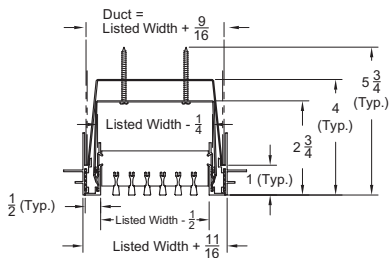
Concealed Mounting Hanger - 1/2" Border/7/32" Bars/1/2" Centers - Extruded Aluminum - Series 2100

Model 2100H - 0° Deflection
 Model 2115H - 15° Deflection
 Model 2130H - 30° Deflection



Concealed Spline Subframe - 1/2" Border/7/32" Bars/1/2" Centers - Extruded Aluminum - Series 2100

Model 2100HP - 0° Deflection
 Model 2115HP - 15° Deflection
 Model 2130HP - 30° Deflection



Linear Bar Grilles

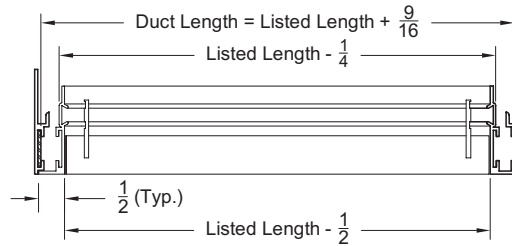
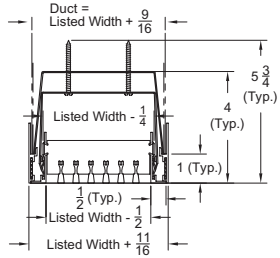


LBG

LBG - Linear Bar Grilles

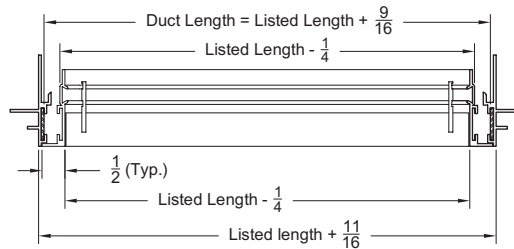
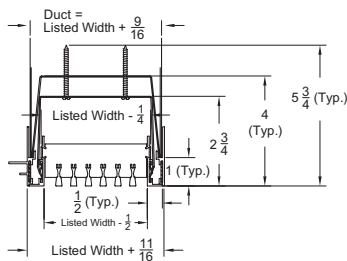
Narrow Subframe - 1/2" Border/7/32" Bars/1/2" Centers - Extruded Aluminum - Series 2100

- Model 2100HW - 0° Deflection
- Model 2115HW - 15° Deflection
- Model 2130HW - 30° Deflection



Combination Subframe - 1/2" Border/7/32" Bars/1/2" Centers - Extruded Aluminum - Series 2100

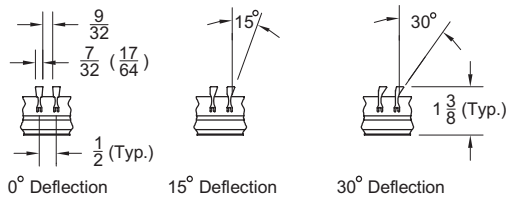
- Model 2100HC - 0° Deflection
- Model 2115HC - 15° Deflection
- Model 2130HC - 30° Deflection



Deflection Angles

Models

2100/2100H/2100HP/2100HW/2100HC



LBG - Linear Bar Grilles

5/2007

Series 2200 - 3/16" Borders • 7/32" Bars • 1/2" Centers

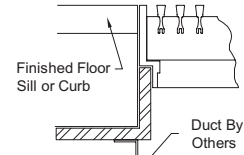
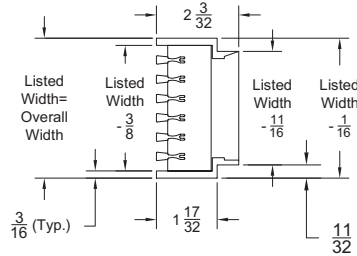
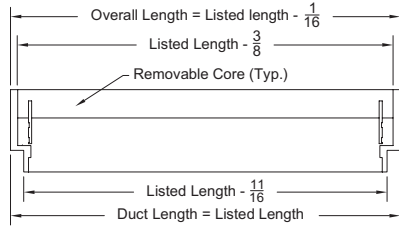
3/16" Border/7/32" Bars/1/2" Centers - Extruded Aluminum - Series 2200

Non-Flanged Floor Mounting

Model 2200F - 0° Deflection
 Model 2215F - 15° Deflection
 Model 2230F - 30° Deflection

Non-Flanged Floor Mounting/Pencil Proof

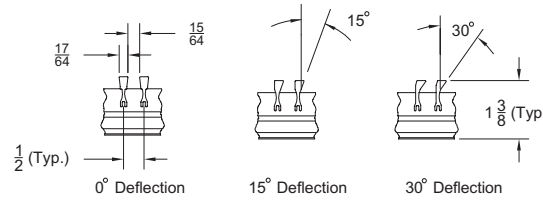
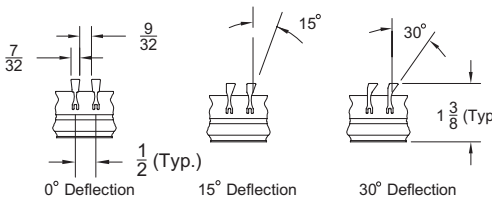
Model 2200FP - 0° Deflection
 Model 2215FP - 15° Deflection
 Model 2230FP - 30° Deflection



Deflection Angles

Models
2200F

Models
2000FP Pencil Proof



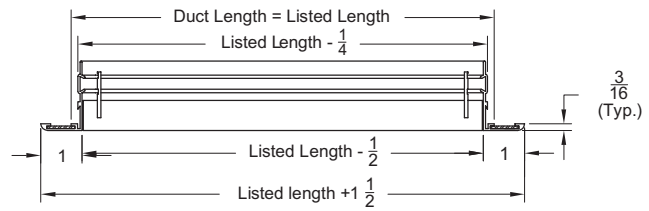
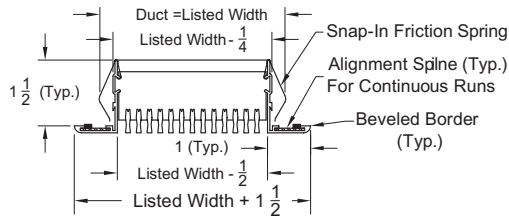
Linear Bar Grilles

LBG

Series 2300 - 1" Borders • 1/8" Bars • 1/4" Centers

Wall Mounted - 1" Border/1/8" Bars/1/4" Centers - Extruded Aluminum - Series 2300

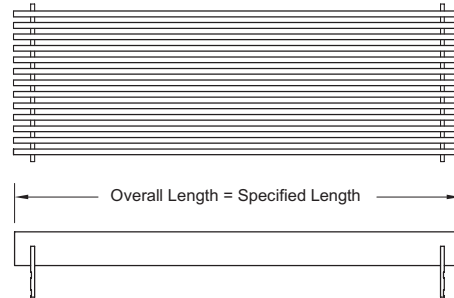
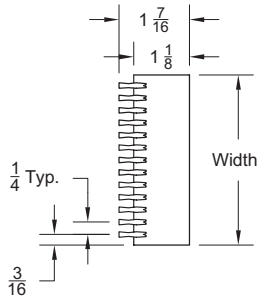
Model 2300 - 0° Deflection
 Model 2315 - 15° Deflection
 Model 2330 - 30° Deflection



LBG - Linear Bar Grilles

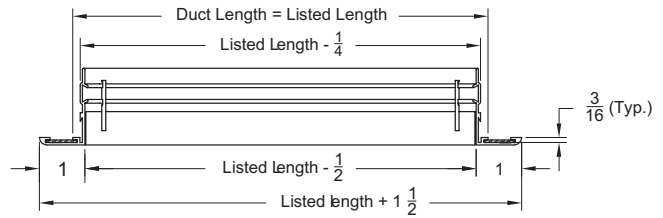
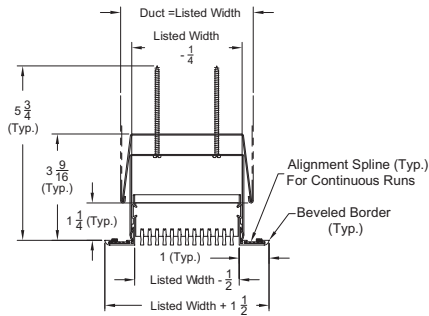
Core Only - 1" Border/1/8" Bars/1/4" Centers - Extruded Aluminum - Series 2300

- Model 2300CO - 0° Deflection
- Model 2315CO - 15° Deflection
- Model 2330CO - 30° Deflection



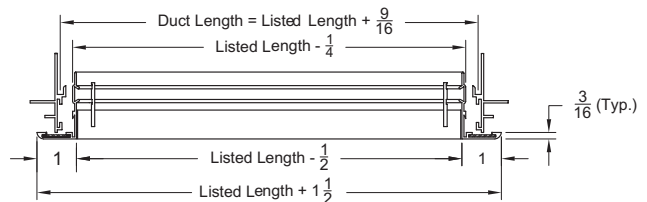
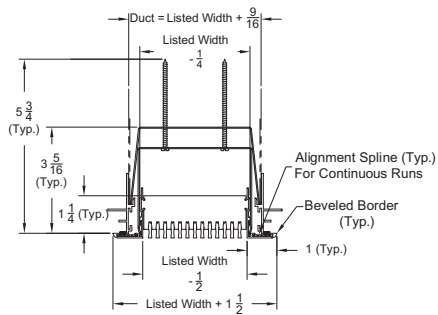
Concealed Mounting Hangers - 1" Border/1/8" Bars/1/4" Centers - Extruded Aluminum - Series 2300

- Model 2300H - 0° Deflection
- Model 2315H - 15° Deflection
- Model 2330H - 30° Deflection



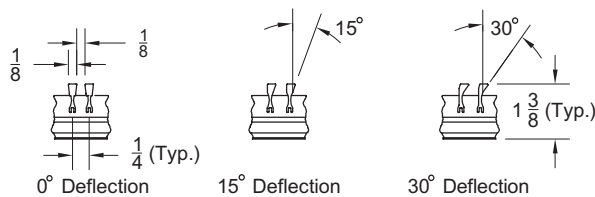
Spline Subframe - 1" Border/1/8" Bars/1/4" Centers - Extruded Aluminum - Series 2300

- Model 2300HP - 0° Deflection
- Model 2315HP - 15° Deflection
- Model 2330HP - 30° Deflection



Deflection Angles

Models
2300/2300CO/2300H/2300HP



Linear Bar Grilles

LBG

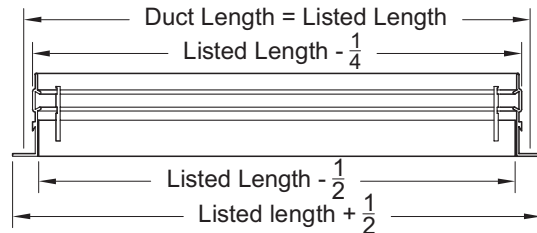
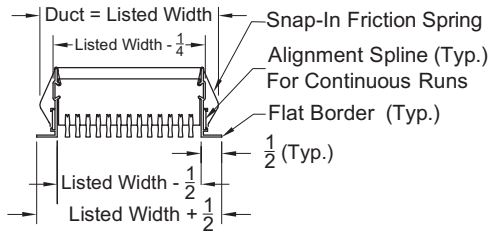
LBG - Linear Bar Grilles

5/2007

Series 2400 - 1/2" Borders • 1/8" Bars • 1/4" Centers

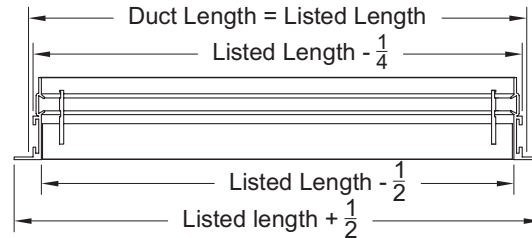
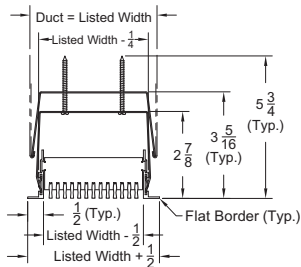
Wall Mounted - 1/2" Border/1/8" Bars/1/4" Centers - Extruded Aluminum - Series 2400

- Model 2400 - 0° Deflection
- Model 2415 - 15° Deflection
- Model 2430 - 30° Deflection



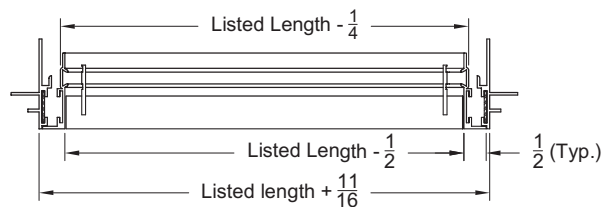
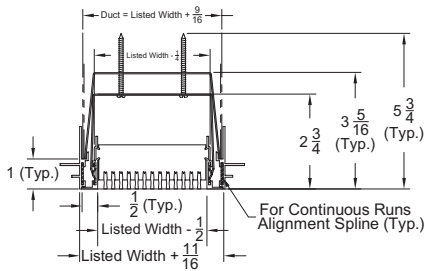
Concealed Mounting Hangers - 1/2" Border/1/8" Bars/1/4" Centers - Extruded Aluminum - Series 2400

- Model 2400H - 0° Deflection
- Model 2415H - 15° Deflection
- Model 2430H - 30° Deflection



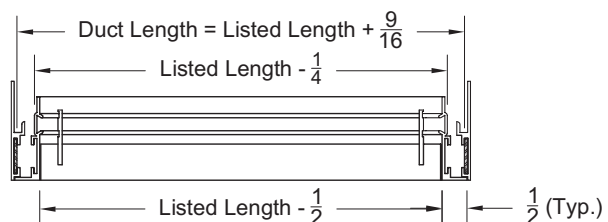
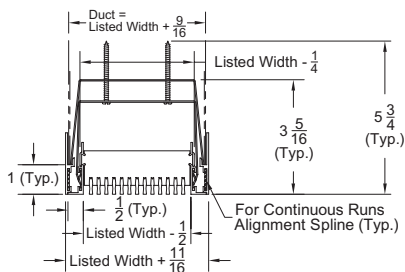
Concealed Spline Subframe - 1/2" Border/1/8" Bars/1/4" Centers - Extruded Aluminum - Series 2400

- Model 2400HP - 0° Deflection
- Model 2415HP - 15° Deflection
- Model 2430HP - 30° Deflection



Narrow Subframe - 1/2" Border/1/8" Bars/1/4" Centers - Extruded Aluminum - Series 2400

- Model 2400HW - 0° Deflection
- Model 2415HW - 15° Deflection
- Model 2430HW - 30° Deflection



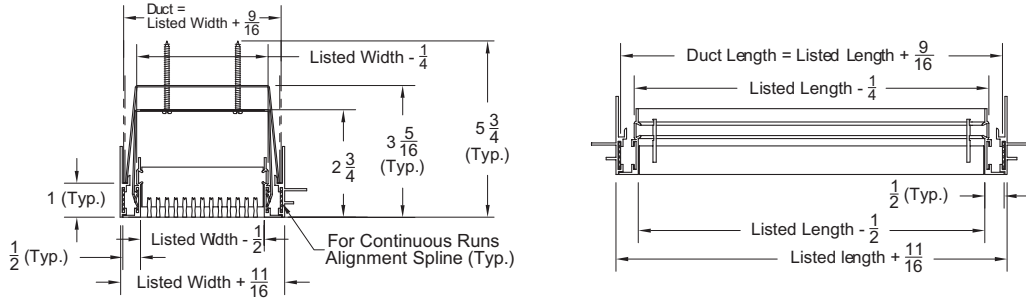
Linear Bar Grilles

LBG

LBG - Linear Bar Grilles

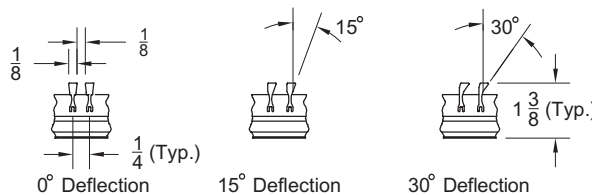
Spline Subframe - 1/2" Border/1/8" Bars/1/4" Centers - Extruded Aluminum - Series 2400

- Model 2400HC - 0° Deflection
- Model 2415HC - 15° Deflection
- Model 2430HC - 30° Deflection



Deflection Angles

Models
2400/2400H/2400HP/2400HC



Notes for Models 2000, 2015, 2030, 2000F, 2015F, 2030F, 2000FP, 2015FP, 2030FP, 2000H, 2015H, 2030H, 2000HP, 2015HP, 2030HP, 2100, 2115, 2130, 2100H, 2115H, 2130H, 2100HP, 2115HP, 2130HP, 2100HW, 2115HW, 2130HW, 2100HC, 2115HC, 2130HC

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 01 White Optional Finish 04 Clear Anodized 28 Custom color	L9 - Equalizing grid221 Mitered corner98 Damper (for grilles)	Dampers - Widths 3 1/2" and smaller use a single flap style damper Widths 4" and larger use model OBD - Steel OBDA - Aluminum damper Core Only (longer sections are not available for core only sections)	<ul style="list-style-type: none"> • Widths available in 1/2" increments from 1 1/2" to 24" • Lengths available in single pieces up to 72" • Longer sections are made by joining sections in the field with factory supplied alignment strap • For lengths less than 72", round up to next listed size. No odd size charges apply • Standard mounting in concealed friction spring clips • Available reverse sizes (face bars parallel to short side)

Notes for Models 2300, 2315, 2330, 2300H, 2315H, 2330H, 2300HP, 2315HP, 2330HP, 2400, 2415, 2430, 2400H, 2415H, 2430H, 2400HP, 2415HP, 2430HP, 2400HW, 2415HW, 2430HW

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 01 White Optional Finish 04 Clear Anodized 28 Custom color	L9 - Equalizing grid221 Mitered corner98 Damper (for grilles)	Dampers - Widths 3 1/2" and smaller use a single flap style damper Widths 4" and larger use model OBD - Steel OBDA - Aluminum damper Core Only	<ul style="list-style-type: none"> • Widths available in 1/2" increments from 1 1/2" to 24" • Lengths available in single pieces up to 72" • Longer sections are made by joining sections in the field with factory supplied alignment strap • Standard mounting in concealed friction spring clips • Available reverse sizes (face bars parallel to short side)

Notes for Models 2200F, 2215F, 2230F, 2200FP, 2215FP, 2230FP, 2300 CO, 2315 CO, 2330 CO

1. Available Finishes	2. Construction Details
Standard Finish: 01 White Optional Finish 04 Clear Anodized 28 Custom color	<ul style="list-style-type: none"> • Widths available in 1/2" increments from 1 1/2" to 8" for series 2200F • Lengths available in single pieces up to 48" • Longer sections are available only as separate non-connected sections. For lengths less than 48", round up to the next size



For more product information visit us at www.metalair.com



LBG - Linear Bar Grilles

Series 2000, 2100, 2200 (0° and 15° Deflection)

Listed Width (in inches) and Ak Area per foot	Outlet Velocity (V _k)	500	700	900	1000	1100	1200	1300
	Total Pressure (Pt)	0.016	0.031	0.051	0.062	0.062	0.09	0.105
	Static Pressure (Ps)	0.012	0.024	0.04	0.05	0.05	0.072	0.084
	NC		15	20	23	23	29	31
1 1/2 0.062	Flow CFM/Ft.	31	44	56	63	69	75	81
	Throw, Sill or Floor	6 9	9 13	10 14	11 16	13 18	13 19	14 20
	Ft. Side Wall	8 11	11 16	13 18	14 20	15 22	17 24	17 25
2 0.086	Flow CFM/Ft.	43	60	77	85	94	102	111
	Throw, Sill or Floor	5 8	8 12	10 14	11 16	13 18	13 19	14 20
	Ft. Side Wall	7 10	10 15	13 18	14 20	15 22	17 24	17 25
2 1/2 0.11	Flow CFM/Ft.	55	77	99	110	121	132	143
	Throw, Sill or Floor	6 9	9 13	11 16	13 18	13 19	15 21	15 22
	Ft. Side Wall	8 11	11 16	14 20	16 23	17 24	18 26	20 28
3 0.13	Flow CFM/Ft.	65	91	117	130	143	156	169
	Throw, Sill or Floor	7 10	10 15	13 18	15 21	15 22	17 24	18 26
	Ft. Side Wall	8 12	13 18	15 22	17 25	18 26	20 28	21 30
3 1/2 0.152	Flow CFM/Ft.	76	107	137	153	168	183	198
	Throw, Sill or Floor	7 10	10 15	13 18	15 21	15 22	17 24	18 26
	Ft. Side Wall	9 13	13 19	16 23	18 26	20 28	21 30	22 23
4 0.176	Flow CFM/Ft.	110	154	198	220	242	264	286
	Throw, Sill or Floor	8 11	13 18	14 20	16 23	18 26	19 27	20 29
	Ft. Side Wall	10 14	15 22	17 25	20 29	22 32	24 34	25 26
5 0.22	Flow CFM/Ft.	110	154	198	220	242	264	286
	Throw, Sill or Floor	8 12	13 18	15 21	17 24	18 26	19 27	21 30
	Ft. Side Wall	10 15	15 22	19 27	22 31	23 33	24 35	27 38
6 0.265	Flow CFM/Ft.	133	186	239	265	292	318	345
	Throw, Sill or Floor	8 12	13 18	15 22	17 25	18 26	20 28	21 30
	Ft. Side Wall	10 15	15 22	19 27	22 31	23 33	24 35	27 38
8 0.062	Flow CFM/Ft.	178	249	320	355	391		
	Throw, Sill or Floor	10 14	13 19	15 22	18 26	19 27		
	Ft. Side Wall	12 17	17 24	20 28	23 33	24 34		
10 0.446	Flow CFM/Ft.	223	312	401	445			
	Throw, Sill or Floor	10 15	15 22	18 26	21 30			
	Ft. Side Wall	13 19	20 28	23 33	26 37			
12 0.536	Flow CFM/Ft.	268	375	482				
	Throw, Sill or Floor	12 17	22 31	21 30				
	Ft. Side Wall	15 21	24 35	27 38				

Performance Notes for Series 2000:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic feet per minute (air)
- fpm - Velocity of air stream in feet per minute
- P_v - Velocity pressure (inches of water column)
- P_t - Total pressure (inches of water column)
- P_s - Static pressure = P_t - P_v (inches of water column)
- Throw - Cataloged throw is horizontal distances in feet to the terminal velocities of 150 and 50 fpm with supply air temperature 20° F below room air temperature.
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (L_w) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak - Area Factors

Linear Bar Grilles

LBG

Series 2000, 2100, 2200 (30° Deflection)

Listed Width (in inches) and Ak Area per foot	Outlet Velocity (V _k)	570	805	1035	1140	1265	1380	1495
	Total Pressure (Pt)	0.02	0.04	0.067	0.081	0.1	0.119	0.139
	Static Pressure (Ps)	0.017	0.034	0.056	0.07	0.084	0.1	0.118
	NC		20	25	28	31	34	36
1 1/2 0.062	Flow CFM/Ft.	36	50	65	71	79	86	94
	Throw, Sill or Floor	6 9	9 13	10 14	11 16	13 18	13 19	14 20
	Ft. Side Wall	8 11	11 16	13 18	14 20	15 22	17 24	17 25
2 0.086	Flow CFM/Ft.	48	68	88	97	108	117	127
	Throw, Sill or Floor	5 8	8 12	10 14	11 16	13 18	13 19	14 20
	Ft. Side Wall	7 10	10 15	13 18	14 20	15 22	17 24	17 25
2 1/2 0.11	Flow CFM/Ft.	63	89	114	125	139	152	164
	Throw, Sill or Floor	6 9	9 13	11 16	13 18	13 19	15 21	15 22
	Ft. Side Wall	8 11	11 16	14 20	16 23	17 24	18 26	20 28
3 0.13	Flow CFM/Ft.	74	105	135	148	164	179	194
	Throw, Sill or Floor	7 10	10 14	13 18	15 21	15 22	17 24	18 26
	Ft. Side Wall	8 12	13 18	15 22	17 25	18 26	20 28	21 30
3 1/2 0.152	Flow CFM/Ft.	87	123	156	174	193	211	228
	Throw, Sill or Floor	7 10	10 15	13 18	14 20	15 21	15 22	17 24
	Ft. Side Wall	9 13	13 19	16 23	18 26	20 28	21 30	22 32
4 0.176	Flow CFM/Ft.	100	141	181	200	221	242	262
	Throw, Sill or Floor	8 11	13 18	15 21	17 24	18 26	19 27	21 30
	Ft. Side Wall	10 14	15 22	17 25	20 29	22 32	24 34	25 36
5 0.22	Flow CFM/Ft.	125	177	228	251	278	304	329
	Throw, Sill or Floor	8 12	13 18	15 22	17 25	18 26	20 28	21 30
	Ft. Side Wall	10 15	15 22	19 27	22 31	23 33	24 35	27 38
6 0.265	Flow CFM/Ft.	157	213	274	302	335	366	396
	Throw, Sill or Floor	8 12	13 18	15 22	17 25	18 26	20 28	21 30
	Ft. Side Wall	10 15	15 22	19 27	22 31	23 33	24 35	27 38
8 0.062	Flow CFM/Ft.	202	286	367	405	449		
	Throw, Sill or Floor	10 14	13 19	15 22	18 26	19 27		
	Ft. Side Wall	12 17	17 24	20 28	23 33	24 34		
10 0.446	Flow CFM/Ft.	254	358	461	507			
	Throw, Sill or Floor	10 15	15 22	18 26	21 30			
	Ft. Side Wall	13 19	20 28	23 33	26 37			
12 0.536	Flow CFM/Ft.	305	431	554				
	Throw, Sill or Floor	12 17	22 31	21 30				
	Ft. Side Wall	15 21	24 35	27 38				

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LBG - Linear Bar Grilles

Series 2300, 2400 (0° and 15° Deflection)

Listed Width (in inches) and Ak Area per foot	Outlet Velocity (V _k) Total Pressure (Pt) Static Pressure (Ps) NC	500	700	900	1000	1100	1200	1300
		0.020	0.038	0.062	0.076	0.091	0.110	0.128
		0.015	0.029	0.049	0.061	0.073	0.088	0.102
		15	18	24	28	31	35	37
1 1/2 0.062	Flow CFM/Ft.	31	44	56	63	69	75	81
	Throw, Sill or Floor	7 11	11 16	12 17	13 19	16 22	16 23	17 24
	Ft. Side Wall	10 13	13 19	16 22	17 24	18 26	20 29	20 30
2 0.086	Flow CFM/Ft.	43	60	77	85	94	102	111
	Throw, Sill or Floor	6 10	10 14	12 17	13 19	16 22	16 23	17 24
	Ft. Side Wall	8 12	12 18	16 22	17 24	18 26	20 29	20 30
2 1/2 0.11	Flow CFM/Ft.	55	77	99	110	121	132	143
	Throw, Sill or Floor	7 11	11 16	13 19	16 22	16 23	18 25	18 26
	Ft. Side Wall	10 13	13 19	17 24	19 28	20 29	22 31	24 34
3 0.13	Flow CFM/Ft.	65	91	117	130	143	156	169
	Throw, Sill or Floor	8 12	12 17	16 22	17 24	18 25	18 26	20 29
	Ft. Side Wall	10 14	16 22	18 26	20 30	22 31	24 34	25 36
3 1/2 0.152	Flow CFM/Ft.	76	107	137	153	168	183	198
	Throw, Sill or Floor	8 12	12 18	16 22	18 25	18 26	20 29	22 31
	Ft. Side Wall	10 14	16 22	18 26	20 30	22 31	24 34	25 36
4 0.176	Flow CFM/Ft.	88	123	158	175	193	210	228
	Throw, Sill or Floor	10 13	16 22	17 24	19 28	22 31	23 32	24 35
	Ft. Side Wall	12 17	18 26	20 30	24 35	26 38	29 41	30 31
5 0.22	Flow CFM/Ft.	110	154	198	220	242	264	286
	Throw, Sill or Floor	10 14	16 22	18 25	20 29	22 0	23 32	25 36
	Ft. Side Wall	12 18	18 26	22 31	25 36	26 0	29 41	31 44
6 0.265	Flow CFM/Ft.	133	186	239	265	292	318	345
	Throw, Sill or Floor	10 14	16 22	18 26	20 30	22 0	24 34	25 36
	Ft. Side Wall	12 18	18 26	23 32	26 37	28 0	29 42	32 46
8 0.062	Flow CFM/Ft.	178	249	320	355	391		
	Throw, Sill or Floor	12 17	16 23	18 26	22 31	23		
	Ft. Side Wall	14 20	20 29	24 34	28 40	29		
10 0.446	Flow CFM/Ft.	223	312	401	445			
	Throw, Sill or Floor	12 18	18 26	22 31	25 36			
	Ft. Side Wall	16 23	24 34	28 40	31 44			
12 0.536	Flow CFM/Ft.	268	375	482				
	Throw, Sill or Floor	14 20	26 37	25 36				
	Ft. Side Wall	18 25	29 42	32 46				

Performance Notes for Series 2000:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic feet per minute (air)
- fpm - Velocity of air stream in feet per minute
- Pv - Velocity pressure (inches of water column)
- Pt - Total pressure (inches of water column)
- Ps - Static pressure = Pt - Pv (inches of water column)
- Throw - Cataloged throw is horizontal distances in feet to the terminal velocities of 150 and 50 fpm with supply air temperature 20° F below room air temperature.
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak - Area Factors

Series 2300, 2400 (30° Deflection)

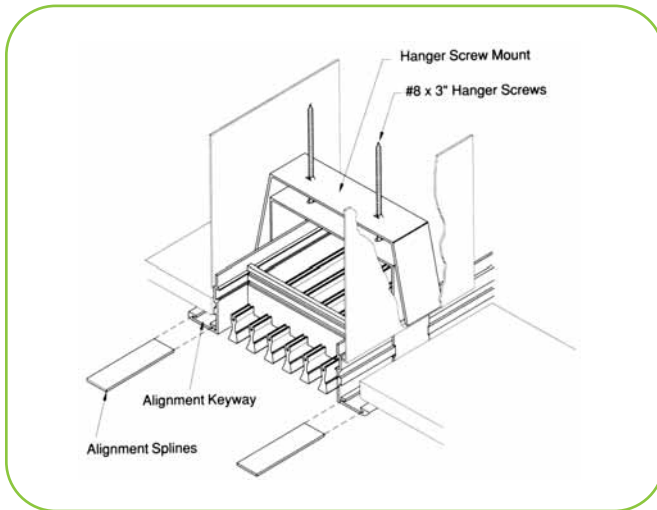
Listed Width (in inches) and Ak Area per foot	Outlet Velocity (V _k) Total Pressure (Pt) Static Pressure (Ps) NC	500	700	900	1000	1100	1200	1300
		0.016	0.031	0.051	0.062	0.062	0.09	0.105
		0.012	0.024	0.04	0.05	0.05	0.072	0.084
		15	20	23	23	29	31	
1 1/2 0.062	Flow CFM/Ft.	36	50	65	71	79	86	94
	Throw, Sill or Floor	7 11	11 16	12 17	13 19	16 22	16 23	17 24
	Ft. Side Wall	10 13	13 19	16 22	17 24	18 26	20 29	20 30
2 0.086	Flow CFM/Ft.	48	68	88	97	108	117	127
	Throw, Sill or Floor	6 10	10 14	12 17	13 19	16 22	16 23	17 24
	Ft. Side Wall	8 12	12 18	16 22	17 24	18 26	20 29	20 30
2 1/2 0.11	Flow CFM/Ft.	63	89	114	125	139	152	164
	Throw, Sill or Floor	7 11	11 16	13 19	16 22	16 23	18 25	18 26
	Ft. Side Wall	10 13	13 19	17 24	19 28	20 29	22 31	24 34
3 0.13	Flow CFM/Ft.	74	105	135	148	164	179	194
	Throw, Sill or Floor	8 12	12 17	16 22	17 24	18 25	18 26	20 29
	Ft. Side Wall	10 14	16 22	18 26	20 30	22 31	24 34	25 36
3 1/2 0.152	Flow CFM/Ft.	87	123	156	174	193	211	228
	Throw, Sill or Floor	8 12	12 18	16 22	18 25	18 26	20 29	22 31
	Ft. Side Wall	11 16	16 23	19 28	22 31	24 34	25 36	26 38
4 0.176	Flow CFM/Ft.	100	141	181	200	221	242	262
	Throw, Sill or Floor	10 13	16 22	17 24	19 28	22 31	23 32	24 35
	Ft. Side Wall	12 17	18 26	20 30	24 35	26 38	29 41	30 43
5 0.22	Flow CFM/Ft.	125	177	228	251	278	304	329
	Throw, Sill or Floor	10 14	16 22	18 25	20 29	22 31	23 32	25 36
	Ft. Side Wall	12 18	18 26	22 31	25 36	26 38	29 41	31 44
6 0.265	Flow CFM/Ft.	157	213	274	302	335	366	396
	Throw, Sill or Floor	10 14	16 22	18 26	20 30	22 31	24 34	25 36
	Ft. Side Wall	10 14	16 22	18 26	20 30	22 31	24 34	25 36
8 0.062	Flow CFM/Ft.	202	286	367	405	449		
	Throw, Sill or Floor	12 17	16 23	18 26	22 31	23		
	Ft. Side Wall	14 20	20 29	24 34	28 40	29		
10 0.446	Flow CFM/Ft.	254	358	461	507			
	Throw, Sill or Floor	12 18	18 26	22 31	25 36			
	Ft. Side Wall	16 23	24 34	28 40	31 44			
12 0.536	Flow CFM/Ft.	305	431	554				
	Throw, Sill or Floor	14 20	26 37	25 36				
	Ft. Side Wall	18 25	29 42	32 46				

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Installation Information

Hanger Bracket Installation into Hemmed Ducts



The hanger bracket mounting system is also designed to work well with factory supplied subframe material – both “P” and “W” styles. In order to ensure a satisfactory subframe installation, the following procedures should be followed:

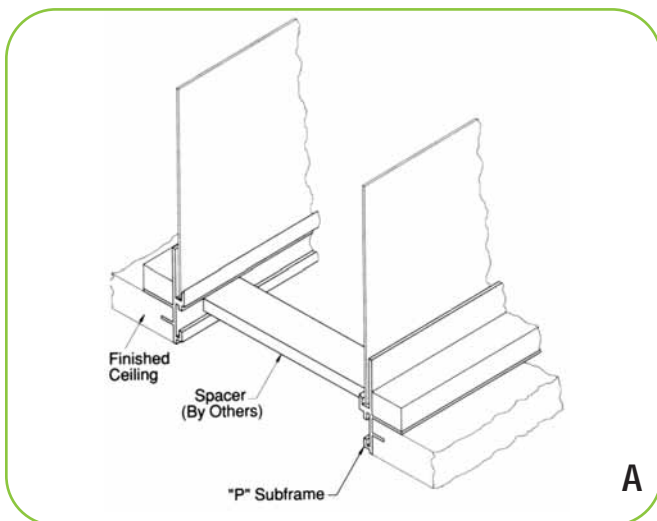
- 1) The factory supplied subframe material should be cut to the proper length (i.e., the nominal size of the Grille).
- 2) The neck of the subframe should be attached to the outside of the ductwork with the ends of the duct nestled in the channel of the subframe extrusion.
- 3) Care should be taken that the face of the subframe material is parallel to the finished surface, and, if being used as a plaster ground, the “P” subframe is recessed the proper distance from the designed finish wall.
- 4) The long sides of the subframe must be braced with appropriately sized spacer bars to prevent distortion of the subframe dimensionally, especially during plastering. Note: this bracing must be done prior to plastering.
- 5) The spacer bars should remain in place until the Grille is installed, and, in a long run, should be removed only when each Grille section is ready for installation. Subframe material used on long runs should be aligned section to section by use of the factory supplied alignment splines. In addition to serving as a plaster ground, the “P” style auxiliary subframe is designed to accommodate standard concealed spline ceiling tiles. The “W” style auxiliary subframe is installed in much the same manner as the “P” style subframe, except that it is usually placed in a ceiling directly against a sidewall. Note that Model 2000 Bar Grilles cannot be used with a “W” style subframe next to a wall because the 1” border of the Grille would overlap the subframe.

Linear Bar Grilles



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Auxiliary Subframe Preparation “P” and “W” Styles

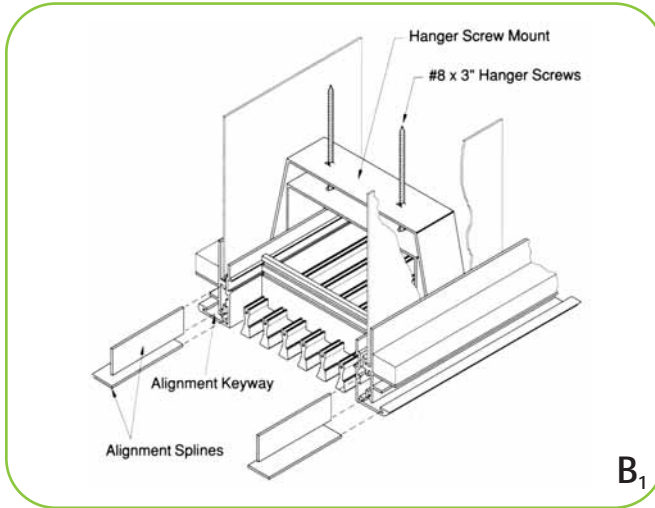


The hanger bracket mounting system is also designed to work well with factory supplied subframe material – both “P” and “W” styles. In order to ensure a satisfactory subframe installation, the following procedures should be followed:

- 1) The factory supplied subframe material should be cut to the proper length (i.e., the nominal size of the Grille).
- 2) The neck of the subframe should be attached to the outside of the ductwork with the ends of the duct nestled in the channel of the subframe extrusion.
- 3) Care should be taken that the face of the subframe material is parallel to the finished surface, and, if being used as a plaster ground, the “P” subframe is recessed the proper distance from the designed finish wall.
- 4) The long sides of the subframe must be braced with appropriately sized spacer bars to prevent distortion of the subframe dimensionally, especially during plastering. Note: this bracing must be done prior to plastering.
- 5) The spacer bars should remain in place until the Grille is installed, and, in a long run, should be removed only when each Grille section is ready for installation. Subframe material used on long runs should be aligned section to section by use of the factory supplied alignment splines. In addition to serving as a plaster ground, the “P” style auxiliary subframe is designed to accommodate standard concealed spline ceiling tiles. The “W” style auxiliary subframe is installed in much the same manner as the “P” style subframe, except that it is usually placed in a ceiling directly against a sidewall. Note that Model 2000 Bar Grilles cannot be used with a “W” style subframe next to a wall because the 1” border of the Grille would overlap the subframe.

Installation Information

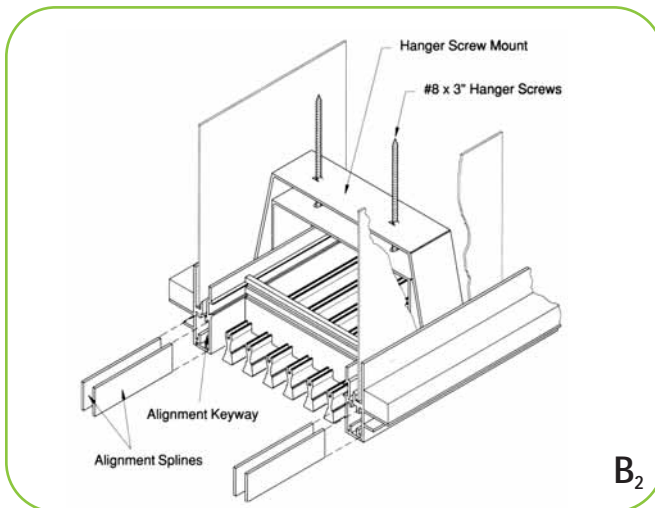
Hanger Bracket Installation into Auxiliary Subframe



Series 2000 and 2300 Linear Bar Grilles and Registers are easily installed into auxiliary subframe material using factory supplied hanger brackets and leveling screws according to the following instructions:

- 1) Arrange the appropriate number of hanger brackets and hanger screw mounts (shipped unattached) on the neck of the Grille, positioning the brackets over the hanger screw mounts.
- 2) Insert the supplied #8 X 3" screws through their mounts and into the proper hole in the hanger brackets, locking the Grille and hangers together.
- 3) Position the Grille carefully in the duct opening and press into position, pushing the legs of the hanger brackets past the extruded channel of the auxiliary subframe, allowing them to snap into position (if necessary, press the hanger brackets upward with the screws to seat the brackets properly).
- 4) Tighten the screws to draw the Grille firmly against the ceiling or sidewall, adjusting the tension to accommodate any variation in the mounting surface. In installations where long runs are composed of many separate units, the same procedure should be followed on each Grille section, taking care to use the factory supplied alignment splines to ensure a smooth and unbroken appearance.

Hanger Bracket Installation into Auxiliary Subframe



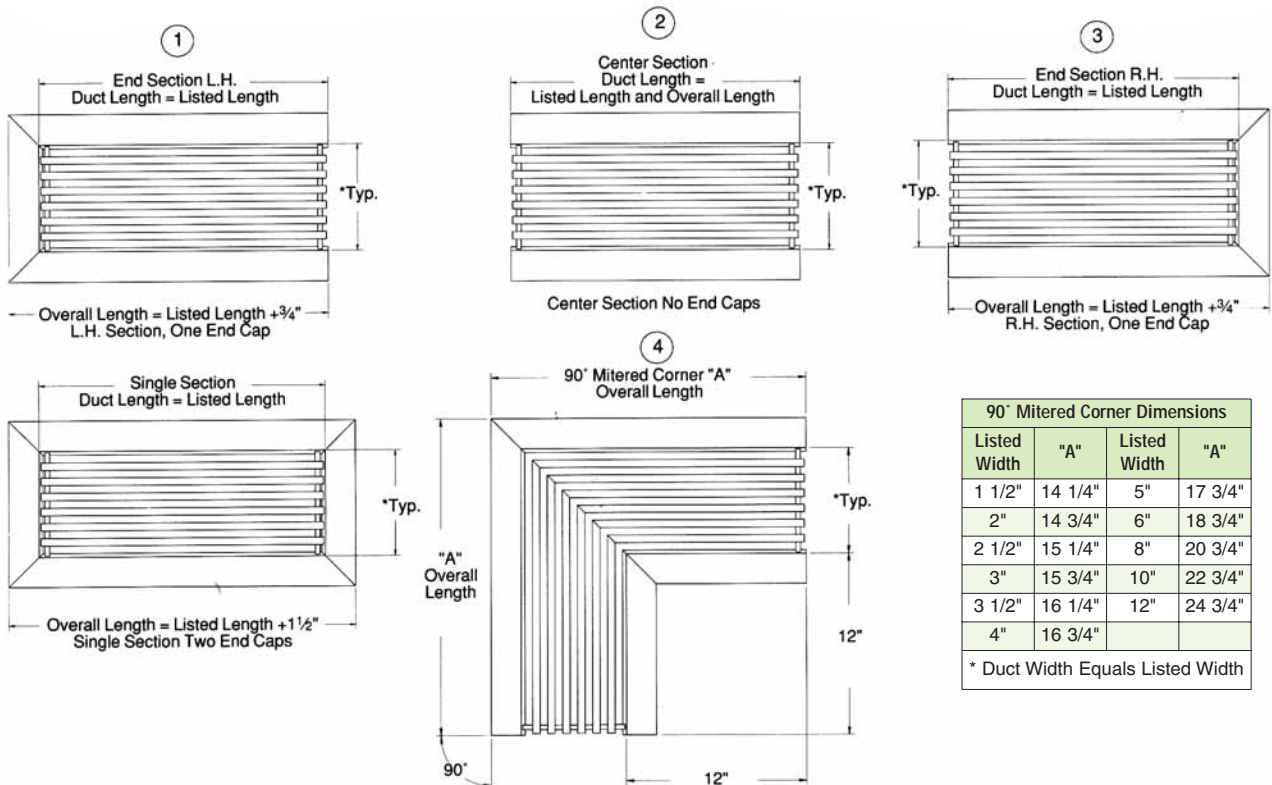
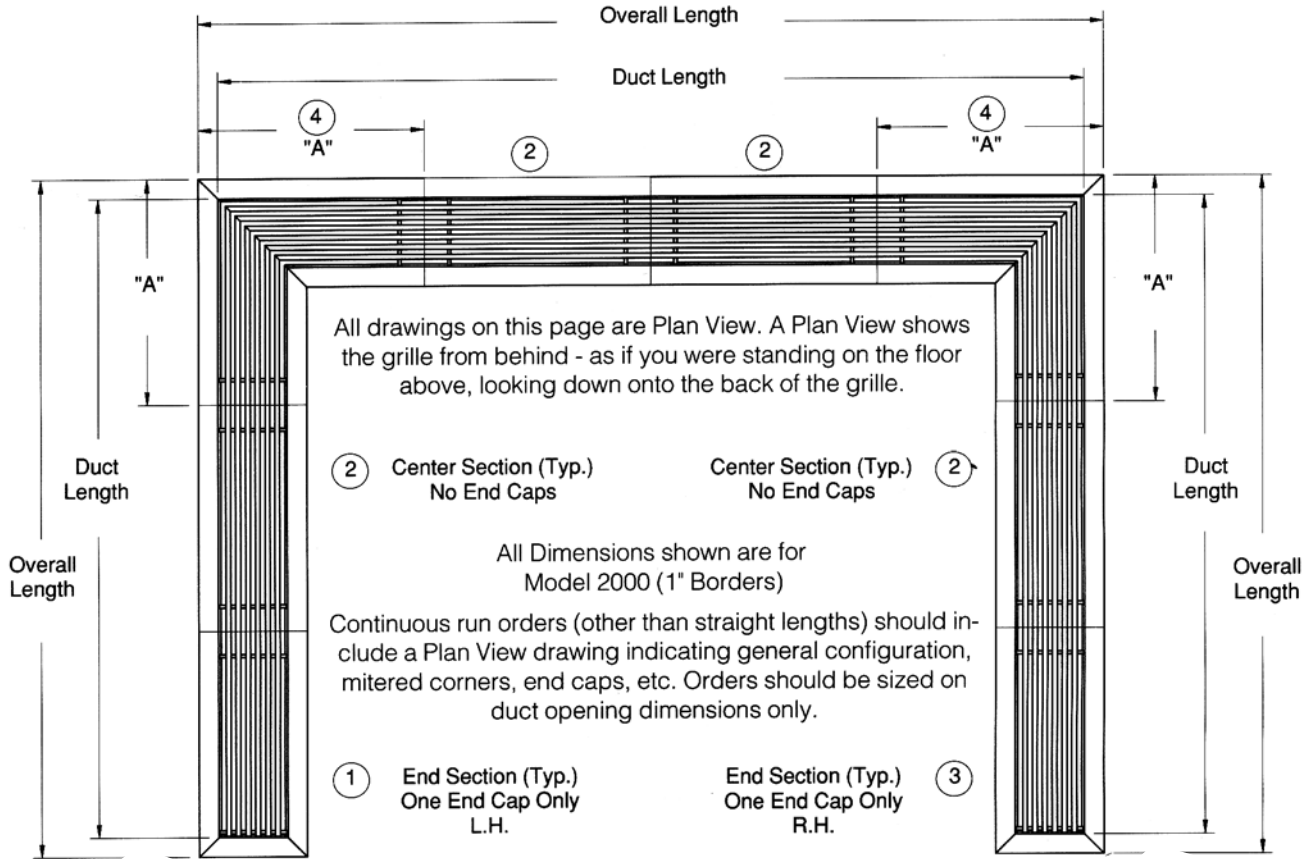
Model 2100 Units – 1/2 inch Borders Model 2100 Bar Grilles and Registers are installed into auxiliary subframes following basically the procedures outlined above. Special care must be taken, however, in the installation of the 2100 unit due to the extremely narrow frame borders of these units. Installation should proceed as follows:

- 1) Arrange the appropriate number of hanger brackets and hanger screw mounts (shipped unattached) on the neck of the Grille, positioning the brackets over the hanger screw mounts.
- 2) Insert the supplied #8 X 3" screws through their mounts and into the proper hole in the hanger brackets, locking the Grille and hangers together.
- 3) Position the Grille carefully in the duct opening and press into position, pushing the legs of the hanger brackets past the extruded channel of the auxiliary subframe, allowing them to snap into position (if necessary, press the hanger brackets upward with the screws to seat the brackets properly).
- 4) Tighten the screws to draw the Grille firmly against the ceiling or sidewall, adjusting the tension to accommodate any variation in the mounting surface. In installations where long runs are composed of many separate units, the same procedure should be followed on each Grille section, taking care to use the factory supplied alignment splines to ensure a smooth and unbroken appearance.

LBG - Linear Bar Grilles

Dimensions and Continuous Runs

Contact your representative for availability of other angles



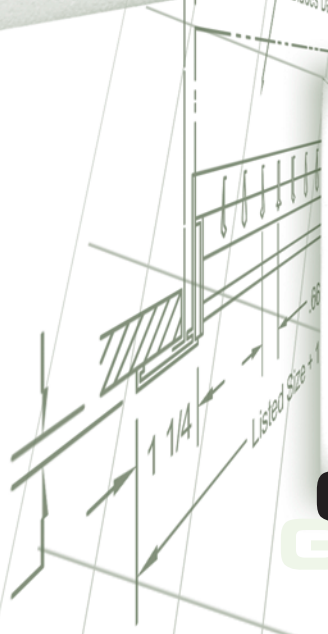
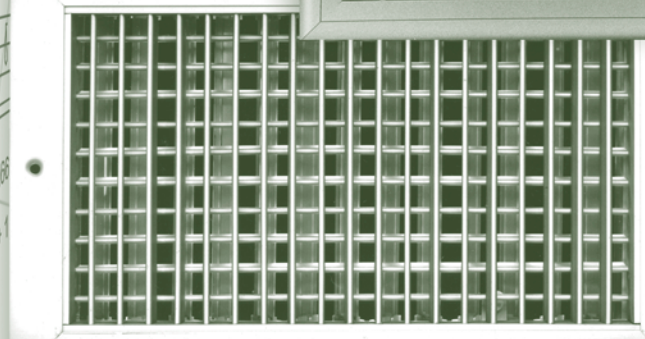
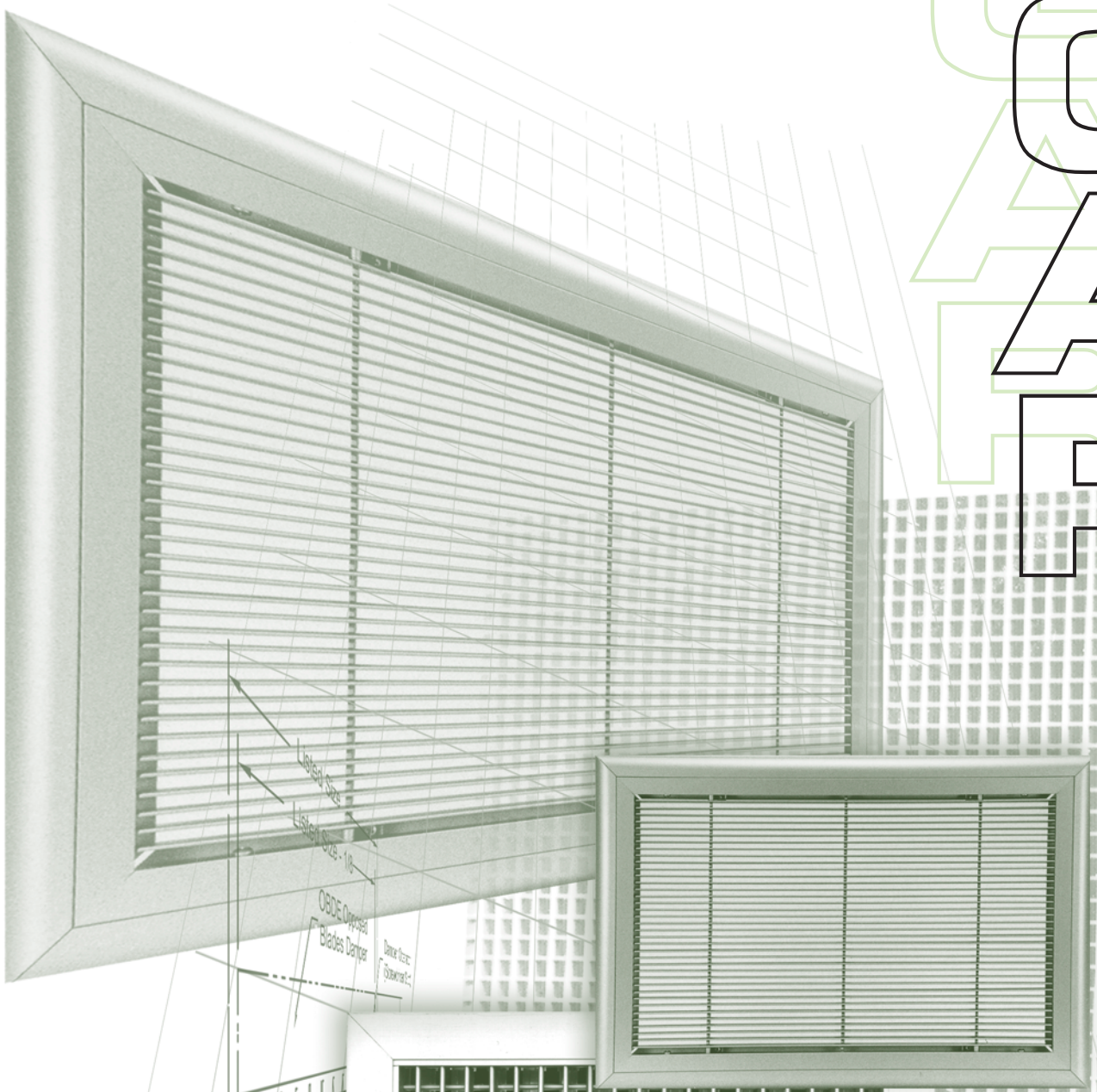
90° Mitered Corner Dimensions			
Listed Width	"A"	Listed Width	"A"
1 1/2"	14 1/4"	5"	17 3/4"
2"	14 3/4"	6"	18 3/4"
2 1/2"	15 1/4"	8"	20 3/4"
3"	15 3/4"	10"	22 3/4"
3 1/2"	16 1/4"	12"	24 3/4"
4"	16 3/4"		

* Duct Width Equals Listed Width

Linear Bar Grilles

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GRILLES & REGISTERS

GRILLES & REGISTERS



Series V
Pg. 158

Sidewall Supply Grilles - Economical Aluminum - Vertical Blades - Series V

- Series V grilles combine the advantages of corrosion resistant construction and durability with attractive design, solid performance, and competitive pricing
- This economical series of supply grilles and registers is available with the V-1 single deflection, VH-1 double deflection and with the VM-1 single deflection with a built in multi-shutter damper
- The series V are provided with vertical front blades. Units are constructed with an aluminum one piece formed border and blades

Single Deflection Grille	V-1
Double Deflection Grille	VH-1
Single Deflection — Multi-Shutter	VM-1



Series 4000
Pg. 160

Sidewall Supply Grilles - Aluminum/Steel - Series 4000

- The series 4000 sets the standards for performance and appearance in the industry. The series 4000 is all aluminum; the series 4000S has a steel border and steel blades
- The series 4000 is available with single or double deflection, and with a number of options and accessories to meet a variety of applications
- Series 4000 grilles and registers can be selected with either vertical or horizontal front blades

	Single Deflection	
	Steel	Aluminum
Vertical Blades	V4002S-1	V4002-1
Horizontal Blades	H4002S-1	H4002-1

	Double Deflection	
	Steel	Aluminum
Vertical Front Blades	V4004S-1	V4004-1
Horizontal Front Blades	H4004S-1	H4004-1

	Single Deflection - Multi-Shutter Damper	
	Steel	Aluminum
Vertical Blades	V4002SM-1	V4002M-1
Horizontal Blades	H4002SM-1	H4002M-1



Model 4000-AF

Additional product information available at www.metalaire.com

Sidewall Supply Grille - Adjustable Air Foil Blades - Extruded Aluminum Blade Series 4000-AF - Air Foil

- The series 4000-AF is our premier product, offering superior construction and high performance with aerodynamically shaped extruded deflection blades. The 4000-AF series is constructed with an extruded aluminum border and air foil deflection blades; the 4000S-AF series has a steel border and extruded aluminum air foil deflection blades
- The series 4000-AF is an excellent choice for projects requiring superior performance and aesthetics
- The series 4000-AF is available with single or double deflection, and with a number of options and accessories to meet a variety of applications
- Series 4000-AF grilles and registers can be selected with either vertical or horizontal front blades

	Single Deflection	
	Steel Border - Aluminum Blades	Aluminum
Vertical Blades	V4002S-AF-1	V4002-AF-1
Horizontal Blades	H4002S-AF-1	H4002-AF-1

	Double Deflection	
	Steel Border - Aluminum Blades	Aluminum
Vertical Front Blades	V4004S-AF-1	V4004-AF-1
Horizontal Front Blades	H4004S-AF-1	H4004-AF-1



Series 4004P
Pg. 164

Supply Grilles - Spiral Pipe Grille - Aluminum/Steel - Series 4004P

- The model 4004P (aluminum) and 4004SP (galvanized steel) offers superior performance in exposed duct applications offering a clean, low profile appearance
- Units can be easily installed in round duct diameters 6"-48"
- Integral gasket seals grille tightly to duct
- Units includes built in extractor to allow accurate balancing and uniform air flow
- Model 4004P is all aluminum construction. Model 4004SP includes is provided with galvanized steel border and blades

	Aluminum	Steel
Surface Mount	4004P-1	4004SP-1



Series L

Model LS3 Shown
Pg. 166

Supply Curved Blade Ceiling Grilles - Aluminum - Series L

- ✦ The series L curved blade grilles and registers are an economic solution for use in applications requiring ceiling or sidewall installations with directional air patterns. The series L is available with 1-way, 2-way corner, 2-way opposite, 3-way, and 4-way directional air patterns
- ✦ The series L is constructed from aluminum with adjustable curved blade allowing adjustment from full horizontal to full vertical air directions
- ✦ Units are available with a wide range of options and accessories

	Single Deflection				
	No Damper		Multi-Shutter Damper Operated Through Curved Blades		Horizontal Multi-Shutter Damper Operated Through slot on border
	Long Blades	Short Blades	Long Blades	Short Blades	Long Blades
1 Way	L-1	S-1	LM-1	SM-1	LMH-1
2 Way Opposite	LT-1	ST-1	LTM-1	STM-1	LTMH-1
2 Way Corner	LTC-1		LTCM-1		
3 Way Corner	LTC3-1		LTC3M-1		
3 Way Equal Throw	LS3-1		LS3M-1		
4 Way	LS4-1		LS4M-1		

	Double Deflection - No Damper	
	Long Blades	Short Blades
1 Way	LV-1	SH-1
2 Way Opposite	LTV-1	STH-1



Series RH

Pg. 172

Sidewall Return Grilles - Aluminum - Series RH

- ✦ The series RH return grilles combine the advantages of corrosion resistant construction and durability with attractive design, solid performance, and competitive pricing
- ✦ This economical series of roll form aluminum return grilles and registers is available with a number of borders to integrate into a wide range of ceiling systems
- ✦ Series RH is an excellent choice for exhaust and return applications

Roll Formed Aluminum/RH - Grilles	
Surface Mount	RH-1
	RH-H-1 - Hinged Core
T-bar Lay-in Modules	RH-6
Concealed T-bar Lay-in	RH-7
Tegular Lay-in	RH-8
Donn Finline Lay-in	RH-9



Series RHE

Pg. 173

Sidewall Return Grilles - Extruded Aluminum - Series RHE

- ✦ The series RHE is our premier product, offering superior construction and high performance with extruded aluminum construction. This unit has both superior appearance and performance and is built for durability
- ✦ The series RHE is available with an optional hinge to allow access behind the grille face
- ✦ Series RHE is an excellent choice for projects requiring exhaust or return applications

Extruded Aluminum/RHE - Grilles	
Surface Mount	RHE-1
	RHE-H-1 - Hinged Core



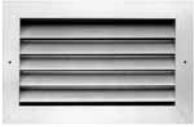
Series SRH

Pg. 174

Sidewall Return Grilles - Steel - Series SRH

- ✦ The series SRH is designed for applications requiring a steel border. The blades of the SRH are constructed from steel
- ✦ This economical series of return grilles and registers is available a number of borders to integrate into a wide range of ceiling systems
- ✦ Series SRH is an excellent choice for exhaust and return applications

Steel/SRH - Grilles	
Surface Mount	SRH-1
	SRH-H-1 - Hinged Core
T-bar Lay-in Modules	SRH-6



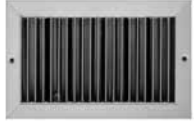
Model HDRH

Additional product information available at www.metalaire.com

Heavy Duty Grilles - Sidewall Return - Extruded Aluminum - 1 1/3" Blade Spacing - Model HDRH

- ✦ The series HDRH is an excellent choice for projects that require a grille or register to withstand moderate physical abuse. Applications for the series HDRH include common areas in schools, hospitals, and other high traffic areas
- ✦ The series HDRH is made from aluminum material equal or greater than 14-gauge steel. Outer borders are thicker than those of standard commercial grilles and registers. Deflector blades are assembled in the outer border using heavy alloy metal screws for rigidity
- ✦ Series HDRH is an excellent choice for exhaust or return applications in heavy traffic public areas

Louver Grille Surface Mount	
Surface Mount	HDRH-1



Series 4002R

Pg. 176

Additional product information available at www.metalaire.com

Return Grilles & Registers - Extruded Aluminum - Fixed Blades 0° or 45° - Series 4002R

- ✦ The series 4002R return grilles and registers are designed to match the 4000 series supply models. These units are constructed of heavy aluminum. The 4002RS is constructed with a heavy steel border and steel deflector blades
- ✦ The deflector blades for both the series 4002R and 4002RS are fixed and available in 0° or 45° settings
- ✦ Series 4000R and 4000RS offer the advantage of a uniform appearance when selected with the series 4000 supply grilles and registers

	Steel	Aluminum
Vertical Blades	V4002RS-1	V4002R-1
Horizontal Blades	H4002RS-1	H4002R-1

Series DG



Model DGCO



Model DGDF

Additional product information available at www.metalaire.com

Door Grilles - Exhaust & Return - Extruded Aluminum - Series DG

- ✦ Series DG door grilles are designed to transfer air through doors or walls. The DG Series include "V" shaped louvers providing a sight-proof return or exhaust grille regardless of the viewing angle
- ✦ The series DG is available with a number of options include a light-proof option (model DGLP), surface mounting applications, and door mounting (model DGDF)
- ✦ Series DG offers a number of solutions for your door and air transfer applications

Series DG	
Core Only	DGCO
Single Frame Flange	DGSF
Double Flange Frame - Telescoping	DGDF
Double Flange Frame - Light Resistant	DGLP

Grilles and Registers

GAR



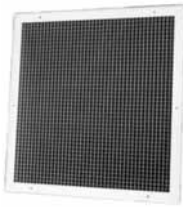
Series 4500

Additional product information available at www.metalaire.com

Sidewall Grille - Steel Gym Grille - Series 4500

- ✦ The series 4500 is a heavy duty return gym grille. This unit is designed for applications such as gymnasiums and public areas. The border and deflection blades are heavy gauge steel and built to withstand moderate physical abuse
- ✦ The series 4500 is available with 0° deflection or for more sight-proof application, 38° deflection (model 4538-1)
- ✦ Series 4500 is an excellent choice for return or exhaust applications in high traffic applications where extra protection for the grille is required

Grilles	
Surface Mount	4500-1 0° Deflection - Horizontal Fixed Blades
	4538-1 38° Deflection - Horizontal Fixed Blades



Series CC5

Pg. 180

Sidewall/Ceiling Return Grilles & Registers - Extruded Aluminum/Aluminum - Series CC5/CC15/CC1

- ✦ The series CC5 cubed core return and exhaust grilles are designed to provide low pressure drops and low sound levels
- ✦ The series CC5 is available with a number of options and accessories such as a 1" thick core (model CC1) to reduce sight into the grille
- ✦ Series CC5 is an excellent choice for applications requiring minimum pressure drop and noise in return and exhaust applications

	Grilles		
	CC5 -Cubed Core 1/2" x 1/2" x 1/2" Core	CC15 - Cubed Core 1/2" x 1/2" x 1" Core	CC1 - Cubed Core 1" x 1" x 1" Core
Surface Mount	CC5-1	CC15-1	CC1-1
T-bar Lay-in	CC5-6	CC15-6	CC1-6
Concealed Spline	CC5-7	CC15-7	CC1-7
Tegular Ceiling T-bar Lay-in	CC5-8	CC15-8	CC1-8
Donn Fineline Lay-in	CC5-9	CC15-9	CC1-9
T-bar Lay-in Channel Frame	CC5 TBC-6		
Removable Core	CC5R-6		



Model RP

Additional product information available at www.metalaire.com

Sidewall Ceiling Return Grille - Perforated Face - Aluminum - Model RP

- ✦ The series RP perforated face return or exhaust grilles are designed to blend into the ceiling system and provide a clean, uncluttered architectural appearance
- ✦ The series RP grilles and registers are available with a wide range of options and accessories
- ✦ Series RP is of aluminum construction and ideal for return and exhaust applications requiring low pressure drops and low sound

Sidewall Ceiling Return Grille - Perorated Face
RP-1



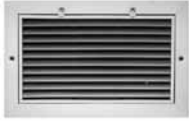
Series RC

Additional product information available at www.metalaire.com

Removable Core Grilles & Registers - Extruded Aluminum - Series RC - Revers-A-Core®

- ✦ The series RC Revers-A-Core® supply grilles and registers combine rugged aluminum construction, a clean architectural design, and an extremely flexible air pattern versatility
- ✦ The fixed louvered core is removable from the face and can be rotated or reversed to achieve any of four different air deflection patterns
- ✦ Series RC grilles and registers is an excellent selection for applications calling for a distinctive appearance and high performance

Single Deflection		Double Deflection	
Curved Border	41C-1	Curved Border	42C-1
Flat Border	41F-1	Flat Border	42F-1
Curved Border - Removable Inner Frame	RC41C-1	Curved Border - Removable Inner Frame	RC42C-1

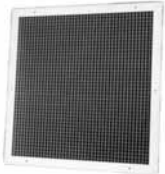


Series RHF
Pg. 184

Filter Return Grilles - Aluminum - Series RHF

- ✦ The series RHF return filter grilles combine the advantages of corrosion resistant construction and durability with attractive design, solid performance, and competitive pricing
- ✦ The series RHF is designed for 1" or 2" thick filters (by others) and includes a hinged face with 1/4" turn fasteners for quick filter changes
- ✦ Series RHF is an excellent choice for exhaust and return applications requiring a filter

	Roll Formed Aluminum	Extruded Aluminum	Steel
Surface Mount	RHF-1 G/S (Grille Size)	RHEF-1 G/S (Grille Size)	SRHF-1 G/S (Grille Size)
	RHF-1 F/S (Filter Size)	RHEF-1 F/S (Filter Size)	SRHF-1 F/S (Filter Size)
T-bar Lay-in	RHF-6 G/S (Grille Size)		SRHF-6 G/S (Grille Size)
	RHF-6 F/S (Filter Size)		SRHF-6 F/S (Filter Size)



Series CC5F
Pg. 188

Filter Return Grilles - Cubed Core - Aluminum - Series CC5F

- ✦ The series CC5F cubed core return and exhaust filter grilles are designed to provide low pressure drops and low sound levels
- ✦ The series CC5F is designed for 1" thick filters (by others) and includes a hinged face with 1/4" turn fasteners for quick filter changes
- ✦ Series CC5F is an excellent choice for applications requiring minimum pressure drop and noise in return and exhaust applications

Return Grilles	
Surface Mount	CC5F-1 G/S Grille Size
	CC5F-1 F/S Filter Size
T-bar Lay-in	CC5F-6 G/S Grille Size
	CC5F-6 F/S Filter Size

Filter Return Grilles - Aluminum - Series RPF

- ✦ The series RPF perforated face return or exhaust filter grilles are designed to blend into the ceiling system and provide a clean, uncluttered architectural appearance
- ✦ The series RPF is designed for 1" thick filters (by others) and includes a hinged face with 1/4" turn fasteners for quick filter changes
- ✦ Series RPF is of aluminum construction and ideal for return and exhaust filter applications requiring low pressure drops and low sound

Perforated Face Return Filter	
Surface Mount	RPF-1 G/S (Grill Size)
	RPF-1 F/S (Filter Size)
T-bar Lay-in	RPF-6 G/S (Grill Size)

Grilles and Registers



GAR

Series RPF

Additional product information available at www.metalaire.com

Supply Grilles Series V Stamped Border Aluminum

Product Details

- ✦ The V series of grilles combine the advantages of corrosion resistant construction and durability with attractive design, solid performance, and competitive pricing
- ✦ This economical series of supply grilles and registers are available with the V-1 single deflection, VH-1 double deflection and with the VM-1 single deflection with a built in multi-shutter damper
- ✦ The V series are provided with vertical front blades. Units are constructed with an aluminum one piece formed border



Model VM-1 Shown

Standard Finish: 01 White

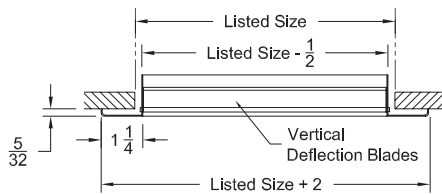
	6	8	10	12	14
4	✓	✓	✓	✓	✓
6	✓	✓	✓	✓	✓
8		✓	✓	✓	✓
10			✓		
12				✓	

Available neck sizes
(V-1, VH-1, VM-1)

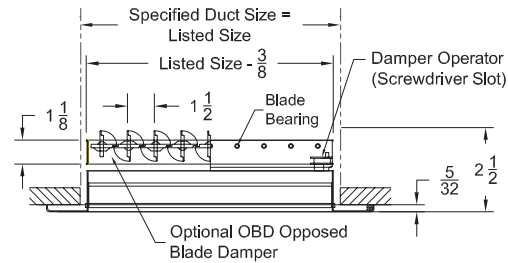
Single Deflection

Sideview, dimensions are in inches

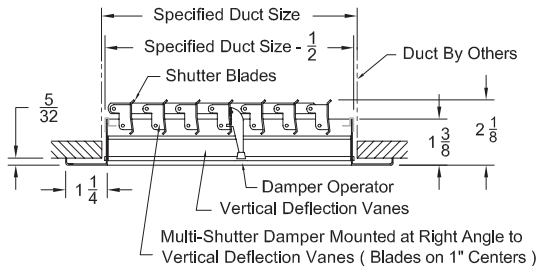
Supply - Single Deflection Grille - Surface Mount - Vertical Blades
Model V-1



Supply - Single Deflection Register - Surface Mount - Vertical Blades
With Opposed Blade Damper
Model VD-1



Supply - Single Deflection Register - Surface Mount - Vertical Blades
With Multi Shutter Damper
Model VM-1



Grilles and Registers

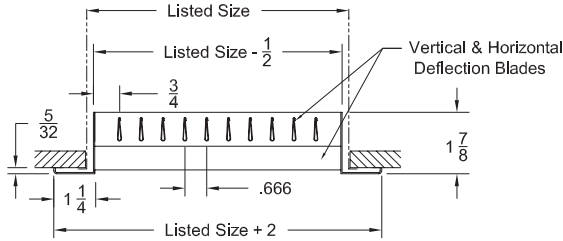


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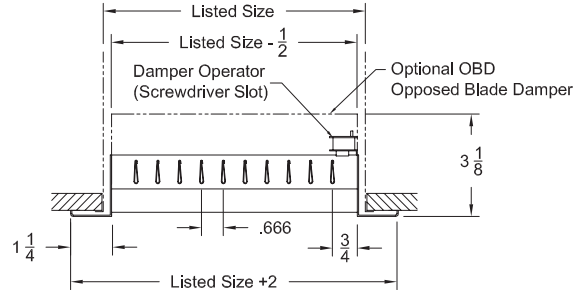
GAR - Grilles and Registers

Double Deflection

Supply - Double Deflection Grille - Surface Mount - Vertical Front Blades
Model VH-1



Supply - Double Deflection Register - Vertical Front Blades
With Opposed Blade Damper
Model VHD-1



1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish 02 Aluminum paint 03 Black 24 Mill finish 28 Custom color</p>	<p>OBD - Steel - Opposed Blade Damper (for grilles only)221</p> <p>OBDA - Aluminum - Opposed Blade Damper (for grilles only) .221</p> <p>L9 - Equalizing Grid221</p> <p>PF - Plaster Frame222</p>	<ul style="list-style-type: none"> Sizes available only as listed For larger sizes, oversize or horizontal front blades, use series H (V) 4002 Border is one-piece construction

Series V - Performance

Models V, VH, VM / Series V available sizes shown on GAR-158

CFM	OUTLET SIZE									NC
	6" x 4"	8" x 4"	10" x 4"	8" x 6"	10" x 6"	12" x 6"	10" x 8"	12" x 8"		
50	Velocity Ps Throw	300 .011 12-9-7	225 .006 11-8-6							20
	Velocity Ps Throw	600 .044 20-14-11	450 .025 18-13-10	360 .016 16-12-9	300 .011 15-11-9	240 .007 14-10-8	200 .005 13-10-7			
100	Velocity Ps Throw	900 .099 26-18-14	675 .056 23-17-13	540 .036 22-15-12	450 .025 20-14-11	360 .016 19-13-10	300 .011 18-13-10	270 .009 17-12-9	225 .006 16-11-9	
	Velocity Ps Throw		900 .099 28-20-16	720 .064 26-19-14	600 .044 25-18-14	480 .028 23-16-13	400 .020 22-15-12	360 .016 21-15-11	300 .011 20-14-11	
150	Velocity Ps Throw				750 .069 29-20-16	600 .044 27-19-15	500 .031 25-18-14	450 .025 24-17-13	375 .017 23-16-13	
	Velocity Ps Throw				900 .099 33-23-18	720 .064 30-21-17	600 .044 28-20-16	540 .036 27-19-15	450 .025 26-18-14	
200	Velocity Ps Throw					840 .087 34-24-18	700 .060 32-22-17	630 .049 30-22-17	525 .034 29-20-16	
	Velocity Ps Throw						800 .079 35-25-19	720 .064 33-24-18	600 .044 31-22-17	
250	Velocity Ps Throw						900 .099 38-27-21	810 .080 36-26-20	675 .056 34-24-19	
	Velocity Ps Throw								750 .069 37-26-20	
300	Velocity Ps Throw								825 .083 39-28-21	
	Velocity Ps Throw								900 .099 41-29-23	
NC	30 - 35									

Performance Notes for Series V

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM** - Cubic feet per minute (air)
- fpm** - Velocity of air stream in feet per minute
- Ps** - Static pressure = Pt - Pv (inches of water column)
- Throw** - Non-isothermal horizontal throw (supply air temperature 20°F colder than average room air temperature) values are for 150 fpm - 100 fpm - 50 fpm velocities
- NC** - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands



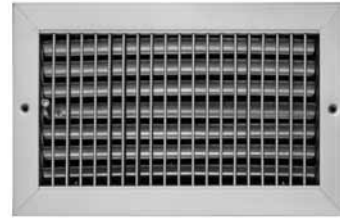
GAR - Grilles and Registers

5/2007

- ➔ Supply Grilles ➔ Series 4000 ➔ Aluminum
- ➔ Series 4000S ➔ Steel

Product Details

- ★ Series 4000 sets the standards for performance and appearance in the industry. Series 4000 is all aluminum; series 4000S has a steel border and steel deflection blades
- ★ The series 4000 are available with single or double deflection, with a number of options and accessories to meet a variety of applications
- ★ Series 4000 grilles and registers can be selected with either vertical or horizontal front blades



Model V4004 -1 Shown

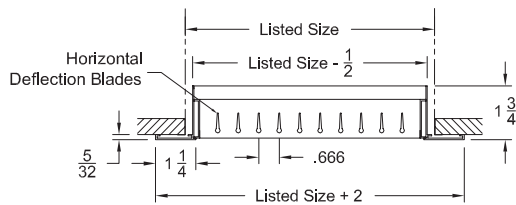
Standard Finish: 01 White

Series 4000 available in 6" x 4" to 48" x 48"
in one piece construction (2" increments)

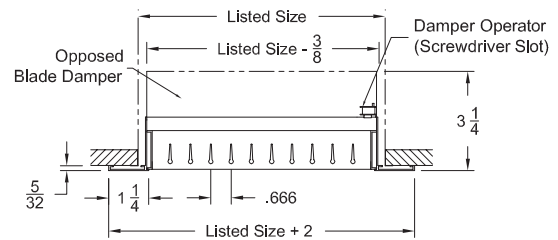
Single Deflection ➔ Aluminum

Sideview, dimensions are in inches

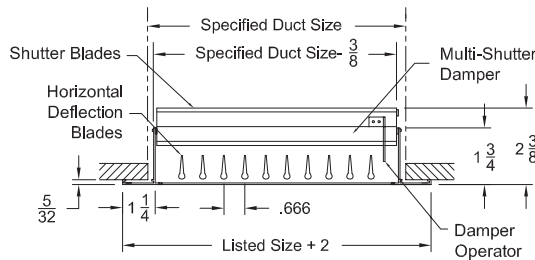
Supply - Single Deflection Grille - Surface Mount - Aluminum
Model H4002-1 - Horizontal Blades
Model V4002-1 - Vertical Blades



Supply - Single Deflection Register - Surface Mount - Aluminum With Opposed Blade Damper
Model H4002D-1 - Horizontal Blades
Model V4002D-1 - Vertical Blades

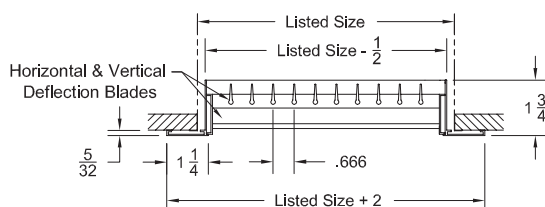


Supply - Single Deflection Register - Surface Mount - Aluminum With Multi Shutter Damper
Model H4002M-1 - Horizontal Blades
Model V4002M-1 - Vertical Blades

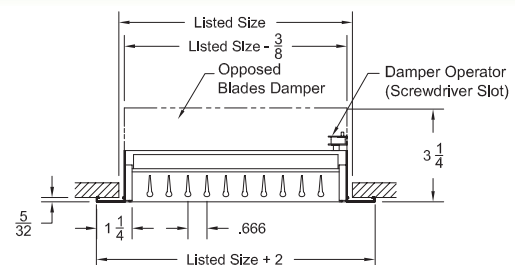


Double Deflection ➔ Aluminum

Supply - Double Deflection Grille - Surface Mount - Aluminum
Model H4004-1 - Horizontal Blades
Model V4004-1 - Vertical Blades



Supply - Double Deflection Register - Surface Mount - Aluminum With Opposed Blade Damper
Model H4004D-1 - Horizontal Blades
Model V4004D-1 - Vertical Blades



Grilles and Registers

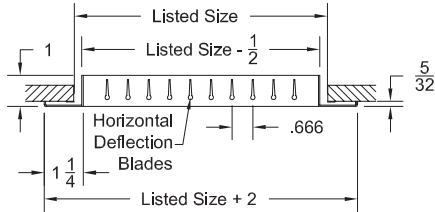


GAR

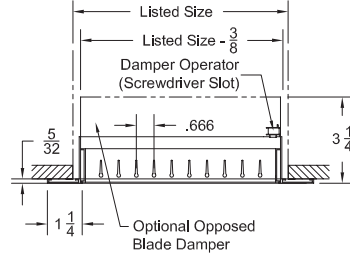
GAR - Grilles and Registers

Single Deflection - Steel

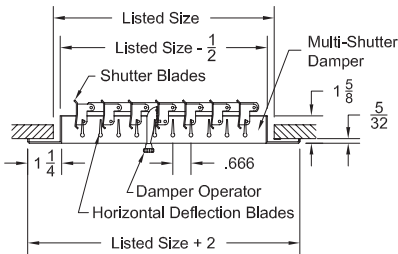
Supply - Single Deflection - Surface Mount - Steel
 Model H4002S-1 - Horizontal Blades
 Model V4002S-1 - Vertical Blades



Supply - Single Deflection - Surface Mount - Steel With Opposed Blade Damper
 Model H4002SD-1 - Horizontal Blades
 Model V4002SD-1 - Vertical Blades

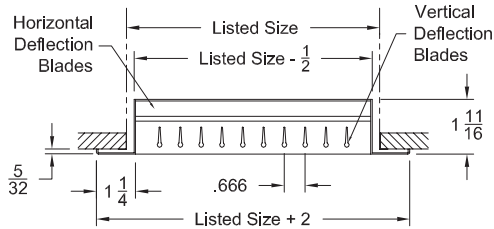


Supply - Single Deflection - Surface Mount - Steel With Multi Shutter Damper
 Model H4002SM-1 - Horizontal Blades
 Model V4002SM-1 - Vertical Blades

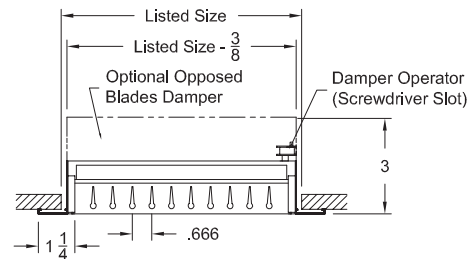


Double Deflection - Steel

Supply - Double Deflection - Surface Mount - Steel
 Model H4004S-1 - Horizontal Blades
 Model V4004S-1 - Vertical Blades



Supply - Double Deflection - Surface Mount - Steel With Opposed Blade Damper
 Model H4004SD-1 - Horizontal Blades
 Model V4004SD-1 - Vertical Blades



Notes for Models H4002-1, V4002-1, H4004-1, V4004-1, H4002M-1, V4002M-1

1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish 02 Aluminum paint 03 Black 24 Mill finish 28 Custom color</p>	<p>OBDA - Steel - Opposed Blade Damper (for grilles only) 221</p> <p>OBDA - Aluminum - Opposed Blade Damper (for grilles only) .221</p> <p>L9 - Equalizing Grid 221</p> <p>PF - Plaster Frame 222</p>	<ul style="list-style-type: none"> All sizes have steel borders and blades Oversized units made in multiple sections, each with full flanges. Mullion strips provided for joining units in field Can be ordered to fit standard T-bar grid sizes

Notes for Models H4002S-1, V4002S-1, H4004S-1, V4004S-1, H4002SM-1, V4002SM-1

1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish 02 Aluminum paint 03 Black 24 Mill finish 28 Custom color</p>	<p>OBDA - Steel - Opposed Blade Damper (for grilles only) 221</p> <p>OBDA - Aluminum - Opposed Blade Damper (for grilles only) .221</p> <p>L9 - Equalizing Grid 221</p> <p>PF - Plaster Frame 222</p>	<ul style="list-style-type: none"> All sizes have steel borders and blades Oversized units made in multiple sections, each with full flanges. Mullion strips provided for joining units in field Can be ordered to fit standard T-bar grid sizes



GAR - Grilles and Registers

Series 4000 - Performance

Models H4002-1, V4002-1, H4004-1, V4004-1, H4002M-1, V4002M-1, H4002S-1, V4002S-1, H4004S-1, V4004S-1, H4002SM-1, V4002SM-1

CFM		OUTLET SIZE														NC			
		6" x 4"	8" x 4"	10" x 4"	8" x 6"	10" x 6"	12" x 6"	10" x 8"	12" x 8"	18" x 6"	16" x 8"	24" x 6"	20" x 8"	28" x 6"	30" x 6"				
50	Velocity Ps Throw	300 .011 12-9-7	225 .006 11-8-6																
100	Velocity Ps Throw	600 .044 20-14-11	450 .025 18-13-10	360 .016 16-12-9	300 .011 15-11-9	240 .007 14-10-8	200 .005 13-10-7												
150	Velocity Ps Throw	900 .099 26-18-14	675 .056 23-17-13	540 .036 22-15-12	450 .025 20-14-11	360 .016 19-13-10	300 .011 18-13-10	270 .009 17-12-9	225 .006 16-11-9	200 .005 15-11-9									
200	Velocity Ps Throw		900 .099 28-20-16	720 .064 26-19-14	600 .044 25-18-14	480 .028 23-16-13	400 .020 22-15-12	360 .016 21-15-11	300 .011 20-14-11	267 .009 19-13-10	225 .006 18-13-10	200 .005 17-12-9							
250	Velocity Ps Throw				750 .069 29-20-16	600 .044 27-19-15	500 .031 25-18-14	450 .025 24-17-13	375 .017 23-16-13	333 .014 22-16-12	281 .010 21-15-11	250 .008 20-14-11	225 .006 19-14-11	214 .006 19-13-10	200 .005 18-13-10				
300	Velocity Ps Throw				900 .099 33-23-18	720 .064 30-21-17	600 .044 28-20-16	540 .036 27-19-15	450 .025 26-18-14	400 .020 25-18-14	338 .014 23-17-13	300 .011 22-16-12	270 .009 22-15-12	257 .008 22-15-12	240 .007 21-15-11				
400	Velocity Ps Throw						800 .079 35-25-19	720 .064 33-24-18	600 .044 31-22-17	533 .035 33-23-18	450 .025 28-20-16	400 .020 27-19-15	360 .016 26-19-14	343 .014 26-18-14	320 .013 25-18-14				
500	Velocity Ps Throw								750 .069 37-26-20	667 .055 35-25-19	563 .039 33-23-18	500 .031 32-23-17	450 .025 31-22-17	429 .023 30-21-17	400 .020 29-21-16				
600	Velocity Ps Throw								900 .099 41-29-23	800 .079 40-28-22	675 .056 38-27-21	600 .044 36-26-20	540 .036 35-25-19	514 .032 34-24-19	480 .028 33-24-18				
700	Velocity Ps Throw										787 .076 42-30-23	700 .060 40-28-22	630 .049 39-27-21	600 .044 38-27-21	560 .038 36-26-20				
	NC	30 - 35										20 - 25							

Grilles and Registers

CFM		OUTLET SIZE														
		30" x 8"	16" x 16"	24" x 12"	30" x 10"	18" x 18"	28" x 12"	20" x 18"	24" x 16"	40" x 10"	30" x 14"	36" x 12"	24" x 20"	42" x 12"	48" x 12"	
350	Velocity Ps Throw	210 .005 21-15-12														
400	Velocity Ps Throw	240 .007 23-16-13	225 .006 22-16-12	200 .005 22-15-12												
450	Velocity Ps Throw	270 .009 25-18-14	253 .008 24-17-13	225 .006 23-17-13	216 .006 23-16-13	200 .005 22-16-12										
500	Velocity Ps Throw	300 .011 27-19-15	281 .010 26-19-14	250 .008 25-18-14	240 .007 25-18-14	222 .006 24-17-13	214 .006 24-17-13	200 .005 23-17-13								
600	Velocity Ps Throw	360 .016 30-21-17	338 .014 30-21-16	300 .011 28-20-16	288 .010 28-20-15	267 .009 27-19-15	257 .008 27-19-15	240 .007 26-19-14	225 .006 26-18-14	216 .006 25-18-14	206 .005 25-18-14	200 .005 25-18-14				
650	Velocity Ps Throw	390 .019 32-23-18	366 .016 31-22-17	325 .013 30-21-16	312 .012 30-21-16	289 .010 29-20-16	279 .010 28-20-16	260 .008 28-20-15	244 .007 27-19-15	234 .007 27-19-15	223 .006 26-19-14	217 .006 26-19-14				
800	Velocity Ps Throw	480 .028 37-26-20	450 .025 36-26-20	400 .020 35-25-19	384 .018 34-24-19	356 .016 33-24-18	343 .014 33-23-18	320 .013 32-23-18	300 .011 31-22-17	288 .010 31-22-17	274 .009 30-22-17	267 .009 30-21-17	240 .007 29-21-16	229 .006 29-20-16	200 .005 27-19-15	
1000	Velocity Ps Throw	600 .044 43-31-24	563 .039 42-30-23	500 .031 40-29-22	480 .028 40-29-22	444 .024 39-28-21	429 .023 38-27-21	400 .020 37-27-21	375 .017 37-26-20	360 .016 36-26-20	343 .014 35-25-19	333 .014 35-25-19	300 .011 34-24-19	286 .010 33-24-18	250 .008 32-23-17	
1200	Velocity Ps Throw	720 .064 49-35-27	675 .056 48-34-26	600 .044 46-33-25	576 .041 45-32-25	533 .035 44-31-24	514 .032 43-31-24	480 .028 42-30-23	450 .025 41-29-23	432 .023 41-29-22	411 .021 40-29-22	400 .020 40-28-22	360 .016 38-27-21	343 .014 38-27-21	300 .011 36-26-20	
1400	Velocity Ps Throw	840 .087 54-39-30	787 .076 53-38-29	700 .060 51-36-28	672 .055 50-36-28	662 .047 49-35-27	600 .044 48-34-27	560 .038 47-34-26	525 .038 47-34-26	504 .031 46-32-25	480 .028 45-32-25	467 .027 44-31-24	420 .022 43-30-24	400 .020 42-30-23	350 .015 38-27-21	
	NC	30 - 35										20 - 25				20

For Series 4000 performance notes, see page GAR-163

GAR - Grilles and Registers

Series 4000 - Performance

Models H4002-1, V4002-1, H4004-1, V4004-1, H4002M-1, V4002M-1, H4002S-1, V4002S-1, H4004S-1, V4004S-1, H4002SM-1, V4002SM-1

CFM		OUTLET SIZE														
		42" x 16"	30" x 24"	48" x 16"	36" x 24"	30" x 30"	48" x 20"	44" x 24"	36" x 30"	48" x 24"	36" x 30"	48" x 26"	40" x 32"	36" x 36"	48" x 30"	
1000	Velocity	214	200													
	Ps	.006	.005													
	Throw	30-21-17	29-21-16													
1200	Velocity	257	240	225	200											
	Ps	.008	.007	.006	.005											
	Throw	34-24-19	33-24-18	33-23-18	31-22-17											
1400	Velocity	300	280	263	233	224	210									
	Ps	.011	.010	.008	.007	.006	.005									
	Throw	38-27-21	37-26-20	36-26-20	34-24-19	34-24-18										
1600	Velocity	343	320	300	267	256	240	218	213	200	213					
	Ps	.014	.013	.011	.009	.008	.007	.006	.006	.005	.006					
	Throw	42-30-23	41-29-22	40-28-22	38-27-21	38-27-21	37-26-20	36-25-19	35-25-19	35-25-19	35-25-19					
1800	Velocity	386	360	338	300	288	270	245	240	225	240	208	203	200		
	Ps	.018	.016	.014	.011	.010	.009	.007	.007	.006	.007	.005	.005	.005		
	Throw	45-32-26	44-31-24	43-31-24	41-29-23	41-29-22	40-28-22	39-27-21	38-27-21	38-27-21	38-27-21	37-26-20	26-26-20	36-26-20		
2000	Velocity	429	400	375	333	320	300	273	267	250	267	231	225	222	200	
	Ps	.023	.020	.017	.014	.013	.011	.009	.009	.008	.009	.007	.006	.006	.005	
	Throw	49-35-27	48-34-26	46-33-26	45-32-25	44-31-24	43-31-24	42-30-23	41-29-23	40-29-22	41-29-23	39-28-22	39-28-21	39-28-21	37-27-21	
2200	Velocity	471	440	413	367	352	330	300	293	275	293	254	248	244	220	
	Ps	.027	.024	.021	.016	.015	.013	.011	.011	.009	.011	.008	.008	.007	.006	
	Throw	52-37-29	51-36-28	50-35-27	48-34-26	47-33-26	46-33-25	44-32-24	44-31-24	43-31-24	44-31-24	42-30-23	42-30-23	41-29-23	40-28-22	
2400	Velocity	514	480	450	400	384	360	327	320	300	320	277	270	267	240	
	Ps	.032	.028	.025	.020	.018	.016	.013	.013	.011	.013	.009	.009	.009	.007	
	Throw	55-39-30	54-38-30	53-37-29	51-36-28	50-35-27	49-35-27	47-34-26	47-33-26	46-33-25	47-33-26	45-32-25	44-31-24	44-31-24	42-30-23	
2600	Velocity	557	520	488	433	416	390	355	347	325	347	300	292	289	260	
	Ps	.038	.033	.029	.023	.021	.019	.015	.015	.013	.015	.011	.010	.010	.008	
	Throw	58-41-32	57-40-31	56-40-31	53-38-29	53-37-29	52-37-28	50-35-27	50-35-27	48-34-27	50-35-27	47-33-26	49-33-26	47-33-26	45-32-25	
2800	Velocity	600	560	525	467	448	420	382	373	350	373	323	315	311	280	
	Ps	.044	.038	.034	.027	.025	.022	.018	.017	.015	.017	.013	.012	.012	.010	
	Throw	61-44-34	60-43-33	59-42-32	56-40-31	55-39-31	54-39-30	53-37-29	52-37-29	51-36-28	52-37-29	50-35-27	49-35-27	49-35-27	47-34-26	
3000	Velocity	643	600	563	500	480	450	409	400	375	400	346	338	333	300	
	Ps	.051	.044	.039	.031	.028	.025	.021	.020	.017	.020	.015	.014	.014	.011	
	Throw	64-46-35	63-45-35	61-44-34	59-42-32	58-41-32	57-40-31	55-39-30	55-39-30	53-38-29	55-39-30	52-37-29	52-37-29	51-36-28	50-35-27	
3400	Velocity	729	680	637	567	544	510	464	453	425	453	392	383	378	340	
	Ps	.065	.057	.050	.039	.036	.032	.026	.025	.022	.025	.019	.018	.018	.014	
	Throw	70-50-38	68-48-38	67-47-37	64-46-35	63-45-35	62-44-34	60-43-33	60-42-33	58-41-32	60-42-33	57-40-31	56-40-31	56-40-31	54-38-30	
3800	Velocity	814	760	712	633	608	570	518	507	475	507	438	428	422	380	
	Ps	.081	.071	.062	.049	.045	.040	.033	.031	.028	.031	.024	.022	.022	.018	
	Throw	75-53-41	74-52-40	72-51-40	69-49-38	68-48-38	67-47-37	65-46-36	64-46-35	63-45-35	64-46-35	61-43-34	61-43-33	60-43-33	58-41-32	
4200	Velocity	900	840	787	700	672	630	573	560	525	560	485	472	467	420	
	Ps	.099	.087	.076	.060	.055	.049	.040	.038	.034	.038	.029	.027	.027	.022	
	Throw	80-57-44	79-56-43	77-55-42	77-55-42	73-52-40	71-51-39	69-49-38	69-49-38	67-48-37	69-49-38	65-46-36	65-46-36	65-46-36	60-43-33	
NC		25 - 30								20 - 25				<20		

Performance Notes for Series 4000

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic feet per minute (air)
- fpm - Velocity of air stream in feet per minute
- Ps - Static pressure = Pt - Pv (inches of water column)
- Throw - Non-isothermal horizontal throw (supply air temperature 20°F colder than average room air temperature) values are for 50 fpm - 100 fpm - 150 fpm velocities
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands

Grilles and Registers



GAR

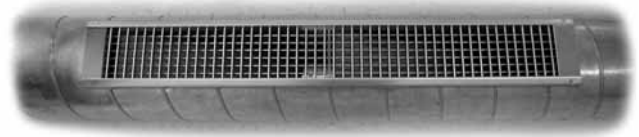
GAR - Grilles and Registers

5/2007

- ➔ Supply Grilles ➔ Series 4004P-1 ➔ Aluminum
- ➔ Series 4004SP-1 ➔ Steel

Product Details

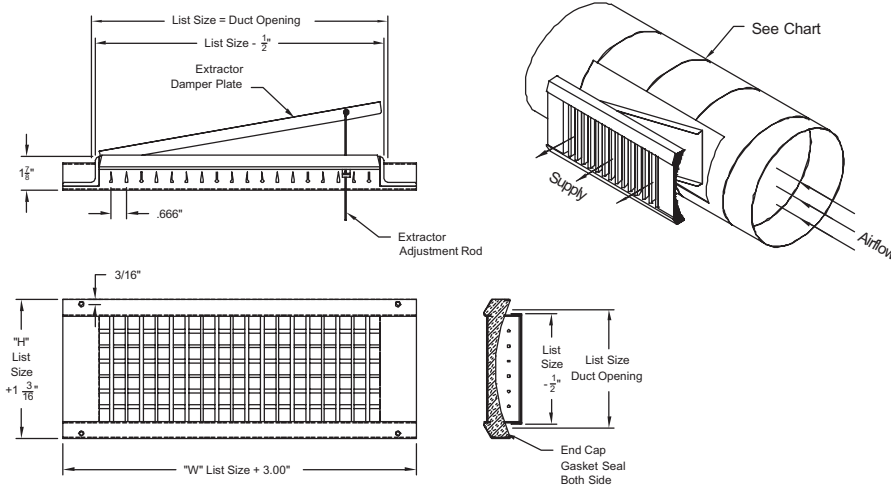
- ✦ The model 4004P (aluminum) and 4004SP (galvanized steel) offers superior performance in exposed duct applications offering a clean, low profile appearance
- ✦ Front blades are vertical
- ✦ Units can be easily installed in round duct diameters 10" to 48"
- ✦ Integral gasket seals grille tightly to duct
- ✦ Units includes built in extractor to allow accurate balancing and uniform air flow
- ✦ Model 4004P is all aluminum construction
Model 4004SP is galvanized steel construction



Model 4004SP-1 Shown
Standard Finish: 24 Mill (galvanized)

Sideview, dimensions are in inches

Supply - Spiral Pipe Grille - Surface Mount
Model 4004P-1 - Aluminum
Model 4004SP-1 - Galvanized Steel



Available in listed sizes only

HEIGHT	WIDTH															
	10"	12"	14"	16"	18"	20"	24"	30"	36"	38"	40"	42"	44"	46"	48"	
	MINIMUM / MAXIMUM DUCT DIAMETER															
3"	6/24	6/24	6/24	6/24	6/24	6/24	6/24	6/24	6/24	6/24	6/24	6/24	6/24	6/24	6/24	
4"	8/24	8/24	8/24	8/24	8/24	8/24	8/24	8/24	8/24	8/24	8/24	8/24	8/24	8/24	8/24	
6"	12/24	12/24	12/24	12/24	12/24	12/24	12/24	12/24	12/24	12/24	12/24	12/24	12/24	12/24	12/24	
8"	-	-	20/36	20/36	20/36	20/36	20/36	20/36	20/36	20/36	20/36	20/36	20/36	20/36	20/36	
10"	-	-	-	-	30/48	30/48	30/48	30/48	30/48	30/48	30/48	30/48	30/48	30/48	30/48	
12"	-	-	-	-	42/48	42/48	42/48	42/48	42/48	42/48	42/48	42/48	42/48	42/48	42/48	

1. Available Finishes

Standard Finish for 4004SP - Steel:
24 Mill finish

Standard Finish for 4004P - Aluminum:
01 White

2. Construction Details

- Units include extractor with wire handle
- Ends are supplied with foam gasket to seal around duct
- Units are surface mount and provided with screws to mount into duct

Grilles and Registers



GAR

GAR - Grilles and Registers

Series 4004P - Performance

CFM		10x3	12x3	10x4 14x3	16x3 12x4	18x3 14x4	10x6 20x3	16x4	24x3 12x6 18x4	14x6 20x4	16x6 24x4 30x3	14x8 18x6 36x3	16x8 20x6 30x4	24x6 18x8 36x4
50	Velocity Ps Throw	225 0.006 11-8-6												
100	Velocity Ps Throw	450 0.025 18-13-10	400 0.02 17-13-10	360 0.016 16-12-9	300 0.011 15-11-9	260 0.008 14-10-9	240 0.007 14-10-8	225 0.006 14-10-8	200 0.005 13-10-7					
150	Velocity Ps Throw	675 0.056 23-17-13	600 0.048 22-16-12	540 0.036 22-15-12	450 0.025 20-14-11	400 0.02 19-14-10	360 0.016 19-13-10	340 0.014 19-13-10	300 0.011 18-13-10	270 0.009 17-12-9	225 0.006 16-11-9			
200	Velocity Ps Throw	900 0.099 28-20-16	800 0.082 27-19-15	720 0.064 26-19-14	600 0.044 25-18-14	530 0.035 24-16-13	480 0.028 23-16-13	450 0.025 23-16-12	400 0.02 22-15-12	360 0.016 21-15-11	300 0.011 20-14-11	260 0.008 19-13-10	225 0.006 18-13-10	200 0.005 17-12-9
250	Velocity Ps Throw				750 0.069 29-20-16	660 0.054 28-19-15	600 0.044 27-19-15	565 0.039 27-19-15	500 0.031 25-18-14	450 0.025 24-17-13	375 0.017 23-16-13	330 0.013 22-15-12	281 0.01 21-15-11	250 0.008 20-14-11
300	Velocity Ps Throw				900 0.099 33-23-18	800 0.08 31-21-17	720 0.064 30-21-17	675 0.055 29-21-17	600 0.044 28-20-16	540 0.036 27-19-15	450 0.025 26-18-14	400 0.021 25-18-13	338 0.014 23-17-13	300 0.011 22-16-12
400	Velocity Ps Throw							900 0.091 37-30-22	800 0.079 35-25-19	720 0.064 33-24-18	600 0.044 31-22-17	535 0.036 30-22-18	450 0.025 28-20-16	400 0.02 27-19-15
500	Velocity Ps Throw										750 0.069 37-26-20	665 0.052 36-25-20	563 0.039 33-23-18	500 0.031 32-23-17
600	Velocity Ps Throw											770 0.07 41-29-23	675 0.056 38-27-21	600 0.044 36-26-20
700	Velocity Ps Throw												787 0.076 42-30-23	700 0.06 40-28-22

CFM		16x10 20x8	30x6 18x10	48x4 20x10 24x8	36x6 18x12	20x12 30x8 24x10	48x6 36x8 24x12	30x10	46x8 36x10 30x12	38x10 48x8	36x12	40x12 48x10	48x12
250	Velocity Ps Throw	225 0.006 19-14-11	200 0.005 18-13-10										
300	Velocity Ps Throw	270 0.009 22-15-12	240 0.007 21-15-11	215 0.006 20-15-11	200 0.005 19-14-10								
400	Velocity Ps Throw	360 0.016 26-19-14	320 0.013 25-18-14	288 0.01 24-17-14	265 0.008 23-17-13	240 0.007 23-16-13	200 0.005 22-15-12						
500	Velocity Ps Throw	450 0.025 31-22-17	400 0.02 29-21-16	360 0.017 29-20-16	330 0.014 28-20-15	300 0.011 27-19-15	250 0.008 25-18-14	240 0.007 25-18-14	200 0.005 23-17-13				
600	Velocity Ps Throw	540 0.036 35-25-19	480 0.028 33-24-18	435 0.024 32-23-18	400 0.019 31-22-17	360 0.016 30-21-17	300 0.011 28-20-16	288 0.01 28-20-15	240 0.007 26-19-14	225 0.006 25-17-14	200 0.005 25-18-14		
700	Velocity Ps Throw	630 0.049 39-27-21	560 0.038 36-26-20	500 0.032 36-25-20	460 0.027 35-24-19	420 0.022 34-23-18	350 0.016 33-23-17	335 0.016 33-22-17	280 0.01 29-21-16	265 0.009 26-19-15	235 0.007 27-19-15	210 0.005 27-20-16	
800	Velocity Ps Throw			575 0.037 39-27-22	535 0.034 38-26-21	480 0.028 37-26-20	400 0.02 35-25-19	384 0.018 34-24-19	320 0.013 32-23-18	300 0.011 29-21-16	267 0.009 30-21-17	240 0.008 28-20-17	200 0.005 27-19-15
1000	Velocity Ps Throw				660 0.05 45-34-27	600 0.044 43-31-24	500 0.031 40-29-22	480 0.028 40-28-22	400 0.02 37-27-21	375 0.017 34-23-18	333 0.014 35-25-19	300 0.012 33-24-18	250 0.008 32-23-17
1200	Velocity Ps Throw					720 0.064 49-35-27	600 0.044 46-33-25	576 0.041 45-32-25	480 0.028 42-30-23	450 0.026 39-28-21	411 0.021 40-29-22	360 0.016 38-28-21	300 0.011 36-26-20
1400	Velocity Ps Throw					840 0.087 54-39-30	700 0.06 51-36-28	672 0.055 50-36-28	560 0.038 47-34-26	530 0.032 45-33-26	480 0.028 45-32-25	420 0.022 41-29-23	350 0.015 38-27-21
1600	Velocity Ps Throw									600 0.04 48-34-26	530 0.031 47-34-27	480 0.027 44-31-26	400 0.019 40-29-23
1800	Velocity Ps Throw										600 0.043 49-35-27	540 0.034 44-33-26	450 0.026 42-30-25
2000	Velocity Ps Throw												500 0.032 44-32-27

Performance Notes for Series 4004P

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

CFM - Cubic Feet per Minute (air)

Velocity - Velocity of air stream in Feet Per Minute

Ps - Static pressure = Pt - Pv (inches of water column)

Throw - Non-isothermal horizontal throw (supply air temperature 20°F colder than average room air temperature) values are for 50 fpm - 100 fpm - 150 fpm velocities



For more product information visit us at www.metalaire.com



Grilles and Registers



GAR

GAR - Grilles and Registers

5/2007

Supply Curved Blade Grilles Series L Aluminum

Product Details

- ★ The L series of curved blade grilles and registers is an economic solution to application requiring ceiling or sidewall installations with direction air patterns. The L series is available with 1, 2-way, 2 way opposite, 3 and 4 way directional air patterns
- ★ The L series is constructed from aluminum with adjustable curved blade allowing adjustment from full horizontal to full vertical air directions
- ★ Units are available with a wide range of options and accessories



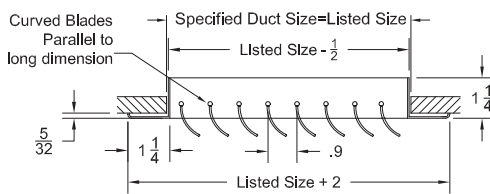
Model LS3-1 Shown

Standard Finish: 01 White

Single Deflection

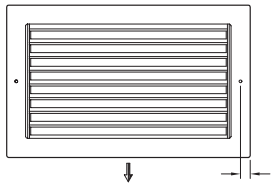
Sideview, dimensions are in inches

Supply - Single Deflection - Surface Mount
One Way - Long Blades
Model L-1

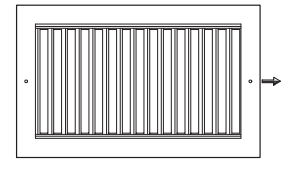


Supply - Single Deflection - Surface Mount
One Way - Short Blades
Model S-1

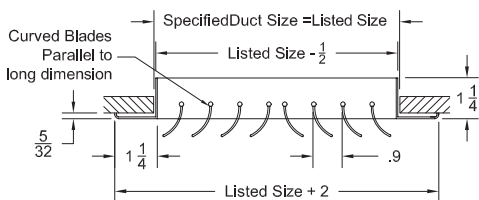
Face View (L-1 Model)



Face View (S-1 Model)

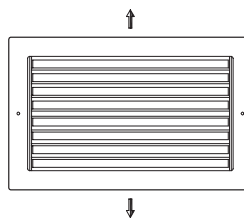


Supply - Single Deflection - Surface Mount
Two Way Opposite - Long Blades
Model LT-1

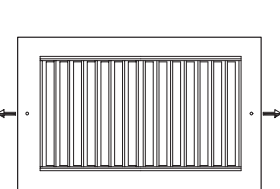


Supply - Single Deflection - Surface Mount
Two Way Opposite - Short Blades
Model ST-1

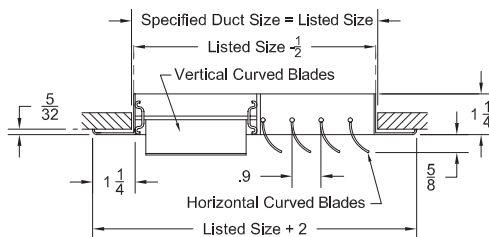
Face View (LT-1 Model)



Face View (ST-1 Model)

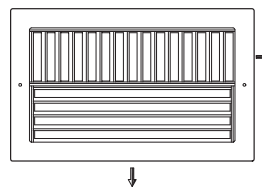


Supply - Single Deflection - Surface Mount
Two Way Corner Blow Pattern - Long Blades
Model LTC-1

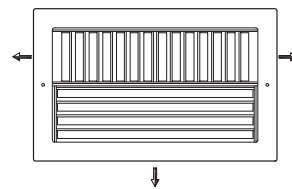


Supply - Single Deflection - Surface Mount
Three Way Corner Blow Pattern - Long Blades
Model LTC3-1

Face View (LTC-1 Model)



Face View (LTC3-1 Model)



Grilles and Registers

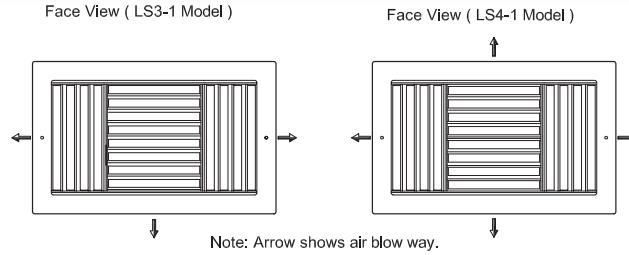
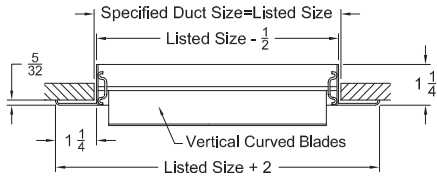


GAR

GAR - Grilles and Registers

Supply - Single Deflection - Surface Mount
Three Way Equal Blow Pattern - Long Blades
 Model LS3-1

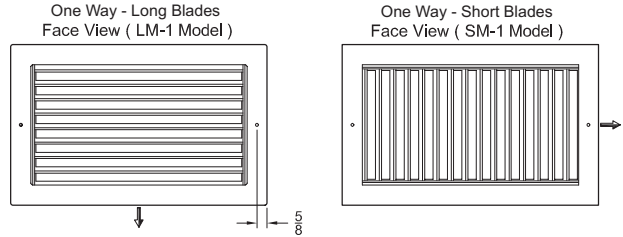
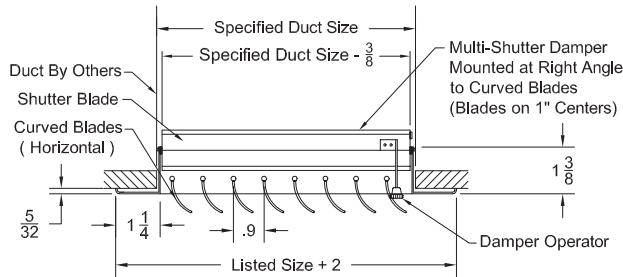
Supply - Single Deflection - Surface Mount
Four Way Blow Pattern - Long Blades
 Model LS4-1



Single Deflection - Multi-Shutter Damper Operated Through Curved

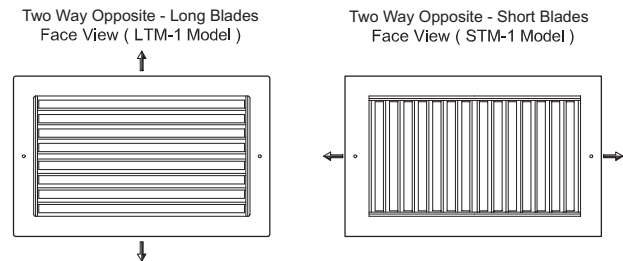
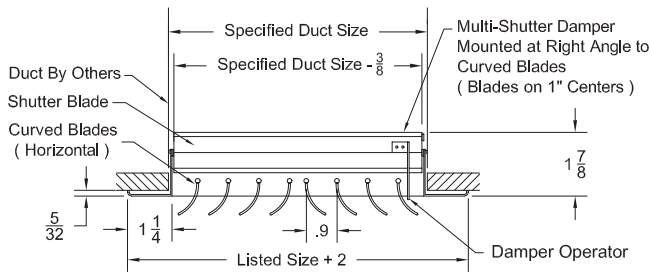
Supply - Single Deflection - Surface Mount
One Way - Long Blades - With Multi Shutter Damper
 Model LM-1

Supply - Single Deflection - Surface Mount
One Way - Short Blades - With Multi Shutter Damper
 Model SM-1



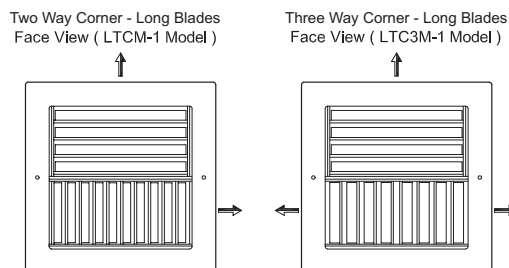
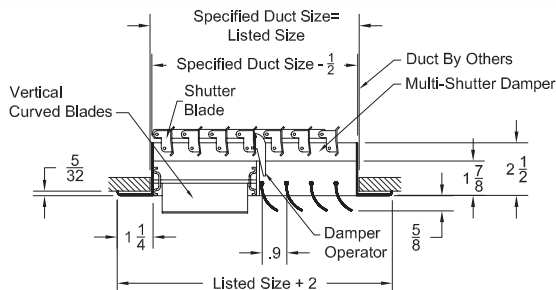
Supply - Single Deflection - Surface Mount
Two Way Opposite - Long Blades - With Multi Shutter Damper
 Model LTM-1

Supply - Single Deflection - Surface Mount
Two Way Opposite - Short Blades - With Multi Shutter Damper
 Model STM-1



Supply - Single Deflection - Surface Mount
Two Way Corner Blow Pattern - Long Blades - With Multi Shutter Damper
 Model LTCM-1

Supply - Single Deflection - Surface Mount
Three Way Corner Blow Pattern - Long Blades - With Multi Shutter Damper
 Model LTC3M-1

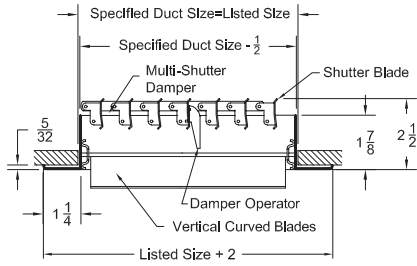


Grilles and Registers

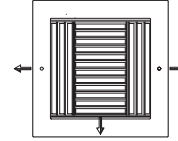
GAR

Supply - Single Deflection - Surface Mount
 Three Way Equal Throw - Long Blades - With Multi Shutter Damper
 Model LS3M-1

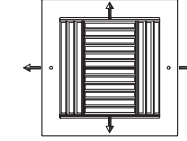
Supply - Single Deflection - Surface Mount
 Four Way - Long Blades - With Multi Shutter Damper
 Model LS4M-1



Three Way - Long Blades
 Face View (LS3M-1 Model)



Four Way - Long Blades
 Face View (LS4M-1 Model)

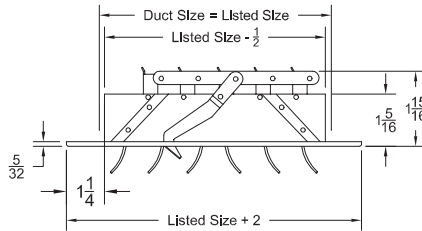


Note: Available In sizes 6 x 6, 8 x 8, 10 x 10, 12 x 12, 14 x 14 Only.

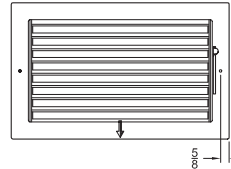
Single Deflection - Horizontal Multi-Shutter Damper Operated Through Slot On Border

Supply - Single Deflection - Surface Mount - One Way - Long Blades
 With Horizontal Multi Shutter Damper - with handles through border
 Model LMH-1

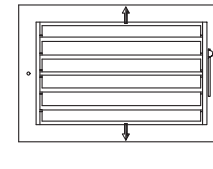
Supply - Single Deflection - Surface Mount
 Two Way Opposite - Long Blades - With Horizontal Multi Shutter Damper
 Model LTMH-1



One Way - Long Blades
 Face View (LMH-1 Model)



Two Way Opposite - Long Blades
 Face View (LTMH-1 Model)



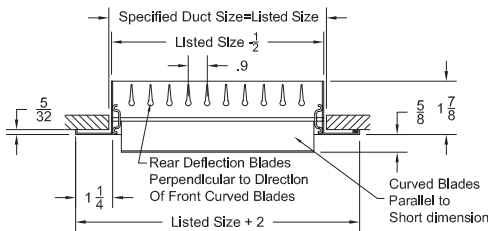
Only Available in Sizes: 6 x 4, 8 x 4, 10 x 4, 12 x 4, 14 x 4, 6 x 6, 8 x 6, 10 x 6, 12 x 6,
 14 x 6, 8 x 8, 10 x 8, 12 x 8, 14 x 8, 10 x 10 and 12 x 12

Grilles and Registers

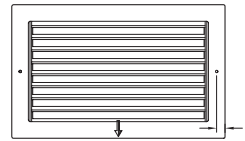
Double Deflection

Supply - Double Deflection - Surface Mount
 One Way - Long Blades
 Model LV-1

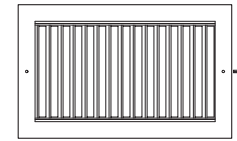
Supply - Double Deflection - Surface Mount
 One Way - Short Blades
 Model SH-1



One Way - Long Blades
 Face View (LV-1 Model)

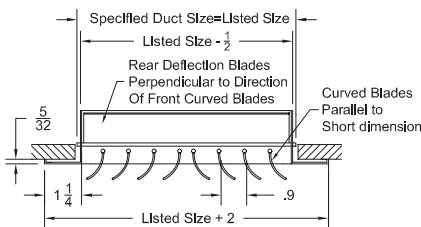


One Way - Short Blades
 Face View (SH-1 Model)

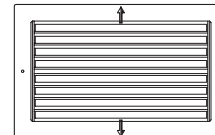


Supply - Double Deflection - Surface Mount
 Two Way Opposite - Long Blades
 Model LTV-1

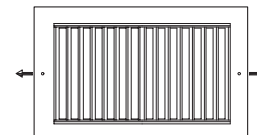
Supply - Double Deflection - Surface Mount
 Two Way Opposite - Short Blades
 Model STH-1



Two Way Opposite - Long Blades
 Face View (LTV-1 Model)



Two Way Opposite - Short Blades
 Face View (STH-1 Model)



GAR - Grilles and Registers

Notes for Models L-1, S-1, LT-1, ST-1, LTC-1, LTC3-1, LS3-1, LS4-1, LV-1, SH-1, LTV-1, STH-1

1. Available Finishes	2. Available Accessories	3. Construction Details
Standard Finish: 01 White Optional Finish 02 Aluminum paint 03 Black 24 Mill finish 28 Custom color	OBD - Steel - Opposed Blade Damper221 OBDA - Aluminum - Opposed Blade Damper221 L9 - Equalizing Grid221 PF - Plaster Frame222	<ul style="list-style-type: none"> • Oversized units made in multiple sections, each with full flanges. Mullion strips provided for joining units in field • Can be ordered to fit standard T-bar Lay-in grid sizes • Can be ordered with smaller neck sizes in T-bar panels

Notes for Models LM-1, SM-1, LTM-1, STM-1, LTCM-1, LTC3M-1, LMH-1, LTMH-1, LS3M-1, LS4M-1

1. Available Finishes	2. Available Accessories	3. Construction Details
Standard Finish: 01 White Optional Finish 02 Aluminum paint 03 Black 24 Mill finish 28 Custom color	L9 - Equalizing Grid221 PF - Plaster Frame222	<ul style="list-style-type: none"> • No odd/fractional sizes available • Sizes only as listed

Series L - Performance

Models L-1, S-1, LT-1, ST-1, LTC-1, LTC3-1, LS3-1, LS4-1, LV-1, SH-1, LTV-1, STH-1, LM-1, SM-1, LTM-1, STM-1, LTCM-1, LTC3M-1, LMH-1, LTMH-1, LS3M-1, LS4M-1

CFM	Ak	OUTLET SIZE												NC
		6" x 6"	8" x 6"	8" x 8"	12" x 6"	10" x 8"	10" x 10"	12" x 10"	12" x 12"	14" x 12"	14" x 14"	18" x 12"	16" x 16"	
		.08	.10	.14	.15	.17	.22	.26	.31	.36	.42	.46	.55	
50	Velocity Ps Throw	645 .055 12-8-7-6	484 .012 11-7-6-5	363 .007 10-7-6-5	323 .005 9-6-5-4	290 .004 9-6-5-4	232 .003 8-6-5-4							
100	Velocity Ps Throw		968 .049 17-12-10-8	726 .028 15-11-9-7	645 .022 15-10-9-7	581 .018 14-10-8-7	465 .011 13-9-8-6	387 .008 13-9-7-6	323 .005 12-8-7-6	276 .004 11-8-6-5	237 .003 11-7-6-5	215 .002 10-7-6-5		
150	Velocity Ps Throw			1089 .063 20-14-12-10	968 .049 20-14-11-9	871 .040 19-13-11-9	697 .026 17-12-10-8	581 .018 16-12-10-8	484 .012 15-11-9-7	415 .009 15-10-9-7	355 .007 14-10-8-7	323 .005 13-9-8-6	272 .004 13-9-7-6	
200	Velocity Ps Throw					1161 .071 23-16-13-11	929 .046 21-15-12-10	774 .032 20-14-12-9	645 .022 19-13-11-9	553 .016 18-13-10-8	474 .012 17-12-10-8	430 .010 16-11-10-8	363 .007 15-11-9-7	
250	Velocity Ps Throw						1161 .071 25-17-14-12	968 .049 23-16-14-11	806 .034 22-15-13-10	691 .025 21-15-12-10	592 .019 20-14-11-9	538 .015 19-13-11-9	454 .011 18-13-10-8	
300	Velocity Ps Throw							1161 .071 26-19-15-12	968 .049 25-17-14-12	829 .036 23-16-14-11	711 .027 22-16-13-11	645 .022 22-15-13-10	544 .016 20-14-12-10	
350	Velocity Ps Throw								1129 .067 28-19-16-13	968 .049 26-18-15-12	829 .036 25-17-14-12	753 .030 24-17-14-11	635 .021 23-16-13-11	
400	Velocity Ps Throw									1106 .065 29-20-17-14	948 .047 27-19-16-13	860 .039 26-18-15-12	726 .028 25-17-14-12	
450	Velocity Ps Throw										1066 .060 29-21-17-14	968 .049 28-20-17-13	817 .035 27-19-16-13	
500	Velocity Ps Throw										1185 .074 32-22-18-15	1075 .061 31-22-18-14	907 .043 29-20-17-14	
550	Velocity Ps Throw											1183 .074 33-23-19-15	998 .053 31-22-18-15	
600	Velocity Ps Throw												1089 .063 33-23-19-16	
650	Velocity Ps Throw												1179 .073 35-24-20-16	

For performance notes, see page GAR-171



GAR - Grilles and Registers

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Series L - Performance

Models L-1, S-1, LT-1, ST-1, LTC-1, LTC3-1, LS3-1, LS4-1, LV-1, SH-1, LTV-1, STH-1, LM-1, SM-1, LTM-1, STM-1, LTCM-1, LTC3M-1, LMH-1, LTMH-1, LS3M-1, LS4M-1

CFM	Ak	OUTLET SIZE											
		24" x 14"	18" x 18"	20" x 20"	22" x 22"	24" x 24"	36" x 24"	30" x 30"	32" x 32"	44" x 24"	48" x 24"	44" x 28"	46" x 30"
		.72	.70	.86	1.04	1.24	1.86	1.94	2.20	2.27	2.48	2.65	2.97
150	Velocity Ps Throw	207 .002 12-8-7-5	215 .002 12-8-7-6										
200	Velocity Ps Throw	276 .004 14-10-8-7	287 .004 14-10-8-7	232 .003 13-9-8-6									
250	Velocity Ps Throw	346 .006 16-12-10-8	358 .007 17-12-10-8	290 .004 15-11-9-7	240 .003 14-10-8-7								
300	Velocity Ps Throw	415 .009 19-13-11-9	430 .010 19-13-11-9	348 .006 17-12-10-8	288 .004 16-12-10-8	242 .003 15-11-9-7							
350	Velocity Ps Throw	484 .012 21-15-12-10	502 .013 21-15-12-10	406 .009 19-14-11-9	336 .006 18-13-11-9	282 .004 17-12-10-8							
400	Velocity Ps Throw	553 .016 23-16-13-11	573 .017 23-16-13-11	465 .011 21-15-12-10	384 .008 20-14-12-9	323 .005 19-13-11-9	215 .002 16-11-10-8	206 .003 16-11-9-8					
500	Velocity Ps Throw	691 .025 26-18-15-12	717 .027 27-19-15-13	581 .018 25-17-14-12	480 .012 23-16-13-11	403 .009 22-15-13-10	269 .004 19-13-11-9	258 .004 19-13-11-9	227 .003 18-13-10-8	220 .003 18-12-10-8	202 .002 17-12-10-8		
600	Velocity Ps Throw	829 .036 30-21-17-14	860 .039 30-21-18-14	697 .026 28-20-16-13	576 .017 26-18-15-12	484 .012 25-17-14-12	323 .005 22-15-13-10	264 .004 20-14-12-10	272 .004 20-14-12-10	264 .004 20-14-12-10	242 .003 20-14-11-9	226 .003 19-13-11-9	202 .002 18-13-11-9
700	Velocity Ps Throw	968 .049 33-23-19-16	1004 .053 34-24-20-16	813 .035 31-22-18-15	672 .024 29-21-17-14	565 .017 28-19-16-13	376 .007 24-17-14-11	308 .005 22-16-13-11	318 .005 23-16-13-11	308 .005 22-16-13-11	282 .004 22-15-13-10	264 .004 21-15-12-10	236 .003 20-14-12-10
800	Velocity Ps Throw	1106 .065 36-26-21-17	1147 .069 37-26-21-17	929 .046 34-24-20-16	768 .031 32-23-19-15	645 .022 30-21-18-14	430 .010 26-18-15-12	413 .009 26-18-15-12	363 .007 25-17-14-12	352 .007 24-17-14-12	323 .005 24-17-14-11	302 .005 23-16-13-11	269 .004 22-16-13-11
900	Velocity Ps Throw			1045 .058 37-26-22-18	864 .039 35-24-20-16	726 .028 33-23-19-16	484 .012 28-20-17-13	396 .008 28-20-16-13	408 .009 27-19-16-13	396 .008 27-19-15-13	363 .007 26-18-15-12	339 .006 25-18-15-12	303 .005 24-17-14-11
	NC		35		30		20 - 25					<20	

Grilles and Registers



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CFM	Ak	OUTLET SIZE												NC
		46" x 30"	46" x 32"	46" x 34"	46" x 36"	46" x 38"	46" x 40"	46" x 42"	46" x 44"	46" x 46"	48" x 44"	48" x 46"	48" x 48"	
		2.97	3.17	3.37	3.56	3.76	3.96	4.16	4.36	4.56	4.55	4.75	4.96	
700	Velocity Ps Throw	236 .003 20-14-12-10	221 .003 20-14-12-9	208 .002 20-14-11-9										
800	Velocity Ps Throw	269 .004 22-16-13-11	252 .003 22-15-13-10	238 .003 21-15-12-10	224 .003 21-15-12-10	213 .002 21-14-12-10	202 .002 20-14-12-10							
1000	Velocity Ps Throw	337 .006 26-18-15-12	316 .005 25-18-15-12	297 .005 25-18-15-12	281 .004 24-17-14-12	266 .004 24-17-14-11	252 .003 24-17-14-11	240 .003 23-16-13-11	230 .003 23-16-13-11	220 .003 22-16-13-11	220 .003 23-16-13-11	210 .002 22-16-13-10	202 .002 22-15-13-10	
1200	Velocity Ps Throw	404 .009 29-21-17-15	379 .008 29-20-17-14	356 .007 28-20-16-13	337 .006 28-20-16-13	319 .005 27-19-16-13	303 .005 27-19-16-13	289 .004 26-18-15-12	275 .004 26-18-15-12	263 .004 26-18-15-12	264 .004 26-18-15-12	252 .003 25-18-15-12	242 .003 25-17-14-12	
1400	Velocity Ps Throw	471 .012 33-23-19-16	442 .010 32-23-19-15	416 .009 32-22-18-15	393 .008 31-22-18-15	372 .007 30-21-18-14	353 .007 30-21-17-14	337 .006 29-21-17-14	321 .005 29-20-17-14	307 .005 28-20-16-13	308 .005 28-20-16-13	295 .005 28-20-16-13	282 .004 28-19-16-13	
1600	Velocity Ps Throw	539 .015 36-25-21-17	505 .013 35-25-21-17	475 .012 35-24-20-16	449 .011 34-24-20-16	425 .010 33-23-19-16	404 .009 33-23-19-15	385 .008 32-23-19-15	367 .007 32-22-18-15	351 .007 31-22-18-15	352 .007 31-22-18-15	337 .006 31-22-18-15	323 .005 30-21-18-14	
1800	Velocity Ps Throw	606 .019 39-28-23-19	568 .017 38-27-22-18	535 .015 37-26-22-18	505 .013 37-26-21-17	478 .012 36-25-21-17	454 .011 35-25-21-17	433 .010 35-24-20-16	413 .009 34-24-20-16	395 .008 34-24-20-16	396 .008 34-24-20-16	379 .008 33-23-19-16	363 .007 33-23-19-16	
2000	Velocity Ps Throw	673 .024 42-30-24-20	631 .021 41-29-24-19	594 .019 40-28-23-19	561 .017 40-28-23-19	531 .015 39-27-23-18	505 .013 38-27-22-18	481 .012 37-26-22-18	459 .011 37-26-21-17	439 .010 36-26-21-17	440 .010 36-26-21-17	421 .009 36-25-21-17	403 .009 35-25-20-17	
2400	Velocity Ps Throw	808 0.34 48-33-28-23	757 .030 47-33-27-22	713 .027 46-32-27-22	673 .024 45-31-26-21	638 .021 44-31-26-21	606 .019 43-30-25-20	577 .018 42-30-25-20	551 .016 42-29-24-20	527 .015 41-29-24-19	528 .015 41-29-24-19	505 .013 41-29-24-19	484 .012 40-28-23-19	
2800	Velocity Ps Throw	942 .047 53-37-31-25	884 .041 52-36-30-24	832 .036 51-36-29-24	785 .033 50-35-29-23	744 .029 49-34-28-23	707 .026 48-34-28-23	673 .024 47-33-27-22	643 .022 46-33-27-22	615 .020 46-32-27-22	616 .020 46-32-27-22	589 .018 45-32-26-21	565 .017 44-31-26-21	
3000	Velocity Ps Throw	1010 .054 55-39-32-26	947 .047 54-38-31-26	891 .042 53-37-31-25	842 .037 52-37-30-25	797 .034 51-36-30-24	757 .030 50-35-29-24	721 .027 49-35-29-23	689 .025 49-34-28-23	659 .023 48-34-28-23	660 .023 48-34-28-23	631 .021 47-33-27-22	605 .019 47-33-27-22	
	NC		35 - 40				30 - 35							



For more product information visit us at www.metalair.com



GAR - Grilles and Registers

Series L - Performance

Models L-1, S-1, LT-1, ST-1, LTC-1, LTC3-1, LS3-1, LS4-1, LV-1, SH-1, LTV-1, STH-1, LM-1, SM-1, LTM-1, STM-1, LTCM-1, LTC3M-1, LMH-1, LTMH-1, LS3M-1, LS4M-1

CFM	Ak	OUTLET SIZE												NC
		46" x 30"	46" x 32"	46" x 34"	46" x 36"	46" x 38"	46" x 40"	46" x 42"	46" x 44"	46" x 46"	48" x 44"	48" x 46"	48" x 48"	
		2.97	3.17	3.37	3.56	3.76	3.96	4.16	4.36	4.56	4.55	4.75	4.96	
2000	Velocity Ps Throw	673 .024 42-30-24-20	631 .021 41-29-24-19	594 .019 40-28-23-19	561 .017 40-28-23-19	531 .015 39-27-23-18	505 .013 38-27-22-18	481 .012 37-26-22-18	459 .011 37-26-21-17	439 .010 36-26-21-17	440 .010 36-26-21-17	421 .009 36-25-21-17	403 .009 35-25-20-17	
2200	Velocity Ps Throw	741 .029 45-32-26-21	694 .025 44-31-26-21	653 .023 43-30-25-20	617 .020 42-30-25-20	585 .018 41-29-24-20	555 .016 41-29-24-19	529 .015 40-28-23-19	505 .013 39-28-23-19	483 .012 39-27-23-18	484 .012 39-27-23-18	463 .011 38-27-22-18	444 .010 38-26-22-18	
2400	Velocity Ps Throw	808 .034 48-33-28-23	757 .030 47-33-27-22	713 .027 46-32-27-22	673 .024 45-31-26-21	638 .021 44-31-26-21	606 .019 43-30-25-20	577 .018 42-30-25-20	551 .016 42-29-24-20	527 .015 41-29-24-19	528 .015 41-29-24-19	505 .013 41-29-24-19	484 .012 40-28-23-19	
2600	Velocity Ps Throw	875 .040 50-35-29-24	820 .036 49-35-29-23	772 .031 48-34-28-23	729 .028 47-33-27-22	691 .025 46-33-27-22	656 .023 46-32-26-22	625 .021 45-32-26-21	597 .019 44-31-26-21	571 .017 43-31-25-21	572 .017 44-31-25-21	547 .016 43-30-25-20	524 .014 42-30-25-20	
2800	Velocity Ps Throw	942 .047 53-37-31-25	884 .041 52-36-30-24	832 .036 51-36-29-24	785 .033 50-35-29-23	744 .029 49-34-28-23	707 .026 48-34-28-23	673 .024 47-33-27-22	643 .022 46-33-27-22	615 .020 46-32-27-22	616 .020 46-32-27-22	589 .018 45-32-26-21	565 .017 44-31-26-21	
3000	Velocity Ps Throw	1010 .054 55-39-32-26	947 .047 54-38-31-26	891 .042 53-37-31-25	842 .037 52-37-30-25	797 .034 51-36-30-24	757 .030 50-35-29-24	721 .027 49-35-29-23	689 .025 49-34-28-23	659 .023 48-34-28-23	660 .023 48-34-28-23	631 .021 47-33-27-22	605 .019 47-33-27-22	
3200	Velocity Ps Throw	1077 .061 58-41-34-27	1010 .054 56-40-33-27	950 .048 55-39-32-26	898 .043 54-38-32-26	850 .038 53-37-31-25	808 .034 52-37-30-25	769 .031 51-36-30-24	734 .028 50-35-29-24	702 .026 50-35-29-24	704 .026 50-35-29-24	673 .024 49-35-29-23	645 .022 49-34-28-23	
3400	Velocity Ps Throw	1144 .069 60-42-35-28	1073 .061 59-41-34-28	1010 .054 58-40-33-27	954 .048 57-40-33-27	904 .043 56-39-32-26	858 .039 55-38-32-26	817 .035 54-38-31-25	780 .032 53-37-31-25	746 .029 52-37-30-25	748 .029 52-37-30-25	715 .027 51-36-30-24	685 .025 51-36-29-24	
3600	Velocity Ps Throw		1136 .068 61-43-35-29	1069 .060 60-42-35-28	1010 .054 59-41-34-28	957 .048 58-41-34-27	909 .044 57-40-33-27	866 .040 56-39-32-26	826 .036 55-39-32-26	790 .033 54-38-31-26	792 .033 54-38-31-26	757 .030 53-38-31-25	726 .028 53-37-31-25	
3800	Velocity Ps Throw		1199 .076 63-44-37-30	1129 .067 62-44-36-29	1066 .060 61-43-35-29	1010 .054 60-42-35-28	959 .049 59-41-34-28	834 .037 56-39-33-27	872 .040 57-40-33-27	834 .037 56-39-33-27	836 .037 56-39-33-27	799 .034 55-39-32-26	766 .031 55-38-32-26	
4000	Velocity Ps Throw			1188 .074 64-45-37-30	1122 .066 63-44-37-30	1063 .060 62-43-36-29	1010 .054 61-43-35-29	962 .049 60-42-35-28	918 .044 59-41-34-28	878 .041 58-41-34-27	880 .041 58-41-34-27	842 .037 57-40-33-27	806 .034 56-40-33-27	
4200	Velocity Ps Throw				1178 .073 65-46-38-31	1116 .066 64-45-37-30	1060 .059 63-44-36-30	922 .045 60-42-35-28	964 .049 61-43-35-29	922 .045 60-42-35-28	924 .045 60-42-35-28	884 .041 59-42-34-28	847 .038 58-41-34-28	
4400	Velocity Ps Throw					1169 .072 66-46-38-31	1111 .065 65-45-38-31	1058 .059 64-45-37-30	1010 .054 63-44-36-30	966 .049 62-43-36-29	968 .049 62-43-36-29	926 .045 61-43-35-29	887 .042 60-42-35-28	
4600	Velocity Ps Throw						1161 .071 67-47-39-31	1101 .054 65-46-38-31	1056 .059 65-45-37-31	1010 .054 64-45-37-30	1012 .054 64-45-37-30	968 .049 63-44-36-30	927 .045 62-43-36-29	

Grilles and Registers
GAR



GAR

Performance Notes for Series L

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

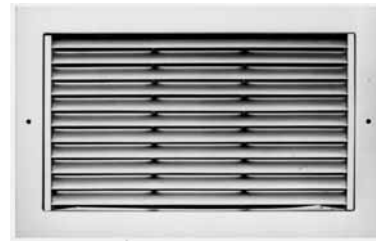
- CFM - Cubic feet per minute (air)
- fpm - Velocity of air stream in feet per minute
- Ps - Static pressure = Pt - Pv (inches of water column)
- Throw - Non-isothermal horizontal throw (supply air temperature 20°F colder than average room air temperature) values are for 50 fpm velocities for 1, 2, 3, and 4-way air patterns
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak - Area Factors



Return and Exhaust Grilles Series RH Aluminum

Product Details

- ★ The RH series of return grilles combine the advantages of corrosion resistant construction and durability with attractive design, solid performance, and competitive pricing
- ★ This economical series of rollformed aluminum return grilles and registers are available in a number of borders to integrate into a wide range of ceiling systems
- ★ The RH is an excellent choice for exhaust and return applications
- ★ See page GAR-63 for performance

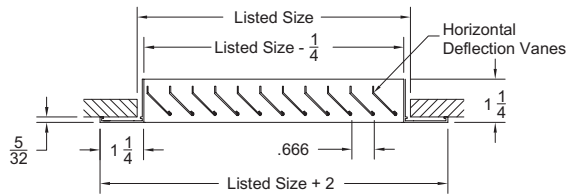


Model RH-1 Shown

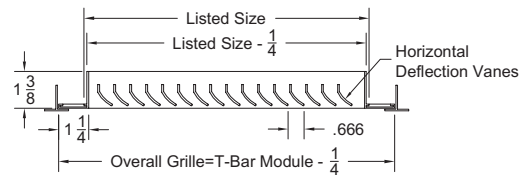
Standard Finish: 01 White

Sideview, dimensions are in inches

Return and Exhaust Grille - Surface Mount Model RH-1



Return and Exhaust Grille - T-bar Lay-in Model RH-6



Modules 12 x 12 thru 48 x 48

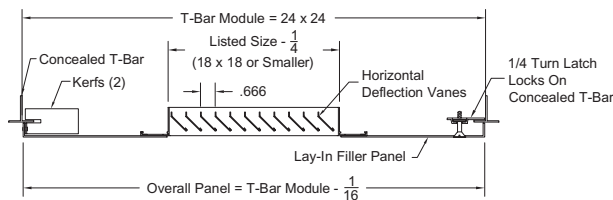
T-Bar Module	12 x 12	24 x 12	24 x 24	48 x 24	36 x 36	48 x 48
Nominal Neck Size	10 x 10	22 x 10	22 x 22	46 x 22	34 x 34	46 x 46

Grilles and Registers

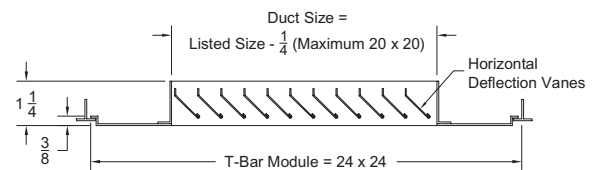


GAR

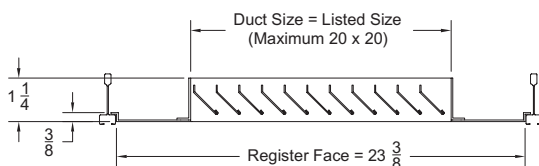
Return and Exhaust Grille - Concealed Spline Model RH-7



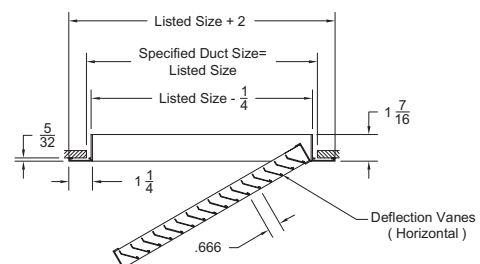
Return and Exhaust Grille - Tegular T-bar Model RH-8



Return and Exhaust Grille - Donn Finline Model RH-9



Return and Exhaust Grille - Surface Mount Hinged Face Model RH-H-1



GAR - Grilles and Registers

Return Grilles → Series RHE → Extruded Aluminum

Product Details

- ★ The series RHE is our premier extruded aluminum product, offering superior construction and high performance. This unit is built for durability
- ★ The series RHE is available with an optional hinge to allow access behind the grille face
- ★ Series RHE is an excellent choice for projects requiring exhaust or return applications
- ★ See page GAR-63 for performance

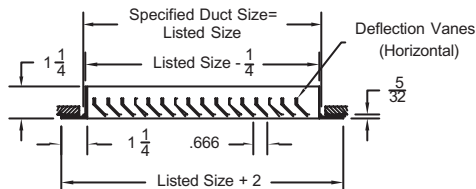


Model RHE-1 Shown

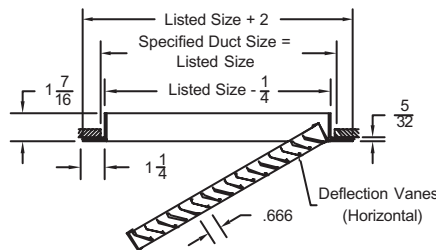
Standard Finish: 01 White

Sideview, dimensions are in inches

**Return Grille - Surface Mount
Model RHE-1**



**Return Grille - Surface Mount - Hinged Face
Model RHE-H-1**



Notes for Models RH (-1, -6, -7, -8, -9), RH-H-1

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 01 White Optional Finish 02 Aluminum paint 03 Black 24 Mill finish 28 Custom color	OBD - Steel - Opposed Blade Damper.....221 OBDA - Aluminum - Opposed Blade Damper...221 L9 - Equalizing Grid221 PF - Plaster Frame222	Reverse Sizes (blades parallel to short side) Hinged Core Insect Screen	• Odd/fractional sizes are available • Oversized units made in multiple sections, each with full flanges. Mullion strips provided for joining units in field

Notes for Models RHE-1, RHE-H-1

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 01 White Optional Finish 02 Aluminum paint 03 Black 04 Clear Anodized 24 Mill finish 28 Custom color	OBD - Steel - Opposed Blade Damper.....221 OBDA - Aluminum - Opposed Blade Damper...221 L9 - Equalizing Grid221 PF - Plaster Frame222	Reverse Sizes (blades parallel to short side) Hinged Core Insect Screen	• All sizes have extruded aluminum frames and blades • Odd/fractional sizes are available • Oversized units made in multiple sections, each with full flanges. Mullion strips provided for joining units in the field

Grilles and Registers



GAR

Return Grilles Series SRH Steel

Product Details

- ✦ The series SRH is designed for applications requiring steel construction
- ✦ This economical series of return grilles and registers is available a number of borders to integrate into a wide range of ceiling system
- ✦ Series SRH is an excellent choice for exhaust and return applications

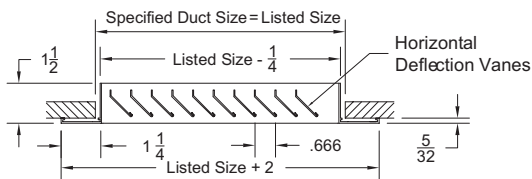


Model SRH-1 Shown

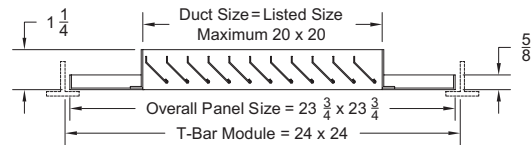
Standard Finish: 01 White

Sideview, dimensions are in inches

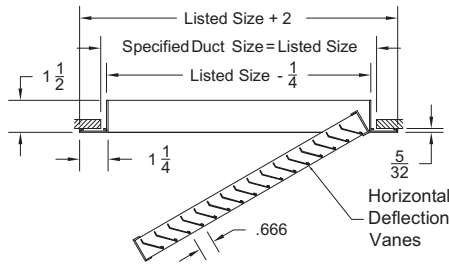
**Return Grille - Surface Mount
Model SRH-1**



**Return Grille - T-bar Lay-in
Model SRH-6**



**Return Grille - Surface Mount - Hinged Face
Model SRH-H-1**



Grilles and Registers



GAR

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish 02 Aluminum paint 03 Black 28 Custom color</p>	<p>OBD - Steel - Opposed Blade Damper221</p> <p>OBDA - Aluminum - Opposed Blade Damper .221</p> <p>L9 - Equalizing Grid221</p> <p>PF - Plaster Frame222</p>	<p>Reverse Sizes (blades parallel to short side)</p> <p>Hinged Core</p> <p>Insect Screen</p>	<ul style="list-style-type: none"> • Frame and blades are steel • Odd/fractional sizes are available • Oversized units made in multiple sections, each with full flanges. Mullion strips provided for joining units in the field

Performance Notes for Series RH, SRH & RHE

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic feet per minute (air)
- Nk Vel - Neck Velocity of air stream in feet per minute
- Ps - Negative Static pressure (inches of water column)
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak - Area Factors

GAR - Grilles and Registers

Series RH, SRH & RHE - Performance

Models RH (-1, -6, -7, -8, -9), RH-H-1, RHE-1, RHE-H-1, SRH (-1, -6), SRH-H-1

CFM	Ak	NECK SIZE														
		10" x 6"	12" x 6"	10" x 8"	12" x 8"	18" x 6"	12" x 12"	16" x 12"	18" x 12"	20" x 12"	24" x 12"	18" x 18"	20" x 18"	20" x 20"	24" x 18"	
		.40	.47	.53	.63	.71	.95	1.27	1.42	1.58	1.90	2.14	2.37	2.63	2.85	
100	Nk Vel Ps	240 .007	200 .005													
150	Nk Vel Ps	360 .016	300 .011	270 .009	225 .006	200 .005										
200	Nk Vel Ps	480 .029	400 .020	360 .016	300 .011	267 .009	200 .005									
250	Nk Vel Ps	600 .046	500 .032	450 .026	375 .018	333 .014	250 .008									
300	Nk Vel Ps	720 .066	600 .046	540 .037	450 .026	400 .020	300 .011	225 .006	200 .005							
350	Nk Vel Ps	840 .089	700 .062	630 .050	525 .035	467 .028	350 .016	263 .009	233 .007	210 .006						
400	Nk Vel Ps		800 .081	720 .066	600 .046	533 .036	400 .020	300 .011	267 .009	240 .007	200 .005					
450	Nk Vel Ps		900 .103	810 .083	675 .058	600 .046	450 .026	338 .014	300 .011	270 .009	225 .006	200 .005				
500	Nk Vel Ps				750 .071	667 .056	500 .032	375 .018	333 .014	300 .011	250 .008	222 .006	200 .005			
550	Nk Vel Ps				825 .086	733 .068	550 .038	413 .022	367 .017	330 .014	275 .010	244 .008	220 .006			
600	Nk Vel Ps				900 .103	800 .081	600 .046	450 .026	400 .020	360 .016	300 .011	267 .009	240 .007	216 .006	200 .005	
650	Nk Vel Ps					867 .095	650 .054	488 .030	433 .024	390 .019	325 .013	289 .011	260 .009	234 .007	217 .006	
700	Nk Vel Ps						700 .062	525 .035	467 .028	420 .022	350 .016	311 .012	280 .010	252 .008	233 .007	
750	Nk Vel Ps						750 .071	563 .040	500 .032	450 .026	375 .018	333 .014	300 .011	270 .009	250 .008	
	NC	40					35			30			25			

CFM	Ak	NECK SIZE														
		22" x 22"	30" x 18"	24" x 24"	36" x 18"	30" x 24"	36" x 24"	30" x 30"	36" x 30"	48" x 24"	42" x 30"	42" x 36"	48" x 36"	48" x 42"	48" x 48"	
		3.19	3.56	3.80	4.27	4.75	5.70	5.94	7.12	7.60	8.31	9.67	11.40	13.30	15.20	
700	Nk Vel Ps	208 .005														
800	Nk Vel Ps	238 .007	213 .006	200 .005												
1000	Nk Vel Ps	298 .011	267 .009	250 .008	222 .006	200 .005										
1200	Nk Vel Ps	357 .016	320 .013	300 .011	267 .009	240 .007	200 .005									
1400	Nk Vel Ps	417 .022	373 .017	350 .015	311 .012	280 .010	233 .007	224 .006								
1600	Nk Vel Ps	476 .028	427 .023	400 .020	356 .016	320 .013	267 .009	256 .008	213 .006	200 .005						
2000	Nk Vel Ps	595 .044	533 .036	500 .031	444 .025	400 .020	333 .014	320 .013	267 .009	250 .008	229 .007					
2500	Nk Vel Ps	744 .069	667 .056	625 .049	556 .039	500 .031	417 .022	400 .020	333 .014	313 .012	286 .010	238 .007	208 .005			
3000	Nk Vel Ps	893 .100	800 .080	750 .070	667 .056	600 .045	500 .031	480 .029	400 .020	375 .018	343 .015	286 .010	250 .008	214 .006		
3500	Nk Vel Ps			875 .096	778 .076	700 .061	583 .043	560 .039	467 .027	438 .024	400 .020	333 .014	292 .011	250 .008	219 .006	
4000	Nk Vel Ps				889 .099	800 .080	667 .056	640 .051	533 .036	500 .031	457 .026	381 .018	333 .014	286 .010	250 .008	
4500	Nk Vel Ps					900 .101	750 .070	720 .065	600 .045	563 .040	514 .033	429 .023	375 .018	321 .013	281 .010	
5000	Nk Vel Ps						833 .087	800 .080	667 .056	625 .049	571 .041	476 .028	417 .022	357 .016	313 .012	
6000	Nk Vel Ps							800 .080	750 .070	686 .059	571 .041	500 .031	429 .023	375 .018	313 .012	
	NC	40					35			30			25			

For performance notes, see page GAR-174

Grilles and Registers



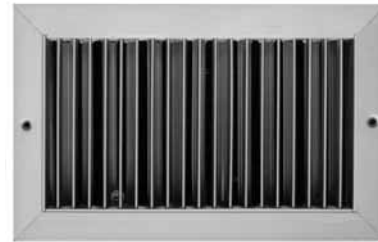
GAR

GAR - Grilles and Registers

- ➔ Return Grilles ➔ Series 4002R ➔ Extruded Aluminum
- ➔ Series 4002RS ➔ Steel

Product Details

- ⊛ The series 4002R return grilles and registers are designed to match the 4000 series supply models. These units are constructed of heavy aluminum. The 4002RS is constructed with a heavy steel border and steel deflector blades
- ⊛ The deflector blades for series 4002R are fixed and available in 0° or 45°. The deflector blades for series 4002RS are fixed and available in 0° or 40° settings



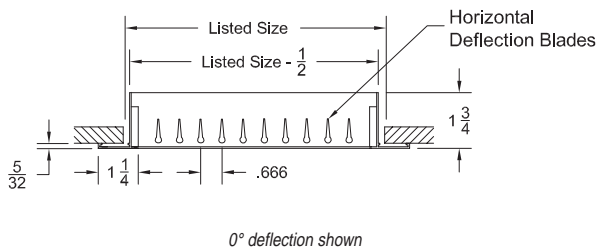
Model 4002R-1 Shown

Standard Finish: 01 White

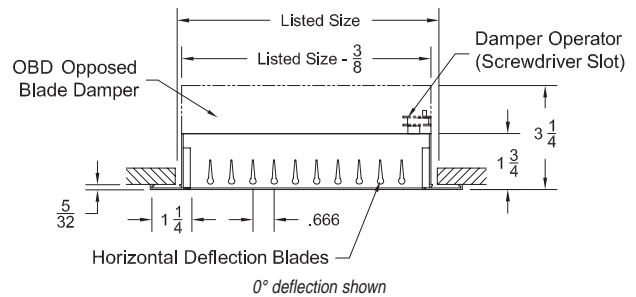
Extruded Aluminum

Sideview, dimensions are in inches

Single Deflection Sidewall Return Grille - Surface Mount Extruded Aluminum
 Model V4002R-1
 Model H4002R-1



Single Deflection Sidewall Return Register - Surface Mount With Opposed Blade Damper - Extruded Aluminum
 Model V4002RD-1
 Model H4002RD-1



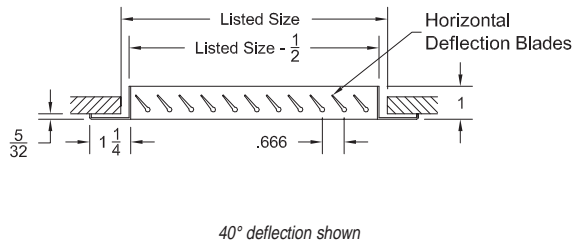
Grilles and Registers



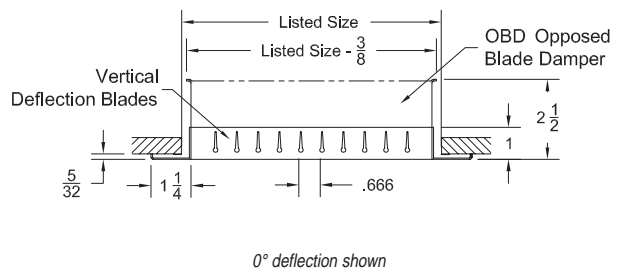
GAR

Steel

Single Deflection Sidewall Return Grille - Surface Mount - Steel
 Model V4002RS-1
 Model H4002RS-1

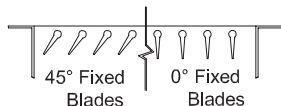


Single Deflection Sidewall Return Register - Surface Mount With Opposed Blade Damper - Extruded Aluminum
 Model V4002RSD-1
 Model H4002RSD-1



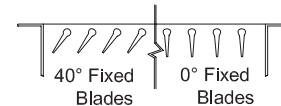
Series 4002R - Aluminum

Deflector Blades Are Available With 0° or 45° Fixed Settings



Series 4002RS - Steel

Deflector Blades Are Available With 0° or 40° Fixed Settings



GAR - Grilles and Registers

Notes for Models H4002R-1, V4002R-1, H4002RD-1, V4002RD-1

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 01 White Optional Finish 02 Aluminum paint 03 Black 04 Anodized 24 Mill finish 28 Custom color	OBD - Steel - Opposed Blade Damper221 OBDA - Aluminum - Opposed Blade Damper .221 L9 - Equalizing Grid221 PF - Plaster Frame222	Insect Screen	<ul style="list-style-type: none"> • Frame and blades are aluminum • Blades are at either 0° or 45° • Oversized units made in multiple sections, each with full flanges. Mullion strips provided for joining units in the field • Can be ordered to fit standard T-bar grid sizes • Can be ordered with smaller neck sizes in T-bar panels

Notes for Models H4002RS-1, V4002RS-1, H4002RSD-1, V4002RSD-1

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 01 White Optional Finish 03 Black 04 Anodized 28 Custom color	OBD - Steel - Opposed Blade Damper221 OBDA - Aluminum - Opposed Blade Damper .221 L9 - Equalizing Grid221 PF - Plaster Frame222	Insect Screen	<ul style="list-style-type: none"> • Frame and blades are steel • Blades are at either 0° or 40° • Oversized units made in multiple sections, each with full flanges. Mullion strips provided for joining units in the field • Can be ordered to fit standard T-bar grid sizes

Series 4002R - Performance

Models H4002R-1, V4002R-1, H4002RD-1, V4002RD-1, H4002RS-1, V4002RS-1, H4002RSD-1, V4002RSD-1

CFM	Ak	NECK SIZE														NC		
		6" x 4"	8" x 4"	10" x 4"	14" x 4"	12" x 6"	14" x 6"	16" x 6"	14" x 8"	18" x 8"	20" x 8"	24" x 8"	26" x 8"	24" x 10"	24" x 12"			
50	Nk Vel Ps .16 .014	300 .014	225 .008															
100	Nk Vel Ps .056 .031	600 .056	450 .031	360 .020	257 .010	200 .006												
150	Nk Vel Ps .126 .071	900 .126	675 .071	540 .045	386 .023	300 .014	257 .010	225 .008										
200	Nk Vel Ps .126 .081		900 .126	720 .081	514 .041	400 .025	343 .018	300 .014	257 .010	200 .006								
250	Nk Vel Ps .064 .039				643 .064	500 .039	429 .029	375 .022	321 .016	250 .010	225 .008							
300	Nk Vel Ps .093 .056				771 .093	600 .056	514 .041	450 .031	386 .023	300 .014	270 .011	225 .008	208 .007					
350	Nk Vel Ps .126 .076				900 .126	700 .076	600 .056	525 .043	450 .031	350 .019	315 .015	263 .011	242 .009	210 .007				
400	Nk Vel Ps .100 .073					800 .100	686 .073	600 .056	514 .041	400 .025	360 .020	300 .014	277 .012	240 .009	200 .006			
450	Nk Vel Ps .093 .071					900 .126	771 .093	675 .071	579 .052	450 .031	405 .026	338 .018	312 .015	270 .011	225 .008			
500	Nk Vel Ps .087 .064						857 .114	750 .087	643 .064	500 .039	450 .031	375 .022	346 .019	300 .014	250 .009			
550	Nk Vel Ps .078 .047							825 .106	707 .078	550 .047	495 .038	413 .026	381 .023	330 .017	275 .011			
600	Nk Vel Ps .093 .056							900 .126	771 .093	600 .056	540 .045	450 .031	415 .027	360 .020	300 .013			
650	Nk Vel Ps .066 .053								836 .109	650 .066	585 .053	488 .037	450 .031	390 .024	325 .016			
700	Nk Vel Ps .076 .062								900 .126	700 .076	630 .062	525 .043	485 .037	420 .027	350 .018			
	NC	30 - 35										25 - 30						

For performance notes, see page GAR-178

Grilles and Registers



GAR

GAR - Grilles and Registers

5/2007

Series 4002R - Performance

Models H4002R-1, V4002R-1, H4002RD-1, V4002RD-1, H4002RS-1, V4002RS-1, H4002RSD-1, V4002RSD-1

CFM	Ak	NECK SIZE														NC
		30" x 10"	28" x 12"	30" x 12"	30" x 14"	34" x 16"	48" x 14"	40" x 18"	48" x 18"	40" x 24"	42" x 24"	48" x 24"	48" x 30"	48" x 36"	48" x 48"	
		2.06	2.31	2.47	2.89	3.74	4.62	4.95	5.94	6.60	6.93	7.92	9.90	11.88	15.84	
500	Nk Vel Ps	240 .009	214 .007	200 .006												
600	Nk Vel Ps	288 .013	257 .010	240 .009	206 .007											
700	Nk Vel Ps	336 .018	300 .014	280 .012	240 .009											
800	Nk Vel Ps	384 .023	343 .018	320 .016	274 .012	212 .007										
1000	Nk Vel Ps	480 .036	429 .029	400 .025	343 .018	265 .011	214 .007	200 .006								
1200	Nk Vel Ps	576 .052	514 .041	480 .036	411 .026	318 .016	257 .010	240 .009	200 .006							
1400	Nk Vel Ps	672 .070	600 .056	560 .049	480 .036	371 .021	300 .014	280 .012	233 .008	210 .007	200 .006					
1600	Nk Vel Ps	768 .092	686 .073	640 .064	549 .047	424 .028	343 .018	320 .016	267 .011	240 .009	229 .008	200 .006				
2000	Nk Vel Ps		857 .114	800 .100	686 .073	529 .044	429 .029	400 .025	333 .017	300 .014	286 .013	250 .010	200 .006			
2500	Nk Vel Ps				857 .114	662 .068	536 .045	500 .039	417 .027	375 .022	357 .020	313 .015	250 .010	208 .007		
3000	Nk Vel Ps					794 .098	643 .064	600 .056	500 .039	450 .031	429 .029	375 .022	300 .014	250 .010		
3500	Nk Vel Ps						750 .087	700 .076	583 .053	525 .043	500 .039	438 .030	350 .019	292 .013	219 .007	
4000	Nk Vel Ps						857 .114	800 .100	667 .069	600 .056	571 .051	500 .039	400 .025	333 .017	250 .010	
4500	Nk Vel Ps							900 .129	750 .089	675 .072	643 .066	563 .050	450 .032	375 .022	281 .013	
	NC	30 - 35										25 - 30				

Grilles and Registers

Performance Notes for Series 4002R

All data are tested in accordance with ANSI/ASHRAE 70-1991



Definition of Units:

- CFM - Cubic feet per minute (air)
- Nk Vel - Neck Velocity of air stream in feet per minute
- Ps - Negative Static pressure (inches of water column)
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak - Area Factors

GAR

Return and Exhaust Grilles Series CC5/CC15/CC1 Aluminum

Product Details

- ★ The series CC5 cubed core return and exhaust grilles are designed to provide low pressure drops and low sound levels
- ★ The series CC5 is available with a number of options and accessories such as a 1" thick core (model CC1) to reduce sight into the grille
- ★ Series CC5 is an excellent choice for applications requiring minimum pressure drop and noise in return and exhaust applications



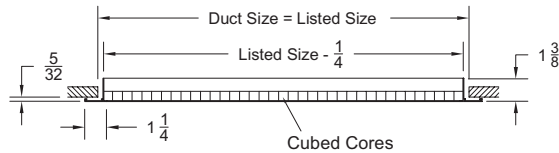
Model CC5-1 Shown

Standard Finish: 01 White

Sideview, dimensions are in inches

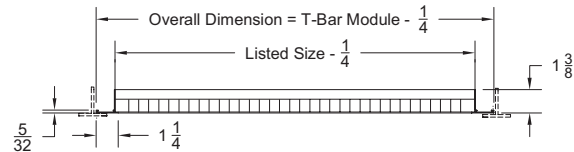
Return and Exhaust - Surface Mount

- Model CC5-1 - 1/2" x 1/2" x 1/2" Core
- Model CC15-1 - 1/2" x 1/2" x 1" Core
- Model CC1-1 - 1" x 1" x 1" Core



Return and Exhaust - T-bar Lay-in

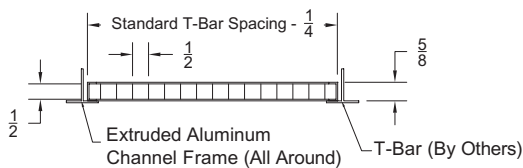
- Model CC5-6 - 1/2" x 1/2" x 1/2" Core
- Model CC15-6 - 1/2" x 1/2" x 1" Core
- Model CC1-6 - 1" x 1" x 1" Core



T-bar Module	12 x 12	24 x 12	24 x 24	48 x 24	30 x 30	36 x 36	48 x 48
Nominal Neck Size	10 x 10	22 x 10	22 x 22	46 x 22	28 x 28	34 x 34	46 x 46

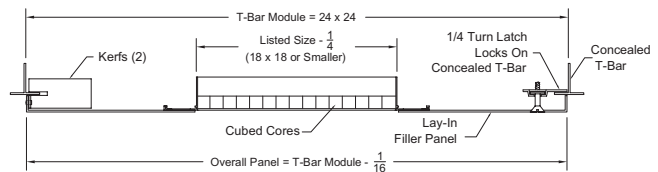
Return and Exhaust - Channel Frame - T-bar Lay-in

- Model CC5-TBC-6 - 1/2" x 1/2" x 1/2" Core



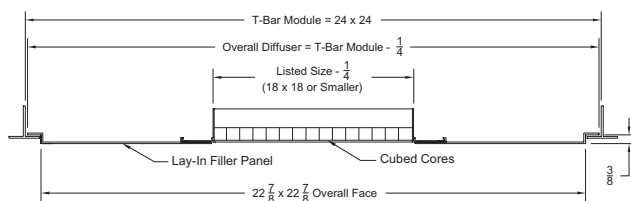
Return and Exhaust - Concealed Spline

- Model CC5-7 - 1/2" x 1/2" x 1/2" Core
- Model CC15-7 - 1/2" x 1/2" x 1" Core
- Model CC1-7 - 1" x 1" x 1" Core



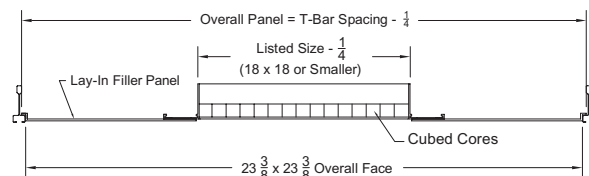
Return and Exhaust - Tegular T-bar

- Model CC5-8 - 1/2" x 1/2" x 1/2" Core
- Model CC15-8 - 1/2" x 1/2" x 1" Core
- Model CC1-8 - 1" x 1" x 1" Core



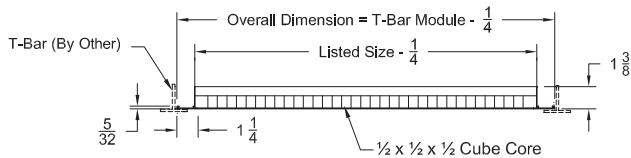
Return and Exhaust - Donn Finline

- Model CC5-9 - 1/2" x 1/2" x 1/2" Core
- Model CC15-9 - 1/2" x 1/2" x 1" Core
- Model CC1-9 - 1" x 1" x 1" Core



GAR - Grilles and Registers

Return and Exhaust - Sidewall Ceiling Grille - 1/2" x 1/2" x 1/2" Core
 T-bar Lay-in Removable Core
 Model CC5R-6



Notes for Models CC5 (-1, -6, -7, -8, -9) CC5-TBC-6, CC5R-6, CC15 (-1, -6, -7, -8, -9), CC1 (-1, -6, -7, -8, -9)

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish 02 Aluminum paint 03 Black 24 Mill finish 28 Custom color</p>	<p>OBD - Opposed Blade Damper - Steel.....221 OBDA - Opposed Blade Damper - Aluminum...221 L9 - Equalizing Grid221 PF - Plaster Frame222</p>	<p>Insect Screen</p>	<ul style="list-style-type: none"> • Frame is extruded aluminum, core is aluminum eggcrate • Oversized units made in multiple sections, each with full flanges. Mullion strips provided for joining units in the field

Grilles and Registers



GAR

GAR - Grilles and Registers

5/2007

Series CC5/CC15/CC1 - Performance

Models CC5 (-1, -6, -7, -8, -9), CC5-TBC-6, CC5R-6, CC15 (-1, -6, -7, -8, -9), CC1 (-1, -6, -7, -8, -9)

CFM	Ak	NECK SIZE														
		6" x 6"	8" x 8"	10" x 10"	12" x 12"	14" x 14"	16" x 14"	16" x 16"	18" x 16"	18" x 18"	20" x 18"	20" x 20"	22" x 20"	22" x 22"	24" x 22"	
		0.25	0.44	0.69	0.99	1.35	1.54	1.76	1.98	2.23	2.47	2.75	3.02	3.33	3.63	
100	Velocity Ps	400 .014	225 .005													
150	Velocity Ps	600 .032	338 .010	216 .004												
200	Velocity Ps	800 .057	450 .018	288 .007	200 .004											
250	Velocity Ps		563 .028	360 .012	250 .006											
300	Velocity Ps		675 .041	432 .017	300 .008	220 .004										
350	Velocity Ps		787 .055	504 .023	350 .011	257 .006	225 .005									
400	Velocity Ps		900 .072	576 .030	400 .014	294 .008	257 .006	225 .005	200 .004							
450	Velocity Ps			648 .037	450 .018	331 .010	289 .007	253 .006	225 .005	200 .004						
500	Velocity Ps			720 .046	500 .022	367 .012	321 .009	281 .007	250 .006	222 .004	200 .004					
550	Velocity Ps			792 .056	550 .027	404 .015	354 .011	309 .009	275 .007	244 .005	220 .004					
600	Velocity Ps			864 .066	600 .032	441 .017	386 .013	338 .010	300 .008	267 .006	240 .005	216 .004				
650	Velocity Ps				650 .038	478 .020	418 .016	366 .012	325 .009	289 .007	260 .006	234 .005	213 .004			
700	Velocity Ps				700 .044	514 .024	450 .018	394 .014	350 .011	311 .009	280 .007	252 .006	229 .005	208 .004		
750	Velocity Ps				750 .050	551 .027	482 .021	422 .016	375 .013	333 .010	300 .008	270 .006	245 .005	223 .004	205 .004	
NC		25-30			20-25		<20									

Grilles and Registers



GAR

GAR - Grilles and Registers

Series CC5/CC15/CC1 - Performance

Models CC5 (-1, -6, -7, -8, -9), CC5-TBC-6, CC5R-6, CC15 (-1, -6, -7, -8, -9), CC1 (-1, -6, -7, -8, -9)

CFM	Ak	NECK SIZE														NC		
		24" x 24"	26" x 26"	28" x 28"	30" x 30"	32" x 32"	48" x 24"	34" x 34"	36" x 36"	38" x 38"	40" x 40"	42" x 42"	44" x 44"	46" x 46"	48" x 48"			
		3.96	4.65	5.39	6.19	7.04	7.92	7.95	8.91	9.93	11.00	12.13	13.31	14.55	15.84			
800	Velocity Ps	200 .003																
1000	Velocity Ps	250 .005	213 .004															
1200	Velocity Ps	300 .008	256 .006	220 .004														
1600	Velocity Ps	400 .014	341 .010	294 .007	256 .006	225 .004	200 .003											
2000	Velocity Ps	500 .021	426 .015	367 .011	320 .009	281 .007	250 .005	249 .005	222 .004									
2500	Velocity Ps	625 .033	533 .024	459 .018	400 .014	352 .010	313 .008	311 .008	278 .007	249 .005	225 .004	204 .004						
3000	Velocity Ps	750 .048	639 .035	551 .026	480 .020	422 .015	375 .012	374 .012	333 .009	299 .008	270 .006	245 .005	223 .004	204 .004				<20
3500	Velocity Ps	875 .065	746 .047	643 .035	560 .027	492 .021	438 .016	436 .016	389 .013	349 .010	315 .008	286 .007	260 .006	238 .005	219 .004			
4000	Velocity Ps		852 .062	735 .046	640 .035	563 .027	500 .021	498 .021	444 .017	399 .013	360 .011	327 .009	298 .008	272 .006	250 .005			
4500	Velocity Ps			827 .058	720 .044	633 .034	563 .027	561 .027	500 .021	449 .017	405 .014	367 .011	335 .010	306 .008	281 .007			
5000	Velocity Ps				800 .054	703 .042	625 .033	623 .033	556 .026	499 .021	450 .017	408 .014	372 .012	340 .010	313 .008			
6000	Velocity Ps					800 .104	750 .048	747 .047	667 .038	598 .030	540 .025	490 .020	446 .017	408 .014	375 .012			
7000	Velocity Ps						875 .065	872 .064	778 .051	698 .041	630 .034	571 .028	521 .023	476 .019	438 .016			
8000	Velocity Ps								889 .067	798 .054	720 .044	653 .036	595 .030	544 .025	500 .021			
NC		30-35										25-30						

Performance Notes for Series CC5/CC15/CC1

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic feet per minute (air)
- Nk Vel - Neck Velocity of air stream in feet per minute
- Ps - Negative Static pressure (inches of water column)
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak - Area Factors

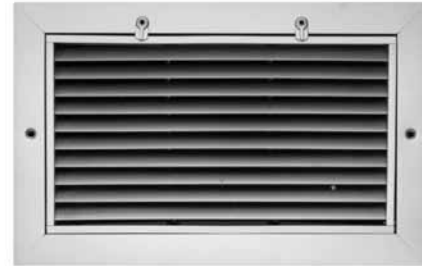


GAR - Grilles and Registers

- ➔ Filter Grilles ➔ Series RHF ➔ Aluminum
 - ➔ Series RHEF ➔ Extruded Aluminum
 - ➔ Series SRHF ➔ Steel

Product Details

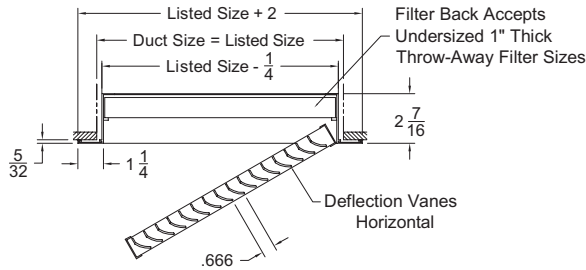
- ✦ The RHF series of return aluminum filter grilles combine the advantages of corrosion resistant construction and durability with attractive design, solid performance, and competitive pricing
- ✦ The RHEF is our premiere extruded aluminum filter grille offering superior appearance and performance. The SRHF is designed for applications requiring steel construction
- ✦ The RHEF and SRHF are excellent choices for exhaust and return applications requiring a filter
- ✦ The SRHF is designed for applications requiring steel construction



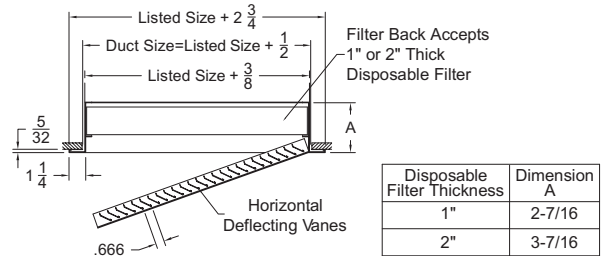
Model RHF-1 Shown
Standard Finish: 01 White

Aluminum Sideview, dimensions are in inches

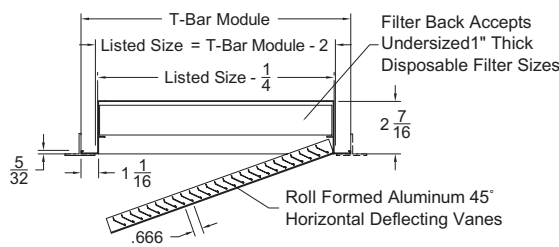
Filter Back Return Grilles and Registers
45° Louvered Face - Grille Size - Surface Mount - Aluminum
Model RHF-1 GS



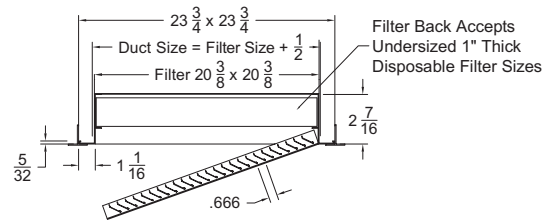
Filter Back Return Grilles and Registers
45° Louvered Face - Filter Size - Surface Mount - Aluminum
Model RHF-1 FS



Filter Back Return Grilles and Registers
45° Louvered Face - Grille Size - T-bar Lay-in - Aluminum
Model RHF-6 GS



Filter Back Return Grilles and Registers
45° Louvered Face - Filter Size - T-bar Lay-in - Aluminum
Model RHF-6 FS



Lay-In T-Bar Modules for RHF-6 GS and RHF-6 FS	
24 x 24	48 x 24
Listed Sizes	
22 x 22	46 x 22
Overall Dimensions W x H	
23 3/4 x 23 3/4	47 3/4 x 23 3/4

Grilles and Registers

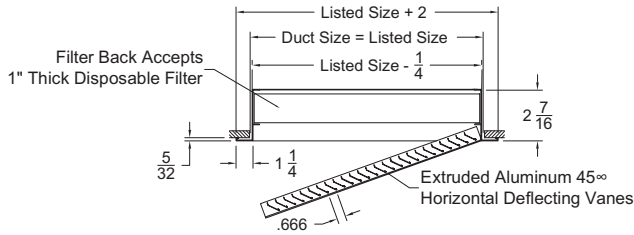


GAR

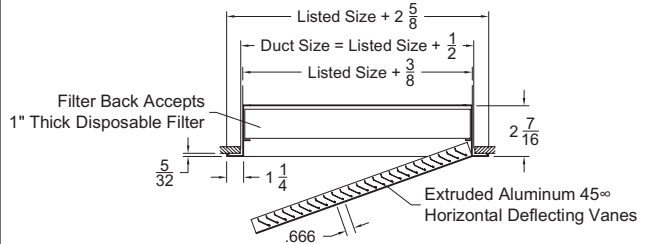
GAR - Grilles and Registers

Extruded Aluminum

Filter Back Return Grilles and Registers - 45° Louvered Face
Grille Size - Surface Mount - Extruded Aluminum
 Model RHEF-1 GS

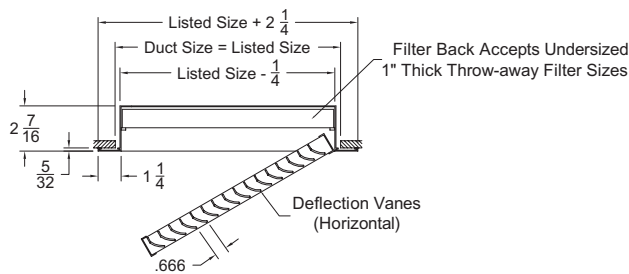


Filter Back Return Grilles and Registers - 45° Louvered Face
Filter Size - Surface Mount - Extruded Aluminum
 Model RHEF-1 FS

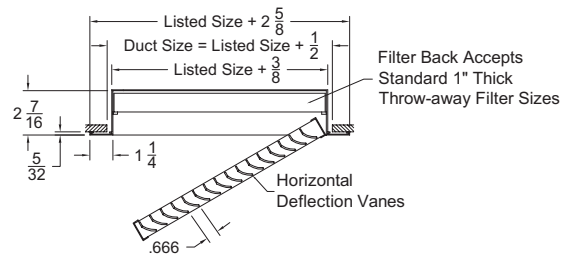


Steel

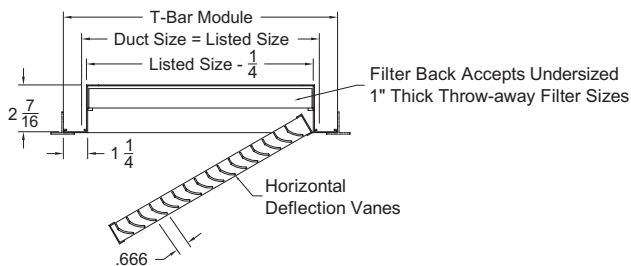
Filter Back Return Grilles and Registers - 45° Louvered Face - Steel
Grille Size - Surface Mount
 Model SRHF-1 GS



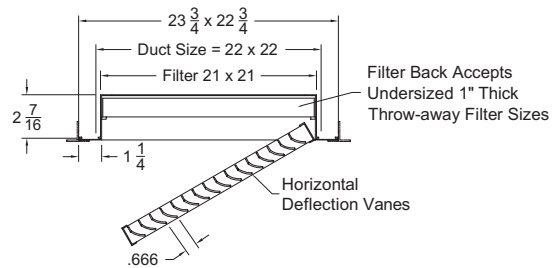
Filter Back Return Grilles and Registers - 45° Louvered Face - Steel
Filter Size - Surface Mount
 Model SRHF-1 FS



Filter Back Return Grilles and Registers - 45° Louvered Face - Steel
Grille Size- T-bar Lay-in
 Model SRHF-6 GS



Filter Back Return Grilles and Registers - 45° Louvered Face - Steel
Filter Size - T-bar Lay-in
 Model SRHF-6 FS



Lay-in T-Bar Modules for SRHF-6 GS and SRHFD-6 GS Models							
12 x 12	24 x 12	36 x 12	48 x 12	24 x 24	36 x 24	48 x 24	36 x 36
Listed Sizes							
10 x 10	22 x 10	34 x 10	46 x 10	22 x 22	34 x 22	46 x 22	34 x 34
							46 x 46

Grilles and Registers

GAR

GAR - Grilles and Registers

5/2007

Notes for Series RHF

1. Available Finishes	2. Available Accessories	3. Construction Details
Standard Finish: 01 White Optional Finish: 02 Aluminum paint 03 Black 24 Mill finish 28 Custom color	OBD - Steel - Opposed Blade Damper.....221 OBDA - Aluminum - Opposed Blade Damper ...221 L9 - Equalizing Grid.....221 PF - Plaster Frame222	<ul style="list-style-type: none"> • Frame and blades are aluminum

Notes for Series RHEF

1. Available Finishes	2. Available Accessories	3. Construction Details
Standard Finish: 01 White Optional Finish (no additional charge): 02 Aluminum paint 03 Black 04 Clear Anodized 24 Mill Finish 28 Custom color	OBD - Steel - Opposed Blade Damper.....221 OBDA - Aluminum - Opposed Blade Damper ...221 L9 - Equalizing Grid.....221 PF - Plaster Frame222	<ul style="list-style-type: none"> • Frame and blades are aluminum. Can be ordered as either G/S (grille size) or F/S (filter size).

Notes for Series SRHF

1. Available Finishes	2. Available Accessories	3. Construction Details
Standard Finish: 01 White Optional Finish: 03 Black 28 Custom color	OBD - Steel - Opposed Blade Damper.....221 OBDA - Aluminum - Opposed Blade Damper ...221 L9 - Equalizing Grid.....221 PF - Plaster Frame222	<ul style="list-style-type: none"> • Frame and blades are steel. Can be ordered as either G/S (grille size) or F/S (filter size).

Grilles and Registers



GAR

GAR - Grilles and Registers

Series RHF - Performance

Models RHF-1 GS, RHF-6 GS, RHF-1 FS, RHF-6 FS, RHEF-1 GS, RHEF-1 FS, SRHF-1 GS, SRHF-1FS, SRHF-6 GS, SRHF-6 FS

CFM	Ak	OUTLET SIZE														
		10" x 6"	12" x 6"	10" x 8"	12" x 8"	18" x 6"	12" x 12"	16" x 12"	18" x 12"	20" x 12"	24" x 12"	18" x 18"	20" x 18"	20" x 20"	24" x 18"	
		.40	.47	.53	.63	.71	.95	1.27	1.42	1.58	1.90	2.14	2.37	2.63	2.85	
100	Nk Vel Ps	240 .007	200 .005													
150	Nk Vel Ps	360 .016	300 .011	270 .009	225 .006	200 .005										
200	Nk Vel Ps	480 .029	400 .020	360 .016	300 .011	267 .009	200 .005									
250	Nk Vel Ps	600 .046	500 .032	450 .026	375 .018	333 .014	250 .008									
300	Nk Vel Ps	720 .066	600 .046	540 .037	450 .026	400 .020	300 .011	225 .006	200 .005							
350	Nk Vel Ps	840 .089	700 .062	630 .050	525 .035	467 .028	350 .016	263 .009	233 .007	210 .006						
400	Nk Vel Ps		800 .081	720 .066	600 .046	533 .036	400 .020	300 .011	267 .009	240 .007	200 .005					
450	Nk Vel Ps		900 .103	810 .083	675 .058	600 .046	450 .026	338 .014	300 .011	270 .009	225 .006	200 .005				
500	Nk Vel Ps				750 .071	667 .056	500 .032	375 .018	333 .014	300 .011	250 .008	222 .006	200 .005			
550	Nk Vel Ps				825 .086	733 .068	550 .038	413 .022	367 .017	330 .014	275 .010	244 .008	220 .006			
600	Nk Vel Ps				900 .103	800 .081	600 .046	450 .026	400 .020	360 .016	300 .011	267 .009	240 .007	216 .006	200 .005	
650	Nk Vel Ps					867 .095	650 .054	488 .030	433 .024	390 .019	325 .013	289 .011	260 .009	234 .007	217 .006	
700	Nk Vel Ps						700 .062	525 .035	467 .028	420 .022	350 .016	311 .012	280 .010	252 .008	233 .007	
750	Nk Vel Ps						750 .071	563 .040	500 .032	450 .026	375 .018	333 .014	300 .011	270 .009	250 .008	
	NC	40					35			30			25			

Performance Notes for Series RHF

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic feet per minute (air)
- Nk Vel - Neck velocity of air stream in feet per minute
- Ps - Negative Static pressure (inches of water column)
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw)
RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak - Area Factors

Grilles and Registers



GAR

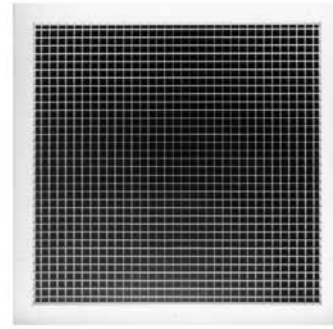
GAR - Grilles and Registers

5/2007

➔ Filter Return Grilles & Registers ➔ Cube Core ➔ Series CC5F ➔ Aluminum

Product Details

- ★ The series CC5F cubed core return and exhaust filter grilles are designed to provide low pressure drops and low sound levels
- ★ The series CC5F is designed for 1" thick filters (by others) and includes a hinged face with 1/4" turn fasteners for quick filter changes
- ★ Series CC5F is an excellent choice for applications requiring minimum pressure drop and noise in return and exhaust applications

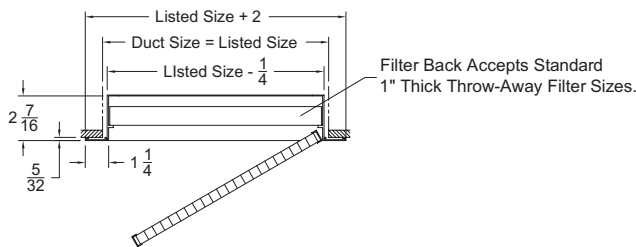


Model CC5F-1 Shown

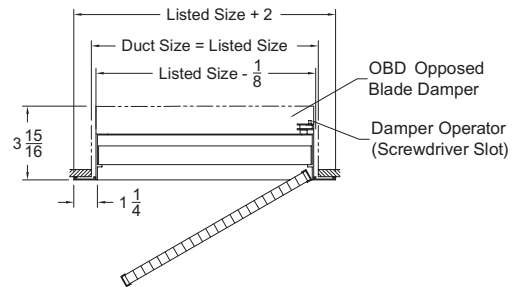
Standard Finish: 01 White

Sideview, dimensions are in inches

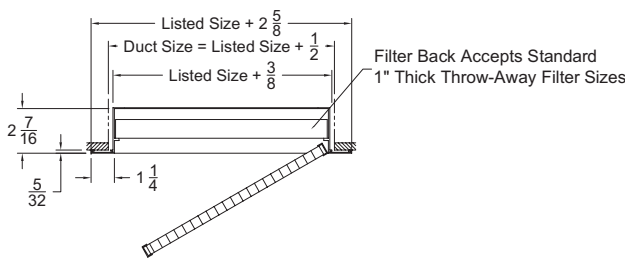
**Filter Back Return Grilles and Registers - 1/2" x 1/2" x 1/2" Cube Core
Grille Size - Surface Mount
Model CC5F-1 GS**



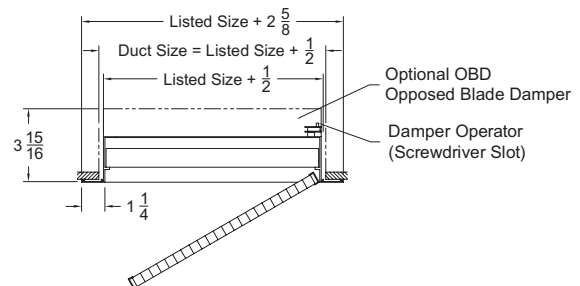
**Filter Back Return Grilles and Registers - 1/2" x 1/2" x 1/2" Cube Core
Grille Size - With Opposed Blade Damper - Surface Mount
Model CC5FD-1 GS**



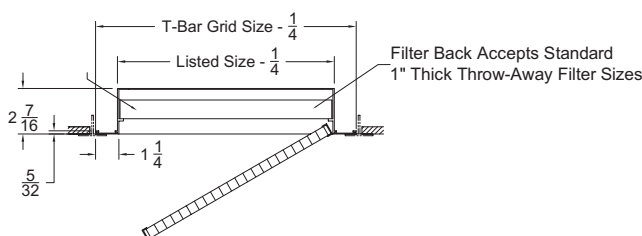
**Filter Back Return Grilles and Registers - 1/2" x 1/2" x 1/2" Cube Core
Filter Size - Surface Mount
Model CC5F-1 FS**



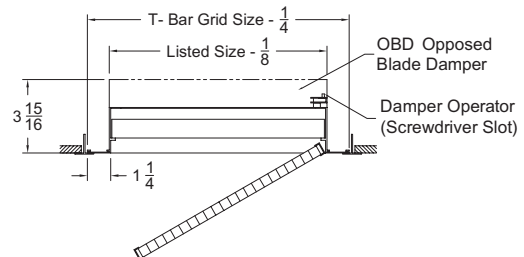
**Filter Back Return Grilles and Registers - 1/2" x 1/2" x 1/2" Cube Core
Filter Size - With Opposed Blade Damper - Surface Mount
Model CC5FD-1 FS**



**Filter Back Return Grilles and Registers - 1/2" x 1/2" x 1/2" Cube Core
Grille Size - T-bar Lay-in
Model CC5F-6 GS**



**Filter Back Return Grilles and Registers - 1/2" x 1/2" x 1/2" Cube Core
Grille Size - With Opposed Blade Damper - T-bar Lay-in
Model CC5FD-6 GS**



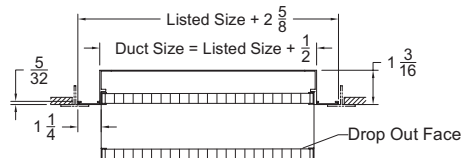
Grilles and Registers



GAR

GAR - Grilles and Registers

Filter Back Return Grilles and Registers - 1/2" x 1/2" x 1/2" Cube Core
 Filter Size - T-bar Lay-in with four thumb latches/removable core
 Model CC5F-6 FS



1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish: 02 Aluminum paint 03 Black 24 Mill finish 28 Custom color</p>	<p>OBD - Steel - Opposed Blade Damper.....221 OBDA - Aluminum - Opposed Blade Damper.....221 L9 - Equalizing Grid221 PF - Plaster Frame222</p>	<ul style="list-style-type: none"> • Frame and cube core are aluminum • Can be ordered as either G/S (grille size) or F/S (filter size)

Series CC5F - Performance

Models CC5F-1 GS, CC5-1 FS, CC5F-6 GS, CC5F-6 FS, CC5FD-1 GS, CC5FD-1 FS, CC5FD-6 GS

CFM	Ak	NECK SIZE														
		6" x 6"	8" x 8"	10" x 10"	12" x 12"	14" x 14"	16" x 14"	16" x 16"	18" x 16"	18" x 18"	20" x 18"	20" x 20"	22" x 20"	22" x 22"	24" x 22"	
100	Velocity Ps	400 .064	225 .0055													
150	Velocity Ps	600 .082	338 .06	216 .054												
200	Velocity Ps	800 .107	450 .068	288 .057	200 .054											
250	Velocity Ps		563 .078	360 .062	250 .056											
300	Velocity Ps		675 .091	432 .067	300 .058	220 .054										
350	Velocity Ps		787 .105	504 .073	350 .061	257 .056	225 .055									
400	Velocity Ps		900 .122	576 .080	400 .064	294 .058	257 .056	225 .055	200 .054							
450	Velocity Ps			648 .087	450 .068	331 .060	289 .057	253 .056	225 .055	200 .054						
500	Velocity Ps			720 .096	500 .072	367 .062	321 .059	281 .057	250 .056	222 .054	200 .054					
550	Velocity Ps			792 .106	550 .077	404 .065	354 .061	309 .059	275 .057	244 .055	220 .054					
600	Velocity Ps			864 .116	600 .082	441 .067	386 .063	338 .060	300 .058	267 .056	240 .055	216 .054				
650	Velocity Ps				650 .088	478 .070	418 .066	366 .062	325 .059	289 .057	260 .056	234 .055	213 .054			
700	Velocity Ps				700 .094	514 .074	450 .068	394 .064	350 .061	311 .059	280 .057	252 .056	229 .055	208 .054		
750	Velocity Ps				750 .100	551 .077	482 .071	422 .066	375 .063	333 .060	300 .058	270 .056	245 .055	223 .054	205 .054	
	NC	25-30			20-25			<20								

For performance notes, see page GAR-190

Grilles and Registers



GAR

GAR - Grilles and Registers

Series CC5F - Performance

Models CC5F-1 GS, CC5-1 FS, CC5F-6 GS, CC5F-6 FS, CC5FD-1 GS, CC5FD-1 FS, CC5FD-6 GS

CFM	Ak	NECK SIZE														NC
		24" x 24"	26" x 26"	28" x 28"	30" x 30"	32" x 32"	48" x 24"	34" x 34"	36" x 36"	38" x 38"	40" x 40"	42" x 42"	44" x 44"	46" x 46"	48" x 48"	
		3.96	4.65	5.39	6.19	7.04	7.92	7.95	8.91	9.93	11.00	12.13	13.31	14.55	15.84	
800	Velocity Ps	200 .053														
1000	Velocity Ps	250 .055	213 .054													
1200	Velocity Ps	300 .058	256 .056	220 .054												
1600	Velocity Ps	400 .064	341 .060	294 .057	256 .056	225 .054	200 .053									
2000	Velocity Ps	500 .071	426 .065	367 .061	320 .059	281 .057	250 .055	249 .055	222 .054							
2500	Velocity Ps	625 .083	533 .074	459 .068	400 .064	352 .060	313 .058	311 .058	278 .057	249 .055	225 .054	204 .054				
3000	Velocity Ps	750 .098	639 .085	551 .076	480 .070	422 .065	375 .062	374 .062	333 .059	299 .058	270 .056	245 .055	223 .054	204 .054		<20
3500	Velocity Ps	875 .115	746 .097	643 .085	560 .077	492 .071	438 .066	436 .066	389 .063	349 .060	315 .058	286 .057	260 .056	238 .055	219 .054	
4000	Velocity Ps		852 .112	735 .096	640 .085	563 .077	500 .071	498 .071	444 .067	399 .063	360 .061	327 .059	298 .058	272 .056	250 .055	
4500	Velocity Ps			827 .108	720 .094	633 .084	563 .077	561 .077	500 .071	449 .067	405 .064	367 .061	335 .060	306 .058	281 .057	
5000	Velocity Ps				800 .104	703 .092	625 .083	623 .083	556 .076	499 .071	450 .067	408 .064	372 .062	340 .060	313 .058	
6000	Velocity Ps					800 .104	750 .098	747 .097	667 .088	598 .080	540 .075	490 .070	446 .067	408 .064	375 .062	
7000	Velocity Ps						875 .115	872 .114	778 .101	698 .091	630 .084	571 .078	521 .073	476 .069	438 .066	
8000	Velocity Ps								889 .117	798 .104	720 .094	653 .086	595 .080	544 .075	500 .071	
	NC	30-35										25-30				

Performance Notes for Series CC5F

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic Feet per Minute (air)
- Nk Vel - Neck velocity of air stream in Feet Per Minute
- Ps - Negative Static pressure (inches of water column)
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw)
RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak - Area Factors

Grilles and Registers



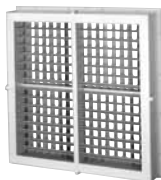
GAR

IND



**INDUSTRIAL /
HIGH CAPACITY DEVICES**

INDUSTRIAL /
HIGH CAPACITY DEVICES



Series 4100
Series 4200
Series 4300

Additional product information available at www.metalair.com

Industrial/High Capacity Grilles & Registers - Modular Frame/Multi-Core - Aluminum Series 4100, 4200, 4300

- Series 4100, 4200 and 4300 industrial grilles and registers are engineered specifically for high capacity industrial air distribution applications where performance is a priority
- The series 4100, 4200 and 4300 models are designed for ceiling and high sidewall installation and are available with of choice of three collar depths
- Series 4100, 4200 and 4300 are excellent selections for industrial applications requiring high capacity and performance

Series 4100	Vertical Blades	Horizontal Blades
Single Deflection	V4152	H4152
Double Deflection - Front Blades	V4154	H4154
Single Deflection - Inverted Frame	V4152 IF	H4152 IF
Double Deflection - Inverted Frame - Front Blades	V4154 IF	H4154 IF
Single Deflection - w/ Trunk Latch Frame	V4152-TLF	H4152-TLF
Double Deflection - Front Blades - w/ Trunk Latch Frame	V4154-TLF	H4154-TLF
Modular Frame - Single Deflection	V4152MF	H4152MF
Modular Frame - Double Deflection	V4154MF	H4154MF

Series 4200	Vertical Blades	Horizontal Blades
Single Deflection	V4252	H4252
Double Deflection - Front Blades	V4254	H4254
Single Deflection - Inverted Frame	V4252 IF	H4252 IF
Double Deflection - Inverted Frame - Front Blades	V4254 IF	H4254 IF
Single Deflection - w/ Trunk Latch Frame	V4252-TLF	H4252-TLF
Double Deflection - Front Blades - w/ Trunk Latch Frame	V4254-TLF	H4254-TLF
Modular Frame - Single Deflection	V4252MF	H4252MF
Modular Frame - Double Deflection	V4254MF	H4254MF

Series 4300	Vertical Blades	Horizontal Blades
Single Deflection	V4352	H4352
Double Deflection - Front Blades	V4354	H4354
Modular Frame - Single Deflection	V4352MF	H4352MF
Modular Frame - Double Deflection	V4354MF	H4354MF

Gang Operator for Series 4100, 4200, & 4300	Vertical Blades	Horizontal Blades
Gang Operator	GOV	GOH

Airfoil Blades for Series 4100 & 4200	
Optional Airfoil Blades (Mounted)	AB

Series	Collar	Blades	Center
4100	4 3/8"	1 1/2"	1 1/2"
4200	1 7/8"	1 1/2"	1 1/2"
4300	7"	3"	3"

Industrial / High Capacity Devices



IND



Model RL
Pg. 194

Industrial/High Capacity Drum Louver - Supply - Extruded Aluminum - Series RL Roto-Louver

- ✦ The series RL Roto-Louver outlets are engineered for high capacity, long throw applications such as sports arenas, gymnasiums, conference centers, industrial plants and other large spaces.
- ✦ The series RL units have the flexibility to change throw direction and spread of the discharge jet with individually adjustable deflection blades and a rotating cylindrical drum assembly.
- ✦ Series RL Roto-Louver outlets are an excellent choice for high capacity, long throw applications. These units offer flexibility allowing installation in a variety of applications.

Roto-Louver
RL
RL-DF Dual Flow
RL-GO Gang Operator



Model JA-1
Additional product information available at www.metalair.com

High Capacity - Supply - Round Neck - Steel - Series JA - Jet*Aire

- ✦ Jet*Aire Diffusers offer an economical solution to high capacity air distribution applications requiring long throw distances. This diffuser can be effectively applied to large space applications such as civic centers, auditoriums, and arenas.
- ✦ Units are available as a single diffuser, or multiple diffusers mounted in a panel.
- ✦ Jet*Aire Diffusers are an excellent choice for high capacity, long throw applications. The modular design of the Jet*Aire diffusers allows selection for a wide range of air volumes

Jet*Aire
JA-1 Surface Mount - Single Unit
JA-1P Panel Mounted - 1 Unit
JA-2P Panel Mounted - 2 Units
JA-3P Panel Mounted - 3 Units
JA-4P Panel Mounted - 4 Units
JA-1EX Exposed Duct Mount - No Panel



Model OAL
Additional product information available at www.metalair.com

Outside Air Louvers - Extruded Aluminum - Series OAL

- ✦ Series OAL stationary outside air louvers are fixed multiple blade air distribution devices designed for installation in building exterior wall openings
- ✦ The series OAL inhibit the entrance of wind, rain, snow, sleet, sand, birds, insects, and airborne debris while serving to enhance the building's exterior appearance
- ✦ Each series OAL blade has a 45° face deflection and includes a water baffle with a 1/4" return bend
- ✦ Series OAL blades also overlap to improve the weather resistance of the louver

Type "C" Channel Frame	Type "F" Flange Frame
OAL2C 2" Depth	OAL2F 2" Depth
OAL4C 4" Depth	OAL4F 4" Depth



Model MPK
Additional product information available at www.metalair.com

Industrial/High Capacity Punkah Louver Global Adjustment - Aluminum - Model MPK

- ✦ Model MPK discharges a high-velocity jet that can be directed to condition a specific space or area
- ✦ The model MPK is constructed using a felt gasket that allows smooth movement of the inner core to direct air flow and provides a tight seal to prevent air leakage
- ✦ An optional aperture damper is available which includes an adjustment knob and stainless steel linkage and tension springs for maximum corrosion protection



Model MRDD
Additional product information available at www.metalair.com

Architectural - High Velocity - Round - Series MRD

- ✦ An excellent selection for architecturally pleasing applications requiring an adjustable outlet with high capacities and long throw.
- ✦ Heavy gauge aluminum construction
- ✦ Available in single and double deflection
- ✦ Unit is designed for surface mounting with concealed fastening

Single Deflection	Double Deflection
MRDS	MRDD



Industrial High Capacity Supply Series RL Roto Louver Aluminum

Product Details

- ★ The series RL Roto-Louver outlets are engineered for high capacity, long throw applications such as sports arenas, gymnasiums, conference centers, industrial plants and other large spaces
- ★ The series RL units have the flexibility to change throw direction and spread of the discharge jet with individually adjustable deflection blades and a rotating cylindrical drum assembly
- ★ Series RL Roto-Louver outlets are an excellent choice for high capacity, long throw applications. These units offer flexibility allowing installation in a variety of applications

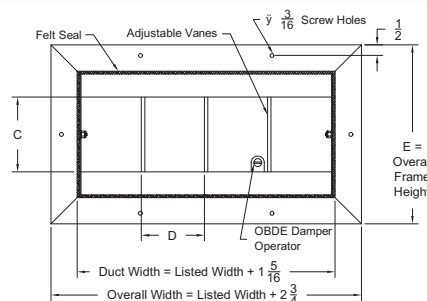
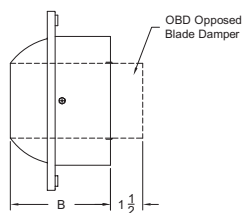


Model RL Shown

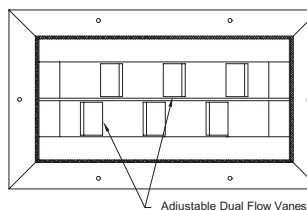
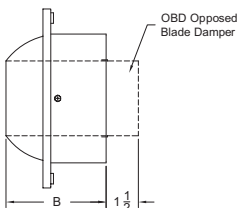
Standard Finish: 02 Aluminum

Sideview, dimensions are in inches

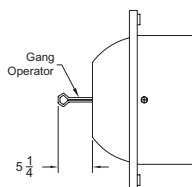
Supply - Cylindrical Drum - Roto Louver - Standard Blades Model RL - Standard Unit



Supply - Cylindrical Drum - Roto Louver - Standard Blades Model RL-DF - Dual Flow Blades



Supply - Cylindrical Drum - Roto Louver - Standard Blades Model RL-GO - With Gang Operator



Available Listed Height	6						10						12						15													
Available Listed Widths	9	12	18	24	30	36	48	60	20	25	30	35	40	50	60	70	20	25	30	35	40	50	60	70	15	20	25	30	40	50	60	70
Number of Louvers	2	3	5	7	9	11	15	19	3	4	5	6	7	9	11	13	3	4	5	6	7	9	11	12	2	3	4	5	7	9	11	13
A	1 3/4						2 5/8						3						3 1/2													
B	4 3/8						6 1/8						6 1/8						8													
C	3 1/2						5 7/8						6 1/4						9 1/2													
D	3						5						5						5													
E	8 1/2						12 1/4						13 7/8						16 7/8													
F	7						10 13/16						12 1/2						15 1/2													

Notes for Models RL, RL-DF, RL-GO

1. Available Finishes	2. Available Accessories	3. Construction Details
Standard Finish: 04 Clear Anodized Optional Finish: 01 White	OBD - Steel - Opposed Blade Damper.....221 OBDA - Aluminum - Opposed Blade Damper.....221	• Sizes available only as listed

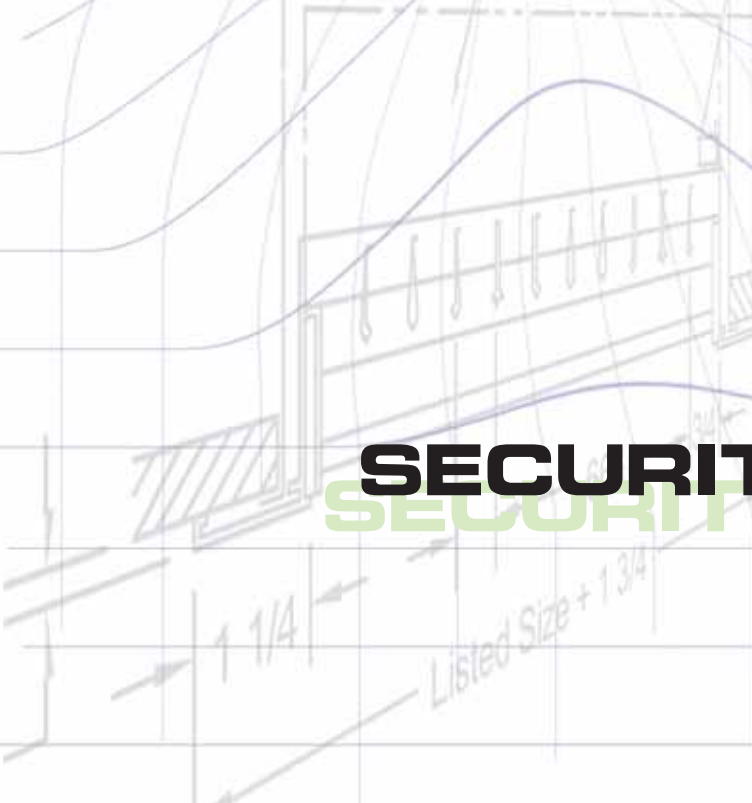


COMMERCIAL



SECURITY PRODUCTS

SECURITY PRODUCTS





Model SGSP
Pg. 197

Maximum Security Grilles - Square Holes/Mesh Face - Series SGSP

- ✦ The series SGSP is a supply maximum security steel grille and has a face plate perforated with 2" square holes separated by 1" wide fret bars. A woven steel mesh screen is inserted directly behind the face panel and is sandwiched by a steel backup plate
- ✦ The series SGSP is designed for sidewall applications. A rear operated opposed blade damper is available as an option
- ✦ Series SGSP is an excellent choice for maximum security applications such as federal correctional facilities, state and local prisons, psychiatric hospitals, and manufacturing plants where security is of paramount concern. This grille can be used for both supply and return applications



Model SGRP
Pg. 198

Maximum Security Grilles - Round Perforated Holes - Series SGRP

- ✦ The series SGRP is a supply maximum security steel grille and has round holes and a perforated face plate
- ✦ The series SGRP is designed for sidewall applications. A rear operated opposed blade damper is available as an option
- ✦ Series SGRP is an excellent choice for maximum security applications such as federal correctional facilities, state and local prisons, psychiatric hospitals, and manufacturing plants where security is of paramount concern. This grille can be used for both supply and return applications

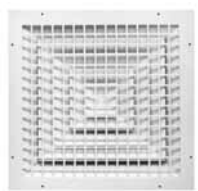


Model SGRH

Additional product information available at www.metalaire.com

Minimum Security Grilles - Fixed Louver Face - Series SGRH

- ✦ The series SGRH is a return, minimum security grille constructed with heavy gauge steel louvers that are reinforced and welded to a steel sleeve
- ✦ The series SGRH is designed for sidewall applications. A rear operated opposed blade damper is available as an option
- ✦ Series SGRH is an excellent choice for a return grille in minimum security, supervised areas. Applications for the series SGRH include minimum security areas in federal correctional facilities, state and local prisons, psychiatric hospitals, and manufacturing plants. The SGRH is also an excellent choice for public areas to resist vandalism



Model SG5500S

Additional product information available at www.metalaire.com

Minimum Security Grilles - Steel Diffuser and Face Plate - Series SG5500S

- ✦ The series SG5500S is a supply, minimum security steel ceiling diffuser and features a steel lattice face panel attached to the high performing Series 5500S steel supply diffuser
- ✦ This surfaced mounted diffuser is available with 1, 2, 3, or 4 way air patterns
- ✦ Series SG5500S is an excellent choice for minimum security, supervised areas requiring a ceiling mounted diffuser. Applications for the SG5500S include minimum security areas in federal correctional facilities, state and local prisons, psychiatric hospitals, and manufacturing plants. The SG5500S is also an excellent choice for public areas to resist vandalism



Model SG2000

Additional product information available at www.metalaire.com

Minimum Security Grilles - 1" Borders - 7/32" Bars - 1/2" Centers - Series SG2000

- ✦ The series SG2000 is a return, minimum security grille constructed with heavy gauge aluminum louvers that are reinforced and welded to a steel sleeve
- ✦ The series SG2000 is designed for sidewall applications. A rear operated opposed blade damper is available as an option
- ✦ Series SG2000 is an excellent choice for a return grille in minimum security, supervised areas. Applications for the series SG2000 include minimum security areas in federal correctional facilities, state and local prisons, psychiatric hospitals, and manufacturing plants. The SG2000 is also an excellent choice for public areas to resist vandalism

Extruded Aluminum		
Deflection	Single Face	Dual Face (Transfer Grille)
0°	SG2000-1	SG2000-2
15°	SG2015-1	SG2015-2
30°	SG2030-1	SG2030-2



➔ Maximum Security Grilles ➔ Square Holes/Mesh Face ➔ Model SGSP ➔ Steel

Product Details

- ✪ The series SGSP is a supply maximum security steel grille and has a face plate perforated with 2' square holes separated by 1" wide fret bars. A woven steel mesh screen is inserted directly behind the face panel and is sandwiched by a steel backup plate
- ✪ The series SGSP is designed for sidewall applications. A rear operated opposed blade damper is available as an option
- ✪ Series SGSP is an excellent choice for maximum security applications such as federal correctional facilities, state and local prisons, psychiatric hospitals, as well as manufacturing plants. The SGSP is also an excellent choice for public areas to resist vandalism

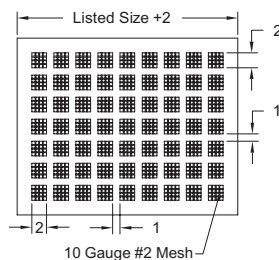
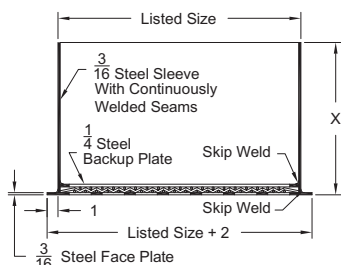


Model SGSP Shown

Standard Finish: 01 White

Sideview, dimensions are in inches

Security Grille - Square Holes - Mesh Screen Face Model SGSP



1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 01 White Note: Contact Factory for other finish	OBD - sleeve mounted steel damper :221 OBDA - sleeve mounted aluminum damper . . :221 SAB - Steel Anchors BSA - Bolted Steel Angles WSA - Welded Steel Angles SBR - Security Bars Screw Holes	LSA - Loose Steel Angles WAF - Welded Angle Frame	<ul style="list-style-type: none"> • Neck Sizes available in 2" increments as listed • Damper can be mounted for rear operation with standard flat tip screwdriver. Due to tight bar spacing, face operated dampers are not recommended • Face plate, sleeve and horizontal blades are 14 gauge steel • Wire mesh is 10 gauge by #2



➔ Maximum Security Grilles ➔ Round Perforated Holes ➔ Series SGRP ➔ Steel

Product Details

- ★ The series SGRP is a supply maximum security steel grille and has round holes and a perforated face plate
- ★ The series SGRP is designed for sidewall applications. A rear operated opposed blade damper is available as an option
- ★ Series SGRP is an excellent choice for maximum security applications such as federal correctional facilities, state and local prisons, psychiatric hospitals, as well as manufacturing plants where security is of paramount concern. This grille can be used for both supply and return applications

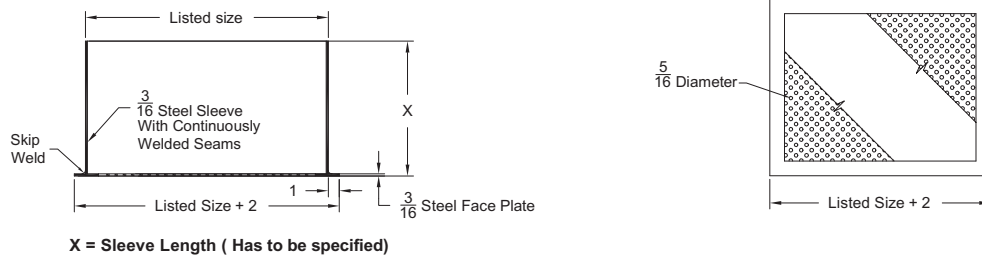


Model SGRP Shown

Standard Finish: 01 White

Sideview, dimensions are in inches

Security Grille - With Perforated Face Model SGRP



Security Products



SEC

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
<p>Standard Finish: 01 White</p> <p>Note: Contact Factory for other finish</p>	<p>OBDA - sleeve mounted aluminum damper221</p> <p>OBD - sleeve mounted steel damper221</p> <p>SAB - Steel Anchors</p> <p>BSA - Bolted Steel Angles</p> <p>WSA - Welded Steel Angles</p> <p>SBR - Security Bars</p> <p>Screw Holes</p>	<p>LSA - Loose Steel Angles</p> <p>WAF - Welded Angle Frame</p>	<ul style="list-style-type: none"> • Neck Sizes available in 2" increments as listed • Damper can be mounted for rear operation with standard flat tip screwdriver. Due to tight bar spacing, face operated dampers are not recommended • Face plate, sleeve and horizontal blades are 14 gauge steel

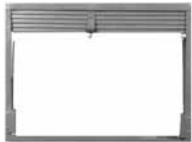
FFP



FIRE RATED PRODUCTS

FIRE RATED PRODUCTS

T-Bar Module = 24 x 24



Model FD11 AH

Thinline 2" Frames - Blades in Airstream - Series FD11 A

- ★ 1 1/2 hour UL fire resistance
- ★ Rated for use in 2 hour fire partitions
- ★ Heavy duty rollformed steel construction
- ★ Meets NFPA 90a requirements for vertical or horizontal mounts
- ★ 2" deep frame
- ★ Optional 12" deep sleeve

Horizontal Application	Vertical Application
FD11 AH	FD11 AV



Model FD12 AH

Standard 4 1/4" Frames - Blades in Airstream - Series FD12 A

- ★ 1 1/2 hour UL fire resistance
- ★ Rated for use in 2 hour partitions
- ★ Heavy duty rollformed steel construction
- ★ Meets NFPA 90a requirements for vertical or horizontal mounts
- ★ 4 1/4" deep frame
- ★ Optional 12" deep sleeve

Horizontal Application	Vertical Application
FD12 AH	FD12 AV



Model FD11 BH

Thinline 2" Frames - Blades out of Airstream - Series FD11 B

- ★ 1 1/2 hour UL fire resistance
- ★ Rated for use in 2 hour fire partitions
- ★ Heavy duty rollformed steel construction
- ★ Meets NFPA 90a requirements for vertical or horizontal mounts
- ★ 2" deep frame
- ★ Optional 12" deep sleeve

Horizontal Application	Vertical Application
FD11 BH	FD11 BV



Model FD12 BH

Standard 4 1/4" Frames - Blades out of Airstream - Series FD12 B

- ★ 1 1/2 hour UL fire resistance
- ★ Rated for use in 2 hour partitions
- ★ Heavy duty rollformed steel construction
- ★ Meets NFPA 90a requirements for vertical or horizontal mounts
- ★ 4 1/4" deep frame
- ★ Optional 12" deep sleeve

Horizontal Application	Vertical Application
FD12 BH	FD12 BV



Model FD11 C

Thinline 2" Frames - Round Inlet/Outlet - Series FD11 C

- ★ 1 1/2 hour UL fire resistance
- ★ Rated for use in 2 hour fire partitions
- ★ Heavy duty rollformed steel construction
- ★ Meets NFPA 90a requirements for vertical or horizontal mounts
- ★ 2" deep frame
- ★ Optional 12" deep sleeve

Horizontal Application	Vertical Application
FD11 CH	FD11 CV





Model FD12 C

Standard 4 1/4" Frames - Round Inlet/Outlet - Series FD12 C

- ★ 1 1/2 hour UL fire resistance
- ★ Rated for use in 2 hour partitions
- ★ Heavy duty rollformed steel construction
- ★ Meets NFPA 90a requirements for vertical or horizontal mounts
- ★ 4 1/4" deep frame
- ★ Optional 12" deep sleeve

Horizontal Application	Vertical Application
FD12 CH	FD12 CV



Model 5500S-6 FRS

Square/Rectangular Louver Face Ceiling Diffusers with Radiation Damper for T-bar Lay-in - Series 5500S FRS

- ★ Three hour UL classified ceiling diffuser system
- ★ Complete factory package - diffuser, damper, & blanket
- ★ Factory assembled — Ready to install



Model 5700-6 FRS

Square Face Diffusers - Round Neck 2-Cone with Radiation Damper for T-bar Lay-in - Series 5700 FRS

- ★ Three hour UL classified ceiling diffuser system
- ★ Complete factory package - diffuser, damper, & blanket
- ★ Factory assembled — Ready to install



Model 5800-6 FRS

Square Face Diffusers - Round Neck 3-Cone with Radiation Damper for T-bar Lay-in - Series 5800 FRS

- ★ Three hour UL classified ceiling diffuser system
- ★ Complete factory package - diffuser, damper, & blanket
- ★ Factory assembled — Ready to install
- ★ Optional volume damper on select models

Supply	
Fixed Volume	Adjustable Volume
5800-6 FRS	5800-6 FRSA



Model 7500-6 FRS

Perforated Ceiling Diffuser - Face Mounted Adjustable Pattern Controller with Radiation Damper for T-bar Lay-in - Series 7500 FRS

- ★ Three hour UL classified ceiling diffuser system
- ★ Complete factory package - diffuser, damper, & blanket
- ★ Factory assembled — Ready to install
- ★ Optional volume damper on select models

Flush Face	Supply		Return
	Fixed Volume	Adjustable Volume	Fixed Volume
Round Neck	7500-6 FRS	7500-6 FRSA	7500R-6 FRS
Square Neck	7550-6 FRS	7550-6 FRSA	7550R-6 FRS

Drop Face	Supply		Return
	Fixed Volume	Adjustable Volume	Fixed Volume
Round Neck	7500-6 DF FRS	7500-6 DF FRSA	7500R-6 DF FRS
Square Neck	7550-6 DF FRS	7550-6 DF FRSA	7550R-6 DF FRS



**Model
7600-6 FRS**

Perforated Ceiling Diffuser - Curved Blade - Neck Mounted Pattern Controller with Radiation Damper for T-bar Lay-in - Series 7600 FRS

- ✦ Three hour UL classified ceiling diffuser system
- ✦ Complete factory package - diffuser, damper, & blanket
- ✦ Factory assembled — Ready to install

	Flush Face			Drop Face	
	Supply	Return		Supply	Return
Round Neck	7600-6 FRS	7600R-6 FRS	Round Neck	7600-6 DF FRS	7600R-6 DF FRS
Square Neck	7650-6 FRS	7650R-6 FRS	Square Neck	7650-6 DF FRS	7650R-6 DF FRS



**Model
CC5 FRS**

Sidewall/Ceiling Return Grilles & Registers with Radiation Damper for T-bar Lay-in - Series CC5 FRS

- ✦ Three hour UL classified ceiling diffuser system
- ✦ Complete factory package - diffuser, damper, & blanket
- ✦ Factory assembled - Ready to install



**Series
PRTB FRS**

Perforated Screen - Non-Ducted - Return with Radiation Damper for T-bar Lay-in - Series PRTB FRS

- ✦ Three hour UL classified ceiling diffuser system
- ✦ Complete factory package - diffuser, damper, & blanket
- ✦ Factory assembled - Ready to install

Aluminum	Steel
PRTB FRS	SPRTB FRS



Model RD-10

Round Radiation Dampers - Series RD-10

- ✦ Three hour UL fire resistant classification
- ✦ Approved for use with flexible duct, steel duct, and non-ducted supply/return applications
- ✦ Heavy duty rollformed steel construction
- ✦ Optional adjustable volume control

Fixed Volume	Adjustable Volume
RD-10	RD-10A



Model RD-20

Square Radiation Dampers - Series RD-20

- ✦ Three hour UL fire resistant classification
- ✦ Approved for use with flexible duct, steel duct, and non-ducted supply/return applications
- ✦ Heavy duty rollformed steel construction
- ✦ Optional adjustable volume control

Fixed Volume	Adjustable Volume
RD-20	RD-20A

TRIM

Earthquake Tab

Match Tabs

Overall Face S

T-Bar Mo

ENGINEERED POLYMER PRODUCTS

ENGINEERED POLYMER PRODUCTS



Engineered Polymer Ceiling Diffusers - Louver Face - Series EP5000

- ✦ For use in ceiling applications which call for a clean, smooth appearance, lightweight, corrosion resistant, and ease of installation
- ✦ For flush surface mount or inverted T-bar Lay-in ceiling grid systems

Model EP5000

Additional product information available at www.metalaire.com

Surface Mount	T-bar Lay-in
EP5000-1	EP5000-6



Engineered Polymer Cube Core - Eggcrate Return/Exhaust - Series EPCC5

- ✦ Attractive 1/2" x 1/2" grid by 1/2" deep design
- ✦ Available for non-ducted applications
- ✦ Can be used with an aluminum transition for use with round duct.

Model EPCC5

Additional product information available at www.metalaire.com

Surface Mount
EP-CC5-1



Engineered Polymer Grilles & Registers - Louver Face Return/Exhaust - Series EPRH

- ✦ Fixed 45° angled deflecting blades provide a vision obscured appearance
- ✦ Horizontal 45° angled fixed vanes are on 3/4" centers

Model EPRH

Additional product information available at www.metalaire.com



Ceiling Framing

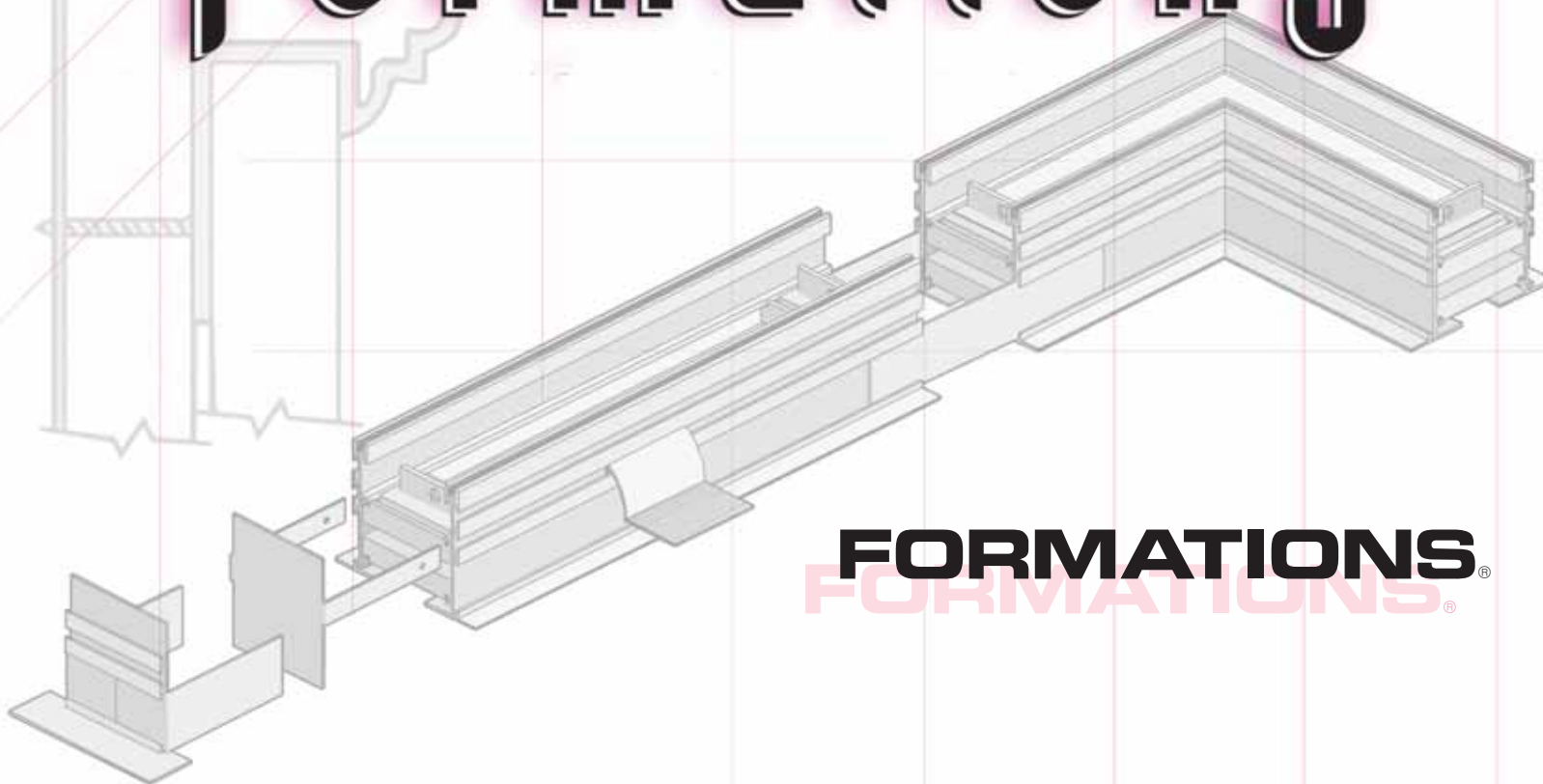
F4

F1

FORMER

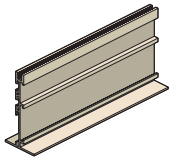
formations™

Table and
Saddle



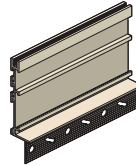
FORMATIONS®
FORMATIONS®

Border Styles



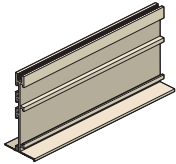
Border A

Our most versatile Formations® border option, Border A is ideal for either hard or acoustical ceilings, as well as any sidewall application. Border A provides you with total freedom to incorporate bends and curves in any direction, which means you can select any air flow pattern for maximum comfort and design without restrictions.



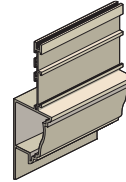
Border B

For beautifully smooth transitions, Border B lets you hide Formations® where ceilings and walls intersect. Because a speedy installation saves everyone time and money, we've incorporated a specially designed leg, to ensure a quick, professional finish.



Border C

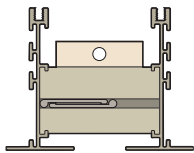
Invisible by design, Border C is a great option when you choose to completely hide your Formations® diffuser. Cover the flange of Border C with drywall tape and spackle for a totally concealed installation. All that's visible is a very sleek, beautiful black line.



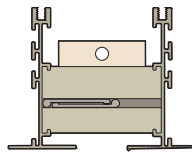
Border D
Patent # 6,648,752

When you want to go beyond concealing to creating a touch of elegance, Border D® provides a fluid integration with wall and ceiling transitions by uniquely disguising the diffuser as a design element. Crown molding, wood trim, marble finish or any of a variety of options... Border D® provides a clean, elegant style you'll only find with Formations®.

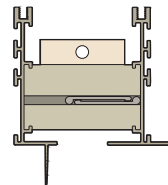
Combination Border Options



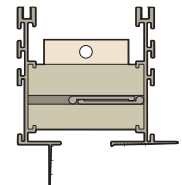
Border AA



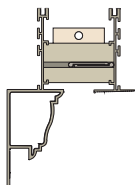
Border AC



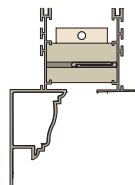
Border BA



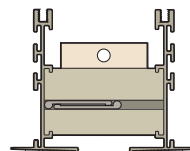
Border BC



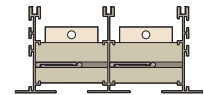
Border DC



Border DA



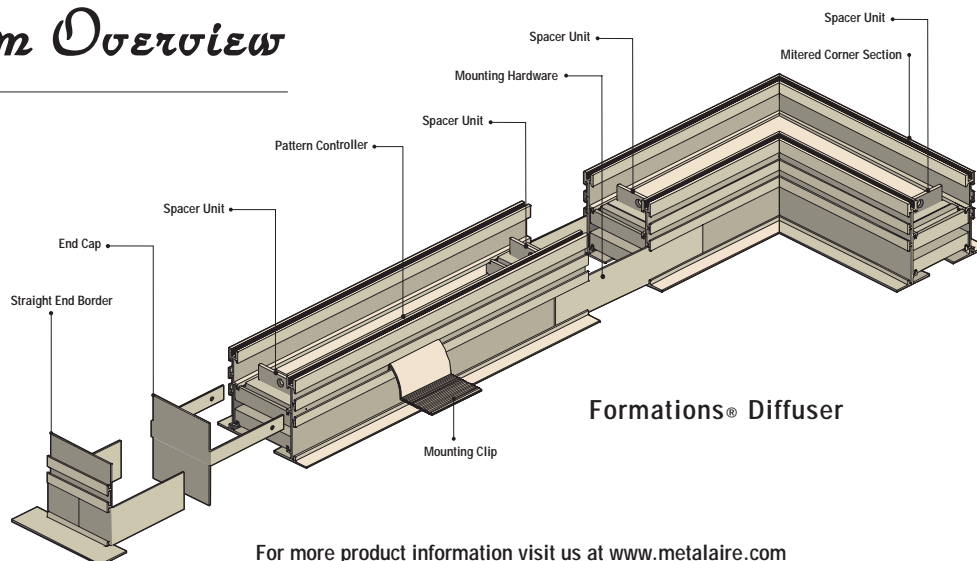
Border CC



Border AA
2 Slot

Formations

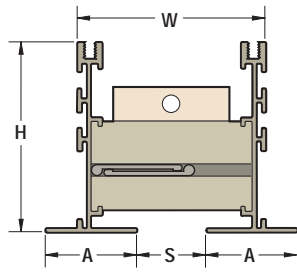
System Overview



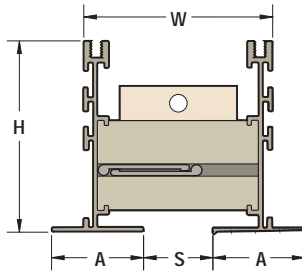
Formations® Diffuser

For more product information visit us at www.metalaire.com

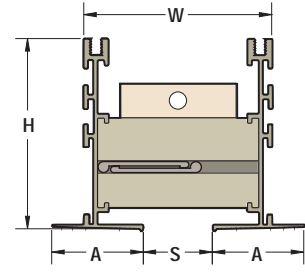
Combination Border Options - Dimensions - One Slot



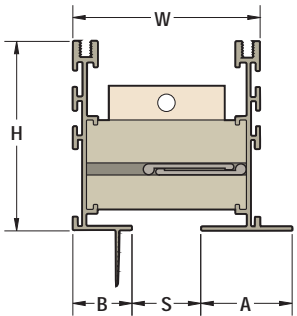
BORDER AA



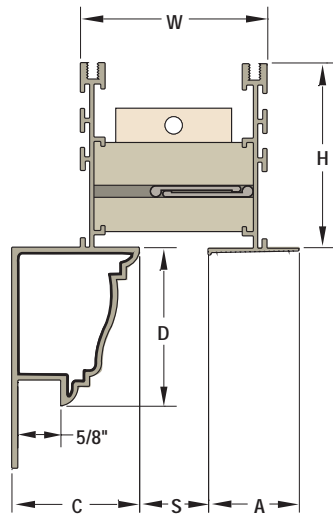
BORDER AC



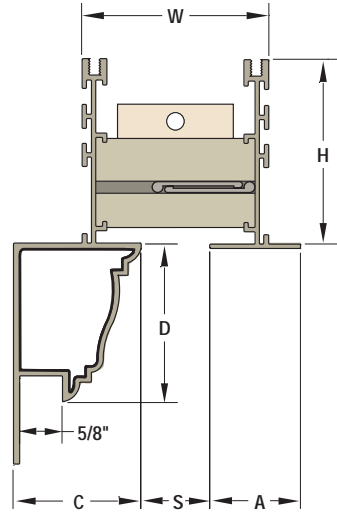
BORDER CC



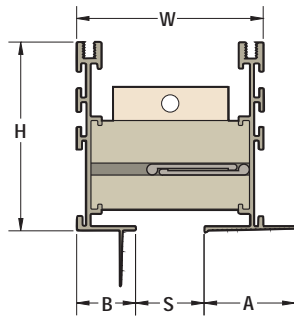
BORDER BA



BORDER DC



BORDER DA

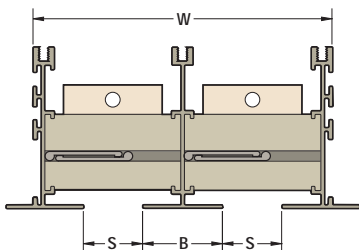


BORDER BC

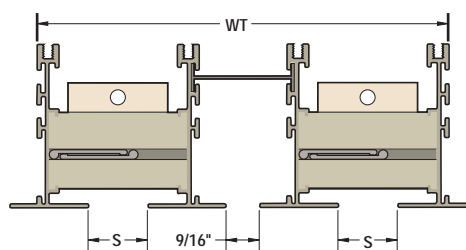
MODEL	S SLOT WIDTH	W WIDTH	A BORDER WIDTH	B BORDER WIDTH	H HEIGHT	C BORDER D WIDTH	D BORDER D HEIGHT
FAL-10	1	2 3/4	1 5/16	7/8	2 3/4	1 7/8	2 5/16
FAL-15	1 1/2	3 3/4	1 9/16	1 1/8	2 3/4	-----	-----
FAL-20	2	4 3/4	1 3/4	1 3/8	2 3/4	2 3/8	3 1/16
FAL-25	2 1/2	5 3/4	2 1/16	1 5/8	3 3/16	-----	-----
FAL-30	3	6 3/4	2 5/16	1 7/8	3 5/8	-----	-----

All dimensions in inches.

Combination Border Options - Dimensions - Two Slot



BORDER AA 2 SLOT



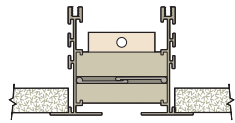
BORDER AA 2T SLOT

MODEL	S SLOT WIDTH	B BORDER WIDTH	W WIDTH	WT WIDTH
FAL-10	1	1 3/8	5 1/8	6 15/16
FAL-15	1 1/2	1 7/8	7 1/8	8 15/16
FAL-20	2	2 3/8	9 1/8	9 15/16
FAL-25	2 1/2	2 7/8	11 1/8	11 15/16
FAL-30	3	3 3/8	13 1/8	13 15/16

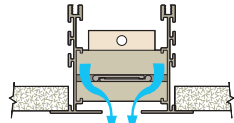
All dimensions in inches.

FOR - Formations

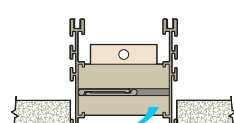
Pattern Controllers - Standard



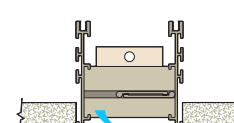
FULLY DAMPERED



VERTICAL

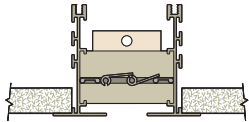


LEFT

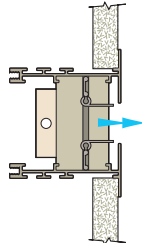


RIGHT

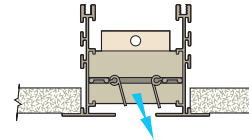
Pattern Controllers - Combo



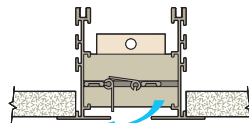
FULLY DAMPERED



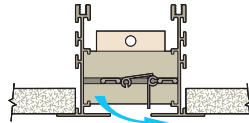
SIDEWALL



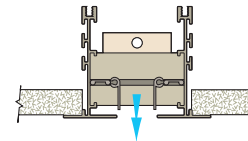
VERTICAL OFFSET



LEFT

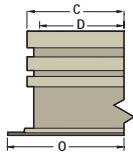


RIGHT

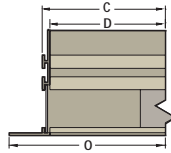


VERTICAL

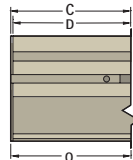
End Fabrication Dimensions



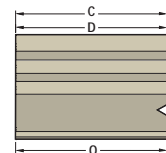
MITERED END



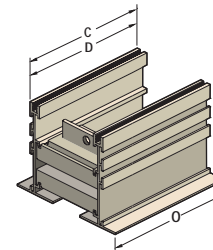
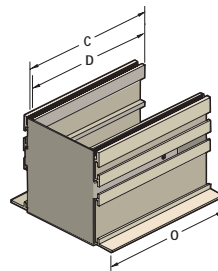
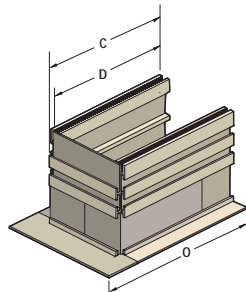
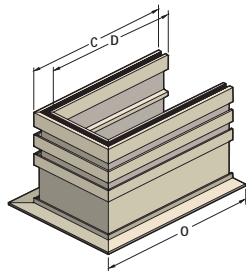
STRAIGHT END



END CAP



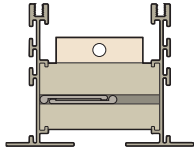
OPEN END



Formations

FOR

PO		STRAIGHT	STRAIGHT	STRAIGHT	OPEN	OPEN	OPEN	MITERED	MITERED	MITERED	OPEN	END CAP	END CAP	END CAP	OPEN
BORDER TYPE	SLOT WIDTH	C	O	C	O	C	O	C	O	C	O	C	O	C	O
AA	1	D+ ³ / ₈	D+2 ¹ / ₈	D+ ³ / ₁₆	D+1 ¹ / ₁₆	D	D	D+ ³ / ₄	D+1 ⁵ / ₈	D+ ³ / ₈	D+ ¹³ / ₁₆	D+ ¹ / ₈	D+ ¹ / ₈	D+ ¹ / ₁₆	D+ ¹ / ₁₆
	1.5	D+ ³ / ₈	D+2 ¹ / ₈	D+ ³ / ₁₆	D+1 ¹ / ₁₆	D	D	D+ ³ / ₄	D+1 ⁵ / ₈	D+ ³ / ₈	D+ ¹³ / ₁₆	D+ ¹ / ₈	D+ ¹ / ₈	D+ ¹ / ₁₆	D+ ¹ / ₁₆
	2	D+ ³ / ₈	D+2 ¹ / ₈	D+ ³ / ₁₆	D+1 ¹ / ₁₆	D	D	D+ ³ / ₄	D+1 ⁵ / ₈	D+ ³ / ₈	D+ ¹³ / ₁₆	D+ ¹ / ₈	D+ ¹ / ₈	D+ ¹ / ₁₆	D+ ¹ / ₁₆
	2.5	D+ ³ / ₈	D+2 ¹ / ₈	D+ ³ / ₁₆	D+1 ¹ / ₁₆	D	D	D+ ³ / ₄	D+1 ⁵ / ₈	D+ ³ / ₈	D+ ¹³ / ₁₆	D+ ¹ / ₈	D+ ¹ / ₈	D+ ¹ / ₁₆	D+ ¹ / ₁₆
	3	D+ ³ / ₈	D+2 ¹ / ₈	D+ ³ / ₁₆	D+1 ¹ / ₁₆	D	D	D+ ³ / ₄	D+1 ⁵ / ₈	D+ ³ / ₈	D+ ¹³ / ₁₆	D+ ¹ / ₈	D+ ¹ / ₈	D+ ¹ / ₁₆	D+ ¹ / ₁₆
BA	1	N/A	N/A	N/A	N/A	D	D	N/A	N/A	N/A	N/A	D+ ¹ / ₈	D+ ¹ / ₈	D+ ¹ / ₁₆	D+ ¹ / ₁₆
AC	1.5	N/A	N/A	N/A	N/A	D	D	N/A	N/A	N/A	N/A	D+ ¹ / ₈	D+ ¹ / ₈	D+ ¹ / ₁₆	D+ ¹ / ₁₆
BC	2	N/A	N/A	N/A	N/A	D	D	N/A	N/A	N/A	N/A	D+ ¹ / ₈	D+ ¹ / ₈	D+ ¹ / ₁₆	D+ ¹ / ₁₆
CC	2	N/A	N/A	N/A	N/A	D	D	N/A	N/A	N/A	N/A	D+ ¹ / ₈	D+ ¹ / ₈	D+ ¹ / ₁₆	D+ ¹ / ₁₆
DA	2.5	N/A	N/A	N/A	N/A	D	D	N/A	N/A	N/A	N/A	D+ ¹ / ₈	D+ ¹ / ₈	D+ ¹ / ₁₆	D+ ¹ / ₁₆
DC	3	N/A	N/A	N/A	N/A	D	D	N/A	N/A	N/A	N/A	D+ ¹ / ₈	D+ ¹ / ₈	D+ ¹ / ₁₆	D+ ¹ / ₁₆



Series FAL

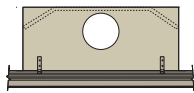
Additional product information available at www.metalaire.com

Formations® Linear: Continuous - Series FAL

- ✦ Formations® Linear satisfies the most demanding engineering and architectural criteria, providing both superior air distribution performance and sculptured elegance
- ✦ Specially designed air pattern controllers are easily adjustable to satisfy a myriad of applications
- ✦ Available in 24" increments, pattern controllers allow the air flow to be directed horizontally, to the left, right or vertically
- ✦ Formations® Linear is available for straight and curved applications

FAL				
1" Slot Width	1.5" Slot Width	2" Slot Width	2.5" Slot Width	3" Slot Width
FAL-10	FAL-15	FAL-20	FAL-25	FAL-30

FALC (for concealed hanger brackets)				
1" Slot Width	1.5" Slot Width	2" Slot Width	2.5" Slot Width	3" Slot Width
FALC-10	FALC-15	FALC-20	FALC-25	FALC-30



Series FAP

Additional product information available at www.metalaire.com

Formations® Plenum - Standard/Hemmed - Series FAP

- ✦ The FAP (non-insulated) and FAPI (insulated) boot plenums are designed to connect the Formations® linear slot diffusers to the ducted supply or return system
- ✦ Units provide an even distribution of air into the plenum to maximize induction and occupant comfort
- ✦ FAPI boot plenum is fully insulated including the end caps
- ✦ Units can be used for both ducted and plenum returns
- ✦ Factory tested and manufactured FAP/FAPI plenums are built to fit securely into the Formations® plenum diffusers, reducing installation cost and minimizing leakage
- ✦ Available with an optional quadrant locking damper
- ✦ Models FAP/FAPI are shipped separate from Formations® Linear and require field attachment
- ✦ Available with hemmed plenum (models FAPH/FAPHI) for use with FALC concealed mounting

	(For FAL) Formations® Plenum				
	1" Slot Width	1.5" Slot Width	2" Slot Width	2.5" Slot Width	3" Slot Width
Non-Insulated Plenums	FAP-10	FAP-15	FAP-20	FAP-25	FAP-30
Insulated Plenums	FAPI-10	FAPI-15	FAPI-20	FAPI-25	FAPI-30

	(For FALC) Hemmed Formations® Plenum				
	1" Slot Width	1.5" Slot Width	2" Slot Width	2.5" Slot Width	3" Slot Width
Non-Insulated Plenums	FAPH-10	FAPH-15	FAPH-20	FAPH-25	FAPH-30
Insulated Plenums	FAPHI-10	FAPHI-15	FAPHI-20	FAPHI-25	FAPHI-30



Series FTS

Additional product information available at www.metalaire.com

Formations® Tee System - Series FTS

- ✦ Formations® Tee system includes model FAL and a plenum
- ✦ Available in 2', 4', or 5' lengths, with an internal plenum, the Formations® Tee system ensures your diffuser fits tightly into your 15/16", 9/16", or bolt-slot suspension system for a sleek, clean appearance
- ✦ A perfect choice for installation in an acoustical ceiling, the Formations® Tee system is easily repositioned, providing great flexibility
- ✦ Manufactured in pre-engineered lengths, the Tee system is available in 1", 1.5", and 2" slot widths

	15/16" & 9/16" Tee System		
	1" Slot Width	1.5" Slot Width	2" Slot Width
Non-Insulated Plenums	FTS-10	FTS-15	FTS-20
Insulated Plenums	FTSI-10	FTSI-15	FTSI-20

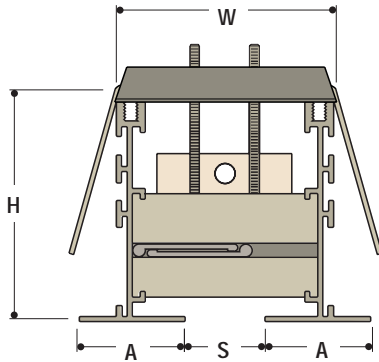
	Bolt-Slot Tee System		
	1" Slot Width	1.5" Slot Width	2" Slot Width
Non-Insulated Plenums	FTSB-10	FTSB-15	FTSB-20
Insulated Plenums	FTSBI-10	FTSBI-15	FTSBI-20

Formations



FOR

Concealed Mounting Models

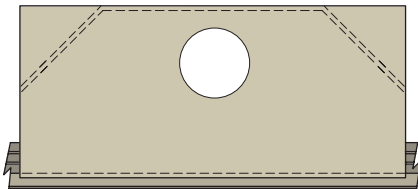


BORDER AA

FALC-10	• 1" SLOT
FALC-15	• 1.5" SLOT
FALC-20	• 2" SLOT
FALC-25	• 2.5" SLOT
FALC-30	• 3" SLOT

FORMATIONS UNIT SLOT WIDTH	NUMBER OF SLOTS	DIM W (WIDTH)	DIM H (HEIGHT)	DIM A (BORDER WIDTH)
1	1	2 3/4	2 3/4	1 5/16
1 1/2	1	3 3/4	2 3/4	1 9/16
2	1	4 3/4	2 3/4	1 13/16
2 1/2	1	5 3/4	3 3/16	2 1/16
3	1	6 3/4	3 5/8	2 5/16

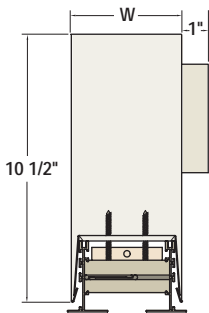
All dimensions are in inches.



Formations Plenums - Hemmed

FAPH-10	• 1" SLOT
FAPH-15	• 1.5" SLOT
FAPH-20	• 2" SLOT
FAPH-25	• 2.5" SLOT
FAPH-30	• 3" SLOT

FAPHI-10	• 1" SLOT	• INSULATED
FAPHI-15	• 1.5" SLOT	• INSULATED
FAPHI-20	• 2" SLOT	• INSULATED
FAPHI-25	• 2.5" SLOT	• INSULATED
FAPHI-30	• 3" SLOT	• INSULATED



FORMATIONS UNIT SLOT WIDTH	NUMBER OF SLOTS	DIM W (WIDTH)	NOMINAL LENGTH	PLENUM LENGTH	STANDARD AVAILABLE INLETS	
					Round	Oval
1	1	3 1/8	24, 36, 48, 60	23 3/4, 35 3/4, 47 3/4, 59 3/4	6	8, 10, 12
1 1/2	1	4 1/8	24, 36, 48, 60	23 3/4, 35 3/4, 47 3/4, 59 3/4	6	8, 10, 12
2	1	5 1/8	24, 36, 48, 60	23 3/4, 35 3/4, 47 3/4, 59 3/4	6	8, 10, 12
2 1/2	1	6 1/8	24, 36, 48, 60	23 3/4, 35 3/4, 47 3/4, 59 3/4	6	8, 10, 12
3	1	7 1/8	24, 36, 48, 60	23 3/4, 35 3/4, 47 3/4, 59 3/4	6	8, 10, 12
1	2	6 1/4	24, 36, 48, 60	23 3/4, 35 3/4, 47 3/4, 59 3/4	6	8, 10, 12
1 1/2	2	8 1/4	24, 36, 48, 60	23 3/4, 35 3/4, 47 3/4, 59 3/4	6	8, 10, 12
2	2	10 1/4	24, 36, 48, 60	23 3/4, 35 3/4, 47 3/4, 59 3/4	6	8, 10, 12
2 1/2	2	12 1/4	24, 36, 48, 60	23 3/4, 35 3/4, 47 3/4, 59 3/4	6	8, 10, 12
3	2	14 1/4	24, 36, 48, 60	23 3/4, 35 3/4, 47 3/4, 59 3/4	6	8, 10, 12

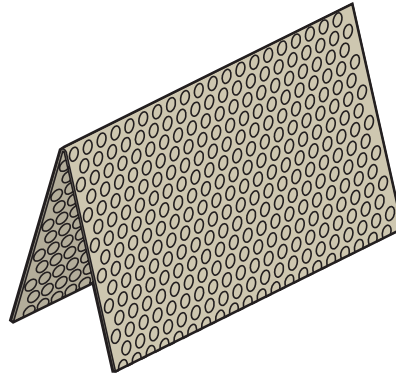
All dimensions are in inches.

Formations

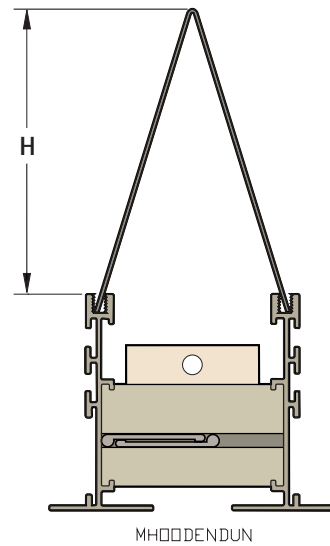
FOR

HOODS

FAR-10	• 1" SLOT
FAR-15	• 1.5" SLOT
FAR-20	• 2" SLOT
FAR-25	• 2.5" SLOT
FAR-30	• 3" SLOT

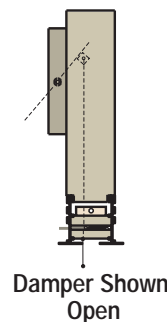
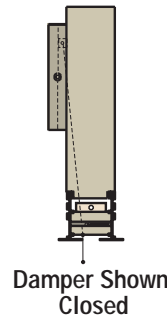
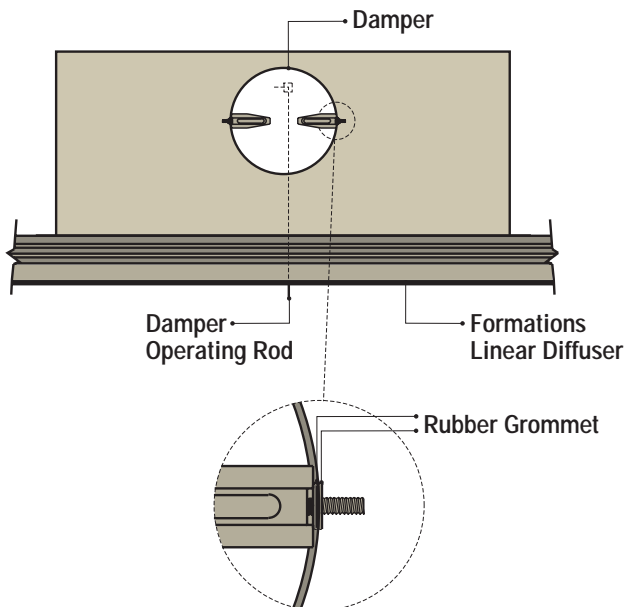


SLOT NUMBER	SLOT WIDTH	DIM H
1	1	3 1/8
	1 1/2	3 1/8
	2	3 1/8
	2 1/2	3 1/8
	3	3 1/8
SLOT NUMBER	SLOT WIDTH	DIM H
2	1	2 3/4
	1 1/2	3
	2	3 3/4
	2 1/2	5
	3	5 3/4

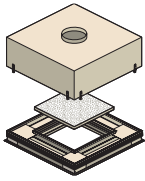


FACE OPERATED DAMPER

FODR • FACE OPERATED DAMPER



Formations
FOR



Series FAI

Additional product information available at www.metalaire.com

Formations® Integra - Supply/Return - Series FAI

- ✦ Laying in an acoustical tee bar or hard ceiling, your specified ceiling material actually becomes the face of the Integra diffuser, providing beautiful design integrity
- ✦ Integra is available in 1", 1.5", and 2" slot widths
- ✦ Available for either supply or return solutions and can be adjusted for one, two, three or four-way directional air flow
- ✦ Unit can be adjusted for horizontal or vertical air patterns

	Supply			Non Ducted Return		
	1" Slot Width	1.5" Slot Width	2" Slot Width	1" Slot Width	1.5" Slot Width	2" Slot Width
Non-Insulated Plenums	FAI-10	FAI-15	FAI-20	FAIR-10	FAIR-15	FAIR-20
Insulated Plenums	FAII-10	FAII-15	FAII-20			

FORMATIONS - Performance Data

PRESSURIZED CEILING PLENUM WITH STANDARD BLADE PATTERN CONTROLLER										
1.0" Slot Width	1 Slot	Airflow, cfm/lf	25	40	65	80	95	110	125	140
		Static Pressure	0.026	0.066	0.174	0.264	0.372	0.499	0.644	0.808
		NC (Noise Criteria)	<15	16	31	37	42	45	48	51
		Throw	6 9 15	10 13 19	14 17 24	15 19 26	17 20 29	18 22 31	19 23 33	20 25 35
1.0" Slot Width	2 Slots	Airflow, cfm/lf	40	60	100	120	145	165	190	210
		Static Pressure	0.017	0.038	0.105	0.151	0.221	0.286	0.379	0.463
		NC (Noise Criteria)	-	<15	26	32	38	41	45	47
		Throw	7 10 19	10 15 23	17 21 29	19 23 32	20 25 35	22 27 38	23 29 41	25 30 43
1.5" Slot Width	1 Slot	Airflow, cfm/lf	30	50	80	95	115	130	150	170
		Static Pressure	0.026	0.072	0.184	0.259	0.380	0.486	0.647	0.831
		NC (Noise Criteria)	<15	16	31	36	41	44	48	50
		Throw	6 9 16	10 15 21	15 19 26	17 20 29	18 22 32	19 24 34	21 25 36	22 27 38
1.5" Slot Width	2 Slots	Airflow, cfm/lf	45	75	120	145	175	195	225	255
		Static Pressure	0.017	0.048	0.123	0.179	0.261	0.324	0.431	0.553
		NC (Noise Criteria)	-	<15	25	31	37	40	44	47
		Throw	5 9 19	11 16 25	17 23 32	20 25 35	22 28 39	24 29 41	25 31 44	27 33 47
2.0" Slot Width	1 Slot	Airflow, cfm/lf	35	55	90	110	135	155	175	195
		Static Pressure	0.025	0.062	0.166	0.248	0.374	0.493	0.628	0.780
		NC (Noise Criteria)	-	<15	27	33	39	42	45	48
		Throw	5 9 17	9 14 22	15 20 28	18 23 31	20 24 34	21 26 37	22 28 39	24 29 41
2.0" Slot Width	2 Slots	Airflow, cfm/lf	55	85	135	165	205	235	265	295
		Static Pressure	0.016	0.039	0.099	0.148	0.229	0.301	0.383	0.474
		NC (Noise Criteria)	-	<15	20	27	34	38	41	44
		Throw	5 10 20	10 15 27	16 24 34	20 27 38	24 30 42	26 32 45	28 34 48	29 36 51
2.5" Slot Width	1 Slot	Airflow, cfm/lf	40	60	100	120	145	165	190	210
		Static Pressure	0.020	0.045	0.126	0.181	0.265	0.343	0.455	0.556
		NC (Noise Criteria)	-	<15	23	29	35	38	42	44
		Throw	5 9 18	9 14 23	15 21 29	18 23 32	20 25 35	22 27 38	23 29 41	25 30 43
2.5" Slot Width	2 Slots	Airflow, cfm/lf	60	90	150	180	220	250	285	315
		Static Pressure	0.012	0.026	0.073	0.105	0.156	0.202	0.262	0.320
		NC (Noise Criteria)	-	<15	17	22	29	33	37	40
		Throw	4 9 20	9 15 28	16 24 36	20 28 39	24 31 44	27 33 47	29 35 50	30 37 52
3.0" Slot Width	1 Slot	Airflow, cfm/lf	45	70	115	145	170	200	225	250
		Static Pressure	0.021	0.051	0.138	0.219	0.301	0.416	0.527	0.650
		NC (Noise Criteria)	-	<15	21	29	34	38	42	44
		Throw	5 9 19	10 15 25	16 22 32	20 25 35	22 27 38	24 29 42	25 31 44	27 33 47
3.0" Slot Width	2 Slots	Airflow, cfm/lf	70	105	175	220	255	300	340	420
		Static Pressure	0.011	0.025	0.070	0.111	0.150	0.207	0.266	0.406
		NC (Noise Criteria)	-	<15	16	23	28	33	37	43
		Throw	4 9 21	9 16 30	17 26 39	22 31 44	25 33 47	29 36 51	31 38 54	35 43 60

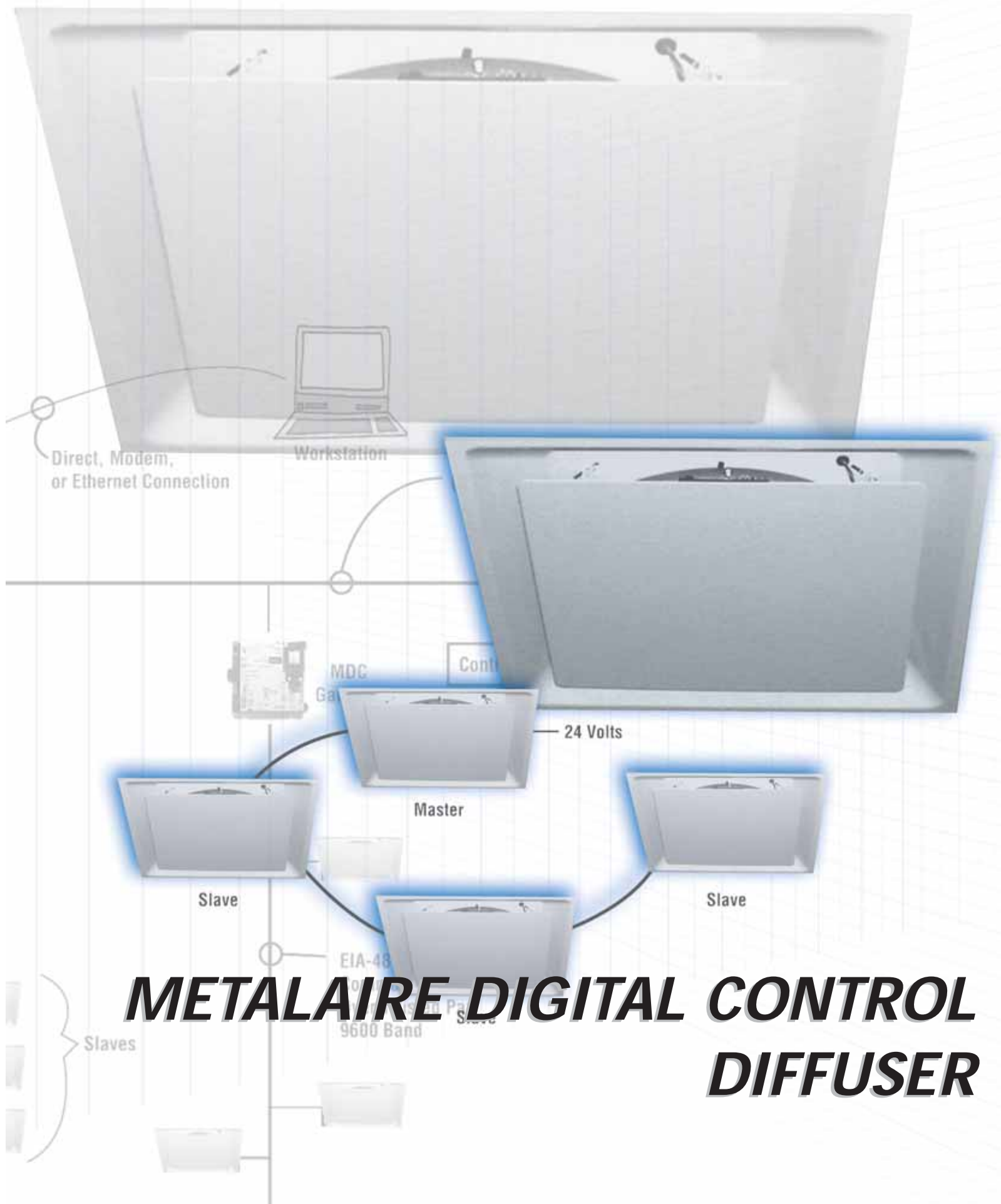
- All pressures are in inches of water.
- Isothermal throws are given for velocities of 150, 100, and 50 fpm.
- Throw values are based on a 1-way discharge from the slot with the controller set at 0 discharge. For 2-way discharges, throw is based upon the number and size of the slots throwing in each direction, with the total supply air flow split equally between all slots in the unit.
- Data were collected in accordance to ASHRAE Standard 70-1991 "Method of Testing for Rating the Performance of Air Outlets and Inlets."
- Performance data is based on an insulated plenum.

Table 1. NC correction for length

Length (feet)	2	4	6	8	10
Supply	-2	+0	+2	+3	+5
Return	+0	+3	+5	+6	+8

Table 2. Throw correction multiplier for length

Length (feet)	2	4	8	10	12
Throw Correction	0.72	0	1.5	1.7	1.8



METALAIRE DIGITAL CONTROL DIFFUSER

➔ Digital Controlled Diffuser ➔ Series MDC ➔ Steel

Product Details

✦ Superior Personal Comfort

The main function of an air distribution system is to provide comfort to a building's occupants. The MDC® is an economical solution to maximize personal comfort by allowing smaller zone control. An MDC® diffuser installed in an individual's office gives the occupant the ability to set the temperature for both heating and cooling comfort

✦ Flexibility

The MDC® has the flexibility to operate in applications ranging from office buildings, retail stores, schools, hospitals, and conference centers. Flexibility built into the MDC® allows the diffuser to be applied to a wide range of applications providing superior control and occupant comfort

✦ Interoperability

All MDC® diffusers are native BACnet devices and communicate using MS/TP protocol. These devices can communicate to any BACnet system regardless of system manufacturer giving building owners and operators the freedom to select and change building controls even after the system is installed. Using the METALAIRE® Portal, the MDC® diffusers can be set-up to communicate with Modbus or Johnson Control's N2 protocol. With the addition of a Serial LonTalk adapter, the MDC® can be integrated into a Lon system

✦ Ease of Installation

Installation of the MDC® is quick and easy. In the basic configuration, the MDC® only requires a 24 power connection and the unit will begin operation as a stand alone device. Add a twisted pair connection and you now can communicate over a multitude of building automation systems

✦ Ease of Start-up, Operation, and Trouble Shooting

The MDC® is easy to configure using the HHC hand held control. The HHC uploads all the operation functions for the MDC® operation. Built into each controller are LEDs designed to make trouble shooting easy. Installers and building operators from the floor can view the LEDs indicating normal operation, transferring firmware, auto-detecting baud rate, hardware failure, manual mode, and firmware error. Indicators also show TX transmit and RX receive displays

✦ Economic Alternative to a Conventional VAV System

When looking at the MDC® diffuser, one must consider the cost compared to a conventional system. The initial cost of an MDC® system is comparable to a conventional system when the entire installation, labor and control wiring is considered



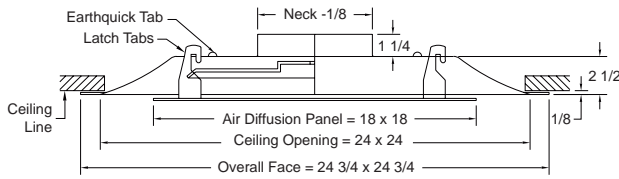
Model MDC Shown

Standard Finish: 01 White

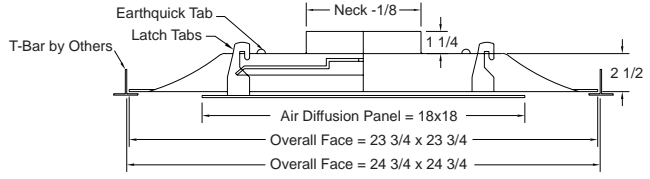
MDC - METALAIRE Digital Control Diffuser

Dimensions are in inches

Digital Controlled Diffuser - Steel
18" x 18" Square Bottom Panel
 Model MDC-1 - Surface Mount



Digital Controlled Diffuser - Steel
18" x 18" Square Bottom Panel
 Model MDC-6 - T-bar Lay-in



1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 01 White	HHC - Hand held controller MDC-G - MDC Gateway	120/24 - Volt Transformer 240/24 - Volt Transformer 277/24 - Volt Transformer 120/277/24 - Dual Voltage Transformer	<ul style="list-style-type: none"> MDC diffuser is shipped with all components and wiring harnesses required for installation Requires the additional of the HHC hand held remote to set-up and operate the MDC Diffusers

Model MDC - Performance

Inlet Static Pressure	Damper Percent Open		20	30	40	50	60	70	80	90	100
			Airflow Rate, CFM	45	60	75	85	95	105	115	125
0.1	Velocity Pressure, in. w.c.	0.003	0.006	0.009	0.012	0.015	0.018	0.021	0.025	0.029	
	Total Pressure, in. w.c.	0.103	0.106	0.109	0.112	0.115	0.118	0.121	0.125	0.129	
	NC	<15	<15	16	16	17	18	18	19	19	
	Throw	1-2-4	1-2-4	2-2-5	2-2-5	2-2-5	2-3-5	2-3-5	2-3-5	2-3-5	
0.2	Airflow Rate, CFM	80	100	120	135	150	165	180	190	205	
	Velocity Pressure, in. w.c.	0.010	0.016	0.023	0.029	0.036	0.044	0.052	0.058	0.068	
	Total Pressure, in. w.c.	0.210	0.216	0.223	0.229	0.236	0.244	0.252	0.258	0.268	
	NC	20	21	22	22	23	24	24	24	25	
0.3	Airflow Rate, CFM	90	115	140	160	185	205	220	240	255	
	Velocity Pressure, in. w.c.	0.013	0.021	0.032	0.041	0.055	0.068	0.078	0.093	0.105	
	Total Pressure, in. w.c.	0.313	0.321	0.332	0.341	0.355	0.368	0.378	0.393	0.405	
	NC	23	25	26	27	28	29	29	30	30	
0.4	Airflow Rate, CFM	105	140	165	195	215	240	265	285	305	
	Velocity Pressure, in. w.c.	0.018	0.032	0.044	0.061	0.075	0.093	0.114	0.131	0.150	
	Total Pressure, in. w.c.	0.418	0.432	0.444	0.461	0.475	0.493	0.514	0.531	0.550	
	NC	25	27	29	31	32	33	34	35	36	
0.5	Airflow Rate, CFM	120	155	190	220	245	275	300	320	345	
	Velocity Pressure, in. w.c.	0.023	0.039	0.058	0.078	0.097	0.122	0.146	0.166	0.192	
	Total Pressure, in. w.c.	0.523	0.539	0.558	0.578	0.597	0.622	0.646	0.666	0.692	
	NC	30	32	34	35	36	37	37	38	38	

See Page MDC-214 for Series MDC Performance Notes

Inlet Static Pressure	Damper Percent Open		20	30	40	50	60	70	80	90	100
			Airflow Rate, CFM	50	65	85	100	115	130	145	160
0.1	Velocity Pressure, in. w.c.	0.001	0.002	0.004	0.005	0.007	0.009	0.011	0.013	0.015	
	Total Pressure, in. w.c.	0.101	0.102	0.104	0.105	0.107	0.109	0.111	0.113	0.115	
	NC	16	16	17	17	18	18	19	20	20	
	Throw	1-2-4	1-2-4	2-2-5	2-2-5	2-3-5	2-3-5	2-3-6	2-3-6	2-3-6	
0.2	Airflow Rate, CFM	80	110	135	155	180	200	220	235	255	
	Velocity Pressure, in. w.c.	0.003	0.006	0.009	0.012	0.017	0.020	0.025	0.028	0.033	
	Total Pressure, in. w.c.	0.203	0.206	0.209	0.212	0.217	0.220	0.225	0.228	0.233	
	NC	25	26	26	27	27	28	28	28	28	
0.3	Airflow Rate, CFM	95	130	160	190	220	245	270	295	320	
	Velocity Pressure, in. w.c.	0.005	0.009	0.013	0.018	0.025	0.031	0.037	0.045	0.052	
	Total Pressure, in. w.c.	0.305	0.309	0.313	0.318	0.325	0.331	0.337	0.345	0.352	
	NC	29	30	31	31	32	32	33	33	33	
0.4	Airflow Rate, CFM	120	160	195	230	265	295	325	355	385	
	Velocity Pressure, in. w.c.	0.007	0.013	0.019	0.027	0.036	0.045	0.054	0.064	0.076	
	Total Pressure, in. w.c.	0.407	0.413	0.419	0.427	0.436	0.445	0.454	0.464	0.476	
	NC	32	33	34	35	36	37	38	38	39	
0.5	Airflow Rate, CFM	125	175	220	260	300	335	370	405	440	
	Velocity Pressure, in. w.c.	0.008	0.016	0.025	0.035	0.046	0.057	0.070	0.084	0.099	
	Total Pressure, in. w.c.	0.508	0.516	0.525	0.535	0.546	0.557	0.570	0.584	0.599	
	NC	35	36	38	38	39	39	40	40	40	



For more product information visit us at www.metalaire.com



METALAIRE Digital Control Diffuser



MDC

MDC - METALAIRE Digital Control Diffuser 5/2007

Model MDC - Performance

		Damper Percent Open									
		20	30	40	50	60	70	80	90	100	
10"	Inlet Static Pressure 0.1	Airflow Rate, CFM	50	75	95	120	140	160	180	200	220
		Velocity Pressure, in. w.c.	0.001	0.001	0.002	0.003	0.004	0.005	0.007	0.008	0.010
		Total Pressure, in. w.c.	0.101	0.101	0.102	0.103	0.104	0.105	0.107	0.108	0.110
		NC	17	18	19	19	20	21	21	22	22
		Throw	1-2-4	1-2-4	2-2-5	2-3-5	2-3-6	2-3-6	2-3-6	2-3-7	2-3-7
Inlet Static Pressure 0.2	Airflow Rate, CFM	80	115	145	180	210	245	275	305	335	
	Velocity Pressure, in. w.c.	0.001	0.003	0.004	0.007	0.009	0.013	0.016	0.019	0.024	
	Total Pressure, in. w.c.	0.201	0.203	0.204	0.207	0.209	0.213	0.216	0.219	0.224	
	NC	30	30	30	31	31	31	31	32	32	
	Throw	2-3-6	2-3-7	2-4-7	3-4-8	3-4-9	3-5-9	3-5-10	3-5-10	4-5-11	
Inlet Static Pressure 0.3	Airflow Rate, CFM	105	145	190	225	265	305	340	375	410	
	Velocity Pressure, in. w.c.	0.002	0.004	0.008	0.011	0.015	0.019	0.024	0.029	0.035	
	Total Pressure, in. w.c.	0.302	0.304	0.308	0.311	0.315	0.319	0.324	0.329	0.335	
	NC	35	35	36	36	36	36	36	37	37	
	Throw	2-4-7	3-4-8	3-5-9	3-5-10	4-5-10	4-6-11	4-6-12	4-6-12	4-7-13	
Inlet Static Pressure 0.4	Airflow Rate, CFM	130	185	235	280	325	370	415	460	500	
	Velocity Pressure, in. w.c.	0.004	0.007	0.012	0.016	0.022	0.029	0.036	0.044	0.052	
	Total Pressure, in. w.c.	0.404	0.407	0.412	0.416	0.422	0.429	0.436	0.444	0.452	
	NC	39	40	40	41	41	41	42	42	42	
	Throw	3-5-7	4-5-9	4-6-10	4-6-11	4-7-11	5-7-12	5-7-13	5-8-14	5-8-14	
Inlet Static Pressure 0.5	Airflow Rate, CFM	135	195	205	305	360	410	460	510	560	
	Velocity Pressure, in. w.c.	0.004	0.008	0.013	0.019	0.027	0.035	0.044	0.055	0.066	
	Total Pressure, in. w.c.	0.504	0.508	0.513	0.519	5.27	0.535	0.544	0.555	0.566	
	NC	41	41	41	42	42	42	42	43	43	
	Throw	3-5-7	4-6-9	4-6-10	5-7-11	5-7-12	5-8-13	5-8-14	6-9-14	6-9-15	

Performance Notes for Series MDC
 All data are tested in accordance with
 ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic feet per minute (air)
- fpm - Velocity of air stream in feet per minute
- Pv - Velocity pressure
(inches of water column)
- Pt - Total pressure (inches of water column)
- Ps - Static pressure = Pt - Pv
(inches of water column)
- Throw - Cataloged throw is horizontal distances
in feet to the terminal velocities of
150 - 100 - 50 fpm with ambient supply
air temperature
- NC - Noise criterion, sound pressure level.
NC ratings are based on sound power
level (Lw) RE: 10E-12 watts minus a
10 dB room attenuation in all
octave bands

		Damper Percent Open									
		20	30	40	50	60	70	80	90	100	
12"	Inlet Static Pressure 0.1	Airflow Rate, CFM	50	75	100	125	150	170	195	220	240
		Velocity Pressure, in. w.c.	0.000	0.001	0.001	0.002	0.002	0.003	0.004	0.005	0.006
		Total Pressure, in. w.c.	0.100	0.101	0.101	0.102	0.102	0.103	0.104	0.105	0.106
		NC	19	20	20	21	22	23	23	24	25
		Throw	1-2-3	1-2-4	2-2-5	2-3-5	2-3-6	2-3-6	2-3-6	2-3-7	2-3-7
Inlet Static Pressure 0.2	Airflow Rate, CFM	75	110	140	185	220	260	295	330	370	
	Velocity Pressure, in. w.c.	0.001	0.001	0.002	0.003	0.005	0.007	0.009	0.011	0.014	
	Total Pressure, in. w.c.	0.201	0.201	0.202	0.203	0.205	0.207	0.209	0.211	0.214	
	NC	29	29	30	31	31	32	32	32	33	
	Throw	2-2-5	2-3-6	2-3-7	2-4-7	3-4-8	3-4-9	3-5-9	3-5-10	4-5-11	
Inlet Static Pressure 0.3	Airflow Rate, CFM	95	145	190	235	280	330	375	420	465	
	Velocity Pressure, in. w.c.	0.001	0.002	0.004	0.006	0.008	0.011	0.014	0.018	0.022	
	Total Pressure, in. w.c.	0.301	0.302	0.304	0.306	0.308	0.311	0.314	0.318	0.322	
	NC	35	36	36	37	37	37	38	38	38	
	Throw	2-3-6	3-4-8	3-4-9	3-5-10	3-5-10	4-6-11	4-6-12	4-6-13	4-7-13	
Inlet Static Pressure 0.4	Airflow Rate, CFM	115	170	225	280	335	390	440	495	550	
	Velocity Pressure, in. w.c.	0.001	0.003	0.005	0.008	0.011	0.015	0.020	0.025	0.031	
	Total Pressure, in. w.c.	0.401	0.403	0.405	0.408	0.411	0.415	0.420	0.425	0.431	
	NC	38	39	40	41	41	42	42	43	43	
	Throw	2-4-7	3-4-8	3-5-10	4-6-11	4-6-12	4-7-13	5-7-13	5-7-14	5-8-15	
Inlet Static Pressure 0.5	Airflow Rate, CFM	125	190	255	315	380	440	505	565	630	
	Velocity Pressure, in. w.c.	0.002	0.004	0.007	0.010	0.015	0.020	0.026	0.032	0.040	
	Total Pressure, in. w.c.	0.502	0.504	0.507	0.510	0.515	0.520	0.526	0.532	0.540	
	NC	41	42	42	43	43	43	44	44	44	
	Throw	3-4-7	3-5-9	4-6-10	4-6-11	5-7-12	5-8-13	5-8-14	6-9-15	6-9-16	

		Damper Percent Open									
		20	30	40	50	60	70	80	90	100	
14"	Inlet Static Pressure 0.1	Airflow Rate, CFM	50	75	105	130	160	190	220	250	280
		Velocity Pressure, in. w.c.	0.000	0.000	0.001	0.001	0.001	0.002	0.003	0.003	0.004
		Total Pressure, in. w.c.	0.100	0.100	0.101	0.101	0.101	0.102	0.103	0.103	0.104
		NC	21	22	23	24	25	25	26	27	27
		Throw	1-1-3	1-2-4	1-2-4	2-2-5	2-3-5	2-3-6	2-3-7	2-3-7	2-4-7
Inlet Static Pressure 0.2	Airflow Rate, CFM	75	115	155	195	235	275	315	355	400	
	Velocity Pressure, in. w.c.	0.000	0.001	0.001	0.002	0.003	0.004	0.005	0.007	0.009	
	Total Pressure, in. w.c.	0.200	0.201	0.201	0.202	0.203	0.204	0.205	0.207	0.209	
	NC	29	30	31	31	32	33	33	34	34	
	Throw	1-2-4	2-3-6	2-3-6	2-4-7	3-4-7	3-4-9	3-5-9	3-5-10	4-5-11	
Inlet Static Pressure 0.3	Airflow Rate, CFM	90	140	190	240	290	345	395	445	500	
	Velocity Pressure, in. w.c.	0.000	0.001	0.002	0.003	0.005	0.006	0.009	0.011	0.014	
	Total Pressure, in. w.c.	0.300	0.301	0.302	0.303	0.305	0.306	0.309	0.311	0.314	
	NC	36	37	37	38	38	38	39	39	39	
	Throw	2-3-5	2-3-7	3-4-8	3-4-9	3-5-10	4-5-11	4-6-12	4-6-12	4-7-13	
Inlet Static Pressure 0.4	Airflow Rate, CFM	105	165	225	285	345	405	465	530	590	
	Velocity Pressure, in. w.c.	0.001	0.001	0.003	0.004	0.006	0.009	0.012	0.015	0.019	
	Total Pressure, in. w.c.	0.401	0.401	0.403	0.404	0.406	0.409	0.412	0.415	0.419	
	NC	38	39	40	40	41	42	42	43	43	
	Throw	2-3-6	3-4-8	3-5-9	4-5-11	4-6-12	4-6-13	5-7-14	5-7-15	5-8-15	
Inlet Static Pressure 0.5	Airflow Rate, CFM	125	190	255	325	390	460	530	600	670	
	Velocity Pressure, in. w.c.	0.001	0.002	0.004	0.006	0.008	0.012	0.015	0.020	0.024	
	Total Pressure, in. w.c.	0.501	0.502	0.504	0.506	0.508	0.512	0.515	0.520	0.524	
	NC	42	42	43	44	44	45	45	46	46	
	Throw	2-4-7	3-5-9	4-5-10	4-6-11	4-7-13	5-7-14	5-8-15	6-8-16	6-9-16	

METALAIRE Digital Control Diffuser



MDC

MDC - METALAIRE Digital Control Diffuser

MDC® Stand Alone



Simple Installation
Requires 24 Volt Connection

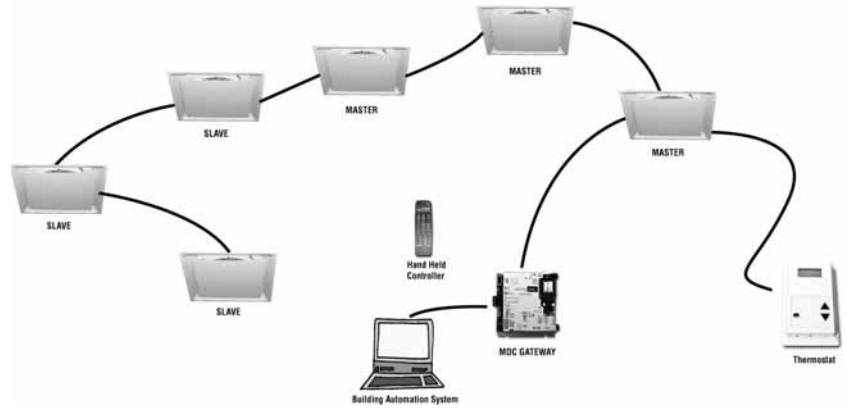
MDC® Master/Slave Units

Master MDC Can Control Up to 3 Slaves

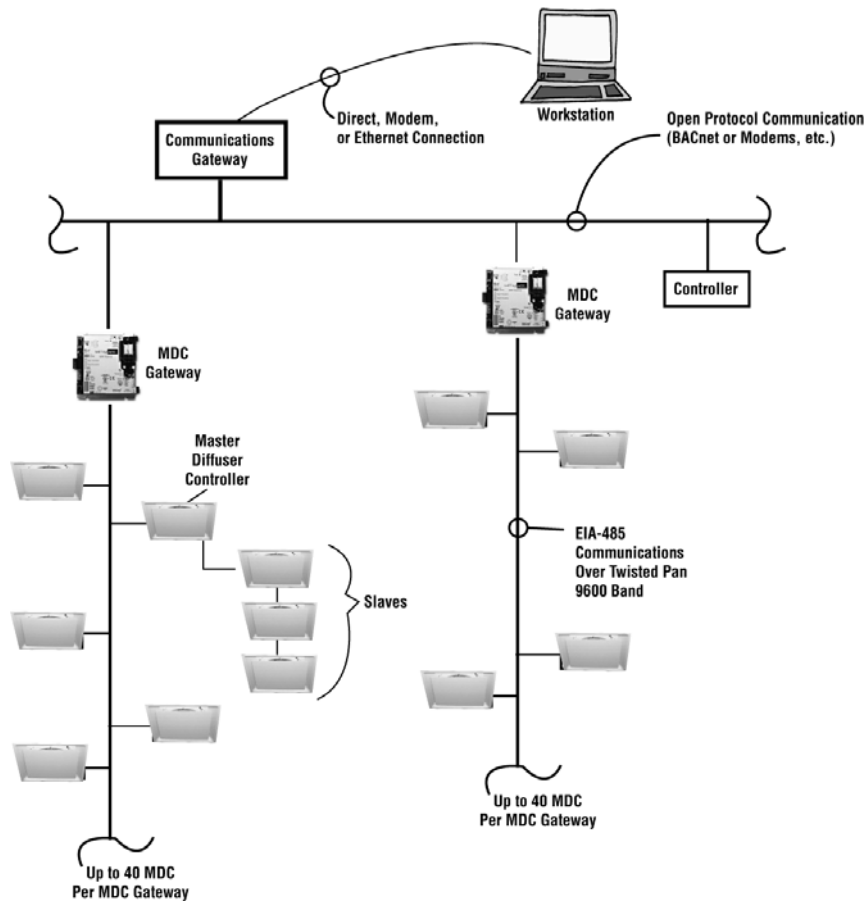


Expands to integrate into BACnet System

Control System Diagram



General Architecture Sketch

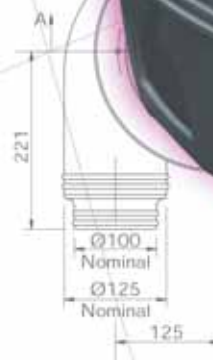
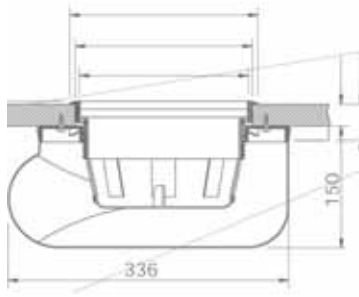
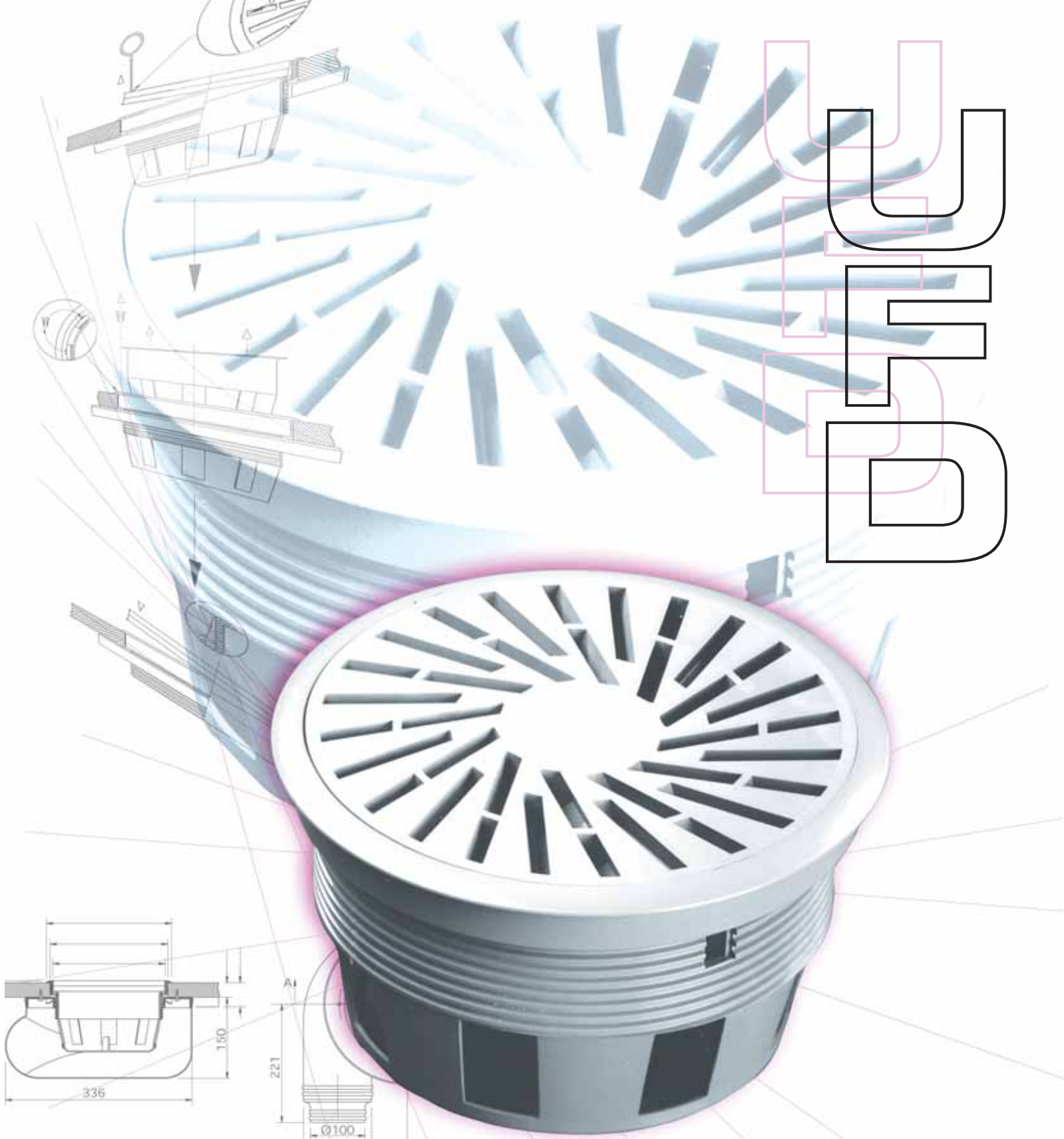


METALAIRE Digital Control Diffuser



MDC

UNDERFLOOR DIFFUSER



WFOP & WFOPV

UNDERFLOOR DIFFUSER

UNDERFLOOR
DIFFUSER

➔ Aircell Polymer Floor Diffuser ➔ Series WFO

Product Details

- ★ Unique "flip-over" design
- ★ Memory locating peg
- ★ Easy fit locking collar
- ★ Concealed bracket for concrete/slab flooring
- ★ Combined damper/dirt tray with incremental damper positioning



Model WFO Shown

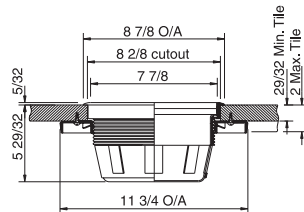
Series WFO - Introduction

The METALAIRE Aircell WFO series floor diffuser offers the choice of horizontal or vertical air patterns with its flip over design, as well as a host of other unique & patented features. The WFOV low pressure vertical supply disc offers vertical projection with a 50% increase in air volume capacity, compared with standard WFO units.

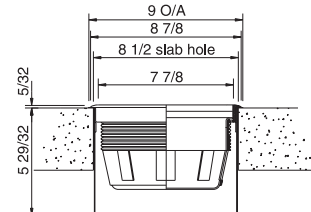
The WFO diffusers disc has been designed to resist permanent deformation when subjected to point loads up to 500 kg and all materials used are fire retardant. The WFOV diffuser disc is suitable for point loads up to 300 kg.

Dimensions are in inches

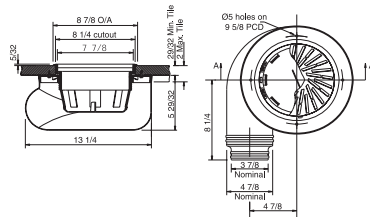
Aircell Polymer Floor Diffusers - Pressurized Floor Void
 Model WFO - Tile Installation
 Model WFOV - Low pressure vertical air pattern



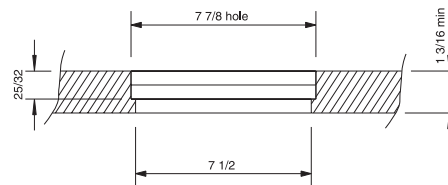
Aircell Polymer Floor Diffusers - Pressurized Void
 Model WFOV - Slab Floor Installation Supplied with a steel adaptor collar which is cast into the floor slab. The diffuser can then be installed into the collar with concealed spring clips



Aircell Polymer Floor Diffusers-Ducted Insulation with Plenum Supplied
 Model WFOP - Plenum snap fits onto the locking collar
 Model WFOPV - Low pressure vertical air pattern disk



Aircell Polymer Floor Diffusers - Step Drilled Installation
 Model WFOD - The diffuser disc only is supplied, suitable for installation into pre-cut holes in floor tiles



1. Available Finishes

Standard Finish:
 WFO diffusers are available in a state grey finish (RAL 7037 Mid Grey) as standard. Other colors can be specified subject to a minimum quantity.

2. Advantages

- Ability to change between horizontal and vertical settings instantly
- Commissioning settings are retained once set using the memory locating peg
- Reduced installation time with easy fit locking collar
- Quick fit plenum

AAA
CCC
CCC



ACCESSORIES
ACCESSORIES



Model 900D

Additional product information available at www.metalaire.com

Round Damper for Series 900 - Aluminum - Model 900D

- ✦ For attachment to Model 900
- ✦ 2 butterfly style blades for 6" - 12" sizes
- ✦ 8 blade radial style for 14" size
- ✦ Blades adjusted through diffuser face
- ✦ Damper supplied with mounting hardware



Model D3

Additional product information available at www.metalaire.com

Radial Opposed Blade Dampers - Aluminum/Steel - Series D3

- ✦ For use in round air diffusers
- ✦ Designed to provide full radial volume control resulting in lower than normal pressure losses
- ✦ Overlapping blade design insures positive shut-off when required

Aluminum	Steel
D3	SD3



Model G3

Additional product information available at www.metalaire.com

Round Straightening Grid - Aluminum - Series G3

- ✦ For use with all diffusers
- ✦ Designed to provide maximum air flow equalization through use of a blade matrix system, thus ensuring lowest possible pressure losses in drop
- ✦ Dampers not available on 24" grid

w/o Damper	w/Damper
G3	GD3



Model BDS

Additional product information available at www.metalaire.com

Butterfly Damper - Steel - Model BDS

- ✦ Two butterfly style blades
- ✦ Blades are adjusted through diffuser face



Model RSD

Additional product information available at www.metalaire.com

Radial Shutter Damper - Steel - Model RSD

- ✦ Cost effective alternative to butterfly style dampers
- ✦ Design permits very precise damper control and does not interfere with diffuser air patterns

Accessories



ACC



Model TR

Additional product information available at www.metalaire.com

Square to Round Transition - Aluminum - Model TR

- ✦ Square to round transitions slip fit over the square neck or register to permit installation to round or flex-duct
- ✦ 2 11/16" overall depth



Model TR DEEP

Additional product information available at www.metalair.com

Square to Round Deep Transition - Aluminum - Model TR Deep

- ✦ Square to round transitions slip fit over the square neck or register to permit installation to round or flex-duct
- ✦ 4 7/8" overall depth



Model L9

Additional product information available at www.metalair.com

Square/Rectangular Equalizing Grid - Aluminum - Model L9

- ✦ Designed to provide uniform airflow in branch ducts
- ✦ Pre-tensioned blades adjust individually and may be set at an angle at the branch take-off to provide a rake-off effect



Model D5

Additional product information available at www.metalair.com

Opposed Blade Damper 5000 - Aluminum/Steel - Series D5

- ✦ Extruded opposed blade volume damper for use with all series 5000 and 5500 diffuser models
- ✦ Designed to snap into the diffuser collar from the face side before or after diffuser installation without the use of tools
- ✦ Damper operator is accessible at the diffuser face

Aluminum	Steel
D5	D5S



Model D7

Additional product information available at www.metalair.com

Opposed Blade Damper 7000 - Aluminum - Model D7

- ✦ Extruded opposed blade volume damper for use with all series 7000
- ✦ Designed to snap into the diffuser neck from the face side
- ✦ Damper operator is accessible at the diffuser face



Model OBDA

Additional product information available at www.metalair.com

Opposed Blade Damper for Grilles - Aluminum - Model OBDA

- ✦ Tapered blades set in a U-channel frame
- ✦ Opposed blades on 1" centers
- ✦ Screwdriver slot operator



Model OBD

Additional product information available at www.metalair.com

Opposed Blade Damper for Grilles - Steel - Model OBD

- ✦ Blades taper at edge to reduce pressure drop and provide tight closure
- ✦ Screwdriver slot operator



Model OBDD

Additional product information available at www.metalair.com

Dampers for Duct Mounting - Extruded Aluminum - Model OBDD

- ✦ Removable key operator for thru-duct adjustments
- ✦ Opposed blades on 1" centers





Sidewall Mounted Plaster Frame - Model PF

- ✦ Provides a uniform opening in plaster ceilings or sidewall to accommodate grilles and registers
- ✦ Are available for all ceiling and sidewall grilles and registers

Model PF

Additional product information available at www.metalaire.com



T-bar Plaster Frame - Aluminum/Steel - Series TBPF

- ✦ Permits installation of a T-bar frame style ceiling diffuser into plaster or gypsum type ceiling

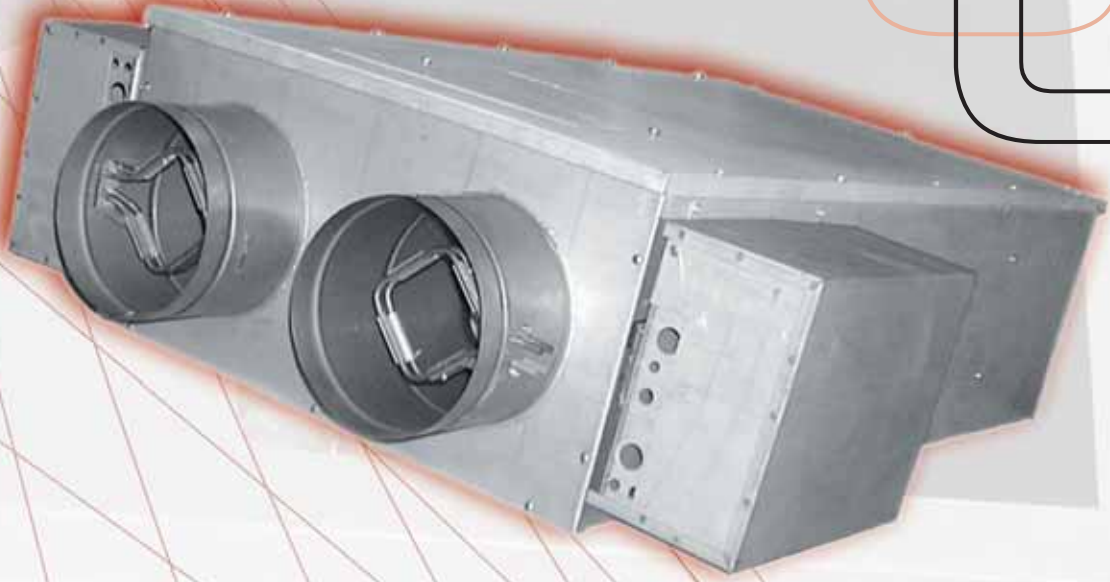
Aluminum	Steel
TBPF	STBPF

Model TBPF

Additional product information available at www.metalaire.com



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AIR TERMINAL UNITS
AIR TERMINAL UNITS

TH-500



Series TH-500
Pg. 230

Series TH-500 - High Performance - Single Duct Air Terminal Units

- ✦ Series TH-500 Air Terminals are designed to regulate the flow of conditioned air in single duct air distribution systems. They are available in a wide range of standard control sequences and work equally well in constant volume and variable volume systems
- ✦ Series TH-500 Air Terminals can be specified with hot water coils, electric heat, sound attenuators, and other optional accessories
- ✦ Series TH-500 Air Terminals feature a low leakage single blade damper. The TH series is available with pneumatic, electric, analog electric, and DDC (by others) factory mounted controls
- ✦ Series TH-500 Air Terminals are available for both pressure independent and pressure dependent applications
- ✦ Series TH-500 Air Terminals are recommended for use in duct systems with static pressures up to 3" water gauge

TL-500



Series TL-500
Pg. 246

Series TL-500 - Low Profile - Single Duct Air Terminal Units

- ✦ Series TL-500 Air Terminals are designed to regulate the flow of conditioned air in single duct air distribution systems. They are available in a wide range of standard control sequences and work equally well in constant volume and variable volume systems. The maximum height of the TL series is 12 1/2"
- ✦ Series TL-500 Air Terminals can be specified with hot water coils, electric heat, sound attenuators, and other optional accessories
- ✦ Series TL-500 Air Terminals feature a low leakage single blade damper
- ✦ Series TL-500 is also available with pneumatic, electric, analog electric, and DDC (by others) factory mounted controls
- ✦ Series TL-500 Air Terminals are available for both system system pressure independent and system pressure dependent applications

FCI-600



Series FCI-600
Pg. 248

Series FCI-600 - Constant Volume Air Terminal Units

- ✦ Series FCI-600 fan-powered terminal units are designed to provide superior comfort control to zones with both heating and cooling requirements. The fan in a constant volume (or series) fan powered terminal, runs continuously during occupied hours. FCI is available with an optional ECM motor for improved energy efficiency and control
- ✦ Series FCI-600 provides cooling through the primary air valve. The primary air valve controls the volume of air that is discharged into the terminal unit. The cooled air is delivered to the space through the terminal's fan. When heating is required, the Series FCI-600 initially provides plenum air that is drawn through the induction inlet
- ✦ Series FCI-600 is available with a wide range of control options and accessories to meet your design requirements; whether they be for factory mounted direct digital controls, pneumatic, or analog applications
- ✦ Series FCI-600 is available in 6 casing sizes with a wide range of primary inlet sizes offering the flexibility to meet both your capacity and sound requirements

FCL-600 Air Terminal Units



Series FCL-600
Pg. 264

Series FCL-600 - Low Profile Constant Volume Air Terminal Units

- ✦ Series FCL-600 low Profile fan-powered terminal units are designed to provide superior comfort control in applications with restricted heights. The FCL-600 series can also be selected for projects with limited heights in the ceiling plenum.
- ✦ The FCL is designed to be applied in zones with both heating and cooling requirements. The fan in a constant volume (or series) fan powered terminal, runs continuously during occupied hours.
- ✦ Series FCL-600 provides cooling through the primary air valve. The primary air valve controls the volume of air that is discharged into the terminal unit. The cooled air is delivered to the space through the terminal's fan. When heating is required, the Series FCL-600 initially provides plenum air that is drawn through the induction inlet.
- ✦ Series FCL-600 is available with a wide range of control options and accessories to meet your design requirements; whether they be for factory mounted direct digital controls, pneumatic, or analog applications.
- ✦ Series FCL-600 is available in 2 casing sizes and offers the flexibility to meet both your capacity and sound requirements.

ATU



Series FVI-500
Pg. 266

Series FVI-500 - Parallel Fan Powered Air Terminal Units

- ✦ Series FVI-500 fan-powered terminal units are designed to provide superior comfort control to zones with both heating and cooling requirements. The fan in a variable volume (or parallel) fan powered terminal, runs only upon requirements for heat
- ✦ Series FVI-500 provides variable volume cooling through the primary air valve. The primary air valve controls the volume of cooled air that is discharged into the space. In a parallel fan-powered terminal unit, the primary air does not pass through the fan. When heating is required, the Series FVI-500 initially provides plenum air that is drawn through the induction inlet
- ✦ Series FVI-500 is available with a wide range of control options and accessories to meet your design requirements; whether they be for factory mounted direct digital controls, pneumatic, or analog applications
- ✦ Series FVI-500 is available in 7 casing sizes with a wide range of primary inlet sizes offering the flexibility to meet both your capacity and sound requirements

FVI-500



Series DH-500
Pg. 286

Series DH-500 - High Performance - Dual Duct Air Terminal Units

- ✦ Series DH-500 (patent pending) High Performance Dual Duct Air Terminals are designed to regulate the flow of conditioned air in dual duct air distribution systems. In a dual duct system, both heated and cooled air are provided to the air terminal and mixed to provide the desired discharge temperature. The DH-500 has been engineered to provide a 1:30* mixing ratio, the highest in the industry. They are available with a wide range of standard control sequences
- ✦ Series DH-500 Air Terminals feature a low leakage single blade damper in the heating and cooling inlets
- ✦ The DH series is available with pneumatic, electric, analog electronic, and DDC (by others) factory mounted controls
- ✦ DH-500 air terminals are available for both system pressure independent and system pressure dependent applications
- ✦ Series DH-500 Air Terminals are recommended for use in duct systems with static pressures up to 3" water gauge

* Series DH-500 is Patent Pending

DH-500



Series DD-500
Pg. 288

Series Dual Duct Air Terminal Units

- ✦ Series DD-500 Dual Duct air terminals are designed to regulate the flow of conditioned air in dual duct air distribution systems. In a dual duct system, both heated and cooled air are provided to the air terminal and mixed in downstream duct work (by others) to provide the desired discharge temperature. The DD-500 is available with a wide range of standard control sequences
- ✦ Series DD-500 Air Terminals feature a low leakage single blade damper. The DD-500 series is available with pneumatic, electric, analog electronic, and DDC (by others) factory mounted controls. DD-500 air terminals are available for both system pressure independent and system pressure dependent applications
- ✦ Series DD-500 air terminals are recommended for use in duct systems with static pressures up to 3" water gauge

Air Terminal Units

DD-500



Series SR-500

Additional product information available at www.metalair.com

Series SR-500 - Square Retrofit Air Terminal

- ✦ The METALAIR® Series SR-500 is a retrofit product designed to fit into existing low pressure square or rectangular duct systems
- ✦ The height of the installation plate varies with the duct height
- ✦ A flow sensor access panel is mounted in the installation plate in front of the damper blades
- ✦ Damper position can be controlled by any pressure dependent or pressure independent pneumatic, electric, or electronic control sequence available for the Series SR TH-500 Single Duct Air Terminal
- ✦ Series SR Retrofit dampers are constructed of 20 gauge zinc coated steel
- ✦ Series SR-500 units are intended for VAV applications in low pressure/low velocity applications, but may be used in duct systems with static pressure up to 4" water gauge and at a maximum rated velocity of 3000 fpm

SR-500



ATU



RA-500



Series RA-500

Additional product information available at www.metalaire.com

Series RA-500 - Retrofit Terminal

- ✦ Series RA retrofit assemblies are customized retrofit valves designed to slip into existing mechanically regulated single or dual duct terminals to convert to variable volume operation.
- ✦ Units allow the conversion of existing constant volume systems to a more energy efficient, variable volume system.
- ✦ RA assemblies are currently available to fit most of the competitive terminals manufactured from the 60's to 80's.
- ✦ The RA valves can be installed, in most applications, without disrupting existing ductwork. Units are installed by removing existing volume regulators and inserting the RA valve.
- ✦ One or two valves in a single panel may be controlled by a single actuator
- ✦ Control sequences for the RA-500 are available to convert mechanically regulated constant single or dual duct air terminals into pneumatic VAV single duct or dual duct.

RT-500



Series RT-500

Additional product information available at www.metalaire.com

Series RT-500 - Round Retrofit Air Terminal

- ✦ Series RT-500 Retrofit Air Terminals are designed to regulate the flow of conditioned air in single or dual duct air distribution systems and are also used to provide positive or negative pressures in laboratory flow hood applications
- ✦ Series RT-500 Retrofit Air Terminals are primarily used to convert mechanically regulated constant volume single or dual duct air terminals to more efficient variable volume air terminals without disrupting total system operation
- ✦ Series RT-500 is ready installed into existing duct-work in front of an old air terminal
- ✦ This series features the the proven, low leakage Series TH-500 Air Terminal Damper
- ✦ Control components are shipped piped and wired
- ✦ Control linkage design allows the damper to be easily field repositioned 90° without the use of tools
- ✦ Constructed of 20 gauge zinc coated steel
- ✦ Recommend for use in duct systems with static pressures up to 3" water gauge

BP-500



Series BP-500

Additional product information available at www.metalaire.com

Series BP-500 - Bypass Terminal

- ✦ Series BP-500 Bypass Air Terminals are designed to achieve VAV delivery of conditioned air to a room in single duct, constant volume air distribution systems
- ✦ Series BP-500 Bypass Air Terminals are available with a variety of standard control sequences
- ✦ Series BP-500 Bypass Air Terminals use a primary air damper working in concert with a bypass port damper
- ✦ Construction is of galvanized steel
- ✦ Units are available for system pressure dependent and system pressure independent applications

ATU

Air Terminal Units

ATU

Features of the METALAIRE VAV Valve and Flow Sensor:

Inlet Valve

The METALAIRE® inlet valve assembly has a seamless butt weld on a round inlet tube to minimize leakage and prevent the damper from binding. The damper shaft rotates in a long life, self-lubricating Kepital® (acetal resin material) bearing. The damper shaft is composed of die cast aluminum and includes a damper position indicator. The actuator connects to a square end to prevent the actuator screw(s) from slipping.

The damper blade is manufactured with a flexible gasket and mounted without adhesives to provide an excellent close off seal. Included on the damper gasket are slits around the perimeter to prevent damper noise at low turn down. The damper is constructed of double thickness 24-gauge steel. Damper leakage is less than 1% of maximum CFM at 3.0" static pressure.

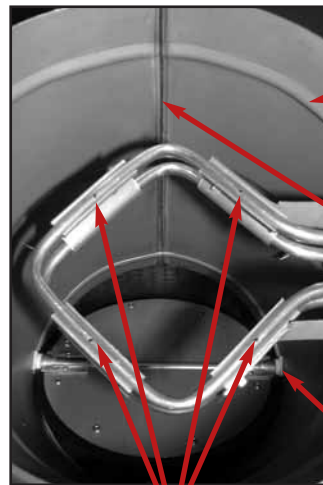
The primary air valve has a bead rolled into the tube, which strengthens the tube and serves as a stop and prevents field attached flex duct from slipping.

Flow Sensor

The METALAIRE multi-quadrant averaging flow sensor is a highly accurate, multi-ported device designed to provide true flow readings, even with varying flex duct inlet conditions. The sensor amplifies the input signal providing accurate flow control at low supply air volumes. Velocity pressure is read as a 4-point average that maintains +/- 5% accuracy regardless of inlet conditions.

The sensor provides two control ports and two accessory ports, all with brass barbed fittings to prevent connecting tubing from slipping. All flow sensor piping connections are made with external ports that extend through the damper tube allowing for easy inspection. This is a major advantage over competitors' sensors where the tubing attachment is inside the air valve. The metal construction of METALAIRE flow sensors assures long life and durability. Competing manufacturers typically provide plastic flow sensors, fittings, and balancing tees.

The METALAIRE flow sensor provides an accurate signal to controllers operating within a typical 0.03" to 1.0" velocity pressure range. For low flow controller applications, the sensor can be used to provide a signal down to 0.01".

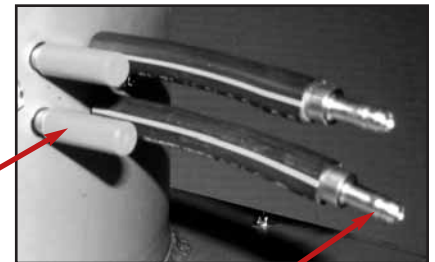


Bead formed on inlet tube for rigidity and to allow for a tight flex duct connection

Seamless weld

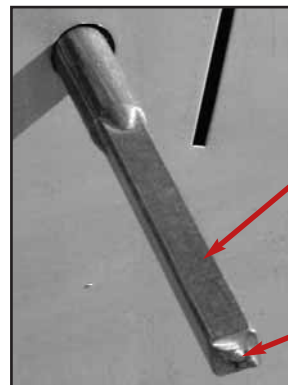
Kepital bearings

Average Velocity is obtained in 4 quadrants



Metal sensor tubes extend through the inlet tube, allowing external connections (shown with dust cover)

Brass barbed fittings for tube connection to VAV controller



Square Shaft

Damper Position indicator



Options & Accessories for Air Terminal Units

Thermopure Insulation

ThermoPure insulation is a closed cell, washable, durable, and non-wicking insulation material that is ideal for critical care facilities such as hospitals and medical facilities as well as high humidity or corrosive environments. ThermoPure is mold and mildew resistant and the closed-cell structure minimizes moisture movement and condensation. It has been tested in accordance with USTC #P91-112.2 for mold growth and in accordance with 10.111 for humidity. After a 60-day period the material showed no evidence of mold growth or insulation deterioration, including the adhesive.

ThermoPure is 100% Fiber Glass free, assuring no downstream brush off, and is provided at a density of 1.5 lbs/ft³. The material is Polyolefin (Polyethylene) and exhibits unique thermal, physical, and chemical resistance properties. It is chemically resistant to most hydrocarbon-based solvents and has a broad installation temperature range. Additionally, because of the closed cell design, it offers low thermal conductivity and the lowest vapor transmission and water absorption rates of the commercially available insulations. The "R" value per wall thickness is 13% greater than Elatomaric (rubber) foam insulation and the water vapor transmission rate is 0.00 perm-in.

ThermoPure has been tested in accordance with both UL-723 (25/50) and ASTM E84 and has a flame spread of 10 and a smoke density of 30. It also meets UL 181 and UL 94 horizontal burn test standards. ThermoPure also meets many other state and local specifications, please contact your METALAIRE representative for a complete list of specification compliance.

ThermoPure's mold and mildew resistance, broad thermal range, and resistance to degradation make it a perfect choice for applications such as hospitals, high humidity environments, clean rooms, food processing areas, low temperature installations, and corrosive or chemical processing environments.



Thermopure Insulation



SERIES TH-500

High Performance-Single Duct Air Terminal Units

Series TH-500 Air Terminals are designed to regulate the flow of conditioned air in single duct air distribution systems. They are available in a wide range of standard control sequences and work equally well in constant volume and variable volume systems.

Series TH-500 Air Terminals can be specified with hot water coils, electric heat, sound attenuators, and other optional accessories.

Series TH-500 Air Terminals feature a low leakage single blade damper. The TH series is available with pneumatic, electric, analog electric, and DDC (by others) factory mounted controls.

Series TH-500 Air Terminals are available for both pressure independent and pressure dependent applications.

Series TH-500 Air Terminals are recommended for use in duct systems with static pressures up to 3" water gauge.

The inlet tube for the TH-500 includes a bead that strengthens the tube and provides recess for flex duct straps

For set-up and balancing purposes, all units are shipped with a convenient balancing chart located on the outside of the terminal for conversion from velocity pressure to CFM

Units size 6 through 16 are constructed with a seamless butt weld to minimize leakage and prevent the damper from binding

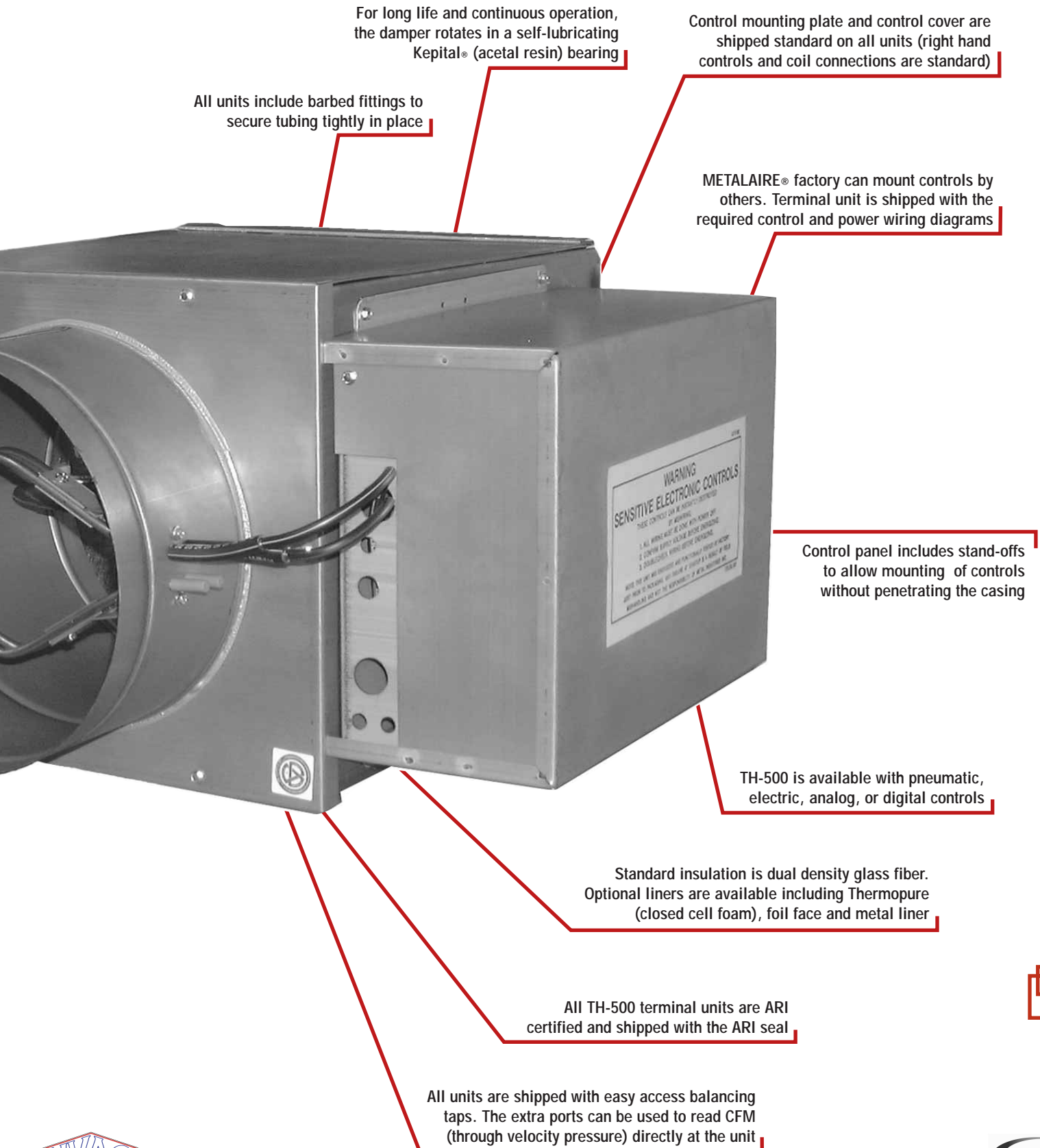
Multiquadrant Averaging Flow Sensor provides an accurate flow signal without requiring an immediate upstream straight duct connection (Shipped standard on all units)

Air Terminal Units



ATU

ATU - Air Terminal Units



For long life and continuous operation, the damper rotates in a self-lubricating Kepital® (acetal resin) bearing

Control mounting plate and control cover are shipped standard on all units (right hand controls and coil connections are standard)

All units include barbed fittings to secure tubing tightly in place

METALAIRES® factory can mount controls by others. Terminal unit is shipped with the required control and power wiring diagrams

Control panel includes stand-offs to allow mounting of controls without penetrating the casing

TH-500 is available with pneumatic, electric, analog, or digital controls

Standard insulation is dual density glass fiber. Optional liners are available including Thermopure (closed cell foam), foil face and metal liner

All TH-500 terminal units are ARI certified and shipped with the ARI seal

All units are shipped with easy access balancing taps. The extra ports can be used to read CFM (through velocity pressure) directly at the unit

Air Terminal Units



ATU



For more product information visit us at www.metalaire.com



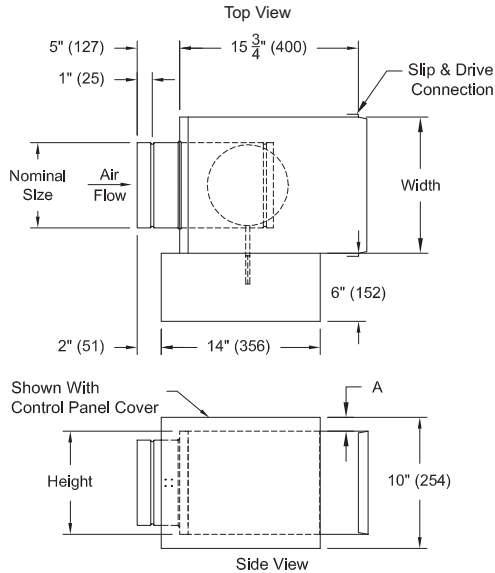
TH-500 - Air Terminal Dimensions

6" to 16" Case Sizes

Dimensions are in inches

High Performance Single Duct - Basic Unit

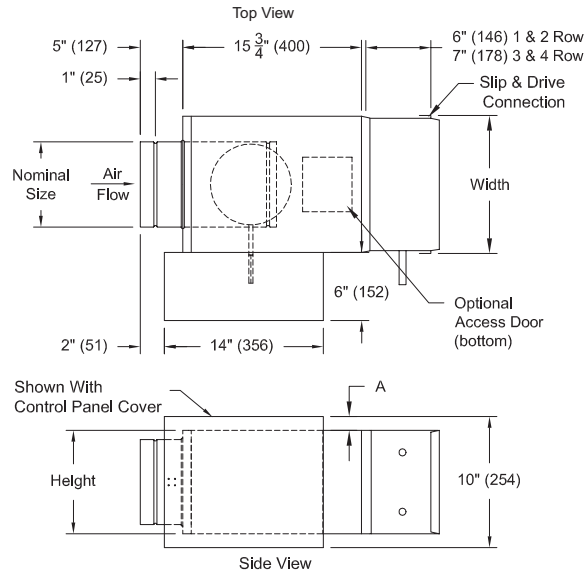
Model TH506 - 6" Inlet Model TH512 - 12" Inlet
 Model TH508 - 8" Inlet Model TH514 - 14" Inlet
 Model TH510 - 10" Inlet Model TH516 - 16" Inlet



Model Number	Nominal Size In. (mm)	Height In. (mm)	Width In. (mm)	Dim. A In. (mm)	Unit Weight
TH506	6 Dia. (152)	8 (203)	12 (305)	2 (51)	12 lbs 5.4 kg
TH508	8 Dia. (203)	10 (254)	12 (305)	1 (25)	15 lbs 6.8 kg
TH510	10 Dia. (254)	12 1/2 (318)	14 (356)	-	18 lbs 8.2 kg
TH512	12 Dia. (305)	15 (381)	16 (406)	-	22 lbs 9.9 kg
TH514	14 Dia. (356)	17 1/2 (445)	20 (508)	-	24 lbs 11 kg
TH516	16 Dia. (406)	18 (457)	24 (610)	-	29 lbs 13 kg

High Performance Single Duct - With Hot Water Coils

Model TH506 - 6" Inlet Model TH512 - 12" Inlet
 Model TH508 - 8" Inlet Model TH514 - 14" Inlet
 Model TH510 - 10" Inlet Model TH516 - 16" Inlet



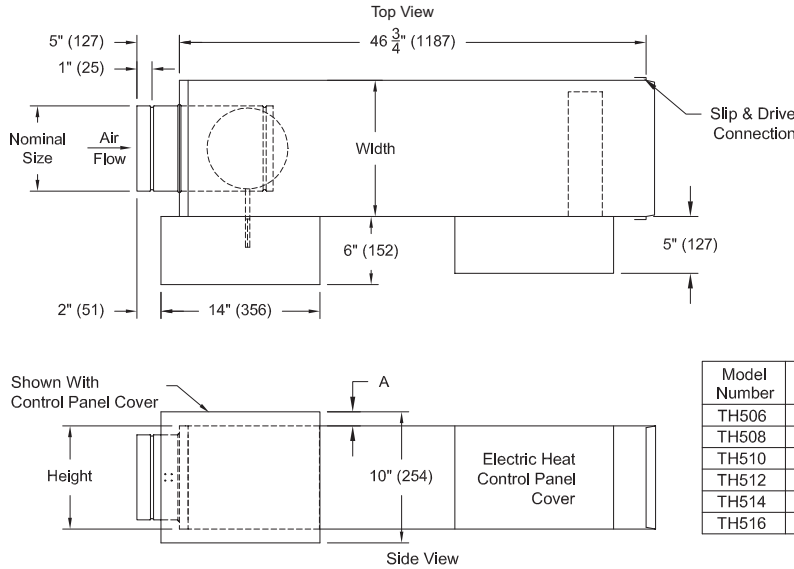
Model Number	Nominal Size In. (mm)	Height In. (mm)	Width In. (mm)	Dim. A In. (mm)	Unit Weight with			
					1R HW Coil	2R HW Coil	3R HW Coil	4R HW Coil
TH506	6 Dia. (152)	8 (203)	12 (305)	2 (51)	16.7 (7.6)	17.7 (8)	21.2 (9.6)	22.5 (10.2)
TH508	8 Dia. (203)	10 (254)	12 (305)	1 (25)	20 (9.1)	21.6 (9.8)	26 (11.8)	27.7 (12.6)
TH510	10 Dia. (254)	12 1/2 (318)	14 (356)	-	24.3 (11)	26.6 (12)	32.4 (14.7)	24.8 (15.8)
TH512	12 Dia. (305)	15 (381)	16 (406)	-	31 (14.1)	34.3 (15.6)	40.1 (18.2)	43.4 (19.7)
TH514	14 Dia. (356)	17 1/2 (445)	20 (508)	-	34.1 (15.5)	38.9 (17.7)	48 (21.8)	52.8 (10.2)
TH516	16 Dia. (406)	18 (457)	24 (610)	-	42.3 (19.2)	48 (21.8)	53.7 (24.3)	59.4 (26.9)



TH-500 - Air Terminal Dimensions

High Performance Single Duct - Electric Heat With Integral Sound Attenuator

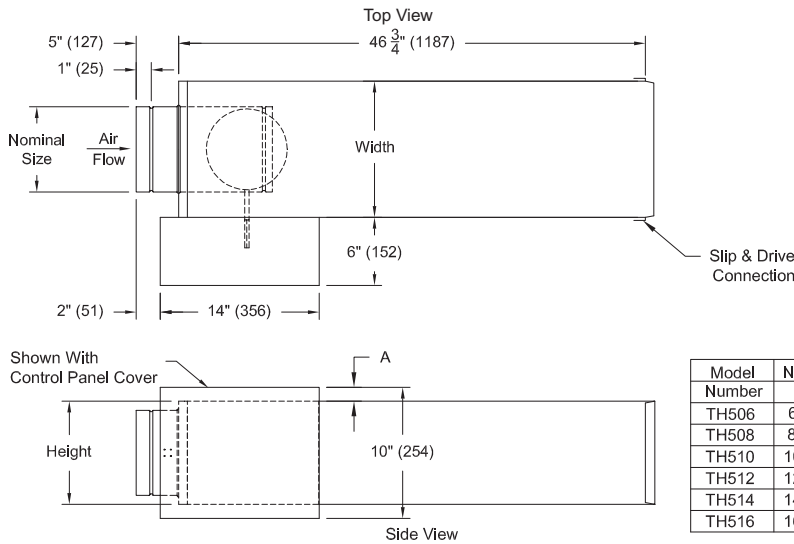
Model TH506 - 6" Inlet Model TH512 - 12" Inlet
 Model TH508 - 8" Inlet Model TH514 - 14" Inlet
 Model TH510 - 10" Inlet Model TH516 - 16" Inlet



Model Number	Nominal Size In. (mm)	Height In. (mm)	Width In. (mm)	Dim. A In. (mm)	Unit Weight Lbs. Kg
TH506	6 Dia. (152)	8 (203)	12 (305)	2 (51)	38 (17)
TH508	8 Dia. (203)	10 (254)	12 (305)	1 (25)	43 (20)
TH510	10 Dia. (254)	12 1/2 (318)	14 (356)	-	50 (23)
TH512	12 Dia. (305)	15 (381)	16 (406)	-	59 (27)
TH514	14 Dia. (356)	17 1/2 (445)	20 (508)	-	67 (30)
TH516	16 Dia. (406)	18 (457)	24 (610)	-	77 (35)

High Performance Single Duct - With Sound Attenuator

Model TH506 - 6" Inlet Model TH512 - 12" Inlet
 Model TH508 - 8" Inlet Model TH514 - 14" Inlet
 Model TH510 - 10" Inlet Model TH516 - 16" Inlet



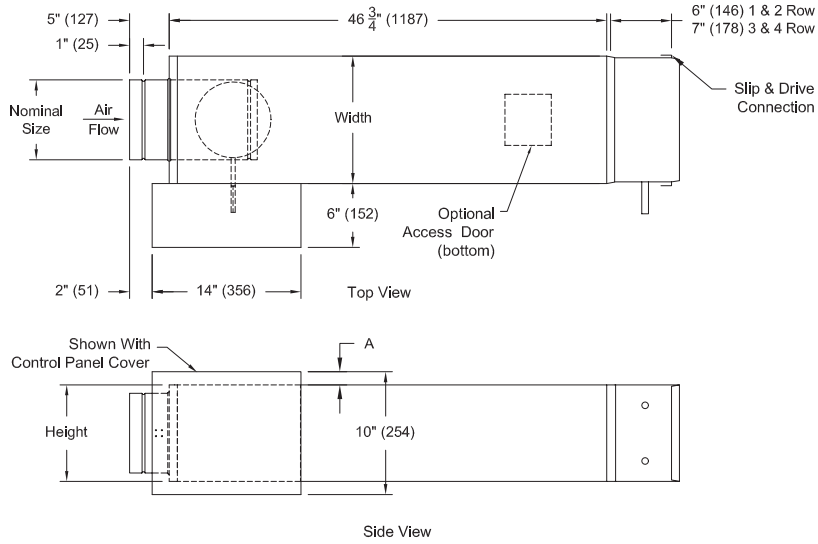
Model Number	Nominal Size In. (mm)	Height In. (mm)	Width In. (mm)	Dim. A In. (mm)	Unit Weight Lbs. (Kg)
TH506	6 Dia. (152)	8 (203)	12 (305)	2 (51)	24 (11)
TH508	8 Dia. (203)	10 (254)	12 (305)	1 (25)	28 (13)
TH510	10 Dia. (254)	12 1/2 (318)	14 (356)	-	34 (15)
TH512	12 Dia. (305)	15 (381)	16 (406)	-	41 (19)
TH514	14 Dia. (356)	17 1/2 (445)	20 (508)	-	47 (21)
TH516	16 Dia. (406)	18 (457)	24 (610)	-	54 (25)



TH-500 - Air Terminal Dimensions

High Performance Single Duct - With Sound Attenuator and Hot Water Coils

Model TH506 - 6" Inlet Model TH512 - 12" Inlet
 Model TH508 - 8" Inlet Model TH514 - 14" Inlet
 Model TH510 - 10" Inlet Model TH516 - 16" Inlet

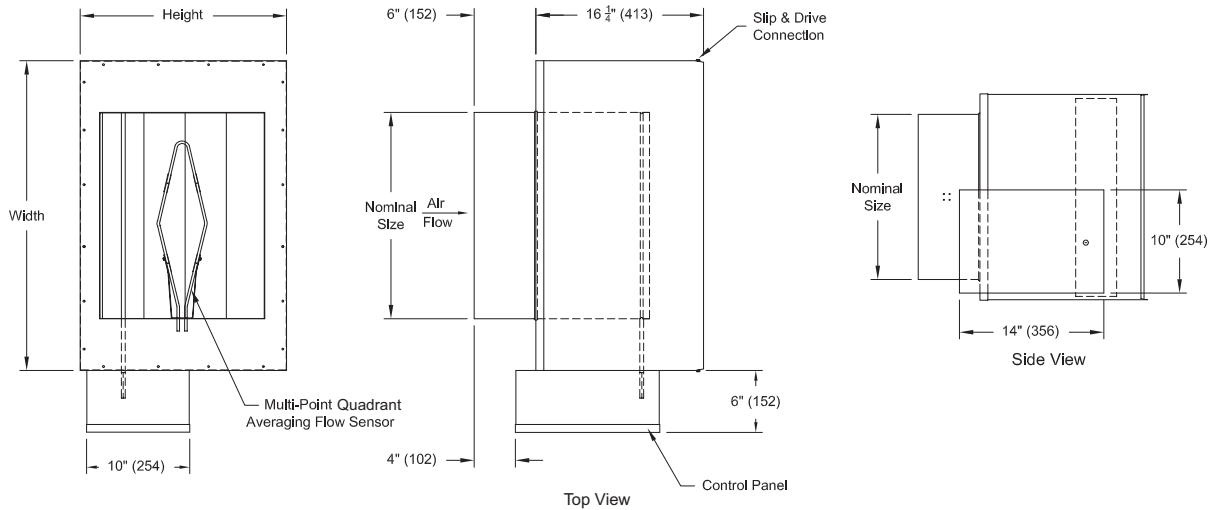


Model Number	Nominal Size In. (mm)	Height In. (mm)	Width In. (mm)	Dim. A In. (mm)	Unit Weight with			
					1R HW Coil	2R HW Coil	3R HW Coil	4R HW Coil
TH506	6 Dia. (152)	8 (203)	12 (305)	2 (51)	29 lbs (13 kg)	30 lbs (14 kg)	33 lbs (15 kg)	35 lbs (16 kg)
TH508	8 Dia. (203)	10 (254)	12 (305)	1 (25)	33 lbs (15 kg)	35 lbs (16 kg)	39 lbs (18 kg)	41 lbs (19 kg)
TH510	10 Dia. (254)	12 1/2 (318)	14 (356)	-	40 lbs (18 kg)	43 lbs (20 kg)	48 lbs (22 kg)	51 lbs (23 kg)
TH512	12 Dia. (305)	15 (381)	16 (406)	-	43 lbs (20 kg)	48 lbs (22 kg)	51 lbs (23 kg)	56 lbs (26 kg)
TH514	14 Dia. (356)	17 1/2 (445)	20 (508)	-	48 lbs (22 kg)	51 lbs (23 kg)	56 lbs (26 kg)	60 lbs (27 kg)
TH516	16 Dia. (406)	18 (457)	24 (610)	-	51 lbs (23 kg)	56 lbs (26 kg)	60 lbs (27 kg)	68 lbs (30 kg)

20" x 16" & 24" x 16" Case Sizes

High Performance Single Duct - Basic Unit

Model TH520 - 20" x 16" Rectangular Inlet
 Model TH524 - 24" x 16" Rectangular Inlet



Model Number	Nominal Size	Dim. H x W	CFM Range	Shipping Weight(Lbs)(Kg)
TH520	20 (508) x 16 (406)	20 (508) x 30 (762)	0-6000 (0-1.04)	47 (21.4)
TH524	24 (610) x 16 (406)	20 (508) x 38 (965)	0-8000 (0-1.42)	58 (26.3)

Air Terminal Units

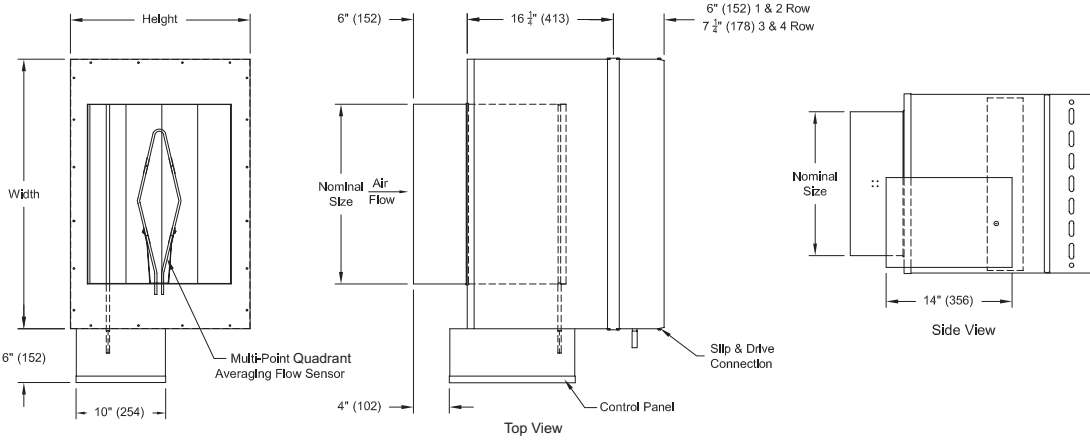


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TH-500 - Air Terminal Dimensions

High Performance Single Duct - With Hot Water Coils

Model TH520 - 20" x 16" Rectangular Inlet
 Model TH524 - 24" x 16" Rectangular Inlet



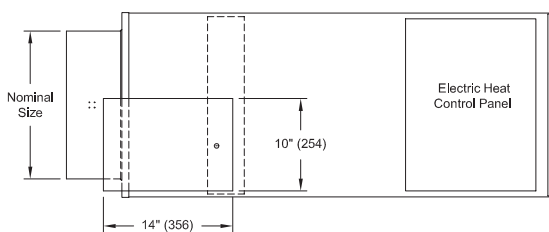
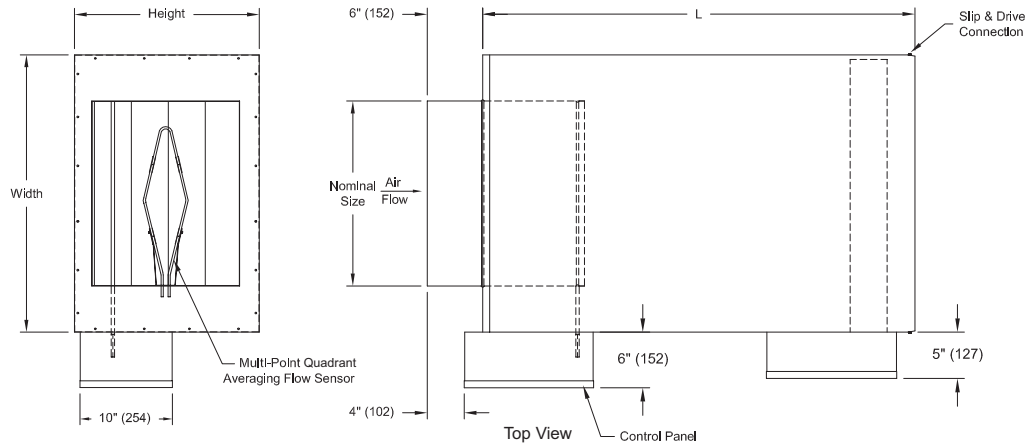
Model Number	Nominal Size	Dim. H x W	CFM Range	Shipping Weight(Lbs)(Kg)
TH520	20 (508) x 16 (406)	20 (508) x 30 (762)	0-6000 (0-1.04)	47 (21.4)
TH524	24 (610) x 16 (406)	20 (508) x 38 (965)	0-8000 (0-1.42)	58 (26.3)

Weight* with 1R HW Coil	1R HW Inlet Tube Diameter	Weight* with 2R HW Coil	2R HW Inlet Tube Diameter	Weight* with 3R HW Coil	3R HW Inlet Tube Diameter	Weight* with 4R HW Coil	4R HW Inlet Tube Diameter
64.1 lbs (29 kg)	7/8 (22)	72.2 lbs (33 kg)	7/8 (22)	78.3 lbs (36 kg)	1 1/8 (28.6)	85.7 lbs (39 kg)	1 1/8 (28.6)
78.5 lbs (36 kg)	7/8 (22)	88.6 lbs (40 kg)	7/8 (22)	98.7 lbs (45 kg)	1 1/8 (28.6)	108.8 lbs (50 kg)	1 1/8 (28.6)

* Dry weight

High Performance Single Duct - With Electric Heat

Model TH520 - 20" x 16" Rectangular Inlet
 Model TH524 - 24" x 16" Rectangular Inlet



Model Number	Nominal Size	Dim. H x W	Dim. L	CFM Range	Shipping Weight(Lbs)(Kg)
TH520	20 (508) x 16 (406)	20 (508) x 30 (762)	46.75 (1187)	0-6000 (0-1.04)	103 (47)
TH524	24 (610) x 16 (406)	20 (508) x 38 (965)	49.75 (1264)	0-8000 (0-1.42)	122 (55)

Air Terminal Units



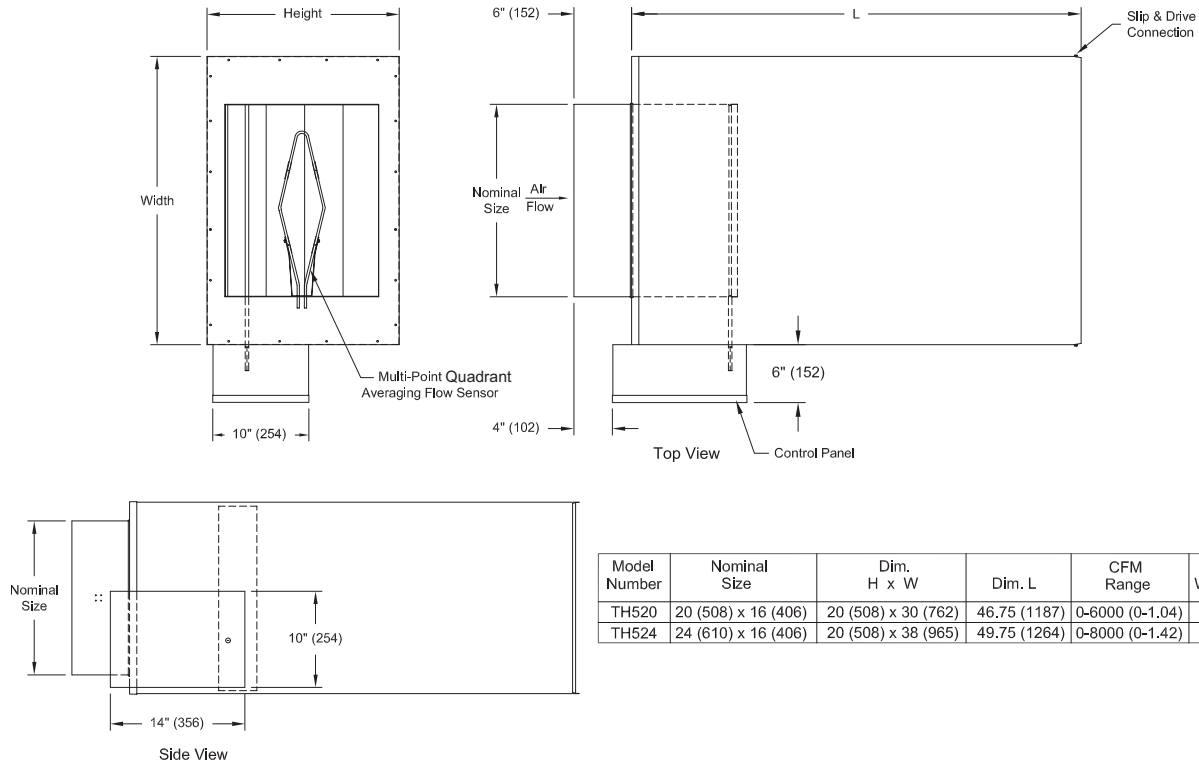
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TH-500 - Air Terminal Dimensions

High Performance Single Duct - With Integral Sound Attenuator

Model TH520 - 20" x 16" Rectangular Inlet

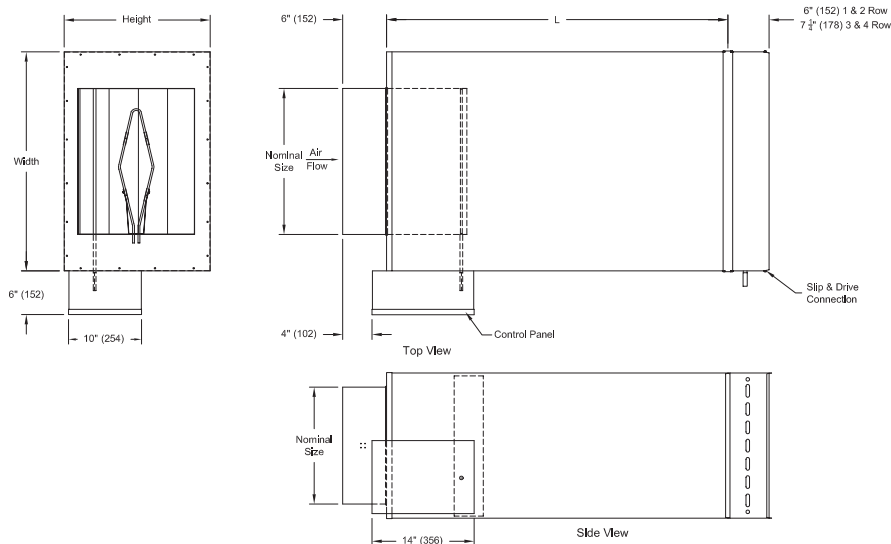
Model TH524 - 24" x 16" Rectangular Inlet



High Performance Single Duct - With Sound Attenuator and Hot Water Coils

Model TH520 - 20" x 16" Rectangular Inlet

Model TH524 - 24" x 16" Rectangular Inlet



Model Number	Nominal Size	Dim. H x W	Dim. L	CFM Range	Shipping Weight(Lbs)(Kg)
TH520	20 (508) x 16 (406)	20 (508) x 30 (762)	46.75 (1187)	0-6000 (0-1.04)	77 (35)
TH524	24 (610) x 16 (406)	20 (508) x 38 (965)	49.75 (1264)	0-8000 (0-1.42)	93 (42)

Weight* with 1R HW Coll	1R HW Inlet Tube Diameter	Weight* with 2R HW Coll	2R HW Inlet Tube Diameter	Weight* with 3R HW Coll	3R HW Inlet Tube Diameter	Weight* with 4R HW Coll	4R HW Inlet Tube Diameter
64.1 lbs (29 kg)	7/8 (22)	72.2 lbs (33 kg)	7/8 (22)	78.3 lbs (36 kg)	1 1/8 (28,6)	85.7 lbs (39 kg)	1 1/8 (28,6)
78.5 lbs (36 kg)	7/8 (22)	88.6 lbs (40 kg)	7/8 (22)	98.7 lbs (45 kg)	1 1/8 (28,6)	108.8 lbs (50 kg)	1 1/8 (28,6)

Air Terminal Units



ATU

TH-500 - ARI Rating Points at 1.5" Inlet Pressure



ARI Certified Radiated Sound Power, 1.5" Inlet Static Pressure								
Unit Size	Min Ps	CFM	Octave Band					
			2	3	4	5	6	7
506	0.10	400	57	53	47	40	37	33
508	0.09	700	62	59	49	43	37	32
510	0.05	1100	60	56	51	44	38	34
512	0.05	1600	64	59	55	48	43	37
514	0.07	2100	63	58	49	44	42	39
516	0.08	2800	64	64	58	51	48	45
520	0.09	4400	70	66	64	61	54	47
524	0.09	5300	76	71	70	65	59	53

ARI Certified Discharge Sound Power, 1.5" Inlet Static Pressure								
Unit Size	Min Ps	CFM	Octave Band					
			2	3	4	5	6	7
506	0.10	400	65	66	61	57	52	49
508	0.09	700	66	67	61	59	55	50
510	0.05	1100	69	70	63	61	55	52
512	0.05	1600	68	70	68	61	57	54
514	0.07	2100	71	72	67	65	62	58
516	0.08	2800	73	74	73	66	61	56
520	0.09	4400	79	82	81	76	73	68
524	0.09	5300	86	83	83	78	74	70

STATEMENT OF STANDARD TEST CONFORMITY

METALAIRE tests all TH-500 air terminal units for engineering performance in accordance with the following standards: American National Standards Institute (ANSI)/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)/International Organization for Standardization (ISO)/Air-Conditioning & Refrigeration Institute (ARI).

- ARI Standard 880-98 Standard for Air Terminals
- ANSI/ASHRAE 130-1996 Methods of Testing for Rating Ducted Air Terminal Units
- ASHRAE Standard 41.1-1986 (RA 91) Standard Method for Temperature Measurement
- ASHRAE Standard 41.2-1987 Standard Methods for Laboratory Air Measurements
- ASHRAE Standard 41.3-1989 Standard Methods for Pressure Measurement
- ISO 5219-1984 Air distribution and air diffusion - Laboratory aerodynamic testing and rating of air terminal devices

Casing Leakage, CFM				
Inlet Size	0.25" ΔPs	0.50" ΔPs	1.00" ΔPs	1.50" ΔPs
6	2	3	4	5
8	2	3	5	6
10	3	4	6	8
12	3	5	7	9
14	4	6	9	11
16	5	7	10	12
20	5	7	10	12
24	6	8	12	14

Damper Leakage, CFM			
Inlet Size	1.5" ΔPs	3.0" ΔPs	6.0" ΔPs
6	3	4	7
8	3	4	7
10	4	5	7
12	4	5	7
14	4	6	8
16	4	6	8
20	N/A	N/A	N/A
24	N/A	N/A	N/A

Selection Recommendations for TH-500		
Inlet Size	Minimum CFM	CFM @ 1"
6	105	600
8	190	1100
10	290	1700
12	430	2500
14	550	3250
16	750	4400
20	1100	6200
24	1250	7200

Notes:

1. Minimum CFM (without electric heat) is based on a signal velocity pressure of 0.03 in w.c..
2. For recommendations on minimum CFM with electric heat, see page ATU-241.
3. Maximum CFM is based on a signal velocity pressure of 1.0 in w.c..
4. For Selections outside the above ranges, contact your local METALAIRE Representative.



ATU - Air Terminal Units

TH-500 - Radiated Sound Power at Min., .5", & .75" Wg

Unit Size	Outlet Ps in. H ₂ O	CFM (Lit)	Min Ps in. H ₂ O (Pa)	Min Ps														Inlet Pressure, P _{in} =0.5 inches of water (125 Pa)														Inlet Pressure, P _{in} =0.75 inches of water (185 Pa)													
				Octave Band Sound Power, Lw, dB							NC1 ARI 885- 90	NC2 ARI 885- 98	Octave Band Sound Power, Lw, dB							NC1 ARI 885- 90	NC2 ARI 885- 98	Octave Band Sound Power, Lw, dB							NC1 ARI 885- 90	NC2 ARI 885- 98															
				2	3	4	5	6	7			2	3	4	5	6	7			2	3	4	5	6	7																				
				506 6inch	0.25	100 (47) 200 (94) 250 (118) 300 (142) 400 (189) 450 (212) 500 (236) 600 (283)	0.015 (3.0) 0.038 (9.9) 0.069 (18.0) 0.104 (26.8) 0.125 (31.0) 0.136 (33.9) 0.169 (42.1)	40 42 43 45 51 51 52 52	32 35 36 38 41 43 45 49	17 23 26 26 34 36 36 44	14 20 23 25 31 34 36 41	12 19 22 25 31 33 36 41	10 12 15 19 22 26 28 31	-	-	41 48 50 52 54 54 55 55	32 38 40 41 46 47 48 51	22 30 32 35 39 42 44 46	20 25 27 28 31 33 36 41	16 20 23 25 29 31 33 42	10 16 18 18 20 22 25 32	-	-	43 50 52 54 56 56 58	34 40 42 46 48 51 54 54	24 34 36 40 43 44 47 47	22 28 30 32 36 39 42 42	18 24 25 29 32 35 37 42	13 20 22 24 28 30 33 33	-	-	-	-	-	-	-	-								
508 8inch	0.25	200 (94) 300 (142) 400 (189) 600 (283) 800 (378) 900 (423) 1000 (472) 1100 (519)	0.021 (5.3) 0.029 (7.2) 0.046 (11.4) 0.064 (15.9) 0.100 (25.2) 0.110 (27.4) 0.128 (31.9) 0.146 (36.0)	42 45 47 48 53 55 55 56	34 39 39 41 46 48 50 51	20 22 26 29 33 35 35 47	15 18 19 21 25 29 32 35	15 18 18 20 25 29 32 35	-	-	48 51 53 54 57 59 61	36 40 43 46 48 50 52 53	25 30 33 35 39 44 47 49	20 23 25 27 31 35 38 44	17 19 20 21 23 25 27 30	16 19 21 22 24 25 27 30	-	-	50 53 55 57 60 61 62 63	39 43 46 48 51 53 54 55	30 37 39 42 44 46 48 49	26 31 33 36 38 41 44 45	20 24 26 29 32 35 38 42	19 21 22 25 28 31 34 39	-	-	-	-	-	-	-	-													
510 10inch	0.25	300 (142) 400 (189) 600 (283) 800 (378) 1000 (472) 1200 (566) 1400 (661) 1600 (753) 1700 (812)	0.029 (7.2) 0.046 (11.4) 0.064 (15.9) 0.099 (26.1) 0.109 (27.2) 0.133 (33.1) 0.151 (37.7)	48 51 52 53 53 55 55 59	34 36 37 37 40 42 45 47	20 22 24 27 31 34 35 44	15 19 19 21 23 27 28 30	13 19 19 21 23 27 30 31	-	-	49 52 54 55 57 59 62 63	36 42 44 46 49 51 54 56	23 28 31 35 39 44 48 53	19 24 26 29 32 35 37 40	17 19 21 22 24 26 28 31	15 19 21 22 24 26 28 31	-	-	51 54 56 57 58 60 64 65	39 46 48 50 53 55 58 59	32 37 39 42 44 46 48 51	25 30 33 36 38 41 44 45	21 24 27 30 32 35 38 42	19 21 22 25 28 31 34 39	-	-	-	-	-	-	-	-													
512 12inch	0.25	400 (189) 800 (378) 1000 (472) 1400 (661) 1600 (753) 1700 (812) 1950 (920) 2200 (1038) 2500 (1180)	0.022 (5.5) 0.051 (13.1) 0.087 (23.1) 0.094 (25.9) 0.054 (13.5) 0.074 (18.5) 0.095 (23.6) 0.115 (28.7) 0.172 (42.8)	51 54 55 56 56 57 58 59 60	35 39 41 44 46 48 51 52 54	22 24 26 28 31 34 36 38 40	19 22 24 26 29 32 35 37	13 18 18 20 22 25 28 30	-	-	53 56 57 58 59 61 63 64	41 48 49 51 54 56 58 60	22 28 31 35 39 44 48 53	19 23 25 29 32 35 38 41	16 21 23 26 29 31 34 37	16 21 23 26 29 31 34 37	-	-	54 57 58 59 61 64 66 67	48 54 55 57 59 62 64 66	33 40 42 44 46 48 51 52	26 33 35 38 40 43 46 47	20 24 27 30 32 35 38 42	19 21 22 25 28 31 34 39	-	-	-	-	-	-	-	-													
514 14inch	0.25	500 (236) 925 (437) 1300 (614) 1600 (753) 1900 (907) 2200 (1038) 2600 (1227) 3000 (1416) 3250 (1534)	0.032 (8.0) 0.044 (11.0) 0.054 (13.5) 0.062 (15.7) 0.099 (26.1) 0.103 (25.6) 0.127 (31.9) 0.138 (34.4)	50 51 54 54 55 55 57 59 60	33 36 40 43 46 49 52 55 57	26 29 31 34 38 41 44 48 51	15 18 20 22 25 28 31 34	14 16 19 22 25 28 31 34	-	-	54 56 59 60 61 62 63 64	38 46 49 50 54 56 58 60	22 28 31 35 39 44 48 53	22 25 29 32 35 38 41	19 21 23 26 29 31 34 37	17 21 23 26 29 31 34 37	17 21 23 26 29 31 34 37	-	-	54 57 59 61 63 65 66	41 49 51 53 55 58 60 62	33 40 42 44 46 48 51 52	28 34 36 38 40 43 46 47	21 24 27 30 32 35 38 42	19 21 22 25 28 31 34 39	-	-	-	-	-	-	-	-												
516 16inch	0.25	750 (354) 1100 (519) 1500 (703) 1800 (850) 2400 (1133) 3200 (1510) 3600 (1699) 4100 (1888) 4400 (2107)	0.034 (8.9) 0.051 (13.1) 0.066 (16.7) 0.085 (21.6) 0.098 (25.2) 0.130 (32.5) 0.113 (28.1) 0.131 (32.7) 0.153 (38.0)	51 53 55 56 57 59 60 61 62	36 40 45 48 48 53 55 57 59	27 31 35 39 43 48 52 57 60	22 25 29 33 36 41 45 50 54	16 19 22 25 28 31 34 37	17 20 23 26 29 32 35 38	-	-	54 56 58 59 60 62 64 66	39 46 51 52 54 56 58 60	24 29 33 37 41 45 49 53	24 29 33 37 41 45 49 53	17 21 25 29 33 37 41 45	17 21 25 29 33 37 41 45	-	-	54 57 59 61 63 65 66	41 49 51 53 55 58 60 62	33 40 42 44 46 48 51 52	28 34 36 38 40 43 46 47	21 24 27 30 32 35 38 42	19 21 22 25 28 31 34 39	-	-	-	-	-	-	-	-												
520 20x16inch	0.25	1100 (519) 1600 (753) 1900 (907) 2500 (1183) 3200 (1510) 3600 (1699) 4000 (1888) 4400 (2107)	0.036 (9.4) 0.051 (13.1) 0.066 (16.7) 0.085 (21.6) 0.103 (25.6) 0.113 (28.1) 0.131 (32.7) 0.153 (38.0)	53 55 56 57 59 60 61 62	39 43 47 51 55 57 59 60	29 34 38 42 46 50 54 57	26 30 34 38 42 46 50 54	18 22 26 30 34 38 42 46	18 22 26 30 34 38 42 46	-	-	54 56 58 59 60 62 64 66	44 52 56 58 60 62 64 66	33 41 45 49 53 57 61 65	29 35 39 43 47 51 55 59	29 35 39 43 47 51 55 59	21 25 29 33 37 41 45 49	21 25 29 33 37 41 45 49	-	-	55 58 60 62 64 66 68	46 54 58 60 62 64 66 68	34 41 44 46 48 51 52	30 37 40 43 46 49 52	29 33 37 41 45 49 53 57	24 28 32 36 40 44 48 52	24 28 32 36 40 44 48 52	-	-	-	-	-	-	-	-										
524 24x16inch	0.25	1600 (753) 2200 (1038) 3000 (1416) 4000 (1888) 5000 (2360) 6000 (2832) 6500 (3098) 7200 (3394)	0.039 (10.5) 0.054 (13.1) 0.072 (19.2) 0.091 (23.1) 0.125 (31.9) 0.152 (37.8) 0.186 (46.4)	54 56 59 62 66 69 70 72	42 46 50 55 60 66 68 69	36 40 44 49 53 59 62 66	30 34 38 42 46 52 56 60	24 28 32 36 40 46 50 54	24 28 32 36 40 46 50 54	-	-	57 60 63 66 69 73 76 77	46 53 58 63 68 73 78 81	37 45 50 55 60 66 71 77	37 45 50 55 60 66 71 77	25 31 36 41 46 51 56 61	25 31 36 41 46 51 56 61	-	-	57 60 63 66 69 73 76 77	46 53 58 63 68 73 78 81	37 45 50 55 60 66 71 77	37 45 50 55 60 66 71 77	25 31 36 41 46 51 56 61	25 31 36 41 46 51 56 61	-	-	-	-	-	-	-	-												

Air Terminal Units

See Page ATU-242 For NC Calculations

NC CALCULATIONS

The current ARI Standard for NC calculations is ARI 885-98. Other terminal manufacturers may catalog performance based on ARI 885-90. Using this older, obsolete standard will provide lower NC levels compared to the 1998 standard. To allow for fair and accurate performance comparisons, METALAIRES publishes the NC levels for both the 1990 standard and the 1998 current standard.



ATU

TH-500 - Sound Path Attenuation Assumptions

NC CALCULATIONS

The current ARI Standard for NC calculations is ARI 885-98. Other terminal manufacturers may catalog performance based on ARI 885-90. Using this older, obsolete standard will provide lower NC levels compared to the 1998 standard. To allow for fair and accurate performance comparisons, METALAIRE publishes the NC levels for both the 1990 standard and the 1998 current standard.

ARI 885-90 Radiated Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	3	2	1	1	1	1
Ceiling Effect	9	10	12	14	15	15
Room Effect	9	10	10	11	12	13
Total dB Reduction	21	22	23	26	28	29

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-90.

- Parameters:
- 1) Mineral fiber ceiling tile, 5/8" thick (35 lb/ft³ density).
 - 2) Room size is 3000 ft³.
 - 3) Unit is located 10 ft from measurement point.

ARI 885-90 Discharge Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	3	2	1	1	1	1
Duct Lining	1	3	8	22	23	13
End Reflection	11	6	2	0	0	0
Flex Duct	6	9	23	25	22	13
Room Effect	9	10	10	11	12	13
Total dB Reduction	30	30	44	59	58	40

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-90.

- Parameters:
- 1) Fiberglass duct lining is 1 inch thick, 12" x 12" duct length is 5 feet.
 - 2) Flex duct is 8 inches in diameter and 6 feet in length for run to diffuser.
 - 3) Flex duct has a vinyl core.
 - 4) Room size is 3000 ft³.
 - 5) Unit is located 10 ft from measurement point.
 - 6) Attenuation credit based on a 300 CFM flow division using 10 log (# space) not shown above

ARI 885-98 Radiated Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Ceiling/Space Effect	16	18	20	26	31	36
Total dB Reduction	18	19	20	26	31	36

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-98.

- Parameters:
- 1) Mineral fiber ceiling tile, 5/8" thick (35 lb/ft³ density).
 - 2) The plenum space is at least 3 ft deep and either wide (>30 ft) or insulated.

* Combined effect including absorption of the ceiling tile, plenum absorption and room absorption. (New to ARI 885-98. ARI 885-90 had separate lines for these absorptions.)

ARI 885-98, APPE defined "Medium" application from 300 to 700 CFM

ARI 885-98 Discharge Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Duct Lining	2	4	10	20	20	14
End Reflection	9	5	2	0	0	0
Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
Total dB Reduction	24	26	37	48	50	36

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-98.

- Parameters:
- 1) 12" x 12" x 5' duct with 1 inch thick fiberglass lining.
 - 2) Flex duct is 8 inches in diameter and 5 feet in length for run to diffuser.
 - 3) Flex duct has a vinyl core.
 - 4) Room size is 2400 ft³ (size of standard test room).
 - 5) Unit is located 5 ft from measurement point.
 - 6) Attenuation credit based on a 300 CFM flow division using 10 log (# space) not shown above

ARI 885-98, APPE defined "Large" application 700 CFM & greater

ARI 885-98 Discharge Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Duct Lining	2	3	9	18	17	12
End Reflection	9	5	2	0	0	0
Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
Total dB Reduction	24	25	36	46	47	34

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-98.

- Parameters:
- 1) 15" x 15" x 5' duct with 1 inch thick fiberglass lining.
 - 2) Flex duct is 8 inches in diameter and 5 feet in length for run to diffuser.
 - 3) Flex duct has a vinyl core.
 - 4) Room size is 2400 ft³ (size of standard test room).
 - 5) Unit is located 5 ft from measurement point.
 - 6) Attenuation credit based on a 300 CFM flow division using 10 log (# space) not shown above



TH-500 - Electric Heat Notes & kW Ranges

NOTES:

1. D Ps is the static pressure difference across the TH assembly, with the damper in the fully open position.
2. To obtain total pressure (Pt), add the velocity pressure (Pv) for a given CFM to the static pressure (Ps) of the desired configuration.
3. Damper leakage at shut-off is less than 1% at the maximum capacity of the air terminal at 3 inches of static pressure, for units 6 through 16.
4. It is recommended that air terminals be selected in the upper middle range of their listed capacity for maximum efficiency.
5. The lowest CFM flows shown above only imply a range; all terminals are capable of shut-off.
The minimum pressure independent controlled flow is dependent on the controller specified.
6. Low flows: High gain sensors are available for flow control down to 50 CFM if desired. On 6" inlet only.
Warning: Most flow controllers are limited to a 5/1 flow control range.
7. Air terminals are not recommended for operation in ambient temperatures over 95°F.
For protection of controls, do not store in ambient temperatures over 115° F.
8. A minimum of 0.03 inches of water is required to set the flow switch in the electric heater.
Warning: Flow rates with static pressures below 0.03 inches of water will not activate the electric heater. Consult Factory.
9. Heaters equal or less than 6.0 kW are specifiable to the nearest 0.2 kW. Heaters from 6.0 to 10.0 kW are specifiable to the nearest 0.5 kW.
Heaters from 10.5 to Max kW are specifiable to the nearest 1.0 kW.
10. **Minimum flow rate for electric heat is 70 CFM/kW. Lower CFM's can cause nuisance tripping, excessive discharge temperatures, rapid cycling, and rapid element failure. Electric Heat units running below 70 CFM/kW will void all warranties (See Selection Recommendations for TH-500 on page TH-21).**
11. Higher kW's consult factory for availability. Min of 70 CFM/kW.
12. For optimum thermal comfort, the suggested discharge temperature should not exceed 20°F above room set point.
13. We do not recommend discharge temperatures in excess of 115°F to protect heater coils.

Single Phase				
Size	Heater Voltage	Min kW/St	Max kW	Max Steps
6	120	1.0	4	2
	208	.5	4	2
	240	.5	4	2
	277	.5	4	2
	480	1	4	2
8	120	1.0	5	3
	208	.5	8	3
	240	.5	8	3
	277	.5	8	3
	480	1	5	3
10	120	.5	5	3
	208	.5	9.5	3
	240	.5	9.5	3
	277	.5	12	3
	480	1	13	3
12	120	.5	5	3
	208	.5	9.5	3
	240	.5	9.5	3
	277	.5	12	3
	480	.5	13	3
14	120	.5	5	3
	208	.5	9.5	3
	240	.5	9.5	3
	277	.5	12	3
	480	.5	13	3
16	120	1.4	5	3
	208	.5	9.5	3
	240	.5	9.5	3
	277	.5	12	3
	480	.5	13	3
20	120	.5	5	3
	208	.5	9.5	3
	240	.5	9.5	3
	277	.5	12	3
	480	.5	13	3
24	120	.5	5	3
	208	.5	9.5	3
	240	.5	9.5	3
	277	.5	12	3
	480	.5	13	3

Three Phase				
Size	Heater Voltage	Min kW/St	Max kW	Max Steps
6	208	.5	4	2
	240	.5	4	2
	480	1.6	4	2
8	208	1.5	8	3
	240	1.5	8	3
10	208	1.5	13	3
	240	1.5	13	3
	480	1.5	13	3
12	208	1.5	16	3
	240	1.5	16	3
	480	1.5	23	3
14	208	1.5	16	3
	240	1.5	16	3
	480	1.5	24	3
16	208	1.5	16	3
	240	1.5	16	3
	480	1.5	39	3
20	208	1.5	16	3
	240	1.5	16	3
	480	1.5	39	3
24	208	1.5	16	3
	240	1.5	16	3
	480	1.5	39	3

Electric heat selection

- Specify electric duct heaters using voltage, kW and number of steps.
- Use above chart to select voltage. Calculate required kW using following equations:

* air density at sea level - reduce by 0.036 for each 1000 feet of altitude above sea level

$kW = \frac{BTU/hr}{3413}$	$dT = \frac{kW \times 3413}{CFM \times 1.085^*}$	$kW = \frac{CFM \times dT \times 1.085^*}{3413}$
$CFM = \frac{kW \times 3413}{dT \times 1.085^*}$	$CFM = \frac{kW \times 3413}{dT \times 1.085^*}$	

Where

- BTU/hr = Required heating capacity
- CFM = volume of air during heating. Typically 30% to 100% of maximum cooling air volume
- dT = desired air temperature rise across the electric heater in °F
- Inlet air temperature = primary air temperature, usually 55°F



ATU - Air Terminal Units

5/2007

TH-500 - Hot Water Coils MBH Selection Data

TH-506 Imperial Units			CFM							
	GPM	Head Loss (Ft-hd)	100	200	300	350	400	450	500	600
1-Row 1-Circuit	0.5	0.1	5.1	6.9	8.0	8.4	8.7	9.0	9.3	9.7
	1	0.47	5.6	7.9	9.4	10.0	10.5	10.9	11.4	12.0
	2	1.79	6.0	8.6	10.4	11.1	11.8	12.3	12.9	13.8
	3	3.91	6.1	8.9	10.8	11.6	12.3	12.9	13.5	14.7
	4	6.83	6.2	9.0	11.0	11.8	12.6	13.2	13.8	14.9
Airsides Ps (in. wc.)			0.01	0.04	0.08	0.1	0.13	0.15	0.19	0.25
2-Row 2-Circuit	1	0.12	8.3	12.2	14.7	15.7	16.5	17.2	17.9	19.0
	2	0.47	9.0	13.8	17.1	18.5	19.7	20.7	21.7	23.3
	3	1.02	9.2	14.4	18.2	19.7	21.0	22.3	23.4	25.3
	5	2.75	9.4	15.0	19.1	20.8	22.3	23.7	25.0	27.2
	6	3.92	9.5	15.2	19.4	21.1	22.7	24.1	25.5	27.8
Airsides Ps (in. wc.)			0.03	0.09	0.17	0.22	0.27	0.33	0.4	0.54

TH-508 Imperial Units			CFM							
	GPM	Head Loss (Ft-hd)	300	400	500	600	700	800	900	1000
1-Row 1-Circuit	0.5	0.17	9.2	10.1	10.8	11.3	11.8	12.2	12.5	12.8
	1	0.64	10.9	12.2	13.3	14.1	14.8	15.5	16.0	16.5
	2	2.42	12.0	13.7	15.0	16.1	17.1	18.0	18.7	19.4
	3	5.3	12.5	14.3	15.7	17.0	18.1	19.0	19.9	20.7
	4	9.25	12.7	14.6	16.1	17.5	18.6	19.6	20.5	21.4
Airsides Ps (in. wc.)			0.05	0.08	0.11	0.15	0.2	0.25	0.31	0.37
2-Row 2-Circuit	1	0.17	16.6	18.7	20.4	21.7	22.8	23.8	24.6	25.3
	2	0.64	19.2	22.3	24.7	26.0	28.5	30.0	31.3	32.5
	3	1.39	20.3	23.8	26.6	29.0	31.1	32.9	34.5	36.0
	4.5	3.04	21.2	25.0	28.1	30.8	33.2	35.2	37.1	38.8
	6	5.31	21.6	25.6	28.9	31.8	34.3	36.5	38.6	40.4
Airsides Ps (in. wc.)			0.1	0.17	0.24	0.33	0.43	0.54	0.65	0.78

TH-510 Imperial Units			CFM							
	GPM	Head Loss (Ft-hd)	400	600	800	1000	1200	1400	1500	1600
1-Row 2-Circuit	1	0.12	13.6	15.7	17.1	18.3	19.1	19.9	20.2	20.5
	2	0.46	15.7	18.5	20.7	22.3	23.7	24.9	25.4	25.8
	3	1.01	16.5	19.8	22.2	24.2	25.8	27.2	27.8	28.4
	4	1.76	17.0	20.5	23.2	25.3	27.1	28.6	29.3	29.9
	5	2.71	17.3	21.0	23.8	26.0	27.9	29.5	30.3	30.9
Airsides Ps (in. wc.)			0.04	0.08	0.13	0.19	0.27	0.35	0.39	0.44
2-Row 3-Circuit	1	0.1	20.6	24.0	26.3	27.9	29.0	30.2	-	-
	2	0.37	24.9	30.1	34.0	36.9	38.9	41.2	-	-
	3	0.82	26.8	33.0	37.7	41.4	43.9	46.9	-	-
	4.5	1.8	28.8	35.3	40.7	45.1	48.2	51.8	-	-
	6	3.16	29.0	36.5	42.4	47.2	50.6	54.7	-	-
Airsides Ps (in. wc.)			0.09	0.18	0.28	0.41	0.57	0.73	-	-

TH-512 Imperial Units			CFM							
	GPM	Head Loss (Ft-hd)	800	1000	1200	1400	1600	1800	2000	2200
1-Row 2-Circuit	1	0.15	20.2	21.6	22.7	23.6	24.3	25.0	25.6	26.1
	2	0.55	24.4	26.5	28.2	29.7	30.9	32.0	33.0	33.9
	3	1.21	26.3	28.7	30.8	32.6	34.1	35.4	36.7	37.8
	4	2.11	27.3	30.0	32.3	34.2	36.0	37.5	38.8	40.1
	5	3.25	28.0	30.9	33.3	35.4	37.2	38.8	40.3	41.6
Airsides Ps (in. wc.)			0.08	0.11	0.15	0.2	0.25	0.31	0.37	0.44
2-Row 4-Circuit	1	0.06	28.5	30.3	31.5	32.8	33.7	34.5	35.1	-
	2	0.25	37.5	40.8	43.1	45.7	47.5	49.1	50.5	-
	3	0.54	41.9	46.2	49.1	52.6	55.1	57.3	59.3	-
	4.5	1.2	45.5	50.6	54.3	58.6	61.8	64.6	67.1	-
	6	2.12	47.6	53.2	57.3	62.2	65.8	69.0	71.9	-
Airsides Ps (in. wc.)			0.17	0.24	0.33	0.43	0.54	0.65	0.78	-

Air Terminal Units



ATU

ATU - Air Terminal Units

TH-500 - Hot Water Coils MBH Selection Data

TH-514 Imperial Units			CFM							
	GPM	Head Loss (Ft-hd)	1000	1300	1600	2000	2300	2600	3000	3300
1-Row 2-Circuit	1	0.21	25.7	27.7	29.2	30.8	31.7	32.5	33.4	33.9
	2	0.79	31.9	35.1	37.7	40.4	42.1	43.5	45.2	46.3
	3	1.73	34.7	38.6	41.7	45.1	47.2	49.1	51.2	52.7
	4	3.01	36.3	40.6	44.1	47.9	50.3	52.4	54.2	55.6
	5	4.63	37.3	41.9	45.6	49.7	52.4	54.7	57.4	59.2
		Airside Ps (in. wc.)	0.06	0.09	0.13	0.19	0.25	0.31	0.39	0.46
2-Row 4-Circuit	1	0.08	35.1	37.5	39.1	40.8	41.8	42.6	43.4	-
	2	0.3	47.2	52.4	56.1	59.8	62.1	64.0	66.1	-
	3	0.66	53.8	60.2	65.3	70.6	73.9	76.7	79.9	-
	4.5	1.45	59.0	66.9	73.4	80.3	84.6	88.4	92.7	-
	6	2.54	62.1	70.9	78.2	86.2	91.2	95.7	100.8	-
		Airside Ps (in. wc.)	0.13	0.2	0.28	0.41	0.52	0.64	0.82	-

TH-516 Imperial Units			CFM							
	GPM	Head Loss (Ft-hd)	1600	2000	2300	2600	3000	3300	3600	4000
1-Row 2-Circuit	1	0.24	31.7	33.4	34.4	35.2	36.2	36.8	37.3	38.0
	2	0.89	41.1	44.2	46.1	47.7	49.6	50.8	51.9	53.2
	3	1.95	45.6	49.5	51.9	54.0	56.4	58.1	59.5	61.3
	4	3.39	48.3	52.6	55.4	57.8	60.6	62.5	64.2	66.3
	5	5.21	50.4	54.7	57.7	60.4	63.5	65.6	67.5	69.8
		Airside Ps (in. wc.)	0.1	0.14	0.18	0.22	0.29	0.34	0.39	0.47
2-Row 4-Circuit	1	0.08	41.7	43.5	44.5	45.3	46.2	46.8	47.2	-
	2	0.32	60.1	64.3	66.8	68.9	71.2	72.7	74.0	-
	3	0.72	70.3	76.2	79.9	83.0	86.5	88.8	90.9	-
	4.5	1.58	79.0	86.8	91.7	95.9	100.8	104.0	107.0	-
	6	2.76	84.3	93.3	99.0	104.0	109.8	113.7	117.2	-
		Airside Ps (in. wc.)	0.21	0.3	0.39	0.47	0.6	0.71	0.82	-

TH-520 Imperial Units			CFM							
	GPM	Head Loss (Ft-hd)	1500	2000	2500	3000	3500	4000	5000	6000
1-Row 4-Circuit	2	0.25	43.9	48.0	51.1	53.6	55.6	57.2	59.9	62.0
	4	0.96	53.0	59.3	64.2	68.3	71.7	74.6	79.4	83.2
	6	2.12	57.0	64.4	70.3	75.2	79.4	83.0	89.1	94.0
	8	3.72	59.2	67.3	73.8	79.3	84.0	88.9	95.0	100.6
	10	5.77	60.7	69.2	76.2	82.0	87.0	91.4	98.9	105.1
		Airside Ps (in. wc.)	0.05	0.08	0.11	0.15	0.2	0.25	0.37	0.51
2-Row 6-Circuit	6	1.55	90.8	104.1	114.7	123.3	130.6	136.8	146.9	-
	8	2.73	95.9	111.0	123.2	133.3	141.9	149.4	161.7	-
	10	4.23	99.2	115.6	129.0	140.1	149.7	158.1	172.1	-
	12	6.06	101.6	118.9	133.1	145.1	155.5	164.5	179.8	-
	14	8.21	103.4	121.4	136.2	148.9	159.8	169.4	185.7	-
		Airside Ps (in. wc.)	0.1	0.17	0.24	0.33	0.43	0.54	0.78	-

TH-524 Imperial Units			CFM							
	GPM	Head Loss (Ft-hd)	2000	3000	4000	5000	5500	6000	7000	8000
1-Row 4-Circuit	2	0.28	53.4	59.7	63.9	66.9	68.2	69.3	71.1	72.7
	4	1.07	66.3	76.8	84.2	89.8	92.2	94.3	98.0	101.1
	6	2.36	72.1	84.8	94.1	101.2	104.3	107.1	112.0	116.2
	8	4.15	75.5	89.6	100.0	108.2	111.7	114.9	120.6	125.5
	10	6.43	77.6	92.7	103.9	112.8	116.6	120.2	126.4	131.9
		Airside Ps (in. wc.)	0.05	0.1	0.17	0.25	0.29	0.34	0.44	0.56
2-Row 6-Circuit	2	0.2	74.8	82.9	87.8	91.1	92.4	93.5	-	-
	4	0.77	100.8	117.3	128.4	136.5	139.7	142.6	-	-
	6	1.7	104.1	135.5	151.0	162.7	167.5	171.9	-	-
	8	2.73	111.0	146.8	165.4	179.7	185.8	191.2	-	-
	10	4.63	126.2	154.4	175.3	191.6	198.6	204.9	-	-
		Airside Ps (in. wc.)	0.11	0.22	0.36	0.52	0.62	0.71	-	-



For more product information visit us at www.metalair.com



Air Terminal Units
ATU



SERIES TL-500

Low Profile-Single Duct Air Terminal Units

Series TL-500 Air Terminals are designed to regulate the flow of conditioned air in single duct air distribution systems. They are available in a wide range of standard control sequences and work equally well in constant volume and variable volume systems. The maximum height of the TL series is 12 1/2".

Series TL-500 Air Terminals can be specified with hot water coils, electric heat, sound attenuators, and other optional accessories.

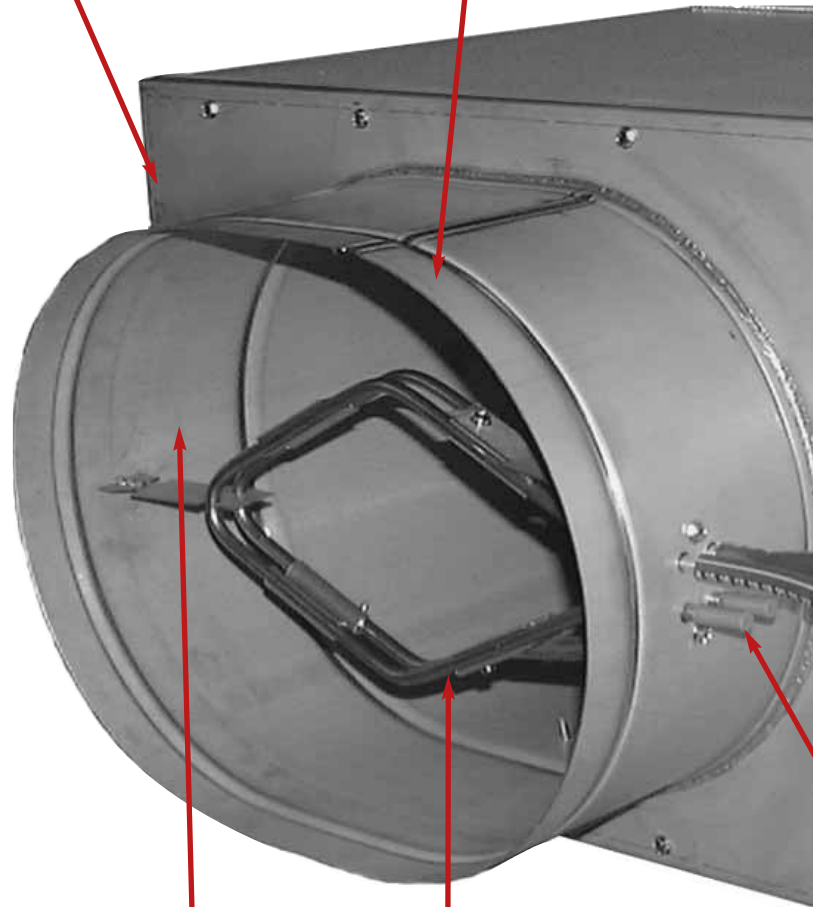
Series TL-500 Air Terminals feature a low leakage single blade damper.

Series TL-500 is also available with pneumatic, electric, analog electric, and DDC (by others) factory mounted controls.

Series TL-500 Air Terminals are available for both system system pressure independent and system pressure dependent applications.

The inlet tube for the TL-500 includes a bead that strengthens the tube and serves as a stop to keep attached flex duct from slipping

For set-up and balancing purposes, all units are shipped with a convenient balancing chart located on the outside of the terminal for conversion from velocity pressure to CFM



Units are constructed with a seamless butt weld to minimize leakage and prevent the damper from binding

Multiquadrant Averaging Flow Sensor provides an accurate flow signal without requiring an immediate upstream straight duct connection (Shipped standard on all units)

Air Terminal Units



ATU

ATU - Air Terminal Units

Maximum Height 12 1/2"

All units include barbed fittings to secure tubing tightly in place

Control mounting plate and control cover are shipped standard on all units(right hand controls and coil connections are standard)

For long life and continuous operation, the damper rotates in a self-lubricating Kepital® (acetal resin) bearing

Control panel includes stand-offs to allow mounting of controls without penetrating the casing

METALAIRE® factory can mount controls by others. Terminal unit is shipped with the required control and power wiring diagrams

TL-500 is available with pneumatic, electric, analog or digital controls

Standard insulation is dual density glass fiber. Optional liners are available including Thermopure (closed cell foam), foil face, and metal liner

All TL-500 terminal units are ARI certified and shipped with the ARI seal

All units are shipped with easy access balancing taps. The extra ports can be used to read CFM (through velocity pressure) directly at the unit



For more product information visit us at www.metalaire.com



Air Terminal Units



ATU



SERIES FCI-600

Constant Volume Air Terminal Units

Series FCI-600 fan-powered terminal units are designed to provide superior comfort control to zones with both heating and cooling requirements. The fan in a constant volume (or series) fan powered terminal, runs continuously during occupied hours. FCI is available with an optional ECM motor for improved energy efficiency and control.

Series FCI-600 provides cooling through the primary air valve. The primary air valve controls the volume of air that is discharged into the terminal unit. The cooled air is delivered to the space through the terminal's fan. When heating is required, the Series FCI-600 initially provides plenum air that is drawn through the induction inlet.

Series FCI-600 is available with a wide range of control options and accessories to meet your design requirements; whether they be for factory mounted direct digital controls, pneumatic, or analog applications.

Series FCI-600 is available in 6 casing sizes with a wide range of primary inlet sizes offering the flexibility to meet both your capacity and sound requirements.

All units are shipped with easy access balancing taps. The extra ports can be used to read CFM (through velocity pressure) directly at the unit

All units include an SCR solid state fan speed controller. Motors are designed to work in conjunction with the SCR controller

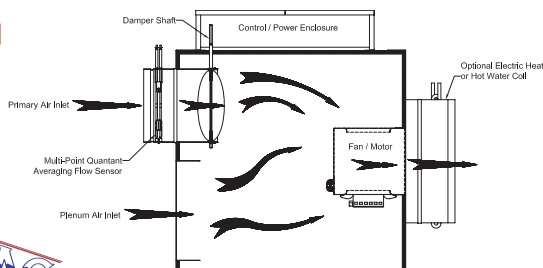
All electrical wiring is connected using quick-disconnect bulkhead fittings allowing easy servicing of electrical components

Control panel includes stand-offs to allow mounting of controls without penetrating the casing

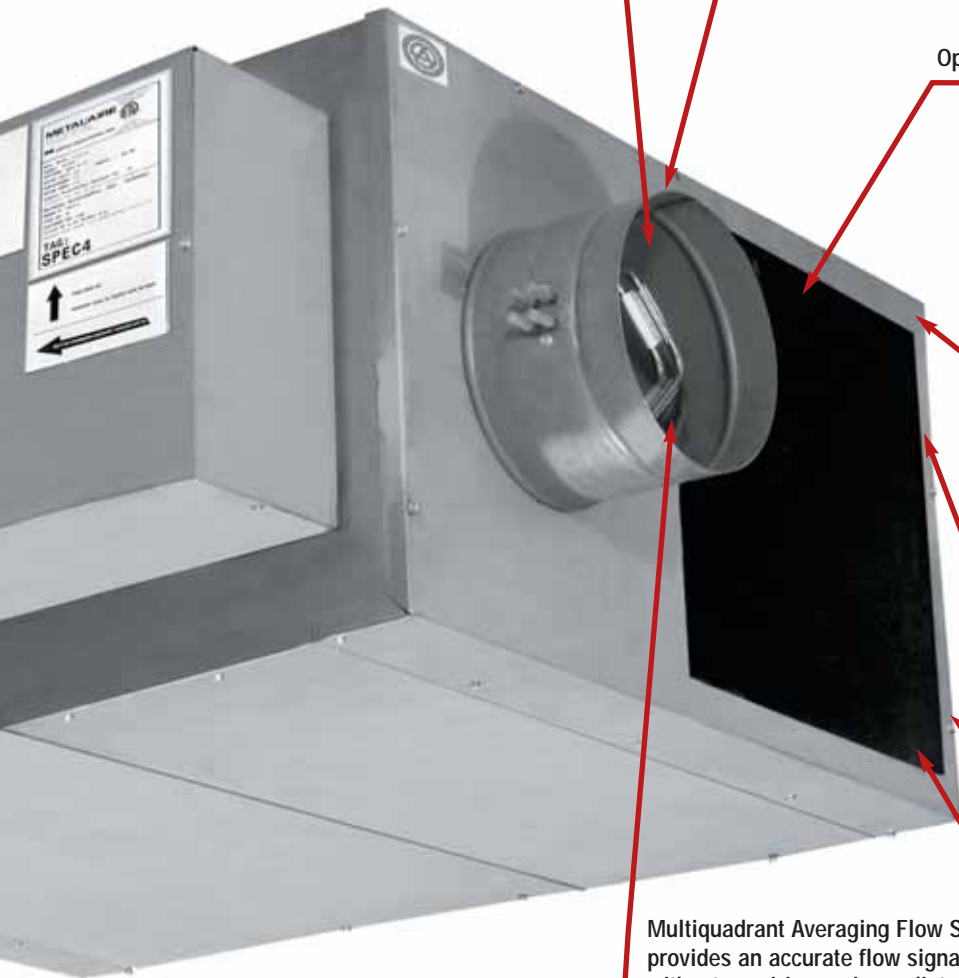
Air Terminal Units



ATU



ATU - Air Terminal Units



For long life and continuous operation, the damper shaft rotates in a self-lubricating Kepital® (acetal resin) bearing

Round primary inlet tubes are constructed with a seamless butt weld for rigidity and to eliminate leakage. It also includes a bead that strengthens the tube and provides recess for flex duct straps

Optional filter rack is available for 1" thick filters

Inlet panel is one-piece construction to increase rigidity and to reduce radiated sound

All units are ETL® listed to UL® Standard 1995 and CSA-C22.2 No. 236. All electrical components are UL® certified and listed

1" thick fiberglass insulation is standard

Multiquadrant Averaging Flow Sensor provides an accurate flow signal without requiring an immediate upstream straight duct connection (Shipped standard on all units)

Hand Adjustable Restrictor Plates Top & Bottom For Balancing

Air Terminal Units



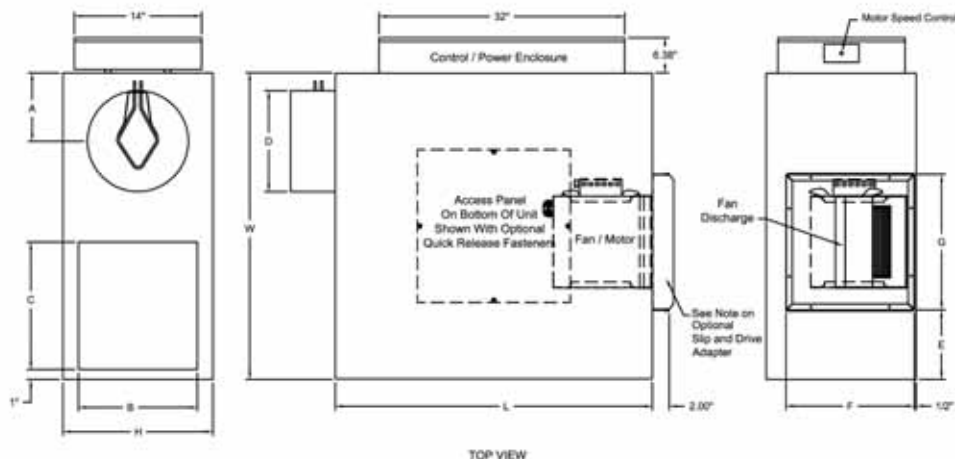
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FCI-600 - Air Terminal Dimensions

Dimensions are in inches

Series Fan Powered - Basic Unit

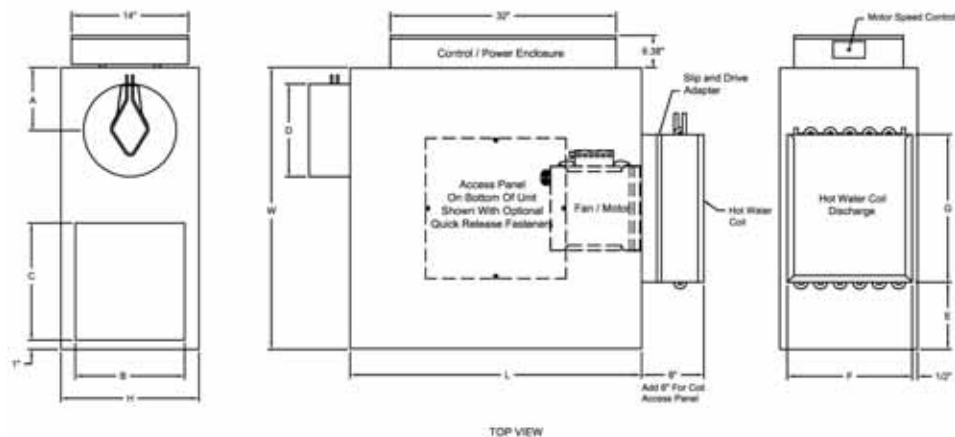
- Case Size 2 - 8" Inlet Case Size 5 - 14" Inlet
- Case Size 3 - 10" Inlet Case Size 6 - 16" Inlet
- Case Size 4 - 12" Inlet Case Size 7 - 18" x 16" Inlet



Casing Size	Inlet Diameter D		Horse Power	Unit Height H	Unit Width W	Unit Length L	Inlet Loc. A	Ind. Inlet Height B	Ind. Inlet Width C	Discharge Loc. E	Discharge Height F	Discharge Width G
	Standard	Optional										
2	8 (203)	6, 10, 12	1/8	17 1/2 (445)	30 (762)	36 (914)	7 (178)	14 (356)	14 (356)	7 (178)	15 (381)	16 (406)
3	10 (254)	6, 8, 12, 14	1/8	17 1/2 (445)	36 (914)	40 (1016)	8 (203)	14 (356)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
4	12 (305)	8, 10, 14	1/4	17 1/2 (445)	36 (914)	40 (1016)	8 (203)	14 (356)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
5	14 (356)	10, 12, 16	1/3	20 (508)	40 (1016)	40 (1016)	10 (254)	16 (406)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
6	16 (406)	10, 12, 14	1	20 (508)	42 (1067)	42 (1067)	10 (254)	16 (406)	20 (508)	9 (228)	18 (457)	22 (559)
7	18 x 16 (457 x 406)	12, 14, 16	(2) 3/4	20 (508)	46 (1168)	46 (1168)	11 (279)	16 (406)	22 (559)	4 (102)	20 (508)	38 (962)

Series Fan Powered - With Hot Water Coil on Discharge Port

- Case Size 2 - 8" Inlet Case Size 5 - 14" Inlet
- Case Size 3 - 10" Inlet Case Size 6 - 16" Inlet
- Case Size 4 - 12" Inlet Case Size 7 - 18" x 16" Inlet



Casing Size	Inlet Diameter D		Horse Power	Unit Height H	Unit Width W	Unit Length L	Inlet Loc. A	Ind. Inlet Height B	Ind. Inlet Width C	Discharge Loc. E	Standard Hot Water Coil	
	Standard	Optional									Discharge Height F	Discharge Width G
2	8 (203)	6, 10, 12	1/2	17 1/2 (445)	30 (762)	36 (914)	7 (178)	14 (356)	14 (356)	7 (178)	15 (381)	16 (406)
4	12 (305)	8, 10, 14	1/2	17 1/2 (445)	36 (914)	40 (1016)	8 (203)	14 (356)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
6	16 (406)	10, 12, 14	1	20 (508)	42 (1067)	42 (1067)	10 (254)	16 (406)	20 (508)	9 (228)	18 (457)	22 (559)

Air Terminal Units



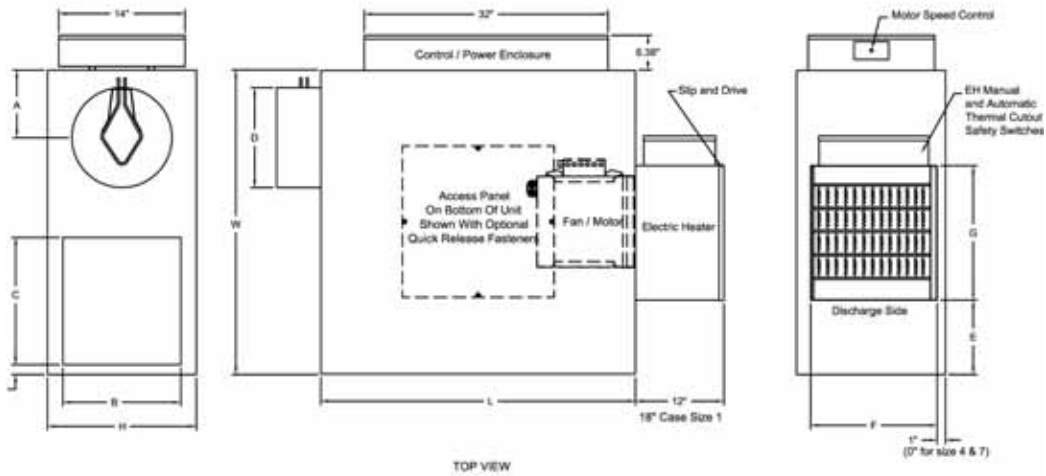
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ATU - Air Terminal Units

FCI-600 - Air Terminal Dimensions

Series Fan Powered - With Electric Heat

- Case Size 2 - 8" Inlet Case Size 5 - 14" Inlet
- Case Size 3 - 10" Inlet Case Size 6 - 16" Inlet
- Case Size 4 - 12" Inlet Case Size 7 - 18" x 16" Inlet



Casing Size	Inlet Diameter D		Horse Power	Unit Height H	Unit Width W	Unit Length L	Inlet Loc. A	Ind. Inlet Height B	Ind. Inlet Width C	Discharge Loc. E	Discharge Height F	Discharge Width G
	Standard	Optional										
2	8 (203)	8, 10, 12	1/8	17 1/2 (445)	30 (762)	36 (914)	7 (178)	14 (356)	14 (356)	7 (178)	15 (381)	16 (406)
3	10 (254)	8, 8, 12, 14	1/8	17 1/2 (445)	36 (914)	40 (1016)	8 (203)	14 (356)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
4	12 (305)	8, 10, 14	1/4	17 1/2 (445)	36 (914)	40 (1016)	8 (203)	14 (356)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
5	14 (356)	10, 12, 16	1/3	20 (508)	40 (1016)	40 (1016)	10 (254)	16 (406)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
6	16 (406)	10, 12, 14	1	20 (508)	42 (1067)	42 (1067)	10 (254)	16 (406)	20 (508)	9 (228)	18 (457)	22 (559)
7	18 x 16 (457 x 406)	12, 14, 16	(2) 3/4	20 (508)	46 (1168)	46 (1168)	11 (279)	16 (406)	22 (559)	4 (102)	20 (508)	38 (962)

Approximate Shipping Weight	
CASE	FCI
2	124 LBS.
3	165 LBS.
4	165 LBS.
5	198 LBS.
6	220 LBS.
7	260 LBS.



ATU - Air Terminal Units

5/2007

FCI-600 - RADIATED SOUND POWER AT FAN ONLY, .5", .75" WG

Case	Inlet	Outlet Ps in. H2O	CFM (L/s)	Min Ps in. H2O (Pa)	Fan Only																		sure, Ps = 0.5 inches of water						sure, Ps = 0.75 inches of water																																																																																																																																																																							
					Octave Band Sound Power, Lw, dB							NC1	NC2	Octave Band Sound Power, Lw, dB							NC1	NC2	Octave Band Sound Power, Lw, dB							NC1	NC2																																																																																																																																																																					
					2	3	4	5	6	7	90	885-	885-	2	3	4	5	6	7	90	885-	885-	2	3	4	5	6	7	90	885-	885-																																																																																																																																																																					
					2	3	4	5	6	7	90	885-	885-	2	3	4	5	6	7	90	885-	885-	2	3	4	5	6	7	90	885-	885-																																																																																																																																																																					
2	8	0.25	200 (94)	0.007 (1.6)	55	52	47	39	40	36	18	21	57	53	51	43	44	39	22	25	56	53	50	44	45	41	21	24	300 (142)	0.017 (4.2)	56	53	48	39	40	36	19	22	57	54	51	43	44	39	22	25	57	54	51	45	46	41	22	25	400 (189)	0.031 (7.7)	57	54	49	39	40	37	20	23	59	55	53	43	44	40	24	27	59	55	51	45	46	43	22	25	500 (236)	0.045 (11.2)	60	57	50	39	41	37	22	26	60	56	53	43	44	40	24	27	61	57	53	45	47	42	24	27	600 (283)	0.076 (18.9)	62	60	50	43	43	39	26	29	62	59	53	46	46	41	25	28	63	60	53	47	47	43	26	29	750 (354)	0.110 (27.4)	66	63	52	49	53	48	29	33	66	63	53	46	46	45	29	33	67	64	54	48	47	46	31	34																																						
			3	10	0.25	300 (142)	0.006 (1.4)	60	56	49	37	36	33	21	25	61	58	50	42	40	37	24	27	61	57	50	43	41	38	22	26	400 (189)	0.010 (2.6)	60	56	49	37	36	33	21	25	61	58	50	42	40	37	24	27	61	58	50	43	42	39	24	27	500 (236)	0.016 (4.0)	60	56	49	37	36	33	21	25	61	58	50	42	40	37	24	27	62	58	51	44	42	39	24	27	600 (283)	0.023 (5.8)	62	57	49	39	38	36	22	26	62	59	50	43	41	38	25	28	63	60	51	45	44	41	26	29	700 (330)	0.032 (7.9)	62	59	49	41	41	38	25	29	64	61	51	45	44	41	27	31	64	61	51	46	45	43	27	31	800 (378)	0.041 (10.3)	64	61	49	44	43	41	27	31	65	63	51	47	46	43	29	33	66	63	52	48	47	45	29	33	900 (425)	0.052 (13.0)	65	62	50	45	45	44	28	32	66	64	52	48	47	46	31	34	67	65	53	50	49	47	32	35									
						4	12	0.25	400 (189)	0.001 (0.3)	59	57	45	39	36	31	22	26	61	57	46	40	37	33	22	26	61	57	46	40	38	34	22	26	600 (283)	0.003 (0.6)	59	57	45	39	36	31	22	26	61	57	46	40	37	33	22	26	61	58	47	41	39	35	24	27	800 (378)	0.005 (1.2)	61	58	46	40	38	33	24	27	63	60	48	42	40	36	26	29	64	61	49	44	42	38	27	31	1000 (472)	0.008 (2.0)	64	61	48	44	42	38	27	31	67	63	51	46	44	41	29	33	68	63	51	47	45	42	29	33	1200 (566)	0.014 (3.5)	66	62	51	46	45	42	28	32	70	66	53	49	48	45	33	37	70	67	54	50	48	46	34	38	1400 (661)	0.023 (5.7)	69	65	53	49	49	46	32	35	73	69	56	52	51	48	37	40	73	69	56	52	51	49	37	40	1600 (755)	0.037 (9.2)	71	67	55	52	52	49	34	38	75	70	58	54	53	51	38	41	74	67	60	55	52	50	36	40						
									5	14	0.25	1000 (472)	0.029 (7.2)	63	60	50	43	42	37	26	29	65	61	51	45	42	38	27	31	66	62	52	47	44	39	28	32	1200 (566)	0.041 (10.3)	65	61	52	45	44	40	27	31	67	63	52	47	44	40	29	33	68	64	53	48	46	42	31	34	1400 (661)	0.056 (14.0)	67	64	53	48	47	43	31	34	70	65	54	49	47	44	32	35	70	66	55	50	49	45	33	37	1600 (755)	0.074 (18.3)	69	66	54	50	50	47	33	37	71	68	55	51	50	47	35	39	72	68	56	52	51	47	35	39	1800 (849)	0.093 (23.2)	71	68	56	53	53	50	35	39	73	70	57	53	52	50	38	41	74	71	58	54	53	50	39	42	2000 (944)	0.115 (28.6)	73	70	57	54	54	52	38	41	75	72	59	55	54	52	40	44	76	73	60	56	55	52	41	45																													
												6	16	0.25	1600 (755)	0.030 (7.5)	70	65	60	55	50	48	32	35	71	66	60	55	49	47	33	37	72	66	60	55	49	47	34	38	1800 (849)	0.039 (9.7)	72	67	60	57	52	50	34	38	73	67	61	56	51	49	35	39	73	68	61	56	51	49	35	39	2000 (944)	0.048 (11.9)	74	69	61	58	54	52	37	40	74	69	62	57	52	50	37	40	74	70	62	58	53	50	38	41	2200 (1038)	0.058 (14.4)	75	71	62	59	55	54	39	42	75	70	62	59	54	52	38	41	76	71	62	59	54	52	39	43	2400 (1133)	0.069 (17.2)	77	73	63	61	57	56	41	45	77	72	63	60	56	53	40	44	77	72	63	61	56	54	40	44	2600 (1227)	0.081 (20.2)	80	75	64	64	60	58	44	48	78	73	64	62	57	55	41	45	79	74	65	62	58	55	43	46	2800 (1321)	0.096 (23.8)	83	78	66	69	64	62	48	52	80	75	66	63	59	57	44	48	80	75	66	63	59	57	44	48
															7	18 x 16	0.25	2200 (1038)	0.068 (17.0)	73	71	67	64	62	59	39	43	75	72	68	64	62	60	41	44	76	73	69	65	62	60	42	45	2500 (1180)	0.082 (20.5)	75	73	69	66	64	60	42	45	77	74	70	66	64	61	43	46	77	75	70	66	64	62	44	47	2700 (1274)	0.091 (22.8)	78	75	70	66	64	61	44	47	79	77	72	67	64	61	46	50	80	78	73	67	65	62	47	51	3000 (1416)	0.105 (26.1)	79	76	71	67	65	62	45	48	80	78	73	68	65	62	47	51	81	79	74	68	66	63	47	51	4000 (1888)	0.151 (37.6)	82	80	75	71	70	65	50	53	83	81	76	71	69	65	51	54	83	82	77	71	69	65	52	55	4400 (1888)	0.163 (40.5)	83	81	76	73	72	67	51	54	84	82	77	74	72	68	52	55	84	83	78	74	73	69	53	57																							

See Page ATU-257 For NC Calculations

NC CALCULATIONS

The current ARI Standard for NC calculations is ARI 885-98. Other terminal manufacturers may catalog performance based on ARI 885-90. Using this older, obsolete standard will provide lower NC levels compared to the 1998 standard. To allow for fair and accurate performance comparisons, METALAIRE publishes the NC levels for both the 1990 standard and the 1998 current standard.

Air Terminal Units



ATU

ATU - Air Terminal Units

FCI-600 - RADIATED SOUND POWER AT 1", 1.5", 2" WG

Case	Inlet	Outlet Ps in. H2O	CFM (L/s)	Min Ps in. H2O (Pa)	sure, Ps = 1.0 inches of water												sure, Ps = 1.5 inches of water												sure, Ps = 2.0 inches of water											
					Octave Band Sound Power, Lw, dB							NC1	NC2	Octave Band Sound Power, Lw, dB							NC1	NC2	Octave Band Sound Power, Lw, dB							NC1	NC2									
					2	3	4	5	6	7	885-	885-	2	3	4	5	6	7	885-	885-	2	3	4	5	6	7	885-	885-												
2	8	0.25	200 (94)	0.007 (1.6)	54	52	50	45	47	43	21	24	54	52	50	48	51	48	22	24	55	52	51	51	54	51	25	25												
			300 (142)	0.017 (4.2)	57	54	51	46	48	44	22	25	57	54	52	49	52	48	23	26	58	55	53	52	55	52	26	27												
			400 (189)	0.031 (7.7)	59	54	48	47	49	46	20	22	60	58	53	50	53	51	24	27	63	59	54	53	56	54	27	29												
			500 (236)	0.045 (11.2)	62	58	53	47	49	45	24	27	63	59	54	50	53	49	25	29	64	60	55	52	56	52	27	30												
			600 (283)	0.076 (18.9)	64	60	54	49	49	45	26	29	65	61	54	51	52	49	27	31	66	62	55	54	55	52	28	32												
750 (354)	0.110 (27.4)	68	64	55	49	50	47	31	34	68	65	55	53	53	51	32	35	69	65	56	54	55	52	32	35															
3	10	0.25	300 (142)	0.006 (1.4)	61	57	49	43	43	40	22	26	61	57	51	47	47	45	22	26	61	57	53	49	50	49	24	27												
			400 (189)	0.010 (2.6)	61	58	50	44	44	41	24	27	62	58	52	47	48	46	24	27	62	59	53	50	51	49	25	28												
			500 (236)	0.016 (4.0)	62	59	51	45	45	42	25	28	63	60	53	49	49	47	26	29	64	61	55	51	52	51	27	31												
			600 (283)	0.023 (5.8)	63	60	51	46	46	43	26	29	64	61	53	49	49	47	27	31	65	62	55	52	52	51	28	32												
			700 (330)	0.032 (7.9)	65	62	52	47	47	45	28	32	66	63	54	50	50	48	29	33	67	64	56	52	53	51	31	34												
800 (378)	0.041 (10.3)	66	64	53	49	49	47	31	34	68	65	55	51	51	49	32	35	68	66	57	53	54	52	33	37															
900 (425)	0.052 (13.0)	68	66	54	51	51	49	33	37	69	67	56	52	53	51	34	38	70	67	58	54	55	53	34	38															
4	12	0.25	400 (189)	0.001 (0.3)	61	58	46	41	40	36	24	27	61	58	48	44	43	41	24	27	62	60	51	46	46	45	26	29												
			600 (283)	0.003 (0.6)	62	59	48	43	41	38	25	28	63	60	50	45	44	43	26	29	64	61	52	48	47	46	27	31												
			800 (378)	0.005 (1.2)	65	62	50	45	43	40	28	32	66	63	52	47	46	44	29	33	67	64	54	49	49	47	31	34												
			1000 (472)	0.008 (2.0)	68	64	52	48	46	43	31	34	70	66	54	50	48	46	33	37	71	67	56	51	50	48	34	38												
			1200 (566)	0.014 (3.5)	71	67	55	50	49	46	34	38	72	69	59	54	51	48	37	40	73	70	58	53	52	50	38	41												
			1400 (661)	0.023 (5.7)	73	69	57	53	52	49	37	40	74	71	61	55	53	51	39	42	75	72	60	55	54	52	40	44												
1600 (755)	0.037 (9.2)	74	64	62	57	51	50	36	40	75	73	63	57	54	52	41	45	80	68	66	61	55	53	44	48															
5	14	0.25	1000 (472)	0.029 (7.2)	68	64	54	50	48	42	31	34	70	66	57	53	53	46	33	37	71	68	60	56	57	49	35	39												
			1200 (566)	0.041 (10.3)	69	65	54	50	48	43	32	35	71	67	57	53	53	46	34	38	71	68	60	56	57	49	35	39												
			1400 (661)	0.056 (14.0)	71	67	56	52	50	46	34	38	72	68	58	54	54	48	35	39	73	70	61	57	59	50	38	41												
			1600 (755)	0.074 (18.3)	73	69	57	53	52	48	37	40	74	70	59	56	55	50	38	41	75	71	61	57	60	52	39	42												
			1800 (849)	0.093 (23.2)	75	72	59	55	54	51	40	44	76	73	61	57	57	52	41	45	77	73	62	58	61	53	41	45												
2000 (944)	0.115 (28.6)	77	73	60	57	56	53	41	45	77	74	62	58	59	54	42	46	78	75	63	59	62	55	44	47															
6	16	0.25	1600 (755)	0.030 (7.5)	72	67	60	55	49	47	34	38	73	68	61	56	50	48	35	39	74	69	61	57	51	49	37	40												
			1800 (849)	0.039 (9.7)	74	68	61	57	51	49	36	40	74	69	61	57	52	49	37	40	75	70	62	58	53	50	38	41												
			2000 (944)	0.048 (11.9)	75	70	62	58	53	51	38	41	76	71	62	58	53	51	39	43	77	72	63	59	54	52	40	44												
			2200 (1038)	0.058 (14.4)	76	71	63	59	55	52	39	43	77	72	63	60	55	53	40	44	78	73	64	60	55	54	41	45												
			2400 (1133)	0.069 (17.2)	78	73	64	61	57	54	41	45	78	73	64	62	57	55	41	45	79	74	64	63	58	57	43	46												
			2600 (1227)	0.081 (20.2)	79	75	65	62	58	56	44	47	80	75	65	62	58	56	44	48	81	75	65	62	58	56	45	49												
2800 (1321)	0.096 (23.8)	80	75	66	63	59	57	44	48	81	76	67	63	59	57	45	49	82	75	66	64	60	58	46	50															
7	18 x 16	0.25	2200 (1038)	0.068 (17.0)	76	74	69	65	62	60	42	46	78	75	70	65	62	61	44	47	80	77	74	66	63	60	47	50												
			2500 (1180)	0.082 (20.5)	78	76	71	67	64	62	45	48	80	77	72	67	64	63	46	50	82	79	76	68	65	62	49	53												
			2700 (1274)	0.091 (22.8)	80	78	73	67	65	62	47	51	81	80	75	68	65	62	50	53	83	80	77	69	66	63	50	54												
			3000 (1416)	0.105 (26.1)	81	79	74	68	66	63	48	52	81	80	76	69	66	63	51	54	85	82	79	71	68	65	53	56												
			4000 (1888)	0.151 (37.6)	83	82	77	71	69	65	52	55	84	83	78	71	68	65	53	57	89	86	83	75	72	69	57	60												
4400 (2076)	0.163 (40.5)	84	83	79	75	73	70	53	57	85	84	79	76	74	71	54	58	90	87	85	78	75	73	59	62															

See Page ATU-257 For NC Calculations

NC CALCULATIONS

The current ARI Standard for NC calculations is ARI 885-98. Other terminal manufacturers may catalog performance based on ARI 885-90. Using this older, obsolete standard will provide lower NC levels compared to the 1998 standard. To allow for fair and accurate performance comparisons, METALAIR publishes the NC levels for both the 1990 standard and the 1998 current standard.



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Air Terminal Units



ATU

ATU - Air Terminal Units

FCI-600 - DISCHARGE SOUND POWER FAN ONLY, .5", .75" WG

Case	Inlet	Outlet Ps in. H2O	CFM (L/s)	Min Ps in. H2O (Pa)	Fan Only														Pressure, Ps = 0.5 inches of water							Pressure, Ps = 0.75 inches of water						
					Octave Band Sound Power, Lw, dB														Octave Band Sound Power, Lw, dB							Octave Band Sound Power, Lw, dB						
					Octave Band Sound Power, Lw, dB							NC1 ARI 885-885-	NC2 ARI 885-885-	Octave Band Sound Power, Lw, dB							NC1 ARI 885-885-	NC2 ARI 885-885-	Octave Band Sound Power, Lw, dB							NC1 ARI 885-885-	NC2 ARI 885-885-	
					2	3	4	5	6	7	90	98	2	3	4	5	6	7	90	98	2	3	4	5	6	7	90	98				
2	8	0.25	200 (94)	0.007 (1.6)	56	50	55	49	47	43	<15	<15	55	49	54	48	45	42	<15	<15	55	49	54	48	45	42	<15	<15				
			300 (142)	0.017 (4.2)	57	51	56	50	48	45	<15	<15	58	52	56	51	50	47	<15	<15	58	52	56	52	50	47	<15	<15				
			400 (189)	0.031 (7.7)	58	51	56	51	49	48	<15	<15	62	55	58	55	54	52	<15	<15	62	55	59	56	54	53	<15	<15				
			500 (236)	0.045 (11.2)	60	56	60	55	55	55	<15	<15	62	57	61	57	57	56	<15	<15	63	58	61	59	58	57	<15	15				
			600 (283)	0.076 (18.9)	63	59	62	59	59	59	16	16	65	60	63	61	60	60	16	18	66	61	63	62	61	61	18	19				
			750 (354)	0.110 (27.4)	67	64	66	65	65	65	21	22	69	65	66	66	65	65	22	22	70	66	67	66	66	66	24	24				
3	10	0.25	300 (142)	0.006 (1.4)	53	57	54	44	44	42	<15	<15	54	57	54	44	44	43	<15	<15	62	69	60	55	53	52	27	28				
			400 (189)	0.010 (2.6)	54	58	55	45	45	43	<15	15	55	58	55	45	45	44	<15	15	60	60	58	53	51	50	16	18				
			500 (236)	0.016 (4.0)	56	60	57	47	47	45	16	18	57	60	57	47	47	46	16	18	58	51	56	51	49	48	<15	<15				
			600 (283)	0.023 (5.8)	64	62	58	48	48	47	19	20	65	62	59	48	48	47	19	20	60	56	60	55	55	55	<15	<15				
			700 (330)	0.032 (7.9)	67	63	59	49	49	48	20	21	67	63	59	49	49	49	20	21	68	64	62	57	55	54	21	22				
			800 (378)	0.041 (10.3)	68	64	60	50	49	48	21	21	69	64	61	50	50	49	21	21	70	66	63	58	57	56	24	24				
900 (425)	0.052 (13.0)	70	66	62	52	52	51	24	24	71	66	62	52	52	51	24	24	71	66	62	52	52	51	24	24							
4	12	0.25	400 (189)	0.001 (0.3)	57	58	57	56	52	47	<15	15	57	58	59	57	53	50	<15	15	59	60	60	59	55	52	16	18				
			600 (283)	0.003 (0.6)	57	58	58	57	52	48	<15	15	58	59	60	58	54	51	15	16	60	61	61	60	56	53	18	19				
			800 (378)	0.005 (1.2)	60	61	60	59	56	52	18	18	61	62	62	61	57	55	19	19	63	63	64	63	59	57	20	20				
			1000 (472)	0.008 (2.0)	64	64	64	62	60	58	21	21	64	65	66	65	61	60	22	22	66	67	67	66	63	62	25	25				
			1200 (566)	0.014 (3.5)	64	66	66	65	62	60	24	24	67	68	69	68	65	65	26	26	69	70	69	69	66	66	28	28				
			1400 (661)	0.023 (5.7)	68	68	67	68	64	62	26	26	70	71	71	71	68	68	29	29	71	73	72	72	70	69	32	32				
1600 (755)	0.037 (9.2)	71	70	67	70	65	63	28	28	72	74	74	74	71	71	33	33	73	75	74	75	72	72	34	34							
5	14	0.25	1000 (472)	0.029 (7.2)	67	60	60	56	54	51	16	17	68	61	61	58	56	53	18	18	69	62	61	59	57	54	19	20				
			1200 (566)	0.041 (10.3)	69	63	63	61	58	56	20	20	70	64	64	62	59	57	21	21	71	65	64	63	60	58	22	22				
			1400 (661)	0.056 (14.0)	70	66	66	65	62	61	24	24	71	67	67	66	63	62	25	25	72	68	67	67	64	63	26	26				
			1600 (755)	0.074 (18.3)	72	69	69	69	66	65	27	27	73	70	70	70	67	66	28	28	74	71	70	70	68	66	29	29				
			1800 (849)	0.093 (23.2)	73	72	72	72	70	69	31	31	75	73	73	73	71	70	32	32	76	74	73	73	71	70	33	33				
			2000 (944)	0.115 (28.6)	75	75	74	75	73	73	34	34	76	76	75	76	74	74	35	35	77	77	77	75	76	75	74	35	35			
6	16	0.25	1600 (755)	0.030 (7.5)	69	71	74	69	68	67	29	29	72	73	74	71	70	70	32	32	73	73	74	72	70	69	32	32				
			1800 (849)	0.039 (9.7)	71	73	75	71	69	69	32	32	74	74	76	73	72	72	33	33	74	74	75	73	72	71	33	33				
			2000 (944)	0.048 (11.9)	73	74	77	73	71	71	33	33	75	76	77	75	74	73	35	35	76	76	77	75	73	73	35	35				
			2200 (1038)	0.058 (14.4)	76	76	78	74	73	72	35	35	77	77	79	77	75	75	37	37	77	77	78	77	75	75	37	37				
			2400 (1133)	0.069 (17.2)	80	78	80	76	75	75	38	38	78	79	80	78	77	77	39	39	78	79	80	79	77	77	39	39				
			2600 (1227)	0.081 (20.2)	84	80	81	78	77	76	40	40	80	80	82	80	79	78	40	40	80	80	82	80	79	79	40	40				
2800 (1321)	0.096 (23.8)	84	80	82	80	78	78	40	40	80	82	84	82	80	80	42	42	80	82	84	82	81	80	42	42							
7	18 x 16	0.25	2200 (1038)	0.068 (17.0)	77	69	68	67	66	65	29	30	77	69	68	67	66	66	29	30	78	70	69	68	67	66	30	31				
			2500 (1180)	0.082 (20.5)	78	70	69	68	67	66	30	31	79	70	69	68	67	66	31	32	79	71	70	69	68	67	31	32				
			2700 (1274)	0.091 (22.8)	79	71	70	69	68	67	31	32	79	72	70	69	68	67	31	32	80	72	71	70	69	68	32	34				
			3000 (1416)	0.105 (26.1)	81	73	72	71	70	69	34	35	81	73	72	71	70	69	34	35	82	74	73	72	71	70	35	36				
			4000 (1888)	0.151 (37.6)	83	75	74	73	72	71	36	38	83	75	75	73	72	71	36	38	84	76	75	74	73	72	38	39				
			4400 (2076)	0.163 (40.5)	84	77	76	74	73	72	38	39	84	77	76	75	74	72	38	39	85	78	76	75	74	73	39	40				

See Page ATU-257 For NC Calculations

NC CALCULATIONS

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ATU - Air Terminal Units

FCI-600 - DISCHARGE SOUND POWER AT 1", 1.5", 2" WG

Case	Inlet	Outlet Ps in. H2O	CFM (L/s)	Min Ps in. H2O (Pa)	sure, Ps = 1.0 inches of water										sure, Ps = 1.5 inches of water										sure, Ps = 2.0 inches of water									
					Octave Band Sound Power, Lw, dB							NC1	NC2	Octave Band Sound Power, Lw, dB							NC1	NC2	Octave Band Sound Power, Lw, dB							NC1	NC2			
					2	3	4	5	6	7	90	ARI 885-	ARI 885-	2	3	4	5	6	7	90	ARI 885-	ARI 885-	2	3	4	5	6	7	90	ARI 885-	ARI 885-			
					85-85	85-85	85-85	85-85	85-85	85-85	85-85	85-85	85-85	85-85	85-85	85-85	85-85	85-85	85-85	85-85	85-85	85-85	85-85	85-85	85-85	85-85	85-85	85-85	85-85	85-85	85-85			
2	8	0.25	200 (94)	0.007 (1.6)	55	49	53	48	45	42	<15	<15	55	49	54	48	46	42	<15	<15	55	49	53	48	46	42	<15	<15						
			300 (142)	0.017 (4.2)	58	52	56	52	50	48	<15	<15	58	52	56	52	50	48	<15	<15	58	52	56	52	50	48	<15	<15						
			400 (189)	0.031 (7.7)	61	55	59	56	55	53	<15	<15	61	55	59	56	55	54	<15	<15	62	55	59	56	55	54	<15	<15						
			500 (236)	0.045 (11.2)	63	58	61	58	58	57	<15	<15	64	59	62	59	59	58	15	16	64	60	62	60	59	58	16	18						
			600 (283)	0.076 (18.9)	66	62	63	62	61	61	19	20	66	63	64	62	62	61	20	21	67	63	64	62	62	61	20	21						
750 (354)	0.110 (27.4)	70	66	67	67	67	66	24	24	70	66	67	67	66	66	24	24	71	67	68	67	67	66	25	25									
3	10	0.25	300 (142)	0.006 (1.4)	64	61	60	59	55	54	18	19	65	61	60	59	56	54	18	19	65	62	61	60	57	55	19	20						
			400 (189)	0.010 (2.6)	64	61	60	59	55	54	18	19	65	61	60	59	56	54	18	19	65	62	61	60	57	55	19	20						
			500 (236)	0.016 (4.0)	64	61	60	59	55	54	18	19	65	61	60	59	56	54	18	19	65	62	61	60	57	55	19	20						
			600 (283)	0.023 (5.8)	65	62	61	60	57	56	19	20	66	62	62	61	58	56	19	20	67	63	62	62	58	57	20	21						
			700 (330)	0.032 (7.9)	67	64	63	63	60	58	21	22	68	65	64	64	60	59	22	24	68	65	64	64	61	60	22	24						
800 (378)	0.041 (10.3)	69	66	65	65	62	61	24	24	69	66	66	66	62	61	24	24	70	67	66	66	63	62	25	25									
900 (425)	0.052 (13.0)	69	66	66	66	63	62	24	24	70	67	67	67	63	63	25	25	71	67	67	67	64	63	25	25									
4	12	0.25	400 (189)	0.001 (0.3)	58	59	60	58	55	52	15	16	60	61	61	60	56	54	18	19	61	62	62	61	57	55	19	20						
			600 (283)	0.003 (0.6)	59	60	61	59	55	53	16	18	61	61	62	61	57	54	18	19	62	63	63	62	58	56	20	21						
			800 (378)	0.005 (1.2)	62	63	63	62	59	57	20	20	63	64	64	63	60	58	21	21	64	65	65	64	61	59	22	22						
			1000 (472)	0.008 (2.0)	65	66	66	66	62	61	24	24	66	67	67	67	63	62	25	25	67	68	68	67	64	63	26	26						
			1200 (566)	0.014 (3.5)	68	69	69	69	66	65	27	27	69	70	70	70	67	66	28	28	70	71	71	70	67	67	29	29						
1400 (661)	0.023 (5.7)	71	72	72	72	69	69	31	31	71	73	73	73	70	70	32	32	72	74	73	73	71	70	33	33									
1600 (755)	0.037 (9.2)	73	74	74	75	72	72	33	33	73	75	74	75	72	72	34	34	74	76	75	76	73	73	35	35									
5	14	0.25	1000 (472)	0.029 (7.2)	70	63	61	59	57	55	20	21	71	64	62	61	59	57	21	22	71	64	62	61	59	57	21	22						
			1200 (566)	0.041 (10.3)	71	66	64	63	61	59	24	24	72	67	65	64	62	60	25	25	72	67	65	64	62	60	25	25						
			1400 (661)	0.056 (14.0)	73	69	67	67	65	63	27	27	74	70	68	68	66	64	28	28	74	70	68	68	66	64	28	28						
			1600 (755)	0.074 (18.3)	75	72	70	70	68	66	31	31	76	73	71	71	69	67	32	32	76	73	71	71	69	67	32	32						
			1800 (849)	0.093 (23.2)	76	74	73	73	71	70	33	33	78	75	74	74	72	71	34	34	78	75	74	74	72	71	34	34						
2000 (944)	0.115 (28.6)	78	77	75	76	75	74	37	37	79	78	76	77	76	75	38	38	79	78	76	77	76	75	38	38									
6	16	0.25	1600 (755)	0.030 (7.5)	72	73	74	71	70	70	32	32	72	72	73	71	69	68	31	31	73	73	74	72	70	69	32	32						
			1800 (849)	0.039 (9.7)	74	74	75	73	72	71	33	33	74	74	75	73	71	70	33	33	75	74	75	73	72	71	33	33						
			2000 (944)	0.048 (11.9)	75	76	76	75	74	73	35	35	76	75	76	75	73	72	34	34	76	76	76	75	73	73	35	35						
			2200 (1038)	0.058 (14.4)	77	77	78	77	75	75	37	37	77	77	78	77	75	75	37	37	78	77	78	77	75	75	37	37						
			2400 (1133)	0.069 (17.2)	78	79	79	79	77	77	39	39	79	79	80	79	77	77	39	39	79	79	80	79	78	77	39	39						
2600 (1227)	0.081 (20.2)	80	81	82	81	80	79	41	41	80	81	81	81	79	79	41	41	81	81	82	81	79	79	41	41									
2800 (1321)	0.096 (23.8)	82	83	84	83	82	82	44	44	81	82	83	83	81	81	42	42	81	82	84	82	81	81	42	42									
7	18 x 16	0.25	2200 (1038)	0.068 (17.0)	79	71	70	69	68	67	31	32	79	72	71	70	69	68	31	32	80	72	71	70	69	68	32	34						
			2500 (1180)	0.082 (20.5)	80	72	71	70	69	68	32	34	81	72	72	71	70	69	34	35	81	73	72	71	70	69	34	35						
			2700 (1274)	0.091 (22.8)	81	73	72	71	70	69	34	35	82	74	73	72	71	69	35	36	82	74	73	72	71	70	35	36						
			3000 (1416)	0.105 (26.1)	83	75	74	73	72	71	36	38	83	76	75	74	73	72	36	38	84	76	75	74	73	72	38	39						
			4000 (1888)	0.151 (37.6)	85	77	76	75	74	73	39	40	86	78	77	76	74	74	40	41	86	78	77	76	75	74	40	41						
4400 (2076)	0.163 (40.5)	86	78	77	76	75	74	40	41	87	79	78	77	75	75	41	43	87	80	79	77	76	75	41	43									

See Page ATU-257 For NC Calculations

NC CALCULATIONS

The current ARI Standard for NC calculations is ARI 885-98. Other terminal manufacturers may catalog performance based on ARI 885-90. Using this older, obsolete standard will provide lower NC levels compared to the 1998 standard. To allow for fair and accurate performance comparisons, METALAIRE publishes the NC levels for both the 1990 standard and the 1998 current standard.



FCI-600 - ARI Rating Points



ARI Certified Radiated Sound Power, Fan Only								
Unit Size	Fan CFM	Octave Band					Electrical Power (Watts)	
		2	3	4	5	6		7
208	400	57	54	49	39	40	37	145
310	700	62	59	49	41	41	38	230
412	1200	66	62	51	46	45	42	420
514	1800	71	68	56	53	53	50	810
616	2400	77	73	63	61	57	56	1300
718	2700	78	75	70	66	64	61	1700

ARI Certified Discharge Sound Power, 1.5" Inlet Static Pressure									
Unit Size	Fan CFM	Primary CFM	Min Ps	Octave Band					
				2	3	4	5	6	7
208	400	400	0.03	61	55	59	56	55	54
310	700	700	0.03	68	65	64	64	60	59
412	1200	1200	0.01	69	70	70	70	67	66
514	1800	1800	0.09	78	75	74	74	72	71
616	2400	2400	0.07	79	79	80	79	77	77
718	2700	2700	0.09	82	74	73	72	71	69

ARI Certified Discharge Sound Power, Fan Only								
Unit Size	Fan CFM	Octave Band					Electrical Power (Watts)	
		2	3	4	5	6		7
208	400	58	51	56	51	49	48	145
310	700	67	63	59	49	49	48	230
412	1200	64	66	66	65	62	60	420
514	1800	73	72	72	72	70	69	810
616	2400	80	78	80	76	75	75	1300
718	2700	79	71	70	69	68	67	1700

STATEMENT OF STANDARD TEST CONFORMITY

METALAIRE tests all FCI-600 air terminal units for engineering performance in accordance with the following standards: American National Standards Institute (ANSI)/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)/International Organization for Standardization (ISO)/Air-Conditioning & Refrigeration Institute (ARI).

- ARI Standard 880-98 Standard for Air Terminals
- ANSI/ASHRAE 130-1996 Methods of Testing for Rating Ducted Air Terminal Units
- ASHRAE Standard 41.1-1986 (RA 91) Standard Method for Temperature Measurement
- ASHRAE Standard 41.2-1987 Standard Methods for Laboratory Air Measurements
- ASHRAE Standard 41.3-1989 Standard Methods for Pressure Measurement
- ISO 5219-1984 Air distribution and air diffusion - Laboratory aerodynamic testing and rating of air terminal devices

Case Size	Motor HP	Standard PSC Motor Amperage Ratings	
		115V-1 Phase 60 Hz	277V-1 Phase 60 Hz
		Name Plate Amps	Name Plate Amps
2	1/8	2.6	0.9
3	1/8	2.6	0.9
4	1/4	4.8	1.9
5	1/3	8.8	3.6
6	1	N/A	6.2
7	3/4 (Qty 2)	22.8 (2 motors)	8.6 (2 motors)

Inlet Size	Damper Leakage, CFM		
	1.5" DPS	3.0" DPs	6.0" DPs
6	3	4	7
8	2	4	7
10	4	5	7
12	4	5	7
14	4	6	8
16	4	6	8

Case Size	Motor HP	ECM Motor Amperage Ratings	
		115V-1 Phase 60 Hz	277V-1 Phase 60 Hz
		Name Plate Amps	Name Plate Amps
2	1/2	7.7	4.1
4	1/2	7.7	4.1
6	1	12.8	6.9

Motors also available 208-240 50/60 Hz. Contact your METALAIRE Representative for details.

Air Terminal Units



ATU

FCI-600 - Sound Path Attenuation Assumptions

NC CALCULATIONS

The current ARI Standard for NC calculations is ARI 885-98. Other terminal manufacturers may catalog performance based on ARI 885-90. Using this older, obsolete standard will provide lower NC levels compared to the 1998 standard. To allow for fair and accurate performance comparisons, METALAIRE publishes the NC levels for both the 1990 standard and the 1998 current standard.

ARI 885-90 Radiated Sound Path Assumptions						
Assumptions	Octave Band					
	2	3	4	5	6	7
Environmental Effect	3	2	1	1	1	1
Ceiling Effect	9	10	12	14	15	15
Room Effect	9	10	10	11	12	13
Total dB Reduction	21	22	23	26	28	29

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-90.

- Parameters:
- 1) Mineral fiber ceiling tile, 5/8" thick (35 lb/ft³ density)
 - 2) Room size is 3000 ft³.
 - 3) Unit is located 10 ft from measurement point.

ARI 885-90 Discharge Sound Path Assumptions						
Assumptions	Octave Band					
	2	3	4	5	6	7
Environmental Effect	3	2	1	1	1	1
Duct Lining	1	3	8	22	23	13
End Reflection	11	6	2	0	0	0
Flex Duct	6	9	23	25	22	13
Room Effect	9	10	10	11	12	13
Total dB Reduction	30	30	44	59	58	40

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-90.

- Parameters:
- 1) Fiberglass duct lining is 1 inch thick. 12 x 12 duct length is 5 feet.
 - 2) Flex duct is 8 inches in diameter and 6 feet in length for run to diffuser.
 - 3) Flex duct has a vinyl core.
 - 4) Room size is 3000 ft³.
 - 5) Unit is located 10 ft from measurement point.
 - 6) Sound power split; attenuation credit based on unit feeding one outlet (10 log (# outlets = 1)).

ARI 885-98 Discharge Sound Path Assumptions						
Assumptions	Octave Band					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Duct Lining	2	3	9	18	17	12
End Reflection	9	5	2	0	0	0
Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
Power Split	5	5	5	5	5	5
Total dB Reduction	29	30	41	51	52	39

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-98.

- Parameters:
- 1) Fiberglass duct lining is 1 inch thick. 15 x 15 duct length is 5 feet.
 - 2) Flex duct is 8 inches in diameter and 5 feet in length for run to diffuser.
 - 3) Flex duct has a vinyl core.
 - 4) Room size is 2400 ft³.
 - 5) Unit is located 5 ft from measurement point.
 - 6) Sound power split; attenuation credit based on unit feeding three outlets (10 log (# outlets = 3)).

ARI 885-98 Radiated Sound Path Assumptions						
Assumptions	Octave Band					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Ceiling/Space Effect*	16	18	20	26	31	36
Total dB Reduction	18	19	20	26	31	36

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-98.

- Parameters:
- 1) Mineral fiber ceiling tile, 5/8" thick (35 lb/ft³ density)
 - 2) The plenum space is at least 3 ft deep and either wide (> 30 ft) or insulated.

* - combined effect including absorption of the ceiling tile, plenum absorption and room absorption. (New to ARI 885-98. ARI 885-90 had separate lines for these absorptions.)

ARI 885-98, Appendix E defines "Small" for applications less than 300 CFM

ARI 885-98 Discharge Sound Path Assumptions						
Assumptions	Octave Band					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Duct Lining	2	6	12	25	29	18
End Reflection	9	5	2	0	0	0
Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
Power Split	0	0	0	0	0	0
Total dB Reduction	24	28	39	53	59	40

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-98.

- Parameters:
- 1) Fiberglass duct lining is 1 inch thick. 8 x 8 duct length is 5 feet.
 - 2) Flex duct is 8 inches in diameter and 5 feet in length for run to diffuser.
 - 3) Flex duct has a vinyl core.
 - 4) Room size is 2400 ft³.
 - 5) Unit is located 5 ft from measurement point.
 - 6) Sound power split; attenuation credit based on unit feeding one outlet (10 log (# outlets = 1)).

ARI 885-98, Appendix E defines "Medium" for applications from 300 to 700 CFM

ARI 885-98 Discharge Sound Path Assumptions						
Assumptions	Octave Band					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Duct Lining	2	4	10	20	20	14
End Reflection	9	5	2	0	0	0
Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
Power Split	3	3	3	3	3	3
Total dB Reduction	27	29	40	51	53	39

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-98.

- Parameters:
- 1) Fiberglass duct lining is 1 inch thick. 12 x 12 duct length is 5 feet.
 - 2) Flex duct is 8 inches in diameter and 5 feet in length for run to diffuser.
 - 3) Flex duct has a vinyl core.
 - 4) Room size is 2400 ft³.
 - 5) Unit is located 5 ft from measurement point.
 - 6) Sound power split; attenuation credit based on unit feeding two outlets (10 log (# outlets = 2)).

ARI 885-98, Appendix E defines "Large" for applications 700 CFM and greater



ATU - Air Terminal Units

FCI-600 - Hot Water Coil MBH Selection Data/Imperial Units

Unit Size	Rows	GPM	Head Loss (Ft-H ₂ O)	CFM						
				200	300	350	400	450	500	600
2	One	1	0.14	10.5	12.7	13.6	14.4	15.1	15.7	16.8
		2	0.55	11.5	14.3	15.5	16.5	17.5	18.3	19.8
		4	2.11	12.2	15.4	16.7	17.9	19.0	20.1	21.9
		6	4.62	12.4	15.8	17.2	18.5	19.6	20.7	22.7
		Airside Ps (in. w.c.)		0.01	0.01	0.02	0.02	0.03	0.03	0.05
2	Two	1	0.06	14.4	17.9	19.2	20.4	21.4	22.3	-
		2	0.24	16.3	21.0	23.0	24.7	26.3	27.7	-
		4	0.95	17.5	23.1	25.5	27.7	29.7	31.6	-
		6	2.12	18.0	24.0	26.5	28.9	31.1	33.2	-
		Airside Ps (in. w.c.)		0.02	0.03	0.04	0.05	0.06	0.07	-
Unit Size	Rows	GPM	Head Loss (Ft-H ₂ O)	CFM						
3	One	1	0.21	15.9	16.8	18.5	19.8	20.4	21.5	22.0
		2	0.78	18.1	19.4	21.6	22.6	24.4	26.0	26.7
		4	3.00	19.5	21.0	23.7	24.9	27.1	29.0	29.9
		6	6.57	20.0	21.6	24.5	25.7	28.1	30.2	31.2
		Airside Ps (in. w.c.)		0.01	0.01	0.02	0.02	0.03	0.03	0.04
3	Two	1	0.08	21.6	23.0	25.4	26.3	28.0	29.5	30.1
		2	0.30	25.7	27.8	31.5	33.1	36.0	38.4	39.6
		4	1.15	28.4	31.1	35.8	37.9	41.8	45.2	46.9
		6	2.54	29.4	32.3	37.5	39.8	44.2	48.1	49.9
		Airside Ps (in. w.c.)		0.02	0.03	0.04	0.05	0.06	0.08	0.09
Unit Size	Rows	GPM	Head Loss (Ft-H ₂ O)	CFM						
4	One	1	0.21	22.0	23.6	24.3	24.9	25.4	25.9	26.4
		2	0.79	26.7	29.2	30.2	31.2	32.1	33.0	33.7
		4	3.01	29.9	33.1	34.5	35.8	37.0	38.2	39.2
		6	6.59	31.2	34.7	36.3	37.7	39.1	40.3	41.5
		Airside Ps (in. w.c.)		0.04	0.06	0.07	0.08	0.09	0.10	0.11
4	Two	1	0.08	30.1	32.1	33.0	33.7	34.4	35.0	35.5
		2	0.30	39.6	43.4	45.1	46.6	47.9	49.1	50.3
		4	1.15	46.9	52.5	55.0	57.3	59.4	61.4	63.3
		6	2.54	49.9	56.5	59.4	62.1	64.6	67.0	69.2
		Airside Ps (in. w.c.)		0.09	0.13	0.15	0.17	0.19	0.22	0.25
Unit Size	Rows	GPM	Head Loss (Ft-H ₂ O)	CFM						
5	One	1	0.21	24.9	25.7	26.3	27.3	27.8	28.2	30.6
		2	0.79	31.2	32.6	33.6	35.3	36.1	36.8	40.0
		4	3.01	35.8	37.6	39.0	41.4	42.5	43.6	47.3
		6	6.59	37.7	39.7	41.2	44.0	45.2	46.4	50.5
		Airside Ps (in. w.c.)		0.08	0.1	0.11	0.15	0.16	0.18	0.19
5	Two	1	0.08	33.7	34.7	35.4	36.5	-	-	-
		2	0.30	46.6	48.5	50.0	52.5	-	-	-
		4	1.15	57.3	60.5	62.8	67.0	-	-	-
		6	2.54	62.1	65.8	68.7	73.8	-	-	-
		Airside Ps (in. w.c.)		0.17	0.21	0.24	0.31	-	-	-
Unit Size	Rows	GPM	Head Loss (Ft-H ₂ O)	CFM						
6	One	1	0.22	28.2	28.8	29.3	29.8	30.2	30.7	31.2
		2	0.84	36.5	37.5	38.5	39.4	40.2	40.9	41.9
		4	3.20	42.7	44.2	45.6	46.8	48.0	49.1	50.5
		6	7.00	45.4	47.0	48.6	50.0	51.4	52.6	54.2
		Airside Ps (in. w.c.)		0.11	0.13	0.15	0.17	0.2	0.22	0.25
6	Two	1	0.08	37.4	38.1	38.6	39.2	39.6	40.0	-
		2	0.31	53.8	55.3	56.6	57.8	58.9	59.9	-
		4	1.20	68.5	71.0	73.2	75.3	77.3	79.1	-
		6	2.65	75.3	78.3	81.1	83.8	86.2	88.5	-
		Airside Ps (in. w.c.)		0.25	0.29	0.33	0.37	0.42	0.46	-
Unit Size	Rows	GPM	Head Loss (Ft-H ₂ O)	CFM						
7	One	1	0.07	32.9	35.1	36.6	37.2	37.8	38.7	39.4
		2	0.28	44.5	48.9	52.1	53.5	54.7	56.9	58.6
		4	1.07	53.8	60.6	65.9	68.2	70.2	73.9	77.1
		6	2.36	57.9	65.8	72.2	75.0	77.5	82.1	86.0
		Airside Ps (in. w.c.)		0.03	0.05	0.07	0.09	0.10	0.13	0.16
7	Two	1	0.05	42.4	44.7	46.2	46.8	47.3	-	-
		2	0.20	62.6	68.6	72.9	74.6	76.1	-	-
		4	0.77	81.0	92.1	100.6	104.1	107.4	-	-
		6	1.70	89.6	103.6	114.7	119.5	123.8	-	-
		Airside Ps (in. w.c.)		0.07	0.11	0.16	0.19	0.22	-	-

Air Terminal Units



ATU

FCI-600 - Hot Water Coils Notes

Table-A

IMPERIAL NOTES

- Hot water coil data are for discharge mounted coils.
- Values shown in the previous charts assume the following conditions: 180°F EWT, and 65°F EAT. For other conditions of entering water, air temperatures and air flow, see note 5.
- Tabulated values are in MBH (Thousands of BTU per hour).
- Head Loss is in feet of water.
- MBH values are based on a DT (temperature difference) of 115° F between entering air and entering water. For other DTs, multiply the MBH values by the factors below:

DT	Factor
50	.44
60	.52
70	.61
80	.70
90	.79

DT	Factor
100	.88
115	1.00
125	1.07
140	1.20
150	1.30

6. Air Temperature Rise = $\frac{927 \times \text{MBH}}{\text{CFM}}$

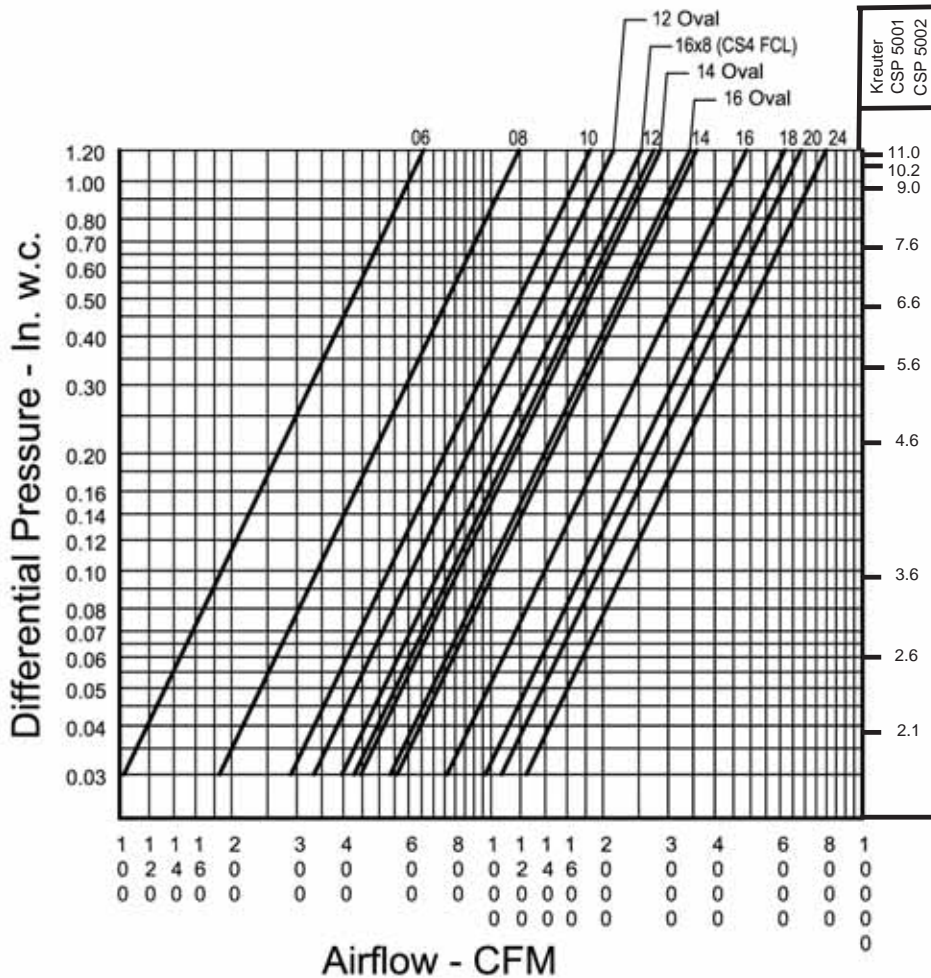
7. Water Temperature Drop = $\frac{2.04 \times \text{MBH}}{\text{GPM}}$

8. For water valve sizing, contact your METALAIR representative. For data values other than those listed, interpolate or use the METALAIR Terminal Selection Program. Contact your METALAIR representative for additional information.

9. All hot water coils are 10 Fins per inch (FPI).



FCI-600 - Calibration for MI Multi-Point Quadrant Averaging Flow Sensor



ATU Model	Inlet Size	Flow Coefficient
TH, FC	06 Round	600
FV, DD	08 "	1100
DH, BP	10 "	1700
RT, RA	12 "	2500
TL (6-10)	14 "	3250
FCL Cs2 (6-8)	16 "	4400
12 TL	12 Oval	1965
14 TL	14 "	2600
16 TL	16 "	3150
FCL Cs4	16x8 Rect.	2340
FC & FV Cs7	18x16 "	5600
TH20	20x16 "	6200
TH24	24x16 "	7200

$$Cfm = \sqrt{\Delta p} \times \text{Flow Coefficient}$$

Data is with Sensor Mounted in Round Duct, except for Rectangular Sizes 18, 20 and 24 Widths x 16 Height and 16 x 8 (FCL Case 4)

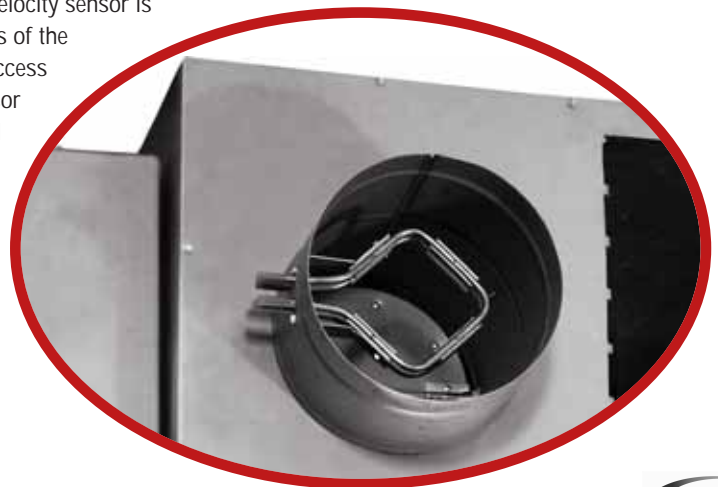
*Some controllers do not operate consistently below 0.030 in. w.c.

PRIMARY AIR VALVE AND MULTI-POINT QUADRANT AVERAGING FLOW SENSOR

Primary air valve has a bead rolled into the tube, which strengthens the tube and serves as a stop to prevent field-attached flex duct from slipping. The primary valve velocity sensor is multi-ported and arranged to sense velocity in each of four quadrants of the inlet. Those port readings are then inherently averaged back to the access

FCI-600 Fan Powered Unit - K Factors			
Inlet Size	Inlet Area	CFM @ 1"	K Factor
6	0.20	600	1.72
8	0.35	1100	1.61
10	0.55	1700	1.65
12	0.79	2500	1.58
14	1.07	3250	1.73
16	1.40	4400	1.61
18 x 16	2.00	5600	2.05

ports. The sensor has two control ports and two accessory ports. Piping connections are made externally.

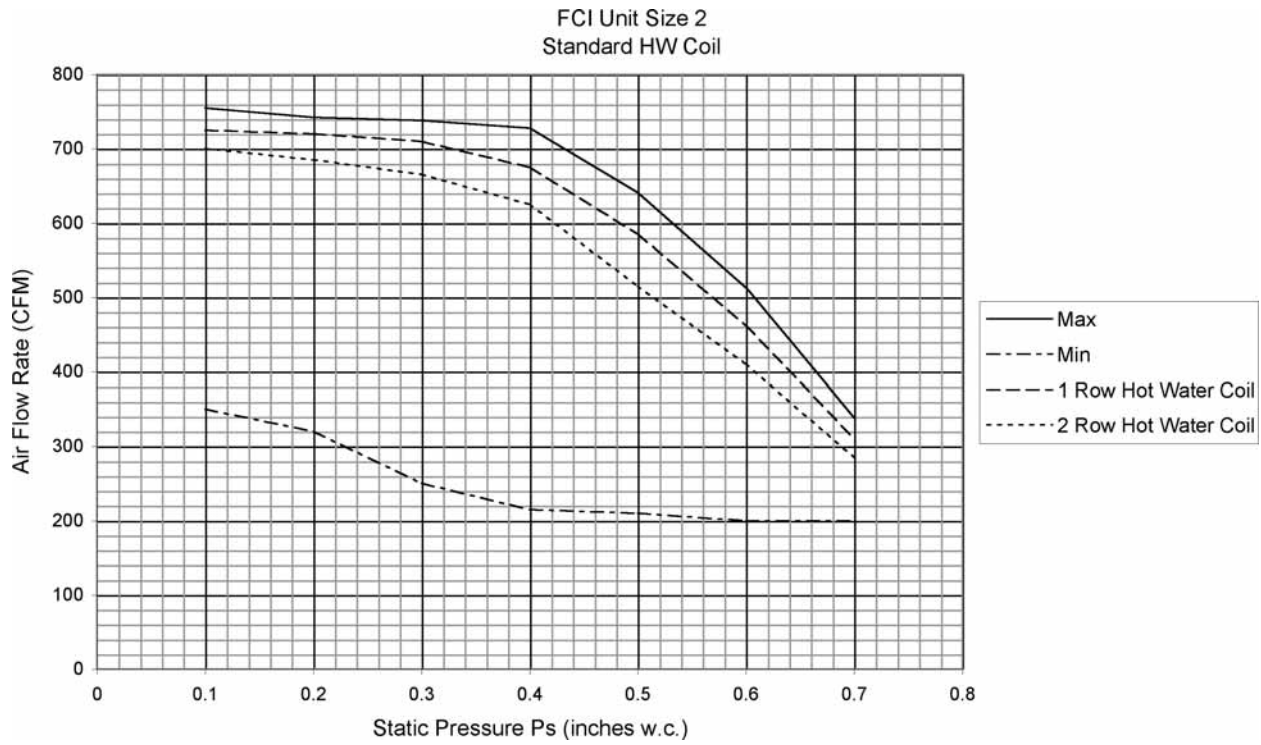


Air Terminal Units

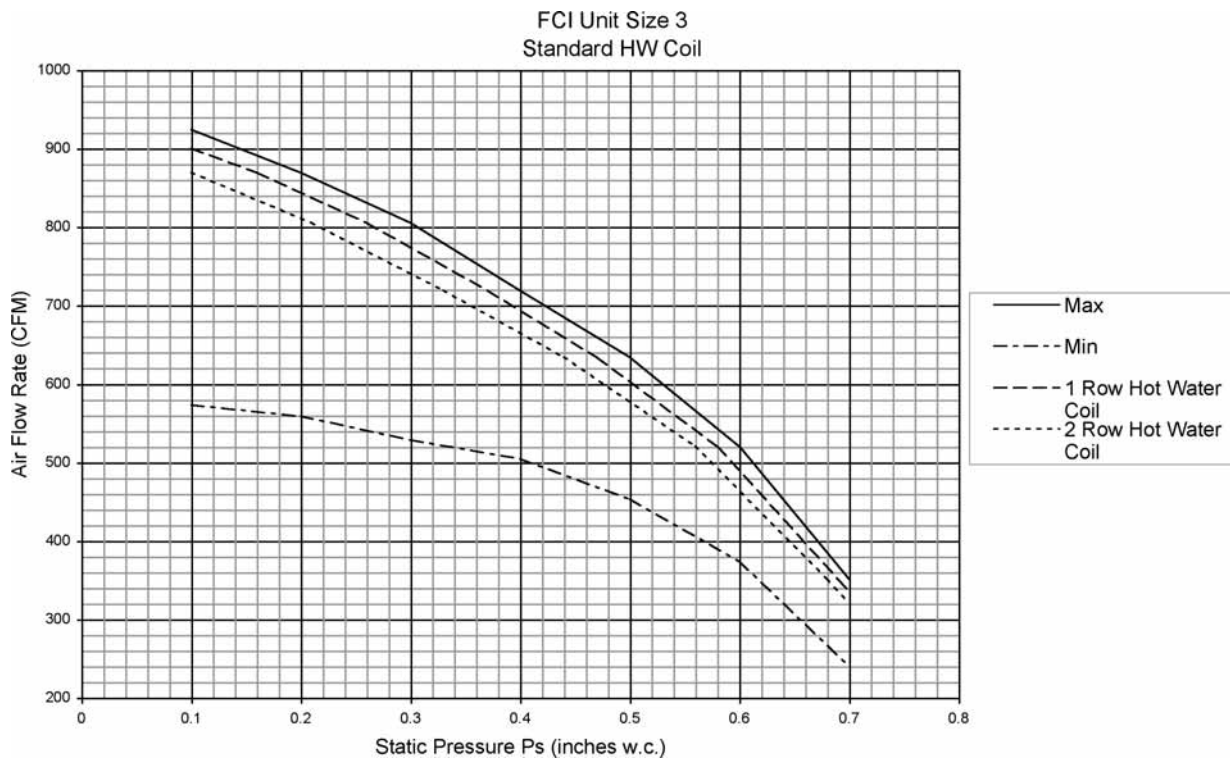
ATU

FCI-600 - Fan Performance Charts

FAN CURVES



FAN CURVES

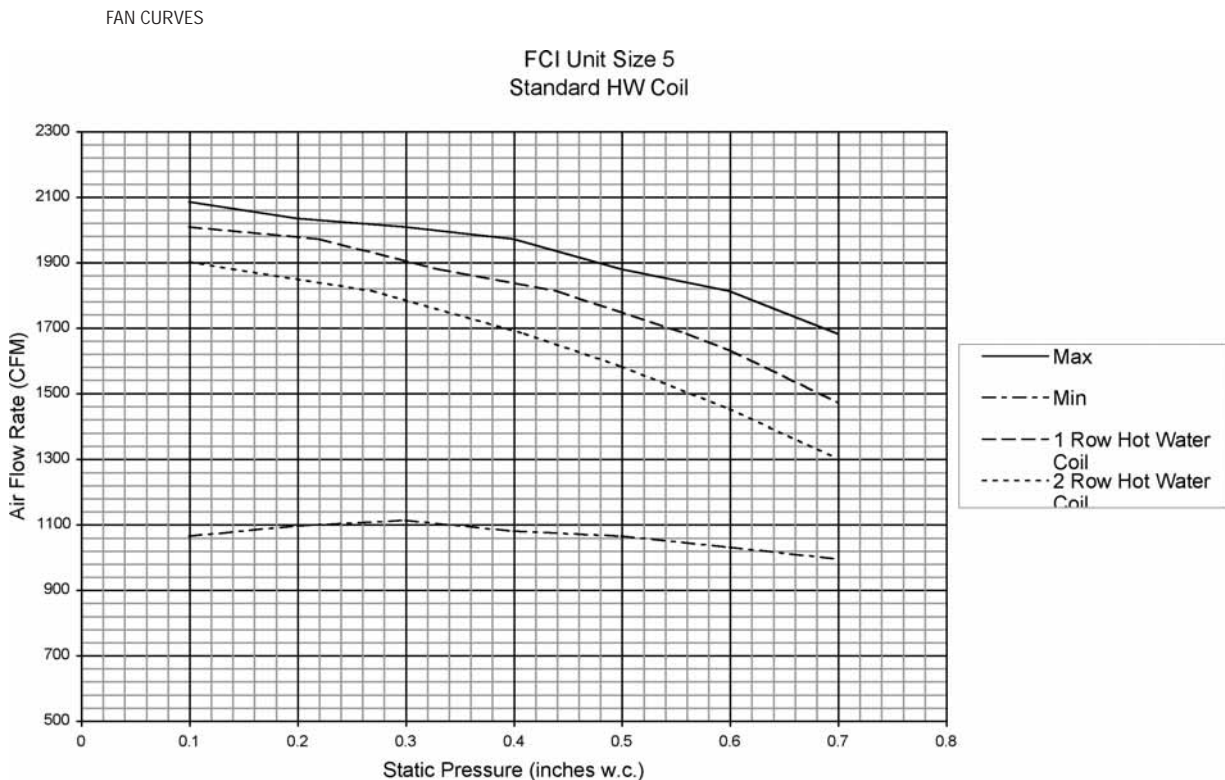
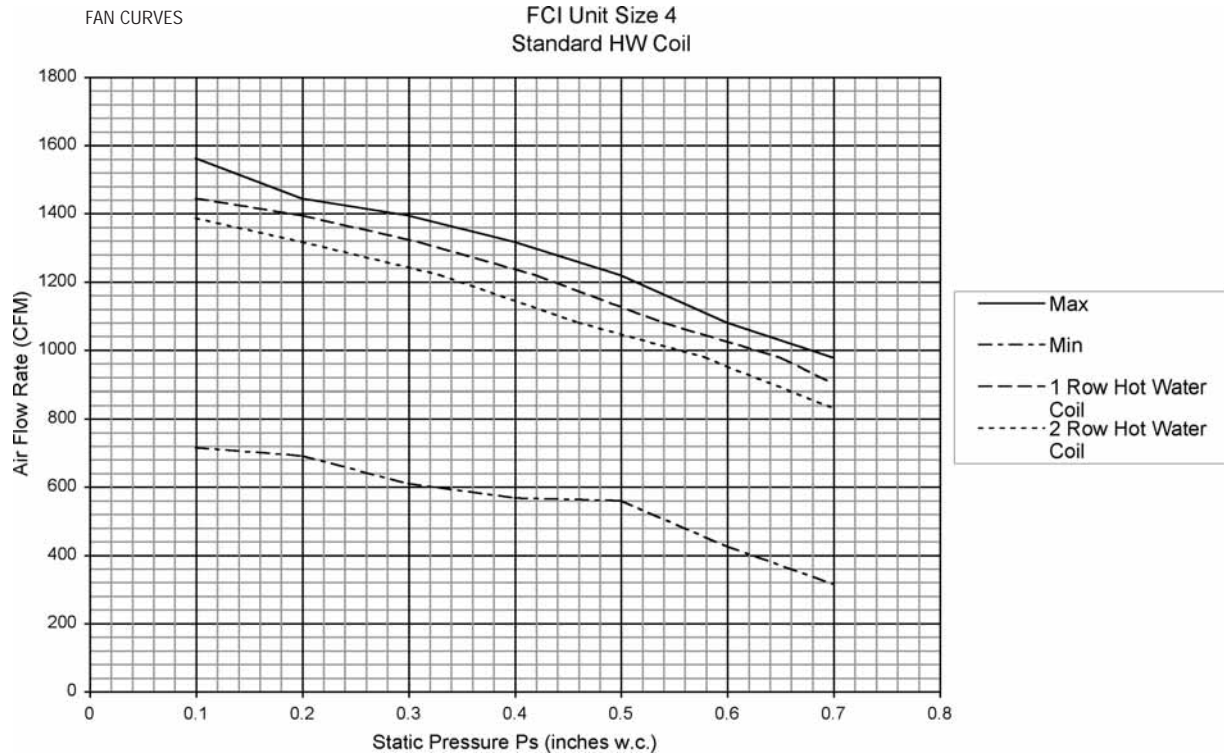


Air Terminal Units



ATU

FCI-600 - Fan Performance Charts



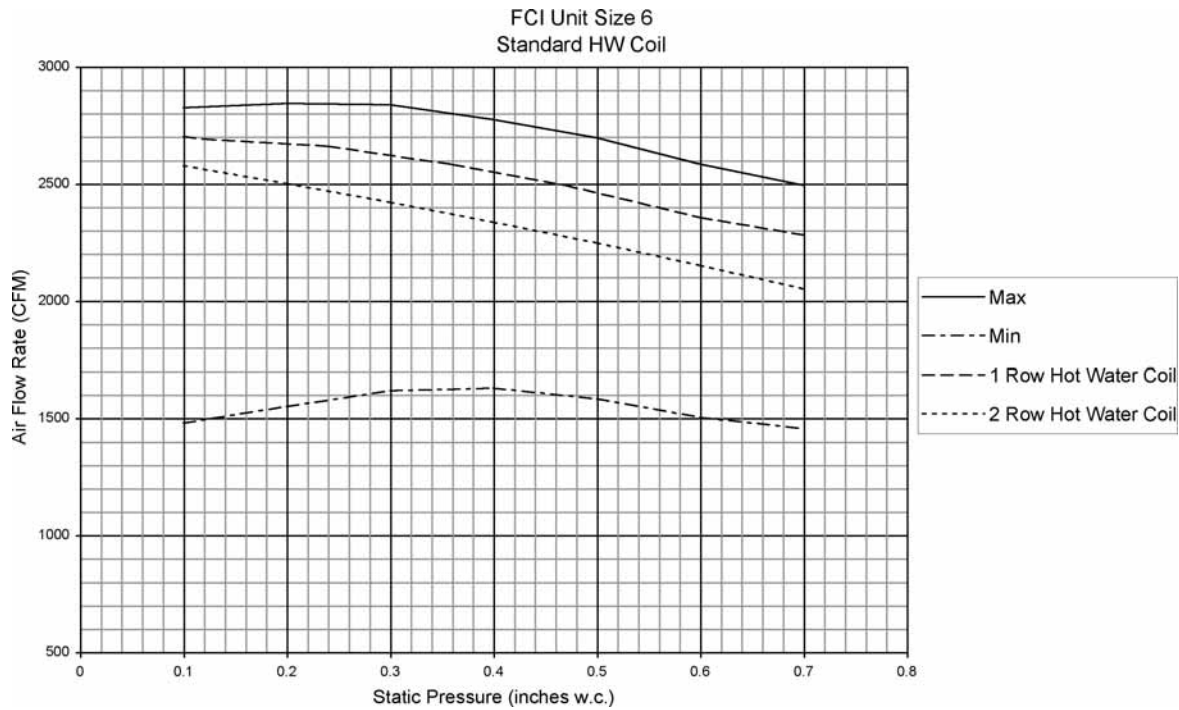
Air Terminal Units



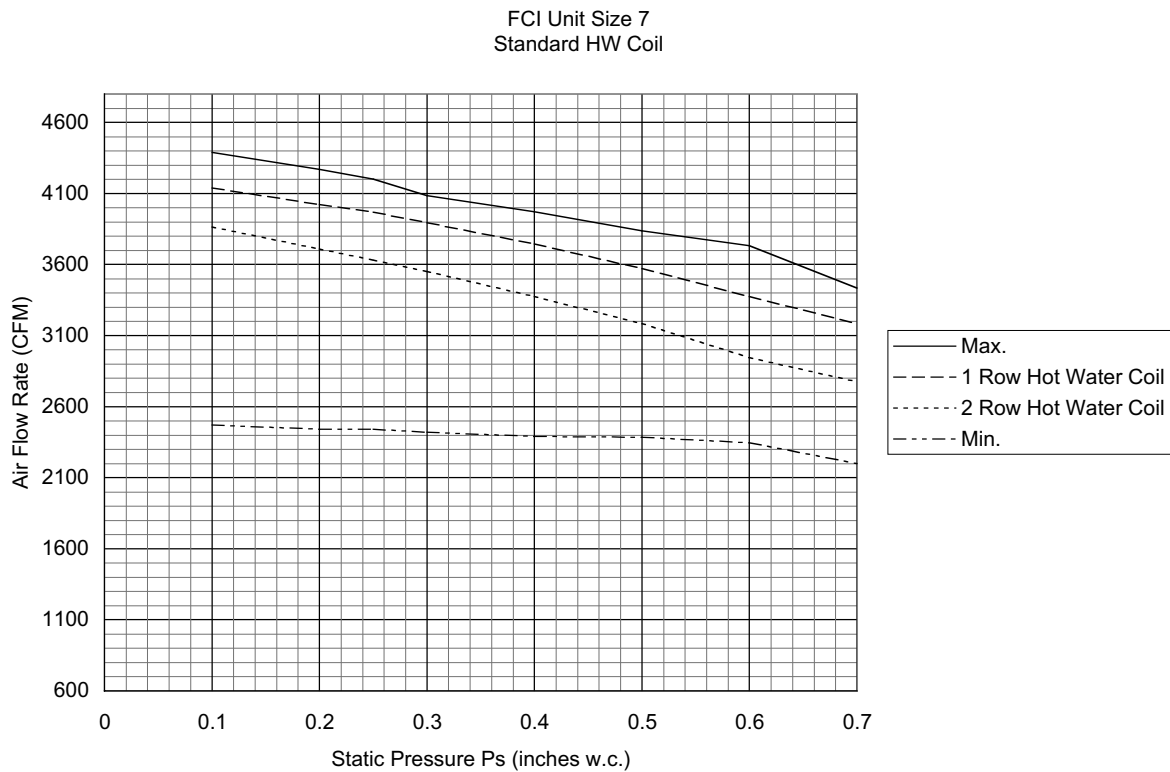
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FCI-600 - Fan Performance Charts

FAN CURVES



FAN CURVES



Air Terminal Units



ATU



SERIES FCL-600

Low Profile Constant Volume Air Terminal Units

Series FCL-600 low Profile fan-powered terminal units are designed to provide superior comfort control in applications with restricted heights. The FCL-600 series can also be selected for projects with limited heights in the ceiling plenum.

The FCL-600 is designed to be applied in zones with both heating and cooling requirements. The fan in a constant volume (or series) fan powered terminal, runs continuously during occupied hours.

Series FCL-600 provides cooling through the primary air valve. The primary air valve controls the volume of air that is discharged into the terminal unit. The cooled air is delivered to the space through the terminal's fan. When heating is required, the Series FCL-600 initially provides plenum air that is drawn through the induction inlet.

Series FCL-600 is available with a wide range of control options and accessories to meet your design requirements; whether they be for factory mounted direct digital controls, pneumatic, or analog applications.

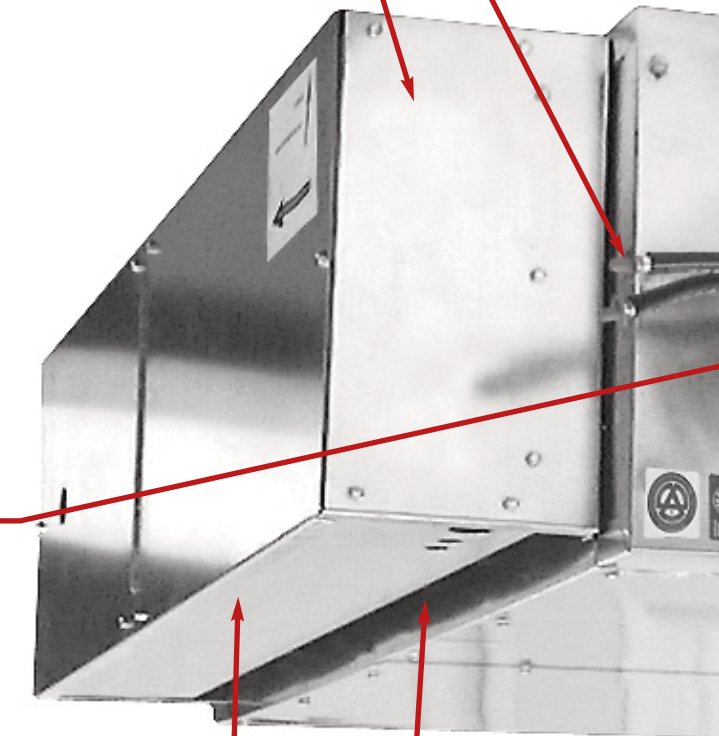
Series FCL-600 is available in 2 casing sizes and offers the flexibility to meet both your capacity and sound requirements.

All units are shipped with easy access balancing taps. The extra ports can be used to read CFM (through velocity pressure) directly at the unit

All units include an SCR solid state fan speed controller. Motors are designed to work in conjunction with the SCR controller

Multiquadrant Averaging Flow Sensor provides an accurate flow signal without requiring an immediate upstream straight duct connection (Shipped standard on all units)

All electrical wiring is connected using quick-disconnect bulkhead fittings allowing easy servicing of electrical components

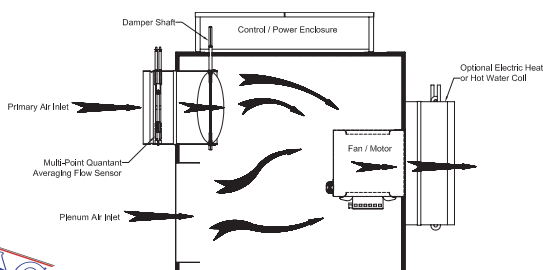


Control panel includes stand-offs to allow mounting of controls without penetrating the casing

Air Terminal Units



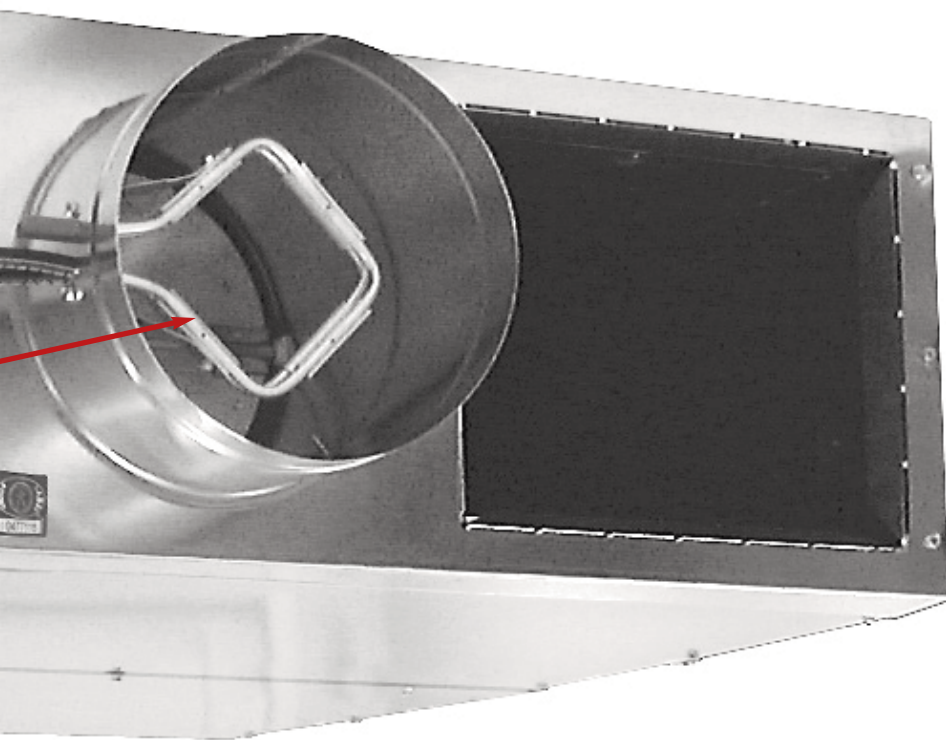
ATU



ATU - Air Terminal Units

For long life and continuous operation, the damper shaft rotates in a self-lubricating Kepital® (acetal resin) bearing

Round primary inlet tubes are constructed with a seamless butt weld for rigidity and to eliminate leakage. It also includes a bead that strengthens the tube and provides recess for flex duct straps



Optional filter rack is available for 1" thick filters

Inlet panel is one-piece construction to increase rigidity and to reduce radiated sound

All units are ETL® listed to UL® Standard 1995 and CSA-C22.2 No. 236. All electrical components are UL® certified and listed

1" thick fiberglass insulation is standard

2" wide mounting lip provides easy installation and removal of access panel. Panels can be removed without disturbing trapeze-type hangers

Units are shipped with balanced single speed energy saving motors manufactured specifically for the torque requirements of each terminal. Motors are of energy efficient design

Air Terminal Units



ATU



For more product information visit us at www.metalair.com





SERIES FVI-500

Parallel Fan Powered Terminal Units

Series FVI-500 fan-powered terminal units are designed to provide superior comfort control to zones with both heating and cooling requirements. The fan in a variable volume (or parallel) fan powered terminal, runs only upon requirements for heat.

Series FVI-500 provides variable volume cooling through the primary air valve. The primary air valve controls the volume of cooled air that is discharged into the space. In a parallel fan-powered terminal unit, the primary air does not pass through the fan. When heating is required, the **Series FVI-500** initially provides plenum air that is drawn through the induction inlet.

Series FVI-500 is available with a wide range of control options and accessories to meet your design requirements; whether they be for factory mounted direct digital controls, pneumatic, or analog applications.

Series FVI-500 is available in 7 casing sizes with a wide range of primary inlet sizes offering the flexibility to meet both your capacity and sound requirements.

All units include an SCR solid state fan speed controller. Motors are designed to work in conjunction with the SCR controller

All electrical wiring is connected using quick-disconnect bulkhead fittings allowing easy servicing of electrical components

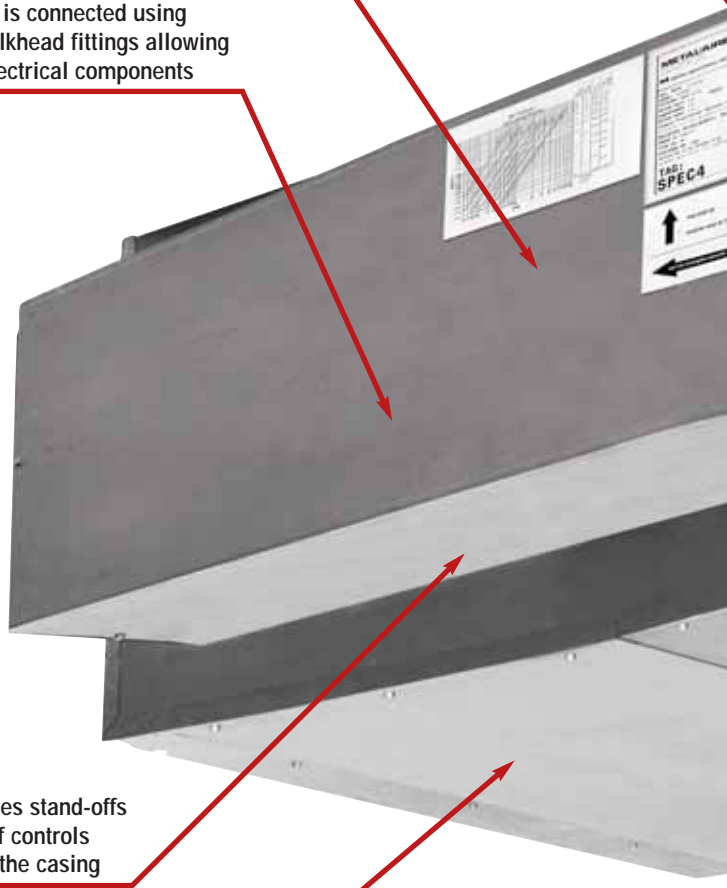
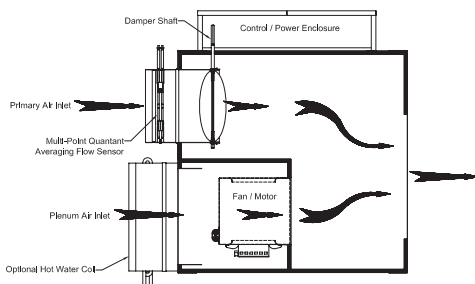
Control panel includes stand-offs to allow mounting of controls without penetrating the casing

18 gauge fan mounting bracket is designed to allow easy removal of fan assembly for servicing

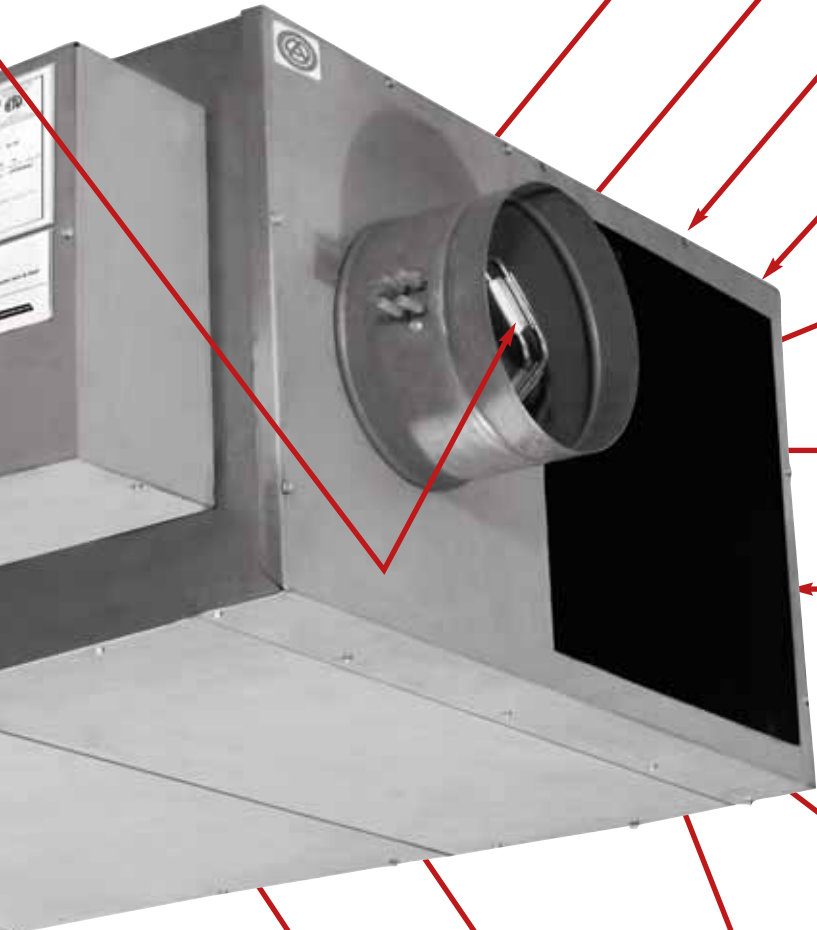
Air Terminal Units



ATU



ATU - Air Terminal Units



All units are shipped with easy access balancing taps. The extra ports can be used to read CFM (through velocity pressure) directly at the unit

For long life and continuous operation, the damper shaft rotates in a self-lubricating Kepital® (acetal resin) bearing

Optional filter rack is available for 1" thick filters

Inlet panel is one-piece construction to increase rigidity and to reduce radiated sound

The inlet tube includes a bead that strengthens the tube and provides recess for flex duct straps

All units are ETL® listed to UL® Standard 1995 and CSA-C22.2 No. 236
All electrical components are UL® certified and listed

1" thick fiberglass insulation is standard

Induced air inlet baffles ensure uniform loading of the fan and reduce radiated sound levels

Round primary inlet tubes are constructed with a seamless butt weld for rigidity and to eliminate leakage

3" wide mounting lip provides easy installation and removal of access panel. Panels can be removed without disturbing trapeze-type hangers

Units are shipped with balanced single speed energy saving motors manufactured specifically for the torque requirements of each terminal. Motors are of energy efficient design

Air Terminal Units



ATU



ATU - Air Terminal Units

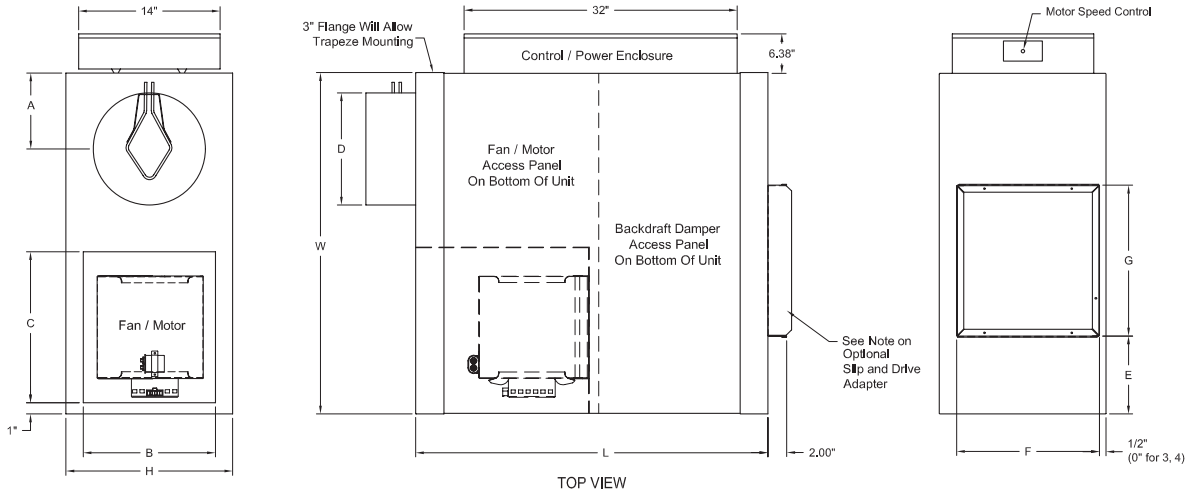
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FVI-500 - Air Terminal Dimensions

Dimensions are in inches

Parallel Fan Powered - Basic Unit

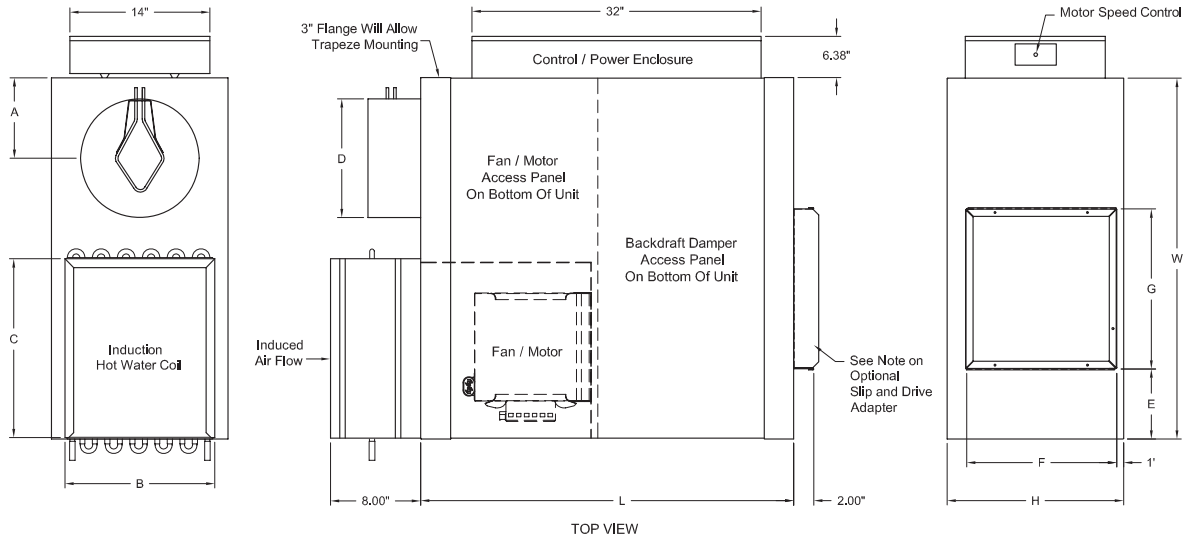
Case Size 1 - 6" Inlet Case Size 4 - 12" Inlet Case Size 7 - 18" x 16" Inlet
 Case Size 2 - 8" Inlet Case Size 5 - 14" Inlet
 Case Size 3 - 10" Inlet Case Size 6 - 16" Inlet



Casing Size	Inlet Diameter D		Horse Power	Unit Height H	Unit Width W	Unit Length L	Inlet Loc. A	Ind. Inlet Height B	Ind. Inlet Width C	Discharge Loc. E	Discharge Height F	Discharge Width G
	Standard	Optional										
1	6 (152)	8, 10	1/8	17 1/2 (445)	30 (762)	36 (914)	6 (152)	14 (356)	14 (356)	7 (178)	15 (381)	16 (406)
2	8 (203)	6, 8, 10, 12	1/6	17 1/2 (445)	30 (762)	36 (914)	7 (178)	14 (356)	14 (356)	7 (178)	15 (381)	16 (406)
3	10 (254)	6, 8, 12, 14	1/4	17 1/2 (445)	36 (914)	40 (1016)	8 (203)	14 (356)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
4	12 (305)	8, 10, 14	1/4	17 1/2 (445)	36 (914)	40 (1016)	8 (203)	14 (356)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
5	14 (356)	10, 12, 16	1/3	20 (508)	40 (1016)	40 (1016)	10 (254)	16 (406)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
6	16 (406)	10, 12, 14	1/2	20 (508)	42 (1067)	42 (1067)	10 (254)	16 (406)	20 (508)	9 (229)	18 (457)	22 (559)
7	18x16 (457x406)	12, 14, 16	1	20 (508)	42 (1067)	42 (1067)	10 (254)	16 (406)	20 (508)	6 (152)	20 (508)	30 (762)

Parallel Fan Powered - With Hot Water Coil on Induction Port

Case Size 1 - 6" Inlet Case Size 4 - 12" Inlet
 Case Size 2 - 8" Inlet Case Size 5 - 14" Inlet
 Case Size 3 - 10" Inlet Case Size 6 - 16" Inlet



Casing Size	Inlet Diameter D		Horse Power	Unit Height H	Unit Width W	Unit Length L	Inlet Loc. A	Hot Water Coil			Discharge Loc. E	Discharge Height F	Discharge Width G
	Standard	Optional						Height B	Width C				
1	6 (152)	8, 10	1/8	17 1/2 (445)	30 (762)	36 (914)	6 (152)	15 (381)	16 (406)	7 (178)	15 (381)	16 (406)	
2	8 (203)	6, 10	1/6	17 1/2 (445)	30 (762)	36 (914)	7 (178)	15 (381)	16 (406)	7 (178)	15 (381)	16 (406)	
3	10 (254)	6, 8, 12	1/4	17 1/2 (445)	36 (914)	40 (1016)	8 (203)	17 1/2 (445)	20 (508)	8 (203)	17 1/2 (445)	20 (508)	
4	12 (305)	8, 10	1/4	17 1/2 (445)	36 (914)	40 (1016)	8 (203)	17 1/2 (445)	20 (508)	8 (203)	17 1/2 (445)	20 (508)	
5	14 (356)	10, 12, 16	1/3	20 (508)	40 (1016)	40 (1016)	10 (254)	17 1/2 (445)	20 (508)	8 (203)	17 1/2 (445)	20 (508)	
6	16 (406)	10, 12, 14	1/2	20 (508)	42 (1067)	42 (1067)	10 (254)	18 (457)	22 (559)	9 (229)	18 (457)	22 (559)	

Air Terminal Units

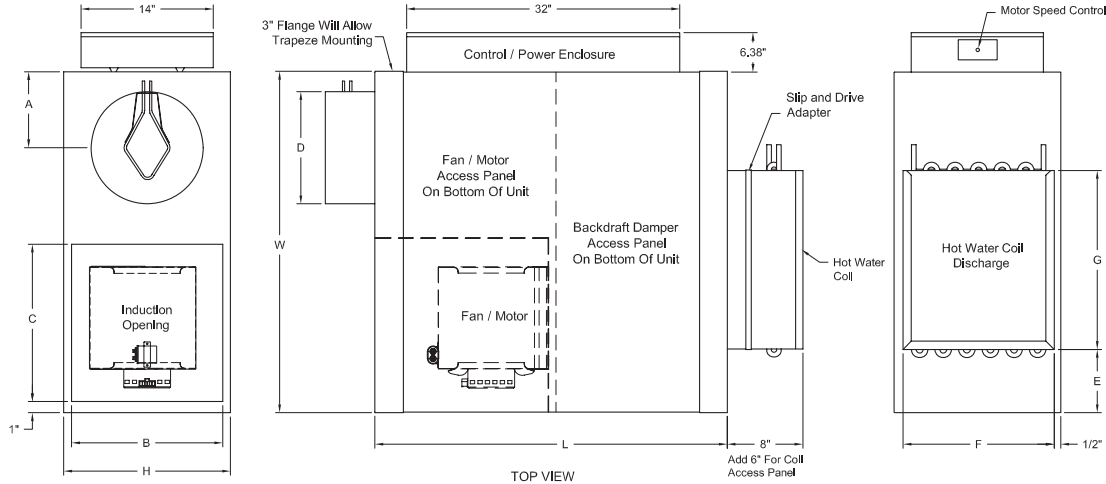


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FVI-500 - Air Terminal Dimensions

Parallel Fan Powered - With Hot Water Coil on Discharge Port

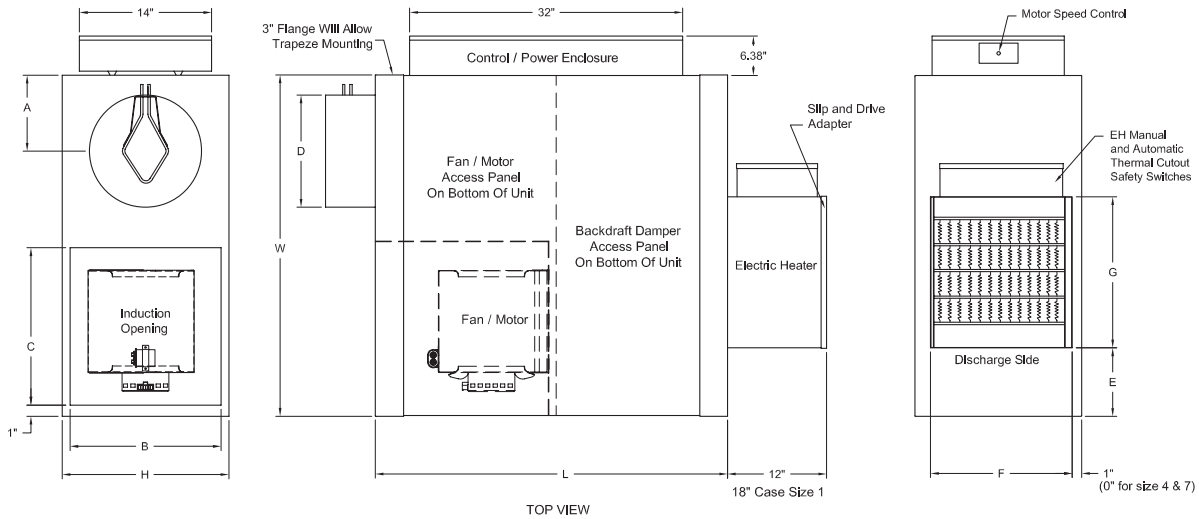
- Case Size 1 - 6" Inlet Case Size 4 - 12" Inlet Case Size 7 - 18" x 16" Inlet
 Case Size 2 - 8" Inlet Case Size 5 - 14" Inlet
 Case Size 3 - 10" Inlet Case Size 6 - 16" Inlet



Casing Size	Inlet Diameter D		Horse Power	Unit Height H	Unit Width W	Unit Length L	Inlet Loc. A	Ind. Inlet Height B	Ind. Inlet Width C	Standard Hot Water Coil		
	Standard	Optional								Discharge Loc. E	Discharge Loc. F	Discharge Loc. G
1	6 (152)	8, 10	1/8	17 1/2 (445)	30 (762)	36 (914)	6 (152)	14 (356)	14 (356)	7 (178)	15 (381)	16 (406)
2	8 (203)	6, 10, 12	1/6	17 1/2 (445)	30 (762)	36 (914)	7 (178)	14 (356)	14 (356)	7 (178)	15 (381)	16 (406)
3	10 (254)	6, 8, 12, 14	1/4	17 1/2 (445)	36 (914)	40 (1016)	8 (203)	14 (356)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
4	12 (305)	8, 10, 14	1/4	17 1/2 (445)	36 (914)	40 (1016)	8 (203)	14 (356)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
5	14 (356)	10, 12, 16	1/3	20 (508)	40 (1016)	40 (1016)	10 (254)	16 (406)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
6	16 (406)	10, 12, 14	1/2	20 (508)	42 (1067)	42 (1067)	10 (254)	16 (406)	20 (508)	9 (228)	18 (457)	22 (559)
7	18x16 (457x406)	12, 14, 16	1	20 (508)	42 (1067)	42 (1067)	10 (254)	16 (406)	20 (508)	6 (152)	20 (508)	30 (762)

Parallel Fan Powered - With Electric Heat

- Case Size 1 - 6" Inlet Case Size 4 - 12" Inlet Case Size 7 - 18" x 16" Inlet
 Case Size 2 - 8" Inlet Case Size 5 - 14" Inlet
 Case Size 3 - 10" Inlet Case Size 6 - 16" Inlet



Casing Size	Inlet Diameter D		Horse Power	Unit Height H	Unit Width W	Unit Length L	Inlet Loc. A	Ind. Inlet Height B	Ind. Inlet Width C	Discharge Loc. E	Discharge Loc. F	Discharge Loc. G
	Standard	Optional										
1	6 (152)	8, 10	1/8	17 1/2 (445)	30 (762)	36 (914)	6 (152)	14 (356)	14 (356)	5 (127)	15 (381)	16 (406)
2	8 (203)	6, 10, 12	1/6	17 1/2 (445)	30 (762)	36 (914)	7 (178)	14 (356)	14 (356)	5 (127)	15 (381)	16 (406)
3	10 (254)	6, 8, 12, 14	1/4	17 1/2 (445)	36 (914)	40 (1016)	8 (203)	14 (356)	18 (457)	7 1/4 (184)	15 (381)	16 (406)
4	12 (305)	8, 10, 14	1/4	17 1/2 (445)	36 (914)	40 (1016)	8 (203)	14 (356)	18 (457)	3 1/4 (83)	17 1/2 (445)	20 (508)
5	14 (356)	10, 12, 16	1/3	20 (508)	40 (1016)	40 (1016)	10 (254)	16 (406)	18 (457)	6 5/8 (168)	17 1/2 (445)	20 (508)
6	16 (406)	10, 12, 14	1/2	20 (508)	42 (1067)	42 (1067)	10 (254)	16 (406)	20 (508)	8 (203)	17 1/2 (445)	20 (508)
7	18x16 (457x406)	12, 14, 16	1	20 (508)	42 (1067)	42 (1067)	10 (254)	16 (406)	20 (508)	4 (102)	20 (508)	30 (762)

ATU - Air Terminal Units

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FVI-500 - Radiated Sound Power at Fan Only

Case	Inlet	Outlet Ps in. H ₂ O	CFM (L/s)	Fan Only								NC1 ARI 885- 90	NC2 ARI 885- 98
				Octave Band Sound Power, Lw, dB									
				2	3	4	5	6	7				
1	6	0.25	150 (71)	59	57	52	48	41	38	23	26		
			200 (94)	60	59	53	50	43	41	25	28		
			250 (118)	62	61	55	53	44	43	27	31		
			300 (142)	64	63	56	54	46	45	29	33		
			400 (189)	66	67	59	58	50	49	34	38		
			450 (212)	68	69	61	60	52	51	37	40		
2	8	0.25	250 (118)	63	60	55	51	44	41	26	30		
			300 (142)	64	61	56	51	44	41	27	31		
			350 (165)	65	62	56	52	45	42	28	32		
			400 (189)	65	63	56	52	45	43	29	33		
			500 (236)	66	64	56	52	46	43	31	34		
			600 (283)	67	65	57	53	46	44	32	35		
3	10	0.25	125 (59)	50	47	46	39	36	28	-	-		
			300 (142)	54	51	49	44	41	34	-	23		
			425 (201)	58	54	53	46	43	37	24	27		
			675 (319)	64	61	57	53	48	45	29	32		
			800 (378)	66	64	59	57	52	49	31	34		
			925 (437)	69	67	62	60	54	53	34	38		
4	12	0.25	1175 (555)	76	73	67	67	60	61	41	45		
			1225 (578)	77	73	68	67	61	62	41	45		
			500 (236)	61	60	56	53	45	42	27	31		
			700 (330)	64	63	58	56	48	46	30	33		
			900 (425)	67	66	60	59	50	50	33	37		
			1100 (519)	70	68	62	62	53	53	35	39		
5	14	0.25	1300 (614)	72	71	64	66	56	57	39	42		
			1500 (708)	75	74	66	69	58	61	42	46		
			1575 (743)	76	74	66	69	58	62	42	46		
			800 (378)	64	60	53	47	44	41	26	29		
			950 (448)	66	63	58	55	52	49	30	33		
			1100 (519)	71	67	62	60	56	53	34	38		
6	16	0.25	1300 (614)	75	70	63	61	58	54	38	41		
			1500 (708)	78	73	65	63	60	56	41	45		
			1700 (802)	80	75	66	65	61	57	44	48		
			1800 (850)	81	76	67	66	62	59	45	49		
			800 (378)	62	58	52	46	42	40	24	27		
			1000 (472)	66	63	60	55	47	45	32	35		
7	18x16	0.25	1250 (590)	72	69	64	59	52	50	37	40		
			1400 (661)	73	71	65	61	54	53	39	42		
			1650 (779)	74	72	66	62	56	55	40	44		
			1800 (850)	76	73	67	63	57	56	41	45		
			2160 (1020)	78	75	68	65	59	58	44	47		
			1875 (885)	72	67	61	56	47	46	34	38		
8	18x16	0.25	2100 (991)	74	68	62	57	49	48	36	40		
			2400 (1133)	75	71	65	62	54	53	39	42		
			2600 (1227)	77	74	71	69	62	61	44	47		
			2800 (1322)	78	75	73	72	66	64	46	49		
			3000 (1416)	80	76	75	73	67	66	48	51		
			3125 (1475)	81	77	76	74	68	66	49	53		

See Page ATU-277 For NC Calculations

NC CALCULATIONS

The current ARI Standard for NC calculations is ARI 885-98. Other terminal manufacturers may catalog performance based on ARI 885-90. Using this older, obsolete standard will provide lower NC levels compared to the 1998 standard. To allow for fair and accurate performance comparisons, METALAIRE publishes the NC levels for both the 1990 standard and the 1998 current standard.

Air Terminal Units



ATU

ATU - Air Terminal Units

FVI-500 - Radiated Sound Power at .5", .75", 1" WG

Case	Inlet	Outlet Ps in. H ₂ O	CFM (L/s)	Min Ps H ₂ O (Pa)	in.	Inlet Pressure, Ps = 0.5 inches of water (125 Pa)								Inlet Pressure, Ps = 0.75 inches of water (187 Pa)								Inlet Pressure, Ps = 1.0 inches of water (250 Pa)																						
						Octave Band Sound Power, Lw, dB							NC ARI 885- 90	NC ARI 885- 98	Octave Band Sound Power, Lw, dB							NC ARI 885- 90	NC ARI 885- 98	Octave Band Sound Power, Lw, dB							NC ARI 885- 90	NC ARI 885- 98												
						2	3	4	5	6	7	2			3	4	5	6	7	2	3			4	5	6	7																	
1	6	0.25	100 (47)	0.080 (21.0)	50	37	33	30	25	23	-	-	51	38	33	31	26	24	-	-	51	39	34	32	27	24																		
			2	8	0.25	200 (94)	0.100 (24.9)	52	40	36	34	28	25	-	-	52	41	37	35	29	26	-	-	53	42	37	35	29	27															
						3	10	0.25	300 (138)	0.127 (31.6)	54	44	39	37	31	28	-	-	55	45	42	39	34	31	-	-	56	46	44	40	35	31												
									4	12	0.25	400 (183)	0.160 (39.7)	56	48	42	40	34	31	-	-	57	48	44	41	36	33	-	-	58	49	47	43	38	35									
												5	14	0.25	500 (228)	0.211 (53.4)	57	49	44	41	35	32	-	-	58	50	46	42	37	34	-	-	59	50	48	44	39	35						
															6	16	0.25	600 (273)	0.241 (60.1)	58	51	46	42	37	33	-	-	59	51	47	44	38	34	-	-	60	51	49	45	40	36			
																		7	18x16	0.25	700 (318)	0.281 (70.1)	59	51	46	42	37	33	21	25	62	51	47	44	38	34	21	25	63	54	51	50	42	37

See Page ATU-277 For NC Calculations

NC CALCULATIONS

The current ARI Standard for NC calculations is ARI 885-98. Other terminal manufacturers may catalog performance based on ARI 885-90. Using this older, obsolete standard will provide lower NC levels compared to the 1998 standard. To allow for fair and accurate performance comparisons, METALAIR publishes the NC levels for both the 1990 standard and the 1998 current standard.



For more product information visit us at www.metalaire.com



ATU - Air Terminal Units

FVI-500 - Radiated Sound Power at 1.5", 2" WG

Case	Inlet	Outlet Ps in. H ₂ O	CFM (L/s)	Min Ps in. H ₂ O (Pa)	Inlet Pressure, Ps = 1.5 inches of water (375 Pa)								Inlet Pressure, Ps = 2.0 inches of water (700 Pa)									
					Octave Band Sound Power, Lw, dB							NC1 ARI	NC2 ARI	Octave Band Sound Power, Lw, dB							NC1 ARI	NC2 ARI
					2	3	4	5	6	7	8	885-90	885-98	2	3	4	5	6	7	8	885-90	885-98
					2	3	4	5	6	7	8	885-90	885-98	2	3	4	5	6	7	8	885-90	885-98
1	6	0.25	100 (47)	0.080 (20.0)	55	42	38	37	31	27	-	-	56	44	39	38	32	29	-	-		
			200 (94)	0.100 (24.9)	58	46	39	39	34	30	-	-	59	48	41	40	36	32	-	21		
			250 (118)	0.110 (27.5)	60	51	44	43	38	37	-	-	61	53	49	47	40	42	-	23		
			300 (142)	0.127 (31.6)	60	52	45	45	39	37	-	-	61	53	50	49	41	42	21	24		
			400 (189)	0.160 (39.7)	61	54	48	46	42	39	-	-	62	54	51	50	42	43	22	25		
			450 (212)	0.176 (43.8)	62	55	52	51	43	40	-	-	63	56	53	52	43	43	24	26		
			500 (236)	0.192 (47.9)	63	56	53	53	44	40	-	-	64	57	54	53	44	43	25	29		
			600 (283)	0.241 (60.1)	64	57	54	53	45	41	-	-	65	58	56	55	46	42	27	31		
2	8	0.25	200 (94)	0.084 (20.9)	53	42	37	30	29	25	-	-	54	44	39	31	30	28	-	-		
			300 (142)	0.094 (23.5)	56	47	42	36	32	28	-	-	56	48	44	37	34	30	-	-		
			400 (189)	0.105 (26.2)	57	49	45	39	35	31	-	-	58	50	47	40	37	33	-	21		
			500 (236)	0.116 (28.8)	59	53	48	42	40	39	-	-	60	55	51	45	42	42	22	25		
			650 (307)	0.138 (34.4)	61	55	51	45	42	40	-	-	62	57	54	47	44	42	25	29		
			800 (378)	0.161 (40.1)	63	58	55	48	44	41	-	-	65	60	57	50	46	43	29	32		
			875 (413)	0.175 (43.5)	63	59	57	50	45	41	-	-	66	61	58	52	47	44	30	33		
			950 (448)	0.188 (46.9)	63	60	60	52	46	42	-	-	66	62	61	53	48	45	33	36		
3	10	0.25	300 (142)	0.088 (21.9)	57	51	47	45	36	30	-	-	59	53	49	46	38	33	-	23		
			500 (236)	0.103 (25.7)	59	54	50	47	39	32	-	-	61	56	51	49	41	35	22	25		
			775 (366)	0.125 (31.1)	63	59	52	49	42	39	-	-	64	62	55	52	45	42	28	32		
			925 (437)	0.136 (33.9)	66	60	53	51	43	40	-	-	66	64	57	53	45	42	31	34		
			1075 (507)	0.158 (39.3)	66	60	54	52	45	41	-	-	66	65	59	54	46	43	32	35		
			1325 (625)	0.190 (47.2)	67	64	62	55	48	42	-	-	67	66	62	55	48	43	34	37		
			1450 (684)	0.204 (50.9)	67	65	61	56	49	43	-	-	68	66	63	56	49	43	35	38		
			1625 (767)	0.254 (63.2)	70	67	62	57	50	44	-	-	71	68	64	58	51	45	36	39		
4	12	0.25	450 (212)	0.076 (18.9)	53	45	40	38	35	32	-	-	56	49	43	40	39	35	-	-		
			650 (307)	0.084 (20.9)	57	50	44	42	39	36	-	-	60	55	48	45	42	40	-	24		
			900 (425)	0.094 (23.4)	63	56	49	45	43	41	-	-	66	59	53	49	47	45	26	30		
			1100 (519)	0.100 (25.0)	65	57	50	47	44	42	-	-	68	61	54	50	48	46	29	32		
			1300 (614)	0.107 (26.6)	66	58	52	48	45	42	-	-	69	62	55	51	49	46	30	34		
			1500 (708)	0.118 (29.4)	67	59	53	49	46	43	-	-	71	63	56	52	49	47	32	36		
			1800 (850)	0.143 (35.5)	70	61	55	51	48	44	-	-	72	64	57	53	50	47	34	38		
			2200 (1038)	0.182 (45.3)	74	62	57	52	49	43	-	-	76	65	58	55	51	48	39	43		
5	14	0.25	550 (260)	0.072 (18.0)	55	52	45	41	36	33	-	-	58	53	50	44	40	35	21	24		
			775 (366)	0.081 (20.1)	58	54	48	43	40	36	-	-	60	59	52	47	42	38	25	28		
			1000 (472)	0.090 (22.5)	61	59	52	49	43	40	-	-	65	62	56	52	45	42	28	32		
			1500 (708)	0.106 (26.5)	68	63	56	52	48	45	-	-	71	65	59	55	51	49	32	36		
			1950 (920)	0.134 (33.3)	70	64	57	53	49	46	-	-	74	67	61	57	53	50	36	40		
			2200 (1038)	0.149 (37.0)	71	65	58	54	50	46	-	-	75	68	62	57	54	50	38	41		
			2675 (1263)	0.209 (52.0)	74	67	60	56	52	49	-	-	77	69	65	60	56	51	40	44		
			3000 (1416)	0.246 (61.2)	76	69	62	58	53	51	-	-	79	71	67	62	58	53	41	45		
6	16	0.25	3250 (1534)	0.278 (69.3)	77	70	63	59	55	52	-	-	80	72	68	63	60	55	43	46		
			750 (354)	0.083 (20.6)	56	50	43	39	35	33	-	-	58	52	46	42	37	35	-	-		
			950 (448)	0.088 (21.8)	58	52	50	42	37	39	-	-	60	56	52	48	45	43	23	26		
			1525 (720)	0.104 (25.9)	64	56	53	46	44	43	-	-	66	62	57	50	49	48	29	32		
			1800 (850)	0.115 (28.7)	67	62	57	53	49	46	-	-	68	65	60	58	55	51	32	35		
			2400 (1133)	0.138 (34.3)	70	64	59	54	50	47	-	-	72	67	62	59	55	51	34	38		
			3000 (1416)	0.165 (41.2)	73	67	61	56	51	47	-	-	75	69	64	60	57	53	38	41		
			3500 (1652)	0.188 (46.9)	76	69	64	59	53	49	-	-	78	71	66	61	58	54	41	45		
7	18 x 16	0.25	4000 (1888)	0.218 (54.3)	78	71	66	61	55	52	-	-	81	73	68	63	59	57	45	49		
			4400 (2077)	0.247 (61.4)	80	73	68	62	58	54	-	-	84	75	70	65	62	60	48	52		
			975 (460)	0.178 (44.4)	60	48	45	42	40	39	-	-	61	52	48	46	43	41	-	23		
			1200 (566)	0.021 (5.2)	62	50	48	47	44	41	-	-	63	56	51	49	48	43	22	26		
			1600 (756)	0.028 (6.9)	63	57	53	52	48	45	-	-	65	61	56	55	52	48	27	31		
			2000 (944)	0.036 (9.0)	68	63	60	58	53	50	-	-	70	66	64	63	59	55	36	39		
			2500 (1180)	0.056 (14.0)	70	65	62	59	54	51	-	-	73	68	66	64	59	56	38	42		
			3300 (1558)	0.098 (24.4)	74	68	65	62	56	52	-	-	77	70	68	66	62	57	41	44		
4200 (1982)	0.170 (42.4)	78	72	68	65	60	54	-	-	80	75	70	67	64	59	44	48					
5000 (2360)	0.298 (74.2)	81	76	70	67	63	59	-	-	83	78	72	69	65	62	48	52					
5600 (2643)	0.454 (113.0)	82	78	74	69	65	62	-	-	84	80	76	72	67	65	50	53					

Air Terminal Units

See Page ATU-277 For NC Calculations

NC CALCULATIONS

The current ARI Standard for NC calculations is ARI 885-98. Other terminal manufacturers may catalog performance based on ARI 885-90. Using this older, obsolete standard will provide lower NC levels compared to the 1998 standard. To allow for fair and accurate performance comparisons, METALAIRE publishes the NC levels for both the 1990 standard and the 1998 current standard.

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ATU - Air Terminal Units

FVI-500 - Discharge Sound Power Fan Only

Case	Inlet	Outlet Ps in. H ₂ O	CFM (L/s)	Fan Only								NC1 ARI 885- 90	NC2 ARI 885- 98
				Octave Band Sound Power, Lw, dB									
				2	3	4	5	6	7				
1	6	0.25	150 (71)	53	52	48	41	41	37	-	-		
			200 (94)	56	54	50	44	43	39	-	-		
			250 (118)	58	57	52	47	45	42	-	-		
			300 (142)	60	60	55	50	47	45	-	-		
			400 (189)	64	63	57	53	51	48	-	21		
			450 (212)	67	65	60	56	54	50	-	24		
550 (260)	69	68	62	59	57	52	24	27					
2	8	0.25	250 (118)	55	53	47	47	42	38	-	-		
			300 (142)	56	55	48	48	43	40	-	-		
			350 (165)	57	57	50	50	44	42	-	-		
			400 (189)	59	58	51	51	45	44	-	-		
			500 (236)	62	61	53	53	47	48	-	-		
			600 (283)	65	64	55	56	50	52	-	22		
775 (366)	67	66	58	59	53	57	21	22					
3	10	0.25	125 (59)	43	41	36	28	27	27	-	-		
			300 (142)	48	47	42	35	35	35	-	-		
			425 (201)	54	51	45	39	37	36	-	-		
			675 (319)	63	60	53	50	47	46	-	-		
			800 (378)	66	65	58	57	55	54	-	21		
			925 (437)	70	68	60	61	58	57	24	25		
			1175 (555)	72	70	62	62	60	59	26	27		
1225 (578)	73	71	64	63	62	60	27	28					
4	12	0.25	500 (236)	60	58	54	52	50	46	-	-		
			700 (330)	64	62	56	55	54	50	-	-		
			900 (425)	66	65	58	57	56	53	-	21		
			1100 (519)	69	67	59	63	59	56	22	24		
			1300 (614)	71	70	61	62	62	59	26	27		
			1500 (708)	73	72	63	64	63	61	28	29		
1575 (743)	74	72	64	65	64	63	28	29					
5	14	0.25	800 (378)	60	56	50	46	43	40	-	-		
			950 (448)	63	63	58	55	52	49	-	-		
			1100 (519)	68	67	62	60	56	53	22	24		
			1300 (614)	72	70	62	61	58	55	26	27		
			1500 (708)	73	71	63	62	60	60	27	28		
			1700 (802)	74	73	64	64	61	63	29	31		
1800 (850)	75	73	65	65	62	65	29	31					
6	16	0.25	800 (378)	58	55	55	52	48	44	-	-		
			1000 (472)	61	58	57	56	51	48	-	-		
			1250 (590)	64	61	60	55	54	52	-	-		
			1400 (661)	66	63	62	60	56	54	-	-		
			1650 (779)	70	67	65	61	60	60	22	24		
			1800 (850)	73	70	67	69	63	64	26	27		
2160 (1020)	75	72	68	67	66	65	28	29					
7	18x16	0.25	1875 (885)	71	68	70	65	64	67	24	25		
			2100 (991)	74	71	72	68	66	69	27	28		
			2400 (1133)	77	74	74	71	69	71	31	32		
			2600 (1227)	79	76	75	73	70	73	33	34		
			2800 (1322)	81	78	76	75	72	74	35	37		
			3000 (1416)	82	79	77	76	74	74	37	38		
3125 (1475)	83	80	77	77	76	75	38	39					

See Page ATU-277 For NC Calculations

Air Terminal Units



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ATU - Air Terminal Units

FVI-500 - Discharge Sound Power 1.5", 2" WG

Case	Inlet	Outlet Ps in. H ₂ O	CFM (L/s)	Mn Ps in. H ₂ O (Pa)	Inlet Pressure, Ps = 1.5 inches of water (125 Pa)							Inlet Pressure, Ps = 2.0 inches of water (187 Pa)										
					Octave Band Sound Power, Lw, dB							NC1 ARI	NC2 ARI	Octave Band Sound Power, Lw, dB							NC1 ARI	NC2 ARI
					2	3	4	5	6	7	85-	85-	2	3	4	5	6	7	85-	85-		
											90	98							90	98		
1	6	0.25	100 (47)	0.080 (20.0)	58	54	51	46	42	39	-	-	59	56	52	47	43	41	-	-		
			200 (94)	0.100 (24.9)	59	55	52	46	43	40	-	-	61	57	53	48	44	42	-	-		
			250 (118)	0.110 (27.5)	60	56	52	47	44	41	-	-	62	57	54	49	44	43	-	-		
			300 (142)	0.127 (31.6)	60	56	53	47	44	42	-	-	62	58	55	49	45	44	-	-		
			400 (189)	0.160 (39.7)	61	57	53	47	45	44	-	-	63	59	56	50	46	46	-	-		
			450 (212)	0.176 (43.9)	63	58	54	50	46	45	-	-	64	61	57	52	48	47	-	-		
			500 (236)	0.192 (47.9)	64	60	55	52	47	47	-	-	65	63	58	53	49	49	-	21		
			600 (263)	0.241 (60.1)	66	62	59	54	50	49	-	-	67	64	60	54	51	50	-	22		
2	8	0.25	200 (94)	0.084 (20.9)	56	53	48	50	40	33	-	-	59	55	51	50	42	35	-	-		
			300 (142)	0.094 (23.5)	60	55	52	51	41	36	-	-	62	57	53	52	44	38	-	-		
			400 (189)	0.105 (26.2)	62	57	54	52	44	39	-	-	63	59	55	54	46	41	-	-		
			500 (236)	0.116 (28.8)	63	59	55	53	46	43	-	-	64	60	56	53	47	45	-	-		
			650 (307)	0.138 (34.4)	65	60	58	54	49	48	-	-	66	61	58	55	50	49	-	-		
			800 (378)	0.161 (40.1)	67	63	60	55	51	51	-	-	68	64	61	56	52	52	-	-		
			875 (413)	0.175 (43.5)	70	65	61	57	53	52	-	21	71	66	62	58	54	53	21	22		
			950 (448)	0.188 (46.9)	72	67	63	58	56	55	22	24	73	68	65	59	58	57	24	25		
			1100 (519)	0.227 (56.6)	74	69	64	59	58	61	25	26	75	70	66	60	59	62	26	27		
3	10	0.25	300 (142)	0.088 (21.9)	60	56	48	44	41	35	-	-	61	58	50	47	43	38	-	-		
			500 (236)	0.103 (25.7)	62	58	52	46	45	39	-	-	63	59	55	48	46	44	-	-		
			775 (366)	0.125 (31.1)	65	60	55	49	47	44	-	-	66	61	59	51	49	46	-	-		
			925 (437)	0.136 (33.9)	67	61	57	51	48	46	-	-	68	63	58	53	52	48	-	-		
			1075 (507)	0.158 (39.3)	68	63	59	52	49	48	-	-	69	64	60	56	54	49	-	-		
			1325 (625)	0.190 (47.2)	71	65	60	53	50	49	-	21	72	66	62	57	55	54	21	22		
			1450 (684)	0.204 (50.9)	73	66	62	56	55	51	22	23	74	68	63	58	56	56	24	25		
			1625 (767)	0.254 (63.2)	74	67	63	59	58	57	23	25	75	69	64	60	58	57	25	26		
			1700 (802)	0.270 (67.2)	76	68	64	60	59	58	26	27	76	71	66	61	60	59	27	28		
			4	12	0.25	450 (212)	0.076 (18.9)	62	58	53	47	41	37	-	-	63	59	54	49	45	42	-
650 (307)	0.084 (20.9)	64				60	55	49	44	40	-	-	66	61	56	52	46	45	-	-		
900 (425)	0.094 (23.4)	66				61	57	52	47	43	-	-	67	62	58	54	50	47	-	-		
1100 (519)	0.100 (25.0)	67				63	58	54	49	46	-	-	68	64	60	57	52	50	-	-		
1300 (614)	0.107 (26.6)	69				65	59	57	51	49	-	21	71	66	62	60	55	54	21	22		
1500 (708)	0.118 (29.4)	71				67	61	58	53	51	22	24	73	68	64	63	56	55	24	25		
1800 (850)	0.143 (35.5)	74				70	64	63	58	56	26	27	76	70	66	64	59	57	26	27		
2200 (1038)	0.182 (45.3)	77				71	68	67	64	62	27	29	79	73	69	68	65	63	30	31		
2500 (1180)	0.212 (52.7)	78	72	70	69	67	65	29	30	80	75	71	70	68	66	32	33					
5	14	0.25	550 (260)	0.072 (18.0)	63	58	53	45	44	43	-	-	64	59	54	46	45	43	-	-		
			775 (366)	0.081 (20.1)	64	59	54	48	45	44	-	-	65	60	56	49	46	45	-	-		
			1000 (472)	0.090 (22.5)	65	60	55	51	48	46	-	-	67	62	57	52	49	48	-	-		
			1500 (708)	0.106 (26.5)	68	62	58	54	51	50	-	-	71	65	61	55	55	52	-	21		
			1950 (920)	0.134 (33.3)	73	67	62	57	56	53	22	24	74	69	64	59	58	55	25	26		
			2200 (1038)	0.149 (37.0)	74	70	65	59	58	55	26	27	75	71	66	61	60	56	27	28		
			2675 (1263)	0.209 (52.0)	75	71	66	61	60	57	27	28	76	73	67	63	61	60	29	31		
			3000 (1416)	0.246 (61.2)	76	74	69	65	64	62	31	32	77	75	70	66	65	63	32	33		
3250 (1534)	0.278 (69.3)	78	75	70	67	65	64	32	33	78	76	71	68	67	66	33	34					
6	16	0.25	750 (354)	0.083 (20.6)	63	56	51	45	41	40	-	-	64	58	53	57	43	42	-	-		
			950 (448)	0.088 (21.8)	65	58	54	47	43	42	-	-	66	59	56	50	45	44	-	-		
			1525 (720)	0.104 (25.9)	68	61	57	50	47	46	-	-	69	62	59	53	51	50	-	-		
			1800 (850)	0.115 (28.7)	70	64	59	53	52	51	-	-	71	66	63	57	53	52	21	22		
			2400 (1133)	0.138 (34.3)	75	68	62	58	57	56	25	26	77	70	66	60	58	57	27	29		
			3000 (1416)	0.165 (41.2)	77	74	69	65	63	61	31	32	79	77	70	64	62	61	34	35		
			3500 (1652)	0.188 (46.9)	78	75	70	65	65	62	32	33	81	78	72	67	66	63	35	37		
			4000 (1888)	0.218 (54.3)	81	76	71	67	66	63	33	34	84	81	73	68	67	64	39	40		
4400 (2077)	0.247 (61.4)	83	77	72	68	67	65	36	36	85	82	74	69	68	66	40	41					
7	18 x 16	0.25	975 (460)	0.178 (44.4)	62	57	50	48	41	35	-	-	63	59	52	49	45	40	-	-		
			1200 (566)	0.021 (5.2)	66	63	57	56	51	49	-	-	68	64	61	59	55	52	-	-		
			1600 (755)	0.028 (6.9)	70	66	59	58	56	52	21	22	72	67	62	61	60	59	22	24		
			2000 (944)	0.036 (9.0)	75	71	61	60	58	57	27	28	76	72	68	66	62	64	28	29		
			2500 (1180)	0.056 (14.0)	78	74	63	61	60	59	31	32	79	75	69	68	65	65	32	33		
			3300 (1558)	0.098 (24.4)	81	79	75	73	71	70	37	38	82	80	76	74	72	71	38	39		
			4200 (1982)	0.170 (42.4)	84	82	78	78	77	77	40	41	85	83	79	80	79	73	41	42		
			5000 (2360)	0.298 (74.2)	85	83	81	79	78	77	41	42	86	84	82	81	79	78	42	44		
5600 (2643)	0.454 (113.0)	86	84	82	80	79	78	42	44	87	85	83	82	80	79	44	45					

See Page ATU-277 For NC Calculations

NC CALCULATIONS

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Air Terminal Units



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FVI-500 - ARI Rating Points

ARI Certified Radiated Sound Power, Fan Only								
Unit Size	Fan CFM	Octave Band						Electrical Power (Watts)
		2	3	4	5	6	7	
106	270	62	62	55	53	45	43	150
208	440	65	63	56	52	45	43	160
310	780	65	63	59	56	51	49	290
412	1000	68	66	61	60	52	51	490
514	1200	74	69	62	60	57	54	680
616	1800	76	73	67	63	57	56	760
718	2600	77	74	71	69	62	61	1430

ARI Certified Radiated Sound Power, 1.5" Inlet Static Pressure									
Unit Size	Primary CFM	Min Ps	Octave Band						Electrical Power (Watts)
			2	3	4	5	6	7	
106	400	0.16	61	54	48	46	42	39	150
208	700	0.14	62	56	52	46	42	40	160
310	1100	0.16	66	60	54	53	45	41	290
412	1600	0.13	68	60	54	50	47	43	490
514	2100	0.15	71	64	58	53	50	46	680
616	2800	0.16	72	66	60	55	51	47	760
718	3750	0.13	77	71	67	63	58	52	1430

ARI Certified Discharge Sound Power, Fan Only								
Unit Size	Fan CFM	Octave Band						Electrical Power (Watts)
		2	3	4	5	6	7	
106	270	59	59	53	48	46	43	150
208	440	60	59	51	52	46	46	160
310	780	66	64	57	56	54	51	290
412	1000	67	66	58	62	57	54	490
514	1200	71	69	62	60	57	54	680
616	1800	73	70	67	69	63	64	760
718	2600	79	76	75	73	70	73	1430

ARI Certified Discharge Sound Power, 1.5" Inlet Static Pressure									
Unit Size	Primary CFM	Min Ps	Octave Band						Electrical Power (Watts)
			2	3	4	5	6	7	
106	400	0.16	61	57	53	47	45	44	150
208	700	0.14	66	61	58	54	49	49	160
310	1100	0.16	68	64	59	52	49	49	290
412	1600	0.13	72	68	63	60	55	53	490
514	2100	0.15	74	69	64	59	58	54	680
616	2800	0.16	77	73	68	62	61	60	760
718	3750	0.13	84	81	76	75	74	77	1430

STATEMENT OF STANDARD TEST CONFORMITY

METALAIRE tests all FVI-500 air terminal units for engineering performance in accordance with the following standards: Air-Conditioning & Refrigeration Institute (ARI), American National Standards Institute (ANSI)/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE).

- ARI Standard 880-98
Standard for Air Terminals
- ANSI/ASHRAE 130-1996
Methods of Testing for Rating Ducted Air Terminal Units
- ASHRAE Standard 41.1-1986 (RA 91)
Standard Method for Temperature Measurement
- ASHRAE Standard 41.2-1987
Standard Methods for Laboratory Air Measurements
- ASHRAE Standard 41.3-1989
Standard Methods for Pressure Measurement

		Standard PSC Motor Amperage Ratings	
		115V-1 Phase 60 Hz	277V-1 Phase 60 Hz
Case Size	Motor HP	Name Plate Amps	Name Plate Amps
1	1/8	2.6	0.9
2	1/6	3.1	1.2
3	1/4	4.8	1.9
4	1/4	4.8	1.9
5	1/3	8.8	3.6
6	1/2	9.8	3.6
7	1	N/A	6.2

Inlet Size	Damper Leakage, CFM		
	1.5" DPS	3.0" DPs	6.0" DPs
6	3	4	7
8	2	4	7
10	4	5	7
12	4	5	7
14	4	6	8
16	4	6	8

Motors also available 208-240 50/60 Hz. Contact your METALAIRE Representative for details.

		ECM Motor Amperage Ratings	
		115V-1 Phase 60 Hz	277V-1 Phase 60 Hz
Case Size	Motor HP	Name Plate Amps	Name Plate Amps
3	1/2	7.7	4.1
6	1	12.8	6.9

All accessories which can be attached to the Series FVI-500 Air Terminals are not a part of the ARI certification program but ratings can be affected by their use.

Air Terminal Units



ATU



FVI-500 - Sound Path Attenuation Assumptions

NC CALCULATIONS

The current ARI Standard for NC calculations is ARI 885-98. Other terminal manufacturers may catalog performance based on ARI 885-90. Using this older, obsolete standard will provide lower NC levels compared to the 1998 standard. To allow for fair and accurate performance comparisons, METALAIRE publishes the NC levels for both the 1990 standard and the 1998 current standard.

ARI 885-90 Radiated Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	3	2	1	1	1	1
Ceiling Effect	9	10	12	14	15	15
Room Effect	9	10	10	11	12	13
Total dB Reduction	21	22	23	26	28	29

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-90.

- Parameters:
- 1) Mineral fiber ceiling tile, 5/8" thick (35 lb/ft² density).
 - 2) Room size is 3000 ft³.
 - 3) Unit is located 10 ft from measurement point.

ARI 885-90 Discharge Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	3	2	1	1	1	1
Duct Lining	1	3	8	22	23	13
End Reflection	11	6	2	0	0	0
Flex Duct	6	9	23	25	22	13
Room Effect	9	10	10	11	12	13
Total dB Reduction	30	30	44	59	58	40

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-90.

- Parameters:
- 1) Fiberglass duct lining is 1 inch thick, 12" x 12" duct length is 5 feet.
 - 2) Flex duct is 8 inches in diameter and 6 feet in length for run to diffuser.
 - 3) Flex duct has a vinyl core.
 - 4) Room size is 3000 ft³.
 - 5) Unit is located 10 ft from measurement point.
 - 6) Attenuation credit based on a 300 CFM flow division using 10 log (# space) not shown above

ARI 885-98 Radiated Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Ceiling/Space Effect	16	18	20	26	31	36
Total dB Reduction	18	19	20	26	31	36

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-98.

- Parameters:
- 1) Mineral fiber ceiling tile, 5/8" thick (35 lb/ft² density).
 - 2) The plenum space is at least 3 ft deep and either wide (>30 ft) or insulated.

* Combined effect including absorption of the ceiling tile, plenum absorption and room absorption.
(New to ARI 885-98. ARI 885-90 had separate lines for these absorptions.)

ARI 885-98, APPE defined "Medium" application from 300 to 700 CFM

ARI 885-98 Discharge Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Duct Lining	2	4	10	20	20	14
End Reflection	9	5	2	0	0	0
Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
Total dB Reduction	24	26	37	48	50	36

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-98.

- Parameters:
- 1) 12" x 12" x 5' duct with 1 inch thick fiberglass lining.
 - 2) Flex duct is 8 inches in diameter and 5 feet in length for run to diffuser.
 - 3) Flex duct has a vinyl core.
 - 4) Room size is 2400 ft³ (size of standard test room).
 - 5) Unit is located 5 ft from measurement point.
 - 6) Attenuation credit based on a 300 CFM flow division using 10 log (# space) not shown above

ARI 885-98, APPE defined "Large" application 700 CFM & greater

ARI 885-98 Discharge Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Duct Lining	2	3	9	18	17	12
End Reflection	9	5	2	0	0	0
Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
Total dB Reduction	24	25	36	46	47	34

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-98.

- Parameters:
- 1) 15" x 15" x 5' duct with 1 inch thick fiberglass lining.
 - 2) Flex duct is 8 inches in diameter and 5 feet in length for run to diffuser.
 - 3) Flex duct has a vinyl core.
 - 4) Room size is 2400 ft³ (size of standard test room).
 - 5) Unit is located 5 ft from measurement point.
 - 6) Attenuation credit based on a 300 CFM flow division using 10 log (# space) not shown above



ATU - Air Terminal Units

FVI-500 - Hot Water Coil MBH Selection Data / Metric Units

Unit Size	Rows	L/s	Head Loss (kPa)	L/s							
				95	140	190	235	285	330	375	450
1	One	0.06	0.45	3.3	3.7	4.0	4.1	4.2	4.3	4.5	4.6
		0.13	1.76	3.6	4.2	4.5	4.7	4.8	5.0	5.3	5.4
		0.25	6.76	3.8	4.5	4.9	5.1	5.3	5.4	5.7	5.9
		0.38	14.83	3.9	4.6	5.0	5.2	5.4	5.6	5.9	6.1
		Airside Ps (kPa)		0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
1	Two	0.06	0.18	4.5	5.2	5.6	5.8	6.0	6.1	6.4	6.5
		0.13	0.75	5.2	6.2	6.7	7.0	7.3	7.5	7.9	8.1
		0.25	2.84	5.6	6.8	7.5	7.8	8.1	8.4	9.0	9.3
		0.38	6.34	5.7	7.0	7.7	8.1	8.5	8.8	9.5	9.7
		Airside Ps (kPa)		0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02
Unit Size	Rows	L/s	Head Loss (kPa)	L/s							
				165.2	210	245	260	285	340	375	415
2	One	0.06	0.45	4.0	4.4	4.7	4.8	4.9	5.2	5.4	5.6
		0.13	1.76	4.5	5.1	5.5	5.6	5.8	6.3	6.5	6.7
		0.25	6.76	4.9	5.6	6.0	6.2	6.4	7.0	7.3	7.6
		0.38	14.83	5.0	5.8	6.2	6.4	6.7	7.3	7.6	7.9
		Airside Ps (kPa)		0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02
2	Two	0.06	0.18	5.6	6.3	6.7	6.8	7.0	7.5	7.7	7.9
		0.13	0.75	6.7	7.7	8.3	8.5	8.9	9.8	10.0	10.4
		0.25	2.84	7.5	8.7	9.5	10.7	10.3	11.5	11.9	12.4
		0.38	6.34	7.8	9.1	10.0	10.3	10.8	12.3	12.7	13.3
		Airside Ps (kPa)		0.01	0.01	0.02	0.02	0.02	0.04	0.04	0.05
Unit Size	Rows	L/s	Head Loss (kPa)	L/s							
				255	295	330.4	375	460	530	565	640
3	One	0.06	0.63	5.6	5.9	6.2	6.4	6.9	7.0	7.2	7.3
		0.13	2.36	6.6	7.0	7.4	7.8	8.5	8.7	8.9	9.2
		0.25	8.97	7.3	7.8	8.2	8.8	9.6	9.9	10.2	10.5
		0.38	19.67	7.5	8.1	8.6	9.1	10.1	10.4	10.7	11.1
		Airside Ps (kPa)		0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02
3	Two	0.06	0.24	7.7	8.1	8.4	8.8	9.4	9.6	9.7	9.9
		0.13	0.90	9.7	10.4	10.9	11.6	12.6	13.0	13.3	13.7
		0.25	3.44	11.0	12.0	12.8	13.8	15.2	15.8	16.3	16.8
		0.38	7.59	11.6	12.6	13.5	14.6	16.3	17.0	17.6	18.2
		Airside Ps (kPa)		0.01	0.01	0.02	0.02	0.03	0.03	0.04	0.04
Unit Size	Rows	L/s	Head Loss (kPa)	L/s							
				370	440	470	510	650	660	710	660
4	One	0.06	0.63	6.4	6.7	6.9	7.1	7.2	7.4	7.6	7.6
		0.13	2.36	7.8	8.3	8.5	8.8	9.1	9.4	9.6	9.7
		0.25	8.97	8.7	9.4	9.7	10.0	10.4	10.8	11.1	11.2
		0.38	19.67	9.1	9.8	10.2	10.5	11.0	11.4	11.7	11.8
		Airside Ps (kPa)		0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
4	Two	0.06	0.24	8.8	9.2	9.4	9.6	9.8	10.0	10.2	10.3
		0.13	0.90	11.5	12.3	12.7	13.1	13.5	14.0	14.3	14.4
		0.25	3.44	13.6	14.8	15.4	16.0	16.6	17.3	17.9	18.0
		0.38	7.59	14.5	15.9	16.6	17.2	18.0	18.8	19.5	19.6
		Airside Ps (kPa)		0.02	0.03	0.03	0.03	0.04	0.05	0.05	0.05
Unit Size	Rows	L/s	Head Loss (kPa)	L/s							
				460	505	545	575	615	660	732	780
5	One	0.06	0.63	6.9	7.1	7.2	7.3	7.5	7.6	7.8	7.9
		0.13	2.36	8.5	8.8	9.0	9.2	9.4	9.7	10.0	10.2
		0.25	9.00	9.6	10.0	10.3	10.6	10.9	11.2	11.7	11.9
		0.38	19.70	10.1	10.5	10.9	11.2	11.5	11.8	12.3	12.7
		Airside Ps (kPa)		0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.03
5	Two	0.06	0.24	9.4	9.6	9.8	9.9	10.1	10.3	10.5	10.6
		0.13	0.90	12.6	13.1	13.4	13.8	14.0	14.4	14.9	15.2
		0.25	3.44	15.2	15.9	16.5	17.0	17.4	18.0	18.8	19.3
		0.38	7.59	16.3	17.2	17.8	18.4	18.9	19.6	20.6	21.2
		Airside Ps (kPa)		0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.07
Unit Size	Rows	L/s	Head Loss (kPa)	L/s							
				555	600	660	685	730	770	800	850
6	One	0.06	0.66	7.6	7.7	7.9	8.0	8.1	8.2	8.3	8.4
		0.13	2.51	9.5	9.8	10.1	10.2	10.4	10.6	10.8	11.0
		0.25	9.53	10.9	11.3	11.7	11.9	12.1	12.5	12.7	13.0
		0.38	20.89	11.5	11.9	12.4	12.6	12.8	13.2	13.5	13.8
		Airside Ps (kPa)		0.01	0.02	0.02	0.02	0.02	0.03	0.03	0.03
6	Two	0.06	0.24	10.2	10.4	10.6	10.7	10.8	10.9	11.0	11.2
		0.13	0.93	14.0	14.5	14.9	15.1	15.5	15.7	15.9	16.2
		0.25	3.59	17.3	17.9	18.7	19.0	19.6	20.0	20.3	20.8
		0.38	7.92	18.7	19.5	20.4	20.8	21.4	21.9	22.4	23.0
		Airside Ps (kPa)		0.03	0.04	0.05	0.05	0.05	0.06	0.06	0.07
Unit Size	Rows	L/s	Head Loss (kPa)	L/s							
				945	1135	1325	1225	1700	1795	1890	2125
7	One	0.06	0.93	10.3	10.5	10.7	10.9	11.1	11.2	11.3	11.4
		0.19	7.50	15.7	16.2	16.7	17.2	17.7	18.0	18.4	18.8
		0.38	28.46	17.9	18.7	19.4	20.0	20.6	21.1	21.7	22.2
		0.57	62.20	18.9	19.7	20.4	21.1	21.8	22.4	23.0	23.6
		Airside Ps (kPa)		0.02	0.02	0.02	0.03	0.03	0.04	0.04	0.05
7	Two	0.06	0.33	15.1	15.3	15.5	13.5	13.6	13.8	-	-
		0.19	2.66	27.1	28.1	28.9	25.5	26.2	26.7	-	-
		0.38	10.19	33.4	34.9	36.2	32.3	33.3	34.3	-	-
		0.57	22.42	36.1	37.9	39.5	35.3	36.6	37.7	-	-
		Airside Ps (kPa)		0.04	0.05	0.05	0.06	0.07	0.08	-	-

Air Terminal Units



ATU

FVI-500 - Hot Water Coils Notes

Table-A

IMPERIAL NOTES

- Hot water coil data are correct for both discharge & induction mounted coils with exception to case 7.
- Values shown in the previous charts assume the following conditions: 180°F EWT, and 65°F EAT. For other conditions of entering water, air temperatures and air flow, see note 5.
- Tabulated values are in MBH (Thousands of BTU per hour).
- Head Loss is in feet of water.
- MBH values are based on a DT (temperature difference) of 115° F between entering air and entering water. For other DTs, multiply the MBH values by the factors below:

DT	Factor
50	.44
60	.52
70	.61
80	.70
90	.79

DT	Factor
100	.88
115	1.00
125	1.07
140	1.20
150	1.30

6. Air Temperature Rise = $\frac{927 \times \text{MBH}}{\text{CFM}}$

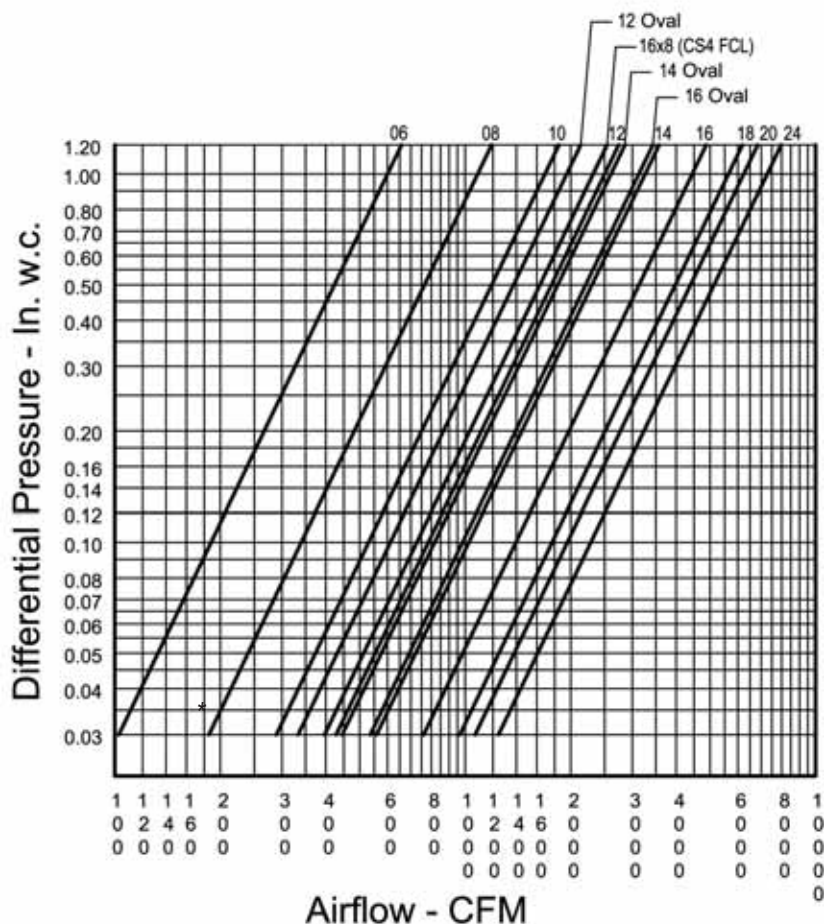
7. Water Temperature Drop = $\frac{2.04 \times \text{MBH}}{\text{GPM}}$

8. For water valve sizing, contact your METALAIR representative. For data values other than those listed, interpolate or use the METALAIR Terminal Selection Program. Contact your METALAIR representative for additional information.

9. All hot water coils are 10 Fins per inch (FPI).



FVI-500 - Calibration for METALAIRE Multi-Point Quadrant Averaging Sensor



ATU Model	Inlet Size	Flow Coefficient
TH, FC	06 Round	600
FV, DD	08 "	1100
DH, BP	10 "	1700
RT, RA	12 "	2500
TL (6-10)	14 "	3250
FCL Cs2 (6-8)	16 "	4400
12 TL	12 Oval	1965
14 TL	14 "	2600
16 TL	16 "	3150
FCL Cs4	16x8 Rect.	2340
FC & FV Cs7	18x16 "	5600
TH20	20x16 "	6200
TH24	24x16 "	7200

$$Cfm = \sqrt{\Delta P} \times \text{Flow Coefficient}$$

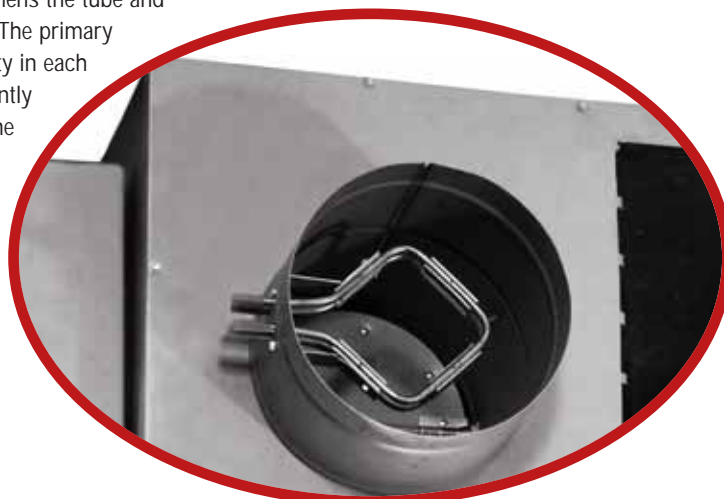
Data is with Sensor Mounted in Round Duct, except for Rectangular Sizes 18, 20 and 24 Widths x 16 Height and 16 x 8 (FCL Case 4)

* Some controllers do not operate consistently below 0.030 in. w.c.

PRIMARY AIR VALVE AND MULTI-POINT QUADRANT AVERAGING FLOW SENSOR

Primary air valve has a bead rolled into the tube, which strengthens the tube and serves as a stop to prevent field-attached flex duct from slipping. The primary valve velocity sensor is multi-ported and arranged to sense velocity in each of four quadrants of the inlet. Those port readings are then inherently

averaged back to the access ports. The sensor has two control ports and two accessory ports. Piping connections are made externally.



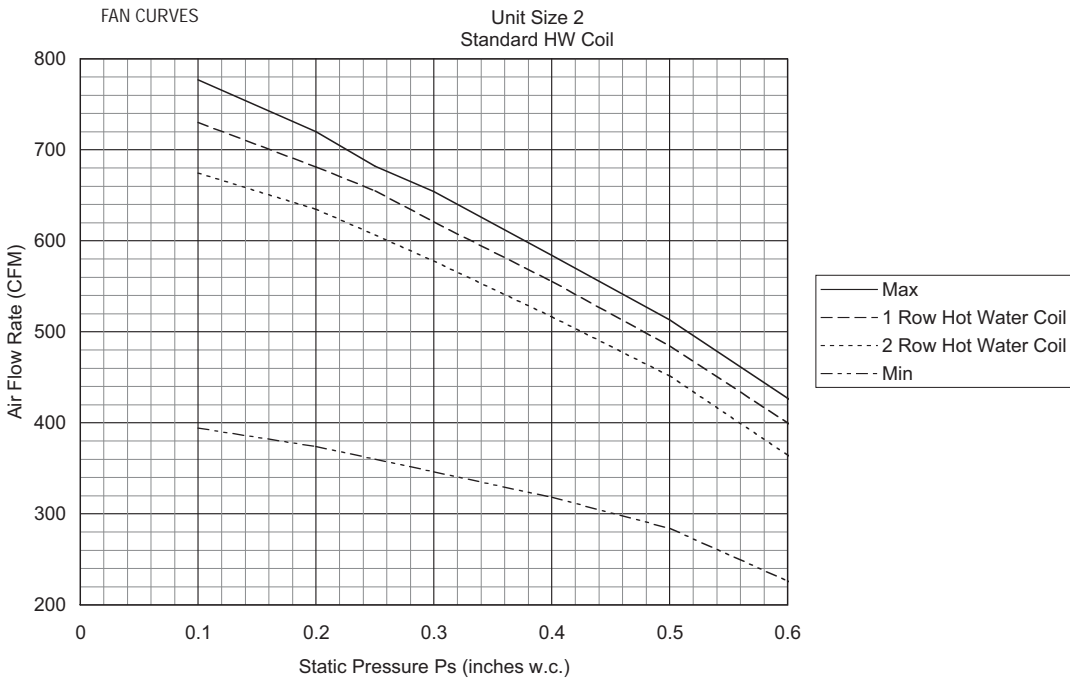
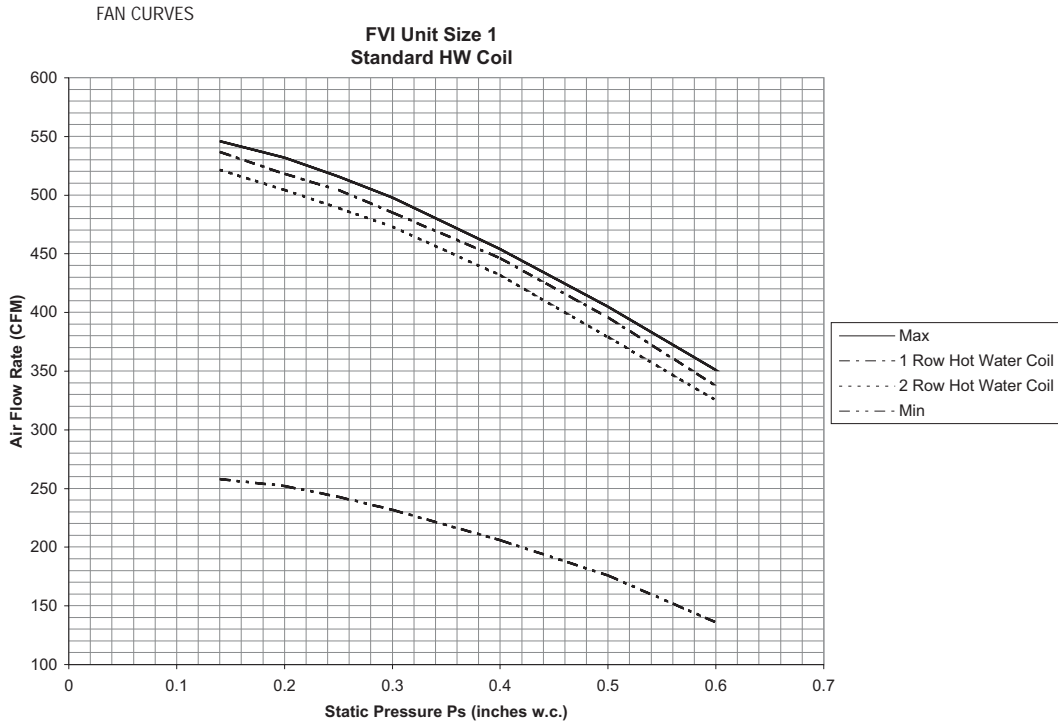
FVI-500 Fan Powered Unit - K Factors			
Inlet Size	Inlet Area	CFM @ 1"	K Factor
6	0.20	600	1.72
8	0.35	1100	1.61
10	0.55	1700	1.65
12	0.79	2500	1.58
14	1.07	3250	1.73
16	1.40	4400	1.61
18 x 16	2.00	5600	2.05

Air Terminal Units



ATU

FVI-500 - Fan Performance Charts



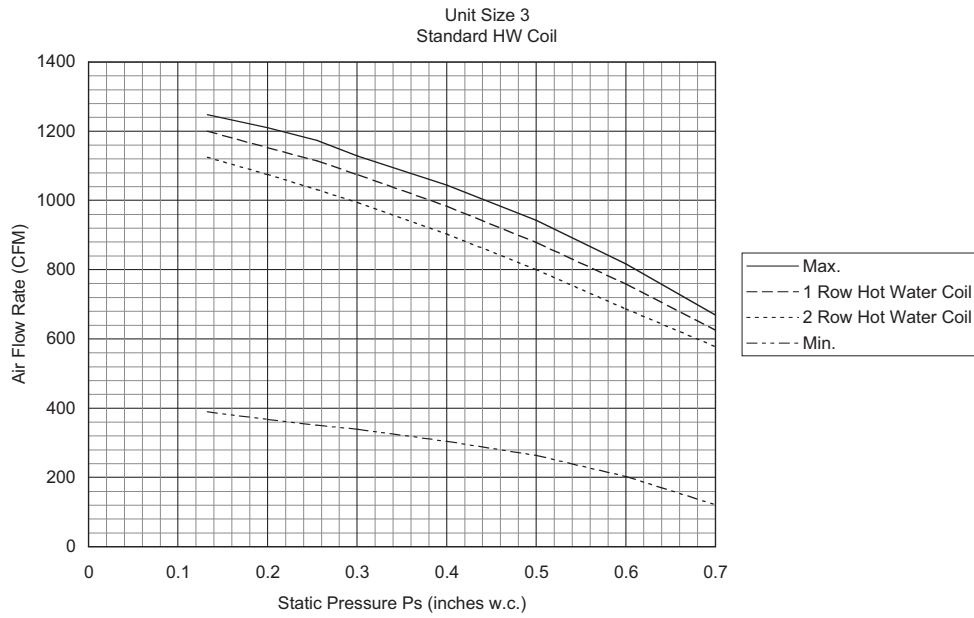
Air Terminal Units



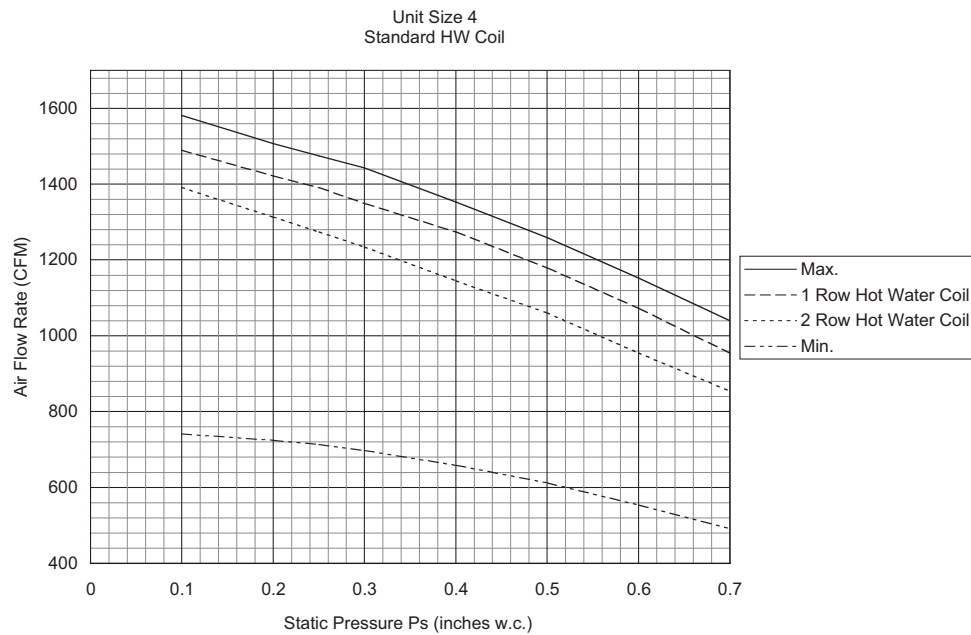
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FVI-500 - Fan Performance Charts

FAN CURVES



FAN CURVES

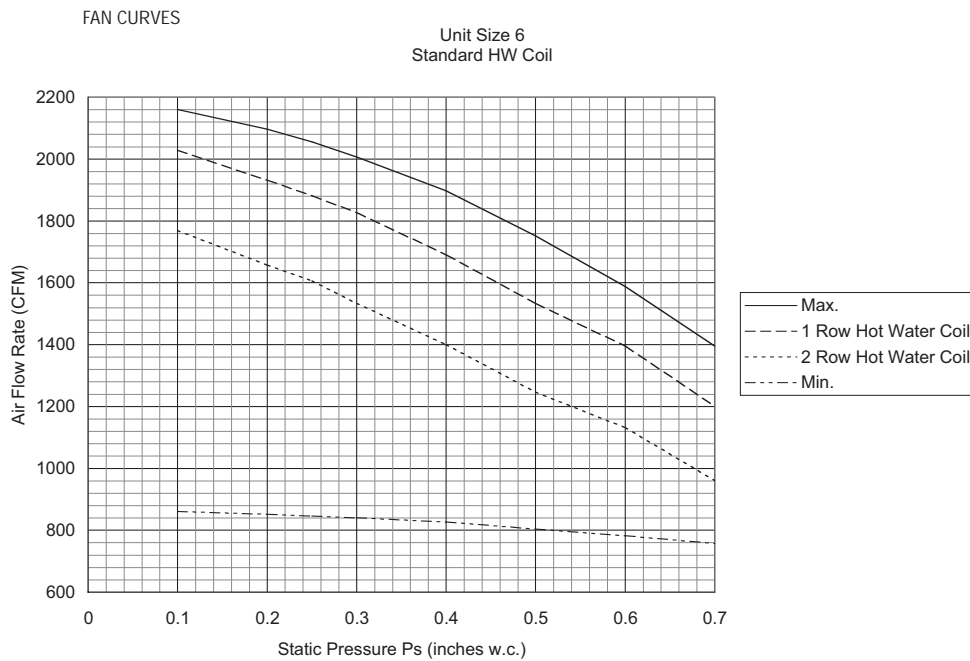
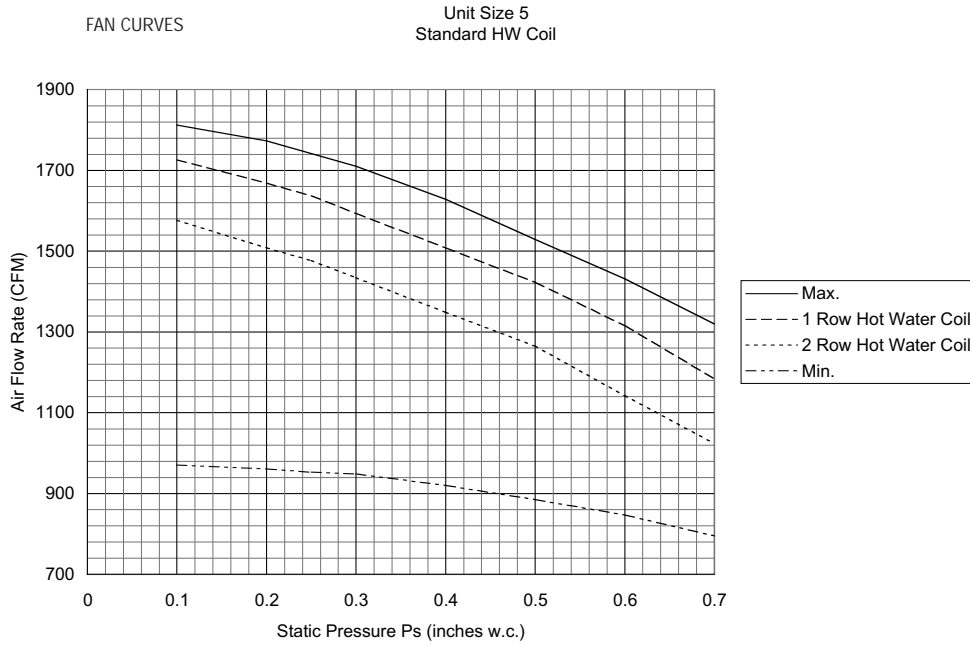


Air Terminal Units



ATU

FVI-500 - Fan Performance Charts



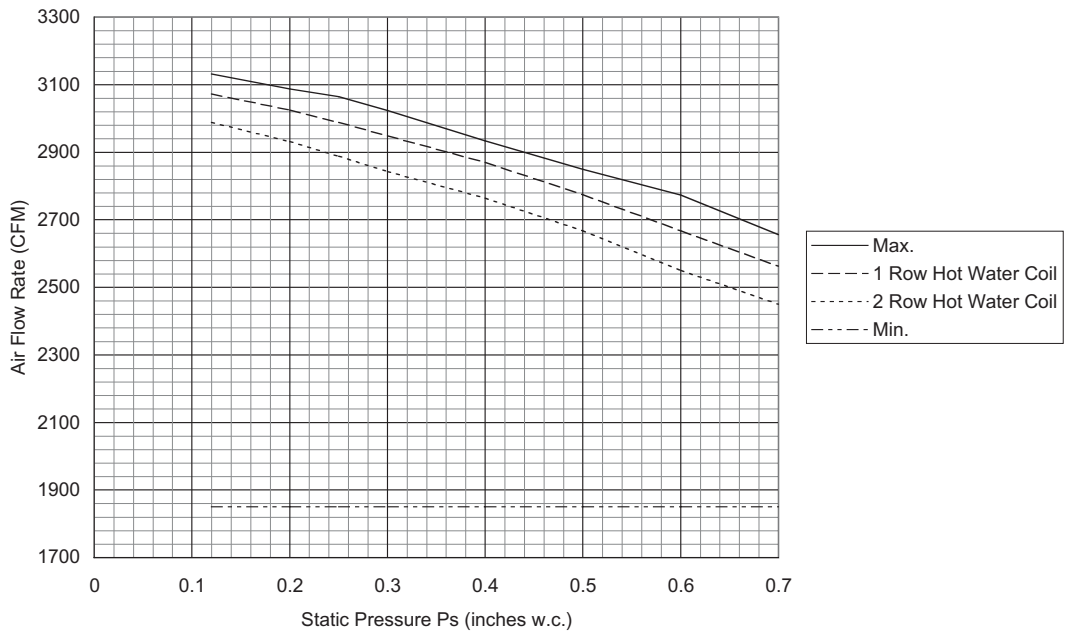
Air Terminal Units



ATU

FVI-500 - Fan Performance Charts

FVI Unit Size 7
Standard HW Coil



Air Terminal Units



ATU

Equations, Conversions & Factors

Formulas

- VP = $(\text{fpm} / 4,005)^2$
- CFM = Cubic feet per minute
- TP = Total Pressure
- SP = Static Pressure
- VP = Velocity Pressure
- fpm = feet per minute
- ΔP = Differential Pressure
- ΔP_s = Static Differential Pressure
- ΔP_T = Total Differential Pressure
- Area Factor = Dimension in Square Feet
- VP = TP - SP
- TP = SP + VP
- SP = TP - VP
- CFM = fpm x Area Factor
- $\Delta P_T = TP_1 - TP_2$
- $\Delta P_s = SP_1 - SP_2$
- $\Delta P = (\text{CFM} / K)^2$
- fpm = CFM / Area Factor
- $K = \text{CFM} / \sqrt{\Delta P}$

Water Coils

- MBH = 1,000s of Btus per Hour
- Btu = British Thermal Unit
- gpm = Gallons per Minute
- $\Delta T = (\text{EWT} - \text{LWT})$
- Air $\Delta T = 927 \times \text{MBH} / \text{cfm}$
- $H_2O \Delta T = 2.04 \times \text{MBH} / \text{gpm}$
- 1 foot of head = 0.4335 psi
- 7.5 Gallons = 1 Cubic Foot

Imperial to Metric Conversions

multiply	by	to get
Ft of water	2.989	kPa
GPM	0.0631	L/s
CFM	0.472	L/s
in w.c.	249.088	Pa
MBH	0.2931	kW
Gallons	3.79	Litres

Electric Coils

- kW = Kilowatts
- Air $\Delta T = (\text{LWT} - \text{EWT})$
- kW = $\text{cfm} \times \Delta T / 3,160$
- $\Delta T = \text{kW} \times 3160 / \text{cfm}$
- 1 MBH = kW x 3.41

Power

- W = Watts
- A = Amps
- hp = Horsepower
- V = Volts
- E_1 = Efficiency
- PF = Power Factor

1 HUMAN AT REST = 100 WATTS = 341 BTU'S

Power AC Circuits (Single Phase)

- PF = $W / (V \times A)$
- A = $746 \times \text{HP} / (V \times E \times \text{PF})$
- E = $746 \times \text{HP} / (V \times A \times \text{PF})$
- kW = $V \times A \times E \times \text{PF} / 1,000$
- hp = $V \times A \times E \times \text{PF} / 746$

Power AC Circuits (3 Phase)

- PF = $W / (V \times A \times 1.732)$
- A = $746 \times \text{HP} / (1.732 \times V \times E \times \text{PF})$
- E = $746 \times \text{HP} / (V \times A \times \text{PF} \times 1.732)$
- kW = $V \times A \times \text{PF} \times 1.732 / 1000$
- hp = $V \times A \times 1.732 \times E \times \text{PF} / 746$

U.S. Galvanized Sheet Metal Gauges	
Gauge No.	Thickness (inches)
26	.0217
24	.0276
22	.0336
20	.0396
18	.0516
16	.0635
14	.0785

Reheat Coils:

Several types of terminal devices are available with reheat coils, both hot water and electric. When determining the heat requirement for a terminal, the engineer will often start with the known zone heating demand, typically expressed in BTUH, or more conveniently, MBH (thousands of BTUs). The room load requirements for heating are then used to determine the Room Entering Air temperature (EAT_r) now becomes the required LAT of the VAV box (ignoring any duct heat losses). The coil can now be sized according to:

$$\text{BTUH (coil)} = 1.085 \times (\text{LAT} - \text{EAT}_r) \times \text{CFM}$$

Where;

- LAT = The coil leaving air temperature
- EAT = Coil entering air temperature, (primary or mixed air)
- CFM = Cubic feet per minute

Now that the coil requirements are known, published catalog data may be used to select the proper hot water or electric coil.





SERIES DH-500 *(Patent Pending)*

High Performance-Dual Duct Air Terminal Units

Series DH-500 (patent pending) High Performance Dual Duct Air Terminals are designed to regulate the flow of conditioned air in dual duct air distribution systems. In a dual duct system, both heated and cooled air are provided to the air terminal and mixed to provide the desired discharge temperature. The DH-500 has been engineered to provide a 1:30* mixing ratio, the highest in the industry. They are available with a wide range of standard control sequences.

Series DH-500 Air Terminals feature a low leakage single blade damper in the heating and cooling inlets.

The DH series is available with pneumatic, electric, analog electronic, and DDC (by others) factory mounted controls.

DH-500 Air Terminals are available for both system pressure independent and system pressure dependent applications.

Series DH-500 Air Terminals are recommended for use in duct systems with static pressures up to 3" water gauge

**Mixing ratio is the ratio between a 1°F temperature difference in the discharge air stream and the difference between the hot deck and cold deck temperature*

#Series DH-500 is Patent Pending

The inlet tubes are free of obstructions, including stops, allowing the damper to rotate 360° within the inlet tube

The inlet tubes for the DH-500 includes a bead that strengthens the tube and serves as a stop to keep attached flex duct from slipping

For set-up and balancing purposes, all units are shipped with a convenient balancing chart located on the outside of the terminal for conversion from velocity pressure to CFM

The DH-500 damper gaskets has slits around the perimeter to prevent a low frequency vibration and corresponding noise at near shut-off

Units inlet tubes are constructed with a seamless butt weld to minimize leakage and prevent the damper from binding

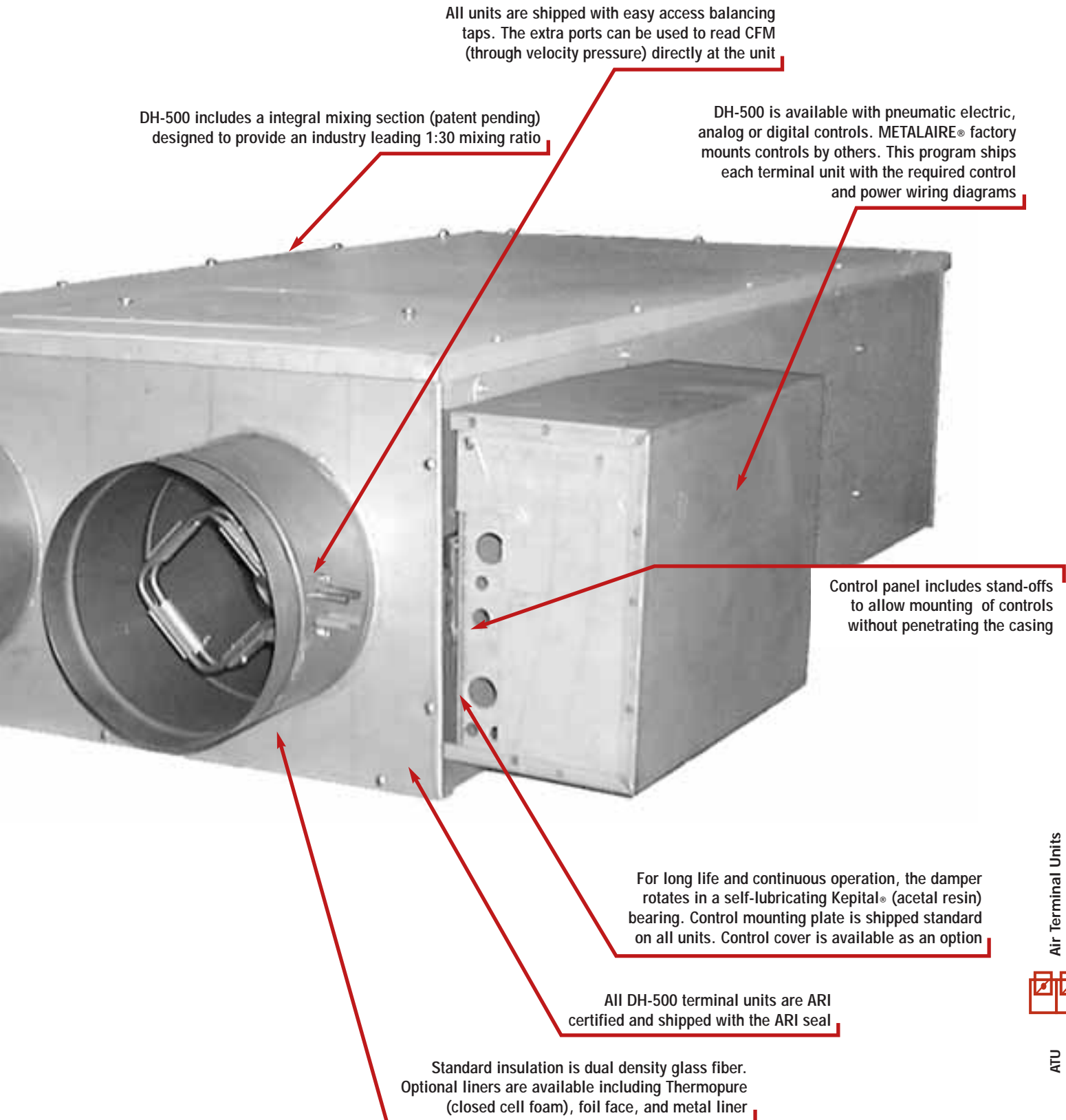
Multiquadrant Averaging Flow Sensor provides an accurate flow signal without the requirement of a straight duct connection immediately upstream (Shipped standard on all units).

Air Terminal Units



ATU

ATU - Air Terminal Units



All units are shipped with easy access balancing taps. The extra ports can be used to read CFM (through velocity pressure) directly at the unit

DH-500 includes a integral mixing section (patent pending) designed to provide an industry leading 1:30 mixing ratio

DH-500 is available with pneumatic electric, analog or digital controls. METALAIRE® factory mounts controls by others. This program ships each terminal unit with the required control and power wiring diagrams

Control panel includes stand-offs to allow mounting of controls without penetrating the casing

For long life and continuous operation, the damper rotates in a self-lubricating Kepital® (acetal resin) bearing. Control mounting plate is shipped standard on all units. Control cover is available as an option

All DH-500 terminal units are ARI certified and shipped with the ARI seal

Standard insulation is dual density glass fiber. Optional liners are available including Thermopure (closed cell foam), foil face, and metal liner

Air Terminal Units



ATU



SERIES DD-500

Dual Duct Air Terminal Units

Series DD-500 Dual Duct air terminals are designed to regulate the flow of conditioned air in dual duct air distribution systems. In a dual duct system, both heated and cooled air are provided to the air terminal and mixed to provide the desired discharge temperature. The DD-500 is available with a wide range of standard control sequences.

Series DD-500 Air Terminals feature a low leakage single blade damper. The DD-500 series is available with pneumatic, electric, analog electronic, and DDC (by others) factory mounted controls. DD-500 air terminals are available for both system pressure independent and system pressure dependent applications.

Series DD-500 air terminals are recommended for use in duct systems with static pressures up to 3" water gauge.

Units inlet tubes are constructed with a seamless butt weld to minimize leakage and prevent the damper from binding

The inlet tubes are free of obstructions, including stops, allowing the damper to rotate 360 degrees within the inlet tube

Multiquadrant Averaging Flow Sensor provides an accurate flow signal without the requirement of a straight duct connection immediately upstream (Shipped standard on all units).

The DD-500 damper gaskets has slits around the perimeter to prevent a low frequency vibration and corresponding noise at near shut-off

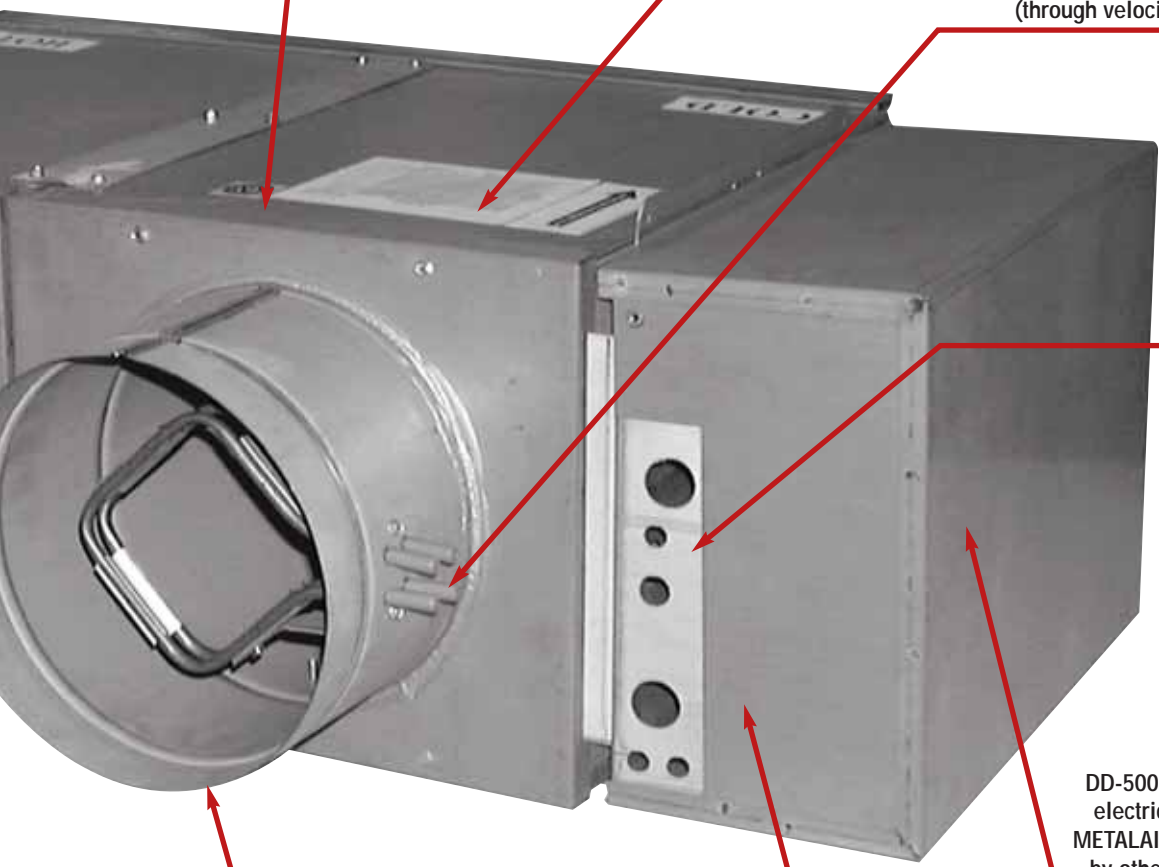
Standard insulation is dual density glass fiber. Optional liners are available including Thermopure (closed cell foam), foil face, and metal liner

Air Terminal Units



ATU

ATU - Air Terminal Units



All DD-500 terminal units are ARI certified and shipped with the ARI seal

For set-up and balancing purposes, all units are shipped with a convenient balancing chart located on the outside of the terminal for conversion from velocity pressure to CFM

All units are shipped with easy access balancing taps. The extra ports can be used to read CFM (through velocity pressure) directly at the unit

Control panel includes stand-offs to allow mounting of controls without penetrating the casing

DD-500 is available with pneumatic electric, analog or digital controls. METALAIRE® factory mounts controls by others. This program ships each terminal unit with the required control and power wiring diagrams

For long life and continuous operation, the damper rotates in a self-lubricating Kepital® (acetal resin) bearing. Control mounting plate is shipped standard on all units. Control cover is provided as standard

The inlet tubes for the DD-500 includes a bead that strengthens the tube and serves as a stop to keep attached flex duct from slipping

Air Terminal Units



ATU



For more product information visit us at www.metalaire.com



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METAL*AIRE®

GRILLES & REGISTERS

PRODUCT CATALOG

The METAL*AIRE InfoSource Catalog suite is the leading product catalog in the industry. Included in these catalogs are the complete product listings, drawings, product features and benefits, product performance data, specifications, and model specifications. These catalogs are organized to make it quick and easy to find the information you are looking for.

Revised: July 27, 2006



At METAL*AIRE®, we continually work to improve our products. Product descriptions, dimensions, and performance are subject to change without notice. For the most current available literature visit our web page at www.metalaire.com. Contact your local METAL*AIRE® representative to verify product or performance details.

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LBG

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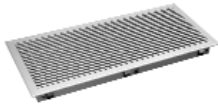


GERB

LINEAR BAR GRILLES

LINEAR BAR GRILLES

LBG - Linear Bar Grilles



Series 2000
Pg. 10

Linear Bar Grilles & Registers - Series 2000

- ✦ Series 2000 linear bar grilles and registers are engineered for supply and return air distribution in heating, cooling, and ventilating applications, and are designed for sidewall, floor, sill, and ceiling installation
- ✦ Constructed of high-grade aluminum extrusions
- ✦ Bar grille frames are available in three border widths: 3/16", 1/2", 1"
- ✦ A complete line of accessories is available for series 2000 bar grilles and registers; including mitered corners, opposed blade dampers, adjustable extractors and grids, access doors, and debris screens

Series 2000 1" Borders - 7/32" Bars - 1/2" Center	Grilles - 1" Border		
	0° Deflection	15° Deflection	30° Deflection
Wall Mounting	2000 1" Border	2015 1" Border	2030 1" Border
Core Only	2000CO 1" Border	2015CO 1" Border	2030CO 1" Border
Floor Mounting	2000F 1" Border	2015F 1" Border	2030F 1" Border
Floor or Sill Mounting	2000FP 1" Border	2015FP 1" Border	2030FP 1" Border
Concealed Mounting Hanger	2000H 1" Border	2015H 1" Border	2030H 1" Border
For Plaster Wall & Ceilings	2000HP 1" Border	2015HP 1" Border	2030HP 1" Border

Series 2100 1/2" Borders - 7/32" Bars - 1/2" Center	Grilles - 1/2" Border		
	0° Deflection	15° Deflection	30° Deflection
Wall Mounting	2100 1/2" Border	2115 1/2" Border	2130 1/2" Border
Concealed Mounting Hanger	2100H 1/2" Border	2115H 1/2" Border	2130H 1/2" Border
Concealed Spline Subframe	2100HP 1/2" Border	2115HP 1/2" Border	2130HP 1/2" Border
Narrow Subframe	2100HW 1/2" Border	2115HW 1/2" Border	2130HW 1/2" Border
Combination Subframe	2100HC 1/2" Border	2115HC 1/2" Border	2130HC 1/2" Border

Series 2200 3/16" Border - 7/32" Bars - 1/2" Center	Grilles - 3/16" Border		
	0° Deflection	15° Deflection	30° Deflection
Non-Flanged Floor Mounting	2200F Floor Frame	2215F Floor Frame	2230F Floor Frame
Non-Flanged Floor Mounting - Pencil Proof	2200FP Floor Frame	2215FP Floor Frame	2230FP Floor Frame

Series 2300 1" Border - 1/8" Bars - 1/4" Center	Grilles - 1" Border		
	0° Deflection	15° Deflection	30° Deflection
Wall Mounting	2300 1" Border	2315 1" Border	2330 1" Border
Core Only - 1/8" Bars - 1/4" Centers	2300CO 1" Border - Core Only	2315CO 1" Border - Core Only	2330CO 1" Border - Core Only
Concealed Mounting Hangers	2300H 1" Border	2315H 1" Border	2330H 1" Border
Concealed Spline Mounting Frame	2300HP 1" Border	2315HP 1" Border	2330HP 1" Border

Series 2400 1/2" Border - 1/8" Bars - 1/4" Center	Grilles - 1/2" Border		
	0° Deflection	15° Deflection	30° Deflection
Wall Mounting	2400 1/2" Border	2415 1/2" Border	2430 1/2" Border
Concealed Mounting Hangers	2400H 1/2" Border	2415H 1/2" Border	2430H 1/2" Border
Concealed Spline Mounting Frame	2400HP 1/2" Border	2415HP 1/2" Border	2430HP 1/2" Border
Narrow Mounting Frame	2400HW 1/2" Border	2415HW 1/2" Border	2430HW 1/2" Border
Combination Narrow Mounting Frame	2400HC 1/2" Border	2415HC 1/2" Border	2430HC 1/2" Border

	Border	Bars	Centers
2000	1"	7/32"	1/2"
2100	1/2"	7/32"	1/2"
2200	3/16"	7/32"	1/2"
2300	1"	1/8"	1/4"
2400	1/2"	1/8"	1/4"

Linear Bar Grilles



LBG

Linear Bar Grilles & Registers Series 2000 Extruded Aluminum

Product Details

- ✦ Series 2000 linear bar grilles and registers are engineered for supply and return air distribution in heating, cooling, and ventilating applications, and are designed for sidewall, floor, sill, and ceiling installation
- ✦ Constructed of high-grade aluminum extrusions
- ✦ Bar grille frames are available in three border widths: 3/16", 1/2", 1"
- ✦ A complete line of accessories are available for series 2000 bar grilles and registers; including mitered corners, opposed blade dampers, adjustable extractors and grids, access doors, and debris screens



Model 2000 Shown

Standard Finish: 01 White

Series 2000 - 1" Borders • 7/32" Bars • 1/2" Centers

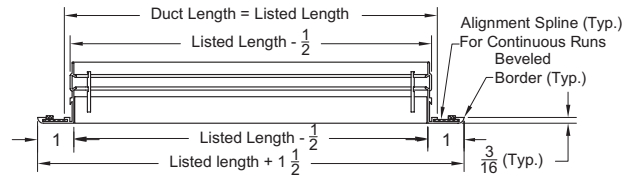
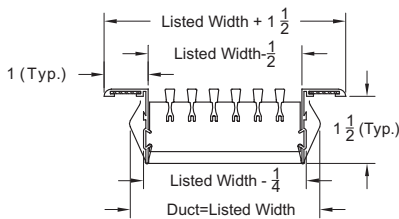
Sideview, dimensions are in inches

Wall Mounted - 1" Border/7/32" Bars/1/2" Centers - Extruded Aluminum - Series 2000

Model 2000 - 0° Deflection

Model 2015 - 15° Deflection

Model 2030 - 30° Deflection

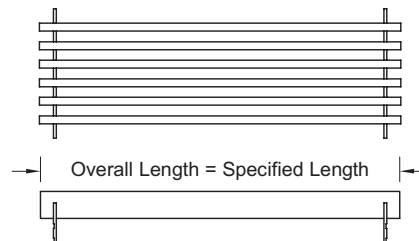
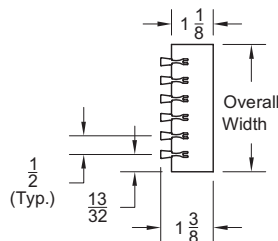


Core Only - 1" Border/7/32" Bars/1/2" Centers - Extruded Aluminum - Series 2000

Model 2000CO - 0° Deflection

Model 2015CO - 15° Deflection

Model 2030CO - 30° Deflection



Linear Bar Grilles

LBG

LBG - Linear Bar Grilles

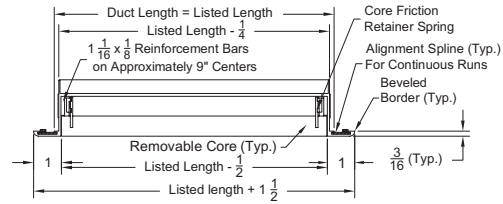
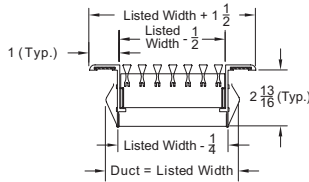
1" Border/7/32" Bars/1/2" Centers - Extruded Aluminum - Series 2000

Floor Mounted

Model 2000F - 0° Deflection
 Model 2015F - 15° Deflection
 Model 2030F - 30° Deflection

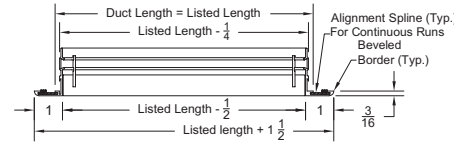
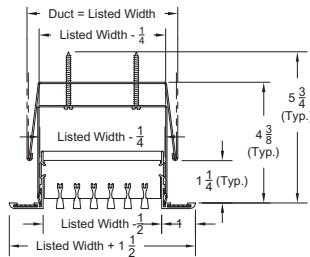
Floor Mounted/Pencil Proof

Model 2000FP - 0° Deflection
 Model 2015FP - 15° Deflection
 Model 2030FP - 30° Deflection



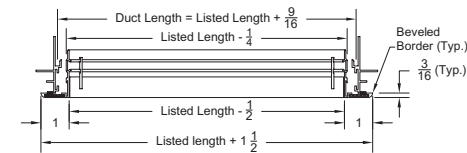
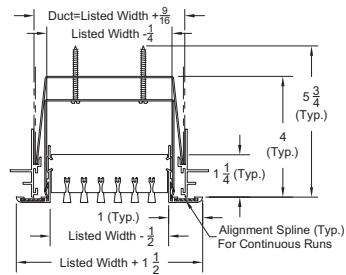
Concealed Mounting Hanger - 1" Border/7/32" Bars/1/2" Centers - Extruded Aluminum - Series 2000

Model 2000H - 0° Deflection
 Model 2015H - 15° Deflection
 Model 2030H - 30° Deflection



Plaster Wall & Ceiling - 1" Border/7/32" Bars/1/2" Centers - Extruded Aluminum - Series 2000

Model 2000HP - 0° Deflection
 Model 2015HP - 15° Deflection
 Model 2030HP - 30° Deflection



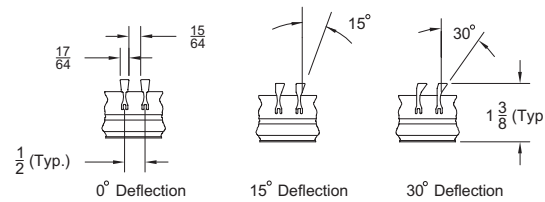
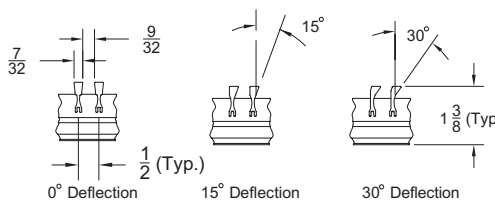
Deflection Angles

Models

2000/2000CO/2000F/2000H/2000HP

Models

2000FP Pencil Proof



LBG - Linear Bar Grilles

7/2006

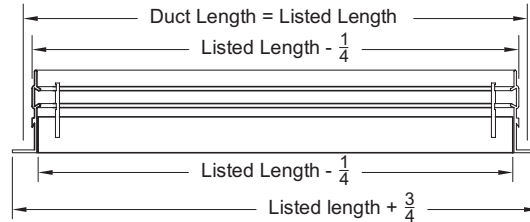
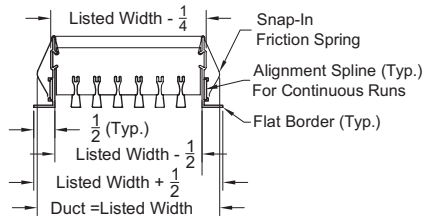
Series 2100 - 1/2" Borders • 7/32" Bars • 1/2" Centers

Wall Mounted - 1/2" Border/7/32" Bars/1/2" Centers - Extruded Aluminum - Series 2100

Model 2100 - 0° Deflection

Model 2115 - 15° Deflection

Model 2130 - 30° Deflection

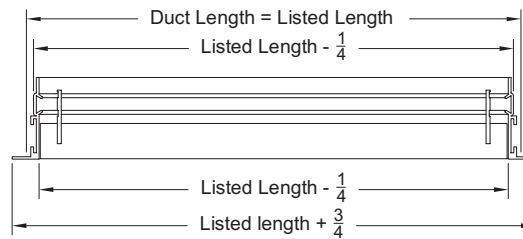
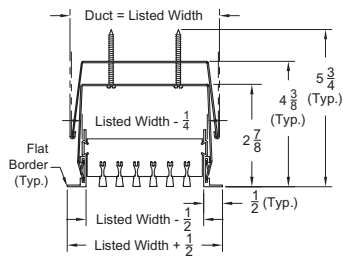


Concealed Mounting Hanger - 1/2" Border/7/32" Bars/1/2" Centers - Extruded Aluminum - Series 2100

Model 2100H - 0° Deflection

Model 2115H - 15° Deflection

Model 2130H - 30° Deflection

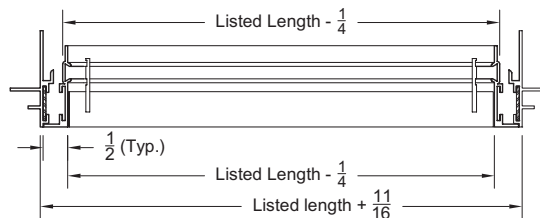
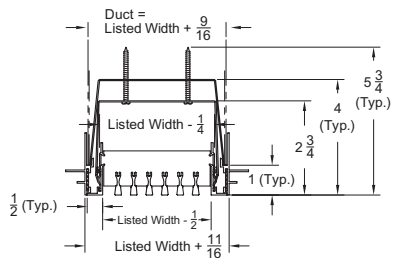


Concealed Spline Subframe - 1/2" Border/7/32" Bars/1/2" Centers - Extruded Aluminum - Series 2100

Model 2100HP - 0° Deflection

Model 2115HP - 15° Deflection

Model 2130HP - 30° Deflection



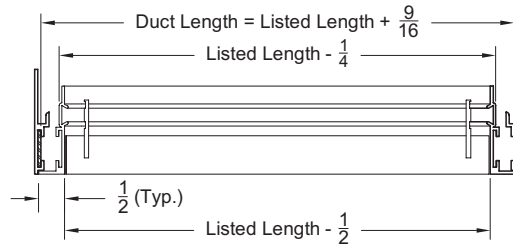
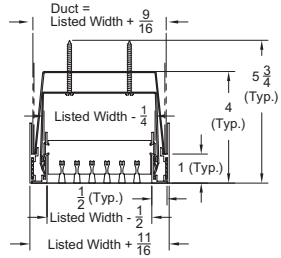
Linear Bar Grilles

LBG

LBG - Linear Bar Grilles

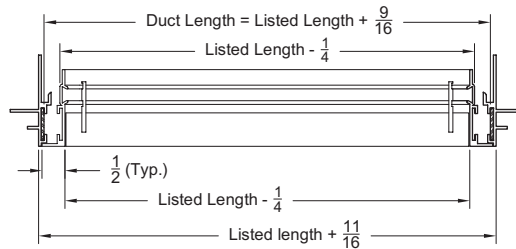
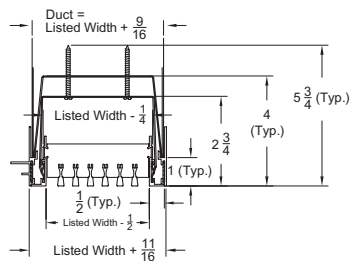
Narrow Subframe - 1/2" Border/7/32" Bars/1/2" Centers - Extruded Aluminum - Series 2100

- Model 2100HW - 0° Deflection
- Model 2115HW - 15° Deflection
- Model 2130HW - 30° Deflection



Combination Subframe - 1/2" Border/7/32" Bars/1/2" Centers - Extruded Aluminum - Series 2100

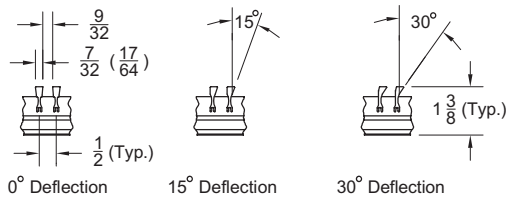
- Model 2100HC - 0° Deflection
- Model 2115HC - 15° Deflection
- Model 2130HC - 30° Deflection



Deflection Angles

Models

2100/2100H/2100HP/2100HW/2100HC



LBG - Linear Bar Grilles

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Series 2200 - 3/16" Borders • 7/32" Bars • 1/2" Centers

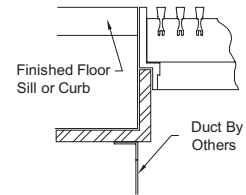
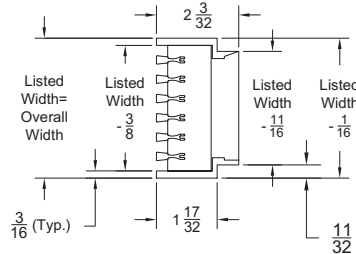
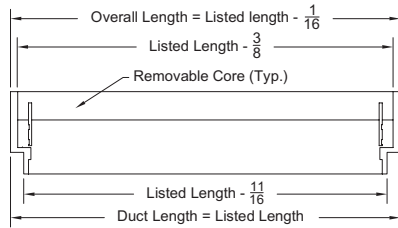
3/16" Border/7/32" Bars/1/2" Centers - Extruded Aluminum - Series 2200

Non-Flanged Floor Mounting

Model 2200F - 0° Deflection
 Model 2215F - 15° Deflection
 Model 2230F - 30° Deflection

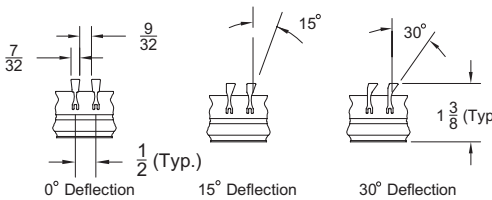
Non-Flanged Floor Mounting/Pencil Proof

Model 2200FP - 0° Deflection
 Model 2215FP - 15° Deflection
 Model 2230FP - 30° Deflection

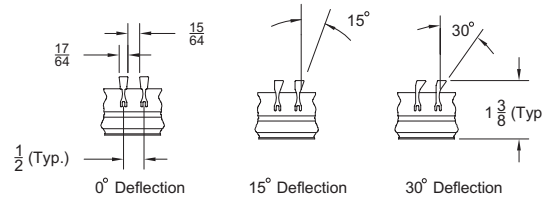


Deflection Angles

Models
2200F



Models
2000FP Pencil Proof



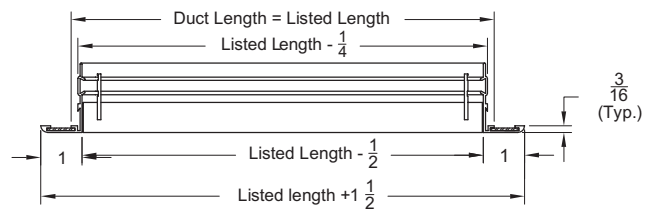
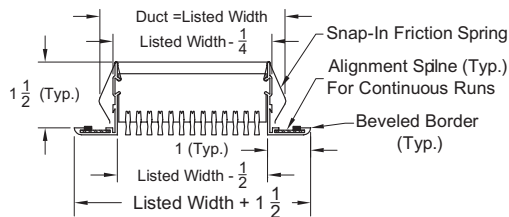
Linear Bar Grilles

LBG

Series 2300 - 1" Borders • 1/8" Bars • 1/4" Centers

Wall Mounted - 1" Border/1/8" Bars/1/4" Centers - Extruded Aluminum - Series 2300

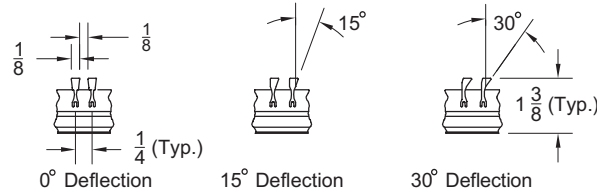
Model 2300 - 0° Deflection
 Model 2315 - 15° Deflection
 Model 2330 - 30° Deflection



LBG - Linear Bar Grilles

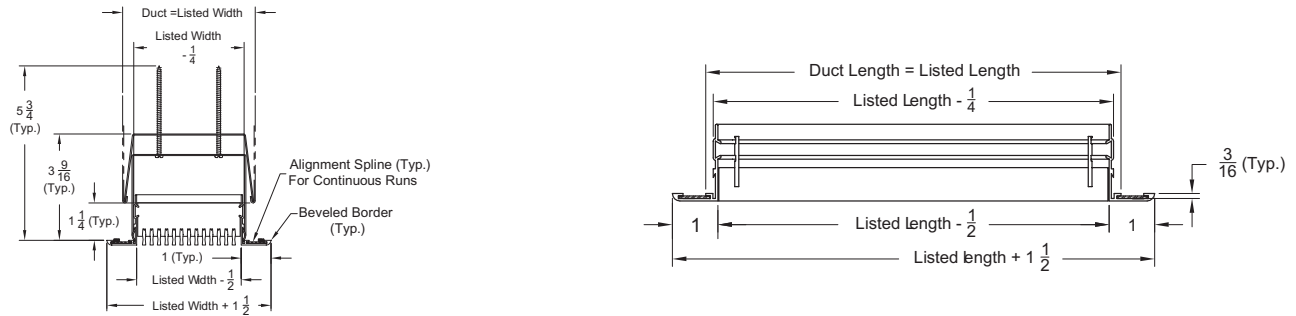
Core Only - 1" Border/1/8" Bars/1/4" Centers - Extruded Aluminum - Series 2300

- Model 2300CO - 0° Deflection
- Model 2315CO - 15° Deflection
- Model 2330CO - 30° Deflection



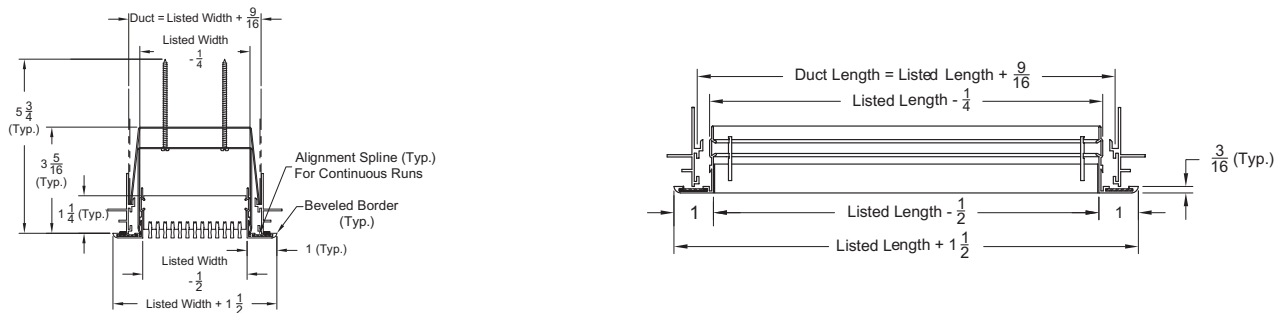
Concealed Mounting Hangers - 1" Border/1/8" Bars/1/4" Centers - Extruded Aluminum - Series 2300

- Model 2300H - 0° Deflection
- Model 2315H - 15° Deflection
- Model 2330H - 30° Deflection



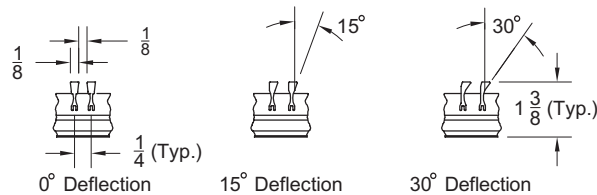
Spline Subframe - 1" Border/1/8" Bars/1/4" Centers - Extruded Aluminum - Series 2300

- Model 2300HP - 0° Deflection
- Model 2315HP - 15° Deflection
- Model 2330HP - 30° Deflection



Deflection Angles

Models
2300/2300CO/2300H/2300HP



Linear Bar Grilles

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LBG - Linear Bar Grilles

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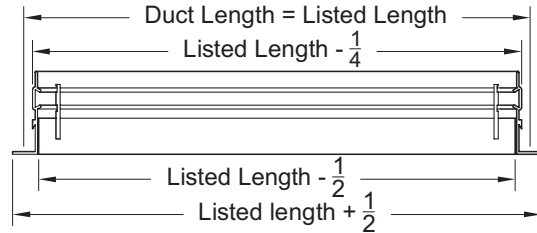
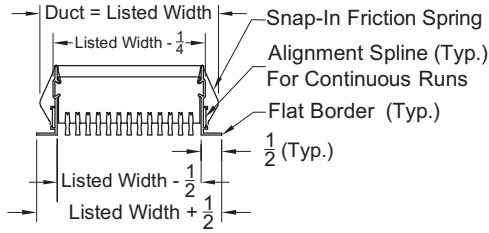
Series 2400 - 1/2" Borders • 1/8" Bars • 1/4" Centers

Wall Mounted - 1/2" Border/1/8" Bars/1/4" Centers - Extruded Aluminum - Series 2400

Model 2400 - 0° Deflection

Model 2415 - 15° Deflection

Model 2430 - 30° Deflection

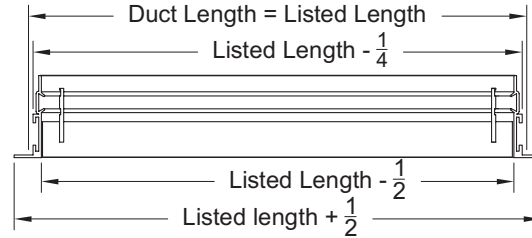
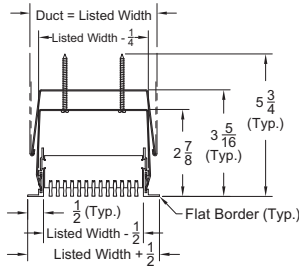


Concealed Mounting Hangers - 1/2" Border/1/8" Bars/1/4" Centers - Extruded Aluminum - Series 2400

Model 2400H - 0° Deflection

Model 2415H - 15° Deflection

Model 2430H - 30° Deflection

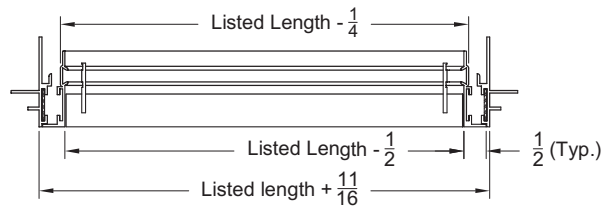
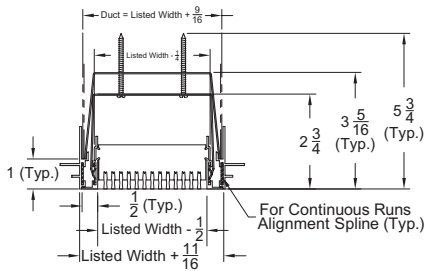


Concealed Spline Subframe - 1/2" Border/1/8" Bars/1/4" Centers - Extruded Aluminum - Series 2400

Model 2400HP - 0° Deflection

Model 2415HP - 15° Deflection

Model 2430HP - 30° Deflection

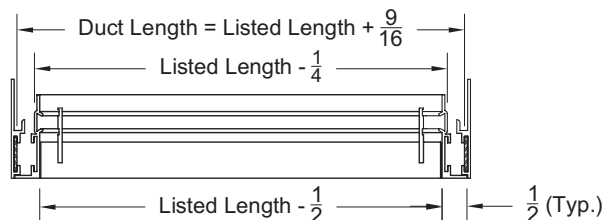
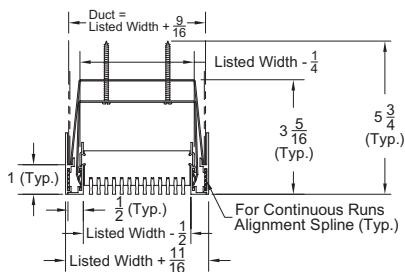


Narrow Subframe - 1/2" Border/1/8" Bars/1/4" Centers - Extruded Aluminum - Series 2400

Model 2400HW - 0° Deflection

Model 2415HW - 15° Deflection

Model 2430HW - 30° Deflection

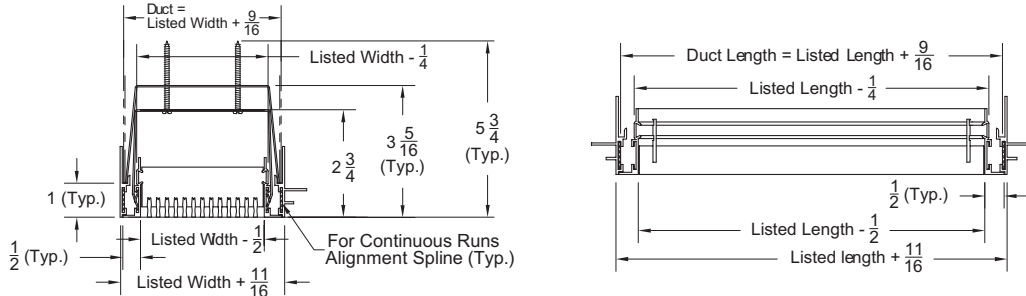


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LBG - Linear Bar Grilles

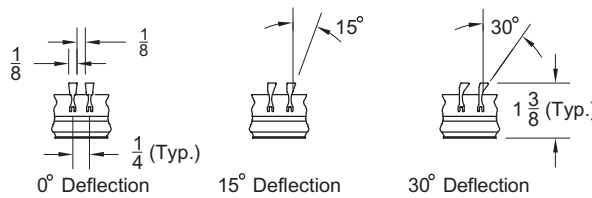
Spline Subframe - 1/2" Border/1/8" Bars/1/4" Centers - Extruded Aluminum - Series 2400

- Model 2400HC - 0° Deflection
- Model 2415HC - 15° Deflection
- Model 2430HC - 30° Deflection



Deflection Angles

Models
2400/2400H/2400HP/2400HC



Notes for Models 2000, 2015, 2030, 2000F, 2015F, 2030F, 2000FP, 2015FP, 2030FP, 2000H, 2015H, 2030H, 2000HP, 2015HP, 2030HP, 2100, 2115, 2130, 2100H, 2115H, 2130H, 2100HP, 2115HP, 2130HP, 2100HW, 2115HW, 2130HW, 2100HC, 2115HC, 2130HC

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 01 White Optional Finish 04 Clear Anodized 28 Custom color	L9 - Equalizing grid208 Mitered corner209 Damper (for grilles)	Dampers - Widths 3 1/2" and smaller use a single flap style damper Widths 4" and larger use model OBD - Steel OBDA - Aluminum damper Core Only (longer sections are not available for core only sections)	<ul style="list-style-type: none"> Widths available in 1/2" increments from 1 1/2" to 24" Lengths available in single pieces up to 72" Longer sections are made by joining sections in the field with factory supplied alignment strap For lengths less than 72", round up to next listed size. No odd size charges apply Standard mounting in concealed friction spring clips Available reverse sizes (face bars parallel to short side)

Notes for Models 2300, 2315, 2330, 2300H, 2315H, 2330H, 2300HP, 2315HP, 2330HP, 2400, 2415, 2430, 2400H, 2415H, 2430H, 2400HP, 2415HP, 2430HP, 2400HW, 2415HW, 2430HW

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 01 White Optional Finish 04 Clear Anodized 28 Custom color	L9 - Equalizing grid208 Mitered corner209 Damper (for grilles)	Dampers - Widths 3 1/2" and smaller use a single flap style damper Widths 4" and larger use model OBD - Steel OBDA - Aluminum damper Core Only	<ul style="list-style-type: none"> Widths available in 1/2" increments from 1 1/2" to 24" Lengths available in single pieces up to 72" Longer sections are made by joining sections in the field with factory supplied alignment strap Standard mounting in concealed friction spring clips Available reverse sizes (face bars parallel to short side)

Notes for Models 2200F, 2215F, 2230F, 2200FP, 2215FP, 2230FP, 2300 CO, 2315 CO, 2330 CO

1. Available Finishes	2. Construction Details
Standard Finish: 01 White Optional Finish 04 Clear Anodized 28 Custom color	<ul style="list-style-type: none"> Widths available in 1/2" increments from 1 1/2" to 8" for series 2200F Lengths available in single pieces up to 48" Longer sections are available only as separate non-connected sections. For lengths less than 48", round up to the next size



For more product information visit us at www.metalair.com



LBG - Linear Bar Grilles

Series 2000, 2100, 2200 (0° and 15° Deflection)

Listed Width (in inches) and Ak Area per foot	Outlet Velocity (V _k)	500	700	900	1000	1100	1200	1300
	Total Pressure (Pt)	0.016	0.031	0.051	0.062	0.062	0.09	0.105
	Static Pressure (Ps)	0.012	0.024	0.04	0.05	0.05	0.072	0.084
	NC		15	20	23	23	29	31
1 1/2 0.062	Flow CFM/Ft.	31	44	56	63	69	75	81
	Throw, Sill or Floor	6 9	9 13	10 14	11 16	13 18	13 19	14 20
	Ft. Side Wall	8 11	11 16	13 18	14 20	15 22	17 24	17 25
2 0.086	Flow CFM/Ft.	43	60	77	85	94	102	111
	Throw, Sill or Floor	5 8	8 12	10 14	11 16	13 18	13 19	14 20
	Ft. Side Wall	7 10	10 15	13 18	14 20	15 22	17 24	17 25
2 1/2 0.11	Flow CFM/Ft.	55	77	99	110	121	132	143
	Throw, Sill or Floor	6 9	9 13	11 16	13 18	13 19	15 21	15 22
	Ft. Side Wall	8 11	11 16	14 20	16 23	17 24	18 26	20 28
3 0.13	Flow CFM/Ft.	65	91	117	130	143	156	169
	Throw, Sill or Floor	7 10	10 15	13 18	15 21	15 22	17 24	18 26
	Ft. Side Wall	8 12	13 18	15 22	17 25	18 26	20 28	21 30
3 1/2 0.152	Flow CFM/Ft.	76	107	137	153	168	183	198
	Throw, Sill or Floor	7 10	10 15	13 18	15 21	15 22	17 24	18 26
	Ft. Side Wall	9 13	13 19	16 23	18 26	20 28	21 30	22 23
4 0.176	Flow CFM/Ft.	110	154	198	220	242	264	286
	Throw, Sill or Floor	8 11	13 18	14 20	16 23	18 26	19 27	20 29
	Ft. Side Wall	10 14	15 22	17 25	20 29	22 32	24 34	25 26
5 0.22	Flow CFM/Ft.	110	154	198	220	242	264	286
	Throw, Sill or Floor	8 12	13 18	15 21	17 24	18 26	19 27	21 30
	Ft. Side Wall	10 15	15 22	19 27	22 31	23 33	24 35	27 38
6 0.265	Flow CFM/Ft.	133	186	239	265	292	318	345
	Throw, Sill or Floor	8 12	13 18	15 22	17 25	18 26	20 28	21 30
	Ft. Side Wall	10 15	15 22	19 27	22 31	23 33	24 35	27 38
8 0.062	Flow CFM/Ft.	178	249	320	355	391		
	Throw, Sill or Floor	10 14	13 19	15 22	18 26	19 27		
	Ft. Side Wall	12 17	17 24	20 28	23 33	24 34		
10 0.446	Flow CFM/Ft.	223	312	401	445			
	Throw, Sill or Floor	10 15	15 22	18 26	21 30			
	Ft. Side Wall	13 19	20 28	23 33	26 37			
12 0.536	Flow CFM/Ft.	268	375	482				
	Throw, Sill or Floor	12 17	22 31	21 30				
	Ft. Side Wall	15 21	24 35	27 38				

Performance Notes for Series 2000:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic feet per minute (air)
- fpm - Velocity of air stream in feet per minute
- P_v - Velocity pressure (inches of water column)
- P_t - Total pressure (inches of water column)
- P_s - Static pressure = P_t - P_v (inches of water column)
- Throw - Cataloged throw is horizontal distances in feet to the terminal velocities of 150 and 50 fpm with supply air temperature 20° F below room air temperature.
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (L_w) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- A_k - Area Factors

Linear Bar Grilles

LBG

Series 2000, 2100, 2200 (30° Deflection)

Listed Width (in inches) and Ak Area per foot	Outlet Velocity (V _k)	570	805	1035	1140	1265	1380	1495
	Total Pressure (Pt)	0.02	0.04	0.067	0.081	0.1	0.119	0.139
	Static Pressure (Ps)	0.017	0.034	0.056	0.07	0.084	0.1	0.118
	NC		20	25	28	31	34	36
1 1/2 0.062	Flow CFM/Ft.	36	50	65	71	79	86	94
	Throw, Sill or Floor	6 9	9 13	10 14	11 16	13 18	13 19	14 20
	Ft. Side Wall	8 11	11 16	13 18	14 20	15 22	17 24	17 25
2 0.086	Flow CFM/Ft.	48	68	88	97	108	117	127
	Throw, Sill or Floor	5 8	8 12	10 14	11 16	13 18	13 19	14 20
	Ft. Side Wall	7 10	10 15	13 18	14 20	15 22	17 24	17 25
2 1/2 0.11	Flow CFM/Ft.	63	89	114	125	139	152	164
	Throw, Sill or Floor	6 9	9 13	11 16	13 18	13 19	15 21	15 22
	Ft. Side Wall	8 11	11 16	14 20	16 23	17 24	18 26	20 28
3 0.13	Flow CFM/Ft.	74	105	135	148	164	179	194
	Throw, Sill or Floor	7 10	10 14	13 18	15 21	15 22	17 24	18 26
	Ft. Side Wall	8 12	13 18	15 22	17 25	18 26	20 28	21 30
3 1/2 0.152	Flow CFM/Ft.	87	123	156	174	193	211	228
	Throw, Sill or Floor	7 10	10 15	13 18	14 20	15 21	15 22	17 24
	Ft. Side Wall	9 13	13 19	16 23	18 26	20 28	21 30	22 32
4 0.176	Flow CFM/Ft.	100	141	181	200	221	242	262
	Throw, Sill or Floor	8 11	13 18	15 21	17 24	18 26	19 27	21 30
	Ft. Side Wall	10 14	15 22	17 25	20 29	22 32	24 34	25 36
5 0.22	Flow CFM/Ft.	125	177	228	251	278	304	329
	Throw, Sill or Floor	8 12	13 18	15 22	17 25	18 26	20 28	21 30
	Ft. Side Wall	10 15	15 22	19 27	22 31	23 33	24 35	27 38
6 0.265	Flow CFM/Ft.	157	213	274	302	335	366	396
	Throw, Sill or Floor	8 12	13 18	15 22	17 25	18 26	20 28	21 30
	Ft. Side Wall	10 15	15 22	19 27	22 31	23 33	24 35	27 38
8 0.062	Flow CFM/Ft.	202	286	367	405	449		
	Throw, Sill or Floor	10 14	13 19	15 22	18 26	19 27		
	Ft. Side Wall	12 17	17 24	20 28	23 33	24 34		
10 0.446	Flow CFM/Ft.	254	358	461	507			
	Throw, Sill or Floor	10 15	15 22	18 26	21 30			
	Ft. Side Wall	13 19	20 28	23 33	26 37			
12 0.536	Flow CFM/Ft.	305	431	554				
	Throw, Sill or Floor	12 17	22 31	21 30				
	Ft. Side Wall	15 21	24 35	27 38				

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LBG - Linear Bar Grilles

Series 2300, 2400 (0° and 15° Deflection)

Listed Width (in inches) and Ak Area per foot	Outlet Velocity (V _k)	500	700	900	1000	1100	1200	1300	
		Total Pressure (Pt)	0.020	0.038	0.062	0.076	0.091	0.110	0.128
		Static Pressure (Ps)	0.015	0.029	0.049	0.61	0.073	0.088	0.102
		NC	15	18	24	28	31	35	37
1 1/2 0.062	Flow CFM/Ft.	31	44	56	63	69	75	81	
	Throw, Sill or Floor	7 11	11 16	12 17	13 19	16 22	16 23	17 24	
	Ft. Side Wall	10 13	13 19	16 22	17 24	18 26	20 29	20 30	
2 0.086	Flow CFM/Ft.	43	60	77	85	94	102	111	
	Throw, Sill or Floor	6 10	10 14	12 17	13 19	16 22	16 23	17 24	
	Ft. Side Wall	8 12	12 18	16 22	17 24	18 26	20 29	20 30	
2 1/2 0.11	Flow CFM/Ft.	55	77	99	110	121	132	143	
	Throw, Sill or Floor	7 11	11 16	13 19	16 22	16 23	18 25	18 26	
	Ft. Side Wall	10 13	13 19	17 24	19 28	20 29	22 31	24 34	
3 0.13	Flow CFM/Ft.	65	91	117	130	143	156	169	
	Throw, Sill or Floor	8 12	12 17	16 22	17 24	18 25	18 26	20 29	
	Ft. Side Wall	10 14	16 22	18 26	20 30	22 31	24 34	25 36	
3 1/2 0.152	Flow CFM/Ft.	76	107	137	153	168	183	198	
	Throw, Sill or Floor	8 12	12 18	16 22	18 25	18 26	20 29	22 31	
	Ft. Side Wall	10 14	16 22	18 26	20 30	22 31	24 34	25 36	
4 0.176	Flow CFM/Ft.	88	123	158	175	193	210	228	
	Throw, Sill or Floor	10 13	16 22	17 24	19 28	22 31	23 32	24 35	
	Ft. Side Wall	12 17	18 26	20 30	24 35	26 38	29 41	30 31	
5 0.22	Flow CFM/Ft.	110	154	198	220	242	264	286	
	Throw, Sill or Floor	10 14	16 22	18 25	20 29	22 0	23 32	25 36	
	Ft. Side Wall	12 18	18 26	22 31	25 36	26 0	29 41	31 44	
6 0.265	Flow CFM/Ft.	133	186	239	265	292	318	345	
	Throw, Sill or Floor	10 14	16 22	18 26	20 30	22 0	24 34	25 36	
	Ft. Side Wall	12 18	18 26	23 32	26 37	28 0	29 42	32 46	
8 0.062	Flow CFM/Ft.	178	249	320	355	391			
	Throw, Sill or Floor	12 17	16 23	18 26	22 31	23			
	Ft. Side Wall	14 20	20 29	24 34	28 40	29			
10 0.446	Flow CFM/Ft.	223	312	401	445				
	Throw, Sill or Floor	12 18	18 26	22 31	25 36				
	Ft. Side Wall	16 23	24 34	28 40	31 44				
12 0.536	Flow CFM/Ft.	268	375	482					
	Throw, Sill or Floor	14 20	26 37	25 36					
	Ft. Side Wall	18 25	29 42	32 46					

Performance Notes for Series 2000:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic feet per minute (air)
- fpm - Velocity of air stream in feet per minute
- Pv - Velocity pressure (inches of water column)
- Pt - Total pressure (inches of water column)
- Ps - Static pressure = Pt - Pv (inches of water column)
- Throw - Cataloged throw is horizontal distances in feet to the terminal velocities of 150 and 50 fpm with supply air temperature 20° F below room air temperature.
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak - Area Factors

Series 2300, 2400 (30° Deflection)

Listed Width (in inches) and Ak Area per foot	Outlet Velocity (V _k)	500	700	900	1000	1100	1200	1300	
		Total Pressure (Pt)	0.016	0.031	0.051	0.062	0.062	0.09	0.105
		Static Pressure (Ps)	0.012	0.024	0.04	0.05	0.05	0.072	0.084
		NC	15	20	23	23	29	31	
1 1/2 0.062	Flow CFM/Ft.	36	50	65	71	79	86	94	
	Throw, Sill or Floor	7 11	11 16	12 17	13 19	16 22	16 23	17 24	
	Ft. Side Wall	10 13	13 19	16 22	17 24	18 26	20 29	20 30	
2 0.086	Flow CFM/Ft.	48	68	88	97	108	117	127	
	Throw, Sill or Floor	6 10	10 14	12 17	13 19	16 22	16 23	17 24	
	Ft. Side Wall	8 12	12 18	16 22	17 24	18 26	20 29	20 30	
2 1/2 0.11	Flow CFM/Ft.	63	89	114	125	139	152	164	
	Throw, Sill or Floor	7 11	11 16	13 19	16 22	16 23	18 25	18 26	
	Ft. Side Wall	10 13	13 19	17 24	19 28	20 29	22 31	24 34	
3 0.13	Flow CFM/Ft.	74	105	135	148	164	179	194	
	Throw, Sill or Floor	8 12	12 17	16 22	17 24	18 25	18 26	20 29	
	Ft. Side Wall	10 14	16 22	18 26	20 30	22 31	24 34	25 36	
3 1/2 0.152	Flow CFM/Ft.	87	123	156	174	193	211	228	
	Throw, Sill or Floor	8 12	12 18	16 22	18 25	18 26	20 29	22 31	
	Ft. Side Wall	11 16	16 23	19 28	22 31	24 34	25 36	26 38	
4 0.176	Flow CFM/Ft.	100	141	181	200	221	242	262	
	Throw, Sill or Floor	10 13	16 22	17 24	19 28	22 31	23 32	24 35	
	Ft. Side Wall	12 17	18 26	20 30	24 35	26 38	29 41	30 43	
5 0.22	Flow CFM/Ft.	125	177	228	251	278	304	329	
	Throw, Sill or Floor	10 14	16 22	18 25	20 29	22 31	23 32	25 36	
	Ft. Side Wall	12 18	18 26	22 31	25 36	26 38	29 41	31 44	
6 0.265	Flow CFM/Ft.	157	213	274	302	335	366	396	
	Throw, Sill or Floor	10 14	16 22	18 26	20 30	22 31	24 34	25 36	
	Ft. Side Wall	10 14	16 22	18 26	20 30	22 31	24 34	25 36	
8 0.062	Flow CFM/Ft.	202	286	367	405	449			
	Throw, Sill or Floor	12 17	16 23	18 26	22 31	23			
	Ft. Side Wall	14 20	20 29	24 34	28 40	29			
10 0.446	Flow CFM/Ft.	254	358	461	507				
	Throw, Sill or Floor	12 18	18 26	22 31	25 36				
	Ft. Side Wall	16 23	24 34	28 40	31 44				
12 0.536	Flow CFM/Ft.	305	431	554					
	Throw, Sill or Floor	14 20	26 37	25 36					
	Ft. Side Wall	18 25	29 42	32 46					

For more product information visit us at www.metalair.com

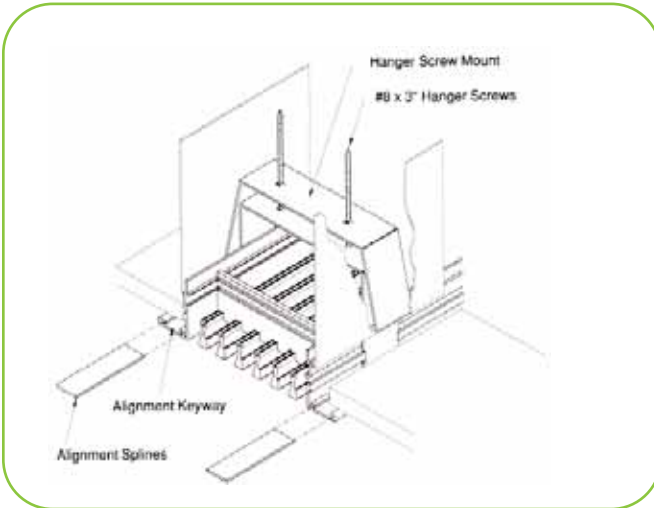


Linear Bar Grilles
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Installation Information

Hanger Bracket Installation into Hemmed Ducts



The hanger bracket mounting system is also designed to work well with factory supplied subframe material – both “P” and “W” styles. In order to ensure a satisfactory subframe installation, the following procedures should be followed:

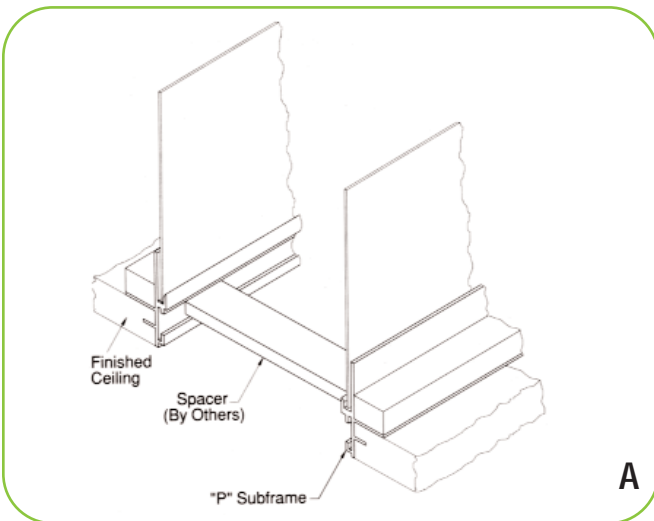
- 1) The factory supplied subframe material should be cut to the proper length (i.e., the nominal size of the Grille).
- 2) The neck of the subframe should be attached to the outside of the ductwork with the ends of the duct nestled in the channel of the subframe extrusion.
- 3) Care should be taken that the face of the subframe material is parallel to the finished surface, and, if being used as a plaster ground, the “P” subframe is recessed the proper distance from the designed finish wall.
- 4) The long sides of the subframe must be braced with appropriately sized spacer bars to prevent distortion of the subframe dimensionally, especially during plastering. Note: this bracing must be done prior to plastering.
- 5) The spacer bars should remain in place until the Grille is installed, and, in a long run, should be removed only when each Grille section is ready for installation. Subframe material used on long runs should be aligned section to section by use of the factory supplied alignment splines. In addition to serving as a plaster ground, the “P” style auxiliary subframe is designed to accommodate standard concealed spline ceiling tiles. The “W” style auxiliary subframe is installed in much the same manner as the “P” style subframe, except that it is usually placed in a ceiling directly against a sidewall. Note that Model 2000 Bar Grilles cannot be used with a “W” style subframe next to a wall because the 1” border of the Grille would overlap the subframe.

Linear Bar Grilles



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Auxiliary Subframe Preparation “P” and “W” Styles

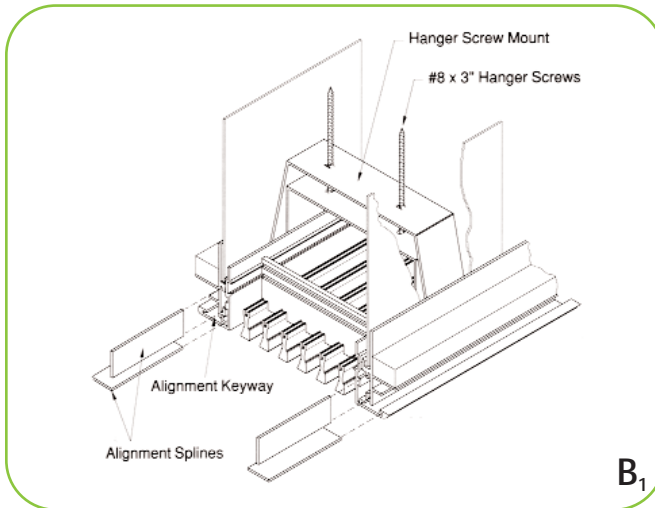


The hanger bracket mounting system is also designed to work well with factory supplied subframe material – both “P” and “W” styles. In order to ensure a satisfactory subframe installation, the following procedures should be followed:

- 1) The factory supplied subframe material should be cut to the proper length (i.e., the nominal size of the Grille).
- 2) The neck of the subframe should be attached to the outside of the ductwork with the ends of the duct nestled in the channel of the subframe extrusion.
- 3) Care should be taken that the face of the subframe material is parallel to the finished surface, and, if being used as a plaster ground, the “P” subframe is recessed the proper distance from the designed finish wall.
- 4) The long sides of the subframe must be braced with appropriately sized spacer bars to prevent distortion of the subframe dimensionally, especially during plastering. Note: this bracing must be done prior to plastering.
- 5) The spacer bars should remain in place until the Grille is installed, and, in a long run, should be removed only when each Grille section is ready for installation. Subframe material used on long runs should be aligned section to section by use of the factory supplied alignment splines. In addition to serving as a plaster ground, the “P” style auxiliary subframe is designed to accommodate standard concealed spline ceiling tiles. The “W” style auxiliary subframe is installed in much the same manner as the “P” style subframe, except that it is usually placed in a ceiling directly against a sidewall. Note that Model 2000 Bar Grilles cannot be used with a “W” style subframe next to a wall because the 1” border of the Grille would overlap the subframe.

Installation Information

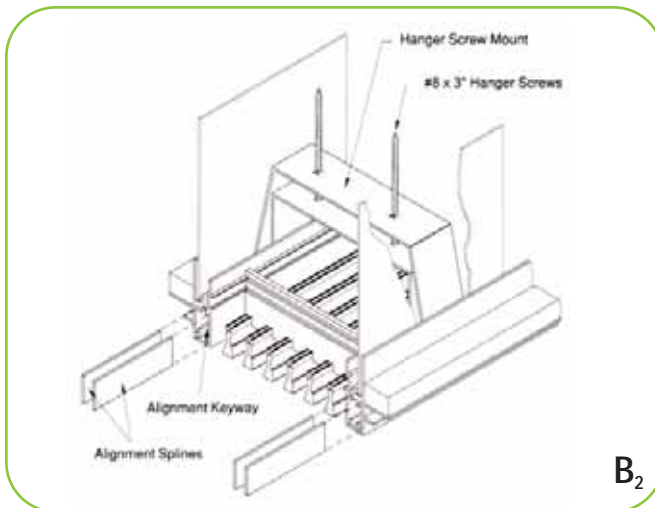
Hanger Bracket Installation into Auxiliary Subframe



Series 2000 and 2300 Linear Bar Grilles and Registers are easily installed into auxiliary subframe material using factory supplied hanger brackets and leveling screws according to the following instructions:

- 1) Arrange the appropriate number of hanger brackets and hanger screw mounts (shipped unattached) on the neck of the Grille, positioning the brackets over the hanger screw mounts.
- 2) Insert the supplied #8 X 3" screws through their mounts and into the proper hole in the hanger brackets, locking the Grille and hangers together.
- 3) Position the Grille carefully in the duct opening and press into position, pushing the legs of the hanger brackets past the extruded channel of the auxiliary subframe, allowing them to snap into position (if necessary, press the hanger brackets upward with the screws to seat the brackets properly).
- 4) Tighten the screws to draw the Grille firmly against the ceiling or sidewall, adjusting the tension to accommodate any variation in the mounting surface. In installations where long runs are composed of many separate units, the same procedure should be followed on each Grille section, taking care to use the factory supplied alignment splines to ensure a smooth and unbroken appearance.

Hanger Bracket Installation into Auxiliary Subframe



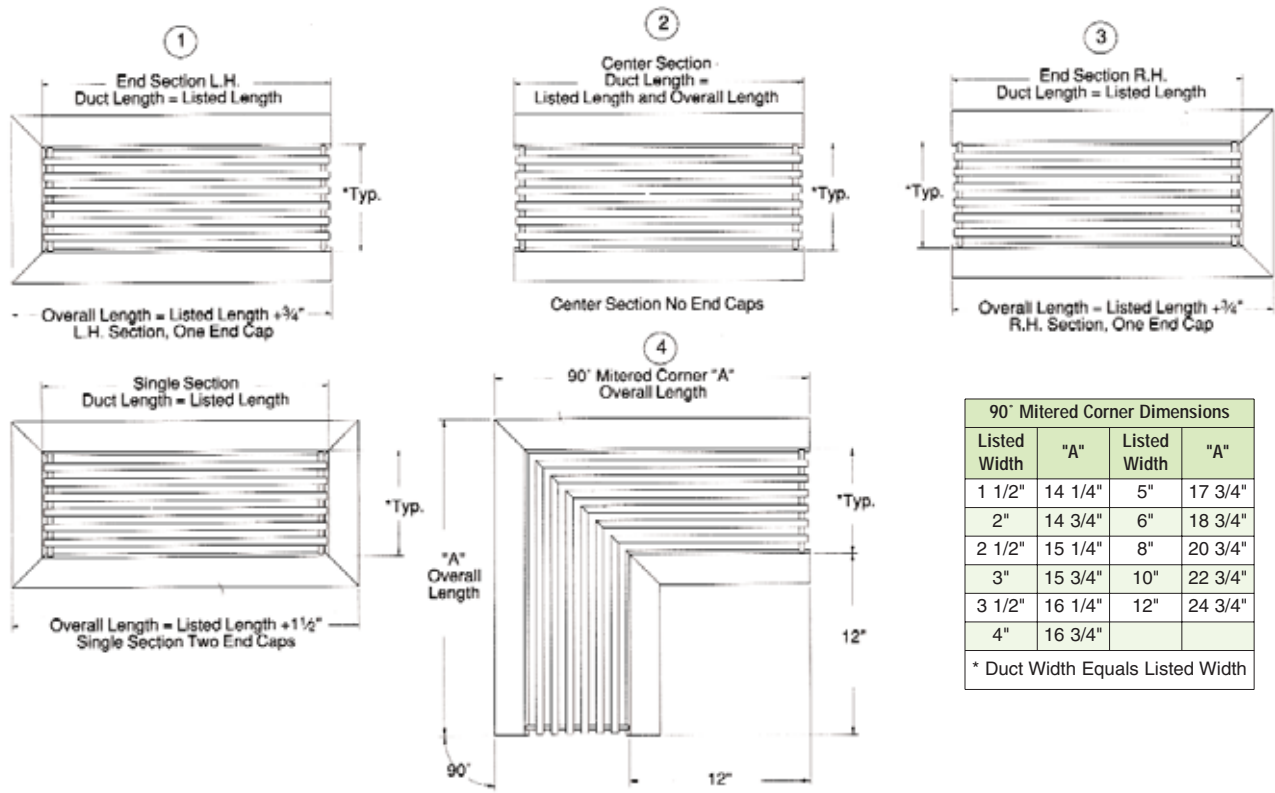
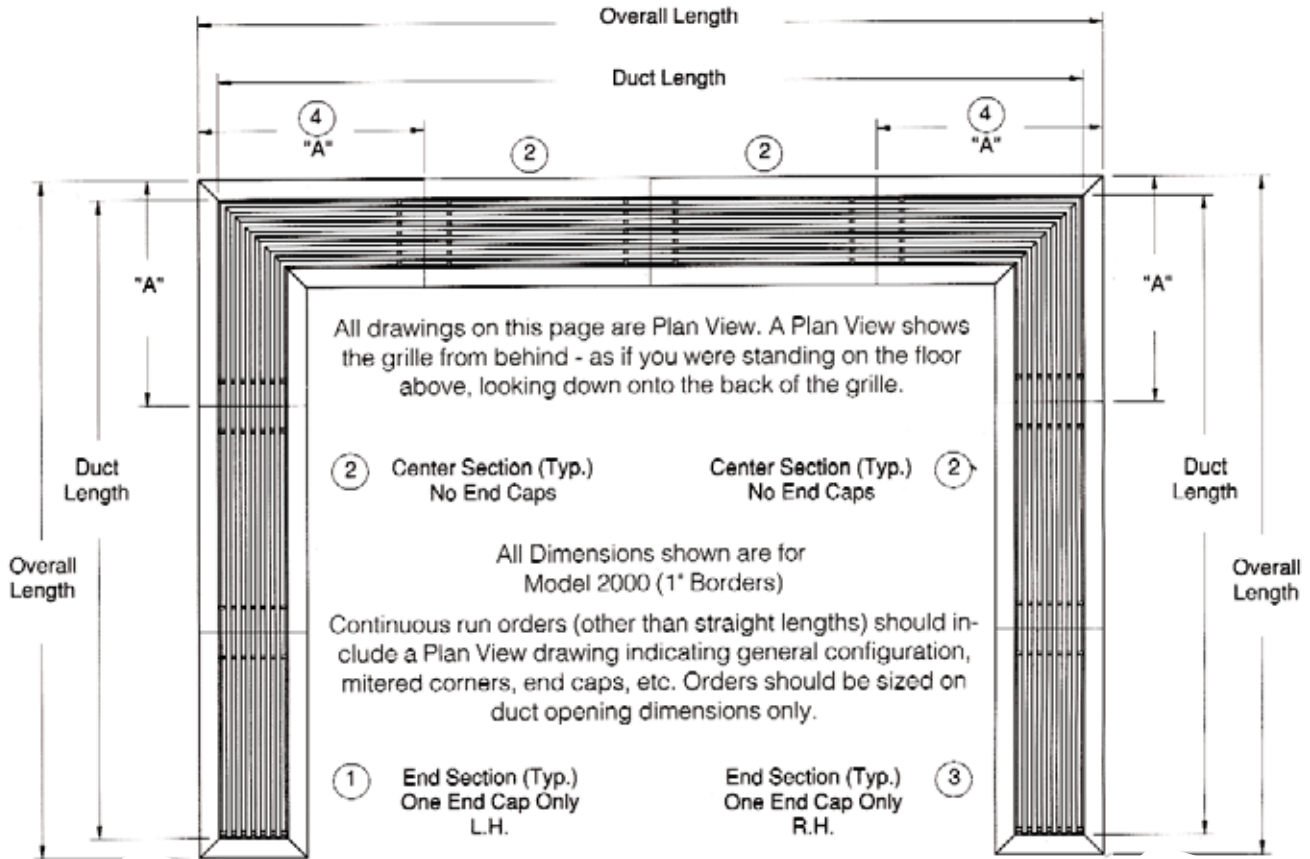
Model 2100 Units – 1/2 inch Borders Model 2100 Bar Grilles and Registers are installed into auxiliary subframes following basically the procedures outlined above. Special care must be taken, however, in the installation of the 2100 unit due to the extremely narrow frame borders of these units. Installation should proceed as follows:

- 1) Arrange the appropriate number of hanger brackets and hanger screw mounts (shipped unattached) on the neck of the Grille, positioning the brackets over the hanger screw mounts.
- 2) Insert the supplied #8 X 3" screws through their mounts and into the proper hole in the hanger brackets, locking the Grille and hangers together.
- 3) Position the Grille carefully in the duct opening and press into position, pushing the legs of the hanger brackets past the extruded channel of the auxiliary subframe, allowing them to snap into position (if necessary, press the hanger brackets upward with the screws to seat the brackets properly).
- 4) Tighten the screws to draw the Grille firmly against the ceiling or sidewall, adjusting the tension to accommodate any variation in the mounting surface. In installations where long runs are composed of many separate units, the same procedure should be followed on each Grille section, taking care to use the factory supplied alignment splines to ensure a smooth and unbroken appearance.

LBG - Linear Bar Grilles

Dimensions and Continuous Runs

Contact your representative for availability of other angles



90° Mitered Corner Dimensions			
Listed Width	"A"	Listed Width	"A"
1 1/2"	14 1/4"	5"	17 3/4"
2"	14 3/4"	6"	18 3/4"
2 1/2"	15 1/4"	8"	20 3/4"
3"	15 3/4"	10"	22 3/4"
3 1/2"	16 1/4"	12"	24 3/4"
4"	16 3/4"		

* Duct Width Equals Listed Width

Linear Bar Grilles



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Series 2000 - Specifications

- 1" Border, 7/32" Bars, 1/2" Centers** - Model 2000
- 1/2" Border, 7/32" Bars, 1/2" Centers** - Model 2100
- 1" Border, 1/8" Bars, 1/4" Centers** - Model 2300
- 1/2" Border, 1/8" Bars, 1/4" Centers** - Model 2400

Air outlets shall be Series 2000 extruded aluminum linear bar grilles manufactured by METALAIR®. Units shall be designed specifically for sidewall or ceiling applications and be constructed from heavy gauge extruded aluminum. The units shall be the size and quantity as outline in the plans and specifications.

Deflection bars shall be 0', 15' or 30' as detailed. Face bars shall be (1/8" or 7/32") wide on (1/4" or 1/2") centers and shall be permanently fixed in position. Borders shall be (1" or 1/2") wide. Auxiliary sub frames shall be furnished as required to fit the wall or ceiling system.

Bar Grilles and Registers shall be furnished with positive holding concealed mounting systems as required. Units shall be furnished in one piece up to 6 feet in length. Continuous sections shall butt together with hairline joints and be provided with interlocking alignment splines. Borders shall be mechanically fastened to provide a neat hairline corner.

Floor Applications

- 1" Border, 7/32" Bars, 1/2" Centers** - Model 2000F
- 3/16" Border, 7/32" Bars, 1/2" Centers (*Not available for continuous runs)** - Model 2200F

Air outlets shall be Series 2000 extruded aluminum linear bar grilles manufactured by METALAIR®. Units shall be designed specifically for floor applications and be constructed from heavy gauge extruded aluminum. The units shall be the size and quantity as outline in the plans and specifications.

Deflection bars shall be 0', 15', or 30' as detailed.

Cores shall be removable and shall be held in place by coated steel retaining clips. Face bars shall be a minimum of 7/32" thick. Grille Borders shall be (3/16" or 1") inch wide with 3/16" wide bars. Units shall be specially reinforced for floor installation with 1/8" by 11/16" inch support brackets. Units shall be furnished in one piece up to 6 feet in length. Continuous sections* shall butt together with hairline joints and be provided with interlocking alignment splines. Bar Grille borders shall be mitered and mechanically fastened to provide a neat hairline corner.

Pencil Proof Floor

- 1" Border, 7/32" Bars, 1/2" Centers** - Model 2000FP
- 3/16" Border, 7/32" Bars, 1/2" Centers (*Not available for continuous runs)** - Model 2200FP

Air outlets shall be Series 2000 extruded aluminum linear bar grilles manufactured by METALAIR®. Units shall be designed specifically for pencil proof applications and be constructed from heavy gauge extruded aluminum. The units shall be the size and quantity as outline in the plans and specifications.

Deflection bars shall be 0', 15' or 30' as detailed. Face bars shall be 3/16" wide on 1/2" centers and shall be permanently fixed in position. Borders shall be (1" or 3/16") wide as specified.

Bar Grilles and Registers shall be furnished with positive holding concealed mounting systems as required. Grille and Register sections shall be furnished in one piece up to 6 feet in length. Continuous Grille sections shall butt together with hairline joints and shall be provided with interlocking alignment splines. Bar Grille borders shall be mechanically fastened to provide a neat hairline corner.

Cores shall be removable and shall be held in place by coated steel retaining clips. Grilles and Registers shall be specially reinforced for floor or sill installation with 1/8 inch by 11/16 inch support brackets. Units shall be furnished in one piece up to 6 feet in length. Continuous sections* shall butt together with hairline joints and be provided with interlocking alignment splines. Borders shall be mitered and mechanically fastened to provide a neat hairline corner.

Optional Accessories

- Opposed blade volume control dampers, extractors, and equalizing grids shall be furnished behind active supply sections.
- Opposed blade volume control dampers shall be furnished behind return sections as required.
- Debris screens shall be furnished behind active and return sections as required.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.



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Paint Specification

Process shall be anodic electrode position using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaline cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

Series 2000 - Model Specification Guide

		Model			Available Widths	Available one piece length	Available Finishes	Available Options		
		0'	15'	30'	1 1/2"	6"	Standard	AD1 - One Access Door		
2000 Series 1" Border - 7/32" Bars - 1/2" Centers	Wall Mounting	2000	2015	2030	thru	thru	01 - White	AD2 - Two Access Doors		
	Core Only	2000CO	2015CO	2030CO	24"	72"		Optional	L9 - Equalizing Grid	
	Floor Mounting	2000F	2015F	2030F			02 - Aluminum		04 - Clear Anodized	03 - Black
	Floor or Sill Mounting	2000FP	2015FP	2030FP	04 - Clear Anodized	28 - Custom Color		OBDA - Opposed Blade Damper - Aluminum		
	Concealed Mounting Hangers	2000H	2015H	2030H						
	Plaster Wall & Ceiling	2000HP	2015HP	2030HP						
2100 Series 1/2" Border - 7/32" Bars - 1/2" Centers	Wall Mounting	2100	2115	2130						
	Concealed Mounting Hangers	2100H	2115H	2130H						
	Concealed Spline Subframe	2100HP	2115HP	2130HP						
	Narrow Subframe	2100HW	2115HW	2130HW						
	Combination Subframe	2100HC	2115HC	2130HC						
	2200 Series 3/16" Border - 7/32" Bars - 1/2" Centers	Non-Flanged Floor Mounting	2200F	2215F	2230F					
Non-Flanged Floor Mounting		2200FP	2215FP	2230FP						
Pencil Proof										
2300 Series 1" Border - 1/8" Bars - 1/4" Centers	Wall Mounting	2300	2315	2330						
	Core Only	2300CO	2315CO	2330CO						
	Concealed Mounting Hangers	2300H	2315H	2330H						
	Plaster Wall & Ceiling	2300HP	2315HP	2330HP						
2400 Series 1/2" Border - 1/8" Bars - 1/4" Centers	Wall Mounting	2400	2415	2430						
	Concealed Mounting Hangers	2400H	2415H	2430H						
	Concealed Spline Subframe	2400HP	2415HP	2430HP						
	Narrow Subframe	2400HW	2415HW	2430HW						
	Combination Subframe	2400HC	2415HC	2430HC						

Linear Bar Grilles

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GRILLES & REGISTERS

GRILLES & REGISTERS

5/30



Series V
Pg. 32

Sidewall Supply Grilles - Economical Aluminum - Vertical Blades - Series V

- Series V grilles combine the advantages of corrosion resistant construction and durability with attractive design, solid performance, and competitive pricing
- This economical series of supply grilles and registers is available with the V-1 single deflection, VH-1 double deflection and with the VM-1 single deflection with a built in multi-shutter damper
- The series V are provided with vertical front blades. Units are constructed with an aluminum one piece formed border and blades

Single Deflection Grille	V-1
Double Deflection Grille	VH-1
Single Deflection — Multi-Shutter	VM-1



Series 4000
Pg. 36

Sidewall Supply Grilles - Aluminum/Steel - Series 4000

- The series 4000 sets the standards for performance and appearance in the industry. The series 4000 is all aluminum; the series 4000S has a steel border and steel blades
- The series 4000 is available with single or double deflection, and with a number of options and accessories to meet a variety of applications
- Series 4000 grilles and registers can be selected with either vertical or horizontal front blades

	Single Deflection	
	Steel	Aluminum
Vertical Blades	V4002S-1	V4002-1
Horizontal Blades	H4002S-1	H4002-1

	Double Deflection	
	Steel	Aluminum
Vertical Front Blades	V4004S-1	V4004-1
Horizontal Front Blades	H4004S-1	H4004-1

	Single Deflection - Multi-Shutter Damper	
	Steel	Aluminum
Vertical Blades	V4002SM-1	V4002M-1
Horizontal Blades	H4002SM-1	H4002M-1



Model 4000-AF
Pg. 42

Sidewall Supply Grille - Adjustable Air Foil Blades - Extruded Aluminum Blade Series 4000-AF - Air Foil

- The series 4000-AF is our premier product, offering superior construction and high performance with aerodynamically shaped extruded deflection blades. The 4000-AF series is constructed with an extruded aluminum border and air foil deflection blades; the 4000S-AF series has a steel border and extruded aluminum air foil deflection blades
- The series 4000-AF is an excellent choice for projects requiring superior performance and aesthetics
- The series 4000-AF is available with single or double deflection, and with a number of options and accessories to meet a variety of applications
- Series 4000-AF grilles and registers can be selected with either vertical or horizontal front blades

	Single Deflection	
	Steel Border - Aluminum Blades	Aluminum
Vertical Blades	V4002S-AF-1	V4002-AF-1
Horizontal Blades	H4002S-AF-1	H4002-AF-1

	Double Deflection	
	Steel Border - Aluminum Blades	Aluminum
Vertical Front Blades	V4004S-AF-1	V4004-AF-1
Horizontal Front Blades	H4004S-AF-1	H4004-AF-1



Series 4004P
Pg. 48

Supply Grilles - Spiral Pipe Grille - Aluminum/Steel - Series 4004P

- The model 4004P (aluminum) and 4004SP (galvanized steel) offers superior performance in exposed duct applications offering a clean, low profile appearance
- Units can be easily installed in round duct diameters 6"-48"
- Integral gasket seals grille tightly to duct
- Units includes built in extractor to allow accurate balancing and uniform air flow
- Model 4004P is all aluminum construction. Model 4004SP includes is provided with galvanized steel border and blades

	Aluminum	Steel
Surface Mount	4004P-1	4004SP-1



Series L

Model LS3 Shown
Pg. 52

Supply Curved Blade Ceiling Grilles - Aluminum - Series L

- ✦ The series L curved blade grilles and registers are an economic solution for use in applications requiring ceiling or sidewall installations with directional air patterns. The series L is available with 1-way, 2-way corner, 2-way opposite, 3-way, and 4-way directional air patterns
- ✦ The series L is constructed from aluminum with adjustable curved blade allowing adjustment from full horizontal to full vertical air directions
- ✦ Units are available with a wide range of options and accessories

	Single Deflection				
	No Damper		Multi-Shutter Damper Operated Through Curved Blades		Horizontal Multi-Shutter Damper Operated Through slot on border
	Long Blades	Short Blades	Long Blades	Short Blades	Long Blades
1 Way	L-1	S-1	LM-1	SM-1	LMH-1
2 Way Opposite	LT-1	ST-1	LTM-1	STM-1	LTMH-1
2 Way Corner	LTC-1		LTCM-1		
3 Way Corner	LTC3-1		LTC3M-1		
3 Way Equal Throw	LS3-1		LS3M-1		
4 Way	LS4-1		LS4M-1		

	Double Deflection - No Damper	
	Long Blades	Short Blades
1 Way	LV-1	SH-1
2 Way Opposite	LTV-1	STH-1



Series RH

Pg. 60

Sidewall Return Grilles - Aluminum - Series RH

- ✦ The series RH return grilles combine the advantages of corrosion resistant construction and durability with attractive design, solid performance, and competitive pricing
- ✦ This economical series of roll form aluminum return grilles and registers is available with a number of borders to integrate into a wide range of ceiling systems
- ✦ Series RH is an excellent choice for exhaust and return applications

Roll Formed Aluminum/RH - Grilles	
Surface Mount	RH-1
	RH-H-1 - Hinged Core
T-bar Lay-in Modules	RH-6
Concealed T-bar Lay-in	RH-7
Tegular Lay-in	RH-8
Donn Finline Lay-in	RH-9



Series RHE

Pg. 61

Sidewall Return Grilles - Extruded Aluminum - Series RHE

- ✦ The series RHE is our premier product, offering superior construction and high performance with extruded aluminum construction. This unit has both superior appearance and performance and is built for durability
- ✦ The series RHE is available with an optional hinge to allow access behind the grille face
- ✦ Series RHE is an excellent choice for projects requiring exhaust or return applications

Extruded Aluminum/RHE - Grilles	
Surface Mount	RHE-1
	RHE-H-1 - Hinged Core



Series SRH

Pg. 62

Sidewall Return Grilles - Steel - Series SRH

- ✦ The series SRH is designed for applications requiring a steel border. The blades of the SRH are constructed from steel
- ✦ This economical series of return grilles and registers is available a number of borders to integrate into a wide range of ceiling systems
- ✦ Series SRH is an excellent choice for exhaust and return applications

Steel/SRH - Grilles	
Surface Mount	SRH-1
	SRH-H-1 - Hinged Core
T-bar Lay-in Modules	SRH-6

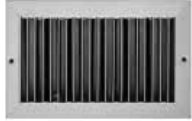


Model HDRH
Pg. 66

Heavy Duty Grilles - Sidewall Return - Extruded Aluminum - 1 1/3" Blade Spacing - Model HDRH

- ✦ The series HDRH is an excellent choice for projects that require a grille or register to withstand moderate physical abuse. Applications for the series HDRH include common areas in schools, hospitals, and other high traffic areas
- ✦ The series HDRH is made from aluminum material equal or greater than 14-gauge steel. Outer borders are thicker than those of standard commercial grilles and registers. Deflector blades are assembled in the outer border using heavy alloy metal screws for rigidity
- ✦ Series HDRH is an excellent choice for exhaust or return applications in heavy traffic public areas

Louver Grille Surface Mount	
Surface Mount	HDRH-1



Series 4002R
Pg. 68

Return Grilles & Registers - Extruded Aluminum - Fixed Blades 0° or 45° - Series 4002R

- ✦ The series 4002R return grilles and registers are designed to match the 4000 series supply models. These units are constructed of heavy aluminum. The 4002RS is constructed with a heavy steel border and steel deflector blades
- ✦ The deflector blades for both the series 4002R and 4002RS are fixed and available in 0° or 45° settings
- ✦ Series 4000R and 4000RS offer the advantage of a uniform appearance when selected with the series 4000 supply grilles and registers

	Steel	Aluminum
Vertical Blades	V4002RS-1	V4002R-1
Horizontal Blades	H4002RS-1	H4002R-1

Series DG



Model DGCO

Door Grilles - Exhaust & Return - Extruded Aluminum - Series DG

- ✦ Series DG door grilles are designed to transfer air through doors or walls. The DG Series include "V" shaped louvers providing a sight-proof return or exhaust grille regardless of the viewing angle
- ✦ The series DG is available with a number of options include a light-proof option (model DGLP), surface mounting applications, and door mounting (model DGDF)
- ✦ Series DG offers a number of solutions for your door and air transfer applications

Series DG	
Core Only	DGCO
Single Frame Flange	DGSF
Double Flange Frame - Telescoping	DGDF
Double Flange Frame - Light Resistant	DGLP

Model DGDF

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Grilles and Registers



GAR

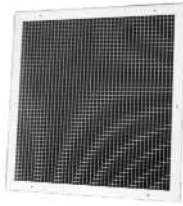


Series 4500
Pg. 76

Sidewall Grille - Steel Gym Grille - Series 4500

- ✦ The series 4500 is a heavy duty return gym grille. This unit is designed for applications such as gymnasiums and public areas. The border and deflection blades are heavy gauge steel and built to withstand moderate physical abuse
- ✦ The series 4500 is available with 0° deflection or for more sight-proof application, 38° deflection (model 4538-1)
- ✦ Series 4500 is an excellent choice for return or exhaust applications in high traffic applications where extra protection for the grille is required

Grilles	
Surface Mount	4500-1 0° Deflection - Horizontal Fixed Blades
	4538-1 38° Deflection - Horizontal Fixed Blades

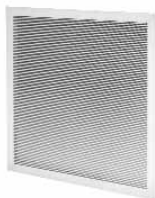


Series CC5
Pg. 80

Sidewall/Ceiling Return Grilles & Registers - Extruded Aluminum/Aluminum - Series CC5/CC15/CC1

- ✦ The series CC5 cubed core return and exhaust grilles are designed to provide low pressure drops and low sound levels
- ✦ The series CC5 is available with a number of options and accessories such as a 1" thick core (model CC1) to reduce sight into the grille
- ✦ Series CC5 is an excellent choice for applications requiring minimum pressure drop and noise in return and exhaust applications

	Grilles		
	CC5 -Cubed Core 1/2" x 1/2" x 1/2" Core	CC15 - Cubed Core 1/2" x 1/2" x 1" Core	CC1 - Cubed Core 1" x 1" x 1" Core
Surface Mount	CC5-1	CC15-1	CC1-1
T-bar Lay-in	CC5-6	CC15-6	CC1-6
Concealed Spline	CC5-7	CC15-7	CC1-7
Tegular Ceiling T-bar Lay-in	CC5-8	CC15-8	CC1-8
Donn Fineline Lay-in	CC5-9	CC15-9	CC1-9
T-bar Lay-in Channel Frame	CC5 TBC-6		
Removable Core	CC5R-6		



Model RP
Pg. 86

Sidewall Ceiling Return Grille - Perforated Face - Aluminum - Model RP

- ✦ The series RP perforated face return or exhaust grilles are designed to blend into the ceiling system and provide a clean, uncluttered architectural appearance
- ✦ The series RP grilles and registers are available with a wide range of options and accessories
- ✦ Series RP is of aluminum construction and ideal for return and exhaust applications requiring low pressure drops and low sound

Sidewall Ceiling Return Grille - Perorated Face
RP-1

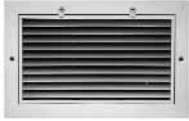


Series RC
Pg. 90

Removable Core Grilles & Registers - Extruded Aluminum - Series RC - Revers-A-Core®

- ✦ The series RC Revers-A-Core® supply grilles and registers combine rugged aluminum construction, a clean architectural design, and an extremely flexible air pattern versatility
- ✦ The fixed louvered core is removable from the face and can be rotated or reversed to achieve any of four different air deflection patterns
- ✦ Series RC grilles and registers is an excellent selection for applications calling for a distinctive appearance and high performance

Single Deflection		Double Deflection	
Curved Border	41C-1	Curved Border	42C-1
Flat Border	41F-1	Flat Border	42F-1
Curved Border - Removable Inner Frame	RC41C-1	Curved Border - Removable Inner Frame	RC42C-1

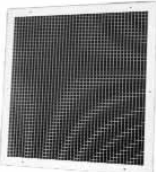


Series RHF
Pg. 96

Filter Return Grilles - Aluminum - Series RHF

- ✦ The series RHF return filter grilles combine the advantages of corrosion resistant construction and durability with attractive design, solid performance, and competitive pricing
- ✦ The series RHF is designed for 1" or 2" thick filters (by others) and includes a hinged face with 1/4" turn fasteners for quick filter changes
- ✦ Series RHF is an excellent choice for exhaust and return applications requiring a filter

	Roll Formed Aluminum	Extruded Aluminum	Steel
Surface Mount	RHF-1 G/S (Grille Size)	RHEF-1 G/S (Grille Size)	SRHF-1 G/S (Grille Size)
	RHF-1 F/S (Filter Size)	RHEF-1 F/S (Filter Size)	SRHF-1 F/S (Filter Size)
T-bar Lay-in	RHF-6 G/S (Grille Size)		SRHF-6 G/S (Grille Size)
	RHF-6 F/S (Filter Size)		SRHF-6 F/S (Filter Size)



Series CC5F
Pg. 102

Filter Return Grilles - Cubed Core - Aluminum - Series CC5F

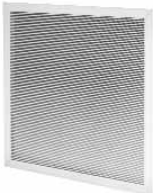
- ✦ The series CC5F cubed core return and exhaust filter grilles are designed to provide low pressure drops and low sound levels
- ✦ The series CC5F is designed for 1" thick filters (by others) and includes a hinged face with 1/4" turn fasteners for quick filter changes
- ✦ Series CC5F is an excellent choice for applications requiring minimum pressure drop and noise in return and exhaust applications

Return Grilles	
Surface Mount	CC5F-1 G/S Grille Size
	CC5F-1 F/S Filter Size
T-bar Lay-in	CC5F-6 G/S Grille Size
	CC5F-6 F/S Filter Size

Filter Return Grilles - Aluminum - Series RPF

- ✦ The series RPF perforated face return or exhaust filter grilles are designed to blend into the ceiling system and provide a clean, uncluttered architectural appearance
- ✦ The series RPF is designed for 1" thick filters (by others) and includes a hinged face with 1/4" turn fasteners for quick filter changes
- ✦ Series RPF is of aluminum construction and ideal for return and exhaust filter applications requiring low pressure drops and low sound

Perforated Face Return Filter	
Surface Mount	RPF-1 G/S (Grill Size)
	RPF-1 F/S (Filter Size)
T-bar Lay-in	RPF-6 G/S (Grill Size)



Series RPF
Pg. 106

Supply Grilles → Series V → Stamped Border → Aluminum

Product Details

- ✪ The V series of grilles combine the advantages of corrosion resistant construction and durability with attractive design, solid performance, and competitive pricing
- ✪ This economical series of supply grilles and registers are available with the V-1 single deflection, VH-1 double deflection and with the VM-1 single deflection with a built in multi-shutter damper
- ✪ The V series are provided with vertical front blades. Units are constructed with an aluminum one piece formed border



Model VM-1 Shown

Standard Finish: 01 White

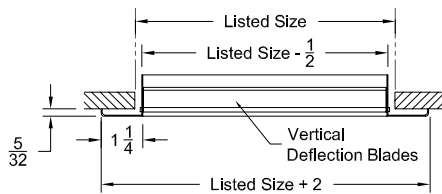
	6	8	10	12	14
4	✓	✓	✓	✓	✓
6	✓	✓	✓	✓	✓
8		✓	✓	✓	✓
10			✓		
12				✓	

Available neck sizes
(V-1, VH-1, VM-1)

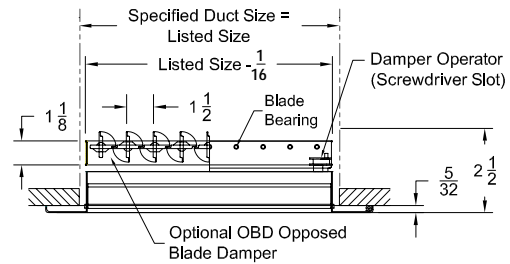
Single Deflection

Sideview, dimensions are in inches

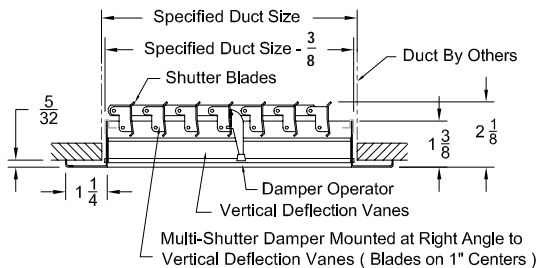
Supply - Single Deflection Grille - Surface Mount - Vertical Blades
Model V-1



Supply - Single Deflection Register - Surface Mount - Vertical Blades
With Opposed Blade Damper
Model VD-1



Supply - Single Deflection Register - Surface Mount - Vertical Blades
With Multi Shutter Damper
Model VM-1



Grilles and Registers

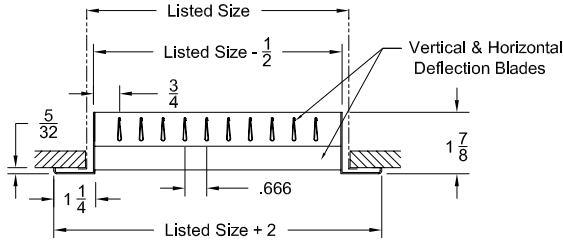


GAR

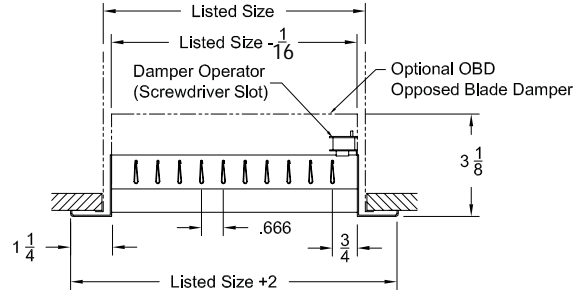
GAR - Grilles and Registers

Double Deflection

Supply - Double Deflection Grille - Surface Mount - Vertical Front Blades
Model VH-1



Supply - Double Deflection Register - Vertical Front Blades
With Opposed Blade Damper
Model VHD-1



1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish 02 Aluminum paint 03 Black 24 Mill finish 28 Custom color</p>	<p>OBD - Steel - Opposed Blade Damper (for grilles only)208</p> <p>OBDA - Aluminum - Opposed Blade Damper (for grilles only) .208</p> <p>L9 - Equalizing Grid208</p> <p>PF - Plaster Frame209</p>	<ul style="list-style-type: none"> Sizes available only as listed For larger sizes, oversize or horizontal front blades, use series H (V) 4002 Border is one-piece construction

Series V - Performance

Models V, VH, VM / Series V available sizes shown on GAR-32

CFM	OUTLET SIZE									NC
	6" x 4"	8" x 4"	10" x 4"	8" x 6"	10" x 6"	12" x 6"	10" x 8"	12" x 8"		
50	Velocity	300	225							20
	Ps	.011	.006							
100	Velocity	600	450	360	300	240	200			20
	Ps	.044	.025	.016	.011	.007	.005			
150	Velocity	900	675	540	450	360	300	270	225	20
	Ps	.099	.056	.036	.025	.016	.011	.009	.006	
200	Velocity		900	720	600	480	400	360	300	20
	Ps		.099	.064	.044	.028	.020	.016	.011	
250	Velocity				750	600	500	450	375	20
	Ps				.069	.044	.031	.025	.017	
300	Velocity				900	720	600	540	450	20
	Ps				.099	.064	.044	.036	.025	
350	Velocity					840	700	630	525	20
	Ps					.087	.060	.049	.034	
400	Velocity						800	720	600	25
	Ps						.079	.064	.044	
450	Velocity						900	810	675	25
	Ps						.099	.080	.056	
500	Velocity								750	25
	Ps								.069	
550	Velocity								825	25
	Ps								.083	
600	Velocity								900	25
	Ps								.099	
NC										30 - 35

For Series V performance notes, see page GAR-34



For more product information visit us at www.metalair.com



Performance Notes for Series V

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

CFM - Cubic Feet per Minute (air)

fpm - Velocity of air stream in Feet Per Minute

Ps - Static pressure = $P_t - P_v$ (inches of water column)

Throw - Non-isothermal horizontal throw (supply air temperature 20°F colder than average room air temperature) values are for 50 fpm - 100 fpm - 150 fpm velocities

NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands

Series V - Specifications

Supply - Single Deflection Supply Grilles and Registers – Aluminum/Model V-1

Air Outlets shall be model V manufactured by METALAIRES. Units shall be single deflection supply grilles of aluminum construction and with a one piece formed border and a single set of vertical deflection blades. The units shall be the size and quantity as outlined in the plans and specifications.

Border shall be 1 1/4" wide with aerodynamically shaped deflector blades on .666" centers. Deflector blades shall be individually adjustable. Units shall be designed for surface mounting applications and be provided with screw holes on the face of the device.

Blades shall pivot in friction mounting retainers. Retainers shall hold the deflector blade position throughout the specified operating range of the device. Metal friction wires are not acceptable.

Optional opposed blade damper shall be constructed of steel (Model OBD) or aluminum (Model OBDA). Damper must be operable from the face of the diffuser.

Supply - Double Deflection Supply Grilles and Registers – Aluminum/Model VH-1

Air Outlets shall be model VH-1 manufactured by METALAIRES. Units shall be double deflection supply grilles of aluminum construction and with a one piece formed border and front vertical deflection blades on the front and rear mounted horizontal blades. Optional opposed blade damper shall be constructed of aluminum. Damper must be operable from the face of the diffuser. The units shall be the size and quantity as outlined in the plans and specifications.

Border shall be 1 1/4" wide with aerodynamically shaped deflector blades on .666" centers. Deflector blades shall be individually adjustable. Units shall be provided with screw holes on the face for surface mounting.

The units shall be the size and quantity as outlined in the plans and specifications.

Blades shall pivot in friction mounting retainers. Retainers shall hold the deflector blade position throughout the specified operating range of the device. Metal friction wires are not acceptable.

Optional opposed blade damper shall be constructed of steel (Model OBD) or aluminum (Model OBDA). Damper must be operable from the face of the diffuser.

Supply - Single Deflection with Multi Shutter Damper - Supply Grilles and Registers – Aluminum/Model VM-1

Air Outlets shall be model VM-1 manufactured by METALAIRES. Units shall be single deflection supply grilles with a face operated multi-shutter damper. Units shall be of aluminum construction and with a one piece formed border and front vertical deflection. Border shall be 1 1/4" wide with aerodynamically shaped deflector blades on .666" centers. Deflector blades shall be individually adjustable. Units shall be provided with screw holes on the face for surface mounting.

Blades shall pivot in friction mounting retainers. Retainers shall hold the deflector blade position throughout the specified operating range of the device. Metal friction wires are not acceptable.

The units shall be the size and quantity as outlined in the plans and specifications.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaline cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:



GAR - Grilles and Registers

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaline cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

Series V - Model Specification Guide

Supply - Sidewall

Series V - Aluminum - Economical

Model	Available Neck		Available Finishes	Available Options	
V-1 - Single Deflection Grille VH-1 - Single Deflection Grille	Neck 1	Neck 2	Standard	OBD	Opposed Blade Damper - Steel
	6" thru 14"	4" thru 12"	01 - White	OBDA	Opposed Blade Damper - Aluminum
			Optional	L9	Equalizing Grid
			02 - Aluminum	PF	Plaster Frame
			03 - Black		
			24 - Mill		
			28 - Custom Color		

Supply - Sidewall

Series V - Aluminum - Economical

Model VM-1 Single Deflection Register with Multi-Shutter Damper

Model	Available Neck		Available Finishes	Available Options	
VM-1 - Single Deflection Register with Multi-shutter Damper	Neck 1	Neck 2	Standard	L9	Equalizing Grid
	6" thru 14"	4" thru 12"	01 - White	PF	Plaster Frame
			Optional		
			02 - Aluminum		
			03 - Black		
			24 - Mill		
			28 - Custom Color		



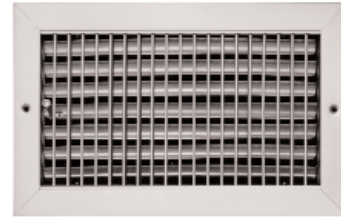
GAR - Grilles and Registers

7/2006

- ➔ Supply Grilles ➔ Series 4000 ➔ Aluminum
- ➔ Series 4000S ➔ Steel

Product Details

- ★ Series 4000 sets the standards for performance and appearance in the industry. Series 4000 is all aluminum; series 4000S has a steel border and steel deflection blades
- ★ The series 4000 are available with single or double deflection, with a number of options and accessories to meet a variety of applications
- ★ Series 4000 grilles and registers can be selected with either vertical or horizontal front blades



Model V4004 -1 Shown

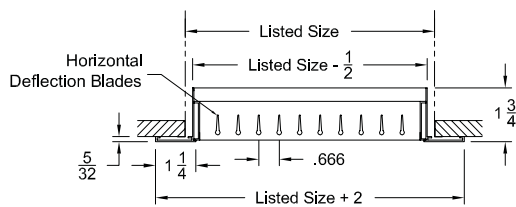
Standard Finish: 01 White

Series 4000 available in 6" x 4" to 48" x 48"
in one piece construction (2" increments)

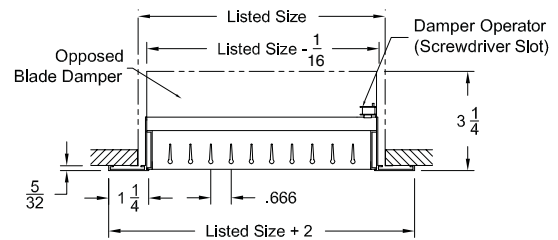
Single Deflection ➔ Aluminum

Sideview, dimensions are in inches

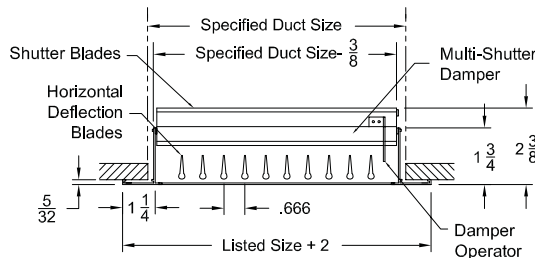
Supply - Single Deflection Grille - Surface Mount - Aluminum
Model H4002-1 - Horizontal Blades
Model V4002-1 - Vertical Blades



Supply - Single Deflection Register - Surface Mount - Aluminum With Opposed Blade Damper
Model H4002D-1 - Horizontal Blades
Model V4002D-1 - Vertical Blades

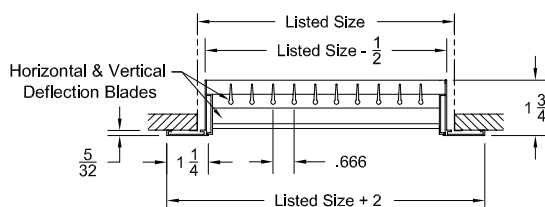


Supply - Single Deflection Register - Surface Mount - Aluminum With Multi Shutter Damper
Model H4002M-1 - Horizontal Blades
Model V4002M-1 - Vertical Blades

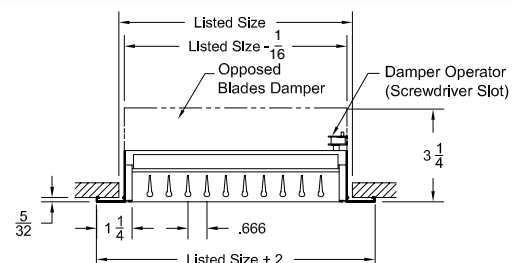


Double Deflection ➔ Aluminum

Supply - Double Deflection Grille - Surface Mount - Aluminum
Model H4004-1 - Horizontal Blades
Model V4004-1 - Vertical Blades



Supply - Double Deflection Register - Surface Mount - Aluminum With Opposed Blade Damper
Model H4004D-1 - Horizontal Blades
Model V4004D-1 - Vertical Blades



Grilles and Registers



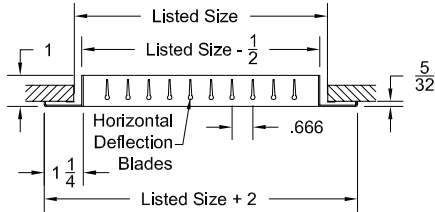
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GAR - Grilles and Registers

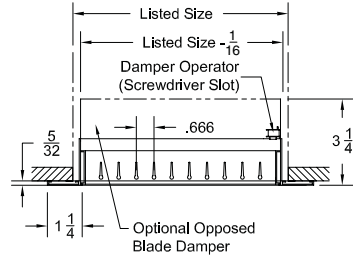


Single Deflection - Steel

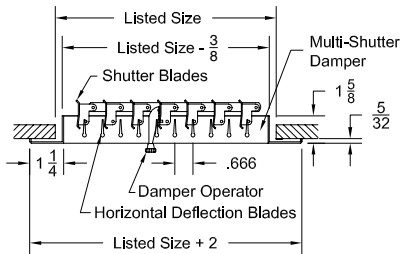
Supply - Single Deflection - Surface Mount - Steel
 Model H4002S-1 - Horizontal Blades
 Model V4002S-1 - Vertical Blades



Supply - Single Deflection - Surface Mount - Steel With Opposed Blade Damper
 Model H4002SD-1 - Horizontal Blades
 Model V4002SD-1 - Vertical Blades

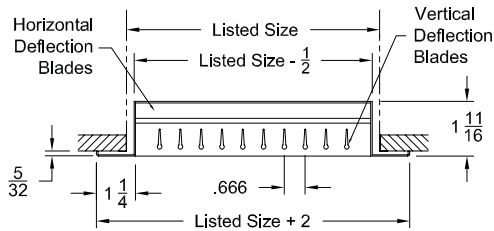


Supply - Single Deflection - Surface Mount - Steel With Multi Shutter Damper
 Model H4002SM-1 - Horizontal Blades
 Model V4002SM-1 - Vertical Blades

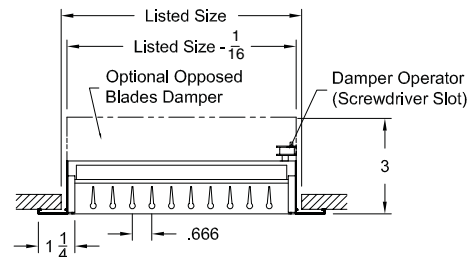


Double Deflection - Steel

Supply - Double Deflection - Surface Mount - Steel
 Model H4004S-1 - Horizontal Blades
 Model V4004S-1 - Vertical Blades



Supply - Double Deflection - Surface Mount - Steel With Opposed Blade Damper
 Model H4004SD-1 - Horizontal Blades
 Model V4004SD-1 - Vertical Blades



Notes for Models H4002-1, V4002-1, H4004-1, V4004-1, H4002M-1, V4002M-1

1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish 02 Aluminum paint 03 Black 24 Mill finish 28 Custom color</p>	<p>OBDA - Steel - Opposed Blade Damper (for grilles only)208 OBDA - Aluminum - Opposed Blade Damper (for grilles only) .208 L9 - Equalizing Grid208 PF - Plaster Frame209</p>	<ul style="list-style-type: none"> All sizes have steel borders and blades Oversized units made in multiple sections, each with full flanges. Mullion strips provided for joining units in field Can be ordered to fit standard T-bar grid sizes

Notes for Models H4002S-1, V4002S-1, H4004S-1, V4004S-1, H4002SM-1, V4002SM-1

1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish 02 Aluminum paint 03 Black 24 Mill finish 28 Custom color</p>	<p>OBDA - Steel - Opposed Blade Damper (for grilles only)208 OBDA - Aluminum - Opposed Blade Damper (for grilles only) .208 L9 - Equalizing Grid208 PF - Plaster Frame209</p>	<ul style="list-style-type: none"> All sizes have steel borders and blades Oversized units made in multiple sections, each with full flanges. Mullion strips provided for joining units in field Can be ordered to fit standard T-bar grid sizes



GAR - Grilles and Registers

7/2006

Series 4000 - Performance

Models H4002-1, V4002-1, H4004-1, V4004-1, H4002M-1, V4002M-1, H4002S-1, V4002S-1, H4004S-1, V4004S-1, H4002SM-1, V4002SM-1

CFM		OUTLET SIZE														NC		
		6" x 4"	8" x 4"	10" x 4"	8" x 6"	10" x 6"	12" x 6"	10" x 8"	12" x 8"	18" x 6"	16" x 8"	24" x 6"	20" x 8"	28" x 6"	30" x 6"			
50	Velocity Ps Throw	300 .011 12-9-7	225 .006 11-8-6															
100	Velocity Ps Throw	600 .044 20-14-11	450 .025 18-13-10	360 .016 16-12-9	300 .011 15-11-9	240 .007 14-10-8	200 .005 13-10-7											
150	Velocity Ps Throw	900 .099 26-18-14	675 .056 23-17-13	540 .036 22-15-12	450 .025 20-14-11	360 .016 19-13-10	300 .011 18-13-10	270 .009 17-12-9	225 .006 16-11-9	200 .005 15-11-9								
200	Velocity Ps Throw		900 .099 28-20-16	720 .064 26-19-14	600 .044 25-18-14	480 .028 23-16-13	400 .020 22-15-12	360 .016 21-15-11	300 .011 20-14-11	267 .009 19-13-10	225 .006 18-13-10	200 .005 17-12-9						
250	Velocity Ps Throw				750 .069 29-20-16	600 .044 27-19-15	500 .031 25-18-14	450 .025 24-17-13	375 .017 23-16-13	333 .014 22-16-12	281 .010 21-15-11	250 .008 20-14-11	225 .006 19-14-11	214 .006 19-13-10	200 .005 18-13-10			
300	Velocity Ps Throw				900 .099 33-23-18	720 .064 30-21-17	600 .044 28-20-16	540 .036 27-19-15	450 .025 26-18-14	400 .020 25-18-14	338 .014 23-17-13	300 .011 22-16-12	270 .009 22-15-12	257 .008 22-15-12	240 .007 21-15-11			
400	Velocity Ps Throw						800 .079 35-25-19	720 .064 33-24-18	600 .044 31-22-17	533 .035 33-23-18	450 .025 28-20-16	400 .020 27-19-15	360 .016 26-19-14	343 .014 26-18-14	320 .013 25-18-14			
500	Velocity Ps Throw							750 .069 37-26-20	667 .055 35-25-19	563 .039 33-23-18	500 .031 32-23-17	450 .025 31-22-17	429 .023 30-21-17	400 .020 29-21-16				
600	Velocity Ps Throw							900 .099 41-29-23	800 .079 40-28-22	675 .056 38-27-21	600 .044 36-26-20	540 .036 35-25-19	514 .032 34-24-19	480 .028 33-24-18				
700	Velocity Ps Throw									787 .076 42-30-23	700 .060 40-28-22	630 .049 39-27-21	600 .044 38-27-21	560 .038 36-26-20				
	NC	30 - 35										20 - 25						

Grilles and Registers



GAR

CFM		OUTLET SIZE														
		30" x 8"	16" x 16"	24" x 12"	30" x 10"	18" x 18"	28" x 12"	20" x 18"	24" x 16"	40" x 10"	30" x 14"	36" x 12"	24" x 20"	42" x 12"	48" x 12"	
350	Velocity Ps Throw	210 .005 21-15-12														
400	Velocity Ps Throw	240 .007 23-16-13	225 .006 22-16-12	200 .005 22-15-12												
450	Velocity Ps Throw	270 .009 25-18-14	253 .008 24-17-13	225 .006 23-17-13	216 .006 23-16-13	200 .005 22-16-12										
500	Velocity Ps Throw	300 .011 27-19-15	281 .010 26-19-14	250 .008 25-18-14	240 .007 25-18-14	222 .006 24-17-13	214 .006 24-17-13	200 .005 23-17-13								
600	Velocity Ps Throw	360 .016 30-21-17	338 .014 30-21-16	300 .011 28-20-16	288 .010 28-20-15	267 .009 27-19-15	257 .008 27-19-15	240 .007 26-19-14	225 .006 26-18-14	216 .006 25-18-14	206 .005 25-18-14	200 .005 25-18-14				
650	Velocity Ps Throw	390 .019 32-23-18	366 .016 31-22-17	325 .013 30-21-16	312 .012 30-21-16	289 .010 29-20-16	279 .010 28-20-16	260 .008 28-20-15	244 .007 27-19-15	234 .007 27-19-15	223 .006 26-19-14	217 .006 26-19-14				
800	Velocity Ps Throw	480 .028 37-26-20	450 .025 36-26-20	400 .020 35-25-19	384 .018 34-24-19	356 .016 33-24-18	343 .014 33-23-18	320 .013 32-23-18	300 .011 31-22-17	288 .010 31-22-17	274 .009 30-22-17	267 .009 30-21-17	240 .007 29-21-16	229 .006 29-20-16	200 .005 27-19-15	
1000	Velocity Ps Throw	600 .044 43-31-24	563 .039 42-30-23	500 .031 40-29-22	480 .028 40-28-22	444 .024 39-28-21	429 .023 38-27-21	400 .020 37-27-21	375 .017 37-26-20	360 .016 36-26-20	343 .014 35-25-19	333 .014 35-25-19	300 .011 34-24-19	286 .010 33-24-18	250 .008 32-23-17	
1200	Velocity Ps Throw	720 .064 49-35-27	675 .056 48-34-26	600 .044 46-33-25	576 .041 45-32-25	533 .035 44-31-24	514 .032 43-31-24	480 .028 42-30-23	450 .025 41-29-23	432 .023 41-29-22	411 .021 40-29-22	400 .020 40-28-22	360 .016 38-27-21	343 .014 38-27-21	300 .011 36-26-20	
1400	Velocity Ps Throw	840 .087 54-39-30	787 .076 53-38-29	700 .060 51-36-28	672 .055 50-36-28	662 .047 49-35-27	600 .044 48-34-27	560 .038 47-34-26	525 .038 47-34-26	504 .031 46-32-25	480 .028 45-32-25	467 .027 44-31-24	420 .022 43-30-24	400 .020 42-30-23	350 .015 38-27-21	
	NC	30 - 35										20 - 25				20

For Series 4000 performance notes, see page GAR-39

GAR - Grilles and Registers

Series 4000 - Performance

Models H4002-1, V4002-1, H4004-1, V4004-1, H4002M-1, V4002M-1, H4002S-1, V4002S-1, H4004S-1, V4004S-1, H4002SM-1, V4002SM-1

CFM		OUTLET SIZE														
		42" x 16"	30" x 24"	48" x 16"	36" x 24"	30" x 30"	48" x 20"	44" x 24"	36" x 30"	48" x 24"	36" x 30"	48" x 26"	40" x 32"	36" x 36"	48" x 30"	
1000	Velocity	214	200													
	Ps Throw	.006 30-21-17	.005 29-21-16													
1200	Velocity	257	240	225	200											
	Ps Throw	.008 34-24-19	.007 33-24-18	.006 33-23-18	.005 31-22-17											
1400	Velocity	300	280	263	233	224	210									
	Ps Throw	.011 38-27-21	.010 37-26-20	.008 36-26-20	.007 35-25-19	.006 34-24-19	.005 34-24-18									
1600	Velocity	343	320	300	267	256	240	218	213	200	213					
	Ps Throw	.014 42-30-23	.013 41-29-22	.011 40-28-22	.009 38-27-21	.008 38-27-21	.007 37-26-20	.006 36-25-20	.006 35-25-19	.005 35-25-19	.006 35-25-19					
1800	Velocity	386	360	338	300	288	270	245	240	225	240	208	203	200		
	Ps Throw	.018 45-32-26	.016 44-31-24	.014 43-31-24	.011 41-29-23	.010 41-29-22	.009 40-28-22	.007 39-27-21	.007 38-27-21	.006 38-27-21	.006 37-26-20	.005 37-26-20	.005 26-26-20	.005 26-26-20	.005 36-26-20	
2000	Velocity	429	400	375	333	320	300	273	267	250	267	231	225	222		
	Ps Throw	.023 49-35-27	.020 48-34-26	.017 46-33-26	.014 45-32-25	.013 44-31-24	.011 43-31-24	.009 42-30-23	.009 41-29-23	.008 40-29-22	.008 41-29-23	.009 39-28-22	.007 39-28-22	.006 39-28-21	.006 39-28-21	.005 37-27-21
2200	Velocity	471	440	413	367	352	330	300	293	275	293	254	248	244		
	Ps Throw	.027 52-37-29	.024 51-36-28	.021 50-35-27	.016 48-34-26	.015 47-33-26	.013 46-33-25	.011 44-32-24	.011 44-31-24	.009 43-31-24	.011 44-31-24	.008 42-30-23	.008 42-30-23	.007 41-29-23	.006 40-28-22	
2400	Velocity	514	480	450	400	384	360	327	320	300	320	277	270	267		
	Ps Throw	.032 55-39-30	.028 54-38-30	.025 53-37-29	.020 51-36-28	.018 50-35-27	.016 49-35-27	.013 47-34-26	.013 47-33-26	.011 46-33-25	.013 46-33-25	.009 45-32-25	.009 44-31-24	.009 44-31-24	.007 42-30-23	
2600	Velocity	557	520	488	433	416	390	355	347	325	347	300	292	289		
	Ps Throw	.038 58-41-32	.033 57-40-31	.029 56-40-31	.023 53-38-29	.021 53-37-29	.019 52-37-28	.015 50-35-27	.015 50-35-27	.013 48-34-27	.013 50-35-27	.011 47-33-26	.010 49-33-26	.010 47-33-26	.008 45-32-25	
2800	Velocity	600	560	525	467	448	420	382	373	350	373	323	315	311		
	Ps Throw	.044 61-44-34	.038 60-43-33	.034 59-42-32	.027 56-40-31	.025 55-39-31	.022 54-39-30	.018 53-37-29	.017 52-37-29	.015 51-36-28	.015 52-37-29	.017 50-35-27	.013 49-35-27	.012 49-35-27	.010 47-34-26	
3000	Velocity	643	600	563	500	480	450	409	400	375	400	346	338	333		
	Ps Throw	.051 64-46-35	.044 63-45-35	.039 61-44-34	.031 59-42-32	.028 58-41-32	.025 57-40-31	.021 55-39-30	.020 55-39-30	.017 53-38-29	.017 55-39-30	.020 52-37-29	.015 52-37-28	.014 51-36-28	.011 50-35-27	
3400	Velocity	729	680	637	567	544	510	464	453	425	453	392	383	378		
	Ps Throw	.065 70-50-38	.057 68-48-38	.050 67-47-37	.039 64-46-35	.036 63-45-35	.032 62-44-34	.026 60-43-33	.026 60-42-33	.025 58-41-32	.022 60-42-33	.025 57-40-31	.019 56-40-31	.018 56-40-31	.014 54-38-30	
3800	Velocity	814	760	712	633	608	570	518	507	475	507	438	428	422		
	Ps Throw	.081 75-53-41	.071 74-52-40	.062 72-51-40	.049 69-49-38	.045 68-48-38	.040 67-47-37	.033 65-46-36	.033 64-46-35	.031 63-45-35	.028 63-45-35	.031 64-46-35	.024 61-43-34	.022 61-43-33	.022 60-43-33	.018 58-41-32
4200	Velocity	900	840	787	700	672	630	573	560	525	560	485	472	467		
	Ps Throw	.099 80-57-44	.087 79-56-43	.076 77-55-42	.060 77-55-42	.055 73-52-40	.049 71-51-39	.040 69-49-38	.038 69-49-38	.038 67-48-37	.034 69-49-38	.038 69-49-38	.029 65-46-36	.027 65-46-36	.027 65-46-36	.022 60-43-33
	NC	25 - 30			20 - 25											<20

Performance Notes for Series 4000

All data are tested are accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic feet per minute (air)
- fpm - Velocity of air stream in feet per minute
- Ps - Static pressure = Pt - Pv (inches of water column)
- Throw - Non-isothermal horizontal throw (supply air temperature 20°F colder than average room air temperature) values are for 50 fpm - 100 fpm - 150 fpm velocities
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands

Grilles and Registers



GAR

Series 4000 - Specifications

Supply - Single Deflection Supply Grilles and Registers – Aluminum/Model 4002

Air Outlets shall be model V4002 (vertical front blades) or H4002 (horizontal front blades) manufactured by METALAIR®. Units shall be single deflection supply grilles of aluminum construction and with an extruded aluminum border and a single set of deflection blades. The units shall be the size and quantity as outlined in the plans and specifications.

Border shall be 1 1/4" wide with aerodynamically shaped deflector blades on .666" centers. Deflector blades shall be individually adjustable. Units shall be designed for surface mounting applications and be provided with screw holes on the face of the device.

Blades shall pivot in friction mounting retainers. Retainers shall hold the deflector blade position throughout the specified operating range of the device. Metal friction wires are not acceptable.

Optional opposed blade damper shall be constructed of steel (Model OBD) or aluminum (Model OBDA). Damper must be operable from the face of the diffuser.

Supply - Double Deflection Supply Grilles and Registers – Aluminum/Model 4004

Air Outlets shall be model V4004S (vertical front blades) or H4004S (horizontal front blades) manufactured by METALAIR®. Units shall be double deflection supply grilles of aluminum construction and with an extruded border with a front and rear sets of deflection blades. The units shall be the size and quantity as outlined in the plans and specifications.

Border shall be 1 1/4" wide with aerodynamically shaped deflector blades on .666" centers. Deflector blades shall be individually adjustable. Units shall be provided with screw holes on the face for surface mounting. The units shall be the size and quantity as outlined in the plans and specifications.

Blades shall pivot in friction mounting retainers. Retainers shall hold the deflector blade position throughout the specified operating range of the device. Metal friction wires are not acceptable.

Optional opposed blade damper shall be constructed of steel (Model OBD) or aluminum (Model OBDA). Damper must be operable from the face of the diffuser.

Supply - Single Deflection with Multi Shutter Damper - Supply Grilles and Registers – Aluminum/Model 4002M

Air Outlets shall be model V4002M (vertical front blades) or H4002M (horizontal front blades) manufactured by METALAIR®. Units shall be single deflection supply grilles with a face operated multi-shutter damper. Units shall be of aluminum construction and with an extruded aluminum border and a single set of deflection blades.

Border shall be 1 1/4" wide with aerodynamically shaped deflector blades on .666" centers. Deflector blades shall be individually adjustable. Units shall be provided with screw holes on the face for surface mounting.

Blades shall pivot in friction mounting retainers. Retainers shall hold the deflector blade position throughout the specified operating range of the device. Metal friction wires are not acceptable.

The units shall be the size and quantity as outlined in the plans and specifications.

Grilles and Registers



GAR

Supply - Single Deflection Supply Grilles and Registers – Steel/Model 4002S

Air Outlets shall be model V4002S (vertical front blades) or H4002S (horizontal front blades) manufactured by METALAIR®. Units shall be single deflection supply grilles of steel construction and with a steel border and a single set of deflection blades. The units shall be the size and quantity as outlined in the plans and specifications.

Border shall be 1 1/4" wide with aerodynamically shaped deflector blades on .666" centers. Deflector blades shall be individually adjustable. Units shall be designed for surface mounting applications and be provided with screw holes on the face of the device.

Blades shall pivot in friction mounting retainers. Retainers shall hold the deflector blade position throughout the specified operating range of the device. Metal friction wires are not acceptable.

Optional opposed blade damper shall be constructed of steel (Model OBD) or aluminum (Model OBDA). Damper must be operable from the face of the diffuser.

Supply - Double Deflection Supply Grilles and Registers – Steel/Model 4004S

Air Outlets shall be model V4004 (vertical front blades) or H4004 (horizontal front blades) manufactured by METALAIR®. Units shall be double deflection supply grilles of steel construction and with a steel border with a front and rear sets of deflection blades. The units shall be the size and quantity as outlined in the plans and specifications.

Border shall be 1 1/4" wide with aerodynamically shaped deflector blades on .666" centers. Deflector blades shall be individually adjustable. Units shall be provided with screw holes on the face for surface mounting.

The units shall be the size and quantity as outlined in the plans and specifications.

Blades shall pivot in friction mounting retainers. Retainers shall hold the deflector blade position throughout the specified operating range of the device. Metal friction wires are not acceptable.

Optional opposed blade damper shall be constructed of steel (Model OBD) or aluminum (Model OBDA). Damper must be operable from the face of the diffuser.

GAR - Grilles and Registers

Supply - Single Deflection with Multi Shutter Damper - Supply Grilles and Registers –Steel/Model 4002SM

Air Outlets shall be model V4002M (vertical front blades) or H4002M (horizontal front blades) manufactured by METALAIR®. Units shall be single deflection supply grilles with a face operated multi-shutter damper. Units shall be of steel construction and with an steel border and a single set of deflection blades.

Border shall be 1 1/4" wide with aerodynamically shaped deflector blades on .666" centers. Deflector blades shall be individually adjustable. Units shall be provided with screw holes on the face for surface mounting.

Blades shall pivot in friction mounting retainers. Retainers shall hold the deflector blade position throughout the specified operating range of the device. Metal friction wires are not acceptable.

The units shall be the size and quantity as outlined in the plans and specifications.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaline cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

Series 4000 - Model Specification Guide

Supply - Sidewall
 Series 4000 - Aluminum
 Series 4000S - Steel

Model	Available Neck	Available Finishes	Available Options	
Aluminum	6" thru 48"	Standard	OBD	Opposed Blade Damper - Steel
V4002-1 - Single Deflection - Vertical Blades		01 - White	OBDA	Opposed Blade Damper - Aluminum
H4002-1 - Single Deflection - Horizontal Blades		Optional	L9	Equalizing Grid
V4004-1 - Double Deflection - Vertical Front Blades		02 - Aluminum	PF	Plaster Frame
H4004-1 - Double Deflection - Horizontal Front Blades		03 - Black		
Steel		24 - Mill		
V4002S-1 - Single Deflection - Vertical Blades		28 - Custom Color		
H4002S-1 - Single Deflection - Horizontal Blades				
V4004S-1 - Double Deflection - Vertical Front Blades				
H4004S-1 - Double Deflection - Horizontal Front Blades				

Supply - Sidewall
 Series 4000 - Single Deflection Register with Multi-Shutter Damper

Model	Available Neck	Available Finishes	Available Options	
Aluminum	6" thru 48"	Standard	L9	Equalizing Grid
V4002M-1 - Single Deflection - Vertical Blades (With multi-shutter Damper)		01 - White	PF	Plaster Frame
H4002M-1 - Single Deflection - Horizontal Blades (With multi-shutter Damper)		Optional		
Steel		02 - Aluminum		
V4002SM-1 - Single Deflection - Vertical Blades (With multi-shutter Damper)		03 - Black		
H4002SM-1 - Single Deflection - Horizontal Blades (With multi-shutter Damper)		24 - Mill		
		28 - Custom Color		



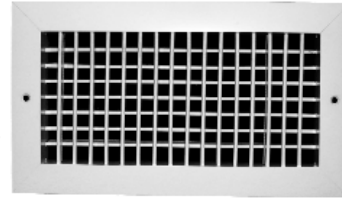
GAR - Grilles and Registers

7/2006

- Supply Grilles ➤ Series 4000-AF ➤ Aluminum Border/Extruded Aluminum Blades
- Series 4000S-AF ➤ Steel Border/Extruded Aluminum Blades

Product Details

- ⊛ The series 4000-AF is our premier product, offering superior construction and high performance with aerodynamically shaped extruded deflection blades. The 4000-AF series is constructed with an extruded aluminum border and air foil deflection blades; the 4000S-AF series has a steel border and extruded aluminum air foil deflection blades
- ⊛ The series 4000-AF is an excellent choice for projects requiring superior performance and aesthetics
- ⊛ The series 4000-AF is available with single or double deflection, and with a number of options and accessories to meet a variety of applications
- ⊛ Series 4000-AF grilles and registers can be selected with either vertical or horizontal front blades



Model 4000-AF-1 Shown

Standard Finish: 01 White

Grilles and Registers

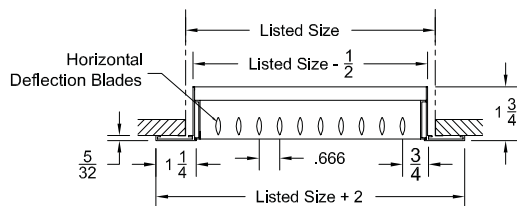


GAR

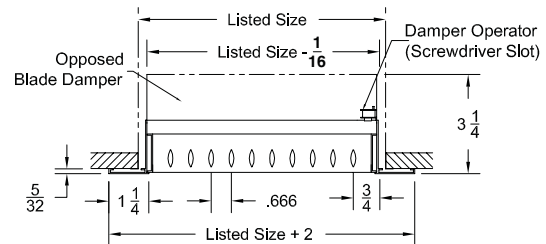
Single Deflection ➤ Aluminum Blades & Border

Sideview, dimensions are in inches

Supply - Single Deflection Grille - Surface Mount
Aluminum Border/Extruded Aluminum Blades
Model H4002-AF-1 - Horizontal Blades
Model V4002-AF-1 - Vertical Blades

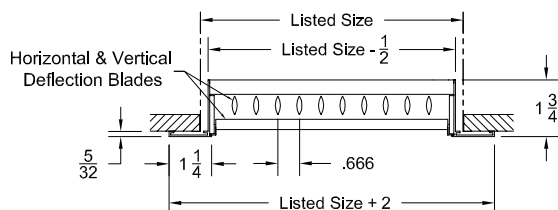


Supply - Single Deflection Register - Surface Mount
Aluminum Border/Extruded Aluminum Blades - w/ Opposed Blade Damper
Model H4002D-AF-1 - Horizontal Blades
Model V4002D-AF-1 - Vertical Blades

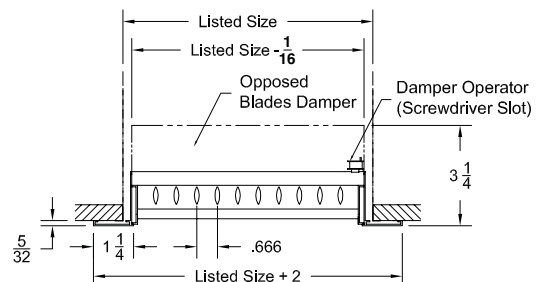


Double Deflection ➤ Aluminum Blades & Border

Supply - Double Deflection Grille - Surface Mount
Aluminum Border/Extruded Aluminum Blades
Model H4004-AF-1 - Horizontal Blades
Model V4004-AF-1 - Vertical Blades



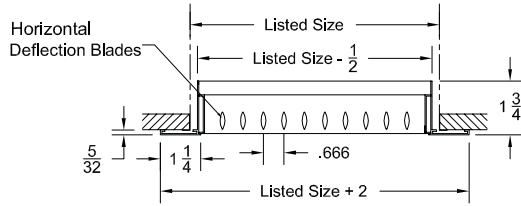
Supply - Double Deflection Register - Surface Mount
Aluminum Border/Extruded Aluminum Blades - w/ Opposed Blade Damper
Model H4004D-AF-1 - Horizontal Blades
Model V4004D-AF-1 - Vertical Blades



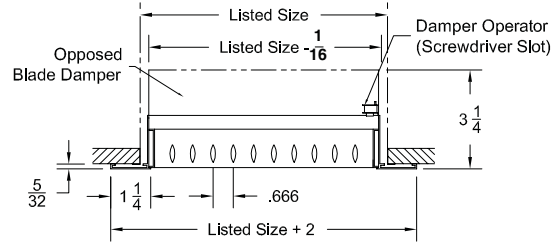
GAR - Grilles and Registers

Single Deflection → Steel Border/Extruded Aluminum Blades

Supply - Single Deflection Grille - Surface Mount
 Steel Border/Extruded Aluminum Blades
 Model H4002S-AF-1 - Horizontal Blades
 Model V4002S-AF-1 - Vertical Blades

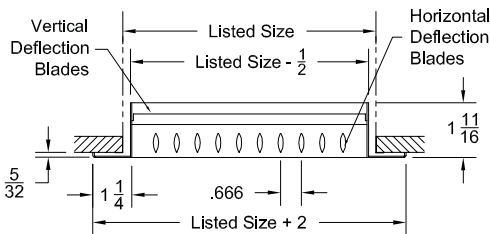


Supply - Single Deflection Register - Surface Mount
 Steel Border/Extruded Aluminum Blades - With Opposed Blade Damper
 Model H4002SD-AF-1 - Horizontal Blades
 Model V4002SD-AF-1 - Vertical Blades

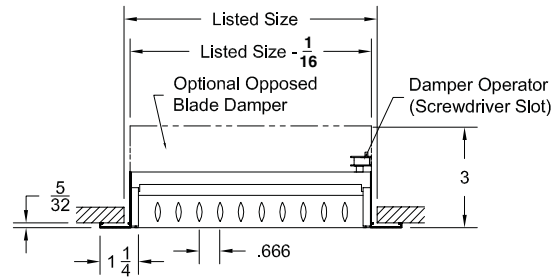


Double Deflection → Steel Border/Extruded Aluminum Blades

Supply - Double Deflection Grille - Surface Mount
 Steel Border/Extruded Aluminum Blades
 Model H4004S-AF-1 - Horizontal Blades
 Model V4004S-AF-1 - Vertical Blades



Supply - Double Deflection Register - Surface Mount - Aluminum
 Steel Border/Extruded Aluminum Blades - With Opposed Blade Damper
 Model H4004SD-AF-1 - Horizontal Blades
 Model V4004SD-AF-1 - Vertical Blades



Notes for Models H4002-AF-1, V4002-AF, H4002D-AF-1, V4002D-AF-1, H4004-AF-1, V4004-AF, H4004D-AF-1, V4004D-AF-1

1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish: 02 Aluminum paint 03 Black 04 Clear Anodized 24 Mill finish 28 Custom color</p>	<p>OBD - Steel - Opposed Blade Damper208</p> <p>OBDA - Aluminum - Opposed Blade Damper208</p> <p>L9 - Equalizing Grid208</p> <p>PF - Plaster Frame209</p>	<ul style="list-style-type: none"> Extruded aluminum border and blades Oversized units made in multiple sections, each with full flanges. Mullion strips provided for joining units in field

Notes for Models H4002S-AF-1, V4002S-AF, H4002SD-AF-1, V4002SD-AF-1, H4004S-AF-1, V4004S-AF, H4004SD-AF-1, V4004SD-AF-1

1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish: 02 Aluminum paint 28 Custom color</p>	<p>OBD - Steel - Opposed Blade Damper208</p> <p>OBDA - Aluminum - Opposed Blade Damper208</p> <p>L9 - Equalizing Grid208</p> <p>PF - Plaster Frame209</p>	<ul style="list-style-type: none"> Extruded aluminum air foil blades and steel border Oversized units made in multiple sections, each with full flanges. Mullion strips provided for joining units in field

Grilles and Registers



GAR

GAR - Grilles and Registers

7/2006

Series 4000-AF - Performance

Models H4002-AF-1, V4002-AF-1, H4002D-AF-1, V4002D-AF-1, H4004-AF-1, V4004-AF, H4004D-AF-1, V4004D-AF-1, H4002S-AF-1, V4002S-AF-1, H4002SD-AF-1, V4002SD-AF-1, H4004S-AF-1, V4004S-AF, H4004SD-AF-1, V4004SD-AF-1

CFM	OUTLET SIZE															NC	
	6" x 4"	8" x 4"	10" x 4"	8" x 6"	10" x 6"	12" x 6"	10" x 8"	12" x 8"	18" x 6"	16" x 8"	24" x 6"	20" x 8"	28" x 6"	30" x 6"			
50	Velocity Ps Throw	300 .011 12-9-7	225 .006 11-8-6														
100	Velocity Ps Throw	600 .044 20-14-11	450 .025 18-13-10	360 .016 16-12-9	300 .011 15-11-9	240 .007 14-10-8	200 .005 13-10-7										
150	Velocity Ps Throw	900 .099 26-18-14	675 .056 23-17-13	540 .036 22-15-12	450 .025 20-14-11	360 .016 19-13-10	300 .011 18-13-10	270 .009 17-12-9	225 .006 16-11-9	200 .005 15-11-9							
200	Velocity Ps Throw		900 .099 28-20-16	720 .064 26-19-14	600 .044 25-18-14	480 .028 23-16-13	400 .020 22-15-12	360 .016 21-15-11	300 .011 20-14-11	267 .009 19-13-10	225 .006 18-13-10	200 .005 17-12-9					
250	Velocity Ps Throw				750 .069 29-20-16	600 .044 27-19-15	500 .031 26-18-14	450 .025 24-17-13	375 .017 23-16-13	333 .014 22-16-12	281 .010 21-15-11	250 .008 20-14-11	225 .006 19-14-11	214 .006 19-13-10	200 .005 18-13-10		
300	Velocity Ps Throw				900 .099 33-23-18	720 .064 30-21-17	600 .044 28-20-16	540 .036 27-19-15	450 .025 26-18-14	400 .020 25-18-14	338 .014 23-17-13	300 .011 22-16-12	270 .009 22-15-12	257 .008 22-15-12	240 .007 21-15-11		
400	Velocity Ps Throw						800 .079 35-25-19	720 .064 33-24-18	600 .044 31-22-17	533 .035 33-23-18	450 .025 28-20-16	400 .020 27-19-15	360 .016 26-19-14	343 .014 26-18-14	320 .013 25-18-14		
500	Velocity Ps Throw								750 .069 37-26-20	667 .055 35-25-19	563 .039 33-23-18	500 .031 32-23-17	450 .025 31-22-17	429 .023 30-21-17	400 .020 29-21-16		
600	Velocity Ps Throw								900 .099 41-29-23	800 .079 40-28-22	675 .056 38-27-21	600 .044 36-26-20	540 .036 35-25-19	514 .032 34-24-19	480 .028 33-24-18		
700	Velocity Ps Throw										787 .076 42-30-23	700 .060 40-28-22	630 .049 39-27-21	600 .044 38-27-21	560 .038 36-26-20		
NC							30 - 35										20 - 25

Grilles and Registers



GAR

CFM	OUTLET SIZE																
	30" x 8"	16" x 16"	24" x 12"	30" x 10"	18" x 18"	28" x 12"	20" x 18"	24" x 16"	40" x 10"	30" x 14"	36" x 12"	24" x 20"	42" x 12"	48" x 12"			
350	Velocity Ps Throw	210 .005 21-15-12															
400	Velocity Ps Throw	240 .007 23-16-13	225 .006 22-16-12	200 .005 22-15-12													
450	Velocity Ps Throw	270 .009 25-18-14	253 .008 24-17-13	225 .006 23-17-13	216 .006 23-16-13	200 .005 22-16-12											
500	Velocity Ps Throw	300 .011 27-19-15	281 .010 26-19-14	250 .008 25-18-14	240 .007 25-18-14	222 .006 24-17-13	214 .006 24-17-13	200 .005 23-17-13									
600	Velocity Ps Throw	360 .016 30-21-17	338 .014 30-21-16	300 .011 28-20-16	288 .010 28-20-15	267 .009 27-19-15	257 .008 27-19-15	240 .007 26-19-14	225 .006 26-18-14	216 .006 25-18-14	206 .005 25-18-14	200 .005 25-18-14					
650	Velocity Ps Throw	390 .019 32-23-18	366 .016 31-22-17	325 .013 30-21-16	312 .012 30-21-16	289 .010 29-20-16	279 .010 28-20-16	260 .008 28-20-15	244 .007 27-19-15	234 .007 27-19-15	223 .006 26-19-14	217 .006 26-19-14					
800	Velocity Ps Throw	480 .028 37-26-20	450 .025 36-26-20	400 .020 35-25-19	384 .018 34-24-19	356 .016 33-24-18	343 .014 33-23-18	320 .013 32-23-18	300 .011 31-22-17	288 .010 31-22-17	274 .009 30-22-17	267 .009 30-21-17	240 .007 29-21-16	229 .006 29-20-16	200 .005 27-19-15		
1000	Velocity Ps Throw	600 .044 43-31-24	563 .039 42-30-23	500 .031 40-29-22	480 .028 40-28-22	444 .024 39-28-21	429 .023 38-27-21	400 .020 37-27-21	375 .017 37-26-20	360 .016 36-26-20	343 .014 35-25-19	333 .014 35-25-19	300 .011 34-24-19	286 .010 33-24-18	250 .008 32-23-17		
1200	Velocity Ps Throw	720 .064 49-35-27	675 .056 48-34-26	600 .044 46-33-25	576 .041 45-32-25	533 .035 44-31-24	514 .032 43-31-24	480 .028 42-30-23	450 .025 41-29-23	432 .023 41-29-22	411 .021 40-29-22	400 .020 40-28-22	360 .016 38-27-21	343 .014 38-27-21	300 .011 36-26-20		
1400	Velocity Ps Throw	840 .087 54-39-30	787 .076 53-38-29	700 .060 51-36-28	672 .055 50-36-28	662 .047 49-35-27	600 .044 48-34-27	560 .038 47-34-26	525 .038 47-34-26	504 .031 46-32-25	480 .028 45-32-25	467 .027 44-31-24	420 .022 43-30-24	400 .020 42-30-23	350 .015 38-27-21		
NC		30 - 35															20

For Series 4000-AF performance notes, see page GAR-45

GAR - Grilles and Registers

Models H4002-AF-1, V4002-AF-1, H4002D-AF-1, V4002D-AF-1, H4004-AF-1, V4004-AF, H4004D-AF-1, V4004D-AF-1, H4002S-AF-1, V4002S-AF-1, H4002SD-AF-1, V4002SD-AF-1, H4004S-AF-1, V4004S-AF, H4004SD-AF-1, V4004SD-AF-1

CFM	OUTLET SIZE														
		42" x 16"	30" x 24"	48" x 16"	36" x 24"	30" x 30"	48" x 20"	44" x 24"	36" x 30"	48" x 24"	36" x 30"	48" x 26"	40" x 32"	36" x 36"	48" x 30"
1000	Velocity Ps Throw	214 .006 30-21-17	200 .005 29-21-16												
1200	Velocity Ps Throw	257 .008 34-24-19	240 .007 33-24-18	225 .006 33-23-18	200 .005 31-22-17										
1400	Velocity Ps Throw	300 .011 38-27-21	280 .010 37-26-20	263 .008 36-26-20	233 .007 35-25-19	224 .006 34-24-19	210 .005 34-24-18								
1600	Velocity Ps Throw	343 .014 42-30-23	320 .013 41-29-22	300 .011 40-28-22	267 .009 38-27-21	256 .008 38-27-21	240 .007 37-26-20	218 .006 36-25-20	213 .006 35-25-19	200 .005 35-25-19	213 .006 35-25-19				
1800	Velocity Ps Throw	386 .018 45-32-26	360 .016 44-31-24	338 .014 43-31-24	300 .011 41-29-23	288 .010 41-29-22	270 .009 40-28-22	245 .007 39-27-21	240 .007 38-27-21	225 .006 38-27-21	240 .007 38-27-21	208 .005 37-26-20	203 .005 26-26-20	200 .005 36-26-20	
2000	Velocity Ps Throw	429 .023 49-35-27	400 .020 48-34-26	375 .017 46-33-26	333 .014 45-32-25	320 .013 44-31-24	300 .011 44-31-24	273 .009 42-30-23	267 .009 41-29-23	250 .008 40-29-22	267 .009 41-29-23	231 .007 39-28-22	225 .006 39-28-21	222 .006 39-28-21	200 .005 37-27-21
2200	Velocity Ps Throw	471 .027 52-37-29	440 .024 51-36-28	413 .021 50-35-27	367 .016 48-34-26	352 .015 47-33-26	330 .013 46-33-25	300 .011 44-32-24	293 .011 44-31-24	275 .009 43-31-24	293 .011 44-31-24	254 .008 42-30-23	248 .008 42-30-23	244 .007 41-29-23	220 .006 40-28-22
2400	Velocity Ps Throw	514 .032 55-39-30	480 .028 54-38-30	450 .025 53-37-29	400 .020 51-36-28	384 .018 50-35-27	360 .016 49-35-27	327 .013 47-34-26	320 .013 47-33-26	300 .011 46-33-25	320 .013 47-33-26	277 .009 45-32-25	270 .009 44-31-24	267 .009 44-31-24	240 .007 42-30-23
2600	Velocity Ps Throw	557 .038 58-41-32	520 .033 57-40-31	488 .029 56-40-31	433 .023 53-38-29	416 .021 53-37-29	390 .019 52-37-28	355 .015 50-35-27	347 .015 50-35-27	325 .013 48-34-27	347 .015 50-35-27	300 .011 47-33-26	292 .010 49-33-26	289 .010 47-33-26	260 .008 45-32-25
2800	Velocity Ps Throw	600 .044 61-44-34	560 .038 60-43-33	525 .034 59-42-32	467 .027 56-40-31	448 .025 55-39-31	420 .022 54-39-30	382 .018 53-37-29	373 .017 52-37-29	350 .015 51-36-28	373 .017 52-37-29	323 .013 50-35-27	315 .012 49-35-27	311 .012 49-35-27	280 .010 47-34-26
3000	Velocity Ps Throw	643 .051 64-46-35	600 .044 63-45-35	563 .039 61-44-34	500 .031 59-42-32	480 .028 58-41-32	450 .025 57-40-31	409 .021 55-39-30	400 .020 55-39-30	375 .017 53-38-29	400 .020 55-39-30	346 .015 52-37-29	338 .014 52-37-28	333 .014 51-36-28	300 .011 50-35-27
3400	Velocity Ps Throw	729 .065 70-50-38	680 .057 68-48-38	637 .050 67-47-37	567 .039 64-46-35	544 .036 63-45-35	510 .032 62-44-34	464 .026 60-43-33	453 .025 60-42-33	425 .022 58-41-32	453 .025 60-42-33	392 .019 57-40-31	383 .018 56-40-31	378 .018 56-40-31	340 .014 54-38-30
3800	Velocity Ps Throw	814 .081 75-53-41	760 .071 74-52-40	712 .062 72-51-40	633 .049 69-49-38	608 .045 68-48-38	570 .040 67-47-37	518 .033 65-46-36	507 .031 64-46-35	475 .028 63-45-35	507 .031 64-46-35	438 .024 61-43-34	428 .022 61-43-33	422 .022 60-43-33	380 .018 58-41-32
4200	Velocity Ps Throw	900 .099 80-57-44	840 .087 79-56-43	787 .076 77-55-42	700 .060 77-55-42	672 .055 73-52-40	630 .049 71-51-39	573 .040 69-49-38	560 .038 69-49-38	525 .034 67-48-37	560 .038 69-49-38	485 .029 65-46-36	472 .027 65-46-36	467 .027 65-46-36	420 .022 60-43-33
NC		25 - 30			20 - 25										<20

Performance Notes for Series 4000-AF
All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic Feet per Minute (air)
- fpm - Velocity of air stream in Feet Per Minute
- Ps - Static pressure = Pt - Pv (inches of water column)
- Throw - Non-isothermal horizontal throw (supply air temperature 20°F colder than average room air temperature) values are for 50 fpm - 100 fpm - 150 fpm velocities
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands

Grilles and Registers
GAR



Series 4000-AF - Specifications

Supply - Single Deflection Supply Grilles and Registers – Extruded Aluminum - Airfoil Blades/Model 4002-AF

Air Outlets shall be model V4002-AF (vertical front blades) or H4002-AF (horizontal front blades) manufactured by METALAIRES®. Units shall be single deflection supply grilles of all extruded aluminum construction with an extruded aluminum border and deflection blades. The units shall be the size and quantity as outlined in the plans and specifications.

Border shall be 1 1/4" wide with airfoil shaped deflector blades on .666" centers. Deflector blades shall be individually adjustable. Units shall be designed for surface mounting applications and be provided with screw holes on the face of the device.

Blades shall pivot in friction mounting retainers. Retainers shall hold the deflector blade position throughout the specified operating range of the device. Metal friction wires are not acceptable.

Optional opposed blade damper shall be constructed of steel (Model OBD) or aluminum (Model OBDA).
Damper must be operable from the face of the diffuser.

Supply - Double Deflection Supply Grilles and Registers – Extruded Aluminum - Airfoil Blades/Model 4004-AF

Air Outlets shall be model V4004-AF (vertical front blades) or H4004-AF (horizontal front blades) manufactured by METALAIRES®. Units shall be double deflection supply grilles of all extruded aluminum construction and with an extruded border with front and rear sets of deflection blades. The units shall be the size and quantity as outlined in the plans and specifications.

Border shall be 1 1/4" wide with aerodynamically shaped deflector blades on .666" centers. Deflector blades shall be individually adjustable. Units shall be provided with screw holes on the face for surface mounting. The units shall be the size and quantity as outlined in the plans and specifications.

Blades shall pivot in friction mounting retainers. Retainers shall hold the deflector blade position throughout the specified operating range of the device. Metal friction wires are not acceptable.

Optional opposed blade damper shall be constructed of steel (Model OBD) or aluminum (Model OBDA).
Damper must be operable from the face of the diffuser.

Supply - Single Deflection Supply Grilles and Registers – Steel Border - Extruded Aluminum Airfoil Blades/Model 4002S-AF

Air Outlets shall be model V4002S-AF (vertical front blades) or H4002S-AF (horizontal front blades) manufactured by METALAIRES®. Units shall be single deflection supply grilles of all steel construction. The units shall be the size and quantity as outlined in the plans and specifications.

Border shall be 1 1/4" wide with airfoil shaped deflector blades on .666" centers. Deflector blades shall be individually adjustable. Units shall be designed for surface mounting applications and be provided with counter sunk screw holes on the face of the device.

Blades shall pivot in friction mounting retainers. Retainers shall hold the deflector blade position throughout the specified operating range of the device. Metal friction wires are not acceptable.

Optional opposed blade damper shall be constructed of steel (Model OBD) or aluminum (Model OBDA).
Damper must be operable from the face of the diffuser.

Supply - Double Deflection Supply Grilles and Registers – Steel Border - Extruded Aluminum Airfoil Blades/Model 4004S-AF

Air Outlets shall be model V4004S-AF (vertical front blades) or H4004S-AF (horizontal front blades) manufactured by METALAIRES®. Units shall be double deflection supply grilles of all steel construction. The units shall be the size and quantity as outlined in the plans and specifications.

Border shall be 1 1/4" wide with aerodynamically shaped deflector blades on .666" centers. Deflector blades shall be individually adjustable. Units shall be provided with screw holes on the face for surface mounting.

The units shall be the size and quantity as outlined in the plans and specifications.

Blades shall pivot in friction mounting retainers. Retainers shall hold the deflector blade position throughout the specified operating range of the device. Metal friction wires are not acceptable.

Optional opposed blade damper shall be constructed of steel (Model OBD) or aluminum (Model OBDA).
Damper must be operable from the face of the diffuser.



GAR - Grilles and Registers

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaline cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

Series 4000-AF - Model Specification Guide

Supply - Sidewall

Series 4000-AF - Air Foil Blades - Extruded Aluminum

Series 4000S-AF - Air Foil Blades - Steel Border

Model	Available Neck	Available Finishes	Available Options	
Aluminum	6" thru 48"	Standard	OBD	Opposed Blade Damper - Steel
V4002-AF-1 - Single Deflection - Vertical Blades H4002-AF-1 - Single Deflection - Horizontal Blades		01 - White	OBDA	Opposed Blade Damper - Aluminum
V4004-AF-1 - Double Deflection - Vertical Front Blades H4004-AF-1 - Double Deflection - Horizontal Front Blades		Optional	L9	Equalizing Grid
		02 - Aluminum	PF	Plaster Frame
Steel		03 - Black		
V4002S-AF-1 - Single Deflection - Vertical Blades H4002S-AF-1 - Single Deflection - Horizontal Blades		24 - Mill		
V4004S-AF-1 - Double Deflection - Vertical Front Blades H4004S-AF-1 - Double Deflection - Horizontal Front Blades		28 - Custom Color		



GAR - Grilles and Registers

- ➔ Supply Grilles ➔ Series 4004P-1 ➔ Aluminum
- ➔ Series 4004SP-1 ➔ Steel

Product Details

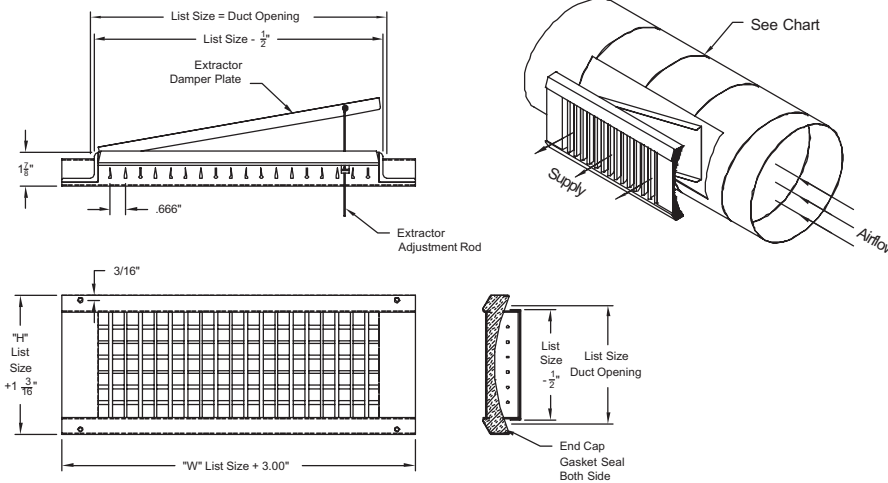
- ✦ The model 4004P (aluminum) and 4004SP (galvanized steel) offers superior performance in exposed duct applications offering a clean, low profile appearance
- ✦ Front blades are vertical
- ✦ Units can be easily installed in round duct diameters 10" to 48"
- ✦ Integral gasket seals grille tightly to duct
- ✦ Units includes built in extractor to allow accurate balancing and uniform air flow
- ✦ Model 4004P is all aluminum construction
Model 4004SP is galvanized steel construction



Model 4004SP-1 Shown
Standard Finish: 24 Mill (galvanized)

Sideview, dimensions are in inches

Supply - Spiral Pipe Grille - Surface Mount
Model 4004P-1 - Aluminum
Model 4004SP-1 - Galvanized Steel



Available in listed sizes only

HEIGHT	WIDTH															
	10"	12"	14"	16"	18"	20"	24"	30"	36"	38"	40"	42"	44"	46"	48"	
	MINIMUM / MAXIMUM DUCT DIAMETER															
3"	6/24	6/24	6/24	6/24	6/24	6/24	6/24	6/24	6/24	6/24	6/24	6/24	6/24	6/24	6/24	
4"	8/24	8/24	8/24	8/24	8/24	8/24	8/24	8/24	8/24	8/24	8/24	8/24	8/24	8/24	8/24	
6"	12/24	12/24	12/24	12/24	12/24	12/24	12/24	12/24	12/24	12/24	12/24	12/24	12/24	12/24	12/24	
8"	-	-	20/36	20/36	20/36	20/36	20/36	20/36	20/36	20/36	20/36	20/36	20/36	20/36	20/36	
10"	-	-	-	-	30/48	30/48	30/48	30/48	30/48	30/48	30/48	30/48	30/48	30/48	30/48	
12"	-	-	-	-	42/48	42/48	42/48	42/48	42/48	42/48	42/48	42/48	42/48	42/48	42/48	

1. Available Finishes	2. Construction Details
Standard Finish for 4004SP - Steel: 24 Mill finish Standard Finish for 4004P - Aluminum: 01 White	<ul style="list-style-type: none"> • Units include extractor with wire handle • Ends are supplied with foam gasket to seal around duct • Units are surface mount and provided with screws to mount into duct

Grilles and Registers



GAR

GAR - Grilles and Registers

Series 4004P - Performance

CFM		10x3	12x3	10x4 14x3	16x3 12x4	18x3 14x4	10x6 20x3	16x4	24x3 12x6 18x4	14x6 20x4	16x6 24x4 30x3	14x8 18x6 36x3	16x8 20x6 30x4	24x6 18x8 36x4
50	Velocity Ps Throw	225 0.006 11-8-6												
100	Velocity Ps Throw	450 0.025 18-13-10	400 0.02 17-13-10	360 0.016 16-12-9	300 0.011 15-11-9	260 0.008 14-10-9	240 0.007 14-10-8	225 0.006 14-10-8	200 0.005 13-10-7					
150	Velocity Ps Throw	675 0.056 23-17-13	600 0.048 22-16-12	540 0.036 22-15-12	450 0.025 20-14-11	400 0.02 19-14-10	360 0.016 19-13-10	340 0.014 19-13-10	300 0.011 18-13-10	270 0.009 17-12-9	225 0.006 16-11-9			
200	Velocity Ps Throw	900 0.099 28-20-16	800 0.082 27-19-15	720 0.064 26-19-14	600 0.044 25-18-14	530 0.035 24-16-13	480 0.028 23-16-13	450 0.025 23-16-12	400 0.02 22-15-12	360 0.016 21-15-11	300 0.011 20-14-11	260 0.008 19-13-10	225 0.006 18-13-10	200 0.005 17-12-9
250	Velocity Ps Throw				750 0.069 29-20-16	660 0.054 28-19-15	600 0.044 27-19-15	565 0.039 27-19-15	500 0.031 25-18-14	450 0.025 24-17-13	375 0.017 23-16-13	330 0.013 22-15-12	281 0.01 21-15-11	250 0.008 20-14-11
300	Velocity Ps Throw				900 0.099 33-23-18	800 0.08 31-21-17	720 0.064 30-21-17	675 0.055 29-21-17	600 0.044 28-20-16	540 0.036 27-19-15	450 0.025 26-18-14	400 0.021 25-18-13	338 0.014 23-17-13	300 0.011 22-16-12
400	Velocity Ps Throw							900 0.091 37-30-22	800 0.079 35-25-19	720 0.064 33-24-18	600 0.044 31-22-17	535 0.036 30-22-18	450 0.025 28-20-16	400 0.02 27-19-15
500	Velocity Ps Throw										750 0.069 37-26-20	665 0.052 36-25-20	563 0.039 33-23-18	500 0.031 32-23-17
600	Velocity Ps Throw											770 0.07 41-29-23	675 0.056 38-27-21	600 0.044 36-26-20
700	Velocity Ps Throw												787 0.076 42-30-23	700 0.06 40-28-22

CFM		16x10 20x8	30x6 18x10	48x4 20x10 24x8	36x6 18x12	20x12 30x8 24x10	48x6 36x8 24x12	30x10	46x8 36x10 30x12	38x10 48x8	36x12	40x12 48x10	48x12
250	Velocity Ps Throw	225 0.006 19-14-11	200 0.005 18-13-10										
300	Velocity Ps Throw	270 0.009 22-15-12	240 0.007 21-15-11	215 0.006 20-15-11	200 0.005 19-14-10								
400	Velocity Ps Throw	360 0.016 26-19-14	320 0.013 25-18-14	288 0.01 24-17-14	265 0.008 23-17-13	240 0.007 23-16-13	200 0.005 22-15-12						
500	Velocity Ps Throw	450 0.025 31-22-17	400 0.02 29-21-16	360 0.017 29-20-16	330 0.014 28-20-15	300 0.011 27-19-15	250 0.008 25-18-14	240 0.007 23-17-13					
600	Velocity Ps Throw	540 0.036 35-25-19	480 0.028 33-24-18	435 0.024 32-23-18	400 0.019 31-22-17	360 0.016 30-21-17	300 0.011 28-20-16	288 0.01 26-19-14	240 0.007 25-17-14	225 0.006 25-17-14	200 0.005 25-18-14		
700	Velocity Ps Throw	630 0.049 39-27-21	560 0.038 36-26-20	500 0.032 36-25-20	460 0.027 35-24-19	420 0.022 34-23-18	350 0.016 33-23-17	335 0.016 33-22-17	280 0.01 29-21-16	265 0.009 26-19-15	235 0.007 27-19-15	210 0.005 27-20-16	
800	Velocity Ps Throw			575 0.037 39-27-22	535 0.034 38-26-21	480 0.028 37-26-20	400 0.02 35-25-19	384 0.018 34-24-19	320 0.013 32-23-18	300 0.011 29-21-16	267 0.009 30-21-17	240 0.008 28-20-17	200 0.005 27-19-15
1000	Velocity Ps Throw				660 0.05 45-34-27	600 0.044 43-31-24	500 0.031 40-29-22	480 0.028 40-28-22	400 0.02 37-27-21	375 0.017 34-23-18	333 0.014 35-25-19	300 0.012 33-24-18	250 0.008 32-23-17
1200	Velocity Ps Throw					720 0.064 49-35-27	600 0.044 46-33-25	576 0.041 45-32-25	480 0.028 42-30-23	450 0.026 39-28-21	411 0.021 40-29-22	360 0.016 38-28-21	300 0.011 36-26-20
1400	Velocity Ps Throw					840 0.087 54-39-30	700 0.06 51-36-28	672 0.055 50-36-28	560 0.038 47-34-26	530 0.032 45-33-26	480 0.028 45-32-25	420 0.022 41-29-23	350 0.015 38-27-21
1600	Velocity Ps Throw									600 0.04 48-34-26	530 0.031 47-34-27	480 0.027 44-31-26	400 0.019 40-29-23
1800	Velocity Ps Throw										600 0.043 49-35-27	540 0.034 44-33-26	450 0.026 42-30-25
2000	Velocity Ps Throw												500 0.032 44-32-27

Performance Notes for Series 4004P

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

CFM - Cubic Feet per Minute (air)

Velocity - Velocity of air stream in Feet Per Minute

Ps - Static pressure = Pt - Pv (inches of water column)

Throw - Non-isothermal horizontal throw (supply air temperature 20°F colder than average room air temperature) values are for 50 fpm - 100 fpm - 150 fpm velocities



For more product information visit us at www.metalaire.com



Grilles and Registers



GAR

Series 4000P - Specifications

Supply - Double Deflection Spiral Pipe Registers

Air Outlets shall be model 4004P (aluminum construction) or 4004SP (galvanized steel construction) direct spiral duct-mounted supply grilles manufactured by METALAIRE. Units shall be double deflection supply grilles with a front and rear sets of deflection blades. The units shall be the size and quantity as outline in the plans and specifications

Units shall include an air extractor mounted on the back of the register. Extractor shall be face operated using an extractor adjustment rod. Grilles shall conform tightly to the duct radius and include a foam gasket around sides and end caps of the unit.

Aerodynamically shaped deflector blades shall be on .666" centers. Deflector blades shall be individually adjustable. Units shall be provided with counter sunk screw holes on the face for surface mounting. Blades shall pivot in polymer friction mounting retainers. Retainers shall hold the deflector blade position throughout the specified operating range of the device. Metal friction wires are not acceptable.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours



GAR - Grilles and Registers

Series 4000P - Model Specification Guide

Spiral Pipe Grille

Series 4004P-1 - Double Deflection - Vertical Front Blades

Model	Available Neck		Available Finishes
Aluminum	10" thru 48"	3" thru 12"	Standard
4004P-1 - Double Deflection - Vertical Front Blades			01 - White
			Optional
			02 - Aluminum
			03 - Black
			24 - Mill
			28 - Custom Color

Spiral Pipe Grille

Series 4004SP-1 - Double Deflection - Vertical Front Blades

Model	Available Neck		Available Finishes
Galvanized Steel	10" thru 48"	3" thru 12"	Standard
4004SP-1 - Double Deflection - Vertical Front Blades			01 - Galvanized Steel



GAR - Grilles and Registers

7/2006

Supply Curved Blade Grilles Series L Aluminum

Product Details

- ★ The L series of curved blade grilles and registers is an economic solution to application requiring ceiling or sidewall installations with direction air patterns. The L series is available with 1, 2-way, 2 way opposite, 3 and 4 way directional air patterns
- ★ The L series is constructed from aluminum with adjustable curved blade allowing adjustment from full horizontal to full vertical air directions
- ★ Units are available with a wide range of options and accessories



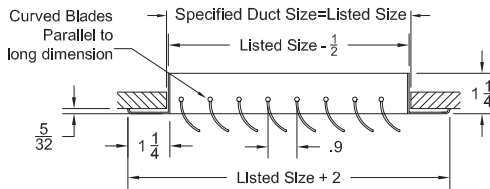
Model LS3-1 Shown

Standard Finish: 01 White

Single Deflection

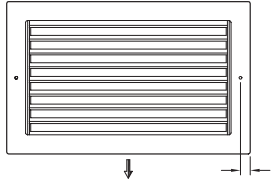
Sideview, dimensions are in inches

Supply - Single Deflection - Surface Mount
One Way - Long Blades
Model L-1

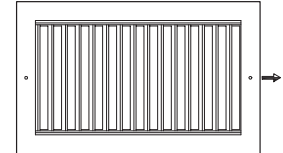


Supply - Single Deflection - Surface Mount
One Way - Short Blades
Model S-1

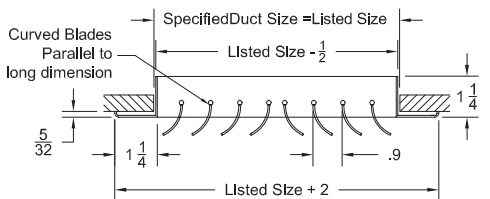
One Way - Long Blades
Face View (L-1 Model)



One Way - Short Blades
Face View (S-1 Model)

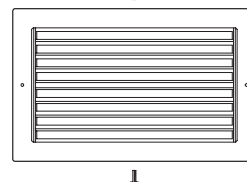


Supply - Single Deflection - Surface Mount
Two Way Opposite - Long Blades
Model LT-1

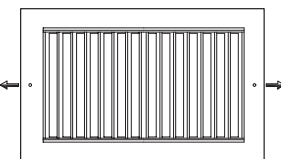


Supply - Single Deflection - Surface Mount
Two Way Opposite - Short Blades
Model ST-1

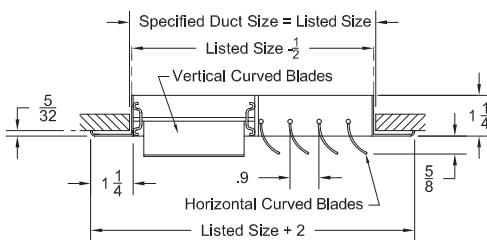
Two Way Opposite - Long Blades
Face View (LT-1 Model)



Two Way Opposite - Short Blades
Face View (ST-1 Model)

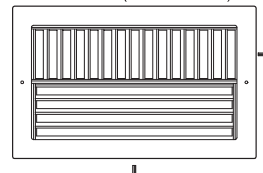


Supply - Single Deflection - Surface Mount
Two Way Corner Blow Pattern - Long Blades
Model LTC-1

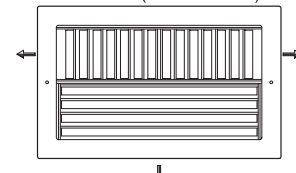


Supply - Single Deflection - Surface Mount
Three Way Corner Blow Pattern - Long Blades
Model LTC3-1

Two Way Corner - Long Blades
Face View (LTC-1 Model)



Three Way Corner - Long Blades
Face View (LTC3-1 Model)



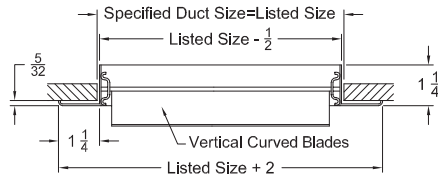
Grilles and Registers



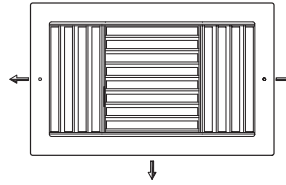
GAR

GAR - Grilles and Registers

Supply - Single Deflection - Surface Mount
Three Way Equal Throw Blow Pattern - Long Blades
Model LS3-1

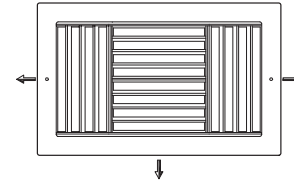


Three Way Equal Throw - Long Blades
Face View (LS3-1 Model)



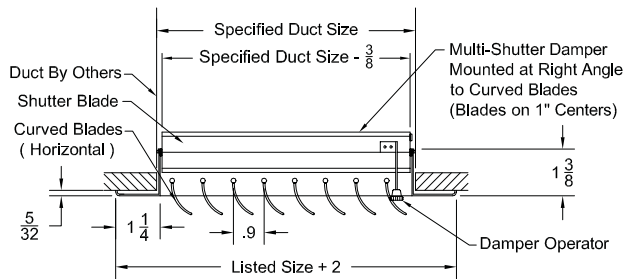
Supply - Single Deflection - Surface Mount
Four Way Blow Pattern - Long Blades
Model LS4-1

Four Way - Long Blades
Face View (LS4-1 Model)



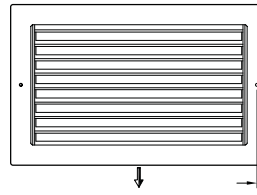
Single Deflection - Multi-Shutter Damper Operated Through Curved

Supply - Single Deflection - Surface Mount
One Way - Long Blades - With Multi Shutter Damper
Model LM-1

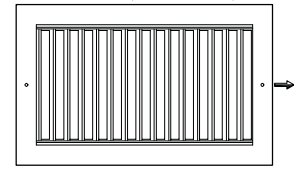


Supply - Single Deflection - Surface Mount
One Way - Short Blades - With Multi Shutter Damper
Model SM-1

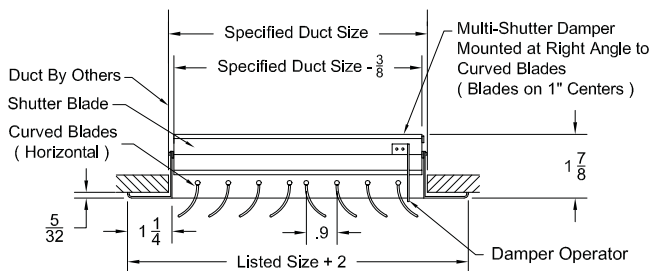
One Way - Long Blades
Face View (LM-1 Model)



One Way - Short Blades
Face View (SM-1 Model)

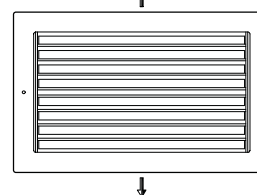


Supply - Single Deflection - Surface Mount
Two Way Opposite - Long Blades - With Multi Shutter Damper
Model LTM-1

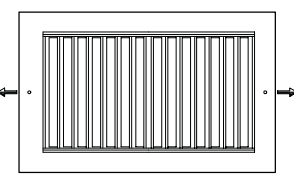


Supply - Single Deflection - Surface Mount
Two Way Opposite - Short Blades - With Multi Shutter Damper
Model STM-1

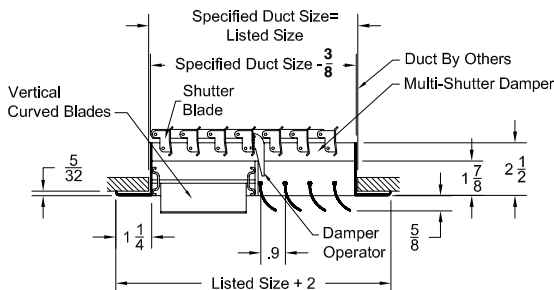
Two Way Opposite - Long Blades
Face View (LTM-1 Model)



Two Way Opposite - Short Blades
Face View (STM-1 Model)

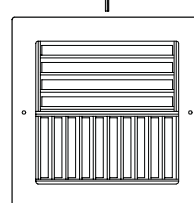


Supply - Single Deflection - Surface Mount
Two Way Corner Blow Pattern - Long Blades - With Multi Shutter Damper
Model LTCM-1

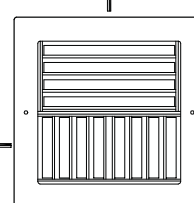


Supply - Single Deflection - Surface Mount
Three Way Corner Blow Pattern - Long Blades - With Multi Shutter Damper
Model LTC3M-1

Two Way Corner - Long Blades
Face View (LTCM-1 Model)



Three Way Corner - Long Blades
Face View (LTC3M-1 Model)

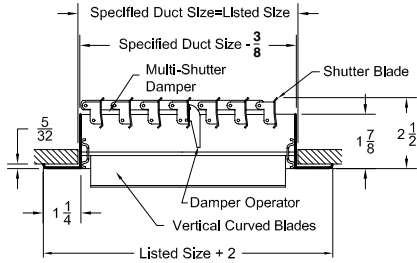


Grilles and Registers

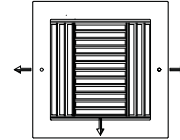
GAR

Supply - Single Deflection - Surface Mount
 Three Way Equal Throw - Long Blades - With Multi Shutter Damper
 Model LS3M-1

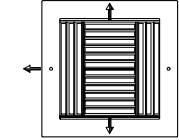
Supply - Single Deflection - Surface Mount
 Four Way - Long Blades - With Multi Shutter Damper
 Model LS4M-1



Three Way - Long Blades
 Face View (LS3M-1 Model)



Four Way - Long Blades
 Face View (LS4M-1 Model)

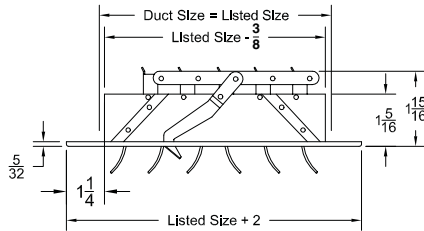


Note: Available In sizes 6 x 6, 8 x 8, 10 x 10, 12 x 12, 14 x 14 Only.

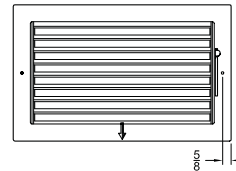
Single Deflection - Horizontal Multi-Shutter Damper Operated Through Slot On Border

Supply - Single Deflection - Surface Mount - One Way - Long Blades
 With Horizontal Multi Shutter Damper - with handles through border
 Model LMH-1

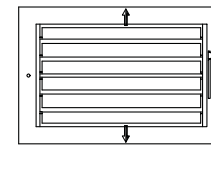
Supply - Single Deflection - Surface Mount
 Two Way Opposite - Long Blades - With Horizontal Multi Shutter Damper
 Model LTMH-1



One Way - Long Blades
 Face View (LMH-1 Model)



Two Way Opposite - Long Blades
 Face View (LTMH-1 Model)



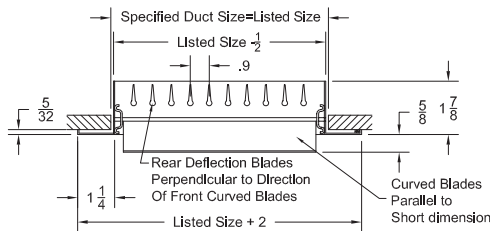
Only Available in Sizes: 6 x 4, 8 x 4, 10 x 4, 12 x 4, 14 x 4, 6 x 6, 8 x 6, 10 x 6, 12 x 6,
 14 x 6, 8 x 8, 10 x 8, 12 x 8, 14 x 8, 10 x 10 and 12 x 12

Grilles and Registers

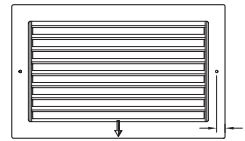
Double Deflection

Supply - Double Deflection - Surface Mount
 One Way - Long Blades
 Model LV-1

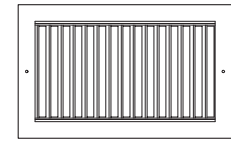
Supply - Double Deflection - Surface Mount
 One Way - Short Blades
 Model SH-1



One Way - Long Blades
 Face View (LV-1 Model)

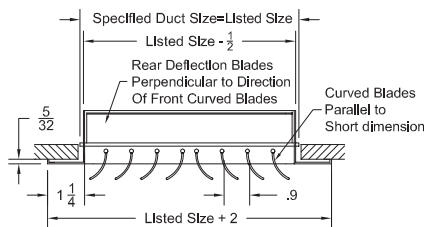


One Way - Short Blades
 Face View (SH-1 Model)

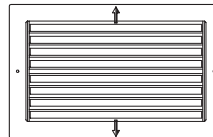


Supply - Double Deflection - Surface Mount
 Two Way Opposite - Long Blades
 Model LTV-1

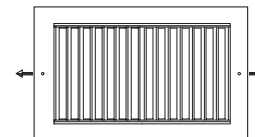
Supply - Double Deflection - Surface Mount
 Two Way Opposite - Short Blades
 Model STH-1



Two Way Opposite - Long Blades
 Face View (LTV-1 Model)



Two Way Opposite - Short Blades
 Face View (STH-1 Model)



GAR - Grilles and Registers

Notes for Models L-1, S-1, LT-1, ST-1, LTC-1, LTC3-1, LS3-1, LS4-1, LV-1, SH-1, LTV-1, STH-1

1. Available Finishes	2. Available Accessories	3. Construction Details
Standard Finish: 01 White Optional Finish 02 Aluminum paint 03 Black 24 Mill finish 28 Custom color	OBD - Steel - Opposed Blade Damper208 OBDA - Aluminum - Opposed Blade Damper208 L9 - Equalizing Grid208 PF - Plaster Frame209	<ul style="list-style-type: none"> • Oversized units made in multiple sections, each with full flanges. Mullion strips provided for joining units in field • Can be ordered to fit standard T-bar Lay-in grid sizes • Can be ordered with smaller neck sizes in T-bar panels

Notes for Models LM-1, SM-1, LTM-1, STM-1, LTCM-1, LTC3M-1, LMH-1, LTMH-1, LS3M-1, LS4M-1

1. Available Finishes	2. Available Accessories	3. Construction Details
Standard Finish: 01 White Optional Finish 02 Aluminum paint 03 Black 24 Mill finish 28 Custom color	L9 - Equalizing Grid208 PF - Plaster Frame209	<ul style="list-style-type: none"> • No odd/fractional sizes available • Sizes only as listed

Series L - Performance

Models L-1, S-1, LT-1, ST-1, LTC-1, LTC3-1, LS3-1, LS4-1, LV-1, SH-1, LTV-1, STH-1, LM-1, SM-1, LTM-1, STM-1, LTCM-1, LTC3M-1, LMH-1, LTMH-1, LS3M-1, LS4M-1

CFM	Ak	OUTLET SIZE												NC
		6" x 6"	8" x 6"	8" x 8"	12" x 6"	10" x 8"	10" x 10"	12" x 10"	12" x 12"	14" x 12"	14" x 14"	18" x 12"	16" x 16"	
		.08	.10	.14	.15	.17	.22	.26	.31	.36	.42	.46	.55	
50	Velocity Ps Throw	645 .055 12-8-7-6	484 .012 11-7-6-5	363 .007 10-7-6-5	323 .005 9-6-5-4	290 .004 9-6-5-4	232 .003 8-6-5-4							
100	Velocity Ps Throw		968 .049 17-12-10-8	726 .028 15-11-9-7	645 .022 15-10-9-7	581 .018 14-10-8-7	465 .011 13-9-8-6	387 .008 13-9-7-6	323 .005 12-8-7-6	276 .004 11-8-6-5	237 .003 11-7-6-5	215 .002 10-7-6-5		
150	Velocity Ps Throw			1089 .063 20-14-12-10	968 .049 20-14-11-9	871 .040 19-13-11-9	697 .026 17-12-10-8	581 .018 16-12-10-8	484 .012 15-11-9-7	415 .009 15-10-9-7	355 .007 14-10-8-7	323 .005 13-9-8-6	272 .004 13-9-7-6	
200	Velocity Ps Throw					1161 .071 23-16-13-11	929 .046 21-15-12-10	774 .032 20-14-12-9	645 .022 19-13-11-9	553 .016 18-13-10-8	474 .012 17-12-10-8	430 .010 16-11-10-8	363 .007 15-11-9-7	
250	Velocity Ps Throw						1161 .071 25-17-14-12	968 .049 23-16-14-11	806 .034 22-15-13-10	691 .025 21-15-12-10	592 .019 20-14-11-9	538 .015 19-13-11-9	454 .011 18-13-10-8	
300	Velocity Ps Throw							1161 .071 26-19-15-12	968 .049 25-17-14-12	829 .036 23-16-14-11	711 .027 22-16-13-11	645 .022 22-15-13-10	544 .016 20-14-12-10	
350	Velocity Ps Throw								1129 .067 28-19-16-13	968 .049 26-18-15-12	829 .036 25-17-14-12	753 .030 24-17-14-11	635 .021 23-16-13-11	
400	Velocity Ps Throw									1106 .065 29-20-17-14	948 .047 27-19-16-13	860 .039 26-18-15-12	726 .028 25-17-14-12	
450	Velocity Ps Throw										1066 .060 29-21-17-14	968 .049 28-20-17-13	817 .035 27-19-16-13	
500	Velocity Ps Throw										1185 .074 32-22-18-15	1075 .061 31-22-18-14	907 .043 29-20-17-14	
550	Velocity Ps Throw											1183 .074 33-23-19-15	998 .053 31-22-18-15	
600	Velocity Ps Throw												1089 .063 33-23-19-16	
650	Velocity Ps Throw												1179 .073 35-24-20-16	

For performance notes, see page GAR-57



GAR - Grilles and Registers

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Series L - Performance

Models L-1, S-1, LT-1, ST-1, LTC-1, LTC3-1, LS3-1, LS4-1, LV-1, SH-1, LTV-1, STH-1, LM-1, SM-1, LTM-1, STM-1, LTCM-1, LTC3M-1, LMH-1, LTMH-1, LS3M-1, LS4M-1

CFM	Ak	OUTLET SIZE											
		24" x 14"	18" x 18"	20" x 20"	22" x 22"	24" x 24"	36" x 24"	30" x 30"	32" x 32"	44" x 24"	48" x 24"	44" x 28"	46" x 30"
		.72	.70	.86	1.04	1.24	1.86	1.94	2.20	2.27	2.48	2.65	2.97
150	Velocity Ps Throw	207 .002 12-8-7-5	215 .002 12-8-7-6										
200	Velocity Ps Throw	276 .004 14-10-8-7	287 .004 14-10-8-7	232 .003 13-9-8-6									
250	Velocity Ps Throw	346 .006 16-12-10-8	358 .007 17-12-10-8	290 .004 15-11-9-7	240 .003 14-10-8-7								
300	Velocity Ps Throw	415 .009 19-13-11-9	430 .010 19-13-11-9	348 .006 17-12-10-8	288 .004 16-12-10-8	242 .003 15-11-9-7							
350	Velocity Ps Throw	484 .012 21-15-12-10	502 .013 21-15-12-10	406 .009 19-14-11-9	336 .006 18-13-11-9	282 .004 17-12-10-8							
400	Velocity Ps Throw	553 .016 23-16-13-11	573 .017 23-16-13-11	465 .011 21-15-12-10	384 .008 20-14-12-9	323 .005 19-13-11-9	215 .002 16-11-10-8	206 .003 16-11-9-8					
500	Velocity Ps Throw	691 .025 26-18-15-12	717 .027 27-19-15-13	581 .018 25-17-14-12	480 .012 23-16-13-11	403 .009 22-15-13-10	269 .004 19-13-11-9	258 .004 19-13-11-9	227 .003 18-13-10-8	220 .003 18-12-10-8	202 .002 17-12-10-8		
600	Velocity Ps Throw	829 .036 30-21-17-14	860 .039 30-21-18-14	697 .026 28-20-16-13	576 .017 26-18-15-12	484 .012 25-17-14-12	323 .005 22-15-13-10	264 .004 20-14-12-10	272 .004 20-14-12-10	264 .004 20-14-12-10	242 .003 20-14-11-9	226 .003 19-13-11-9	202 .002 18-13-11-9
700	Velocity Ps Throw	968 .049 33-23-19-16	1004 .053 34-24-20-16	813 .035 31-22-18-15	672 .024 29-21-17-14	565 .017 28-19-16-13	376 .007 24-17-14-11	308 .005 22-16-13-11	318 .005 23-16-13-11	308 .005 22-16-13-11	282 .004 22-15-13-10	264 .004 21-15-12-10	236 .003 20-14-12-10
800	Velocity Ps Throw	1106 .065 36-26-21-17	1147 .069 37-26-21-17	929 .046 34-24-20-16	768 .031 32-23-19-15	645 .022 30-21-18-14	430 .010 26-18-15-12	413 .009 26-18-15-12	363 .007 25-17-14-12	352 .007 24-17-14-12	323 .005 24-17-14-11	302 .005 23-16-13-11	269 .004 22-16-13-11
900	Velocity Ps Throw			1045 .058 37-26-22-18	864 .039 35-24-20-16	726 .028 33-23-19-16	484 .012 28-20-17-13	396 .008 28-20-16-13	408 .009 27-19-16-13	396 .008 27-19-15-13	363 .007 26-18-15-12	339 .006 25-18-15-12	303 .005 24-17-14-11
	NC		35		30		20 - 25				<20		

Grilles and Registers



GAR

CFM	Ak	OUTLET SIZE												NC
		46" x 30"	46" x 32"	46" x 34"	46" x 36"	46" x 38"	46" x 40"	46" x 42"	46" x 44"	46" x 46"	48" x 44"	48" x 46"	48" x 48"	
		2.97	3.17	3.37	3.56	3.76	3.96	4.16	4.36	4.56	4.55	4.75	4.96	
700	Velocity Ps Throw	236 .003 20-14-12-10	221 .003 20-14-12-9	208 .002 20-14-11-9										
800	Velocity Ps Throw	269 .004 22-16-13-11	252 .003 22-15-13-10	238 .003 21-15-12-10	224 .003 21-15-12-10	213 .002 21-14-12-10	202 .002 20-14-12-10							
1000	Velocity Ps Throw	337 .006 26-18-15-12	316 .005 25-18-15-12	297 .005 25-18-15-12	281 .004 24-17-14-12	266 .004 24-17-14-11	252 .003 24-17-14-11	240 .003 23-16-13-11	230 .003 23-16-13-11	220 .003 22-16-13-11	220 .003 23-16-13-11	210 .002 22-16-13-10	202 .002 22-15-13-10	
1200	Velocity Ps Throw	404 .009 29-21-17-15	379 .008 29-20-17-14	356 .007 28-20-16-13	337 .006 28-20-16-13	319 .005 27-19-16-13	303 .005 27-19-16-13	289 .004 26-18-15-12	275 .004 26-18-15-12	263 .004 26-18-15-12	264 .004 26-18-15-12	252 .003 25-18-15-12	242 .003 25-17-14-12	
1400	Velocity Ps Throw	471 .012 33-23-19-16	442 .010 32-23-19-15	416 .009 32-22-18-15	393 .008 31-22-18-15	372 .007 30-21-18-14	353 .007 30-21-17-14	337 .006 29-21-17-14	321 .005 29-20-17-14	307 .005 28-20-16-13	308 .005 28-20-16-13	295 .005 28-20-16-13	282 .004 28-19-16-13	
1600	Velocity Ps Throw	539 .015 36-25-21-17	505 .013 35-25-21-17	475 .012 35-24-20-16	449 .011 34-24-20-16	425 .010 33-23-19-16	404 .009 33-23-19-15	385 .008 32-23-19-15	367 .007 32-22-18-15	351 .007 31-22-18-15	352 .007 31-22-18-15	337 .006 31-22-18-15	323 .005 30-21-18-14	
1800	Velocity Ps Throw	606 .019 39-28-23-19	568 .017 38-27-22-18	535 .015 37-26-22-18	505 .013 37-26-21-17	478 .012 36-25-21-17	454 .011 35-25-21-17	433 .010 35-24-20-16	413 .009 34-24-20-16	395 .008 34-24-20-16	396 .008 34-24-20-16	379 .008 33-23-19-16	363 .007 33-23-19-16	
2000	Velocity Ps Throw	673 .024 42-30-24-20	631 .021 41-29-24-19	594 .019 40-28-23-19	561 .017 40-28-23-19	531 .015 39-27-23-18	505 .013 38-27-22-18	481 .012 37-26-22-18	459 .011 37-26-21-17	439 .010 36-26-21-17	440 .010 36-26-21-17	421 .009 36-25-21-17	403 .009 35-25-20-17	
2400	Velocity Ps Throw	808 0.34 48-33-28-23	757 .030 47-33-27-22	713 .027 46-32-27-22	673 .024 45-31-26-21	638 .021 44-31-26-21	606 .019 43-30-25-20	577 .018 42-30-25-20	551 .016 42-29-24-20	527 .015 41-29-24-19	528 .015 41-29-24-19	505 .013 41-29-24-19	484 .012 40-28-23-19	
2800	Velocity Ps Throw	942 .047 53-37-31-25	884 .041 52-36-30-24	832 .036 51-36-29-24	785 .033 50-35-29-23	744 .029 49-34-28-23	707 .026 48-34-28-23	673 .024 47-33-27-22	643 .022 46-33-27-22	615 .020 46-32-27-22	616 .020 46-32-27-22	589 .018 45-32-26-21	565 .017 44-31-26-21	
3000	Velocity Ps Throw	1010 .054 55-39-32-26	947 .047 54-38-31-26	891 .042 53-37-31-25	842 .037 52-37-30-25	797 .034 51-36-30-24	757 .030 50-35-29-24	721 .027 49-35-29-23	689 .025 49-34-28-23	659 .023 48-34-28-23	660 .023 48-34-28-23	631 .021 47-33-27-22	605 .019 47-33-27-22	
	NC		35 - 40				30 - 35							



For more product information visit us at www.metalaires.com



GAR - Grilles and Registers

Series L - Performance

Models L-1, S-1, LT-1, ST-1, LTC-1, LTC3-1, LS3-1, LS4-1, LV-1, SH-1, LTV-1, STH-1, LM-1, SM-1, LTM-1, STM-1, LTCM-1, LTC3M-1, LMH-1, LTMH-1, LS3M-1, LS4M-1

CFM	Ak	OUTLET SIZE												NC		
		46" x 30"	46" x 32"	46" x 34"	46" x 36"	46" x 38"	46" x 40"	46" x 42"	46" x 44"	46" x 46"	48" x 44"	48" x 46"	48" x 48"			
		2.97	3.17	3.37	3.56	3.76	3.96	4.16	4.36	4.56	4.55	4.75	4.96			
2000	Velocity Ps Throw	673 .024 42-30-24-20	631 .021 41-29-24-19	594 .019 40-28-23-19	561 .017 40-28-23-19	531 .015 39-27-23-18	505 .013 38-27-22-18	481 .012 37-26-22-18	459 .011 37-26-21-17	439 .010 36-26-21-17	440 .010 36-26-21-17	421 .009 36-25-21-17	403 .009 35-25-20-17	25 - 30		
2200	Velocity Ps Throw	741 .029 45-32-26-21	694 .025 44-31-26-21	653 .023 43-30-25-20	617 .020 42-30-25-20	585 .018 41-29-24-20	555 .016 41-29-24-19	529 .015 40-28-23-19	505 .013 39-28-23-19	483 .012 39-27-23-18	484 .012 39-27-23-18	463 .011 38-27-22-18	444 .010 38-26-22-18			
2400	Velocity Ps Throw	808 .034 48-33-28-23	757 .030 47-33-27-22	713 .027 46-32-27-22	673 .024 45-31-26-21	638 .021 44-31-26-21	606 .019 43-30-25-20	577 .018 42-30-25-20	551 .016 42-29-24-20	527 .015 41-29-24-19	528 .015 41-29-24-19	505 .013 41-29-24-19	484 .012 40-28-23-19			
2600	Velocity Ps Throw	875 .040 50-35-29-24	820 .036 49-35-29-23	772 .031 48-34-28-23	729 .028 47-33-27-22	691 .025 46-33-27-22	656 .023 46-32-26-22	625 .021 45-32-26-21	597 .019 44-31-26-21	571 .017 43-31-25-21	572 .017 44-31-25-21	547 .016 43-30-25-20	524 .014 42-30-25-20			
2800	Velocity Ps Throw	942 .047 53-37-31-25	884 .041 52-36-30-24	832 .036 51-36-29-24	785 .033 50-35-29-23	744 .029 49-34-28-23	707 .026 48-34-28-23	673 .024 47-33-27-22	643 .022 46-33-27-22	615 .020 46-32-27-22	616 .020 46-32-27-22	589 .018 45-32-26-21	565 .017 44-31-26-21			
3000	Velocity Ps Throw	1010 .054 55-39-32-26	947 .047 54-38-31-26	891 .042 53-37-31-25	842 .037 52-37-30-25	797 .034 51-36-30-24	757 .030 50-35-29-24	721 .027 49-35-29-23	689 .025 49-34-28-23	659 .023 48-34-28-23	660 .023 48-34-28-23	631 .021 47-33-27-22	605 .019 47-33-27-22			
3200	Velocity Ps Throw	1077 .061 58-41-34-27	1010 .054 56-40-33-27	950 .048 55-39-32-26	898 .043 54-38-32-26	850 .038 53-37-31-25	808 .034 52-37-30-25	769 .031 52-36-30-24	734 .028 51-36-30-24	702 .026 50-35-29-24	704 .026 50-35-29-24	673 .024 49-35-29-23	645 .022 49-34-28-23			
3400	Velocity Ps Throw	1144 .069 60-42-35-28	1073 .061 59-41-34-28	1010 .054 58-40-33-27	954 .048 57-40-33-27	904 .043 56-39-32-26	858 .039 55-38-32-26	817 .035 54-38-31-25	780 .032 53-37-31-25	746 .029 52-37-30-25	748 .029 52-37-30-25	715 .027 51-36-30-24	685 .025 51-36-29-24			
3600	Velocity Ps Throw		1136 .068 61-43-35-29	1069 .060 60-42-35-28	1010 .054 59-41-34-28	957 .048 58-41-34-27	909 .044 57-40-33-27	866 .040 56-39-32-26	826 .036 55-39-32-26	790 .033 54-38-31-26	792 .033 54-38-31-26	757 .030 53-38-31-25	726 .028 53-37-31-25		30 - 35	
3800	Velocity Ps Throw		1199 .076 63-44-37-30	1129 .067 62-44-36-29	1066 .060 61-43-35-29	1010 .054 60-42-35-28	959 .049 59-41-34-28	834 .037 56-39-32-26	872 .040 57-40-33-27	834 .037 56-39-32-27	836 .037 56-39-32-27	799 .034 55-39-32-26	766 .031 55-38-32-26			
4000	Velocity Ps Throw			1188 .074 64-45-37-30	1122 .066 63-44-37-30	1063 .060 62-43-36-29	1010 .054 61-43-35-29	962 .049 60-42-35-28	918 .044 59-41-34-28	878 .041 58-41-34-27	880 .041 58-41-34-27	842 .037 57-40-33-27	806 .034 56-40-33-27			
4200	Velocity Ps Throw				1178 .073 65-46-38-31	1116 .066 64-45-37-30	1060 .059 63-44-36-30	922 .045 60-42-35-28	964 .049 61-43-35-29	922 .045 60-42-35-28	924 .045 60-42-35-28	884 .041 59-42-34-28	847 .038 58-41-34-28			
4400	Velocity Ps Throw					1169 .072 66-46-38-31	1111 .065 65-45-38-31	1058 .059 64-45-37-30	1010 .054 63-44-36-30	966 .049 62-43-36-29	968 .049 62-43-36-29	926 .045 61-43-35-29	887 .042 60-42-35-28			
4600	Velocity Ps Throw						1161 .071 67-47-39-31	1101 .054 65-46-38-31	1056 .059 65-45-37-31	1010 .054 64-45-37-30	1012 .054 64-45-37-30	968 .049 63-44-36-30	927 .045 62-43-36-29			35 - 40



Performance Notes for Series L

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic feet per minute (air)
- fpm - Velocity of air stream in feet per minute
- Ps - Static pressure = Pt - Pv (inches of water column)
- Throw - Non-isothermal horizontal throw (supply air temperature 20°F colder than average room air temperature) values are for 50 fpm velocities for 1, 2, 3, and 4-way air patterns
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak - Area Factors



Series L - Specifications

Supply - Curved Blade Grilles – Aluminum/Model L – Long Blades/Model S – Short Blades

Air Outlets shall be model L (long blades) or S (short blades) manufactured by METALAIRE®. Units shall be curved blade supply grilles of aluminum construction and with an extruded aluminum border and curved deflection blades.

Rear Deflection Blades (Optional)

Outlets shall include rear deflection blades adjustable from the face (1-way model LV-1 or SV-1 or 2-way model LTV-1 or STH-1).

Units shall be available in 1, 2, 3, or 4 way directional patterns. Pattern shall be adjustable from full horizontal to vertical. The units shall be the size and quantity as outlined in the plans and specifications.

Border shall be 1 1/4" wide with aerodynamically shaped deflector blades on .9" center. Deflector blades shall be individually adjustable. Units shall be designed for surface mounting applications and be provided with screw holes on the face of the device.

Blades shall pivot in friction mounting retainers. Retainers shall hold the deflector blade position throughout the specified operating range of the device. Metal friction wires are not acceptable.

Damper Accessories (Optional)

- Optional opposed blade damper shall be constructed of steel (Model OBD) or aluminum (Model OBDA). Damper must be operable from the face of the diffuser.
- An integral multi-shutter damper shall be provided. Damper shall be operated from the face of the diffuser.
- An integral multi-shutter damper shall be provided (1-way model LMH-1 or 2-way opposite model LTMH-1). Damper handle shall protrude through the border of the grille.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours



GAR - Grilles and Registers

Series L - Model Specification Guide

Supply - Curved Blade Grille Series L - Aluminum

Model	Available Neck	Available Finishes	Available Options		
Single Deflection	6" thru 48"	Standard	OBD	Opposed Blade Damper - Steel	
L-1 - One Way Long Blades S-1 - One Way Short Blades LT-1 - Two Way Long Blades ST-1 - Two Way Short Blades LTC-1 - Two Way Corner Blow Pattern LTC3-1 - Three Way Corner Blow Pattern LS3-1 - Three Way Blow Pattern LS4-1 - Four Way Blow Pattern		01 - White	OBDA	Opposed Blade Damper - Aluminum	
		Optional	L9	Equalizing Grid	
		02 - Aluminum	PF	Plaster Frame	
		03 - Black			
		24 - Mill			
		28 - Custom Color			
		Double Deflection			
		LV-1 - One Way Long Blades with Rear Vertical Blades SH-1 - One Way Short Blades with Rear Horizontal Blades LTV-1 - Two Way Long Blades with Rear Vertical Blades STH-1 - Two Way Short Blades with Rear Horizontal Blades			

Supply - Curved Blade Grille- Multi Shutter Damper Series L - Aluminum

Model	Available Neck	Available Finishes	Available Options		
Single Deflection	6" thru 24"	Standard	L9	Equalizing Grid	
LM-1 - One Way Long Blades with Multi-Shutter Damper SM-1 - One Way Short Blades with Multi-Shutter Damper LTM-1 - Two Way Long Blades with Multi-Shutter Damper STM-1 - Two Way Short Blades with Multi-Shutter Damper LMH-1 - One Way Long Blades with Horizontal Multi-Shutter Damper LTMH-1 - Two Way Long Blades with Horizontal Multi-Shutter Damper LTCM-1 - One Way Corner Blow with Multi-Shutter Damper LTC3M-1 - Three Way Corner Blow with Multi-Shutter Damper LS3M-1 - Three Way Blow Pattern with Multi-Shutter Damper LS4M-1 - Four Way Blow Pattern with Multi-Shutter Damper		01 - White	PF	Plaster Frame	
		Optional			
		02 - Aluminum			
		03 - Black			
		24 - Mill			
		28 - Custom Color			
		Double Deflection			
		LTV-1 - Two Way Long Blades with Rear Vertical Blades STH-1 - Two Way Short Blades with Rear Horizontal Blades			

Supply - Curved Blade Grille- Horizontal Multi-Shutter Damper with Handle Through Border Series L - Aluminum

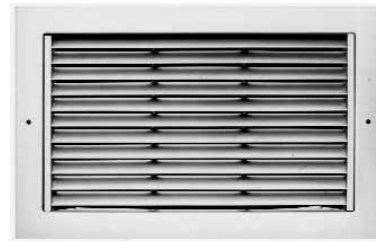
Model	Available Neck	Available Finishes	Available Options	
LMH-1 - One Way Long Blades with Multi-Shutter Damper LTMH-1 - Two Way Opposite Long Blades with Multi-Shutter Damper	6" thru 24"	Standard	L9	Equalizing Grid
		01 - White	PF	Plaster Frame
		Optional		
		02 - Aluminum		
		03 - Black		
		24 - Mill		
		28 - Custom Color		



Return and Exhaust Grilles Series RH Aluminum

Product Details

- ★ The RH series of return grilles combine the advantages of corrosion resistant construction and durability with attractive design, solid performance, and competitive pricing
- ★ This economical series of rollformed aluminum return grilles and registers are available in a number of borders to integrate into a wide range of ceiling systems
- ★ The RH is an excellent choice for exhaust and return applications
- ★ See page GAR-63 for performance

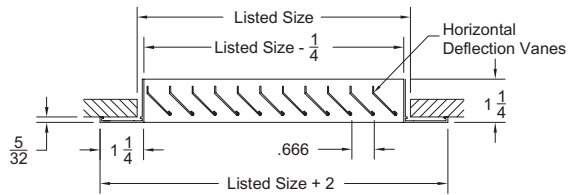


Model RH-1 Shown

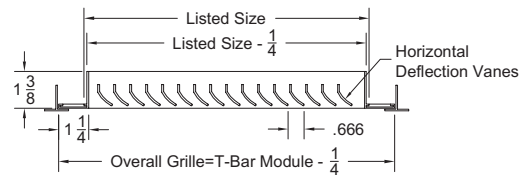
Standard Finish: 01 White

Sideview, dimensions are in inches

Return and Exhaust Grille - Surface Mount Model RH-1



Return and Exhaust Grille - T-bar Lay-in Model RH-6



Modules 12 x 12 thru 48 x 48

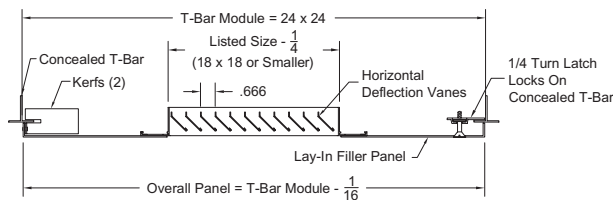
T-Bar Module	12 x 12	24 x 12	24 x 24	48 x 24	36 x 36	48 x 48
Nominal Neck Size	10 x 10	22 x 10	22 x 22	46 x 22	34 x 34	46 x 46

Grilles and Registers

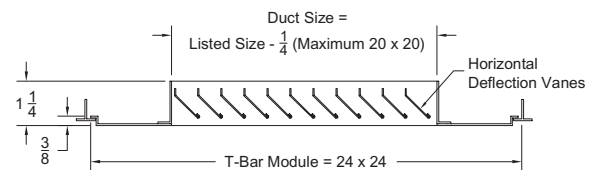


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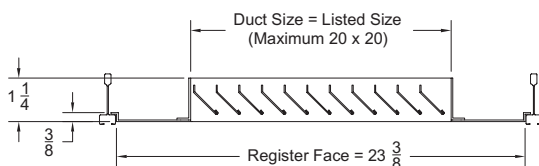
Return and Exhaust Grille - Concealed Spline Model RH-7



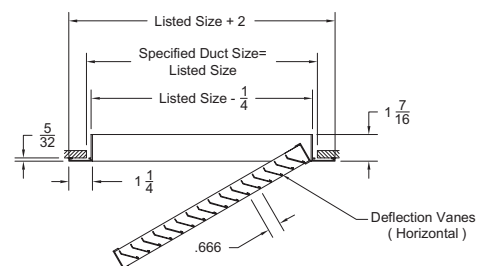
Return and Exhaust Grille - Tegular T-bar Model RH-8



Return and Exhaust Grille - Donn Finline Model RH-9



Return and Exhaust Grille - Surface Mount Hinged Face Model RH-H-1



GAR - Grilles and Registers

Return Grilles → Series RHE → Extruded Aluminum

Product Details

- ★ The series RHE is our premier extruded aluminum product, offering superior construction and high performance. This unit is built for durability
- ★ The series RHE is available with an optional hinge to allow access behind the grille face
- ★ Series RHE is an excellent choice for projects requiring exhaust or return applications
- ★ See page GAR-63 for performance

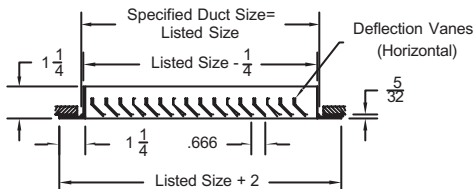


Model RHE-1 Shown

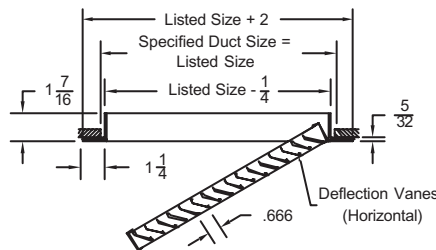
Standard Finish: 01 White

Sideview, dimensions are in inches

**Return Grille - Surface Mount
Model RHE-1**



**Return Grille - Surface Mount - Hinged Face
Model RHE-H-1**



Notes for Models RH (-1, -6, -7, -8, -9), RH-H-1

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 01 White Optional Finish 02 Aluminum paint 03 Black 24 Mill finish 28 Custom color	OBD - Steel - Opposed Blade Damper.....208 OBDA - Aluminum - Opposed Blade Damper...208 L9 - Equalizing Grid208 PF - Plaster Frame209	Reverse Sizes (blades parallel to short side) Hinged Core Insect Screen	• Odd/fractional sizes are available • Oversized units made in multiple sections, each with full flanges. Mullion strips provided for joining units in field

Notes for Models RHE-1, RHE-H-1

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 01 White Optional Finish 02 Aluminum paint 03 Black 04 Clear Anodized 24 Mill finish 28 Custom color	OBD - Steel - Opposed Blade Damper.....208 OBDA - Aluminum - Opposed Blade Damper...208 L9 - Equalizing Grid208 PF - Plaster Frame209	Reverse Sizes (blades parallel to short side) Hinged Core Insect Screen	• All sizes have extruded aluminum frames and blades • Odd/fractional sizes are available • Oversized units made in multiple sections, each with full flanges. Mullion strips provided for joining units in the field

Grilles and Registers



GAR

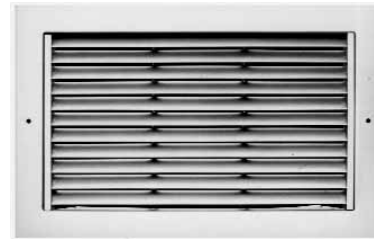
GAR - Grilles and Registers

7/2006

Return Grilles Series SRH Steel

Product Details

- ✦ The series SRH is designed for applications requiring steel construction
- ✦ This economical series of return grilles and registers is available a number of borders to integrate into a wide range of ceiling system
- ✦ Series SRH is an excellent choice for exhaust and return applications



Model SRH-1 Shown

Standard Finish: 01 White

Sideview, dimensions are in inches

<p>Return Grille - Surface Mount Model SRH-1</p>	<p>Return Grille - T-bar Lay-in Model SRH-6</p>
<p>Return Grille - Surface Mount - Hinged Face Model SRH-H-1</p>	

Grilles and Registers



GAR

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish 02 Aluminum paint 03 Black 28 Custom color</p>	<p>OBD - Steel - Opposed Blade Damper208 OBDA - Aluminum - Opposed Blade Damper .208 L9 - Equalizing Grid208 PF - Plaster Frame209</p>	<p>Reverse Sizes (blades parallel to short side) Hinged Core Insect Screen</p>	<ul style="list-style-type: none"> • Frame and blades are steel • Odd/fractional sizes are available • Oversized units made in multiple sections, each with full flanges. Mullion strips provided for joining units in the field

GAR - Grilles and Registers

Series RH, SRH & RHE - Performance

Models RH (-1, -6, -7, -8, -9), RH-H-1, RHE-1, RHE-H-1, SRH (-1, -6), SRH-H-1

CFM	Ak	NECK SIZE															
		10" x 6"	12" x 6"	10" x 8"	12" x 8"	18" x 6"	12" x 12"	16" x 12"	18" x 12"	20" x 12"	24" x 12"	18" x 18"	20" x 18"	20" x 20"	24" x 18"		
		.40	.47	.53	.63	.71	.95	1.27	1.42	1.58	1.90	2.14	2.37	2.63	2.85		
100	Nk Vel Ps	240 .007	200 .005														
150	Nk Vel Ps	360 .016	300 .011	270 .009	225 .006	200 .005											
200	Nk Vel Ps	480 .029	400 .020	360 .016	300 .011	267 .009	200 .005										
250	Nk Vel Ps	600 .046	500 .032	450 .026	375 .018	333 .014	250 .008										
300	Nk Vel Ps	720 .066	600 .046	540 .037	450 .026	400 .020	300 .011	225 .006	200 .005								
350	Nk Vel Ps	840 .089	700 .062	630 .050	525 .035	467 .028	350 .016	263 .009	233 .007	210 .006							
400	Nk Vel Ps		800 .081	720 .066	600 .046	533 .036	400 .020	300 .011	267 .009	240 .007	200 .005						
450	Nk Vel Ps		900 .103	810 .083	675 .058	600 .046	450 .026	338 .014	300 .011	270 .009	225 .006	200 .005					
500	Nk Vel Ps				750 .071	667 .056	500 .032	375 .018	333 .014	300 .011	250 .008	222 .006	200 .005				
550	Nk Vel Ps				825 .086	733 .068	550 .038	413 .022	367 .017	330 .014	275 .010	244 .008	220 .006				
600	Nk Vel Ps				900 .103	800 .081	600 .046	450 .026	400 .020	360 .016	300 .011	267 .009	240 .007	216 .006	200 .005		
650	Nk Vel Ps					867 .095	650 .054	488 .030	433 .024	390 .019	325 .013	289 .011	260 .009	234 .007	217 .006		
700	Nk Vel Ps						700 .062	525 .035	467 .028	420 .022	350 .016	311 .012	280 .010	252 .008	233 .007		
750	Nk Vel Ps						750 .071	563 .040	500 .032	450 .026	375 .018	333 .014	300 .011	270 .009	250 .008		
	NC	40					35			30				25			

CFM	Ak	NECK SIZE													
		22" x 22"	30" x 18"	24" x 24"	36" x 18"	30" x 24"	36" x 24"	30" x 30"	36" x 30"	48" x 24"	42" x 30"	42" x 36"	48" x 36"	48" x 42"	48" x 48"
		3.19	3.56	3.80	4.27	4.75	5.70	5.94	7.12	7.60	8.31	9.67	11.40	13.30	15.20
700	Nk Vel Ps	208 .005													
800	Nk Vel Ps	238 .007	213 .006	200 .005											
1000	Nk Vel Ps	298 .011	267 .009	250 .008	222 .006	200 .005									
1200	Nk Vel Ps	357 .016	320 .013	300 .011	267 .009	240 .007	200 .005								
1400	Nk Vel Ps	417 .022	373 .017	350 .015	311 .012	280 .010	233 .007	224 .006							
1600	Nk Vel Ps	476 .028	427 .023	400 .020	356 .016	320 .013	267 .009	256 .008	213 .006	200 .005					
2000	Nk Vel Ps	595 .044	533 .036	500 .031	444 .025	400 .020	333 .014	320 .013	267 .009	250 .008	229 .007				
2500	Nk Vel Ps	744 .069	667 .056	625 .049	556 .039	500 .031	417 .022	400 .020	333 .014	313 .012	286 .010	238 .007	208 .005		
3000	Nk Vel Ps	893 .100	800 .080	750 .070	667 .056	600 .045	500 .031	480 .029	400 .020	375 .018	343 .015	286 .010	250 .008	214 .006	
3500	Nk Vel Ps			875 .096	778 .076	700 .061	583 .043	560 .039	467 .027	438 .024	400 .020	333 .014	292 .011	250 .008	219 .006
4000	Nk Vel Ps				889 .099	800 .080	667 .056	640 .051	533 .036	500 .031	457 .026	381 .018	333 .014	286 .010	250 .008
4500	Nk Vel Ps					900 .101	750 .070	720 .065	600 .045	563 .040	514 .033	429 .023	375 .018	321 .013	281 .010
5000	Nk Vel Ps						833 .087	800 .080	667 .056	625 .049	571 .041	476 .028	417 .022	357 .016	313 .012
6000	Nk Vel Ps							800 .080	750 .070	686 .059	571 .041	500 .031	429 .023	375 .018	
	NC	40					35				30				25

For performance notes, see page GAR-64

Grilles and Registers



GAR

Performance Notes for Series RH, SRH & RHE

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic Feet per Minute (air)
- Nk Vel - Neck Velocity of air stream in Feet Per Minute
- Ps - Negative Static pressure (inches of water column)
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak - Area Factors

Series RH, SRH & RHE - Specifications

Return Grilles – Aluminum/*Series RH*

- RH-1 - Surface Mounted
- RH-6 - T-bar Lay-in
- RH-7 - Concealed Spline
- RH-8 - Tegral T-bar
- RH-9 - Donn Finline Lay-in

Air Inlets shall be model RH manufactured by METALAIRES. Units shall be return or exhaust grilles of aluminum construction and with an extruded aluminum border and a single set of fixed deflection blades. The units shall be the size and quantity as outlined in the plans and specifications.

Border shall be 1 1/4" wide with aerodynamically shaped deflector blades on .666" centers set at 45°. Units shall be designed to integrate into the specified ceiling system.

Return Grilles – Extruded Aluminum/*Series RHE*

- RHE-1 - Surface Mounted
- RHE-H-1 - Surface Mounted with hinged face

Air Inlets shall be model RHE-H manufactured by METALAIRES. Units shall be return or exhaust grilles constructed of heavy extruded aluminum. The units shall be the size and quantity as outlined in the plans and specifications.

Hinged Face (Optional)

Units (model RHE-H) shall include a hinged face allowing access to concealed equipment. The units shall be the size and quantity as outlined in the plans and specifications.

Border shall be 1 1/4" wide with aerodynamically shaped fixed deflector blades on .666" centers set at 45°. Units shall be designed for surface mounting applications and be provided with screw holes on the face of the device.

Return Grilles – Steel/*Series SRH*

- SRH-1 - Surface Mounted
- SRH-6 - T-bar Lay-in
- SRH-H-1 - Surface Mounted – Hinged Face

Air Inlets shall be model SRH manufactured by METALAIRES. Units shall be return or exhaust grilles constructed of steel with a single set of fixed deflector blades. The units shall be the size and quantity as outlined in the plans and specifications.

Border shall be 1 1/4" wide with aerodynamically shaped deflector blades on .666" centers set at 45°. Units shall be designed to integrate into the specified ceiling system.

Hinged Face (Optional)

Units (model SRH-H) shall include a hinged face allowing access to concealed equipment. The units shall be the size and quantity as outlined in the plans and specifications.

The units shall be the size and quantity as outlined in the plans and specifications.

Border shall be 1 1/4" wide with aerodynamically shaped deflector blades on .666" centers set at 45°. Deflector blades shall be fixed. Units shall be designed to integrate into the specified ceiling system.

Damper Accessories (Optional)

Optional opposed blade damper shall be constructed of steel (Model OBD) or aluminum (Model OBDA). Damper must be operable from the face of the diffuser.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.



Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaline cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

Series RH, SRH & RHE - Model Specification Guide

Sidewall Return Grille - Horizontal Blades

Series RH - Aluminum

Series RHE - Extruded Aluminum

Series SRH - Steel

	Model	Available Neck	Available Finishes	Available Options	
Aluminum	RH-1 - Surface Mount	6" thru 48"	Standard	OBD	Opposed Blade Damper - Steel
	RH-H-1 - Surface Mount - Hinged Core		01 - White	OBDA	Opposed Blade Damper - Aluminum
Extruded Aluminum	RHE-1 - Surface Mount		Optional	L9	Equalizing Grid
	RHE-H-1 - Surface Mount - Hinged Core		02 - Aluminum	PF	Plaster Frame
Steel	SRH-1 - Surface Mount		03 - Black	IS	Insect Screen
	SRH-H-1 - Surface Mount Hinged Core		24 - Mill		
			28 - Custom Color		

Sidewall Return Grille - Horizontal Blades

Series RH - Aluminum

Series SRH - Steel

For T-bar Lay-in Ceiling Grid Applications

	Model	Available Neck	Module	Available Finishes	Available Options	
Aluminum	RH-6 - T-bar Lay-in Ceilings	6" thru 48"	12" x 12"	Standard	OBD	Opposed Blade Damper - Steel
	RH-7 - Concealed Spline Ceilings		24" x 12"	01 - White	OBDA	Opposed Blade Damper - Aluminum
	RH-8 - Tegular Ceilings		24" x 24"	Optional	L9	Equalizing Grid
	RH-9 - Donn Fineline Ceilings		36" x 24"	02 - Aluminum	IS	Insect Screen
Steel	SRH-6 - T-bar Lay-in Ceilings		36" x 36"	03 - Black		
			48" x 24"	24 - Mill		
		48" x 48"	28 - Custom Color			



GAR - Grilles and Registers

7/2006

➔ Heavy Duty Return Grille ➔ Model HDRH ➔ Extruded Aluminum

Product Details

- ✪ The HDRH is an excellent choice for projects that require a grille or register to withstand moderate physical abuse. Applications for the series HDRH include common areas in schools, hospitals, and other high traffic areas
- ✪ The HDRH is made from aluminum material equal or greater than 14 gauge steel. Outer borders are thicker than those of standard commercial grilles and registers. Deflector blades are assembled in the outer border using heavy alloy metal screws for rigidity
- ✪ Model HDRH is an excellent choice for exhaust or return applications in heavy traffic public areas

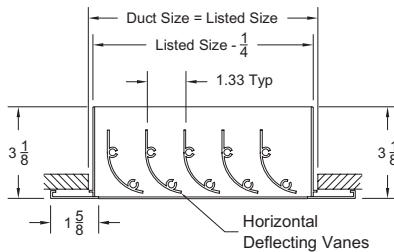


Model HDRH-1 Shown

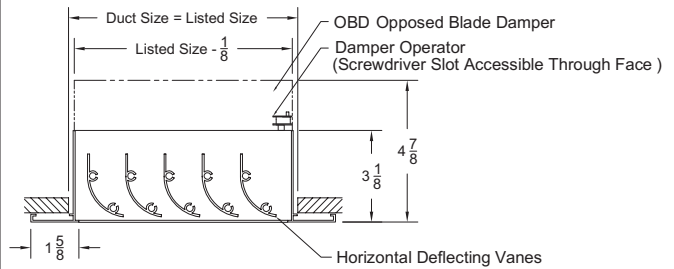
Standard Finish: 01 White

Sideview, dimensions are in inches

**Heavy Duty Return Grille - Surface Mount
Model HDRH-1**



**Heavy Duty Return Grille - Surface Mount
With Opposed Blade Damper
Model HDRHD-1**



1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 01 White Optional Finish: 03 Black 04 Clear Anodized	OBD - Steel - Opposed Blade Damper.....208 OBDA - Aluminum - Opposed Blade Damper...208 L9 - Equalizing Grid208	Reverse Sizes (blades parallel to short side) Insect Screen	<ul style="list-style-type: none"> • Frame and blades are aluminum • Oversized units made in multiple sections, each with full flanges. Mullion strips provided for joining units in the field

Model HDRH - Performance

Models HDRH-1, HDRHD-1

CFM	Ak	NECK SIZE													
		12" x 12"	16" x 16"	18" x 18"	20" x 20"	24" x 24"	24" x 30"	32" x 24"	36" x 32"	36" x 36"	36" x 42"	36" x 48"	42" x 42"	42" x 48"	48" x 48"
500	Nk Vel Ps	.82 .014	1.78 .004	1.85 .003	2.85	3.29	5.76	4.94	6.58	7.40	8.64	9.87	10.08	11.84	13.16
900	Nk Vel Ps	900 .045	506 .014	400 .009	324 .006	225 .003									
1500	Nk Vel Ps		844 .040	667 .025	540 .016	375 .008	300 .005	281 .004							
2000	Nk Vel Ps			889 .044	720 .029	500 .014	400 .009	375 .008	250 .003	222 .003					
3000	Nk Vel Ps					750 .031	600 .020	563 .018	375 .008	333 .006	286 .005	250 .003	245 .003	214 .003	
4000	Nk Vel Ps						800 .036	750 .031	500 .014	444 .011	381 .008	333 .006	327 .006	286 .005	250 .003
5000	Nk Vel Ps								625 .022	556 .017	476 .013	417 .010	408 .009	357 .007	313 .005
	NC						35					30			25

For performance notes, see page GAR-67

Performance Notes for Model HDRH

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic Feet per Minute (air)
- Nk Vel - Neck Velocity of air stream in Feet Per Minute
- Ps - Negative Static pressure (inches of water column)
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak - Area Factors

Model HDRH - Specifications

Return Grilles – Heavy Duty - Extruded Aluminum

Air Inlets shall be model HDRH manufactured by METALAIRE®. Units shall be heavy duty return or exhaust grilles of extruded aluminum construction. Extrusion thickness shall be equal or greater than the equivalent of 14 gauge steel. Units shall be designed to withstand moderate physical abuse. The units shall be the size and quantity as outlined in the plans and specifications.

Border shall be 1 5/8" wide with aerodynamically shaped curved blades on 1 1/3" centers. Deflector blades shall be fixed in place heavy alloy metal screws. Units shall be designed for surface mounting applications and be provided with counter sunk screw holes on the face of the device.

Damper Accessories (Optional)

Optional opposed blade damper shall be constructed of steel (Model OBD) or aluminum (Model OBDA). Damper must be operable from the face of the diffuser.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

Model HDRH - Model Specification Guide

Return - Heavy Duty - Horizontal Blades

Series HDRH - Extruded Aluminum

Model HDRH-1 - 45 Degree Louver Grille Hinged Core

Model	Available Neck	Available Finishes	Available Options	
HDRH-1 - Surface Mount	6" thru 48"	Standard	OBD	Opposed Blade Damper - Steel
		01 - White	OBDA	Opposed Blade Damper - Aluminum
		Optional	L9	Equalizing Grid
		02 - Aluminum	PF	Plaster Frame
		03 - Black	IS	Insect Screen
		24 - Mill		
		28 - Custom Color		



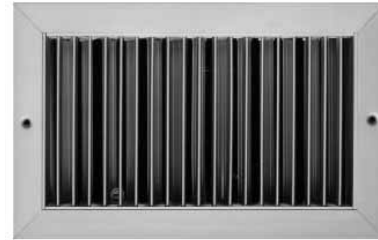
GAR - Grilles and Registers

7/2006

- ➔ Return Grilles ➔ Series 4002R ➔ Extruded Aluminum
- ➔ Series 4002RS ➔ Steel

Product Details

- ⊛ The series 4002R return grilles and registers are designed to match the 4000 series supply models. These units are constructed of heavy aluminum. The 4002RS is constructed with a heavy steel border and steel deflector blades
- ⊛ The deflector blades for series 4002R are fixed and available in 0° or 45°. The deflector blades for series 4002RS are fixed and available in 0° or 40° settings



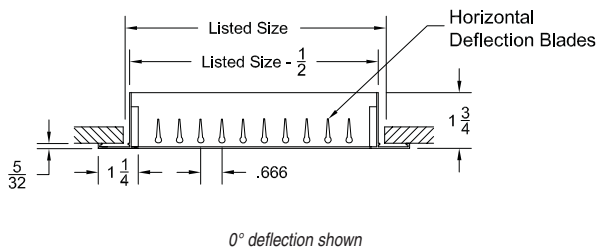
Model 4002R-1 Shown

Standard Finish: 01 White

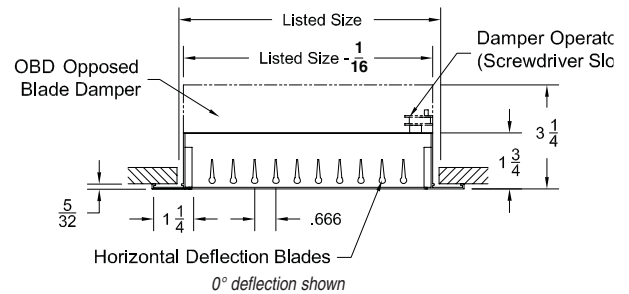
Extruded Aluminum

Sideview, dimensions are in inches

Single Deflection Sidewall Return Grille - Surface Mount Extruded Aluminum
 Model V4002R-1
 Model H4002R-1



Single Deflection Sidewall Return Register - Surface Mount With Opposed Blade Damper - Extruded Aluminum
 Model V4002RD-1
 Model H4002RD-1



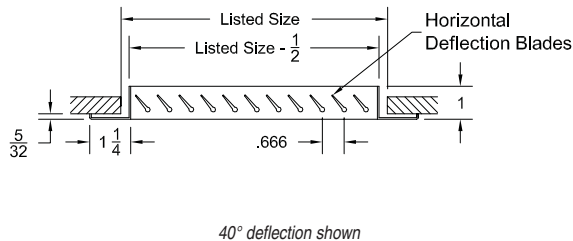
Grilles and Registers



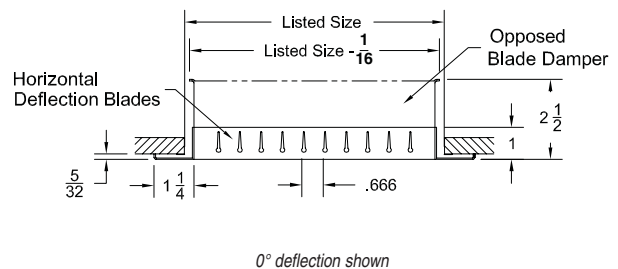
GAR

Steel

Single Deflection Sidewall Return Grille - Surface Mount - Steel
 Model V4002RS-1
 Model H4002RS-1

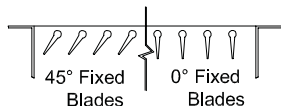


Single Deflection Sidewall Return Register - Surface Mount With Opposed Blade Damper - Extruded Aluminum
 Model V4002RSD-1
 Model H4002RSD-1



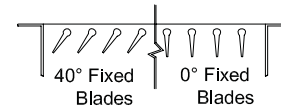
Series 4002R - Aluminum

Deflector Blades Are Available With 0° or 45° Fixed Settings



Series 4002RS - Steel

Deflector Blades Are Available With 0° or 40° Fixed Settings



GAR - Grilles and Registers

Notes for Models H4002R-1, V4002R-1, H4002RD-1, V4002RD-1

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 01 White Optional Finish 02 Aluminum paint 03 Black 04 Anodized 24 Mill finish 28 Custom color	OBD - Steel - Opposed Blade Damper208 OBDA - Aluminum - Opposed Blade Damper .208 L9 - Equalizing Grid208 PF - Plaster Frame209	Insect Screen	<ul style="list-style-type: none"> • Frame and blades are aluminum • Blades are at either 0° or 45° • Oversized units made in multiple sections, each with full flanges. Mullion strips provided for joining units in the field • Can be ordered to fit standard T-bar grid sizes • Can be ordered with smaller neck sizes in T-bar panels

Notes for Models H4002RS-1, V4002RS-1, H4002RSD-1, V4002RSD-1

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 01 White Optional Finish 03 Black 04 Anodized 28 Custom color	OBD - Steel - Opposed Blade Damper208 OBDA - Aluminum - Opposed Blade Damper .208 L9 - Equalizing Grid208 PF - Plaster Frame209	Insect Screen	<ul style="list-style-type: none"> • Frame and blades are steel • Blades are at either 0° or 40° • Oversized units made in multiple sections, each with full flanges. Mullion strips provided for joining units in the field • Can be ordered to fit standard T-bar grid sizes

Series 4002R - Performance

Models H4002R-1, V4002R-1, H4002RD-1, V4002RD-1, H4002RS-1, V4002RS-1, H4002RSD-1, V4002RSD-1

CFM	AK	NECK SIZE														NC
		6" x 4"	8" x 4"	10" x 4"	14" x 4"	12" x 6"	14" x 6"	16" x 6"	14" x 8"	18" x 8"	20" x 8"	24" x 8"	26" x 8"	24" x 10"	24" x 12"	
50	Nk Vel Ps .16 .014	300 .014	225 .008	.27	.38	.49	.58	.66	.77	.99	1.10	1.32	1.43	1.65		NC
100	Nk Vel Ps .056 .010	600 .056	450 .031	360 .020	257 .010	200 .006										
150	Nk Vel Ps .126 .012	900 .126	675 .071	540 .045	386 .023	300 .014	257 .010	225 .008								
200	Nk Vel Ps .126 .012		900 .126	720 .081	514 .041	400 .025	343 .018	300 .014	257 .010	200 .006						20
250	Nk Vel Ps .064 .012				643 .064	500 .039	429 .029	375 .022	321 .016	250 .010	225 .008					
300	Nk Vel Ps .093 .012				771 .093	600 .056	514 .041	450 .031	386 .023	300 .014	270 .011	225 .008	208 .007			
350	Nk Vel Ps .126 .012				900 .126	700 .076	600 .056	525 .043	450 .031	350 .019	315 .015	263 .011	242 .009	210 .007		
400	Nk Vel Ps .100 .012					800 .100	686 .073	600 .056	514 .041	400 .025	360 .020	300 .014	277 .012	240 .009	200 .006	
450	Nk Vel Ps .093 .012					900 .126	771 .093	675 .071	579 .052	450 .031	405 .026	338 .018	312 .015	270 .011	225 .008	
500	Nk Vel Ps .114 .012						857 .114	750 .087	643 .064	500 .039	450 .031	375 .022	346 .019	300 .014	250 .009	
550	Nk Vel Ps .106 .012							825 .106	707 .078	550 .047	495 .038	413 .026	381 .023	330 .017	275 .011	
600	Nk Vel Ps .093 .012							900 .126	771 .093	600 .056	540 .045	450 .031	415 .027	360 .020	300 .013	
650	Nk Vel Ps .109 .012								836 .109	650 .066	585 .053	488 .037	450 .031	390 .024	325 .016	
700	Nk Vel Ps .126 .012								900 .126	700 .076	630 .062	525 .043	485 .037	420 .027	350 .018	
NC		30 - 35									25 - 30					

For performance notes, see page GAR-70

Grilles and Registers
GAR

Series 4002R - Performance

Models H4002R-1, V4002R-1, H4002RD-1, V4002RD-1, H4002RS-1, V4002RS-1, H4002RSD-1, V4002RSD-1

CFM	Ak	NECK SIZE														NC
		30" x 10"	28" x 12"	30" x 12"	30" x 14"	34" x 16"	48" x 14"	40" x 18"	48" x 18"	40" x 24"	42" x 24"	48" x 24"	48" x 30"	48" x 36"	48" x 48"	
		2.06	2.31	2.47	2.89	3.74	4.62	4.95	5.94	6.60	6.93	7.92	9.90	11.88	15.84	
500	Nk Vel Ps	240 .009	214 .007	200 .006												
600	Nk Vel Ps	288 .013	257 .010	240 .009	206 .007											
700	Nk Vel Ps	336 .018	300 .014	280 .012	240 .009											
800	Nk Vel Ps	384 .023	343 .018	320 .016	274 .012	212 .007										
1000	Nk Vel Ps	480 .036	429 .029	400 .025	343 .018	265 .011	214 .007	200 .006								
1200	Nk Vel Ps	576 .052	514 .041	480 .036	411 .026	318 .016	257 .010	240 .009	200 .006							
1400	Nk Vel Ps	672 .070	600 .056	560 .049	480 .036	371 .021	300 .014	280 .012	233 .008	210 .007	200 .006					
1600	Nk Vel Ps	768 .092	686 .073	640 .064	549 .047	424 .028	343 .018	320 .016	267 .011	240 .009	229 .008	200 .006				
2000	Nk Vel Ps		857 .114	800 .100	686 .073	529 .044	429 .029	400 .025	333 .017	300 .014	286 .013	250 .010	200 .006			
2500	Nk Vel Ps				857 .114	662 .068	536 .045	500 .039	417 .027	375 .022	357 .020	313 .015	250 .010	208 .007		
3000	Nk Vel Ps					794 .098	643 .064	600 .056	500 .039	450 .031	429 .029	375 .022	300 .014	250 .010		
3500	Nk Vel Ps						750 .087	700 .076	583 .053	525 .043	500 .039	438 .030	350 .019	292 .013	219 .007	
4000	Nk Vel Ps						857 .114	800 .100	667 .069	600 .056	571 .051	500 .039	400 .025	333 .017	250 .010	
4500	Nk Vel Ps							900 .129	750 .089	675 .072	643 .066	563 .050	450 .032	375 .022	281 .013	
	NC	30 - 35										25 - 30				

Grilles and Registers

GAR

Performance Notes for Series 4002R

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic feet per minute (air)
- Nk Vel - Neck Velocity of air stream in feet per minute
- Ps - Negative Static pressure (inches of water column)
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak - Area Factors

Series 4002R - Specifications

Return Grilles – Aluminum/Model 4002R

Air Inlets shall be model V40002R (vertical blades) or H4002R (horizontal blades) manufactured by METALAIRES. Units shall be return or exhaust grilles of aluminum construction and with an extruded aluminum border and a single set of deflection blades. Air inlets to be specifically design to match the appearance of the supply units, METALAIRES Series 4000. The units shall be the size and quantity as outlined in the plans and specifications.

Border shall be 1 1/4" wide with aerodynamically shaped deflector blades on .666" centers set at 0° (or 45°). Deflector blades shall be fixed. Units shall be designed for surface mounting applications and be provided with counter sunk screw holes on the face of the device.

Return Grilles – Steel/Model 4002RS

Air Inlets shall be model V40002RS (vertical blades) or H4002RS (horizontal blades) manufactured by METALAIRES. Units shall be return or exhaust grilles of steel construction and with a single set of deflection blades. Air inlets to be specifically design to match the appearance of the supply units, METALAIRES Series 4000. The units shall be the size and quantity as outlined in the plans and specifications.

Border shall be 1 1/4" wide with aerodynamically shaped deflector blades on .666" centers set at 0° (or 40°). Deflector blades shall be fixed. Units shall be designed for surface mounting applications and be provided with counter sunk screw holes on the face of the device.

Damper Accessories (Optional)

Optional opposed blade damper shall be constructed of steel (Model OBD) or aluminum (Model OBDA). Damper must be operable from the face of the diffuser.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

GAR - Grilles and Registers

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaline cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

Series 4002R - Model Specification Guide

Aluminum Sidewall Return - Fixed Blades

Series 4002R - Matches 4000 Supply

Model	Available Neck	Blade Angles	Available Finishes	Available Options	
V4002R-1 - Single Deflection - Vertical Blades H4002R-1 - Single Deflection - Horizontal Blades	6" thru 48"	0° (degrees)	Standard	OBD	Opposed Blade Damper - Steel
		45° (degrees)	01 - White	OBDA	Opposed Blade Damper - Aluminum
			Optional	L9	Equalizing Grid
			02 - Aluminum	PF	Plaster Frame
			03 - Black	IS	Insect Screen
			04 - Anodized		
			24 - Mill		
			28 - Custom Color		

Model	Available Neck	Blade Angles	Available Finishes	Available Options	
V4002RS-1 - Single Deflection - Vertical Blades H4002RS-1 - Single Deflection - Horizontal Blades	6" thru 48"	0° (degrees)	Standard	OBD	Opposed Blade Damper - Steel
		45° (degrees)	01 - White	OBDA	Opposed Blade Damper - Aluminum
			Optional	L9	Equalizing Grid
			02 - Aluminum	PF	Plaster Frame
			03 - Black	IS	Insect Screen
			04 - Anodized		
			28 - Custom Color		



GAR - Grilles and Registers

7/2006

➔ Door Grilles ➔ Series DG ➔ Extruded Aluminum

Product Details

- ★ Series DG door grilles are designed to transfer air through doors or walls. The DG series include "V" shaped louvers providing a sight-proof return or exhaust grille regardless of the viewing angle
- ★ The series DG is available with a number of options include a light-proof option (model DGLP), surface mounting applications, and door mounting (model DGDF)
- ★ Series DG offers a number of solutions for your door and air transfer applications



Model DGCO Shown

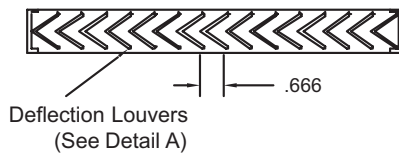


Model DGDF Shown

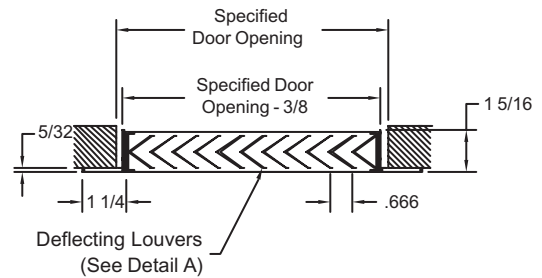
Standard Finish: 01 White

Sideview, dimensions are in inches

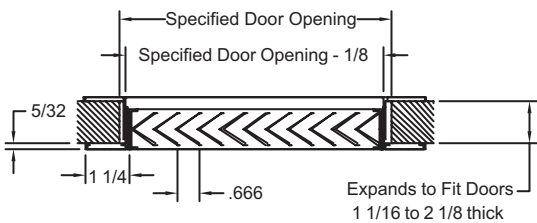
Door Grille - Core Only
Model DGCO



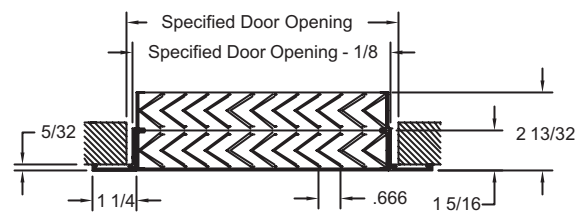
Door Grille - Surface Mount - Single Frame Flange
Model DGSF



Door Grille - Surface Mount - Double Flange Frame - Telescoping
Model DGDF



Door Grille - Surface Mount - Double Flange Frame - Light Resistant
Model DGLP



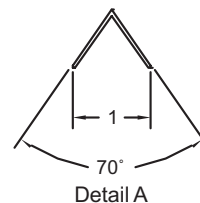
1. Available Finishes

Standard Finish:
01 White
Optional Finish:
02 Aluminum paint
03 Black
04 Clear anodized
24 Mill finish
28 Custom color

2. Construction Details

- Frame and blades are extruded aluminum

Detail A



Grilles and Registers



GAR

GAR - Grilles and Registers

Series DG - Performance

Models DGCO, DGSF, DGDG, DGLP

CFM	Ak	NECK SIZE														
		12" x 6"	12" x 8"	18" x 6"	12" x 10"	12" x 12"	18" x 10"	20" x 10"	18" x 12"	24" x 10"	24" x 12"	30" x 12"	24" x 16"	36" x 12"	30" x 16"	
		.49	.66	.74	.82	.99	1.24	1.37	1.48	1.65	1.98	2.47	2.64	2.97	3.30	
100	Nk Vel Ps	200 .024														
150	Nk Vel Ps	300 .055	225 .031	200 .024												
200	Nk Vel Ps	400 .097	300 .055	267 .043	240 .035	200 .024										
250	Nk Vel Ps	500 .152	375 .085	333 .067	300 .055	250 .038	200 .024									
300	Nk Vel Ps	600 .219	450 .123	400 .097	360 .079	300 .055	240 .035	216 .028	200 .024							
350	Nk Vel Ps	700 .298	525 .167	467 .132	420 .107	350 .074	280 .048	252 .039	233 .033	210 .027						
400	Nk Vel Ps	800 .389	600 .219	533 .173	480 .140	400 .097	320 .062	288 .050	267 .043	240 .035	200 .024					
450	Nk Vel Ps	900 .492	675 .277	600 .219	540 .177	450 .123	360 .079	324 .064	300 .055	270 .044	225 .031					
500	Nk Vel Ps		750 .342	667 .270	600 .219	500 .152	400 .097	360 .079	333 .067	300 .055	250 .038	200 .024				
550	Nk Vel Ps		825 .413	733 .327	660 .264	550 .184	440 .118	396 .095	367 .082	330 .066	275 .046	220 .029	206 .026			
600	Nk Vel Ps		900 .492	800 .389	720 .315	600 .219	480 .140	432 .113	400 .097	360 .079	300 .055	240 .035	225 .031	200 .024		
650	Nk Vel Ps			867 .456	780 .369	650 .257	520 .164	468 .133	433 .114	390 .092	325 .064	260 .041	244 .036	217 .029		
700	Nk Vel Ps				840 .428	700 .298	560 .190	504 .154	467 .132	420 .107	350 .074	280 .048	263 .042	233 .033	225 .031	
750	Nk Vel Ps				900 .492	750 .342	600 .219	540 .177	500 .152	450 .123	375 .085	300 .055	281 .048	250 .038	210 .027	
	NC	45				40			35			30		25		

Performance Notes for Series DG

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic Feet per Minute (air)
- Nk Vel - Neck Velocity of air stream in Feet Per Minute
- Ps - Negative Static pressure (inches of water column)
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak - Area Factors



Series DG - Specifications

Door Grille - Core Only - Extruded Aluminum/Model DGCO

Air Inlets shall be series DGCO manufactured by METALAIRES. Units shall be return or exhaust grilles designed to transfer air through doors or walls. Units shall be of extruded aluminum construction and with an extruded aluminum border and a single set of 1" inverted "V" louvers. The units shall be the size and quantity as outlined in the plans and specifications.

Inlets shall have a narrow border providing a recessed appearance when installed. Louvers shall be on .666" centers set at 70° and overlapped to provide a vision proof effect.

Deflector blades shall be fixed. Units shall be designed to integrate into a wall or door application.

Door Grille - Surface Mount - Single Frame Flange - Extruded Aluminum/Model DGSF

Air Inlets shall be series DGSF manufactured by METALAIRES. Units shall be return or exhaust grilles designed to transfer air through doors or walls. Units shall be of extruded aluminum construction and with an extruded aluminum border and a single set of 1" inverted "V" louvers. The units shall be the size and quantity as outlined in the plans and specifications.

Inlets shall have a single 1 1/4" border with screw holes for surface mounting. Units to provide a finished appearance on one side of the door. Louvers shall be on .666" centers set at 70° and overlapped to provide a vision proof effect.

Deflector blades shall be fixed. Units shall be designed to integrate into a wall or door application.

Door Grille - Surface Mount - Double Frame Flange - Telescoping - Extruded Aluminum/Model DGDF

Air Inlets shall be series DGDF manufactured by METALAIRES. Units shall be return or exhaust grilles designed to transfer air through doors or walls. Units shall be of extruded aluminum construction and with an extruded aluminum border and a single set of 1" inverted "V" louvers. The units shall be the size and quantity as outlined in the plans and specifications.

Inlets shall have a single 1 1/4" border and a telescoping rear frame to fit varying door thickness providing a finished appearance on both sides of the door or wall. Units shall include screw holes for surface mounting. Louvers shall be on .666" centers set at 70° and overlapped to provide a vision proof effect.

Deflector blades shall be fixed. Units shall be designed to integrate into a wall or door application.

Door Grille - Surface Mount - Double Frame Flange - Light Resistant - Extruded Aluminum/Model DGLP

Air Inlets shall be series DGLP manufactured by METALAIRES. Units shall be return or exhaust grilles designed to transfer air through doors or walls. Units shall be of extruded aluminum construction and with an extruded aluminum border and two sets of 1" inverted "V" louvers. The units shall be the size and quantity as outlined in the plans and specifications.

Inlets shall have a single 1 1/4" border with screw holes for surface mounting. Units to provide a finished appearance on one side of the door. Louvers shall be on .666" centers set at 70° and overlapped to provide a minimum light transmission.

Deflector blades shall be fixed. Units shall be designed to integrate into a wall or door application.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss - 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours



Series DG - Model Specification Guide

Door/Transfer - Door Grilles
Series DG - Extruded Aluminum

Model	Available Neck	Available Finishes
DGCO - Core Only DGSF - Single Flange DGDF - Double Flange DGLP - Double Core - Double Flange	6" thru 48"	Standard
		01 - White
		Optional
		02 - Aluminum
		03 - Black
		04 - Clear Anodized
		24 - Mill
		28 - Custom Color



➔ Sidewall Grille ➔ Series 4500 ➔ Steel

Product Details

- ★ The series 4500 is a heavy duty return gym grille. This unit is designed for applications such as gymnasiums and public areas. The border and deflection blades are heavy gauge steel and built to withstand moderate physical abuse
- ★ The series 4500 is available with 0° deflection or for more sight-proof application, 38° deflection (model 4538-1)
- ★ Series 4500 is an excellent choice for return or exhaust applications in high traffic applications where extra protection for the grille is required



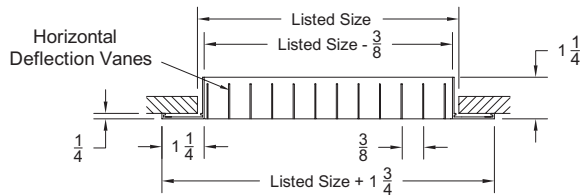
Model 4500-1 Shown

Standard Finish: 01 White

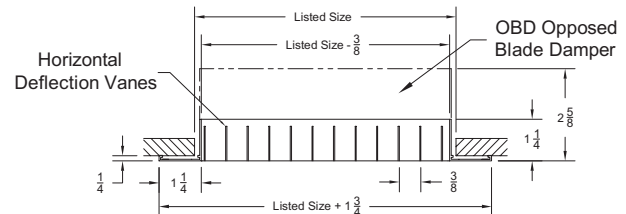
0° Deflection

Sideview, dimensions are in inches

Return - Heavy Duty Steel Gym Grille - Surface Mount
0° Deflection
Model 4500-1

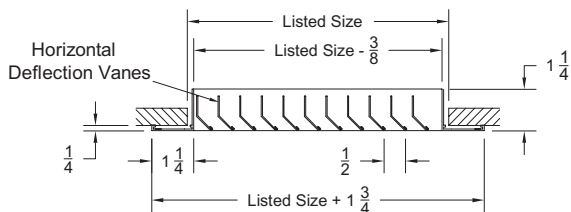


Return - Heavy Duty Steel Gym Register - Surface Mount
0° Deflection - With Opposed Blade Damper
Model 4500D-1

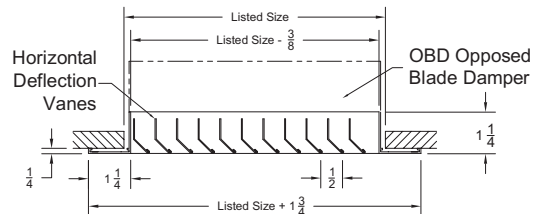


38° Deflection

Return - Heavy Duty Steel Gym Grille - Surface Mount
38° Deflection
Model 4538-1



Return - Heavy Duty Steel Gym Register - Surface Mount
38° Deflection - With Opposed Blade Damper
Model 4538D-1



1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish: 03 Black 24 Mill 28 Custom color</p>	<p>OBD - Steel - Opposed Blade Damper.....204</p> <p>OBDA - Aluminum - Opposed Blade Damper ...204</p> <p>L9 - Equalizing Grid204</p> <p>PF - Plaster Frame205</p>	<p>Reverse Sizes (blades parallel to short side)</p> <p>Insect Screen</p>	<ul style="list-style-type: none"> • Frames and blades are steel • Blades are fixed at either 0° or 38° • Oversized units can be ordered in multiple sections, each with full flanges. Mullion strips provided for joining units in the field



GAR - Grilles and Registers

Series 4500 - 0° Performance

Models 4500-1, 4500D-1

Nominal Duct Size	Nominal Core Area	Core Velocity	Negative Static Pressure												
			200	300	400	500	600	700	800	900	1000	1200	1400	1600	
L	W		0.005	0.012	0.022	0.034	0.049	0.067	0.087	0.110	0.136	0.196	0.267	0.348	
6"	6"	0.21	Volume (CFM)	42	63	84	105	126	147	168	189	210	252	294	336
			NC	-	-	-	-	-	20	22	27	28	32	35	38
8"	6"	0.29	Volume (CFM)	57	86	115	143	172	201	229	258	286	344	401	458
			NC	-	-	-	-	-	21	23	28	29	33	36	39
8"	8"	0.39	Volume (CFM)	78	117	156	195	234	273	313	352	391	469	547	625
			NC	-	-	-	-	-	26	25	30	31	35	38	41
12"	6"	0.44	Volume (CFM)	88	132	176	220	264	307	351	395	439	527	615	703
			NC	-	-	-	-	-	23	25	30	31	35	38	73
12"	8"	0.60	Volume (CFM)	120	180	240	299	359	419	479	539	599	719	839	958
			NC	-	-	-	-	21	25	27	32	33	37	40	43
12"	10"	0.76	Volume (CFM)	152	228	303	379	455	531	607	683	759	910	1062	1214
			NC	-	-	-	-	22	26	28	33	34	38	41	44
12"	12"	0.92	Volume (CFM)	184	276	367	459	551	643	735	827	918	1102	1286	1469
			NC	-	-	-	-	22	26	28	33	34	38	41	44
14"	12"	1.08	Volume (CFM)	216	323	431	539	647	755	863	970	1078	1294	1509	1725
			NC	-	-	-	20	23	27	29	34	35	39	42	45
14"	14"	1.27	Volume (CFM)	253	380	506	633	759	886	1013	1139	1139	252	294	336
			NC	-	-	-	21	24	28	30	35	36	40	43	46
18"	18"	2.13	Volume (CFM)	425	638	851	1063	1276	1489	1701	1914	2127	2552	2977	3403
			NC	-	-	21	23	26	30	32	37	38	42	45	48
24"	12"	1.88	Volume (CFM)	375	563	751	938	1126	1314	1501	1689	1877	2252	2627	3003
			NC	-	-	20	22	25	29	31	36	37	41	44	47
24"	18"	2.86	Volume (CFM)	571	857	1142	1428	1714	1999	2285	2570	2856	3427	3998	4569
			NC	-	-	22	24	27	31	33	38	39	43	46	49
24"	24"	3.84	Volume (CFM)	767	1151	1534	1918	2301	2685	3068	3452	3835	4602	5369	6136
			NC	-	21	24	26	29	33	35	40	41	45	48	51
30"	20"	3.99	Volume (CFM)	799	1198	1598	1997	2397	2797	3196	3595	3995	4794	5593	6392
			NC	-	21	24	26	29	33	35	40	41	45	48	51
30"	24"	4.81	Volume (CFM)	963	1444	1926	2407	2889	3370	3851	4333	4814	5777	6740	7703
			NC	-	22	25	27	30	34	36	41	42	46	49	52
36"	22"	5.30	Volume (CFM)	1060	1590	2120	2650	3180	3710	4240	4770	5300	6360	7420	8481
			NC	-	22	25	27	30	34	36	41	42	46	49	52
36"	24"	5.79	Volume (CFM)	1159	1738	2317	2897	3476	4055	4635	5214	5793	6952	8111	9269
			NC	-	22	25	27	30	34	36	41	42	46	49	52
42"	22"	6.20	Volume (CFM)	1239	1859	2478	3098	3718	4337	4957	5577	6196	7435	8675	9914
			NC	20	23	26	28	31	35	37	42	43	47	50	53
42"	26"	7.35	Volume (CFM)	1470	2205	2940	3674	4409	5144	5879	6614	7349	8819	10289	11758
			NC	20	23	26	28	31	35	37	42	43	47	50	55
48"	24"	7.75	Volume (CFM)	1550	2326	3101	3876	4651	5426	6201	6977	7752	9302	10852	12403
			NC	21	24	27	29	32	36	38	43	44	48	51	54
48"	30"	9.73	Volume (CFM)	1946	2919	3892	4865	5839	6812	7785	8758	9731	11677	13623	15569
			NC	22	25	28	30	33	37	39	44	45	49	52	55
48"	36"	11.71	Volume (CFM)	2342	3513	4684	5855	7026	8197	9368	10539	11710	14052	16394	18736
			NC	22	25	28	30	33	37	39	44	45	49	52	55
48"	40"	13.03	Volume (CFM)	2606	3909	5212	6515	7818	9121	10424	11727	13030	15635	18241	20847
			NC	23	26	29	31	34	38	40	45	46	50	53	56
48"	48"	15.67	Volume (CFM)	3134	4701	6267	7834	9401	10968	12535	14102	15668	18802	21936	25069
			NC	24	27	30	32	35	39	41	46	47	51	54	57

Grilles and Registers



GAR



GAR - Grilles and Registers

Series 4500 - 38° Performance

Models 4538-1, 4538D-1

Nominal Duct Size		Nominal Core Area	Core Velocity	Core Velocity												
L	W			Negative Static Pressure	0.005	0.012	0.022	0.034	0.049	0.067	0.087	0.110	0.136	0.196	0.267	0.348
6"	6"	0.21	Volume (CFM)	42	63	84	105	126	147	168	189	210	252	294	336	
			NC	-	-	-	-	-	-	-	-	-	-	-	-	-
8"	6"	0.29	Volume (CFM)	57	86	115	143	172	201	229	258	286	344	401	458	
			NC	-	-	-	-	-	-	-	-	-	-	-	-	-
8"	8"	0.39	Volume (CFM)	78	117	156	195	234	273	313	352	391	469	547	625	
			NC	-	-	-	-	-	-	-	-	-	-	-	-	-
12"	6"	0.44	Volume (CFM)	88	132	176	220	264	307	351	395	439	527	615	703	
			NC	-	-	-	-	-	-	-	-	-	-	-	-	-
12"	8"	0.60	Volume (CFM)	120	180	240	299	359	419	479	539	599	719	839	958	
			NC	-	-	-	-	-	-	-	-	-	-	-	-	-
12"	10"	0.76	Volume (CFM)	152	228	303	379	455	531	607	683	759	910	1062	1214	
			NC	-	-	-	-	-	-	-	-	-	-	-	-	-
12"	12"	0.92	Volume (CFM)	184	276	367	459	551	643	735	827	918	1102	1286	1469	
			NC	-	-	-	-	-	-	-	-	-	-	-	-	-
14"	12"	1.08	Volume (CFM)	216	323	431	539	647	755	863	970	1078	1294	1509	1725	
			NC	-	-	-	-	-	-	-	-	-	-	-	-	-
14"	14"	1.27	Volume (CFM)	253	380	506	633	759	886	1013	1139	1139	252	294	336	
			NC	-	-	-	-	-	-	-	-	-	-	-	-	-
18"	18"	2.13	Volume (CFM)	425	638	851	1063	1276	1489	1701	1914	2127	2552	2977	3403	
			NC	-	-	-	-	-	-	-	-	-	-	-	-	-
24"	12"	1.88	Volume (CFM)	375	563	751	938	1126	1314	1501	1689	1877	2252	2627	3003	
			NC	-	-	-	-	-	-	-	-	-	-	-	-	-
24"	18"	2.86	Volume (CFM)	571	857	1142	1428	1714	1999	2285	2570	2856	3427	3998	4569	
			NC	-	-	-	-	-	-	-	-	-	-	-	-	-
24"	24"	3.84	Volume (CFM)	767	1151	1534	1918	2301	2685	3068	3452	3835	4602	5369	6136	
			NC	-	-	-	-	-	-	-	-	-	-	-	-	-
30"	20"	3.99	Volume (CFM)	799	1198	1598	1997	2397	2797	3196	3595	3995	4794	5593	6392	
			NC	-	-	-	-	-	-	-	-	-	-	-	-	-
30"	24"	4.81	Volume (CFM)	963	1444	1926	2407	2889	3370	3851	4333	4814	5777	6740	7703	
			NC	-	-	-	-	-	-	-	-	-	-	-	-	-
36"	22"	5.30	Volume (CFM)	1060	1590	2120	2650	3180	3710	4240	4770	5300	6360	7420	8481	
			NC	-	-	-	-	-	-	-	-	-	-	-	-	-
36"	24"	5.79	Volume (CFM)	1159	1738	2317	2897	3476	4055	4635	5214	5793	6952	8111	9269	
			NC	-	-	-	-	-	-	-	-	-	-	-	-	-
42"	22"	6.20	Volume (CFM)	1239	1859	2478	3098	3718	4337	4957	5577	6196	7435	8675	9914	
			NC	-	-	-	-	-	-	-	-	-	-	-	-	-
42"	26"	7.35	Volume (CFM)	1470	2205	2940	3674	4409	5144	5879	6614	7349	8819	10289	11758	
			NC	-	-	-	-	-	-	-	-	-	-	-	-	-
48"	24"	7.75	Volume (CFM)	1550	2326	3101	3876	4651	5426	6201	6977	7752	9302	10852	12403	
			NC	-	-	-	-	-	-	-	-	-	-	-	-	-
48"	30"	9.73	Volume (CFM)	1946	2919	3892	4865	5839	6812	7785	8758	9731	11677	13623	15569	
			NC	-	-	-	-	-	-	-	-	-	-	-	-	-
48"	36"	11.71	Volume (CFM)	2342	3513	4684	5855	7026	8197	9368	10539	11710	14052	16394	18736	
			NC	-	-	-	-	-	-	-	-	-	-	-	-	-
48"	40"	13.03	Volume (CFM)	2606	3909	5212	6515	7818	9121	10424	11727	13030	15635	18241	20847	
			NC	-	-	-	-	-	-	-	-	-	-	-	-	-
48"	48"	15.67	Volume (CFM)	3134	4701	6267	7834	9401	10968	12535	14102	15668	18802	21936	25069	
			NC	-	-	-	-	-	-	-	-	-	-	-	-	-

Grilles and Registers



GAR

For performance notes, see page GAR-78

Performance Notes for Series 4500

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic Feet per Minute (air)
- Nk Vel - Neck velocity of air stream in Feet Per Minute
- Ps - Negative Static pressure (inches of water column)
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw)
RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands

GAR - Grilles and Registers

Series 4500 - Specifications

Model 4500 – 0° deflection

Model 4538 – 38° deflection

Air Inlets shall be model 4500 (0° deflection) or 4538 (38° deflection) manufactured by METALAIRE®. Units shall be return or exhaust grilles constructed of 14 gauge deflector blades and 16 gauge borders. Outlets shall be designed to withstand moderate physical abuse. The units shall be the size and quantity as outlined in the plans and specifications.

Border shall be 1 1/4" wide with aerodynamically shaped deflector blades on .666" centers. Deflector blades shall be fixed. Units shall be designed for surface mounting applications and be provided with counter sunk screw holes on the face of the device.

Damper Accessories (Optional)

Optional opposed blade damper shall be constructed of steel (Model OBD) or aluminum (Model OBDA).

Damper must be operable from the face of the diffuser.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaline cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

Series 4500 - Model Specification Guide

Return - Gym Grille

Series 4500 - Steel

Model	Available Neck	Available Finishes	Available Options	
4500-1 - Horizontal Blades - 0 Degree Deflection 4538-1 - Horizontal Blades - 38 Degree Deflection	6" thru 48"	Standard	OBD	Opposed Blade Damper - Steel
		01 - White	OBDA	Opposed Blade Damper - Aluminum
		Optional	L9	Equalizing Grid
		02 - Aluminum	PF	Plaster Frame
		03 - Black	IS	Insect Screen
		24 - Mill		
		28 - Custom Color		



Return and Exhaust Grilles Series CC5/CC15/CC1 Aluminum

Product Details

- ★ The series CC5 cubed core return and exhaust grilles are designed to provide low pressure drops and low sound levels
- ★ The series CC5 is available with a number of options and accessories such as a 1" thick core (model CC1) to reduce sight into the grille
- ★ Series CC5 is an excellent choice for applications requiring minimum pressure drop and noise in return and exhaust applications



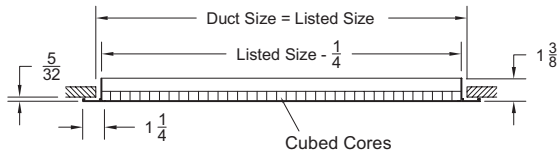
Model CC5-1 Shown

Standard Finish: 01 White

Sideview, dimensions are in inches

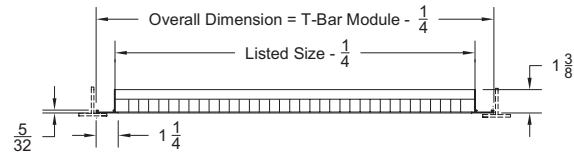
Return and Exhaust - Surface Mount

Model CC5-1 - 1/2" x 1/2" x 1/2" Core
 Model CC15-1 - 1/2" x 1/2" x 1" Core
 Model CC1-1 - 1" x 1" x 1" Core



Return and Exhaust - T-bar Lay-in

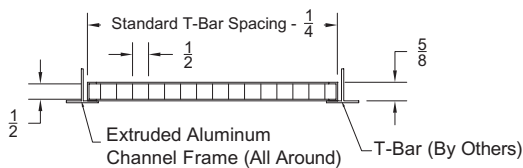
Model CC5-6 - 1/2" x 1/2" x 1/2" Core
 Model CC15-6 - 1/2" x 1/2" x 1" Core
 Model CC1-6 - 1" x 1" x 1" Core



T-bar Module	12 x 12	24 x 12	24 x 24	48 x 24	30 x 30	36 x 36	48 x 48
Nominal Neck Size	10 x 10	22 x 10	22 x 22	46 x 22	28 x 28	34 x 34	46 x 46

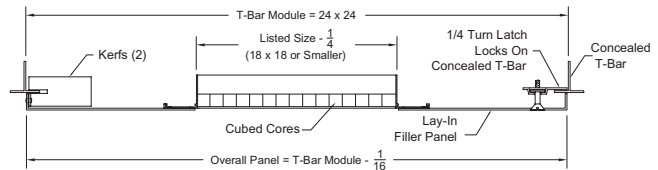
Return and Exhaust - Channel Frame - T-bar Lay-in

Model CC5-TBC-6 - 1/2" x 1/2" x 1/2" Core



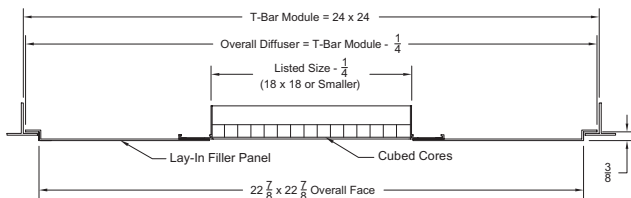
Return and Exhaust - Concealed Spline

Model CC5-7 - 1/2" x 1/2" x 1/2" Core
 Model CC15-7 - 1/2" x 1/2" x 1" Core
 Model CC1-7 - 1" x 1" x 1" Core



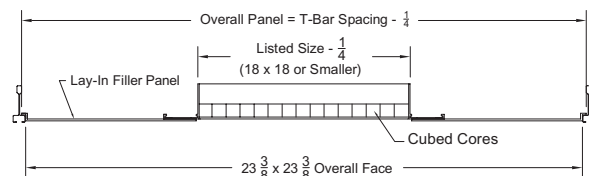
Return and Exhaust - Tegralar T-bar

Model CC5-8 - 1/2" x 1/2" x 1/2" Core
 Model CC15-8 - 1/2" x 1/2" x 1" Core
 Model CC1-8 - 1" x 1" x 1" Core



Return and Exhaust - Donn Finline

Model CC5-9 - 1/2" x 1/2" x 1/2" Core
 Model CC15-9 - 1/2" x 1/2" x 1" Core
 Model CC1-9 - 1" x 1" x 1" Core

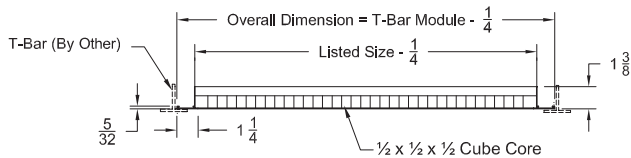


Grilles and Registers

GAR

GAR - Grilles and Registers

Return and Exhaust - Sidewall Ceiling Grille - 1/2" x 1/2" x 1/2" Core
 T-bar Lay-in Removable Core
 Model CC5R-6



Notes for Models CC5 (-1, -6, -7, -8, -9) CC5-TBC-6, CC5R-6, CC15 (-1, -6, -7, -8, -9), CC1 (-1, -6, -7, -8, -9)

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish 02 Aluminum paint 03 Black 24 Mill finish 28 Custom color</p>	<p>OBD - Opposed Blade Damper - Steel.....204 OBDA - Opposed Blade Damper - Aluminum...204 L9 - Equalizing Grid204 PF - Plaster Frame205</p>	<p>Insect Screen</p>	<ul style="list-style-type: none"> Frame is extruded aluminum, core is aluminum eggcrate Oversized units made in multiple sections, each with full flanges. Mullion strips provided for joining units in the field

Grilles and Registers



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GAR - Grilles and Registers

7/2006

Series CC5/CC15/CC1 - Performance

Models CC5 (-1, -6, -7,-8, -9), CC5-TBC-6, CC5R-6, CC15 (-1, -6, -7,-8, -9), CC1 (-1, -6, -7,-8, -9)

CFM	Ak	NECK SIZE														
		6" x 6"	8" x 8"	10" x 10"	12" x 12"	14" x 14"	16" x 14"	16" x 16"	18" x 16"	18" x 18"	20" x 18"	20" x 20"	22" x 20"	22" x 22"	24" x 22"	
		0.25	0.44	0.69	0.99	1.35	1.54	1.76	1.98	2.23	2.47	2.75	3.02	3.33	3.63	
100	Velocity Ps	400 .014	225 .005													
150	Velocity Ps	600 .032	338 .010	216 .004												
200	Velocity Ps	800 .057	450 .018	288 .007	200 .004											
250	Velocity Ps		563 .028	360 .012	250 .006											
300	Velocity Ps		675 .041	432 .017	300 .008	220 .004										
350	Velocity Ps		787 .055	504 .023	350 .011	257 .006	225 .005									
400	Velocity Ps		900 .072	576 .030	400 .014	294 .008	257 .006	225 .005	200 .004							
450	Velocity Ps			648 .037	450 .018	331 .010	289 .007	253 .006	225 .005	200 .004						
500	Velocity Ps			720 .046	500 .022	367 .012	321 .009	281 .007	250 .006	222 .004	200 .004					
550	Velocity Ps			792 .056	550 .027	404 .015	354 .011	309 .009	275 .007	244 .005	220 .004					
600	Velocity Ps			864 .066	600 .032	441 .017	386 .013	338 .010	300 .008	267 .006	240 .005	216 .004				
650	Velocity Ps				650 .038	478 .020	418 .016	366 .012	325 .009	289 .007	260 .006	234 .005	213 .004			
700	Velocity Ps				700 .044	514 .024	450 .018	394 .014	350 .011	311 .009	280 .007	252 .006	229 .005	208 .004		
750	Velocity Ps				750 .050	551 .027	482 .021	422 .016	375 .013	333 .010	300 .008	270 .006	245 .005	223 .004	205 .004	
	NC	25-30			20-25			<20								

Grilles and Registers



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GAR - Grilles and Registers

Series CC5/CC15/CC1 - Performance

Models CC5 (-1, -6, -7,-8, -9), CC5-TBC-6, CC5R-6, CC15 (-1, -6, -7,-8, -9), CC1 (-1, -6, -7,-8, -9)

CFM	Ak	NECK SIZE														NC
		24" x 24"	26" x 26"	28" x 28"	30" x 30"	32" x 32"	48" x 24"	34" x 34"	36" x 36"	38" x 38"	40" x 40"	42" x 42"	44" x 44"	46" x 46"	48" x 48"	
		3.96	4.65	5.39	6.19	7.04	7.92	7.95	8.91	9.93	11.00	12.13	13.31	14.55	15.84	
800	Velocity Ps	200 .003														
1000	Velocity Ps	250 .005	213 .004													
1200	Velocity Ps	300 .008	256 .006	220 .004												
1600	Velocity Ps	400 .014	341 .010	294 .007	256 .006	225 .004	200 .003									
2000	Velocity Ps	500 .021	426 .015	367 .011	320 .009	281 .007	250 .005	249 .005	222 .004							
2500	Velocity Ps	625 .033	533 .024	459 .018	400 .014	352 .010	313 .008	311 .008	278 .007	249 .005	225 .004	204 .004				
3000	Velocity Ps	750 .048	639 .035	551 .026	480 .020	422 .015	375 .012	374 .012	333 .009	299 .008	270 .006	245 .005	223 .004	204 .004		<20
3500	Velocity Ps	875 .065	746 .047	643 .035	560 .027	492 .021	438 .016	436 .016	389 .013	349 .010	315 .008	286 .007	260 .006	238 .005	219 .004	
4000	Velocity Ps		852 .062	735 .046	640 .035	563 .027	500 .021	498 .021	444 .017	399 .013	360 .011	327 .009	298 .008	272 .006	250 .005	
4500	Velocity Ps			827 .058	720 .044	633 .034	563 .027	561 .027	500 .021	449 .017	405 .014	367 .011	335 .010	306 .008	281 .007	
5000	Velocity Ps				800 .054	703 .042	625 .033	623 .033	556 .026	499 .021	450 .017	408 .014	372 .012	340 .010	313 .008	
6000	Velocity Ps					800 .104	750 .048	747 .047	667 .038	598 .030	540 .025	490 .020	446 .017	408 .014	375 .012	
7000	Velocity Ps						875 .065	872 .064	778 .051	698 .041	630 .034	571 .028	521 .023	476 .019	438 .016	
8000	Velocity Ps								889 .067	798 .054	720 .044	653 .036	595 .030	544 .025	500 .021	
	NC	30-35										25-30			20-25	

Performance Notes for Series CC5/CC15/CC1

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic feet per minute (air)
- Nk Vel - Neck Velocity of air stream in feet per minute
- Ps - Negative Static pressure (inches of water column)
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak - Area Factors

Grilles and Registers



GAR

Series CC5/CC15/CC1 - Specifications

Return Grilles – Cubed Core – Aluminum

- CC5-1 – Surface Mount
- CC5-6 – T-bar Lay-in
- CC5 TBC-6 – T-bar Lay-in Channel Border
- CC5-7 – Concealed Spline
- CC5-8 – Tegular T-bar
- CC5-9 – Donn Fineline

Air Inlets shall be model:

1. CC5 with a 1/2" x 1/2" x 1/2" cubed core
2. CC15 with a 1/2" x 1/2" x 1" cubed core
3. CC1 with a 1" x 1" x 1" cubed core

Manufactured by METALAIR®. Border shall be 1 1/4" wide. Units shall be return or exhaust grilles of aluminum construction and with an extruded aluminum border and an aluminum cubed core. The units shall be the size and quantity as outlined in the plans and specifications.

Units shall be designed to integrate into the specified ceiling system.

Damper Accessories (Optional)

Optional opposed blade damper shall be constructed of steel (Model OBD) or aluminum (Model OBDA). Damper must be operable from the face of the diffuser.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours



GAR - Grilles and Registers

Series CC5/CC15/CC1 - Model Specification Guide

Return/ Exhaust - Cubed Core - Sidewall/Ceiling
Series CC5 - Aluminum

	Model	Available Neck	Available Finishes	Available Options	
Surface Mount	CC5-1 - 1/2" X 1/2" X 1/2" Cube Core CC1-1 - 1" X 1" X 1" Cube Core CC15-1 - 1/2" X 1/2" X 1" Cube Core	6" thru 48"	Standard	OBD	Opposed Blade Damper - Steel
			01 - White	OBDA	Opposed Blade Damper - Aluminum
			Optional	L9	Equalizing Grid
			02 - Aluminum	PF	Plaster Frame
			03 - Black	IS	Insect Screen
			24 - Mill		
			28 - Custom Color		

Return/ Exhaust - Cubed Core - Sidewall/Ceiling
For T-bar Lay-in Ceiling Grid Applications
Model CC5TBC-6 - Aluminum

	Model	Available Neck	Module	Available Finishes	Available Options	
1/2" x 1/2" x 1/2" Core Only	CC5TBC-6 - T-bar Lay-in	6" thru 48"	12" x 12"	Standard	OBD	Opposed Blade Damper - Steel
			24" x 12"	01 - White	OBDA	Opposed Blade Damper - Aluminum
			24" x 24"	Optional	L9	Equalizing Grid
			48" x 24"	02 - Aluminum	IS	Insect Screen
			48" x 48"	03 - Black		
			24 - Mill			
			28 - Custom color			

Return/ Exhaust - Cubed Core - Sidewall/Ceiling
Series CC5/CC15/CC1 - Aluminum

	Model	Available Neck	Module	Available Finishes	Available Options	
1/2" x 1/2" x 1/2" Cubed Core	CC5-6 - T-bar Lay-in CC5R-6 - Removable Core CC5-7 - Concealed Spline CC5-8 - Tegular T-bar CC5-9 - Donn Finline	6" thru 48"	12" x 12"	Standard	OBD	Opposed Blade Damper - Steel
			24" x 12"	01 - White	OBDA	Opposed Blade Damper - Aluminum
			24" x 24"	Optional	L9	Equalizing Grid
			48" x 24"	02 - Aluminum	IS	Insect Screen
			48" x 48"	03 - Black		
1" x 1" x 1" Cubed Core	CC1-6 - T-bar Lay-in CC1-7 - Concealed Spline CC1-8 - Tegular T-bar CC1-9 - Donn Finline	6" thru 48"		24 - Mill		
				28 - Custom color		
1/2" x 1/2" x 1" Cubed Core	CC15-6 - T-bar Lay-in CC15-7 - Concealed Spline CC15-8 - Tegular T-bar CC15-9 - Donn Finline	6" thru 48"				



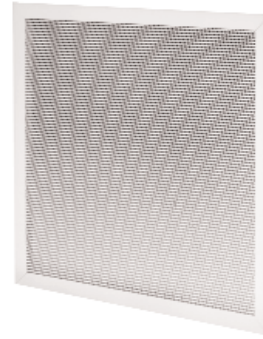
GAR - Grilles and Registers

7/2006

➔ Sidewall Return Grilles ➔ Series RP ➔ Aluminum

Product Details

- ✪ The series RP perforated face return or exhaust grilles are designed to blend into the ceiling system and provide a clean, uncluttered architectural appearance
- ✪ The series RP grilles and registers are available with a wide range of options and accessories
- ✪ Series RP is of aluminum construction and ideal for return and exhaust applications requiring low pressure drops and low sound

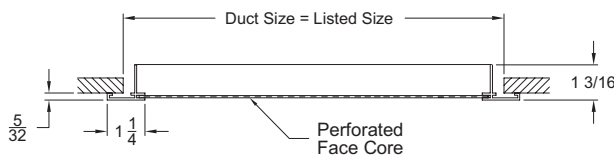


Model RP-1 Shown

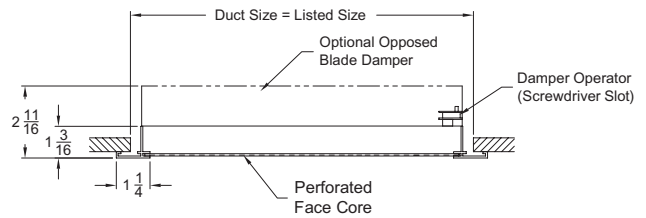
Standard Finish: 01 White

Sideview, dimensions are in inches

Return or Exhaust - Sidewall - Perforated Face - Surface Mount
Model RP-1



Return or Exhaust - Sidewall - Perforated Face - Surface Mount
With Opposed Blade Damper
Model RPD-1



Grilles and Registers



GAR

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish: 02 Aluminum paint 24 Mill finish 28 Custom color</p>	<p>OBD - Steel - Opposed Blade Damper.....204</p> <p>OBDA - Aluminum - Opposed Blade Damper...204</p> <p>L9 - Equalizing Grid204</p> <p>PF - Plaster Frame205</p>	<p>(Factory Mounted) Insect Screen</p>	<ul style="list-style-type: none"> • Frame is extruded aluminum • 51% free area aluminum perforate face • Oversized made in multiple sections, each with full flanges. Mullion strips provide for joining units in field • Available to fit standard T-bar

GAR - Grilles and Registers

Series RP - Performance

Models RP-1, RPD-1

CFM	Ak	NECK SIZE														NC			
		8" x 8"	10" x 10"	12" x 12"	14" x 14"	16" x 16"	18" x 18"	20" x 20"	22" x 22"	24" x 24"	30" x 24"	36" x 24"	40" x 24"	44" x 24"	48" x 24"				
		.36	.56	.80	1.09	1.42	1.80	2.22	2.69	3.20	4.00	4.80	5.33	5.87	6.40				
200	Nk Vel Ps	450 .003	288 .001	200 .001															25 -- 30
400	Nk Vel Ps	900 .012	576 .005	400 .002	294 .001	225 .001													
600	Nk Vel Ps		864 .011	600 .005	441 .003	338 .002	267 .001	216 .001											
800	Nk Vel Ps			800 .010	588 .005	450 .003	356 .002	298 .001	238 .001	200 .001									
1000	Nk Vel Ps				735 .008	563 .005	444 .003	360 .002	298 .001	250 .001	200 .001								
1200	Nk Vel Ps				882 .012	675 .007	533 .004	432 .003	357 .002	300 .001	240 .001	200 .001							
1400	Nk Vel Ps					787 .009	622 .006	504 .004	417 .003	350 .002	280 .001	233 .001	210 .001						
1600	Nk Vel Ps					900 .012	711 .008	576 .005	476 .003	400 .002	320 .002	267 .001	240 .001	218 .001	200 .001				
1800	Nk Vel Ps						800 .010	648 .006	536 .004	450 .003	360 .002	300 .001	270 .001	245 .001	225 .001				
2000	Nk Vel Ps						889 .012	720 .008	595 .005	500 .004	400 .002	333 .002	300 .001	273 .001	250 .001				
2400	Nk Vel Ps							864 .011	714 .008	600 .005	480 .004	400 .002	360 .002	327 .002	300 .001				
2800	Nk Vel Ps								833 .011	700 .007	560 .005	467 .003	420 .003	382 .002	350 .002				
3200	Nk Vel Ps									800 .011	640 .006	533 .004	480 .004	436 .003	400 .002				
3600	Nk Vel Ps									900 .012	720 .008	600 .005	540 .004	491 .004	450 .003				
NC		35 - 40										30 - 35							

Performance Notes for Series RP

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic Feet per Minute (air)
- Nk Vel - Neck velocity of air stream in Feet Per Minute
- Ps - Negative Static pressure (inches of water column)
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw)
RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak - Area Factors

Grilles and Registers



GAR

Series RP – Specifications

Air Inlets shall be model RP manufactured by METALAIRE®. Units shall be perforated face, return or exhaust grilles constructed of aluminum. Perforate face shall have 3/16" diameter holes on 1/4" centers and shall have a 51% free area. The units shall be the size and quantity as outlined in the plans and specifications.

Border shall be 1 1/4". Units shall be designed for surface mounting applications and be provided with counter sunk screw holes on the face of the device.

Damper Accessories (Optional)

Optional opposed blade damper shall be constructed of steel (Model OBD) or aluminum (Model OBDA).

Damper must be operable from the face of the diffuser.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours



GAR - Grilles and Registers

Series RP - Model Specification Guide

Return/Exhaust Sidewall/Ceiling
Series RP - Aluminum

Model	Available Neck	Available Finishes	Available Options	
RP - Perforated Face	6" thru 48"	Standard	OBD	Opposed Blade Damper - Steel
		01 - White	OBDA	Opposed Blade Damper - Aluminum
		Optional	L9	Equalizing Grid
		02 - Aluminum	IS	Insect Screen
		03 - Black		
		24 - Mill		
		28 - Custom Color		



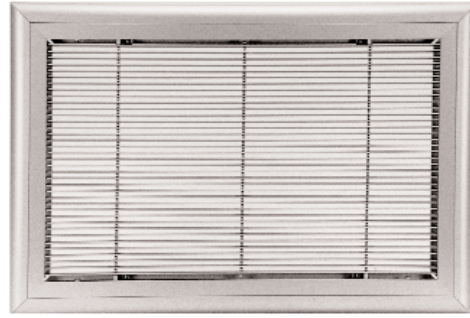
GAR - Grilles and Registers

7/2006

➔ Reversible Core Grilles & Registers ➔ Series RC ➔ Extruded Aluminum

Product Details

- ★ The series RC, Revers-A-Core, supply grilles and registers combine rugged aluminum construction, a clean architectural design, and an extremely flexible air pattern versatility
- ★ The fixed louvered core is removable from the face and can be rotated or reversed to achieve any of four different air deflection patterns
- ★ Series RC grilles and registers is an excellent selection for applications calling for a distinctive appearance and high performance



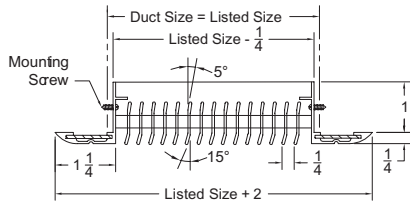
Model RC41C Shown

Standard Finish: 01 White

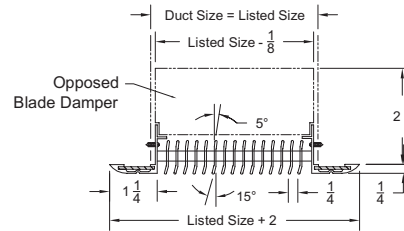
Single Deflection

Sideview, dimensions are in inches

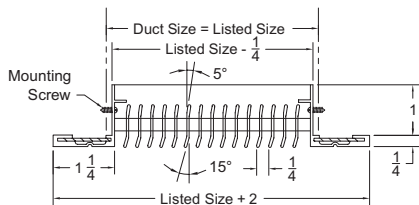
Supply - Single Deflection Grille - Curved Border - Surface Mount
Model 41C-1



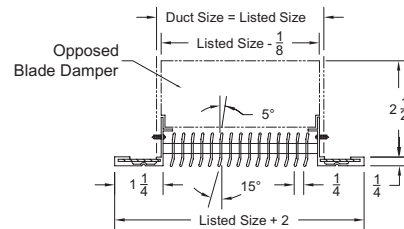
Supply - Single Deflection Grille - Curved Border - Surface Mount
With Opposed Blade Damper
Model 41CD-1



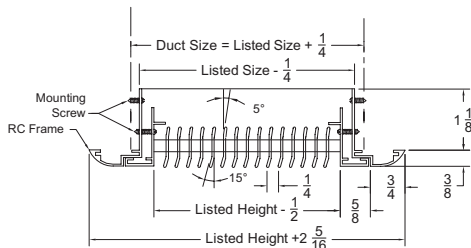
Supply - Single Deflection Grille - Flat Border - Surface Mount
Model 41F-1



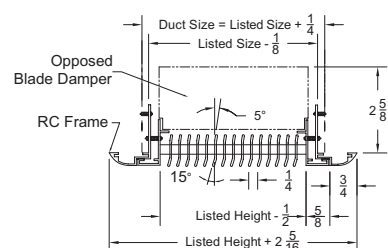
Supply - Single Deflection Grille - Flat Border - Surface Mount
With Opposed Blade Damper
Model 41FD-1



Supply - Single Deflection Grille - Curved Border
Removable Inner Frame - Surface Mount
Model RC41C-1



Supply - Single Deflection Grille - Curved Border
Removable Inner Frame - With Opposed Blade Damper - Surface Mount
Model RC41CD-1



Grilles and Registers

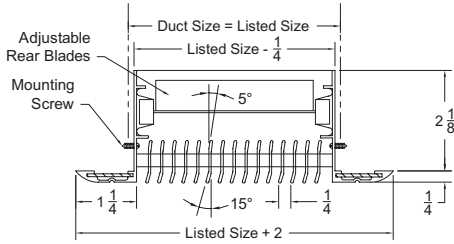


GAR

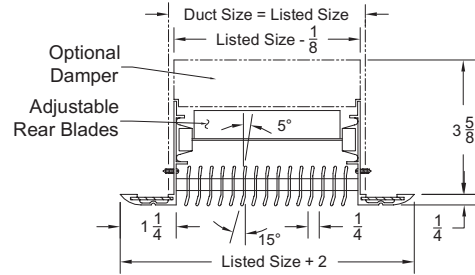
GAR - Grilles and Registers

Double Deflection

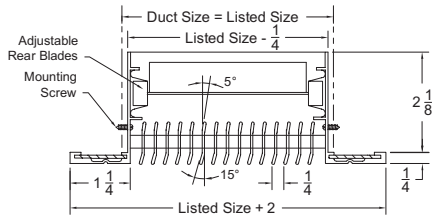
Supply - Double Deflection Grille - Curved Border - Surface Mount
Model 42C-1



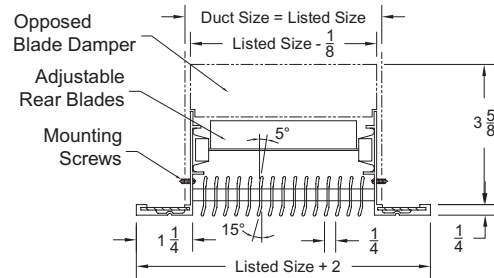
Supply - Double Deflection Grille - Curved Border - Surface Mount
With Opposed Blade Damper
Model 42CD-1



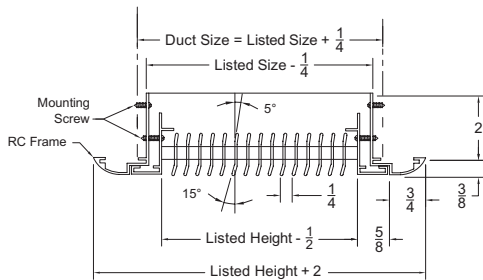
Supply - Double Deflection Grille - Flat Border - Surface Mount
Model 42F-1



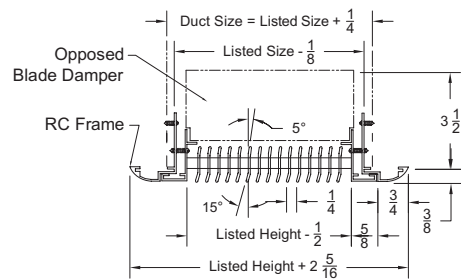
Supply - Double Deflection Grille - Flat Border - Surface Mount
With Opposed Blade Damper
Model 42FD-1



Supply - Double Deflection Grille - Curved Border
Removable Inner Frame - Surface Mount
Model RC42C-1



Supply - Double Deflection Grille - Curved Border
Removable Inner Frame - With Opposed Blade Damper - Surface Mount
Model RC42C-1



Grilles and Registers

GAR



1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish: 02 Aluminum paint 03 Black 24 Mill finish 28 Custom color</p>	<p>OBDA - Steel - Opposed Blade Damper.....204</p> <p>OBDA - Aluminum - Opposed Blade Damper...204</p> <p>L9 - Equalizing Grid204</p> <p>PF - Plaster Frame205</p>	<p>(Factory Mounted)</p> <p>Insect Screen</p> <p>Reverse Sizes (blades parallel to short side)</p>	<ul style="list-style-type: none"> • Frame and blades are aluminum • Blades are fixed at 5° on one side, 15° on the other • Oversized units up to 48" x 48" can be made with one-piece frames and multiple cores

GAR - Grilles and Registers

7/2006

Series RC - Performance

Models 41C-1, 42C-1, 41F-1, 42F-1, RC41C-1, RC42C-1, 41CD-1, 42CD-1, 41FD-1, 42FD-1, RC41CD-1, RC42CD-1

CFM	Ak	OUTLET SIZE																NC		
		6" x 4"	8" x 4"	10" x 4"	8" x 6"	12" x 6"	10" x 8"	14" x 6"	12" x 8"	18" x 6"	14" x 8"	20" x 6"	16" x 8"	18" x 8"	20" x 8"					
		.06	.08	.11	.14	.21	.23	.245	.28	.315	.327	.35	.37	.42	.47					
50	Velocity Ps Throw	300 .032 12-9-7	225 .018 11-8-6																	
100	Velocity Ps Throw	600 .127 20-14-11	450 .072 18-13-10	360 .046 16-12-9	300 .032 15-11-9	200 .014 13-10-7														
150	Velocity Ps Throw	900 .286 26-18-14	675 .161 23-17-13	540 .103 22-15-12	450 .072 20-14-11	300 .032 18-13-10	270 .026 17-12-9	257 .023 17-12-9	225 .018 16-11-9	200 .014 15-11-9										
200	Velocity Ps Throw		900 .286 28-20-16	720 .183 26-19-14	600 .127 25-18-14	400 .057 22-15-12	360 .046 21-15-11	343 .042 20-15-11	300 .032 20-14-11	267 .025 19-13-10	257 .023 19-13-10	240 .020 18-13-10	225 .018 18-13-10	200 .014 17-12-9						
250	Velocity Ps Throw				750 .199 29-20-16	500 .088 25-18-14	450 .072 24-17-13	429 .065 24-17-13	375 .050 23-16-13	333 .039 22-16-12	321 .037 22-15-12	300 .032 21-15-12	281 .028 21-15-11	250 .022 20-14-11	225 .018 19-14-11					
300	Velocity Ps Throw				900 .286 33-23-18	600 .127 28-20-16	540 .103 27-19-15	514 .093 27-19-15	450 .072 26-18-14	400 .057 25-18-14	386 .053 24-17-13	360 .046 24-17-13	338 .040 23-17-13	300 .032 22-16-12	270 .026 22-15-12					
350	Velocity Ps Throw				700 .173 32-22-17	630 .140 30-22-17	600 .127 30-21-16	525 .097 29-20-16	467 .077 27-19-15	450 .072 27-19-15	420 .062 26-19-15	394 .055 26-19-15	350 .043 25-18-14	315 .035 24-17-13						
400	Velocity Ps Throw				800 .226 35-25-19	720 .183 33-24-18	686 .166 33-23-18	600 .127 31-22-17	533 .101 30-21-17	514 .093 30-21-16	480 .081 29-21-16	450 .072 28-20-16	400 .057 27-19-15	360 .046 26-19-14						
450	Velocity Ps Throw				900 .286 38-27-21	810 .232 36-26-20	771 .210 36-25-20	675 .161 34-24-19	600 .127 33-23-18	579 .118 32-23-18	540 .103 31-22-17	506 .091 31-22-17	450 .072 30-21-16	405 .058 29-20-16						
500	Velocity Ps Throw						857 .260 38-27-21	750 .199 37-26-20	667 .157 35-25-19	643 .146 35-25-19	600 .127 34-24-19	563 .112 33-23-18	500 .088 32-23-18	450 .072 31-22-17	405 .058 30-21-16					
550	Velocity Ps Throw							825 .241 39-28-21	733 .190 37-27-21	707 .177 37-26-20	660 .154 36-26-20	619 .135 35-25-19	550 .107 34-24-19	495 .087 33-23-18						
600	Velocity Ps Throw							900 .286 41-29-23	800 .226 40-28-22	771 .210 39-28-22	720 .183 38-27-21	675 .161 38-27-21	600 .127 36-26-20	540 .103 35-25-19						
650	Velocity Ps Throw								867 .265 42-30-23	836 .247 42-30-23	780 .215 41-29-22	731 .189 40-28-22	650 .149 38-27-21	585 .121 37-26-20						
700	Velocity Ps Throw									900 .286 44-31-24	840 .249 43-30-24	787 .219 42-30-23	700 .173 40-28-22	630 .140 38-27-21						
	NC	30 - 40										30 - 35								

Grilles and Registers



GAR

GAR - Grilles and Registers

Series RC - Performance

Models 41C-1, 42C-1, 41F-1, 42F-1, RC41C-1, RC42C-1, 41CD-1, 42CD-1, 41FD-1, 42FD-1, RC41CD-1, RC42CD-1

CFM	Ak	OUTLET SIZE														NC	
		18" x 12"	20" x 12"	20" x 16"	24" x 16"	24" x 20"	30" x 18"	24" x 24"	30" x 20"	36" x 18"	36" x 20"	36" x 24"	42" x 22"	48" x 22"	48" x 24"		
		.66	.78	.97	1.16	1.46	1.73	1.80	1.83	2.07	2.19	2.70	2.84	3.24	3.60		
400	Velocity Ps Throw	267 .025 24-17-13	240 .020 23-16-13														
500	Velocity Ps Throw	333 .040 28-20-15	300 .032 27-19-15	225 .018 24-14-13													
600	Velocity Ps Throw	400 .057 31-22-17	360 .046 30-21-17	270 .026 27-19-15	225 .018 26-18-14												
700	Velocity Ps Throw	467 .077 35-25-19	420 .062 34-24-18	315 .035 30-22-17	263 .025 29-20-16	210 .015 26-19-15											
800	Velocity Ps Throw	533 .101 38-27-21	480 .081 37-26-20	360 .046 33-24-18	300 .032 31-22-17	240 .020 29-21-16	213 .018 28-20-15	200 .014 27-20-15									
900	Velocity Ps Throw	600 .127 41-29-23	540 .103 40-28-22	405 .058 36-26-20	338 .040 34-24-19	270 .027 31-22-17	240 .020 30-21-17	225 .018 29-21-17	216 .016 29-21-16	200 .014 28-20-16							25
1000	Velocity Ps Throw	667 .157 45-32-25	600 .127 43-31-24	450 .072 39-28-21	375 .050 37-26-20	300 .032 34-24-19	267 .026 32-23-18	256 .023 31-22-17	240 .020 31-22-17	222 .018 31-22-17	200 .014 29-21-16						
1200	Velocity Ps Throw	800 .226 51-36-28	720 .183 49-35-27	540 .102 44-31-24	450 .072 41-29-23	360 .046 38-27-21	320 .037 37-26-20	300 .032 36-25-20	288 .028 36-25-20	267 .026 35-25-19	240 .020 33-24-18	200 .014 31-22-17					
1400	Velocity Ps Throw		840 .245 54-39-30	630 .142 49-35-27	525 .100 46-33-25	420 .062 43-30-24	373 .050 41-29-23	350 .045 40-28-22	336 .040 40-28-22	311 .033 39-27-21	280 .027 37-26-20	233 .019 35-25-19	218 .015 34-24-19				
1600	Velocity Ps Throw			720 .183 54-38-30	600 .127 51-36-28	480 .081 47-33-26	427 .075 45-32-25	400 .058 44-31-25	384 .052 43-31-24	356 .044 42-30-23	320 .037 41-29-22	267 .024 38-27-21	249 .023 37-27-21	218 .015 36-25-20	200 .014 35-25-19		
2000	Velocity Ps Throw				750 .199 59-42-32	600 .127 55-39-30	533 .101 52-37-29	500 .082 51-36-28	480 .081 51-36-28	444 .070 49-35-27	400 .057 48-34-26	333 .039 45-32-25	312 .035 44-31-24	273 .027 42-30-23	250 .023 40-29-22		
2500	Velocity Ps Throw					750 .199 64-45-35	667 .160 61-43-34	625 .141 60-42-33	600 .127 59-42-32	556 .105 57-41-32	500 .088 55-39-30	417 .062 52-37-29	390 .060 51-36-28	341 .040 49-34-27	313 .035 47-33-26		
3000	Velocity Ps Throw						900 .286 72-51-40	800 .226 69-49-38	750 .199 68-48-37	720 .183 67-47-37	667 .164 65-46-36	600 .127 63-45-35	500 .088 59-42-32	468 .076 58-41-32	409 .058 55-39-30	375 .050 53-38-29	
3500	Velocity Ps Throw								875 .270 75-53-41	840 .245 74-53-41	778 .220 72-51-40	700 .173 70-49-38	583 .121 65-46-36	545 .100 64-45-35	477 .079 61-43-34	438 .070 56-40-31	
NC		35 - 40										25 - 30					

Performance Notes for Series RC Revers-a-Core

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic Feet per Minute (air)
- Nk Vel - Neck velocity of air stream in Feet Per Minute
- Ps - Static pressure = Pt - Pv (inches of water column)
- Throw - Non-isothermal horizontal throw (supply air temperature 20°F colder than average room air temperature) values are for 50 fpm velocities for 0°, 22°, and 45° spread on double deflection Models 42F, 42C, and RC 42C
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak - Area Factors

Grilles and Registers



GAR

Series RC – Specifications

Supply - Single Deflection Supply Grilles and Registers – Aluminum

Model 41C-1 (curved border)

Air Outlets shall be model 41C-1 manufactured by METALAIRES. Units shall be single deflection supply grilles of with an extruded aluminum border and a removable core consisting of a single set of aluminum fixed deflection fins. Units shall have a 1 1/4" curved outer border. The units shall be the size and quantity as outlined in the plans and specifications.

The inlet shall have a removable core that includes fixed louver fins adjustable to provide 5° or 15°, upward or downward deflection air patterns. The removable core shall be held in place with spring clips. The inner core assembly shall have fins on 1/4" centers and include mullion support bars on 5" maximum spacing.

Units shall be designed for surface mounting applications and be designed to be fastened inside the duct opening with hidden screws.

Model 41F-1 (flat border)

Air Outlets shall be model 41F-1 manufactured by METALAIRES. Units shall be single deflection supply grilles of with an extruded aluminum border and a removable core consisting of a single set of aluminum fixed deflection fins. Units shall have a 1 1/4" flat outer border. The units shall be the size and quantity as outlined in the plans and specifications.

The inlet shall have a removable core with a 5/8" inner border that includes fixed louver fins adjustable to provide 5° or 15°, upward or downward deflection air patterns. The removable core shall be held in place with spring clips.

The inner core assembly shall have fins on 1/4" centers and include mullion support bars on 5" maximum spacing. Units shall be designed for surface mounting applications and be designed to be fastened inside the duct opening with hidden screws.

Model RC41C-1 (curved border with removable inner border)

Air Outlets shall be model RC41C-1 manufactured by METALAIRES. Units shall be single deflection supply grilles of with an extruded aluminum border and a single set of aluminum fixed deflection fins. Units shall have a 1 1/4" curved outer border with a 3/4" radius. The air outlet shall also include a removable inner core with a 5/8" border. The units shall be the size and quantity as outlined in the plans and specifications.

The inlet shall have a removable core with a 5/8" inner border that includes fixed louver fins adjustable to provide 5° or 15°, upward or downward deflection air patterns. The removable core shall be held in place with spring clips.

The inner core assembly shall have fins on 1/4" centers and include mullion support bars on 5" maximum spacing. Units shall be designed for surface mounting applications and be designed to be fastened inside the duct opening with hidden screws.

Supply - Double Deflection Supply Grilles and Registers – Aluminum

Model 42C-1 (curved border)

Air Outlets shall be model 42C-1 manufactured by METALAIRES. Units shall be double deflection supply grilles of with an extruded aluminum border and a removable core consisting of a single set of aluminum fixed deflection fins. Outlets shall also have a rear set of adjustable control blades that allow the spread of the discharge air pattern. Units shall have a 1 1/4" curved outer border. The units shall be the size and quantity as outlined in the plans and specifications.

The inlet shall have a removable core that includes fixed louver fins adjustable to provide 5° or 15°, upward or downward deflection air patterns. The removable core shall be held in place with spring clips.

The inner core assembly shall have fins on 1/4" centers and include mullion support bars on 5" maximum spacing.

Units shall be designed for surface mounting applications and be designed to be fastened inside the duct opening with hidden screws.

Model 42F-1 (flat border)

Air Outlets shall be model 42F-1 manufactured by METALAIRES. Units shall be double deflection supply grilles of with an extruded aluminum border and a removable core consisting of a single set of aluminum fixed deflection fins. Outlets shall also have a rear set of adjustable control blades that allow the spread of the discharge air pattern. Units shall have a 1 1/4" flat outer border. The units shall be the size and quantity as outlined in the plans and specifications.

The inlet shall have a removable core with a 5/8" inner border that includes fixed louver fins adjustable to provide 5° or 15°, upward or downward deflection air patterns. The removable core shall be held in place with spring clips.

The inner core assembly shall have fins on 1/4" centers and include mullion support bars on 5" maximum spacing. Units shall be designed for surface mounting applications and be designed to be fastened inside the duct opening with hidden screws.

Model RC42C-1 (curved border with removable inner border)

Air Outlets shall be model 41C-1 manufactured by METALAIRES. Units shall be double deflection supply grilles of with an extruded aluminum border and a single set of aluminum fixed deflection fins. Outlets shall also have a rear set of adjustable control blades that allow the spread of the discharge air pattern. Units shall have a 1 1/4" curved outer border with a 3/4" radius. The air outlet shall also include a removable inner core with a 5/8" border. The units shall be the size and quantity as outlined in the plans and specifications.

The inlet shall have a removable core with a 5/8" inner border that includes fixed louver fins adjustable to provide 5° or 15°, upward or downward deflection air patterns. The removable core shall be held in place with spring clips.

The inner core assembly shall have fins on 1/4" centers and include mullion support bars on 5" maximum spacing. Units shall be designed for surface mounting applications and be designed to be fastened inside the duct opening with hidden screws.



GAR - Grilles and Registers

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaline cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

Series RC - Model Specification Guide

Removable Core Grilles and Registers Extruded Aluminum - Reverse A Core

Model	Available Neck	Available Finishes	Available Options	
41C-1 - Curved Frame - Single Deflection 41F-1 - Flat Frame - Single Deflection RC41C-1 - Curved Mounting Frame - Single Deflection 42C-1 - Curved Frame - Double Deflection 42F-1 - Flat Frame - Double Deflection RC42C-1 - Curved Mounting Frame - Double Deflection	6" thru 48"	Standard	OBD	Opposed Blade Damper - Steel
		01 - White	OBDA	Opposed Blade Damper - Aluminum
		Optional	L9	Equalizing Grid
		02 - Aluminum	PF	Plaster Frame
		03 - Black		
		24 - Mill		
		28 - Custom Color		



GAR - Grilles and Registers

- ➔ Filter Grilles ➔ Series RHF ➔ Aluminum
 - ➔ Series RHEF ➔ Extruded Aluminum
 - ➔ Series SRHF ➔ Steel

Product Details

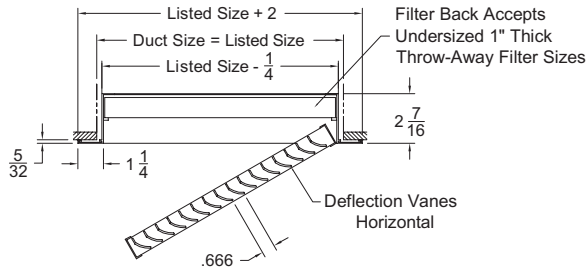
- ⊛ The RHF series of return aluminum filter grilles combine the advantages of corrosion resistant construction and durability with attractive design, solid performance, and competitive pricing
- ⊛ The RHEF is our premiere extruded aluminum filter grille offering superior appearance and performance. The SRHF is designed for applications requiring steel construction
- ⊛ The RHEF and SRHF are excellent choices for exhaust and return applications requiring a filter
- ⊛ The SRHF is designed for applications requiring steel construction



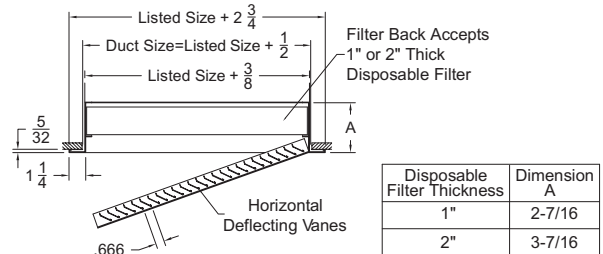
Model RHF-1 Shown
Standard Finish: 01 White

Aluminum Sideview, dimensions are in inches

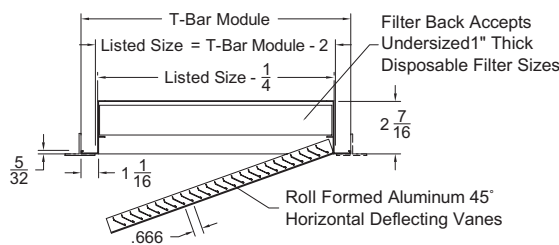
Filter Back Return Grilles and Registers
45° Louvered Face - Grille Size - Surface Mount - Aluminum
Model RHF-1 GS



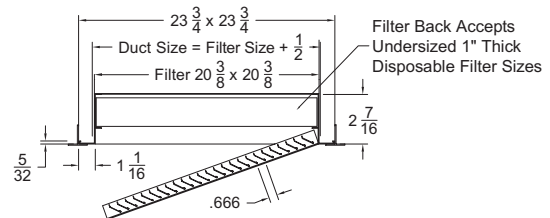
Filter Back Return Grilles and Registers
45° Louvered Face - Filter Size - Surface Mount - Aluminum
Model RHF-1 FS



Filter Back Return Grilles and Registers
45° Louvered Face - Grille Size - T-bar Lay-in - Aluminum
Model RHF-6 GS



Filter Back Return Grilles and Registers
45° Louvered Face - Filter Size - T-bar Lay-in - Aluminum
Model RHF-6 FS



Lay-In T-Bar Modules for RHF-6 GS and RHF-6 FS	
24 x 24	48 x 24
Listed Sizes	
22 x 22	46 x 22
Overall Dimensions W x H	
23 3/4 x 23 3/4	47 3/4 x 23 3/4

Grilles and Registers

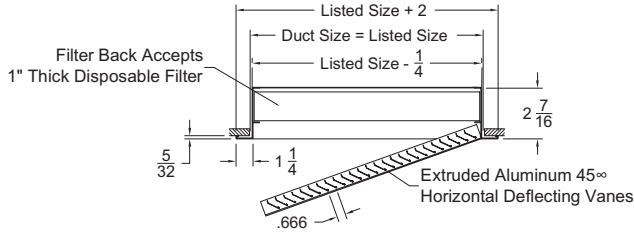


GAR

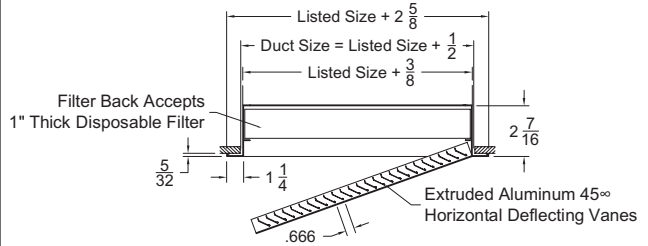
GAR - Grilles and Registers

Extruded Aluminum

Filter Back Return Grilles and Registers - 45° Louvered Face
Grille Size - Surface Mount - Extruded Aluminum
 Model RHEF-1 GS

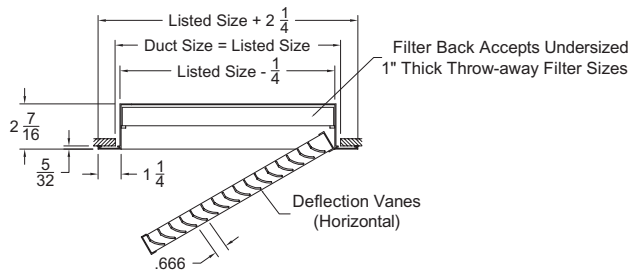


Filter Back Return Grilles and Registers - 45° Louvered Face
Filter Size - Surface Mount - Extruded Aluminum
 Model RHEF-1 FS

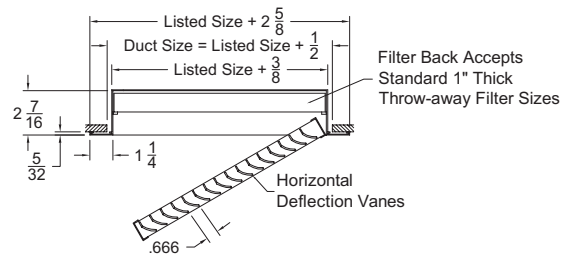


Steel

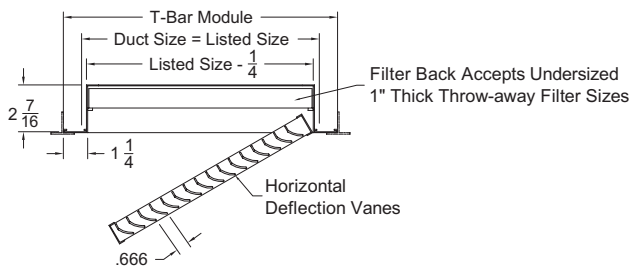
Filter Back Return Grilles and Registers - 45° Louvered Face - Steel
Grille Size - Surface Mount
 Model SRHF-1 GS



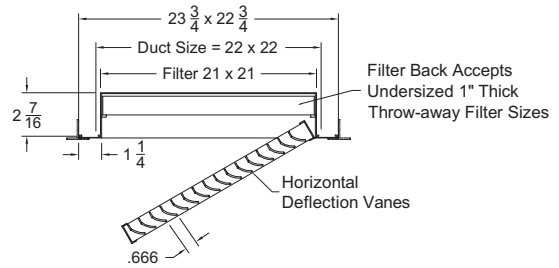
Filter Back Return Grilles and Registers - 45° Louvered Face - Steel
Filter Size - Surface Mount
 Model SRHF-1 FS



Filter Back Return Grilles and Registers - 45° Louvered Face - Steel
Grille Size- T-bar Lay-in
 Model SRHF-6 GS



Filter Back Return Grilles and Registers - 45° Louvered Face - Steel
Filter Size - T-bar Lay-in
 Model SRHF-6 FS



Lay-in T-Bar Modules for SRHF-6 GS and SRHFD-6 GS Models								
12 x 12	24 x 12	36 x 12	48 x 12	24 x 24	36 x 24	48 x 24	36 x 36	48 x 48
Listed Sizes								
10 x 10	22 x 10	34 x 10	46 x 10	22 x 22	34 x 22	46 x 22	34 x 34	46 x 46

Grilles and Registers

GAR

GAR - Grilles and Registers

Notes for Series RHF

1. Available Finishes	2. Available Accessories	3. Construction Details
Standard Finish: 01 White Optional Finish: 02 Aluminum paint 03 Black 24 Mill finish 28 Custom color	OBD - Steel - Opposed Blade Damper.....204 OBDA - Aluminum - Opposed Blade Damper ...204 L9 - Equalizing Grid.....204 PF - Plaster Frame205	• Frame and blades are aluminum

Notes for Series RHEF

1. Available Finishes	2. Available Accessories	3. Construction Details
Standard Finish: 01 White Optional Finish (no additional charge): 02 Aluminum paint 03 Black 04 Clear Anodized 24 Mill Finish 28 Custom color	OBD - Steel - Opposed Blade Damper.....204 OBDA - Aluminum - Opposed Blade Damper ...204 L9 - Equalizing Grid.....204 PF - Plaster Frame205	• Frame and blades are aluminum. Can be ordered as either G/S (grille size) or F/S (filter size).

Notes for Series SRHF

1. Available Finishes	2. Available Accessories	3. Construction Details
Standard Finish: 01 White Optional Finish: 03 Black 28 Custom color	OBD - Steel - Opposed Blade Damper.....204 OBDA - Aluminum - Opposed Blade Damper ...204 L9 - Equalizing Grid.....204 PF - Plaster Frame205	• Frame and blades are steel. Can be ordered as either G/S (grille size) or F/S (filter size).

Series RHF - Performance

Models RHF-1 GS, RHF-6 GS, RHF-1 FS, RHF-6 FS, RHEF-1 GS, RHEF-1 FS, SRHF-1 GS, SRHF-1FS, SRHF-6 GS, SRHF-6 FS

CFM	Ak	OUTLET SIZE														
		10" x 6"	12" x 6"	10" x 8"	12" x 8"	18" x 6"	12" x 12"	16" x 12"	18" x 12"	20" x 12"	24" x 12"	18" x 18"	20" x 18"	20" x 20"	24" x 18"	
100	Nk Vel Ps	240 .007	200 .005													
150	Nk Vel Ps	360 .016	300 .011	270 .009	225 .006	200 .005										
200	Nk Vel Ps	480 .029	400 .020	360 .016	300 .011	267 .009	200 .005									
250	Nk Vel Ps	600 .046	500 .032	450 .026	375 .018	333 .014	250 .008									
300	Nk Vel Ps	720 .066	600 .046	540 .037	450 .026	400 .020	300 .011	225 .006	200 .005							
350	Nk Vel Ps	840 .089	700 .062	630 .050	525 .035	467 .028	350 .016	263 .009	233 .007	210 .006						
400	Nk Vel Ps		800 .081	720 .066	600 .046	533 .036	400 .020	300 .011	267 .009	240 .007	200 .005					
450	Nk Vel Ps		900 .103	810 .083	675 .058	600 .046	450 .026	338 .014	300 .011	270 .009	225 .006	200 .005				
500	Nk Vel Ps				750 .071	667 .056	500 .032	375 .018	333 .014	300 .011	250 .008	222 .006	200 .005			
550	Nk Vel Ps				825 .086	733 .068	550 .038	413 .022	367 .017	330 .014	275 .010	244 .008	220 .006			
600	Nk Vel Ps				900 .103	800 .081	600 .046	450 .026	400 .020	360 .016	300 .011	267 .009	240 .007	216 .006	200 .005	
650	Nk Vel Ps					867 .095	650 .054	488 .030	433 .024	390 .019	325 .013	289 .011	260 .009	234 .007	217 .006	
700	Nk Vel Ps						700 .062	525 .035	467 .028	420 .022	350 .016	311 .012	280 .010	252 .008	233 .007	
750	Nk Vel Ps						750 .071	563 .040	500 .032	450 .026	375 .018	333 .014	300 .011	270 .009	250 .008	
	NC	40					35			30			25			

For performance notes, see page GAR-99

Grilles and Registers

GAR

Performance Notes for Series RHF

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic Feet per Minute (air)
- Nk Vel - Neck velocity of air stream in Feet Per Minute
- Ps - Negative Static pressure (inches of water column)
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw)
RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak - Area Factors

Series RHF - Specifications

Model RHF - Return Grilles – Extruded Aluminum

- RHF-1 G/S Grille Size - Surface Mount
- RHF-1 F/S Filter Size - Surface Mount
- RHF-6 G/S Grille Size - T-bar Lay-in
- RHF-6 F/S Filter Size - T-bar Lay-in

Air Inlets shall be model RHF manufactured by METALAIR®. Units shall be filter return or exhaust grilles of aluminum construction and with an aluminum border and a single set of fixed deflection blades. Units shall include a hinged face and integral frame designed to accept a 1" thick (optional 2" thick) filter. Filter face shall be secured in place with 1/4" turn fasteners. The units shall be the size and quantity as outlined in the plans and specifications.

Option G/S or F/S

1. Inlets shall be size to fit the required filter dimensions (option F/S)
2. Inlets shall be sized to fit the listed duct dimension (option G/S)

Border shall be 1 1/4" wide with aerodynamically shaped deflector blades on .666" centers set at 45°. Deflector blades shall be fixed.

For T-Bar Lay-in

Units shall be designed to integrate into the specified ceiling system.

For Surface Mount

Units shall be designed for surface mounting applications and be provided with counter sunk screw holes on the face of the device.

Model RHEF - Filter Return Grilles – Extruded Aluminum

- RHEF-1 G/S Grille Size - Surface Mount
- RHEF-1 F/S Filter Size - Surface Mount

Air Inlets shall be model RHEF-1 manufactured by METALAIR®. Units shall be filter return or exhaust grilles constructed of heavy extruded aluminum. Unit shall include a hinged face and integral frame designed to accept a 1" thick (optional 2" thick) filter. Filter face shall be secured in place with 1/4" turn fasteners. The units shall be the size and quantity as outlined in the plans and specifications.

Option G/S or F/S

1. Inlets shall be size to fit the required filter dimensions (option F/S)
2. Inlets shall be sized to fit the listed duct dimension (option G/S)

Border shall be 1 1/4" wide with aerodynamically shaped fixed deflector blades on .666" centers set at 45°. Deflector blades shall be fixed. Units shall be designed for surface mounting applications and be provided with counter sunk screw holes on the face of the device.

Model SRHF - Return Grilles – Steel

- SRHF-1 G/S Grille Size - Surface Mount
- SRHF-1 F/S Filter Size - Surface Mount
- SRHF-6 G/S Grille Size - T-bar Lay-in
- SRHF-6 F/S Filter Size - T-bar Lay-in

Air Inlets shall be model SRHF manufactured by METALAIR®. Units shall be filter return or exhaust grilles constructed of steel. Unit shall include a hinged face and integral frame designed to accept a 1" thick (optional 2" thick) filter. Filter face shall be secured in place with 1/4" turn fasteners. The units shall be the size and quantity as outlined in the plans and specifications.

Option G/S or F/S

1. Inlets shall be size to fit the required filter dimensions (option F/S)
2. Inlets shall be sized to fit the listed duct dimension (option G/S)

Border shall be 1 1/4" wide with aerodynamically shaped fixed deflector blades on .666" centers set at 45°. Deflector blades shall be fixed. Units shall be designed to integrate into the specified ceiling system.

For T-Bar Lay-in

Units shall be designed to integrate into the specified ceiling system.

For Surface Mounting

Units shall be designed for surface mounting applications and be provided with counter sunk screw holes on the face of the device.

Damper Accessories (Optional)

Optional opposed blade damper shall be constructed of steel (Model OBD) or aluminum (Model OBDA). Damper must be operable from the face of the diffuser.



Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaline cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

Series RHF - Model Specification Guide

Return and Exhaust - Filter Back Return Grilles
Aluminum - 45° Degree Louvered Face

Model	Available Neck	Available Finishes	Available Options	
RHF-1 F/S - Surface Mount Filter Grille (Filter Size) RHF-1 G/S - Surface Mount Filter Grille (Grille Size)	6" thru 48"	Standard	OBD	Opposed Blade Damper - Steel
		01 - White	OBDA	Opposed Blade Damper - Aluminum
		Optional	L9	Equalizing Grid
		02 - Aluminum	D5	Opposed Blade Damper - Steel
		03 - Black	D5A	Opposed Blade Damper - Aluminum
		24 - Mill		
		28 - Custom Color		

Return and Exhaust - Filter Back Return Grilles
Aluminum - 45° Degree Louvered Face
For T-bar Lay-in Ceiling Grid Applications

Model	Available Neck	Module	Available Finishes	Available Options	
RHF-6 F/S - Surface Mount Filter Grille (Filter Size)	6" x 6" to 22" x 22"	24" to 24"	Standard	OBD	Opposed Blade Damper - Steel
RHF-6 G/S - Surface Mount Filter Grille (Grille Size)	6" x 6" to 22" x 22"	48" to 24"	01 - White	OBDA	Opposed Blade Damper - Aluminum
			Optional	L9	Equalizing Grid
			02 - Aluminum	D5	Opposed Blade Damper - Steel
			03 - Black	D5A	Opposed Blade Damper - Aluminum
			24 - Mill		
		28 - Custom Color			

Grilles and Registers



GAR

GAR - Grilles and Registers

Series RHEF - Model Specification Guide

Return and Exhaust - Filter Back Return Grilles
Extruded Aluminum - 45° Degree Louvered Face

Model	Available Neck	Available Finishes	Available Options	
RHEF-1 F/S - Surface Mount Filter Grille (Filter Size)	6" thru 46"	Standard	OBD	Opposed Blade Damper - Steel
		01 - White	OBDA	Opposed Blade Damper - Aluminum
RHEF-1 G/S - Surface Mount Filter Grille (Grille Size)	6" thru 48"	Optional	L9	Equalizing Grid
		02 - Aluminum	D5	Opposed Blade Damper - Steel
		03 - Black	D5A	Opposed Blade Damper - Aluminum
		04 - Clear Anodized		
		24 - Mill		
		28 - Custom Color		

Series SRHF - Model Specification Guide

Return and Exhaust - Filter Back Return Grilles
Steel - 45° Degree Louvered Face

Model	Available Neck	Available Finishes	Available Options	
SRHF-1 F/S - Surface Mount Filter Grille (Filter Size)	6" thru 48"	Standard	OBD	Opposed Blade Damper - Steel
		01 - White	OBDA	Opposed Blade Damper - Aluminum
SRHF-1 G/S - Surface Mount Filter Grille (Grille Size)		Optional	L9	Equalizing Grid
		02 - Aluminum	D5	Opposed Blade Damper - Steel
		03 - Black	D5A	Opposed Blade Damper - Aluminum
		24 - Mill		
		28 - Custom Color		

Return and Exhaust - Filter Back Return Grilles
Steel - 45° Degree Louvered Face
For T-bar Lay-in Ceiling Grid Applications

Model	Available Neck	Module	Available Finishes	Available Options	
SRHF-6 F/S - T-bar Lay-in Filter Grille (Filter Size)	6" x 6" to 22" x 22"	24" to 24"	Standard	OBD	Opposed Blade Damper - Steel
			01 - White	OBDA	Opposed Blade Damper - Aluminum
SRHF-6 G/S - T-bar Lay-in Filter Grille (Grille Size)			Optional	L9	Equalizing Grid
			02 - Aluminum	D5	Opposed Blade Damper - Steel
			03 - Black	D5A	Opposed Blade Damper - Aluminum
			24 - Mill		
			28 - Custom Color		



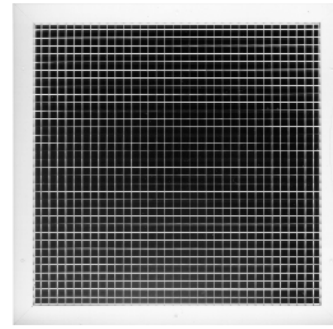
GAR - Grilles and Registers

7/2006

➔ Filter Return Grilles & Registers ➔ Cube Core ➔ Series CC5F ➔ Aluminum

Product Details

- ★ The series CC5F cubed core return and exhaust filter grilles are designed to provide low pressure drops and low sound levels
- ★ The series CC5F is designed for 1" thick filters (by others) and includes a hinged face with 1/4" turn fasteners for quick filter changes
- ★ Series CC5F is an excellent choice for applications requiring minimum pressure drop and noise in return and exhaust applications

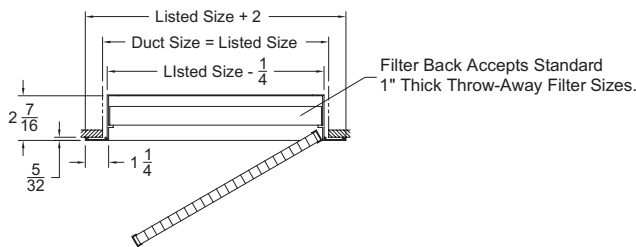


Model CC5F-1 Shown

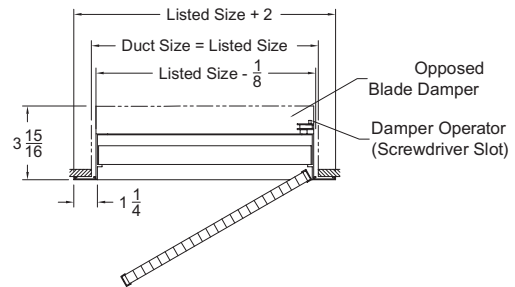
Standard Finish: 01 White

Sideview, dimensions are in inches

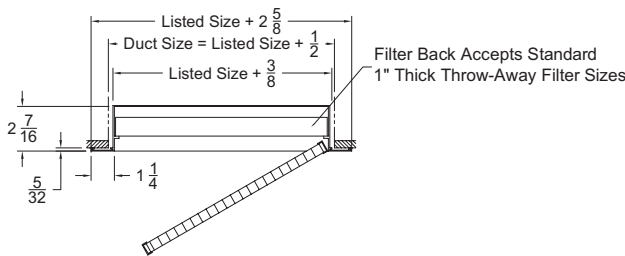
**Filter Back Return Grilles and Registers - 1/2" x 1/2" x 1/2" Cube Core
Grille Size - Surface Mount
Model CC5F-1 GS**



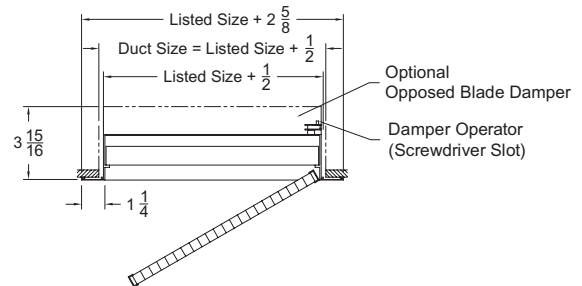
**Filter Back Return Grilles and Registers - 1/2" x 1/2" x 1/2" Cube Core
Grille Size - With Opposed Blade Damper - Surface Mount
Model CC5FD-1 GS**



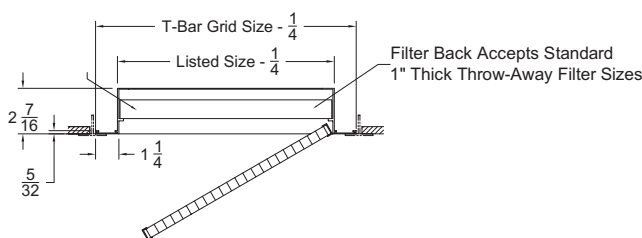
**Filter Back Return Grilles and Registers - 1/2" x 1/2" x 1/2" Cube Core
Filter Size - Surface Mount
Model CC5F-1 FS**



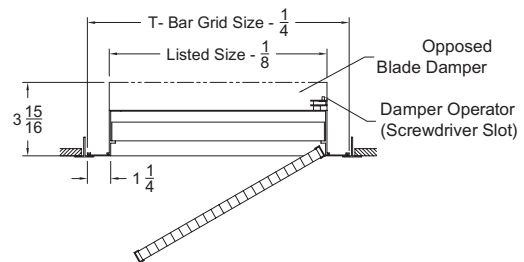
**Filter Back Return Grilles and Registers - 1/2" x 1/2" x 1/2" Cube Core
Filter Size - With Opposed Blade Damper - Surface Mount
Model CC5FD-1 FS**



**Filter Back Return Grilles and Registers - 1/2" x 1/2" x 1/2" Cube Core
Grille Size - T-bar Lay-in
Model CC5F-6 GS**



**Filter Back Return Grilles and Registers - 1/2" x 1/2" x 1/2" Cube Core
Grille Size - With Opposed Blade Damper - T-bar Lay-in
Model CC5FD-6 GS**



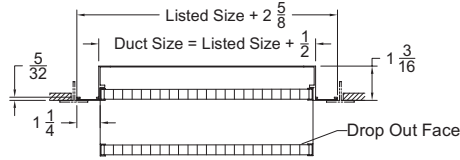
Grilles and Registers



GAR

GAR - Grilles and Registers

Filter Back Return Grilles and Registers - 1/2" x 1/2" x 1/2" Cube Core
 Filter Size - T-bar Lay-in with four thumb latches/removable core
 Model CC5F-6 FS



1. Available Finishes	2. Available Accessories	3. Construction Details
Standard Finish: 01 White Optional Finish: 02 Aluminum paint 03 Black 24 Mill finish 28 Custom color	OBD - Steel - Opposed Blade Damper.....204 OBDA - Aluminum - Opposed Blade Damper.....204 L9 - Equalizing Grid204 PF - Plaster Frame205	<ul style="list-style-type: none"> Frame and cube core are aluminum Can be ordered as either G/S (grille size) or F/S (filter size)

Series CC5F - Performance

Models CC5F-1 GS, CC5-1 FS, CC5F-6 GS, CC5F-6 FS, CC5FD-1 GS, CC5FD-1 FS, CC5FD-6 GS

CFM	Ak	NECK SIZE													
		6" x 6"	8" x 8"	10" x 10"	12" x 12"	14" x 14"	16" x 14"	16" x 16"	18" x 16"	18" x 18"	20" x 18"	20" x 20"	22" x 20"	22" x 22"	24" x 22"
		0.25	0.44	0.69	0.99	1.35	1.54	1.76	1.98	2.23	2.47	2.75	3.02	3.33	3.63
100	Velocity P _s	400 .064	225 .0055												
150	Velocity P _s	600 .082	338 .06	216 .054											
200	Velocity P _s	800 .107	450 .068	288 .057	200 .054										
250	Velocity P _s		563 .078	360 .062	250 .056										
300	Velocity P _s		675 .091	432 .067	300 .058	220 .054									
350	Velocity P _s		787 .105	504 .073	350 .061	257 .056	225 .055								
400	Velocity P _s		900 .122	576 .080	400 .064	294 .058	257 .056	225 .055	200 .054						
450	Velocity P _s			648 .087	450 .068	331 .060	289 .057	253 .056	225 .055	200 .054					
500	Velocity P _s			720 .096	500 .072	367 .062	321 .059	281 .057	250 .056	222 .054	200 .054				
550	Velocity P _s			792 .106	550 .077	404 .065	354 .061	309 .059	275 .057	244 .055	220 .054				
600	Velocity P _s			864 .116	600 .082	441 .067	386 .063	338 .060	300 .058	267 .056	240 .055	216 .054			
650	Velocity P _s				650 .088	478 .070	418 .066	366 .062	325 .059	289 .057	260 .056	234 .055	213 .054		
700	Velocity P _s				700 .094	514 .074	450 .068	394 .064	350 .061	311 .059	280 .057	252 .056	229 .055	208 .054	
750	Velocity P _s				750 .100	551 .077	482 .071	422 .066	375 .063	333 .060	300 .058	270 .056	245 .055	223 .054	205 .054
NC		25-30			20-25		<20								

For performance notes, see page GAR-104

Grilles and Registers



GAR

Series CC5F - Performance

Models CC5F-1 GS, CC5-1 FS, CC5F-6 GS, CC5F-6 FS, CC5FD-1 GS, CC5FD-1 FS, CC5FD-6 GS

CFM	Ak	NECK SIZE														NC
		24" x 24"	26" x 26"	28" x 28"	30" x 30"	32" x 32"	48" x 24"	34" x 34"	36" x 36"	38" x 38"	40" x 40"	42" x 42"	44" x 44"	46" x 46"	48" x 48"	
		3.96	4.65	5.39	6.19	7.04	7.92	7.95	8.91	9.93	11.00	12.13	13.31	14.55	15.84	
800	Velocity Ps	200 .053														
1000	Velocity Ps	250 .055	213 .054													
1200	Velocity Ps	300 .058	256 .056	220 .054												
1600	Velocity Ps	400 .064	341 .060	294 .057	256 .056	225 .054	200 .053									
2000	Velocity Ps	500 .071	426 .065	367 .061	320 .059	281 .057	250 .055	249 .055	222 .054							
2500	Velocity Ps	625 .083	533 .074	459 .068	400 .064	352 .060	313 .058	311 .058	278 .057	249 .055	225 .054	204 .054				
3000	Velocity Ps	750 .098	639 .085	551 .076	480 .070	422 .065	375 .062	374 .062	333 .059	299 .058	270 .056	245 .055	223 .054	204 .054		
3500	Velocity Ps	875 .115	746 .097	643 .085	560 .077	492 .071	438 .066	436 .066	389 .063	349 .060	315 .058	286 .057	260 .056	238 .055	219 .054	
4000	Velocity Ps		852 .112	735 .096	640 .085	563 .077	500 .071	498 .071	444 .067	399 .063	360 .061	327 .059	298 .058	272 .056	250 .055	
4500	Velocity Ps			827 .108	720 .094	633 .084	563 .077	561 .077	500 .071	449 .067	405 .064	367 .061	335 .060	306 .058	281 .057	
5000	Velocity Ps				800 .104	703 .092	625 .083	623 .083	556 .076	499 .071	450 .067	408 .064	372 .062	340 .060	313 .058	
6000	Velocity Ps					800 .104	750 .098	747 .097	667 .088	598 .080	540 .075	490 .070	446 .067	408 .064	375 .062	
7000	Velocity Ps						875 .115	872 .114	778 .101	698 .091	630 .084	571 .078	521 .073	476 .069	438 .066	
8000	Velocity Ps								889 .117	798 .104	720 .094	653 .086	595 .080	544 .075	500 .071	
	NC	30-35										25-30				

Performance Notes for Series CC5F

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic Feet per Minute (air)
- Nk Vel - Neck velocity of air stream in Feet Per Minute
- Ps - Negative Static pressure (inches of water column)
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw)
RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak - Area Factors

Series CC5F - Specifications

- CC5F-1 G/S Grille Size - Surface Mount
- CC5F-1 F/S Filter Size - Surface Mount
- CC5F-6 G/S Grille Size - T-bar Lay-in
- CC5F-6 F/S Filter Size - T-bar Lay-in

Air Inlets shall be Model: CC5 with a 1/2" x 1/2" x 1/2" cubed core manufactured by METALAIRE®. Border shall be 1 1/4" wide. Units shall be filter return or exhaust grilles of aluminum construction and with an extruded aluminum border and an aluminum cubed core. Units shall include a hinged face and integral frame designed to accept a 1" thick filter. Filter face shall be secured in place with 1/4" turn fasteners. The units shall be the size and quantity as outlined in the plans and specifications.

Option G/S or F/S

1. Inlets shall be size to fit the required filter dimensions (option F/S)
2. Inlets shall be sized to fit the listed duct dimension (option G/S)

For T-Bar Lay-in

Units shall be designed to integrate into the specified ceiling system.

For Surface mounting

Units shall be designed for surface mounting applications and be provided with counter sunk screw holes on the face of the device.

Damper Accessories (Optional)

Optional opposed blade damper shall be constructed of steel (Model OBD) or aluminum (Model OBDA).
Damper must be operable from the face of the diffuser.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

GAR - Grilles and Registers

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

Series CC5F - Model Specification Guide

Return and Exhaust Filter Grille

Series CC5F - Aluminum - 1/2" x 1/2" x 1/2" Cube Core

Model	Available Neck	Available Finishes	Available Options	
CC5F-1 F/S - Surface Mount Filter Grille (Filter Size) CC5F-1 G/S - Surface Mount Filter Grille (Grille Size)	6" thru 48"	Standard	OBD	Opposed Blade Damper - Steel
		01 -White	OBDA	Opposed Blade Damper - Aluminum
		Optional	L9	Equalizing Grid
		02 - Aluminum		
		03 - Black		
		24 - Mill		
		28 - Custom Color		

Return and Exhaust Filter Grille

Series CC5F - Aluminum - 1/2" x 1/2" x 1/2" Cube Core

For T-bar Lay-in Ceiling Grid Applications

Model	Available Neck	Available Finishes	Available Options	
CC5F-1 F/S - Surface Mount Filter Grille (Filter Size) CC5F-1 G/S - Surface Mount Filter Grille (Grille Size)	6" thru 48"	Standard	OBD	Opposed Blade Damper - Steel
		01 -White	OBDA	Opposed Blade Damper - Aluminum
		Optional	L9	Equalizing Grid
		02 - Aluminum		
		03 - Black		
		24 - Mill		
		28 - Custom Color		



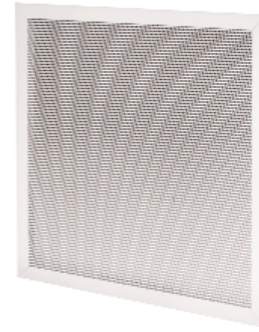
GAR - Grilles and Registers

7/2006

➔ Filter Return Grilles & Registers ➔ Perforated Face ➔ Series RPF ➔ Aluminum

Product Details

- ★ The series RPF perforated face return or exhaust filter grilles are designed to blend into the ceiling system and provide a clean, uncluttered architectural appearance
- ★ The series RPF is designed for 1" thick filters (by others) and includes a hinged face with 1/4" turn fasteners for quick filter changes
- ★ Series RPF is of aluminum construction and ideal for return and exhaust filter applications requiring low pressure drops and low sound

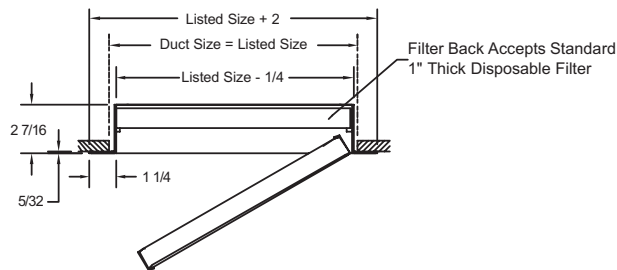


Model RPF-1 Shown

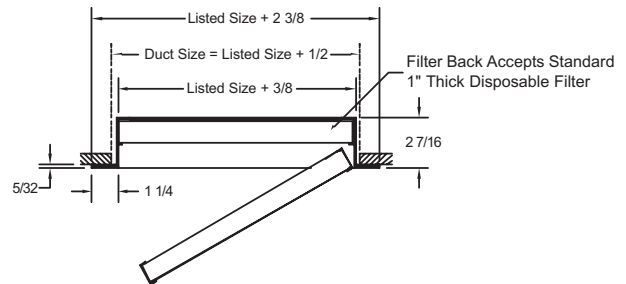
Standard Finish: 01 White

Sideview, dimensions are in inches

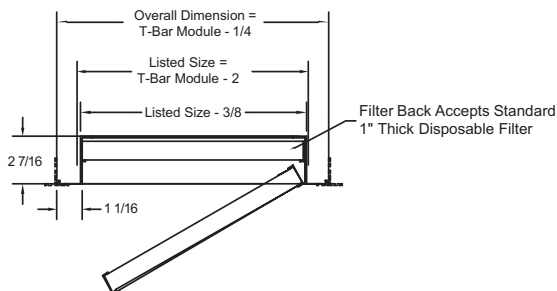
**Filter Return Grille & Registers - Grille Size Filter - Surface Mount
Model RPF-1 GS**



**Filter Return Grille & Registers - Filter Size Filter - Surface Mount
Model RPF-1 FS**



**Filter Return Grille & Registers - Grille Size Filter - T-bar Lay-in
Model RPF-6 GS**



Grilles and Registers



GAR

1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finishes: 02 Aluminum paint 03 Black 24 Mill finish 28 Custom color</p>	<p>OBDA - Steel - Opposed Blade Damper.....204</p> <p>OBDA - Aluminum - Opposed Blade Damper204</p> <p>L9 - Equalizing Grid204</p> <p>PF - Plaster Frame205</p>	<ul style="list-style-type: none"> • Frame and perforated face are aluminum • Can be ordered as either G/S (grille size) or F/S (filter size) • Can be ordered to fit standard T-bar sizes

GAR - Grilles and Registers

Series RPF - Performance

Models RPF-1 GS, RPF-1 FS, RPF-6 GS

CFM	Ak	NECK SIZE														NC
		8" x 8"	10" x 10"	12" x 12"	14" x 14"	16" x 16"	18" x 18"	20" x 20"	22" x 22"	24" x 24"	30" x 24"	36" x 24"	40" x 24"	44" x 24"	48" x 24"	
		.36	.56	.80	1.09	1.42	1.80	2.22	2.69	3.20	4.00	4.80	5.33	5.87	6.40	
200	Nk Vel Ps	450 .003	288 .001	200 .001												
400	Nk Vel Ps	900 .012	576 .005	400 .002	294 .001	225 .001										
600	Nk Vel Ps		864 .011	600 .005	441 .003	338 .002	267 .001	216 .001								
800	Nk Vel Ps			800 .010	588 .005	450 .003	356 .002	298 .001	238 .001	200 .001						
1000	Nk Vel Ps				735 .008	563 .005	444 .003	360 .002	298 .001	250 .001	200 .001					
1200	Nk Vel Ps				882 .012	675 .007	533 .004	432 .003	357 .002	300 .001	240 .001	200 .001				
1400	Nk Vel Ps					787 .009	622 .006	504 .004	417 .003	350 .002	280 .001	233 .001	210 .001			
1600	Nk Vel Ps					900 .012	711 .008	576 .005	476 .003	400 .002	320 .002	267 .001	240 .001	218 .001	200 .001	
1800	Nk Vel Ps						800 .010	648 .006	536 .004	450 .003	360 .002	300 .001	270 .001	245 .001	225 .001	
2000	Nk Vel Ps						889 .012	720 .008	595 .005	500 .004	400 .002	333 .002	300 .001	273 .001	250 .001	
2400	Nk Vel Ps							864 .011	714 .008	600 .005	480 .004	400 .002	360 .002	327 .002	300 .001	
2800	Nk Vel Ps								833 .011	700 .007	560 .005	467 .003	420 .003	382 .002	350 .002	
3200	Nk Vel Ps									800 .011	640 .006	533 .004	480 .004	436 .003	400 .002	
3600	Nk Vel Ps									900 .012	720 .008	600 .005	540 .004	491 .004	450 .003	
NC		35 - 40										30 - 35				

Performance Notes for Series RPF

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic Feet per Minute (air)
- Nk Vel - Neck velocity of air stream in Feet Per Minute
- Ps - Negative Static pressure (inches of water column)
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw)
RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak - Area Factors

Series RPF - Specifications

Model RPF-1 G/S Grille Size - Surface Mount

Model RPF-1 F/S Filter Size - Surface Mount

Air Inlets shall be model RPF manufactured by METALAIR®. Units shall be perforated face, return or exhaust grilles constructed of aluminum. Perforate face shall have 3/16" diameter holes on 1/4" centers and shall have a 51% free area. Units shall include a hinged face and integral frame designed to accept a 1" thick filter. Filter face shall be secured in place with 1/4 turn fasteners. The units shall be the size and quantity as outlined in the plans and specifications.

Option G/S or F/S

1. Inlets shall be size to fit the required filter dimensions (option F/S)
2. Inlets shall be sized to fit the listed duct dimension (option G/S)

Border shall be 1 1/4". Units shall be designed for surface mounting applications and be provided with counter sunk screw holes on the face of the device.

Damper Accessories (Optional)

Optional opposed blade damper shall be constructed of steel (Model OBD) or aluminum (Model OBDA).

Damper must be operable from the face of the diffuser.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Grilles and Registers



GAR

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mills
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

Series RPF - Model Specification Guide

Return and Exhaust Filter Grille

Series RPF - Perforated Face - Aluminum

Model	Available Neck	Available Finishes	Available Options	
RPF-1 F/S - Surface Mount Filter Grille (Filter Size) RPF-1 G/S - Surface Mount Filter Grille (Grille Size)	6" thru 48"	Standard	OBD	Opposed Blade Damper - Steel
		01 - White	OBDA	Opposed Blade Damper - Aluminum
		Optional	L9	Equalizing Grid
		02 - Aluminum		
		03 - Black		
		24 - Mill		
		28 - Custom Color		

Grilles and Registers




Return and Exhaust Filter Grille

Series RPF - Perforated Face - Aluminum

For T-bar Lay-in Ceiling Grid Applications

Model	Available Neck	Module	Available Finishes	Available Options	
RPF-6 G/S - T-bar Lay-in Filter Grille (Grille Size)	6" x 6" to 10" x 10"	12" x 12"	Standard	OBD	Opposed Blade Damper - Steel
	6" x 6" to 22" x 22"	24" x 24"	01 - White	OBDA	Opposed Blade Damper - Aluminum
	6" x 6" to 46" x 22"	48" x 24"	Optional	L9	Equalizing Grid
			02 - Aluminum		
			03 - Black		
			24 - Mill		
			28 - Custom Color		

GAR



IND

**INDUSTRIAL /
HIGH CAPACITY DEVICES**

INDUSTRIAL
HIGH CAPACITY DEVICES

Series 4100
Series 4200
Series 4300

Pg. 112

Industrial/High Capacity Grilles & Registers - Modular Frame/Multi-Core - Aluminum Series 4100, 4200, 4300

- ★ Series 4100, 4200 and 4300 industrial grilles and registers are engineered specifically for high capacity industrial air distribution applications where performance is a priority
- ★ The series 4100, 4200 and 4300 models are designed for ceiling and high sidewall installation and are available with of choice of three collar depths
- ★ Series 4100, 4200 and 4300 are excellent selections for industrial applications requiring high capacity and performance

Series 4100	Vertical Blades	Horizontal Blades
Single Deflection	V4152	H4152
Double Deflection - Front Blades	V4154	H4154
Single Deflection - Inverted Frame	V4152 IF	H4152 IF
Double Deflection - Inverted Frame - Front Blades	V4154 IF	H4154 IF
Single Deflection - w/ Trunk Latch Frame	V4152-TLF	H4152-TLF
Double Deflection - Front Blades - w/ Trunk Latch Frame	V4154-TLF	H4154-TLF
Modular Frame - Single Deflection	V4152MF	H4152MF
Modular Frame - Double Deflection	V4154MF	H4154MF

Series 4200	Vertical Blades	Horizontal Blades
Single Deflection	V4252	H4252
Double Deflection - Front Blades	V4254	H4254
Single Deflection - Inverted Frame	V4252 IF	H4252 IF
Double Deflection - Inverted Frame - Front Blades	V4254 IF	H4254 IF
Single Deflection - w/ Trunk Latch Frame	V4252-TLF	H4252-TLF
Double Deflection - Front Blades - w/ Trunk Latch Frame	V4254-TLF	H4254-TLF
Modular Frame - Single Deflection	V4252MF	H4252MF
Modular Frame - Double Deflection	V4254MF	H4254MF

Series 4300	Vertical Blades	Horizontal Blades
Single Deflection	V4352	H4352
Double Deflection - Front Blades	V4354	H4354
Modular Frame - Single Deflection	V4352MF	H4352MF
Modular Frame - Double Deflection	V4354MF	H4354MF

Gang Operator for Series 4100, 4200, & 4300	Vertical Blades	Horizontal Blades
Gang Operator	GOV	GOH

Airfoil Blades for Series 4100 & 4200		
Optional Airfoil Blades (Mounted)	AB	

Series	Collar	Blades	Center
4100	4 3/8"	1 1/2"	1 1/2"
4200	1 7/8"	1 1/2"	1 1/2"
4300	7"	3"	3"

Industrial / High Capacity Devices



IND



Model RL
Pg. 124

Industrial/High Capacity Drum Louver - Supply - Extruded Aluminum - Series RL Roto-Louver

- ✦ The series RL Roto-Louver outlets are engineered for high capacity, long throw applications such as sports arenas, gymnasiums, conference centers, industrial plants and other large spaces.
- ✦ The series RL units have the flexibility to change throw direction and spread of the discharge jet with individually adjustable deflection blades and a rotating cylindrical drum assembly.
- ✦ Series RL Roto-Louver outlets are an excellent choice for high capacity, long throw applications. These units offer flexibility allowing installation in a variety of applications.

Roto-Louver
RL
RL-DF Dual Flow
RL-GO Gang Operator



Model JA-1
Pg. 134

High Capacity - Supply - Round Neck - Steel - Series JA - Jet*Aire

- ✦ Jet*Aire Diffusers offer an economical solution to high capacity air distribution applications requiring long throw distances. This diffuser can be effectively applied to large space applications such as civic centers, auditoriums, and arenas.
- ✦ Units are available as a single diffuser, or multiple diffusers mounted in a panel.
- ✦ Jet*Aire Diffusers are an excellent choice for high capacity, long throw applications. The modular design of the Jet*Air diffusers allows selection for a wide range of air volumes

Jet*Aire
JA-1 Surface Mount - Single Unit
JA-1P Panel Mounted - 1 Unit
JA-2P Panel Mounted - 2 Units
JA-3P Panel Mounted - 3 Units
JA-4P Panel Mounted - 4 Units
JA-1EX Exposed Duct Mount - No Panel



Model OAL
Pg. 138

Outside Air Louvers - Extruded Aluminum - Series OAL

- ✦ Series OAL stationary outside air louvers are fixed multiple blade air distribution devices designed for installation in building exterior wall openings
- ✦ The series OAL inhibit the entrance of wind, rain, snow, sleet, sand, birds, insects, and airborne debris while serving to enhance the building's exterior appearance
- ✦ Each series OAL blade has a 45° face deflection and includes a water baffle with a 1/4" return bend
- ✦ Series OAL blades also overlap to improve the weather resistance of the louver

Type "C" Channel Frame	Type "F" Flange Frame
OAL2C 2" Depth	OAL2F 2" Depth
OAL4C 4" Depth	OAL4F 4" Depth



Model MPK
Pg. 146

Industrial/High Capacity Punkah Louver Global Adjustment - Aluminum - Model MPK

- ✦ Model MPK discharges a high-velocity jet that can be directed to condition a specific space or area
- ✦ The model MPK is constructed using a felt gasket that allows smooth movement of the inner core to direct air flow and provides a tight seal to prevent air leakage
- ✦ An optional aperture damper is available which includes an adjustment knob and stainless steel linkage and tension springs for maximum corrosion protection



Model MRDD
Pg. 150

Architectural - High Velocity - Round - Series MRD

- ✦ An excellent selection for architecturally pleasing applications requiring an adjustable outlet with high capacities and long throw.
- ✦ Heavy gauge aluminum construction
- ✦ Available in single and double deflection
- ✦ Unit is designed for surface mounting with concealed fastening

Single Deflection	Double Deflection
MRDS	MRDD

For more product information visit us at www.metalair.com

Supply/Modular Frame/Multi-Core Series 4100/4200/4300 Aluminum

Product Details

- Series 4100, 4200 and 4300 industrial grilles and registers are engineered specifically for high capacity industrial air distribution applications where performance is a priority
- The series 4100, 4200 and 4300 models are designed for ceiling and high sidewall installation and are available with choice of three collar depths
- Series 4100, 4200 and 4300 are excellent selections for industrial applications requiring high capacity and performance

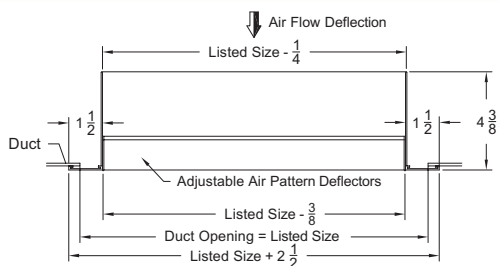


Model V4154 Shown
Standard Finish: 02 Aluminum

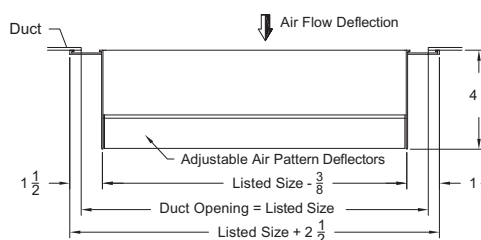
Series 4100 - 4 3/8" Deep Collar - 1 1/2" Blades - 1 1/2" Centers

Sideview, dimensions are in inches

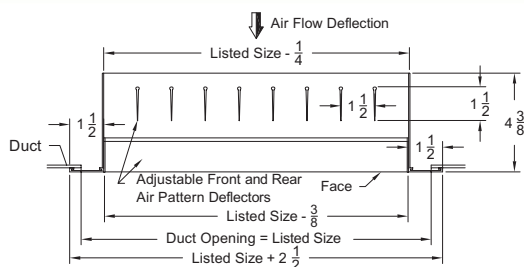
Supply Grille/Multi-Core - Single Deflection - 4 3/8" Deep Collar
1 1/2" Blades - 1 1/2" Centers
Model H4152 - Horizontal Blades
Model V4152 - Vertical Blades



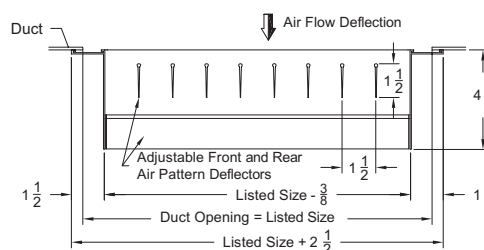
Supply Grille/Multi-Core - Single Deflection - 4 3/8" Deep Collar
1 1/2" Blades - 1 1/2" Centers - Inverted Frame
Model H4152IF - Horizontal Blades
Model V4152IF - Vertical Blades



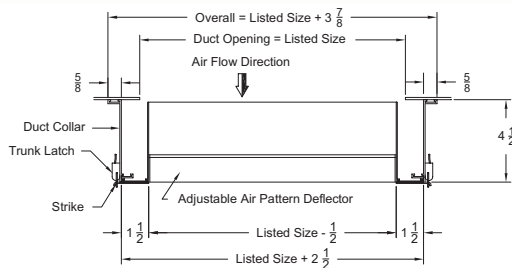
Supply Grille/Multi-Core - Double Deflection - 4 3/8" Deep Collar
1 1/2" Blades - 1 1/2" Centers
Model H4154 - Horizontal Blades
Model V4154 - Vertical Blades



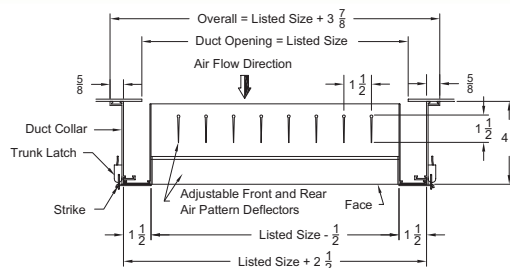
Supply Grille/Multi-Core - Double Deflection - 4 3/8" Deep Collar
1 1/2" Blades - 1 1/2" Centers - Inverted Frame
Model H4154IF - Horizontal Blades
Model V4154IF - Vertical Blades



Supply Grille/Multi-Core - Single Deflection - 4 3/8" Deep Collar
1 1/2" Blades - 1 1/2" Centers - With Trunk Latch Frame
Model H4152 TLF - Horizontal Blades
Model V4152 TLF - Vertical Blades



Supply Grille/Multi-Core - Double Deflection - 4 3/8" Deep Collar
1 1/2" Blades - 1 1/2" Centers - With Trunk Latch Frame
Model H4154 TLF - Horizontal Blades
Model V4154 TLF - Vertical Blades



Industrial / High Capacity Devices

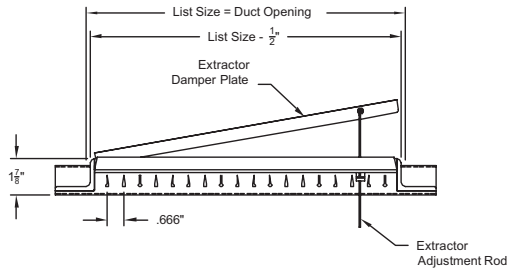


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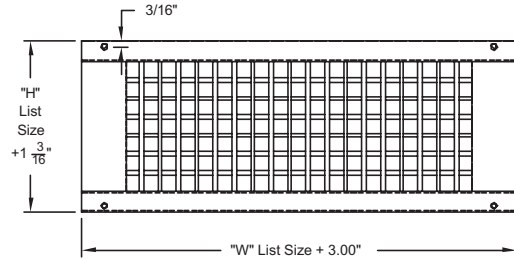
IND - Industrial / High Capacity Devices

Series 4200 → 1 7/8" Deep Collar - 1 1/2" Blades - 1 1/2" Centers

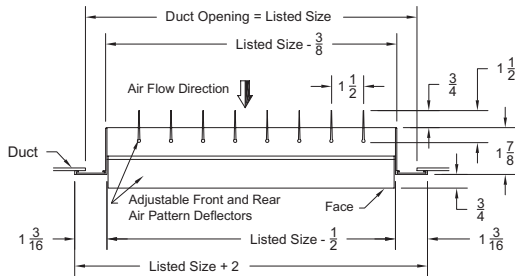
**Supply Grille/Multi-Core - Single Deflection - 1 7/8" Deep Collar
1 1/2" Blades - 1 1/2" Centers**
Model H4252 - *Horizontal Blades*
Model V4252 - *Vertical Blades*



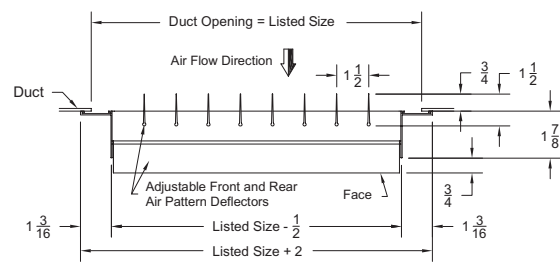
**Supply Grille/Multi-Core - Single Deflection - 1 7/8" Deep Collar
1 1/2" Blades - 1 1/2" Centers - Inverted Frame**
Model H4252IF - *Horizontal Blades*
Model V4252IF - *Vertical Blades*



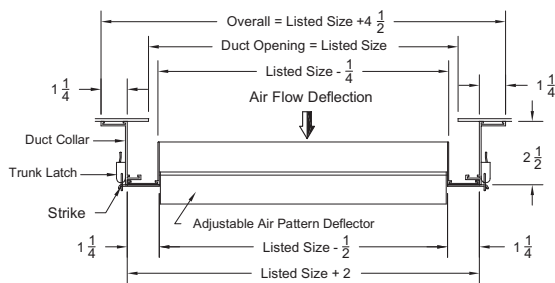
**Supply Grille/Multi-Core - Double Deflection - 1 7/8" Deep Collar
1 1/2" Blades - 1 1/2" Centers**
Model H4254 - *Horizontal Blades*
Model V4254 - *Vertical Blades*



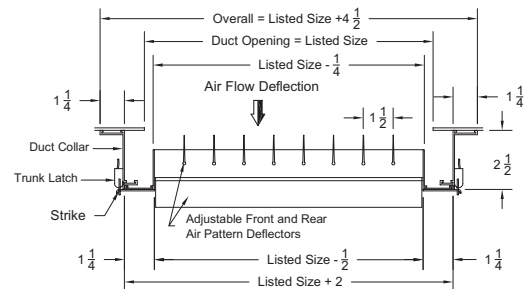
**Supply Grille/Multi-Core - Double Deflection - 1 7/8" Deep Collar
1 1/2" Blades - 1 1/2" Centers - Inverted Frame**
Model H4254IF - *Horizontal Blades*
Model V4254IF - *Vertical Blades*



**Supply Grille/Multi-Core - Single Deflection - 1 7/8" Deep Collar
1 1/2" Blades - 1 1/2" Centers - With Trunk Latch Frame**
Model H4252 TLF - *Horizontal Blades*
Model V4252 TLF - *Vertical Blades*



**Supply Grille/Multi-Core - Double Deflection - 1 7/8" Deep Collar
1 1/2" Blades - 1 1/2" Centers - With Trunk Latch Frame**
Model H4254 TLF - *Horizontal Blades*
Model V4254 TLF - *Vertical Blades*



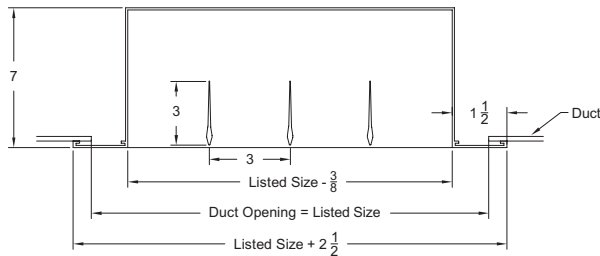
Industrial / High Capacity Devices



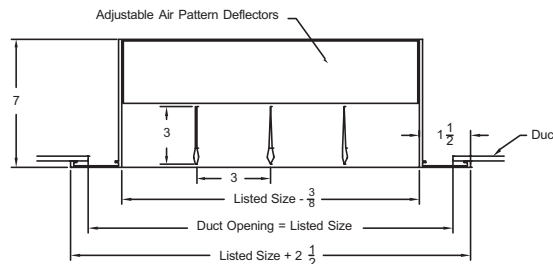
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Series 4300 → 7" Deep Collar - 3" Blades - 3" Centers

Supply Grille/Multi-Core - Single Deflection - 7" Deep Collar
 3" Blades - 3" Centers
 Model H4352 - Horizontal Blades
 Model V4352 - Vertical Blades

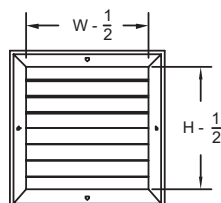


Supply Grille/Multi-Core - Double Deflection - 7" Deep Collar
 3" Blades - 3" Centers
 Model H4352 - Horizontal Blades
 Model V4352 - Vertical Blades

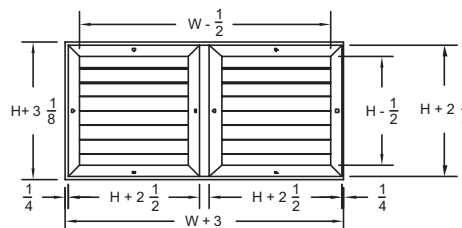


Series 4100/4200/4300 → Modular Frame

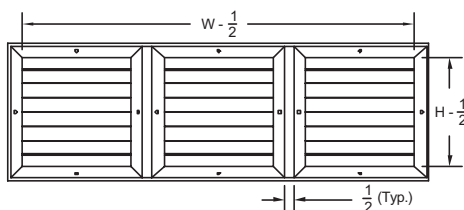
Modular Frame Industrial Grille - 1-1 Core
 Series 4100 MF - 4 3/8" Deep Frame
 Series 4200 MF - 1 7/8" Deep Narrow Frame
 Series 4300 MF - 7" Deep Frame



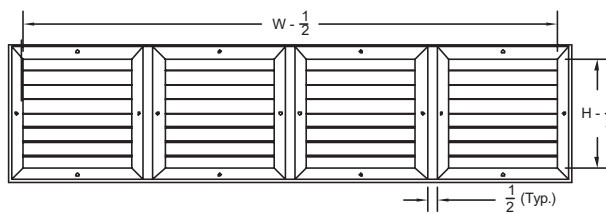
Modular Frame Industrial Grille - 2-2 Core
 Series 4100 MF - 4 3/8" Deep Frame
 Series 4200 MF - 1 7/8" Deep Narrow Frame
 Series 4300 MF - 7" Deep Frame



Modular Frame Industrial Grille - 3-3 Core
 Series 4100 MF - 4 3/8" Deep Frame
 Series 4200 MF - 1 7/8" Deep Narrow Frame
 Series 4300 MF - 7" Deep Frame



Modular Frame Industrial Grille - 4-4 Core
 Series 4100 MF - 4 3/8" Deep Frame
 Series 4200 MF - 1 7/8" Deep Narrow Frame
 Series 4300 MF - 7" Deep Frame



Industrial / High Capacity Devices



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Modular Frame	Duct Dimension W			
	1-1 Core	2-2 Core	3-3 Core	4-4 Core
8	8	19	30	41
10	10	23	36	49
12	12	27	42	57
15	15	33	51	69

Modular Frame		
Model	Vertical Blade	Horizontal Blade
Series 4100		
Single Deflection	V4152 MF	H4152 MF
Double Deflection	V4154 MF	H4154 MF
Series 4200		
Single Deflection	V4252 MF	H4252 MF
Double Deflection	V4254 MF	H4254 MF
Series 4300		
Single Deflection	V4352 MF	H4352 MF
Double Deflection	V4354 MF	H4354 MF

IND - Industrial / High Capacity Devices

Notes for Models 4100, 4200, 4300, 4100 IF, 4200 IF, 4300 IF

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 02 Aluminum Optional Finish: 01 White 03 Black 04 Clear Anodized 24 Mill finish 28 Custom color	OBD - Steel - Opposed Blade Damper204 (not for use with inverted frame) OBDA - Aluminum -Opposed Blade Damper .204 (not for use with inverted frame)	TLF -Trunk Latch Frame MF -Modular Frame GOH - Gang Operator for Horizontal Blades GOV - Gang Operator for Vertical Blades AB - Airfoil Blades	<ul style="list-style-type: none"> Maximum 1-piece dimension 48" x 48" Oversized units made in multiple sections, each with full flanges Mullion strips provided for joining units in the field

Notes for Models 4100 TLF, 4200 TLF, 4300 TLF

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 02 Aluminum Optional Finish: 01 White 03 Black 04 Clear Anodized 24 Mill finish 28 Custom color	(Shipped Unattached) OBD - Steel - Opposed Blade Damper204 OBDA - Aluminum -Opposed Blade Damper ..204	(Factory Mounted) GOH - Gang Operator for Horizontal Blades GOV - Gang Operator for Vertical Blades AB - Airfoil Blades	<ul style="list-style-type: none"> Maximum 1-piece dimension 48" x 48" No oversized units available on TLF option

Notes for Models 4100MF, 4200MF, 4300MF

1. Available Finishes	2. Available Accessories	3. Construction Details
Standard Finish: 02 Aluminum Optional Finish: 01 White 03 Black 28 Custom color	TLF -Trunk Latch Frame MF -Modular Frame GOH - Gang Operator for Horizontal Blades.....205 GOV - Gang Operator for Vertical Blades205 AB - Airfoil Blades205	<ul style="list-style-type: none"> Sizes only as listed in tables Dampers can be mounted on each individual core Dampers not available on Models H4254, and V4254 Cores are extruded aluminum, panels are steel

Industrial / High Capacity Devices



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IND - Industrial / High Capacity Devices

7/2006

Series 4100/4200/4300 - Performance

Series 4100, 4200, 4300

CFM	Listed Size (Inches)	12" x 6"			14" x 6"			12" x 10" 10" x 8"			12" x 10" 16" x 6"			16" x 8"					
		Average Ac Core Area Sq. Ft.			0.44			0.50			0.59			0.75			0.80		
		Deflection			0°	22 1/2°	45°	0°	22 1/2°	45°	0°	22 1/2°	45°	0°	22 1/2°	45°	0°	22 1/2°	45°
No Mullions																			
100	Velocity	325	340	435															
	Throw	7	5	4															
	Pt	.006	.007	.012															
	NC	-	-	-															
150	Velocity	490	515	655	435	453	575	365	385	490									
	Throw	10	8	5	10	8	5	9	7	5									
	Pt	.015	.016	.027	.012	.013	.020	.008	.009	.015									
	NC	-	-	-	-	-	-	-	-	-									
200	Velocity	655	685	875	580	605	770	490	510	650	385	400	510	365	380	485			
	Throw	14	10	8	13	10	7	12	9	7	11	8	4	11	8	6			
	Pt	.027	.029	.048	.020	.023	.037	.015	.016	.026	.009	.010	.016	.008	.009	.015			
	NC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
250	Velocity	820	855	1090	720	755	960	610	640	815	480	500	640	455	475	605			
	Throw	18	14	10	16	12	9	15	11	8	13	10	7	13	10	7			
	Pt	.042	.045	.074	.032	.035	.057	.023	.025	.041	.014	.015	.025	.013	.014	.023			
	NC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
300	Velocity	985	1025	1310	865	905	1155	735	765	975	575	600	765	545	570	725			
	Throw	21	16	11	20	15	11	18	14	10	16	12	9	16	12	9			
	Pt	.060	.065	.107	.047	.051	.083	.034	.036	.059	.020	.022	.036	.018	.020	.033			
	NC	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
350	Velocity	1145	1195	1525	1010	1055	1345	855	895	1140	675	700	895	635	665	845			
	Throw	25	19	14	23	18	13	21	16	11	19	15	10	18	14	10			
	Pt	.082	.089	.145	.063	.069	.113	.045	.050	.081	.028	.030	.050	.025	.027	.044			
	NC	24	25	30	20	21	26	-	-	-	-	-	-	-	-	-			
400	Velocity	1310	1370	1745	1155	1210	1540	980	1025	1300	770	805	1025	725	760	965			
	Throw	28	21	15	27	21	15	24	18	13	22	17	12	21	16	11			
	Pt	.107	.117	.190	.083	.091	.148	.059	.065	.105	.037	.040	.065	.033	.036	.058			
	NC	28	29	34	24	25	30	20	21	26	-	-	-	-	-	-			
450	Velocity	1475	1540	1965	1300	1360	1730	1100	1150	1465	865	905	1150	820	855	1085			
	Throw	31	24	17	30	23	16	27	21	15	24	18	13	24	18	13			
	Pt	.135	.148	.241	.105	.115	.186	.075	.082	.134	.047	.051	.082	.042	.045	.073			
	NC	31	32	37	27	28	33	23	24	29	-	-	-	-	-	-			
500	Velocity	1640	1710	2185	1445	1510	1925	1225	1280	1600	960	1005	1280	910	950	1205			
	Throw	35	27	19	33	25	18	31	24	17	27	21	15	26	20	14			
	Pt	.167	.182	.297	.130	.142	.231	.093	.102	.166	.057	.063	.102	.052	.056	.090			
	NC	35	36	41	31	32	37	27	28	33	20	21	26	-	-	-			
600	Velocity				1735	1810	2305	1470	1535	1955	1155	1205	1535	1090	1340	1450			
	Throw				40	31	22	37	28	20	33	25	18	32	25	18			
	Pt				.187	.204	.331	.135	.147	.238	.083	.090	.147	.074	.112	.131			
	NC				36	37	42	32	33	38	26	27	32	23	24	29			
700	Velocity							1715	1790	2280	1345	1405	1790	1270	1330	1690			
	Throw							43	33	24	38	29	21	37	28	20			
	Pt							.183	.199	.324	.113	.123	.199	.100	.110	.178			
	NC							37	38	43	30	31	36	28	29	34			
800	Velocity										1540	1605	2045	1455	1520	1930			
	Throw										43	33	24	42	32	23			
	Pt										.148	.160	.260	.132	.144	.232			
	NC										34	35	40	32	33	38			
900	Velocity										1730	1805	2300	1635	1705	2175			
	Throw										49	38	27	48	37	26			
	Pt										.186	.203	.329	.166	.181	.295			
	NC										38	39	44	35	36	41			
1000	Velocity													1820	1895	2415			
	Throw													53	41	29			
	Pt													.206	.224	.364			
	NC													39	40	45			

For performance notes, see page IND-120

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Series 4100/4200/4300 - Performance

Series 4100, 4200, 4300 - continued

CFM	Listed Size (Inches)	20" x 20"			24" x 24"			28" x 24"			36" x 24"			38" x 24"		
	Average Ac Core Area Sq. Ft.	2.64			3.38			4.49			5.79			6.12		
	Deflection	0°	22 1/2°	45°	0°	22 1/2°	45°	0°	22 1/2°	45°	0°	22 1/2°	45°	0°	22 1/2°	45°
One Front and One Rear Mullion																
600	Velocity	345	365	460												
	Throw	18	14	10												
	Pt NC	.007 -	.008 -	.013 -												
700	Velocity	405	425	540												
	Throw	21	16	11												
	Pt NC	.010 -	.011 -	.018 -												
800	Velocity	465	485	561												
	Throw	24	18	13												
	Pt NC	.013 -	.014 -	.023 -												
900	Velocity	520	545	690	360	375	480									
	Throw	27	21	15	23	18	12									
	Pt NC	.017 -	.018 -	.029 -	.008 -	.009 -	.014 -									
1000	Velocity	580	605	770	400	415	530	340	355	455						
	Throw	31	24	17	25	19	14	23	18	13						
	Pt NC	.020 -	.022 -	.036 -	.009 -	.010 -	.017 -	.007 -	.008 -	.012 -						
2000	Velocity	1160	1210	1540	800	830	1060	680	710	910	530	550	700	500	520	655
	Throw	61	47	33	51	39	28	46	36	26	41	31	22	40	31	22
	Pt NC	.083 23	.091 24	.148 29	.039 20	.043 21	.070 26	.028 20	.031 21	.052 26	.017 -	.019 -	.030 -	.015 -	.017 -	.027 -
3000	Velocity	1740	1815	2310	1200	1250	1590	1020	1065	1365	795	825	1050	750	780	995
	Throw	92	70	50	76	58	42	69	54	39	62	46	33	60	46	33
	Pt NC	.189 35	.205 36	.332 41	.089 32	.097 33	.158 38	.064 28	.070 29	.116 34	.039 -	.042 -	.068 -	.035 -	.038 -	.061 -
3500	Velocity	2030	2120	2695	1400	1460	1855	1190	1245	1590	925	965	1225	875	915	1165
	Throw	108	83	59	89	68	49	80	63	45	72	54	38	70	54	38
	Pt NC	.256 40	.280 41	.453 46	.122 36	.133 37	.214 41	.088 32	.096 33	.158 38	.053 24	.058 25	.093 30	.047 20	.052 21	.048 26
4000	Velocity				1600	1670	2120	1360	1420	1820	1060	1100	1400	1000	1045	1330
	Throw				102	78	58	92	72	52	82	62	44	80	62	44
	Pt NC				.159 41	.174 42	.280 47	.115 36	.125 37	.206 42	.083 28	.075 29	.122 34	.062 25	.068 26	.110 31
4500	Velocity				1800	1880	2390	1530	1600	2045	1195	1240	1575	1125	1175	1495
	Throw				115	88	63	106	82	58	92	70	50	90	69	49
	Pt NC				.210 44	.221 45	.356 50	.146 40	.159 41	.260 46	.089 31	.095 32	.155 37	.078 28	.086 29	.139 34
5000	Velocity				2000	2085	2655	1700	1780	2265	1320	1375	1755	1250	1305	1660
	Throw				127	97	69	115	90	65	102	78	56	100	77	55
	Pt NC				.249 47	.271 48	.439 53	.180 43	.198 44	.319 49	.108 34	.117 35	.192 40	.097 31	.106 32	.172 37
5500	Velocity							1875	1960	2495	1455	1520	1930	1375	1435	1830
	Throw							126	100	72	112	86	61	110	84	60
	Pt NC							.219 46	.239 47	.388 52	.132 37	.144 38	.232 43	.117 34	.128 35	.208 40
6000	Velocity							2045	2135	2720	1585	1655	2110	1500	1565	1995
	Throw							138	108	78	124	92	66	120	92	66
	Pt NC							.260 48	.284 49	.461 54	.157 40	.171 41	.277 46	.140 37	.153 38	.248 43
6500	Velocity										1720	1795	2285	1625	1700	2160
	Throw										135	103	74	130	100	71
	Pt NC										.184 43	.201 44	.325 49	.165 39	.180 40	.290 45
7000	Velocity										1850	1935	2460	1750	1830	2325
	Throw										145	111	79	140	108	76
	Pt NC										.213 45	.233 46	.377 51	.191 41	.208 42	.337 47
7500	Velocity													1875	1960	2495
	Throw													150	116	82
	Pt NC													.219 43	.239 44	.388 49
8000	Velocity													2000	2090	2660
	Throw													160	124	88
	Pt NC													.249 45	.272 46	.441 51

For performance notes, see page IND-120

Industrial / High Capacity Devices



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IND - Industrial / High Capacity Devices

Series 4100/4200/4300 - Performance

Series 4100, 4200, 4300 - continued

CFM	Listed Size (Inches)	48" x 20"			48" x 24"			72" x 20"			72" x 24"			44" x 44"			48" x 48"		
	Average Ac Core Area Sq. Ft.	6.43			7.75			9.68			11.70			13.14			15.67		
	Deflection	0° 22 1/2° 45°			0° 22 1/2° 45°			0° 22 1/2° 45°			0° 22 1/2° 45°			0° 22 1/2° 45°			0° 22 1/2° 45°		
		One Front and One Rear Mullion						Three Front and One Rear Mullion						Two Front and Two Rear Mullion					
2000	Velocity	485	510	645	405	420	535	315	325	415									
	Throw	39	30	21	37	28	20	32	24	17									
	Pt NC	.014	.016	.025	.010	.011	.017	.006	.007	.010									
3000	Velocity	730	760	970	605	630	805	470	490	625	390	405	515						
	Throw	58	45	32	55	42	30	48	36	25	43	33	23						
	Pt NC	.033	.036	.056	.022	.024	.040	.013	.014	.024	.009	.010	.016						
3500	Velocity	850	890	1130	705	740	940	550	575	730	455	475	605	430	455	575	360	380	480
	Throw	68	52	36	64	49	35	56	42	29	50	38	27	50	38	27	46	35	25
	Pt NC	.045	.049	.079	.030	.034	.055	.019	.020	.033	.012	.014	.022	.011	.012	.020	.008	.009	.014
4000	Velocity	970	1020	1290	810	840	1070	630	650	830	520	540	690	495	515	655	415	430	550
	Throw	78	60	42	74	56	40	64	48	34	58	44	32	58	44	32	53	41	29
	Pt NC	.058	.064	.103	.040	.044	.071	.024	.026	.043	.017	.018	.029	.015	.016	.026	.010	.011	.019
4500	Velocity	1095	1145	1450	910	950	1205	705	735	940	585	610	775	555	580	740	465	485	620
	Throw	87	67	48	83	63	45	72	54	38	65	50	35	65	50	35	60	46	33
	Pt NC	.074	.082	.131	.052	.056	.090	.030	.033	.055	.021	.023	.037	.019	.020	.034	.013	.014	.023
5000	Velocity	1215	1270	1615	1010	1055	1340	785	820	1040	650	675	860	615	645	820	520	540	690
	Throw	97	75	53	92	70	50	80	60	42	72	55	39	73	56	40	67	51	37
	Pt NC	.092	.100	.163	.063	.069	.112	.038	.042	.067	.026	.028	.046	.023	.025	.042	.017	.018	.029
5500	Velocity	1340	1395	1775	1110	1160	1475	865	900	1145	715	745	950	680	710	900	570	595	755
	Throw	106	82	58	100	77	55	88	66	46	79	60	42	79	61	43	73	56	40
	Pt NC	.112	.121	.197	.076	.083	.136	.046	.050	.082	.031	.034	.056	.028	.031	.050	.020	.022	.035
6000	Velocity	1460	1520	1940	1210	1260	1610	940	980	1250	780	810	1030	740	775	985	620	650	825
	Throw	116	90	64	111	84	60	96	72	51	86	66	46	86	66	47	80	61	44
	Pt NC	.133	.144	.234	.091	.098	.162	.055	.059	.097	.038	.040	.066	.034	.037	.060	.023	.026	.042
6500	Velocity	1580	1650	2100	1315	1370	1745	1020	1065	1355	845	880	1120	800	840	1065	670	700	895
	Throw	126	97	69	119	91	65	104	78	55	93	71	50	93	71	50	86	66	47
	Pt NC	.156	.170	.274	.107	.117	.190	.064	.070	.114	.044	.048	.078	.039	.044	.070	.027	.030	.049
7000	Velocity	1700	1780	2260	1410	1480	1880	1100	1150	1460	910	950	1210	860	900	1150	720	755	960
	Throw	136	104	75	128	98	70	112	84	60	100	76	54	100	76	54	92	70	50
	Pt NC	.180	.198	.318	.124	.137	.221	.075	.082	.133	.052	.056	.091	.046	.050	.082	.032	.035	.057
7500	Velocity	1825	1905	2420	1515	1580	2010	1175	1230	1565	975	1015	1295	925	970	1230	775	810	1030
	Throw	146	112	79	138	105	75	120	90	64	108	82	59	108	82	59	99	76	54
	Pt NC	.207	.226	.365	.143	.156	.251	.086	.094	.153	.059	.064	.104	.053	.058	.094	.037	.040	.066
8000	Velocity	1945	2030	2585	1620	1680	2140	1260	1310	1660	1040	1080	1380	990	1030	1310	830	860	1100
	Throw	156	120	84	148	112	80	128	96	68	116	88	64	116	88	64	106	82	58
	Pt NC	.236	.256	.416	.164	.176	.285	.098	.107	.172	.067	.072	.118	.061	.066	.107	.043	.046	.075
8500	Velocity							1335	1390	1770	1100	1150	1465	1050	1095	1395	885	915	1170
	Throw							136	102	71	122	93	67	123	94	67	113	87	62
	Pt NC							.111	.120	.195	.075	.082	.134	.068	.074	.121	.048	.052	.085
9000	Velocity							1410	1475	1880	1170	1220	1550	1110	1160	1480	930	970	1240
	Throw							144	108	75	129	99	70	130	100	70	120	92	66
	Pt NC							.124	.136	.221	.085	.092	.150	.076	.083	.137	.053	.058	.095
9500	Velocity							1490	1555	1980	1230	1285	1635	1170	1225	1560	985	1025	1310
	Throw							152	114	79	136	104	74	138	106	75	127	97	70
	Pt NC							.138	.151	.244	.094	.102	.166	.085	.093	.152	.060	.065	.107
10,000	Velocity							1570	1640	2080	1300	1350	1720	1230	1290	1640	1040	1080	1380
	Throw							160	120	84	144	110	78	146	112	80	134	102	74
	Pt NC							.154	.167	.269	.105	.113	.184	.094	.103	.167	.007	.072	.118

For performance notes, see page IND-120

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Performance Notes for Series 4100/4200/4300

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic Feet per Minute (air)
- fpm - Velocity of air stream in Feet Per Minute
- Pt - Total pressure (inches of water column)
- Ps - Static pressure = Pt - Pv (inches of water column)
- Throw - Cataloged throw is horizontal distances in feet at the terminal velocity of 150 fpm with ambient supply air temperature
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak - Area Factors

Throw Calculations for 4100, 4200, and 4300								
Vt (fpm) Terminal Velocity	50	75	80	100	125	150	200	250
Mult Factor	3.0	2.0	1.8	1.5	1.2	1.0	.75	.6

To calculate throw distances at terminal velocities other than 150 fpm, multiply the appropriate factor by throw values shown on IND-116 to IND-119

Throw Calculations for Multi-Core Units		
2 Cores	3 Cores	4 Cores
1.25 x Single Core Unit	1.33 x Single Core Unit	1.42 x Single Core Unit
Above corrections assume neck velocity is constant through each core with uniform velocity		

Throw Calculations for Multi-Core Units	
$\text{To calculate Ps for Series 4100 and 4200 } \frac{\text{CFM}}{\text{Neck Area in Square Ft.}} = \text{Neck Velocity (fpm), } \left(\frac{\{\text{Neck Velocity (fpm)}\}}{4005} \right)^2 = \text{Pv (Velocity Pressure in. w.c.)}$	

Series 4100/4200/4300 - Specifications

Supply - Single Deflection Supply Grilles and Registers – Aluminum/Series 4100/4200/4300

- Model 4152 - 4 3/8" deep collars with 1 1/2" blades on 1 1/2" centers
- Model 4252 - 1 7/8" deep collars with 1 1/2" blades on 1 1/2" centers
- Model 4352 - 7" deep collars with 3" blades on 3" centers

Air Outlets shall be model V4152, V4252, or V4352 with vertical front blades or H4152, H4252, or H4352 with horizontal front blades manufactured by METALAIRES®. Units shall be single deflection supply grilles of extruded aluminum construction.

Options

- Outlets shall have 4 3/8" deep collars with 1 1/2" blades on 1 1/2" centers
- Outlets shall have 1 7/8" deep collars with 1 1/2" blades on 1 1/2" centers
- Outlets shall have 7" deep collars with 3" blades on 3" centers

Options

- Units shall include a Inverted Frame
- Units shall include a Trunk Latch Frame
- Units shall included a Modular Frame

The units shall be the size and quantity as outlined in the plans and specifications.

Border shall be 1 1/2" wide with individually adjustable, aerodynamically shaped deflector blades. Units shall be designed for surface mounting applications and be provided with screw holes on the face of the device.

Blades shall pivot in friction mounting retainers. Retainers shall hold the deflector blade position throughout the specified operating range of the device. Metal friction wires are not acceptable.

Optional Damper

- Optional opposed blade damper shall be constructed of steel (Model OBD) or aluminum (Model OBDA).
- Damper must be operable from the face of the diffuser.

Supply - Double Deflection Supply Grilles and Registers – Aluminum/Series 4100/4200/4300

- Model 4154 - 4 3/8" deep collars with 1 1/2" blades on 1 1/2" centers
- Model 4254 - 1 7/8" deep collars with 1 1/2" blades on 1 1/2" centers
- Model 4354 - 7" deep collars with 3" blades on 3" centers

Air Outlets shall be model V4154, V4254, or V4354 with vertical front blades or H4154, H4254, or H4354 with horizontal front blades manufactured by METALAIRES®. Units shall be single deflection supply grilles with front and rear sets of deflection extruded aluminum blades.

Options

- Outlets shall have 4 3/8" deep collars with 1 1/2" blades on 1 1/2" centers
- Outlets shall have 1 7/8" deep collars with 1 1/2" blades on 1 1/2" centers
- Outlets shall have 7" deep collars with 3" blades on 3" centers



Options

Units shall include a Inverted Frame (Model 4154 IF)

Units shall include a Trunk Latch Frame – (Model 4154 TLF)

Units shall included a Modular Frame – (Model 4154 MF)

The units shall be the size and quantity as outlined in the plans and specifications.

Border shall be 1 1/2" wide with individually adjustable, aerodynamically shaped deflector blades. Units shall be designed for surface mounting applications and be provided with screw holes on the face of the device.

Blades shall pivot in friction mounting retainers. Retainers shall hold the deflector blade position throughout the specified operating range of the device. Metal friction wires are not acceptable.

Optional Damper

Optional opposed blade damper shall be constructed of steel (Model OBD) or aluminum (Model OBDA).

Damper must be operable from the face of the diffuser.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours



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Series 4100/4200/4300 - Model Specification Guide

Supply - High Capacity - Industrial Grilles and Registers
 4 3/8" Collar - 1 1/2' Blades - 1/2" Centers
 Series 4100 - Aluminum

Model		Available Neck	Available Finishes		Available Options		
Horizontal Front Blades	Vertical Front Blades		Standard				
H4152 - Single Deflection	V4152 - Single Deflection	6" thru 48"	02 - Aluminum	OBDA	Opposed Blade Damper - Aluminum		
H4154 - Double Deflection	V4154 - Double Deflection		Optional		GOV	Gang Operated Blades - Vertical	
H4152 IF - Single Deflection Inverted Frame	V4152 IF - Single Deflection Inverted Frame		01 - White	GOH	Gang Operated Blades - Horizontal		
H4154 IF - Double Deflection Inverted Frame	V4154 IF - Double Deflection Inverted Frame		03 - Black				
H4152 TLF - Single Deflection Trunk Latch Frame	V4152 TLF - Single Deflection Trunk Latch Frame		04 - Clear Anodized				
H4154 TLF - Double Deflection Trunk Latch Frame	V4154 TLF - Double Deflection Trunk Latch Frame		24 - Mill				
H4152 MF - Single Deflection Modular Frame	V4152 MF - Single Deflection Modular Frame		28 - Custom Color				
H4154 MF - Double Deflection Modular Frame	V4154 MF - Double Deflection Modular Frame						

Supply - High Capacity - Industrial Grilles and Registers
 1 7/8" Collar - 1 1/2' Blades - 1/2" Centers
 Series 4200 - Aluminum

Model		Available Neck	Available Finishes		Available Options		
Horizontal Front Blades	Vertical Front Blades		Standard				
H4252 - Single Deflection	V4252 - Single Deflection	6" thru 48"	02 - Aluminum	OBDA	Opposed Blade Damper - Aluminum		
H4254 - Double Deflection	V4254 - Double Deflection		Optional		GOV	Gang Operated Blades - Vertical	
H4252 IF - Single Deflection Inverted Frame	V4252 IF - Single Deflection Inverted Frame		01 - White	GOH	Gang Operated Blades - Horizontal		
H4254 IF - Double Deflection Inverted Frame	V4254 IF - Double Deflection Inverted Frame		03 - Black				
H4252 TLF - Single Deflection Trunk Latch Frame	V4252 TLF - Single Deflection Trunk Latch Frame		04 - Clear Anodized				
H4254 TLF - Double Deflection Trunk Latch Frame	V4254 TLF - Double Deflection Trunk Latch Frame		24 - Mill				
H4252 MF - Single Deflection Modular Frame	V4252 MF - Single Deflection Modular Frame		28 - Custom Color				
H4254 MF - Double Deflection Modular Frame	V4254 MF - Double Deflection Modular Frame						

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Series 4100/4200/4300 - Model Specification Guide

Supply - High Capacity -Industrial Grilles and Registers

7" Collar - 3' Blades - 3" Centers

Series 4300 - Aluminum

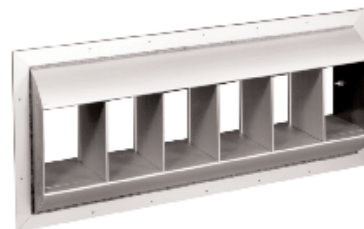
Model		Available Neck	Available Finishes		Available Options		
Horizontal Front Blades	Vertical Front Blades		Standard				
H4252 - Single Deflection	V4252 - Single Deflection	6" thru 48"	02 - Aluminum	OBDA	Opposed Blade Damper - Aluminum		
H4254 - Double Deflection	V4254 - Double Deflection		Optional		GOV	Gang Operated Blades - Vertical	
H4252 MF - Single Deflection Modular Frame	V4252 MF - Single Deflection Modular Frame		01 - White	GOH	Gang Operated Blades - Horizontal		
H4254 MF - Double Deflection Modular Frame	V4254 MF - Double Deflection Modular Frame		03 - Black				
			04 - Clear Anodized				
			24 - Mill				
			28 - Custom Color				



Industrial High Capacity Supply Series RL Roto Louver Aluminum

Product Details

- ★ The series RL Roto-Louver outlets are engineered for high capacity, long throw applications such as sports arenas, gymnasiums, conference centers, industrial plants and other large spaces
- ★ The series RL units have the flexibility to change throw direction and spread of the discharge jet with individually adjustable deflection blades and a rotating cylindrical drum assembly
- ★ Series RL Roto-Louver outlets are an excellent choice for high capacity, long throw applications. These units offer flexibility allowing installation in a variety of applications

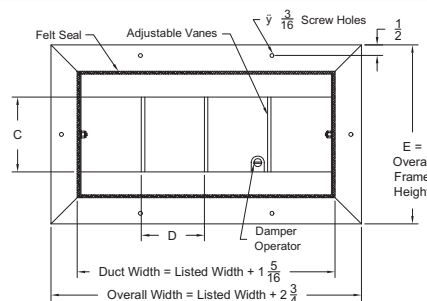
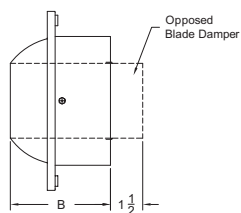


Model RL Shown

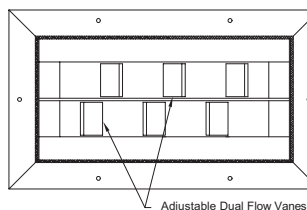
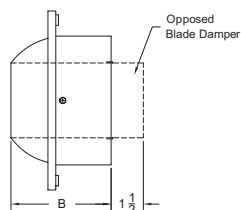
Standard Finish: 02 Aluminum

Sideview, dimensions are in inches

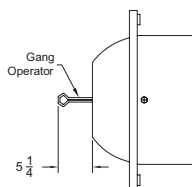
Supply - Cylindrical Drum - Roto Louver - Standard Blades Model RL - Standard Unit



Supply - Cylindrical Drum - Roto Louver - Standard Blades Model RL-DF - Dual Flow Blades



Supply - Cylindrical Drum - Roto Louver - Standard Blades Model RL-GO - With Gang Operator



Available Listed Height	6						10						12						15													
	9	12	18	24	30	36	48	60	20	25	30	35	40	50	60	70	20	25	30	35	40	50	60	70	15	20	25	30	40	50	60	70
Number of Louvers	2	3	5	7	9	11	15	19	3	4	5	6	7	9	11	13	3	4	5	6	7	9	11	12	2	3	4	5	7	9	11	13
A	1 3/4						2 5/8						3						3 1/2													
B	4 3/8						6 1/8						6 1/8						8													
C	3 1/2						5 7/8						6 1/4						9 1/2													
D	3						5						5						5													
E	8 1/2						12 1/4						13 7/8						16 7/8													
F	7						10 13/16						12 1/2						15 1/2													

Notes for Models RL, RL-DF, RL-GO

1. Available Finishes	2. Available Accessories	3. Construction Details
Standard Finish: 04 Clear Anodized Optional Finish: 01 White 28 Custom Color	OBD - Steel - Opposed Blade Damper.....204 OBDA - Aluminum - Opposed Blade Damper.....204	• Sizes available only as listed

Industrial / High Capacity Devices



IND

IND - Industrial / High Capacity Devices

Series RL - Performance

Models RL, RL-DF, RL-GO

CFM	Listed Sizes (Inches)	9" x 6"			12" x 6"			18" x 6"			24" x 6"		
	Duct Opening Area (Sq. Ft.)	0.50			0.65			0.94			1.23		
	Deflection At Outlet Area (Sq. Ft.)	0°	15°	30°	0°	15°	30°	0°	15°	30°	0°	15°	30°
100	Outlet Velocity (fpm) Throw in Feet @ Vt = 150 fpm Pt Inches W.G. NC	590 8 .021 <	625 7 .024 <	770 6 .036 <									
200	Outlet Velocity (fpm) Throw in Feet @ Vt = 150 fpm Pt Inches W.G. NC	1175 14 .086 <	1250 12 .097 <	1540 10 .148 <	870 12 .047 <	950 10 .056 <	1110 8 .076 <	570 10 .020 <	625 8 .024 <	770 7 .036 <			
300	Outlet Velocity (fpm) Throw in Feet @ Vt = 150 fpm Pt Inches W.G. NC	1765 21 .194 22	1875 18 .219 26	2305 15 .331 31	1305 19 .106 <	1430 16 .127 <	1665 13 .173 23	855 17 .045 <	935 14 .054 <	1150 12 .082 <	635 16 .025 <	730 14 .033 <	855 11 .045 <
400	Outlet Velocity (fpm) Throw in Feet @ Vt = 150 fpm Pt Inches W.G. NC				1740 24 .189 23	1905 20 .226 27	2200 17 .302 32	1140 23 .081 <	1250 19 .097 <	1535 16 .147 22	850 21 .045 <	975 18 .059 <	1140 15 .081 <
500	Outlet Velocity (fpm) Throw in Feet @ Vt = 150 fpm Pt Inches W.G. NC							1425 27 .126 20	1560 23 .152 24	1920 19 .229 29	1060 25 .070 <	1220 21 .092 <	1425 17 .026 22
600	Outlet Velocity (fpm) Throw in Feet @ Vt = 150 fpm Pt Inches W.G. NC							1715 30 .183 25	1875 25 .219 29	2305 21 .331 34	1275 28 .101 <	1460 24 .133 22	1715 20 .183 27
700	Outlet Velocity (fpm) Throw in Feet @ Vt = 150 fpm Pt Inches W.G. NC							2000 33 .249 30	2185 28 .298 34	2690 23 .451 39	1490 31 .138 23	1705 26 .181 27	2000 22 .249 32
800	Outlet Velocity (fpm) Throw in Feet @ Vt = 150 fpm Pt Inches W.G. NC										1700 34 .180 27	1950 29 .237 31	2285 24 .325 36
900	Outlet Velocity (fpm) Throw in Feet @ Vt = 150 fpm Pt Inches W.G. NC										1915 38 .228 30	2195 32 .300 34	2570 27 .412 39

For performance notes, see page IND-133



IND - Industrial / High Capacity Devices

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Series RL - Performance

Models RL, RL-DF, RL-GO

CFM	Listed Sizes (Inches)	30" x 6"			36" x 6"			48" x 6"			60" x 6"		
	Duct Opening Area (Sq. Ft.)	1.52			1.81			2.40			2.98		
	Deflection	0°	15°	30°	0°	15°	30°	0°	15°	30°	0°	15°	30°
	Ak Outlet Area (Sq. Ft.)	.59	.52	.44	.72	.62	.55	.94	.83	.70	1.17	1.05	.88
400	Outlet Velocity (fpm)	675	770	910									
	Throw in Feet @ Vt = 150 fpm	18	15	13									
	Pt Inches W.G.	.028	.036	.052									
	NC	<	<	<									
500	Outlet Velocity (fpm)	845	960	1135	695	805	910						
	Throw in Feet @ Vt = 150 fpm	24	20	17	22	19	15						
	Pt Inches W.G.	.044	.057	.080	.030	.040	.052						
	NC	<	<	<	<	<	<						
600	Outlet Velocity (fpm)	1015	1150	1360	850	965	1090	635	720	855			
	Throw in Feet @ Vt = 150 fpm	28	24	20	26	22	18	25	21	17			
	Pt Inches W.G.	.064	.082	.115	.043	.058	.074	.025	.032	.045			
	NC	<	<	22	<	<	<	<	<	<			
700	Outlet Velocity (fpm)	1185	1345	1590	970	1130	1270	745	840	1000			
	Throw in Feet @ Vt = 150 fpm	32	27	19	30	25	21	29	25	20			
	Pt Inches W.G.	.087	.113	.158	.058	.079	.100	.034	.044	.062			
	NC	<	22	27	<	<	<	<	<	<			
800	Outlet Velocity (fpm)	1355	1535	1815	1110	1290	1455	850	960	1140	680	760	910
	Throw in Feet @ Vt = 150 fpm	33	29	24	32	27	22	31	26	22	30	25	21
	Pt Inches W.G.	.114	.147	.205	.076	.103	.132	.045	.057	.081	.028	.036	.052
	NC	22	26	31	<	22	27	<	<	<	<	<	<
1000	Outlet Velocity (fpm)	1695	1920	2270	1385	1610	1820	1060	1205	1425	855	950	1135
	Throw in Feet @ Vt = 150 fpm	40	34	28	38	32	27	37	31	26	36	31	25
	Pt Inches W.G.	.179	.229	.321	.119	.162	.206	.070	.090	.126	.045	.056	.080
	NC	29	33	38	25	29	34	<	<	25	<	<	<
1200	Outlet Velocity (fpm)				1665	1935	2180	1275	1445	1715	1025	1140	1360
	Throw in Feet @ Vt = 150 fpm				43	36	30	42	36	29	41	35	29
	Pt Inches W.G.				.173	.233	.298	.101	.130	.183	.065	.081	.115
	NC				30	34	39	21	25	30	<	20	25
1400	Outlet Velocity (fpm)				1945	2255	2545	1490	1685	2000	1195	1330	1590
	Throw in Feet @ Vt = 150 fpm				48	41	34	47	40	33	46	39	32
	Pt Inches W.G.				.235	.317	.404	.138	.177	.249	.089	.110	.158
	NC				35	39	44	26	30	35	21	25	30
1600	Outlet Velocity (fpm)							1700	1925	2285	1365	1520	1815
	Throw in Feet @ Vt = 150 fpm							50	42	35	49	42	34
	Pt Inches W.G.							.180	.231	.325	.116	.144	.205
	NC							30	34	39	25	29	34
1800	Outlet Velocity (fpm)							1915	2165	2570	1535	1715	2045
	Throw in Feet @ Vt = 150 fpm							53	45	37	52	44	36
	Pt Inches W.G.							.228	.292	.412	.147	.183	.260
	NC							34	38	43	29	33	38
2000	Outlet Velocity (fpm)										1710	1905	2270
	Throw in Feet @ Vt = 150 fpm										56	48	39
	Pt Inches W.G.										.182	.226	.321
	NC										32	36	41
2250	Outlet Velocity (fpm)										1920	2140	2555
	Throw in Feet @ Vt = 150 fpm										60	51	42
	Pt Inches W.G.										.228	.285	.407
	NC										36	40	45

Industrial / High Capacity Devices



IND

For performance notes, see page IND-133

Series RL - Performance

Models RL, RL-DF, RL-GO

CFM	Listed Sizes (Inches)	20 x 10			25 x 10			30 x 10			35 x 10		
	Duct Opening Area (Sq. Ft.)	1.60			1.97			2.35			2.73		
	Deflection	0°	15°	30°	0°	15°	30°	0°	15°	30°	0°	15°	30°
	Ak Outlet Area (Sq. Ft.)	.59	.52	.44	.72	.62	.55	.94	.83	.70	1.17	1.05	.88
400	Outlet Velocity (fpm)	590	665	785									
	Throw in Feet @ Vt = 150 fpm	20	17	14									
	Pt Inches W.G.	.021	.027	.038									
	NC	<	<	<									
600	Outlet Velocity (fpm)	880	1000	1175	705	800	935	570	665	790			
	Throw in Feet @ Vt = 150 fpm	27	23	19	26	22	18	23	19	16			
	Pt Inches W.G.	.048	.062	.086	.030	.039	.054	.020	.027	.039			
	NC	<	<	<	<	<	<	<	<	<			
800	Outlet Velocity (fpm)	1175	1336	1570	940	1065	1250	760	890	1050	665	760	890
	Throw in Feet @ Vt = 150 fpm	33	28	23	32	27	22	29	25	20	27	23	19
	Pt Inches W.G.	.086	.111	.154	.055	.070	.097	.036	.049	.068	.027	.036	.049
	NC	<	23	28	<	<	21	<	<	<	<	<	<
1000	Outlet Velocity (fpm)	1470	1665	1960	1175	1335	1560	950	1110	1315	835	950	1110
	Throw in Feet @ Vt = 150 fpm	39	33	27	38	32	27	35	30	24	33	28	23
	Pt Inches W.G.	.135	.173	.239	.086	.111	.152	.056	.076	.107	.043	.056	.076
	NC	28	32	37	21	25	30	<	<	24	<	<	20
1200	Outlet Velocity (fpm)	1765	2000	2350	1410	1600	1875	1140	1335	1580	1000	1140	1335
	Throw in Feet @ Vt = 150 fpm	43	36	30	42	36	29	39	33	27	37	31	26
	Pt Inches W.G.	.194	.249	.344	.124	.159	.219	.081	.111	.156	.062	.081	.111
	NC	35	39	44	28	32	37	22	26	31	<	22	27
1400	Outlet Velocity (fpm)				1645	1865	2185	1335	1555	1840	1165	1335	1555
	Throw in Feet @ Vt = 150 fpm				47	40	33	44	37	31	42	36	29
	Pt Inches W.G.				.169	.216	.298	.111	.151	.211	.085	.111	.151
	NC				34	38	43	28	32	37	24	28	33
1600	Outlet Velocity (fpm)				1880	2135	2500	1525	1775	2105	1335	1525	1775
	Throw in Feet @ Vt = 150 fpm				50	42	35	47	37	33	45	38	31
	Pt Inches W.G.				.221	.284	.389	.145	.197	.276	.111	.145	.197
	NC				39	43	48	33	37	42	29	33	38
1800	Outlet Velocity (fpm)							1715	2000	2370	1500	1715	2000
	Throw in Feet @ Vt = 150 fpm							52	44	36	50	42	35
	Pt Inches W.G.							.183	.249	.350	.140	.183	.249
	NC							38	42	47	33	37	42
2000	Outlet Velocity (fpm)							1905	2220	2630	1665	1905	2220
	Throw in Feet @ Vt = 150 fpm							55	47	38	53	45	37
	Pt Inches W.G.							.226	.307	.431	.173	.226	.307
	NC							42	46	51	37	41	46
2250	Outlet Velocity (fpm)										1875	2140	2500
	Throw in Feet @ Vt = 150 fpm										59	50	41
	Pt Inches W.G.										.219	.285	.389
	NC										42	46	51

For performance notes, see page IND-133



IND - Industrial / High Capacity Devices

7/2006

Series RL - Performance

Models RL, RL-DF, RL-GO

CFM	Listed Sizes (Inches)	40 x 10			50 x 10			60 x 10			70 x 10		
	Duct Opening Area (Sq. Ft.)	3.10			3.80			4.60			5.30		
	Deflection	0°	15°	30°	0°	15°	30°	0°	15°	30°	0°	15°	30°
	Ak Outlet Area (Sq. Ft.)	1.35	1.20	1.00	1.70	1.50	1.30	2.05	1.85	1.55	2.40	2.15	1.80
800	Outlet Velocity (fpm)	590	665	800									
	Throw in Feet @ Vt = 150 fpm	26	22	18									
	Pt Inches W.G.	.021	.027	.039									
	NC	<	<	<									
1000	Outlet Velocity (fpm)	740	835	1000	590	665	770						
	Throw in Feet @ Vt = 150 fpm	32	28	23	31	26	22						
	Pt Inches W.G.	.034	.043	.062	.021	.027	.036						
	NC	<	<	<	<	<	<						
1200	Outlet Velocity (fpm)	890	1000	1200	705	800	925	585	650	775			
	Throw in Feet @ Vt = 150 fpm	36	31	25	34	29	24	32	27	22			
	Pt Inches W.G.	.049	.062	.089	.030	.039	.053	.021	.026	.037			
	NC	<	<	22	<	<	<	<	<	<			
1400	Outlet Velocity (fpm)	1035	1165	1400	825	935	1075	680	755	905	585	650	775
	Throw in Feet @ Vt = 150 fpm	40	34	28	38	32	27	36	31	25	34	29	24
	Pt Inches W.G.	.067	.084	.122	.042	.054	.072	.028	.035	.051	.021	.026	.037
	NC	<	23	28	<	<	21	<	<	<	<	<	<
1600	Outlet Velocity (fpm)	1185	1335	1600	940	1065	1230	780	865	1030	665	745	890
	Throw in Feet @ Vt = 150 fpm	44	37	31	42	36	29	40	34	28	38	32	27
	Pt Inches W.G.	.087	.111	.159	.055	.070	.094	.038	.046	.066	.027	.034	.049
	NC	24	28	33	<	21	26	<	<	21	<	<	<
1800	Outlet Velocity (fpm)	1335	1500	1800	1060	1200	1385	880	970	1160	750	835	1000
	Throw in Feet @ Vt = 150 fpm	47	40	33	45	38	31	43	36	30	41	35	29
	Pt Inches W.G.	.111	.140	.201	.070	.089	.119	.048	.058	.083	.035	.043	.062
	NC	28	32	37	22	26	31	<	20	25	<	<	20
2000	Outlet Velocity (fpm)	1480	1665	2000	1175	1335	1540	975	1080	1290	835	930	1110
	Throw in Feet @ Vt = 150 fpm	51	43	36	49	42	34	47	40	33	45	38	31
	Pt Inches W.G.	.137	.173	.249	.086	.111	.148	.059	.072	.103	.043	.053	.076
	NC	32	36	41	26	30	35	20	24	29	<	<	24
2250	Outlet Velocity (fpm)	1665	1875	2250	1325	1500	1730	1095	1215	1450	935	1045	1250
	Throw in Feet @ Vt = 150 fpm	55	47	38	53	45	37	51	43	36	49	42	34
	Pt Inches W.G.	.173	.219	.315	.109	.140	.186	.074	.092	.131	.054	.068	.097
	NC	37	41	46	31	35	40	25	29	34	20	24	29
2500	Outlet Velocity (fpm)	1850	2085	2500	1470	1665	1925	1220	1350	1610	1040	1160	1390
	Throw in Feet @ Vt = 150 fpm	60	51	42	58	49	41	56	48	39	54	46	38
	Pt Inches W.G.	.213	.271	.389	.135	.173	.231	.092	.113	.162	.067	.083	.120
	NC	41	45	50	35	39	44	29	33	38	24	28	33
3000	Outlet Velocity (fpm)				1765	2000	2305	1465	1620	1935	1250	1395	1665
	Throw in Feet @ Vt = 150 fpm				65	55	45	63	53	44	61	52	43
	Pt Inches W.G.				.194	.249	.331	.134	.164	.233	.097	.121	.173
	NC				42	46	51	36	40	45	31	35	40
3500	Outlet Velocity (fpm)							1705	1890	2260	1460	1625	1945
	Throw in Feet @ Vt = 150 fpm							69	59	48	67	57	47
	Pt Inches W.G.							.181	.222	.318	.133	.165	.235
	NC							42	46	51	37	41	46
3750	Outlet Velocity (fpm)							1830	2025	2420	1560	1745	2085
	Throw in Feet @ Vt = 150 fpm							72	61	50	69	59	48
	Pt Inches W.G.							.208	.255	.365	.152	.190	.271
	NC							44	48	53	39	43	48
4000	Outlet Velocity (fpm)							1950	2160	2580	1665	1860	2220
	Throw in Feet @ Vt = 150 fpm							77	65	54	74	63	52
	Pt Inches W.G.							.237	.291	.415	.173	.215	.307
	NC							47	51	56	42	46	51

For performance notes, see page IND-133

Industrial / High Capacity Devices



IND

Series RL - Performance

Models RL, RL-DF, RL-GO

CFM	Listed Sizes (Inches)	20 x 12			25 x 12			30 x 12			35 x 12		
	Duct Opening Area (Sq. Ft.)	1.85			2.29			2.83			3.37		
	Deflection	0°	15°	30°	0°	15°	30°	0°	15°	30°	0°	15°	30°
	Ak Outlet Area (Sq. Ft.)	.69	.61	.52	.87	.77	.64	1.04	.89	.75	1.21	1.06	.90
400	Outlet Velocity (fpm)	580	655	770									
	Throw in Feet @ Vt = 150 fpm	12	10	8									
	Pt Inches W.G.	.020	.026	.036									
	NC	<	<	<									
600	Outlet Velocity (fpm)	870	985	1155	690	780	935	575	675	800	495	565	665
	Throw in Feet @ Vt = 150 fpm	17	14	12	16	14	11	15	13	10	14	12	10
	Pt Inches W.G.	.047	.060	.083	.029	.038	.054	.020	.028	.039	.015	.019	.027
	NC	<	<	<	<	<	<	<	<	<	<	<	<
800	Outlet Velocity (fpm)	1160	1310	1540	920	1040	1250	770	900	1065	660	755	890
	Throw in Feet @ Vt = 150 fpm	23	19	16	22	19	15	21	18	15	20	17	14
	Pt Inches W.G.	.083	.107	.148	.053	.067	.097	.036	.050	.070	.027	.035	.049
	NC	<	20	25	<	<	<	<	<	<	<	<	<
1000	Outlet Velocity (fpm)	1450	1640	1925	1150	1300	1560	960	1125	1335	825	945	1110
	Throw in Feet @ Vt = 150 fpm	29	25	20	28	24	20	27	23	19	26	22	18
	Pt Inches W.G.	.131	.167	.231	.082	.105	.152	.057	.078	.111	.042	.055	.076
	NC	23	27	32	<	21	26	<	<	<	<	<	<
1200	Outlet Velocity (fpm)	1740	1965	2305	1380	1560	1875	1155	1350	1600	990	1130	1335
	Throw in Feet @ Vt = 150 fpm	35	30	24	33	28	23	32	27	22	30	25	21
	Pt Inches W.G.	.189	.241	.331	.118	.152	.219	.083	.113	.159	.061	.079	.111
	NC	28	32	37	22	26	31	<	21	26	<	<	22
1400	Outlet Velocity (fpm)				1610	1820	2185	1345	1575	1865	1155	1320	1555
	Throw in Feet @ Vt = 150 fpm				37	31	26	35	41	24	33	28	23
	Pt Inches W.G.				.162	.206	.298	.113	.155	.216	.083	.108	.151
	NC				27	31	36	22	26	31	<	22	27
1600	Outlet Velocity (fpm)				1840	2075	2500	1540	1795	2135	1320	1510	1775
	Throw in Feet @ Vt = 150 fpm				43	36	30	40	34	28	37	31	26
	Pt Inches W.G.				.211	.268	.389	.148	.201	.284	.108	.142	.197
	NC				31	35	40	26	30	35	23	27	32
1800	Outlet Velocity (fpm)							1730	2020	2400	1485	1700	2000
	Throw in Feet @ Vt = 150 fpm							46	39	32	44	37	31
	Pt Inches W.G.							.186	.254	.359	.137	.180	.249
	NC							29	33	38	26	30	35
2000	Outlet Velocity (fpm)							1925	2245	2665	1650	1885	2220
	Throw in Feet @ Vt = 150 fpm							50	42	35	48	41	34
	Pt Inches W.G.							.231	.314	.443	.170	.221	.307
	NC							32	36	41	29	33	38
2250	Outlet Velocity (fpm)										1860	2120	2500
	Throw in Feet @ Vt = 150 fpm										54	46	38
	Pt Inches W.G.										.215	.280	.389
	NC										32	36	41

For performance notes, see page IND-133



IND - Industrial / High Capacity Devices

7/2006

Series RL - Performance

Models RL, RL-DF, RL-GO

CFM	Listed Sizes (Inches)	40 x 12			50 x 12			60 x 12			70 x 12		
	Duct Opening Area (Sq. Ft.)	3.59			4.45			5.32			6.19		
	Deflection	0°	15°	30°	0°	15°	30°	0°	15°	30°	0°	15°	30°
	Ak Outlet Area (Sq. Ft.)	.80	.70	.60	1.08	.92	.78	1.37	1.22	1.01	1.65	1.44	1.24
800	Outlet Velocity (fpm)	580	650	785									
	Throw in Feet @ Vt = 150 fpm	19	16	13									
	Pt Inches W.G.	.020	.026	.038									
	NC	<	<	<									
1000	Outlet Velocity (fpm)	725	815	980	580	655	805						
	Throw in Feet @ Vt = 150 fpm	23	19	16	21	18	15						
	Pt Inches W.G.	.032	.041	.059	.020	.026	.040						
	NC	<	<	<	<	<	<						
1200	Outlet Velocity (fpm)	870	975	1175	695	785	965	575	640	765			
	Throw in Feet @ Vt = 150 fpm	25	21	17	23	19	16	21	18	15			
	Pt Inches W.G.	.047	.059	.086	.030	.038	.058	.020	.025	.036			
	NC	<	<	<	<	<	<	<	<	<			
1400	Outlet Velocity (fpm)	1015	1140	1370	810	915	1130	675	745	890	580	645	775
	Throw in Feet @ Vt = 150 fpm	27	23	19	25	21	17	23	19	16	22	19	15
	Pt Inches W.G.	.064	.081	.117	.040	.052	.079	.028	.034	.049	.020	.025	.037
	NC	<	<	24	<	<	22	<	<	<	<	<	<
1600	Outlet Velocity (fpm)	1160	1300	1570	925	1045	1290	770	850	1020	660	735	885
	Throw in Feet @ Vt = 150 fpm	31	26	22	30	25	21	28	24	20	26	22	18
	Pt Inches W.G.	.083	.105	.154	.053	.068	.103	.036	.045	.064	.027	.033	.048
	NC	<	23	28	<	<	23	<	<	<	<	<	<
1800	Outlet Velocity (fpm)	1305	1465	1765	1040	1175	1450	885	955	1145	745	830	995
	Throw in Feet @ Vt = 150 fpm	40	34	28	38	32	27	37	31	26	35	30	24
	Pt Inches W.G.	.106	.134	.194	.067	.086	.131	.046	.057	.082	.034	.043	.061
	NC	22	26	31	<	21	26	<	<	<	21	<	<
2000	Outlet Velocity (fpm)	1450	1625	1960	1155	1305	1610	960	1065	1275	825	920	1105
	Throw in Feet @ Vt = 150 fpm	45	38	31	41	35	29	39	33	27	37	31	26
	Pt Inches W.G.	.131	.165	.239	.083	.106	.162	.057	.070	.101	.042	.053	.076
	NC	25	29	34	20	24	29	<	<	24	<	<	20
2250	Outlet Velocity (fpm)	1630	1830	2205	1300	1470	1815	1080	1195	1435	930	1035	1245
	Throw in Feet @ Vt = 150 fpm	50	42	35	46	39	32	44	37	31	42	36	29
	Pt Inches W.G.	.166	.208	.303	.105	.135	.205	.072	.089	.128	.053	.067	.096
	NC	29	33	38	24	28	33	<	23	28	<	<	24
2500	Outlet Velocity (fpm)	1810	2030	2450	1445	1635	2015	1200	1330	1590	1035	1150	1380
	Throw in Feet @ Vt = 150 fpm	54	46	38	50	42	35	48	41	34	46	39	32
	Pt Inches W.G.	.204	.256	.374	.130	.166	.253	.089	.110	.158	.067	.082	.118
	NC	32	36	41	27	31	36	22	26	31	<	22	27
3000	Outlet Velocity (fpm)				1735	1960	2420	1440	1595	1910	1240	1380	1655
	Throw in Feet @ Vt = 150 fpm				60	51	42	56	48	39	54	46	38
	Pt Inches W.G.				.187	.239	.365	.129	.158	.227	.095	.118	.171
	NC				32	36	41	27	31	36	23	27	32
3500	Outlet Velocity (fpm)							1680	1860	2230	1445	1610	1935
	Throw in Feet @ Vt = 150 fpm							64	54	45	62	53	43
	Pt Inches W.G.							.176	.215	.310	.130	.162	.233
	NC							32	36	41	28	32	37
4000	Outlet Velocity (fpm)							1925	2125	2545	1650	1845	2210
	Throw in Feet @ Vt = 150 fpm							72	61	50	70	59	49
	Pt Inches W.G.							.231	.281	.404	.170	.212	.304
	NC							36	40	45	32	36	41
4500	Outlet Velocity (fpm)										1860	2075	2485
	Throw in Feet @ Vt = 150 fpm										76	65	53
	Pt Inches W.G.										.215	.268	.384
	NC										35	39	44

For performance notes, see page IND-133

Industrial / High Capacity Devices



IND

Series RL - Performance

Models RL, RL-DF, RL-GO

CFM	Listed Sizes (Inches)	15 x 15			20 x 15			25 x 15			30 x 15		
	Duct Opening Area (Sq. Ft.)	1.75			2.29			2.83			3.37		
	Deflection	0°	15°	30°	0°	15°	30°	0°	15°	30°	0°	15°	30°
	Ak Outlet Area (Sq. Ft.)	.80	.70	.60	1.08	.92	.78	1.37	1.22	1.01	1.65	1.44	1.24
500	Outlet Velocity (fpm)	625	715	835									
	Throw in Feet @ Vt = 150 fpm	11	9	8									
	Pt Inches W.G.	.024	.031	.043									
	NC	<	<	<									
1000	Outlet Velocity (fpm)	1250	1430	1665	925	1085	1280	730	820	990	605	695	805
	Throw in Feet @ Vt = 150 fpm	21	18	15	20	17	14	19	16	13	18	15	13
	Pt Inches W.G.	.097	.127	.173	.053	.073	.102	.033	.042	.061	.022	.030	.040
	NC	20	24	29	<	<	22	<	<	<	<	<	<
1250	Outlet Velocity (fpm)	1560	1785	2085	1155	1360	1600	910	1025	1235	755	870	1010
	Throw in Feet @ Vt = 150 fpm	27	23	19	26	22	18	24	20	17	22	19	15
	Pt Inches W.G.	.152	.199	.271	.083	.115	.159	.052	.065	.095	.035	.047	.063
	NC	27	31	36	20	24	29	<	<	24	<	<	<
1500	Outlet Velocity (fpm)	1875	2140	2500	1390	1630	1925	1095	1230	1485	910	1040	1210
	Throw in Feet @ Vt = 150 fpm	32	27	22	31	26	22	29	25	20	27	23	19
	Pt Inches W.G.	.219	.285	.389	.120	.166	.231	.074	.094	.137	.052	.067	.091
	NC	32	36	41	25	29	34	20	24	29	<	<	24
1750	Outlet Velocity (fpm)				1620	1900	2245	1275	1435	1730	1060	1215	1410
	Throw in Feet @ Vt = 150 fpm				36	31	25	34	29	24	31	26	22
	Pt Inches W.G.				.164	.225	.314	.101	.128	.186	.070	.092	.124
	NC				30	34	39	25	29	34	<	23	28
2000	Outlet Velocity (fpm)				1850	2175	2565	1460	1640	1980	1210	1390	1610
	Throw in Feet @ Vt = 150 fpm				42	36	29	39	33	27	36	31	25
	Pt Inches W.G.				.213	.295	.410	.133	.167	.244	.091	.120	.162
	NC				34	38	43	29	33	28	24	28	33
2250	Outlet Velocity (fpm)							1640	1845	2225	1365	1560	1815
	Throw in Feet @ Vt = 150 fpm							44	37	31	40	34	28
	Pt Inches W.G.							.167	.212	.308	.116	.152	.205
	NC							32	36	41	27	31	36
2500	Outlet Velocity (fpm)							1825	2050	2475	1515	1735	2015
	Throw in Feet @ Vt = 150 fpm							49	42	34	44	37	31
	Pt Inches W.G.							.207	.262	.382	.143	.187	.253
	NC							35	39	44	30	34	39
3000	Outlet Velocity (fpm)										1820	2085	2420
	Throw in Feet @ Vt = 150 fpm										53	45	37
	Pt Inches W.G.										.206	.271	.365
	NC										36	40	45
3250	Outlet Velocity (fpm)										1970	2255	2620
	Throw in Feet @ Vt = 150 fpm										58	49	41
	Pt Inches W.G.										.242	.317	.428
	NC										38	42	47

For performance notes, see page IND-133



IND - Industrial / High Capacity Devices

7/2006

Series RL - Performance

Models RL, RL-DF, RL-GO

CFM	Listed Sizes (Inches)	40 x 15			50 x 15			60 x 15			70 x 15		
	Duct Opening Area (Sq. Ft.)	4.45			5.52			6.60			7.67		
	Deflection	0°	15°	30°	0°	15°	30°	0°	15°	30°	0°	15°	30°
	Ak Outlet Area (Sq. Ft.)	2.17	1.93	1.60	2.69	2.40	2.03	3.21	2.83	2.36	3.68	3.30	2.78
1500	Outlet Velocity (fpm)	690	775	935									
	Throw in Feet @ Vt = 150 fpm	25	21	17									
	Pt Inches W.G.	.029	.037	.054									
	NC	<	<	<									
1750	Outlet Velocity (fpm)	805	905	1095	650	730	860						
	Throw in Feet @ Vt = 150 fpm	29	25	20	27	23	19						
	Pt Inches W.G.	.040	.051	.074	.026	.033	.046						
	NC	<	<	<	<	<	<						
2000	Outlet Velocity (fpm)	920	1035	1250	745	835	985	625	705	845			
	Throw in Feet @ Vt = 150 fpm	33	28	23	31	26	22	29	25	20			
	Pt Inches W.G.	.053	.067	.097	.034	.043	.060	.024	.030	.044			
	NC	<	20	25	<	<	20	<	<	<			
2250	Outlet Velocity (fpm)	1035	1165	1405	835	935	1110	700	795	955	610	680	810
	Throw in Feet @ Vt = 150 fpm	37	31	26	35	30	24	33	28	23	32	27	22
	Pt Inches W.G.	.067	.084	.123	.043	.054	.076	.030	.039	.057	.023	.028	.040
	NC	20	24	29	<	<	23	<	<	<	<	<	<
2500	Outlet Velocity (fpm)	1150	1295	1560	930	1040	1230	780	885	1060	680	755	900
	Throw in Feet @ Vt = 150 fpm	41	35	29	39	33	27	37	31	26	36	31	25
	Pt Inches W.G.	.082	.104	.152	.053	.067	.094	.038	.048	.070	.028	.035	.050
	NC	23	27	32	<	21	26	<	<	22	<	<	<
3000	Outlet Velocity (fpm)	1380	1555	1875	1115	1250	1475	935	1060	1270	815	910	1080
	Throw in Feet @ Vt = 150 fpm	49	42	34	46	39	32	44	37	31	43	36	30
	Pt Inches W.G.	.118	.151	.219	.077	.097	.136	.054	.070	.100	.041	.052	.072
	NC	29	33	38	23	27	32	<	22	27	<	<	24
3250	Outlet Velocity (fpm)	1495	1685	2030	1210	1355	1600	1010	1150	1375	885	985	1170
	Throw in Feet @ Vt = 150 fpm	53	45	37	50	42	35	48	41	34	46	39	32
	Pt Inches W.G.	.139	.177	.256	.091	.114	.159	.063	.082	.117	.048	.060	.085
	NC	31	35	40	25	29	34	21	25	30	<	21	26
3500	Outlet Velocity (fpm)	1610	1815	2185	1300	1460	1725	1090	1235	1485	950	1060	1260
	Throw in Feet @ Vt = 150 fpm	57	48	40	54	46	38	52	44	36	50	42	35
	Pt Inches W.G.	.162	.205	.298	.105	.133	.185	.074	.095	.137	.056	.070	.098
	NC	33	37	42	27	31	36	23	27	32	23	23	28
4000	Outlet Velocity (fpm)	1845	2070	2500	1485	1665	1970	1245	1415	1695	1085	1210	1440
	Throw in Feet @ Vt = 150 fpm	66	56	46	62	53	43	59	50	41	57	48	40
	Pt Inches W.G.	.212	.267	.389	.137	.173	.242	.096	.124	.179	.073	.091	.129
	NC	37	41	46	31	35	40	27	31	36	23	27	32
6000	Outlet Velocity (fpm)							1870	2120	2540	1630	1820	2160
	Throw in Feet @ Vt = 150 fpm							89	76	62	85	72	59
	Pt Inches W.G.							.218	.280	.402	.166	.206	.291
	NC							39	43	48	35	39	44

Industrial / High Capacity Devices



For performance notes, see page IND-133

IND

Performance Notes for Series RL

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic Feet per Minute (air)
- Out Vel - Velocity of air stream in Feet Per Minute
- Ps - Static Pressure = Pt - Pv (inches of water column)
- Pt - Total Pressure (inches of water column)
- Throw - Non-isothermal horizontal throw (supply air temperature 20°F colder than average room air temperature) values are for 150 fpm velocities for 0°, 15°, and 30° spread
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak - Area Factors

Outlet Velocit at 0° deflection should not exceed 2000 FPM. Units should not be selected above cataloged flow rates.

Throw Calculations for RL								
Vt (fpm) Terminal Velocity	50	75	80	100	125	150	200	250
Mult Factor	3.0	2.0	1.8	1.5	1.2	1.0	.75	.6

To calculate throw distances at terminal velocities other than 150 fpm, multiply the appropriate factor by throw values shown on IND-125 to IND-132

Calculating Velocity and Static Pressure	
$\frac{\text{CFM}}{\text{Neck Area in Square Ft.}} = \text{Neck Velocity (fpm),} \left(\frac{\{\text{Neck Velocity (fpm)}\}}{4005} \right)^2 = \text{Pv (Velocity Pressure) in. w.c.}$	

Series RL Roto Louver - Specifications

- Model RL - Standard Unit
- Model RL-DL - Dual Flow
- Model RL-GO - Gang Operator

Air Outlets shall be model RL Roto-Louvers METALAIRE®. Units shall be constructed of a vertical deflection blades mounted in a cylindrical drum. The cylindrical drum shall rotate on nylon bushings and allow the discharge jet to be directed vertically within a 60° arc. Rotating drum shall be sealed with felt gasketing. Deflector blades shall be individually adjustable allowing the discharge jet to be adjusted horizontally from 0° to 60°.

Dual Flow (Optional)

Outlets shall have split deflector blades along the center of the horizontal plane. Top and bottom deflector blades shall be individually adjustable.

Gang Operator (Optional)

Outlets shall include a gang operator to permit uniform adjustment of all deflector blades. Gang operator shall be accessible from the face of the outlet.

The units shall be the size and quantity as outlined in the plans and specifications.

Border shall be 1 1/4" wide with individually adjustable, aerodynamically shaped deflector blades. Units shall be designed for surface mounting applications and be provided with counter sunk screw holes on the face of the device.

Optional Damper

Optional opposed blade damper shall be constructed of steel (Model OBD) or aluminum (Model OBDA). Damper must be operable from the face of the diffuser.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Series RL - Model Specification Guide

Supply - High Capacity Cylindrical Drum
Series RL - Extruded Aluminum

Model	Available Neck			Available Finishes
	Neck 1		Neck 2	Standard
RL - Roto Louver				02 - Aluminum
RL-DF - Roto Louver - Dual Flow	9"	35"		Optional
RL-GO - Roto Louver - Gang Operator	12"	36"	6"	
	15"	40"	10"	01 - White
	18"	48"	12"	24 - Mill
	20"	50"	15"	28 - Custom Color
	24"	60"		
	25"	70"		
	30"			



IND - Industrial / High Capacity Devices

7/2006

➔ High Capacity ➔ Supply ➔ Round Neck ➔ Series JA - JET*AIRE ➔ Steel

Product Details

- ✪ Jet*Aire diffusers offer an economical solution to high capacity air distribution applications requiring long throw distances. This diffuser can be effectively applied to large space applications such as civic centers, auditoriums, and arenas.
- ✪ Units are available as a single diffuser, or multiple diffusers mounted in a panel.
- ✪ Jet*Aire diffusers are an excellent choice for high capacity, long throw applications. The modular design of the Jet*Air diffusers allows selection for a wide range of air volumes

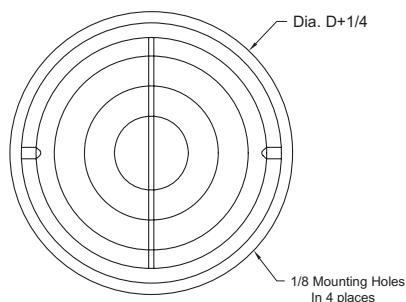
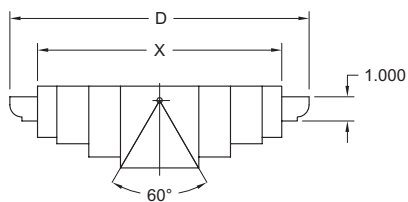


Model JA-1P Shown

Standard Finish: 01 White

Sideview, dimensions are in inches

Supply - Industrial/High Capacity - Round Neck - Series JA Jet*Aire - Steel Model JA-1 - Single Unit



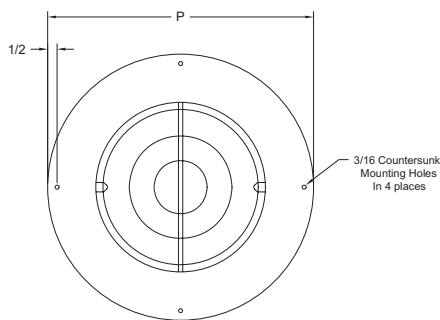
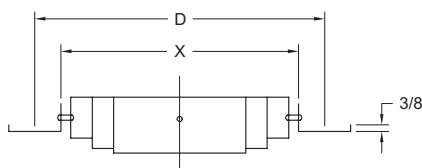
JA - 1EX for exposed duct installation

Model	X Element Diameter	Rings Per Element	Dia D Duct Size
6	4	3	6
8	6	3	8
10	8	3	10
12	10	3	12
14	12	3	14
16	14	4	16
18	16	4	18
20	18	4	20

Industrial / High Capacity Devices



Supply - Industrial/High Capacity - Round Neck - Series JA Jet*Aire - Steel Model JA-1 EX - Panel Mount



JA - 1 for surface mount installation

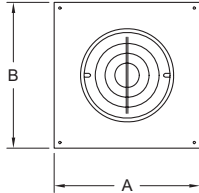
Model	X Element Diameter	Rings Per Element	Dia D Duct Size	P
6	4	3	6	8
8	6	3	8	10
10	8	3	10	12
12	10	3	12	14
14	12	3	14	16
16	14	4	16	18
18	16	4	18	20
20	18	4	20	2

IND

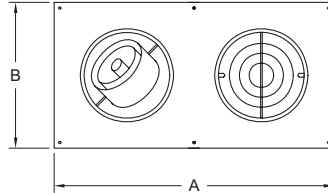
IND - Industrial / High Capacity Devices

Supply - Industrial/High Capacity - Round Neck - Series JA Jet*Aire - Steel

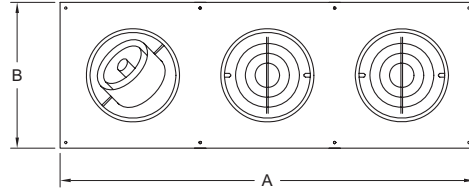
- Model JA-1P - Panel Mounted - 1 Unit
- Model JA-2P - Panel Mounted - 2 Unit
- Model JA-3P - Panel Mounted - 3 Unit
- Model JA-4P - Panel Mounted - 4 Unit



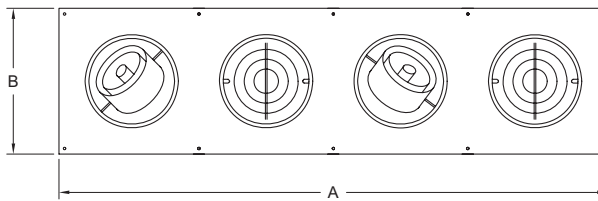
JA - 1P



JA - 2P



JA - 3P



JA - 4P

Available Sizes	Element Sizes	1 Jet (1 Panel)			2 Jets (2 Panel)			3 Jets (3 Panel)			4 Jets (4 Panel)		
		A	B	Duct	A	B	Duct	A	B	Duct	A	B	Duct
6	4	7 7/8	7 7/8	6 x 6	14 7/8	7 7/8	12 x 6	19 7/8	7 7/8	18 x 6	25 7/8	7 7/8	24 x 6
8	6	9 7/8	9 7/8	8 x 8	18 7/8	9 7/8	17 x 8	27 7/8	9 7/8	26 x 8	36 7/8	9 7/8	35 x 8
10	8	11 7/8	11 7/8	10 x 10	23 7/8	11 7/8	22 x 10	35 7/8	11 7/8	34 x 10	47 7/8	11 7/8	46 x 10
12	10	13 7/8	13 7/8	12 x 12	26 7/8	13 7/8	25 x 12	39 7/8	13 7/8	38 x 12	52 7/8	13 7/8	51 x 12
14	12	15 7/8	15 7/8	14 x 14	30 7/8	15 7/8	29 x 14	45 7/8	15 7/8	44 x 14	60 7/8	15 7/8	59 x 14
16	14	17 7/8	17 7/8	16 x 16	34 7/8	17 7/8	33 x 16	51 7/8	17 7/8	50 x 16	68 7/8	17 7/8	67 x 16
18	16	19 7/8	19 7/8	18 x 18	39 7/8	19 7/8	38 x 18	59 7/8	19 7/8	58 x 18	79 7/8	19 7/8	78 x 18
20	18	21 7/8	21 7/8	20 x 20	45 7/8	21 7/8	44 x 20	66 7/8	21 7/8	64 x 20	89 7/8	21 7/8	88 x 20

1. Available Finishes	2. Construction Details
Standard Finish: 01 White	<ul style="list-style-type: none"> • Available only in listed sizes • No dampers can be mounted on units



Series JA - Performance

Models JA, JA-1P, JA-2P, JA-3P, JA-4P

Size	Capacity in CFM	Neck Velocity in fpm	Throw in Feet	Static Pressure	NC
6 Ak = 0.182	75	398	5-10-14	0.030	<20
	125	664	8-15-20	0.070	<20
	127	930	11-18-25	0.131	<20
	225	1195	13-20-28	0.200	22
8 Ak = 0.325	200	591	9-17-27	0.058	<20
	300	887	14-24-33	0.115	<20
	400	1083	18-28-38	0.188	20
	500	1478	22-30-42	0.274	20
10 Ak = 0.511	400	752	12-21-30	0.125	<20
	600	1128	19-28-31	0.229	21
	800	1504	23-32-45	0.350	33
	1000	1880	27-36-49	0.489	45
12 Ak = 0.738	400	520	9-18-27	0.048	<20
	700	910	15-26-34	0.131	<20
	1000	1300	21-30-40	0.243	26
	1300	1690	24-33-46	0.376	39
14 Ak = 1.010	600	571	9-19-28	0.052	<20
	1000	952	15-24-35	0.154	<20
	1400	1333	21-29-41	0.279	22
	1800	1714	25-36-47	0.397	39
16 Ak = 1.319	900	655	16-19-29	0.073	<20
	1400	1019	18-27-37	0.156	<20
	1900	1382	22-32-43	0.265	29
	2400	1746	26-35-48	0.398	43

Performance Notes for Series JA-Jet*Aire

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic Feet per Minute (air)
- fpm - Velocity of air stream in Feet Per Minute
- Ps - Static pressure = Pt - Pv (inches of water column)
- Throw - Non-isothermal horizontal throw (supply air temperature 20°F colder than average room air temperature) values are for 50 fpm - 100 fpm - 150 fpm velocities
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands

Series JA - Performance

Supply – Industrial/High Capacity Round Neck – Panel Mounted

Model JA-1 Surface Mount – Single Unit

Model JA-1P Panel Mounted – 1 Unit

Model JA-2P Panel Mounted – 2 Units

Model JA-3P Panel Mounted – 3 Units

Model JA-4P Panel Mounted – 4 Units

Air Outlets shall be model JA Jet*Aire by METALAIRES®. Units shall be constructed of steel. The outlets shall consist of a core assembly constructed with a series of circular rings. The core shall be capable of adjustment from the face of the outlet without the use of special tools. The core assembly shall pivot on two nylon sleeved steel bolts. The core assembly shall be adjustable to obtain a full 60° arc along the vertical plane.

Options:

- Units shall have a single core mounted in a square panel (Model JA-1)
- Units shall have two cores mounted in a rectangular panel (Model JA-2P)
- Units shall have three cores mounted in a rectangular panel (Model JA-3P)
- Units shall have four cores mounted in a rectangular panel (Model JA-4P)

The units shall be the size and quantity as outlined in the plans and specifications.

Units shall be designed for surface mounting applications and be provided with counter sunk screw holes on the face of the device.

Supply – Industrial/High Capacity - Exposed Round Duct Installation

Model JA- 1EX Exposed Duct Mounted – No Panel

Air Outlets shall be model JA Jet*Aire by METALAIRE®. Units shall be constructed of steel. The outlets shall consist of a core assembly constructed with a series of circular rings. The core shall be capable of adjustment from the face of the outlet without the use of special tools. The core assembly shall pivot on two nylon sleeved steel bolts. The core assembly shall be adjustable to obtain a full 60° arc along the vertical plane.

The units shall be the size and quantity as outlined in the plans and specifications.

Units shall be designed to integrate round exposed ductwork (Model JA- 1EX)

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

Series JA - Model Specification Guide

Supply - High Capacity - Industrial Grilles and Registers Round - Jet Aire

Model	Available Neck	Available Finishes
JA - 1 Jet No Panel	6"	Standard
JA-1 EX - 1 Jet No Panel	8"	01 - White
JA-1P - 1 Jet Panel Mounted	10"	
JA-2P - Jet*Aire - 2 Jets Panel Mounted	12"	
JA-3P - Jet*Aire - 3 Jets Panel Mounted	14"	
JA-4P - Jet*Aire - 4 Jets Panel Mounted	16"	
	18"	
	20"	



➔ Outside Air Louvers ➔ Series OAL ➔ Extruded Aluminum

Product Details

- ★ Series OAL stationary outside air louvers are fixed multiple blade air distribution devices designed for installation in building exterior wall openings
- ★ The series OAL inhibit the entrance of wind, rain, snow, sleet, sand, birds, insects, and airborne debris while serving to enhance the building's exterior appearance
- ★ Each series OAL blade has a 45° face deflection and includes a water baffle with a 1/4" return bend
- ★ Series OAL blades also overlap to improve the weather resistance of the louver

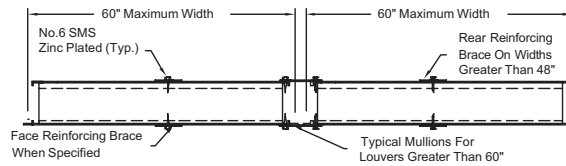
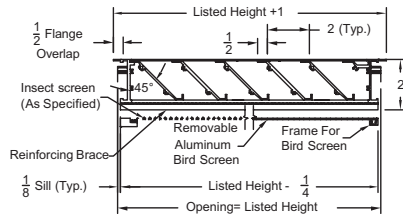


Model OAL-2C Shown

Standard Finish: 24 Mill finish

Sideview, dimensions are in inches

Outside Intake and Exhaust Air Louvers - Type C (Channel Frame) - 2" Depth Series OAL - Extruded Aluminum Model OAL-2C

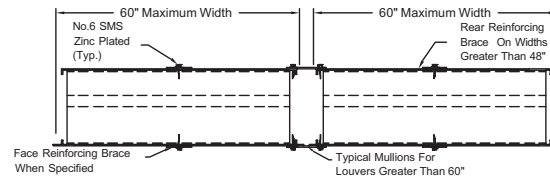
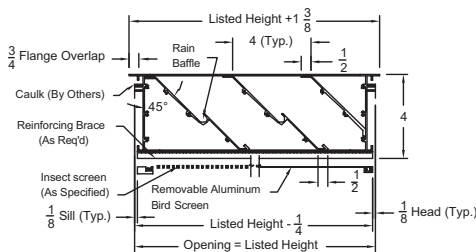


Industrial / High Capacity Devices

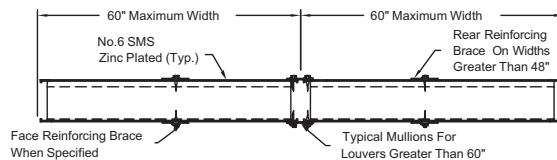
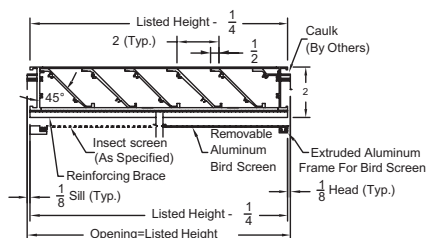


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Outside Intake and Exhaust Air Louvers - Type F (Flanged Frame) - 2" Depth Series OAL - Extruded Aluminum Model OAL-2F

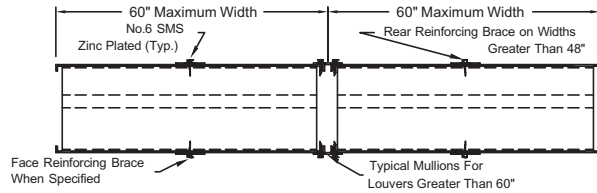
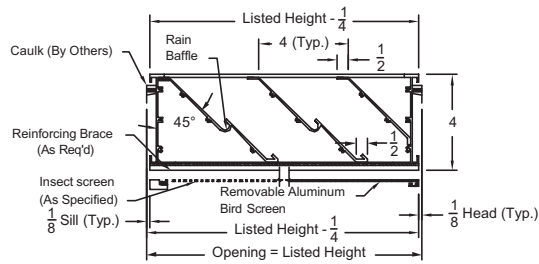


Outside Intake and Exhaust Air Louvers - Type 4 (Channel Frame) - 4" Depth Series OAL - Extruded Aluminum Model OAL-4C



IND - Industrial / High Capacity Devices

Outside Intake and Exhaust Air Louvers - Type 4 (Flanged Frame) - 4" Depth Series OAL - Extruded Aluminum Model OAL-4F



1. Available Finishes	2. Available Accessories	3. Construction Details
Standard Finish: 24 Mill finish Optional Finish: 01 White 02 Aluminum paint 04 Clear Anodized 28 Custom color	(Factory Mounted) I/S - Insect - #18 Aluminum Mesh B/S - Bird Screen - Expanded Aluminum	<ul style="list-style-type: none"> Maximum 1-piece dimension of 72" x 120" or 120" x 72" Even/odd inch sizes for widths Height available only as listed

Series OAL - Free Area (Sq. ft.)

Models OAL-4C, OAL-4F

Height	Model																					
	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80	84	88	92	96
12	.2	.3	.4	.4	.5	.6	.7	.8	.9	1.0	1.1	1.2	1.2	1.3	1.4	1.5	1.6	1.6	1.7	1.8	1.9	2.0
16	.3	.5	.6	.7	.9	1.0	1.2	1.3	1.4	1.6	1.7	1.8	2.0	2.1	2.2	2.4	2.5	2.7	2.8	2.9	3.1	3.2
20	.5	.6	.8	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.3	2.5	2.7	2.9	3.1	3.3	3.5	3.7	3.9	4.1	4.2	4.4
24	.6	.8	1.1	1.3	1.5	1.8	2.0	2.5	2.8	3.0	3.2	3.2	3.5	3.7	3.9	4.2	4.4	4.7	4.9	5.2	5.4	5.6
28	.7	1.0	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.6	3.7	4.0	4.2	4.5	4.8	5.1	5.4	5.7	6.0	6.3	6.6	6.9
32	.8	1.2	1.5	1.9	2.2	2.6	2.9	3.3	3.6	3.9	4.3	4.6	5.0	5.3	5.7	6.0	6.4	6.7	7.0	7.4	7.7	8.9
36	.9	1.4	1.8	2.2	2.6	2.9	3.3	3.7	4.1	4.5	5.0	5.3	5.7	6.1	6.5	6.9	7.3	7.7	8.1	8.5	8.9	9.3
40	1.1	1.5	1.9	2.4	2.9	3.3	3.8	4.2	4.7	5.1	5.6	6.1	6.5	6.9	7.4	7.8	8.3	8.7	9.2	9.6	10.1	10.5
44	1.2	1.6	2.2	2.7	3.2	3.7	4.2	4.8	5.6	5.7	6.2	6.9	7.2	7.7	8.2	8.7	9.3	9.7	10.2	10.7	11.2	11.7
48	1.3	1.9	2.5	3.0	3.6	4.1	4.7	5.6	5.8	6.3	6.9	7.5	8.0	8.5	9.1	9.6	10.2	10.8	11.3	11.8	12.4	12.9
52	1.5	2.1	2.7	3.3	3.9	4.5	5.1	5.7	6.3	6.9	7.5	8.1	8.7	9.3	10.0	10.6	11.2	11.8	12.4	13.0	13.6	14.2
56	1.6	2.3	2.9	3.6	4.2	4.9	5.6	6.2	6.9	7.5	8.5	8.8	9.5	10.2	10.8	11.5	12.1	12.8	13.4	14.1	14.8	15.4
60	1.7	2.4	3.2	3.9	4.6	5.3	6.0	6.7	7.4	8.1	8.8	9.5	10.3	10.9	11.7	12.4	13.1	13.8	14.5	15.2	15.9	16.6
64	1.8	2.6	3.4	4.1	4.9	5.7	6.4	7.2	8.0	8.7	9.5	10.2	11.0	11.8	12.6	13.3	14.1	14.8	15.6	16.3	17.1	17.9
68	1.9	2.8	3.6	4.4	5.2	6.1	6.9	7.7	8.5	9.3	10.1	10.9	11.8	12.6	13.4	14.2	15.0	15.8	16.6	17.4	18.3	19.1
72	2.1	3.0	3.8	4.7	5.6	6.4	7.3	8.2	9.0	10.0	10.8	11.6	12.6	13.4	14.2	15.1	16.0	16.9	17.7	18.6	19.4	20.3
76	2.2	3.2	4.1	5.0	5.9	6.8	7.7	8.7	9.6	10.5	11.4	12.3	13.3	14.2	15.1	16.0	16.9	17.8	18.8	19.7	20.6	21.5
80	2.4	3.3	4.3	5.3	6.2	7.2	8.2	9.2	10.1	11.1	12.1	12.0	14.0	15.0	16.0	16.9	17.8	18.9	19.9	20.8	21.8	22.7
84	2.5	3.5	4.5	5.5	6.6	7.6	8.6	9.6	10.7	11.7	12.7	13.7	14.8	15.8	16.8	17.8	18.9	19.9	20.9	21.9	22.9	24.0
88	2.6	3.7	4.8	5.8	6.9	8.0	9.1	10.1	11.2	12.3	13.4	14.4	15.5	16.6	17.7	18.7	19.8	20.9	21.9	23.0	24.1	24.2
92	2.7	3.9	5.0	6.1	7.3	8.4	9.5	10.6	11.8	12.9	14.0	15.1	16.3	17.4	18.5	19.6	20.8	21.9	23.0	24.2	25.3	26.4
96	2.9	4.1	5.2	6.4	7.6	8.8	10.0	11.1	12.3	13.5	14.6	15.8	17.0	18.2	19.4	20.5	21.7	22.9	24.1	25.3	26.4	27.6

For performance notes, see page IND-141 - IND-143

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Series OAL - Free Area (Sq ft)

Models OAL-2C, OAL-2F - *continued*

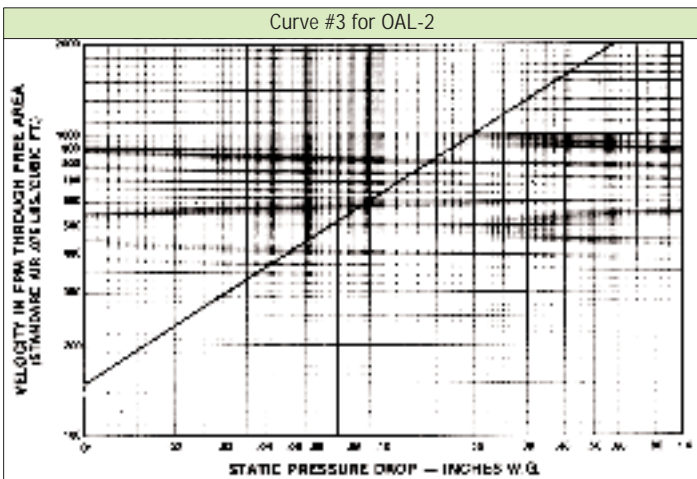
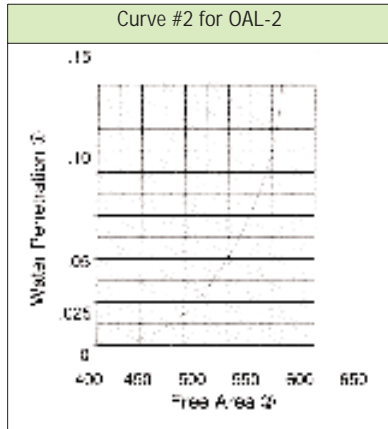
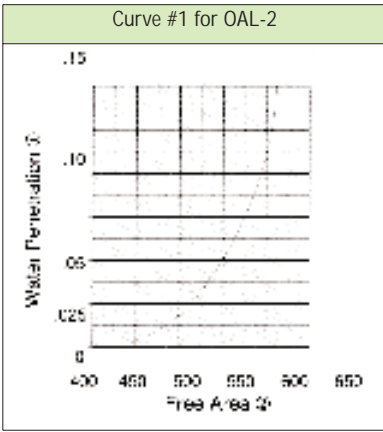
Height	Model																					
	12	16	20	24	28	32	36	40	44	48	52	56	60	64	68	72	76	80	84	88	92	96
12	.4	.5	.6	.7	.8	1.0	1.1	1.3	1.4	1.5	1.6	1.8	1.9	2.0	2.2	2.3	2.4	2.6	2.7	2.8	2.9	3.1
16	.5	.7	.9	1.0	1.2	1.4	1.6	1.8	2.0	2.2	2.3	2.5	2.7	2.9	3.1	3.3	3.5	3.6	3.8	4.0	4.2	4.4
20	.6	.9	1.1	1.4	1.6	1.8	2.1	2.3	2.6	2.8	3.0	3.3	3.5	3.8	4.0	4.3	4.5	4.7	5.0	5.2	5.5	5.7
24	.8	1.1	1.4	1.7	2.0	2.3	2.6	2.9	3.2	3.5	3.8	4.1	4.3	4.6	5.0	5.2	5.5	5.8	6.1	6.4	6.7	7.0
28	.9	1.3	1.7	2.0	2.3	2.7	3.0	3.4	3.8	4.1	4.5	4.8	5.2	5.5	5.9	6.2	6.6	6.9	7.3	7.6	8.0	8.3
32	1.1	1.5	1.9	2.3	2.7	3.1	3.6	4.0	4.4	4.8	5.2	5.6	6.0	6.4	6.8	7.2	7.6	8.0	8.4	8.9	9.3	9.7
36	1.2	1.7	2.2	2.6	3.1	3.6	4.0	4.5	5.0	5.4	5.9	6.3	6.8	7.3	7.7	8.2	8.7	9.1	9.6	10.0	10.5	11.0
40	1.4	1.8	2.4	2.9	3.5	4.0	4.5	5.0	5.5	6.1	6.6	7.1	7.6	8.1	8.6	9.2	9.7	10.2	10.7	11.2	11.8	12.3
44	1.5	2.1	2.7	3.3	3.8	4.5	5.0	5.6	6.1	6.6	7.3	7.9	8.4	9.0	9.6	10.2	10.7	11.3	11.9	12.4	13.0	13.6
48	1.7	2.3	2.9	3.6	4.2	4.8	5.5	6.1	6.7	7.4	8.0	8.6	9.3	9.9	10.5	11.1	11.8	12.4	13.0	13.7	14.3	15.0
52	1.8	2.5	3.2	3.9	4.6	5.3	6.0	6.6	7.4	8.0	8.7	9.4	10.0	10.9	11.4	12.1	12.8	13.5	14.2	14.9	15.6	16.2
56	1.9	2.7	3.5	4.2	4.9	5.7	6.4	7.2	7.9	8.7	9.4	10.0	10.9	11.6	12.4	13.1	13.8	14.6	15.3	16.1	16.8	17.6
60	2.1	2.9	3.7	4.5	5.1	6.1	6.9	7.7	8.5	9.3	10.1	10.9	11.7	12.5	13.3	14.1	14.9	15.7	16.5	17.3	18.1	19.0
64	2.3	3.1	4.0	4.8	5.7	6.5	7.4	8.2	9.1	10.0	10.9	11.7	12.5	13.4	14.2	15.1	15.9	16.8	17.6	18.5	19.3	20.2
68	2.4	3.3	4.2	5.2	6.1	7.0	7.9	8.8	9.7	10.6	11.5	12.4	13.3	14.2	15.1	16.1	17.0	17.9	18.8	19.7	20.6	21.5
72	2.6	3.6	4.5	5.5	6.4	7.4	8.4	9.3	10.3	11.3	12.4	13.1	14.1	15.1	16.4	17.0	18.0	18.9	19.9	21.0	21.9	22.8
76	2.7	3.8	4.8	5.8	6.8	7.8	8.8	9.9	10.9	11.9	12.9	13.9	15.0	16.0	17.0	18.0	19.0	20.1	21.1	22.1	23.1	24.2
80	2.9	4.0	5.0	6.1	7.2	8.3	9.3	10.4	11.5	12.5	13.6	14.7	15.8	16.8	18.0	19.0	20.1	21.1	22.2	23.3	24.4	25.5
84	3.0	4.2	5.3	6.4	7.6	8.9	9.8	10.9	12.1	13.2	14.3	15.5	16.6	17.7	18.8	20.0	21.1	22.2	23.4	24.5	25.6	26.8
88	3.2	4.4	5.6	6.5	7.9	9.1	10.3	11.5	12.7	13.8	15.0	16.2	17.4	18.6	19.8	21.0	22.1	23.3	24.5	25.7	27.0	28.1
92	3.3	4.6	5.8	7.1	8.3	9.5	10.8	12.0	13.3	14.5	15.7	17.0	18.2	19.5	20.7	22.0	23.2	24.4	25.7	27.0	28.1	29.4
96	3.5	4.8	6.1	7.4	8.7	10.0	11.3	12.5	13.8	15.2	16.4	17.7	19.0	20.3	21.6	23.0	24.2	25.5	26.8	28.1	29.4	30.7

For performance notes, see page IND-141 - IND-143

Industrial / High Capacity Devices



IND



Introduction

The performance data shown on pages 4 to 6 are designed to assist in the proper selection of Model OAL Outside Air Louvers. These performance values, developed through testing in the field and at Metal Industries Research Laboratory in Clearwater, Florida, have proven reliable in thousands of installations and may be relied upon with confidence. As with all performance ratings, however, the data shown must be applied according to the manufacturer's recommendations and with an understanding of the basic premises upon which the performance values are predicated.

Design Considerations

METALAIRES extruded aluminum stationary louvers are fixed multiple blade air distribution devices for installation in building exterior wall openings. They are designed to permit flow of fresh air into the building interior and exhaust air to the building exterior with a minimum pressure drop and sound level. They also inhibit the entrance of wind, rain, snow, sleet, sand, birds, insects and airborne debris, and enhance the exterior building appearance.

Model OAL Air Louvers for exterior wall installation are designed with 45° face deflection blades. Blades overlap and include a vertical water baffle with a 1/4 inch return bend at the upper blade edge concealed by the adjacent blade above which improves weather resistance. Models are available with overlapping wall opening flanges for flush mounting and with channel frames for recessed installation inside exterior wall openings. Since no louver is capable of retarding water penetration under all conditions of weather, it is suggested that louvers be recessed in wall openings to avoid rain water cascading down the building face onto a flush mounted louver. When this is not feasible it is suggested that drain pans, drained ductwork, with or without eliminator plates, or other positive means of water collection and drainage be considered when absolutely no moisture carryover can be tolerated.

Performance Variables

The resistance of a louver to water penetration is an important design consideration. A louver's water resistance performance is usually determined by a specific set of laboratory tests in which water is directed over the louver face without external wind, referencing only the velocity of the air entering the louver. This industry standard aids the design engineer in sizing intake louvers for NORMAL WEATHER conditions, but is not a guarantee that, for all variable conditions of wind and rain, a tested louver will prevent water penetration. Metal Industries, Inc. certainly does not offer such a claim. Designers of critical installations should consider their local weather records, and provide a reasonable safety factor by sizing louvers at some point less than the manufacturer's maximum recommended free area velocities.

Maximum Recommended Free Area Velocities for Minimum Water Penetration (Intake Louvers Only, No Maximum for Exhaust Louvers)

OAL2 F	575 fpm
OAL2 C	
OAL4 F	525 fpm
OAL4 C	

Curves 1 and 2 show the relationship between water penetration and free area velocity in Feet Per Minute (fpm).

AMCA (Air Moving and Conditioning Association) Standard 500 is the basis for the louver free area calculations ONLY as shown in Tables 1 and 2 on page 4. Louver static pressure drop data shown in Curves 3 and 4.



Louver free area, static pressure drop and water penetration should all be considered in the proper selection of Outside Air Louvers. Louvers should not be specified to meet a percent free area requirement since the percent free area varies with the louver size and model. Louvers should be specified to meet a maximum allowable pressure drop for a specific volume of design CFM with acceptable water penetration levels. The examples on this page show how these factors are interrelated.

OAL2 or OAL2 Louver Sizes

Example: Select a Model OAL2 F and OAL2 C for fresh air intake application to handle 5000 CFM at less than 0.084 inches W.G. for minimum water penetration.

Step 1: Refer to Louver Performance Curve No. 3 and determine the free area velocity at 0.94 inches W.G. A pressure drop of 0.084 inches W.G. limits the free area velocity to approximately 575 fpm.

Step 2: Use the formula for finding Free Area in square feet.

$$\text{Free Area (sq. ft.)} = \frac{\text{CFM}}{\text{Free Area Velocity (fpm)}}$$

$$\text{Free Area (sq. ft.)} = \frac{5000 \text{ CFM}}{575 \text{ (fpm)}} = 8.7 \text{ sq. ft.}$$

Step 3: Refer to Water Penetration Curve No. 1 at a Free Area Velocity of 575 fpm, water penetration is slight, approximately 0.075 ounces of water per square foot of free area in 5 minutes at 2≤ per hour rainfall rate. Water penetration for Models OAL2 F and OAL2 C starts to become of concern above 615 fpm free area velocity.

Step 4: Use the following formula to calculate the total water penetration of the louver required for the application:

$$\text{Total Louver Water Penetration} = \text{Louver Free Area in sq. ft.} \times \text{Ounces of Water per sq. ft. of Free Area}$$

$$\text{Total Louver Water Penetration} = 8.7 \text{ sq. ft.} \times .75 \text{ in 5 minutes} = .6525 \text{ ozs.}$$

Step 5: Refer to Table 2 and select a Louver with approximately 8.7 sq. ft. of free area. Several selections are available.

Width x Height	Free Area (Sq. Ft.)	Water Penetration in 5 Minutes
76 x 36	8.7	.652 ounces H ₂ O
52 x 52	8.7	.653 ounces H ₂ O
44 x 60	8.5	.637 ounces H ₂ O
36 x 76	8.8	.660 ounces H ₂ O

Example: Select a Model OAL4 F and OAL4 C for fresh air intake application to handle 5000 CFM at less than 0.04 inches W.G. for minimum water penetration.

Step 1: Refer to Louver Performance Curve No. 4 and determine the free area velocity at 0.04 inches W.G. A pressure drop of 0.04 inches W.G. limits the free area velocity to approximately 525 fpm.

Step 2: Use the formula for finding Free Area in square feet.

$$\text{Free Area (sq. ft.)} = \frac{\text{CFM}}{\text{Free Area Velocity (fpm)}}$$

$$\text{Free Area (sq. ft.)} = \frac{5000 \text{ CFM}}{575 \text{ (fpm)}} = 8.7 \text{ sq. ft.}$$

Step 3: Refer to Water Penetration Curve No. 2. At a Free Area Velocity of 525 fpm, water penetration is slight, approximately 0.030 ounces of water per square foot of free area in 5 minutes at 2≤ per hour rainfall rate. Water penetration for Models OAL4 F and OAL4 C starts to become of concern above 550 fpm free area velocity.

Step 4: Use the following formula to calculate the total water penetration of the louver required for the application:

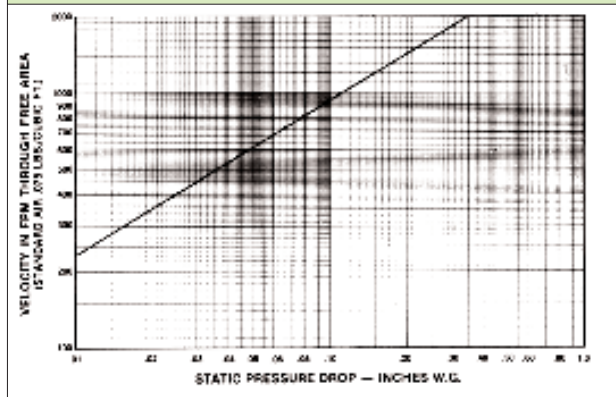
$$\text{Total Louver Water Penetration} = \text{Louver Free Area in sq. ft.} \times \text{Ounces of Water per sq. ft. of Free Area}$$

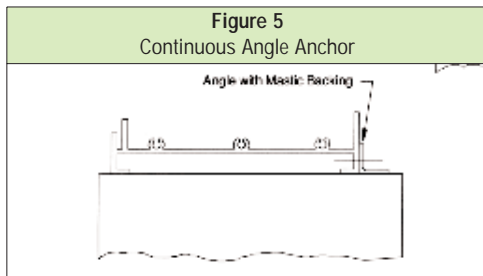
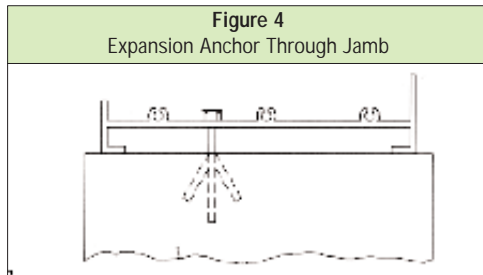
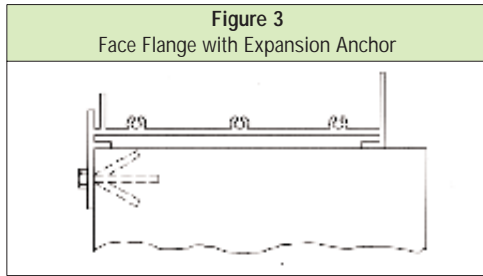
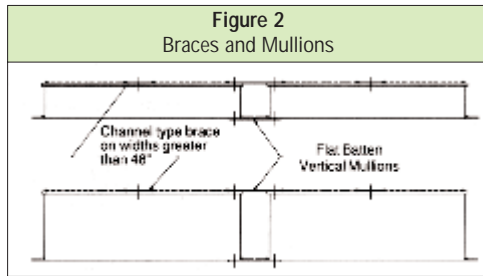
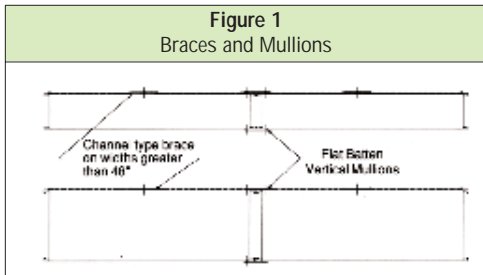
$$\text{Total Louver Water Penetration} = 8.7 \text{ sq. ft.} \times .75 \text{ in 5 minutes} = .6525 \text{ ozs.}$$

Width x Height	Free Area (Sq. Ft.)	Water Penetration in 5 Minutes
76 x 36	8.7	.652 ounces H ₂ O
52 x 52	8.7	.653 ounces H ₂ O
44 x 60	8.5	.637 ounces H ₂ O
36 x 76	8.8	.660 ounces H ₂ O

Selections at higher free area velocities are possible for installations with built-in positive protection of equipment against water penetration. In these situations, the recommended free area velocities for minimum water penetration may be exceeded.

Curve #4 for OAL-4





Louver Installation Details

Louvers can be installed in wall openings by a variety of methods. Louvers are available with flanges for overlapping wall openings and with channel periphery for recess in wall openings. Face flange Models OAL4 F and OAL2 F are provided with front flanges on head, sill and jambs. Model OAL4 F has 3/4" wall opening overlap and Model OAL2 F has a 1/2 inch wall opening overlap. Attachment is suggested through the face flange with lead expansion shields and stainless steel bolts or screws to suit the conditions of construction. (Please see Fig. 3).

Angle Anchors

Continuous angles or 6" long sections of 1 1/4" x 1 1/4" aluminum angles for 4" and 2" deep face flanged louvers and 1" x 5/8" x 1/4" aluminum angles for 4" and 2" deep channel louvers can be used at jambs, sills, and heads for attachment from the rear. Bolt the angle leg to the wall opening. It is suggested that a coating of mastic sealant be used between the wall and angle leg surfaces. Fasten the remaining angle leg to the louver. On continuous angles, installation bolts should be spaced on 18" centers. (Please see Fig. 5).

Lead Expansion Anchors

Stainless steel bolts with lead expansion shields can be used through holes drilled in louver jambs. Large flat washers of the same material as the bolts should be used with mastic sealant between the washers and louver jambs. (Please see Fig. 4).

Vertical Mullions

Flat batten vertical mullions are available for multiple louver sections and are field installed with stainless steel screws by others. The flat batten mullions are 0.081" thick aluminum strips available undrilled in 5 ft. and 10 ft. lengths in 1 1/4" widths for Models OAL2 C and OAL4 C and 1 1/2" widths for Models OAL2 F and OAL4 F louvers. (Please see Figs. 1 & 2).

Installation, caulking around perimeter of louvers and wall openings, hardware and structural materials are furnished by others.

Any of the recommended methods, as well as other means of attachment and installation as detailed by the architect can be employed.



Series OAL - Specifications

Outside Intake and Exhaust Air Louvers – Extruded Aluminum - Series OAL

Model OAL2C - 2" deep – "C" channel frame

Model OAL4C - 4" deep – "C" channel frame

Model OAL2F - 2" deep – "F" flanged frame

Model OAL4F - 4" deep – "F" flanged frame

Supply Unit Specification

Outside air louvers shall be Model OAL manufactured by METALAIRE®. Units shall be constructed from heavy aluminum extrusions with fixed multiple blades. The louver blades shall be on 2" spacing and have a 45° deflection and include a water baffle with a 1/4" bend. Blades shall overlap to increase water resistance. Units to include vertical reinforcing channel type braces for louvers with blade width spans in excess of 48".

Options:

Units shall be 2" deep and include a channel frame (Model OAL2C)

Units shall be 4" deep and include a channel frame (Model OAL4C)

Units shall be 2" deep and include a flanged frame and a 1" wide face flange (Model OAL2F)

Units shall be 4" deep and include a flanged frame and a 1 1/4" wide face flange (Model OAL4F)

Units shall include caulking type sills, jambs, and head allowing a weather tight seal between the louver frame and the wall opening. All fastening shall be steel cadmium plated self-tapping screws threaded into stiffening bosses.

Options:

Units shall include an aluminum bird screen.

Units shall include and aluminum insect screen

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours



Series OAL - Model Specification Guide

Outside Air Louvers - Extruded Aluminum
Series OAL

Model	Available Neck	Available Finishes	Available Options	
OAL 2F - 2" Depth - Flange Frame OAL 2C - 2" Depth - Channel Frame	12" thru 120"	Standard	IS	Insect Screen
		24 - Mill	BS	Bird Screen
Optional				
01 - White				
02 - Aluminum				
03 - Black				
04 - Clear Anodized				
OAL 4F - 4" Depth - Flange Frame OAL 4C - 4" Depth - Channel Frame		28 - Custom Color		



➔ Punkah Louver ➔ Global Adjustment ➔ Model MPK ➔ Aluminum

Product Details

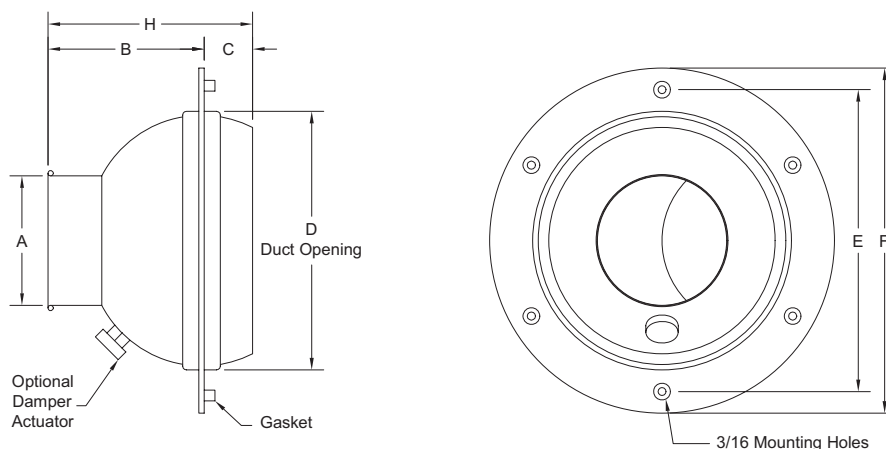
- ✦ Model MPK discharges a high-velocity jet that can be directed to condition a specific space or area
- ✦ The model MPK is constructed using a felt gasket that allows smooth movement of the inner core to direct air flow and provides a tight seal to prevent air leakage
- ✦ An optional aperture damper is available which includes an adjustment knob and stainless steel linkage and tension springs for maximum corrosion protection



Model MPK Shown
Standard Finish: 24 Mill finish

Sideview, dimensions are in inches

Industrial High Capacity Punkah Louver - Aluminum - Global Adjustment Model MPK



Size	A	B	C	D	E	F	H	No. of Mtg. Holes
6	3	3 5/8	1 1/8	6	7	8	4 3/4	4
8	4 3/8	4 5/8	1 3/4	8	9	10	6 1/8	4
10	5 3/4	6 1/4	2 1/2	10	11	12	8 3/4	6
12	7 3/8	6 1/2	3	12	13	14	9 1/2	6
14	8 5/8	7 3/8	4 1/8	14	15	16	11 1/2	6
16	9 3/4	8 1/2	4 5/8	16	17	18	13 1/8	6
18	10 1/2	10	4 5/8	18	19	20	14 5/8	8
20	12 3/8	11	5	20	21	22	16	8

1. Available Finishes	2. Aluminum Construction
<p>Standard Finish: 24 Mill finish</p> <p>Optional Finish: 01 White 02 Aluminum 04 Clear Anodized</p>	<p>• Available only in listed sizes</p>



Series MPK - Performance

Model MPK

Model	Nozzle Velocity (fpm)	1000	1500	2000	2500	3000	3500	4000
6	CFM	49	74	96	123	147	172	196
	Ps	0.05	0.12	0.22	0.34	0.49	0.66	0.86
	NC	<15	<15	15	21	25	29	33
	RC	<10N	<10N	11N	22N	26N	30N	34N
	Projection @ Vt = 400 fpm	3	4	5	6	7	9	10
	Projection @ Vt = 200 fpm	5	7	10	12	14	15	16
	Projection @ Vt = 100 fpm	10	13	15	18	19	20	22
Projection @ Vt = 50 fpm	15	20	22	26	28	30	32	
8	CFM	104	157	209	261	313	365	418
	Ps	0.06	0.14	0.24	0.38	0.53	0.70	0.92
	NC	<15	<15	17	24	30	35	38
	RC	<10N	<10N	15N	22N	28N	33N	36N
	Projection @ Vt = 400 fpm	4	5	7	9	11	13	15
	Projection @ Vt = 200 fpm	7	11	15	17	19	21	23
	Projection @ Vt = 100 fpm	15	18	23	25	27	29	32
Projection @ Vt = 50 fpm	23	28	32	39	41	44	45	
10	CFM	180	270	361	451	541	631	721
	Ps	0.07	0.15	0.25	0.39	0.56	0.74	0.96
	NC	<15	<15	21	29	35	40	45
	RC	<10R	11R	17N	26N	33N	39N	43N
	Projection @ Vt = 400 fpm	5	7	9	12	15	17	19
	Projection @ Vt = 200 fpm	9	14	19	23	25	27	30
	Projection @ Vt = 100 fpm	18	24	30	32	36	38	43
Projection @ Vt = 50 fpm	30	37	43	45	51	57	60	
12	CFM	297	445	593	742	890	1038	1187
	Ps	0.07	0.15	0.26	0.40	0.58	0.78	1.01
	NC	<15	15	24	32	38	44	47
	RC	<10R	11R	18N	28N	35N	41N	43N
	Projection @ Vt = 400 fpm	7	9	12	15	19	22	25
	Projection @ Vt = 200 fpm	12	18	25	29	32	35	38
	Projection @ Vt = 100 fpm	25	31	38	41	46	49	57
Projection @ Vt = 50 fpm	38	47	55	65	70	74	76	
14	CFM	406	609	811	1014	1217	1420	1623
	Ps	0.07	0.15	0.26	0.41	0.58	0.79	1.02
	NC	<15	15	25	33	39	44	48
	RC	<10R	12R	22N	31N	37N	42N	45N
	Projection @ Vt = 400 fpm	8	11	14	17	22	25	29
	Projection @ Vt = 200 fpm	14	21	29	34	37	41	45
	Projection @ Vt = 100 fpm	29	36	45	48	54	57	64
Projection @ Vt = 50 fpm	45	55	64	76	81	86	89	
16	CFM	518	778	1036	1296	1555	1815	2074
	Ps	0.07	0.14	0.26	0.41	0.58	0.80	1.03
	NC	<15	<16	26	33	39	44	49
	RC	<10R	12R	22R	31N	37N	42N	46N
	Projection @ Vt = 400 fpm	8	11	13	16	20	25	30
	Projection @ Vt = 200 fpm	16	19	23	27	34	39	42
	Projection @ Vt = 100 fpm	30	35	43	46	52	56	62
Projection @ Vt = 50 fpm	43	50	60	72	76	82	87	
18	CFM	601	902	1202	1503	1804	2105	2406
	Ps	0.06	0.13	0.24	0.37	0.54	0.74	0.96
	NC	<15	16	26	33	39	44	49
	RC	<10R	12R	23R	31N	37N	42N	47N
	Projection @ Vt = 400 fpm	9	13	15	18	24	27	31
	Projection @ Vt = 200 fpm	18	24	26	32	26	40	45
	Projection @ Vt = 100 fpm	33	37	43	50	54	60	66
Projection @ Vt = 50 fpm	47	53	66	73	80	85	93	
20	CFM	835	1253	1670	2088	2506	2924	3341
	Ps	0.06	0.12	0.22	0.34	0.49	0.68	0.91
	NC	<15	17	27	34	40	46	48N
	RC	<10R	13R	24R	31N	37N	43N	33
	Projection @ Vt = 400 fpm	10	14	18	24	28	30	33
	Projection @ Vt = 200 fpm	20	26	32	39	45	50	56
	Projection @ Vt = 100 fpm	34	45	50	60	65	71	80
Projection @ Vt = 50 fpm	50	66	74	85	91	96	108	

For performance notes, see page IND-148



Performance Notes for Model MPK

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic Feet per Minute (air)
- fpm - Velocity of air stream in Feet Per Minute
- Ps - Static pressure = Pt - Pv (inches of water column)
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak - Area Factors

Model MPK - Specifications

Supply Unit Specification

Air Outlets shall be model MPK Punka Louver Diffusers manufactured by METALAIRE. Units shall be composed of an adjustable inner round nozzle section and a round outer frame. The units shall be the size and quantity as outline in the plans and specifications.

Unit shall be manually adjustable without the use of tools allowing the discharge jet to be directed a full 70 degrees. Outlet shall be constructed using a felt gasket seal providing smooth adjustment without leakage. Outer circular frame of unit shall include a closed cell neoprene gasket to prevent leakage between the outlet and mounting surface.

Optional Aperture Damper

Outlets shall include an integral aperture damper. Damper shall have an adjustment knob constructed from aluminum. Connecting linkage, tension springs, and damper hardware shall be constructed from stainless steel.

Outlets shall be constructed of heavy gauge aluminum and available in 6", 8", 10", 12", 14", 16", 18", and 20" diameters. Finish shall be white or aluminum paint, mill finish, or clear anodized finish.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours



Model MPK - Model Specification Guide

Supply - High Capacity Punkah Louver - Global Adjustment
 Model MPK - Aluminum

Model	Available Neck	Available Finishes	Available Options
MPK - Punkah Louver	6"	Standard	D - MPK Damper
	8"	24 - Mill	
	10"	Optional	
	12"		
	14"	01 - White	
	16"	02 - Aluminum	
	18"		
	20"	04 - Clear Anodized	



➔ Architectural ➔ High Velocity ➔ Round ➔ Series MRD

Product Details

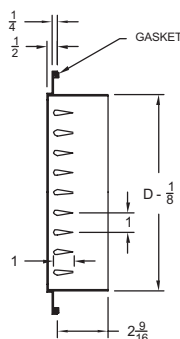
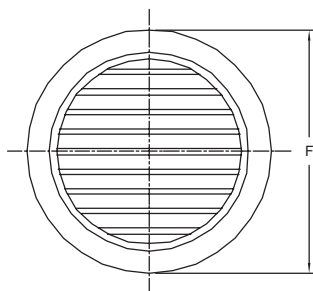
- ★ An excellent selection for architecturally pleasing applications requiring an adjustable outlet with high capacities and long throw
- ★ Heavy gauge aluminum construction
- ★ Available in single and double deflection
- ★ Unit is designed for surface mounting with concealed fastening



Model MRDD Shown
Standard Finish: 01 White

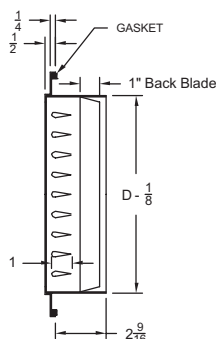
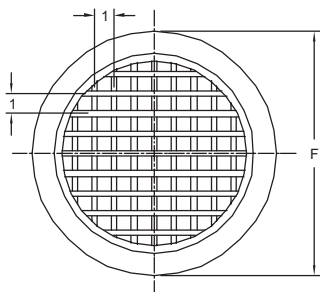
Sideview, dimensions are in inches

Single Deflection Grille - Wall/Ceiling Mount - Adjustable air pattern Model MRDS



Models: MRDS & MRDD		
Available Sizes	D	F
6	6	8-1/4
8	8	10-1/4
10	10	12-1/4
12	12	14-1/4
14	14	16-1/4
16	16	18-1/4
18	18	20-1/4
20	20	22-1/4
22	22	24-1/4
24	24	26-1/4

Double Deflection Grille - Wall/Ceiling Mount - Adjustable Horizontal/Vertical Blades Model MRDD



Models: MRDS & MRDD		
Available Sizes	D	F
6	6	8-1/4
8	8	10-1/4
10	10	12-1/4
12	12	14-1/4
14	14	16-1/4
16	16	18-1/4
18	18	20-1/4
20	20	22-1/4
22	22	24-1/4
24	24	26-1/4

1. Available Finishes

Standard Finish:
01 White

Optional Finish:
02 Aluminum paint
03 Black
24 Mill finish

2. Construction Details

- Concealed mounting system - Suitable for both hard and flexible ductwork
- Mounting screws included
- Border is one-piece construction



Series MRD - Performance

Models MRDS, MRDD

Model	Duct Velocity Velocity Press	400 0.01	600 0.022	800 0.04	1000 0.062	1200 0.09	1400 0.122	1600 0.16
MRD-06	CFM	79	118	157	196	236	275	314
	Ps	0.021	0.047	0.073	0.133	0.185	0.254	0.322
	NC	<15	<15	15	23	29	35	40
	Projection	4-8-15	6-12-21	8-14-24	10-16-28	13-21-30	15-22-32	17-24-34
MRD-08	CFM	140	209	279	349	419	489	559
	Ps	0.016	0.038	0.067	0.105	0.15	0.205	0.266
	NC	<15	<15	<15	21	27	33	38
	Projection	5-10-20	8-16-27	11-21-32	14-25-36	17-28-39	20-30-41	21-32-45
MRD-10	CFM	218	327	436	545	655	764	873
	Ps	0.014	0.033	0.059	0.092	0.131	0.18	0.234
	NC	<15	<15	<15	20	26	32	36
	Projection	6-12-24	9-17-32	14-26-37	17-31-45	21-34-47	25-37-52	29-40-56
MRD-12	CFM	314	471	628	786	943	1100	1257
	Ps	0.014	0.031	0.053	0.085	0.12	0.165	0.213
	NC	<15	<15	<15	19	25	31	35
	Projection	7-15-30	12-24-40	16-33-47	20-37-53	25-41-59	29-45-65	33-48-74
MRD-14	CFM	428	641	855	1069	1283	1497	1711
	Ps	0.013	0.029	0.05	0.077	0.114	0.154	0.201
	NC	<15	<15	<15	19	25	31	35
	Projection	8-18-37	14-28-47	18-38-55	23-44-61	30-48-70	34-52-74	38-56-83
MRD-16	CFM	559	838	1117	1396	1676	1955	2234
	Ps	0.013	0.027	0.048	0.076	0.108	0.147	0.191
	NC	<15	<15	<15	19	25	31	35
	Projection	10-20-40	15-30-53	22-44-65	28-50-72	34-54-80	40-60-85	45-64-90
MRD-18	CFM	707	1060	1414	1767	2121	2474	2828
	Ps	0.012	0.027	0.046	0.072	0.104	0.142	0.185
	NC	<15	<15	<15	20	26	32	36
	Projection	11-22-44	18-36-61	25-50-72	31-57-80	40-63-89	45-67-95	50-71-101
MRD-20	CFM	873	1309	1746	2182	2618	3055	3491
	Ps	0.012	0.026	0.045	0.07	0.101	0.137	0.177
	NC	<15	<15	<15	20	26	32	36
	Projection	12-24-49	20-40-68	27-53-80	35-63-89	44-68-99	51-74-105	56-78-112
MRD-22	CFM	1056	1584	2112	2640	3168	3696	4224
	Ps	0.011	0.025	0.043	0.068	0.097	0.133	0.173
	NC	<15	<15	<15	21	27	33	37
	Projection	13-27-54	22-44-74	30-57-85	37-68-98	47-76-110	57-85-120	60-87-123
MRD-24	CFM	1257	1885	2514	3142	3770	4399	5027
	Ps	0.011	0.024	0.042	0.068	0.096	0.13	0.17
	NC	<15	<15	15	22	29	34	38
	Projection	14-29-60	24-48-81	33-66-95	41-75-106	50-84-116	58-88-124	66-95-130

Performance Notes for Series MRD

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

Projection - Projection distance (THROW) in feet from the Nozzle discharge at which the maximum velocity has been reduced to specified terminal velocity (Vt)

Terminal Velocity - Maximum velocity (Vt) in feet per minute at the specified distance from the outlet face (THROW) 200 fpm, 100 fpm and 50 fpm respectively.

CFM - Standard air density and isothermal conditions

Ps - Inches of water gauge required

NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands



Series MRD - Specifications

Supply – Single Deflection/Model MRDS

Air Outlets shall be model MRDS by METALAIRE. Units shall be a round, single deflection supply register with 1" extruded aluminum airfoil shaped blades on 1" spacing. Border shall be constructed of heavy gauge aluminum. Deflector blades shall be individually adjustable.

Units shall be designed for concealed mounting in either wall or ceiling applications and allow installation for both hard and flexible ductwork. Units shall also include a foam gasket to seal the border and mounting surface.

The units shall be the size and quantity as outlined in the plans and specifications.

Supply – Double Deflection/Model MRDD

Air Outlets shall be model MRDD by METALAIRE. Units shall be a round, double deflection supply register with a set of front and perpendicular rear deflection blades. Deflection blades shall be 1" extruded aluminum airfoil shaped blades on 1" spacing. Border shall be constructed of heavy gauge aluminum. Deflector blades shall be individually adjustable.

Units shall be designed for concealed mounting and allow installation for both hard and flexible ductwork. Units shall also include a foam gasket to seal the border and mounting surface.

The units shall be the size and quantity as outline in the plans and specifications.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

Industrial / High Capacity Devices



IND

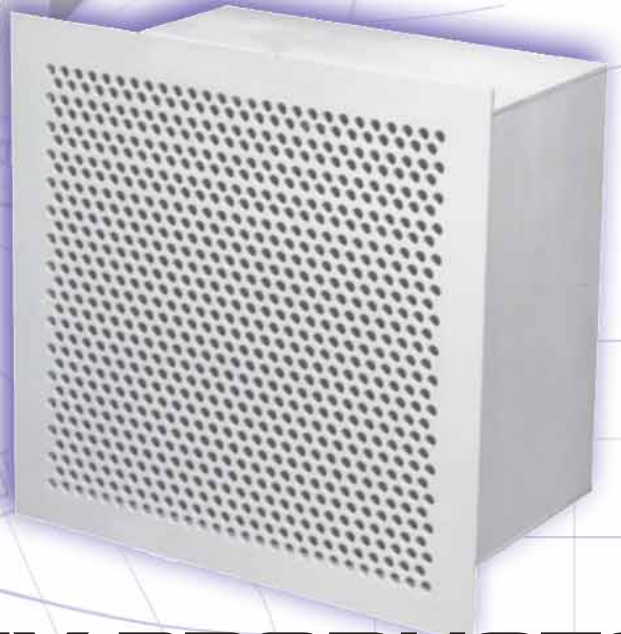
Series MRD - Model Specification Guide

Supply - Architectural - Round

Series MRD - Aluminum

Model	Available Neck	Available Finishes	
MRDS - Round - Single Deflection MRDD - Round - Double Deflection	6"	Standard	
	8"		01 - White
	10"	Optional	
	12"		02 - Aluminum
	14"		
	16"		03 - Black
	18"		
	20"		24 - Mill
	22"		
	24"		

COMMERCIAL



SECURITY PRODUCTS

SECURITY PRODUCTS

Blades Damper

1 1/4

Listed Size + 1 3/4

-132



Model SGSP
Pg. 156

Maximum Security Grilles - Square Holes/Mesh Face - Series SGSP

- ✦ The series SGSP is a supply maximum security steel grille and has a face plate perforated with 2' square holes separated by 1" wide fret bars. A woven steel mesh screen is inserted directly behind the face panel and is sandwiched by a steel backup plate
- ✦ The series SGSP is designed for sidewall applications. A rear operated opposed blade damper is available as an option
- ✦ Series SGSP is an excellent choice for maximum security applications such as federal correctional facilities, state and local prisons, psychiatric hospitals, and manufacturing plants where security is of paramount concern. This grille can be used for both supply and return applications



Model SGRP
Pg. 162

Maximum Security Grilles - Round Perforated Holes - Series SGRP

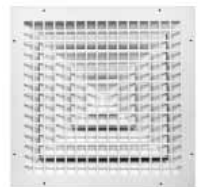
- ✦ The series SGRP is a supply maximum security steel grille and has round holes and a perforated face plate
- ✦ The series SGRP is designed for sidewall applications. A rear operated opposed blade damper is available as an option
- ✦ Series SGRP is an excellent choice for maximum security applications such as federal correctional facilities, state and local prisons, psychiatric hospitals, and manufacturing plants where security is of paramount concern. This grille can be used for both supply and return applications



Model SGRH
Pg. 168

Minimum Security Grilles - Fixed Louver Face - Series SGRH

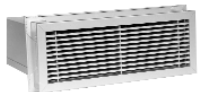
- ✦ The series SGRH is a return, minimum security grille constructed with heavy gauge steel louvers that are reinforced and welded to a steel sleeve
- ✦ The series SGRH is designed for sidewall applications. A rear operated opposed blade damper is available as an option
- ✦ Series SGRH is an excellent choice for a return grille in minimum security, supervised areas. Applications for the series SGRH include minimum security areas in federal correctional facilities, state and local prisons, psychiatric hospitals, and manufacturing plants. The SGRH is also an excellent choice for public areas to resist vandalism



Model SG5500S
Pg. 172

Minimum Security Grilles - Steel Diffuser and Face Plate - Series SG5500S

- ✦ The series SG5500S is a supply, minimum security steel ceiling diffuser and features a steel lattice face panel attached to the high performing Series 5500S steel supply diffuser
- ✦ This surfaced mounted diffuser is available with 1, 2, 3, or 4 way air patterns
- ✦ Series SG5500S is an excellent choice for minimum security, supervised areas requiring a ceiling mounted diffuser. Applications for the SG5500S include minimum security areas in federal correctional facilities, state and local prisons, psychiatric hospitals, and manufacturing plants. The SG5500S is also an excellent choice for public areas to resist vandalism



Model SG2000
Pg. 176

Minimum Security Grilles - 1" Borders - 7/32" Bars - 1/2" Centers - Series SG2000

- ✦ The series SG2000 is a return, minimum security grille constructed with heavy gauge aluminum louvers that are reinforced and welded to a steel sleeve
- ✦ The series SG2000 is designed for sidewall applications. A rear operated opposed blade damper is available as an option
- ✦ Series SG2000 is an excellent choice for a return grille in minimum security, supervised areas. Applications for the series SG2000 include minimum security areas in federal correctional facilities, state and local prisons, psychiatric hospitals, and manufacturing plants. The SG2000 is also an excellent choice for public areas to resist vandalism

Extruded Aluminum		
Deflection	Single Face	Dual Face (Transfer Grille)
0°	SG2000-1	SG2000-2
15°	SG2015-1	SG2015-2
30°	SG2030-1	SG2030-2



Other Security Grilles	
Lattice Face (Min.)	SGLF 4" - 12" or 13" - 16" Sleeve
Wire Mesh Face (Min.)	SGWM 4" - 12" or 13" - 16" Sleeve
Duct Bar Assemblies - Welded in Sleeve	SGDB 4" - 12" or 13" - 16" Sleeve
Duct Bar Assemblies - Welded in Mounting Frame	SGDF

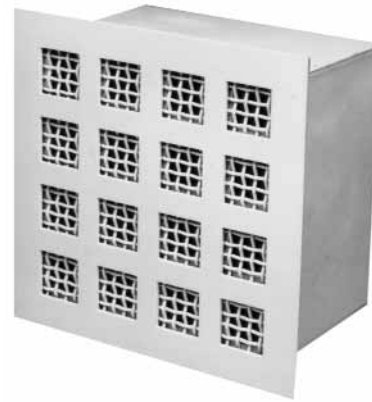
Accessories for Security Grilles	
BSA	Bolted Steel Angles
DS-AL	Debris Screen for SG 2000-1 1/4" x 1/4" Wire Mesh - Aluminum
DS-GS	Debris Screen for SG 2000-1 1/4" x 1/4" Wire Mesh - Galvanized Steel
DS-SS	Debris Screen for SG 2000-1 1/4" x 1/4" Wire Mesh - Stainless Steel
IS	Insect Screen
LSA	Loose Steel Angles
Optional screw holes	
Optional security screws	
SAB	Steel Anchor Bars
SBR	Duct Bars
SG5LFP	Steel Face Plate for SG5500S (Min.)
SGLFO	Steel Lattice Face Plate
SG-OBDA	Aluminum Dampers for Grilles
Steel Angles	
WAF	Companion Flanges (Welded Angle Frames)
WSA	Welded Steel Angles (Welded to Grille Sleeve)
WS	Wall Sleeve



➔ Maximum Security Grilles ➔ Square Holes/Mesh Face ➔ Model SGSP ➔ Steel

Product Details

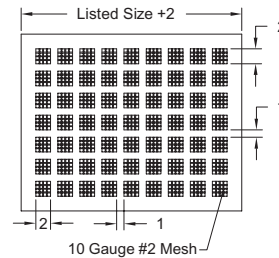
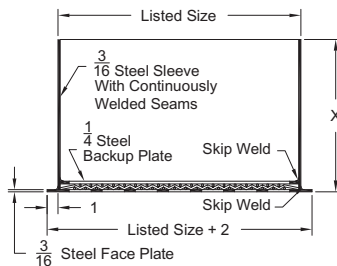
- ✦ The series SGSP is a supply maximum security steel grille and has a face plate perforated with 2' square holes separated by 1" wide fret bars. A woven steel mesh screen is inserted directly behind the face panel and is sandwiched by a steel backup plate
- ✦ The series SGSP is designed for sidewall applications. A rear operated opposed blade damper is available as an option
- ✦ Series SGSP is an excellent choice for maximum security applications such as federal correctional facilities, state and local prisons, psychiatric hospitals, as well as manufacturing plants. The SGSP is also an excellent choice for public areas to resist vandalism



Model SGSP Shown
Standard Finish: 01 White

Sideview, dimensions are in inches

Security Grille - Square Holes - Mesh Screen Face Model SGSP



1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
<p>Standard Finish: 01 White</p> <p>Note: Contact Factory for other finish</p>	<p>OBD - sleeve mounted steel damper206</p> <p>OBDA - sleeve mounted aluminum damper . .206</p> <p>SAB - Steel Anchors206</p> <p>BSA - Bolted Steel Angles207</p> <p>WSA - Welded Steel Angles207</p> <p>SBR - Security Bars207</p> <p>Screw Holes</p>	<p>LSA - Loose Steel Angles</p> <p>WAF - Welded Angle Frame</p>	<ul style="list-style-type: none"> • Neck Sizes available in 2" increments as listed • Damper can be mounted for rear operation with standard flat tip screwdriver. Due to tight bar spacing, face operated dampers are not recommended • Face plate, sleeve and horizontal blades are 14 gauge steel • Wire mesh is 10 gauge by #2

Security Products



SEC

SEC - Security Products

Model SGSP - Performance

CFM		6" x 6"	9" x 6"	12" x 6"	15" x 6"	18" x 6"	21" x 6"	24" x 6"	NC
25	Nk Vel Ps Throw	100 0.008 4 2							20 - 25
50	Nk Vel Ps Throw	200 0.034 12 6	133 0.015 10 5	100 0.008 8 4					
75	Nk Vel Ps Throw	300 0.076 17 8	200 0.034 14 7	150 0.019 13 6	120 0.012 12 6	100 0.008 11 5			
100	Nk Vel Ps Throw	400 0.135 21 10	267 0.06 18 9	200 0.034 16 8	160 0.022 15 7	133 0.015 14 7	114 0.011 13 6	100 0.008 12 6	
150	Nk Vel Ps Throw		400 0.135 23 12	300 0.076 21 11	240 0.049 20 10	200 0.034 19 9	171 0.025 18 9	150 0.019 17 8	
200	Nk Vel Ps Throw			400 0.135 26 13	320 0.087 24 12	267 0.06 23 11	229 0.044 21 11	200 0.034 21 10	
250	Nk Vel Ps Throw			500 0.211 30 15	400 0.135 28 14	333 0.094 26 13	286 0.069 25 12	250 0.053 24 12	
300	Nk Vel Ps Throw				480 0.265 35 18	400 0.184 33 16	343 0.135 31 12	300 0.104 30 12	
350	Nk Vel Ps Throw					467 0.241 36 18	400 0.177 34 17	350 0.135 33 16	
400	Nk Vel Ps Throw						457 0.224 37 19	400 0.171 35 18	
450	Nk Vel Ps Throw							450 0.211 38 19	25 - 30
500	Nk Vel Ps Throw							500 0.256 41 20	

CFM		9" x 9"	12" x 9"	15" x 9"	18" x 9"	21" x 9"	24" x 9"	NC
100	Nk Vel Ps Throw	178 0.027 15 8	133 0.015 14 7	107 0.01 13 6				20 - 25
150	Nk Vel Ps Throw	267 0.06 21 10	200 0.034 19 9	160 0.022 17 9	133 0.015 16 8	114 0.011 15 8	100 0.008 14 7	
200	Nk Vel Ps Throw	356 0.107 25 12	267 0.06 23 11	213 0.038 21 10	178 0.027 20 10	152 0.02 19 9	133 0.015 18 9	
250	Nk Vel Ps Throw	444 0.167 27 14	333 0.094 26 13	267 0.06 24 12	222 0.042 23 11	190 0.031 22 11	167 0.023 21 10	
300	Nk Vel Ps Throw		400 0.135 30 15	320 0.087 28 14	267 0.06 26 13	229 0.044 25 12	200 0.034 23 12	
350	Nk Vel Ps Throw		467 0.184 33 16	373 0.118 31 15	311 0.082 29 14	267 0.06 27 14	233 0.046 26 13	
400	Nk Vel Ps Throw			427 0.195 36 18	356 0.135 34 17	305 0.099 32 16	267 0.076 31 13	
450	Nk Vel Ps Throw			480 0.241 39 19	400 0.167 37 18	343 0.123 35 17	300 0.094 33 17	
500	Nk Vel Ps Throw				444 0.202 39 20	381 0.148 37 19	333 0.114 35 18	
550	Nk Vel Ps Throw				489 0.241 42 21	419 0.177 39 20	367 0.135 38 19	
600	Nk Vel Ps Throw					457 0.207 42 21	400 0.159 40 20	25 - 30
650	Nk Vel Ps Throw					495 0.241 44 22	433 0.184 42 21	
700	Nk Vel Ps Throw						467 0.241 44 22	



Performance notes, see page SEC-160

For more product information visit us at www.metalaire.com



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Model SGSP - Performance

CFM		12" x 12"	15" x 12"	18" x 12"	21" x 12"	24" x 12"	NC	
100	Nk Vel Ps Throw	100 .008 12 7						
150	Nk Vel Ps Throw	150 .019 17 9	120 .012 15 9	100 .008 14 8				
200	Nk Vel Ps Throw	200 .034 21 11	160 .022 19 10	133 .015 18 10	114 .011 17 9	100 .008 16 9		
250	Nk Vel Ps Throw	250 .053 24 13	200 .034 22 12	167 .023 21 11	143 .017 20 11	125 .013 19 10		
300	Nk Vel Ps Throw	300 .076 27 15	240 .049 25 14	200 .034 23 13	171 .025 22 12	150 .019 21 12		
350	Nk Vel Ps Throw	350 .104 30 16	280 .066 28 15	233 .046 26 14	200 .034 25 14	175 .026 24 13		
400	Nk Vel Ps Throw	400 .135 33 18	320 .087 30 17	267 .060 29 16	229 .044 27 15	200 .034 26 14	20	
450	Nk Vel Ps Throw	450 .211 38 21	360 .135 35 19	300 .094 33 18	257 .069 31 71	225 .053 30 17	25	
500	Nk Vel Ps Throw	500 .256 41 22	400 .164 38 21	333 .114 35 19	286 .084 34 18	250 .064 32 18		
550	Nk Vel Ps Throw		440 .195 40 22	367 .135 38 21	314 .099 36 20	275 .076 34 19		
600	Nk Vel Ps Throw		480 .229 42 23	400 .159 40 22	343 .117 38 21	300 .089 36 20		
650	Nk Vel Ps Throw			433 .184 42 23	371 .135 40 22	325 .104 38 21		
700	Nk Vel Ps Throw			467 .211 44 24	400 .155 42 23	350 .119 40 22		
750	Nk Vel Ps Throw			500 .211 44 24	429 .155 42 23	375 .119 40 22		
NC		25 - 30						

CFM		15" x 15"	18" x 15"	21" x 15"	24" x 15"	NC
200	Nk Vel Ps Throw	128 .014 18 9	107 .010 16 8			
300	Nk Vel Ps Throw	160 .022 21 10	133 .015 19 10	114 .011 18 9	100 .008 17 9	
400	Nk Vel Ps Throw	192 .031 23 12	160 .022 22 11	137 .016 21 10	120 .012 20 10	
500	Nk Vel Ps Throw	256 .055 28 14	213 .038 26 13	183 .028 25 13	160 .022 24 12	
600	Nk Vel Ps Throw	320 .087 33 16	267 .060 31 15	229 .044 29 15	200 .034 28 14	20
700	Nk Vel Ps Throw	384 .125 37 19	320 .087 35 17	274 .064 33 17	240 .049 32 16	25
800	Nk Vel Ps Throw	448 .222 45 23	373 .154 42 21	320 .113 40 20	280 .087 38 19	
900	Nk Vel Ps Throw		427 .195 46 23	366 .143 44 22	320 .110 42 21	
1000	Nk Vel Ps Throw		480 .241 50 25	411 .177 47 23	360 .135 45 22	
1100	Nk Vel Ps Throw			457 .254 53 27	400 .195 51 25	
1200	Nk Vel Ps Throw				480 .229 54 27	

Security Products

For performance notes, see page SEC-160



SEC

Model SGSP - Performance

CFM		18" x 18"	21" x 18"	24" x 18"	21" x 21"	24" x 21"	24" x 24"	NC
300	Nk Vel	133	114	100				
	Ps	.015	.011	.008				
	Throw	21 10	19 10	19 9				
400	Nk Vel	178	152	133	131	114	100	
	Ps	.027	.020	.015	.014	.011	.008	
	Throw	25 12	24 12	23 11	22 11	21 11	21 10	
500	Nk Vel	222	190	167	163	143	125	
	Ps	.042	.031	.023	.023	.017	.013	
	Throw	29 14	27 14	26 13	26 13	25 12	24 12	
600	Nk Vel	267	229	200	196	171	150	
	Ps	.060	.044	.034	.032	.025	.019	
	Throw	23 16	31 16	30 15	29 15	28 14	27 13	
700	Nk Vel	311	267	233	229	200	175	
	Ps	.082	.060	.046	.044	.034	.026	
	Throw	36 18	34 17	33 16	33 16	31 16	30 15	
800	Nk Vel	356	305	267	261	229	200	20 -
	Ps	.107	.079	.060	.058	.044	.034	
	Throw	40 20	38 19	36 18	36 18	34 17	33 16	
900	Nk Vel	400	343	300	294	257	225	25
	Ps	.167	.123	.094	.090	.069	.053	
	Throw	47 23	44 22	42 21	42 21	40 20	38 16	
1000	Nk Vel	444	381	333	327	286	250	
	Ps	.241	.177	.135	.130	.099	.076	
	Throw	53 26	50 25	48 24	47 24	45 23	43 22	
1200	Nk Vel		457	400	392	343	300	
	Ps		.241	.184	.177	.135	.104	
	Throw		56 28	53 27	53 26	50 25	48 24	
1400	Nk Vel			467	457	400	350	
	Ps			.241	.231	.177	.135	
	Throw			58 29	58 29	55 28	53 26	
1600	Nk Vel					457	400	
	Ps					.224	.171	
	Throw					60 30	57 29	
1800	Nk Vel						450	25 -
	Ps						.211	
	Throw						62 31	
2000	Nk Vel						500	30
	Ps						.211	
	Throw						62 31	

For performance notes, see page SEC-160



Performance Notes for Series SGSP

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Air volume is in cubic feet per minute
- Nk Vel - Neck Velocity is the airstream velocity in the duct just before it reaches the supply outlet; measured in feet per minute.
- NC - Noise Criteria based on a room absorption of 10 dB, re: 10E-12 watts.
- Throw - Throw distances in feet are for terminal velocities of 50 and 100 fpm respectively
- Ps - Static pressure is in inches of water

Model SGSP - Specifications

Air outlets shall be model SG-SP manufactured by METALAIRE. Units shall be maximum security supply grilles of steel construction. Units shall have a face plate constructed of 3/16" steel with 2" square holes and 1" fret bars. A 10 gauge, 3/8" woven steel mesh screen shall be inserted directly behind the face panel sandwiched by a 1/4" steel backup plate. This assembly shall be backed by a continuous seam welded 3/16" thick steel sleeve. Both face and back-up plate shall be skip welded to the sleeve. Units shall include a 1" border.

The units shall be the size and quantity as outline in the plans and specifications.

Optional opposed blade damper shall be constructed of steel (Model OBD) or aluminum (Model OBDA).
Damper must be operable from the face of the diffuser.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		8-1.0 mils
Film Cure		320 F @ 20 min
Gloss - 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours



Series SGSP - Model Specification Guide

Maximum Security Grilles - Square Holes/Mesh Face
Model SGSP - Steel

Model	Available Neck	Available Sleeve Length	Available Finishes	Available Options	
SGSP - Screw Holes	6" thru 24"	4" - 16"	01 - White	SAB	Steel Anchor Bars
				BSA 2S	2 Bolted Steel Angles - Short Side
				BSA 2L	2 Bolted Steel Angles - Long Side
				BSA 4	4 Bolted Steel Angles
				WSA 2S	2 Welded Steel Angles - Short Side
				WSA 2L	2 Welded Steel Angles - Long Side
				WSA 4	4 Welded Steel Angles
				LSA 2S	2 Loose Steel Angles - Short Side
				LSA 2L	2 Loose Steel Angles - Long Side
				LSA 4	4 Loose Steel Angles
				WAF	Welded Angle Frame
				SBR	Security Bars
				SH	Screw Holes
				OBD	Opposed Blade Damper - Steel
				OBDA	Opposed Blade Damper - Aluminum



➔ Maximum Security Grilles ➔ Round Perforated Holes ➔ Series SGRP ➔ Steel

Product Details

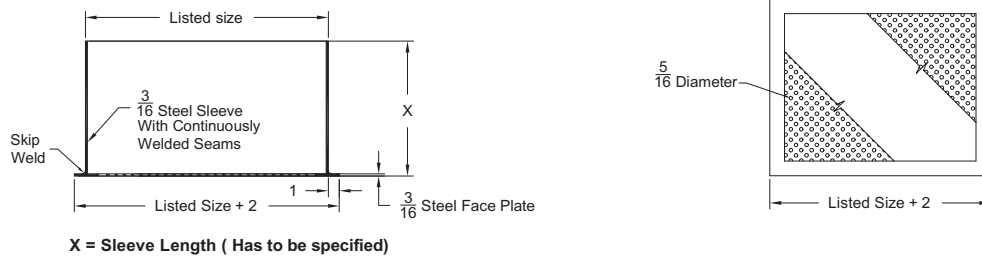
- ★ The series SGRP is a supply maximum security steel grille and has round holes and a perforated face plate
- ★ The series SGRP is designed for sidewall applications. A rear operated opposed blade damper is available as an option
- ★ Series SGRP is an excellent choice for maximum security applications such as federal correctional facilities, state and local prisons, psychiatric hospitals, as well as manufacturing plants where security is of paramount concern. This grille can be used for both supply and return applications



Model SGRP Shown
Standard Finish: 01 White

Sideview, dimensions are in inches

Security Grille - With Perforated Face Model SGRP



1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 01 White Note: Contact Factory for other finish	OBDA - sleeve mounted aluminum damper . . .206 OBD - sleeve mounted steel damper206 SAB - Steel Anchors206 BSA - Bolted Steel Angles207 WSA - Welded Steel Angles207 SBR - Security Bars207 Screw Holes	LSA - Loose Steel Angles WAF - Welded Angle Frame	<ul style="list-style-type: none"> • Neck Sizes available in 2" increments as listed • Damper can be mounted for rear operation with standard flat tip screwdriver. Due to tight bar spacing, face operated dampers are not recommended • Face plate, sleeve and horizontal blades are 14 gauge steel

Security Products



SEC

Series SGRP - Performance

CFM		6" x 6"	9" x 6"	12" x 6"	15" x 6"	18" x 6"	21" x 6"	24" x 6"	NC
50	Nk Vel Ps Throw	200 .008 10 4	133 .003 8 3	100 .002 7 2					
75	Nk Vel Ps Throw	300 .018 14 5	200 .008 12 4	150 .004 11 4	120 .003 10 3	100 .002 9 3			
100	Nk Vel Ps Throw	400 .031 17 6	267 .014 15 5	200 .008 13 5	160 .005 12 4	133 .003 11 4	114 .003 11 4		
125	Nk Vel Ps Throw	500 .049 20 7	333 .022 17 6	250 .012 16 5	200 .008 15 5	167 .005 14 5	143 .004 13 5	125 .003 12 4	
150	Nk Vel Ps Throw		400 .031 20 7	300 .018 18 6	240 .011 16 6	200 .008 15 5	171 .006 15 5	150 .004 14 5	20
200	Nk Vel Ps Throw			400 .031 22 8	320 .020 20 7	267 .014 19 7	229 .010 18 6	200 .008 17 6	25
250	Nk Vel Ps Throw			500 .049 25 9	400 .031 23 8	333 .022 22 8	286 .016 21 7	250 .012 20 7	
300	Nk Vel Ps Throw				480 .061 29 10	400 .042 27 10	343 .031 26 7	300 .018 22 8	
350	Nk Vel Ps Throw					467 .055 30 11	400 .041 29 10	350 .024 25 9	
400	Nk Vel Ps Throw						457 .051 31 11	400 .031 27 10	
450	Nk Vel Ps Throw							450 .049 32 10	25
500	Nk Vel Ps Throw							500 .059 34 12	30

For performance notes, see page SEC-166



SEC - Security Products

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Series SGRP - Performance

CFM		9" x 9"	12" x 9"	15" x 9"	18" x 9"	21" x 9"	24" x 9"	NC
75	Nk Vel Ps Throw	133 .003 10 4	100 .002 9 3					
100	Nk Vel Ps Throw	178 .006 13 4	133 .003 11 4	107 .002 10 4				
125	Nk Vel Ps Throw	222 .010 15 5	167 .005 14 5	133 .003 13 4	111 .002 12 4			
150	Nk Vel Ps Throw	267 .014 17 6	200 .008 15 5	160 .005 14 5	133 .003 13 5	114 .003 13 4	100 .003 12 4	
175	Nk Vel Ps Throw	311 .019 19 7	233 .011 17 6	187 .007 16 6	156 .005 15 5	133 .003 14 5	117 .003 14 5	
200	Nk Vel Ps Throw	356 .025 21 7	267 .014 19 7	213 .009 17 6	178 .006 16 6	152 .005 16 5	133 .003 15 5	
250	Nk Vel Ps Throw	444 .055 27 10	333 .031 25 9	267 .020 23 8	222 .014 22 8	190 .010 20 7	167 .008 20 5	20 - 25
300	Nk Vel Ps Throw		400 .042 27 10	320 .027 25 9	267 .019 24 8	229 .014 23 8	200 .011 22 8	
350	Nk Vel Ps Throw		467 .055 30 11	373 .035 28 10	320 .027 25 9	267 .018 25 9	233 .014 24 8	20 - 25
400	Nk Vel Ps Throw			427 .045 30 11	373 .035 28 10	305 .023 27 9	267 .018 26 9	
450	Nk Vel Ps Throw			480 .055 32 11	400 .038 31 11	343 .028 29 10	300 .022 28 10	
500	Nk Vel Ps Throw				444 .047 33 11	381 .034 31 11	333 .026 30 10	
550	Nk Vel Ps Throw				489 .047 33 11	419 .034 31 11	367 .026 30 10	
600	Nk Vel Ps Throw					457 .048 35 12	400 .037 33 12	
650	Nk Vel Ps Throw					495 .05 37 13	433 .042 35 12	25 - 30
700	Nk Vel Ps Throw						467 .049 37 13	
750	Nk Vel Ps Throw						500 .055 38 13	

For performance notes, see page SEC-166

CFM		12" x 12"	15" x 12"	18" x 12"	21" x 12"	24" x 12"	NC
100	Nk Vel Ps Throw	100 .002 10 4					
125	Nk Vel Ps Throw	125 .003 12 4	100 .002 11 4				
150	Nk Vel Ps Throw	150 .004 14 5	120 .003 13 5	100 .002 12 4			
175	Nk Vel Ps Throw	175 .006 16 5	140 .004 14 5	117 .003 14 5	100 .002 13 4		
200	Nk Vel Ps Throw	200 .008 18 6	160 .005 16 6	133 .003 15 5	114 .003 14 5	100 .002 13 5	
250	Nk Vel Ps Throw	250 .012 20 7	200 .008 18 6	167 .005 17 6	143 .004 16 6	125 .003 16 5	
300	Nk Vel Ps Throw	300 .018 22 8	240 .011 21 7	200 .008 20 7	171 .006 19 7	150 .004 18 6	
350	Nk Vel Ps Throw	350 .031 27 10	280 .020 25 9	233 .014 24 8	200 .010 23 8	175 .008 22 8	
400	Nk Vel Ps Throw	400 .039 30 10	320 .025 27 10	267 .018 26 9	229 .013 24 9	200 .010 23 8	20 - 25
450	Nk Vel Ps Throw	450 .049 32 11	360 .031 29 10	300 .022 28 10	257 .016 26 9	225 .012 25 9	
500	Nk Vel Ps Throw	500 .059 34 12	400 .038 31 11	333 .026 30 10	286 .019 28 10	250 .015 27 9	
550	Nk Vel Ps Throw		440 .045 33 12	367 .031 31 11	314 .023 30 10	275 .018 28 10	
600	Nk Vel Ps Throw		480 .053 35 12	400 .037 33 12	343 .027 31 11	300 .021 30 10	
650	Nk Vel Ps Throw			433 .037 33 12	371 .027 31 11	325 .021 30 10	
700	Nk Vel Ps Throw			467 .042 35 12	400 .031 33 12	350 .024 32 11	
750	Nk Vel Ps Throw			500 .049 37 13	429 .036 35 12	375 .027 33 12	
800	Nk Vel Ps Throw				457 .041 36 13	400 .031 35 12	
850	Nk Vel Ps Throw				486 .046 38 13	425 .035 36 13	25 - 30
900	Nk Vel Ps Throw					450 .044 39 14	
950	Nk Vel Ps Throw					475 .049 40 14	
1000	Nk Vel Ps Throw					500 .054 42 15	

Security Products



SEC

SEC - Security Products

Series SGRP - Performance

CFM		15" x 15"	18" x 15"	21" x 15"	24" x 15"	NC
200	Nk Vel	128	107			
	Ps	.003	.002			
	Throw	15 5	14 5			
300	Nk Vel	192	160	137	120	
	Ps	.007	.005	.004	.003	
	Throw	19 7	18 6	17 6	16 6	
400	Nk Vel	256	213	183	160	
	Ps	.013	.009	.007	.005	
	Throw	23 8	22 8	21 7	20 7	
500	Nk Vel	320	267	229	200	20 - 25
	Ps	.020	.014	.010	.008	
	Throw	28 10	26 9	24 9	23 8	
600	Nk Vel	384	320	274	240	25 - 30
	Ps	.029	.020	.015	.011	
	Throw	31 11	29 10	28 10	26 9	
700	Nk Vel	448	373	320	280	
	Ps	.039	.027	.020	.015	
	Throw	34 12	32 11	31 11	29 10	
800	Nk Vel		427	366	320	
	Ps		.045	.033	.025	
	Throw		38 13	36 13	35 12	
900	Nk Vel		480	411	360	
	Ps		.055	.041	.031	
	Throw		41 14	39 14	37 13	
1000	Nk Vel			457	400	
	Ps			.049	.038	
	Throw			42 15	40 14	
1100	Nk Vel				440	25 - 30
	Ps				.045	
	Throw				42 15	
1200	Nk Vel				480	
	Ps				.053	
	Throw				45 16	

For performance notes, see page SEC-166

CFM		18" x 18"	21" x 18"	24" x 18"	21" x 21"	24" x 21"	24" x 24"	NC
300	Nk Vel	133	114	100				
	Ps	.003	.003	.002				
	Throw	17 6	16 6	15 5				
400	Nk Vel	178	152	133	131	114	100	
	Ps	.006	.005	.003	.003	.003	.002	
	Throw	21 7	20 7	19 7	19 7	18 6	17 6	
500	Nk Vel	222	190	167	163	143	125	
	Ps	.010	.007	.005	.005	.004	.003	
	Throw	24 8	23 8	22 8	22 8	21 7	20 7	
600	Nk Vel	267	229	200	196	171	150	20 - 25
	Ps	.014	.010	.008	.007	.006	.004	
	Throw	27 10	26 9	25 9	25 9	23 8	22 8	
700	Nk Vel	311	267	233	229	200	175	25 - 30
	Ps	.019	.014	.011	.010	.008	.006	
	Throw	30 11	29 10	27 10	27 10	26 9	25 9	
800	Nk Vel	356	305	267	261	229	200	20 - 25
	Ps	.025	.018	.014	.013	.010	.008	
	Throw	33 12	32 11	30 11	30 10	29 10	27 10	
900	Nk Vel	400	343	330	294	257	225	25 - 30
	Ps	.038	.028	.022	.021	.016	.012	
	Throw	39 14	37 13	35 12	35 12	33 12	32 10	
1000	Nk Vel	444	381	333	327	286	250	25 - 30
	Ps	.055	.041	.031	.030	.023	.018	
	Throw	44 15	42 15	40 14	40 14	38 13	36 13	
1200	Nk Vel		457	400	392	343	300	25 - 30
	Ps		.055	.042	.041	.031	.024	
	Throw		46 16	44 16	44 15	42 15	40 14	
1400	Nk Vel			467	457	400	350	25 - 30
	Ps			.055	.053	.041	.031	
	Throw			49 17	48 17	46 16	44 15	
1600	Nk Vel					457	400	25 - 30
	Ps					.051	.039	
	Throw					50 17	48 17	
1800	Nk Vel						450	25 - 30
	Ps						.049	
	Throw						51 18	
2000	Nk Vel						500	25 - 30
	Ps						.049	
	Throw						51 18	



Performance Notes for Series SGRP

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Air volume is in cubic feet per minute
- Nk Vel - Neck Velocity is the airstream velocity in the duct just before it reaches the supply outlet; measured in feet per minute.
- NC - Noise Criteria based on a room absorption of 10 dB, re: 10E-12 watts.
- Throw - Throw distances in feet are for terminal velocities of 50 and 100 fpm respectively
- Ps - Static pressure is in inches of water

Model SGRP - Specifications

Air outlets shall be model SG-RP manufactured by METALAIRE. Units shall be maximum security supply grilles of steel construction. Units shall have a perforated face plate backed by a continuously seam welded steel sleeve. Face plate shall be constructed of 3/16" steel with 5/16" perforations on 7/16" staggered centers and shall be skip welded to the sleeve. The sleeve shall be 3/16" steel with continuously welded seams. Units shall include a 1" border.

The units shall be the size and quantity as outline in the plans and specifications.

Optional opposed blade damper shall be constructed of steel (Model OBD) or aluminum (Model OBDA). Damper must be operable from the face of the diffuser.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours



Series SGRP - Model Specification Guide

Maximum Security Grilles - Round Perforated Holes
Model SGRP - Steel

Model	Available Neck	Available Sleeve Length	Available Finishes	Available Options	
SGRP - Screw Holes	6" thru 24"	4" - 16"	01 - White	SAB	Steel Anchor Bars
				BSA 2S	2 Bolted Steel Angles - Short Side
				BSA 2L	2 Bolted Steel Angles - Long Side
				BSA 4	4 Bolted Steel Angles
				WSA 2S	2 Welded Steel Angles - Short Side
				WSA 2L	2 Welded Steel Angles - Long Side
				WSA 4	4 Welded Steel Angles
				LSA 2S	2 Loose Steel Angles - Short Side
				LSA 2L	2 Loose Steel Angles - Long Side
				LSA 4	4 Loose Steel Angles
				WAF	Welded Angle Frame
				SBR	Security Bars
				SH	Screw Holes
				OBD	Opposed Blade Damper - Steel
OBDA	Opposed Blade Damper - Aluminum				



➔ Minimum Security Grilles ➔ Fixed Louver Face ➔ Series SGRH

Product Details

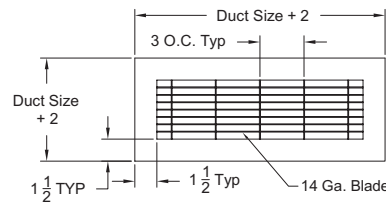
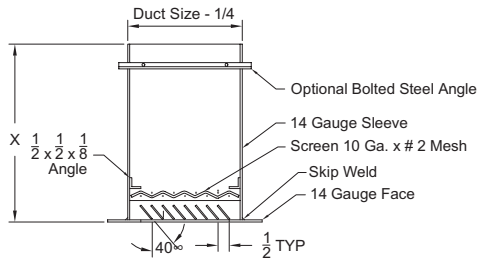
- ✦ The series SGRH is a return, minimum security grille constructed with heavy gauge steel louvers that are reinforced and welded to a steel sleeve
- ✦ The series SGRH is designed for sidewall applications. A rear operated opposed blade damper is available as an option
- ✦ Series SGRH is an excellent choice for a return grille in minimum security, supervised areas. Applications for the series SGRH include minimum security areas in federal correctional facilities, state and local prisons, psychiatric hospitals, as well as manufacturing plants. The SGRH is also an excellent choice for public areas to resist vandalism



Model SGRH Shown
Standard Finish: 01 White

Sideview, dimensions are in inches

Security Grille - Fixed Louver Face
Model SGRH



Security Products



SEC

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
<p>Standard Finish: 01 White</p> <p>Note: Contact Factory for other finish</p>	<p>OBDA - sleeve mounted aluminum damper . . .206</p> <p>OBD - sleeve mounted steel damper206</p> <p>SAB - Steel Anchors206</p> <p>BSA - Bolted Steel Angles207</p> <p>WSA - Welded Steel Angles207</p> <p>SBR - Security Bars207</p> <p>Screw Holes</p>	<p>LSA - Loose Steel Angles</p> <p>WAF - Welded Angle Frame</p>	<ul style="list-style-type: none"> • Neck Sizes available in 2" increments as listed • Damper can be mounted for rear operation with standard flat tip screwdriver. Due to tight bar spacing, face operated dampers are not recommended • Face plate, sleeve and horizontal blades are 14 gauge steel • Wire mesh is 10 gauge by #2

Series SGRH - Performance

CFM		6" x 6"	9" x 6"	12" x 6"	15" x 6"	18" x 6"	21" x 6"	24" x 6"
50	Nk Vel Ps	200 .022						
100	Nk Vel Ps	400 .089	267 .040	200 .022				
150	Nk Vel Ps		400 .089	300 .050	240 .032	200 .022		
200	Nk Vel Ps			400 .089	320 .057	267 .040	229 .029	200 .022
250	Nk Vel Ps			500 .139	400 .089	333 .062	286 .046	250 .035
300	Nk Vel Ps				480 .129	400 .089	343 .066	300 .050
400	Nk Vel Ps						457 .117	400 .089
500	Nk Vel Ps							500 .201

CFM		9" x 9"	12" x 9"	15" x 9"	18" x 9"	21" x 9"	24" x 9"
150	Nk Vel Ps	267 .040	200 .022				
200	Nk Vel Ps	356 .071	267 .040	213 .025			
250	Nk Vel Ps	444 .110	333 .062	267 .040	222 .028		
300	Nk Vel Ps		400 .089	320 .057	267 .040	229 .029	200 .022
400	Nk Vel Ps			427 .102	356 .071	305 .052	267 .040
500	Nk Vel Ps				444 .159	381 .117	333 .089
600	Nk Vel Ps					457 .159	400 .122
700	Nk Vel Ps						467 .159

CFM		12" x 12"	15" x 12"	18" x 12"	21" x 12"	24" x 12"
200	Nk Vel Ps	200 .022				
250	Nk Vel Ps	250 .035	200 .022			
300	Nk Vel Ps	300 .050	240 .032	200 .022		
350	Nk Vel Ps	350 .068	280 .044	233 .030	200 .022	
400	Nk Vel Ps	400 .089	320 .057	267 .040	229 .029	200 .022
500	Nk Vel Ps	500 .139	400 .089	333 .062	286 .046	250 .035
600	Nk Vel Ps		480 .129	400 .089	343 .066	300 .050
700	Nk Vel Ps			467 .159	400 .117	350 .089
800	Nk Vel Ps				457 .148	400 .113
900	Nk Vel Ps					450 .110
1000	Nk Vel Ps					500 .159

CFM		15" x 15"	18" x 15"	21" x 15"	24" x 15"
350	Nk Vel Ps	224 .028			
400	Nk Vel Ps	256 .037	213 .025		
500	Nk Vel Ps	320 .057	267 .040	229 .029	200 .022
600	Nk Vel Ps	384 .082	320 .057	274 .042	240 .032
700	Nk Vel Ps	448 .112	373 .078	320 .057	280 .044
800	Nk Vel Ps		427 .102	366 .075	320 .057
900	Nk Vel Ps		480 .159	411 .117	360 .089
1000	Nk Vel Ps			457 .168	400 .129
1200	Nk Vel Ps				480 .175

For performance notes, see page SEC-170



Series SGRH - Performance

CFM		18" x 18"	21" x 18"	24" x 18"	21" x 21"	24" x 21"
500	Nk Vel	222				
	Ps	.028				
600	Nk Vel	267	229	200		
	Ps	.040	.029	.022		
700	Nk Vel	311	267	233	229	200
	Ps	.054	.040	.030	.029	.022
800	Nk Vel	356	305	267	261	229
	Ps	.071	.052	.040	.038	.029
900	Nk Vel	400	343	300	294	257
	Ps	.089	.066	.050	.048	.037
1000	Nk Vel	444	381	333	327	286
	Ps	.110	.081	.062	.059	.046
1200	Nk Vel		457	400	392	343
	Ps		.159	.122	.117	.089
1400	Nk Vel			467	457	400
	Ps			.159	.152	.117
1600	Nk Vel					457
	Ps					.148

Performance Notes for Series SGRH

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Air volume is in cubic feet per minute
- Nk Vel - Neck Velocity is the airstream velocity in the duct just before it reaches the supply outlet; measured in feet per minute.
- Ps - Static pressure is in inches of water



Series SGRH - Specifications

Air outlets shall be model SG-RH manufactured by METALAIRE. Units shall be minimum security supply grilles of steel construction. Units shall have 14 gauge horizontal fixed louvers set at 0° (or 40°) on 1/2" centers. Louvers shall be reinforced and welded to a steel sleeve. Units shall include a 14 gauge steel face plate and a 10 gauge by #2 wire mesh screen located behind the louvers and secured by 1/8" welded angle. Units shall include a 1 1/2" border.

The units shall be the size and quantity as outline in the plans and specifications.

Optional opposed blade damper shall be constructed of steel (Model OBD) or aluminum (Model OBDA).

Damper must be operable from the face of the diffuser.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

Series SGRH - Model Specification Guide

Maximum Security Grilles - Fixed Louver Face

Model SGRH - Steel

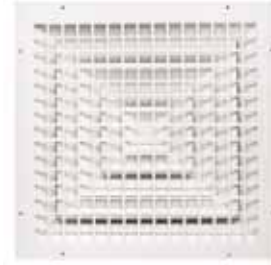
Model	Available Neck	Available Sleeve Length	Available Finishes	Available Options	
SGRH - Fixed Louver Face	6" thru 30"	4" - 16"	01 - White	SAB	Steel Anchor Bars
				BSA 2S	2 Bolted Steel Angles - Short Side
				BSA 2L	2 Bolted Steel Angles - Long Side
				BSA 4	4 Bolted Steel Angles
				WSA 2S	2 Welded Steel Angles - Short Side
				WSA 2L	2 Welded Steel Angles - Long Side
				WSA 4	4 Welded Steel Angles
				LSA 2S	2 Loose Steel Angles - Short Side
				LSA 2L	2 Loose Steel Angles - Long Side
				LSA 4	4 Loose Steel Angles
				WAF	Welded Angle Frame
				SBR	Security Bars
				SH	Screw Holes
				OBD	Opposed Blade Damper - Steel
OBDA	Opposed Blade Damper - Aluminum				



➔ Minimum Security Diffuser ➔ Steel Diffuser and Face Plate ➔ Series SG5500S

Product Details

- ✦ The series SG5500S is a supply, minimum security steel ceiling diffuser and features a steel lattice face panel attached to the high performing Series 5500S steel supply diffuser
- ✦ This surfaced mounted diffuser is available with 1, 2, 3, or 4 way air patterns
- ✦ Series SG5500S is an excellent choice for minimum security, supervised areas requiring a ceiling mounted diffuser. Applications for the SG5500S include minimum security areas in federal correctional facilities, state and local prisons, psychiatric hospitals, as well as manufacturing plants. The SG5500S is also an excellent choice for public areas to resist vandalism

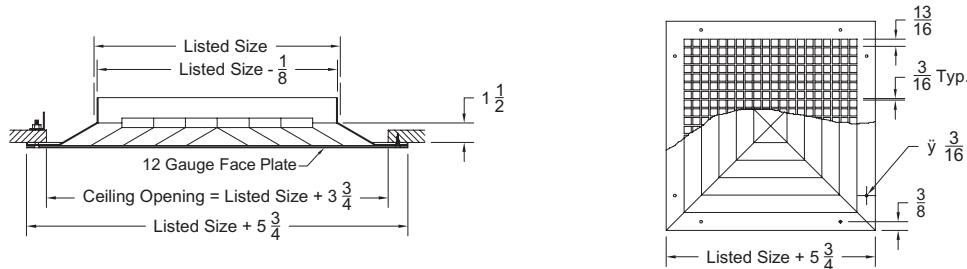


Model SG5500S Shown

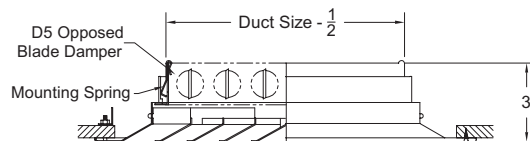
Standard Finish: 01 White

Sideview, dimensions are in inches

Minimum Security Diffuser and Face Plate - Surface Mount Model SG5500S-1



Minimum Security Diffuser and Face Plate With D5/D5A Damper Surface Mount Model SG5500S-1



1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White Note: Contact Factory for other finish</p>	<p>Model D5/D5A - Neck Mounted Damper</p>	<ul style="list-style-type: none"> • Neck Sizes available in 3" increments as listed • Face plate is 12 gauge steel. Overall face plate dimension is Listed Size + 5 9/16 • Pre-drilled holes are included in both the lattice face and louvered diffuser. The two pieces are shipped unattached and must be field assembled with tamper proof fasteners, provided by others

Security Products



SEC

Series SG5500S - Performance

CFM		6" x 6"	9" x 9"	12" x 12"	15" x 15"	18" x 18"	21" x 21"	21" x 21"	NC
50	Nk Vel Ps Throw	200 .023 4 1							
100	Nk Vel Ps Throw	400 .091 7 3	178 .018 5 2	100 .006 3 1					
150	Nk Vel Ps Throw	600 .204 11 1	267 .040 7 3	150 .013 5 2					
200	Nk Vel Ps Throw		356 .072 9 4	200 .023 7 3	128 .009 6 2				
250	Nk Vel Ps Throw		444 .112 11 5	250 .035 8 4	160 .015 7 3	111 .007 6 2			
300	Nk Vel Ps Throw		533 .161 14 6	300 .051 10 4	192 .021 8 3	133 .010 7 3			
350	Nk Vel Ps Throw		622 .219 16 7	350 .069 12 5	224 .028 10 4	156 .014 8 3	114 .007 7 3		
400	Nk Vel Ps Throw			400 .115 13 6	256 .047 11 5	178 .023 9 4	131 .012 8 3	100 .006 7 3	
450	Nk Vel Ps Throw			450 .142 15 6	288 .058 12 5	200 .028 10 4	147 .015 9 3	133 .007 8 3	20 - 25
500	Nk Vel Ps Throw			500 .171 16 7	320 .070 14 6	222 .034 11 5	163 .018 10 4	125 .009 8 4	
550	Nk Vel Ps Throw			550 .204 18 8	352 .084 15 6	244 .040 13 5	180 .022 11 4	138 .011 7 4	
600	Nk Vel Ps Throw			600 .239 20 8	384 .098 16 7	267 .047 14 6	196 .026 12 4	150 .013 10 4	
650	Nk Vel Ps Throw			650 .278 21 9	416 .114 18 7	289 .055 15 6	212 .030 13 5	163 .015 11 5	
700	Nk Vel Ps Throw			700 .278 23 10	448 .114 19 8	311 .055 16 7	229 .030 14 5	175 .017 12 5	
900	Nk Vel Ps Throw				596 .334 25 10	400 .161 21 9	294 .087 18 7	225 .051 15 7	
1200	Nk Vel Ps Throw					533 .252 27 11	392 .136 24 9	300 .080 20 9	
1500	Nk Vel Ps Throw					667 .252 34 14	490 .196 29 11	375 .115 25 11	
1800	Nk Vel Ps Throw						588 .242 35 13	450 .142 30 13	
2000	Nk Vel Ps Throw						653 .348 39 15	500 .204 34 15	25 - 30
2400	Nk Vel Ps Throw							600 .278 40 18	
2800	Nk Vel Ps Throw							700 .278 47 21	

For performance notes, see page SEC-174



Performance Notes for Series SG5500S

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Air volume is in cubic feet per minute
- Nk Vel - Neck Velocity is the airstream velocity in the duct just before it reaches the supply outlet; measured in feet per minute.
- NC - Noise Criteria based on a room absorption of 10 dB, re: 10E-12 watts.
- Throw - Throw distances in feet are for terminal velocities of 50 and 100 fpm respectively
- Ps - Static pressure is in inches of water

Series SG5500S - Specifications

Air outlets shall be model SG-5500S manufactured by METALAIRE. Units shall be minimum security supply ceiling diffusers construction of steel. Units shall consist of a 12 gauge steel lattice face panel with 13/16" square holes and 3/16" fret bars mounted in front of a fixed pattern louvered core fastened into a border with spring loaded latches. Units shall be furnished with screw holes for tamper proof screws (provided by others). With the face lattice face removed, the core shall be removable without the use of tools.

Outlets shall be engineered to perform in variable volume systems and include deflector blades with a horizontal lip to provide longer throw distances. The units shall be the size and quantity as outline in the plans and specifications.

Outlets shall be available in 1, 2 way opposite, 2 way corner, 3, and 4 way directional air patterns.

The units shall be the size and quantity as outline in the plans and specifications.

Optional opposed blade damper shall be constructed of steel (Model OBD) or aluminum (Model OBDA). Damper must be operable from the face of the diffuser.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaline cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours



Series SG5500S - Model Specification Guide

Maximum Security Grilles - Steel Diffuser & Face Plate
 Model SG5500S - Steel

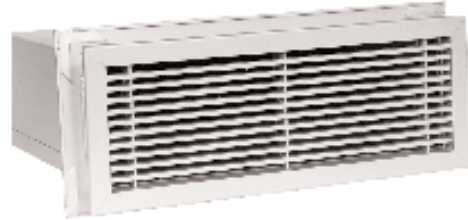
Model	Available Neck	Available Finishes	Available Options	
SG5500S-1 - Surface Mount	6" thru 24"	01 - White	D5	Opposed Blade Damper - Steel
			D5A	Opposed Blade Damper - Aluminum



➔ Minimum Security Grille ➔ 1" Borders - 7/32" Bars - 1/2" Centers ➔ Series SG2000

Product Details

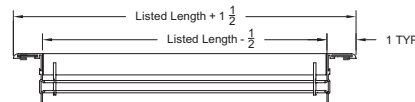
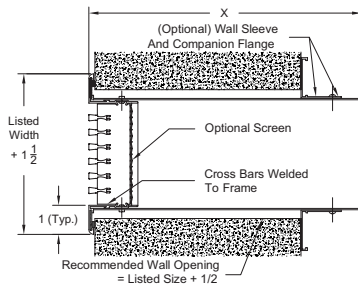
- ✦ The series SG2000 is a return, minimum security grille constructed with heavy gauge aluminum louvers that are reinforced and welded to a steel sleeve
- ✦ The series SG2000 is designed for sidewall applications. A rear operated opposed blade damper is available as an option
- ✦ Series SG2000 is an excellent choice for a return grille in minimum security, supervised areas. Applications for the series SG2000 include minimum security areas in federal correctional facilities, state and local prisons, psychiatric hospitals, as well as manufacturing plants. The SG2000 is also an excellent choice for public areas to resist vandalism



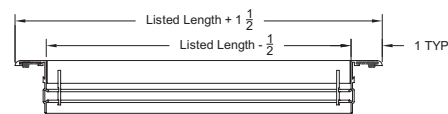
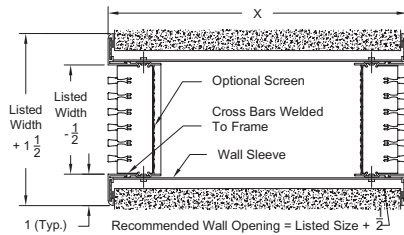
Model SG2000 Shown
Standard Finish: 01 White

Sideview, dimensions are in inches

Security Grille - 0°, 15°, or 30° Deflection - No Sleeve - Surface Mount
Model SG2000-1



Security Grille - 0°, 15°, or 30° Deflection - With Sleeve - V-Beveled
Model SG2000-2



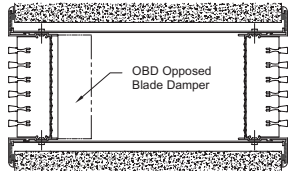
X Has to be specify (when ordering)

Security Products

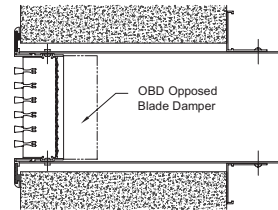


SEC

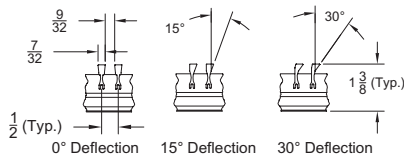
Security Register - 0°, 15°, or 30° Deflection - With OBDA Damper
No Sleeve
Options SG2000-1D/SG2015-1D/SG2030-1D



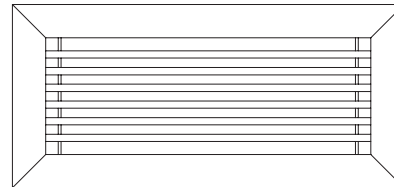
Security Register - 0°, 15°, or 30° Deflection - With OBDA Damper
With Steel Sleeve
Options SG2000-2D/SG2015-2D/SG2030-2D



Air Pattern Deflectors



Face View Models SG2000-1/SG2000-2



1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finishes: 04 Clear anodized</p>	<p>Factory Mounted Accessories Model OBDA aluminum damper Moedl OBDA steel damper Wall Sleeves Aluminum debris screen 1/4 x 1/4 Galvanized steel debris screen 1/4 x 1/4 Stainless steel debris screen 1/4 x 1/4 Insect screen</p>	<ul style="list-style-type: none"> • Neck Sizes available in widths and lengths as listed (No larger unit available) • Widths in 1/2" increments



SEC - Security Products

7/2006

Series SG2000 - Performance

CFM		6" x 4"	6" x 6"	12" x 4"	12" x 6"	12" x 8"	12" x 10"	12" x 12"	NC
25	Nk Vel Ps Throw	150 .004 5 4	100 .002 3 2						
50	Nk Vel Ps Throw	300 .017 12 9	200 .007 10 8	150 .004 9 7	100 .002 7 5				
75	Nk Vel Ps Throw	450 .038 16 12	300 .017 14 11	225 .009 13 9	150 .004 12 9	133 .002 9 7			
100	Nk Vel Ps Throw		400 .030 17 13	300 .017 15 12	200 .007 13 10	150 .004 12 9	120 .003 11 8	100 .002 10 8	
125	Nk Vel Ps Throw		500 .047 20 15	375 .026 18 14	250 .012 16 12	188 .007 14 11	150 .004 13 10	125 .003 12 10	
150	Nk Vel Ps Throw			450 .038 20 15	300 .017 18 13	225 .009 16 12	180 .006 15 11	150 .004 14 11	
175	Nk Vel Ps Throw				350 .023 20 15	263 .013 18 13	210 .008 17 12	175 .006 15 12	20 - 25
200	Nk Vel Ps Throw				400 .038 23 18	300 .021 21 16	240 .014 20 12	200 .007 17 13	
225	Nk Vel Ps Throw				450 .047 25 19	338 .026 23 17	270 .017 21 16	225 .010 18 14	
250	Nk Vel Ps Throw				500 .057 27 20	375 .032 24 18	300 .020 22 17	250 .012 20 15	
275	Nk Vel Ps Throw					413 .038 26 19	330 .024 24 18	275 .014 21 16	
300	Nk Vel Ps Throw					450 .044 27 20	360 .028 25 19	300 .017 22 17	
325	Nk Vel Ps Throw					488 .052 29 21	390 .033 26 20	325 .020 23 18	
350	Nk Vel Ps Throw						420 .033 26 20	350 .023 25 19	
NC		25 - 30							

CFM		18" x 4"	18" x 6"	18" x 8"	18" x 10"	18" x 12"	NC
75	Nk Vel Ps Throw	150 .004 11 8	100 .002 9 7				
100	Nk Vel Ps Throw	200 .007 13 7	133 .003 11 9	100 .002 10 8			
150	Nk Vel Ps Throw	300 .017 18 13	200 .007 15 12	150 .004 14 11	120 .003 13 10	100 .002 12 9	
200	Nk Vel Ps Throw	400 .030 22 16	267 .013 19 14	200 .007 17 13	160 .005 16 12	133 .003 15 11	
250	Nk Vel Ps Throw	500 .047 25 19	333 .021 22 16	250 .012 20 15	200 .007 18 14	167 .005 17 13	
300	Nk Vel Ps Throw		400 .030 25 19	300 .017 22 17	240 .011 21 16	200 .007 20 15	20 - 25
350	Nk Vel Ps Throw		467 .041 27 21	350 .023 25 19	280 .015 23 17	233 .010 22 16	
400	Nk Vel Ps Throw			400 .038 30 20	320 .024 27 21	267 .017 26 19	
450	Nk Vel Ps Throw			450 .047 32 24	360 .030 29 22	300 .021 28 21	
500	Nk Vel Ps Throw			500 .057 34 25	400 .036 31 24	333 .025 30 22	
550	Nk Vel Ps Throw				440 .043 33 25	367 .030 31 24	
600	Nk Vel Ps Throw				480 .051 35 26	400 .035 33 25	
650	Nk Vel Ps Throw					433 .041 35 26	25 - 30
700	Nk Vel Ps Throw					467 .041 35 26	

For performance notes, see page SEC-180

Security Products



SEC

SEC - Security Products

Series SG2000 - Performance

CFM		24" x 4"	24" x 6"	24" x 8"	24" x 10"	24" x 12"	NC
75	Nk Vel Ps Throw	133 .002 9 7					
100	Nk Vel Ps Throw	150 .004 12 9	100 .002 10 8				
150	Nk Vel Ps Throw	225 .009 16 12	150 .004 14 11	113 .002 13 9			
200	Nk Vel Ps Throw	300 .017 20 15	200 .007 17 13	150 .004 15 12	120 .003 14 11	100 .002 13 10	
250	Nk Vel Ps Throw	375 .026 23 17	250 .012 20 15	188 .007 18 14	150 .004 17 13	125 .003 16 12	
300	Nk Vel Ps Throw	450 .038 26 19	300 .017 22 17	225 .009 20 15	180 .006 19 14	150 .004 18 13	20 - 25
350	Nk Vel Ps Throw		350 .023 25 19	263 .013 23 17	210 .008 21 16	175 .006 20 15	
400	Nk Vel Ps Throw		400 .047 32 24	300 .026 29 22	240 .017 27 20	200 .012 25 19	
500	Nk Vel Ps Throw		500 .067 36 27	375 .038 33 24	300 .024 30 23	250 .017 28 21	
600	Nk Vel Ps Throw			450 .052 26 27	360 .033 34 25	300 .023 32 24	
700	Nk Vel Ps Throw				420 .043 37 28	350 .038 35 26	
800	Nk Vel Ps Throw				480 .055 40 30	400 .038 38 28	
900	Nk Vel Ps Throw					450 .047 40 30	25 - 30
1000	Nk Vel Ps Throw					500 .047 40 30	

CFM		30" x 4"	30" x 6"	30" x 8"	30" x 10"	30" x 12"	NC
100	Nk Vel Ps Throw	120 .003 11 8					
150	Nk Vel Ps Throw	180 .006 15 11	120 .003 13 10				
200	Nk Vel Ps Throw	240 .011 18 14	160 .005 16 12	120 .003 14 11			
250	Nk Vel Ps Throw	300 .017 21 16	200 .007 18 14	150 .004 17 13	120 .003 15 12	100 .002 15 11	
300	Nk Vel Ps Throw	360 .024 25 19	240 .011 21 16	180 .006 19 14	144 .004 18 13	120 .003 16 12	
400	Nk Vel Ps Throw	480 .043 29 22	320 .019 25 19	240 .011 23 17	192 .007 21 16	160 .005 20 15	20 - 25
500	Nk Vel Ps Throw		400 .030 29 22	300 .017 27 20	240 .011 25 19	200 .007 23 17	
600	Nk Vel Ps Throw		480 .059 37 28	360 .033 34 25	288 .021 31 23	240 .015 29 22	
700	Nk Vel Ps Throw			420 .043 37 28	336 .028 34 26	280 .019 32 24	
800	Nk Vel Ps Throw			480 .055 40 30	384 .035 37 28	320 .024 35 26	
900	Nk Vel Ps Throw				432 .043 40 30	360 .030 37 28	
1000	Nk Vel Ps Throw				480 .052 43 32	400 .036 40 30	
1100	Nk Vel Ps Throw					440 .043 42 32	25 - 30
1200	Nk Vel Ps Throw					480 .043 42 32	

For performance notes, see page SEC-180



Series SG2000 - Performance

CFM		36" x 4"	36" x 6"	36" x 8"	36" x 10"	36" x 12"	NC
200	Nk Vel	200	133	100			
	Ps	.007	.003	.002			
	Throw	17 13	15 11	13 10			
300	Nk Vel	300	200	150	120	100	
	Ps	.017	.007	.004	.003	.002	
	Throw	22 17	20 15	18 13	16 12	15 12	
400	Nk Vel	400	267	200	160	133	
	Ps	.030	.013	.007	.005	.003	
	Throw	27 20	24 18	22 16	20 15	19 14	
500	Nk Vel	500	333	250	200	167	
	Ps	.047	.021	.012	.007	.005	
	Throw	32 24	28 21	25 19	23 17	22 16	
600	Nk Vel		400	300	240	200	
	Ps		.030	.017	.011	.007	
	Throw		31 24	28 21	26 20	25 19	
700	Nk Vel		467	350	280	233	20 -
	Ps		.041	.023	.015	.010	
	Throw		35 26	32 24	29 22	27 21	
800	Nk Vel			400	320	267	
	Ps			.030	.019	.013	
	Throw			35 26	32 24	30 23	
900	Nk Vel			450	360	300	
	Ps			.047	.030	.021	
	Throw			40 30	37 28	35 26	
1000	Nk Vel			500	400	333	
	Ps			.057	.036	.025	
	Throw			43 32	40 30	37 28	
1100	Nk Vel				440	367	
	Ps				.043	.030	
	Throw				42 32	40 30	
1200	Nk Vel				480	400	
	Ps				.051	.035	
	Throw				45 34	42 32	
1300	Nk Vel					433	
	Ps					.041	
	Throw					44 33	
1400	Nk Vel					467	25 -
	Ps					.047	
	Throw					46 35	
1500	Nk Vel					500	30
	Ps					.047	
	Throw					46 35	

Performance Notes for Series SG2000

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Air volume is in cubic feet per minute
- Nk Vel - Neck Velocity is the airstream velocity in the duct just before it reaches the supply outlet; measured in feet per minute.
- NC - Noise Criteria based on a room absorption of 10 dB, re: 10E-12 watts.
- Throw - Throw distances in feet are for terminal velocities of 50 and 100 fpm respectively
- Ps - Static pressure is in inches of water

Security Products



SEC

Series SG2000 - Specifications

Minimum Security Grilles - Supply/Return/Exhaust Linear Bar Grille - Single Face/Series SG-2000-1

SG 2000-1 - 0° deflection

SG 2015-1 - 15° deflection

SG 2030-1 - 30° deflection

Air outlets (or inlets) shall be model SG-2000-1 manufactured by METALAIRE. Units shall be minimum security supply grilles of aluminum construction. Units shall have linear bars 3/4" deep by 7/32" wide spaced on 1/2" centers. Heavy extruded aluminum face and cross bars shall be heliarc welded to an aluminum frame. Border shall be 1" wide.

Optional: Unit shall include an 18 gauge, galvanized steel wall sleeve fitted with an aluminum companion flange.

Accessories

Optional opposed blade damper shall be constructed of aluminum shall be provide on units 4" and wider. Units under 4" wide shall be provide with an aluminum "flap" type damper. Damper must be operable from the rear of the grille.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Finish Specification

Units shall be clear anodized.

Minimum Security Linear Bar Grilles - Dual Face Transfer Grille/Series SG-2000-2

SG 2000-2 - 0° deflection

SG 2015-2 - 15° deflection

SG 2030-2 - 30° deflection

Air transfer grilles shall be model SG-2000-2 manufactured by METALAIRE. Units shall be minimum security supply grilles of aluminum construction. Units shall be designed for air transfer applications and include two linear bar grilles connected with a sleeve Linear bars shall be 3/4" deep by 7/32" wide spaced on 1/2" centers. Heavy extruded aluminum face and cross bars shall be heliarc welded to an aluminum frame. Borders shall be 1" wide.

The units shall be the size and quantity as outline in the plans and specifications.

Optional opposed blade damper shall be constructed of aluminum shall be provide on units 4" and wider. Units under 4" wide shall be provide with an aluminum "flap" type damper. Damper must be operable through the face of the bar grille.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Finish Specification

Units shall be clear anodized.

Series SG2000 - Model Specification Guide

Maximum Security Grilles - Supply/Return/Exhaust Linear Bar Grille

Model SG2000-1 - Steel - Single Face Transfer Grilles

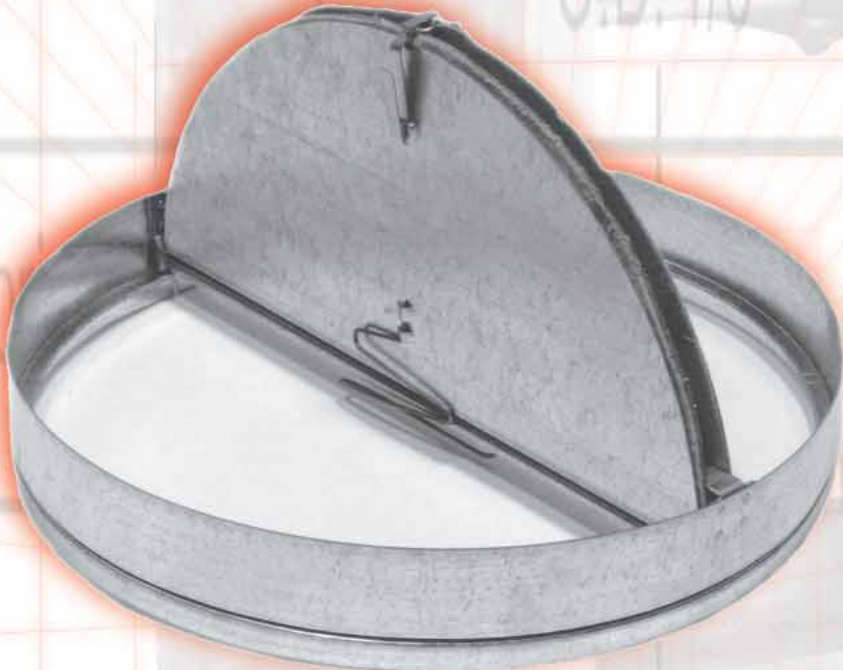
Model	Available Neck		Available Finishes	Sleeve Length	Available Options	
	Neck 1	Neck 2	Standard	4" - 10"	DS-AL	Aluminum Debris Screen
SG2000-1 - 0° Deflection - 1" Border	6" thru 36"	4" thru 12"	01 - White		DS-GS	Galvanized Steel Debris Screen
SG2015-1 - 15° Deflection - 1" Border			Optional		DS-SS	Stainless Steel Debris Screen
SG2030-1 - 30° Deflection - 1" Border			03 - Black		IS	Insect Screen
SG2000-1D - 0° Deflection - 1" Border - With OBDA Damper			04 - Clear Anodized		Screws	Security Screws
SG2015-1D - 15° Deflection - 1" Border - With OBDA Damper				OBD	Opposed Blade Damper - Steel	
SG2030-1D - 30° Deflection - 1" Border - With OBDA Damper				OBDA	Opposed Blade Damper - Aluminum	

Maximum Security Grilles - Supply/Return/Exhaust Linear Bar Grille

Model SG2000-2 - Steel - Dual Face Transfer Grilles - 7/32" Bars - 1/2" Centers - Steel Sleeve 4"-10"

Model	Available Neck		Available Finishes	Sleeve Length	Available Options	
	Neck 1	Neck 2	Standard	4" - 10"	DS-AL	Aluminum Debris Screen
SG2000-1 - 0° Deflection - 1" Border	6" thru 36"	4" thru 12"	01 - White		DS-GS	Galvanized Steel Debris Screen
SG2015-1 - 15° Deflection - 1" Border			Optional		DS-SS	Stainless Steel Debris Screen
SG2030-1 - 30° Deflection - 1" Border			03 - Black		IS	Insect Screen
SG2000-1D - 0° Deflection - 1" Border - With OBDA Damper			04 - Clear Anodized		Screws	Security Screws
SG2015-1D - 15° Deflection - 1" Border - With OBDA Damper				OBD	Opposed Blade Damper - Steel	
SG2030-1D - 30° Deflection - 1" Border - With OBDA Damper				OBDA	Opposed Blade Damper - Aluminum	

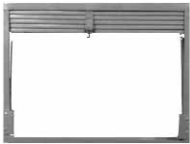
PERFORM



FIRE RATED PRODUCTS

FIRE RATED PRODUCTS

T-Bar Module = 24 x 24



Model FD11 AH
Pg. 188

Thinline 2" Frames - Blades in Airstream - Series FD11 A

- ★ 1 1/2 hour UL fire resistance
- ★ Rated for use in 2 hour fire partitions
- ★ Heavy duty rollformed steel construction
- ★ Meets NFPA 90a requirements for vertical or horizontal mounts
- ★ 2" deep frame
- ★ Optional 12" deep sleeve

Horizontal Application	Vertical Application
FD11 AH	FD11 AV



Model FD12 AH
Pg. 189

Standard 4 1/4" Frames - Blades in Airstream - Series FD12 A

- ★ 1 1/2 hour UL fire resistance
- ★ Rated for use in 2 hour partitions
- ★ Heavy duty rollformed steel construction
- ★ Meets NFPA 90a requirements for vertical or horizontal mounts
- ★ 4 1/4" deep frame
- ★ Optional 12" deep sleeve

Horizontal Application	Vertical Application
FD12 AH	FD12 AV

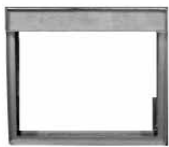


Model FD11 BH
Pg. 190

Thinline 2" Frames - Blades out of Airstream - Series FD11 B

- ★ 1 1/2 hour UL fire resistance
- ★ Rated for use in 2 hour fire partitions
- ★ Heavy duty rollformed steel construction
- ★ Meets NFPA 90a requirements for vertical or horizontal mounts
- ★ 2" deep frame
- ★ Optional 12" deep sleeve

Horizontal Application	Vertical Application
FD11 BH	FD11 BV



Model FD12 BH
Pg. 191

Standard 4 1/4" Frames - Blades out of Airstream - Series FD12 B

- ★ 1 1/2 hour UL fire resistance
- ★ Rated for use in 2 hour partitions
- ★ Heavy duty rollformed steel construction
- ★ Meets NFPA 90a requirements for vertical or horizontal mounts
- ★ 4 1/4" deep frame
- ★ Optional 12" deep sleeve

Horizontal Application	Vertical Application
FD12 BH	FD12 BV



Model FD11 C
Pg. 192

Thinline 2" Frames - Round Inlet/Outlet - Series FD11 C

- ★ 1 1/2 hour UL fire resistance
- ★ Rated for use in 2 hour fire partitions
- ★ Heavy duty rollformed steel construction
- ★ Meets NFPA 90a requirements for vertical or horizontal mounts
- ★ 2" deep frame
- ★ Optional 12" deep sleeve

Horizontal Application	Vertical Application
FD11 CH	FD11 CV





Model FD12 C
Pg. 193

Standard 4 1/4" Frames - Round Inlet/Outlet - Series FD12 C

- ★ 1 1/2 hour UL fire resistance
- ★ Rated for use in 2 hour partitions
- ★ Heavy duty rollformed steel construction
- ★ Meets NFPA 90a requirements for vertical or horizontal mounts
- ★ 4 1/4" deep frame
- ★ Optional 12" deep sleeve

Horizontal Application	Vertical Application
FD12 CH	FD12 CV



Model 5500S-6 FRS
Pg. 194

Square/Rectangular Louver Face Ceiling Diffusers with Radiation Damper for T-bar Lay-in - Series 5500S FRS

- ★ Three hour UL classified ceiling diffuser system
- ★ Complete factory package - diffuser, damper, & blanket
- ★ Factory assembled — Ready to install



Model 5700-6 FRS
Pg. 195

Square Face Diffusers - Round Neck 2-Cone with Radiation Damper for T-bar Lay-in - Series 5700 FRS

- ★ Three hour UL classified ceiling diffuser system
- ★ Complete factory package - diffuser, damper, & blanket
- ★ Factory assembled — Ready to install



Model 5800-6 FRS
Pg. 196

Square Face Diffusers - Round Neck 3-Cone with Radiation Damper for T-bar Lay-in - Series 5800 FRS

- ★ Three hour UL classified ceiling diffuser system
- ★ Complete factory package - diffuser, damper, & blanket
- ★ Factory assembled — Ready to install
- ★ Optional volume damper on select models

Supply	
Fixed Volume	Adjustable Volume
5800-6 FRS	5800-6 FRSA



Model 7500-6 FRS
Pg. 197

Perforated Ceiling Diffuser - Face Mounted Adjustable Pattern Controller with Radiation Damper for T-bar Lay-in - Series 7500 FRS

- ★ Three hour UL classified ceiling diffuser system
- ★ Complete factory package - diffuser, damper, & blanket
- ★ Factory assembled — Ready to install
- ★ Optional volume damper on select models

Flush Face	Supply		Return
	Fixed Volume	Adjustable Volume	Fixed Volume
Round Neck	7500-6 FRS	7500-6 FRSA	7500R-6 FRS
Square Neck	7550-6 FRS	7550-6 FRSA	7550R-6 FRS

Drop Face	Supply		Return
	Fixed Volume	Adjustable Volume	Fixed Volume
Round Neck	7500-6 DF FRS	7500-6 DF FRSA	7500R-6 DF FRS
Square Neck	7550-6 DF FRS	7550-6 DF FRSA	7550R-6 DF FRS

For more product information visit us at www.metalaire.com



**Model
7600-6 FRS**
Pg. 198

Perforated Ceiling Diffuser - Curved Blade - Neck Mounted Pattern Controller with Radiation Damper for T-bar Lay-in - Series 7600 FRS

- ✦ Three hour UL classified ceiling diffuser system
- ✦ Complete factory package - diffuser, damper, & blanket
- ✦ Factory assembled — Ready to install

	Flush Face			Drop Face	
	Supply	Return		Supply	Return
Round Neck	7600-6 FRS	7600R-6 FRS	Round Neck	7600-6 DF FRS	7600R-6 DF FRS
Square Neck	7650-6 FRS	7650R-6 FRS	Square Neck	7650-6 DF FRS	7650R-6 DF FRS



**Model
CC5 FRS**
Pg. 199

Sidewall/Ceiling Return Grilles & Registers with Radiation Damper for T-bar Lay-in - Series CC5 FRS

- ✦ Three hour UL classified ceiling diffuser system
- ✦ Complete factory package - diffuser, damper, & blanket
- ✦ Factory assembled - Ready to install



**Series
PRTB FRS**
Pg. 200

Perforated Screen - Non-Ducted - Return with Radiation Damper for T-bar Lay-in - Series PRTB FRS

- ✦ Three hour UL classified ceiling diffuser system
- ✦ Complete factory package - diffuser, damper, & blanket
- ✦ Factory assembled - Ready to install

Aluminum	Steel
PRTB FRS	SPRTB FRS



Model RD-10
Pg. 201

Round Radiation Dampers - Series RD-10

- ✦ Three hour UL fire resistant classification
- ✦ Approved for use with flexible duct, steel duct, and non-ducted supply/return applications
- ✦ Heavy duty rollformed steel construction
- ✦ Optional adjustable volume control

Fixed Volume	Adjustable Volume
RD-10	RD-10A



Model RD-20
Pg. 202

Square Radiation Dampers - Series RD-20

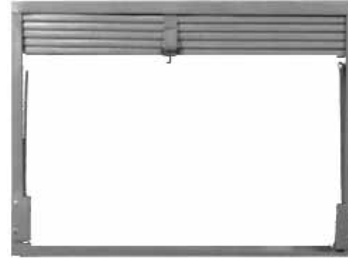
- ✦ Three hour UL fire resistant classification
- ✦ Approved for use with flexible duct, steel duct, and non-ducted supply/return applications
- ✦ Heavy duty rollformed steel construction
- ✦ Optional adjustable volume control

Fixed Volume	Adjustable Volume
RD-20	RD-20A

➔ Thinline 2" Frames ➔ Blades in Airstream ➔ Series FD11A

Product Details

- ★ 1 1/2 hour UL fire resistance
- ★ Rated for use in 2 hour fire partitions
- ★ Heavy duty rollformed steel construction
- ★ Meets NFPA 90a requirements for vertical or horizontal mounts
- ★ 2" deep frame
- ★ Optional 12" deep sleeve

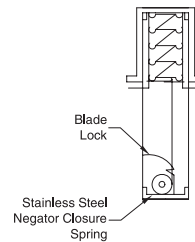
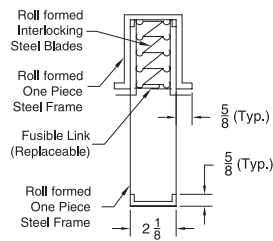


Model FD11 AH
Standard Finish: 01 White

Sideview, dimensions are in inches

Thin Line 2" Frame - Blades in Air Stream

Model FD-11-AV (Vertical Application)
Model FD-11-AG (Horizontal Application)



Fire Rated Products



FRP

FRP - Fire Rated Products

➔ Standard 4 1/4" Frames ➔ Blades in Airstream ➔ Series FD12A

Product Details

- ★ 1 1/2 hour UL fire resistance
- ★ Rated for use in 2 hour partitions
- ★ Heavy duty rollformed steel construction
- ★ Meets NFPA 90a requirements for vertical or horizontal mounts
- ★ 4 1/4" deep frame
- ★ Optional 12" deep sleeve

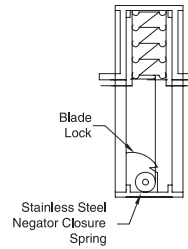
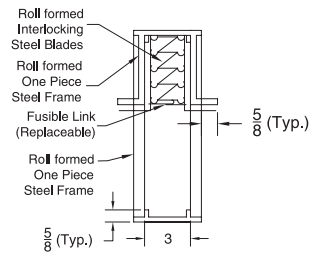


Model FD12 AH
Standard Finish: 01 White

Sideview, dimensions are in inches

Standard 4 1/4" Frame - Blades in Air Stream

Model FD-11-AV (Vertical Application)
Model FD-11-AH (Horizontal Application)



Fire Rated Products



FRP

↳ Thinline 2" Frames ↳ Blades in Airstream ↳ Series FD11B

Product Details

- ★ 1 1/2 hour UL fire resistance
- ★ Rated for use in 2 hour partitions
- ★ Heavy duty rollformed steel construction
- ★ Meets NFPA 90a requirements for vertical or horizontal mounts
- ★ 4 1/4" deep frame
- ★ Optional 12" deep sleeve

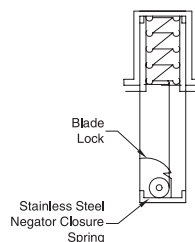
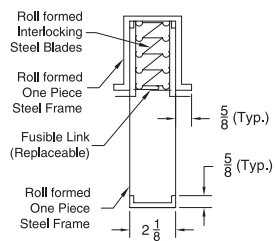


Model FD11 B
Standard Finish: 01 White

Sideview, dimensions are in inches

Thin Size 2" Frame - Blades out of Air Stream

Model FD-11 BV (Vertical Application)
Model FD-11 BH (Horizontal Application)



Fire Rated Products

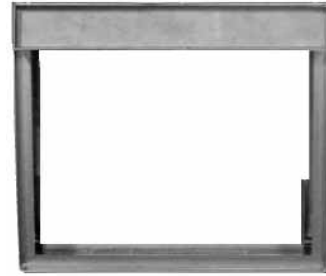


FRP

➔ Standard 4 1/4" Frames ➔ Blades out at Airstream ➔ Series FD12 B

Product Details

- ★ 1 1/2 hour UL fire resistance
- ★ Rated for use in 2 hour partitions
- ★ Heavy duty rollformed steel construction
- ★ Meets NFPA 90a requirements for vertical or horizontal mounts
- ★ 4 1/4" deep frame
- ★ Optional 12" deep sleeve

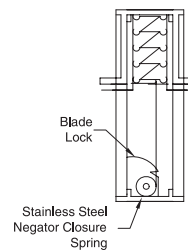
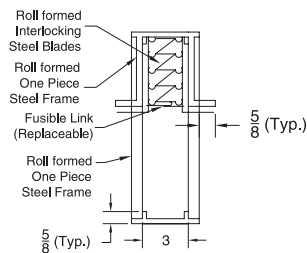


Model FD12 BH
Standard Finish: 01 White

Sideview, dimensions are in inches

Standard 4 1/4" Frame - Blades out of Air Stream

Model FD-12 BV (Vertical Application)
Model FD-12 BH (Horizontal Application)



➔ Thinline 2" Frames - Round Inlet/Outlet ➔ Series FD11C

Product Details

- ★ 1 1/2 hour UL fire resistance
- ★ Rated for use in 2 hour fire partitions
- ★ Heavy duty rollformed steel construction
- ★ Meets NFPA 90a requirements for vertical or horizontal mounts
- ★ 2" deep frame
- ★ Optional 12" deep sleeve

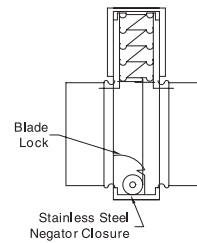
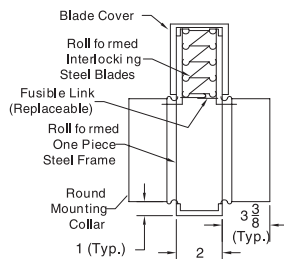


Model FD11 C
Standard Finish: 01 White

Sideview, dimensions are in inches

Thin Line 2" Frame - Round Inlet / Outlet

Model FD-11-CV (Vertical Application)
Model FD-11-CH (Horizontal Application)



Fire Rated Products



FRP

➔ Standard 4 1/4" Frames ➔ Round Inlet/Outlet ➔ Series FD12 C

Product Details

- ★ 1 1/2 hour UL fire resistance
- ★ Rated for use in 2 hour partitions
- ★ Heavy duty rollformed steel construction
- ★ Meets NFPA 90a requirements for vertical or horizontal mounts
- ★ 4 1/4" deep frame
- ★ Optional 12" deep sleeve



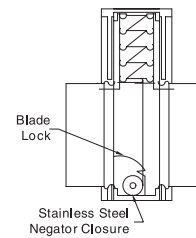
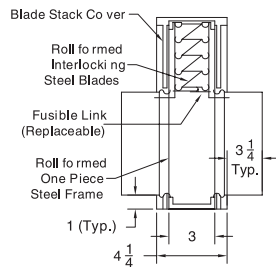
Model FD12 C
Standard Finish: 01 White

Sideview, dimensions are in inches

Standard 4 1/4" Frame - Round Inlet / Outlet

Model FD-12-CV (Vertical Application)

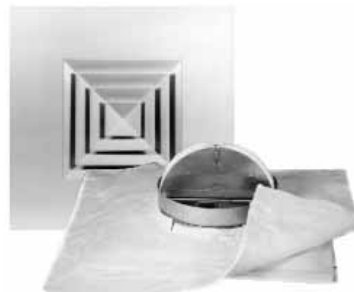
Model FD-12-CH (Horizontal Application)



➔ Square/Rectangular Louver Face Ceiling Diffusers w/Radiation Damper for T-bar Lay-in ➔ Series 5500S FRS

Product Details

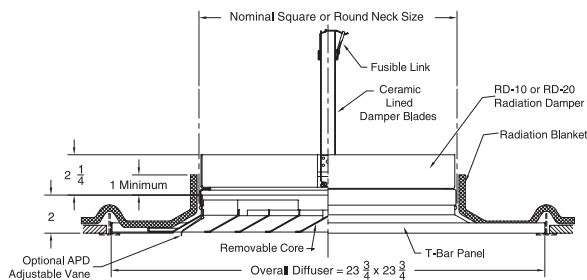
- ✦ Three hour UL classified ceiling diffuser system
- ✦ Complete factory package - diffuser, damper, & blanket
- ✦ Factory assembled — Ready to install



Model 5500S-6 FRS
Standard Finish: 01 White

Sideview, dimensions are in inches

Louver Face Diffuser - Square or Round Neck Model 5500-6 FRS



Round Neck Diameters	Square Neck Size
6	6 x 6
8	9 x 9
10	12 x 12
12	15 x 15
14	18 x 18
16	21 x 21

Fire Rated Products



FRP

FRP - Fire Rated Products

➤ Square Face Diffusers ➤ Round Neck 2-Cone w/Radiation Damper for T-bar Lay-in ➤ Series 5700 FRS

Product Details

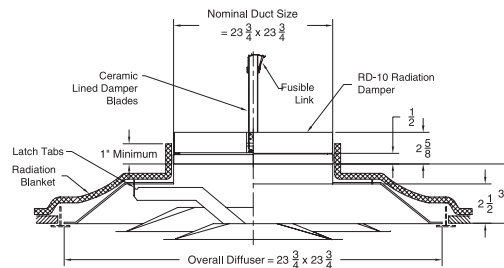
- ★ 1 1/2 hour UL fire resistance
- ★ Rated for use in 2 hour fire partitions
- ★ Heavy duty rollformed steel construction
- ★ Meets NFPA 90a requirements for vertical or horizontal mounts
- ★ 2" deep frame
- ★ Optional 12" deep sleeve



Model 5700-6 FRS
Standard Finish: 01 White

Sideview, dimensions are in inches

Square Diffuser - Two Cones
Model 5700-6 FRS



Fire Rated Products

FRP

➔ Square Face Diffusers ➔ Round Neck 3-Cone w/Radiation Damper for T-bar Lay-in ➔ Series 5800 FRS

Product Details

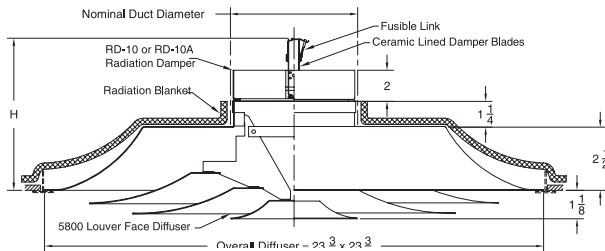
- ✪ Three hour UL classified ceiling diffuser system
- ✪ Complete factory package - diffuser, damper, & blanket
- ✪ Factory assembled — Ready to install
- ✪ Optional volume damper on select models



Model 5800-6 FRS
Standard Finish: 01 White

Sideview, dimensions are in inches

Square Diffuser - Three Cones Model 5800-6 FRS



Listed Size	Duct Size	H
6/24	6	8
8/24	8	8 3/8
10/24	10	9 3/8
12/24	12	10 3/8
14/24	14	11 3/8
15/24	15	11 7/8

Fire Rated Products

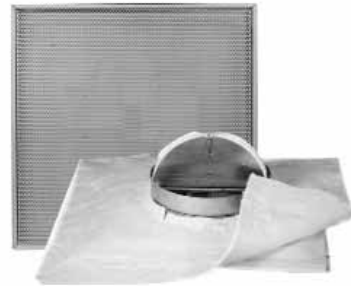


FRP

➔ Perforated Ceiling Diffuser ➔ Face Mounted Adjustable Pattern Controller w/Radiation Damper for T-bar Lay-in ➔ Series 7500 FRS

Product Details

- ✪ Three hour UL classified ceiling diffuser system
- ✪ Complete factory package - diffuser, damper, & blanket
- ✪ Factory assembled — Ready to install
- ✪ Optional volume damper on select models



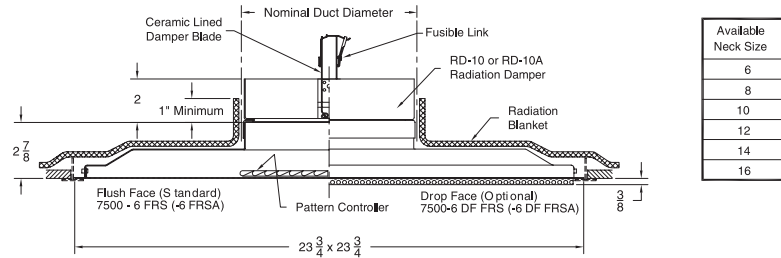
Model 7500-6 FRS

Standard Finish: 01 White

Sideview, dimensions are in inches

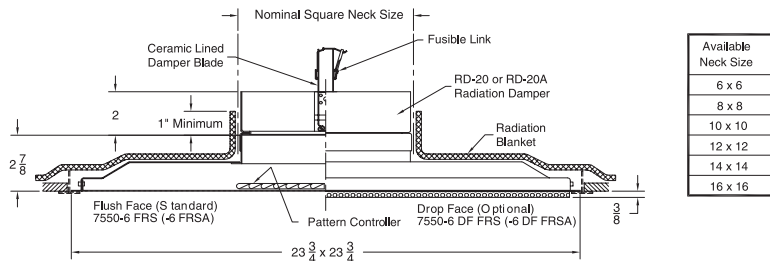
Round Neck - Face Mounted Controller

- Model 7500-6-FRS
- Model 7500-6-FRSA Adjustable Damper
- Model 7500-6-DR-FRS Drop Face
- Model 7500-6-DF-FRSA Drop Face - Adjustable Damper



Round Neck - Face Mounted Controller

- Model 7500-6-FRS
- Model 7500-6-FRSA Adjustable Damper
- Model 7500-6-DR-FRS Drop Face
- Model 7500-6-DF-FRSA Drop Face - Adjustable Damper



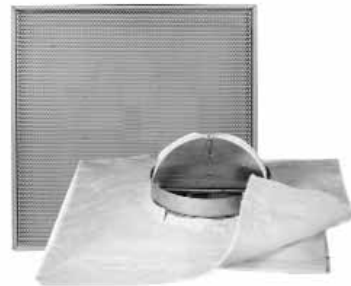
Fire Rated Products

FRP

➔ Perforated Ceiling Diffuser ➔ Curved Blade ➔ Neck Mounted Pattern Controller w/Radiation Damper for T-bar Lay-In ➔ Series 7600 FRS

Product Details

- ✦ Three hour UL classified ceiling diffuser system
- ✦ Complete factory package - diffuser, damper, & blanket
- ✦ Factory assembled — Ready to install

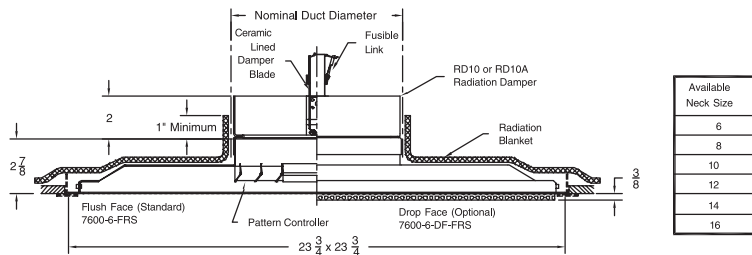


Model 7600-6 FRS
Standard Finish: 01 White

Sideview, dimensions are in inches

Round Neck - Curved Blade Controller

- Model 7600-6-FRS (Round Neck-Curved Blade Deflector)
- Model 7600-6-DF-FRS (Round Neck-Curved Blade Deflector-Drop Face)

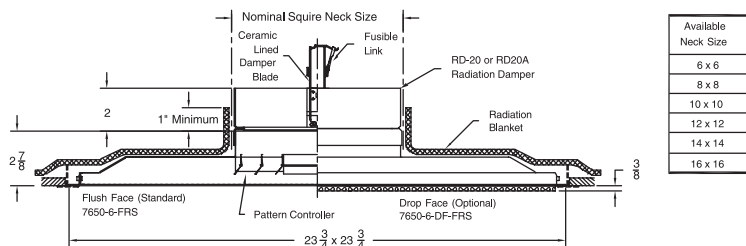


Available Neck Size
6
8
10
12
14
16

Fire Rated Products

Square Neck - Curved Blade Controller

- Model 7650-6-FRS (Square Neck-Curved Blade Deflector)
- Model 7650-6-DF-FRS (Square Neck-Curved Blade Deflector-Drop Face)



Available Neck Size
6 x 6
8 x 8
10 x 10
12 x 12
14 x 14
16 x 16

FRP

FRP - Fire Rated Products

➔ Sidewall/Ceiling Return Grilles & Registers w/Radiation Damper for T-bar Lay-in ➔ Series CC5 FRS

Product Details

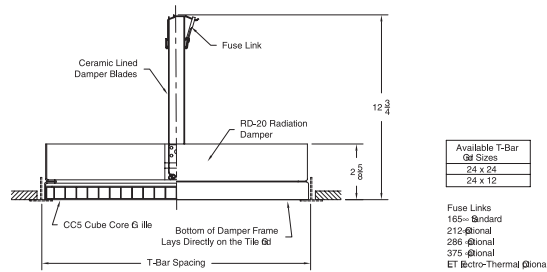
- ⊛ Three hour UL classified ceiling diffuser system
- ⊛ Complete factory package - diffuser, damper, & blanket
- ⊛ Factory assembled - Ready to install



Model CC5 FRS
Standard Finish: 01 White

Sideview, dimensions are in inches

Aluminum Square Return - Cube Core 1/2" x 1/2" x 1/2"
Model CC5-FRS (Aluminum Square Return - Cube Core 1/2" x 1/2" x 1/2")



Fire Rated Products

FRP

➔ Perforated Screen ➔ Non-Ducted ➔ Return w/Radiation Damper for T-bar Lay-in ➔ Series PRTB FRS

Product Details

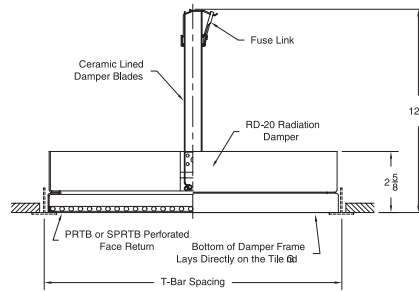
- ★ Three hour UL classified ceiling diffuser system
- ★ Complete factory package - diffuser, damper, & blanket
- ★ Factory assembled - Ready to install



Model PRTB FRS
Standard Finish: 01 White

Sideview, dimensions are in inches

Perforated Screen - Square / Rectangular Neck
Model SPR-TB-FRS (Steel Square Return Diffuser)
Model PR-TB-FRS (Aluminum Square Returns Diffuser)



Fire Rated Products



FRP

➔ Round Radiation Dampers ➔ Series RD-10

Product Details

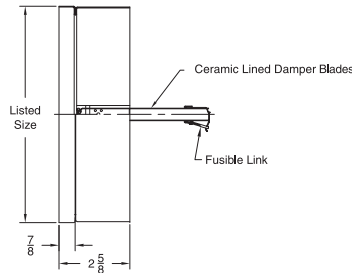
- ★ Three hour UL fire resistant classification
- ★ Approved for use with flexible duct, steel duct, and non-ducted supply/return applications
- ★ Heavy duty rollformed steel construction
- ★ Optional adjustable volume control



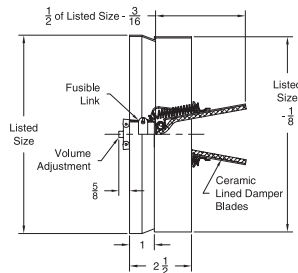
Model RD-10
Standard Finish: 01 White

Sideview, dimensions are in inches

Round Radiation Damper Model RD-10 (Round Radiation Damper - Non Adjustable)



Round Radiation Damper Model RD-10A (Round Radiation Damper - Adjustable Volume Control)



Fire Rated Products

FRP

➔ Square Radiation Dampers ➔ Series RD-20

Product Details

- ✪ Three hour UL fire resistant classification
- ✪ Approved for use with flexible duct, steel duct, and non-ducted supply/return applications
- ✪ Heavy duty rollformed steel construction
- ✪ Optional adjustable volume control

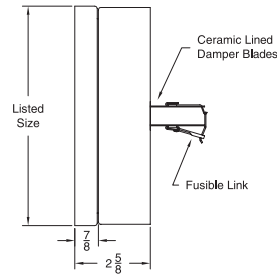


Model RD-20
Standard Finish: 01 White

Sideview, dimensions are in inches

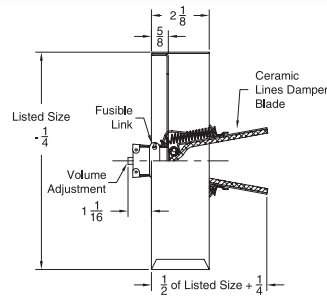
Round Radiation Damper

Model RD-20 (Round Radiation Damper - Non Adjustable)



Round Radiation Damper

Model RD-20A (Round Radiation Damper - Adjustable Volume Control)



AAA
CCC
CCC

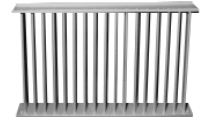


ACCESSORIES

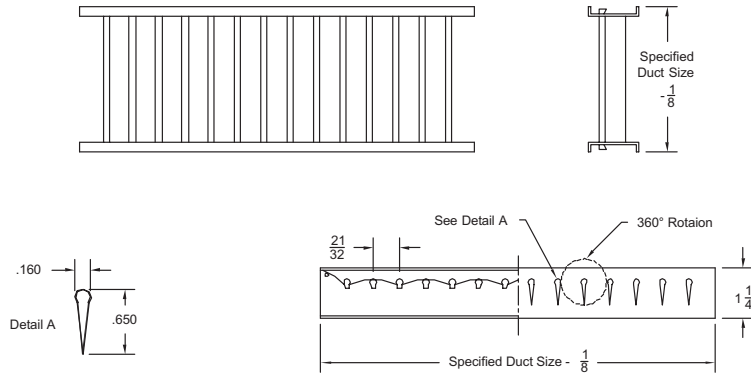
ACCESSORIES

Square/Rectangular Equalizing Grid ➔ Aluminum ➔ Model L9

- ★ Designed to provide uniform airflow in branch ducts
- ★ Pre-tensioned blades adjust individually and may be set at an angle at the branch take-off to provide a rake-off effect

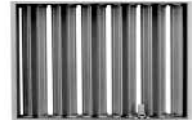


Sideview, dimensions are in inches

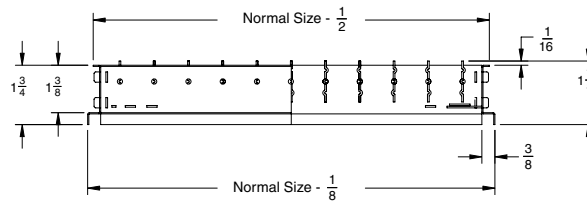


Opposed Blade Damper for Grilles ➔ Aluminum ➔ Model OBDA ➔ Aluminum ➔ Model OBD

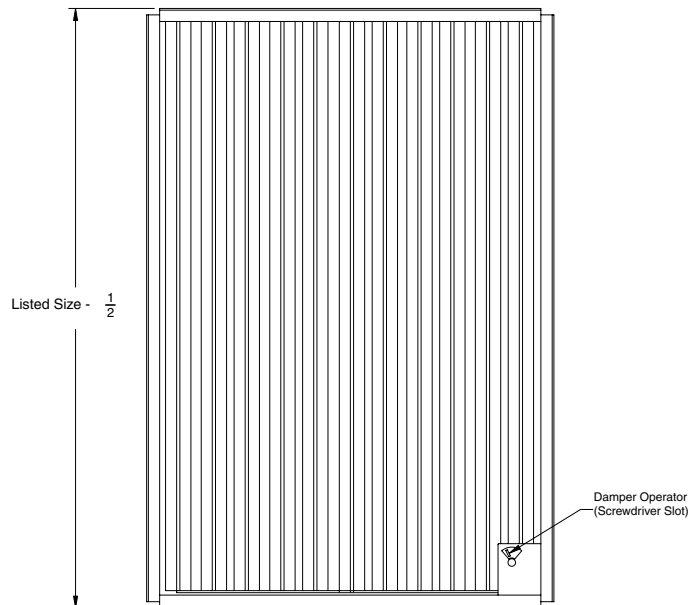
- ★ Tapered blades set in a U-channel frame
- ★ Opposed blades on 1" centers
- ★ Screwdriver slot operator



Sideview, dimensions are in inches



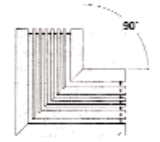
Face View (Models OBD / OBDA)



Grilles & Registers - Accessories

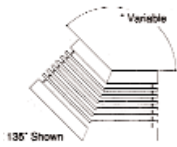
Optional Mitered Corners

Available for installation in ceiling, floor, sill or sidewall applications, the standard horizontal (flat) mitered corner section includes an angle of 90° and is available in 0°, 15°, and 30° deflection. The corner section contains two (2) feet of straight grille, one foot on either side of the miter line. When specifying a corner section with 15° or 30° deflection, it is imperative to specify the direction of the air throw - either toward the inside or the outside of the corner. Normally inactive, corner sections are of one piece welded construction and are not supplied with dampers equalizing grids, or other accessories.



Standard Finish: 01 White

Special Horizontal



Vertical Outside



Vertical Inside



Access Door

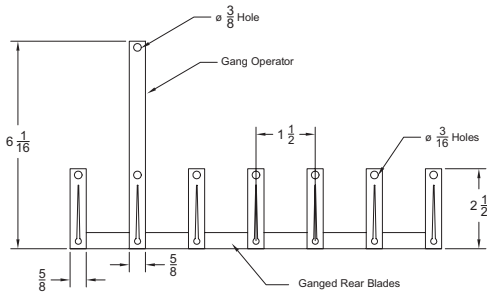
Used in a variety of applications that require hands-on access through the grille face - for example, to provide access to the operating controls of a fan coil cabinet - the Series 2000 access door consists of a 2000 core section, approximately 7 1/2 inches long, with concealed hinges that allow it to pivot upward 90°. Access doors are available on either or both ends of a Series 2000 grille section, and can be specified in 0°, 15°, or 30° deflection. When 15° or 30° deflection is specified, it is imperative to orient the access door location to the direction of the air flow. Access doors are not available in floor units.



Standard Finish: 01 White

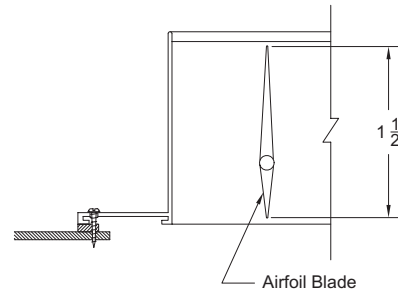
Gang Operator - For Series 4100, 4200 & 4300

Model GOH - Horizontal Blades
Model GOV - Vertical Blades



Airfoil Blades - Mounted - For Series 4100 & 4200

Model AB

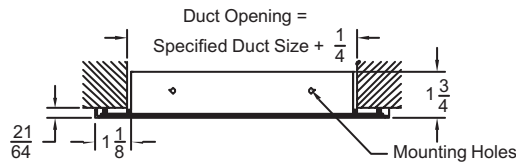


Sidewall Mounted Plaster Frame - Model PF

- Provides a uniform opening in plaster ceilings or sidewall to accommodate grilles and registers
- Are available for all ceiling and sidewall grilles and registers



Sideview, dimensions are in inches



Grilles & Registers - Accessories

7/2006

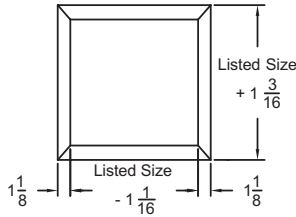
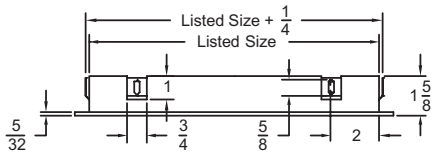
T-bar Plaster Frame ➔ Aluminum/Steel ➔ Series TBPF

- ⊕ Permits installation of a T-bar frame style ceiling diffuser into plaster or gypsum type ceiling

Aluminum	Steel
TBPF	STBPF



Sideview, dimensions are in inches

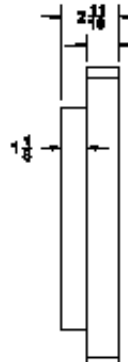
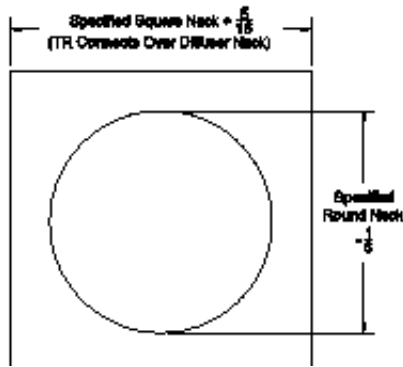


Available Size (TBPF models)	
Nominal	Overall
12" x 12"	13 3/16" x 13 3/16"
24" x 12"	25 3/16" x 13 3/16"
24" x 24"	25 3/16" x 25 3/16"
36" x 24"	37 3/16" x 25 3/16"
36" x 36"	37 3/16" x 37 3/16"
48" x 24"	49 3/16" x 25 3/16"
48" x 48"	49 3/16" x 49 3/16"

Square to Round Transitions ➔ Model TR

- ⊕ Square to round transitions slip fit over the square neck or register to permit installation to round or flex-duct
- ⊕ 2 11/16" overall depth

□ Model: TR (Square to Round Transition)

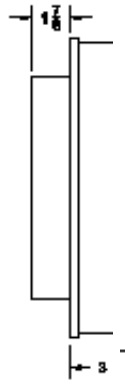
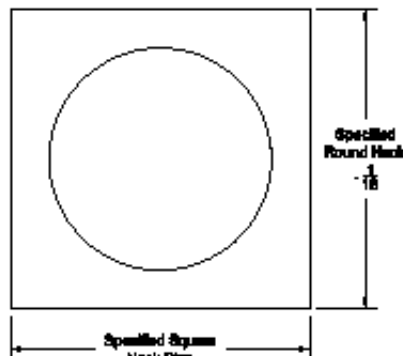


Square Neck Size	Available Sizes Round Neck Sizes
6 x 6	4, 5, 6, 8
8 x 8	5, 6, 7, 8, 9
9 x 9	6, 7, 8, 9
10 x 10	6, 7, 8, 9, 10
12 x 12	6, 7, 8, 9, 10, 11, 12
14 x 14	6, 7, 8, 9, 10, 11, 12, 14
16 x 16	6, 7, 8, 9, 10, 11, 12, 14, 16
18 x 18	6, 7, 8, 9, 10, 11, 12, 14, 16, 18
22 x 22	6, 7, 8, 9, 10, 11, 12, 14, 16, 18, 20, 22

Square to Round Deep Transitions ➔ Model TR DEEP

- ⊕ Square to round transitions slip fit over the square neck or register to permit installation to round or flex-duct
- ⊕ 4 7/8" overall depth

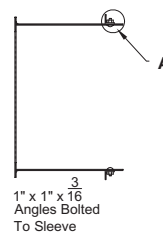
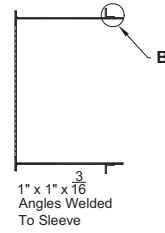
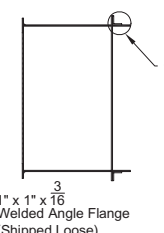
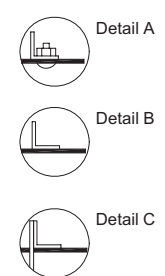
□ Model: TR-DEEP (Square to Round Deep Transition)



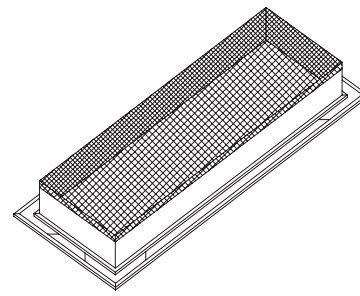
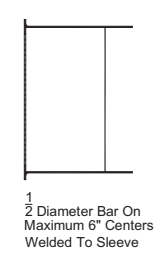
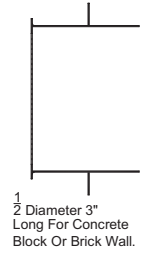
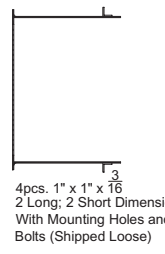
Square Neck Size	Available Sizes Round Neck Sizes
6 x 6	6, 8, 8
8 x 8	5, 6, 7, 8, 9
9 x 9	5, 6, 7, 8, 9
10 x 10	6, 7, 8, 9, 10
12 x 12	6, 7, 8, 9, 10, 11, 12
14 x 14	6, 7, 8, 9, 10, 11, 12, 14
16 x 16	6, 7, 8, 9, 10, 11, 12, 14, 16
18 x 18	6, 7, 8, 9, 10, 11, 12, 14, 16, 18
18 x 18	5, 6, 7, 8, 9, 10, 11, 12, 14, 16, 18, 18

Grilles & Registers - Accessories

SEC - Security Products - Accessories

<p>Security Grilles and Registers - Accessories Model BSA - Bolted steel angles - Shipped loose</p>  <p>1" x 1" x 16" Angles Bolted To Sleeve</p>	<p>Security Grilles and Registers - Accessories Model WSA - Welded steel angles - Welded to grille sleeve</p>  <p>1" x 1" x 16" Angles Welded To Sleeve</p>
<p>Security Grilles and Registers - Accessories Model WAF - Companion flanges - Welded angle frames</p>  <p>1" x 1" x 16" Welded Angle Flange (Shipped Loose)</p>	<p>Security Grilles and Registers - Accessories Details</p>  <p>Detail A Detail B Detail C</p>

SEC - Security Products - Accessories

<p>Security Grilles and Registers - Accessories Model DS - Debris screen</p> 	<p>Security Grilles and Registers - Accessories Model SBR - Duct bars - Installed in security grilles</p>  <p>1/2 Diameter Bar On Maximum 6" Centers Welded To Sleeve</p>
<p>Security Grilles and Registers - Accessories Model SAB - Steel Anchor Bars - Welded on sleeve</p>  <p>1/2 Diameter 3" Long For Concrete Block Or Brick Wall.</p>	<p>Security Grilles and Registers - Accessories Model LSA - Loose Steel Angles</p>  <p>4pcs. 1" x 1" x 16" 2 Long; 2 Short Dimension With Mounting Holes and Bolts (Shipped Loose)</p>

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METAL*LAIRE®

CEILING DIFFUSERS

PRODUCT CATALOG

The METAL*LAIRE Ceiling Diffuser Catalog is designed to save you time selecting air distribution equipment. The Ceiling Diffuser Catalog is divided into productlines. Each section begins with a summary that includes all our available models along with features and benefits of our products.

To obtain product information not included in this catalog, simply go to our web site at www.metalaire.com, or refer to our InfoSource catalogs.

Revised: March 7, 2006



At METAL*LAIRE®, we continually work to improve our products. Product descriptions, dimensions, and performance are subject to change without notice. For the most current available literature visit our web page at www.metalaire.com. Contact your local METAL*LAIRE® representative to verify product or performance details.

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PCD

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MDC® • METALAIRE DIGITAL CONTROL DIFFUSER

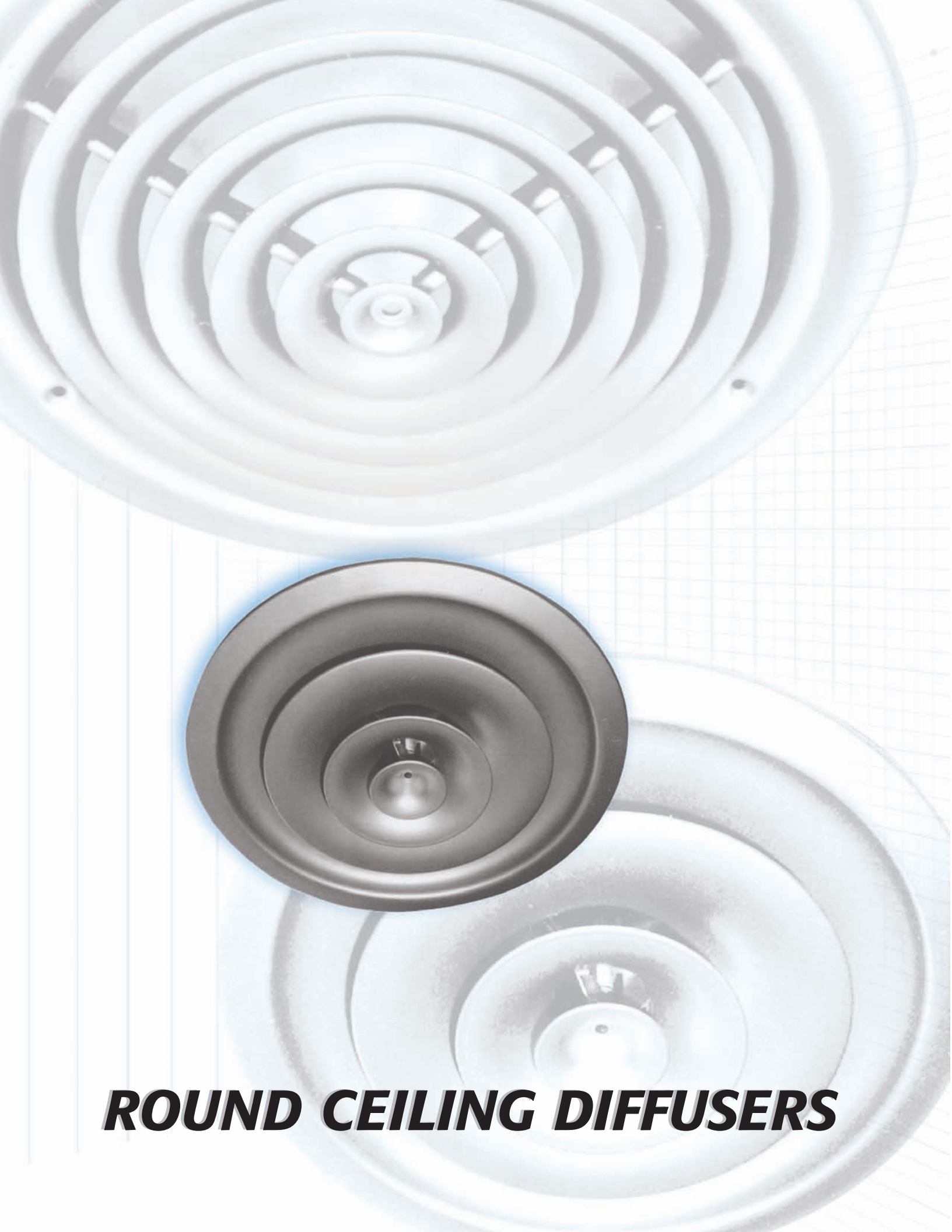
MDC

METALAIRE Digital Control Diffuser	
✦ Series MDC®316

UFD • UNDERFLOOR DIFFUSER

UFD

Aircell Polymer Floor Diffuser	
✦ Series WFO332



ROUND CEILING DIFFUSERS



Model 900
Pg. 10

Fixed Round Diffusers - Aluminum - Multi-Cone - Model 900

- ✦ Economical high performance diffuser
- ✦ Damper available (900D)



Model 3000
(Flush Face Shown)
Pg. 14

Adjustable Round Diffusers - Aluminum - 3-Cone - Series 3000

- ✦ High induction/capacity 3 cone adjustable diffuser
- ✦ Fully adjustable from horizontal to vertical discharge
- ✦ Low profile flush face or dropped face designs are available

Adjustable	
3000-1	Flush
3000-2	Dropped



Model 3100
(Flush Face Shown)
Pg. 18

Series 3100 - Aluminum
Series 3100S - Steel

Fixed/Adjustable Round Diffusers - Aluminum/Steel - Multi-Cone - Series 3100

- ✦ High induction/capacity 2 cone diffuser
- ✦ Can be adjusted for vertical or horizontal discharge
- ✦ Low profile flush face or dropped face designs are available

	Aluminum		Steel	
Adjustable	3100A-1 Flush	3100A-2 Dropped	3100S-A-1 Flush	3100S-A-2 Dropped
Fixed	3100-1 Flush	3100-2 Dropped	3100S-1 Flush	3100S-2 Dropped



Model 3200
Pg. 22

Adjustable Round Diffusers - Steel - Model 3200

- ✦ Excellent choice for high capacity applications such as factories, gymnasiums, theaters, and convention halls
- ✦ Discharge pattern is easily adjusted from vertical to horizontal with adjustment ring
- ✦ Diffuser can effectively be applied for either spot heating or cooling
- ✦ In the horizontal setting the unit provides tight ceiling patterns excellent for VAV applications
- ✦ Outer cone design guards against ceiling smudging in horizontal position



Model R5750
Pg. 26

Round Architectural Ceiling Diffuser - Steel - Model R5750

- ✦ Architectural pleasing round diffuser blends well into the ceiling surface
- ✦ Fixed horizontal throw pattern
- ✦ Designed for surface mounting applications
- ✦ Excellent in both heating and cooling applications
- ✦ The R5750 is an excellent choice for VAV applications

RCD - Round Ceiling Diffusers

3/2006

Round Ceiling Diffusers



RCD

➔ Fixed Round Diffusers ➔ Model 900 ➔ Aluminum

Product Details

- ✦ Economical high performance diffuser
- ✦ Damper available (900D)

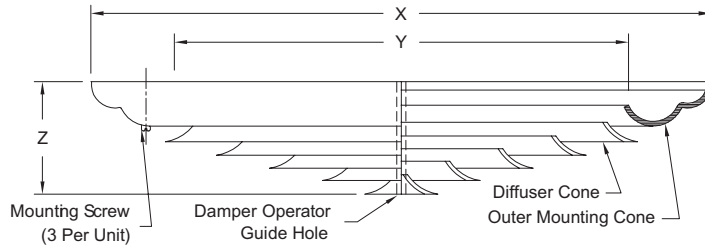


Model 900-1 Shown

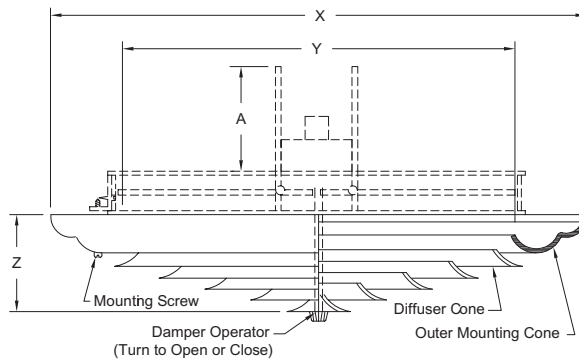
Standard Finish: 01 White

Dimensions are in inches

Fixed Round Diffuser - Multi Cone Surface Mount Model 900-1



Fixed Round Diffuser - Multi Cone - With Damper Surface Mount Model 900D-1



Diffuser Size	X	Y	Z	Number of Cones
6	10 1/8	5 7/8	1 7/8	4
8	12 1/8	7 7/8	2 3/16	5
10	14 1/8	9 7/8	2 1/2	6
12	16 1/8	11 7/8	2 13/16	7
14	18 1/8	13 7/8	3 1/8	8

Damper Size	A
6	3
8	4
10	5
12	6
14	6 1/4

1. Available Finishes	2. Available Accessories	3. Construction Details
Standard Finish: 01 White Optional Finish 02 Aluminum 28 Custom Color	900D - Round Damper335 Replacement Knobs	• Sizes only as listed

RCD - Round Ceiling Diffusers

Round Ceiling Diffusers
RCD

Model 900 - Performance

Neck Size	fpm Throw NC	200	300	400	500	600	700	800	900	1000
		Pt .005	.010	.015	.025	.035	.050	.065	.080	.10
6"	CFM Throw NC	37 3-5 <	55 3-5 <	75 3-6 <	90 3-6 <	110 4-6 20	130 4-6 23	145 4-6 25	165 5-7 25	185 5-7 30
8"	CFM Throw NC	65 4-6 <	100 4-6 <	135 4-6 <	165 5-7 20	200 5-8 25	230 5-8 25	265 5-8 28	300 5-9 30	330 6-10 35
10"	CFM Throw NC	105 4-7 <	160 5-8 <	210 5-9 <	265 5-10 20	315 6-11 25	370 6-12 30	420 7-13 30	475 7-14 35	525 7-14 35
12"	CFM Throw NC	150 5-8 <	230 5-9 <	305 6-10 20	380 6-11 25	455 6-12 25	535 7-13 30	610 7-14 30	685 6-16 35	760 10-18 35
14"	CFM Throw NC	200 6-9 <	310 7-11 <	415 8-13 20	520 9-14 25	625 11-15 30	730 12-17 30	830 13-19 35	935 15-21 35	1040 18-23 40

Performance Notes for Series 900:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic feet per minute (air)
- fpm - Velocity of air stream in feet per minute
- Pt - Total pressure (inches of water column)
- Throw - Throw distance in feet at terminal velocities of 150 - 100 fpm with a supply air temperature 20°F cooler than room temperature
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE:10E-12 watts minus a 10 dB room attenuation in all octave bands

Round Damper for Series 900 ➔ Aluminum ➔ Model 900D

- ✪ For attachment to Model 900
- ✪ 2 butterfly style blades for 6" - 12" sizes
- ✪ 8 blade radial style for 14" size
- ✪ Blades adjusted through diffuser face
- ✪ Damper supplied with mounting hardware



Dimensions are in inches

Butterfly Damper - Size 12 and Under - Aluminum

Opposed Blade Damper - Size 14 for Series 900 - Aluminum

900D Models			
Diffuser Sizes	X	Y	Z
6	5 15/16	5 5/8	3
8	7 15/16	7 5/8	4
10	9 15/16	9 5/8	5
12	11 15/16	11 5/8	6
14	13 15/16	13 5/8	7



Model 900 - Specifications

Air Outlets shall be model 900 manufactured by METALAIR®. Diffuser shall have a series of uniformly spaced concentric round cones. Units shall be aluminum construction. The units shall be the size and quantity as outline in the plans and specifications.

Unit's cones shall be drop down and provide an efficient horizontal radial discharge pattern. Diffuser shall include countersunk screw holes for installation into the ceiling system. Center cone of diffuser shall include an access hole to allow face adjustment of an optional damper operator.

Optional Accessories

900 Series Damper

Outlets shall be installed with a neck-mounted damper, model 900D, manufactured by METALAIR®. Damper shall be of aluminum construction and designed to give jam-free operation. Sizes 6" – 12" round dampers shall be 2 blade, butterfly type. Size 14" damper shall be an 8 blade opposed blade damper. Units shall include a damper operator knob constructed of high impact nylon. Damper knob shall be removable to prevent tampering after the outlet is balanced.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

RCD - Round Ceiling Diffusers

Model 900 - Model Specification Guide

Fixed Round Diffusers - Multi Cone
Model 900 - Aluminum

Model	Available Neck		Available Finishes	Available Options	
900-1 - Surface Mount	6	6" round	Standard	900D	Aluminum Damper
	8	8" round	01 - White	EK	Extra Knots
	10	10" round	Optional		
	12	12" round	02 - Aluminum		
	14	14" round			



RCD - Round Ceiling Diffusers

3/2006

Adjustable Round Diffusers Series 3000 Aluminum

Product Details

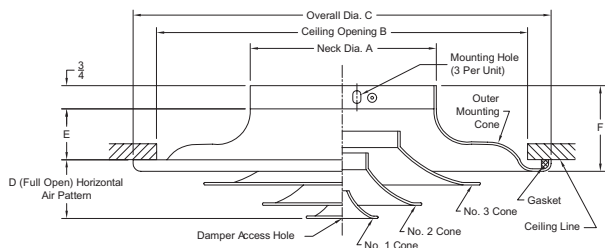
- High induction/capacity 3 cone adjustable diffuser
- Fully adjustable from horizontal to vertical discharge
- Low profile flush face, or dropped face designs are available



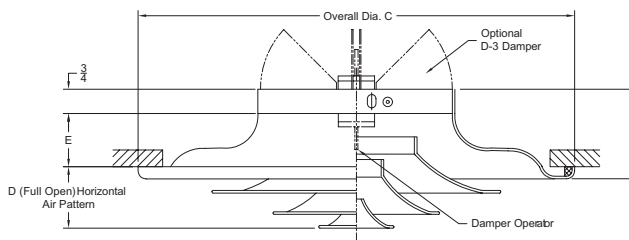
Model 3000-1 Shown
Standard Finish: 01 White

Dimensions are in inches

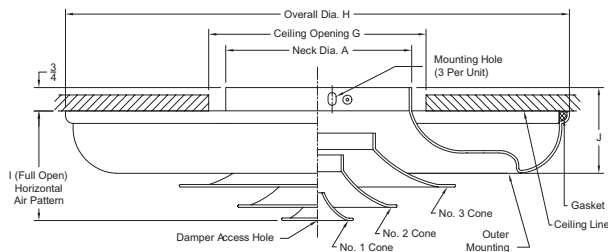
Adjustable Round Diffuser - 3 Cone Flush Cone Model 3000-1



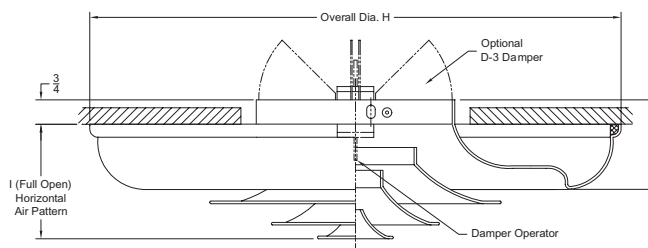
Adjustable Round Diffuser - 3 Cone Flush Cone - With D3 Damper Model 3000-1D



Adjustable Round Diffuser - 3 Cone Drop Cone Model 3000-2



Adjustable Round Diffuser - 3 Cone Drop Cone - With D3 Damper Model 3000-2D



Neck Size	A	B	C	D	E	F	G	H	I	J
6	5 7/8	12	13 1/2	2 1/4	1 5/8	2 3/4	7	16 5/16	3 7/8	2 3/4
8	7 7/8	16	18	2 5/8	2 1/8	3 3/8	9	23 3/16	4 3/4	3 3/8
10	9 7/8	20	22 1/2	2 15/16	2 5/8	4	11	27 3/16	5 9/16	4
12	11 7/8	24	27	3 1/2	3 1/4	4 5/8	13	31 13/16	6 3/4	4 5/8
14	13 7/8	28	31 1/2	4 1/4	3 3/4	5 1/4	15	36 7/8	8	5 1/4
16	15 7/8	32	36	4 5/8	4 1/4	6	17	42 1/4	8 7/8	6
18	17 7/8	36	40 1/2	5	4 7/8	6 5/8	19	47 9/16	9 7/8	6 5/8
20	19 7/8	40	45	5 3/8	5 3/8	7 1/4	21	52 3/8	10 3/4	7 1/4
24	23 7/8	40	45	5 3/8	5 3/8	7 1/4	25	52 3/8	10 3/4	7 1/4



RCD - Round Ceiling Diffusers



1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 01 White Optional Finish 02 Aluminum paint 03 Black 24 Mill finish 28 Custom color	Shipped Unattached D3 - Aluminum Radial Opposed Blade Damper . . .336 SD3 - Steel Radial Opposed Blade Damper336 G3 - Equalizing Grid337 GD3 - Combination Grid/Damper337 BDS - Butterfly Damper335 RSD - Radial Shutter Damper336	Safety Chain	• Sizes only as listed

Series 3000 - Performance

Models 3000 (-1, -2)

Neck Size	Neck Area in Sq. Ft.	fpm Neck Vel.										
		Pv	400	500	600	700	800	900	1000	1200	1400	1600
		Ps Horiz. Ps Vert.	0.011 0.019	0.018 0.03	0.026 0.043	0.035 0.058	0.046 0.075	0.059 0.096	0.072 0.115	0.105 0.17	0.145 0.225	0.190 0.3
6"	0.2	CFM Throw NC	80 1-3 <	100 2-4 <	110 2-5 <	140 3-6 20	160 3-7 24	180 3-8 27	200 4-8 36	240 4-9 36	280 5-10 39	320 6-12 44
8"	0.35	CFM Throw NC	140 2-4 <	175 2-5 <	210 3-6 <	245 3-7 20	280 4-8 24	315 4-10 27	350 5-11 31	420 5-13 36	490 6-14 39	560 7-16 44
10"	0.55	CFM Throw NC	220 2-5 <	270 3-6 <	330 3-7 <	380 4-8 21	435 5-10 25	490 6-11 28	545 6-12 32	655 7-14 37	765 8-18 40	870 9-21 45
12"	0.79	CFM Throw NC	315 3-7 <	390 3-8 <	470 4-10 20	550 5-11 22	630 6-13 26	710 7-15 29	785 8-17 33	940 9-19 38	1100 10-21 41	1260 12-25 46
14"	1.07	CFM Throw NC	425 3-8 <	535 4-9 <	640 5-11 20	750 6-13 23	855 7-16 27	965 8-18 31	1070 9-20 34	1285 11-13 40	1500 13-26 43	1710 15-30 48
16"	1.4	CFM Throw NC	560 4-9 <	700 5-10 <	840 5-13 21	980 6-15 24	1120 7-17 28	1260 9-21 33	1400 10-23 36	1680 12-27 41	1960 14-30 44	2240 16-35 49
18"	1.77	CFM Throw NC	710 4-10 <	885 5-12 <	1060 6-15 21	1240 7-17 25	1420 9-21 29	1595 11-23 34	1770 13-26 37	2120 15-31 42	2480 16-34 45	2830 18-38 51
20"	2.18	CFM Throw NC	875 4-11 <	1090 6-14 20	1310 7-16 22	1525 8-19 26	1745 9-23 30	1965 11-23 36	2180 13-28 39	2620 15-33 44	3060 18-38 47	3490 20-42 53
24"	3.14	CFM Throw NC	1255 12-24 22	1570 13-26 26	1885 14-28 28	2200 15-30 31	2510 16-33 35	2825 17-35 38	3140 18-37 41	3770 20-40 47	4395 23-45 51	5025 25-50 55

Performance Notes for Series 3000:

1. Tabulated radial throw in feet is based on a 9' ceiling height, ambient supply air, MAX Throw @ Vt = 75 fpm, MIN Throw @ Vt = 150 fpm, and the diffuser inner cones in down position for 360° horizontal air distribution pattern.
2. For vertical down protection air pattern with cooling supply air temperature 20° below room temperature and diffuser inner cones in up position: multiply the tabulated radial throw values by a factor of 0.80 to obtain vertical down projection distances at MIN and MAX (Vt) terminal velocities.
3. For vertical down projection air pattern with heating supply air temperatures 20° above room temperature and diffuser inner cones in up position; multiply the tabulated radial throw values by a factor of 0.60 to obtain vertical down projection distances at MIN and MAX (Vt) terminal velocities.
4. Velocity Pressure (Pv) and Static Pressure (Ps) are in inches of water.
5. Series 3000 Diffusers are tested in accordance with ASHRAE 70-1991. Sound data are calculated in accordance with International Standard ISO 3741 comparison method. The NC values are based on a room absorption of 10 dB for sound power level (Lw) RE: 10E-12 watts. < symbol indicated NC less than 20. The NC data are for single diffusers; for results of throttling a volume damper, see table below.
6. All data are applicable for exposed duct mounting or ceiling installation.

Damper Throttling Correction Factors

% Register Damper Open	Add To Listed NC (1)*	Factor Times Listed Pt (2)*
100%	0 dB	1.0
82%	4 dB	1.5
70%	8 dB	2.0
50%	16 dB	4.0

(1) NC Addition to listed NC value.
 (2) Pt Multiplier times listed Pt value.





Series 3000 - Specifications

Air Outlets shall be model 3000 manufactured by METALAIRE®. Diffuser shall be constructed of 3 round inner cones and a round outer cone. Outlet shall be adjustable to allow the discharge pattern to be set from full horizontal to vertical. Units shall be aluminum construction. The units shall be the size and quantity as outline in the plans and specifications.

Pattern adjustment shall be accomplished by rotating the innermost cone. The inner core assembly shall be removable for installation and for access into the ductwork. The center cone shall include an access hole to allow adjustment of an optional damper.

Model 3000-1 - Flush Cone

Outlet shall have an outer cone that allows flush mounting to the ceiling opening.

Model 3000-2 - Drop Cone

Outlet shall have a dropped outer cone to move the discharge jet away from the ceiling surface. Dropped cone shall minimize ceiling smudging.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

RCD - Round Ceiling Diffusers

Series 3000 - Model Specification Guide

Adjustable Round Diffusers - 3 Cone Series 3000 - Aluminum

Model	Available Neck Sizes		Available Finishes	Available Options		Available Accessories	
3000-1 - Flush Mount 3000-2 - Drop Face	6	6" round	Standard	SC	Safety Chain	D3	Aluminum Radial Damper
	8	8" round	01 - White			SD3	Steel Radial Damper
10	10" round	Optional	G3			Round Equalizing Grid	
12	12" round	02 - Aluminum	GD3			Combo Grid/Damper	
14	14" round	24 - Mill	BDS			Butterfly Damper	
16	16" round	03 - Black	RSD			Radial Shutter Damper	
18	18" round	28 - Custom Color					
20	20" round						
24	24" round						



RCD - Round Ceiling Diffusers

3/2006

Round Ceiling Diffusers



RCD

➔ Fixed/Adjustable Round Diffusers ➔ Series 3100 ➔ Aluminum
➔ Series 3100S ➔ Steel

Product Details

- ✪ High induction/capacity 2 cone diffuser
- ✪ Can be adjusted for vertical or horizontal discharge
- ✪ Available 3100 aluminum construction or 3100S steel construction
- ✪ Low profile flush face or dropped face designs are available
- ✪ 30" and 36" units are available in non-adjustable models only



Model 3100-1 Shown

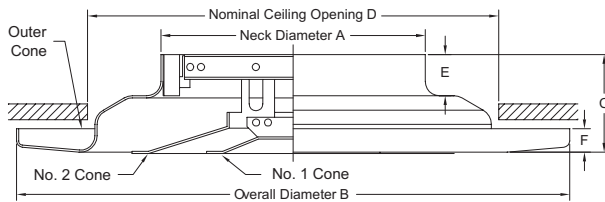
Standard Finish: 01 White

Dimensions are in inches

Fixed Round Ceiling Diffuser - 2 Cone

Flush Cone

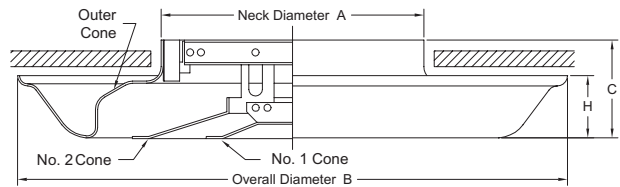
Model 3100-1 - Aluminum
Model 3100S-1 - Steel



Fixed Round Ceiling Diffuser - 2 Cone

Drop Cone

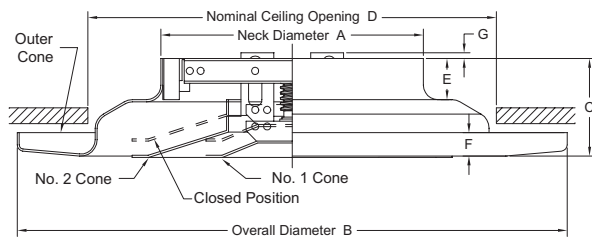
Model 3100-2 - Aluminum
Model 3100S-2 - Steel



Adjustable Round Ceiling Diffuser - 2 Cone

Flush Cone

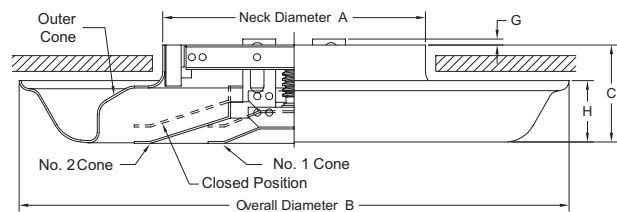
Model 3100A-1 - Aluminum
Model 3100AS-1 - Steel



Adjustable Round Ceiling Diffuser - 2 Cone

Drop Cone

Model 3100A-2 - Aluminum
Model 3100SA-2 - Steel



Dimensions								
Size	A	B	C	D	E	F	G	H
6	5 3/4	16 5/8	2 15/16	11	1 1/4	5/8	3/4	1 7/8
8	7 3/4	16 5/8	2 15/16	11	1 1/4	5/8	3/4	1 7/8
10	9 3/4	22 3/16	3 5/16	17	1 1/4	7/8	3/4	2 1/2
12	11 3/4	22 3/16	3 5/16	17	1 1/4	7/8	3/4	2 1/2
14	13 3/4	29 1/4	4 3/16	22	1 1/4	7/8	1 9/16	3 1/2
16	15 3/4	29 1/4	4 3/16	22	1 1/4	7/8	1 9/16	3 3/8
18	17 3/4	34 1/2	4 5/8	27	1 1/4	1	1 9/16	3 3/4
20	19 3/4	34 1/2	4 5/8	27	1 1/4	1	1 9/16	3 3/4
24	23 3/4	40 1/2	5 1/4	34	1 1/4	1	1 9/16	4 1/4
30	29 3/4	49 1/2	6 1/8	41	2 1/4	1 3/8	2 1/16	5 1/8
36	35 3/4	58 3/8	7 1/8	50	2 1/4	1 3/8	2 1/16	6 1/8

30" and 36" units are available in non-adjustable models only

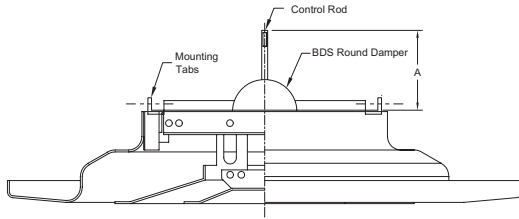
RCD - Round Ceiling Diffusers

Round Ceiling Diffusers



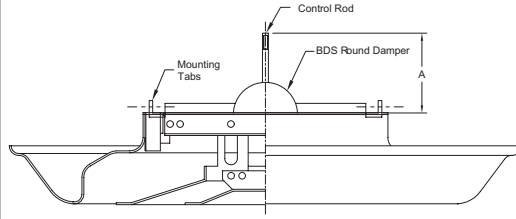
RCD

Fixed Round Ceiling Diffuser - 2 Cone
Flush Cone - With Damper
 Model 3100-1D - Aluminum
 Model 3100S-1D - Steel



Dimensions	
Size	A
6	2 1/2
8	3 1/2
10	4 1/2
12	5 1/2
14	6 1/2
16	7 1/2

Fixed Round Ceiling Diffuser - 2 Cone
Drop Cone - With Damper
 Model 3100-2D - Aluminum
 Model 3100S-2D - Steel



Dimensions	
Size	A
6	2 1/2
8	3 1/2
10	4 1/2
12	5 1/2
14	6 1/2
16	7 1/2

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 01 White Optional Finish 02 Aluminum paint 03 Black 24 Mill finish 28 Custom color	Shipped Unattached D3 - Aluminum Radial Opposed Blade Damper . . .336 SD3 - Steel Radial Opposed Blade Damper336 G3 - Equalizing Grid337 GD3 - Combination Grid/Damper337 BDS - Butterfly Damper335 RSD - Radial Shutter Damper336	Safety Chain	• Sizes only as listed

Series 3100 - Performance

Models 3100 (-1, -2), 3100S (-1, -2)

Neck Size	Neck Area in Sq. Ft.	fpm Neck Vel.	Pv	400	500	600	700	800	900	1000	1200	1400	1600
				0.01	0.016	0.023	0.031	0.04	0.051	0.063	0.09	0.122	0.16
				Ps Horiz. Ps Vert.	0.025 0.049	0.039 0.076	0.056 0.109	0.076 0.149	0.1 0.194	0.126 0.247	0.156 0.305	0.225 0.44	0.304 0.594
6"	0.188	CFM Throw NC	75 2-3-6 <18	94 3-4-8 <18	113 3-5-9 <18	132 4-5-11 18	151 4-6-12 19	169 5-7-14 23	188 5-8-16 26	226 6-9-19 32	264 7-11-22 36	301 9-13-26 40	
8"	0.338	CFM Throw NC	135 3-5-9 19	169 3-5-10 19	203 4-6-12 19	237 4-7-13 20	271 5-8-15 24	304 6-9-17 28	338 7-10-20 31	406 8-12-25 37	474 10-14-29 42	541 10-15-30 46	
10"	0.769	CFM Throw NC	213 4-16-12 20	266 4-7-13 20	319 5-7-15 23	372 5-8-17 26	425 6-9-18 29	479 7-10-20 31	532 7-11-23 34	638 9-14-27 40	745 11-16-32 45	851 12-18-36 49	
12"	1.05	CFM Throw NC	308 5-7-15 19	385 5-8-16 22	461 6-9-18 25	538 7-10-20 28	615 7-11-22 31	692 8-12-24 34	769 9-13-26 37	923 11-16-32 42	1077 12-19-37 47	1231 14-21-43 51	
14"	1.375	CFM Throw NC	420 6-9-18 22	525 6-10-19 25	630 7-11-21 28	735 8-12-23 31	840 8-13-25 34	945 9-14-28 37	1050 10-15-30 39	1260 12-18-36 44	1470 14-21-43 48	1680 17-25-57 52	
16"	1.743	CFM Throw NC	550 7-10-21 24	687 7-11-22 27	825 8-12-25 30	962 9-14-27 32	1100 10-15-30 35	1237 11-17-33 38	1375 12-18-37 40	1649 14-22-43 45	1924 17-25-50 50	2194 19-29-57 54	
18"	2.154	CFM Throw NC	697 8-12-24 25	871 9-13-27 28	1046 11-16-32 31	1220 12-18-36 33	1394 13-20-39 37	1568 14-22-43 39	1743 16-24-47 41	2091 19-28-56 45	2440 22-33-65 50	2788 24-36-72 54	
20"	3.109	CFM Throw NC	862 9-13-27 27	1077 10-15-30 30	1293 11-16-32 32	1508 12-18-36 35	1724 13-20-39 37	1939 14-22-43 39	2154 16-24-47 41	2585 19-28-56 45	3016 22-33-65 50	3447 24-36-72 54	
24"	3.109	CFM Throw NC	1224 12-18-36 28	1554 13-20-40 31	1885 15-22-45 33	2176 16-25-49 36	2487 18-27-54 38	2798 20-30-59 40	3109 21-32-64 42	3731 25-37-75 46	4353 28-42-84 50	4974 31-47-93 54	
30"	4.868	CFM Throw NC	1947 17-26-51 30	2434 19-29-54 32	2921 21-32-64 35	3408 24-35-71 37	3894 26-39-78 39	4381 28-42-85 41	4868 31-46-92 43	5842 35-53-105 47	6815 39-58-117 51	7789 42-63-127 54	
36"	7.02	CFM Throw NC	2808 24-36-72 31	3510 27-40-81 33	4212 30-45-90 36	4914 33-49-99 38	5616 36-54-108 40	6318 39-59-118 42	7020 42-63-127 44	8423 48-72-144 48	9827 53-79-158 57	11231 58-84-168 54	

30" and 36" units are available in non-adjustable models only

See Page RCD-20 for Performance Notes





Performance Notes:

1. Tabulated throw in feet is based on a 9' ceiling, with supply air temperature 20°F cooler than room temperature, MAX Throw @ Vt = 50 fpm, MIN Throw @ Vt = 150 fpm, and the diffuser/inner cones in down position for 360° horizontal air distribution pattern.

Example: 9-13-27

-Distance @ 50 fpm Term. Vel.
-Distance @ 100 fpm Term. Vel.
-Distance @ 150 fpm Term. Vel.

For vertical Ak values, multiply Ak by 0.76.

2. For vertical down projection air pattern with cooling supply air temperature 20° below room temperature, and diffuser inner cones in up position: multiply the tabulated radial throw values by a factor of 0.80 to obtain vertical down projection distances at MIN and MAX (Vt) terminal velocities.
3. For vertical down projection air pattern with heating supply air temperatures 20° above room temperature, and diffuser inner cones in up position: multiply the tabulated radial throw values by a factor of 0.60 to obtain vertical down projection distances at MIN and MAX (Vt) terminal velocities.
4. Velocity Pressure (Pv) and Static Pressure (Ps) are in inches of water. $P_v + P_s = P_t$ (total pressure).
5. Series 3100 Round Adjustable Diffusers are tested in accordance with ASHRAE 70-1991. Sound data are calculated in accordance with International Standard ISO 3741 comparison method. The NC values are based on a room absorption of 10 dB for sound power level (Lw) RE: 10E-12 watts. < symbol indicates NC less than 20. The NC data is for a single diffusers; for results of throttling a volume damper, see table below.
6. All data is applicable for exposed duct mounting or ceiling installation.

Damper Throttling Correction Factors

% Register Damper Open	Add To Listed NC (1)*	Factor Times Listed Pt (2)*
100%	0 dB	1.0
82%	4 dB	1.5
70%	8 dB	2.0
50%	16 dB	4.0

*(1) NC Addition to listed NC value.
 (2) Pt Multiplier times listed Pt value.

Series 3100 - Specifications

Fixed Round Diffuser - 2 Cone/Series 3100

Air outlets shall be model 3100 (aluminum) or 3100-S (steel) manufactured by METALAIRES. Diffuser shall be constructed of 2 round inner cone assembly and a round outer cone. Outlet shall have a fixed horizontal pattern. Units shall be aluminum construction (model 3100) or steel construction (model 3100S). The units shall be the size and quantity as outline in the plans and specifications.

The inner core assembly shall be removable for installation and for access into the ductwork. The center cone shall include an access hole to allow adjustment of an optional damper.

Flush Cone

- Model 3100-1 - Aluminum
- Model 3100S-1 - Steel

Outlet shall have an outer cone that allows flush mounting to the ceiling opening.

Drop Cone

- Model 3100-2 - Aluminum
- Model 3100-S-2 - Steel

Outlet shall have a dropped outer cone to move the discharge jet away from the ceiling surface. Dropped cone shall minimize ceiling smudging.

Adjustable Round Diffuser - 2 Cone/Series 3100A

Air outlets shall be model 3100A (aluminum) or 3100A-S (steel) manufactured by METALAIRES. Diffuser shall be constructed of 2 round inner cone assembly and a round outer cone. Outlet shall be adjustable to allow the discharge pattern to be set from full horizontal to vertical. Units shall be aluminum construction (model 3100) or steel construction (model 3100S). The units shall be the size and quantity as outline in the plans and specifications.

Pattern adjustment shall be accomplished by rotating the innermost cone. The inner core assembly shall be removable for installation and for access into the ductwork. The center cone shall include an access hole to allow adjustment of an optional damper.

Flush Cone

- Model 3100A-1 - Aluminum
- Model 3100SA-1 - Steel

Outlet shall have an outer cone that allows flush mounting to the ceiling opening.

Drop Cone

- Model 3100A-2 - Aluminum
- Model 3100A-S-2 - Steel

Outlet shall have a dropped outer cone to move the discharge jet away from the ceiling surface. Dropped cone shall minimize ceiling smudging.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

RCD - Round Ceiling Diffusers

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

Series 3100 - Model Specification Guide

Fixed/Adjustable Round Diffuser - 2 Cone Series 3100 - Aluminum

Model	Available Neck Sizes		Available Finishes	Available Options		Available Accessories	
3100-1 - Fixed	6	6" round	Standard	SC	Safety Chain	D3	Aluminum Radial Damper
3100A-1 - Adjustable	8	8" round	01 - White			SD3	Steel Radial Damper
3100-2 - Fixed	10	10" round	Optional			G3	Round Equalizing Grid
3100A-2 - Adjustable	12	12" round	02 - Aluminum			GD3	Combo Grid/Damper
	14	14" round	24 - Mill			BDS	Butterfly Damper
	16	16" round	03 - Black			RSD	Radial Shutter Damper
	18	18" round	28 - Custom Color				
	20	20" round					
	24	24" round					
	30	30" round					
	36	36" round					

30" and 36" units are available in non-adjustable models only

Fixed/Adjustable Round Diffuser - 2 Cone Series 3100S - Steel

Model	Available Neck Sizes		Available Finishes	Available Options		Available Accessories	
3100S-1 - Fixed	6	6" round	Standard	SC	Safety Chain	D3	Aluminum Radial Damper
3100S-A-1 - Adjustable	8	8" round	01 - White			SD3	Steel Radial Damper
3100S-2 - Fixed	10	10" round	Optional			G3	Round Equalizing Grid
3100S-A-2 - Adjustable	12	12" round	02 - Aluminum			GD3	Combo Grid/Damper
	14	14" round	03 - Black			BDS	Butterfly Damper
	16	16" round	28 - Custom Color			RSD	Radial Shutter Damper
	18	18" round					
	20	20" round					
	24	24" round					
	30	30" round					
	36	36" round					

30" and 36" units are available in non-adjustable models only



RCD - Round Ceiling Diffusers

3/2006

Round Ceiling Diffusers

RCD

Adjustable Round Diffusers Model 3200 Steel

Product Details

- ✪ Excellent choice for high capacity applications such as factories, gymnasiums, theaters, and convention halls
- ✪ Discharge pattern is easily adjusted from vertical to horizontal with adjustment ring
- ✪ Diffuser can effectively be applied for either spot heating or cooling
- ✪ In the horizontal setting the unit provides tight ceiling patterns excellent for VAV applications
- ✪ Outer cone design guards against ceiling smudging in horizontal position

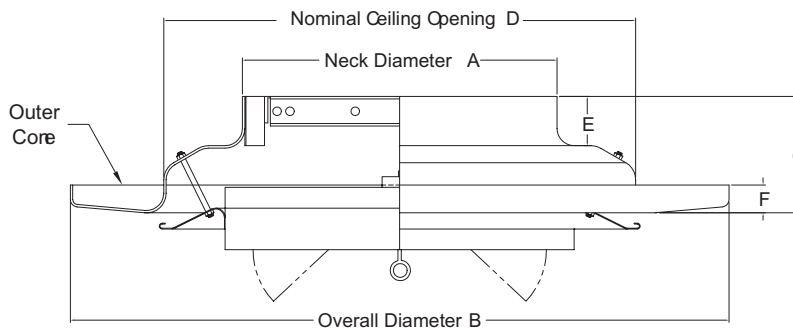


Model 3200-1

Standard Finish: 01 White

Dimensions are in inches

Round Diffuser - High Capacity - Adjustable - Pole Operated - Vertical to Horizontal Pattern Model 3200-1



Dimensions						
Size	A	B	C	D	E	F
6	5 3/4	17 1/4	2 1/8	6 3/4	1 1/8	1 1/8
8	7 3/4	17 1/4	2 1/8	8 3/4	1 1/8	1 1/4
10	9 3/4	20 1/4	2 5/8	10 3/4	1 1/4	1 3/4
12	11 3/4	22 1/4	2 5/8	12 3/4	1 1/4	1 3/4
14	13 3/4	29 1/2	2 5/8	14 3/4	1 1/4	2 3/8
16	15 3/4	29 1/2	2 3/4	16 3/4	1 1/4	2 3/8
18	17 3/4	33 1/2	3 5/8	18 3/4	1 1/4	2 1/2
20	19 3/4	36 1/2	3 5/8	20 3/4	1	2 1/2
24	23 3/4	40 1/2	3 5/8	24 3/4	1	2 1/2

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 01 White Optional Finish 02 Aluminum paint 03 Black 24 Mill finish 28 Custom color	G3 - Equalizing Grid337	Safety Chain	<ul style="list-style-type: none"> • Sizes only as listed • Units 14" and greater are shipped with a factory installed safety chain

RCD - Round Ceiling Diffusers

Model 3200 - Performance

Neck Velocity		400	500	600	700	800	900	1000	1200	1400	1600
Velocity Pressure		0.010	0.016	0.022	0.031	0.040	0.050	0.062	0.090	0.122	0.160
6" Dia	Air Flow Rate, CFM	80	100	120	135	155	175	195	235	275	315
	Static Pressure, H	0.004	0.007	0.010	0.013	0.017	0.022	0.027	0.039	0.052	0.069
	Total Pressure, H	0.014	0.022	0.032	0.044	0.057	0.072	0.089	0.128	0.175	0.228
	Static Pressure, V	0.020	0.032	0.046	0.062	0.081	0.103	0.127	0.182	0.248	0.324
	Total Pressure, V	0.030	0.047	0.068	0.093	0.121	0.153	0.189	0.272	0.371	0.484
	NC, H	<	<	15	16	17	19	21	24	26	29
	NC, V	<	<	<	13	15	16	18	22	25	29
	Throw, H, cooling	1-1-3	1-2-3	1-2-4	1-2-4	2-2-5	2-3-6	2-3-6	2-4-7	3-4-9	3-5-9
	Throw, V, cooling	2-4-8	4-5-11	4-6-13	5-7-14	5-8-16	6-9-19	7-10-21	8-12-25	10-15-29	11-17-33
	Throw, V, heating	0-1-3	1-2-4	1-2-4	1-2-5	2-3-6	2-3-6	2-4-7	3-4-8	3-5-10	4-6-11
8" Dia	Air Flow Rate, CFM	140	175	210	245	280	315	350	420	490	560
	Static Pressure, H	0.003	0.004	0.006	0.009	0.011	0.014	0.018	0.026	0.035	0.046
	Total Pressure, H	0.013	0.020	0.029	0.039	0.051	0.065	0.080	0.115	0.157	0.205
	Static Pressure, V	0.012	0.018	0.026	0.036	0.046	0.059	0.073	0.104	0.142	0.186
	Total Pressure, V	0.022	0.034	0.049	0.066	0.086	0.109	0.135	0.194	0.264	0.345
	NC, H	<	16	18	20	21	23	25	28	31	34
	NC, V	<	<	<	<	<	17	19	24	28	32
	Throw, H, cooling	1-2-3	1-2-4	2-2-5	2-3-6	2-3-7	2-4-7	3-4-8	3-5-10	4-6-12	4-7-12
	Throw, V, cooling	3-6-11	5-7-14	6-8-17	8-10-19	7-11-22	8-13-25	9-14-28	11-17-33	13-19-39	15-22-45
	Throw, V, heating	1-1-4	1-2-5	1-3-6	2-3-7	3-4-8	3-4-9	3-5-9	4-6-11	4-7-13	5-8-15
10" Dia	Air Flow Rate, CFM	220	275	325	380	435	490	545	655	765	875
	Static Pressure, H	0.003	0.004	0.006	0.009	0.011	0.014	0.018	0.026	0.035	0.046
	Total Pressure, H	0.013	0.020	0.029	0.039	0.051	0.065	0.080	0.115	0.157	0.205
	Static Pressure, V	0.012	0.018	0.026	0.036	0.046	0.059	0.073	0.104	0.142	0.186
	Total Pressure, V	0.022	0.034	0.049	0.066	0.086	0.109	0.135	0.194	0.264	0.345
	NC, H	<	16	17	19	20	22	23	26	29	32
	NC, V	<	<	<	<	<	15	17	23	27	31
	Throw, H, cooling	1-2-4	2-3-5	2-3-6	2-4-7	3-4-8	3-5-9	3-5-10	4-6-12	5-7-14	6-8-15
	Throw, V, cooling	4-7-14	6-9-18	7-10-21	8-12-24	9-14-28	10-16-31	12-17-35	14-21-42	16-24-49	19-28-56
	Throw, V, heating	1-2-5	1-3-6	2-4-7	2-4-8	3-5-9	4-5-11	4-6-12	5-7-14	6-8-17	6-9-19
12" Dia	Air Flow Rate, CFM	315	395	470	550	630	705	785	940	1100	1255
	Static Pressure, H	0.003	0.004	0.006	0.009	0.011	0.014	0.018	0.026	0.035	0.046
	Total Pressure, H	0.013	0.02	0.029	0.039	0.051	0.065	0.080	0.115	0.157	0.205
	Static Pressure, V	0.011	0.017	0.025	0.034	0.044	0.056	0.069	0.099	0.134	0.175
	Total Pressure, V	0.021	0.033	0.047	0.064	0.084	0.106	0.131	0.188	0.257	0.335
	NC, H	<	15	17	19	23	26	29	35	40	43
	NC, V	<	<	<	17	20	23	27	32	37	41
	Throw, H, cooling	2-2-5	2-3-6	2-4-7	3-4-9	3-5-10	4-6-11	4-6-12	5-7-15	6-9-17	7-10-19
	Throw, V, cooling	4-8-17	7-10-21	8-12-25	10-15-29	11-17-33	12-19-37	14-21-42	17-25-50	19-29-58	22-33-67
	Throw, V, heating	1-2-6	1-3-7	2-4-8	3-5-10	4-6-11	4-6-13	5-7-14	6-8-17	7-10-20	8-11-23
14" Dia	Air Flow Rate, CFM	430	535	640	750	855	960	1070	1285	1495	1710
	Static Pressure, H	0.003	0.004	0.006	0.009	0.011	0.014	0.018	0.026	0.035	0.046
	Total Pressure, H	0.013	0.020	0.029	0.039	0.051	0.065	0.080	0.115	0.157	0.205
	Static Pressure, V	0.011	0.017	0.024	0.033	0.043	0.055	0.068	0.097	0.133	0.173
	Total Pressure, V	0.021	0.033	0.047	0.064	0.083	0.105	0.13	0.187	0.255	0.333
	NC, H	<	16	21	25	29	32	36	41	44	46
	NC, V	<	15	19	23	27	30	33	38	42	45
	Throw, H, cooling	2-3-6	2-4-7	3-4-9	3-5-10	4-6-12	4-6-13	5-7-14	6-9-17	7-10-20	8-12-22
	Throw, V, cooling	1-3-13	2-5-21	3-7-28	5-10-33	6-13-38	7-17-43	9-21-48	13-29-57	18-33-67	24-38-71
	Throw, V, heating	1-2-5	1-3-7	2-4-8	3-5-9	4-5-11	4-6-12	4-7-13	5-8-16	6-9-19	7-11-22
16" Dia	Air Flow Rate, CFM	560	700	840	975	1115	1255	1395	1675	1955	2235
	Static Pressure, H	0.003	0.004	0.006	0.009	0.011	0.014	0.018	0.026	0.035	0.046
	Total Pressure, H	0.013	0.020	0.029	0.039	0.051	0.065	0.080	0.115	0.157	0.205
	Static Pressure, V	0.010	0.016	0.024	0.032	0.042	0.053	0.066	0.094	0.129	0.168
	Total Pressure, V	0.02	0.032	0.046	0.063	0.082	0.104	0.128	0.184	0.251	0.328
	NC, H	15	20	25	29	33	37	40	45	48	50
	NC, V	16	20	24	28	31	35	38	43	47	49
	Throw, H, cooling	2-3-7	3-4-8	3-5-10	4-6-12	4-7-13	5-7-15	6-8-17	7-10-20	8-12-23	9-13-25
	Throw, V, cooling	2-4-14	3-6-23	4-8-30	5-11-35	6-14-40	8-18-45	10-22-50	14-30-60	20-35-69	26-40-79
	Throw, V, heating	1-2-6	1-3-8	2-4-9	2-5-11	3-6-12	4-7-14	5-8-16	6-9-19	7-11-22	8-12-25

See Page RCD-24 for Performance Notes

Round Ceiling Diffusers



RCD

RCD - Round Ceiling Diffusers

3/2006

Model 3200 - Performance

Neck Velocity		400	500	600	700	800	900	1000	1200	1400	1600
Velocity Pressure		0.010	0.016	0.022	0.031	0.040	0.050	0.062	0.090	0.122	0.160
18" Dia	Air Flow Rate, CFM	705	885	1060	1235	1415	1590	1765	2120	2475	2825
	Static Pressure, H	0.003	0.004	0.006	0.009	0.011	0.014	0.018	0.026	0.035	0.046
	Total Pressure, H	0.013	0.02	0.029	0.039	0.051	0.065	0.08	0.115	0.157	0.205
	Static Pressure, V	0.01	0.016	0.023	0.031	0.041	0.051	0.064	0.092	0.125	0.163
	Total Pressure, V	0.02	0.031	0.045	0.062	0.081	0.102	0.126	0.181	0.247	0.322
	NC, H	<	19	23	27	31	35	38	44	50	54
	NC, V	<	16	21	25	30	34	37	43	49	52
	Throw, H, cooling	2-4-7	3-5-9	4-6-11	4-7-13	5-7-15	6-8-17	6-9-19	7-11-22	9-13-26	10-15-28
	Throw, V, cooling	2-4-14	3-6-23	4-8-32	5-11-37	6-14-43	8-18-48	10-23-53	14-32-64	20-37-74	26-43-85
	Throw, V, heating	1-1-5	1-2-8	1-3-11	2-4-12	2-5-14	3-6-16	4-8-18	5-11-21	7-12-25	9-14-28
20" Dia	Air Flow Rate, CFM	875	1090	1310	1525	1745	1965	2180	2620	3055	3490
	Static Pressure, H	0.003	0.004	0.006	0.009	0.011	0.014	0.018	0.026	0.035	0.046
	Total Pressure, H	0.013	0.02	0.029	0.039	0.051	0.065	0.08	0.115	0.157	0.205
	Static Pressure, V	0.01	0.015	0.022	0.029	0.038	0.049	0.06	0.087	0.118	0.154
	Total Pressure, V	0.02	0.031	0.044	0.06	0.078	0.099	0.123	0.176	0.24	0.314
	NC, H	<	19	25	29	34	38	41	48	53	57
	NC, V	<	<	20	25	30	35	39	45	50	52
	Throw, H, cooling	3-4-8	3-5-10	4-6-12	5-7-14	6-8-17	6-9-19	7-10-21	8-12-25	10-14-29	11-17-31
	Throw, V, cooling	2-4-14	2-6-22	4-8-32	5-11-41	6-14-47	8-18-53	10-22-59	14-32-71	19-41-83	25-47-95
	Throw, V, heating	0-1-4	1-1-6	1-2-9	1-3-12	2-4-15	2-5-18	3-6-19	4-9-23	5-12-27	7-15-31
24" Dia	Air Flow Rate, CFM	1255	1570	1885	2200	2515	2825	3140	3770	4400	5025
	Static Pressure, H	0.002	0.004	0.005	0.007	0.009	0.012	0.015	0.021	0.029	0.038
	Total Pressure, H	0.012	0.019	0.028	0.038	0.049	0.062	0.077	0.111	0.151	0.197
	Static Pressure, V	0.009	0.014	0.021	0.028	0.037	0.047	0.058	0.083	0.113	0.148
	Total Pressure, V	0.019	0.03	0.043	0.059	0.077	0.097	0.12	0.173	0.236	0.308
	NC, H	<	19	25	31	36	40	44	50	54	56
	NC, V	<	17	23	28	32	37	40	47	52	56
	Throw, H, cooling	3-5-10	4-6-12	5-7-15	6-9-17	7-10-20	7-11-22	8-12-25	10-15-30	12-17-35	13-20-37
	Throw, V, cooling	2-4-17	3-7-27	4-10-38	6-13-50	8-17-57	10-21-64	12-27-71	17-38-85	23-50-99	30-57-109
	Throw, V, heating	1-1-5	1-2-7	1-3-10	2-3-14	2-5-18	3-6-21	3-7-23	5-10-28	6-14-33	8-18-37

Performance Notes for Model 3200-1:

- Tabulated throw in feet is based on a 9' ceiling, with supply air temperature 20°F cooler than room temperature, heating air temperature is 20°F above room temperature MAX Throw @ Vt = 50 fpm, MIN Throw @ Vt = 150 fpm, and the diffuser/inner cones in down position for 360° horizontal air distribution pattern.
Example: 9-13-27
 - |.....Distance @ 50 fpm Term. Vel.
 - |.....Distance @ 100 fpm Term. Vel.
 - |.....Distance @ 150 fpm Term. Vel.
- Velocity Pressure (Pv) and Static Pressure (Ps) are in inches of water. Pv + Ps = Pt (total pressure).
- Series 3200 Round Adjustable Diffusers are tested in accordance with ASHRAE 70-1991. Sound data are calculated in accordance with International Standard ISO 3741 comparison method. The NC values are based on a room absorption of 10 dB for sound power level (Lw) RE: 10E-12 watts. < symbol indicates NC less than 15. The NC data is for a single diffusers; for results of throttling a volume damper, see table below.
- All data is applicable for exposed duct mounting or ceiling installation.

RCD - Round Ceiling Diffusers

Model 3200 - Specifications

Air outlets shall be model 3200 manufactured by METALAIRES®. Diffusers shall be constructed of an opposed blade damper inner assembly mounted in an inner ring. Outlets shall allow the adjustment of the discharge pattern from full horizontal to full vertical and be adjustable from the face by turning an operator ring. Units shall be steel construction. The units shall be the size and quantity as outline in the plans and specifications.

Pattern adjustment operator shall open the inner opposed blade damper assembly to discharge the air in a vertical pattern or close the damper to allow a tight horizontal pattern. In the horizontal setting, core shall project discharge pattern to minimize ceiling smudging. The inner core assembly shall be removable for installation and for access into the ductwork.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaline cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

Model 3200 - Model Specification Guide

Adjustable - Round Ceiling Diffuser
Face Accessible Operating Ring
Steel - Center Opposed Blade Damper

Model	Available Neck Sizes		Available Finishes	Available Options		Available Accessories	
3200-1 - Adjustable	6	6" round	Standard	SC	Safety Chain	G3	Round Equalizing Grid
	8	8" round	01 - White				
	10	10" round	Optional				
	12	12" round	02 - Aluminum				
	14	14" round	03 - Black				
	16	16" round	28 - Custom Color				
	18	18" round					
	20	20" round					
24	24" round						



RCD - Round Ceiling Diffusers

3/2006

Round Ceiling Diffusers



RCD

- ➔ Round Architectural Diffusers ➔ Model R5750 ➔ All Aluminum
- ➔ Model R5750-AF ➔ Aluminum Face/Steel Backpan
- ➔ Model R5750-S ➔ All Steel

Product Details

- ★ Architectural pleasing round diffuser blends well into the ceiling surface
- ★ Fixed horizontal throw pattern
- ★ Designed for surface mounting applications
- ★ Excellent in both heating and cooling applications
- ★ The R5750 is an excellent choice for VAV applications



Model R5750

Standard Finish: 01 White

Dimensions are in inches

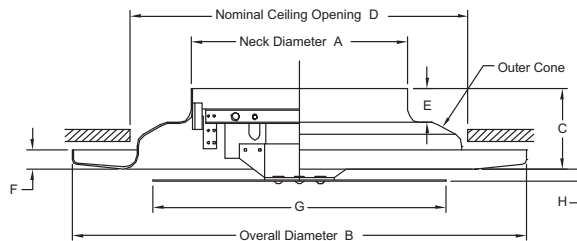
Round Diffusers

Aluminum / Steel Construction - Fixed Horizontal Pattern

Model R5750-S - All Steel Construction

Model R5750-AL - All Aluminum Construction

Model R5750-AF - Steel Backpan - Aluminum Face



Nominal Round Duct Size	Dim. A	Dim. B	Dim. C	Dim. D	Dim. E	Dim. F	Dim. G	Dim. H
6	5 3/4	16 5/8	2 15/16	11	3/4	5/8	9	3/4
8	7 3/4	16 5/8	2 15/16	11	3/4	5/8	9	3/4
10	9 3/4	22 3/16	3 5/16	17	1.0	7/8	14	7/8
12	11 3/4	22 3/16	3 5/16	17	1.0	7/8	14	7/8
14	13 3/4	29 1/4	4 3/16	22	1.0	7/8	19	7/8
16	15 3/4	29 1/4	4 3/16	22	1.0	7/8	19	7/8

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 01 White Optional Finish 02 Aluminum paint 03 Black 24 Mill finish 28 Custom color	D3 - Aluminum Radial Opposed Blade Damper . . .336 SD3 - Steel Radial Opposed Blade Damper336 GD3 - Combination Grid/Damper337 BDS - Steel Butterfly Damper337 RSD - Radial Shutter Damper336 G3 - Equalizing Grid337	Safety Chain	• Sizes only as listed

RCD - Round Ceiling Diffusers

Model R5750 - Performance

Neck Size	Nk Velocity P _v	400 0.015	500 0.024	600 0.034	700 0.046	800 0.060	900 0.076	1000 0.094	1200 0.136
6	CFM	79	98	118	137	157	177	196	236
	P _s	0.023	0.035	0.052	0.070	0.092	0.117	0.143	0.208
	P _t	0.038	0.059	0.086	0.116	0.152	0.193	0.237	0.344
	Throw NC	1 - 2 - 4 <15	2 - 3 - 5 <15	2 - 3 - 6 19	2 - 3 - 6 24	2 - 4 - 7 29	3 - 4 - 8 31	3 - 5 - 9 34	4 - 6 - 11 38
8	CFM	140	175	209	244	279	314	349	419
	P _s	0.024	0.037	0.054	0.074	0.096	0.122	0.150	0.216
	P _t	0.039	0.061	0.088	0.120	0.156	0.198	0.244	0.352
	Throw NC	1 - 2 - 4 <15	2 - 3 - 6 16	2 - 3 - 7 21	3 - 4 - 8 26	3 - 4 - 9 31	3 - 5 - 10 33	4 - 6 - 11 35	4 - 7 - 13 40
10	CFM	218	273	327	382	436	491	545	654
	P _s	0.026	0.040	0.058	0.080	0.104	0.132	0.162	0.233
	P _t	0.041	0.064	0.092	0.126	0.164	0.208	0.256	0.369
	Throw NC	3 - 4 - 7 <15	4 - 6 - 9 <15	4 - 7 - 11 <15	5 - 8 - 13 24	6 - 9 - 14 28	7 - 10 - 16 32	7 - 11 - 18 35	9 - 13 - 21 41
12	CFM	314	393	471	550	628	707	785	942
	P _s	0.035	0.054	0.078	0.106	0.139	0.175	0.216	0.311
	P _t	0.050	0.078	0.112	0.152	0.199	0.251	0.310	0.447
	Throw NC	4 - 5 - 11 <15	4 - 7 - 12 <15	5 - 8 - 13 <15	6 - 9 - 14 26	7 - 11 - 16 29	8 - 12 - 19 34	9 - 13 - 21 36	11 - 16 - 22 43
14	CFM	428	535	641	748	855	962	1069	1283
	P _s	0.025	0.038	0.055	0.075	0.098	0.124	0.153	0.220
	P _t	0.040	0.062	0.089	0.121	0.158	0.200	0.247	0.356
	Throw NC	4 - 6 - 12 <15	5 - 7 - 12 <15	6 - 9 - 13 22	7 - 10 - 16 23	8 - 12 - 17 25	9 - 13 - 19 26	10 - 15 - 21 29	12 - 18 - 21 33
16	CFM	559	698	838	977	1117	1257	1396	1676
	P _s	0.038	0.058	0.084	0.114	0.149	0.187	0.230	0.328
	P _t	0.053	0.082	0.118	0.160	0.209	0.263	0.324	0.464
	Throw NC	4 - 7 - 13 19	6 - 8 - 13 19	7 - 10 - 15 24	8 - 12 - 18 26	9 - 13 - 19 32	10 - 15 - 21 33	11 - 17 - 23 34	13 - 20 - 24 37

Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic feet per minute (air)
- Nk Vel - Neck velocity of air stream in feet per minute
- P_v - Velocity pressure (inches of water column)
- P_t - Total pressure (inches of water column)
- P_s - Static pressure = P_t - P_v (inches of water column)
- Throw - Isothermal horizontal throw (supply air temperature the same as average room air temperature)
values are for 150 fpm - 100 fpm - 50 fpm velocities, respectively
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands

Round Ceiling Diffusers
RCD





Model R5750 - Specifications

Air outlets shall be model R5750-AL (all aluminum), R5750-AF (aluminum face, steel backpan) or R5750-S (all steel) manufactured by METALAIRE. Diffuser shall be constructed of a round flat face panel and a round outer cone. Outlet shall have a fixed horizontal pattern. The units shall be the size and quantity as outlined in the plans and specifications.

Round face panel shall be removable to allow access to the round outer cone. Outlet shall be designed for surface mounting applications and have an outer cone that allows flush mounting to the ceiling opening.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

Model R5750 - Model Specification Guide

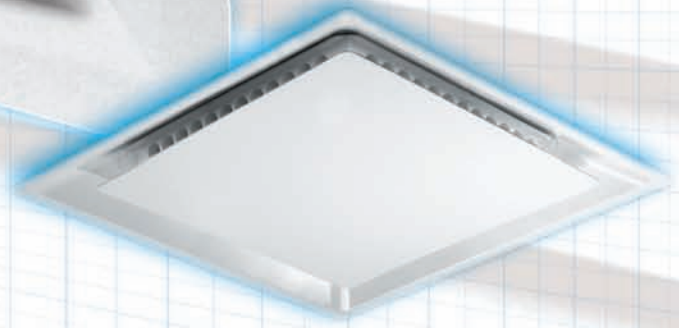
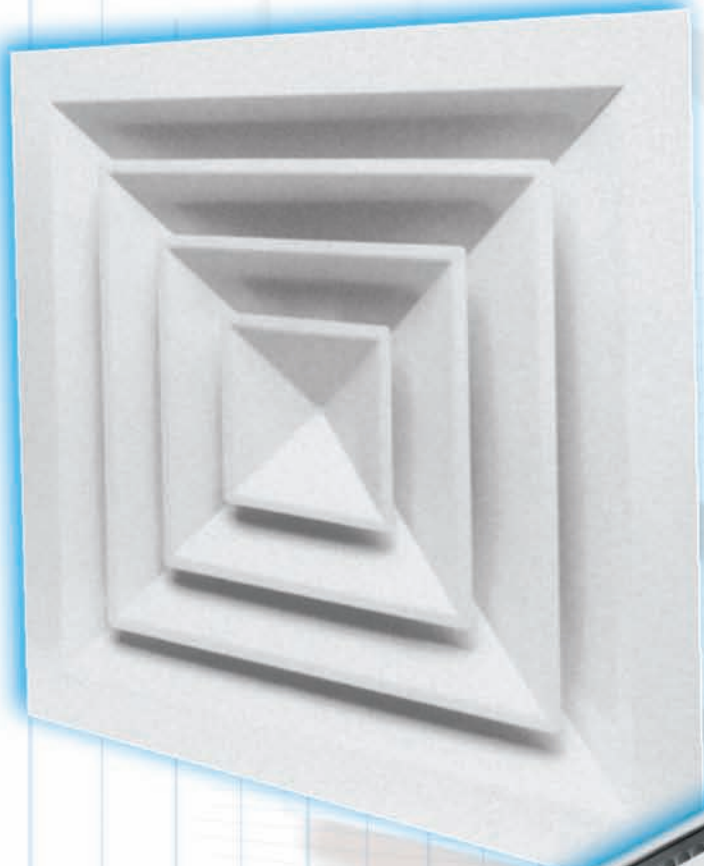
Aluminum

Steel

Round Panel Faced Diffusers

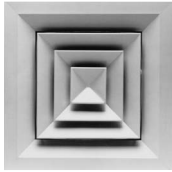
Model	Available Neck Sizes		Available Finishes	Available Options		Available Accessories	
R5750-AL	6	6" round	Standard	SC	Safety Chain	D3	Aluminum Radial Damper
R5750-S	8	8" round	01 - White			SD3	Aluminum Radial Damper
	10	10" round	Optional			G3	Aluminum Radial Damper
	12	12" round	02 - Aluminum			GD3	Aluminum Radial Damper
	14	14" round	03 - Black			BDS	Aluminum Radial Damper
	16	16" round	28 - Custom Color			RSD	Aluminum Radial Damper

D
C
D



**DIRECTIONAL
CEILING DIFFUSERS**

DIRECTIONAL
CEILING DIFFUSERS



Model 5000
Aluminum

(Border 1
Surface Mount Shown)
Pg. 34



Square/Rectangular Louver Face Ceiling Diffusers - Aluminum - Series 5000

- ★ Available in 1-way, 2-way opposite, 2-way corner, 3-way, and 4-way directional air patterns
- ★ Cores are easy to remove with spring loaded latches — no tools required
- ★ Series 5000 deflector blades are straight and do not include a horizontal lip, making this diffuser an excellent choice for high capacity applications
- ★ The series 5000 is an excellent choice for VAV applications
- ★ The series 5000 is available with optional induction vanes

Available Border Styles	
5000-1 Surface Mount	5000-6 T-bar Lay-in
5000-2 V-Beveled Drop Surface Mounting	5000-7 Concealed T-bar
5000-4 Drop Face Surface Mount	5000-8 Tegular T-bar
5000-46 Drop Face T-bar Lay-in	5000-9 Donn Finline



Model 5500
Aluminum

(Border 6
T-bar Lay-in Shown)
Pg. 46



Square/Rectangular Louver Face Ceiling Diffusers - Aluminum - Series 5500

- ★ Available in 1-way, 2-way opposite, 2-way corner, 3-way, and 4-way directional air patterns
- ★ Cores are easy to remove with spring loaded latches — no tools required
- ★ Series 5500 deflector blades include a horizontal lip, making this diffuser an excellent choice for high induction applications
- ★ The series 5500 is an excellent choice for VAV applications
- ★ The series 5500 is available with optional induction vanes

Available Border Styles	
5500-1 Surface Mount	5500-6 T-bar Lay-in
5500-2 V-Beveled Drop Surface Mounting	5500-7 Concealed T-bar
5500-4 Drop Face Surface Mount	5500-8 Tegular T-bar
5500-46 Drop Face T-bar Lay-in	5500-9 Donn Finline



Model 5500S
Steel

(Border 6
T-bar Lay-in Shown)
Pg. 48



Square/Rectangular Louver Face Ceiling Diffusers - Steel - Series 5500S

- ★ Available in 1-way, 2-way opposite, 2-way corner, 3-way, and 4-way directional air patterns
- ★ Cores are easy to remove with spring loaded latches — no tools required
- ★ Series 5500S deflector blades include a horizontal lip, making this diffuser an excellent choice for high induction applications
- ★ The series 5500S is an excellent choice for VAV applications
- ★ The series 5500S is also available with optional induction vanes.

Available Border Styles	
5500S-1 Surface Mount	5500SR-1 Flush Mount w/Integral Round Neck
5500S-2 V-Beveled Drop Surface Mounting	5500SR-2 V-Beveled Drop Surface Mounting - Round Neck
5500S-6 T-bar Lay-in	5500SR-6 T-bar Lay-in w/Integral Round Neck
5500S-8 Tegular T-bar	5500SR-8 Tegular T-bar - Round Neck
5500S-9 Donn Finline	5500SR-9 Donn Finline - Round Neck



Model 5200
Pg. 58

Square/Rectangular Diffusers - Economical Square Diffusers - Aluminum - Series 5200

- ★ Removable core for concealed mounting
- ★ Optional built-in opposed blade damper
- ★ Available in 1 way, 2 way opposite, 2 way corner, 3 way, and 4 way directional air patterns

Available Border Styles	
5200-1 Surface Mount	
5200-2 Beveled Drop Surface Mounting	
5200-6 T-bar Lay-in	

DCD - Directional Ceiling Diffusers



Model 5700
Pg. 62

Series 5700 - Fixed
Series 5700A - Adjustable

Square Face Diffusers - Round Neck 2-Cone - Steel/Aluminum/Aluminized Steel Adjustable/Non-Adjustable - Series 5700

- ★ The series 5700 provides a tight horizontal 360° discharge pattern for superior induction and occupant comfort
- ★ Series 5700 can be converted in the field to a 3 cone diffuser with the addition of the optional Snap-58
- ★ Lay-in border designed to be installed in standard 15/16" wide tees
- ★ T-bar Lay-in border 6 can be used in surface mounting applications by adding optional T-bar plaster frame (TBPF)
- ★ Cores are easy to remove without tools
- ★ The series 5700 is an excellent choice for VAV applications

Steel	Aluminized Steel	Aluminum
5700-1 Surface Mount	5700-1 AS Surface Mount	5700-1 AL Surface Mount
5700-6 T-bar Lay-in	5700-6 AS T-bar Lay-in	5700-6 AL T-bar Lay-in
5700-6P T-bar Lay-in Panel		
5700-7 Concealed T-bar	5700-7 AS Concealed T-bar	
5700-9 Donn Finline	5700-9 AS Donn Finline	
Metric/Steel	Metric/Aluminized Steel	Metric/Aluminum
M5700-6 T-bar Lay-in 600mm x 600mm	M5700-6 AS T-bar Lay-in 600mm x 600mm	M5700-6 AL T-bar Lay-in 600mm x 600mm

Adjustable/Steel	Adjustable/Aluminized Steel	Adjustable/Aluminum
5700A-1 Surface Mount	5700A-1 AS Surface Mount	
5700A-6 T-bar Lay-in	5700A-6 AS T-bar Lay-in	5700A-6 AL T-bar Lay-in
5700A-7 Concealed T-bar	5700A-7 AS Concealed T-bar	



Model 5750
Pg. 68

Square Panel Face Diffusers - Round Neck - Uni-Flo - Steel/Aluminized Steel - Series 5750

- ★ Attractive single panel design blends well with all ceilings
- ★ The series 5750 provides a tight 360° discharge pattern for superior induction and occupant comfort
- ★ T-bar Lay-in border type 6 designed to be installed in standard 15/16" wide tees
- ★ Border type 6 can be used in surface mounting applications by adding optional T-bar plaster frame (TBPF)
- ★ Face panel is easy to remove without tools
- ★ The series 5750 is an excellent choice for VAV applications

Steel	Aluminized Steel
5750-1 Surface Mount	5750-1 AS Surface Mount
5750-6 T-bar Lay-in	5750-6 AS T-bar Lay-in
5750-7 Concealed T-bar	5750-7 AS Concealed T-bar
5750-9 Donn Finline	5750-9 AS Donn Finline

Metric/Steel	Metric/Aluminized Steel
M5750-6 T-bar Lay-in - 600mm x 600mm	M5750-6 AS T-bar Lay-in - 600mm x 600mm



Model 5800
Pg. 74

Series 5800 - Fixed
Series 5800A - Adjustable

Square Face Diffusers - Round Neck 3-Cone - Steel/Aluminum/Aluminized Steel Adjustable/Non-Adjustable - Series 5800

- ★ The series 5800 provides a tight 360° discharge pattern for superior induction and occupant comfort
- ★ T-bar Lay-in border type 6 is designed to be installed in standard 15/16" wide tees
- ★ border type 6 can be used in surface mounting applications by adding optional T-bar plaster frame (TBPF)
- ★ Cores are easy to remove without tools
- ★ The Series 5800 is an excellent choice for VAV applications

Steel	Aluminized Steel	Aluminum
5800-1 Surface Mount	5800-1 AS Surface Mount	5800-1 AL Surface Mount
5800-6 T-bar Lay-in	5800-6 AS T-bar Lay-in	5800-6 AL T-bar Lay-in
5800-6P T-bar Lay-in Panel		
5800-7 Concealed T-bar	5800-7 AS Concealed T-bar	
Metric/Steel	Metric/Aluminized Steel	Metric/Aluminum
M5800-6 T-bar Lay-in 600mm x 600mm	M5800-6 AS T-bar Lay-in 600mm x 600mm	M5800-6 AL T-bar Lay-in 600mm x 600mm

Adjustable/Steel	Adjustable/Aluminized Steel
5800A-1 Surface Mount	5800A-1 AS Surface Mount
5800A-6 T-bar Lay-in	5800A-6 AS T-bar Lay-in





Series Phenomenator®

Pg. 80

Square Panel Face Diffusers - Round Neck - Ultra High Performance - Series Phenomenator®

- ⊗ The highest induction ratio of any commercial air diffuser available
- ⊗ Excellent selection for providing exceptional comfort, especially in executive offices, conference rooms, and board rooms
- ⊗ Can improve productivity by maintaining draft-free comfort in many applications
- ⊗ Designed for applications calling for minimal temperature differences in a space
- ⊗ Solves comfort problems in applications such as reception areas and entrance ways
- ⊗ Diffuser can be applied in critical applications requiring minimal temperature gradients

Steel	Aluminized Steel	Metric/Steel	Metric/Aluminized Steel
Phenom-1 Surface Mount	Phenom-1 AS Surface Mount	M-Phenom-6 T-bar Lay-in - 600mm x 600mm	M-Phenom-6 AS T-bar Lay-in - 600mm x 600mm
Phenom-6 T-bar Lay-in	Phenom-6 AS T-bar Lay-in		
Phenom-7 Concealed T-bar	Phenom-7 AS Concealed T-bar		
Phenom-9 Donn Finline	Phenom-9 AS Donn Finline		



Model 5500 DAF-CC5

Pg. 84

Concentric Supply/Return Ceiling Diffusers - Louvered Face - Cube Core Series 5500 DAF-CC5

- ⊗ 5500 DAF-CC5 concentric supply/return diffuser is designed for high capacity application
- ⊗ Cube core return
- ⊗ 4-way air patterns only
- ⊗ Choice of 6 mounting frames
- ⊗ Snap-in/out core - simplifies installation
- ⊗ Sizes to handle full range of standard tonnage roof-top units
- ⊗ Supply/Return plenums are by others

Available Border Styles
5500 DAF-CC5-1 Surface Mount
5500 DAF-CC5-2 V-Beveled Drop Surface Mounting
5500 DAF-CC5-4 Deep Drop Frame
5500 DAF-CC5-6 T-bar Lay-in
5500 DAF-CC5-7 Concealed T-bar
5500 DAF-CC5-8 Tegular T-bar Lay-in



Model 9000

Pg. 94

Square/Rectangular Diffusers - Modular Core - Supply - Extruded Aluminum - Series 9000 Mod-Flo

- ⊗ The series 9000 is a directional ceiling diffuser available in a wide range of field capabilities
- ⊗ Modular cores can be adjusted to obtain 1-way, 2-way opposite, 2-way corner, 3-way, and 4-way air patterns
- ⊗ Cores are easy to remove with spring loaded latches - no tools required
- ⊗ T-bar Lay-in border type 6 can be used in surface mounting applications by adding optional T-bar plaster frame (TBPF)
- ⊗ The series 9000 is an excellent choice for VAV applications

Available Styles
9000-1 Surface Mount
9000-2 Beveled Frame
9000-6 T-bar Lay-in
9000-7 Concealed Spline
9000-8 Tegular T-bar
9000-9 Donn Finline

DCD - Directional Ceiling Diffusers

3/2006

Directional Ceiling Diffusers

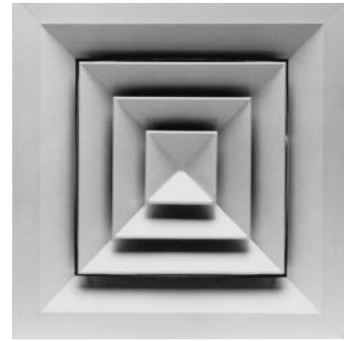


DCD

➔ Square/Rectangular Louver Face ➔ Series 5000 ➔ Extruded Aluminum

Product Details

- ✪ Available in 1, 2-way opposite, 2-way corner, 3, and 4-way directional air patterns
- ✪ Cores are easy to remove with spring loaded latches - no tools required
- ✪ 5000 series deflector blades are straight and do not include a horizontal lip, making this diffuser an excellent choice for high capacity applications
- ✪ The 5000 series is an excellent choice for VAV applications
- ✪ The 5000 series is available with optional induction vanes

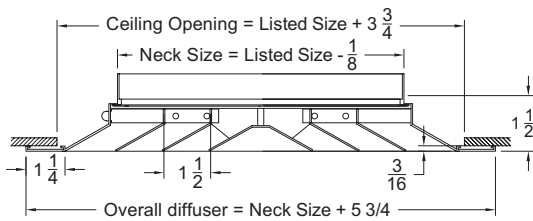


Model 5000-1 S4 Shown

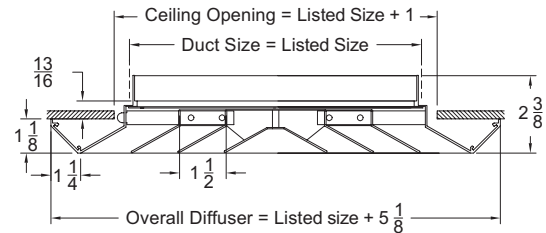
Standard Finish: 01 White

Dimensions are in inches

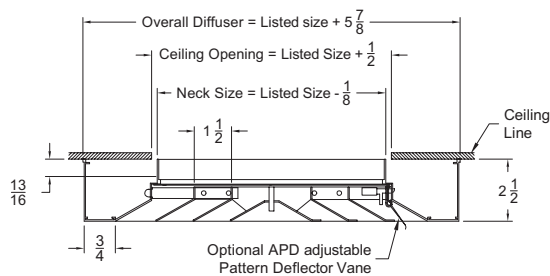
Square/Rectangular Louver Face Ceiling Diffusers Surface Mount - Removable Core Model 5000-1



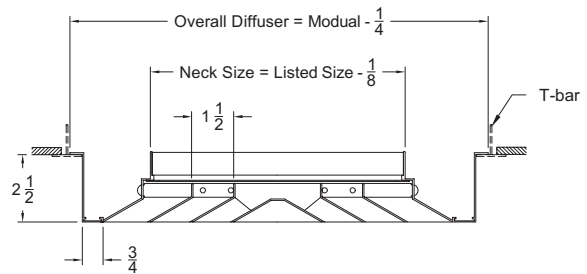
Square/Rectangular Louver Face Ceiling Diffusers V-Beveled Drop Surface Mounting - Removable Core Model 5000-2



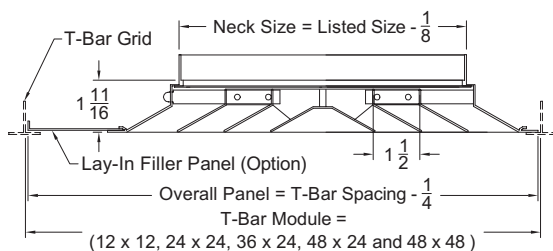
Square/Rectangular Louver Face Ceiling Diffusers Drop Face Surface Mount - Removable Core Model 5000-4



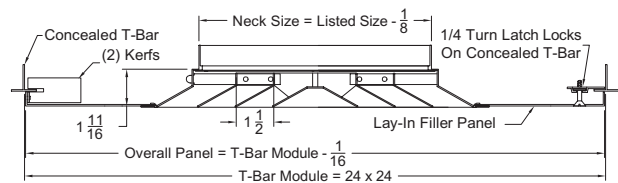
Square/Rectangular Louver Face Ceiling Diffusers Drop Face - T-bar Lay-in - Removable Core Model 5000-46



Square/Rectangular Louver Face Ceiling Diffusers T-bar Lay-in - Removable Core Model 5000-6



Square/Rectangular Louver Face Ceiling Diffusers Concealed Spline - Removable Core Model 5000-7



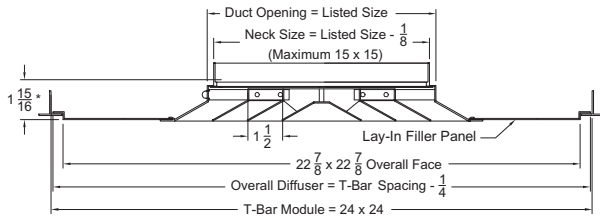
DCD - Directional Ceiling Diffusers

Directional Ceiling Diffusers

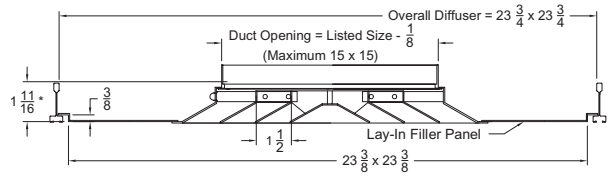


DCD

Square/Rectangular Louver Face Ceiling Diffusers Tegular T-bar - Removable Core Model 5000-8



Square/Rectangular Louver Face Ceiling Diffusers Donn Finline - Removable Core Model 5000-9



Air Patterns - (Square) Louver Face Ceiling Diffusers

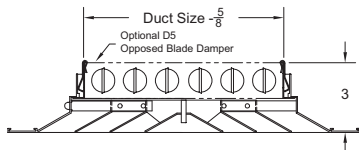
S1 - One Way	S2 - Two Way Opposite	SC - Two Way Corner	S3 - Three Way	S4 - Four Way

Air Patterns - (Rectangular)

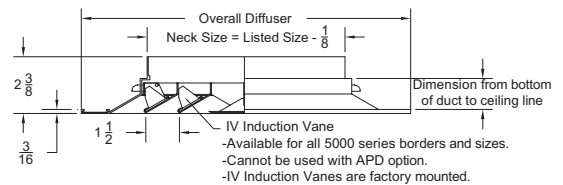
Short Louver Face Ceiling Diffusers				Long Louver Face Ceiling Diffusers		
R1 - One Way	R2S - Two Way Opposite	R3S - Three Way	R4 - Four Way	R1L - One Way	R2L - Two Way	R3L - Three Way

Options and Accessories

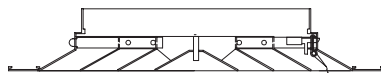
Square/Rectangular Louver Face Ceiling Diffusers Option: D5 Opposed Blade Damper



Square/Rectangular Louver Face Ceiling Diffusers Option: IV Induction Vane (see page DCD-37 for performance)



Option: APD Air Pattern Controller allows adjustment from horizontal to vertical from the face of the diffuser



Optional APD Adjustable Pattern Deflector Vane
- Available for all 5000 series borders and sizes,
- Cannot be used with IV Induction Vanes option,
- APDs are factory mounted.

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish 02 Aluminum paint 03 Black 24 Mill finish 28 Custom color</p> <p>Note: Anodized Finish not available</p>	<p>Square and Rectangular Neck: D5 - Opposed Blade Damper- Steel337 D5A - Opposed Blade Damper- Aluminum337 L9 - Equalizing Grid334 TR - Square to Round Transition338 TR DEEP - Square to Round Transition - Deep338</p> <p>Round Neck: G3 - Equalizing Grid337 BDS - Butterfly Damper335 RSD - Radial Shutter Damper336</p>	<p>Factory Mounted: IV - Induction Vanes APD - Air Pattern Deflectors allows adjustment from horizontal to vertical air pattern from the face of the diffuser</p> <p>Note: IV (Induction Vanes) can not be used with APD (Air Pattern Deflector) option and vice-versa</p>	<ul style="list-style-type: none"> Available air patterns: S1, S2, S3, S4, R1S, R1L, R2S, R2L, R3S, R3L, R4 and SC For 5000-6 (D5) models only: 21" x 21" neck in 24" x 24" module is available in S4 pattern only



For more product information visit us at www.metalaire.com



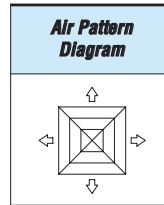
DCD - Directional Ceiling Diffusers

3/2006

Series 5000 - Performance/(S4) 4-Way Square Pattern

Models 5000 (-1, -2, -4, -46, -6, -7, -8, -9)

NECK SIZE Ak	Ps Pt	NECK VELOCITY					
		200	300	400	500	600	700
		.006 .008	.013 .018	.022 .032	.035 .050	.050 .072	.068 .099
6" X 6" Ak = .145	TOTAL CFM	50	75	100	125	150	175
	CFM/SIDE	13	19	25	31	38	44
	THROW	2-4	4-8	7-11	9-13	11-16	13-17
	NC	-	-	-	-	20	25
9" X 9" Ak = .325	TOTAL CFM	113	169	225	281	335	394
	CFM/SIDE	28	42	56	70	84	98
	THROW	3-5	5-9	8-12	10-15	12-17	14-18
	NC	-	-	-	21	26	31
12" X 12" Ak = .578	TOTAL CFM	200	300	400	500	600	700
	CFM/SIDE	50	75	100	125	150	175
	THROW	3-7	6-10	9-14	11-16	13-18	15-20
	NC	-	-	-	24	29	34
15" X 15" Ak = .903	TOTAL CFM	313	469	625	781	938	1094
	CFM/SIDE	78	117	156	195	234	273
	THROW	4-8	7-12	10-15	12-18	15-20	17-22
	NC	-	-	21	26	31	36
18" X 18" Ak = 1.301	TOTAL CFM	450	675	900	1125	1350	1575
	CFM/SIDE	113	169	225	281	338	394
	THROW	5-10	8-14	11-17	14-20	16-22	18-23
	NC	-	-	22	27	32	37
21" X 21" Ak = 1.77	TOTAL CFM	613	919	1225	1531	1837	2144
	CFM/SIDE	153	230	306	383	459	536
	THROW	6-12	9-16	12-19	15-21	17-23	19-25
	NC	-	-	23	28	33	38
24" X 24" Ak = 2.312	TOTAL CFM	800	1200	1600	2000	2400	2800
	CFM/SIDE	200	300	400	500	600	700
	THROW	7-14	10-17	13-20	16-23	18-25	21-27
	NC	-	-	24	29	34	39
27" X 27" Ak = 2.926	TOTAL CFM	1013	1519	2025	2531	3037	3544
	CFM/SIDE	253	380	506	633	759	886
	THROW	7-15	11-19	14-22	17-25	20-27	22-28
	NC	-	20	25	30	35	40
33" X 33" Ak = 4.371	TOTAL CFM	1513	2269	3025	3781	4537	5294
	CFM/SIDE	378	567	756	945	1134	1323
	THROW	9-18	13-22	16-25	19-27	22-30	24-31
	NC	-	21	26	31	36	41



Directional Ceiling Diffusers



DCD

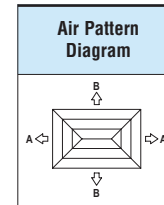
See Page DCD-43 for Performance Notes

DCD - Directional Ceiling Diffusers

Series 5000 - Performance/(R4) 4-Way Rectangular Pattern

Models 5000 (-1, -2, -4, -46, -6, -7, -8, -9)

NECK SIZE Ak	Ps Pt Side Designation	NECK VELOCITY											
		200		300		400		500		600		700	
		.006 .008		.013 .018		.022 .032		.035 .050		.050 .072		.068 .099	
		A	B	A	B	A	B	A	B	A	B	A	B
6" X 9" Ak = .217	TOTAL CFM	75		113		150		185		225		263	
	CFM/SIDE	13	25	19	38	25	50	31	63	38	75	43	86
6" X 12" Ak = .289	TOTAL CFM	100		150		200		250		300		350	
	CFM/SIDE	13	38	19	56	25	75	31	94	38	113	44	131
9" X 12" Ak = .434	TOTAL CFM	150		225		300		375		450		525	
	CFM/SIDE	28	47	42	70	56	94	70	117	84	141	98	164
9" X 15" Ak = .542	TOTAL CFM	188		281		375		469		563		656	
	CFM/SIDE	28	66	42	98	56	131	70	164	84	197	98	230
9" X 18" Ak = .650	TOTAL CFM	225		338		450		563		675		788	
	CFM/SIDE	28	84	42	127	56	169	70	211	84	253	98	295
9" X 21" Ak = .759	TOTAL CFM	263		394		525		656		788		919	
	CFM/SIDE	28	103	42	155	56	206	70	258	84	309	98	361
12" X 15" Ak = .723	TOTAL CFM	250		375		500		625		750		875	
	CFM/SIDE	50	75	75	113	100	150	125	188	150	225	175	263
12" X 18" Ak = .867	TOTAL CFM	300		450		600		750		900		1050	
	CFM/SIDE	50	100	75	150	100	200	125	250	150	300	175	350
12" X 21" Ak = 1.012	TOTAL CFM	350		525		700		875		1050		1225	
	CFM/SIDE	50	125	75	188	100	250	125	313	150	375	175	438
12" X 24" Ak = 1.156	TOTAL CFM	400		600		800		1000		1200		1400	
	CFM/SIDE	50	150	75	225	100	300	125	375	150	450	175	525
15" X 18" Ak = 1.084	TOTAL CFM	375		563		750		938		1125		1313	
	CFM/SIDE	78	109	117	164	156	219	195	273	234	328	273	383
15" X 24" Ak = 1.445	TOTAL CFM	500		750		1000		1250		1500		1750	
	CFM/SIDE	78	172	117	258	156	344	195	430	234	516	273	602
18" X 24" Ak = 1.734	TOTAL CFM	600		900		1200		1500		1800		2100	
	CFM/SIDE	113	188	160	281	225	375	281	469	338	563	394	656
21" X 33" Ak = 2.782	TOTAL CFM	963		1444		1925		2406		2888		3369	
	CFM/SIDE	153	328	230	492	306	656	383	820	459	984	536	1148
24" X 30" Ak = 2.890	TOTAL CFM	1000		1500		2000		2500		3000		3500	
	CFM/SIDE	200	300	300	450	400	600	500	750	600	900	700	1050



Directional Ceiling Diffusers



DCD

See Page DCD-43 for Performance Notes



For more product information visit us at www.metalair.com



DCD - Directional Ceiling Diffusers

3/2006

Series 5000 - Performance/(S3) 3-Way Square Pattern

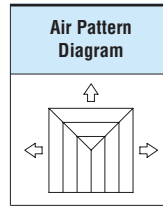
Models 5000 (-1, -2, -4, -46, -6, -7, -8, -9)

Directional Ceiling Diffusers



DCD

NECK SIZE Ak	Ps Pt	NECK VELOCITY					
		200	300	400	500	600	700
		.006 .008	.013 .018	.022 .032	.035 .050	.050 .072	.068 .099
6" X 6" Ak = .135	TOTAL CFM	50	75	100	125	150	175
	CFM/SIDE	13	19	25	31	38	44
	THROW	2-4	4-8	7-11	9-13	11-16	13-17
	NC	-	-	-	-	20	25
9" X 9" Ak = .304	TOTAL CFM	113	169	225	281	335	394
	CFM/SIDE	28	42	56	70	84	98
	THROW	3-5	5-9	8-12	10-15	12-17	14-18
	NC	-	-	-	21	26	31
12" X 12" Ak = .541	TOTAL CFM	200	300	400	500	600	700
	CFM/SIDE	50	75	100	125	150	175
	THROW	3-7	6-10	9-14	11-16	13-18	15-20
	NC	-	-	-	24	29	34
15" X 15" Ak = .845	TOTAL CFM	313	469	625	781	938	1094
	CFM/SIDE	78	117	156	195	234	273
	THROW	4-8	7-12	10-15	12-18	15-20	17-22
	NC	-	-	21	26	31	36
18" X 18" Ak = 1.216	TOTAL CFM	450	675	900	1125	1350	1575
	CFM/SIDE	113	169	225	281	338	394
	THROW	5-10	8-14	11-17	14-20	16-22	18-23
	NC	-	-	22	27	32	37
21" X 21" Ak = 1.655	TOTAL CFM	613	919	1225	1531	1837	2144
	CFM/SIDE	153	230	306	383	459	536
	THROW	6-12	9-16	12-19	15-21	17-23	19-25
	NC	-	-	23	28	33	38
24" X 24" Ak = 2.162	TOTAL CFM	800	1200	1600	2000	2400	2800
	CFM/SIDE	200	300	400	500	600	700
	THROW	7-14	10-17	13-20	16-23	18-25	21-27
	NC	-	-	24	29	34	39
27" X 27" Ak = 2.736	TOTAL CFM	1013	1519	2025	2531	3037	3544
	CFM/SIDE	253	380	506	633	759	886
	THROW	7-15	11-19	14-22	17-25	20-27	22-28
	NC	-	20	25	30	35	40



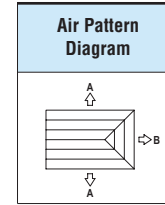
See Page DCD-43 for Performance Notes

DCD - Directional Ceiling Diffusers

Series 5000 - Performance/(R3L) 3-Way Rectangular Pattern

Models 5000 (-1, -2, -4, -46, -6, -7, -8, -9)

NECK SIZE Ak	Ps Pt Side Designation	NECK VELOCITY												
		200		300		400		500		600		700		
		.006 .008		.013 .018		.022 .032		.035 .050		.050 .072		.068 .099		
		A	B	A	B	A	B	A	B	A	B	A	B	
6" X 9" Ak = .217	TOTAL CFM CFM/SIDE THROW NC	75 25 13 2-5 2-4 -	113 38 19 5-9 4-8 -	150 50 25 8-12 7-11 -	188 63 31 10-14 9-13 -	225 75 38 12-17 11-16 23	263 88 44 14-18 13-17 28							
6" X 12" Ak = .289	TOTAL CFM CFM/SIDE THROW NC	100 44 13 3-6 2-4 20	150 66 19 6-10 4-8 20	200 88 25 8-13 7-11 20	250 109 31 11-16 9-13 20	300 131 38 13-18 12-17 25	350 153 44 15-20 13-17 30							
9" X 12" Ak = .434	TOTAL CFM CFM/SIDE THROW NC	150 61 28 4-7 3-5 20	225 91 42 6-11 5-9 20	300 122 56 9-14 8-12 20	375 152 70 12-17 10-15 22	450 183 84 14-19 12-17 27	525 213 98 16-21 14-18 32							
9" X 15" Ak = .542	TOTAL CFM CFM/SIDE THROW NC	188 80 28 4-8 3-5 20	281 120 42 7-12 5-9 20	375 159 56 10-15 8-12 20	469 199 70 12-18 10-15 23	563 239 84 15-20 12-17 28	656 279 98 17-22 14-18 33							
9" X 18" Ak = .650	TOTAL CFM CFM/SIDE THROW NC	225 98 28 5-9 3-5 20	338 148 42 8-13 5-9 20	450 197 56 11-16 8-12 20	563 246 70 13-19 10-15 24	675 295 84 15-21 12-17 29	788 345 98 17-23 14-18 34							
9" X 21" Ak = .759	TOTAL CFM CFM/SIDE THROW NC	263 117 28 5-10 3-5 20	394 176 42 8-14 5-19 20	525 234 56 11-17 8-12 20	656 293 70 14-20 10-15 25	788 352 84 16-22 13-18 30	919 410 98 18-24 14-18 35							
12" X 15" Ak = .723	TOTAL CFM CFM/SIDE THROW NC	250 100 50 5-10 3-6 20	375 150 75 8-13 6-10 20	500 200 100 11-16 9-14 20	625 250 125 13-19 11-16 25	750 300 150 15-21 13-18 30	875 350 175 17-23 15-20 35							
12" X 18" Ak = .867	TOTAL CFM CFM/SIDE THROW NC	300 125 50 5-11 3-7 20	450 188 75 8-14 6-10 20	600 250 100 11-18 9-14 20	750 313 125 14-20 11-16 25	900 375 150 16-22 15-20 30	1050 438 175 18-24 15-20 35							
12" X 21" Ak = 1.012	TOTAL CFM CFM/SIDE THROW NC	375 148 78 6-12 4-8 20	563 223 117 9-15 7-12 20	750 297 156 12-19 10-15 21	938 371 195 15-21 12-18 26	1125 445 234 17-23 15-20 31	1313 520 273 19-25 17-22 36							
12" X 24" Ak = 1.156	TOTAL CFM CFM/SIDE THROW NC	438 180 78 6-13 4-8 20	656 270 117 10-17 7-12 20	875 359 156 13-20 10-15 22	1094 449 195 16-22 12-18 27	1313 539 234 18-27 16-22 32	1531 629 273 20-26 17-22 37							
15" X 18" Ak = 1.084	TOTAL CFM CFM/SIDE THROW NC	525 206 113 7-14 5-10 20	788 309 169 10-17 8-14 20	1050 413 225 13-21 11-17 23	1313 516 281 16-23 14-20 28	1575 619 338 19-25 16-22 33	1837 722 394 21-27 18-23 38							
15" X 24" Ak = 1.445	TOTAL CFM CFM/SIDE THROW NC	600 244 113 7-15 5-10 20	900 366 169 11-19 8-14 20	1200 488 225 14-22 11-17 23	1500 609 281 17-24 14-20 28	1800 731 338 19-26 17-23 33	2100 853 394 22-28 18-23 38							
18" X 24" Ak = 1.734	TOTAL CFM CFM/SIDE THROW NC	788 317 153 8-17 6-12 20	1181 476 230 12-20 9-16 20	1575 634 306 15-24 12-19 24	1969 793 383 18-26 15-21 29	2362 952 459 21-28 34	2756 1110 536 23-30 19-25 39							



Directional Ceiling Diffusers



DCD

See Page DCD-43 for Performance Notes



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DCD - Directional Ceiling Diffusers

3/2006

Series 5000 - Performance/(R3S) 3-Way Rectangular Pattern

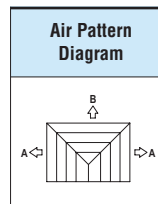
Models 5000 (-1, -2, -4, -46, -6, -7, -8, -9)

Directional Ceiling Diffusers



DCD

NECK SIZE Ak	Ps Pt Side Designation	NECK VELOCITY											
		200		300		400		500		600		700	
		A	B	A	B	A	B	A	B	A	B	A	B
6" X 9" Ak = .203	TOTAL CFM	75		113		150		188		225		263	
	CFM/SIDE	28	23	42	35	56	47	70	59	84	70	98	82
6" X 12" Ak = .270	TOTAL CFM	100		150		200		250		300		350	
	CFM/SIDE	50	25	75	38	100	50	125	63	150	75	175	88
9" X 12" Ak = .405	TOTAL CFM	150		225		300		375		450		525	
	CFM/SIDE	50	50	75	75	100	100	125	125	150	150	175	175
9" X 15" Ak = .507	TOTAL CFM	188		28		375		469		563		656	
	CFM/SIDE	78	55	117	82	156	109	195	137	234	164	273	191
12" X 15" Ak = .676	TOTAL CFM	250		375		500		625		750		875	
	CFM/SIDE	78	86	117	129	156	172	195	215	234	258	273	301
12" X 18" Ak = .811	TOTAL CFM	300		450		600		750		900		1050	
	CFM/SIDE	113	94	169	141	225	188	281	234	338	281	394	328
15" X 18" Ak = 1.014	TOTAL CFM	375		563		750		938		1125		1313	
	CFM/SIDE	113	131	169	197	225	263	281	238	338	394	394	459
15" X 21" Ak = 1.182	TOTAL CFM	438		656		875		1094		1313		1531	
	CFM/SIDE	153	142	230	213	306	284	383	355	459	427	536	498
18" X 24" Ak = 1.182	TOTAL CFM	600		900		1200		1500		1800		2100	
	CFM/SIDE	200	200	300	300	400	400	500	500	600	600	700	700
21" X 27" Ak = 2.128	TOTAL CFM	788		1181		1575		1969		2362		2756	
	CFM/SIDE	253	267	380	401	506	534	633	668	759	802	886	935
24" X 30" Ak = 2.703	TOTAL CFM	1000		1500		2000		2500		3000		3500	
	CFM/SIDE	313	344	469	516	625	688	781	859	938	1031	1094	1203
	THROW	3-6	3-6	7-12	7-11	11-18	11-17	16-23	16-23	21-29	20-28	24-32	24-34
	NC	-	-	-	-	-	-	21	26	28	30	31	33
	NC	-	-	-	-	20	20	25	25	30	30	35	35
	NC	20	20	20	20	20	20	25	25	30	30	35	35
	NC	20	20	20	20	20	20	23	28	33	33	38	38
	NC	20	20	20	20	24	29	29	34	34	39	39	39
	NC	20	20	20	20	25	30	30	35	35	40	40	40



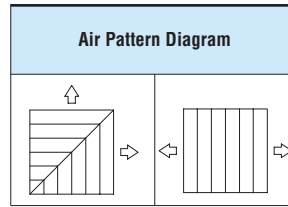
See Page DCD-43 for Performance Notes

DCD - Directional Ceiling Diffusers

Series 5000 - Performance/(SC) 2-Way Adjacent or (S2) Opposite Pattern

Models 5000 (-1, -2, -4, -46, -6, -7, -8, -9)

NECK SIZE Ak	Ps Pt	NECK VELOCITY					
		200	300	400	500	600	700
		.006 .008	.013 .018	.022 .032	.035 .050	.050 .072	.068 .099
6" X 6" Ak = .132	TOTAL CFM	50	75	100	125	150	175
	CFM/SIDE	25	38	50	63	75	88
	THROW	2-5	5-9	8-12	10-14	12-17	14-18
	NC	20	20	20	20	20	25
9" X 9" Ak = .298	TOTAL CFM	113	169	225	281	338	394
	CFM/SIDE	56	84	113	141	169	197
	THROW	3-7	6-11	9-14	12-17	14-19	16-20
	NC	20	20	20	21	26	31
12" X 12" Ak = .529	TOTAL CFM	200	300	400	500	600	700
	CFM/SIDE	100	150	200	250	300	350
	THROW	5-10	8-13	11-16	13-19	15-21	17-23
	NC	20	20	20	24	29	34
15" X 15" Ak = .827	TOTAL CFM	313	469	625	781	938	1094
	CFM/SIDE	156	234	313	391	469	547
	THROW	6-12	9-16	12-19	15-21	17-24	19-25
	NC	20	20	21	26	31	36
18" X 18" Ak = 1.190	TOTAL CFM	450	675	900	1125	1350	1575
	CFM/SIDE	225	338	450	563	675	788
	THROW	7-14	10-18	14-21	17-24	19-26	21-28
	NC	20	20	22	27	32	37
21" X 21" Ak = 1.620	TOTAL CFM	613	919	1225	1531	1837	2144
	CFM/SIDE	306	459	613	766	919	1072
	THROW	8-17	12-20	15-23	18-26	21-28	23-30
	NC	20	20	23	28	33	38
24" X 24" Ak = 2.116	TOTAL CFM	800	1200	1600	2000	2400	2800
	CFM/SIDE	400	600	800	1000	1200	1400
	THROW	9-18	13-22	16-25	19-28	22-30	24-30
	NC	20	20	24	29	34	39
27" X 27" Ak = 2.679	TOTAL CFM	1013	1519	2025	2531	3037	3544
	CFM/SIDE	506	759	1013	1266	1519	1772
	THROW	10-20	14-24	17-27	21-29	23-32	25-33
	NC	20	20	25	30	35	40



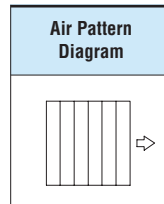
Directional Ceiling Diffusers
DCD



Series 5000 - Performance/(S1) 1-Way Square Air Pattern

Models 5000 (-1, -2, -4, -46, -6, -7, -8, -9)

NECK SIZE Ak	Ps Pt	NECK VELOCITY					
		200	300	400	500	600	700
		.008 .010	.018 .023	.031 .041	.049 .064	.070 .092	.095 .126
6 x 6 Ak = .122	TOTAL CFM	50	75	100	125	150	175
	THROW	3-7	6-10	9-14	11-16	13-18	15-20
	NC	20	20	20	20	20	25
9 x 9 Ak = .275	TOTAL CFM	113	169	225	281	338	394
	THROW	5-10	8-14	11-17	14-20	16-22	18-23
	NC	20	20	20	21	26	31
12 x 12 Ak = .489	TOTAL CFM	200	300	400	500	600	700
	THROW	7-14	10-17	13-20	16-23	18-25	21-27
	NC	20	20	20	24	29	34
15 x 15 Ak = .764	TOTAL CFM	313	469	625	781	938	1094
	THROW	8-17	12-20	15-23	18-26	21-28	23-30
	NC	20	20	21	26	31	36
18 x 18 Ak = 1.100	TOTAL CFM	450	675	900	1125	1350	1575
	THROW	9-19	13-23	17-26	20-29	23-31	25-32
	NC	20	20	22	27	32	37
21 x 21 Ak = 1.498	TOTAL CFM	613	919	1225	1531	1837	2144
	THROW	10-21	14-25	18-28	21-31	24-33	26-35
	NC	20	20	23	28	33	38
24 x 24 Ak = 1.956	TOTAL CFM	800	1200	1600	2000	2400	2800
	THROW	11-23	15-27	19-30	23-32	25-34	28-36
	NC	20	20	24	29	34	39
27 x 27 Ak = 2.476	TOTAL CFM	1013	1519	2025	2531	3037	3544
	THROW	12-24	16-28	20-31	23-34	26-36	29-38
	NC	20	20	25	30	35	40



See Page DCD-43 for Performance Notes



For more product information visit us at www.metalair.com



DCD - Directional Ceiling Diffusers

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Series 5000 - Performance - (R2L) or (R2S) 2-Way Opposite Pattern

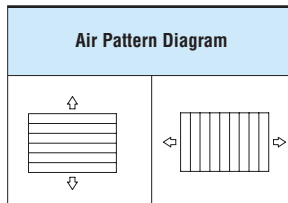
Models 5000 (-1, -2, -4, -46, -6, -7, -8, -9)

Directional Ceiling Diffusers



DCD

NECK SIZE Ak	Ps Pt	NECK VELOCITY					
		200	300	400	500	600	700
		.007 .009	.015 .021	.027 .037	.042 .057	.060 .082	.082 .112
6" x 9" Ak = .198	TOTAL CFM	75	113	150	188	225	263
	CFM/SIDE	38	56	75	94	113	131
	THROW	3-6	6-10	8-13	11-15	13-17	15-19
	NC	20	20	20	20	23	28
6" x 12" Ak = .265	TOTAL CFM	100	150	200	250	300	350
	CFM/SIDE	50	75	100	125	150	175
	THROW	3-7	6-10	9-14	11-16	13-18	15-20
	NC	20	20	20	20	25	30
6" x 15" Ak = .333	TOTAL CFM	125	188	250	313	375	438
	CFM/SIDE	63	94	125	156	188	219
	THROW	4-7	6-11	9-14	12-17	14-19	16-21
	NC	20	20	20	21	26	31
6" x 18" Ak = .397	TOTAL CFM	150	225	300	375	450	525
	CFM/SIDE	75	113	150	188	225	263
	THROW	4-8	7-12	10-15	12-18	14-20	16-21
	NC	20	20	20	22	27	32
9" x 15" Ak = .496	TOTAL CFM	188	281	375	469	563	656
	CFM/SIDE	94	141	188	234	281	328
	THROW	4-9	7-13	10-16	13-19	15-21	17-22
	NC	20	20	20	23	28	33
9" x 18" Ak = .595	TOTAL CFM	225	338	450	563	675	788
	CFM/SIDE	113	169	225	281	338	394
	THROW	5-10	8-14	11-17	14-20	16-22	18-23
	NC	20	20	20	24	29	34
9" x 21" Ak = .694	TOTAL CFM	263	394	525	656	788	919
	CFM/SIDE	131	197	263	328	394	459
	THROW	5-11	8-15	12-18	14-20	17-23	19-24
	NC	20	20	20	25	30	35
12" x 15" Ak = .661	TOTAL CFM	250	375	500	625	750	875
	CFM/SIDE	125	188	250	313	375	438
	THROW	5-11	8-14	11-18	14-20	16-22	18-24
	NC	20	20	20	25	30	35
12" x 18" Ak = .794	TOTAL CFM	300	450	600	750	900	1050
	CFM/SIDE	150	225	300	375	450	525
	THROW	6-12	9-15	12-19	15-21	17-23	19-25
	NC	20	20	20	25	30	35
12" x 21" Ak = .926	TOTAL CFM	350	525	700	875	1050	1225
	CFM/SIDE	175	263	350	438	525	613
	THROW	6-13	9-16	13-20	15-22	18-24	20-26
	NC	20	20	21	26	31	36
15" x 21" Ak = 1.157	TOTAL CFM	438	656	875	1094	1313	1531
	CFM/SIDE	219	328	438	547	656	766
	THROW	7-14	10-18	14-21	16-24	19-26	21-27
	NC	20	20	22	27	32	37
15" x 24" Ak = 1.323	TOTAL CFM	500	750	1000	1250	1500	1750
	CFM/SIDE	250	375	500	625	750	875
	THROW	7-15	11-19	14-22	17-25	20-27	22-28
	NC	20	20	22	27	32	37
18" x 21" Ak = 1.386	TOTAL CFM	525	788	1050	1313	1575	1837
	CFM/SIDE	263	394	525	656	788	919
	THROW	7-15	11-19	14-22	17-25	20-27	22-29
	NC	20	20	23	28	33	38
18" x 24" Ak = 1.587	TOTAL CFM	600	900	1200	1500	1800	2100
	CFM/SIDE	300	450	600	750	900	1050
	THROW	8-16	12-20	15-23	18-26	21-28	23-30
	NC	20	20	23	28	33	38
21" x 27" Ak = 2.083	TOTAL CFM	788	1181	1575	1969	2362	2756
	CFM/SIDE	394	591	788	984	1181	1378
	THROW	9-18	13-22	16-25	19-28	22-30	24-32
	NC	20	20	24	29	34	39



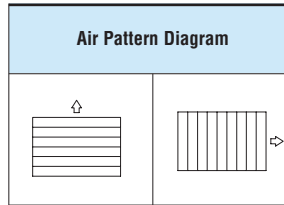
See Page DCD-43 for Performance Notes

DCD - Directional Ceiling Diffusers

Series 5000 - Performance- (R1L) or (R1S) 1-Way Rectagular Pattern

Models 5000 (-1, -2, -4, -46, -6, -7, -8, -9)

NECK SIZE Ak	Ps Pt	NECK VELOCITY					
		200	300	400	500	600	700
		.008 .010	.018 .023	.031 .041	.049 .064	.070 .092	.095 .126
6" x 9" Ak = .183	TOTAL CFM	75	113	150	188	225	263
	THROW	4-8	7-12	10-15	12-18	14-20	16-21
	NC	20	20	20	20	23	28
6" x 12" Ak = .244	TOTAL CFM	100	150	200	250	300	350
	THROW	5-10	8-13	11-16	13-19	15-21	17-23
	NC	20	20	20	20	25	30
6" x 15" Ak = .307	TOTAL CFM	125	188	250	313	375	438
	THROW	5-11	8-14	11-18	14-20	16-22	18-24
	NC	20	20	20	21	26	31
6" x 18" Ak = .366	TOTAL CFM	150	225	300	300	450	525
	THROW	6-12	9-15	12-19	12-19	17-23	19-25
	NC	20	20	20	20	27	32
6" x 21" Ak = .429	TOTAL CFM	175	263	350	438	525	613
	THROW	6-13	9-16	13-20	15-22	18-24	20-26
	NC	20	20	20	23	28	33
9" x 15" Ak = .458	TOTAL CFM	188	281	375	469	563	656
	THROW	6-13	10-17	13-20	16-23	18-25	20-26
	NC	20	20	20	23	28	33
9" x 18" Ak = .550	TOTAL CFM	225	338	450	563	675	788
	THROW	7-14	10-18	14-21	17-24	19-26	21-28
	NC	20	20	20	24	29	34
12" x 15" Ak = .611	TOTAL CFM	250	375	500	625	750	875
	THROW	7-15	11-19	14-22	17-25	20-27	22-28
	NC	20	20	20	25	30	35
12" x 18" Ak = .733	TOTAL CFM	300	450	600	750	900	1050
	THROW	8-16	12-20	15-23	18-26	21-28	23-30
	NC	20	20	20	25	30	35
15" x 21" Ak = 1.070	TOTAL CFM	438	656	875	1094	1313	1531
	THROW	9-19	13-23	17-26	20-28	22-31	25-32
	NC	20	20	22	27	32	37
15" x 24" Ak = 1.222	TOTAL CFM	500	750	1000	1250	1500	1750
	THROW	10-20	14-24	17-27	20-29	23-31	25-33
	NC	20	20	22	27	32	37
18" x 21" Ak = 1.278	TOTAL CFM	525	788	1050	1313	1575	1837
	THROW	10-20	14-24	18-27	21-30	23-32	26-34
	NC	20	20	23	28	33	38
18" x 24" Ak = 1.467	TOTAL CFM	600	900	1200	1500	1800	2100
	THROW	10-21	14-25	18-28	21-31	24-33	26-34
	NC	20	20	23	28	33	38
21" x 27" Ak = 1.925	TOTAL CFM	788	1181	1575	1969	2362	2756
	THROW	11-23	15-26	19-30	23-32	25-34	28-36
	NC	20	20	24	29	34	39



Series 5000 - Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM** - Cubic Feet per Minute (air)
- fpm** - Velocity of air stream in Feet Per Minute
- Pv** - Velocity pressure (inches of water column)
- Pt** - Total pressure (inches of water column)
- Ps** - Static pressure = Pt - Pv (inches of water column)
- Throw** - Cataloged throw is horizontal distances in feet to the terminal velocities of 150 and 50 fpm with ambient supply air temperature.
- NC** - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak** - Area Factor

Series 5000 - Specifications

- 5000-1 - Surface Mount
- 5000-4 - Drop Face
- 5000-46 - Drop Face - T-Bar Lay-in
- 5000-6 - T-bar Lay-in
- 5000-7 - Concealed Spline
- 5000-8 - Tegalay Lay-in
- 5000-9 - Donn Finline

Air Outlets shall be aluminum model 5000 manufactured by METALAIRE®. Units shall consist of a fixed pattern louvered core fastened into a border with spring loaded latches. Core shall be removable without the use of tools. Outlets shall be engineered for high capacity applications and include straight deflector blades (without a horizontal lip). Units with a horizontal lip at the ends of the deflector blades are not acceptable. The units shall be the size and quantity as outlined in the plans and specifications.

Outlets shall be available in 1, 2 way opposite, 2 way corner, 3, and 4 way directional air patterns.

Units shall be designed to integrate into the specified ceiling system.



Options

Adjustable Pattern (horizontal to vertical)

Outlets shall include adjustable air pattern deflector blades that allows the air pattern to be set from vertical to horizontal (Optional APD Air Pattern Deflectors). Air pattern deflector blades shall be accessible from the face and the diffuser and adjustable without the use of tools.

IV Induction Vanes

Units shall include IV induction vanes factory mounted onto the back side of the deflector vanes. IV vanes shall increase the induction rate of the diffuser.

Accessories

Optional Dampers

Aluminum D5A or Steel D5 opposed blade dampers shall be provided. Damper shall be adjusted using a handle accessible through the face of the diffuser.

Screwdriver slot operators are not allowed.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss - 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	60 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

DCD - Directional Ceiling Diffusers

Series 5000 - Model Specification Guide

Square/Rectangular Louver Face Ceiling Diffusers Series 5000 - Extruded Aluminum

Model	Available Neck	Air Pattern	Available Finishes	Available Options		
5000-1 - Surface Mount 5000-2 - V-Beveled Drop Surface Mount 5000-4 - Drop Face Surface Mount	6" thru 48"	Standard	Standard	D5	Opposed Blade Damper - Steel	
		S4 - Sq. 4-way	01 - White	D5A	Opposed Blade Damper - Aluminum	
		Optional	Optional	L9	Equalizing Grid	
		S1 - Sq. 1-way	02 - Aluminum	TR	Square to Round Transition	
		S2 - Sq. 2-way	03 - Black	TR DEEP	Square to Round Transition - Deep	
		S3 - Sq. 3-way	24 - Mill	G3	Equalizing Grid	
		SC - Sq. 2-way corner	28 - Custom Color	BDS	Butterfly Damper	
		R1S - Rct. 1-way short			RSD	Radial Shutter Damper
		R1L - Rct. 1-way long			IV	Induction Vanes
		R2S - Rct. 2-way short			APD	Air Pattern Deflectors
		R2L - Rct. 2-way long				
		R3S - Rct. 3-way short				
		R3L - Rct. 3-way long				
		R4 - Rct. 4-way				

Square/Rectangular Louver Face Ceiling Diffusers Series 5000 - Extruded Aluminum For T-bar Lay-in Ceiling Grid Applications

Model	Available Neck	Module	Air Pattern	Available Finishes	Available Options		
5000-46 - Drop Face - T-bar Lay-in 5000-6 - T-bar Lay-in 5000-7 - Concealed Spline 5000-8 - Tegular T-bar 5000-9 - Donn Finline	6" thru 42"	12" x 12" 24" x 24" 36" x 24" 48" x 24" 48" x 48"	Standard	Standard	D5	Opposed Blade Damper - Steel	
			S4 - Sq. 4-way	01 - White	D5A	Opposed Blade Damper - Aluminum	
			Optional	Optional	L9	Equalizing Grid	
			S1 - Sq. 1-way	02 - Aluminum	TR	Square to Round Transition	
			S2 - Sq. 2-way	03 - Black	TR DEEP	Square to Round Transition - Deep	
			S3 - Sq. 3-way	24 - Mill	G3	Equalizing Grid	
			SC - Sq. 2-way corner	28 - Custom Color	BDS	Butterfly Damper	
			R1S - Rct. 1-way short			RSD	Radial Shutter Damper
			R1L - Rct. 1-way long			IV	Induction Vanes
			R2S - Rct. 2-way short			APD	Air Pattern Deflectors
			R2L - Rct. 2-way long				
			R3S - Rct. 3-way short				
			R3L - Rct. 3-way long				
			R4 - Rct. 4-way				



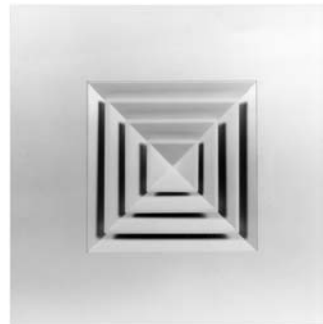
DCD - Directional Ceiling Diffusers

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➔ Square/Rectangular Louver Face ➔ Series 5500 ➔ Aluminum

Product Details

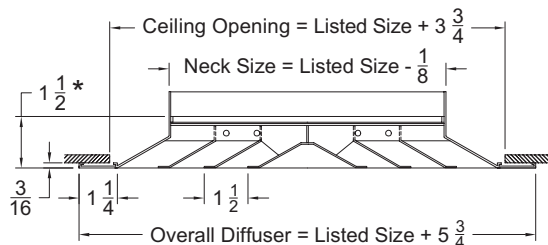
- Available in 1, 2-way opposite, 2-way corner, 3, and 4-way directional air patterns
- Cores are easy to remove with spring loaded latches - no tools required
- 5500 series deflector blades include a horizontal lip, making this diffuser an excellent choice for high induction applications
- The 5500 series is an excellent choice for VAV applications
- The 5500 series is available with optional induction vanes



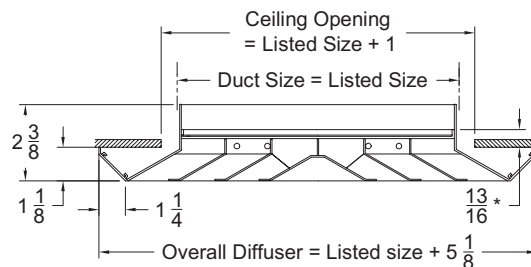
Model 5500-2 S4 Shown
Standard Finish: 01 White

Dimensions are in inches

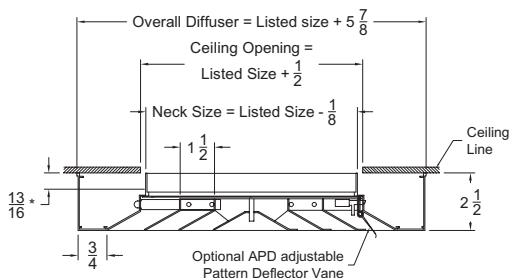
Square/Rectangular Louver Face Ceiling Diffusers Surface Mount Model 5500-1



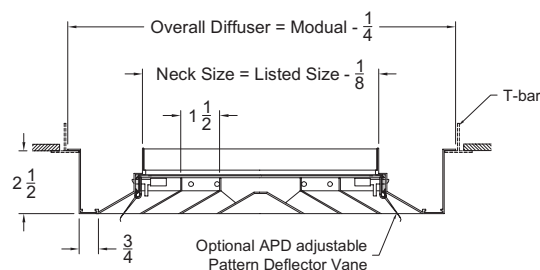
Square/Rectangular Louver Face Ceiling Diffusers V-Beveled Drop Surface Mounting Model 5500-2



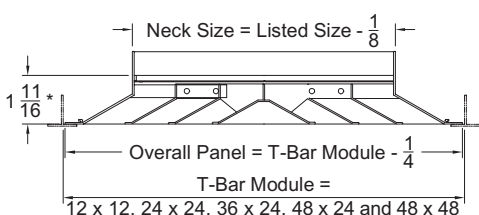
Square/Rectangular Louver Face Ceiling Diffusers Drop Face Surface Mount Model 5500-4



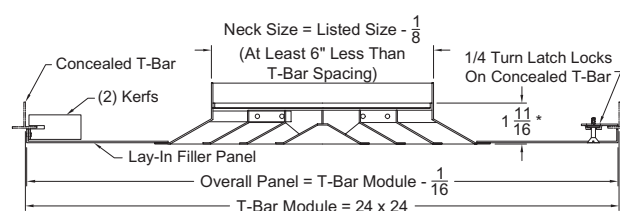
Square/Rectangular Louver Face Ceiling Diffusers Drop Face T-bar Lay-in Model 5500-46



Square/Rectangular Louver Face Ceiling Diffusers T-bar Lay-in Model 5500-6



Square/Rectangular Louver Face Ceiling Diffusers Concealed Spine Model 5500-7



Directional Ceiling Diffusers



DCD

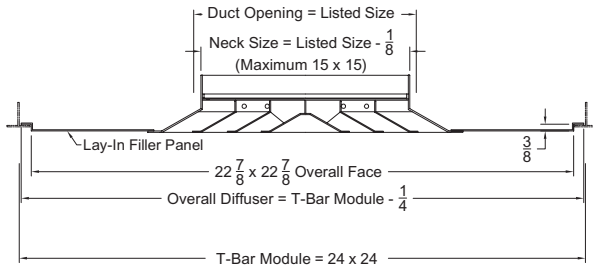
DCD - Directional Ceiling Diffusers

Directional Ceiling Diffusers

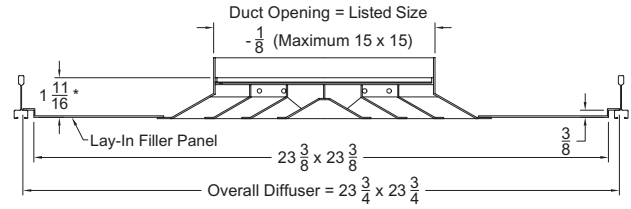


DCD

Square/Rectangular Louver Face Ceiling Diffusers Tegular T-bar Model 5500-8



Square/Rectangular Louver Face Ceiling Diffusers Donn Fineline Model 5500-9



Air Patterns - (Square) Louver Face Ceiling Diffusers

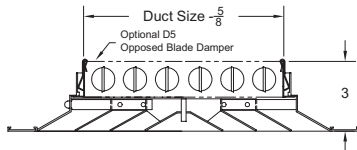
S1 - One Way	S2 - Two Way Opposite	SC - Two Way Corner	S3 - Three Way	S4 - Four Way

Air Patterns - (Rectangular)

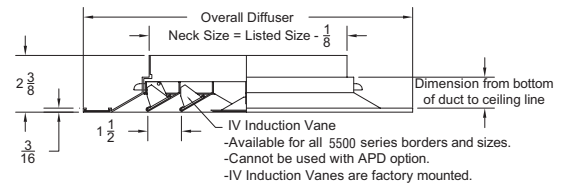
Short Louver Face Ceiling Diffusers				Long Louver Face Ceiling Diffusers		
R1 - One Way	R2S - Two Way Opposite	R3S - Three Way	R4 - Four Way	R1L - One Way	R2L - Two Way	R3L - Three Way

Options and Accessories

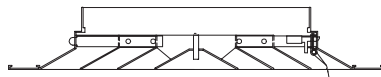
Square/Rectangular Louver Face Ceiling Diffusers Option: D5 Opposed Blade Damper



Square/Rectangular Louver Face Ceiling Diffusers Option: IV Induction Vane (see page DCD-37 for performance)



Option: APD Air Pattern Controller allows adjustment from horizontal to vertical from the face of the diffuser



Optional APD Adjustable Pattern Deflector Vane
- Available for all 5000 series borders and sizes,
- Cannot be used with IV Induction Vanes option,
- APDs are factory mounted.

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish 02 Aluminum paint 03 Black 24 Mill finish 28 Custom color</p> <p>Note: Anodized Finish not available</p>	<p>(Shipped Unattached)</p> <p>Square and Rectangular Neck: D5 - Opposed Blade Damper - Steel337 D5A - Opposed Blade Damper - Aluminum . .337 L9 - Equalizing Grid334 TR - Square to Round Transition338</p> <p>Round Neck: G3 - Equalizing Grid337 BDS - Butterfly Damper335 RSD - Radial Shutter Damper336</p>	<p>Factory Mounted: IV - Induction Vanes</p> <p>APD - Air Pattern Deflectors allows adjustment from horizontal to vertical air pattern from the face of the diffuser</p> <p>Note: IV (Induction Vanes) can not be used with APD (Air Pattern Deflector) option and vice-versa</p>	<ul style="list-style-type: none"> Available air patterns: S1, S2, S3, S4, R1S, R1L, R2S, R2L, R3S, R3L, R4 and SC (Type) For 5500-6 models only: 21" x 21" neck in 24" x 24" module is available in S4 pattern only



See Page DCD-52 for Performance Notes

For more product information visit us at www.metalaire.com



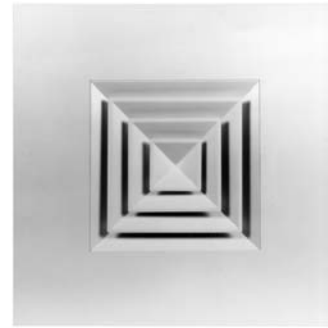
DCD - Directional Ceiling Diffusers

3/2006

➔ Square/Rectangular Louver Face ➔ Series 5500S ➔ Steel

Product Details

- Available in 1, 2-way opposite, 2-way corner, 3, and 4-way directional air patterns
- Cores are easy to remove with spring loaded latches - no tools required
- 5500S series deflector blades include a horizontal lip, making this diffuser an excellent choice for high induction applications
- The 5500S series is an excellent choice for VAV applications
- The 5500S is also available with optional induction vanes

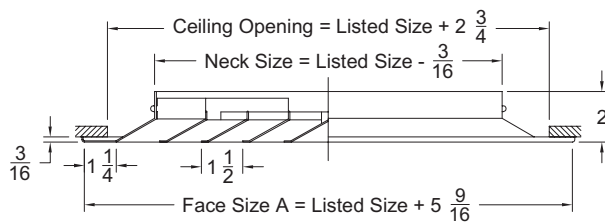


Model 5500S-6 S4 Shown

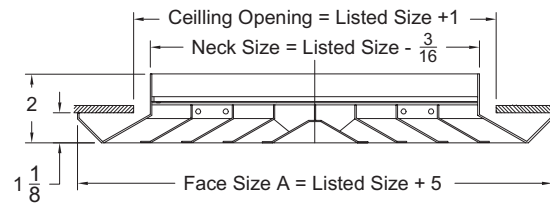
Standard Finish: 01 White

Dimensions are in inches

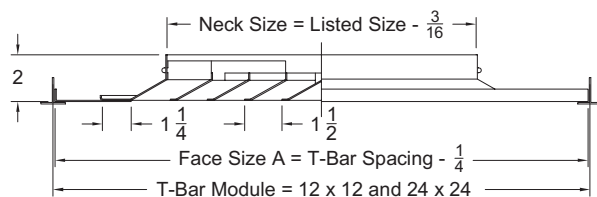
Square/Rectangular Louver Face Ceiling Diffusers Surface Mount - Steel Model 5500S-1



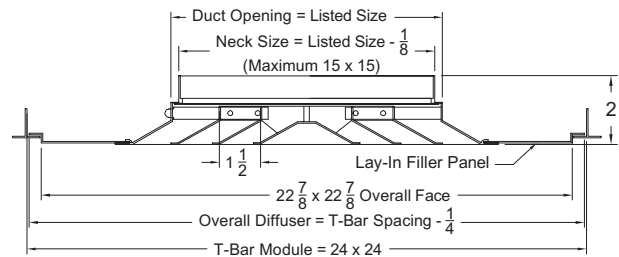
Square/Rectangular Louver Face Ceiling Diffusers V-Beveled Drop Surface Mounting - Steel Model 5500S-2



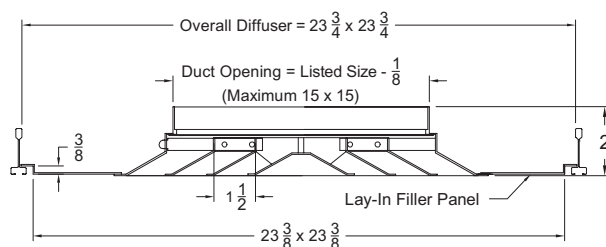
Square/Rectangular Louver Face Ceiling Diffusers T-bar Lay-in - Steel Model 5500S-6



Square/Rectangular Louver Face Ceiling Diffusers Tegular T-bar - Steel Model 5500S-8



Square/Rectangular Louver Face Ceiling Diffusers Donn Fineline - Steel Model 5500S-9



Directional Ceiling Diffusers



DCD

DCD - Directional Ceiling Diffusers



Air Patterns - (Square) Louver Face Ceiling Diffusers				
S1 - One Way	S2 - Two Way Opposite	SC - Two Way Corner	S3 - Three Way	S4 - Four Way

Air Patterns - (Rectangular)						
Short Louver Face Ceiling Diffusers				Long Louver Face Ceiling Diffusers		
R1 - One Way	R2S - Two Way Opposite	R3S - Three Way	R4 - Four Way	R1L - One Way	R2L - Two Way	R3L - Three Way

Options and Accessories

<p>Square/Rectangular Louver Face Ceiling Diffusers Option: D5 Opposed Blade Damper</p>	<p>Square/Rectangular Louver Face Ceiling Diffusers Option: IV Induction Vane (see page DCD-37 for performance)</p> <p>IV Induction Vane - Available for all 5500S series borders and sizes. - Cannot be used with APD option. - IV Induction Vanes are factory mounted.</p>
<p>Option: APD Air Pattern Controller allows adjustment from horizontal to vertical from the face of the diffuser</p> <p>Optional APD Adjustable Pattern Deflector Vane - Available for all 5000 series borders and sizes, - Cannot be used with IV Induction Vanes option, - APDs are factory mounted.</p>	

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish 02 Aluminum 03 Black 28 Custom Color</p>	<p>(Shipped Unattached) Square and Rectangular Neck: D5 - Opposed Blade Damper - Steel337 D5A - Opposed Blade Damper - Aluminum . .337 L9 - Equalizing Grid334 TR - Square to Round Transition338</p> <p>Round Neck: G3 - Equalizing Grid337 BDS - Butterfly Damper335 RSD - Radial Shutter Damper336</p>	<p>Factory Mounted: IV - Induction Vanes</p> <p>APD - Air Pattern Deflectors allows adjustment from horizontal to vertical air pattern from the face of the diffuser</p> <p>Note: IV (Induction Vanes) can not be used with APD (Air Pattern Deflector) option and vice-versa</p>	<ul style="list-style-type: none"> Available air patterns: S1, S2, S3, S4, R1S, R1L, R2S, R2L, R3S, R3L, R4 and SC For 5500S-6 models only: 21x21 neck in 24x24 module is available in S4 pattern only

See Page DCD-52 for Performance Notes



DCD - Directional Ceiling Diffusers

Series 5500/5500S - Performance

Models 5500 (frame styles: -1, -2, -4, -46, -6, -7, -8, -9)
 Models 5500S (frame styles: -1, -2, -4, -46, -6, -7, -8, -9)
 (S1) 1-Way Square Air Pattern

Directional Ceiling Diffusers



DCD

NECK SIZE Ak	Ps Pt	NECK VELOCITY					
		200	300	400	500	600	700
		.018 .020	.040 .046	.071 .081	.111 .127	.160 .182	.218 .248
6 x 6 Ak = .087	TOTAL CFM THROW NC	50 5-9 -	75 8-15 -	100 13-20 -	125 18-26 -	150 22-31 23	175 26-37 28
9 x 9 Ak = .197	TOTAL CFM THROW NC	113 8-16 -	169 12-21 -	225 17-27 -	281 22-32 24	338 27-38 29	394 31-44 34
12 x 12 Ak = .350	TOTAL CFM THROW NC	200 11-22 -	300 16-27 -	400 21-33 22	500 26-38 27	600 31-44 32	700 35-50 37
15 x 15 Ak = .546	TOTAL CFM THROW NC	313 12-24 -	469 17-30 -	625 23-35 24	781 28-41 29	938 33-47 34	1094 37-52 39
18 x 18 Ak = .787	TOTAL CFM THROW NC	450 14-26 -	675 22-32 20	900 33-45 25	1125 36-48 30	1350 38-52 35	1575 40-56 40
21 x 21 Ak = 1.071	TOTAL CFM THROW NC	613 16-28 -	919 26-34 21	1225 33-43 26	1531 37-51 31	1837 40-55 36	2144 42-58 41
24 x 24 Ak = 1.399	TOTAL CFM THROW NC	800 19-29 -	1200 28-36 22	1600 39-45 27	2000 40-53 32	2400 41-59 37	2800 44-61 42
27 x 27 Ak = 1.770	TOTAL CFM THROW NC	1013 21-31 -	1519 30-39 23	2025 35-49 28	2531 41-55 33	3037 43-60 38	3544 46-64 43

Models 5500 (-1, -2, -4, -46, -6, -7, -8, -9)
 Models 5500S (-1, -2, -4, -46, -6, -7, -8, -9)
 (SC) 2-Way Adjacent or (S2) Opposite Pattern

NECK SIZE Ak	Ps Pt	NECK VELOCITY					
		200	300	400	500	600	700
		.018 .020	.040 .046	.071 .081	.111 .127	.160 .182	.218 .248
6 x 6 Ak = .087	TOTAL CFM CFM/SIDE THROW NC	50 25 3-6 -	75 38 7-12 -	100 50 11-17 -	125 63 16-23 -	150 75 20-28 23	175 88 24-34 28
9 x 9 Ak = .197	TOTAL CFM CFM/SIDE THROW NC	113 56 5-10 -	169 84 9-15 -	225 113 13-21 -	281 141 18-27 24	338 169 23-32 29	394 197 27-38 34
12 x 12 Ak = .350	TOTAL CFM CFM/SIDE THROW NC	200 100 7-14 -	300 150 12-20 -	400 200 16-26 22	500 250 21-31 27	600 300 26-37 32	700 350 30-42 37
15 x 15 Ak = .546	TOTAL CFM CFM/SIDE THROW NC	313 156 10-19 -	469 234 14-25 -	625 313 19-30 24	781 391 25-36 29	938 469 30-41 34	1094 547 33-47 39
18 x 18 Ak = .787	TOTAL CFM CFM/SIDE THROW NC	450 225 12-23 -	675 338 16-28 20	900 450 22-34 25	1125 563 27-39 30	1350 675 32-45 35	1575 788 36-51 40
21 x 21 Ak = 1.071	TOTAL CFM CFM/SIDE THROW NC	613 306 12-24 -	919 459 17-30 21	1225 613 23-35 26	1531 766 28-41 31	1837 919 33-47 36	2144 1072 37-52 41
24 x 24 Ak = 1.399	TOTAL CFM CFM/SIDE THROW NC	800 400 12-22 -	1200 600 16-28 22	1600 800 21-34 27	2000 1000 27-39 32	2400 1200 32-45 37	2800 1400 36-50 42
27 x 27 Ak = 1.770	TOTAL CFM CFM/SIDE THROW NC	1013 506 8-15 -	1519 759 12-21 23	2025 1013 17-27 28	2531 1266 22-32 33	3037 1519 27-38 38	3544 1772 31-43 43

See Page DCD-52 for Performance Notes

DCD - Directional Ceiling Diffusers

Series 5500/5500S - Performance

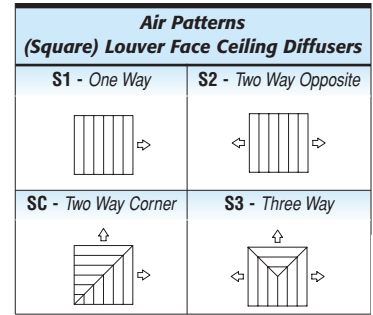
Models 5500 (-1, -2, -4, -46, -6, -7, -8, -9)

Models 5500S (-1, -2, -4, -46, -6, -7, -8, -9)

(S3) 3 Way Square Pattern

NECK SIZE Ak	Ps Pt Side Designation	NECK VELOCITY											
		200		300		400		500		600		700	
		.013 .016		.030 .036		.053 .063		.083 .099		.120 .142		.163 .194	
6 x 6 Ak = .100	TOTAL CFM CFM/SIDE THROW NC	50		75		100		125		150		175	
		19 13 3-5 2-4 0	28 19 6-11 6-10 0	38 25 10-16 10-16 0	47 31 15-22 15-21 0	56 38 20-28 19-27 23	66 44 24-33 23-32 28						
9 x 9 Ak = .225	TOTAL CFM CFM/SIDE THROW NC	113		169		225		281		338		394	
		42 28 4-8 3-6 0	63 42 8-14 7-12 0	84 56 12-19 11-18 0	105 70 17-25 16-23 24	127 84 22-31 21-29 29	148 98 26-36 24-34 34						
12 x 12 Ak = .400	TOTAL CFM CFM/SIDE THROW NC	200		300		400		500		600		700	
		75 50 6-12 5-9 0	113 75 10-17 8-15 0	150 100 15-23 13-20 22	188 125 20-29 18-26 27	225 150 24-34 22-31 32	263 175 28-40 26-37 37						
15 x 15 Ak = .625	TOTAL CFM CFM/SIDE THROW NC	313		469		625		781		938		1094	
		75 50 6-12 5-9 0	176 117 12-22 10-18 0	234 156 17-27 15-23 24	293 195 23-33 20-29 29	352 234 27-38 25-35 34	410 273 31-44 29-40 39						
18 x 18 Ak = .900	TOTAL CFM CFM/SIDE THROW NC	450		675		900		1125		1350		1575	
		169 113 10-20 8-16 0	253 169 15-25 12-21 20	338 225 20-31 17-27 25	422 281 25-37 22-32 30	506 338 30-42 27-38 35	591 394 34-48 31-44 40						
21 x 21 Ak = 1.225	TOTAL CFM CFM/SIDE THROW NC	613		919		1225		1531		1837		2144	
		230 153 12-23 10-19 0	345 230 16-28 14-24 21	459 306 22-34 19-30 26	574 383 27-40 24-36 31	689 459 32-45 29-41 36	804 536 36-51 33-47 41						
24 x 24 Ak = 1.600	TOTAL CFM CFM/SIDE THROW NC	800		1200		1600		2000		2400		2800	
		300 200 12-24 11-22 0	450 300 17-30 16-27 22	600 400 23-35 21-33 27	750 500 28-41 26-38 32	900 600 33-47 31-44 37	1050 700 37-52 35-50 42						
27 x 27* Ak = 2.025	TOTAL CFM CFM/SIDE THROW NC	1013		1519		2025		2531		3037		3544	
		380 253 12-23 12-24 0	570 380 17-29 17-19 23	759 506 22-34 22-35 28	949 633 27-40 28-40 33	1139 759 32-46 33-46 38	1329 886 36-51 37-52 43						

See Page DCD-52 for Performance Notes



Directional Ceiling Diffusers



DCD

DCD - Directional Ceiling Diffusers

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Series 5500/5500S - Performance

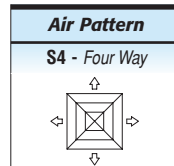
Models 5500 (-1, -2, -4, -46, -6, -7, -8, -9 frame styles)
 Models 5500S (-1, -2, -4, -46, -6, -7, -8, -9 frame styles)
 (S4) 4-Way Square Pattern

Directional Ceiling Diffusers



DCD

NECK SIZE Ak	Ps Pt	NECK VELOCITY					
		200	300	400	500	600	700
		.013 .016	.030 .036	.053 .063	.083 .099	.120 .142	.163 .194
6 x 6 Ak = .100	TOTAL CFM	50	75	100	125	150	175
	CFM/SIDE	13	19	25	31	38	44
	THROW NC	2-4 -	6-10 -	10-16 -	15-21 -	19-27 23	23-32 28
9 x 9 Ak = .225	TOTAL CFM	113	169	225	281	338	394
	CFM/SIDE	28	42	56	70	84	98
	THROW NC	3-6 -	7-12 -	11-18 -	16-23 24	21-29 29	24-34 34
12 x 12 Ak = .400	TOTAL CFM	200	300	400	500	600	700
	CFM/SIDE	50	75	100	125	150	175
	THROW NC	5-9 -	8-15 -	13-20 22	18-26 27	22-31 32	26-37 37
15 x 15 Ak = .625	TOTAL CFM	313	469	625	781	938	1094
	CFM/SIDE	78	117	156	195	234	273
	THROW NC	6-12 -	10-18 -	15-23 24	20-29 29	25-35 34	29-40 39
18 x 18 Ak = .900	TOTAL CFM	450	675	900	1225	1350	1575
	CFM/SIDE	113	169	225	306	338	394
	THROW NC	8-16 -	12-21 20	17-27 25	22-32 30	27-38 35	31-44 40
21 x 21 Ak = 1.225	TOTAL CFM	613	919	1225	1531	1837	2144
	CFM/SIDE	153	230	306	383	459	536
	THROW NC	10-19 -	14-24 21	19-30 26	24-36 31	29-41 36	33-47 41
24 x 24 Ak = 1.600	TOTAL CFM	800	1200	1600	2000	2400	2800
	CFM/SIDE	200	300	400	500	600	700
	THROW NC	11-22 -	16-27 22	21-33 27	26-38 32	31-44 37	35-50 42
27 x 27* Ak = 2.025	TOTAL CFM	1013	1519	2025	2531	3037	3544
	CFM/SIDE	253	380	506	633	759	886
	THROW NC	12-24 -	17-29 23	22-35 28	28-40 33	33-46 38	37-52 43
33 x 33* Ak = 3.025	TOTAL CFM	1513	2269	3025	3781	4537	5294
	CFM/SIDE	378	567	756	945	1134	1323
	THROW NC	12-23 -	17-29 24	22-34 29	27-40 34	33-46 39	36-51 44



Series 5500/5500S - Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM** - Cubic feet per minute (air)
- fpm** - Velocity of air stream in feet per minute
- Pv** - Velocity pressure (inches of water column)
- Pt** - Total pressure (inches of water column)
- Ps** - Static pressure = Pt - Pv (inches of water column)
- Throw** - Cataloged throw is horizontal distances in feet to the terminal velocities of 150 - 50 fpm with ambient supply air temperature.
- NC** - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak** - Area Factor

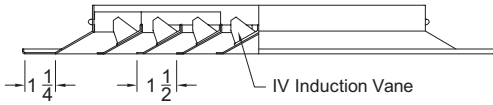
DCD - Directional Ceiling Diffusers

Optional IV

Optional IV Induction Vane

Model 5000 - Aluminum
 Model 5500 - Aluminum
 Model 5500S - Steel

IV Vanes increase the induction rate of the diffuser providing higher mixing and comfort in the occupied zone



IV Induction Vane Shown (back side of diffuser)

Directional Ceiling Diffusers

Optional IV - Performance

Performance Data		5000-IV Performance - Neck Velocity, fpm							5500-IV Performance - Neck Velocity, fpm																							
		200		300		400		500		600		700		200		300		400		500		600		700		800						
		A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B	A	B					
Size	Pv in Inches H2O	.003	.006	.010	.016	.022	.150	0.008	0.017	0.031	0.049	0.070	0.095	0.124	Pv in Inches H2O	.015	.030	.050	.078	.110	.030	0.002	0.006	0.010	0.016	0.022	0.031	0.040				
	Total CFM	50	75	100	125	150	175	50	75	100	125	150	175	200		110	170	225	280	335	390	115	170	225	280	340	395	450				
6" x 6"	1-Way	2	4	7	8	10	11	2	4	6	8	9	10	11	4	7	10	11	12	16	3	5	7	9	10	11	19					
	2-Way	1	3	4	6	7	8	3	5	7	9	10	11	12	2	5	7	8	11	12	4	7	9	10	11	12	22					
	3-Way	1	2	2	3	4	4	1	2	2	3	4	4	5	1	2	3	4	5	7	1	2	3	4	5	6	15					
	4-Way	1	2	2	3	4	4	1	2	2	3	4	4	5	1	2	3	4	5	7	1	2	3	4	5	6	15					
	NC	<	<	<	<	<	23	<10	<15	16	18	25	28	33	<	<	<	<	23	28	<10	17	20	26	31	35	35					
9" x 9"	Total CFM	110	170	225	280	335	390	115	170	225	280	340	395	450	110	170	225	280	335	390	115	170	225	280	340	395	450					
	1-Way	4	7	10	11	12	16	3	5	7	9	10	11	12	4	7	10	11	12	16	3	5	7	9	10	11	19					
	2-Way	2	5	7	8	11	12	4	7	10	11	12	16	3	5	7	9	10	11	4	7	10	11	12	16	3	5	7	9	10	11	19
	3-Way	1	2	2	3	4	4	1	2	2	3	4	4	5	1	2	3	4	5	7	1	2	3	4	5	6	15					
	4-Way	2	3	5	6	7	9	1	2	2	3	4	4	5	1	2	3	4	5	7	1	2	3	4	5	6	15					
NC	<	<	<	<	<	23	<10	<15	17	20	26	31	35	<	<	<	<	23	28	<10	17	20	26	31	35	35						
12" x 12"	Total CFM	200	300	400	500	600	700	200	300	400	500	600	700	800	200	300	400	500	600	700	200	300	400	500	600	700	800					
	1-Way	6	10	12	15	17	20	3	5	7	9	10	11	12	6	10	12	15	17	20	3	5	7	9	10	11	19					
	2-Way	4	7	9	12	13	15	4	7	9	10	11	12	16	4	7	9	10	11	12	4	7	9	10	11	12	22					
	3-Way	2	3	5	6	7	8	2	3	4	5	6	6	7	2	3	4	5	6	7	2	3	4	5	6	6	15					
	4-Way	2	5	7	8	9	11	2	3	4	5	6	6	7	2	3	4	5	6	7	2	3	4	5	6	6	15					
NC	<	<	<	23	28	33	<10	14	18	22	27	32	37	<	<	<	23	28	<10	17	22	27	32	37	36							
15" x 15"	Total CFM	310	470	625	780	935	1090	315	470	625	780	940	1095	1250	310	470	625	780	935	1090	315	470	625	780	940	1095	1250					
	1-Way	8	11	14	17	20	25	4	6	8	10	11	12	14	8	11	14	17	20	25	4	6	8	10	11	12	25					
	2-Way	5	8	11	12	15	17	6	8	10	11	12	14	16	5	8	10	11	12	15	6	8	10	11	12	14	29					
	3-Way	3	4	5	6	7	8	3	4	5	6	7	8	9	3	4	5	6	7	8	3	4	5	6	7	8	35					
	4-Way	3	6	8	10	12	14	3	4	5	6	7	8	9	3	4	5	6	7	8	3	4	5	6	7	8	35					
NC	<	<	<	23	28	33	<10	17	23	29	34	39	45	<	<	<	23	28	<10	17	23	29	34	39	45							
18" x 18"	Total CFM	450	675	900	1125	1350	1575	450	675	900	1125	1350	1575	1800	450	675	900	1125	1350	1575	450	675	900	1125	1350	1575	1800					
	1-Way	9	12	16	20	22	27	4	6	8	10	11	12	14	9	12	16	20	22	27	4	6	8	10	11	12	27					
	2-Way	7	10	12	15	17	22	6	8	10	11	12	14	16	7	10	12	15	17	22	6	8	10	11	12	14	31					
	3-Way	4	5	8	9	10	11	4	5	8	9	10	11	12	4	5	8	9	10	11	4	5	8	9	10	11	38					
	4-Way	4	8	10	11	14	16	4	5	8	9	10	11	12	4	5	8	9	10	11	4	5	8	9	10	11	38					
NC	<	<	<	23	28	33	<15	19	25	30	35	40	46	<	<	<	23	28	<15	19	25	30	35	40	46							
21" x 21"	Total CFM	610	920	1225	1530	1835	2140	615	920	1225	1530	1840	2145	2450	610	920	1225	1530	1835	2140	615	920	1225	1530	1840	2145	2450					
	1-Way	10	14	18	22	25	30	4	6	8	10	11	12	14	10	14	18	22	25	30	4	6	8	10	11	12	29					
	2-Way	7	11	14	17	20	26	6	8	10	11	12	14	16	7	11	14	17	20	26	6	8	10	11	12	14	34					
	3-Way	5	6	9	10	11	12	5	6	9	10	11	12	14	5	6	9	10	11	12	5	6	9	10	11	12	42					
	4-Way	5	9	11	13	15	17	5	6	9	10	11	12	14	5	9	11	13	15	17	5	9	11	13	15	17	42					
NC	<	<	<	28	33	38	<15	20	25	31	36	41	47	<	<	<	28	33	<15	20	25	31	36	41	47							

Optional IV - Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM** - Cubic feet per minute (air)
- fpm** - Velocity of air stream in feet per minute
- Pv** - Velocity pressure (inches of water column)
- Pt** - Total pressure (inches of water column)
- Ps** - Static pressure = Pt - Pv (inches of water column)
- Throw** - Cataloged throw is horizontal distances in feet to the terminal velocities of 150 - 50 fpm with ambient supply air temperature.
- NC** - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak** - Area Factor

Series 5500 Aluminum - Specifications

- 5500-1 – Surface Mount
- 5500-4 – Drop Face
- 5500-46 – Drop Face – T-bar Lay-in
- 5500-6 – T-bar Lay-in
- 5500-7 – Concealed Spline
- 5500-8 – Tegular Lay-in
- 5500-9 – Donn Finline Lay-in

Air Outlets shall be aluminum model 5500 manufactured by METALAIRES. Units shall consist of a fixed pattern louvered core fastened into a border with spring loaded latches. Core shall be removable without the use of tools. Outlets shall be engineered to perform in variable volume systems and include deflector blades with a horizontal lip to provide longer throw distances. The units shall be the size and quantity as outline in the plans and specifications.

Outlets shall be available in 1, 2-way opposite, 2-way corner, 3, and 4-way directional air patterns.

Units shall be designed to integrate into the specified ceiling system.



Series 5500S Steel - Specifications

- 5500S-1 – Surface Mount
- 5500S-6 – T-bar Lay-in
- 5500S-8 – Tegular Lay-in
- 5500S-9 – Donn Finline Lay-in

Air Outlets shall be steel model 5500S manufactured by METALAIRES. Units shall consist of a fixed pattern louvered core fastened into a border with spring loaded latches. Core shall be removable without the use of tools. Outlets shall be engineered to perform in variable volume systems and include deflector blades with a horizontal lip to provide longer throw distances. The units shall be the size and quantity as outline in the plans and specifications.

Outlets shall be available in 1, 2-way opposite, 2-way corner, 3, and 4-way directional air patterns.

Units shall be designed to integrate into the specified ceiling system.

Options

Adjustable Pattern (horizontal to vertical)

Outlets shall include adjustable air pattern deflector blades that allows the air pattern to be set from vertical to horizontal (Optional APD Air Pattern Deflectors). Air pattern deflector blades shall be accessible from the face and the diffuser and adjustable without the use of tools.

IV Induction Vanes

Units shall include IV induction vanes factory mounted onto the back side of the deflector vanes. IV vanes shall increase the induction rate of the diffuser.

Accessories

Optional Dampers

Aluminum D5A or Steel D5 opposed blade dampers shall be provided. Damper shall be adjusted using a handle accessible through the face of the diffuser. Screwdriver slot operators are not allowed.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

DCD - Directional Ceiling Diffusers

Series 5500 Aluminum - Model Specification Guide

Square/Rectangular Louver Face Ceiling Diffusers Series 5500 - Aluminum

Model	Available Neck	Air Pattern	Available Finishes	Available Options	
5500-1 - Flush Surface Mount	6" thru 48"	Standard	Standard	D5	Opposed Blade Damper - Steel
5500-2 - V-Beveled Drop Surface Mount		S4 - Sq. 4-way	01 - White	D5A	Opposed Blade Damper - Aluminum
5500-4 - Drop Face Surface Mount		Optional	Optional	L9	Equalizing Grid
		S1 - Sq. 1-way	02 - Aluminum	TR	Square to Round Transition
		S2 - Sq. 2-way	03 - Black	TR Deep	Square to Round Transition - Deep
		S3 - Sq. 3-way	24 - Mill	G3	Equalizing Grid
		SC - Sq. 2-way corner	28 - Custom Color	BDS	Butterfly Damper
		R1S - Rct. 1-way short		RSD	Radial Shutter Damper
		R1L - Rct. 1-way long		IV	Induction Vanes
		R2S - Rct. 2-way short		APD	Air Pattern Deflectors
		R2L - Rct. 2-way long		TR	Transition-Mounted
		R3S - Rct. 3-way short			
		R3L - Rct. 3-way long			
	R4 - Rct. 4-way				

Square/Rectangular Louver Face Ceiling Diffusers Series 5500 - Extruded Aluminum

Model	Available Neck	Module	Air Pattern	Available Finishes	Available Options	
5500-46 - Drop Face T-bar Lay-in	6" thru 46"	12" x 12" 24" x 24"	Standard	Standard	D5	Opposed Blade Damper - Steel
5500-6 - T-bar Lay-in			S4 - Sq. 4-way	01 - White	D5A	Opposed Blade Damper - Aluminum
5500-7 - Concealed Spline		36" x 24" 48" x 24" 48" x 48"	Optional	Optional	L9	Equalizing Grid
5500-8 - Tegalur T-bar			S1 - Sq. 1-way	02 - Aluminum	TR	Square to Round Transition
5500-9 - Donn Finline			S2 - Sq. 2-way	03 - Black	TR Deep	Square to Round Transition - Deep
			S3 - Sq. 3-way	24 - Mill	G3	Equalizing Grid
			SC - Sq. 2-way corner	28 - Custom Color	BDS	Butterfly Damper
			R1S - Rct. 1-way short		RSD	Radial Shutter Damper
			R1L - Rct. 1-way long		IV	Induction Vanes
			R2S - Rct. 2-way short		APD	Air Pattern Deflectors
			R2L - Rct. 2-way long		TR	Transition-Mounted
			R3S - Rct. 3-way short			
			R3L - Rct. 3-way long			
		R4 - Rct. 4-way				



DCD - Directional Ceiling Diffusers

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Series 5500 Steel - Model Specification Guide

Square/Rectangular Louver Face Ceiling Diffusers Series 5500 - Steel

Model	Available Neck	Air Pattern	Available Finishes	Available Options	
5500S-1 - Flush Surface Mount 5500S-2 - V-Beveled Drop Surface Mount	6" thru 24"	Standard	Standard	D5	Opposed Blade Damper - Steel
		S4 - Sq. 4-way	01 - White	D5A	Opposed Blade Damper - Aluminum
		Options	Optional	L9	Equalizing Grid
		S1 - Sq. 1-way	02 - Aluminum	TR	Square to Round Transition
		S2 - Sq. 2-way	03 - Black	TR Deep	Square to Round Transition - Deep
		S3 - Sq. 3-way	24 - Mill	G3	Equalizing Grid
		SC - Sq. 2-way corner	28 - Custom Color	BDS	Butterfly Damper
		R1S - Rct. 1-way short		RSD	Radial Shutter Damper
		R1L - Rct. 1-way long		IV	Induction Vanes
		R2S - Rct. 2-way short		APD	Air Pattern Deflectors
		R2L - Rct. 2-way long		TR	Transition-Mounted
		R3S - Rct. 3-way short			
		R3L - Rct. 3-way long			
		R4 - Rct. 4-way			

Square/Rectangular Louver Face Ceiling Diffusers Series 5500 - Steel For T-bar Lay-in Ceiling Grid Applications

Model	Available Neck	Module	Air Pattern	Available Finishes	Available Options	
5500S-6 - T-bar Lay-in 5500S-8 - Tegular T-bar 5500S-9 - Donn Fineline	6" thru 21"	12" x 12" 24" x 24"	Standard	Standard	D5	Opposed Blade Damper - Steel
			S4 - Sq. 4-way	01 - White	D5A	Opposed Blade Damper - Aluminum
			Options	Optional	L9	Equalizing Grid
			S1 - Sq. 1-way	02 - Aluminum	TR	Square to Round Transition
			S2 - Sq. 2-way	03 - Black	TR Deep	Square to Round Transition - Deep
			S3 - Sq. 3-way	24 - Mill	G3	Equalizing Grid
			SC - Sq. 2-way corner	28 - Custom Color	BDS	Butterfly Damper
			R1S - Rct. 1-way short		RSD	Radial Shutter Damper
			R1L - Rct. 1-way long		IV	Induction Vanes
			R2S - Rct. 2-way short		APD	Air Pattern Deflectors
			R2L - Rct. 2-way long		TR	Transition-Mounted
			R3S - Rct. 3-way short			
			R3L - Rct. 3-way long			
			R4 - Rct. 4-way			

Directional Ceiling Diffusers



DCD

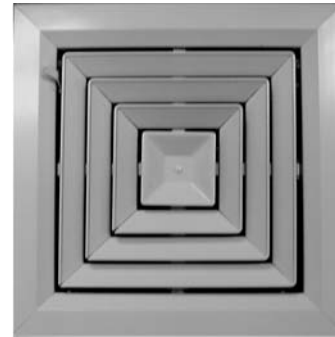
DCD - Directional Ceiling Diffusers

3/2006

➔ Economical Square Diffusers ➔ Series 5200 ➔ Aluminum

Product Details

- ✦ Removable core for concealed mounting
- ✦ Optional built-in opposed blade damper
- ✦ Available in 1 way, 2 way opposite, 2 way corner, 3 way and 4 way directional air patterns



Model 5200-2 Shown

Standard Finish: 01 White

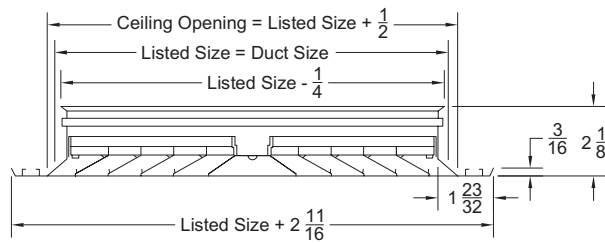
Directional Ceiling Diffusers



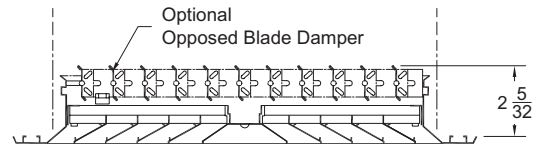
DCD

Dimensions are in inches

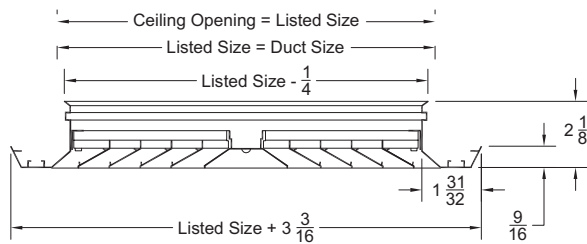
Economical Square Diffusers - Surface Mount Model 5200-1



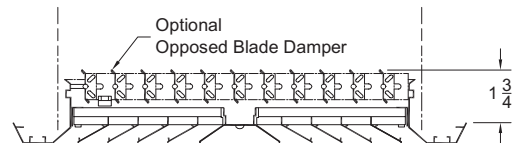
Economical Square Diffusers - Surface Mount With Opposed Blade Damper Model 5200-1 D



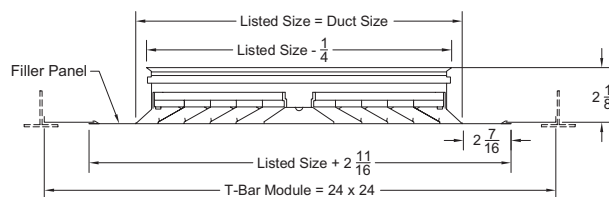
Economical Square Diffusers - V-Beveled Drop Surface Mounting Model 5200-2



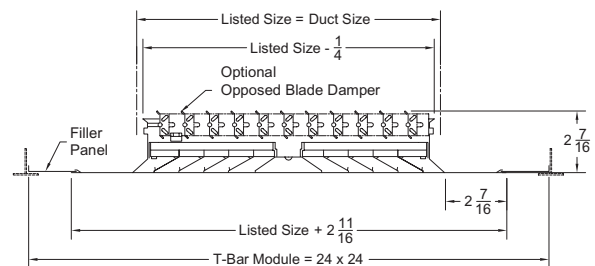
Economical Square Diffusers - V-Beveled Drop Surface Mounting With Opposed Blade Damper Model 5200-2 D



Economical Square Diffusers - T-bar Lay-in Model 5200-6



Economical Square Diffusers - T-bar Lay-in With Opposed Blade Damper Model 5200-6 D



DCD - Directional Ceiling Diffusers

Directional Ceiling Diffusers



DCD

Air Patterns - Square Economical Face Ceiling Diffusers					
S1 - One Way	S2 - Two Way Opposite	SC - Two Way Corner	S3 - Three Way	S4 - Four Way	Available Sizes
					6" x 6" 8" x 8" 10" x 10" 12" x 12" 14" x 14" 16" x 16" 18" x 18" 20" x 20" 22" x 22" 24" x 24"

1. Available Finishes	2. Available Accessories	3. Construction Details
Standard Finish: 01 White Optional Finish: 02 Aluminum 28 Custom Color	5200-1 - with screw holes 5200-2 - with screw holes	Available Air Pattern: S1, S2, S3, S4 and SC Units are shipped with screw holes as standard

Series 5200 - Performance

Models 5200 (-1, -2, -6, -1D, -2D, -6D)

CFM	Outlet Size	6 x 6	8 x 8	10 x 10	12 x 12	14 x 14	16 x 16	20 x 20	22 x 22	24 x 24
100	Neck Velocity	400	225	114	100					
	Ps	.004	.001	.001	.001					
200	Neck Velocity	800	450	288	200	147				
	Ps	.014	.004	.002	.001	.001				
300	Neck Velocity		675	432	300	220				
	Ps		.008	.004	.002	.001				
400	Neck Velocity		900	576	400	294				
	Ps		.019	.008	.004	.002				
600	Neck Velocity			864	600	441	216			
	Ps			.017	.008	.003	.001			
800	Neck Velocity				800	588	450	288	238	200
	Ps				.018	.008	.005	.002	.001	.001
1000	Neck Velocity					735	563	360	298	250
	Ps					.014	.009	.003	.002	.001
1200	Neck Velocity					882	675	432	357	300
	Ps					.019	.012	.004	.002	.001
1400	Neck Velocity						787	504	417	350
	Ps						.014	.005	.003	.002
1600	Neck Velocity						900	576	476	400
	Ps						.020	.006	.005	.003
1800	Neck Velocity							648	536	450
	Ps							.006	.011	.006
2000	Neck Velocity								720	595
	Ps								.007	.008
2200	Neck Velocity									792
	Ps									.014
	Throw									
	Throw									

Series 5200 - Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

Neck Velocity - The neck velocity is in feet per minute (fpm).

Ps - Static pressure = Pt - Pv (inches of water column).

Throw - Throws indicated are based on total number of feet of projected air when a terminal velocity of 50 fpm is reached.

Numbers reported in chart are, from left to right, for 1,2,3, and 4-way throw patterns.



DCD - Directional Ceiling Diffusers

3/2006

Directional Ceiling Diffusers

Series 5200 - Specifications

5200-1 - Surface Mount
5200-2 - V-Beveled
5200-6 - T-bar Lay-in

Air Outlets shall be aluminum model 5200 manufactured by METALAIRE. Units shall consist of a fixed pattern louvered core fastened into a border with spring loaded latches. Core shall be removable without the use of tools. The units shall be the size and quantity as outline in the plans and specifications.

Outlets shall be available in 1, 2-way opposite, 2-way corner, 3, and 4-way directional air patterns.

Units shall be designed to integrate into the specified ceiling system.

Accessories

Optional Dampers:

Aluminum DA opposed blade dampers shall be provided. Damper shall be adjusted using a handle accessible through the face of the diffuser. Screwdriver slot operators are not allowed.



Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

DCD

DCD - Directional Ceiling Diffusers

Series 5200 - Model Specification Guide

Square Louver Face Ceiling Diffusers Aluminum - Series 5200

Model	Available Neck	Air Pattern	Available Finishes	Available Options	
5200-1 - Flush Surface Mount 5200-2 - V-Beveled Drop Surface Mount 5200-4 - Drop Face Surface Mount	6" thru 24"	Standard	Standard	DA	Aluminum - Opposed Blade Damper
		S4 - Sq. 4-way	01 - White		
		Options			
		S1 - Sq. 1-way			
		SC - Sq. 2-way corner			
		S2 - Sq. 2-way			
		S3 - Sq. 3-way			

Square Louver Face Ceiling Diffusers Aluminum - Series 5200 For T-bar Lay-in Ceiling Grid Applications

Model	Available Neck	Module	Air Pattern	Available Finishes	Available Options	
5200-6 - T-bar Lay-in	6" thru 20"	24" x 24"	Standard	Standard	DA	Aluminum - Composed Blade Damper
			S4 - Sq. 4-way	01 - White		
			Options			
			S1 - Sq. 1-way			
			SC - Sq. 2-way corner			
		S2 - Sq. 2-way				
		S3 - Sq. 3-way				



DCD - Directional Ceiling Diffusers

3/2006

Directional Ceiling Diffusers



DCD

- ➔ Square Face Diffuser ➔ 2-Cone ➔ Round Neck ➔ Series 5700 ➔ Steel
- ➔ Series 5700 AS ➔ Aluminized Steel
- ➔ Series 5700 AL ➔ Steel

Product Details

- ✪ The 5700 provides a tight horizontal 360° discharge pattern for superior induction and occupant comfort
- ✪ 5700 can be converted in the field to a 3 cone diffuser with the addition of the optional Snap-58
- ✪ Available in metric 600mm x 600mm lay-in
- ✪ Model 5700A is adjustable from horizontal to vertical discharge
- ✪ Lay-in T-bar border 6 can be used in surface mounting applications by adding optional T-bar Plaster Frame (TBPF)
- ✪ Cores are easy to remove without tools
- ✪ The 5700 series is an excellent choice for VAV applications



Model 5700-6 Shown
Standard Finish: 01 White

Aluminized Steel

METALAIRE is proud to announce the availability of aluminized steel for our square Directional Ceiling Diffusers. In environments which demand aluminum's corrosion resistance, the aluminized coated steel offers the protection of aluminum and the strength of steel. The use of aluminized steel results in a product that ships better and that handle better during installation.

What is Aluminized Steel?

Aluminized steel is continuously hot-dip coated in a bath of commercially pure aluminum to provide a metallurgical bond between the steel substrate and the aluminum coating. The aluminum bath contains 5% to 11% silicon, which is added to minimize growth of a brittle iron-aluminum inter-metallic layer and thus promote coating adherence during forming. This process melds the best features of both metallic materials; the strength and other mechanical properties of the steel substrate and the surface characteristics and corrosion resistance of the aluminum coating.

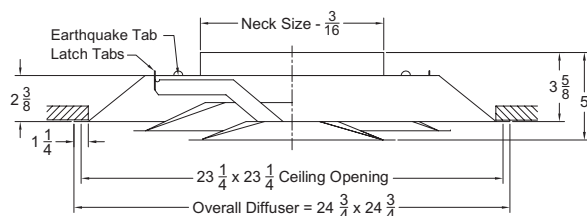
Aluminized steel has been subjected to long-term testing for resistance to atmospheric corrosion and is proven superior to any other metallic-coated steel. Over forty years of exposure tests in a mild industrial atmosphere show the coating on aluminized steel still protecting the base metal with virtually no detectable loss of the original coating.

Non - Adjustable

Dimensions are in inches

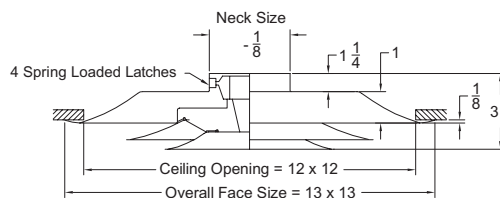
Square Face Diffusers - Surface Mount - 24" x 24"

- Model 5700-1 - Steel
- Model 5700-1 AS - Aluminized Steel
- Model 5700-1 AL - Aluminum



Square Face Diffusers - Surface Mount - 12" x 12"

- Model 5700-1 - Steel
- Model 5700-1 AS - Aluminized Steel
- Model 5700-1 AL - Aluminum

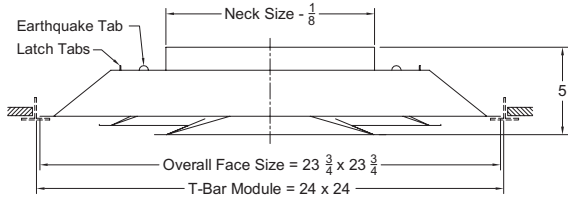


DCD - Directional Ceiling Diffusers



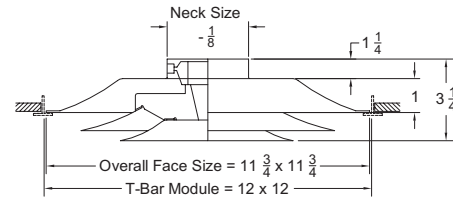
Square Face Diffusers - T-Bar Lay-in - 24" x 24"

- Model 5700-6 - Steel
- Model 5700-6 AS - Aluminumized Steel
- Model 5700-6 AL - Aluminum



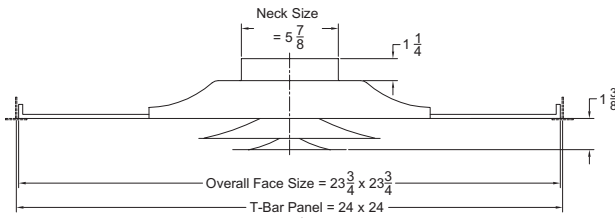
Square Face Diffusers - T-Bar Lay-ins - 12" x 12"

- Model 5700-6 - Steel
- Model 5700-6 AS - Aluminumized Steel
- Model 5700-6 AL - Aluminum



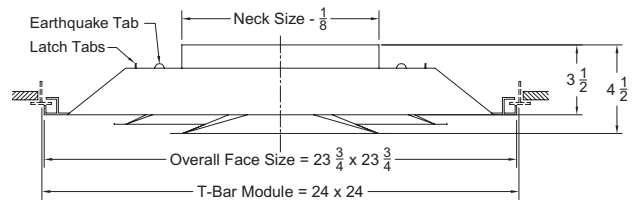
Square Face Diffusers - T-bar Lay-in Panel - Steel

Model 5700-6P



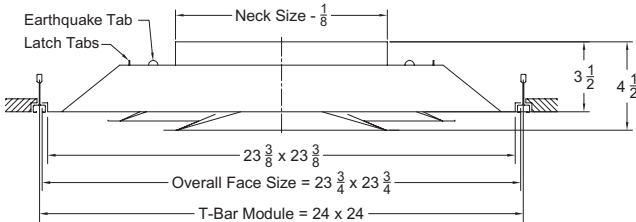
Square Face Diffusers - Concealed Spline - 24" x 24"

- Model 5700-7 - Steel
- Model 5700-7 AS - Aluminumized Steel



Square Face Diffusers - Donn Fineline - 24" x 24"

- Model 5700-9 - Steel
- Model 5700-9 AS - Aluminumized Steel

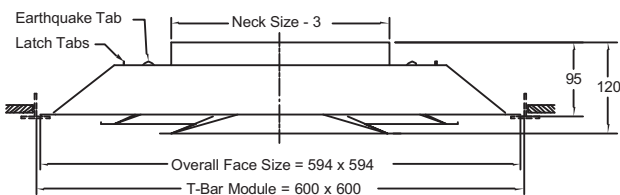


Metric

Dimensions are in millimeters

Square Face Diffusers - Metric - T-bar Lay-in - Steel

- Model M5700-6 - 600mm x 600mm
- Model M5700-6 AS - 600mm x 600mm
- Model M5700-6 AL - 600mm x 600mm



DCD - Directional Ceiling Diffusers

3/2006

Directional Ceiling Diffusers



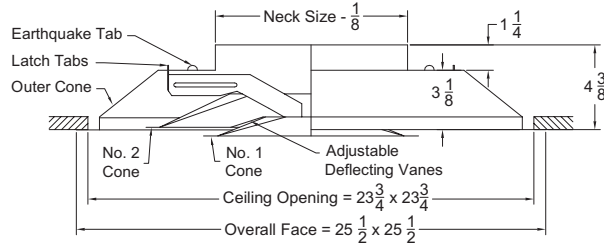
DCD

Adjustable

Dimensions are in inches

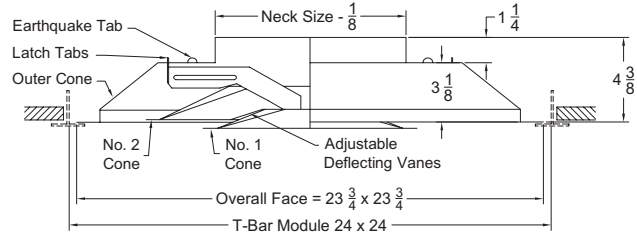
Square Face Diffusers - Surface Mount

Model 5700A-1 - Steel
 Model 5700A-1 AS- Aluminized Steel
 Model 5700A-1 AL- Aluminum



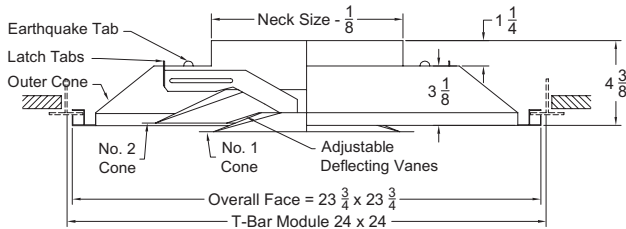
Square Face Diffusers - T-bar Lay-in

Model 5700A-6 - Steel
 Model 5700A-6 AS- Aluminized Steel
 Model 5700A-6 AL- Aluminum



Square Face Diffusers - Concealed Spline

Model 5700A-7 - Steel
 Model 5700A-7 AS- Aluminized Steel



1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish 03 Black 28 Custom color</p>	<p>G3 - Equalizing Grid337 BDS - Butterfly Damper335 RSD - Radial Shutter Damper336 SNAP 58 - Converts 5700 from 2 to 3 Cones) BAF - Directional Baffles</p> <p>Note: All Accessories Shipped Unattached</p>	<ul style="list-style-type: none"> Sizes only as listed Available Neck Sizes: 6, 8, 10, 12, 14 and 15

DCD - Directional Ceiling Diffusers

Series 5700 - Performance

Models 5700 (-1, -6, -7, -9), 5700-6P, 5700 AS (-1,-6,-7,-9), 5700 AL (-1, -6), 5700A (-1, -6, -7), 5700A-1, 5700A-6P

Listed Size	Neck Size Ak	fpm Neck Velocity Pv	400 0.010	500 0.016	600 0.022	700 0.031	800 0.040	900 0.050	1000 0.062	1200 0.090	1400 0.122	2000 0.249
12" x 12"	6 Ak = 0.093	CFM Ps Pt Throw* Throw NC	80 0.021 0.031 2-3-6 3-4-6 -	100 0.033 0.049 3-4-7 3-5-7 <15	120 0.048 0.071 3-5-7 4-5-7 18	135 0.061 0.091 3-5-8 4-6-8 20	155 0.080 0.120 4-6-8 5-6-8 23	175 0.102 0.153 4-6-9 5-6-9 26	195 0.127 0.189 5-7-9 6-7-9 28	235 0.184 0.274 6-7-10 6-7-10 33	275 0.253 0.375 6-8-11 6-8-11 36	395 0.521 0.770 8-9-13 8-10-13 44
	8 Ak = 0.165	CFM Ps Pt Throw* Throw NC	140 0.029 0.039 3-4-8 3-5-8 -	175 0.046 0.062 3-5-9 4-6-9 <15	210 0.066 0.089 4-6-10 5-7-10 19	245 0.090 0.121 5-7-11 6-7-11 22	280 0.118 0.158 5-8-11 6-8-11 25	315 0.149 0.199 6-8-12 7-8-12 28	350 0.184 0.246 7-9-13 8-9-13 31	420 0.265 0.354 8-10-14 8-10-14 36	490 0.360 0.482 9-11-15 9-11-15 40	700 0.735 0.984 10-13-18 10-13-18 46
24" x 24"	6 Ak = .077	CFM Ps Pt Throw* Throw NC	80 0.014 0.024 2-2-5 2-4-7 -	100 0.021 0.037 2-3-5 3-5-8 -	120 0.031 0.053 2-4-6 4-6-9 -	135 0.039 0.069 3-4-6 4-6-10 <15	155 0.051 0.091 3-4-6 5-7-10 16	175 0.065 0.116 4-5-7 5-8-11 20	195 0.081 0.143 4-5-7 6-8-12 18	235 0.118 0.207 5-6-8 7-9-13 23	275 0.161 0.283 5-6-8 8-10-14 27	395 0.332 0.582 6-7-10 10-12-17 43
	8 Ak = 0.136	CFM Ps Pt Throw* Throw NC	140 0.016 0.026 2-3-6 3-5-10 -	175 0.025 0.040 3-4-7 4-6-11 -	210 0.036 0.058 3-5-7 5-7-12 -	245 0.048 0.079 4-6-8 6-9-13 -	280 0.063 0.103 4-6-9 6-10-14 <15	315 0.080 0.131 5-6-9 7-10-15 18	350 0.099 0.161 5-7-10 8-11-16 21	420 0.142 0.232 6-7-10 10-12-17 26	490 0.194 0.316 7-8-11 11-13-18 30	700 0.395 0.645 8-10-13 13-16-22 55
	10 Ak = 0.213	CFM Ps Pt Throw* Throw NC	220 0.019 0.029 3-4-8 4-6-12 -	275 0.030 0.046 3-5-8 5-8-14 -	325 0.042 0.064 4-6-9 6-9-15 -	380 0.057 0.088 5-7-10 7-11-16 <15	435 0.075 0.115 5-8-11 8-12-17 16	490 0.096 0.146 6-8-11 8-12-17 20	545 0.118 0.181 7-8-12 9-13-18 24	655 0.171 0.261 8-9-13 10-14-19 30	765 0.233 0.355 8-10-14 13-16-23 35	1090 0.473 0.722 10-12-17 16-19-28 63
	12 Ak = 0.307	CFM Ps Pt Throw* Throw NC	315 0.021 0.031 3-5-9 5-7-15 -	395 0.033 0.048 4-6-10 6-9-17 -	470 0.046 0.069 5-7-11 7-11-18 -	550 0.063 0.094 6-8-12 8-13-20 <15	630 0.083 0.123 7-9-13 10-15-21 19	705 0.104 0.154 7-10-14 11-16-22 23	785 0.129 0.191 8-10-14 12-17-23 27	940 0.185 0.274 9-11-16 14-18-26 33	1100 0.253 0.375 10-12-17 16-20-28 39	1570 0.515 0.765 12-14-20 19-23-33 68
	14 Ak = 0.418	CFM Ps Pt Throw* Throw NC	430 0.026 0.036 4-6-11 6-9-17 -	535 0.041 0.056 5-7-12 7-11-19 -	640 0.058 0.081 6-9-13 8-13-21 <15	750 0.080 0.110 7-10-14 10-15-23 <15	855 0.104 0.144 8-11-15 11-17-24 18	960 0.131 0.181 9-11-16 13-18-26 23	1070 0.163 0.225 10-12-17 14-19-27 28	1285 0.234 0.324 11-13-18 17-21-30 35	1495 0.317 0.440 11-14-20 19-23-32 40	2140 0.650 0.900 14-17-24 22-27-39 57
	15 Ak = 0.479	CFM Ps Pt Throw* Throw NC	490 0.032 0.042 4-6-11 6-9-18 -	615 0.051 0.066 5-8-13 8-11-21 -	735 0.072 0.095 6-9-14 9-14-23 <15	860 0.099 0.130 7-11-15 11-16-24 16	980 0.129 0.169 8-11-16 12-18-26 22	1105 0.164 0.214 9-12-17 14-20-28 27	1225 0.201 0.263 10-13-18 15-21-29 31	1475 0.292 0.381 11-14-20 18-23-32 39	1720 0.396 0.519 12-15-21 20-24-35 46	2455 0.808 1.057 15-18-25 24-29-41 68

Series 5700 - Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM** - Cubic Feet per Minute (air)
- fpm** - Velocity of air stream in Feet Per Minute
- Pv** - Velocity pressure (inches of water column)
- Pt** - Total pressure (inches of water column)
- Ps** - Static pressure = Pt - Pv (inches of water column)
- Throw*** - Non-isothermal horizontal throw (supply air temperature 15°F colder than average room air temperature) values are for 150 fpm - 100 fpm - 50 fpm velocities
- Throw** - Isothermal horizontal throw (supply air temperature the same as average room air temperature) values are for 150 fpm - 100 fpm - 50 fpm velocities
- NC** - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak** - Area Factors



For more product information visit us at www.metalair.com



Directional Ceiling Diffusers



DCD



Specifications - Series 5700

- 5700-1 - Surface Mount
- 5700-6 - T-bar Lay-in
- 5700-7 - Concealed Spline
- 5700-9 - Donn Finline Lay-in

Air Outlets shall be model:

Non-Adjustable, Horizontal Discharge Pattern

5700 manufactured by METALAIR. Units shall be constructed of steel.
 5700 AS manufactured by METALAIR. Units shall be constructed of aluminized steel.
 5700 AL manufactured by METALAIR. Units shall be constructed of aluminum.

Adjustable Discharge Pattern

5700A manufactured by METALAIR. Units shall be constructed of steel.
 5700A AS manufactured by METALAIR. Units shall be constructed of aluminized steel.
 5700A AL manufactured by METALAIR. Units shall be constructed of aluminum.

Units shall be square with a formed backpan and two inner cones. Outlet shall have the same appearance from the face regardless of inlet size. The units shall be the size and quantity as outline in the plans and specifications.

Inlets shall be drawn into the backpan of the diffuser. Welded inlets are not acceptable. Diffusers shall include seismic tabs drawn into the backpan. Inner cone assemble shall be removable without the aid of tools for installation and to access optional damper. Units requiring tools such as screwdrivers or hex keys to remove the inner cones are not acceptable.

The bottom cone shall have a removable plug in the center to allow access to adjust an optional damper. Units shall include the option to allow a field installed third optional cone accessory model Snap-58. Optional third cone shall be installed into the bottom of the 5700 diffuser without the use of tools.

Units shall be designed to integrate into the specified ceiling system.

Optional for Adjustable Pattern

Outlet shall include adjustable deflector blades located within the cones of the device. Deflectors shall allow the discharge air to be adjusted to obtain a vertical or horizontal air pattern.

Optional Dampers and Accessories

Butterfly Damper

METALAIR model BDS aluminum round butterfly type dampers shall be provided. Damper shall consist of two butterfly style blades that can be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot that can be assessed through the face of the diffuser.

Radial Shutter Damper

METALAIR model RSD steel round radial shutter damper shall be provided. Damper shall consist of gang operated radial blades that slide perpendicular to air flow direction. The damper shall be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot that can be assessed through the face of the diffuser.

Equalizing Grid

METALAIR model G3 aluminum round equalizing grid shall be provided. Equalizing grid shall consist of 1/2" x 1/2" x 1/2" aluminum cubed core mounting in an aluminum frame.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

DCD - Directional Ceiling Diffusers

Series 5700 - Model Specification Guide

Square Face Diffusers - 2 Cone - Series 5700

Model	Available Neck	Module	Available Finishes	Available Options	
5700-1 - Surface Mount - Steel 5700-1 AS - Surface Mount - Aluminized Steel 5700-1 AL - Surface Mount - Aluminum 5700A-1 - Adjustable - Surface Mount - Steel 5700A-1 AS - Adjustable - Surface Mount - Aluminized Steel 5700-6 - T-bar Lay-in - Steel 5700-6 AS - T-bar Lay-in - Aluminized Steel 5700-6 AL - T-bar Lay-in - Aluminum 5700A-6 - Adjustable T-bar Lay-in Steel 5700A-6 AS - Adjustable T-bar Lay-in - Aluminized Steel 5700A-6 AL - Adjustable T-bar Lay-in - Aluminum	6" 8" 10" 12" 14" 15"	12" x 12" 24" x 24"	Standard	G3	Equalizing Grid
			01 - White	BDS	Butterfly Damper
			Optional	RSD	Radial Shutter Damper
			03 - Black	BAF-1	1 Way Directional Baffle
			28 - Custom Color	BAF-2	2 Way Directional Baffle
				BAF-3	3 Way Directional Baffle

Model	Available Neck	Module	Available Finishes	Available Options	
5700-7 - Concealed T-bar - Steel 5700-7 AS - Concealed T-bar - Aluminized Steel 5700A-7 - Concealed T-bar - Aluminized Steel 5700A-7 AS - Adjustable T-bar Lay-in - Aluminized Steel 5700-9 - Donn Finline - Steel 5700-9 AS - Donn Finline - Aluminized Steel	6" 8" 10" 12" 14" 15"	24" x 24"	Standard	G3	Equalizing Grid
			01 - White	BDS	Butterfly Damper
			Optional	RSD	Radial Shutter Damper
			03 - Black	BAF-1	1 Way Directional Baffle
			28 - Custom Color	BAF-2	2 Way Directional Baffle
				BAF-3	3 Way Directional Baffle

Model	Available Neck	Module	Available Finishes	Available Options	
M5700-6 - Metric T-bar Lay-in - Steel M5700-6 AS - Metric T-bar Lay-in - Aluminized Steel M5700-6 AL - Metric T-bar Lay-in - Aluminum	6" 8" 10" 12" 14" 15"	600mm x 600mm	Standard	G3	Equalizing Grid
			01 - White	BDS	Butterfly Damper
			Optional	RSD	Radial Shutter Damper
			03 - Black	BAF-1	1 Way Directional Baffle
			28 - Custom Color	BAF-2	2 Way Directional Baffle
				BAF-3	3 Way Directional Baffle



DCD - Directional Ceiling Diffusers

3/2006

Directional Ceiling Diffusers



DCD

- ➔ Square Panel Face ➔ Series 5750 ➔ Steel
- ➔ Series 5750 AS ➔ Aluminized Steel

Product Details

- ★ Attractive single panel design blends well with all ceilings
- ★ The 5750 provides a tight 360° discharge pattern for superior induction and occupant comfort
- ★ Available in metric lay-in 600mm x 600mm
- ★ Lay-in T-bar border 6 can be used in surface mounting applications by adding optional T-bar Plaster Frame (TBPf)
- ★ Face panel is easy to remove without tools
- ★ The 5750 is an excellent choice for VAV applications



Model 5750-6 Shown
Standard Finish: 01 White

Aluminized Steel

METALAIRe is proud to announce the availability of aluminized steel for our square Directional Ceiling Diffusers. In environments which demand aluminum's corrosion resistance, the aluminized coated steel offers the protection of aluminum and the strength of steel. The use of aluminized steel results in a product that ships better and that handle better during installation.

What is Aluminized Steel?

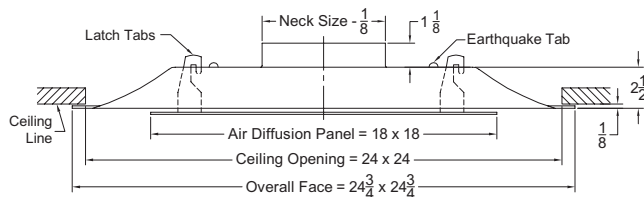
Aluminized steel is continuously hot-dip coated in a bath of commercially pure aluminum to provide a metallurgical bond between the steel substrate and the aluminum coating. The aluminum bath contains 5% to 11% silicon, which is added to minimize growth of a brittle iron-aluminum inter-metallic layer and thus promote coating adherence during forming. This process melds the best features of both metallic materials; the strength and other mechanical properties of the steel substrate and the surface characteristics and corrosion resistance of the aluminum coating.

Aluminized steel has been subjected to long-term testing for resistance to atmospheric corrosion and is proven superior to any other metallic-coated steel. Over forty years of exposure tests in a mild industrial atmosphere show the coating on aluminized steel still protecting the base metal with virtually no detectable loss of the original coating.

Dimensions are in inches

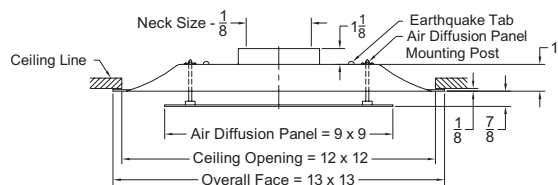
Square Face - Round Neck - Uni-Flow Panel Face Surface Mount - 24" x 24"

Model 5750-1 - Steel
Model 5750-1 AS - Aluminized Steel



Square Face - Round Neck - Uni-Flow Panel Face Surface Mount - 12" x 12"

Model 5750-1 - Steel
Model 5750-1 AS - Aluminized Steel



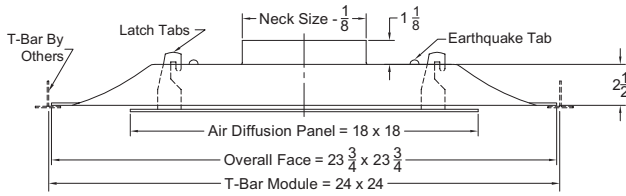
DCD - Directional Ceiling Diffusers

Directional Ceiling Diffusers

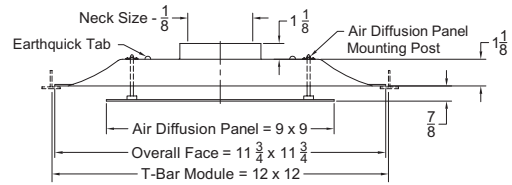


DCD

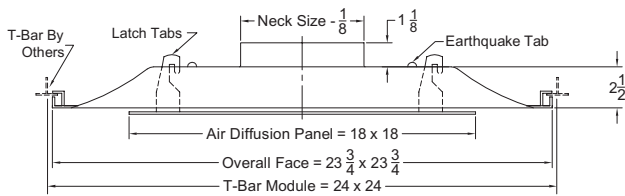
Square Face - Round Neck - Uni-Flow Panel Face
T-bar Lay-in - 24" x 24"
 Model 5750-6 - Steel
 Model 5750-6 AS - Aluminized Steel



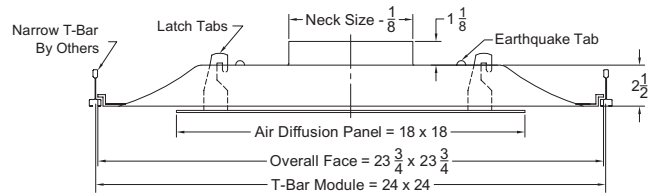
Square Face - Round Neck - Uni-Flow Panel Face
T-bar Lay-in - 12" x 12"
 Model 5750-6 - Steel
 Model 5750-6 AS - Aluminized Steel



Square Face - Round Neck - Uni-Flow Panel Face
Concealed Spline - 24" x 24"
 Model 5750-7 - Steel
 Model 5750-7 AS - Aluminized Steel



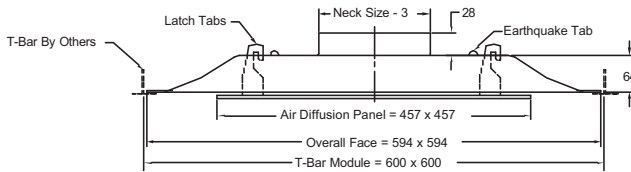
Square Face - Round Neck - Uni-Flow Panel Face
Donn Finline - 12" x 12"
 Model 5750-9 - Steel
 Model 5750-9 AS - Aluminized Steel



Metric

Dimensions are in millimeters

Square Face - Round Neck - Uni-Flow Panel Face - Metric
T-bar Lay-in
 Model M5750-6 - Steel
 Model M5750-6 AS - Aluminized Steel



1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish 03 Black 28 Custom color</p>	<p>G3 - Equalizing Grid337 BDS - Butterfly Damper335 RSD - Radial Shutter Damper336 BAF - Directional Baffles BO - Blank off for 5750</p> <p>Note: All Accessories Shipped Unattached</p>	<ul style="list-style-type: none"> Sizes only as listed Available Neck Sizes: 6" and 8" for 12" x 12" Module 6", 8", 10", 12", 14", and 15" for 24" x 24" Module.

DCD - Directional Ceiling Diffusers

Series 5750 - Performance

Models 5750 (-1, -2, -7, -9) 5750 AS (-1, -6, -7, -9)

Directional Ceiling Diffusers



DCD

Listed Size	Neck Size Ak	fpm Neck Velocity Pv	400 0.010	500 0.016	600 0.022	700 0.031	800 0.040	900 0.050	1000 0.062	1200 0.090	1400 0.122	2000 0.249
12" x 12"	6 Ak = 0.093	CFM Ps Pt Throw* Throw NC	80 0.009 0.019 3-4-7 3-4-7 <15	100 0.014 0.030 3-5-7 4-5-7 <15	120 0.021 0.043 4-6-8 4-6-8 <15	135 0.024 0.054 4-6-9 5-6-9 16	155 0.032 0.072 5-6-9 5-7-9 18	175 0.041 0.092 6-7-10 6-7-10 21	195 0.051 0.114 6-7-10 6-7-10 23	235 0.075 0.165 6-8-11 7-8-11 27	275 0.104 0.226 7-9-12 7-9-12 31	315 0.137 0.297 8-9-13 8-9-13 34
	8 Ak = 0.165	CFM Ps Pt Throw* Throw NC	140 0.017 0.027 3-5-9 4-6-9 <15	175 0.027 0.043 4-7-10 5-7-10 <15	210 0.039 0.061 5-8-11 6-8-11 17	245 0.053 0.083 6-8-11 7-8-12 20	280 0.069 0.109 7-9-12 7-9-13 22	315 0.087 0.138 8-9-13 8-9-13 25	350 0.108 0.170 8-10-14 8-10-14 27	420 0.155 0.245 9-11-15 9-11-15 31	490 0.212 0.334 10-12-17 10-12-17 34	560 0.276 0.436 10-12-17 10-13-18 37
24" x 24"	6 Ak = .077	CFM Ps Pt Throw* Throw NC	80 0.003 0.013 0-1-4 1-2-5 <15	100 0.004 0.020 1-2-6 1-3-6 <15	120 0.006 0.029 1-2-7 2-4-7 <15	135 0.006 0.036 1-3-8 2-4-8 <15	155 0.008 0.048 2-4-8 3-5-9 15	175 0.011 0.061 2-5-9 4-5-9 18	195 0.014 0.076 3-5-9 4-6-10 21	235 0.021 0.110 4-7-10 5-7-11 26	275 0.029 0.151 5-8-11 6-8-12 31	315 0.039 0.198 6-9-12 6-9-13 35
	8 Ak = 0.136	CFM Ps Pt Throw* Throw NC	140 0.007 0.017 1-1-6 1-2-6 <15	175 0.012 0.027 1-2-7 2-4-8 <15	210 0.017 0.039 1-3-9 2-5-10 <15	245 0.023 0.053 2-4-10 3-6-11 17	280 0.030 0.070 3-6-11 4-6-12 21	315 0.038 0.088 3-7-12 5-7-13 25	350 0.047 0.109 4-7-13 5-8-13 28	420 0.067 0.157 6-9-14 6-10-14 34	490 0.091 0.213 7-10-15 7-11-16 39	560 0.119 0.279 8-11-16 9-12-17 42
	10 Ak = 0.213	CFM Ps Pt Throw* Throw NC	220 0.016 0.026 1-2-7 1-3-8 <15	275 0.025 0.040 1-3-9 2-5-10 <15	325 0.034 0.056 2-4-11 3-6-12 15	380 0.047 0.077 2-5-13 4-7-14 21	435 0.061 0.101 3-7-14 5-8-15 26	490 0.078 0.128 4-8-15 6-9-16 30	545 0.096 0.159 5-9-16 7-10-17 33	655 0.139 0.229 7-11-17 8-12-18 37	765 0.190 0.313 9-13-19 9-14-20 41	875 0.249 0.409 10-14-20 11-15-21 43
	12 Ak = 0.307	CFM Ps Pt Throw* Throw NC	315 0.027 0.037 1-2-9 2-4-10 <15	395 0.042 0.058 1-3-11 2-6-12 <15	470 0.059 0.082 2-5-13 4-7-14 17	550 0.081 0.112 3-7-15 5-8-17 22	630 0.107 0.146 4-9-17 6-10-18 27	705 0.133 0.183 5-10-18 7-11-19 30	785 0.165 0.227 6-11-19 8-12-20 33	940 0.236 0.326 8-13-21 10-14-22 38	1100 0.324 0.446 10-15-23 11-17-23 42	1255 0.422 0.581 12-17-24 13-18-25 45
	14 Ak = 0.418	CFM Ps Pt Throw* Throw NC	430 0.031 0.041 1-3-10 2-4-11 <15	535 0.049 0.064 2-4-13 3-6-14 <15	640 0.069 0.092 2-6-15 4-8-17 20	750 0.095 0.126 3-8-18 6-10-19 25	855 0.124 0.164 4-10-20 7-11-21 30	960 0.156 0.206 6-12-21 8-13-22 33	1070 0.194 0.256 7-13-22 9-14-23 36	1285 0.280 0.370 10-15-24 11-17-25 40	1495 0.378 0.501 12-18-26 13-19-27 44	1710 0.495 0.655 14-20-28 15-21-29 46
	15 Ak = 0.479	CFM Ps Pt Throw* Throw NC	490 0.038 0.048 1-3-11 2-4-12 <15	615 0.060 0.076 2-4-14 3-7-15 <15	735 0.086 0.108 3-6-16 4-9-18 20	860 0.117 0.148 4-8-19 6-10-21 27	980 0.152 0.192 5-11-21 8-12-22 32	1105 0.194 0.244 6-12-23 9-13-24 35	1225 0.238 0.300 7-14-24 10-15-25 37	1475 0.345 0.435 11-17-26 12-18-27 41	1720 0.469 0.592 13-19-28 14-21-29 44	1965 0.613 0.772 15-21-30 16-22-31 47

Series 5750 - Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic Feet per Minute (air)
- fpm - Velocity of air stream in Feet Per Minute
- Pv - Velocity pressure (inches of water column)
- Pt - Total pressure (inches of water column)
- Ps - Static pressure = Pt - Pv (inches of water column)
- Throw* - Non-isothermal horizontal throw (supply air temperature 15°F colder than average room air temperature) values are for 150 fpm - 100 fpm - 50 fpm velocities
- Throw - Isothermal horizontal throw (supply air temperature the same as average room air temperature) values are for 150 fpm - 100 fpm - 50 fpm velocities
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak - Area Factors

Series 5750 - Specifications

- 5750-1 - Surface Mount
- 5750-6 - T-bar Lay-in
- 5750-7 - Concealed Spline
- 5750-9 - Donn Finline Lay-in

Air Outlets shall be model:

5750 manufactured by METALAIRE. Units shall be constructed of steel.
5750 AS manufactured by METALAIRE. Units shall be constructed of aluminized steel.

Units shall be square with a formed backpan and a flat face panel. Face panel shall project no more than 1/4" below the ceiling grid or surface. Outlet shall have the same appearance from the face regardless of inlet size. The units shall be the size and quantity as outline in the plans and specifications.

Inlets shall be drawn into the backpan of the diffuser. Welded inlets are not acceptable. Diffusers shall include seismic tabs drawn into the backpan. Face panel shall be removable without the aid of tools for installation and to access optional damper. Units requiring tools to remove the inner cones are not acceptable.

Units shall be designed to integrate into the specified ceiling system.

Optional Dampers and Accessories

Butterfly Damper

METALAIRE model BDS aluminum round butterfly type dampers shall be provided. Damper shall consist of two butterfly style blades that can be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot that can be assessed through the face of the diffuser.

Radial Shutter Damper

METALAIRE model RSD steel round radial shutter damper shall be provided. Damper shall consist of gang operated radial blades that slide perpendicular to air flow direction. The damper shall be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot that can be assessed through the face of the diffuser.

Opposed Blade Damper

METALAIRE model D3 aluminum or SD3 Steel round opposed blade type dampers shall be provided. Damper shall consist of gang operated blades that can be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot that can be assessed through the face of the diffuser.

Equalizing Grid

METALAIRE model G3 aluminum round equalizing grid shall be provided. Equalizing grid shall consist of 1/2" x 1/2" x 1/2" aluminum cubed core mounting in an aluminum frame.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours



DCD - Directional Ceiling Diffusers

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Series 5750 - Model Specification Guide

Square Face Diffusers - Round Neck - Uni-Flo Panel Face - Series 5750

Directional Ceiling Diffusers



DCD

Model	Available Neck	Module	Available Finishes	Available Options	
5750-1 - Surface Mount - Steel 5750-1 AS - Surface Mount - Aluminized Steel 5750-6 - T-bar Lay-in - Steel 5750-6 AS - T-bar Lay-in - Aluminized Steel	6" 8" 10" 12" 14" 15"	12" x 12" 24" x 24"	Standard	G3	Equalizing Grid
			01 - White	BDS	Butterfly Damper
			Options	RSD	Radial Shutter Damper
			03 - Black	BAF-1	1 Way Directional Baffle
			28 - Custom Color	BAF-2	2 Way Directional Baffle
				BAF-3	3 Way Directional Baffle
				BO	Blank-Off
	D3	Round Opposed Blade Damper - Aluminum			
	SD3	Round Opposed Blade Damper - Steel			

Model	Available Neck	Module	Available Finishes	Available Options	
5750-7 - Concealed T-bar - Steel 5750-7 AS - Concealed T-bar - Aluminized Steel 5750-9 - Donn Finline - Steel 5750-9 AS - Donn Finline - Aluminized Steel	6" 8" 10" 12" 14" 15"	24" x 24"	Standard	G3	Equalizing Grid
			01 - White	BDS	Butterfly Damper
			Options	RSD	Radial Shutter Damper
			03 - Black	BAF-1	1 Way Directional Baffle
			28 - Custom Color	BAF-2	2 Way Directional Baffle
				BAF-3	3 Way Directional Baffle
				BO	Blank-Off
	D3	Round Opposed Blade Damper - Aluminum			
	SD3	Round Opposed Blade Damper - Steel			

Model	Available Neck	Module	Available Finishes	Available Options	
M5750-6 - Metric T-bar Lay-in - Steel M5750-6 AS - Metric T-bar Lay-in - Aluminized Steel	6" 8" 10" 12" 14" 15"	600mm x 600mm	Standard	G3	Equalizing Grid
			01 - White	BDS	Butterfly Damper
			Options	RSD	Radial Shutter Damper
			03 - Black	BAF-1	1 Way Directional Baffle
			28 - Custom Color	BAF-2	2 Way Directional Baffle
				BAF-3	3 Way Directional Baffle
				BO	Blank-Off
	D3	Round Opposed Blade Damper - Aluminum			
	SD3	Round Opposed Blade Damper - Steel			

DCD - Directional Ceiling Diffusers

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Directional Ceiling Diffusers



DCD

- ➔ Square Louver Face ➔ Series 5800 ➔ Steel
- ➔ Series 5800 AS ➔ Aluminized Steel
- ➔ Series 5800 AL ➔ Aluminum

Product Details

- ✦ The 5800 provides a tight 360° discharge pattern for superior induction and occupant comfort
- ✦ Available in metric 600mm x 600mm lay-in
- ✦ 5800A can be adjusted from horizontal to vertical discharge
- ✦ Lay-in T-bar border 6 can be used in surface mounting applications by adding optional T-bar Plaster Frame (TBPF)
- ✦ Cores are easy to remove without tools
- ✦ The 5800 is an excellent choice for VAV applications



Model 5800-6 Shown
Standard Finish: 01 White

Aluminized Steel

METALAIRE is proud to announce the availability of aluminized steel for our square Directional Ceiling Diffusers. In environments which demand aluminum's corrosion resistance, the aluminized coated steel offers the protection of aluminum and the strength of steel. The use of aluminized steel results in a product that ships better and that handles better during installation.

What is Aluminized Steel?

Aluminized steel is continuously hot-dip coated in a bath of commercially pure aluminum to provide a metallurgical bond between the steel substrate and the aluminum coating. The aluminum bath contains 5% to 11% silicon, which is added to minimize growth of a brittle iron-aluminum inter-metallic layer and thus promote coating adherence during forming. This process melds the best features of both metals; the strength and other mechanical properties of the steel substrate and the surface characteristics and corrosion resistance of aluminum.

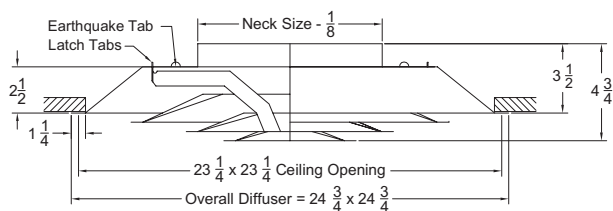
Aluminized steel has been subjected to long-term testing for resistance to atmospheric corrosion and is proven superior to any other metallic-coated steel. Over forty years of exposure tests in a mild industrial atmosphere show the coating on aluminized steel still protecting the base metal with virtually no detectable loss of the original coating.

Non-Adjustable

Dimensions are in inches

Square Face - Round Neck - 3 Cone - Surface Mount - 24" x 24"

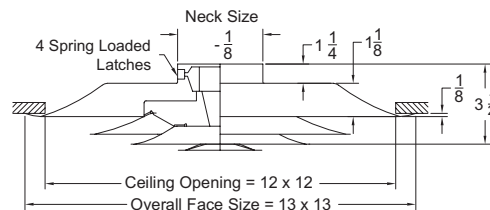
- Model 5800-1 - Steel
- Model 5800-1 AS - Aluminized Steel
- Model 5800-1 AL - Aluminum



Available Neck Sizes 6, 8, 10, 12, 14, 15

Square Face - Round Neck - 3 Cone - Surface Mount - 12" x 12"

- Model 5800-1 - Steel
- Model 5800-1 AS - Aluminized Steel



Available Neck Sizes 6, 8

DCD - Directional Ceiling Diffusers

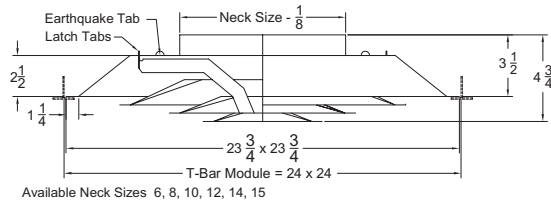
Directional Ceiling Diffusers



DCD

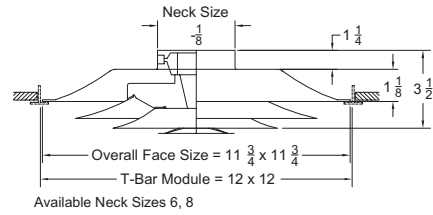
Square Face - Round Neck - 3 Cone - T-bar Lay-in - 24" x 24"

Model 5800-6 - Steel
 Model 5800-6 AS - Aluminized Steel
 Model 5800-6 AL - Aluminum



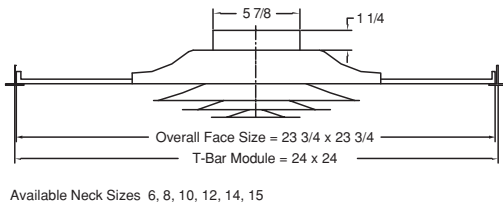
Square Face - Round Neck - 3 Cone - T-bar Lay-in - 12" x 12"

Model 5800-6 - Steel
 Model 5800-6 AS - Aluminized Steel



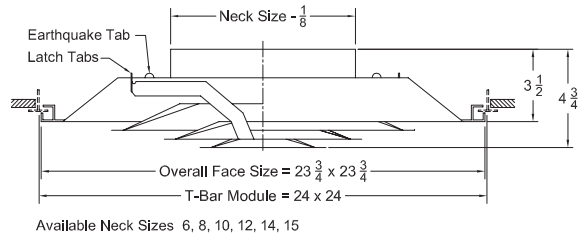
Square Face - Round Neck - 3 Cone - T-bar Lay-in Panel - 24" x 24"

Model 5800-6P - Steel



Square Face - Round Neck - 3 Cone - Concealed Spline - 24" x 24"

Model 5800-7 - Steel
 Model 5800-7 AS - Aluminized Steel

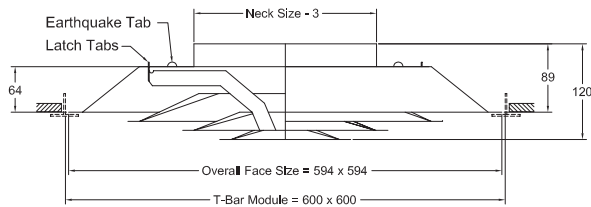


Metric

Dimensions are in millimeters

Square Face - Round Neck - 3 Cone - T-bar Lay-in - Metric

Model M5800-6 - Steel
 Model M5800-6 AS - Aluminized Steel
 Model M5800-6 AS - Aluminized Steel



DCD - Directional Ceiling Diffusers

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Directional Ceiling Diffusers



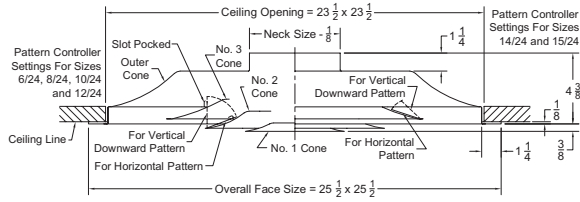
DCD

Adjustable

Dimensions are in inches

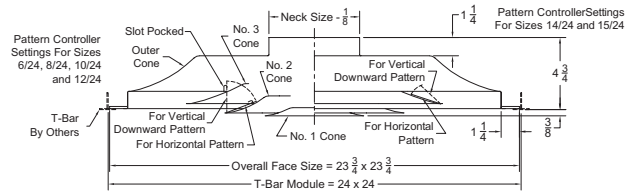
Square Face - Round Neck - 3 Cone - Surface Mount - Adjustable

Model 5800A-1 - Steel
Model 5800A-1 AS - Aluminized Steel



Square Face - Round Neck - 3 Cone - T-bar Lay-in - Adjustable

Model 5800A-6 - Steel
Model 5800A-6 AS - Aluminized Steel



1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish 03 Black 28 Custom color</p>	<p>G3 - Equalizing Grid337</p> <p>BDS - Butterfly Damper335</p> <p>RSD - Radial Shutter Damper336</p> <p>BAF - Directional Baffles</p> <p>Note: All Accessories Shipped Unattached</p>	<ul style="list-style-type: none"> Sizes only as listed Available Neck Sizes: 6, 8, 10, 12, 14 and 15 Available Neck Sizes: 6" and 8" for 12" x 12" Module

DCD - Directional Ceiling Diffusers

Series 5800 - Performance

Models 5800 (-1, -6, -7), 5800-6P, 5800 AS (-1,-6, -7), 5800 AL (-1, -6)

Listed Size	Neck Size Ak	fpm Neck Velocity Pv	400 0.010	500 0.016	600 0.022	700 0.031	800 0.040	900 0.050	1000 0.062	1200 0.090	1400 0.122	2000 0.249
12" x 12"	6 Ak = 0.093	CFM Ps Pt Throw* Throw NC	80 0.026 0.036 3-4-6 2-4-6 -	100 0.040 0.056 3-5-7 3-5-7 <15	120 0.058 0.080 4-5-7 4-5-7 18	135 0.073 0.104 4-6-8 4-6-8 21	155 0.097 0.137 5-6-8 5-6-8 24	175 0.123 0.174 5-6-9 5-6-9 26	195 0.153 0.216 5-7-9 5-7-9 29	235 0.223 0.312 6-7-10 6-7-10 33	275 0.305 0.427 6-8-11 6-8-11 35	315 0.400 0.559 7-9-12 7-9-12 37
		CFM Ps Pt Throw* Throw NC	140 0.026 0.036 3-5-8 3-5-8 <15	175 0.041 0.056 4-6-9 4-6-9 <15	210 0.059 0.081 5-7-10 5-7-10 19	245 0.080 0.110 6-8-11 6-8-11 22	280 0.104 0.144 7-8-11 7-8-11 25	315 0.132 0.182 7-9-12 7-9-12 28	350 0.163 0.225 7-9-13 7-9-13 30	420 0.235 0.324 8-10-14 8-10-14 34	490 0.319 0.442 9-11-15 9-11-15 37	560 0.417 0.577 9-11-16 9-11-16 40
24" x 24"	6 Ak = .077	CFM Ps Pt Throw* Throw NC	80 0.013 0.023 3-4-5 3-4-7 -	100 0.020 0.036 3-4-6 3-5-8 -	120 0.029 0.051 4-5-7 4-6-9 -	135 0.037 0.067 4-5-7 5-7-10 <15	155 0.048 0.088 4-5-7 5-7-10 <15	175 0.061 0.112 5-6-8 6-8-11 18	195 0.076 0.139 5-6-8 7-8-11 21	235 0.111 0.201 6-7-10 7-9-13 25	275 0.152 0.274 6-7-10 8-10-14 28	315 0.199 0.359 6-7-11 8-10-15 31
		CFM Ps Pt Throw* Throw NC	140 0.014 0.024 4-5-7 4-5-10 -	175 0.022 0.038 5-6-8 4-7-11 -	210 0.032 0.054 5-6-9 5-8-12 -	245 0.043 0.074 5-7-9 6-9-13 <15	280 0.056 0.096 6-7-10 7-10-14 17	315 0.071 0.122 6-8-11 8-10-15 21	350 0.088 0.150 6-8-11 9-11-15 24	420 0.126 0.216 7-9-12 10-12-17 30	490 0.172 0.294 8-9-13 10-13-18 34	560 0.225 0.384 8-10-14 11-14-19 35
	8 Ak = 0.136	CFM Ps Pt Throw* Throw NC	220 0.018 0.028 5-6-9 4-7-12 -	275 0.028 0.043 6-7-10 6-8-14 -	325 0.039 0.061 6-8-11 7-10-15 -	380 0.053 0.084 7-8-12 8-11-16 <15	435 0.070 0.110 7-9-12 9-12-17 19	490 0.088 0.139 8-9-13 10-13-18 23	545 0.109 0.172 8-10-14 11-14-19 27	655 0.158 0.248 9-11-15 12-15-21 33	765 0.215 0.337 9-12-16 13-16-23 38	875 0.282 0.441 10-12-18 14-17-24 40
		CFM Ps Pt Throw* Throw NC	315 0.022 0.032 6-7-11 5-8-15 -	395 0.035 0.050 7-8-12 7-10-16 -	470 0.049 0.072 7-9-13 8-12-18 <15	550 0.067 0.098 8-10-14 9-14-19 16	630 0.088 0.128 9-11-15 11-15-21 21	705 0.111 0.161 9-11-16 12-15-22 26	785 0.137 0.200 10-12-17 12-15-23 30	940 0.197 0.287 11-13-18 15-18-25 36	1100 0.270 0.392 11-14-20 16-19-27 41	1255 0.351 0.511 12-15-21 17-21-29 43
	10 Ak = 0.213	CFM Ps Pt Throw* Throw NC	430 0.032 0.042 7-9-12 6-9-17 -	535 0.049 0.065 8-10-14 8-12-19 -	640 0.071 0.093 9-11-15 9-14-21 <15	750 0.097 0.128 9-12-16 11-16-22 17	855 0.126 0.166 10-12-17 12-17-24 22	960 0.159 0.210 11-13-18 14-18-25 27	1070 0.198 0.260 11-14-19 15-19-27 32	1285 0.285 0.375 12-15-21 17-21-29 39	1495 0.386 0.508 13-16-23 18-22-32 44	1710 0.505 0.665 14-17-25 20-24-34 47
		CFM Ps Pt Throw* Throw NC	490 0.036 0.046 7-9-13 7-10-18 -	615 0.056 0.072 9-10-15 8-12-20 -	735 0.080 0.102 9-11-16 10-15-22 <15	860 0.109 0.140 10-12-17 12-17-24 18	980 0.142 0.182 11-13-19 13-18-26 23	1105 0.181 0.231 11-14-20 15-19-27 29	1225 0.222 0.284 12-15-21 17-20-29 33	1475 0.322 0.412 13-16-23 18-22-32 41	1720 0.438 0.560 14-17-25 20-24-34 46	1965 0.571 0.731 15-19-26 21-26-36 49

Series 5800 - Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM** - Cubic Feet per Minute (air)
- fpm** - Velocity of air stream in Feet Per Minute
- Pv** - Velocity pressure (inches of water column)
- Pt** - Total pressure (inches of water column)
- Ps** - Static pressure = Pt - Pv (inches of water column)
- Throw*** - Non-isothermal horizontal throw (supply air temperature 15°F colder than average room air temperature) values are for 150 fpm - 100 fpm - 50 fpm velocities
- Throw** - Isothermal horizontal throw (supply air temperature the same as average room air temperature) values are for 150 fpm - 100 fpm - 50 fpm velocities
- NC** - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak** - Area Factors



For more product information visit us at www.metalair.com



Directional Ceiling Diffusers
DCD



Series 5800 - Specifications

- 5800-1 - Surface Mounted
- 5800-6 - T-bar Lay-in
- 5800-7 - Concealed Spline
- 5800-9 - Donn Finline Lay-in

Air Outlets shall be model:

Non-Adjustable, Horizontal Discharge Pattern

5800 manufactured by METALAIRE. Units shall be constructed of steel.
 5800 AS manufactured by METALAIRE. Units shall be constructed of aluminized steel.
 5800 AL manufactured by METALAIRE. Units shall be constructed of aluminum.

Adjustable Discharge Pattern

5800A manufactured by METALAIRE. Units shall be constructed of steel.
 5800A AS manufactured by METALAIRE. Units shall be constructed of aluminized steel.
 5800A AL manufactured by METALAIRE. Units shall be constructed of aluminum.

Units shall be square with a formed backpan and three inner cones. Outlet shall have the same appearance from the face regardless of inlet size. The units shall be the size and quantity as outline in the plans and specifications.

Optional for Adjustable Pattern

Inlets shall be drawn into the backpan of the diffuser. Welded inlets are not acceptable. Diffusers shall include seismic tabs drawn into the backpan. Inner cone assemble shall be removable without the aid of tools for installation and to access optional damper. Units requiring tools such as screwdrivers or hex keys to remove the inner cones are not acceptable.

The bottom cone shall have a removable plug in the center to allow access to adjust an optional damper.

Units shall be designed to integrate into the specified ceiling system.

Outlet shall include adjustable deflector blades located within the cones of the device. Deflectors shall allow the discharge air to be adjusted to obtain a vertical or horizontal air pattern.

Optional Dampers and Accessories

Butterfly Damper

METALAIRE model BDS aluminum round butterfly type dampers shall be provided. Damper shall consist of two butterfly style blades that can be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot that can be assessed through the face of the diffuser.

Radial Shutter Damper

METALAIRE model RSD steel round radial shutter damper shall be provided. Damper shall consist of gang operated radial blades that slide perpendicular to air flow direction. The damper shall be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot that can be assessed through the face of the diffuser.

Opposed Blade Damper

METALAIRE model D3 aluminum or SD3 steel round opposed blade type dampers shall be provided. Damper shall consist of gang operated blades that can be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot that can be assessed through the face of the diffuser.

Equalizing Grid

METALAIRE model G3 aluminum round equalizing grid shall be provided. Equalizing grid shall consist of 1/2"x 1/2" x 1/2" aluminum cubed core mounting in an aluminum frame.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaline cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

DCD - Directional Ceiling Diffusers

Series 5800 - Model Specification Guide

Square Face Diffusers - Round Neck - 3 Cone Series 5800

Model	Available Neck	Module	Available Finishes			Available Options	
			Standard	G3			
5800-1 - Surface Mount - Steel 5800-1 AS - Surface Mount - Aluminized Steel 5800-1 AL - Surface Mount - Aluminum 5800A-1 - Adjustable - Surface Mount - Steel 5800A-1 AS - Adjustable - Surface Mount - Aluminized Steel 5800-6 - T-bar Lay-in - Steel 5800-6 AS - T-bar Lay-in - Aluminized Steel 5800-6 AL - T-bar Lay-in - Aluminum 5800A-6 - Adjustable T-bar Lay-in - Steel 5800A-6 AS - Adjustable T-bar Lay-in - Aluminized Steel 5700A-6 AL - Adjustable T-bar Lay-in - Aluminum	6" 8" 10" 12" 14" 15"	12" x 12" 24" x 24"	Standard	G3		Equalizing Grid	
			01 - White	BDS		Butterfly Damper	
			Options	RSD		Radial Shutter Damper	
			03 - Black	BAF-1		1 Way Directional Baffle	
			28 - Custom Color	BAF-2		2 Way Directional Baffle	
				BAF-3		3 Way Directional Baffle	
				D3		Round Opposed Blade Damper - Aluminum	
				SD3		Round Opposed Blade Damper - Steel	

Model	Available Neck	Module	Available Finishes			Available Options	
			Standard	G3			
5800-7 - Concealed Spline - Steel 5800-7 AS - Concealed Spline - Aluminized Steel 5800A-7 - Adjustable - Concealed Spline - Steel 5800A-7 AS - Adjustable - Concealed Spline - Aluminized Steel	6" 8" 10" 12" 14" 15"	24" x 24"	Standard	G3		Equalizing Grid	
			01 - White	BDS		Butterfly Damper	
			Options	RSD		Radial Shutter Damper	
			03 - Black	BAF-1		1 Way Directional Baffle	
			28 - Custom Color	BAF-2		2 Way Directional Baffle	
				BAF-3		3 Way Directional Baffle	
				D3		Round Opposed Blade Damper - Aluminum	
				SD3		Round Opposed Blade Damper - Steel	

Model	Available Neck	Module	Available Finishes			Available Options	
			Standard	G3			
M5800-6 - Metric T-bar Lay-in - Steel M5800-6 AS - Metric T-bar Lay-in - Aluminized Steel M5800-6 AL - Metric T-bar Lay-in - Aluminum	6" 8" 10" 12" 14" 15"	600mm x 600mm	Standard	G3		Equalizing Grid	
			01 - White	BDS		Butterfly Damper	
			Options	RSD		Radial Shutter Damper	
			03 - Black	BAF-1		1 Way Directional Baffle	
			28 - Custom Color	BAF-2		2 Way Directional Baffle	
				BAF-3		3 Way Directional Baffle	
				D3		Round Opposed Blade Damper - Aluminum	
				SD3		Round Opposed Blade Damper - Steel	



DCD - Directional Ceiling Diffusers

3/2006

Directional Ceiling Diffusers



DCD

- ➔ Square Panel Face ➔ Series Phenomenator® ➔ Steel
- ➔ Series Phenomenator® AS ➔ Aluminized Steel

Product Details

- ✦ The highest induction ratio of any commercial air diffuser available
- ✦ Excellent selection for providing exceptional comfort, especially in executive offices, conference rooms, and board rooms
- ✦ Can improve productivity by maintaining draft-free comfort in many applications
- ✦ Designed for applications calling for minimal temperature differences in a space
- ✦ Solves comfort problems in applications such as reception areas and entrance ways
- ✦ Diffuser can be applied in critical applications requiring minimal temperature gradients



Model Phenomenator® Shown
Standard Finish: 01 White

Aluminized Steel

METALAIRES is proud to announce the availability of aluminized steel for our square Directional Ceiling Diffusers. In environments which demand aluminum's corrosion resistance, the aluminized coated steel offers the protection of aluminum and the strength of steel. The use of aluminized steel results in a product that ships better and that handle better during installation.

What is Aluminized Steel?

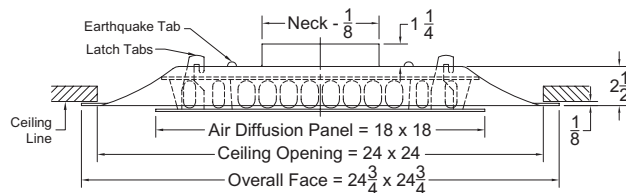
Aluminized steel is continuously hot-dip coated in a bath of commercially pure aluminum to provide a metallurgical bond between the steel substrate and the aluminum coating. The aluminum bath contains 5% to 11% silicon, which is added to minimize growth of a brittle iron-aluminum inter-metallic layer and thus promote coating adherence during forming. This process melds the best features of both metallic materials; the strength and other mechanical properties of the steel substrate and the surface characteristics and corrosion resistance of the aluminum coating.

Aluminized steel has been subjected to long-term testing for resistance to atmospheric corrosion and is proven superior to any other metallic-coated steel. Over forty years of exposure tests in a mild industrial atmosphere show the coating on aluminized steel still protecting the base metal with virtually no detectable loss of the original coating.

Dimensions are in inches

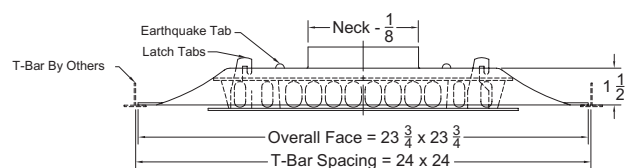
Square Face Ceiling Diffusers - Round Neck - Ultra High Performance Surface Mount

Model Phenom-1 - Steel
Model Phenom-1 AS - Aluminized Steel



Square Face Ceiling Diffusers - Round Neck - Ultra High Performance T-bar Lay-in

Model Phenom-6 - Steel
Model Phenom-6 AS - Aluminized Steel

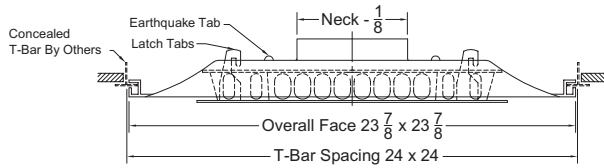


DCD - Directional Ceiling Diffusers



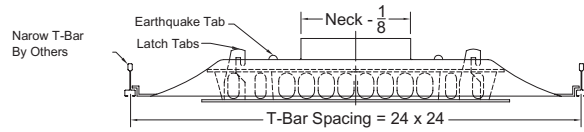
Square Face Ceiling Diffusers - Round Neck - Ultra High Performance Concealed Spline

Model Phenom-7 - Steel
 Model Phenom-7 AS - Aluminized Steel



Square Face Ceiling Diffusers - Round Neck - Ultra High Performance Donn Finline

Model Phenom-9 - Steel
 Model Phenom-9 AS - Aluminized Steel

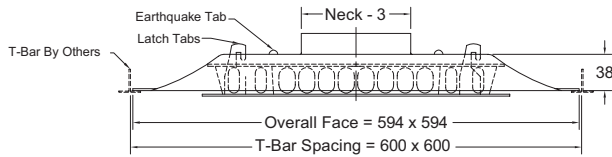


Metric

Dimensions are in millimeters

Square Face Ceiling Diffusers - Round Neck - Ultra High Performance T-bar Lay-in

Model Phenom-6 - Steel
 Model Phenom-6 AS - Aluminized Steel



1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish 03 Black 28 Custom color</p>	<p>G3 - Equalizing Grid337 BDS - Butterfly Damper335 RSD - Radial Shutter Damper336 BO - Blank off</p> <p>Note: All Accessories Shipped Unattached</p>	<ul style="list-style-type: none"> Sizes only as listed Available Neck Sizes: 6", 8", 10", 12", 14", and 15"

Series Phenomenator® - Performance

Model Phenom (-1, -6, -7, -9), Phenom AS (-1, -6, -7, -9)

Nominal Neck Size	Neck Velocity, fpm Velocity Pressure	400 0.010	500 0.016	600 0.022	700 0.031	800 0.040	900 0.050	1000 0.062	1200 0.090
6"	Volumetric Flow Rate, CFM			120	135	155	175	195	215
	Static Pressure, Ps (in. w.c.)			0.020	0.026	0.034	0.044	0.054	0.066
	Total Pressure, Ps (in. w.c.)			0.042	0.057	0.074	0.094	0.116	0.141
	Isothermal Throw			1-1-2	1-2-3	2-2-4	2-3-5	3-4-6	3-5-7
	Non-Isothermal Throw*			1-1-1	1-1-2	1-1-3	1-2-4	2-3-5	3-4-6
Noise Criteria, NC			<20	20	21	24	26	29	
8"	Volumetric Flow Rate, CFM	140	175	210	245	280	315	350	385
	Static Pressure, Ps (in. w.c.)	0.020	0.031	0.045	0.061	0.080	0.101	0.125	0.152
	Total Pressure, Ps (in. w.c.)	0.030	0.047	0.067	0.092	0.114	0.151	0.187	0.218
	Isothermal Throw	1-2-3	2-3-5	2-5-6	3-6-7	4-6-8	5-7-10	6-8-12	7-9-13
	Non-Isothermal Throw*	1-1-2	1-2-4	1-4-5	2-5-6	3-5-7	4-6-9	5-7-10	6-7-11
Noise Criteria, NC	<20	21	25	29	32	35	37	40	
10"	Volumetric Flow Rate, CFM	220	275	325	380	435	490	545	600
	Static Pressure, Ps (in. w.c.)	0.036	0.080	0.090	0.108	0.142	0.180	0.223	0.270
	Total Pressure, Ps (in. w.c.)	0.046	0.096	0.110	0.139	0.182	0.300	0.285	0.345
	Isothermal Throw	4-6-9	6-8-10	7-9-12	8-10-13	8-10-14	9-12-16	11-14-17	12-15-18
	Non-Isothermal Throw*	3-5-7	5-7-9	5-8-11	6-9-12	7-9-13	8-11-15	10-13-15	11-13-17
Noise Criteria, NC	20	24	27	31	35	38	41	44	
12"	Volumetric Flow Rate, CFM	315	395	470	550	630	705	785	870
	Static Pressure, Ps (in. w.c.)	0.061	0.096	0.136	0.186	0.240	0.306	0.380	0.423
	Total Pressure, Ps (in. w.c.)	0.071	0.112	0.156	0.217	0.280	0.356	0.442	0.495
	Isothermal Throw	4-7-11	7-10-13	9-11-14	11-13-16	13-15-18	15-18-20	16-20-22	18-21-24
	Non-Isothermal Throw*	3-6-10	6-9-12	7-10-13	9-11-14	11-14-16	12-15-18	13-17-20	15-19-22
Noise Criteria, NC	22	27	32	36	40	43	46	52	
14"	Volumetric Flow Rate, CFM	430	535	640	750	860	975	1095	1220
	Static Pressure, Ps (in. w.c.)	0.089	0.138	0.166	0.271	0.284	0.293	0.306	0.336
	Total Pressure, Ps (in. w.c.)	0.099	0.154	0.188	0.297	0.318	0.343	0.360	0.441
	Isothermal Throw	9-10-13	11-14-15	13-15-18	14-17-21	16-19-23	17-21-25	19-23-27	23-26-29
	Non-Isothermal Throw*	6-7-11	7-11-13	11-14-15	12-15-17	16-18-20	18-20-22	20-22-24	21-23-26
Noise Criteria, NC	30	35	40	44	50	56	62	68	
15"	Volumetric Flow Rate, CFM	490	615	735	875	1020	1165		
	Static Pressure, Ps (in. w.c.)	0.112	0.177	0.253	0.337	0.355	0.364		
	Total Pressure, Ps (in. w.c.)	0.122	0.193	0.275	0.368	0.395	0.414		
	Isothermal Throw	10-12-14	13-15-17	13-16-20	16-19-22	19-21-25	21-23-27		
	Non-Isothermal Throw*	8-10-12	10-12-14	11-14-17	12-16-19	15-19-22	17-21-23		
Noise Criteria, NC	33	39	44	50	56	62			

Series Phenom - Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991

1. All pressures are in inches of water.
2. Isothermal throw values are given for velocities of 150, 100 and 50 feet per minute (room and supply air temperature are within 2°)
3. Throw* values are given for velocities of 150, 100 and 50 feet per minute with supply air 15°F cooler than room air temperature.
4. Data were collected in accordance to ASHRAE Standard 70-1991 "Method of Testing for Rating of Air Outlets and Inlets."
5. Each NC value represents the noise criteria curve for the octave bands, with a room absorption of 10 dB, re 10⁻¹² Watts.
6. Actual throw and noise performance may vary from cataloged values with the field use of flexible duct inlets.

Series Phenomenator® - Specifications

- Phenom-1 - Surface Mount
- Phenom-6 - T-bar Lay-in
- Phenom-7 - Concealed Spline
- Phenom-9 - Donn Finline Lay-in

Air Outlets shall be model:

Phenom manufactured by METALAIRE. Units shall be constructed of steel.
Phenom AS manufactured by METALAIRE. Units shall be constructed of aluminized steel.

Units shall be square with a formed backpan, flat panel face, and a high induction inner high induction core assembly. The face panel of the outlet shall project no more than 1/4" below the ceiling grid. The units shall be the size and quantity as outline in the plans and specifications.

Inlets shall be drawn into the backpan of the diffuser. Welded inlets are not acceptable. Diffusers shall include seismic tabs drawn into the backpan. Face panel shall be held in place with hooks are secured through the backpan and be removable without the aid of tools. Units with face panels held in place with springs or clips are not acceptable.

Inner core assembly shall be steel and include a gasket between the core and the backpan. The high induction core assembly shall produce a four way discharge pattern through a series of nozzles to maximize induction and comfort. ADPI for the diffuser shall be a minimum of 97 in typical applications.

Units shall be designed to integrate into the specified ceiling system.



DCD - Directional Ceiling Diffusers

Optional Dampers and Accessories

Butterfly Damper

METALAIRE model BDS aluminum round butterfly type dampers shall be provided. Damper shall consist of two butterfly style blades that can be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot.

Radial Shutter Damper

METALAIRE model RSD steel round radial shutter damper shall be provided. Damper shall consist of gang operated radial blades that slide perpendicular to air flow direction. The damper shall be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot.

Opposed Blade Damper

METALAIRE model D3 aluminum or SD3 steel round opposed blade type dampers shall be provided. Damper shall consist of gang operated blades that can be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot.

Equalizing Grid

METALAIRE model G3 aluminum round equalizing grid shall be provided. Equalizing grid shall consist of 1/2" x 1/2" x 1/2" aluminum cubed core mounting in an aluminum frame.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaline cleaner and a de-ionized water rinse.

Series Phenomenator® - Model Specification Guide

Square Face - Round Neck - Ultra High Performance

Series Phenomenator®

Model	Available Neck	Module	Available Finishes	Available Options	
Phenom-1 - Surface Mount - Steel Phenom-1 AS - Surface Mount - Aluminized Steel Phenom-6 - T-bar Lay-in - Steel Phenom-6 AS - T-bar Lay-in - Aluminized Steel	6" 8" 10" 12" 14" 15"	24" x 24"	Standard	G3	Equalizing Grid
			01 - White	BDS	Butterfly Damper
			Options	RSD	Radial Shutter Damper
			03 - Black	BAF-1	1 Way Directional Baffle
			28 - Custom Color	BAF-2	2 Way Directional Baffle
				BAF-3	3 Way Directional Baffle
				D3	Round Opposed Blade Damper - Aluminum
				SD3	Round Opposed Blade Damper - Steel

Model	Available Neck	Module	Available Finishes	Available Options	
Phenom-7 - Concealed T-bar - Steel Phenom-7 AS - Concealed T-bar - Aluminized Steel Phenom-9 - Donn Finline - Steel Phenom-9 AS - Donn Finline - Steel	6" 8" 10" 12" 14" 15"	24" x 24"	Standard	G3	Equalizing Grid
			01 - White	BDS	Butterfly Damper
			Options	RSD	Radial Shutter Damper
			03 - Black	BAF-1	1 Way Directional Baffle
			28 - Custom Color	BAF-2	2 Way Directional Baffle
				BAF-3	3 Way Directional Baffle
				D3	Round Opposed Blade Damper - Aluminum
				SD3	Round Opposed Blade Damper - Steel

Model	Available Neck	Module	Available Finishes	Available Options	
MPhenom-6 - Metric T-bar Lay-in - Steel MPhenom-6 AS - Metric T-bar Lay-in - Aluminized Steel	6" 8" 10" 12" 14" 15"	600mm x 600mm	Standard	G3	Equalizing Grid
			01 - White	BDS	Butterfly Damper
			Options	RSD	Radial Shutter Damper
			03 - Black	BAF-1	1 Way Directional Baffle
			28 - Custom Color	BAF-2	2 Way Directional Baffle
				BAF-3	3 Way Directional Baffle
				BO	Blank Off
				D3	Round Opposed Blade Damper - Aluminum
	SD3	Round Opposed Blade Damper - Steel			



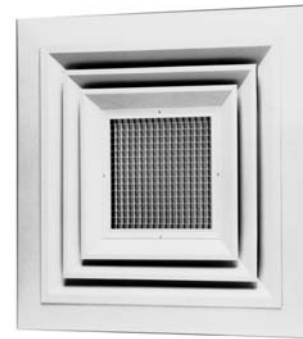
DCD - Directional Ceiling Diffusers

3/2006

Concentric Supply/Return Diffusers Series 5500 DAF-CC5

Product Details

- ★ 5500 DAF-CC5 concentric supply/return diffuser is designed for high capacity application
- ★ Cube core return
- ★ 4-way air patterns only
- ★ Choice of 6 mounting frames
- ★ Snap-in/out core - simplifies installation
- ★ Sizes to handle full range of standard tonnage roof-top units
- ★ Supply/Return plenums are by others

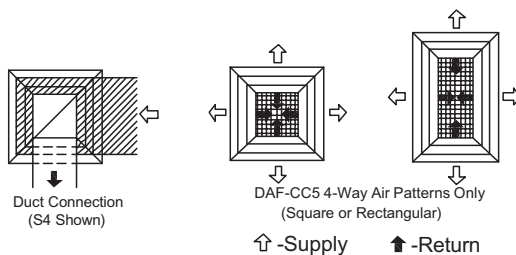
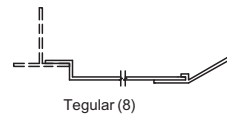
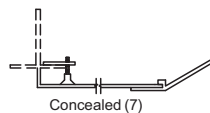
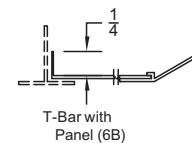
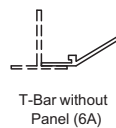
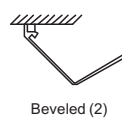
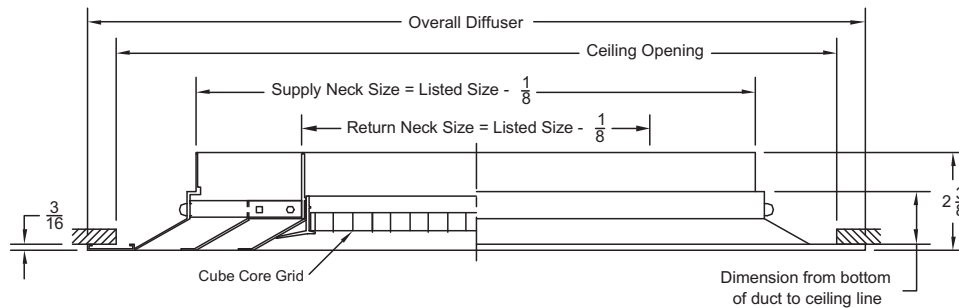


Model 5500 DAF-CC5 Shown
Standard Finish: 01 White

Dimensions are in inches

Concentric Supply/Return Ceiling Diffuser - Louvered Face - Cube Core

- Model 5500 DAF-CC5-1 - Surface Mount
- Model 5500 DAF-CC5-2 - V-Beveled
- Model 5500 DAF-CC5-6 - T-bar Lay-in
- Model 5500 DAF-CC5-7 - Concealed Spline
- Model 5500 DAF-CC5-8 - Tegular T-bar



Frame Style	Overall Diffuser Size	Ceiling Opening Dimensions	Bottom of Duct To Ceiling Line
1	Supply Neck + 5 3/4	Supply Neck + 3 3/4	1 1/2
2	Supply Neck + 5 1/8	Supply Neck + 1	13/16
6A	Supply Neck + 5 3/4	T-Bar Module Size	1 11/16
6B	T-Bar Spacing - 1/4	T-Bar Module Size	1 11/16
7	T-Bar Spacing - 1/16	T-Bar Module Size	1 11/16
8	T-Bar Spacing - 1/4	T-Bar Module Size	1 15/16

Directional Ceiling Diffusers



DCD

DCD - Directional Ceiling Diffusers

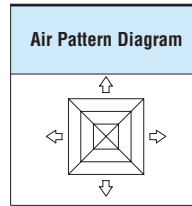


1. Available Finishes	
Standard Finish:	01 White
Optional Finish	02 Aluminum paint
	03 Black
	24 Mill finish
	28 Custom color
Note:	Anodized Finish not available

Series 5500 DAF-CC5 - Performance/(S4) 4-Way Square Pattern

Model 5500 DAF-CC5 (-1, -2, -6, -7, -8)

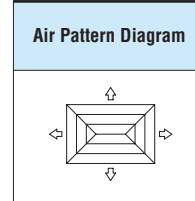
BASED ON 100% RETURN OF SUPPLY AIR FOR 2 - 10 TON ROOF TOP PACKAGES							
TONNAGE	2	2 1/2	3	4	5	7 1/2	10
CAPACITY (CFM)	800	1000	1200	1600	2000	3000	4000
SUPPLY NECK SIZE	21 x 21	21 x 21	24 x 24	27 x 27	30 x 30	39 x 39	45 x 45
Ak	.60	.60	.70	1.10	1.30	2.20	2.60
Vk	1335	1665	1715	1430	1575	1365	1540
Ps	.09	.15	.15	.11	.13	.10	.12
Pt	.11	.18	.18	.13	.15	.12	.15
THROW	7-14	8-16	9-17	10-20	12-23	16-31	21-39
RETURN NECK SIZE	15 x 15	15 x 15	18 x 18	18 x 18	21 x 21	27 x 27	33 x 33
Ak	1.56	1.56	2.25	2.25	3.06	5.06	7.56
INLET VELOCITY	513	640	535	710	654	590	529
Ps	.04	.06	.04	.07	.06	.05	.04
NC	25	35	37	30	37	37	38



Series 5500 DAF-CC5 - Performance/(R4) 4-Way Rectangle Pattern

Model 5500 DAF-CC5 (-1, -2, -6, -7, -8)

BASED ON 100% RETURN OF SUPPLY AIR FOR 2 - 10 TON ROOF TOP PACKAGES														
TONNAGE	2		2 1/2		3		4		5		7 1/2		10	
SIDE DESIGNATION	A	B	A	B	A	B	A	B	A	B	A	B	A	B
CAPACITY (CFM)	800		1000		1200		1600		2000		3000		4000	
SUPPLY NECK SIZE	24 x 18		27 x 18		27 x 21		36 x 21		36 x 27		45 x 36		54 x 36	
Ak	.60		.65		.70		1.20		1.35		2.30		2.60	
Vk	1335		1540		1715		1335		1480		1300		1540	
Ps	.09		.12		.15		.09		.12		.09		.12	
Pt	.11		.15		.18		.11		.14		.11		.15	
THROW	6-11	8-14	7-12	11-15	8-13	10-16	10-15	12-18	12-14	14-21	15-22	17-25	16-24	19-31
RETURN NECK SIZE	18 x 12		21 x 12		21 x 15		27 x 12		27 x 18		33 x 24		42 x 24	
Ak	1.50		1.75		2.18		2.25		3.38		5.50		7.00	
INLET VELOCITY	533		570		550		710		590		545		570	
Ps	.04		.05		.04		.07		.05		.04		.05	
NC	25		35		37		30		37		32		38	



See Page DCD-92 for Series 5500 DAF-CCF Performance Notes

DCD - Directional Ceiling Diffusers

3/2006

Series 5500 DAF-CC5 - Performance/(S4) 4-Way Square Pattern

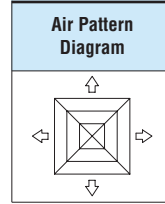
Model 5500 DAF-CC5 (-1, -2, -6, -7, -8)

Directional Ceiling Diffusers



DCD

		BASED ON 75% RETURN OF SUPPLY AIR						
		NECK VELOCITY						
		200	300	400	500	600	700	800
ALL SUPPLIES	FACE VELOCITY	500	750	1000	1250	1500	1750	2000
	Ps	.013	.03	.05	.08	.12	.16	.21
	Pt	.016	.04	.06	.10	.14	.19	.25
12" x 12" SUPPLY Ak = .18	TOTAL CFM THROW	90 2-4	130 3-5	175 5-8	220 6-10	265 6-12	310 7-13	350 8-14
9" x 9" RETURN Ak = .56	TOTAL CFM	70	100	130	165	200	230	260
	INLET VELOCITY	125	180	230	295	355	410	465
	Ps	.01	.01	.01	.01	.02	.03	.04
	NC	-	-	21	26	31	35	39
15" x 15" SUPPLY Ak = .40	TOTAL CFM THROW	200 3-5	300 5-8	400 6-10	500 6-12	600 7-14	700 8-17	800 10-19
9" x 9" RETURN Ak = .56	TOTAL CFM	150	225	300	375	450	525	600
	INLET VELOCITY	265	400	535	670	805	935	1070
	Ps	.01	.02	.04	.06	.09	.12	.16
	NC	-	-	21	26	35	40	45
18" x 18" SUPPLY Ak = .50	TOTAL CFM THROW	250 3-5	375 4-8	500 6-11	625 6-12	750 8-14	875 9-16	1000 10-19
12" x 12" RETURN Ak = 1.00	TOTAL CFM	190	280	375	470	560	655	750
	INLET VELOCITY	190	280	375	470	560	655	750
	Ps	.01	.01	.02	.03	.04	.06	.08
	NC	-	-	24	29	34	38	42
18" x 18" SUPPLY Ak = .28	TOTAL CFM THROW	140 4-6	210 5-8	280 6-12	350 7-13	420 8-15	490 9-17	560 11-20
15" x 15" RETURN Ak = 1.56	TOTAL CFM	105	155	210	260	315	365	420
	INLET VELOCITY	70	100	135	165	200	235	270
	Ps	.001	.002	.003	.005	.007	.009	.01
	NC	-	-	20	25	30	35	40
21" x 21" SUPPLY Ak = .60	TOTAL CFM THROW	300 3-5	450 4-8	600 5-12	750 7-13	900 8-15	1050 9-17	1200 11-20
15" x 15" RETURN Ak = 1.56	TOTAL CFM	225	340	450	560	675	790	900
	INLET VELOCITY	145	220	290	360	430	505	575
	Ps	.01	.01	.01	.02	.03	.04	.05
	NC	-	-	25	30	35	39	43
24" x 24" SUPPLY Ak = .70	TOTAL CFM THROW	350 3-5	525 4-8	700 5-11	875 6-13	1050 8-16	1225 10-20	1400 13-25
18" x 18" RETURN Ak = 2.25	TOTAL CFM	260	395	525	655	790	920	1050
	INLET VELOCITY	115	175	235	290	350	410	465
	Ps	.01	.01	.01	.01	.02	.03	.04
	NC	-	-	26	31	36	40	43
27" x 27" SUPPLY Ak = 1.10	TOTAL CFM THROW	560 3-5	845 5-10	1125 7-15	1405 8-17	1685 10-20	1965 12-24	2250 14-28
18" x 18" RETURN Ak = 2.25	TOTAL CFM	405	610	815	1015	1220	1425	1630
	INLET VELOCITY	180	270	360	450	540	635	725
	Ps	.01	.01	.02	.03	.04	.06	.07
	NC	-	-	26	32	37	41	44



See Page DCD-92 for Series 5500 DAF-CCF Performance Notes

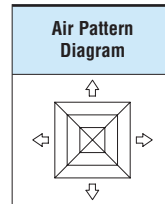
DCD - Directional Ceiling Diffusers

Series 5500 DAF-CC5 - Performance/(S4) 4-Way Square Pattern

Model 5500 DAF-CC5 (-1, -2, -6, -7, -8)

		BASED ON 75% RETURN OF SUPPLY AIR						
		NECK VELOCITY						
		200	300	400	500	600	700	800
ALL SUPPLIES	FACE VELOCITY	500	750	1000	1250	1500	1750	2000
	Ps	.013	.03	.05	.08	.12	.16	.21
	Pt	.016	.04	.06	.10	.14	.19	.25
30" x 30" SUPPLY Ak = 1.30	TOTAL CFM THROW	640 3-7	955 5-12	1275 7-16	1595 9-17	1915 11-21	2235 13-25	2550 15-30
21" x 21" RETURN Ak = 3.06	TOTAL CFM INLET VELOCITY	480 155	715 235	955 310	1195 390	1435 470	1675 545	1910 625
	Ps	.01	.01	.01	.02	.03	.04	.05
	NC	-	20	27	33	38	42	45
33" x 33" SUPPLY Ak = 1.80	TOTAL CFM THROW	900 4-8	1350 6-13	1800 8-17	2250 11-23	2700 15-30	3150 17-33	3600 19-38
21" x 21" RETURN Ak = 3.06	TOTAL CFM INLET VELOCITY	675 220	1010 330	1350 440	1690 550	2025 660	2360 770	2700 880
	Ps	.01	.02	.03	.04	.06	.08	.11
	NC	-	20	28	34	39	43	46
36" x 36" SUPPLY Ak = 2.00	TOTAL CFM THROW	1000 4-8	1500 5-13	2000 8-18	2500 12-22	3000 15-30	3500 17-34	4000 21-38
24" x 24" RETURN Ak = 4.00	TOTAL CFM INLET VELOCITY	750 185	1125 280	1500 375	1875 470	2250 560	2625 655	3000 750
	Ps	.01	.01	.02	.03	.05	.06	.08
	NC	-	20	28	34	39	43	47
39" x 39" SUPPLY Ak = 2.20	TOTAL CFM THROW	1100 5-10	1650 8-17	2200 11-21	2750 15-23	3300 18-34	3850 25-39	4400 26-42
27" x 27" RETURN Ak = 5.06	TOTAL CFM INLET VELOCITY	825 165	1240 245	1650 325	2060 410	2475 490	2890 570	3300 650
	Ps	.01	.01	.015	.02	.03	.05	.06
	NC	-	20	29	35	40	44	47
42" x 42" SUPPLY Ak = 2.90	TOTAL CFM THROW	1440 4-10	2160 10-21	2875 14-28	3595 18-34	4315 21-39	5035 25-43	5750 28-49
27" x 27" RETURN Ak = 5.06	TOTAL CFM INLET VELOCITY	1080 215	1615 320	2160 425	2695 530	3235 640	3775 745	4310 850
	Ps	.01	.01	.03	.04	.06	.08	.10
	NC	-	23	30	36	41	45	48
42" x 42" SUPPLY Ak = 2.40	TOTAL CFM THROW	1200 4-10	1800 8-17	2400 11-21	3000 15-24	3600 18-33	4200 24-38	4800 25-44
30" x 30" RETURN Ak = 6.25	TOTAL CFM INLET VELOCITY	900 145	1350 215	1800 290	2250 360	2700 430	3150 505	3600 575
	Ps	.01	.01	.01	.02	.03	.04	.05
	NC	-	-	25	33	35	40	45
42" x 42" SUPPLY Ak = 1.87	TOTAL CFM THROW	940 4-9	1410 6-13	1880 8-18	2345 12-21	2815 15-29	3285 16-33	3750 20-37
33" x 33" RETURN Ak = 7.56	TOTAL CFM INLET VELOCITY	705 95	1055 140	1410 185	1760 230	2110 280	2460 325	2815 370
	Ps	.002	.003	.005	.009	.013	.017	.022
	NC	-	20	25	33	35	40	45

		BASED ON 75% RETURN OF SUPPLY AIR						
		NECK VELOCITY						
		200	300	400	500	600	700	800
ALL SUPPLIES	FACE VELOCITY	500	750	1000	1250	1500	1750	2000
	Ps	.013	.03	.05	.08	.12	.16	.21
	Pt	.016	.04	.06	.10	.14	.19	.25
45" x 45" SUPPLY Ak = 2.60	TOTAL CFM THROW	1300 5-10	1950 9-20	2600 13-24	3250 17-28	3900 20-38	4550 27-45	5200 24-50
33" x 33" RETURN Ak = 7.56	TOTAL CFM INLET VELOCITY	975 130	1460 195	1950 255	2440 320	2925 390	3410 450	3900 515
	Ps	.003	.006	.01	.015	.02	.03	.04
	NC	-	22	28	33	39	44	48
48" x 48" SUPPLY Ak = 3.37	TOTAL CFM THROW	1690 6-11	2530 11-23	3380 16-24	4220 20-30	5065 23-41	5910 30-48	6750 35-55
33" x 33" RETURN Ak = 7.56	TOTAL CFM INLET VELOCITY	1265 170	1900 250	2530 335	3165 420	3800 500	4430 585	5065 670
	Ps	.01	.01	.02	.03	.04	.05	.06
	NC	-	23	32	37	41	45	49
60" x 60" SUPPLY Ak = 4.37	TOTAL CFM THROW	2190 7-13	3280 13-25	4375 18-28	5470 22-32	6565 25-43	7660 32-50	8750 37-56
45" x 45" RETURN Ak = 14.06	TOTAL CFM INLET VELOCITY	1640 115	2460 175	3280 235	4100 290	4925 350	5745 410	6565 465
	Ps	.002	.004	.007	.01	.02	.025	.03
	NC	-	28	32	35	38	41	46



See Page DCD-92 for Series 5500 DAF-CCF Performance Notes

Directional Ceiling Diffusers



DCD

DCD - Directional Ceiling Diffusers

3/2006

Series 5500 DAF-CC5 - Performance/(R4) 4-Way Rectangle Pattern

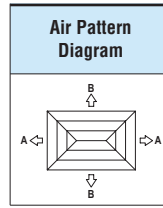
Model 5500 DAF-CC5 (-1, -2, -6, -7, -8)

Directional Ceiling Diffusers



DCD

		BASED ON 75% RETURN OF SUPPLY AIR						
		NECK VELOCITY						
		200	300	400	500	600	700	800
ALL SUPPLIES	FACE VELOCITY	500	750	1000	1250	1500	1750	2000
	Ps	.013	.03	.05	.08	.12	.16	.21
	Pt	.016	.04	.06	.10	.14	.19	.25
36" x 24" SUPPLY Ak = 1.28	TOTAL CFM	640	960	1280	1600	1920	2240	2560
	THROW A SIDE	5-7	7-10	9-13	11-17	13-20	16-23	18-28
	THROW B SIDE	4-7	5-9	7-11	9-14	11-17	13-18	15-23
27" x 15" RETURN Ak = 2.80	TOTAL CFM	480	720	960	1200	1440	1680	1920
	INLET VELOCITY	170	255	340	430	515	600	685
	Ps	.01	.01	.02	.03	.04	.05	.07
	NC	20	23	26	30	35	40	45
36" x 27" SUPPLY Ak = 1.35	TOTAL CFM	675	1015	1350	1690	2030	2365	2705
	THROW A SIDE	5-8	7-10	9-13	11-17	13-20	16-24	18-28
	THROW B SIDE	4-7	6-9	8-12	10-15	11-19	14-20	17-25
27" x 18" RETURN Ak = 3.37	TOTAL CFM	505	760	1010	1270	1520	1775	2030
	INLET VELOCITY	150	225	300	375	450	525	600
	Ps	.01	.01	.01	.02	.03	.04	.05
	NC	20	23	26	30	35	40	45
36" x 30" SUPPLY Ak = 1.43	TOTAL CFM	715	1070	1430	1785	2140	2500	2855
	THROW A SIDE	5-9	7-11	9-13	11-17	13-20	16-23	18-28
	THROW B SIDE	4-7	6-9	8-12	10-15	12-18	15-21	17-25
27" x 21" RETURN Ak = 3.93	TOTAL CFM	535	800	1070	1340	1605	1875	2140
	INLET VELOCITY	135	205	270	340	410	480	545
	Ps	.01	.01	.01	.02	.025	.03	.04
	NC	20	23	26	30	35	40	45
42" x 33" SUPPLY Ak = 2.10	TOTAL CFM	1050	1575	2100	2625	3150	3675	4200
	THROW A SIDE	6-10	8-12	11-16	13-20	16-24	19-28	22-32
	THROW B SIDE	4-8	6-10	9-14	12-18	14-21	17-25	19-29
30" x 21" RETURN Ak = 4.37	TOTAL CFM	790	1180	1575	1970	2360	2755	3150
	INLET VELOCITY	180	270	360	450	540	630	720
	Ps	.01	.01	.02	.03	.04	.06	.07
	NC	20	23	26	30	35	40	45
48" x 21" SUPPLY Ak = 1.50	TOTAL CFM	750	1125	1500	1875	2250	2625	3000
	THROW A SIDE	4-8	7-11	10-15	13-19	17-23	18-26	22-31
	THROW B SIDE	3-6	6-9	7-11	9-14	11-16	13-20	15-23
39" x 12" RETURN Ak = 3.25	TOTAL CFM	560	845	1125	1405	1690	1970	2250
	INLET VELOCITY	170	260	345	430	520	605	690
	Ps	.01	.01	.02	.03	.04	.05	.07
	NC	20	23	26	30	35	40	45
48" x 24" SUPPLY Ak = 1.57	TOTAL CFM	790	1180	1575	1970	2365	2760	3150
	THROW A SIDE	5-8	7-11	10-15	13-19	15-23	18-27	21-31
	THROW B SIDE	4-7	6-9	8-11	9-14	11-17	13-20	15-23
39" x 15" RETURN Ak = 4.06	TOTAL CFM	590	885	1180	1480	1775	2070	2360
	INLET VELOCITY	145	220	290	365	440	510	580
	Ps	.01	.01	.01	.02	.03	.04	.05
	NC	20	23	26	30	35	40	45
48" x 27" SUPPLY Ak = 1.65	TOTAL CFM	825	1240	1650	2065	2480	2890	3305
	THROW A SIDE	6-8	8-12	10-15	13-19	15-23	18-27	21-30
	THROW B SIDE	5-7	7-10	8-12	10-15	13-19	14-21	17-25
39" x 18" RETURN Ak = 4.87	TOTAL CFM	620	930	1240	1550	1860	2170	2480
	INLET VELOCITY	130	190	255	320	380	445	510
	Ps	.01	.01	.01	.01	.02	.03	.04
	NC	20	23	26	30	35	40	45



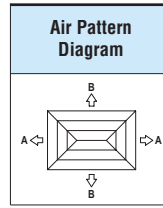
See Page DCD-92 for Series 5500 DAF-CCF Performance Notes

DCD - Directional Ceiling Diffusers

Series 5500 DAF-CC5 - Performance/(R4) 4-Way Rectangle Pattern

Model 5500 DAF-CC5 (-1, -2, -6, -7, -8)

		BASED ON 75% RETURN OF SUPPLY AIR						
		NECK VELOCITY						
		200	300	400	500	600	700	800
ALL SUPPLIES	FACE VELOCITY	500	750	1000	1250	1500	1750	2000
	Ps	.013	.03	.05	.08	.12	.16	.21
	Pt	.016	.04	.06	.10	.14	.19	.25
48 x 30 SUPPLY Ak = 1.73	TOTAL CFM	865	1295	1730	2160	2590	3025	3455
	THROW A SIDE	5-9	7-11	10-15	13-19	15-23	18-27	21-31
	THROW B SIDE	4-7	6-9	8-12	11-16	13-19	15-22	17-25
39 x 21 RETURN Ak = 5.68	TOTAL CFM	650	970	1295	1620	1940	2270	2590
	INLET VELOCITY	115	170	230	285	340	400	455
	Ps	.01	.01	.01	.01	.015	.02	.03
	NC	20	23	26	30	35	40	45
48 x 33 SUPPLY Ak = 2.30	TOTAL CFM	1150	1725	2300	2875	3450	4025	4600
	THROW A SIDE	7-11	9-13	11-17	15-22	18-26	21-30	23-34
	THROW B SIDE	5-8	6-10	9-14	12-18	14-21	17-25	19-29
36 x 21 RETURN Ak = 5.25	TOTAL CFM	860	1295	1725	2155	2590	3020	3450
	INLET VELOCITY	165	250	330	410	495	575	655
	Ps	.01	.01	.015	.02	.03	.05	.06
	NC	20	23	26	30	35	40	45
48 x 36 SUPPLY Ak = 2.40	TOTAL CFM	1200	1800	2400	3000	3600	4200	4800
	THROW A SIDE	7-11	9-13	11-17	15-22	18-26	21-30	23-34
	THROW B SIDE	5-9	7-11	10-15	13-19	15-21	17-26	20-30
36 x 24 RETURN Ak = 6.00	TOTAL CFM	900	1350	1800	2250	2700	3150	3600
	INLET VELOCITY	150	225	300	375	450	525	600
	Ps	.01	.01	.01	.02	.03	.04	.05
	NC	20	23	26	30	35	40	45
48 x 39 SUPPLY Ak = 2.50	TOTAL CFM	1250	1875	2500	3125	3750	4375	5000
	THROW A SIDE	7-11	9-13	11-17	15-22	16-25	18-27	21-31
	THROW B SIDE	5-9	7-11	10-15	11-16	13-19	15-23	18-28
36 x 37 RETURN Ak = 6.75	TOTAL CFM	940	1405	1875	2345	2810	3280	3750
	INLET VELOCITY	140	210	280	350	415	485	555
	Ps	.01	.01	.01	.02	.025	.03	.04
	NC	20	23	26	30	35	40	45
48 x 45 SUPPLY Ak = 3.25	TOTAL CFM	1625	2440	3250	4065	4880	5690	6500
	THROW A SIDE	8-13	10-15	13-19	16-24	19-29	23-33	26-38
	THROW B SIDE	7-12	9-14	12-18	15-23	18-28	21-32	24-35
33 x 30 RETURN Ak = 6.87	TOTAL CFM	1220	1830	2440	3050	3660	4270	4875
	INLET VELOCITY	180	265	355	445	535	620	710
	Ps	.01	.01	.02	.03	.04	.05	.07
	NC	20	23	26	30	35	40	45



Directional Ceiling Diffusers



DCD

See Page DCD-92 for Series 5500 DAF-CCF Performance Notes

DCD - Directional Ceiling Diffusers

Series 5500 DAF-CC5 - Performance/(R4) 4-Way Rectangle Pattern

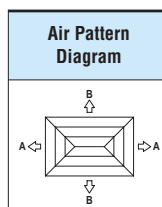
Model 5500 DAF-CC5 (-1, -2, -6, -7, -8)

Directional Ceiling Diffusers



DCD

		BASED ON 75% RETURN OF SUPPLY AIR						
		NECK VELOCITY						
		200	300	400	500	600	700	800
ALL SUPPLIES	FACE VELOCITY	500	750	1000	1250	1500	1750	2000
	Ps	.013	.03	.05	.08	.12	.16	.21
	Pt	.016	.04	.06	.10	.14	.19	.25
60" x 21" SUPPLY Ak = 1.82	TOTAL CFM	910	1365	1820	2275	2730	3185	3640
	THROW A SIDE	6-10	9-13	11-17	17-22	18-26	21-30	23-34
	THROW B SIDE	4-7	6-9	8-11	10-15	12-18	14-20	15-23
51" x 12" RETURN Ak = 4.25	TOTAL CFM	680	1025	1365	1705	2050	2390	2730
	INLET VELOCITY	160	240	320	400	480	560	640
	Ps	.01	.01	.01	.02	.03	.05	.06
	NC	20	23	26	30	35	40	45
60" x 27" SUPPLY Ak = 1.95	TOTAL CFM	975	1465	1950	2440	2930	3415	3900
	THROW A SIDE	7-11	9-13	11-17	17-22	18-26	21-30	23-35
	THROW B SIDE	4-7	6-9	8-12	10-15	13-19	14-20	17-25
51" x 18" RETURN Ak = 6.37	TOTAL CFM	730	1110	1460	1833	2200	2560	2925
	INLET VELOCITY	115	175	230	290	345	400	460
	Ps	.01	.01	.01	.01	.02	.03	.04
	NC	20	23	26	30	35	40	45
60" x 30" SUPPLY Ak = 2.02	TOTAL CFM	1015	1520	2030	2535	3040	3550	4055
	THROW A SIDE	7-11	9-13	11-17	17-22	18-25	21-30	23-35
	THROW B SIDE	4-7	6-9	8-12	11-16	13-19	15-23	17-25
51" x 21" RETURN Ak = 7.43	TOTAL CFM	760	1140	1520	1900	2280	2660	3040
	INLET VELOCITY	100	155	205	255	310	360	410
	Ps	.01	.01	.01	.01	.02	.03	.04
	NC	20	23	26	30	35	40	45
60" x 33" SUPPLY Ak = 2.70	TOTAL CFM	1350	2025	2700	3375	4050	4725	5400
	THROW A SIDE	8-13	10-15	13-20	17-24	18-30	22-34	26-38
	THROW B SIDE	5-9	7-11	9-14	12-18	14-21	17-25	19-29
48" x 21" RETURN Ak = 7.00	TOTAL CFM	1010	1520	2025	2530	3035	3545	4050
	INLET VELOCITY	145	215	290	360	435	505	580
	Ps	.01	.01	.01	.02	.03	.04	.05
	NC	20	23	26	30	35	40	45
60" x 36" SUPPLY Ak = 2.80	TOTAL CFM	1400	2100	2800	3500	4200	4900	5600
	THROW A SIDE	8-13	10-15	13-20	17-25	18-30	23-34	27-40
	THROW B SIDE	5-9	7-11	12-15	13-19	15-22	17-26	20-30
48" x 24" RETURN Ak = 8.00	TOTAL CFM	1050	1575	2100	2625	3150	3675	4200
	INLET VELOCITY	130	195	260	330	395	460	525
	Ps	.01	.01	.01	.02	.03	.04	.05
	NC	20	23	26	30	35	40	45
60" x 39" SUPPLY Ak = 2.90	TOTAL CFM	1450	2175	2900	3625	4350	5075	5800
	THROW A SIDE	8-13	10-15	14-20	17-25	18-30	23-34	27-40
	THROW B SIDE	5-9	7-11	10-15	13-19	15-23	19-28	20-32
48" x 27" RETURN Ak = 9.00	TOTAL CFM	1090	1630	2175	2720	3260	3805	4350
	INLET VELOCITY	120	180	240	300	360	420	485
	Ps	.01	.01	.01	.02	.025	.03	.04
	NC	20	23	26	30	35	40	45
60" x 42" SUPPLY Ak = 3.62	TOTAL CFM	1810	2720	3625	4530	5435	6340	7250
	THROW A SIDE	9-15	11-17	15-23	19-29	23-35	27-40	30-45
	THROW B SIDE	7-11	9-13	11-17	15-23	19-27	22-31	24-35
45" x 27" RETURN Ak = 8.43	TOTAL CFM	1360	2040	2720	3400	4080	4755	5440
	INLET VELOCITY	160	240	320	405	485	565	645
	Ps	.01	.01	.01	.02	.03	.04	.06
	NC	20	25	30	35	40	45	50



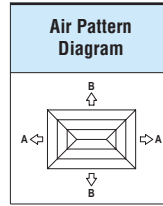
See Page DCD-92 for Series 5500 DAF-CCF Performance Notes

DCD - Directional Ceiling Diffusers

Series 5500 DAF-CC5 - Performance/(R4) 4-Way Rectangle Pattern

Model 5500 DAF-CC5 (-1, -2, -6, -7, -8)

		BASED ON 75% RETURN OF SUPPLY AIR						
		NECK VELOCITY						
		200	300	400	500	600	700	800
ALL SUPPLIES	FACE VELOCITY	500	750	1000	1250	1500	1750	2000
	Ps	.013	.03	.05	.08	.12	.16	.21
	Pt	.016	.04	.06	.10	.14	.19	.25
60 x 45 SUPPLY Ak = 3.75	TOTAL CFM	1875	2815	3750	4690	5630	6565	7500
	THROW A SIDE	9-15	11-17	15-23	19-28	22-34	26-40	30-45
	THROW B SIDE	7-12	9-14	12-18	15-23	17-27	21-32	24-36
45 x 30 RETURN Ak = 9.37	TOTAL CFM	1400	2110	2810	3520	4220	4925	5625
	INLET VELOCITY	150	225	300	375	450	525	600
	Ps	.01	.01	.01	.02	.03	.04	.05
	NC	20	25	30	35	40	45	50
60 x 48 SUPPLY Ak = 3.88	TOTAL CFM	1940	2910	3880	4850	5820	6790	7760
	THROW A SIDE	9-15	11-17	15-23	19-29	22-35	27-41	31-46
	THROW B SIDE	7-12	9-14	13-19	16-24	18-29	23-34	25-39
45 x 33 RETURN Ak = 10.30	TOTAL CFM	1455	2180	2910	3640	4365	5090	5820
	INLET VELOCITY	140	210	280	355	425	495	565
	Ps	.01	.01	.01	.02	.025	.03	.04
	NC	20	25	30	35	40	45	50
60 x 51 SUPPLY Ak = 4.00	TOTAL CFM	2000	3000	4000	5000	6000	7000	8000
	THROW A SIDE	9-15	11-17	15-23	19-29	22-35	27-41	31-46
	THROW B SIDE	8-13	10-15	13-20	16-25	20-30	23-35	27-40
45 x 36 RETURN Ak = 11.25	TOTAL CFM	1500	2250	3000	3750	4500	5250	6000
	INLET VELOCITY	135	200	265	335	400	465	535
	Ps	.01	.01	.01	.02	.025	.03	.04
	NC	20	25	30	35	40	45	50
60 x 54 SUPPLY Ak = 4.80	TOTAL CFM	2400	3600	4800	6000	7200	8400	9600
	THROW A SIDE	10-16	12-18	16-25	22-32	26-39	31-46	34-52
	THROW B SIDE	9-15	11-17	15-24	20-30	24-36	27-42	32-48
42 x 36 RETURN Ak = 10.50	TOTAL CFM	1800	2700	3600	4500	5400	6300	7200
	INLET VELOCITY	170	255	340	430	515	600	685
	Ps	.01	.01	.02	.03	.04	.05	.07
	NC	20	25	30	35	40	45	50
60 x 57 SUPPLY Ak = 4.95	TOTAL CFM	2480	3715	4950	6190	7430	8665	9900
	THROW A SIDE	11-17	13-19	17-26	22-33	26-39	33-49	35-52
	THROW B SIDE	10-16	12-18	16-24	21-30	25-36	30-46	32-50
42 x 39 RETURN Ak = 11.37	TOTAL CFM	1860	2790	3710	4640	5570	6500	7425
	INLET VELOCITY	165	245	325	410	490	570	655
	Ps	.01	.01	.01	.02	.03	.05	.06
	NC	20	25	30	35	40	45	50



Directional Ceiling Diffusers



DCD

See Page DCD-92 for Series 5500 DAF-CCF Performance Notes

DCD - Directional Ceiling Diffusers

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Directional Ceiling Diffusers

Series 5500 DAF-CC5 - Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM** - Cubic Feet per Minute (air)
- fpm** - Velocity of air stream in Feet Per Minute
- Pv** - Velocity pressure (inches of water column)
- Pt** - Total pressure (inches of water column)
- Ps** - Static pressure = Pt - Pv (inches of water column)
- Throw** - Cataloged throw is horizontal distances in feet to the terminal velocities of 150 and 50 fpm with ambient supply air temperature.
- NC** - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak** - Area Factor

Series 5500 DAF-CC5 - Specifications



DCD

- 5500 DAF-CC5-1 - Surface Mount
- 5500 DAF-CC5-2 - V-Beveled Drop Face
- 5500 DAF-CC5-4 - Deep Drop Frame
- 5500 DAF-CC5-6 - T-bar Lay-in
- 5500 DAF-CC5-7 - Concealed Spline
- 5500 DAF-CC5-8 - Tegular Lay-in

Combination concentric supply/return units shall be model 5500 DAF-CC5 manufactured by METALAIRE. Units shall consist of a fixed pattern outer ring of louvers that discharge supply air. The inner return or exhaust core shall consist of aluminum 1/2" x 1/2" x 1/2" cubed core.

Units shall be designed to integrate into the specified ceiling system.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

DCD - Directional Ceiling Diffusers

Series 5500 DAF-CC5 - Model Specification Guide

Conentric Supply/Return Ceiling Diffusers - Louvered Face - Cubed Core Series 5500 DAF-CC5 - Aluminum

Model	Supply	Return	Available Finishes
5500 DAF CC5-1 - Flush Surface Mount	12" x 12" thru 60" x 60"	9" x 9" thru 45" x 45"	Standard
5500 DAF CC5-2 - V-beveled Drop Surface Mount			01 - White
			Optional
			03 - Black
			24 - Mill
			28 - Custom Color

Model	Supply	Return	Module	Available Finishes
5500 DAF CC5-6A - Lay-in T-bar (without panel)	12" x 12" thru 42" x 42"	9" x 9" thru 33" x 33"	24" x 24" 48" x 24" 48" x 48"	Standard
5500 DAF CC5-6B - Lay-in T-bar (with panel)				01 - White
5500 DAF CC5-4 - Concealed Spline				Optional
5500 DAF CC5-5 - Tegral T-bar				03 - Black
				24 - Mill
				28 - Custom Color



DCD - Directional Ceiling Diffusers

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Directional Ceiling Diffusers



DCD

➔ Square/Rectangular Modular Core ➔ Series 9000 ➔ Aluminum

Product Details

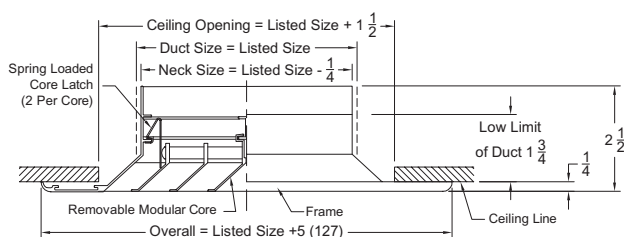
- ✪ The 9000 is a highly flexible directional mounting applications ceiling diffuser available in a wide range of border types
- ✪ Modular cores can be adjusted to obtain 1, 2 way opposite, 2 way corner, 3 or 4 way air patterns
- ✪ Cores are easy to remove with spring loaded latches - no tools required
- ✪ Lay-in T-bar border 6 can be used in surface mounting applications by adding optional T-bar Plaster Frame (TBPf)
- ✪ The 9000 is an excellent choice for VAV applications



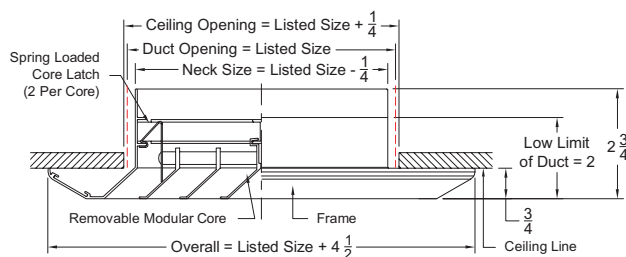
Model 9000-1 Shown
Standard Finish: 01 White

Dimensions are in inches

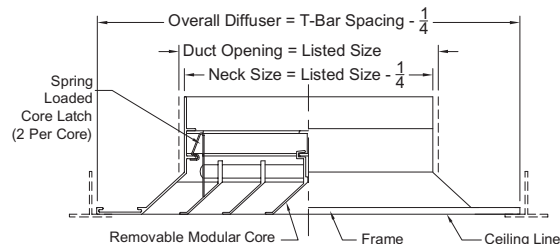
Square/Rectangular Modular Core Ceiling Diffusers Surface Mount Model 9000-1



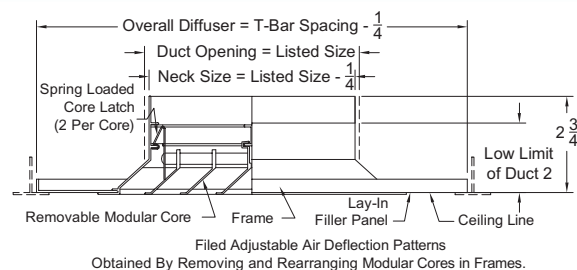
Square/Rectangular Modular Core Ceiling Diffusers Beveled Surface Mount Model 9000-2



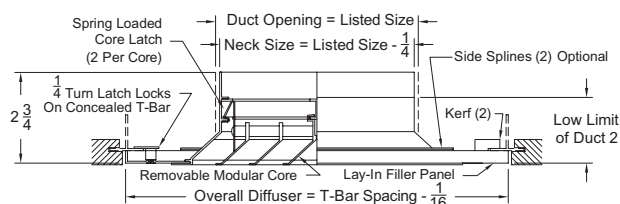
Square/Rectangular Modular Core Ceiling Diffusers T-bar Lay-in Model 9000-6



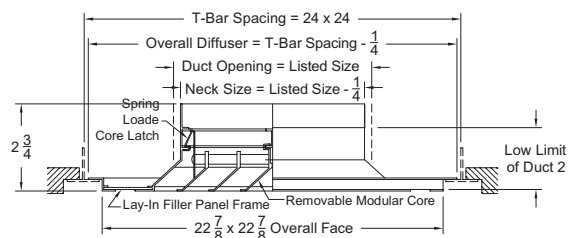
Square/Rectangular Modular Core Ceiling Diffusers T-bar Lay-in Panel Model 9000-6P



Square/Rectangular Modular Core Ceiling Diffusers Concealed Spline Model 9000-7



Square/Rectangular Modular Core Ceiling Diffusers Tegular T-bar Model 9000-8



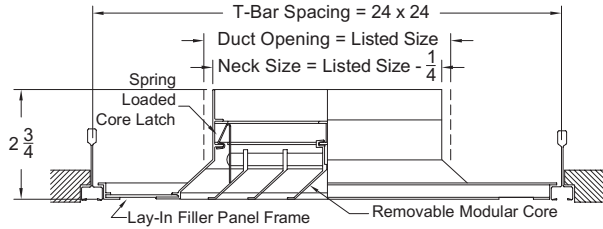
DCD - Directional Ceiling Diffusers

Directional Ceiling Diffusers

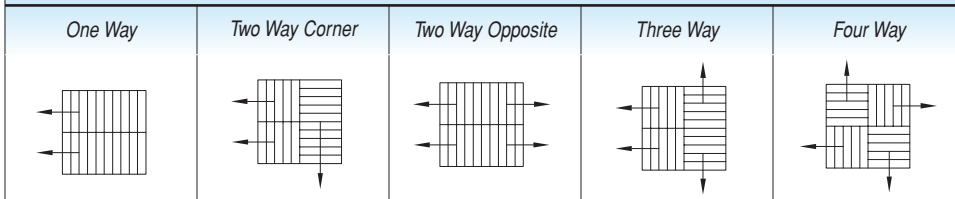


DCD

Square/Rectangular Modular Core Ceiling Diffusers Donn Finline Model 9000-9



Air Patterns - Square Face Ceiling Diffusers



1. Available Finishes	2. Available Accessories
<p>Standard Finish: 01 White</p> <p>Optional Finish 02 Aluminum paint 03 Black 28 Custom color</p>	<p>(Shipped Unattached) OBD - Opposed Blade Damper - Steel334 OBDA - Opposed Blade Damper - Aluminum334 L9 - Equalizing Grid334 TR Deep - Square to Round Transition - Deep338</p>



For more product information visit us at www.metalair.com



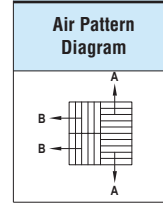
DCD - Directional Ceiling Diffusers

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Series 9000 - Performance

4 Core - Models 9000-1, 9000-2, 9000-6, 9000-6P, 9000-7, 9000-8, 9000-9

Listed Size & Neck Area Sq. Ft.	Effective Area AK Sq. Ft.	Vn Neck Velocity fpm Vk Outlet Velocity fpm Pt Total Pressure Side Designation	200		300		400		500		600		700	
			A	B	A	B	A	B	A	B	A	B	A	B
6" X 6" 0.25	0.112	CFM NC	50 <20	75 <20	100 <20	125 20	150 26	175 31						
		Throw	4-Way 3-Way 2-Way 1-Way	2-3 3-4 4-6	3-4 4-6 6-8	4-5 6-7 8-10	4-6 6-8 8-12	5-7 7-10 10-14	6-8 8-11 12-16					
8" x 8" 0.44	0.196	CFM NC	90 <20	130 <20	175 <20	220 23	265 28	310 33						
		Throw	4-Way 3-Way 2-Way 1-Way	3-4 3-4 4-6 4-6 6-8	4-5 4-5 6-7 6-7 8-10	5-7 5-7 7-10 7-10 10-14	6-8 6-8 8-11 8-11 12-16	6-9 6-9 8-13 8-13 12-18	7-10 7-10 10-14 10-14 14-20					
10" x 10" 0.69	0.312	CFM NC	140 <20	205 <20	275 <20	345 23	415 28	485 33						
		Throw	4-Way 3-Way 2-Way 1-Way	4-5 4-5 6-7 6-7 8-10	5-7 5-7 7-10 7-10 10-14	6-9 6-9 8-13 8-13 12-18	7-10 7-10 10-14 10-14 14-20	8-12 8-12 11-17 11-17 16-24	9-13 9-13 13-18 13-18 18-26					
12" x 12" 1.00	0.444	CFM NC	200 <20	300 <20	400 <20	500 25	600 31	700 36						
		Throw	4-Way 3-Way 2-Way 1-Way	4-6 4-6 6-8 6-8 8-12	6-8 6-8 8-11 8-11 12-16	7-10 7-10 10-14 10-14 14-20	8-12 8-12 11-17 11-17 16-24	9-14 9-14 13-20 13-20 18-28	10-15 10-15 14-21 14-21 20-30					
14" x 14" 1.36	0.604	CFM NC	270 <20	405 <20	545 21	680 27	815 33	950 38						
		Throw	4-Way 3-Way 2-Way 1-Way	5-7 5-7 7-10 7-10 10-14	7-10 7-10 10-14 10-14 14-20	8-12 8-12 11-17 11-17 16-24	10-14 10-14 14-20 14-20 20-28	11-17 11-17 16-24 16-24 22-34	12-18 12-18 17-25 17-25 24-36					
16" x 16" 1.78	0.792	CFM NC	355 20	530 20	710 21	885 28	1070 33	1245 38						
		Throw	4-Way 3-Way 2-Way 1-Way	5-8 5-8 7-11 7-11 10-16	8-11 8-11 11-16 11-16 16-22	9-14 9-14 13-20 13-20 18-28	11-16 11-16 16-22 16-22 22-32	12-19 12-19 17-27 17-27 24-38	13-20 13-20 18-28 18-28 26-40					
18" x 18" 2.25	0.996	CFM NC	450 <20	670 <20	900 22	1120 29	1345 34	1570 39						
		Throw	4-Way 3-Way 2-Way 1-Way	6-9 6-9 8-13 8-13 12-18	9-12 9-12 13-17 13-17 18-24	10-15 10-15 14-21 14-21 20-30	12-18 12-18 17-25 17-25 24-36	13-21 13-21 18-30 18-30 26-42	15-23 15-23 21-32 21-32 30-46					
20" x 20" 2.78	1.236	CFM NC	555 <20	830 <20	1110 23	1390 30	1670 35	1945 40						
		Throw	4-Way 3-Way 2-Way 1-Way	7-10 7-10 10-14 10-14 14-20	10-13 10-13 14-18 14-18 20-26	12-16 12-16 17-22 17-22 24-32	13-20 13-20 18-28 18-28 26-40	15-23 15-23 21-32 21-32 30-46	16-24 16-24 22-34 22-34 32-48					
22" x 22" 3.36	1.492	CFM NC	670 <20	1010 <20	1345 23	1680 31	2015 36	2350 41						
		Throw	4-Way 3-Way 2-Way 1-Way	7-11 7-11 10-16 10-16 14-22	11-15 11-15 16-21 16-21 22-30	13-18 13-18 18-25 18-25 26-36	15-22 15-22 21-31 21-31 30-44	16-25 16-25 22-35 22-35 32-50	18-27 18-27 25-38 25-38 36-54					
24" x 24" 4.00	1.776	CFM NC	800 <20	1200 <20	1600 26	2000 32	2400 38	2800 42						
		Throw	4-Way 3-Way 2-Way 1-Way	8-12 8-12 11-17 11-17 16-24	12-16 12-16 17-22 17-22 24-32	14-20 14-20 20-28 20-28 28-40	16-24 16-24 22-34 22-34 32-48	18-28 18-28 25-39 25-39 36-56	20-30 20-30 28-42 28-42 40-60					



Directional Ceiling Diffusers



DCD

See Page DCD-97 for Series 9000 Performance Notes

DCD - Directional Ceiling Diffusers

Series 9000 - Performance

Single Core - Models 9000-1, 9000-2, 9000-6, 9000-6P, 9000-7, 9000-8, 9000-9

Single Core Size (Inches)	Single Core Area (Sq. Ft)	Ak Effective Area (Sq. Ft.)	Neck Outlet Vel Pt.	200 450 0.013	300 675 0.028	400 900 0.50	500 1125 0.079	600 1350 0.114	700 1575 0.155	800 1800 0.202
3" X 3"	0.063	0.028	CFM THROW NC	13 2-3 <20	19 3-4 <20	25 4-5 <20	32 4-6 <20	38 5-7 20	44 6-8 25	50 6-9 27
4" X 4"	0.111	0.049	CFM THROW NC	22 3-4 <20	33 4-5 <20	44 5-7 <20	56 6-8 <20	67 6-9 22	78 7-10 27	89 8-11 31
5" X 5"	0.174	0.078	CFM THROW NC	35 4-5 <20	52 5-7 <20	70 6-9 <20	87 7-10 <20	104 8-12 22	122 9-13 27	139 10-14 31
6" X 6"	0.250	0.111	CFM THROW NC	50 4-6 <20	75 6-8 <20	100 7-10 <20	125 8-12 <20	150 9-14 25	175 10-15 30	200 11-16 34
7" X 7"	0.340	0.151	CFM THROW NC	68 5-7 <20	102 7-10 <20	136 8-12 <20	170 10-14 21	204 11-17 27	238 12-18 32	272 13-19 35
8" X 8"	0.445	0.198	CFM THROW NC	89 5-8 <20	133 8-11 <20	178 9-14 <20	222 11-16 22	267 12-19 27	311 13-20 32	355 15-22 36
9" X 9"	0.562	0.249	CFM THROW NC	112 6-9 <20	169 9-12 <20	225 10-15 <20	281 12-18 23	337 13-21 28	393 15-23 33	459 16-24 37
10" X 10"	0.695	0.309	CFM THROW NC	139 7-10 <20	208 10-13 <20	278 12-16 <20	347 13-20 24	416 15-23 29	486 16-24 34	555 18-26 38

Series 9000 - Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM** - Cubic Feet per Minute (air)
- fpm** - Velocity of air stream in Feet Per Minute
- Pv** - Velocity pressure (inches of water column)
- Pt** - Total pressure (inches of water column)
- Ps** - Static pressure = Pt - Pv (inches of water column)
- Throw** - Cataloged throw is horizontal distances in feet to the terminal velocities of 150 and 100 fpm with supply air temperature 20° F below room air temperature
- NC** - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak** - Area Factor

Series 9000 - Specification

- 9000-1 - Surface Mounted
- 9000-2 - Beveled
- 9000-6 - T-bar Lay-in
- 9000-7 - Concealed Spline
- 9000-8 - Tegular Lay-in
- 9000-9 - Donn Finline Lay-in

Air Outlets shall be model 9000 manufactured by METALAIRES. Units shall consist of an adjustable set of modular core pattern controllers that are removable from the face of the outlet without the use of tools. Outlets shall be extruded aluminum construction. Steel border or cores are not acceptable. The units shall be the size and quantity as outline in the plans and specifications.

Outlets shall field adjustable to obtain 1, 2-way opposite, 2-way corner, 3, and 4-way directional air patterns.

Units shall be designed to integrate into the specified ceiling system.



DCD - Directional Ceiling Diffusers

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Directional Ceiling Diffusers



DCD

Accessories

Optional Dampers

Aluminum opposed blade dampers shall be provided. Damper shall be adjusted using a handle accessible through the face of the diffuser. Screwdriver slot operators are not allowed.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaline cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

Series 9000 - Model Specification Guide

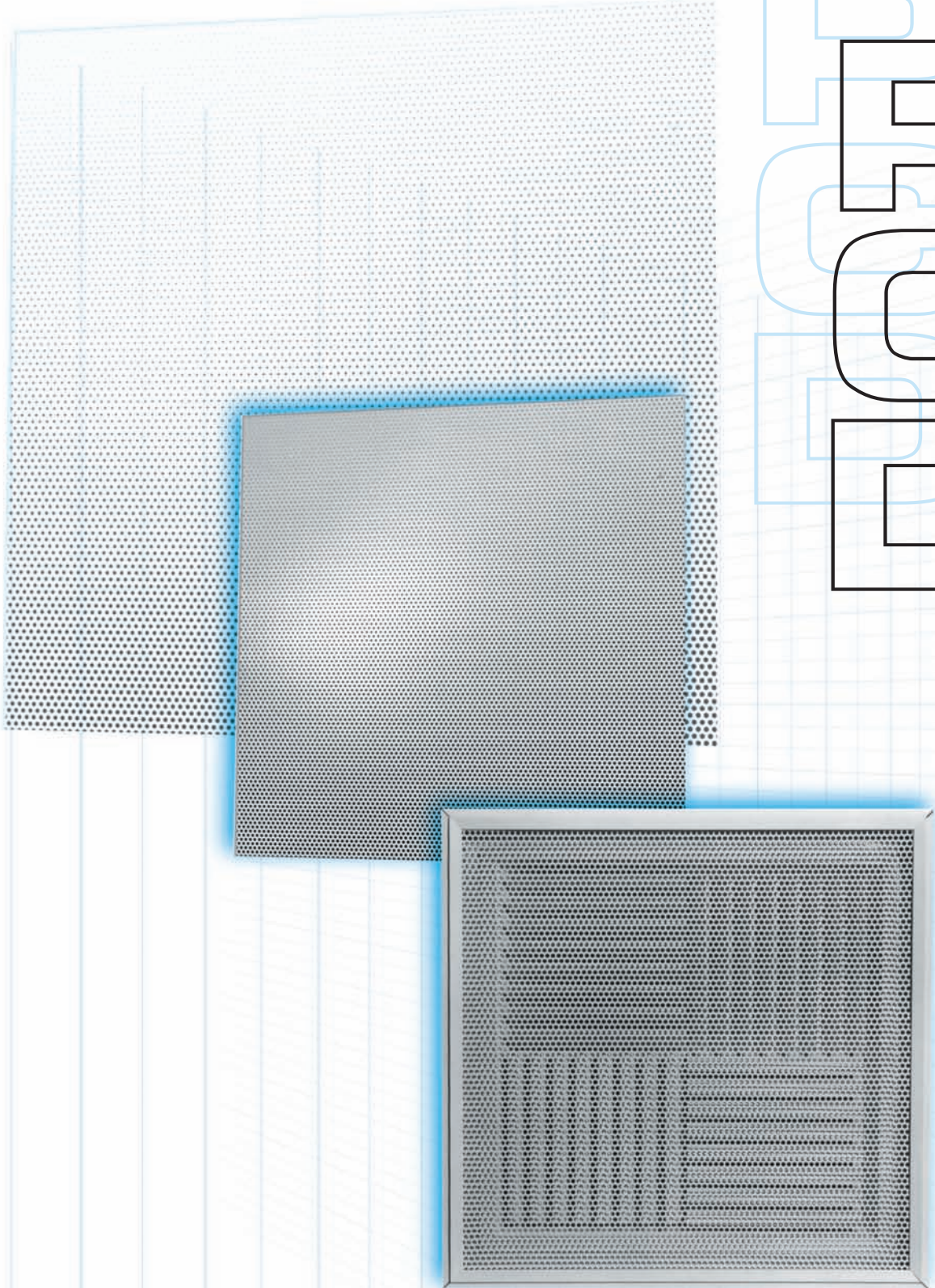
Square/Rectangular Modular Core Ceiling Diffusers

Series 9000 - Aluminum

Model	Available Neck	Air Pattern	Available Finishes	Available Options	
9000-1 - Flush Surface Mount 9000-2 - Beveled Surface Mount	6" thru 48"	Standard	Standard	OBD	Opposed Blade Damper - Steel
		S4 - 4 Core	01 - White	OBDA	Opposed Blade Damper - Aluminum
		Optional	Optional	L9	Equalizing Grid
		S1 - 1-way	02 - Aluminum	TR Deep	Square to Round Transition - Deep
		S2 - 2-way	03 - Black		
		S3 - 3-way	28 - Custom Color		

Model	Available Neck	Module	Air Pattern	Available Finishes	Available Options	
9000-6 - T-bar Lay-in	6" x 6" thru 20" x 20"	24" x 24"	Standard	Standard	OBD	Opposed Blade Damper - Steel
9000-7 - Concealed Spline	6" x 6" thru 18" x 18"		S4 - 4 Core	01 - White	OBDA	Opposed Blade Damper - Aluminum
9000-8 - Tegular T-bar			Optional	L9	Equalizing Grid	
9000-9 - Donn Finline			02 - Aluminum	TR Deep	Square to Round Transition - Deep	
			03 - Black			
		28 - Custom Color				

PERFORATED
CEILING
DIFFUSERS



**PERFORATED
CEILING DIFFUSERS**



Model 7000

Pg. 104

Series 7000 - Supply
Series 7000R - Return

Perforated Supply - Extruded Aluminum - Curved Blade Pattern Controller - Series 7000

- ★ The series 7000 is an aluminum, perforated supply diffuser with curved blade pattern controllers mounted in the neck of the diffuser. Pattern controllers are adjustable from a horizontal to vertical discharge pattern
- ★ The face is secured with spring clips making removal and access to the pattern controllers easy
- ★ Units are available in 1-way, 2-way opposite, 2-way corner, 3-way, and 4-way patterns
- ★ The Series 7000 generates a "star pattern" directional discharge of air maximizing induction and room air mixing
- ★ T-bar Lay-in border type 6 is designed to be installed in standard 15/16" tee. This border type 6 can be used in surface mounting applications by adding optional T-bar plaster frame (TBPF)
- ★ Matching returns available: 7000R
- ★ The series 7000 is an excellent choice for VAV applications

Supply		Return	
7000-1 Surface Mount	7000-8 Tegular T-bar	7000R-1 Surface Mount	7000R-8 Tegular T-bar
7000-6 T-bar Lay-in	7000-9 Donn Finline	7000R-6 T-bar Lay-in	7000R-9 Donn Finline
7000-7 Concealed T-bar		7000R-7 Concealed T-bar	



Model PRTB

Pg. 112

Series PRTB - Aluminum
Series SPRTB - Steel

Perforated Screen - Non-Ducted - Return - Aluminum/Steel - Series PRTB

- ★ The series PRTB is an economical choice for non-duct plenum return applications and is shipped without pattern controllers
- ★ Unit can be used in surface mounting applications by adding optional T-bar plaster frame (TBPF)

Aluminum	Steel
PRTB-6 T-bar Lay-in	SPRTB-6 T-bar Lay-in
PRTB-8 Tegular T-bar	SPRTB-8 Tegular T-bar
PRTB-9 Donn Finline	SPRTB-9 Donn Finline



Model 7300

Pg. 114

Perforated Supply/Return Diffuser - Fiberglass Backpan - Series 7300

- ★ The series 7300 perforated supply diffuser is an economical diffuser with a fiberglass plenum designed to allow field installation of the inlet collar (by others). The face of the diffuser is non-removable and includes a pattern controller set for a circular 360° degree round discharge pattern
- ★ The series 7300 provides a 360° tight horizontal circular pattern along the ceiling
- ★ The series 7300 includes a T-bar Lay-in border type 6 which is designed to be installed in standard 15/16" tee
- ★ Border type 6 can be used in surface mounting applications by adding optional T-bar plaster frame (TBPF)
- ★ Matching returns available: 7300R
- ★ The series 7300 is an excellent choice for VAV applications

T-bar Lay-in
7300-6 Fixed Steel Face
7300-6 AF Fixed Aluminum Face



Model 7350

Pg. 116

Perforated Supply/Return Diffuser - Fiberglass Backpan - Series 7350

- ★ The series 7350 perforated supply diffuser is an economical diffuser with a fiberglass plenum designed to allow field installation of the inlet collar (by others)
- ★ The face diffuser includes a hinged removable face and 4 pattern controllers that can adjusted for a 1-way, 2-way opposite, 2-way corner, 3-way, and 4-way discharge air patterns
- ★ Set in a 4-way pattern, the 7350 provides a 360° tight horizontal circular pattern along the ceiling
- ★ The series 7350 includes a T-bar Lay-in border type 6 designed to be installed in standard 15/16" tee
- ★ Border type 6 can be used in surface mounting applications by adding optional T-bar Plaster Frame (TBPF)
- ★ Matching returns available: 7350R
- ★ The series 7350 is an excellent choice for VAV applications

	Supply	Return
T-bar Lay-in	7350-6 Hinged Steel Removable Face	7350R-6 Hinged Steel Removable Face
	7350-6 AF Hinged Aluminum Removable Face	7350R-6 AF Hinged Aluminum Removable Face
Tegular T-bar	7350-8 Hinged Steel Removable Drop Face	7350R-8 Hinged Steel Removable Drop Face

PCD - Perforated Ceiling Diffusers



Model 7500

Pg. 118

Round Neck

Series 7500 - Supply
Series 7500R - Return

Square Neck

Series 7550 - Supply
Series 7550R - Return

Perforated Ceiling Diffuser - Face Mounted Adjustable Pattern Controller - Series 7500

- ✦ The series 7500 and 7550 perforated supply diffusers have 4 adjustable pattern controllers mounted on the face of the diffuser. Pattern controllers are adjustable from a horizontal to vertical discharge pattern
- ✦ Series 7500 are round neck diffusers; series 7550 are square neck diffusers
- ✦ The hinged, fully removable face allow access to the pattern controllers
- ✦ Unit can be adjusted for 1-way, 2-way opposite, 2-way corner, 3-way, and 4-way patterns
In 4-way pattern, Series 7500 provides a 360° tight horizontal circular pattern along the ceiling
- ✦ T-bar Lay-in border type 6 is designed to be installed in standard 15/16" tee
- ✦ Border type 6 can be used in surface mounting applications by adding optional T-bar plaster frame (TBPF)
- ✦ Matching returns available: 7500R (round neck) and 7550R (square neck)
- ✦ The series 7500 and 7550 are excellent choices for VAV applications

Round Neck			
Supply		Return	
7500-1 Surface Mount	7500-8 Tegular T-bar	7500R-1 Surface Mount	7500R-8 Tegular T-bar
7500-1 DF Surface Mount - Drop Face	7500-8 AF Tegular T-bar - Aluminum Face	7500R-1 DF Surface Mount - Drop Face	7500R-8 AF Tegular T-bar - Aluminum Face
7500-1 AF Surface Mount - Aluminum Face	7500-8 AL Tegular T-bar -All Aluminum	7500R-1 AF Surface Mount - Aluminum Face	7500R-8 AL Tegular T-bar - All Aluminum
7500-6 T-bar Lay-in	7500-9 Donn Finline	7500R-6 T-bar Lay-in	7500R-9 Donn Finline
7500-6 AF T-bar Lay-in - Aluminum Face	Metric	7500R-6 AF T-bar Lay-in - Aluminum Face	Metric
7500-6 AL T-bar Lay-in - All Aluminum	M-7000-6 T-bar Lay-in - 600mm x 600mm	7500R-6 AL T-bar Lay-in - All Aluminum	M-7500R-6 T-bar Lay-in - 600mm x 600mm

Square Neck			
Supply		Return	
7550-1 Surface Mount	7550-8 Tegular T-bar	7550R-1 Surface Mount	7550R-8 Tegular T-bar
7550-1 DF Surface Mount - Drop Face	7550-8 AF Tegular T-bar - Aluminum Face	7550R-1 DF Surface Mount - Drop Face	7550R-8 AF Tegular T-bar - Aluminum Face
7550-1 AF Surface Mount - Aluminum Face	7550-8 AL Tegular T-bar - All Aluminum	7550R-1 AF Surface Mount - Aluminum Face	7550R-8 AL Tegular T-bar - All Aluminum
7550-6 T-bar Lay-in	7550-9 Donn Finline	7550R-6 T-bar Lay-in	7550R-9 Donn Finline
7550-6 AF T-bar Lay-in - Aluminum Face	Metric	7550R-6 AF T-bar Lay-in - Aluminum Face	Metric
7550-6 AL T-bar Lay-in - All Aluminum	M-7550-6 T-bar Lay-in - 600mm x 600mm	7550R-6 AL T-bar Lay-in - All Aluminum	M-7550R-6 T-bar Lay-in - 600mm x 600mm



Model 7600

Pg. 134

Round Neck

Series 7600 - Supply
Series 7600R - Return

Square Neck

Series 7650 - Supply
Series 7650R - Return

Perforated Ceiling Diffuser - Curved Blade - Neck Mounted Pattern Controller - Series 7600

- ✦ The Series 7600 and 7650 perforated supply diffusers have curved blade pattern controllers mounted in the neck of the diffuser. Pattern controllers are adjustable from a horizontal to vertical discharge pattern
- ✦ Series 7600 are round neck diffusers; series 7650 are square neck diffusers
- ✦ The hinged, fully removable face allow access to the pattern controllers
- ✦ Units are available in 1-way, 2-way opposite, 2-way corner, 3-way, and 4-way patterns. The 4-way core can be set for corner or side discharge patterns. The series 7600 and 7650 provide a "star pattern" directional discharge of air maximizing induction and room air mixing
- ✦ T-bar Lay-in border type 6 is designed to be installed in standard 15/16" tee
- ✦ Border type 6 can be used in surface mounting applications by adding optional T-bar plaster frame (TBPF)
- ✦ Matching returns available: 7600R (round neck) and 7650R (square neck)
- ✦ The series 7600 and 7650 are excellent choices for VAV applications

Round Neck			
Supply		Return	
7600-1 Surface Mount	7600-8 Tegular T-bar	7600R-1 Surface Mount	7600R-8 Tegular T-bar
7600-1 DF Surface Mount - Drop Face	7600-8 AF Tegular T-bar - Aluminum Face	7600R-1 DF Surface Mount - Drop Face	7600R-8 AF Tegular T-bar - Aluminum Face
7600-1 AF Surface Mount - Aluminum Face	7600-8 AL Tegular T-bar - All Aluminum	7600R-1 AF Surface Mount - Aluminum Face	7600R-8 AL Tegular T-bar - All Aluminum
7600-6 T-bar Lay-in	7600-9 Donn Finline	7600R-6 T-bar Lay-in	7600R-9 Donn Finline
7600-6 AF T-bar Lay-in - Aluminum Face	Metric	7600R-6 AF T-bar Lay-in - Aluminum Face	Metric
7600-6 AL T-bar Lay-in - All Aluminum	M-7600-6 T-bar Lay-in - 600mm x 600mm	7600R-6 AL T-bar Lay-in - All Aluminum	M-7600R-6 T-bar Lay-in - 600mm x 600mm

Square Neck			
Supply		Return	
7650-1 Surface Mount	7650-8 Tegular T-bar	7650R-1 Surface Mount	7650R-8 Tegular T-bar
7650-1 DF Surface Mount - Drop Face	7650-8 AF Tegular T-bar - Aluminum Face	7650R-1 DF Surface Mount - Drop Face	7650R-8 AF Tegular T-bar - Aluminum Face
7650-1 AF Surface Mount - Aluminum Face	7650-8 AL Tegular T-bar - All Aluminum	7650R-1 AF Surface Mount - Aluminum Face	7650R-8 AL Tegular T-bar - All Aluminum
7650-6 T-bar Lay-in	7650-9 Donn Finline	7650R-6 T-bar Lay-in	7650R-9 Donn Finline
7650-6 AF T-bar Lay-in - Aluminum Face	Metric	7650R-6 AF T-bar Lay-in - Aluminum Face	Metric
7650-6 AL T-bar Lay-in - All Aluminum	M-7650-6 T-bar Lay-in - 600mm x 600mm	7650R-6 AL T-bar Lay-in - All Aluminum	M-7650R-6 T-bar Lay-in - 600mm x 600mm





Model 7900

Pg. 150

Perforated Face Modular Core Diffuser - Aluminum - Series 7900

- ✦ The series 7900 is an aluminum, perforated modular core supply diffuser. Modular cores can be field adjusted for 1-way, 2-way opposite, 2-way corner, 3-way, and 4-way air discharge patterns
- ✦ The perforated face is secured with spring clips making removal and access to the modular core pattern controllers easy
- ✦ T-bar Lay-in border type 6 is designed to be installed in standard 15/16" tee
- ✦ Border type 6 can be used in surface mounting applications by adding optional T-bar plaster frame (TBPF)
- ✦ Matching returns available: 7900R
- ✦ The series 7900 is an excellent choice for VAV applications

Supply	
7900-1	Surface Mount
7900-6	T-bar Lay-in
7900-7	Concealed Spline
7900-8	Tegular T-bar



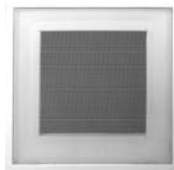
Model 7950

Pg. 156

Perforated Face Modular Core Diffuser - Aluminum Deflectors/Steel Backpan - Square Neck - Series 7950

- ✦ The series 7950 perforated modular core supply diffuser with a steel backpan. Modular cores can be field adjusted for 1-way, 2-way opposite, 2-way corner, 3-way, and 4-way air discharge patterns
- ✦ The perforated face is secured with spring clips making removal and access to the modular core pattern controllers easy
- ✦ T-bar Lay-in border type 6 is designed to be installed in standard 15/16" tee
- ✦ Border type 6 can be used in surface mounting applications by adding optional T-bar plaster frame (TBPF)
- ✦ Matching returns available: 7950R
- ✦ The 7950 is an excellent choice for VAV applications

Supply			
7950-1	Surface Mount	7950-8	Tegular T-bar
7950-1 DF	Surface Mount - Drop Face	7950-8 AF	Tegular T-bar - Aluminum Face
7950-1 AF	Surface Mount - Aluminum Face	7950-9	Donn Finline
7950-6	T-bar Lay-in		
7950-6 AF	T-bar Lay-in - Aluminum Face		



Model 7550R-F

Pg. 160

Perforated Filter Return Diffuser - Square Neck - Steel Series 7550R-F/7650R-F

- ✦ Unit can be used in surface mounting applications by adding optional T-bar plaster frame (TBPF)
- ✦ T-bar Lay-in border type 6 is designed to be installed in standard 15/16" tee
- ✦ The hinged, perforated face, allows access to the filter (by others)

Filter Return			
7550R-1 F	Surface Mount - Filter Back	7650R-1 F	Surface Mount - Filter Back
7550R-6 F	T-bar Lay-in - Filter Back	7650R-6 F	T-bar Lay-in - Filter Back
7550R-8 F	Tegular T-bar - Filter Back	7650R-8 F	Tegular T-bar - Filter Back

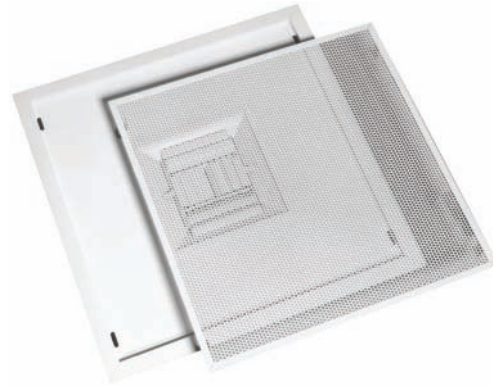
PCD - Perforated Ceiling Diffusers

3/2006

- ➔ Perforated ➔ Series 7000 ➔ Supply Aluminum
- ➔ Series 7000R ➔ Return/Exhaust Aluminum

Product Details

- ★ The series 7000 is an aluminum, perforated supply diffuser with curved blade pattern controllers mounted in the neck of the diffuser. Pattern controllers are adjustable from a horizontal to vertical discharge pattern
- ★ The face is secured with spring clips making removal and access to the pattern controllers easy
- ★ Units are available in 1-way, 2-way opposite, 2-way corner, 3-way, and 4-way patterns
- ★ The Series 7000 generates a “star pattern” directional discharge of air maximizing induction and room air mixing
- ★ Matching returns available: 7000R
- ★ The series 7000 is an excellent choice for VAV applications



Model 7000-6
Standard Finish: 01 White

Perforated Ceiling Diffusers

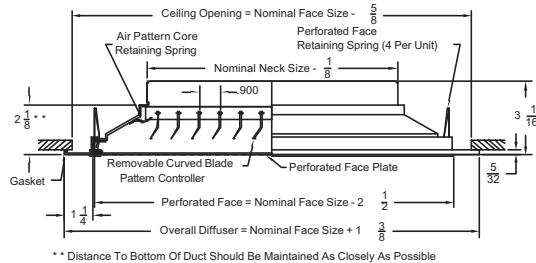


PCD

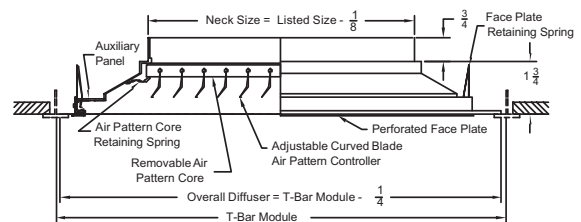
Supply

Dimensions are in inches

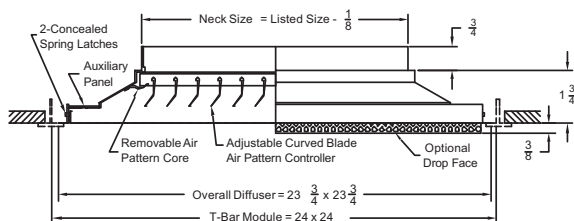
Supply - Perforated Ceiling Diffuser - Surface Mount Model 7000-1



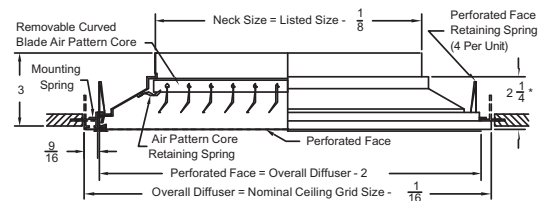
Supply - Perforated Ceiling Diffuser - T-bar Lay-in Model 7000-6 - All sizes except 24" x 24"



Supply - Perforated Ceiling Diffuser - T-bar Lay-in Model 7000-6 - 24" x 24" Grid Size



Supply - Perforated Ceiling Diffuser - Concealed Spline Model 7000-7



* Dimension indicates distance to bottom of duct which should be maintained as closely as possible.

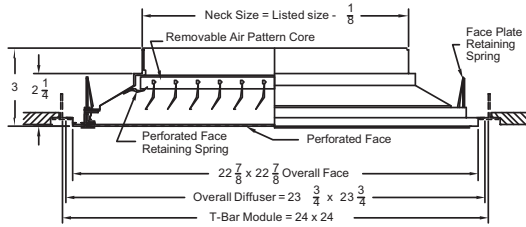
PCD - Perforated Ceiling Diffusers

Perforated Ceiling Diffusers

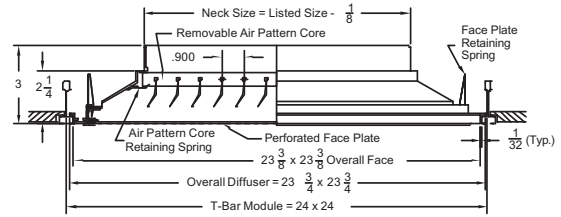


PCD

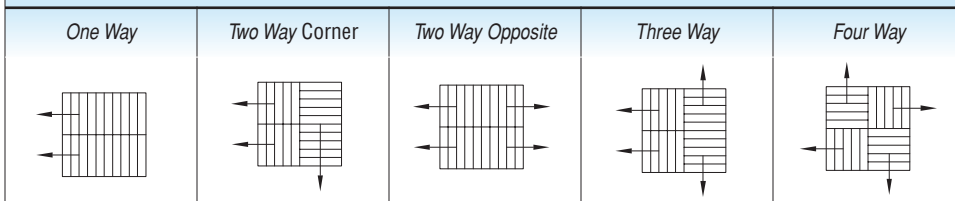
Supply - Perforated Ceiling Diffuser - Tegular T-bar Model 7000-8



Supply - Perforated Ceiling Diffuser - Donn Finline Model 7000-9



Air Patterns - Perforated Ceiling Diffusers



1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish 02 Aluminum paint 03 Black 22 (BBP) Black back pan/white face & border 28 Custom color</p>	<p>(Accessories Shipped Unattached)</p> <p>Square Neck: D7 - Opposed blade damper - Steel337 D7A - Opposed blade damper - Aluminum . . .337 L9 - Equalizing grid334 TR - Square to round transition338</p> <p>Round Neck: BDS - Butterfly damper335 RSD - Radial shutter damper336 G3 - Equalizing grid337</p>	<ul style="list-style-type: none"> Available core patterns: 1W, 2W, 2C (Corner), 3W and 4W 7600 Series has 3/16" diameter holes on 1/4" staggered centers

PCD - Perforated Ceiling Diffusers

3/2006

Perforated Ceiling Diffusers

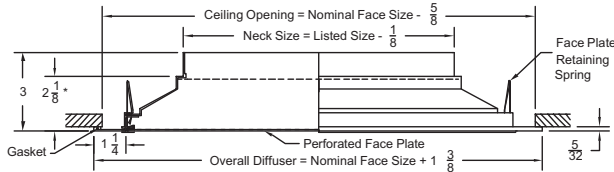


PCD

Return

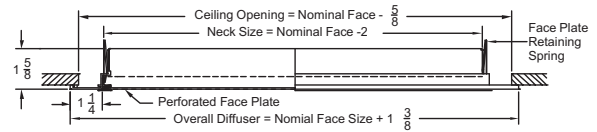
Return - Perforated Ceiling Diffuser - Surface Mount

Model 7000R-1 - For units with neck sizes less than nominal face -2"



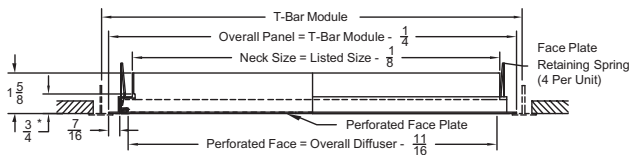
Return - Perforated Ceiling Diffuser - Surface Mount

Model 7000R-1* - For units with neck sizes less than nominal face -2"



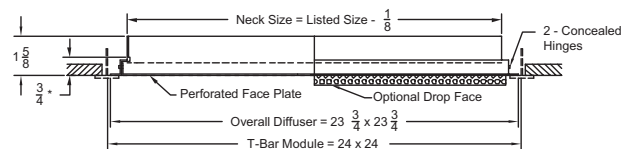
Return - Perforated Ceiling Diffuser - T-bar Lay-in

Model 7000R-6 - All sizes except 24" x 24"



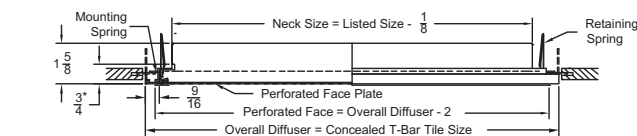
Return - Perforated Ceiling Diffuser - T-bar Lay-in

Model 7000R-6* - 24" x 24" grid size only



Return - Perforated Ceiling Diffuser - Concealed Spline

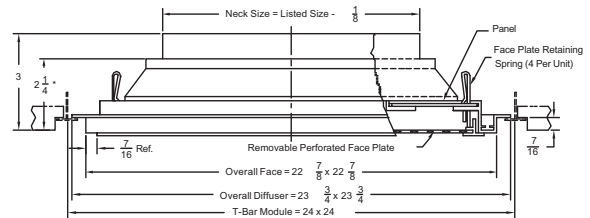
Model 7000R-7



* Distance To Bottom Of Duct Should Be Maintained as Closely As Possible

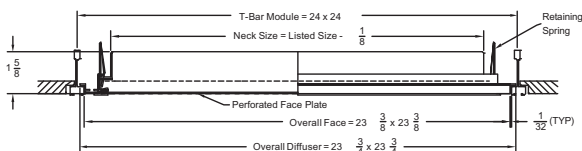
Return - Perforated Ceiling Diffuser - Tegular T-bar

Model 7000R-8



Return - Perforated Ceiling Diffuser - Donn Finline

Model 7000R-9 - Low profile



PCD - Perforated Ceiling Diffusers

1. Available Finishes	2. Available Accessories	3. Construction Details
Standard Finish: 01 White Optional Finish 02 Aluminum paint 03 Black 22 (BBP) Black back pan/white face & border 28 Custom color Note: Anodized Finish not available	Accessories are shipped unattached Square Neck: D7 - Opposed Blade Damper - Steel337 D7A - Opposed Blade Damper - Aluminum . . .337 TR - Square to Round Transition338 Round Neck: BDS - Butterfly Damper335 RSD - Radial Shutter Damper336	• Series 7000R has 3/16" diameter holes on 1/4" staggered centers

Series 7000 - Available Sizes

Model 7000-1 (Surface Mount)

Nominal Face Size	Actual Overall Face Size	Neck Sizes Available									
		6 x 6	8 x 8								
12 x 12	13 3/8 x 13 3/8	6 x 6	8 x 8								
14 x 14	15 3/8 x 15 3/8	6 x 6	8 x 8								
15 x 15	16 3/8 x 16 3/8	6 x 6	8 x 8	9 x 9							
16 x 16	17 3/8 x 17 3/8	6 x 6	8 x 8	9 x 9	10 x 10						
18 x 18	19 3/8 x 19 3/8	6 x 6	8 x 8	9 x 9	10 x 10	12 x 12					
20 x 20	21 3/8 x 21 3/8	6 x 6	8 x 8	9 x 9	10 x 10	12 x 12	14 x 14				
21 x 21	22 3/8 x 22 3/8	6 x 6	8 x 8	9 x 9	10 x 10	12 x 12	14 x 14	15 x 15			
24 x 12	25 3/8 x 13 3/8	6 x 6	8 x 6	9 x 6	10 x 6	12 x 6	14 x 6	16 x 6	18 x 6		
24 x 24	25 3/8 x 25 3/8	6 x 6	8 x 8	9 x 9	10 x 10	12 x 12	14 x 14	15 x 15	16x16	18 x 18	
36 x 12	37 3/8 x 13 3/8	6 x 6	8 x 6	9 x 6	10 x 6	12 x 6	14 x 6	16 x 6	18 x 6		
36 x 24	37 3/8 x 25 3/8	6 x 6	8 x 8	9 x 9	10 x 10	12 x 12	14 x 14	15 x 15	16x16	18 x 18	
48 x 12	49 3/8 x 13 3/8	6 x 6	8 x 6	9 x 6	10 x 6	12 x 6	14 x 6	16 x 6	16x6	18 x 6	
48 x 24	49 3/8 x 25 3/8	6 x 6	8 x 8	9 x 9	10 x 10	12 x 12	14 x 14	15 x 15	16x16	18 x 18	

Model 7000-7 (Concealed T-bar)

T-Bar Spacing	Actual Overall Face Size	Neck Sizes Available									
12 x 12	11 15/16 x 11 15/16	6 x 6	8 x 8								
24 x 12	23 15/16 x 11 15/16	6 x 6	8 x 6	9 x 6	10 x 6	12 x 6	14 x 6	16 x 6	18 x 6		
24 x 24	23 15/16 x 23 15/16	6 x 6	8 x 8	9 x 9	10 x 10	12 x 12	14 x 14	15 x 15	16x16	18 x 18	
36 x 12	35 15/16 x 11 15/16	6 x 6	8 x 6	9 x 6	10 x 6	12 x 6	14 x 6	15 x 6	16x6	18x6	
36 x 24	35 15/16 x 23 15/16	6 x 6	8 x 8	9 x 9	10 x 10	12 x 12	14 x 14	15 x 15	16x16	18 x 18	
48 x 12	47 15/16 x 11 15/16	6 x 6	8 x 6	12 x 6	14 x 6	16 x 6	18 x 6				
48 x 24	47 15/16 x 23 15/16	6 x 6	8 x 8	9 x 9	10 x 10	12 x 12	14 x 14	15 x 15	16x16	18 x 18	

Model 7000-6 (T-bar Lay-in)

T-Bar Spacing	Actual Overall Face Size	Neck Sizes Available									
12 x 12	11 15/16 x 11 15/16	6 x 6	8 x 8								
24 x 12	23 15/16 x 11 15/16	6 x 6	8 x 6	9 x 6	10 x 6	12 x 6	14 x 6	15 x 6	16 x 6	18 x 6	
24 x 24	23 15/16 x 23 15/16	6 x 6	8 x 8	9 x 9	10 x 10	12 x 12	14 x 14	15 x 15	16 x 16	18 x 18	
36 x 12	35 15/16 x 11 15/16	6 x 6	8 x 6	9 x 6	10 x 6	12 x 6	14 x 6	15 x 6	16 x 6	18 x 6	
36 x 24	35 15/16 x 23 15/16	6 x 6	8 x 8	9 x 9	10 x 10	12 x 12	14 x 14	15 x 15	16 x 16	18 x 18	
48 x 12	47 15/16 x 11 15/16	6 x 6	8 x 6	9 x 6	10 x 6	12 x 6	14 x 6	15 x 6	16 x 6	18 x 6	
48 x 24	47 15/16 x 23 15/16	6 x 6	8 x 8	9 x 9	10 x 10	12 x 12	14 x 14	15 x 15	16 x 16	18 x 18	

Model 7000-8 (Tegular T-bar)

Model 7000-9 (Donn Finline)

T-Bar Spacing	Actual Overall Face Size	Neck Sizes Available							
	Face Size	6 x 6	8 x 8	9 x 9	10 x 10	12 x 12	14 x 14	15 x 15	22 x 22
24 x 24	22 7/8 x 22 7/8	6 x 6	8 x 8	9 x 9	10 x 10	12 x 12	14 x 14	15 x 15	22 x 22

See Page PCD-109 for Series 7000 Performance Notes



PCD - Perforated Ceiling Diffusers

3/2006

Series 7000 - Performance

Models 7000 (-1, -6, -7, -8, -9)

Neck Size Ak	fpm Neck Velocity Pv	200 .003	300 .006	400 .010	500 .016	600 .022	700 .030	800 .040	900 .050
6" x 6"	CFM Pt NC	50 .015 <	75 .03 <	100 .06 <	125 .09 25	150 .13 25	175 .17 30	200 .23 35	225 .29 40
	Throw	4-Way 3-Way 2-Way 1-Way	1-1-3 1-2-3 2-3-4 3-4-5	2-3-4 2-3-4 3-4-5 4-5-7	3-4-5 3-5-6 4-5-7 5-7-9	3-5-6 4-5-7 5-7-9 6-8-11	4-5-7 5-7-9 6-9-12 7-11-14	4-6-8 6-8-10 7-10-13 8-12-16	5-7-9 6-9-12 7-10-13 8-12-15 9-14-18
8" x 6" 9" x 6"	CFM Pt NC	65 .015 <	100 .03 <	130 .06 20	165 .09 25	200 .13 25	230 .18 30	265 .23 35	300 .29 40
	Throw	4-Way 3-Way 2-Way 1-Way	2-3-4 3-4-5 3-4-5 3-5-6	3-4-5 3-4-5 3-5-6 4-6-8	3-5-6 4-5-7 4-6-8 5-7-10	4-5-7 4-6-8 5-7-10 6-9-12	4-6-8 5-7-10 7-10-13 8-12-15	5-7-9 6-9-12 7-11-14 9-13-17	5-7-10 6-9-12 7-10-13 8-12-16 10-15-19
8" x 8" 10" x 6"	CFM Pt NC	90 .016 <	130 .033 <	180 .06 20	220 .09 25	265 .13 30	310 .18 35	350 .24 40	400 .30 40
	Throw	4-Way 3-Way 2-Way 1-Way	2-4-5 2-3-4 3-5-6 4-5-7	3-5-6 3-5-6 4-6-8 5-7-9	4-5-7 4-6-8 6-8-11 6-9-12	4-6-8 5-7-9 7-10-13 8-12-15	5-7-9 6-8-11 8-12-15 9-14-18	6-8-11 7-11-14 9-14-18 11-16-22	7-10-13 8-12-16 11-16-21 12-18-24
12" x 6"	CFM Pt NC	100 .016 <	150 .032 <	200 .06 20	250 .09 25	300 .13 30	350 .18 35	400 .24 40	450 .30 40
	Throw	4-Way 3-Way 2-Way 1-Way	3-4-5 3-4-5 3-5-6 4-5-7	3-5-6 4-5-7 4-6-8 5-7-9	4-6-8 5-7-9 6-8-11 6-9-12	5-7-9 5-7-10 7-10-13 8-12-15	5-7-10 6-9-12 8-12-15 9-14-18	6-9-12 8-12-15 9-14-18 11-16-22	7-11-14 9-13-17 11-16-21 13-19-25
9" x 9" 14" x 6"	CFM Pt NC	115 .016 <	175 .042 <	230 .06 20	290 .09 25	350 .137 30	405 .18 35	465 .24 40	520 .30 40
	Throw	4-Way 3-Way 2-Way 1-Way	3-5-6 3-5-6 4-6-7 4-6-8	4-5-7 4-6-8 5-7-9 5-7-10	5-7-9 5-7-10 6-9-12 7-10-13	5-7-10 6-8-11 7-11-14 8-12-16	6-9-12 7-10-13 8-12-16 10-15-19	7-10-13 8-12-16 10-15-19 11-16-22	8-12-15 9-14-18 11-16-22 13-19-25
10" x 10" 15" x 6" 16" x 6"	CFM Pt NC	140 .016 <	210 .035 <	275 .06 20	345 .10 25	415 .14 30	485 .19 35	550 .25 40	620 .31 40
	Throw	4-Way 3-Way 2-Way 1-Way	2-3-4 3-5-6 4-6-8 5-7-9	3-5-6 4-6-8 6-8-11 6-9-12	4-6-8 5-7-10 7-10-13 8-12-16	6-8-11 7-10-13 8-12-16 10-15-20	6-9-12 7-10-13 8-12-15 10-15-20	7-11-14 9-14-18 12-17-23 14-21-28	8-12-16 10-15-20 13-19-26 16-24-32

Models 7000R (-1, -6, -7, -8, -9)

Neck Size Ak	fpm Neck Velocity Pv	200 -.013	300 -.03	400 -.05	500 -.08	600 -.011	700 -.015	800 -.020
6" x 6"	CFM NC	50 <	75 <	100 <	125 <	150 20	175 25	200 30
8" x 6"	CFM NC	65 <	100 <	130 <	165 <	200 20	230 25	265 30
8" x 8"	CFM NC	90 <	130 <	175 <	220 20	265 25	310 30	350 35
9" x 9"	CFM NC	110 <	170 <	225 <	280 20	335 25	390 30	450 35
10" x 6"	CFM NC	80 <	125 <	165 <	205 20	245 25	290 30	330 35
10" x 10"	CFM NC	140 <	210 <	275 <	345 20	415 25	485 30	550 35
12" x 6"	CFM NC	100 <	150 <	200 <	250 20	300 25	350 30	400 35
12" x 12"	CFM NC	200 <	300 <	400 <	500 20	600 25	700 30	800 35
15" x 15"	CFM NC	310 <	470 <	625 20	780 25	935 30	1090 35	1250 40
18" x 18"	CFM NC	450 <	675 <	900 20	1125 25	1350 30	1575 35	1800 40
20" x 20"	CFM NC	555 <	830 <	1110 20	1385 28	1660 33	1940 38	2215 42
22" x 10"	CFM NC	305 <	455 <	610 20	760 25	910 30	1065 35	1215 40
22" x 22"	CFM NC	670 <	1010 <	1345 20	1680 28	2015 33	2350 38	2690 42
34" x 22"	CFM NC	1040 <	1555 <	2075 20	2595 28	3115 35	3635 40	4150 45
46" x 22"	CFM NC	1405 <	2105 <	2810 23	3510 30	4210 38	4915 42	5615 45

See Page PCD-109 for Series 7000 Performance Notes

For more product information visit us at www.metalaire.com



PCD - Perforated Ceiling Diffusers

Series 7000 - Performance

Models 7000 (-1, -6, -7, -8, -9)

Neck Size Ak	fpm Neck Velocity Pv	200 Pt NC	300 .006	400 .010	500 .016	600 .022	700 .030	800 .040	900 .050	
18" x 6"	CFM	150	225	300	375	450	525	600	675	
	Pt	.016	.05	.06	.10	.14	.19	.25	.31	
	NC	<	<	20	25	30	35	40	40	
18" x 6"	Throw	4-Way	3-4-5	3-5-6	4-6-8	6-8-11	7-10-13	8-12-15	9-14-18	10-15-20
		3-Way	3-4-5	4-6-8	6-8-11	7-10-13	8-12-16	9-14-18	11-16-21	12-18-24
		2-Way	4-6-8	6-8-11	7-11-14	9-13-17	11-16-21	12-18-24	14-21-28	18-27-33
		1-Way	5-7-9	6-9-12	8-12-16	11-16-21	13-19-25	15-22-29	17-25-33	19-28-38
12" x 12"	CFM	200	300	400	500	600	700	800	900	
	Pt	.016	.045	.066	.10	.15	.20	.26	.33	
	NC	<	20	25	25	30	35	40	40	
12" x 12"	Throw	4-Way	3-5-6	4-6-8	5-7-10	6-9-12	8-12-15	9-13-17	10-15-20	12-17-23
		3-Way	3-5-6	5-7-9	6-9-12	8-12-15	9-14-18	11-16-22	13-19-25	14-20-27
		2-Way	5-7-9	6-9-12	8-12-16	11-16-21	12-18-24	15-22-29	17-25-33	18-27-36
		1-Way	6-9-12	8-12-16	10-15-20	12-18-24	15-22-29	17-25-33	18-27-36	21-31-42
14" x 14"	CFM	270	410	545	680	815	950	1090	1225	
	Pt	.018	.04	.07	.11	.16	.22	.28	.36	
	NC	<	20	25	28	33	37	40	43	
14" x 14"	Throw	4-Way	4-5-7	4-6-9	6-9-12	7-11-14	9-14-18	10-15-20	12-18-24	14-21-28
		3-Way	4-5-9	5-8-11	6-10-13	8-13-16	10-15-20	11-17-23	13-19-27	16-23-31
		2-Way	5-7-10	6-9-13	8-12-18	11-17-22	12-19-26	16-23-31	18-26-36	19-29-39
		1-Way	6-9-12	8-12-18	10-15-22	13-19-26	15-23-30	17-25-35	19-28-39	21-31-43
15" x 15"	CFM	310	470	625	780	935	1090	1250	1405	
	Pt	.018	.05	.07	.11	.16	.21	.28	.35	
	NC	<	20	25	30	35	40	40	45	
15" x 15"	Throw	4-Way	4-6-8	5-7-10	7-10-13	8-12-16	10-15-20	12-17-23	13-19-26	15-23-30
		3-Way	5-7-9	6-9-12	8-12-15	9-14-18	11-16-22	13-19-26	15-23-30	18-26-35
		2-Way	6-9-12	9-14-15	12-17-20	13-19-26	16-22-31	18-27-36	20-30-40	23-33-43
		1-Way	7-11-14	9-14-18	11-18-22	14-21-28	16-24-32	19-28-38	21-31-42	23-34-45
16" x 16"	CFM	355	590	710	885	1060	1240	1415	1595	
	Pt	.018	.047	.070	.109	.155	.212	.280	.350	
	NC	<	20	25	30	35	40	40	45	
16" x 16"	Throw	4-Way	5-7-9	6-8-11	8-10-14	9-13-18	10-15-21	13-18-27	14-20-28	16-22-31
		3-Way	5-7-9	6-9-12	8-13-17	10-15-22	13-19-26	15-22-30	18-25-36	19-29-39
		2-Way	6-10-12	9-14-16	11-17-24	14-21-28	17-25-32	19-26-34	21-34-40	24-34-44
		1-Way	7-10-16	9-15-18	12-18-26	15-22-32	18-27-36	19-28-37	24-35-42	26-36-46
18" x 18"	CFM	450	675	900	1125	1350	1575	1800	2025	
	Pt	.019	.05	.07	.11	.16	.22	.29	.36	
	NC	<	20	25	30	35	40	40	45	
18" x 18"	Throw	4-Way	5-7-10	6-9-12	8-12-16	10-15-20	12-18-24	14-21-28	16-24-32	18-27-36
		3-Way	5-7-12	7-11-14	9-14-18	11-16-22	13-19-26	16-24-31	18-27-36	21-31-41
		2-Way	8-12-18	10-15-20	13-19-26	16-24-32	20-29-39	23-34-45	26-39-52	29-43-58
		1-Way	9-14-22	11-16-24	15-23-30	18-27-36	22-32-43	25-37-49	28-42-56	30-45-60

Series 7000 - Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM** - Cubic Feet per Minute (air)
- fpm** - Velocity of air stream in Feet Per Minute
- Pv** - Velocity pressure (inches of water column)
- Pt** - Total pressure (inches of water column)
- Ps** - Static pressure = Pt - Pv (inches of water column)
- Throw** - Cataloged throw is horizontal distances in feet to the terminal velocities of 150, 100 and 50 fpm with supply air temperature 20° F below room air temperature
- NC** - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak** - Area Factor





Series 7000 - Specification

Supply – Perforated Face – Square Neck - Curved Pattern Controllers/Series 7000

- 7000-1 - Surface Mounted
- 7000-6 - T-bar Lay-in
- 7000-7 - Concealed Spline
- 7000-8 - Tegular T-bar
- 7500-9 - Donn Finline

Air Outlets shall be aluminum model 7000 manufactured by METALAIR. Units shall consist of aluminum 51% free area perforated face and an aluminum border and backpan. Perforated holes shall be 3/16" diameter on 1/4" staggered centers.

Outer border of units shall be extruded aluminum construction. The perforated face shall be removable allowing access to aluminum curved blade pattern controller mounted into the neck of the diffusers. Face shall be secured in place with tension spring clips. Pattern controller blades shall be individually adjustable and allow the discharge pattern to be adjustable from vertical to horizontal. Pattern controller blades shall pivot in friction mounting retainers. Retainers shall hold the deflector blade position throughout the specified operating range of the device. Metal friction wires are not acceptable.

Outlets shall be available in 1, 2-way opposite, 2-way corner, 3, and 4-way directional air patterns. Units shall have square inlets.

The units shall be the size and quantity as outline in the plans and specifications.

Units shall be designed to integrate into the specified ceiling system.

Return/Exhaust – Perforated Face – Square Neck/Series 7000

- 7000R-1 - Surface Mounted
- 7000R-6 - T-bar Lay-in
- 7000R-7 - Concealed Spline
- 7000R-8 - Tegular T-bar
- 7500R-9 - Donn Finline

Air Inlets shall be aluminum model 7000R manufactured by METALAIR. Units shall consist of aluminum 51% free area perforated face and an aluminum border and backpan. Perforated holes shall be 3/16" diameter on 1/4" staggered centers. Units shall be designed for use in ducted return or exhaust applications.

Outer border of units shall be extruded aluminum construction. The perforated face shall be removable allowing access to interior of diffuser. Face shall be secured in place with tension spring clips.

The units shall be the size and quantity as outline in the plans and specifications.

Units shall be designed to integrate into the specified ceiling system.

Square Neck Options and Accessories:

Opposed Blade Damper

METALAIR model D7A aluminum or D7 steel round opposed blade type dampers shall be provided. Damper shall consist of gang operated blades that can be adjusted from full open to full closed. Damper shall be adjusted with a handle accessible by opening the face of the diffuser.

Equalizing Grid

METALAIR model L9 aluminum square equalizing grid shall be provided. Equalizing grid shall consist aluminum blades mounting in an aluminum frame.

Round Neck Optional Dampers and Accessories:

Square to Round Transitions

Units to have square to round transitions allowing installation with round ductwork.

Butterfly Damper

METALAIR model BDS aluminum round butterfly type dampers shall be provided. Damper shall consist of two butterfly style blades that can be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot that can be assessed through the face of the diffuser.

Radial Shutter Damper

METALAIR model RSD steel round radial shutter damper shall be provided. Damper shall consist of gang operated radial blades that slide perpendicular to air flow direction. The damper shall be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot that can be assessed through the face of the diffuser.

Opposed Blade Damper

METALAIR model D3 aluminum or SD3 steel round opposed blade type dampers shall be provided. Damper shall consist of gang operated blades that can be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot that can be assessed through the face of the diffuser.

Equalizing Grid

METALAIR model G3 aluminum round equalizing grid shall be provided. Equalizing grid shall consist of 1/2" x 1/2" x 1/2" aluminum cubed core mounting in an aluminum frame.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

PCD - Perforated Ceiling Diffusers

Series 7000 - Model Specification Guide

Square/Rectangular Perforated Curved Blade Ceiling Diffusers

Model	Available Neck	Module	Air Pattern	Available Finishes	Available Options	
7000-1 Flush Surface Mount	6" thru 18"	12" x 12" 14" x 14" 16" x 16" 18" x 18" 20" x 20" 21" x 21" 24" x 12" 24" x 24" 48" x 24"	Standard	Standard	Square Options	
			4W - 4-way	01 - White	D7	Opposed Blade Damper - Steel
			Options	Options	D7A	Opposed Blade Damper - Aluminum
			1W - 1-way	02 - Aluminum	L9	Equalizing Grid
			2W - 2-way	03 - Black	TR	Square to Round Transition
			3W - 3-way	22 - Black Back Pan White Face	Round Options	
			2C - 2-way corner	28 - Custom Color	G3	Equalizing Grid
					BDS	Radial Shutter Damper
					RSD	Induction Vanes
					D3	Opposed Blade Damper - Aluminum
					SD3	Opposed Blade Damper - Steel

Model	Available Neck	Module	Air Pattern	Available Finishes	Available Options	
7000-6 T-bar Lay-in 7000-7 Concealed Spline 7000-8 Tegular T-bar 7000-9 Donn Finline	6" thru 18"	12" x 12" 24" x 12" 24" x 24" 48" x 12" 48" x 24"	Standard	Standard	Square Options	
			4W - 4-way	01 - White	D7	Opposed Blade Damper - Steel
			Options	Options	D7A	Opposed Blade Damper - Aluminum
			1W - 1-way	02 - Aluminum	L9	Equalizing Grid
			2W - 2-way	03 - Black	TR	Square to Round Transition
			3W - 3-way	24 - Mill	Round Options	
			2C - 2-way corner	28 - Custom Color	G3	Equalizing Grid
					BDS	Radial Shutter Damper
					RSD	Induction Vanes
					D3	Opposed Blade Damper - Aluminum
					SD3	Opposed Blade Damper - Steel

Return and Exhaust Perforated Diffusers

Model	Available Neck	Module	Available Finishes	Available Options	
7000R-1 Surface Mount	6" thru 18"	12" x 12" 14" x 14" 16" x 16" 18" x 18" 20" x 20" 21" x 21" 24" x 12" 24" x 24" 48" x 24"	Standard	Square Options	
			01 - White	D7	Opposed Blade Damper - Steel
			Options	D7A	Opposed Blade Damper - Aluminum
			02 - Aluminum	L9	Equalizing Grid
			03 - Black	TR	Square to Round Transition
			22 - Black Back Pan White Face	Round Options	
			28 - Custom Color	G3	Equalizing Grid
				BDS	Radial Shutter Damper
				RSD	Induction Vanes
				D3	Opposed Blade Damper - Aluminum
				SD3	Opposed Blade Damper - Steel

Model	Available Neck	Module	Available Finishes	Available Options	
7000R-6 T-bar Lay-in 7000R-7 Concealed Spline 7000R-8 Tegular T-bar 7000R-9 Donn Finline	6" thru 18"	12" x 12" 24" x 12" 24" x 24" 48" x 12" 48" x 24"	Standard	Square Options	
			01 - White	D7	Equalizing Grid - Steel
			Options	D7A	Equalizing Grid - Aluminum
			02 - Aluminum	L9	Square to Round Transition
			03 - Black	TR	Square to Round Transition - Deep
			22 - Black Back Pan White Face	Round Options	
			28 - Custom Color	G3	Equalizing Grid
				BDS	Radial Shutter Damper
				RSD	Induction Vanes
				D3	Opposed Blade Damper - Aluminum
				SD3	Opposed Blade Damper - Steel

Perforated Ceiling Diffusers



PCD

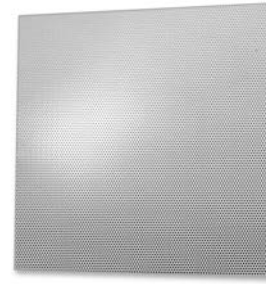
PCD - Perforated Ceiling Diffusers

3/2006

- ➔ Return/Exhaust Perforated Screen ➔ Series PRTB ➔ Aluminum ➔ Non-Ducted
- ➔ Series SPRTB ➔ Steel ➔ Non-Ducted

Product Details

- ✦ The series PRTB and SPRTB are economical choice for non-duct plenum return applications and is shipped without pattern controllers
- ✦ The PRTB is constructed from aluminum for corrosion resistance. The SPRTB is constructed from steel for durability
- ✦ Unit can be used in surface mounting applications by adding optional T-bar plaster frame (TBPF)



Model PRTB-6
Standard Finish: 01 White

Perforated Ceiling Diffusers

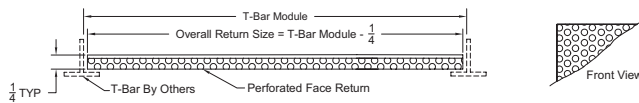


Dimensions are in inches

PCD

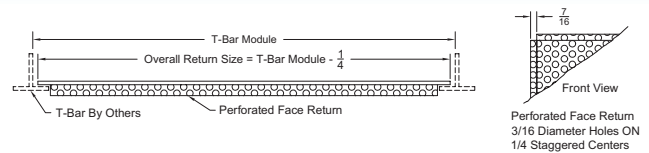
Return - Perforated Screen - Non Ducted - T-bar Lay-in

Model PRTB-6 - *Aluminum*
Model SPRTB-6 - *Steel*



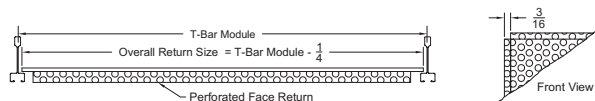
Return - Perforated Screen - Non Ducted - Tegral T-bar

Model PRTB-8 - *Aluminum*
Model SPRTB-8 - *Steel*



Return - Perforated Screen - Non Ducted - Donn Finline

Model PRTB-9 - *Aluminum*
Model SPRTB-9 - *Steel*



1. Available Finishes	2. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish 02 Aluminum paint 03 Black 28 Custom color</p>	<ul style="list-style-type: none"> • Available only in sizes listed in Performance Table • PRTB and SPRTB have 3/16" diameters holes on 1/4" staggered centers

PCD - Perforated Ceiling Diffusers

Performance - Series PRTB

Models PRTB (-6, -8, -9), SPRTB (-6, -8, -9)

Nom. Neck Size	fpm Inlet Velocity Negative Ps	200 -.01	300 -.03	400 -.05	500 -.08	600 -.11	700 -.15	800 -.19
12" x 12"	CFM NC	170 <	250 <	335 <	420 20	505 25	590 30	670 35
24" x 12"	CFM NC	350 <	525 <	700 20	875 25	1050 30	1225 35	1400 40
24" x 24"	CFM NC	735 <	1100 <	1470 20	1835 28	2200 33	2570 38	2935 42
36" x 24"	CFM NC	1120 <	1680 <	2235 25	2795 30	3355 35	3915 40	4470 45
48" x 12"	CFM NC	735 <	1100 <	1470 20	1835 28	2200 33	2570 38	2935 42
48" x 24"	CFM NC	1500 <	2250 <	3000 20	3750 28	4500 33	5250 38	6000 42

Series PRTB - Specification

Return or Exhaust - Perforated Face Only - Non Ducted/Series PRTB

Aluminum

PRTB-6 - T-bar Lay-in

PRTB-8 - Tegular T-bar

PRTB-9 - Donn Finline

Steel

SPRTB-6 - T-bar Lay-in

SPRTB-8 - Tegular T-bar

SPRTB-9 - Donn Finline

Air Inlets shall be aluminum model PRTB or steel SPRTB manufactured by METALAIRE. Units shall be designed for use in a non-duct return or exhaust applications. Units shall consist of a 51% free area perforated face. Perforated holes shall be 3/16" diameter on 1/4" staggered centers.

The units shall be the size and quantity as outline in the plans and specifications.

Units shall be designed to integrate into the specified ceiling system.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Series PRTB - Model Specification Guide

Return and Exhaust - Perforated Screen - Non Ducted Series PRTB

Steel - Perforated Face

Model	Module	Available Finishes
SPRTB-6 T-bar Lay-in SPRTB-8 Tegular T-bar SPRTB-9 Donn Finline	12" x 12" 24" x 12" 24" x 24" 36" x 24" 48" x 12" 48" x 24"	Standard
		01 - White
		Options
		02 - Aluminum
		03 - Black
		24 - Mill
		28 - Custom Color

Aluminum - Perforated Face

Model	Module	Available Finishes
PRTB-6 T-bar Lay-in PRTB-8 Tegular T-bar PRTB-9 Donn Finline	12" x 12" 24" x 12" 24" x 24" 36" x 24" 48" x 12" 48" x 16" 48" x 24"	Standard
		01 - White
		Options
		02 - Aluminum
		03 - Black
		24 - Mill
		28 - Custom Color



PCD - Perforated Ceiling Diffusers

3/2006

- ➔ Perforated Supply Diffuser ➔ Series 7300 ➔ Steel Face
- ➔ Series 7300-AF ➔ Aluminum Face

Product Details

- ★ The series 7300 perforated supply diffuser is an economical diffuser with a fiberglass plenum designed to allow field installation of the inlet collar (by others). The face of the diffuser is non-removable and includes a pattern controller set for a circular 360° degree round discharge pattern
- ★ The series 7300 provides a 360° tight horizontal circular pattern along the ceiling
- ★ The series 7300 includes a T-bar Lay-in border type 6 which is designed to be installed in standard 15/16" tee
- ★ Border type 6 can be used in surface mounting applications by adding optional T-bar plaster frame(TBPF)
- ★ Matching returns available: 7300R
- ★ The series 7300 is an excellent choice for VAV applications

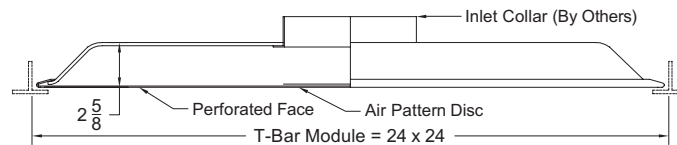


Model 7300-6
Standard Finish: 01 White

Dimensions are in inches

Perforated Supply Diffusers - Foil Lined Fiberglass Back - T-bar Lay-in

- Model 7300-6 - Steel fixed face
- Model 7300-6 AF - Aluminum fixed face



1. Available Finishes	2. Construction Details
<p>Standard Finish: 01 White with black dispersion disc and plenum interior</p>	<ul style="list-style-type: none"> • Neck is pre-scored to 5", 6", 7", 8", 10", 12", 14" & 15" • Face is non-removable • Inlet collars are provided by others • 7300 series has 3/16" diameter holes on 1/4" staggered centers

Perforated Ceiling Diffusers



PCD

PCD - Perforated Ceiling Diffusers

Series 7300 - Performance

Models 7300-6, 7300-6 AF

Neck Size	fpm Neck Velocity Pv	200 .002	300 .006	400 .010	500 .016	600 .022	700 .030	800 .040	900 .050	1000 .062
5"	CFM	25	40	55	70	80	95	110	120	138
	Pt	.003	.008	.016	.025	.033	.045	.060	.076	.094
	Throw	1-1-1	1-1-1	1-1-1	1-1-3	1-1-4	1-1-4	1-1-5	1-2-6	1-3-6
	NC	<	<	<	<	<	<	<	21	27
6"	CFM	40	60	80	100	115	135	155	175	196
	Pt	.004	.009	.016	.027	.035	.049	.066	.078	.105
	Throw	1-1-1	1-1-1	1-1-4	1-2-4	1-2-5	1-3-6	2-3-7	2-3-8	2-4-10
	NC	<	<	<	<	22	26	30	35	38
7"	CFM	50	80	105	135	160	185	210	240	265
	Pt	.005	.013	.026	.036	.050	.068	.088	.115	.140
	Throw	1-1-1	1-1-3	1-1-4	1-2-4	1-2-5	1-3-6	2-3-7	2-3-8	2-4-10
	NC	<	<	<	20	23	26	30	34	37
8"	CFM	70	105	140	175	210	245	280	315	350
	Pt	.006	.013	.026	.037	.054	.073	.096	.121	.150
	Throw	1-1-2	1-1-3	1-2-5	2-2-5	2-3-6	2-3-8	2-4-10	3-5-11	3-6-12
	NC	<	<	<	20	23	26	30	34	38
9"	CFM	90	130	175	220	265	310	350	395	440
	Pt	.007	.014	.026	.042	.060	.083	.105	.134	.166
	Throw	1-1-2	1-1-3	1-2-5	2-2-5	2-3-6	2-3-8	2-4-10	3-5-11	3-6-13
	NC	-	-	-	22	26	30	34	38	41
10"	CFM	110	160	215	270	325	380	435	490	545
	Pt	.008	.018	.033	.052	.075	.111	.135	.171	.212
	Throw	1-2-3	1-2-4	1-2-5	2-3-6	2-3-7	3-4-8	3-4-10	3-5-12	4-7-14
	NC	<	<	20	23	26	29	34	38	41
12"	CFM	155	235	315	390	470	550	630	705	785
	Pt	.009	.021	.039	.059	.086	.118	.155	.194	.240
	Throw	1-2-4	1-2-5	1-2-7	2-3-9	2-5-11	3-6-13	4-7-14	6-9-18	7-11-21
	NC	<	20	24	27	30	34	38	42	45
14"	CFM	210	320	425	535	640	750	855	960	1070
	Pt	.010	.022	.039	.063	.091	.124	.162	.210	.253
	Throw	1-2-6	1-3-9	2-5-11	3-6-13	4-8-16	5-9-18	7-11-23	9-13-27	10-16-32
	NC	<	20	24	28	32	36	40	45	48
15"	CFM	245	370	490	610	735	860	980	1105	1225
	Pt	.015	.034	.060	.093	.135	.185	.240	.305	.375
	Throw	1-3-9	2-5-11	3-6-13	4-8-16	5-10-18	7-11-23	9-13-27	10-16-32	11-16-33
	NC	<	23	28	33	38	43	48	53	55

Series 7300 - Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

CFM - Cubic Feet per Minute (air)

fpm - Velocity of air stream in Feet Per Minute

Pv - Velocity pressure (inches of water column)

Pt - Total pressure (inches of water column)

Ps - Static pressure = Pt - Pv (inches of water column)

Throw - Cataloged throw is horizontal distances in feet to the terminal velocities of 150, 100 and 50 fpm with supply air temperature 20° F below room air temperature

NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands



Series 7300 - Specification

Supply - Perforated Face - Integral Fiberglass Backpan - Fixed Deflector

Fixed Steel Face

7300-6 - Surface Mounted

Fixed Aluminum Face

7300-6 AF - Surface Mounted

Air Outlets shall be aluminum face model 7300 or steel face model 7300 AF manufactured by METALAIR. Units shall consist of 51% free area perforated face fixed to a formed fiberglass backpan. Exposed fiberglass backpan shall have an aluminum foil liner. The outlet's backpan shall be factory scored to allow field installation of a tab lock collar or spin-in fittings.

Perforated holes shall be 3/16" diameter on 1/4" staggered centers.

Unit shall generate a 360° horizontal pattern with a fixed round pattern disk mounted on the inside face of the perforated face.

The units shall be the size and quantity as outline in the plans and specifications.

Units shall be designed to integrate into the specified ceiling system.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkane cleaner and a de-ionized water rinse.

Series 7300 - Model Specification Guide

Perforated Supply Diffusers - Foil Lined Fiberglass Back Steel Face - Series 7300

Model	Module	Finishes
7300-6 - T-bar Lay-in	24" x 24"	Standard
7300-6 AF - T-bar Lay-in - Aluminum Face		
		01 - White

PCD - Perforated Ceiling Diffusers

3/2006

- ➔ Perforated Supply/Return Diffuser ➔ Series 7350 ➔ Steel Face
- ➔ Series 7350 AF ➔ Aluminum Face

Product Details

- ✦ The series 7350 perforated supply diffuser is an economical diffuser with a fiberglass plenum designed to allow field installation of the inlet collar (by others)
- ✦ The face diffuser includes a hinged removable face and 4 pattern controllers that can be adjusted for a 1-way, 2-way opposite, 2-way corner, 3-way, and 4-way discharge air patterns
- ✦ Set in a 4-way pattern, the 7350 provides a 360° tight horizontal circular pattern along the ceiling
- ✦ Border type 6 can be used in surface mounting applications by adding optional T-bar Plaster Frame (TBPf)
- ✦ Matching returns available: 7350R
- ✦ The series 7350 is an excellent choice for VAV applications

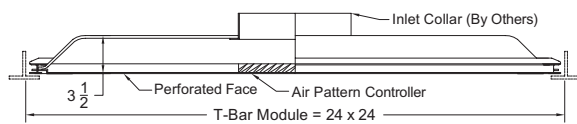


Model 7350-1
Standard Finish: 01 White

Dimensions are in inches

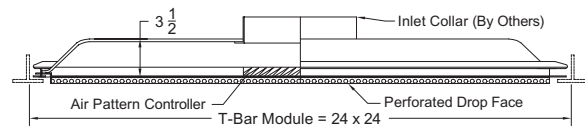
Perforated Supply Diffusers - Foil Lined Fiberglass Back T-bar Lay-in

- Model 7350-6 - Steel fixed face
- Model 7350-6 AF - Aluminum fixed face



Perforated Supply Diffusers - Foil Lined Fiberglass Back Tegular T-bar - Steel

- Model 7350-8 - Hinged drop face



1. Available Finishes	2. Available Options
<p>Standard Finish: 01 White</p>	<ul style="list-style-type: none"> • Neck is pre-scored to 5", 6", 7", 8", 10", 12", 14" & 15" • Return diffusers have no pattern controllers • Faces are hinged and removable • Models: 7350-6, 7350-6 AF & 7350-8 include 4 black painted, individually adjusted pattern controllers, mounted on rear of the perforated face • 7350 series has 3/16" diameter holes on 1/4" centers

Series 7350 - Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM** - Cubic Feet per Minute (air)
- fpm** - Velocity of air stream in Feet Per Minute
- Pv** - Velocity pressure (inches of water column)
- Pt** - Total pressure (inches of water column)
- Ps** - Static pressure = Pt - Pv (inches of water column)
- Throw** - Cataloged throw is horizontal distances in feet to the terminal velocities of 150, 100 and 50 fpm with supply air temperature 20° F below room air temperature
- NC** - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands

Perforated Ceiling Diffusers



PCD

PCD - Perforated Ceiling Diffusers

Series 7350-6 Performance

Models 7350-6, 7350-6 AF

Neck Size	fpm Neck Velocity Pv	300 .006	400 .010	500 .016	600 .023	700 .031	800 .040	1000 .062	
6"	CFM	60	80	100	115	135	155	195	
	Pt	.012	.022	.034	.045	.062	.083	.131	
	NC	<	<	<	-	20	24	31	
	Throw	4-Way	1-1-3	1-1-4	1-2-4	1-2-5	1-3-6	2-3-7	2-3-8
		3-Way	1-1-3	1-2-4	2-2-5	2-3-6	2-3-6	2-3-8	2-4-8
2-Way		1-2-4	1-2-5	2-3-5	2-4-6	3-4-7	3-4-9	3-4-9	
1-Way		1-2-5	1-3-5	3-4-6	3-4-7	3-4-8	3-5-9	3-5-10	
8"	CFM	105	140	175	210	245	280	350	
	Pt	.017	.031	.048	.070	.095	.124	.195	
	NC	<	<	<	21	26	30	36	
	Throw	4-Way	1-1-3	1-2-5	2-2-5	2-3-6	2-3-8	2-4-10	3-5-11
		3-Way	1-2-3	1-2-5	2-3-5	2-3-6	3-3-8	3-4-11	3-5-12
2-Way		1-2-4	1-3-5	2-4-6	3-4-7	3-4-9	3-5-12	4-6-13	
1-Way		2-3-5	2-4-5	3-4-7	3-5-8	3-5-10	3-6-13	4-6-14	
10"	CFM	165	220	270	325	380	435	545	
	Pt	.020	.035	.053	.077	.106	.138	.218	
	NC	<	<	22	28	33	37	43	
	Throw	4-Way	1-2-4	1-2-5	2-3-6	2-3-7	3-4-8	3-4-10	3-5-12
		3-Way	1-2-4	1-3-6	2-3-7	2-4-8	3-5-9	3-5-12	3-6-13
2-Way		1-2-5	2-3-6	3-4-8	3-4-8	3-6-10	3-6-14	4-7-15	
1-Way		2-3-6	2-4-7	3-5-9	3-5-10	4-7-11	4-7-14	5-9-16	
12"	CFM	235	315	390	470	550	630	785	
	Pt	.032	.059	.090	.131	.180	.236	.367	
	NC	<	<	25	29	35	40	46	
	Throw	4-Way	1-2-4	2-2-8	3-3-8	3-5-10	3-5-11	4-6-12	5-7-14
		3-Way	2-3-5	2-3-8	3-4-9	3-5-11	4-6-13	4-7-14	5-8-15
2-Way		2-3-6	3-4-8	3-5-11	3-6-12	4-7-13	5-8-15	6-9-16	
1-Way		3-4-8	3-5-9	4-6-12	4-7-13	5-8-14	6-9-16	7-10-18	
14"	CFM	320	425	535	640	750	855	1070	
	Pt	.039	.068	.108	.156	.213	.277	.435	
	NC	<	23	29	34	39	44	50	
	Throw	4-Way	2-3-6	3-4-8	3-5-11	4-6-13	4-7-14	5-8-15	6-9-17
		3-Way	2-4-7	3-5-9	3-6-12	4-7-14	5-8-16	5-9-17	6-10-18
2-Way		2-5-8	3-5-10	3-7-13	5-8-15	6-10-17	7-10-18	8-11-19	
1-Way		3-5-9	4-8-11	4-8-14	6-9-16	7-11-18	8-12-19	9-12-20	

See Page PCD-116 for Series 7350-8 Performance Notes

Series 7350-8 Performance

Models 7350-8

Neck Size	fpm Neck Velocity Pv	300 .006	400 .010	500 .016	600 .023	700 .031	800 .040	1000 .062	
6"	CFM	60	80	100	115	135	155	195	
	Pt	.010	.017	.027	.036	.049	.065	.103	
	NC	<	<	<	<	20	23	29	
	Throw	4-Way	1-1-3	1-1-4	1-2-5	1-2-6	1-4-7	2-4-8	3-4-8
		3-Way	1-1-3	1-1-4	2-3-6	2-3-6	2-3-7	3-3-9	4-4-9
2-Way		1-2-4	1-2-5	2-3-7	2-4-9	3-4-10	3-3-10	3-4-10	
1-Way		1-2-5	1-3-6	3-4-7	3-4-9	4-4-11	4-4-11	4-4-12	
8"	CFM	105	140	175	210	245	280	350	
	Pt	.014	.026	.040	.058	.078	.120	.160	
	NC	<	<	<	20	25	28	33	
	Throw	4-Way	1-1-4	1-2-6	2-3-5	2-4-6	3-4-8	3-5-10	4-5-11
		3-Way	1-2-4	1-2-6	2-3-6	2-4-7	4-3-8	4-4-11	4-4-12
2-Way		1-3-4	1-3-6	2-4-8	3-4-9	3-4-10	3-5-12	4-5-13	
1-Way		2-3-6	3-4-7	4-4-9	4-5-10	4-5-11	4-5-12	5-5-12	
10"	CFM	165	220	270	325	380	435	545	
	Pt	.016	.029	.044	.064	.087	.114	.179	
	NC	<	<	21	27	32	34	40	
	Throw	4-Way	1-1-5	1-4-6	3-4-6	3-4-8	4-2-9	5-5-11	5-5-14
		3-Way	1-3-5	2-4-6	3-4-8	4-4-8	4-5-9	5-5-12	5-7-14
2-Way		1-3-5	2-3-6	4-5-8	4-5-9	4-6-11	5-6-14	5-6-15	
1-Way		3-4-6	3-4-7	5-5-9	5-5-10	5-7-12	6-7-15	6-9-17	
12"	CFM	235	315	390	470	550	630	785	
	Pt	.028	.051	.078	.113	.155	.203	.316	
	NC	<	<	24	28	34	37	44	
	Throw	4-Way	1-4-5	3-4-9	5-5-10	5-6-11	5-6-11	6-8-12	6-9-15
		3-Way	3-4-6	3-4-9	5-5-10	5-6-11	5-7-11	5-8-13	6-9-16
2-Way		3-5-6	4-5-9	5-5-11	5-6-12	5-7-12	6-8-14	6-9-17	
1-Way		4-5-10	5-7-12	6-8-15	6-9-13	6-10-14	7-12-16	9-13-19	
14"	CFM	320	425	535	640	750	855	1070	
	Pt	.034	.059	.094	.134	.185	.240	.376	
	NC	<	23	29	33	36	40	47	
	Throw	4-Way	2-5-7	4-6-10	5-7-13	6-7-14	6-8-14	7-10-15	7-11-18
		3-Way	3-6-8	4-6-10	5-7-13	6-8-15	6-9-16	7-11-18	7-11-19
2-Way		3-6-8	4-6-10	5-7-13	6-8-16	6-10-17	8-11-19	8-12-19	
1-Way		4-6-11	6-10-14	6-10-15	8-11-17	9-13-18	9-15-19	11-15-21	

Perforated Ceiling Diffusers



PCD

Series 7350 - Specification

Supply - Perforated Face - Fiberglass Backpan - Adjustable Pattern Controllers/Series 7350

Steel Face

7350-6 - T-bar Lay-in
7350-8 - Tegular T-bar

Aluminum Face

7350-6 AF - T-bar Lay-in

Air Outlets shall be aluminum face model 7350 or steel face model 7350 AF manufactured by METALAIRES. Units shall consist of 51% free area perforated face fixed to a formed fiberglass backpan. Perforated holes shall be 3/16" diameter on 1/4" staggered centers. Exposed fiberglass backpan shall have an aluminum foil liner. The outlet's backpan shall be factory scored to allow field installation of a tab lock collar or spin-in fittings

Outer border of units shall be extruded aluminum construction. The perforated face shall be hinged allowing access to four adjustable pattern controllers mounted onto the inside face of the outlet. Face shall be secured in place with tension spring clips. Pattern controller blades shall be individually adjustable and allow the discharge pattern to be adjustable from vertical to horizontal.

Outlets shall be field adjustable allowing 1, 2-way opposite, 2-way corner, 3, and 4-way directional air patterns.

The units shall be the size and quantity as outline in the plans and specifications.

Units shall be designed to integrate into the specified ceiling system.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Series 7350 - Model Specification Guide

Supply - Perforated Diffusers - Hinged Face - Foil Lined Fiberglass Back

Series 7350

Model	Module	Finishes
7350-6 - T-bar Lay-in - Steel Face	24" x 24"	Standard
7350-8 - Tegular T-bar - Steel Face		01 - White
7350-6 AF - T-bar Lay-in - Aluminum Face		

Series 7350R

Model	Module	Finishes
7350R-6 - T-bar Lay-in - Steel Face	24" x 24"	Standard
7350R-8 - Tegular T-bar - Steel Face		01 - White
7350R-6 AF - T-bar Lay-in - Aluminum Face		



PCD - Perforated Ceiling Diffusers

3/2006

- ➔ Supply/Return Perforated Ceiling Diffusers ➔ Round Neck
- ➔ Face Mounted Adjustable Pattern Controllers

Perforated Ceiling Diffusers

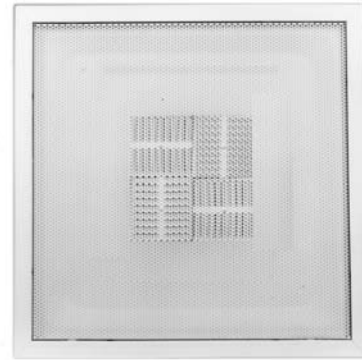


PCD

Product Details

- ★ Series 7500 perforated supply diffusers have 4 adjustable pattern controllers mounted on the face of the diffuser. Pattern controllers are adjustable from a horizontal to vertical discharge pattern
- ★ Series 7500 are round neck diffusers
- ★ The hinged, fully removable face allows access to the pattern controllers
- ★ Unit can be adjusted for 1-way, 2-way opposite, 2-way corner, 3-way, and 4-way patterns. In 4-way pattern, Series 7500 provides a 360° tight horizontal circular pattern along the ceiling
- ★ Border type 6 can be used in surface mounting applications by adding optional T-bar plaster frame (TBPF)
- ★ Matching returns available: 7500R (round neck) and 7550R (square neck)
- ★ The series 7500 is an excellent choices for VAV applications
- ★ Also available in square neck series 7550

Series 7500	
7500	Steel Backpan & Face
7500 AF	Steel Backpan & Aluminum Face
7500 AL	Aluminum Backpan & Face



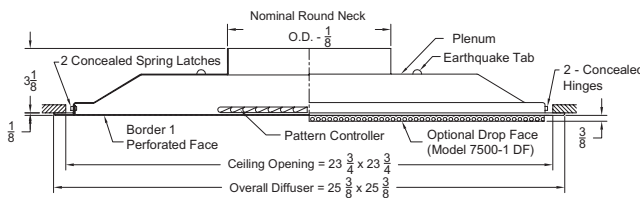
Model 7500-1
Standard Finish: 01 White

Supply

Dimensions are in inches

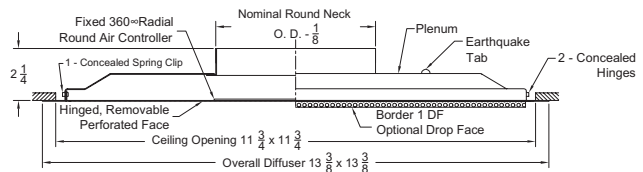
Supply - Round Neck - Adjustable - Surface Mount - 24" x 24"

Model 7500-1 - Steel backpan & face
Model 7500-1 AF - Steel backpan & aluminum face
Model 7500-1 DF - Steel backpan & face - drop face



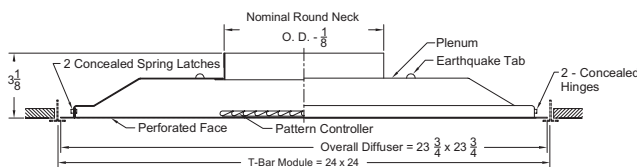
Supply - Round Neck - Adjustable - Surface Mount - 12" x 12"

Model 7500-1 - Steel backpan & face
Model 7500-1 AF - Steel backpan & aluminum face
Model 7500-1 DF - Steel backpan & face - drop face



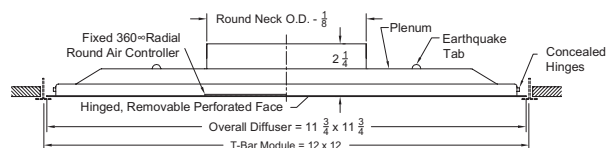
Supply - Round Neck - Adjustable - T-bar Lay-in - 24" x 24"

Model 7500-6 - Steel backpan & face
Model 7500-6 AF - Steel backpan & aluminum face
Model 7500-6 AL - Aluminum backpan & face



Supply - Round Neck - Adjustable - T-bar Lay-in - 12" x 12"

Model 7500-6 - Steel backpan & face
Model 7500-6 AF - Steel backpan & aluminum face
Model 7500-6 AL - Aluminum backpan & face



PCD - Perforated Ceiling Diffusers

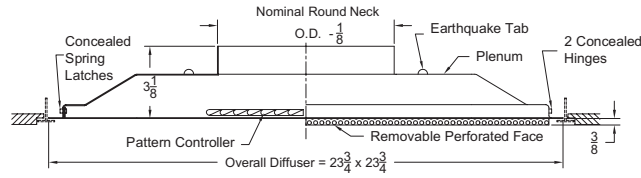
Perforated Ceiling Diffusers



PCD

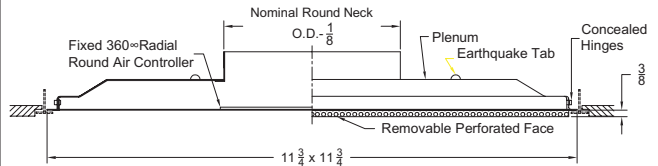
Supply - Round Neck - Adjustable - Tegular T-bar - 24" x 24"

- Model 7500-8 - Steel backpan & face
- Model 7500-8 AF - Steel backpan & aluminum face
- Model 7500-8 AL - Aluminum backpan & face



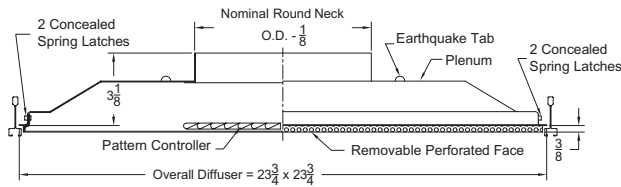
Supply - Round Neck - Adjustable - Tegular T-bar - 12" x 12"

- Model 7500-8 - Steel backpan & face
- Model 7500-8 AF - Steel backpan & aluminum face



Supply - Round Neck - Adjustable - Donn Finline - 24" x 24"

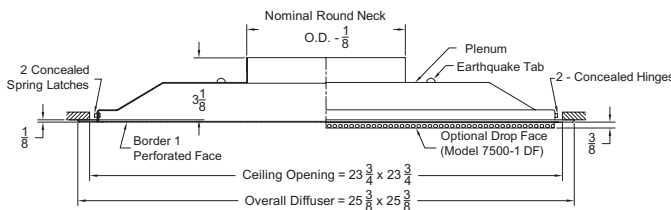
- Model 7500-9 - Steel backpan & face
- Model 7500-9 AF - Steel backpan & aluminum face



Return

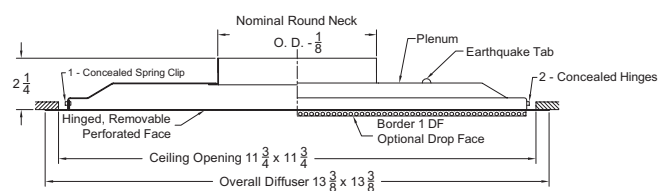
Return - Round Neck - Surface Mount - 24" x 24"

- Model 7500R-1 - Steel backpan & face
- Model 7500R-1 AF - Steel backpan & aluminum face
- Model 7500R-1 DF - Steel backpan & face - drop face



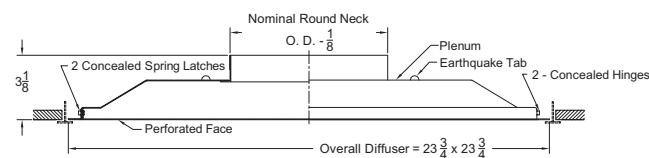
Return - Round Neck - Surface Mount - 12" x 12"

- Model 7500R-1 - Steel backpan & face
- Model 7500R-1 AF - Steel backpan & aluminum face
- Model 7500R-1 DF - Steel backpan & face - drop face



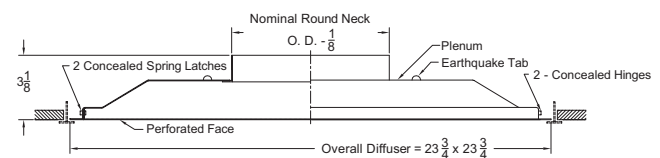
Return - Round Neck - T-bar Lay-in - 24" x 24"

- Model 7500R-6 - Steel backpan & face
- Model 7500R-6 AF - Steel backpan & aluminum face
- Model 7500R-6 AL - Aluminum backpan & face



Return - Round Neck - Face Mounted - T-bar Lay-in - 12" x 12"

- Model 7500R-6 - Steel backpan & face
- Model 7500R-6 AF - Steel backpan & aluminum face
- Model 7500R-6 AL - Aluminum backpan & face



PCD - Perforated Ceiling Diffusers

3/2006

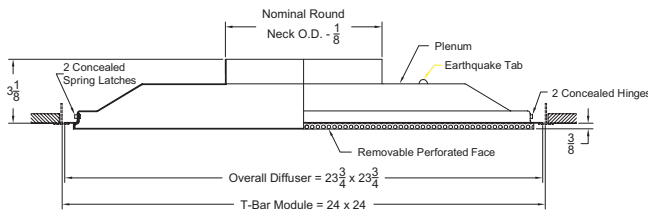
Perforated Ceiling Diffusers



PCD

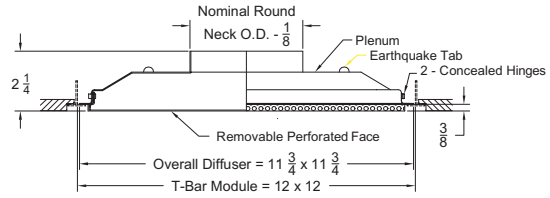
Return - Round Neck - Face Mounted - T-bar Lay-in - 24" x 24"

- Model 7500R-8 - Steel backpan & face
- Model 7500R-8 AF - Steel backpan & aluminum face
- Model 7500R-8 AL - Aluminum backpan & face



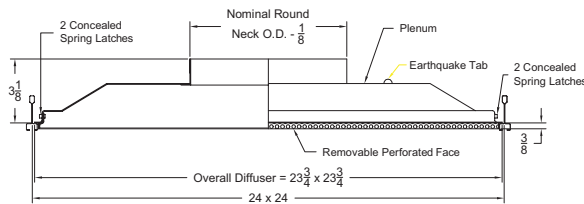
Return - Round Neck - Face Mounted - T-bar Lay-in - 12" x 12"

- Model 7500R-8 - Steel backpan & face
- Model 7500R-8 AF - Steel backpan & aluminum face
- Model 7500R-8 AL - Aluminum backpan & face



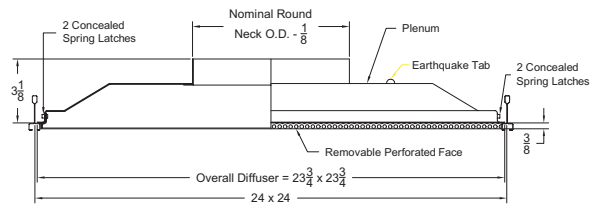
Return - Round Neck - Face Mounted - Donn Finline - 24" x 24"

- Model 7500R-9 - Steel backpan & face
- Model 7500R-9 AF - Steel backpan & aluminum face



Return - Round Neck - Face Mounted - Donn Finline - 24" x 24"

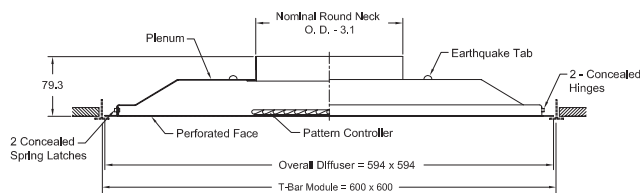
- Model 7500R-9 - Steel backpan & face
- Model 7500R-9 AF - Steel backpan & aluminum face



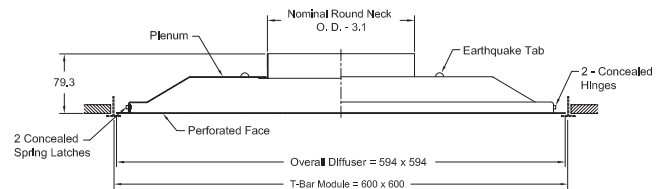
Metric

Dimensions are in millimeters

Supply - Round Neck - T-bar Lay-in Model M7500-6



Return - Round Neck - T-bar Lay-in Model M7500R-6



Notes for Models 7500 (-1, -6, -8, -9) 7500-1 DF, 7500 AF (-1, -6, -8), 7500 AL (-6, -8)

1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White (border only for 7500-1)</p> <p>Optional Finish 02 Aluminum paint 03 Black 22 (BBP) Black back pan/white face & border 28 Custom color</p>	<p>All accessories shipped unattached</p> <p>Round Neck: G3 - Equalizing grid 337 BDS - Butterfly damper 335 RSD - Radial Shutter damper 336</p>	<ul style="list-style-type: none"> • Available only in listed sizes • Pattern controllers are mounted on the back side of the perforated face and can be adjusted to 1, 2, 3 or 4 way pattern • Seismic tabs standard on all units • Pattern controller on 12" x 12" unit is a non adjustable disc on the perforated face • 7500 series have 3/16" diameter holes on 1/4" staggered centers

Notes for Models 7500R (-1, -6, -8, -9) 7500R-1 DF, 7500R AF (-1, -6, -8, -9) 7500R AL (-6, -8)

1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish 02 Aluminum paint 03 Black 22 (BBP) Black back pan/white face & border and white border (for 7500R-1 models only) 28 Custom color</p>	<p>All accessories shipped unattached</p> <p>Square Necks: OBD - Opposed blade damper - Steel 334 OBDA - Opposed blade damper - Aluminum . . 334</p> <p>Round Neck: BDS - Butterfly damper 335 RSD - Radial Shutter damper 336</p>	<ul style="list-style-type: none"> • Available only in listed sizes • 7500R series have 3/16" diameter holes on 1/4" staggered centers



For more product information visit us at www.metalair.com



PCD - Perforated Ceiling Diffusers

Series 7500 - Performance/Flush Face - Round Neck

Models 7500 (-1, -6), 7500 AF (-1, -6), 7500 AL (-6)

Listed Size	Neck Size	fpm Neck Velocity Pv	300 0.006	400 0.010	500 0.016	600 0.022	700 0.031	800 0.040	1000 0.062	1200 0.090	
12" x 12"	6"	CFM Pt	60 0.011	80 0.019	100 0.030	120 0.043	135 0.054	155 0.072	195 0.114	235 0.165	
		Throw	4*-Way	1-2-3	1-2-5	2-3-5	2-3-6	3-4-6	3-4-6	4-5-7	5-6-8
	4-Way		1-2-4	1-2-5	2-3-6	2-4-6	3-4-7	3-5-7	4-6-8	5-6-9	
	3-Way		1-2-4	1-3-5	2-3-6	3-4-6	3-5-7	4-5-7	4-6-8	5-6-9	
	2-Way		1-2-5	2-3-5	3-4-6	3-5-6	4-5-7	4-5-7	5-6-8	5-6-9	
	1-Way		1-2-5	2-3-5	3-4-6	3-5-7	4-5-7	4-5-8	5-6-8	5-7-9	
	NC	-	-	<15	17	21	25	31	36		
	8"	CFM Pt	105 0.015	140 0.027	175 0.043	210 0.061	245 0.083	280 0.109	350 0.170	420 0.245	
		Throw	4*-Way	1-2-5	2-3-6	3-4-7	3-5-7	4-5-8	4-6-9	5-7-10	6-7-11
			4-Way	1-2-5	2-3-6	3-4-7	3-5-8	4-6-9	4-6-9	5-7-11	6-8-12
3-Way			1-2-5	2-4-7	3-5-8	4-5-8	4-6-9	5-7-10	6-8-11	7-8-12	
2-Way			2-3-6	3-4-7	4-5-8	4-6-9	5-7-9	6-7-10	6-8-11	7-9-12	
1-Way			2-3-6	3-4-7	4-5-8	4-6-9	5-7-9	6-7-10	7-8-11	7-9-12	
NC			-	-	<15	20	25	30	37	43	
24" x 24"	6"	CFM Pt	60 0.010	80 0.019	100 0.029	120 0.042	135 0.053	155 0.070	195 0.110	235 0.160	
		Throw	4*-Way	1-2-4	1-2-5	2-3-5	2-4-6	3-4-6	3-5-7	4-5-8	5-6-8
	4-Way		1-2-4	1-3-5	2-3-6	3-4-7	3-4-7	3-5-7	4-6-8	5-6-9	
	3-Way		1-2-4	1-3-5	2-4-6	3-4-7	3-5-7	4-5-8	5-6-8	5-7-9	
	2-Way		1-3-5	2-3-6	3-4-6	3-5-7	4-5-7	4-5-8	5-6-9	5-7-9	
	1-Way		1-3-5	2-3-6	3-4-6	3-5-7	4-5-7	4-6-8	5-6-9	6-7-10	
	NC	-	-	<15	17	21	25	31	36		
	8"	CFM Pt	105 0.016	140 0.028	175 0.043	210 0.063	245 0.085	280 0.111	350 0.174	420 0.250	
		Throw	4*-Way	1-2-5	2-3-6	3-4-7	3-5-8	4-6-9	4-6-9	5-7-10	6-8-11
			4-Way	1-2-5	2-3-7	3-4-8	3-5-9	4-6-9	4-7-10	6-8-11	7-9-12
			3-Way	1-2-6	2-4-7	3-5-8	4-6-9	4-7-10	5-7-10	6-8-11	7-9-12
			2-Way	2-3-6	3-5-7	4-6-8	5-6-9	5-7-10	6-7-10	7-8-12	7-9-13
			1-Way	2-3-7	3-5-8	4-6-8	5-7-9	5-7-10	6-8-11	7-8-12	8-9-13
			NC	-	-	<15	20	25	30	37	43
	10"	CFM Pt	165 0.023	220 0.041	275 0.064	325 0.090	380 0.123	435 0.161	545 0.252	655 0.365	
		Throw	4*-Way	1-3-6	2-4-8	3-5-9	4-6-10	5-7-11	5-8-11	7-9-13	8-10-14
			4-Way	1-3-6	2-4-8	3-5-10	4-6-11	5-7-12	5-8-12	7-10-14	8-11-15
			3-Way	1-3-7	2-5-9	3-6-10	4-7-11	5-8-12	6-9-13	8-10-14	9-11-16
			2-Way	2-4-8	4-6-9	5-7-10	6-8-11	7-9-12	7-9-13	8-10-14	9-11-16
			1-Way	2-4-8	4-6-9	5-7-11	6-8-11	7-9-12	7-9-13	9-11-15	9-12-16
			NC	-	<15	15	22	28	33	42	48
	12"	CFM Pt	235 0.025	315 0.044	395 0.070	470 0.099	550 0.135	630 0.177	785 0.275	940 0.395	
		Throw	4*-Way	1-3-7	3-5-10	4-6-11	5-7-12	6-8-13	6-10-14	8-11-15	10-12-17
			4-Way	1-3-7	3-5-10	4-6-12	5-7-13	6-9-14	7-10-15	8-12-17	10-13-18
			3-Way	1-3-8	3-6-11	4-7-12	6-8-13	7-10-14	8-11-15	9-12-17	11-13-19
			2-Way	3-5-9	5-7-11	6-8-12	7-9-13	8-10-15	9-11-16	10-12-17	11-13-19
			1-Way	3-5-10	5-7-11	6-8-13	7-10-14	8-11-15	9-11-16	10-13-18	11-14-20
			NC	-	<15	17	24	31	37	45	52
	14"	CFM Pt	320 0.033	430 0.059	535 0.091	640 0.131	750 0.179	855 0.233	1070 0.365	1285 0.527	
		Throw	4*-Way	2-4-8	3-6-11	5-7-13	6-8-14	7-10-15	7-11-16	9-13-18	11-14-20
4-Way			2-4-9	3-6-12	5-7-14	6-9-15	7-10-16	8-12-17	10-14-19	12-15-21	
3-Way			2-4-10	3-7-13	5-8-14	7-10-15	8-12-17	9-13-18	11-14-20	13-15-22	
2-Way			3-6-11	5-8-13	7-10-14	8-11-16	9-12-17	10-13-18	12-14-20	13-16-22	
1-Way			3-6-11	5-8-13	7-10-15	8-11-16	9-12-17	10-13-19	12-15-21	13-16-23	
NC			-	<15	18	27	34	41	50	56	
16"	CFM Pt	420 0.040	560 0.071	700 0.110	840 0.159	975 0.214	1115 0.280	1395 0.438	1675 0.631		
	Throw	4*-Way	2-4-10	4-6-13	5-8-14	6-10-16	7-11-17	8-13-18	11-14-20	13-16-22	
		4-Way	2-4-10	3-7-13	5-8-16	7-10-17	8-12-19	9-13-20	11-16-22	13-17-24	
		3-Way	2-4-11	3-8-14	5-9-16	8-11-18	9-13-19	10-14-20	13-16-23	14-18-25	
		2-Way	4-7-13	6-9-15	8-11-16	9-13-18	10-14-19	12-15-21	13-16-23	15-18-25	
		1-Way	4-7-13	6-9-15	8-11-17	9-13-18	10-14-20	12-15-21	14-17-24	15-18-26	
		NC	-	<15	20	29	36	43	52	60	

See Page PCD-123 for Series 7500 Performance Notes

Perforated Ceiling Diffusers



PCD

PCD - Perforated Ceiling Diffusers

Series 7500 - Performance/Drop Face - Round Neck

Models 7500 (-8, -9), 7500 AF (-8, -9), 7500 DF (-1), 7500 AL (-8)

Perforated Ceiling Diffusers



PCD

Listed Size	Neck Size	fpm Neck Velocity Pv	300 0.006	400 0.010	500 0.016	600 0.022	700 0.031	800 0.040	1000 0.062	1200 0.090	
12" x 12"	6"	CFM Pt	60 0.011	80 0.020	100 0.031	120 0.045	135 0.057	155 0.075	195 0.119	235 0.172	
		Throw	4*-Way 1-1-2 1-2-4 4-Way 1-2-4 3-Way 1-2-5 2-Way 2-3-6 1-Way 2-3-5 NC -	1-2-3 1-2-5 2-4-7 3-5-8 -	1-2-3 1-3-5 2-3-6 3-4-8 4-5-9 3-5-8 -	1-2-4 2-3-6 2-4-7 3-4-7 4-5-9 4-6-9 5-7-10 -	2-3-4 3-4-7 3-4-7 3-5-7 4-5-7 4-5-7 4-5-8 -	2-3-5 3-5-7 4-5-8 4-6-8 5-6-8 6-7-10 6-8-11 20 25	2-3-5 4-5-8 4-5-8 4-6-8 5-6-8 6-7-10 6-8-11 7-9-12 21	3-4-5 4-6-9 4-6-9 4-6-9 5-6-9 6-7-10 7-9-12 28	3-4-6 5-7-10 5-7-10 6-7-10 6-7-10 7-9-13 8-10-13 32
	8"	CFM Pt	105 0.014	140 0.025	175 0.038	210 0.055	245 0.075	280 0.098	350 0.153	420 0.221	
		Throw	4*-Way 1-2-3 4-Way 1-2-5 3-Way 1-3-5 2-Way 2-3-6 1-Way 2-4-7 NC -	1-2-3 1-2-5 2-4-7 3-5-8 -	1-2-4 2-4-7 2-3-6 3-4-8 4-5-9 3-5-8 -	2-3-5 3-5-8 2-4-7 3-4-7 4-5-9 4-6-9 5-7-10 -	2-3-5 4-5-9 4-6-10 4-6-10 4-6-10 5-7-10 6-7-10 -	2-4-6 4-6-10 4-6-10 4-6-10 5-7-10 6-7-10 6-8-11 20 25	3-4-6 5-7-11 5-7-11 6-8-11 6-8-11 7-9-12 7-9-12 8-10-13 32	4-5-7 6-8-12 6-8-12 7-9-13 7-9-13 8-10-13 8-10-13 9-10-14 36	
	24" x 24"	6"	CFM Pt	60 0.011	80 0.020	100 0.031	120 0.045	135 0.057	155 0.075	195 0.119	235 0.172
			Throw	4*-Way 1-1-3 4-Way 1-2-4 3-Way 1-2-4 2-Way 1-3-5 1-Way 2-3-5 NC -	1-1-3 1-2-4 2-3-6 3-4-8 -	1-2-3 2-3-6 2-3-6 3-4-7 4-5-9 3-5-8 -	1-2-4 2-4-7 2-4-7 3-4-7 4-5-9 4-6-9 5-7-10 -	2-3-4 3-4-7 3-4-7 3-5-8 4-6-8 4-6-8 5-6-9 6-7-10 6-8-11 17	2-3-5 4-6-8 4-6-8 4-6-8 5-7-9 6-8-11 7-9-13 8-10-14 21	3-4-5 5-7-9 5-7-9 6-8-9 6-8-9 7-9-13 7-9-13 8-10-14 28	3-4-6 6-7-10 6-7-10 6-7-10 7-9-13 8-10-14 8-10-14 9-10-14 32
8"		CFM Pt	105 0.014	140 0.025	175 0.038	210 0.055	245 0.075	280 0.098	350 0.153	420 0.221	
		Throw	4*-Way 1-2-3 4-Way 1-2-6 3-Way 1-3-6 2-Way 2-3-7 1-Way 2-4-7 NC -	1-2-3 1-2-6 2-4-8 3-5-9 -	1-2-4 2-4-8 2-4-8 3-5-9 4-6-9 3-5-8 -	2-3-5 3-5-9 4-6-10 4-6-10 4-7-10 5-7-10 6-8-11 -	2-3-6 4-6-10 4-6-10 4-7-10 5-8-11 6-8-11 7-8-12 20	3-4-6 5-8-11 5-8-11 5-8-11 6-8-11 6-8-11 7-8-12 25	4-5-7 6-9-12 6-9-12 6-9-12 7-9-13 7-9-13 8-10-14 32	4-6-8 8-10-14 8-10-14 8-10-14 8-10-14 9-10-14 9-10-14 10-11-14 36	
10"		CFM Pt	165 0.016	220 0.029	275 0.046	325 0.064	380 0.087	435 0.114	545 0.179	655 0.259	
		Throw	4*-Way 1-2-4 4-Way 1-3-7 3-Way 2-3-7 2-Way 2-4-8 1-Way 3-5-9 NC -	1-2-4 1-3-7 2-3-7 2-4-8 3-5-9 4-7-10 -	2-3-6 2-5-10 3-5-10 4-6-10 5-8-11 4-7-10 -	2-3-6 4-6-11 4-6-11 5-7-11 6-8-12 6-9-12 8-10-14 16	3-4-7 5-7-12 5-7-12 6-8-12 7-9-13 8-10-14 8-10-14 22	3-5-7 5-8-13 5-8-13 6-9-13 7-9-13 8-10-14 8-10-14 28	4-5-8 6-9-14 6-9-14 7-10-14 8-11-16 8-10-14 9-11-16 37	5-6-9 8-11-16 8-11-16 9-11-16 10-12-17 10-13-18 10-13-18 42	
12"		CFM Pt	235 0.021	315 0.037	395 0.059	470 0.083	550 0.113	630 0.149	785 0.231	940 0.331	
		Throw	4*-Way 1-2-5 4-Way 2-4-8 3-Way 2-4-8 2-Way 3-5-10 1-Way 3-6-11 NC -	1-2-5 2-4-8 3-6-11 3-5-10 3-6-11 -	2-3-7 3-6-11 5-7-12 5-8-12 -	3-4-8 5-7-13 6-8-13 7-10-15 8-11-15 17	3-5-8 6-8-14 6-8-14 7-10-15 8-11-15 8-11-15 17	4-6-9 7-10-16 7-10-16 8-11-16 9-11-16 10-12-17 25	4-7-10 8-11-17 8-11-17 9-12-17 10-12-17 11-14-19 11-14-19 31	5-8-11 9-13-19 9-13-19 11-13-19 11-13-19 11-14-19 11-14-19 40	7-8-12 11-14-20 11-14-20 12-15-21 12-15-21 12-15-21 12-15-21 43
14"		CFM Pt	320 0.023	430 0.041	535 0.063	640 0.091	750 0.124	855 0.162	1070 0.253	1285 0.365	
		Throw	4*-Way 2-3-6 4-Way 2-4-10 3-Way 2-5-10 2-Way 3-6-12 1-Way 4-7-12 NC -	2-3-6 2-4-10 2-5-10 3-6-12 4-7-12 -	3-4-8 3-7-13 4-7-13 5-8-14 6-9-14 -	3-5-9 5-8-15 6-8-15 7-10-16 8-11-16 -	4-6-10 7-10-17 7-10-17 8-12-17 9-12-18 9-12-18 19	4-7-11 8-12-18 8-12-18 9-13-19 10-14-20 11-13-19 12-14-20 27	5-8-11 9-13-19 9-13-19 10-14-20 12-14-20 13-16-23 13-16-23 34	6-9-13 11-15-22 11-15-22 13-16-22 13-16-23 14-18-25 14-18-25 45	8-10-14 13-17-24 13-17-24 14-17-24 14-17-24 16-20-28 16-20-28 50
16"		CFM Pt	420 0.025	560 0.045	700 0.070	840 0.100	975 0.135	1115 0.177	1395 0.276	1675 0.398	
		Throw	4*-Way 2-3-7 4-Way 2-5-11 3-Way 2-5-11 2-Way 4-7-14 1-Way 4-8-14 NC -	2-3-7 2-5-11 4-8-15 4-7-14 4-8-14 -	3-4-9 4-8-15 6-9-18 6-9-18 6-9-18 -	4-6-10 6-9-18 8-11-18 8-11-18 9-13-18 -	4-7-11 8-11-19 8-11-19 9-14-20 10-15-21 10-14-20 21	5-8-12 9-13-21 9-13-21 10-15-21 12-15-22 12-15-22 29	6-9-13 10-15-22 10-15-22 12-16-23 13-16-23 13-16-23 36	7-10-14 13-18-25 13-18-25 15-18-25 15-18-26 15-18-26 48	9-11-16 15-19-27 15-19-27 16-20-28 16-20-28 16-20-28 54

See Page PCD-123 for Series 7500 Performance Notes

PCD - Perforated Ceiling Diffusers

Series 7500R - Performance

Models 7500R (-1, -6, -8, -9), 7500R AF (-1, -6, -8, -9), 7500R DF (-1), 7500R AL (-6, -8, -9)

Nominal Neck Diameter	fpm Inlet Velocity Ps	300 -.01	400 -.02	500 -.03	600 -.04	700 -.05	800 -.06	900 -.08	1000 -.10
6	CFM	60	80	100	115	135	155	175	195
8	CFM	105	140	175	210	245	280	315	350
10	CFM	165	220	270	325	380	435	490	545
12	CFM	235	315	390	470	550	630	705	785
14	CFM	320	425	535	640	750	855	9300	1070
16	CFM	420	560	700	835	975	1115	1255	1395
18	CFM	520	700	870	1045	1220	1395	1570	1740

Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM** - Cubic feet per minute (air)
- fpm** - Velocity of air stream in feet per minute
- Pv** - Velocity pressure (inches of water column)
- Pt** - Total pressure (inches of water column)
- Ps** - Static pressure = Pt - Pv (inches of water column)
- Throw*** - Non-isothermal horizontal throw (supply air temperature 15°F colder than average room air temperature) values are for 150 fpm - 100 fpm - 50 fpm velocities
- Throw** - Isothermal horizontal throw (supply air temperature the same as average room air temperature) values are for 150 fpm - 100 fpm - 50 fpm velocities
- NC** - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands
- Ak** - Area Factors

Series 7500 - Specification

Supply - Perforated Face - Round Neck/Series 7500

Steel

- 7500-1 - Surface Mounted
- 7500-1 DF - Surface Mounted-Dropped Face
- 7500-6 - T-bar Lay-in
- 7500-8 - Tegular T-bar
- 7500-9 - Donn Finline

Aluminum Face - Steel Backpan

- 7500-1 AF - Surface Mounted
- 7500-6 AF - T-bar Lay-in
- 7500-8 AF - Tegular T-bar
- 7500-9 AF - Donn Finline

Aluminum

- 7500-6 AL - T-bar Lay-in
- 7500-8 AL - Tegular T-bar

Round neck units

Air Outlets shall be steel model 7500 or aluminum face, steel backpan model 7500-AF or all aluminum model 7500-AL manufactured by METALAIRE.

Units shall consist of aluminum 51% free area perforated face with 3/16" diameter perforated holes on 1/4" staggered centers. The perforated face shall be hinged allowing access to four adjustable pattern controllers mounted onto the inside face of the outlet. Face shall be secured in place with tension spring clips. Pattern controller blades shall be individually adjustable and allow the discharge pattern to be adjustable from vertical to horizontal.

Outlets shall be field adjustable allowing 1, 2-way opposite, 2-way corner, 3, and 4-way directional air patterns.

The units shall be the size and quantity as outline in the plans and specifications.

Units shall be designed to integrate into the specified ceiling system.

Return - Return or Exhaust - Perforated Face - Round Neck/Series 7500R

Steel

- 7500R-1 - Surface Mounted
- 7500R-1 DF - Surface Mounted-Dropped Face
- 7500R-6 - T-bar Lay-in
- 7500R-8 - Tegular T-bar
- 7500R-9 - Donn Finline

Aluminum Face - Steel Backpan

- 7500R-1 AF - Surface Mounted
- 7500R-6 AF - T-bar Lay-in
- 7500R-8 AF - Tegular T-bar
- 7500R-9 AF - Donn Finline

Aluminum

- 7500R-6 AL - T-bar Lay-in
- 7500R-8 AL - Tegular T-bar

Round neck units

Air Inlets shall be steel model 7500R or aluminum face, steel backpan model 7500R-AF or all aluminum model 7500R-AL manufactured by METALAIRE.

Units shall consist of aluminum 51% free area perforated face with 3/16" diameter perforated holes on 1/4" staggered centers. Units shall be designed for use in ducted return or exhaust applications.

The perforated face shall be hinged allowing access to the inside of the packpan. Face shall be secured in place with tension spring clips.

The units shall be the size and quantity as outline in the plans and specifications.

Units shall be designed to integrate into the specified ceiling system.





Optional Dampers and Accessories

Butterfly Damper

METALAIRE model BDS aluminum round butterfly type dampers shall be provided. Damper shall consist of two butterfly style blades that can be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot that can be assessed through the face of the diffuser.

Radial Shutter Damper

METALAIRE model RSD steel round radial shutter damper shall be provided. Damper shall consist of gang operated radial blades that slide perpendicular to air flow direction. The damper shall be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot that can be assessed through the face of the diffuser.

Opposed Blade Damper

METALAIRE model D3 aluminum or SD3 steel round opposed blade type dampers shall be provided. Damper shall consist of gang operated blades that can be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot that can be assessed through the face of the diffuser.

Equalizing Grid

METALAIRE model G3 aluminum round equalizing grid shall be provided. Equalizing grid shall consist of 1/2" x 1/2" x 1/2" aluminum cubed core mounting in an aluminum frame.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

PCD - Perforated Ceiling Diffusers

Series 7500 - Model Specification Guide

Perforated Ceiling Diffuser - Round Necks - Face Mounted Pattern Controllers Series 7500 - Supply

Model	Available Neck	Module	Available Finishes	Available Options	
7500-1 - Flush Surface Mount Steel Face & Backpan	6"	12" x 12" 24" x 24"	Standard	G3	Equalizing Grid
	8"		01 -White	BDS	Butterfly Damper
7500-1 DF - Flush Surface Mount - Drop Face Steel Face & Backpan	10"		Optional	RSD	Radial Shutter Damper
	12"		03 - Black	D3	Round Opposed Blade Damper - Aluminum
7500-1 AF - Flush Surface Mount Aluminum Face/Steel Backpan	14"		22 - Black Back pan White Face	SD3	Round Opposed Blade Damper - Steel
	16"		28 - Custom Color		

Model	Available Neck	Module	Available Finishes	Available Options	
7500-6 - T-bar Lay-in - Steel Face & Backpan 7500-6 AF - T-bar Lay-in Aluminum Face/Steel Backpan	6"	12" x 12" 24" x 24"	Standard	G3	Equalizing Grid
	8"		01 -White	BDS	Butterfly Damper
7500-6 AL - T-bar Lay-in - All Aluminum 7500-8 - Tegular T-bar - Steel Face & Backpan	10"		Optional	RSD	Radial Shutter Damper
	12"		03 - Black	D3	Round Opposed Blade Damper - Aluminum
7500-8 AF - Tegular T-bar Aluminum Face/Steel Backpan 7500-8 AL - Tegular T-bar - All Aluminum	14"		22 - Black Back pan White Face	SD3	Round Opposed Blade Damper - Steel
	16"		28 - Custom Color		
7500-9 - Donn Finline - Steel Face & Backpan					

Perforated Ceiling Diffuser - Round Necks Series 7500R - Return

Model	Available Neck	Module	Available Finishes	Available Options	
7500R-1 - Flush Surface Mount Steel Face & Backpan	6"	12" x 12" 24" x 24"	Standard	G3	Equalizing Grid
	8"		01 -White	BDS	Butterfly Damper
7500R-1 DF - Flush Surface Mount - Drop Face Steel Face & Backpan	10"		Optional	RSD	Radial Shutter Damper
	12"		03 - Black	D3	Round Opposed Blade Damper - Aluminum
7500R-1 AF - Flush Surface Mount Aluminum Face/Steel Backpan	14"		22 - Black Back pan White Face	SD3	Round Opposed Blade Damper - Steel
	16"		28 - Custom Color		

Model	Available Neck	Module	Available Finishes	Available Options	
7500R-6 - T-bar Lay-in - Steel Face & Backpan 7500R-6 AF - T-bar Lay-in Aluminum Face/Steel Backpan	6"	12" x 12" 24" x 24"	Standard	G3	Equalizing Grid
	8"		01 -White	BDS	Butterfly Damper
7500R-6 AL - T-bar Lay-in - All Aluminum 7500R-8 - Tegular T-bar - Steel Face & Backpan	10"		Optional	RSD	Radial Shutter Damper
	12"		03 - Black	D3	Round Opposed Blade Damper - Aluminum
7500R-8 AF - Tegular T-bar Aluminum Face/Steel Backpan 7500R-8 AL - Tegular T-bar - All Aluminum	14"		22 - Black Back pan White Face	SD3	Round Opposed Blade Damper - Steel
	16"		28 - Custom Color		
7500R-9 - Donn Finline - Steel Face & Backpan					

Perforated Ceiling Diffuser - Metric - Round Necks Series 7500 - T-bar Lay-in

Model	Available Neck	Module	Available Finishes	Available Options	
M7500-6 - Supply M7500R-6 - Return	6"	600 x 600	Standard	G3	Equalizing Grid
	8"		01 -White	BDS	Butterfly Damper
	10"		Optional	RSD	Radial Shutter Damper
	12"		03 - Black	D3	Round Opposed Blade Damper - Aluminum
	14"		22 - Black Back pan White Face	SD3	Round Opposed Blade Damper - Steel
	16"		28 - Custom Color		



PCD - Perforated Ceiling Diffusers

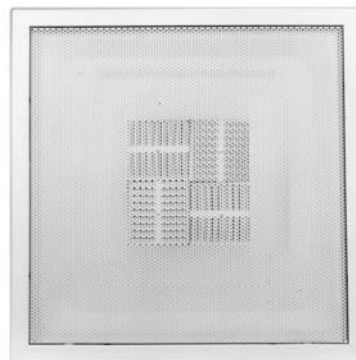
3/2006

- ➔ Supply/Return Perforated Ceiling Diffusers ➔ Square Necks
- ➔ Face Mounted Adjustable Pattern Controllers

Product Details

- ✪ Series 7550 perforated supply diffusers have 4 adjustable pattern controllers mounted on the face of the diffuser. Pattern controllers are adjustable from a horizontal to vertical discharge pattern
- ✪ Series 7550 are square neck diffusers
- ✪ The hinged, fully removable face allow access to the pattern controllers
- ✪ Unit can be adjusted for 1-way, 2-way opposite, 2-way corner, 3-way, and 4-way patterns. In 4-way pattern, Series 7550 provides a 360° tight horizontal circular pattern along the ceiling
- ✪ Border type 6 can be used in surface mounting applications by adding optional T-bar plaster frame (TBPF)
- ✪ Matching returns available: 7500R (round neck) and 7550R (square neck)
- ✪ Series 7550 is an excellent choices for VAV applications

Series 7550	
7550	Steel Backpan & Face
7550 AF	Steel Backpan & Aluminum Face
7550 AL	Aluminum Backpan & Face



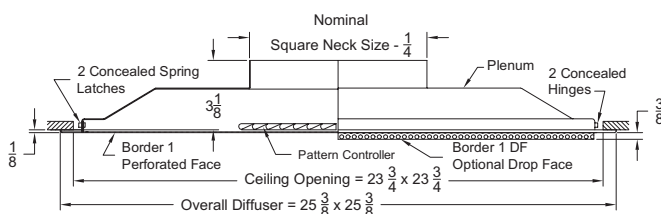
Model 7550-1
Standard Finish: 01 White

Supply

Dimensions are in inches

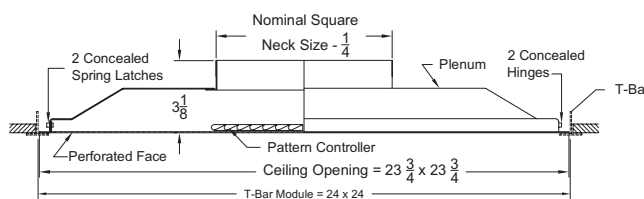
Supply - Square Neck - Adjustable - Surface Mount

- Model 7550-1 - Steel backpan & face
- Model 7550-1 DF - Steel backpan & face - drop face
- Model 7550-1 AF - Steel backpan & aluminum face



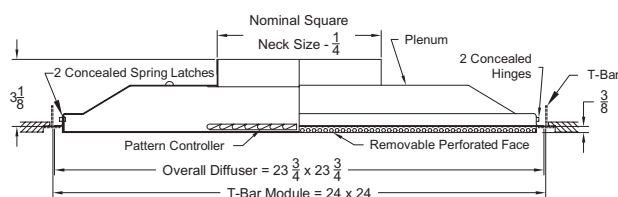
Supply - Square Neck - Adjustable - T-bar Lay-in

- Model 7550-6 - Steel backpan & face
- Model 7550-6 AF - Steel backpan & aluminum face
- Model 7550-6 AL - Aluminum backpan & face



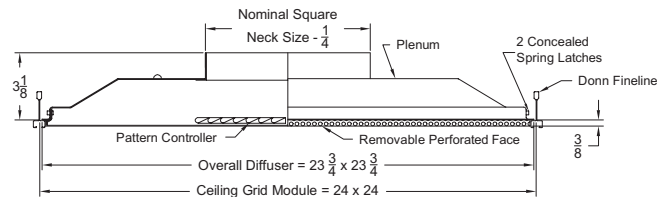
Supply - Square Neck - Adjustable - Tegular T-bar

- Model 7550-8 - Steel backpan & face
- Model 7550-8 AF - Steel backpan & aluminum face
- Model 7550-8 AL - Aluminum backpan & face



Supply - Square Neck - Adjustable - Donn Finline

- Model 7550-9 - Steel backpan & face



Perforated Ceiling Diffusers



PCD

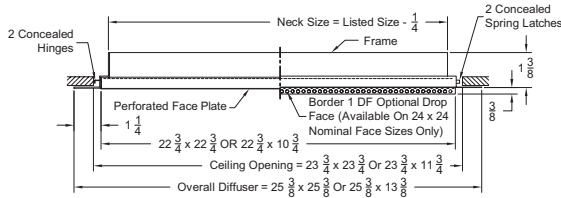
PCD - Perforated Ceiling Diffusers



Return

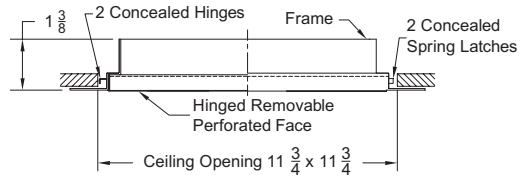
Return - Square Neck - Surface Mount

- Model 7550R-1 - Steel backpan & face (24" x 24")
- Model 7550R-1 DF - Steel backpan & drop face (24" x 24")
- Model 7550R-1 AF - Steel backpan & aluminum face (24" x 24")



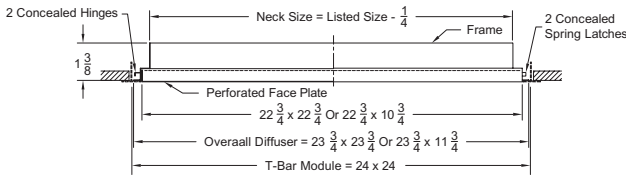
Return - Square Neck - Surface Mount

- Model 7550R-1 - Steel backpan & face (12" x 12")
- Model 7550R-1 DF - Steel backpan & drop face (12" x 12")
- Model 7550R-1 AF - Steel backpan & aluminum face (12" x 12")



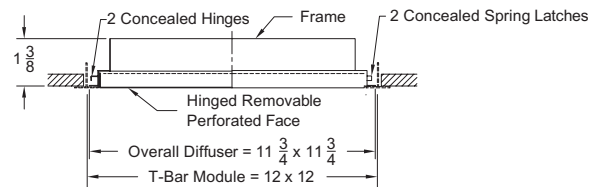
Return - Square Neck - T-bar Lay-in

- Model 7550R-6 - Steel backpan & face (24" x 24")
- Model 7550R-6 AF - Steel backpan & aluminum face (24" x 24")
- Model 7550R-6 AL - Aluminum backpan & face (24" x 24")



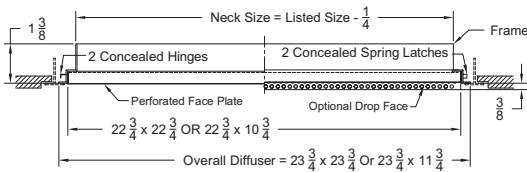
Return - Square Neck - T-bar Lay-in

- Model 7550R-6 - Steel backpan & face (12" x 12")
- Model 7550R-6 AF - Steel backpan & aluminum face (12" x 12")



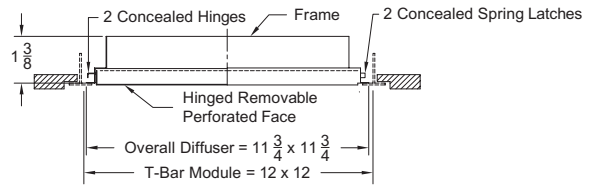
Return - Square Neck - T-bar Lay-in

- Model 7550R-8 - Steel backpan & face (24" x 24")
- Model 7550R-8 AF - Steel backpan & aluminum face (24" x 24")
- Model 7550R-8 AL - Aluminum backpan & face (24" x 24")



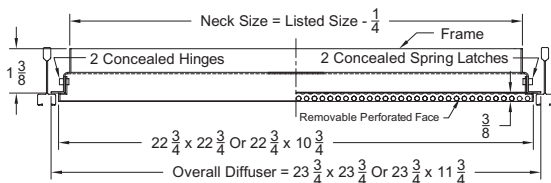
Return - Square Neck - Tegular T-bar

- Model 7550R-8 - Steel backpan & face (12" x 12")
- Model 7550R-8 AF - Steel backpan & aluminum face (12" x 12")



Return - Square Neck - Donn Fineline

- Model 7550R-9 - Steel backpan & face (24" x 24")
- Model 7550R-9 AF - Steel backpan & aluminum face (24" x 24")



PCD - Perforated Ceiling Diffusers

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Perforated Ceiling Diffusers



PCD

Metric	<i>Dimensions are in millimeters</i>
<p>Supply - Square Neck - Adjustable - T-bar Lay-in Model M7550-6 - Steel backpan & face Model M7550-6 AF - Steel backpan & aluminum face Model M7550-6 AL - Aluminum backpan & face</p>	<p>Return - Square Neck - Adjustable - T-bar Lay-in Model M7550R-6 - Steel backpan & face Model M7550R-6 AF - Steel backpan & aluminum face Model M7550R-6 AL - Aluminum backpan & face</p>

Notes for Models 7550 (-1, -6, -8, -9), 7550-1 DF, 7550 AF (-1, -6, -8, -9), 7550 AL (-6, -8)

1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White Optional Finish 03 Black 22 (BBP) Black back pan/white face 28 Custom color</p>	<p>All accessories shipped unattached Square Necks: OBD - Opposed blade damper - Steel334 OBDA - Opposed blade damper - Aluminum ...334 L9 - Equalizing grid334 Round Neck: G3 - Round Equalizing Grid337 BDS - Butterfly damper335 RSD - Radial Shutter damper336</p>	<ul style="list-style-type: none"> • Pattern controllers are mounted on the back side of the perforated face and can be adjusted 1, 2, 3 or 4 way pattern • Pattern controller on 12" x 12" unit is a non adjustable disc on the perforated face • 7550 has 3/16" diameter holes on 1/4" staggered centers

Notes for Models 7550R (-1, -6, -8, -9), 7550R-1 DF, 7550R AF (-1, -6, -8, -9), 7550R AL (-6, -8)

1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White Optional Finish 02 Aluminum paint 03 Black 28 Custom color</p>	<p>All accessories shipped unattached Square Necks: OBD - Opposed blade damper - Steel334 OBDA - Opposed blade damper - Aluminum ...334 Round Neck: BDS - Butterfly damper335 RSD - Radial Shutter damper336</p>	<ul style="list-style-type: none"> • 7550R has 3/16" diameter holes on 1/4" staggered centers

PCD - Perforated Ceiling Diffusers

Series 7550 - Performance/Flush Face - Square Neck

Models 7550 (-1, -6), 7550 AF (-1, -6), 7550 AL (-6)

Listed Size	Neck Size	fpm Neck Velocity Pv	300 0.006	400 0.010	500 0.016	600 0.022	700 0.031	800 0.040	1000 0.062	1200 0.090	
12" x 12"	6"	CFM Pt	75 0.013	100 0.023	125 0.036	150 0.052	175 0.071	200 0.093	250 0.145	300 0.209	
		Throw	4*-Way 4-Way 3-Way 2-Way 1-Way NC	1-2-4 1-2-4 1-2-5 1-3-5 2-3-5 -	1-3-5 1-3-5 1-3-6 2-4-6 2-4-6 -	2-3-6 2-3-6 2-4-6 3-5-7 3-5-7 <15	3-4-6 3-4-7 3-5-7 4-5-7 4-5-7 19	3-4-7 3-5-7 4-5-8 4-6-8 4-6-8 25	3-5-7 4-5-8 4-6-8 5-6-8 5-6-9 29	4-6-8 4-6-9 5-6-9 5-7-9 6-7-10 36	5-6-9 5-7-10 6-7-10 6-7-10 6-7-10 41
	8"	CFM Pt	135 0.017	180 0.031	220 0.046	265 0.067	310 0.092	355 .121	445 0.190	535 0.275	
		Throw	4*-Way 4-Way 3-Way 2-Way 1-Way NC	1-2-5 1-2-5 1-2-6 2-4-7 2-4-7 -	2-3-7 2-4-7 2-4-8 3-5-8 3-5-8 -	3-4-8 3-4-8 3-5-9 4-6-9 4-6-9 <15	3-5-8 4-5-9 4-6-9 5-7-10 5-7-10 20	4-6-9 4-6-10 5-7-10 6-7-10 6-8-11 27	5-7-10 5-7-11 5-8-11 6-8-11 6-8-11 32	6-8-11 6-8-12 7-9-12 7-9-12 7-9-13 39	7-8-12 7-9-13 8-9-13 8-10-14 8-10-14 45
	24 x 24	6"	CFM Pt	75 0.013	100 0.023	125 0.036	150 0.052	175 0.071	200 0.093	250 0.145	300 0.209
			Throw	4*-Way 4-Way 3-Way 2-Way 1-Way NC	1-2-4 1-2-4 1-2-5 2-3-5 2-3-6 -	1-3-5 1-3-6 1-3-6 3-4-6 3-4-6 -	2-3-6 2-4-7 2-4-7 3-5-7 3-5-7 <15	3-4-7 3-4-7 3-5-7 4-5-8 4-6-8 19	3-5-7 4-5-8 4-6-8 5-6-9 4-6-8 25	4-5-8 4-6-8 4-6-9 5-6-9 5-6-9 29	5-6-9 5-7-9 5-7-10 6-7-10 6-7-10 36
		8"	CFM Pt	135 0.017	180 0.031	220 0.046	265 0.067	310 0.092	355 0.121	445 0.190	535 0.275
			Throw	4*-Way 4-Way 3-Way 2-Way 1-Way NC	1-3-5 1-2-6 1-2-6 2-4-7 2-4-7 -	2-4-7 2-4-8 2-4-8 3-5-8 3-5-9 -	3-4-8 3-5-9 3-5-9 4-6-9 4-6-9 <15	4-5-9 4-6-10 4-6-10 5-7-10 5-7-10 20	4-6-10 4-7-10 5-7-11 6-8-11 6-8-11 27	5-7-10 5-7-11 6-8-11 7-8-12 7-8-12 32	6-8-11 6-9-13 7-9-13 8-9-13 8-9-13 39
		10"	CFM Pt	210 0.023	280 0.040	345 0.061	415 0.088	485 0.120	555 0.158	695 0.247	835 0.357
			Throw	4*-Way 4-Way 3-Way 2-Way 1-Way NC	1-3-7 1-3-7 1-3-8 3-5-9 3-5-9 -	3-5-9 2-5-9 2-5-10 4-6-10 4-6-11 -	4-6-10 4-6-11 4-7-11 5-8-12 5-8-12 <15	4-7-11 5-7-12 5-8-12 6-9-13 6-9-13 22	5-8-12 5-8-13 6-9-13 7-10-14 7-10-14 29	6-9-13 6-9-14 7-10-14 8-10-15 8-11-15 34	8-10-14 8-11-16 9-11-16 9-12-16 10-12-17 42
12"		CFM Pt	300 0.023	400 0.040	500 0.063	600 0.090	700 0.123	800 0.160	1000 0.250	1200 0.360	
		Throw	4*-Way 4-Way 3-Way 2-Way 1-Way NC	2-4-8 2-4-8 2-4-10 3-6-11 3-6-11 -	3-5-11 3-6-11 3-6-12 5-8-12 5-8-13 <15	5-7-12 4-7-13 4-8-14 6-10-14 6-10-14 15	5-8-13 6-8-15 6-10-15 8-11-15 8-11-16 23	6-9-14 7-10-16 7-11-16 9-12-16 9-12-17 30	7-11-15 7-11-17 9-12-17 10-12-18 10-13-18 35	9-12-17 9-13-19 11-14-19 11-14-20 12-14-20 44	11-13-19 11-15-21 12-15-21 12-15-21 13-16-22 50
14"		CFM Pt	410 0.023	545 0.041	680 0.064	815 0.092	955 0.126	1090 0.164	1360 0.255	1635 0.369	
		Throw	4*-Way 4-Way 3-Way 2-Way 1-Way NC	2-4-9 2-4-10 2-4-11 4-7-13 4-7-13 -	3-6-13 3-7-13 3-7-14 6-9-14 6-9-15 <15	5-8-14 5-8-15 5-9-16 7-11-16 7-11-17 16	6-9-16 7-10-17 7-11-17 9-13-18 9-13-18 24	7-11-17 8-11-18 9-13-19 10-14-19 10-14-20 31	8-13-18 9-13-20 10-14-20 12-14-20 12-15-21 37	10-14-20 11-15-22 12-16-22 13-16-23 14-17-23 46	13-16-22 13-17-24 14-17-25 14-18-25 15-18-26 51
16"	CFM Pt	535 0.026	710 0.046	890 0.073	1065 0.104	1245 0.143	1420 0.186	1780 0.291	2135 0.419		
	Throw	4*-Way 4-Way 3-Way 2-Way 1-Way NC	2-5-11 2-5-11 2-5-13 4-8-14 4-8-15 -	4-7-14 4-7-15 4-9-16 7-10-17 7-10-17 <15	6-9-16 6-9-18 6-11-18 8-13-18 8-13-19 16	7-11-18 7-11-19 9-13-20 10-14-20 10-15-21 24	8-13-19 9-13-21 10-15-21 12-15-22 12-16-22 33	10-14-21 10-15-22 11-16-23 13-17-23 13-17-24 39	12-16-23 12-18-25 14-18-26 15-18-26 16-19-27 49	14-18-25 15-19-27 16-20-28 17-20-29 17-21-29 53	

See Page PCD-131 for Series 7550/7550R Performance Notes

Perforated Ceiling Diffusers



PCD



PCD - Perforated Ceiling Diffusers

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Series 7550 - Performance/Drop Face - Square Neck

Models 7550 (-8, -9), 7550-1 DF, 7550 AF (-8, -9), 7550 AL (-8)

Listed Size	Neck Size	fpm Neck Velocity Pv	300 0.006	400 0.010	500 0.016	600 0.022	700 0.031	800 0.040	1000 0.062	1200 0.090	
12" x 12"	6"	CFM Pt	75 0.012	100 0.022	125 0.034	150 0.048	175 0.066	200 0.086	250 0.134	300 0.194	
		Throw	4*-Way 1-1-3 4-Way 1-2-5 3-Way 1-2-5 2-Way 1-3-5 1-Way 2-3-6 NC	1-2-4 2-3-6 2-3-6 2-4-6 3-4-7 -	1-2-4 2-3-6 3-4-7 3-5-7 3-5-7 <15	2-3-4 2-4-7 3-5-8 4-5-8 4-6-8 19	2-3-5 2-4-8 3-5-8 4-5-8 5-6-9 25	2-4-5 2-5-9 3-6-9 4-6-9 5-7-9 29	3-4-6 3-5-10 4-6-10 5-7-10 6-7-10 35	4-4-6 4-5-11 5-6-11 6-7-11 7-8-11 40	
	8"	CFM Pt	135 0.016	180 0.028	220 0.042	265 0.061	310 0.084	355 0.110	445 0.172	535 0.249	
		Throw	4*-Way 1-2-4 4-Way 1-3-6 3-Way 1-3-6 2-Way 2-4-7 1-Way 2-4-8 NC	2-2-5 2-4-8 2-4-8 3-5-9 4-6-9 -	2-3-5 3-5-9 3-5-9 4-6-10 5-7-10 <15	2-4-6 3-5-9 4-6-10 5-7-10 6-8-11 20	3-4-6 3-5-11 4-6-11 5-7-11 6-8-11 27	3-5-7 4-6-12 5-7-12 6-8-12 7-9-12 32	4-5-8 5-6-13 6-7-13 7-8-13 8-10-14 39	5-6-8 6-7-15 7-8-15 8-10-15 9-11-15 44	
	24" x 24"	6"	CFM Pt	75 0.012	100 0.022	125 0.034	150 0.048	175 0.066	200 0.086	250 0.134	300 0.194
			Throw	4*-Way 1-1-3 4-Way 1-2-5 3-Way 1-2-5 2-Way 2-3-6 1-Way 2-3-6 NC	1-2-4 2-3-6 2-3-6 2-4-9 4-5-10 -	2-2-4 3-4-7 3-4-7 3-5-8 4-6-8 <15	2-3-5 3-4-8 3-5-8 4-6-8 4-6-8 19	2-3-5 2-4-9 3-5-8 4-6-9 5-6-9 25	2-4-5 2-5-9 3-6-9 4-6-9 5-7-10 29	3-4-6 3-5-11 4-6-11 5-7-11 6-8-11 35	4-5-7 4-6-12 5-7-12 6-8-12 7-8-12 40
		8"	CFM Pt	135 0.016	180 0.028	220 0.042	265 0.061	310 0.084	355 0.110	445 0.172	535 0.249
			Throw	4*-Way 1-2-4 4-Way 1-3-6 3-Way 1-3-6 2-Way 2-4-8 1-Way 2-4-8 NC	2-3-5 2-4-9 2-4-9 3-5-9 4-6-9 -	2-3-6 3-5-10 4-6-10 5-7-10 6-8-11 <15	2-4-6 3-5-11 4-6-11 5-7-11 6-8-11 20	3-4-7 4-5-12 5-6-12 6-7-12 7-8-12 27	3-5-7 4-6-13 5-7-13 6-8-13 7-9-13 32	4-6-8 5-7-14 6-8-14 7-9-14 8-10-14 39	5-6-9 6-7-15 7-8-15 8-10-15 9-11-15 44
		10"	CFM Pt	210 0.020	280 0.028	220 0.042	265 0.061	310 0.084	355 0.110	445 0.172	535 0.249
			Throw	4*-Way 1-2-5 4-Way 2-4-8 3-Way 2-4-8 2-Way 3-5-10 1-Way 3-6-10 NC	2-3-6 3-5-11 3-5-11 4-6-11 5-7-12 -	3-4-7 4-5-12 4-6-12 5-7-12 6-9-13 <15	3-5-8 4-6-13 5-7-13 6-8-13 7-9-13 23	4-5-8 5-6-14 6-7-14 7-8-14 8-9-14 30	4-6-9 5-7-15 6-8-15 7-9-15 8-10-15 35	5-7-10 6-8-16 7-9-16 8-10-16 9-11-16 42	6-8-11 7-9-17 8-10-17 9-11-17 10-13-18 46
12"		CFM Pt	300 0.021	400 0.037	500 0.058	600 0.083	700 0.113	800 0.147	1000 0.230	1200 0.331	
		Throw	4*-Way 2-3-6 4-Way 2-4-10 3-Way 2-5-10 2-Way 3-6-11 1-Way 4-7-12 NC	2-4-7 3-6-13 4-6-13 5-8-14 6-9-14 -	3-5-9 4-6-15 5-8-15 6-10-15 7-11-15 15	4-6-9 5-7-16 6-10-16 7-11-16 8-12-17 24	4-7-10 5-8-17 6-10-16 7-11-16 8-13-17 31	5-7-11 6-8-18 7-11-18 8-13-18 9-14-19 37	6-9-12 7-10-19 8-13-19 9-14-19 10-14-19 44	7-9-13 8-10-20 9-11-20 10-13-20 11-14-20 50	
14"		CFM Pt	410 0.023	545 0.040	680 0.062	815 0.089	955 0.122	1090 0.159	1360 0.248	1635 0.358	
		Throw	4*-Way 2-3-7 4-Way 2-5-11 3-Way 2-5-11 2-Way 4-7-13 1-Way 4-8-14 NC	3-4-9 4-7-15 4-7-15 6-9-16 7-10-16 -	4-5-10 5-8-17 6-9-17 7-11-18 8-13-18 17	4-6-11 5-7-19 6-9-17 7-11-19 8-13-19 26	5-8-12 6-9-20 7-11-19 8-13-21 9-14-21 34	6-9-13 7-10-21 8-13-21 9-14-21 10-14-21 40	7-10-14 8-11-22 9-14-22 10-15-22 11-16-23 48	9-11-16 10-13-23 11-14-23 12-17-25 13-18-26 53	
16"	CFM Pt	535 0.024	710 0.043	890 0.067	1065 0.096	1245 0.132	1420 0.171	1780 0.269	2135 0.387		
	Throw	4*-Way 2-4-7 4-Way 2-6-13 3-Way 3-6-13 2-Way 4-8-15 1-Way 5-9-16 NC	3-5-10 4-9-17 5-9-17 7-10-18 8-12-18 -	4-6-11 5-7-20 6-9-20 8-13-20 10-15-21 18	5-7-13 6-8-22 7-11-20 8-13-22 9-14-22 28	6-9-14 7-10-23 8-13-22 9-14-22 10-15-23 36	7-10-14 8-11-25 9-14-23 10-15-23 11-17-25 42	8-11-16 9-12-28 10-15-23 11-17-25 12-18-26 51	10-13-18 11-14-31 12-17-23 13-18-26 14-20-29 56		

See Page PCD-131 for Series 7550/7550R Performance Notes

Perforated Ceiling Diffusers



PCD

PCD - Perforated Ceiling Diffusers

Series 7550R - Square Neck

Models 7550R (-1, -6, -8, -9), 7550R-1 DF, 7550R AF (-1, -6, -8), 7550R AL (-6, -8)

Nominal Neck Size	fpm Inlet Velocity	300	400	500	600	700	800	900	1000
	PS	-0.08	-0.15	-0.2	-0.3	-0.5	-0.6	-0.8	-0.9
6" x 6"	CFM	75	100	120	150	175	200	225	250
8" x 8"	CFM	130	175	220	265	310	350	400	445
10" x 10"	CFM	210	275	345	415	485	555	625	695
12" x 12"	CFM	300	400	500	600	700	800	900	1000
14" x 14"	CFM	410	545	680	815	950	1090	1225	1360
16" x 16"	CFM	530	710	885	1060	1240	1415	1600	1770
22" x 22"	CFM	1010	1345	1680	2015	2350	2690	3025	3360

Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM** - Cubic Feet per Minute (air)
- fpm** - Velocity of air stream in Feet Per Minute
- Pv** - Velocity pressure (inches of water column)
- Pt** - Total pressure (inches of water column)
- Ps** - Static pressure = Pt - Pv (inches of water column)
- Throw*** - Non-isothermal horizontal throw (supply air temperature 15°F colder than average room air temperature) values are for 150 fpm - 100 fpm - 50 fpm velocities
- Throw** - Isothermal horizontal throw (supply air temperature the same as average room air temperature) values are for 150 fpm - 100 fpm - 50 fpm velocities
- NC** - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands



Series 7550/7550R - Specification

Supply - Perforated Diffuser - Face Mounted Adjustable Pattern Controller - Square Necks/Series 7550

Steel	Aluminum Face - Steel Backpan	Aluminum
7550-1 - Surface Mounted	7550-1 AF - Surface Mounted	7550-6 AL - T-bar Lay-in
7550-1 DF - Surface Mounted-Dropped Face	7550-6 AF - T-bar Lay-in	7550-8 AL - Tegular T-bar
7550-6 - T-bar Lay-in	7550-8 AF - Tegular T-bar	
7550-8 - Tegular T-bar	7550-9 AF - Donn Finline	
7550-9 - Donn Finline		

Air Outlets shall be steel model 7550 or aluminum face, steel backpan model 7550-AF or all aluminum model 7550-AL manufactured by METALAIRE.

Units shall consist of aluminum 51% free area perforated face with 3/16" diameter perforated holes on 1/4" staggered centers. The perforated face shall be hinged allowing access to four adjustable pattern controllers mounted onto the inside face of the outlet. Face shall be secured in place with tension spring clips. Pattern controller blades shall be individually adjustable and allow the discharge pattern to be adjustable from vertical to horizontal.

Outlets shall be field adjustable allowing 1, 2 way opposite, 2 way corner, 3, and 4 way directional air patterns.

The units shall be the size and quantity as outline in the plans and specifications.

Units shall be designed to integrate into the specified ceiling system.

Return - Perforated Diffuser - Square Necks - 12" x 12"/24" x 24"/Series 7550R

Steel	Aluminum Face - Steel Backpan	Aluminum
7550R-1 - Surface Mounted	7550R-1 AF - Surface Mounted	7550R-6 AL - T-bar Lay-in
7550R-1 DF - Surface Mounted-Dropped Face	7550R-6 AF - T-bar Lay-in	7550R-8 AL - Tegular T-bar
7550R-6 - T-bar Lay-in	7550R-8 AF - Tegular T-bar	
7550R-8 - Tegular T-bar	7550R-9 AF - Donn Finline	
7550R-9 - Donn Finline		

Air inlets shall be steel model 7550R or aluminum face, steel backpan model 7550R-AF or all aluminum model 7550R-AL manufactured by METALAIRE.

Units shall consist of aluminum 51% free area perforated face with 3/16" diameter perforated holes on 1/4" staggered centers. Units shall be designed for use in ducted return or exhaust applications.

The perforated face shall be hinged allowing access to the inside of the packpan. Face shall be secured in place with tension spring clips.

The units shall be the size and quantity as outline in the plans and specifications.

Units shall be designed to integrate into the specified ceiling system

Options and Accessories

Opposed Blade Damper

METALAIRE model OBDA aluminum or OBD steel opposed blade type dampers shall be provided. Damper shall consist of gang operated blades that can be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot accessible by opening the face of the diffuser.

Equalizing Grid

METALAIRE model L9 aluminum square equalizing grid shall be provided. Equalizing grid shall consist aluminum blades mounting in an aluminum frame.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

PCD - Perforated Ceiling Diffusers

Series 7550/7550R - Model Specification Guide

Return and Exhaust - Perforated Supply Diffuser - Square Necks - Face Mounted Pattern Controllers - Steel Frame & Face

Model	Available Neck	Module	Available Finishes	Available Options	
7500-1 - Flush Ceiling Mount 7550-1 DF - Flush Ceiling Mount - Drop Face 7550-1 AF - Flush Ceiling Mount - Aluminum Face	6" x 6" 8" x 8" 10" x 10" 12" x 12" 14" x 14" 15" x 15" 16" x 16" 18" x 18"	12" x 12" 24" x 24"	Standard	OBD	Opposed Blade Damper - Steel
			01 - White	OBDA	Opposed Blade Damper - Aluminum
			Optional	L9	Equalizing Grid
			03 - Black		
			22 - Black Back pan White Face		
			28 - Custom Color		

Model	Available Neck	Module	Available Finishes	Available Options	
7500-6 - T-bar Lay-in 7550-6 AF - T-bar Lay-in - Aluminum Face 7550-6 AL - T-bar Lay-in - Aluminum 7500-8 - Tegular T-bar 7550-8 AF - Tegular T-bar - Aluminum Face 7550-8 AL - Tegular T-bar - Aluminum 7550-9 - Donn Finline	6" x 6" 8" x 8" 10" x 10" 12" x 12" 14" x 14" 15" x 15" 16" x 16"	12" x 12" 24" x 24"	Standard	OBD	Opposed Blade Damper - Steel
			01 - White	OBDA	Opposed Blade Damper - Aluminum
			Optional	L9	Equalizing Grid
			03 - Black		
			22 - Black Back pan White Face		
			28 - Custom Color		

Model	Available Neck	Module	Available Finishes	Available Options	
7500R-1 - Flush Ceiling Mount 7550R-1 DF - Flush Ceiling Mount - Aluminum Face 7550R-1 AF - Flush Ceiling Mount - Aluminum	6" x 6" 8" x 8" 10" x 10" 12" x 12" 14" x 14" 15" x 15" 16" x 16"	12" x 12" 24" x 24"	Standard	OBD	Opposed Blade Damper - Steel
			01 - White	OBDA	Opposed Blade Damper - Aluminum
			Optional	L9	Equalizing Grid
			03 - Black		
			22 - Black Back pan White Face		
			28 - Custom Color		

Model	Available Neck	Module	Available Finishes	Available Options	
7550R-6 - T-bar Lay-in 7550R-6 AF - T-bar Lay-in - Aluminum Face 7550R-6 AL - T-bar Lay-in - Aluminum 7500R-8 - Tegular T-bar 7550R-8 AF - Tegular T-bar - Aluminum Face 7550R-8 AL - Tegular T-bar - Aluminum 7550R-9 - Donn Finline	6" x 6" 8" x 8" 10" x 10" 12" x 12" 14" x 14" 15" x 15" 16" x 16"	12" x 12" 24" x 24"	Standard	OBD	Opposed Blade Damper - Steel
			01 - White	OBDA	Opposed Blade Damper - Aluminum
			Optional	L9	Equalizing Grid
			03 - Black		
			22 - Black Back pan White Face		
			28 - Custom Color		

Perforated Ceiling Diffuser - Metric - Square Necks Series 7500 - T-bar Lay-in

Model	Available Neck	Module	Available Finishes	Available Options	
M7550-6 - Supply M7550R-6 - Return	6" x 6" 8" x 8" 10" x 10" 12" x 12" 14" x 14" 15" x 15" 16" x 16"	600mm x 600mm	Standard	G3	Equalizing Grid
			01 -White	BDS	Butterfly Damper
			Optional	RSD	Radial Shutter Damper
			03 - Black		
			22 - Black Back pan White Face		
			28 - Custom Color		



PCD - Perforated Ceiling Diffusers

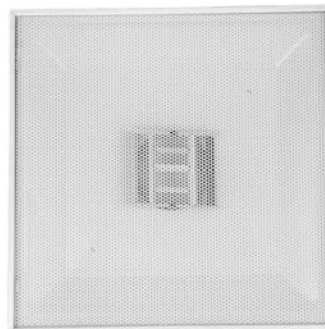
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- ➔ Supply/Return Perforated Ceiling Diffuser ➔ Round Neck
- ➔ Neck Mounted Curved Blade Pattern Controllers

Product Details

- ✪ The 7600 perforated supply diffuser has curved blade pattern controllers mounted in the neck of the diffuser. Pattern controllers are adjustable from a horizontal to vertical discharge pattern
- ✪ The hinged, fully removable face allow access to the pattern controllers
- ✪ Units are available in 1, 2-way opposite, 2-way corner, 3, and 4-way patterns. The 4-way core can be set for corner or side discharge patterns
- ✪ Border 6, T-bar Lay-in can be used in surface mounting applications by adding optional T-bar Plaster Frame (TBPf)
- ✪ Matching returns available: 7600R (round neck)
- ✪ The 7600 is an excellent choices for VAV applications
- ✪ Also available in square neck series 7650

Series 7600	
7600	Steel Backpan & Face
7600 AF	Steel Backpan & Aluminum Face
7600 AL	Aluminum Backpan & Face



Model 7600-6 4W Shown

Standard Finish: 01 White

Perforated Ceiling Diffusers



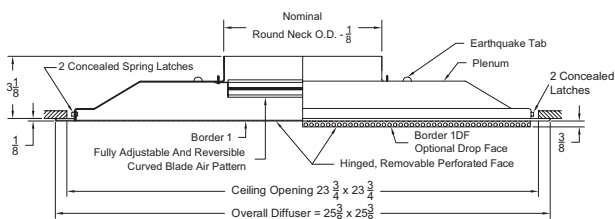
PCD

Supply - 24" x 24"

Dimensions are in inches

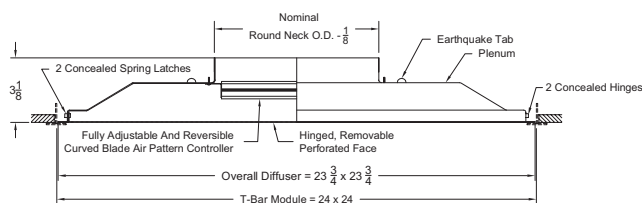
Supply - Round Neck - Neck Mounted - Adjustable - Surface Mount

- Model 7600-1 - Steel backpan & face
- Model 7600-1 AF - Steel backpan & aluminum face
- Model 7600-1 DF - Steel backpan & face - drop face



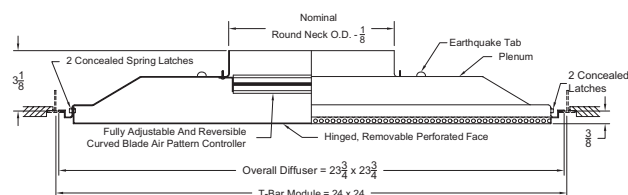
Supply - Round Neck - Neck Mounted - Adjustable - T-bar Lay-in

- Model 7600-6 - Steel backpan & face
- Model 7600-6 AF - Steel backpan & aluminum face
- Model 7600-6 AL - Aluminum backpan & face



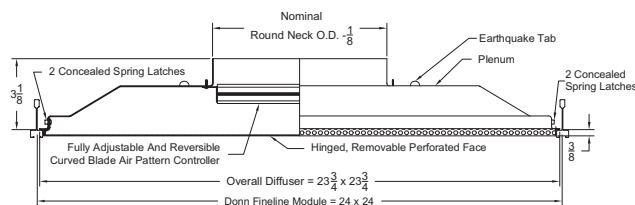
Supply - Round Neck - Face Mounted - Adjustable - Tegular T-bar

- Model 7600-8 - Steel backpan & face
- Model 7600-8 AF - Steel backpan & aluminum face
- Model 7600-8 AL - Aluminum backpan & face



Supply - Round Neck - Face Mounted - Adjustable - Donn Finline

- Model 7600-9 - Steel backpan & face
- Model 7600-9 AF - Steel backpan & aluminum face



Available Round Inlets (For All Models): 6, 8, 10, 12, 14, 16

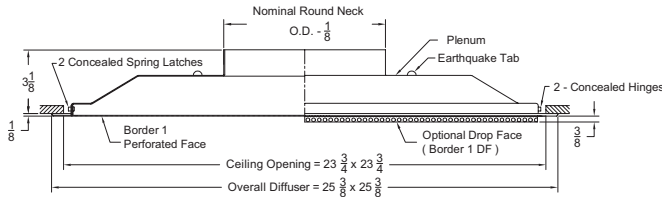
PCD - Perforated Ceiling Diffusers



Return

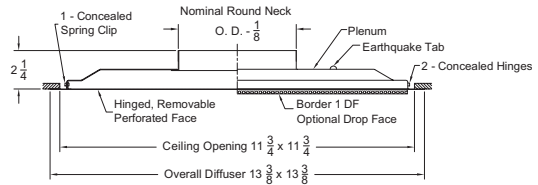
Return - Round Neck - Surface Mount - 24" x 24"

- Model 7600R-1 - Steel backpan & face
- Model 7600R-1 DF - Steel backpan & face - drop face
- Model 7600R-1 AF - Steel backpan & aluminum face



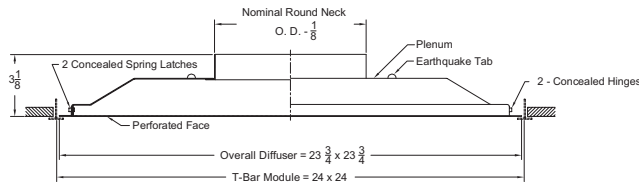
Return - Round Neck - Surface Mount - 12" x 12"

- Model 7600R-1 - Steel backpan & face
- Model 7600R-1 AF - Steel backpan & aluminum face
- Model 7600R-1 AL - Aluminum backpan & face



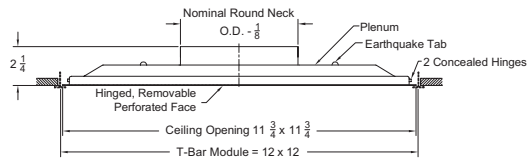
Return - Round Neck - T-bar Lay-in - 24" x 24"

- Model 7600R-6 - Steel backpan & face
- Model 7600R-6 AF - Steel backpan & aluminum face
- Model 7600R-6 AL - Aluminum backpan & face



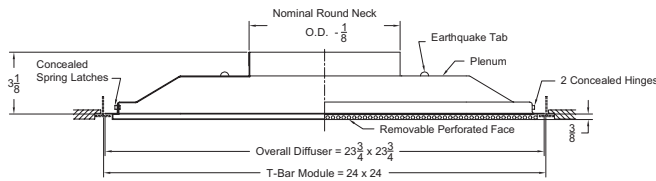
Return - Round Neck - T-bar Lay-in - 12" x 12"

- Model 7600R-6 - Steel backpan & face
- Model 7600R-6 AF - Steel backpan & aluminum face
- Model 7600R-6 AL - Aluminum backpan & face



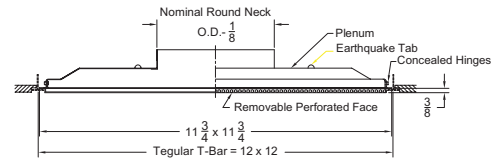
Return - Round Neck - Tegular T-bar - 24" x 24"

- Model 7600R-8 - Steel backpan & face
- Model 7600R-8 AF - Steel backpan & aluminum face
- Model 7600R-8 AL - Aluminum backpan & face



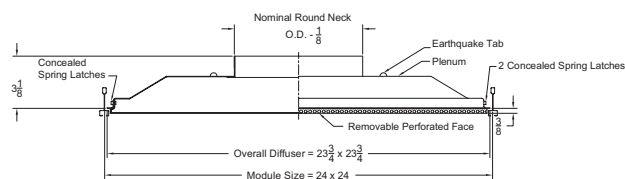
Return - Round Neck - Tegular T-bar - 12" x 12"

- Model 7600R-8 - Steel backpan & face
- Model 7600R-8 AF - Steel backpan & aluminum face
- Model 7600R-8 AL - Aluminum backpan & face



Return - Round Neck - Donn Finline - 24" x 24"

- Model 7600R-9 - Steel backpan & face
- Model 7600R-9 AF - Steel backpan & aluminum face



PCD - Perforated Ceiling Diffusers

3/2006

Perforated Ceiling Diffusers

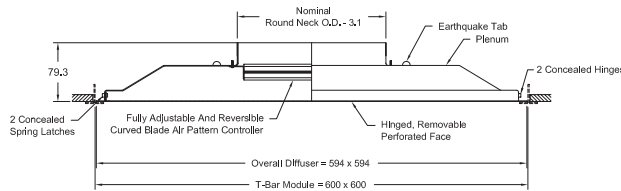


PCD

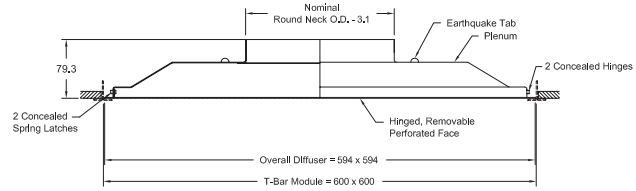
Metric

Dimensions are in millimeters

Supply - Round Neck - T-bar Lay-in Model M7600-6



Return - Round Neck - T-bar Lay-in Model M7600R-6



Notes for Models 7600 (-1, -6, -8, -9) 7600-1 DF, 7600 AF (-1, -6, -8, -9) 7600 AL (-6, -8)

1. Available Finishes	2. Available Accessories	3. Construction Details
Standard Finish: 01 White Optional Finish 02 Aluminum paint 03 Black 22 (BBP) Black back pan/white face 28 Custom color	All accessories shipped unattached Round Neck: G3 - Equalizing grid337 BDS - Butterfly damper335 RSD - Radial Shutter damper336	<ul style="list-style-type: none"> • Pattern controllers are mounted on the back side of the perforated face and can be adjusted to 1, 2, 3 or 4 way pattern • Seismic tabs standard on all units • 7600 has 3/16" diameter holes in 1/4" centers

Notes for Models 7600R (-1, -6, -8, -9), 7600R-1 DF, 7600R AF (-1, -6, -8, -9) 7600R AL (-6, -8)

1. Available Finishes	2. Available Accessories	3. Construction Details
Standard Finish: 01 White Optional Finish 02 Aluminum paint 03 Black 22 (BBP) Black back pan/white face 28 Custom color	Round Neck: BDS - Butterfly damper335 RSD - Radial Shutter damper336	<ul style="list-style-type: none"> • Seismic tabs standard on all units • 7600R has 3/16" diameter holes in 1/4" centers

PCD - Perforated Ceiling Diffusers

Series 7600 - Performance/Flush Face - Round Neck

Models 7600 (-1, -6), 7600 AF (-1, -6), 7600 AL (-6)

Listed Size	Neck Size	fpm Neck Velocity Pv	300 0.006	400 0.010	500 0.016	600 0.022	700 0.031	800 0.040	1000 0.062	1200 0.090	
12" x 12"	6"	CFM Pt	60 0.015	80 0.026	100 0.041	120 0.060	135 0.075	155 0.099	195 0.157	235 0.229	
		Throw	4*-Way 4-Way 3-Way 2-Way 1-Way NC	1-1-2 1-2-4 2-2-5 2-3-5 4-6-9 -	1-2-3 2-3-5 2-3-6 2-3-6 5-7-10 -	1-2-4 2-4-6 3-4-7 3-4-7 7-8-11 <15	2-2-5 3-4-6 3-4-7 3-5-8 7-9-12 19	2-3-5 3-5-7 4-5-8 4-6-8 8-9-13 23	2-3-6 4-5-7 4-6-8 4-6-9 8-10-14 26	3-4-6 5-6-8 5-6-9 6-7-10 9-11-16 30	3-5-7 5-6-9 6-7-10 6-8-11 10-12-17 35
	8"	CFM Pt	105 0.016	140 0.028	175 0.044	210 0.063	245 0.086	280 0.112	350 0.175	420 0.252	
		Throw	4*-Way 4-Way 3-Way 2-Way 1-Way NC	1-2-3 2-3-6 2-3-6 2-3-7 5-8-12 -	1-2-4 3-4-7 3-4-8 3-5-9 7-9-13 -	2-3-5 3-5-8 3-5-9 4-6-10 9-11-15 <15	2-3-6 4-6-9 4-6-9 5-7-11 9-12-16 19	2-4-7 4-7-9 5-7-10 5-8-11 10-12-18 24	3-4-8 5-7-10 6-8-11 6-9-12 11-13-19 27	3-5-8 6-8-11 7-9-12 8-10-14 12-15-21 31	4-6-9 7-9-12 8-9-13 9-11-15 13-16-23 37
	24" x 24"	6"	CFM Pt	60 0.015	80 0.026	100 0.041	120 0.060	135 0.075	155 0.099	195 0.157	235 0.229
			Throw	4*-Way 4-Way 3-Way 2-Way 1-Way NC	1-1-2 1-2-5 2-3-5 2-3-5 4-6-9 -	1-2-3 2-3-6 2-3-6 2-4-7 6-8-11 -	1-2-4 3-4-6 3-4-7 3-5-8 7-8-12 <15	2-2-5 3-5-7 3-5-7 4-5-8 8-9-13 19	2-3-6 3-5-7 4-6-8 4-6-9 8-10-14 23	2-3-6 4-5-8 4-6-9 5-7-10 9-10-15 26	3-4-7 5-6-9 5-7-10 6-8-11 10-12-17 30
		8"	CFM Pt	105 0.016	140 0.028	175 0.044	210 0.063	245 0.086	280 0.112	350 0.175	420 0.252
			Throw	4*-Way 4-Way 3-Way 2-Way 1-Way NC	1-2-3 2-3-6 2-3-7 2-4-7 5-8-12 -	1-2-4 3-4-7 3-4-8 3-5-9 7-10-14 -	2-3-5 3-5-8 4-5-9 4-6-10 9-11-16 <15	2-3-7 4-6-9 4-7-10 5-7-11 10-12-17 19	3-4-7 5-7-10 5-8-11 6-8-12 11-13-19 24	3-4-8 5-7-10 6-8-11 6-9-13 11-14-20 27	4-5-9 7-8-12 7-9-13 8-10-14 13-16-22 31
		10"	CFM Pt	165 0.017	220 0.030	275 0.047	325 0.066	380 0.090	435 0.118	545 0.186	655 0.268
			Throw	4*-Way 4-Way 3-Way 2-Way 1-Way NC	1-2-4 2-4-8 3-4-8 3-4-9 7-10-15 -	2-3-5 3-5-9 4-6-10 4-6-11 9-12-18 -	2-3-7 4-6-10 5-7-11 5-7-13 11-14-20 <15	3-4-8 5-7-11 5-8-12 6-9-14 12-15-21 20	3-5-9 6-9-12 6-9-13 7-10-15 13-16-23 25	4-5-10 7-9-13 7-10-14 8-11-16 14-18-25 29	5-7-11 8-10-15 9-11-16 10-13-18 16-20-28 34
12"		CFM Pt	235 0.018	315 0.033	395 0.052	470 0.074	550 0.101	630 0.133	785 0.206	940 0.295	
		Throw	4*-Way 4-Way 3-Way 2-Way 1-Way NC	2-2-5 3-5-9 3-5-10 4-5-11 8-12-18 -	2-3-7 4-6-11 4-7-12 5-7-14 11-15-21 <15	3-4-8 5-8-12 5-8-14 6-9-15 14-17-24 15	3-5-10 6-9-13 7-10-15 7-11-17 15-18-26 22	4-6-11 7-10-15 8-11-16 8-12-18 16-20-28 27	4-7-12 8-11-16 9-12-17 9-14-19 17-21-30 31	5-8-13 10-12-17 11-14-19 12-15-21 19-24-33 36	7-10-15 11-13-19 12-15-21 14-17-23 21-26-36 42
14"		CFM Pt	320 0.017	430 0.031	535 0.048	640 0.068	750 0.094	855 0.122	1070 0.191	1285 0.276	
		Throw	4*-Way 4-Way 3-Way 2-Way 1-Way NC	2-3-6 3-5-11 4-6-11 4-6-12 9-14-21 -	3-4-8 5-7-13 5-8-14 6-8-16 13-17-25 <15	3-5-10 6-9-14 6-10-16 7-10-18 16-19-27 16	4-6-11 7-11-16 8-11-17 8-12-19 17-21-30 24	4-7-13 8-12-17 9-13-19 10-15-21 19-23-33 29	5-8-14 9-13-18 10-14-20 11-16-22 20-25-35 33	6-10-16 12-14-20 13-16-22 14-18-25 22-27-39 38	8-11-17 13-16-22 14-17-25 16-19-27 25-30-43 44
16"	CFM Pt	420 0.019	560 0.033	700 0.052	840 0.075	975 0.101	1115 0.132	1395 0.206	1675 0.297		
	Throw	4*-Way 4-Way 3-Way 2-Way 1-Way NC	2-3-7 4-6-12 4-7-13 5-7-14 10-16-24 -	3-4-9 5-8-15 6-9-16 6-9-18 15-20-28 <15	4-5-11 7-10-16 7-11-18 8-12-20 18-22-31 17	4-7-13 8-12-18 9-13-20 9-14-22 20-24-34 25	5-8-15 9-14-19 10-15-21 11-17-24 21-26-37 30	6-9-16 11-15-21 12-16-23 13-18-26 23-28-40 34	7-11-18 13-16-23 15-18-26 16-20-29 26-31-44 39	9-13-20 15-18-25 16-20-28 18-22-31 28-34-49 46	

See Page PCD-139 for Series 7600 Performance Notes

Perforated Ceiling Diffusers



PCD

PCD - Perforated Ceiling Diffusers

Series 7600 - Performance/Drop Face - Round Neck

Models 7600 (-8, -9), 7600-1 DF, 7600 AF (-8, -9), 7600 AL (-8)

Listed Size	Neck Size Ak	fpm Neck Velocity Pv	300 0.006	400 0.010	500 0.016	600 0.022	700 0.031	800 0.040	1000 0.062	1200 0.090	
12" x 12"	6"	CFM Pt	60 0.015	80 0.026	100 0.041	120 0.060	135 0.075	155 0.099	195 0.157	235 0.229	
		Throw	4*-Way 4-Way 3-Way 2-Way 1-Way NC	1-1-3 1-2-3 1-2-4 3-4-6 3-5-7 -	1-2-3 1-2-4 2-3-4 4-5-7 4-6-8 -	1-2-4 2-3-5 2-3-5 5-6-8 5-6-9 -	2-3-4 2-3-5 3-4-5 5-6-9 6-7-10 <15	2-3-4 2-4-6 3-4-6 5-7-9 6-8-11 17	2-3-4 3-4-6 3-4-6 6-7-10 7-8-11 20	3-3-5 3-5-7 4-5-7 6-8-11 7-9-13 26	3-4-5 4-5-7 4-5-7 7-9-12 8-10-14 32
	8"	CFM Pt	105 0.016	140 0.028	175 0.044	210 0.063	245 0.086	280 0.112	350 0.175	420 0.252	
		Throw	4*-Way 4-Way 3-Way 2-Way 1-Way NC	1-2-3 1-2-4 1-3-5 4-5-8 4-7-9 -	1-2-4 2-3-6 2-4-6 5-7-10 6-8-11 -	2-3-5 2-4-6 3-4-6 6-8-11 7-9-12 <15	2-3-5 3-4-7 4-5-7 7-8-12 8-9-13 15	3-4-6 3-5-8 4-5-8 7-9-13 8-10-14 19	3-4-6 4-6-8 5-6-8 8-10-13 9-11-15 22	4-5-7 5-6-9 5-6-9 9-11-15 10-12-17 28	4-5-7 6-7-10 6-7-10 10-12-17 11-13-19 34
	24" x 24"	6"	CFM Pt	60 0.015	80 0.026	100 0.041	120 0.060	135 0.075	155 0.099	195 0.157	235 0.229
			Throw	4*-Way 4-Way 3-Way 2-Way 1-Way NC	1-1-3 1-2-3 1-2-4 3-4-7 4-5-7 -	1-2-3 1-2-5 2-3-5 4-5-8 5-6-9 -	1-2-4 2-3-5 2-4-5 5-6-8 6-7-10 -	2-3-4 2-3-6 3-4-6 5-7-9 6-7-11 <15	2-3-4 3-4-6 3-4-6 6-7-10 6-8-11 17	2-3-5 3-4-6 4-4-6 6-7-11 7-8-12 20	3-4-5 4-5-7 4-5-7 7-8-12 8-9-13 26
		8"	CFM Pt	105 0.016	140 0.028	175 0.044	210 0.063	245 0.086	280 0.112	350 0.175	420 0.252
			Throw	4*-Way 4-Way 3-Way 2-Way 1-Way NC	1-2-3 1-2-4 1-3-5 4-6-9 5-7-10 -	2-2-4 2-3-6 2-4-6 5-7-10 6-8-11 -	2-3-5 2-4-7 3-5-7 6-8-11 7-9-13 <15	2-3-5 3-4-7 4-5-7 7-9-12 8-10-14 15	3-4-6 3-5-8 4-6-8 8-9-13 9-11-15 19	3-4-6 4-6-9 5-6-9 8-10-14 9-11-16 22	4-5-7 5-7-10 5-7-10 9-11-16 10-13-18 28
		10"	CFM Pt	165 0.017	220 0.030	275 0.047	325 0.066	380 0.090	435 0.118	545 0.186	655 0.268
			Throw	4*-Way 4-Way 3-Way 2-Way 1-Way NC	1-2-4 1-3-6 2-4-7 5-7-11 6-9-12 -	2-3-5 2-4-7 3-5-8 6-9-13 8-10-14 -	2-4-6 3-5-8 4-6-8 8-10-14 9-11-16 <15	3-4-7 4-6-9 5-6-9 9-11-15 10-12-17 16	3-5-7 4-6-10 5-7-10 10-12-17 11-13-19 21	4-5-8 5-7-11 6-8-11 10-13-18 12-14-20 24	5-6-9 6-8-12 7-8-12 11-14-20 13-16-22 31
12"		CFM Pt	235 0.018	315 0.033	395 0.052	470 0.074	550 0.101	630 0.133	785 0.206	940 0.295	
		Throw	4*-Way 4-Way 3-Way 2-Way 1-Way NC	1-3-5 1-3-7 2-4-8 6-8-13 7-10-15 -	2-3-7 3-4-9 4-6-9 8-11-15 9-12-17 -	3-4-7 4-6-10 5-7-10 9-12-17 11-14-19 <15	3-5-8 4-7-11 6-8-11 11-13-18 12-15-21 17	4-6-9 5-8-12 7-8-12 11-14-20 13-16-23 22	5-7-9 6-9-13 7-9-13 14-18-25 14-17-24 25	6-7-10 7-10-14 8-10-14 14-17-24 16-19-27 32	7-8-11 9-11-16 9-11-16 15-18-26 17-21-29 40
14"		CFM Pt	320 0.017	430 0.031	535 0.048	640 0.068	750 0.094	855 0.122	1070 0.191	1285 0.276	
		Throw	4*-Way 4-Way 3-Way 2-Way 1-Way NC	2-3-6 2-4-8 2-5-9 7-10-15 8-12-17 -	3-4-8 3-5-10 4-7-11 9-12-18 11-14-20 -	3-5-9 4-6-12 5-8-12 11-14-20 13-16-22 <15	4-6-9 5-8-13 7-9-13 12-15-21 14-17-24 18	5-7-10 6-9-14 8-10-14 13-16-23 15-19-26 23	5-8-11 7-10-15 9-11-15 14-18-25 16-20-28 27	7-9-12 9-12-17 10-12-17 16-20-28 18-22-31 34	8-9-13 10-13-18 11-13-18 18-22-30 20-24-34 43
16"	CFM Pt	420 0.019	560 0.033	700 0.052	840 0.075	975 0.101	1115 0.132	1395 0.206	1675 0.297		
	Throw	4*-Way 4-Way 3-Way 2-Way 1-Way NC	2-3-7 2-4-9 3-6-10 8-11-17 9-14-20 -	3-5-9 3-6-12 5-7-12 10-14-20 12-16-23 -	4-6-10 5-7-13 6-9-13 13-16-22 15-18-25 <15	5-7-11 6-9-15 7-10-15 14-17-25 16-20-28 20	5-8-12 7-10-16 9-11-16 15-19-26 17-21-30 24	6-9-12 8-12-17 10-12-17 16-20-28 19-23-32 29	8-10-14 10-13-19 11-13-19 18-22-32 21-25-36 36	9-11-15 12-15-21 12-15-21 20-25-35 23-28-39 45	

See Page PCD-139 for Series 7600 Performance Notes

Perforated Ceiling Diffusers



PCD

Series 7600R Round Neck

All models for Series 7600R

Nominal Neck Diameter	fpm Inlet Velocity Ps	300 -.01	400 -.02	500 -.03	600 -.04	700 -.05	800 -.06	900 -.08	1000 -.10
6	CFM	60	80	100	115	135	155	175	195
8	CFM	105	140	175	210	245	280	315	350
10	CFM	165	220	270	325	380	435	490	545
12	CFM	235	315	390	470	550	630	705	785
14	CFM	320	425	535	640	750	855	930	1070
16	CFM	420	560	700	835	975	1115	1255	1395
18	CFM	520	700	870	1045	1220	1395	1570	1740

Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM** - Cubic feet per minute (air)
- fpm** - Velocity of air stream in feet per minute
- Pv** - Velocity pressure (inches of water column)
- Pt** - Total pressure (inches of water column)
- Ps** - Static pressure = Pt - Pv (inches of water column)
- Throw*** - Non-isothermal horizontal throw (supply air temperature 15°F colder than average room air temperature) values are for 150 fpm - 100 fpm - 50 fpm velocities
- Throw** - Isothermal horizontal throw (supply air temperature the same as average room air temperature) values are for 150 fpm - 100 fpm - 50 fpm velocities
- NC** - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands

Series 7600 - Specification

Supply - Perforated Diffuser - Adjustable Neck Mounted Curved Blade Pattern Controllers - Round Neck/Series 7600

Steel	Aluminum Face - Steel Backpan	Aluminum
7600-1 - Surface Mounted	7600-1 AF - Surface Mounted	7600-6 AL - T-bar Lay-in
7600-1 DF - Surface Mounted-Dropped Face	7600-6 AF - T-bar Lay-in	7600-6 AL - Tegular T-bar
7600-6 - T-bar Lay-in	7600-8 AF - Tegular T-bar	
7600-8 - Tegular T-bar	7600-9 AF - Donn Fineline	
7600-9 - Donn Fineline		

Air Outlets shall be steel model 7600 or aluminum face, steel backpan model 7600-AF or all aluminum model 7600-AL manufactured by METALAIRES.

Units shall consist of a 51% free area perforated face with 3/16" diameter perforated holes on 1/4" staggered centers. The perforated face shall be removable allowing access to aluminum curved blade pattern with tension spring clips. Pattern controller blades shall be individually adjustable and allow the discharge pattern to be adjustable from vertical to horizontal. Pattern controller blades shall pivot in adjustable from vertical to horizontal. Pattern controller blades shall pivot in friction mounting retainers. Retainers shall hold the deflector blade position throughout the specified operating range of the device. Metal friction wires are not acceptable.

Outlets shall be available in 1, 2-way opposite, 2-way corner, 3, and 4-way directional air patterns.

Return - Perforated Diffuser - Round Neck - 12" x 12"/24" x 24" Module/Series 7600

Steel	Aluminum Face - Steel Backpan	Aluminum
7600R-1 - Surface Mounted	7600R-1 AF - Surface Mounted	7600R-6 AL - T-bar Lay-in
7600R-1 DF - Surface Mounted-Dropped Face	7600R-6 AF - T-bar Lay-in	7600R-6 AL - Tegular T-bar
7600R-6 - T-bar Lay-in	7600R-8 AF - Tegular T-bar	
7600R-8 - Tegular T-bar	7600R-9 AF - Donn Fineline	
7600R-9 - Donn Fineline		

Air Inlets shall be steel model 7600R or aluminum face, steel backpan model 7600R-AF or all aluminum model 7600R-AL manufactured by METALAIRES.

Units shall consist of aluminum 51% free area perforated face with 3/16" diameter perforated holes on 1/4" staggered centers. Units shall be designed for use in ducted return or exhaust applications.

The perforated face shall be hinged allowing access to the inside of the packpan. Face shall be secured in place with tension spring clips.

The units shall be the size and quality as outline in the plans and specifications.

Units shall be designed to integrate into the specified ceiling systems.



Series 7600 - Specification

Optional Dampers and Accessories:

Square to Round Transitions

Units to have square to round transitions allowing installation with round ductwork.

Butterfly Damper

METALAIRES model BDS aluminum round butterfly type dampers shall be provided. Damper shall consist of two butterfly style blades that can be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot that can be assessed through the face of the diffuser.

Radial Shutter Damper

METALAIRES model RSD steel round radial shutter damper shall be provided. Damper shall consist of gang operated radial blades that slide perpendicular to air flow direction. The damper shall be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot that can be assessed through the face of the diffuser.

Opposed Blade Damper

METALAIRES model D3 aluminum or SD3 steel round opposed blade type dampers shall be provided. Damper shall consist of gang operated blades that can be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot that can be assessed through the face of the diffuser.

Equalizing Grid

METALAIRES model G3 aluminum round equalizing grid shall be provided. Equalizing grid shall consist of 1/2" x 1/2" x 1/2" aluminum cubed core mounting in an aluminum frame

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaline cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours



PCD - Perforated Ceiling Diffusers

Series 7600 - Model Specification Guide

Supply Perforated Diffuser - Round Necks
Adjustable Neck Mounted Pattern Controllers
Series 7600

Model	Available Neck	Module	Air Pattern	Available Finishes	Available Options
7600-1 - Flush Surface Mount 7600-1 DF - Flush Surface Mount - Drop Face 7600-1 AF - Flush Surface Mount - Aluminum Face	6" 8" 10" 12" 14" 16"	24" x 24"	Standard	Standard	G3 Equalizing Grid
			4W - 4-way	01 - White	BDS Butterfly Damper
			Optional	Optional	RSD Radial Shutter Damper
			1W - 1 Way	03 - Black	D3 Round Opposed Blade Damper - Aluminum
			2W - 2-Way Opposite	22 - Black Back Pan White Face	
			2C - 2 Way Corner	28 - Custom Color	SD3 Round Opposed Blade Damper - Steel
			3W - 3-Way		
			ST - Star Corner Blow		

Model	Available Neck	Module	Air Pattern	Available Finishes	Available Options
7600-6 - T-bar Lay-in 7600-6 AF - T-bar Lay-in - Aluminum Face 7600-6 AL - T-bar Lay-in - All Aluminum 7600-8 - Tegular T-bar 7600-8 AF - Tegular T-bar - Aluminum Face 7600-8 AL - Tegular T-bar - All Aluminum 7600-9 - Donn Finline	6" 8" 10" 12" 14" 16"	24" x 24"	Standard	Standard	G3 Equalizing Grid
			4W - 4-way	01 - White	BDS Butterfly Damper
			Optional	Optional	RSD Radial Shutter Damper
			1W - 1 Way	03 - Black	D3 Round Opposed Blade Damper - Aluminum
			2W - 2-Way Opposite	22 - Black Back Pan White Face	
			2C - 2 Way Corner	28 - Custom Color	SD3 Round Opposed Blade Damper - Steel
			3W - 3-Way		
			ST - Star Corner Blow		

Return and Exhaust Perforated Diffuser - Round Necks
Series 7600R

Model	Available Neck	Module	Available Finishes	Available Options
7600R-1 - Flush Surface Mount 7600R-1 DF - Flush Surface Mount - Drop Face 7600R-1 AF - Flush Surface Mount - Aluminum Face	6" 8" 10" 12" 14" 16"	12" x 12" 24" x 24"	Standard	G3 Equalizing Grid
			01 - White	BDS Butterfly Damper
			Optional	RSD Radial Shutter Damper
			03 - Black	D3 Round Opposed Blade Damper - Aluminum
			22 - Black Back Pan White Face	SD3 Round Opposed Blade Damper - Steel
			28 - Custom Color	

Model	Available Neck	Module	Available Finishes	Available Options
7600R-6 - T-bar Lay-in 7600R-6 AF - T-bar Lay-in - Aluminum Face 7600R-6 AL - T-bar Lay-in - All Aluminum 7600R-8 - Tegular T-bar 7600R-8 AF - Tegular T-bar - Aluminum Face 7600R-8 AL - Tegular T-bar - All Aluminum 7600R-9 - Donn Finline	6" 8" 10" 12" 14" 16"	12" x 12" 24" x 24"	Standard	G3 Equalizing Grid
			01 - White	BDS Butterfly Damper
			Optional	RSD Radial Shutter Damper
			03 - Black	D3 Round Opposed Blade Damper - Aluminum
			22 - Black Back Pan White Face	SD3 Round Opposed Blade Damper - Steel
			28 - Custom Color	

Perforated Ceiling Diffuser - Metric - Round Necks
Series 7600 - T-bar Lay-in

Model	Available Neck	Module	Available Finishes	Available Options
M7600-6 - Supply M7600R-6 - Return	6" 8" 10" 12" 14" 16"	600 x 600	Standard	G3 Equalizing Grid
			01 - White	BDS Butterfly Damper
			Optional	RSD Radial Shutter Damper
			03 - Black	D3 Round Opposed Blade Damper - Aluminum
			22 - Black Back pan White Face	SD3 Round Opposed Blade Damper - Steel
			28 - Custom Color	



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Perforated Ceiling Diffusers



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- ➔ Supply/Return Perforated Ceiling Diffusers ➔ Square Neck
- ➔ Neck Mounted Curved Blade Pattern Controllers

Product Details

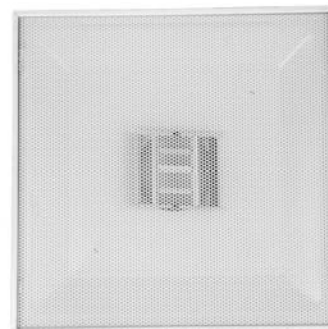
- ✦ The 7650 perforated supply diffuser has curved blade pattern controllers mounted in the neck of the diffuser. Pattern controllers are adjustable from a horizontal to vertical discharge pattern
- ✦ The hinged, fully removable face allow access to the pattern controllers
- ✦ Units are available in 1, 2-way opposite, 2-way corner, 3, and 4-way patterns. The 4-way core can be set for corner or side discharge patterns
- ✦ Border 6, T-bar Lay-in can be used in surface mounting applications by adding optional T-bar Plaster Frame (TBPF)
- ✦ Matching returns available: 7600R (round neck) 7650R Square neck
- ✦ The 7650 is an excellent choices for VAV applications

Perforated Ceiling Diffusers



PCD

Series 7600	
7650	Steel Backpan & Face
7650 AF	Steel Backpan & Aluminum Face
7650 AL	Aluminum Backpan & Face



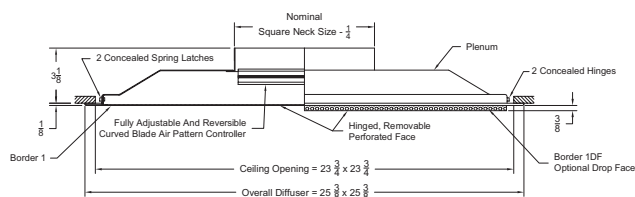
Model 7650-6 4W Shown
Standard Finish: 01 White

Supply

Dimensions are in inches

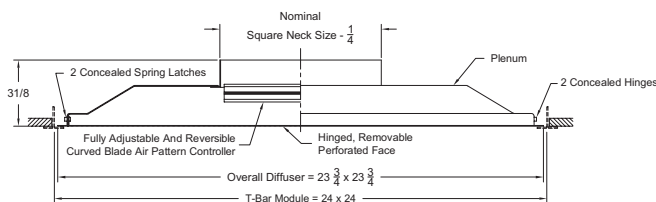
Supply - Square Neck - Adjustable - Surface Mount

- Model 7650-1 - Steel backpan & face
- Model 7650-1 DF - Steel backpan & face - drop face
- Model 7650-1 AF - Steel backpan & aluminum face



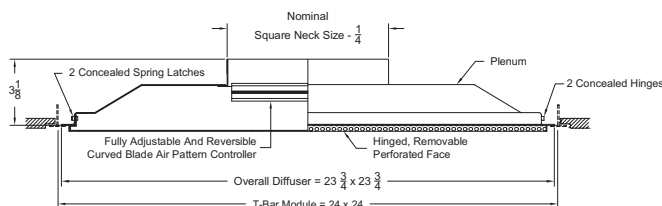
Supply - Square Neck - Adjustable - T-bar Lay-in

- Model 7650-6 - Steel backpan & face
- Model 7650-6 AF - Steel backpan & aluminum face
- Model 7650-6 AL - Aluminum backpan & face



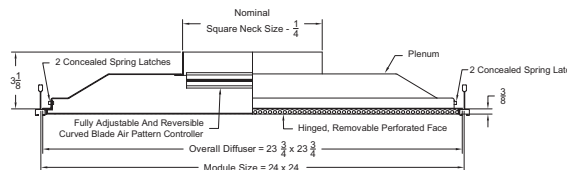
Supply - Square Neck - Adjustable - Tegular T-bar

- Model 7650-8 - Steel backpan & face
- Model 7650-8 AF - Steel backpan & aluminum face
- Model 7650-8 AL - Aluminum backpan & face



Supply - Square Neck - Adjustable - Donn Fineline

- Model 7650-9 - Steel backpan & face
- Model 7650-9 AF - Steel backpan & aluminum face



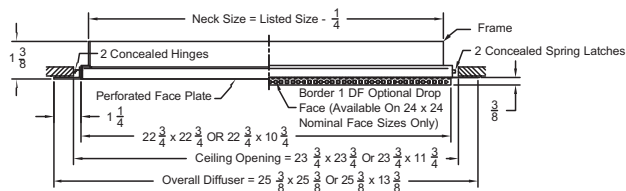
Available Neck Sizes (For All Models): 6 x 6, 8 x 8, 10 x 10, 12 x 12, 14 x 14 and 16 x 16

PCD - Perforated Ceiling Diffusers

Return

Return - Square Neck - Adjustable - Surface Mount

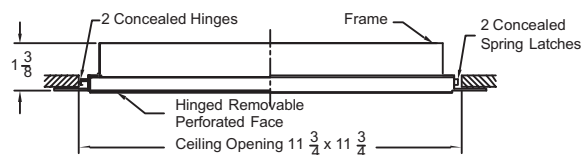
- Model 7650R-1 - Steel backpan & face (24" x 24")
- Model 7650R-1 DF - Steel backpan & drop face - (24" x 24")
- Model 7650R-1 AF - Steel backpan & aluminum face (24" x 24")



Available For 24 x 24 Ceiling Openings. 24 x 24 Return Available With 22 x 22 Neck Size.
24 x 12 Return Available With 22 x 10 Neck Size Only.

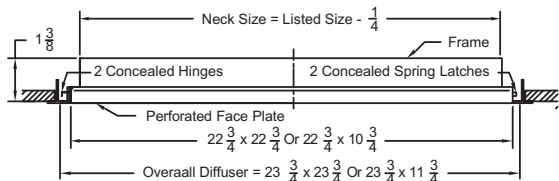
Return - Square Neck - Adjustable - Surface Mount

- Model 7650R-1 - Steel backpan & face (12" x 12")
- Model 7650R-1 DF - Steel backpan & face - drop face (12" x 12")
- Model 7650R-1 AF - Steel backpan & aluminum face (12" x 12")



Return - Square Neck - Adjustable - T-bar Lay-in

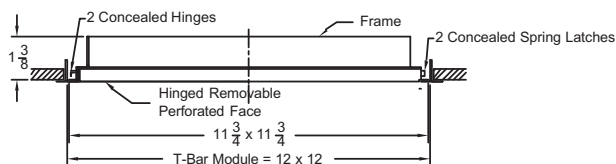
- Model 7650R-6 - Steel backpan & face (24" x 24")
- Model 7650R-6 AF - Steel backpan & aluminum face (24" x 24")
- Model 7650R-6 AL - Aluminum backpan & face (24" x 24")



Available For 24 x 24 And 24 x 12 T-Bar Lay-In Ceiling Grids.
24 x 24 Return Available With 22 x 22 Neck Size.
24 x 12 Return Available With 22 x 10 Neck Size Only.

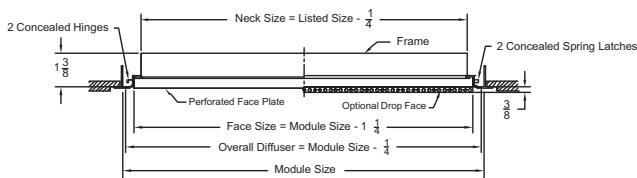
Return - Square Neck - Adjustable - T-bar Lay-in

- Model 7650R-6 - Steel backpan & face (12" x 12")
- Model 7650R-6 AF - Steel backpan & aluminum face (12" x 12")
- Model 7650R-6 AL - Aluminum backpan & face (12" x 12")



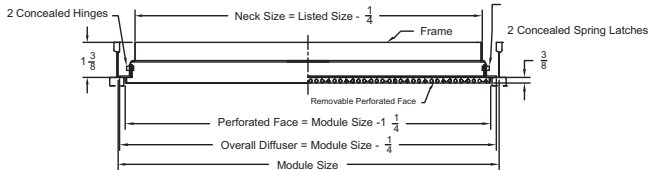
Return - Square Neck - Adjustable - Tegrular T-bar

- Model 7650R-8 - Steel backpan & face (24" x 24")
- Model 7650R-8 AF - Steel backpan & aluminum face (24" x 24")
- Model 7650R-8 AL - Aluminum backpan & face (24" x 24")



Return - Square Neck - Adjustable - Donn Finline

- Model 7650R-9 - Steel backpan & face
- Model 7650R-9 AF - Steel backpan & aluminum face



Perforated Ceiling Diffusers



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Metric	Dimensions are in millimeters
<p>Supply - Square Neck - Adjustable - T-bar Lay-in Model M7650-6 - Steel backpan & face Model M7650-6 AF - Steel backpan & aluminum face Model M7650-6 AL - Aluminum backpan & face</p>	<p>Return - Square Neck - Adjustable - T-bar Lay-in Model M7650R-6 - Steel backpan & face Model M7650R-6 AF - Steel backpan & aluminum face Model M7650R-6 AL - Aluminum backpan & face</p>

Notes for Models 7650 (-1, -6, -8, -9), 7650-1 DF, 7650 AF (-1, -6, -8, -9), 7650 AL (-6, -8)

1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish 02 Aluminum paint 03 Black 22 (BBP) Black back pan/white face 28 Custom color</p>	<p>All accessories shipped unattached</p> <p>Square Necks: OBD - Opposed blade damper - Steel334 OBDA - Opposed blade damper - Aluminum .334 L9 - Equalizing grid334</p> <p>Round Neck: G3 - Round equalizing grid337 BDS - Butterfly damper335 RSD - Radial Shutter damper336</p>	<ul style="list-style-type: none"> • Pattern controllers are mounted on the back side of the perforated face and can be specified for 1, 2, 3 or 4 way pattern • Series 7650 have 3/16" diameters holes on 1/4" staggered centers

Notes for Models 7650R (-1, -6, -8, -9), 7650R-1 DF, 7650R AF (-1, -6, -8, -9), 7650R AL (-6, -8)

1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish 02 Aluminum paint 03 Black 22 (BBP) Black back pan/white face 28 Custom color</p>	<p>All accessories shipped unattached</p> <p>OBD - Opposed blade damper - Steel334 OBDA - Opposed blade damper - Aluminum .334</p>	<ul style="list-style-type: none"> • Available only in listed sizes • Series 7650R have 3/16" diameters holes on 1/4" staggered centers

PCD - Perforated Ceiling Diffusers

Series 7650 - Performance/Flush Face - Square Neck

Models 7650 (-1, -6), 7650 AF (-1, -6), 7650 AL (-6)

Listed Size	Neck Size	fpm Neck Velocity Pv	300 0.006	400 0.010	500 0.016	600 0.022	700 0.031	800 0.040	1000 0.040	1200 0.090
12" x 12"	6" x 6"	CFM Pt	75 0.017	100 0.031	125 0.048	150 0.070	175 0.095	200 0.124	250 0.194	300 0.279
		Throw	4*-Way 4-Way 3-Way 2-Way 1-Way NC	1-1-3 1-2-5 2-3-5 2-3-6 4-7-10 -	1-2-3 2-3-6 2-4-7 3-4-7 6-8-11 -	1-2-4 3-4-7 3-4-7 3-5-8 7-9-13 <15	2-3-5 3-5-7 4-5-8 4-6-9 8-10-14 16	2-3-6 4-6-8 4-6-9 4-7-10 9-11-15 21	2-3-6 4-6-8 5-7-9 5-7-10 9-11-16 25	3-4-7 5-7-9 6-7-10 6-8-11 10-13-18 30
	8" x 8"	CFM Pt	135 0.020	180 0.036	220 0.054	265 0.079	310 0.108	355 0.141	445 0.222	535 0.321
		Throw	4*-Way 4-Way 3-Way 2-Way 1-Way NC	1-1-3 2-3-5 2-3-6 2-3-6 4-7-10 -	1-2-4 2-3-6 2-4-7 3-4-8 6-8-12 -	2-2-5 3-4-7 3-5-8 3-5-9 8-9-13 <15	2-3-6 3-5-8 4-6-8 4-6-9 8-10-15 16	2-3-6 4-6-8 4-6-9 5-7-10 9-11-16 21	2-4-7 5-6-9 5-7-10 5-8-11 10-12-17 25	3-5-8 6-7-10 6-8-11 7-9-12 11-13-19 30
24" x 24"	6" x 6"	CFM Pt	75 0.017	100 0.031	125 0.048	150 0.070	175 0.095	200 0.124	250 0.194	300 0.279
		Throw	4*-Way 4-Way 3-Way 2-Way 1-Way NC	1-1-3 2-3-5 2-3-6 2-3-6 4-7-10 -	1-2-4 2-3-6 2-4-7 3-4-8 6-8-12 -	2-2-5 3-4-7 3-5-8 3-5-9 8-9-13 <15	2-3-6 3-5-8 4-6-8 4-6-9 8-10-15 16	2-3-6 4-6-8 4-6-9 5-7-10 9-11-16 21	2-4-7 5-6-9 5-7-10 5-8-11 10-12-17 25	3-5-8 6-7-10 6-8-11 7-9-12 11-13-19 30
	8" x 8"	CFM Pt	135 0.020	180 0.036	220 0.054	265 0.079	310 0.108	355 0.141	445 0.222	535 0.321
		Throw	4*-Way 4-Way 3-Way 2-Way 1-Way NC	1-2-4 2-3-7 2-4-7 3-4-8 6-9-14 -	2-2-5 3-5-8 3-5-9 4-5-10 8-11-16 -	2-3-6 4-6-9 4-6-10 4-7-11 10-12-18 <15	2-4-7 5-7-10 5-7-11 5-8-12 11-14-19 18	3-4-8 5-8-11 6-9-12 6-9-13 12-15-21 23	4-6-10 8-9-13 7-9-13 7-10-14 13-16-22 28	5-7-11 8-10-14 8-10-14 9-11-16 14-18-25 34
	10" x 10"	CFM Pt	210 0.023	280 0.040	345 0.061	415 0.089	485 0.089	555 0.159	695 0.249	835 0.359
		Throw	4*-Way 4-Way 3-Way 2-Way 1-Way NC	2-2-5 3-4-9 3-5-9 3-5-10 7-12-17 -	2-3-6 4-6-10 4-6-11 4-7-13 10-14-20 -	3-4-8 5-7-12 5-8-13 6-8-14 13-16-22 <15	3-5-9 6-8-13 6-9-14 7-10-16 14-17-24 20	4-5-11 7-10-14 7-11-15 8-12-17 15-18-26 26	4-6-11 8-10-15 8-11-16 9-13-18 16-20-28 29	5-8-13 9-12-16 10-13-18 11-14-20 18-22-31 36
	12" x 12"	CFM Pt	300 0.023	400 0.040	500 0.063	600 0.090	700 0.123	800 0.160	1000 0.250	1200 0.360
		Throw	4*-Way 4-Way 3-Way 2-Way 1-Way NC	2-3-6 3-5-10 4-6-11 4-6-12 9-14-21 -	2-4-7 5-7-12 5-7-14 5-8-15 12-17-24 -	3-5-9 6-9-14 6-9-15 7-10-17 15-19-27 <15	4-6-11 7-10-15 7-11-17 8-12-19 17-21-29 21	4-6-13 8-12-18 9-13-20 9-14-20 18-22-31 26	5-7-14 9-12-18 10-14-19 11-15-22 19-24-34 31	6-9-15 11-14-20 12-15-22 13-17-24 22-27-38 38
	14" x 14"	CFM Pt	410 0.023	545 0.040	680 0.062	815 0.089	950 0.121	1090 0.159	1360 0.248	1630 0.356
		Throw	4*-Way 4-Way 3-Way 2-Way 1-Way NC	2-3-6 4-6-12 4-7-13 5-7-14 10-16-24 -	3-4-9 5-8-15 6-9-16 6-9-18 14-20-28 -	4-5-11 7-10-16 7-11-18 8-12-20 18-22-31 <15	4-6-13 8-12-18 9-13-20 9-14-22 20-24-34 21	5-7-15 9-14-19 10-15-21 11-16-24 21-26-37 28	6-9-16 11-15-21 12-16-23 12-18-25 23-28-39 33	7-11-18 13-16-23 14-18-25 16-20-28 25-31-44 41
	16" x 16"	CFM Pt	535 0.027	710 0.047	890 0.074	1070 0.108	1245 0.146	1425 0.191	1780 0.298	2135 0.428
		Throw	4*-Way 4-Way 3-Way 2-Way 1-Way NC	2-4-7 4-7-14 5-7-15 5-8-16 12-18-27 -	3-5-10 6-9-17 7-10-18 7-11-20 16-22-32 -	4-6-12 8-11-19 8-12-20 9-13-23 20-25-35 15	5-7-15 9-14-20 10-15-22 11-16-25 22-27-39 23	6-9-17 11-16-22 12-17-24 12-19-27 24-30-42 30	7-10-18 12-17-23 13-18-26 14-20-29 26-32-45 35	8-12-20 15-19-26 16-20-29 18-23-32 29-35-50 42

See Page PCD-147 for Series 7650 Performance Notes



PCD - Perforated Ceiling Diffusers

Series 7650 - Performance/Drop Face - Square Neck

Models 7600 (-8, -9), 7600-1 DF, 7600 AF (-8, -9), 7600 AL (-8)

Listed Size	Neck Size	fpm Neck Velocity Pv	300 0.006	400 0.010	500 0.016	600 0.022	700 0.031	800 0.040	1000 0.040	1200 0.090	
12" x 12"	6" x 6"	CFM Pt	75 0.017	100 0.031	125 0.048	150 0.069	175 0.093	200 0.122	250 0.191	300 0.275	
		Throw	4*-Way	1-1-3	1-2-4	2-2-4	2-3-4	2-3-5	2-4-5	3-4-6	4-4-6
			4-Way	1-2-4	1-2-5	2-3-5	2-4-6	3-4-6	3-5-7	4-5-8	5-6-8
			3-Way	1-2-4	2-3-5	3-4-5	3-4-6	4-5-6	4-5-7	4-5-8	5-6-8
			2-Way	3-5-7	4-6-8	5-6-9	6-7-10	6-8-11	7-8-11	7-9-13	8-10-14
			1-Way	4-6-8	5-6-9	6-7-10	6-8-11	7-9-12	7-9-13	8-10-14	9-11-16
	NC	-	<15	16	23	27	30	34	38		
	8" x 8"	CFM Pt	135 0.020	180 0.036	220 0.054	265 0.079	310 0.108	355 0.141	445 0.222	535 0.321	
		Throw	4*-Way	1-2-4	2-3-5	2-3-5	2-4-6	3-4-6	3-5-7	4-5-7	5-6-8
			4-Way	1-2-5	2-3-6	3-4-7	3-5-8	4-6-9	4-6-9	5-7-10	6-8-11
			3-Way	2-3-6	3-4-6	3-5-7	4-6-8	5-6-9	5-6-9	6-7-10	6-8-11
			2-Way	4-6-9	5-8-11	7-8-12	8-9-13	8-10-14	9-11-15	10-12-17	11-13-19
1-Way			5-8-11	7-9-12	8-10-14	9-11-15	9-11-16	10-12-17	11-14-19	12-15-21	
NC	-	<15	17	25	30	34	38	41			
24" x 24"	6" x 6"	CFM Pt	75 0.017	100 0.031	125 0.048	150 0.069	175 0.093	200 0.122	250 0.191	300 0.275	
		Throw	4*-Way	1-1-3	1-2-4	2-2-4	2-3-5	2-3-5	3-4-5	3-4-6	4-5-6
			4-Way	1-2-4	1-3-5	2-3-6	3-4-6	3-4-7	3-5-7	4-6-8	5-6-9
			3-Way	1-2-4	2-3-5	3-4-6	3-4-6	4-5-7	4-5-7	5-6-8	5-6-9
			2-Way	3-5-7	4-6-8	5-7-9	6-7-10	6-8-11	7-8-12	8-9-13	8-10-15
			1-Way	4-6-8	5-7-10	6-8-11	7-8-12	7-9-13	8-10-14	9-11-15	10-12-17
	NC	-	<15	16	23	27	30	34	38		
	8" x 8"	CFM Pt	135 0.020	180 0.036	220 0.054	265 0.079	310 0.108	355 0.141	445 0.222	535 0.321	
		Throw	4*-Way	1-2-4	2-3-5	2-3-5	3-4-6	3-5-7	3-5-7	4-6-8	5-6-9
			4-Way	1-2-5	2-3-7	3-4-8	3-5-8	4-6-9	4-7-10	6-8-11	7-8-12
			3-Way	2-3-6	3-4-7	3-5-8	4-6-8	5-6-9	6-7-10	6-8-11	7-8-12
			2-Way	4-6-10	6-8-11	7-9-13	8-10-14	9-11-15	9-11-16	10-13-18	11-14-20
1-Way			5-8-11	7-9-13	8-10-14	9-11-16	10-12-17	10-13-18	12-14-20	13-16-22	
NC	-	<15	17	25	30	34	38	41			
10" x 10"	CFM Pt	210 0.023	280 0.040	345 0.061	415 0.089	485 0.121	555 0.158	695 0.248	835 0.358		
	Throw	4*-Way	1-2-5	2-3-6	3-4-7	3-5-8	4-6-8	4-6-9	5-7-10	6-8-11	
		4-Way	1-3-6	2-4-8	3-5-9	4-6-10	5-7-11	6-8-12	7-9-13	8-10-15	
		3-Way	2-4-7	4-5-9	4-7-9	5-7-10	6-8-11	7-8-12	8-9-13	8-10-15	
		2-Way	5-8-12	7-10-14	9-11-16	10-12-17	11-13-19	12-14-20	13-16-22	14-17-25	
		1-Way	7-10-14	9-11-16	10-13-18	11-14-20	12-15-21	13-16-23	15-18-25	16-20-28	
NC	-	-	18	26	32	36	41	44			
12" x 12"	CFM Pt	300 0.023	400 0.040	500 0.063	600 0.090	700 0.123	800 0.160	1000 0.250	1200 0.360		
	Throw	4*-Way	2-3-6	3-4-7	3-5-8	4-6-9	5-7-10	5-7-10	7-8-12	7-9-13	
		4-Way	2-4-8	3-5-10	4-6-11	5-8-12	6-9-13	7-10-14	8-11-16	10-12-18	
		3-Way	2-5-9	4-6-10	5-8-11	6-9-12	7-10-13	8-10-14	9-11-16	10-12-18	
		2-Way	6-10-15	8-12-17	11-13-19	12-15-21	13-16-22	14-17-24	15-19-27	17-21-29	
		1-Way	8-12-17	10-14-19	12-15-22	14-17-24	15-18-25	16-19-27	18-22-30	19-24-33	
NC	-	-	21	29	35	39	43	46			
14" x 14"	CFM Pt	410 0.024	545 0.043	680 0.067	815 0.096	955 0.131	1090 0.171	1360 0.266	1635 0.385		
	Throw	4*-Way	2-3-7	3-5-9	4-6-10	5-7-11	5-8-11	6-9-12	8-10-14	9-11-15	
		4-Way	2-4-9	3-6-12	5-7-13	6-9-15	7-10-16	8-12-17	10-13-19	12-15-21	
		3-Way	3-6-10	5-7-12	6-9-13	7-10-15	9-11-16	10-12-17	11-13-19	12-15-21	
		2-Way	7-11-17	10-14-20	12-16-22	14-17-24	15-19-26	16-20-28	18-22-31	20-24-34	
		1-Way	9-14-19	12-16-22	14-18-25	16-19-27	17-21-30	18-22-32	20-25-35	22-27-39	
NC	-	-	21	30	37	41	46	49			
16" x 16"	CFM Pt	535 0.027	710 0.047	890 0.074	1065 0.107	1245 0.146	1420 0.190	1780 0.298	2135 0.428		
	Throw	4*-Way	2-4-8	3-5-10	4-7-11	5-8-12	6-9-13	7-10-14	9-11-16	10-12-17	
		4-Way	2-5-10	4-7-13	6-8-15	7-10-17	8-12-18	9-13-19	11-15-21	13-17-24	
		3-Way	3-6-12	6-8-14	7-11-15	8-12-17	10-13-18	11-14-19	12-15-21	14-17-24	
		2-Way	9-13-20	11-16-23	14-18-25	16-20-28	17-21-30	18-23-32	21-25-36	23-28-39	
		1-Way	10-16-22	14-18-26	17-20-29	18-22-31	20-24-34	21-26-36	23-29-41	26-31-44	
NC	-	-	22	31	38	42	48	52			

See Page PCD-147 for Series 7650 Performance Notes

Perforated Ceiling Diffusers



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Series 7650R - Performance

All models for Series 7650R

Nominal Neck Size	fpm Inlet Velocity	300	400	500	600	700	800	900	1000
	PS	-0.008	-0.015	-0.02	-0.03	-0.05	-0.06	-0.08	-0.09
6" x 6"	CFM	75	100	120	150	175	200	225	250
8" x 8"	CFM	130	175	220	265	310	350	400	445
10" x 10"	CFM	210	275	345	415	485	555	625	695
12" x 12"	CFM	300	400	500	600	700	800	900	1000
14" x 14"	CFM	410	545	680	815	950	1090	1225	1360
16" x 16"	CFM	530	710	885	1060	1240	1415	1600	1770
22" x 22"	CFM	1010	1345	1680	2015	2350	2690	3025	3360

Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM** - Cubic Feet per Minute (air)
- fpm** - Velocity of air stream in Feet Per Minute
- Pv** - Velocity pressure (inches of water column)
- Pt** - Total pressure (inches of water column)
- Ps** - Static pressure = Pt - Pv (inches of water column)
- Throw*** - Non-isothermal horizontal throw (supply air temperature 15°F colder than average room air temperature) values are for 150 fpm - 100 fpm - 50 fpm velocities
- Throw** - Isothermal horizontal throw (supply air temperature the same as average room air temperature) values are for 150 fpm - 100 fpm - 50 fpm velocities
- NC** - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands

Series 7650 - Specification

Supply - Perforated Diffuser - Square Neck - Adjustable Neck Mounted Pattern Controller/Series 7650

Steel	Aluminum Face - Steel Backpan	Aluminum
7650-1 - Surface Mounted	7650-1 AF - Surface Mounted	7650-6 AL - T-bar Lay-in
7650-1 DF - Surface Mounted-Dropped Face	7650-6 AF - T-bar Lay-in	7650-6 AL - Tegular T-bar
7650-6 - T-bar Lay-in	7650-8 AF - Tegular T-bar	
7650-8 - Tegular T-bar	7650-9 AF - Donn Finline	
7650-9 - Donn Finline		

Air Outlets shall be steel model 7650 or aluminum face, steel backpan model 7650-AF or all aluminum model 7650-AL manufactured by METALAIRES.

Units shall consist of a 51% free area perforated face with 3/16" diameter perforated holes on 1/4" staggered centers. The perforated face shall be removable allowing access to aluminum curved blade pattern controller mounted into the neck of the diffusers. Face shall be secured in place with tension spring clips. Pattern controller blades shall be individually adjustable and allow the discharge pattern to be adjustable from vertical to horizontal. Pattern controller blades shall pivot in friction mounting retainers. Retainers shall hold the deflector blade position throughout the specified operating range of the device. Metal friction wires are not acceptable.

Outlets shall be available in 1, 2 way opposite, 2 way corner, 3, and 4 way directional air patterns.

The units shall be the size and quantity as outline in the plans and specifications.

Units shall be designed to integrate into the specified ceiling system.

Return - Perforated Diffuser - Square Neck /Series 7650R

Steel	Aluminum Face - Steel Backpan	Aluminum
7650R-1 - Surface Mounted	7650R-1 AF - Surface Mounted	7650R-6 AL - T-bar Lay-in
7650R-1 DF - Surface Mounted-Dropped Face	7650R-6 AF - T-bar Lay-in	7650R-8 AL - Tegular T-bar
7650R-6 - T-bar Lay-in	7650R-8 AF - Tegular T-bar	
7650R-8 - Tegular T-bar	7650R-9 AF - Donn Finline	
7650R-9 - Donn Finline		

Air Inlets shall be steel model 7650R or aluminum face, steel backpan model 7650R-AF or all aluminum model 7650R-AL manufactured by METALAIRES.

Units shall consist of aluminum 51% free area perforated face with 3/16" diameter perforated holes on 1/4" staggered centers. Units shall be designed for use in ducted return or exhaust applications.

The perforated face shall be hinged allowing access to the inside of the packpan. Face shall be secured in place with tension spring clips.

The units shall be the size and quantity as outline in the plans and specifications.

Units shall be designed to integrate into the specified ceiling system.



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Square Neck Options and Accessories

Opposed Blade Damper

METALAIRE model OBDA aluminum or OBD steel round opposed blade type dampers shall be provided. Damper shall consist of gang operated blades that can be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot accessible by opening the face of the diffuser.

Equalizing Grid

METALAIRE model L9 aluminum square equalizing grid shall be provided. Equalizing grid shall consist aluminum blades mounting in an aluminum frame.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

Series 7650 - Model Specification Guide

Supply - Perforated Supply Diffuser - Square Necks Adjustable Neck Mounted Pattern Controllers Series 7650

Model	Available Neck	Module	Air Pattern	Available Finishes	Available Options	
7650-1 - Flush Surface Mount 7650-1 DF - Flush Surface Mount - Drop Face 7650-1 AF - Flush Surface Mount - Aluminum Face	6" x 6" 8" x 8" 10" x 10" 12" x 12" 14" x 14" 15" x 15" 16" x 16" 18" x 18"	12" x 12" 24" x 24"	Standard	Standard	OBD	Opposed Blade Damper - Steel
			4W - 4-way	01 - White	OBDA	Opposed Blade Damper - Aluminum
			Optional	Optional	L9	Equalizing Grid
			1W - 1 Way	03 - Black		
			2W - 2-Way Opposite	22 - Black Back Pan White Face		
			2C - 2 Way Corner	28 - Custom Color		
			3W - 3-Way			
			ST - Star Corner Blow			

Model	Available Neck	Module	Air Pattern	Available Finishes	Available Options	
7650-6 - T-bar Lay-in 7650-6 AF - T-bar Lay-in - Aluminum Face 7650-6 AL - T-bar Lay-in - All Aluminum 7650-8 - Tegular T-bar 7650-8 AF - Tegular T-bar - Aluminum Face 7650-8 AL - Tegular T-bar - All Aluminum 7650-9 - Donn Finline	6" x 6" 8" x 8" 10" x 10" 12" x 12" 14" x 14" 15" x 15" 16" x 16"	12" x 12" 24" x 24"	Standard	Standard	OBD	Opposed Blade Damper - Steel
			4W - 4-way	01 - White	OBDA	Opposed Blade Damper - Aluminum
			Optional	Optional	L9	Equalizing Grid
			1W - 1 Way	03 - Black		
			2W - 2-Way Opposite	22 - Black Back Pan White Face		
			2C - 2 Way Corner	28 - Custom Color		
			3W - 3-Way			
			ST - Star Corner Blow			

PCD - Perforated Ceiling Diffusers

Series 7650 - Model Specification Guide

Return and Exhaust - Perforated Supply diffuser - Square Necks
Series 7650R

Model	Available Neck	Module	Available Finishes		Available Options	
			Standard	OBD	OBDA	Opposed Blade Damper - Steel
7650R-1 - Flush Ceiling Mount 7650R-1 DF - Flush Ceiling Mount - Drop Face 7650R-1 AF - Flush Ceiling Mount - Aluminum Face	6" x 6" 8" x 8" 10" x 10" 12" x 12" 14" x 14" 15" x 15" 16" x 16" 18" x 18"	12" x 12" 24" x 24"	01 - White	OBDA	Opposed Blade Damper - Aluminum	
			Optional		L9	Equalizing Grid
			03 - Black			
			22 - Black Back Pan White Face			
			28 - Custom Color			

Model	Available Neck	Module	Available Finishes		Available Options	
			Standard	OBD	OBDA	Opposed Blade Damper - Steel
7650R-6 - T-bar Lay-in 7650R-6 AF - T-bar Lay-in - Aluminum Face 7650R-6 AL - T-bar Lay-in - All Aluminum 7650R-8 - Tegular T-bar 7650R-8 AF - Tegular T-bar - Aluminum Face 7650R-8 AL - Tegular T-bar - All Aluminum 7650R-9 - Donn Finline	6" x 6" 8" x 8" 10" x 10" 12" x 12" 14" x 14" 15" x 15" 16" x 16"	12" x 12" 24" x 24"	01 - White	OBDA	Opposed Blade Damper - Aluminum	
			Optional		L9	Equalizing Grid
			03 - Black			
			22 - Black Back Pan White Face			
			28 - Custom Color			

Perforated Ceiling Diffuser - Metric - Round Necks
Series 7600 - T-bar Lay-in

Model	Available Neck	Module	Available Finishes		Available Options	
			Standard	G3	RSD	Equalizing Grid
M7650-6 - Supply M7650R-6 - Return	6" x 6" 8" x 8" 10" x 10" 12" x 12" 14" x 14" 15" x 15" 16" x 16"	600mm x 600mm	01 -White	BDS	Butterfly Damper	
			Optional		RSD	Radial Shutter Damper
			03 - Black			
			22 - Black Back pan White Face			
			28 - Custom Color			



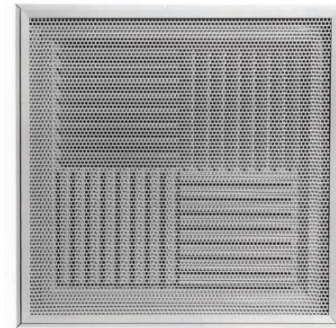
PCD - Perforated Ceiling Diffusers

3/2006

➔ Supply Diffuser ➔ Perforated Face ➔ Modular Core ➔ Series 7900

Product Details

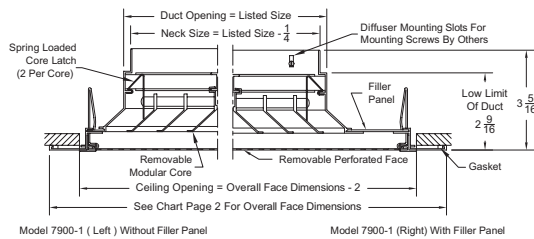
- ★ The series 7900 is an aluminum, perforated modular core supply diffuser. Modular cores can be field adjusted for 1-way, 2-way opposite, 2-way corner, 3-way, and 4-way discharge air patterns
- ★ The perforated face is secured with spring clips making removal and access to the modular core pattern controllers easy
- ★ Border type 6 can be used in surface mounting applications by adding optional T-bar plaster frame (TBPF)
- ★ Matching returns available: 7900R
- ★ The series 7900 is an excellent choice for VAV applications



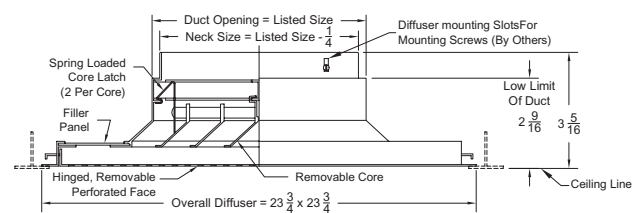
Model 7900-6 Shown
Standard Finish: 01 White

Dimensions are in inches

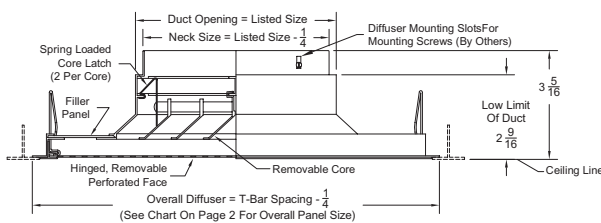
Perforated Modular Core Supply Diffusers - Square Neck 1 or 4 Core - Surface Mount Model 7900-1



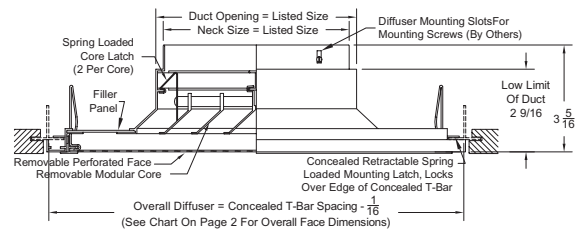
Perforated Modular Core Supply Diffusers - Square Neck 1 or 4 Core - T-bar Lay-in - 24" x 24" Grid Size Only Model 7900-6



Perforated Modular Core Supply Diffusers - Square Neck 1 or 4 Core - T-bar Lay-in - All Grid Sizes Except 24" x 24" Model 7900-6



Perforated Modular Core Supply Diffusers - Square Neck 1 or 4 Core - Concealed Spline Model 7900-7



Perforated Ceiling Diffusers



PCD

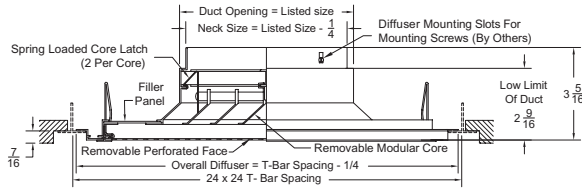
PCD - Perforated Ceiling Diffusers

Perforated Ceiling Diffusers

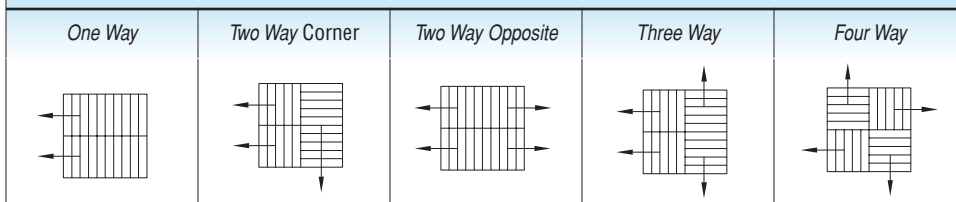


PCD

Perforated Modular Core Supply Diffusers - Square Neck 1 or 4 Core - Tegular T-bar Model 7900-8



Air Patterns - Perforated Modular Core Ceiling Diffusers



1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish 03 Black 22 (BBP) Black back pan/white face and frame 28 Custom color</p>	<p>Square Neck: OBD - Opposed blade damper - Steel334 OBDA - Opposed blade damper - Aluminum334 L9 - Equalizing grid334 TR DEEP - Square to round transition - deep338</p> <p>Round Neck: G3 - Equalizing grid337 BDS - Butterfly damper335 RSD - Radial Shutter damper336</p>	<ul style="list-style-type: none"> Series 7900 have 3/16" diameter holes on 1/4" staggered centers

PCD - Perforated Ceiling Diffusers

3/2006

Series 7900 - Performance (4 Core Supply)

All models for Series 7900 (-1, -6, -7)

Single Core Size (Inches)	Single Core Area (Sq. Ft)	Ak Effective Area (Sq. Ft.)	Neck Outlet Vel Pt	200 310 0.020	300 460 0.045	400 615 0.080	500 770 0.125	600 925 0.180	700 1080 0.245
3" X 3"	0.063	0.028	CFM THROW NC	13 1-3 <20	19 1-4 <20	25 2-6 <20	32 3-9 21	38 4-12 27	44 5-14 31
4" X 4"	0.111	0.049	CFM THROW NC	22 1-3 <20	33 2-6 <20	44 3-9 <20	56 4-12 24	67 5-15 29	78 6-18 34
5" X 5"	0.174	0.078	CFM THROW NC	35 1-3 <20	52 2-7 <20	70 3-9 20	87 5-15 26	104 7-20 31	122 8-23 36
6" X 6"	0.250	0.111	CFM THROW NC	50 2-6 <20	75 2-8 <20	100 4-12 21	125 6-18 27	150 12-24 33	175 10-28 37
7" X 7"	0.340	0.151	CFM THROW NC	68 2-6 <20	102 3-9 <20	136 5-15 23	170 7-21 28	204 10-27 34	238 11-33 38
8" X 8"	0.445	0.198	CFM THROW NC	89 2-6 <20	133 4-12 <20	178 6-18 25	222 8-24 30	267 10-30 35	311 12-36 40
9" X 9"	0.562	0.249	CFM THROW NC	112 2-6 <20	169 4-13 <20	225 6-18 25	281 9-27 31	337 12-35 36	393 14-42 41
10" X 10"	0.695	0.309	CFM THROW NC	139 2-6 <20	208 4-14 <20	278 6-18 26	347 10-30 32	416 14-40 37	486 16-46 42
11" X 11"	0.840	0.373	CFM THROW NC	168 2-7 <20	252 4-14 <20	336 7-20 27	420 11-27 33	504 15-43 38	588 17-49 43
12" X 12"	1.000	0.444	CFM THROW NC	200 2-8 <20	300 4-14 20	400 8-22 28	500 12-24 35	600 16-46 40	700 18-52 45

See Page PCD-153 for Series 7900 Performance Notes

Perforated Ceiling Diffusers



PCD

PCD - Perforated Ceiling Diffusers

Series 7900 - Performance (Single Core Supply)

All models for Series 7900 (-1, -6, -7)

Listed Size & Neck Area Sq. Ft.	Effective Sq. Ft.	Vn Neck Velocity fpm Vk Outlet Velocity fpm Pt Total Pressure Side Designation	300 460 0.045		400 615 0.080		500 770 0.125		600 925 0.180		700 1080 0.245	
			A	B	A	B	A	B	A	B	A	B
6" X 6" 0.25	0.162	CFM NC	50 <20		75 <20		100 21		125 27		150 33	
		Throw	4-Way 3-Way 2-Way 1-Way	1-3 1-3 2-4 2-4 2-6		1-4 1-4 2-6 2-6 2-8		2-6 2-6 3-8 3-8 4-12		3-9 3-9 4-13 4-13 6-18		4-12 4-12 6-17 6-17 12-24
8" x 8" 0.44	0.288	CFM NC	90 <20		130 <20		175 25		220 30		265 35	
		Throw	4-Way 3-Way 2-Way 1-Way	1-3 1-3 2-4 2-4 2-6		2-6 2-6 3-8 3-8 4-12		3-9 3-9 4-13 4-13 6-18		4-12 4-12 6-17 6-17 8-24		5-15 5-15 7-21 7-21 10-30
10" x 10" 0.69	.0450	CFM NC	140 <20		205 <20		275 26		345 32		415 37	
		Throw	4-Way 3-Way 2-Way 1-Way	1-3 1-3 2-4 2-4 2-6		2-7 2-7 3-10 3-10 4-14		3-9 3-9 4-13 4-13 6-18		5-15 5-15 7-21 7-21 10-30		7-20 7-20 10-28 10-28 14-40
12" x 12" 1.00	0.648	CFM NC	200 <20		300 20		400 28		500 35		600 40	
		Throw	4-Way 3-Way 2-Way 1-Way	1-4 1-4 2-6 2-6 2-8		2-7 2-7 3-10 3-10 4-14		4-11 4-11 6-16 6-16 8-22		6-17 6-17 8-24 8-24 12-34		8-23 8-23 11-32 11-32 16-46
14" x 14" 1.36	0.880	CFM NC	270 <20		405 21		545 29		680 36		815 41	
		Throw	4-Way 3-Way 2-Way 1-Way	1-4 1-4 2-6 2-6 2-8		3-9 3-9 4-13 4-13 6-18		5-15 5-15 7-21 7-21 10-30		8-23 8-23 11-32 11-32 16-46		10-29 10-29 14-41 14-41 20-58
16" x 16" 1.78	1.152	CFM NC	355 <20		530 22		710 30		885 37		1070 42	
		Throw	4-Way 3-Way 2-Way 1-Way	1-5 1-5 2-7 2-7 2-10		3-9 3-9 4-13 4-13 6-18		5-15 5-15 7-21 7-21 10-30		8-24 8-24 11-34 11-34 16-48		11-32 11-32 16-45 16-45 22-64
18" x 18" 2.25	1.456	CFM NC	450 <20		670 23		900 31		1120 37		1345 43	
		Throw	4-Way 3-Way 2-Way 1-Way	1-6 1-6 2-8 2-8 2-11		3-10 3-10 4-14 4-14 6-20		5-16 5-16 7-23 7-23 10-32		9-27 9-27 13-38 13-38 18-54		12-35 12-35 17-49 17-49 24-70
20" x 20" 2.78	1.800	CFM NC	560 <20		830 24		1110 32		1385 38		1665 44	
		Throw	4-Way 3-Way 2-Way 1-Way	2-6 2-6 3-8 3-8 4-12		3-11 3-11 4-16 4-16 6-22		6-18 6-18 8-25 8-25 12-36		9-27 9-27 13-38 13-38 18-54		12-36 12-36 17-51 17-51 24-72

Series 7900 Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

CFM - Cubic Feet per Minute (air)

fpm - Velocity of air stream in Feet Per Minute

Pt - Total pressure (inches of water column)

Throw - Non-isothermal horizontal throw (supply air temperature 20°F colder than average room air temperature) values are for 150 fpm - 50 fpm velocities

NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands



Series 7900 - Specification

Supply - Perforated Modular Core - Extruded Aluminum - Square Neck - 1 to 4 Core/Series 7900

Steel

- 7900-1 - Surface Mounted
- 7900-6 - T-bar Lay-in
- 7900-8 - Tegular T-bar
- 7900-9 - Donn Fineline

Air Outlets shall be aluminum model 7900 manufactured by METALAIRE. Units shall consist of an aluminum 51% free area perforated face with 3/16" diameter perforated holes on 1/4" staggered centers. Border of outlet shall be constructed from an aluminum extrusion.

The perforated face shall be removable allowing access to adjustable modular core pattern controllers mounted onto the inside neck of the outlet. Steel modular cores deflectors are not acceptable. Face shall be secured in place with tension spring clips. Outlets shall be field adjustable allowing 1, 2 way opposite, 2 way corner, 3, and 4 way directional air patterns.

The units shall be the size and quantity as outline in the plans and specifications.

Units shall be designed to integrate into the specified ceiling system.

Square Neck Options and Accessories

Opposed Blade Damper

METALAIRE model OBDA aluminum and OBD steel opposed blade type dampers shall be provided. Damper shall consist of gang operated blades that can be adjusted from full open to full closed. Damper shall be screw slot operated that can be accessed through the damper of the diffuser.

Equalizing Grid

METALAIRE model L9 aluminum square equalizing grid shall be provided. Equalizing grid shall consist aluminum blades mounting in an aluminum frame.

Round Neck Optional Dampers and Accessories

Square to Round Transitions

Units to have square to round transitions allowing installation with round ductwork.

Butterfly Damper

METALAIRE model BDS aluminum round butterfly type dampers shall be provided. Damper shall consist of two butterfly style blades that can be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot that can be assessed through the face of the diffuser.

Radial Shutter Damper

METALAIRE model RSD steel round radial shutter damper shall be provided. Damper shall consist of gang operated radial blades that slide perpendicular to air flow direction. The damper shall be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot that can be assessed through the face of the diffuser.

Opposed Blade Damper

METALAIRE model D3 aluminum or SD3 steel round opposed blade type dampers shall be provided. Damper shall consist of gang operated blades that can be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot that can be assessed through the face of the diffuser.

Equalizing Grid

METALAIRE model G3 aluminum round equalizing grid shall be provided. Equalizing grid shall consist of 1/2" x 1/2" x 1/2" aluminum cubed core mounting in an aluminum frame.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

Perforated Ceiling Diffusers



PCD

PCD - Perforated Ceiling Diffusers

Series 7900 - Model Specification Guide

Supply - Perforated Face Modular Core Diffuser Steel Back Pan/Steel Face - Series 7900

Model	Available Neck	Module	Air Pattern	Available Finishes	Available Options	
7900-1 - Surface Mount	6" x 6" 8" x 8" 10" x 10" 12" x 12" 14" x 14" 16" x 16" 18" x 18" 20" x 20"	12" x 12" 24" x 12" 20" x 20" 24" x 24" 48" x 24"	S1-1- 1 Core S4-4- 4-Cores	Standard	Square Neck Accessories	
				01 - White	OBD	Opposed Blade Damper - Steel
				Optional	OBDA	Opposed Blade Damper - Aluminum
				03 - Black	L9	Equalizing Grid
				22 - Black Back Pan White Face	TR	Square to Round Transitions
				28 - Custom Color	TR-Deep	Square to Round Transitions - Deep
					Round Neck Accessories	
					G3	Equalizing Grid
					BDS	Butterfly Damper
					RSD	Radial Shutter Damper
					D3	Round Opposed Blade Damper - Aluminum
					SD3	Round Opposed Blade Damper - Steel

Model	Available Neck	Module	Air Pattern	Available Finishes	Available Options	
7900-6 - T-bar Lay-in 7900-7 - Concealed Spine 7900-8 - T-bar	6" x 6" 8" x 8" 10" x 10" 12" x 12" 14" x 14" 16" x 16" 18" x 18" 20" x 20"	12" x 12" 24" x 12" 20" x 20" 24" x 24" 48" x 24"	S1-1- 1 Core S4-4- 4-Cores	Standard	Square Neck Accessories	
				01 - White	OBD	Opposed Blade Damper - Steel
				Optional	OBDA	Opposed Blade Damper - Aluminum
				03 - Black	L9	Equalizing Grid
				22 - Black Back Pan White Face	TR	Square to Round Transitions
				28 - Custom Color	TR-Deep	Square to Round Transitions - Deep
					Round Neck Accessories	
					G3	Equalizing Grid
					BDS	Butterfly Damper
					RSD	Radial Shutter Damper
					D3	Round Opposed Blade Damper - Aluminum
					SD3	Round Opposed Blade Damper - Steel



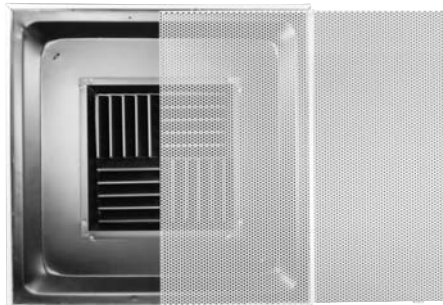
PCD - Perforated Ceiling Diffusers

3/2006

➔ Supply Diffusers ➔ Perforated Face Modular Core ➔ Square Neck ➔ Series 7950

Product Details

- ✦ The 7950 is a perforated modular core supply diffuser with a steel backpan. Modular cores can be field adjusted for 1, 2-way opposite, 2-way corner, 3, or 4 way air discharge patterns
- ✦ The perforated face is secured with spring clips making removal and access to the modular core pattern controllers easy
- ✦ Border 6, T-bar Lay-in can be used in surface mounting applications by adding optional T-bar Plaster Frame (TBPF)
- ✦ Matching returns available: 7950R
- ✦ The 7950 is an excellent choice for VAV applications



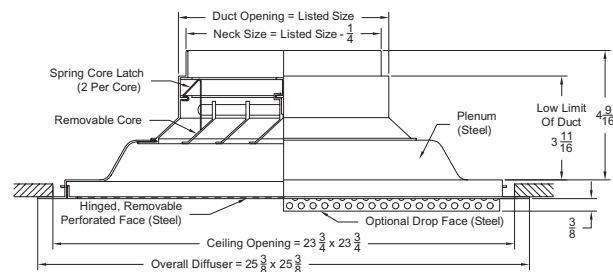
Model 7950-6 Shown

Standard Finish: 22 BBP White Perforated Face - Black Backpan and Core

Dimensions are in inches

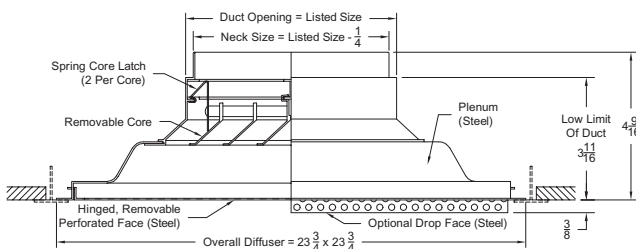
Supply - Square Neck - Neck Mounted - Adjustable - Surface Mount

Model 7950-1 - Steel backpan & face
 Model 7950-1 DF - Steel backpan & face - drop face
 Model 7950-1 AF - Steel backpan & aluminum face



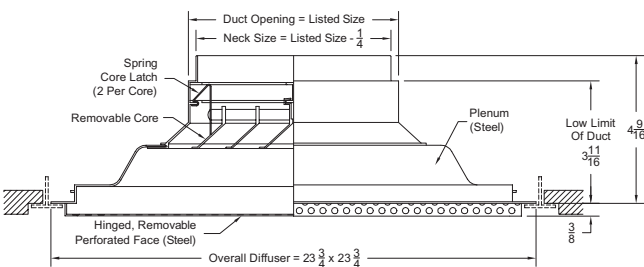
Supply - Square Neck - Neck Mounted - Adjustable - T-bar Lay-in

Model 7950-6 - Steel backpan & face
 Model 7950-6 AF - Steel backpan & aluminum face - drop face



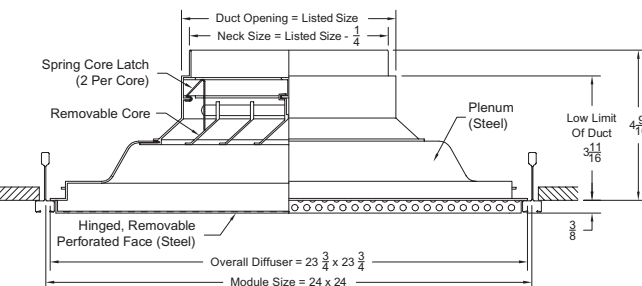
Supply - Square Neck - Neck Mounted - Adjustable - Tegular T-bar

Model 7950-8 - Steel backpan & face
 Model 7950-8 AF - Steel backpan & aluminum face



Supply - Square Neck - Neck Mounted - Adjustable - Donn Finline

Model 7950-9 - Steel backpan & face
 Model 7950-9 AF - Steel backpan & aluminum face



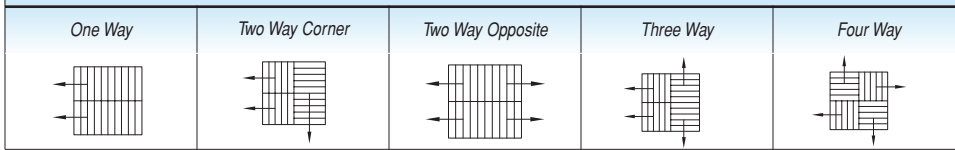
Perforated Ceiling Diffusers



PCD

PCD - Perforated Ceiling Diffusers

Air Patterns - Square Louver Face Ceiling Diffusers



1. Available Finishes	2. Available Accessories	3. Construction Details
Standard Finish: 01 White (for 7950-1) 22 (BBP) White perforated face with black backpan and cores Optional Finish 03 Black 28 Custom color	OBD - Opposed blade damper - Steel334 OBDA - Opposed blade damper - Aluminum334 L9 - Equalizing grid334 TR DEEP - Square to round transition - deep338	<ul style="list-style-type: none"> All modules have 4 cores for possible 1, 2, 3 or 4 way air patterns Series 7950 have 3/16" diameter holes on 1/4" staggered centers

Series 7950 - Performance

All models for Series 7950 (-1, -6, -8), 7950-1 DF, 7950 AF (-1, -6, -8)

Listed Size (ft.) & Neck Area Sq. Ft.	Neck Velocity fpm Outlet Velocity fpm Side Designation	200 305		300 460		400 615		500 770		600 925	
		A	B	A	B	A	B	A	B	A	B
6" x 6"	CFM	50		75		100		125		150	
	NC	-		-		-		20		24	
	Pt. Total Pressure (in. w.c)	0.006		0.016		0.032		0.049		0.065	
Throw	4-Way	1-3		1-4		2-6		3-9		4-12	
	3-Way	1-3 2-4		1-4 2-6		2-6 3-8		3-9 4-13		4-12 6-17	
	2-Way	2-4		2-6		3-8		4-13		6-17	
	1-Way	2-6		2-8		4-12		6-18		12-24	
8" x 8"	CFM	90		135		175		225		265	
	NC	-		-		18		24		30	
	Pt. Total Pressure (in. w.c)	0.012		0.025		0.042		0.069		0.080	
Throw	4-Way	1-3		2-6		3-9		4-12		5-15	
	3-Way	1-3 2-4		2-6 3-8		3-9 4-13		4-12 6-17		5-15 7-21	
	2-Way	2-4		3-8		4-13		6-17		7-21	
	1-Way	2-6		4-12		6-18		8-24		10-30	
10" x 10"	CFM	140		205		275		345		415	
	NC	-		-		22		25		31	
	Pt. Total Pressure (in. w.c)	0.012		0.027		0.019		0.076		0.110	
Throw	4-Way	1-3		2-7		3-9		5-15		7-20	
	3-Way	1-3 2-4		2-7 3-10		3-9 4-13		5-15 7-21		7-20 10-28	
	2-Way	2-4		3-10		4-13		7-21		10-28	
	1-Way	2-6		4-14		6-18		10-30		14-40	
12" x 12"	CFM	200		300		400		500		600	
	NC	-		-		23		26		32	
	Pt. Total Pressure (in. w.c)	0.014		0.030		0.054		0.085		0.122	
Throw	4-Way	1-4		2-7		4-11		6-17		8-23	
	3-Way	1-4 2-6		2-7 3-10		4-11 6-16		6-17 8-24		8-23 11-32	
	2-Way	2-6		3-10		6-16		8-24		11-32	
	1-Way	2-8		4-14		8-22		12-34		16-46	
14" x 14"	CFM	275		410		545		680		815	
	NC	-		-		-		-		33	
	Pt. Total Pressure (in. w.c)	0.014		0.032		0.057		0.009		0.129	
Throw	4-Way	1-4		3-9		5-15		8-24		11-32	
	3-Way	1-4 2-6		3-9 4-13		5-15 7-21		8-23 11-32		10-29 14-41	
	2-Way	2-6		4-13		7-21		11-32		14-41	
	1-Way	2-8		6-18		10-30		16-46		20-58	
16" x 16"	CFM	355		530		710		890		1065	
	NC	-		-		25		33		38	
	Pt. Total Pressure (in. w.c)	0.016		0.034		0.061		0.095		0.137	
Throw	4-Way	1-5		3-9		5-15		8-21		11-32	
	3-Way	1-5 2-7		3-9 4-13		5-15 7-21		8-24 11-34		11-32 16-45	
	2-Way	2-7		4-13		7-21		11-34		16-45	
	1-Way	2-10		6-18		10-30		16-48		22-64	
18" x 18"	CFM	450		675		900		1125		1350	
	NC	-		-		26		35		39	
	Pt. Total Pressure (in. w.c)	0.016		0.036		0.065		0.102		0.149	
Throw	4-Way	1-6		3-10		5-16		9-27		12-35	
	3-Way	1-6 2-8		3-10 4-14		5-16 7-23		9-27 13-38		12-35 17-49	
	2-Way	2-8		1-14		7-23		13-38		17-49	
	1-Way	2-11		6-20		10-32		18-54		24-70	
20" x 20"	CFM	555		835		1110		1385		1665	
	NC	-		-		27		37		40	
	Pt. Total Pressure (in. w.c)	0.016		0.038		0.068		0.106		0.158	
Throw	4-Way	1-5		3-9		5-15		8-24		11-32	
	3-Way	1-5 2-7		3-9 4-13		5-15 7-21		8-24 11-34		11-32 16-45	
	2-Way	2-7		4-13		7-21		11-34		16-45	
	1-Way	2-10		6-18		10-30		16-48		22-64	

Series 7950 Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM** - Cubic feet per minute (air)
- fpm** - Velocity of air stream in feet per minute
- Pt** - Total pressure (inches of water column)
- Throw** - Non-isothermal horizontal throw (supply air temperature 20°F colder than average room air temperature) values are for 150 fpm - 50 fpm velocities
- NC** - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands



Series 7950 - Specification

Supply Diffusers - Perforated Modular Core - Square Neck - 4 Core/Series 7950

Steel	Aluminum Face - Steel Backpan
7950-1 - Surface Mounted	7950-1 AF - Surface Mounted
7950-1 DF - Surface Mounted-Dropped Face	7950-6 AF - T-bar Lay-in
7950-6 - T-bar Lay-in	7950-8 AF - Tegular T-bar
7950-8 - Tegular T-bar	7950-9 AF - Donn Finline
7950-9 - Donn Finline	

Air Outlets shall be steel model 7950 or aluminum face, steel backpan model 7950-AF manufactured by METALAIRE.

Units shall consist of aluminum 51% free area perforated face with 3/16" diameter perforated holes on 1/4" staggered centers. The perforated face shall be hinged allowing access to four adjustable aluminum modular core pattern controllers mounted into the neck of the outlet. Steel modular cores deflectors are not acceptable. Face shall be secured in place with tension spring clips. Outlets shall be field adjustable allowing 1, 2-way opposite, 2-way corner, 3, and 4-way directional air patterns.

The units shall be the size and quantity as outline in the plans and specifications.

Units shall be designed to integrate into the specified ceiling system.

Square Neck Options and Accessories

Opposed Blade Damper

METALAIRE model OBDA aluminum or OBD steel round opposed blade type dampers shall be provided. Damper shall consist of gang operated blades that can be adjusted from full open to full closed. Damper shall be adjusted with a handle accessible by opening the face of the diffuser.

Equalizing Grid

METALAIRE model L9 aluminum square equalizing grid shall be provided. Equalizing grid shall consist aluminum blades mounting in an aluminum frame.

Round Neck Optional Dampers and Accessories:

Square to Round Transitions

Units to have square to round transitions allowing installation with round ductwork.

Butterfly Damper

METALAIRE model BDS aluminum round butterfly type dampers shall be provided. Damper shall consist of two butterfly style blades that can be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot that can be assessed through the face of the diffuser.

Radial Shutter Damper

METALAIRE model RSD steel round radial shutter damper shall be provided. Damper shall consist of gang operated radial blades that slide perpendicular to air flow direction. The damper shall be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot that can be assessed through the face of the diffuser.

Opposed Blade Damper

METALAIRE model D3 aluminum or SD3 steel round opposed blade type dampers shall be provided. Damper shall consist of gang operated blades that can be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot that can be assessed through the face of the diffuser.

Equalizing Grid

METALAIRE model G3 aluminum round equalizing grid shall be provided. Equalizing grid shall consist of 1/2" x 1/2" x 1/2" aluminum cubed core mounting in an aluminum frame.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours



PCD - Perforated Ceiling Diffusers

Series 7950 - Model Specification Guide

Supply - Perforated Face Modular Core Diffuser - 4 Cores Steel Back Pan/Steel Face - Series 7950

Model	Available Neck	Module	Available Finishes	Available Options	
7950-1 - Surface Mount 7950-1 DF - Surface Mount with Drop Face 7950-1 AF - Surface Mount with Aluminum Face	6" x 6" 8" x 8" 10" x 10" 12" x 12" 14" x 14" 16" x 16" 18" x 18" 20" x 20"	24" x 24"	Standard	Square Neck Accessories	
			01 -White	OBD	Opposed Blade Damper - Steel
			Optional	OBDA	Opposed Blade Damper - Aluminum
			03 - Black	L9	Equalizing Grid
			22 - Black Back Pan White Face	TR	Square to Round Transitions
			28 - Custom Color	TR-Deep	Square to Round Transitions - Deep
				Round Neck Accessories	
				G3	Equalizing Grid
				BDS	Butterfly Damper
				RSD	Radial Shutter Damper
				D3	Round Opposed Blade Damper - Aluminum
	SD3	Round Opposed Blade Damper - Steel			

Model	Available Neck	Module	Available Finishes	Available Options	
7950-6 - T-bar Lay-in 7950-6 AF - T-bar Lay-in - Aluminum Face 7950-8 - Tegular T-bar 7950-8 AF - Tegular T-bar - Aluminum Face 7950-9 - Donn Finline	6" x 6" 8" x 8" 10" x 10" 12" x 12" 14" x 14" 16" x 16"	24" x 24"	Standard	Square Neck Accessories	
			01 -White	OBD	Opposed Blade Damper - Steel
			Optional	OBDA	Opposed Blade Damper - Aluminum
			03 - Black	L9	Equalizing Grid
			22 - Black Back Pan White Face	TR	Square to Round Transitions
			28 - Custom Color	TR-Deep	Square to Round Transitions - Deep
				Round Neck Accessories	
				G3	Equalizing Grid
				BDS	Butterfly Damper
				RSD	Radial Shutter Damper
				D3	Round Opposed Blade Damper - Aluminum
	SD3	Round Opposed Blade Damper - Steel			



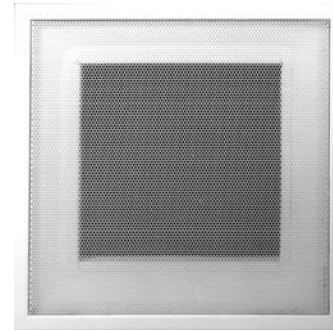
PCD - Perforated Ceiling Diffusers

3/2006

- ➔ Perforated Filter Back ➔ Square Neck ➔ Series 7550R F ➔ Steel
- ➔ Series 7650R F ➔ Steel

Product Details

- ★ Unit can be used in surface mounting applications by adding optional T-bar plaster frame (TBPF)
- ★ T-bar Lay-in border type 6 is designed to be installed in standard 15/16" tee
- ★ The hinged, perforated face, allows access to the filter (by others)
- ★ 7550R-F matches series 7500 perforated diffuser. 7650R-F matches series 7600 supply diffusers



Model 7550R F Shown
Standard Finish: 01 White

Perforated Ceiling Diffusers

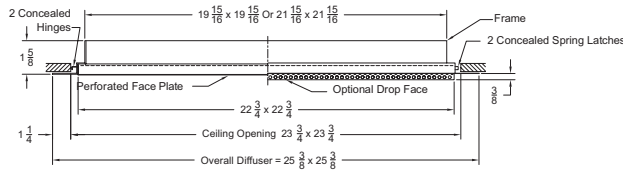


PCD

Dimensions are in inches

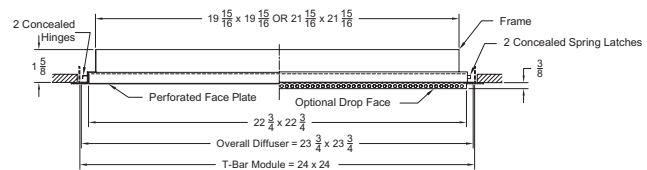
Return - Perforated Filter Diffuser

Surface Mount
Model 7550R-1 F
Model 7650R-1 F



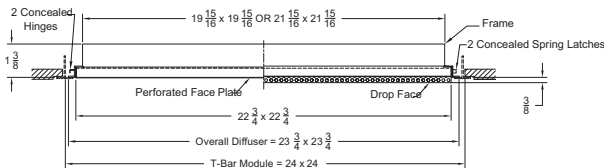
Return - Perforated Filter Diffuser

T-bar Lay-in
Model 7550R-6 F
Model 7650R-6 F



Return - Perforated Filter Diffuser

Tegular T-bar
Model 7550R-8 F
Model 7650R-8 F



1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White</p> <p>Optional Finish 02 Aluminum 03 Black 28 Custom color</p>	<p>Shipped Unattached</p> <p>OBD - Opposed Blade Damper (square neck) - Steel334</p> <p>OBDA - Opposed Blade Damper (square neck) - Aluminum . .334</p>	<ul style="list-style-type: none"> • Seismic tabs standard on all units • Series 7550R-F and 7650R-F have 3/16" diameter holes on 1/4" center

PCD - Perforated Ceiling Diffusers

Series 7550R F/7650 F - Performance

Models 7550R F (-1, -6, -8), 7650R F (-1, -6, -8)

Nominal Neck Size	fpm Inlet Velocity	300	400	500	600	700	800	900	1000
	Ps (in. w.c.)	-.008	-.015	-.02	-.03	-.05	-.06	-.08	-.09
6" x 6"	CFM	75	100	120	150	175	200	225	250
8" x 8"	CFM	130	175	220	265	310	350	400	445
10" x 10"	CFM	210	275	345	415	485	555	625	695
12" x 12"	CFM	300	400	500	600	700	800	900	1000
14" x 14"	CFM	410	545	680	815	950	1090	1225	1360
16" x 16"	CFM	530	710	885	1060	1240	1415	1600	1770
22" x 22"	CFM	1010	1345	1680	2015	2350	2690	3025	3360

Series 7550R F/7650R F - Specification

Exhaust/Return - Filter Grilles - Perforated Face - Series 7500/7600

Series 7550

7550-1 F - Surface Mounted

7550-6 F - T-bar Lay-in

7550-8 F - Tegular T-bar

Series 7650

7650-1 F - Surface Mounted

7650-6 F - T-bar Lay-in

7650-8 F - Tegular T-bar

Air Inlets shall be steel model 7550 F or 7650 F perforated face filter return diffusers manufactured by METALAIRES. Units shall consist of aluminum 51% free area perforated face with 3/16" diameter perforated holes on 1/4" staggered centers. Units shall include a hinged face and integral frame designed to accept a 1" thick filter. Face shall be secured in place with tension spring clips.

The units shall be the size and quantity as outline in the plans and specifications.

Units shall be designed to integrate into the specified ceiling system.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaline cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours



PCD - Perforated Ceiling Diffusers

3/2006

Series 7550R F/7650R F - Model Specification Guide

Supply - Perforated Face Modular Core Diffuser - 4 Cores
Steel Back Pan/Steel Face - Series 7550RF, 7650RF

Perforated Ceiling Diffusers



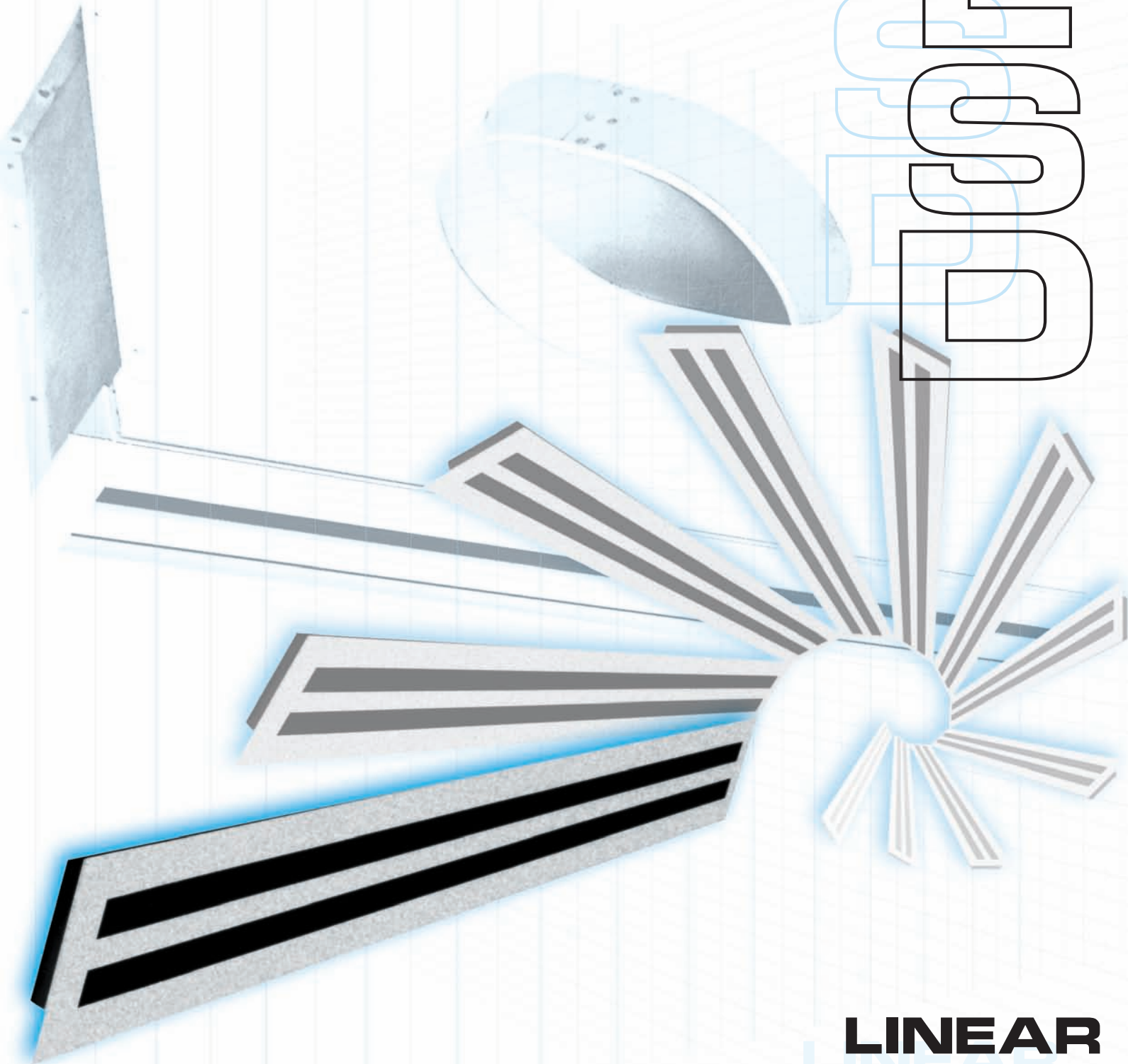
PCD

Model	Available Neck	Module	Available Finishes	Available Options
7550R-1 F - Surface Mount 7650R-1F - Surface Mount	20" x 20" 22" x 22"	24" x 24"	Standard	Square Neck Accessories
			01 - White	OBD Opposed Blade Damper - Steel
			Optional	OBDA Opposed Blade Damper - Aluminum
			03 - Black 28 - Custom Color	

Model	Available Neck	Module	Available Finishes	Available Options
7550R-6 F - T-bar Lay-in 7650R-6 F - T-bar Lay-in 7550R-8 F - Tegular T-bar 7650R-8 F - Tegular T-bar	20" x 20" 22" x 22"	24" x 24"	Standard	Square Neck Accessories
			01 - White	OBD Opposed Blade Damper - Steel
			Optional	OBDA Opposed Blade Damper - Aluminum
			03 - Black 28 - Custom Color	

For more product information visit us at www.metalair.com

LINEAR
SLOT
DIFFUSERS



**LINEAR
SLOT DIFFUSERS**



Model 6600

Pg. 166

Supply/Return Linear Slot Diffuser w/ Integral Volume/Directional Pattern Controllers - Aluminum Series 6600/6600R

- ★ Available in 1 to 8 slots with 1/2", 3/4", or 1" slot width
- ★ Excellent choice for continuous linear slot applications. Units are available in a single section up to 8'. This feature gives a clean appearance and makes installation easier with fewer joints to line up
- ★ Pattern controllers on supply units are aluminum and are adjustable from the face of the diffuser and can be set to adjust volume or throw direction from vertical to horizontal
- ★ Available for T-bar Lay-in, Surface mount, Narrow Tee, Dropped Face, Concealed Spline, or Concealed Spline/Plaster Frame
- ★ Optional BP factory supplied boot plenums are available
- ★ The series 6600 is an excellent selection for variable volume systems supplying a tight horizontal pattern from maximum to minimum throws
- ★ The series 6600R is designed for return applications. The unit is supplied without pattern controllers to reduce pressure and noise
- ★ Series 6600 is Patent Pending

	Supply				
	T-bar Lay-in	Surface Mount	Concealed Spline	Drop Face	Narrow Tee
Screw Mounted		6600-11-1 1 1/8" Border			
Concealed Mounting Hardware	6600-12-6 1 1/8" Border	6600-12-1 1 1/8" Border	6600-42-7 25/32" Border		
No Mounting Hardware	6600-10-6 1 1/8" Border		6600-40-7 25/32" Border	6600-40-8 25/32" Border	6600-40-9 25/32" Border
	6600-20-6 3/4" Border				
	6600-30-6 1/2" Border				

Concealed Spline/Plaster Mounting Frame	Concealed Wall Mounted Spline/Plaster Mounting Frame
6600-22-73 3/4" Border	6600-22-74 3/4" Border

	Return				
	T-bar Lay-in	Surface Mount	Concealed Spline	Drop Face	Narrow Tee
Screw Mounted		6600R-11-1 1 1/8" Border			
Concealed Mounting Hardware	6600R-12-6 1 1/8" Border	6600R-12-1 1 1/8" Border	6600R-42-7 25/32" Border		
No Mounting Hardware	6600R-10-6 1 1/8" Border		6600R-40-7 25/32" Border	6600R-40-8 25/32" Border	6600R-40-9 25/32" Border
	6600R-20-6 3/4" Border				
	6600R-30-6 1/2" Border				

Concealed Spline/Plaster Mounting Frame	Concealed Wall Mounted Spline/Plaster Mounting Frame
6600R-22-73 3/4" Border	6600R-22-74 3/4" Border

Supply/Return Linear Slot Diffuser for Spiral Pipe - Aluminum - Series 6600SP/6600SPR



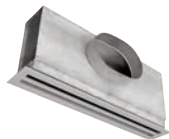
Model 6610SP

Pg. 184

- ★ The series 6600SP is designed to integrate into exposed spiral duct systems
- ★ Series 6600SP pattern controllers are fully adjustable and can be set from horizontal to vertical discharge
- ★ The series 6600SP operates effectively from minimum to maximum flow making this diffuser an excellent selection for variable volume systems
- ★ Series 6600SPR is designed for return applications. The unit is supplied without pattern controllers to reduce pressure and noise

Supply	Return
6610SP-11-1 Screw Mounted - 1 1/8" Border	6610SPR-11-1 Screw Mounted - 1 1/8" Border
6610SP-12-1 Concealed Mounting Hardware - 1 1/8" Border	6610SPR-12-1 Concealed Mounting Hardware - 1 1/8" Border

LSD - Linear Slot Diffusers



Model BP
Pg. 190

Boot Plenums - Insulated/Non-Insulated for 6600 - Series BP

- ★ The series BP (non-insulated) and BPI (insulated) boot plenums are designed to connect the Series 6600 linear slot diffusers to the ducted supply or return system
- ★ Units provide an even distribution of air into the series 6600 diffuser to maximize induction and occupant comfort
- ★ The series BPI boot plenum is fully insulated — including the end caps
- ★ Units can be used for both ducted and plenum returns
- ★ Factory tested and manufactured BP/BPI plenums are built to fit securely into the series 6600 of diffusers reducing installation cost and minimizing leakage
- ★ Available with an optional quadrant locking damper
- ★ Series BP & BPI are shipped separate from series 6600 linear slot diffusers and require field attachment

	Non Insulated				
	T-bar Lay-in	Surface Mount	Concealed Spline	Drop Face	Narrow Tee
Screw Mounted		BP-11-1 1 1/8" Border			
Concealed Mounting Hardware	BP-12-6 1 1/8" Border	BP-12-1 1 1/8" Border	BP-42-7 25/32" Border		
No Mounting Hardware	BP-10-6 1 1/8" Border		BP-40-7 25/32" Border	BP-40-8 25/32" Border	BP-40-9 25/32" Border
	BP-20-6 3/4" Border				
	BP-30-6 1/2" Border				

Concealed Spline/Plaster Mounting Frame	Concealed Wall Mounted Spline/Plaster Mounting Frame
BP-22-73 3/4" Border	BP-22-74 3/4" Border

	Insulated				
	T-bar Lay-in	Surface Mount	Concealed Spline	Drop Face	Narrow Tee
Screw Mounted		BPI-11-1 1 1/8" Border			
Concealed Mounting Hardware	BPI-12-6 1 1/8" Border	BPI-12-1 1 1/8" Border	BPI-42-7 25/32" Border		
No Mounting Hardware	BPI-10-6 1 1/8" Border		BPI-40-7 25/32" Border	BPI-40-8 25/32" Border	BPI-40-9 25/32" Border
	BPI-20-6 3/4" Border				
	BPI-30-6 1/2" Border				

Concealed Spline/Plaster Mounting Frame	Concealed Wall Mounted Spline/Plaster Mounting Frame
BPI-22-73 3/4" Border	BPI-22-74 3/4" Border



Model L-5000
Pg. 200

Linear Louver Diffusers - Series L-5000

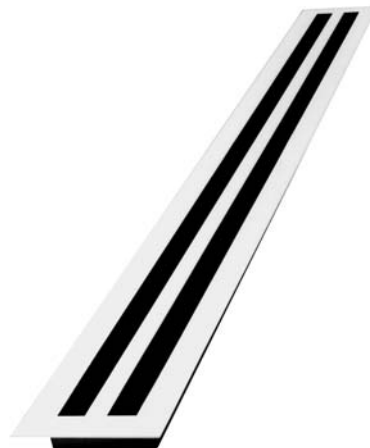
- ★ The series L-5000 is a fixed pattern, high induction architectural linear slot diffuser. This diffuser is constructed from heavy aluminum extrusions and is available with either 1-way or 2-way opposite air discharge patterns
- ★ The series L-5000 generates a tight, high induction discharge of air maximizing room air mixing and occupant comfort. With the optional IV induction vanes, mixing and performance is further increased reducing temperature gradients and increasing room air circulation
- ★ Also available is an optional plenum that allows the 2-way opposite unit to become a supply/return diffuser. The optional L-5000 BP-SR has a dividing section built into the plenum making an effective choice for perimeter supply/return applications
- ★ Units available in 24", 36" or 48" lengths and can be selected for T-bar Lay-in or surface mounting applications
- ★ 1-way units available in 3", 6", 9", 12" and 15" widths
- ★ 2-way opposite units available in 6" and 12" widths
- ★ The louvered face is secured with spring clips making removal easy for installation
- ★ The series L-5000 is an excellent choice for VAV applications

Surface Mount	L-5000-1
T-bar Lay-in	L-5000-6

➔ Linear Slot ➔ Series 6600 ➔ Aluminum

Product Details

- ✦ Available in 1 to 8 slots with 1/2", 3/4", or 1" slot width
- ✦ Excellent choice for continuous linear slot applications. Units are available in a single section up to 8'. This feature gives a clean appearance and makes installation easier with fewer joints to line up
- ✦ Pattern controllers on supply units are aluminum and are adjustable from the face of the diffuser and can be set to adjust volume or throw direction from vertical to horizontal
- ✦ Available for T-bar Lay-in, surface mount, narrow tee, dropped face, concealed spline, or concealed spline/plaster frame
- ✦ Optional BP factory supplied boot plenums are available
- ✦ The 6600 series is an excellent selection for variable volume systems supplying a tight horizontal pattern from maximum to minimum throws
- ✦ The 6600R is designed for return applications. The unit is supplied without pattern controllers to reduce pressure and noise



Model 6600 Shown

Finish: 20 White Border
with Black Pattern Controller

About The 6600 (Patent Pending)

The 6600 is an excellent choice for continuous linear applications such as perimeter office space where the diffuser can direct air along the perimeter wall or glass and towards the occupied area to maximize comfort. Other applications for the 6600 linear slot diffuser include large public areas that demand superior comfort such as airport terminals, convention centers, or shopping malls. The flexibility of the 6600 allows the diffuser to be installed in a variety of applications to maximize occupant comfort.

The Series 6600 pattern controllers can be adjusted from the face to obtain vertical to horizontal throw. Pattern can be field set for "left" or "right" horizontal throw direction. Multiple slot units can be field set for one or two-way opposite horizontal throw.

In the horizontal setting, the diffuser produces a tight air pattern from maximum to minimum flow, making the 6600 an excellent choice for variable volume systems.

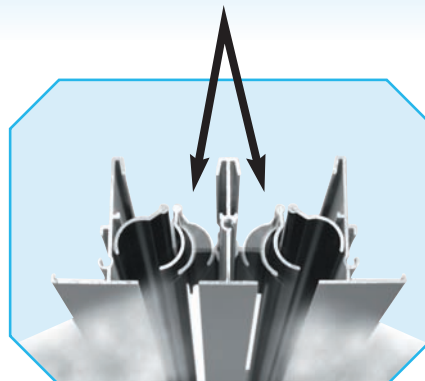
Model 6600 - Supply



Model 6600 - Return



6600 Pattern Controllers can be field-adjusted to vary discharge volume while maintaining a tight horizontal pattern



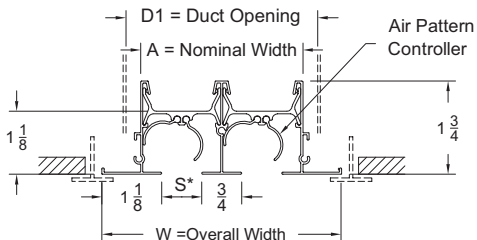
LSD - Linear Slot Diffusers

Dimensions are in inches

Series 6600-10-6 T-bar Lay-in \Rightarrow 1 1/8" Border

Supply - 1 1/8" Border - T-bar Lay-in

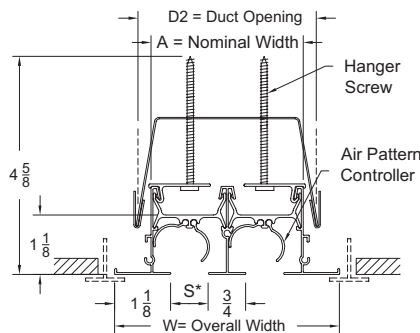
- Model 6650-10-6 - 1/2" Slot Width
- Model 6675-10-6 - 3/4" Slot Width
- Model 6610-10-6 - 1" Slot Width



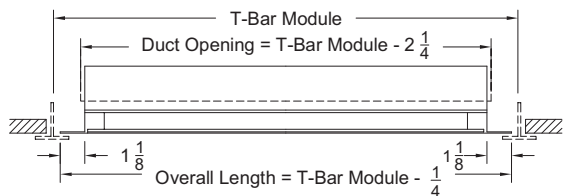
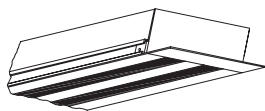
Series 6600-12-6 T-bar Lay-in \Rightarrow 1 1/8" Border \Rightarrow Concealed Mount

Supply - 1 1/8" Border - T-bar Lay-in

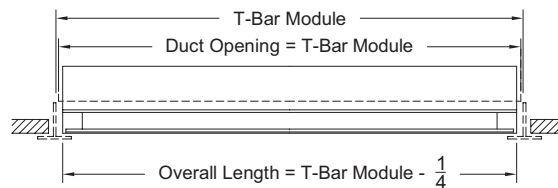
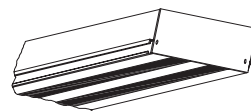
- Model 6650-12-6 - 1/2" Slot Width
- Model 6675-12-6 - 3/4" Slot Width
- Model 6610-12-6 - 1" Slot Width



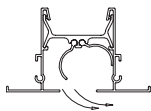
End Border Models 6600-10-6 & 6600-12-6



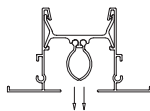
End Cap Models 6600-10-6 & 6600-12-6



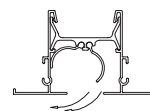
Air Deflection Patterns



Right Horizontal



Vertical Projection



Left Horizontal

Model 6650 (6650-10-6 & 6650-12-6)								
S = 1/2" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 1/4	2 1/2	3 3/4	5	6 1/4	7 1/2	8 3/4	10
D1	1 5/8	2 7/8	4 1/8	5 3/8	6 5/8	7 7/8	9 1/8	10 3/8
D2	1 7/8	3 1/8	4 3/8	5 5/8	6 7/8	8 1/8	9 3/8	10 5/8
W	2 3/4	4	5 1/4	6 1/2	7 3/4	9	10 1/4	11 1/2

Model 6610 (6610-10-6 & 6610-12-6)								
S = 1" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 3/4	3 1/2	5 1/4	7	8 3/4	10 1/2	12 1/4	14
D1	2 1/8	3 7/8	5 5/8	7 3/8	9 1/8	10 7/8	12 5/8	14 3/8
D2	2 3/8	4 1/8	5 7/8	7 5/8	9 3/8	11 1/8	12 7/8	14 5/8
W	3 1/4	5	6 3/4	8 1/2	10 1/4	12	13 3/4	15 1/2

Model 6675 (6675-10-6 & 6675-12-6)								
S = 3/4" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 1/2	3	4 1/2	6	7 1/2	9	10 1/2	12
D1	1 7/8	3 3/8	4 7/8	6 3/8	7 7/8	9 3/8	10 7/8	12 3/8
D2	2 1/8	3 5/8	5 1/8	6 5/8	8 1/8	9 5/8	11 1/8	12 5/8
W	3	4 1/2	6	7 1/2	9	10 1/2	12	13 1/2

6600R return has same dimensions as 6600 supply but provided without pattern controllers to reduce sound and pressure drop

For more product information visit us at www.metalaire.com



Linear Slot Diffusers

LSD

LSD - Linear Slot Diffusers

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Linear Slot Diffusers

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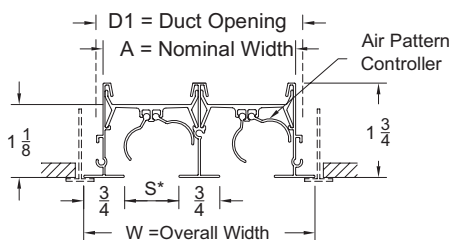
Series 6600-20-6 T-bar Lay-in → 3/4" Border

Supply - 3/4" Border - T-bar Lay-in

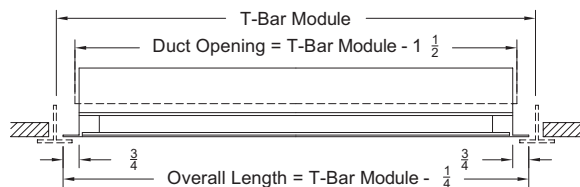
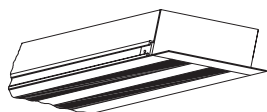
Model 6650-20-6 - 1/2" Slot Width

Model 6675-20-6 - 3/4" Slot Width

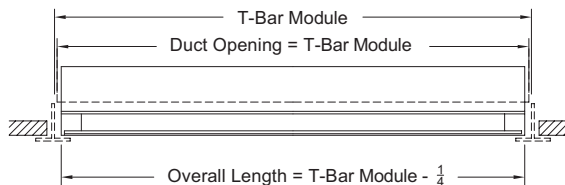
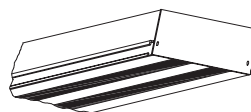
Model 6610-20-6 - 1" Slot Width



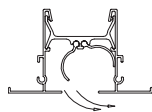
End Border Model 6600-20-6



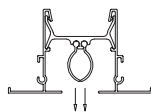
End Cap Model 6600-20-6



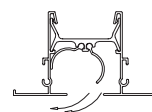
Air Deflection Patterns



Right Horizontal



Vertical Projection



Left Horizontal

Model 6650								
S = 1/2" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 1/4	2 1/2	3 3/4	5	6 5/16	7 1/2	8 3/4	10
D1	1 5/8	2 7/8	4 1/8	5 3/8	6 5/8	7 7/8	9 1/8	10 3/8
W	2	3 1/4	4 1/2	5 3/4	7	8 1/4	9 1/2	10 3/4

Model 6610								
S = 1" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 3/4	3 1/2	5 1/4	7	8 3/4	10 1/2	12 1/4	14
D1	2 1/8	3 7/8	5 5/8	7 3/8	9 1/8	10 7/8	12 5/8	14 3/8
W	2 1/2	4 1/4	6	7 3/4	9 1/2	11 1/4	13	14 3/4

Model 6675								
S = 3/4" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 1/2	3	4 1/2	6	7 1/2	9	10 1/2	12
D1	1 7/8	3 3/8	4 7/8	6 3/8	7 7/8	9 3/8	10 7/8	12 3/8
W	2 1/4	3 3/4	5 1/4	6 3/4	8 1/4	9 3/4	11 1/4	12 3/4

6600R return has same dimensions as 6600 supply but provided without pattern controllers to reduce sound and pressure drop

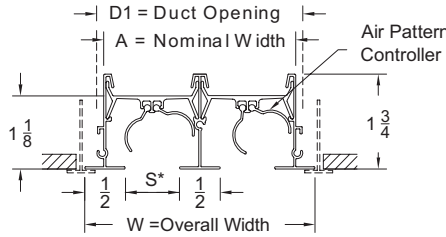
LSD - Linear Slot Diffusers

Linear Slot Diffusers

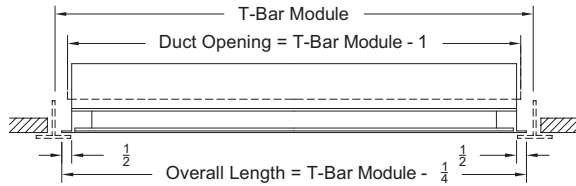
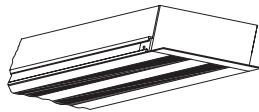
LSD

Series 6600-30-6
T-bar Lay-in → 1/2" Border

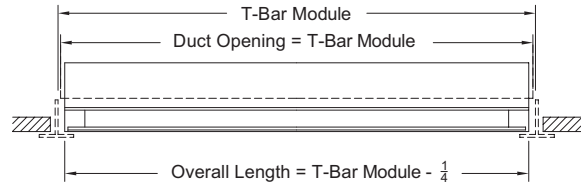
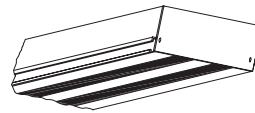
Supply - 1/2" Border - T-bar Lay-in
 Model 6650-30-6 - 1/2" Slot Width
 Model 6675-30-6 - 3/4" Slot Width
 Model 6610-30-6 - 1" Slot Width



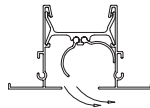
End Border
Model 6600-30-6



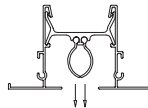
End Cap
Model 6600-30-6



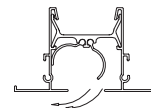
Air Deflection Patterns



Right Horizontal



Vertical Projection



Left Horizontal

Model 6650								
S = 1/2" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 1/4	2 1/2	3 3/4	5	6 5/16	7 1/2	8 3/4	10
D1	1 5/8	2 7/8	4 1/8	5 3/8	6 5/8	7 7/8	9 1/8	10 3/8
W	1 1/2	2 3/4	4	5 1/4	6 1/2	7 3/4	9	10 1/4

Model 6610								
S = 1" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 3/4	3 1/2	5 1/4	7	8 3/4	10 1/2	12 1/4	14
D1	2 1/8	3 7/8	5 5/8	7 3/8	9 1/8	10 7/8	12 5/8	14 3/8
W	2	3 3/4	5 1/2	7 1/4	9	10 3/4	12 1/2	14 1/4

Model 6675								
S = 3/4" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 1/2	3	4 1/2	6	7 1/2	9	10 1/2	12
D1	1 7/8	3 3/8	4 7/8	6 3/8	7 7/8	9 3/8	10 7/8	12 3/8
W	1 3/4	3 1/4	4 3/4	6 1/4	7 3/4	9 1/4	10 3/4	12 1/4

6600R return has same dimensions as 6600 supply but provided without pattern controllers to reduce sound and pressure drop



For more product information visit us at www.metalair.com



LSD - Linear Slot Diffusers

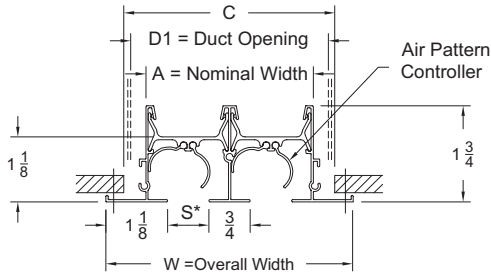
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Linear Slot Diffusers

LSD

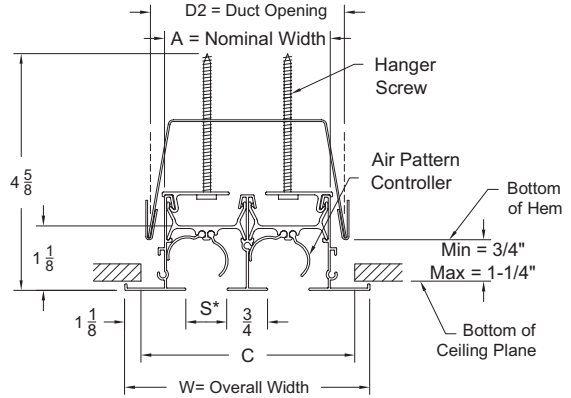
Series 6600-11-1 1 1/8" Border → Face Screw Mounting

Supply - 1 1/8" Border
 Model 6650-11-1 - 1/2" Slot Width
 Model 6675-11-1 - 3/4" Slot Width
 Model 6610-11-1 - 1" Slot Width



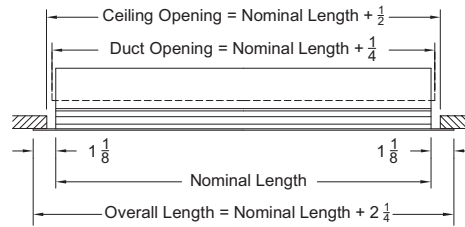
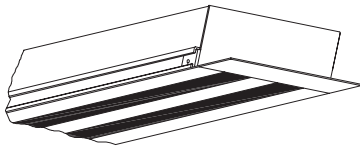
Series 6600-12-1 1 1/8" Border → Concealed Surface Mount

Supply - 1 1/8" Border
 Model 6650-12-1 - 1/2" Slot Width
 Model 6675-12-1 - 3/4" Slot Width
 Model 6610-12-1 - 1" Slot Width

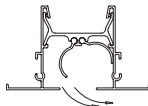


End Border

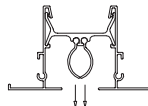
Note: For the 6600-12-1, the BP/BPI plenum must be installed with 3/4" minimum/ 1-1/4" Maximum opening between the bottom of the ceiling plane and the bottom of the hem of the BP/BPI plenum



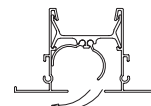
Air Deflection Patterns



Right Horizontal



Vertical Projection



Left Horizontal

Model 6650 (6650-11-1 & 6650-12-1)								
S = 1/2" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 1/4	2 1/2	3 3/4	5	6 1/4	7 1/2	8 3/4	10
D1	1 5/8	2 7/8	4 1/8	5 3/8	6 5/8	7 7/8	9 1/8	10 3/8
D2	1 7/8	3 1/8	4 3/8	5 5/8	6 7/8	8 1/8	9 3/8	10 5/8
C	2	3 1/4	4 1/2	5 3/4	7	8 1/4	9 1/2	10 3/4
W	2 3/4	4	5 1/4	6 1/2	7 3/4	9	10 1/4	11 1/2

Model 6610 (6610-11-1 & 6610-12-1)								
S = 1" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 3/4	3 1/2	5 1/4	7	8 3/4	10 1/2	12 1/4	14
D1	2 1/8	3 7/8	5 5/8	7 3/8	9 1/8	10 7/8	12 5/8	14 3/8
D2	2 3/8	4 1/8	5 7/8	7 5/8	9 3/8	11 1/8	12 7/8	14 5/8
C	2 1/2	4 1/4	6	7 3/4	9 1/2	11 1/4	13	14 3/4
W	3 1/4	5	6 3/4	8 1/2	10 1/4	12	13 3/4	15 1/2

Model 6675 (6675-11-1 & 6675-12-1)								
S = 3/4" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 1/2	3	4 1/2	6	7 1/2	9	10 1/2	12
D1	1 7/8	3 3/8	4 7/8	6 3/8	7 7/8	9 3/8	10 7/8	12 3/8
D2	2 1/8	3 5/8	5 1/8	6 5/8	8 1/8	9 5/8	11 1/8	12 5/8
C	2 1/4	3 3/4	5 1/4	6 3/4	8 1/4	9 3/4	11 1/4	12 3/4
W	3	4 1/2	6	7 1/2	9	10 1/2	12	13 1/2

6600R return has same dimensions as 6600 supply but provided without pattern controllers to reduce sound and pressure drop

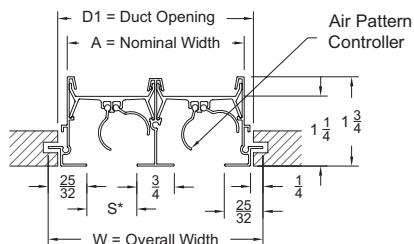
LSD - Linear Slot Diffusers

Linear Slot Diffusers

LSD

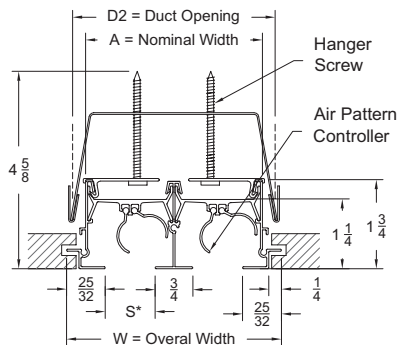
Series 6600-40-7
25/32" Border → Concealed Spline

Supply - Concealed Spline
Model 6650-40-7 - 1/2" Slot Width
Model 6675-40-7 - 3/4" Slot Width
Model 6610-40-7 - 1" Slot Width

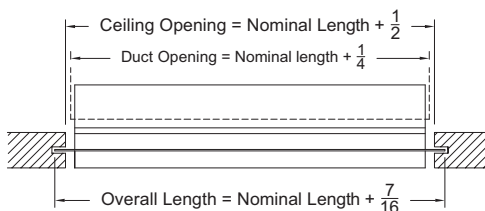
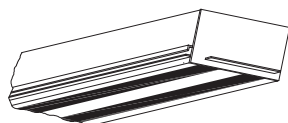


Series 6600-42-7
25/32" Border → Concealed Spline → Concealed Mount

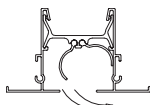
Supply - Concealed Spline
Model 6650-42-7 - 1/2" Slot Width
Model 6675-42-7 - 3/4" Slot Width
Model 6610-42-7 - 1" Slot Width



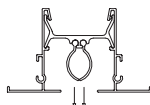
End Border
Model 6600-40-7 & 6600-42-7



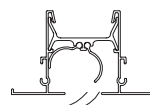
Air Deflection Patterns



Right Horizontal



Vertical Projection



Left Horizontal

Model 6650 (6650-40-7 & 6650-42-7)								
S = 1/2" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 1/4	2 1/2	3 3/4	5	6 1/4	7 1/2	8 3/4	10
D1	1 5/8	2 7/8	4 1/8	5 3/8	6 5/8	7 7/8	9 1/8	10 3/8
D2	1 7/8	3 1/8	4 3/8	5 5/8	6 7/8	8 1/8	9 3/8	10 5/8
W	2 1/16	3 5/16	4 9/16	5 13/16	7 1/16	8 5/16	9 9/16	10 13/16

Model 6610 (6610-40-7 & 6610-42-7)								
S = 1" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 3/4	3 1/2	5 1/4	7	8 3/4	10 1/2	12 1/4	14
D1	2 1/8	3 7/8	5 5/8	7 3/8	9 1/8	10 7/8	12 5/8	14 3/8
D2	2 3/8	4 1/8	5 7/8	7 5/8	9 3/8	11 1/8	12 7/8	14 5/8
W	2 9/16	4 5/16	6 1/16	7 13/16	9 9/16	11 5/16	13 1/16	14 13/16

Model 6675 (6675-40-7 & 6675-42-7)								
S = 3/4" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 1/2	3	4 1/2	6	7 1/2	9	10 1/2	12
D1	1 7/8	3 3/8	4 7/8	6 3/8	7 7/8	9 3/8	10 7/8	12 3/8
D2	2 1/8	3 5/8	5 1/8	6 5/8	8 1/8	9 5/8	11 1/8	12 5/8
W	2 5/16	3 13/16	5 5/16	6 13/16	8 5/16	9 13/16	11 5/16	12 13/16

6600R return has same dimensions as 6600 supply but provided without pattern controllers to reduce sound and pressure drop



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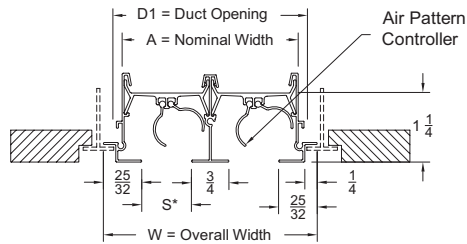
LSD - Linear Slot Diffusers

3/2006

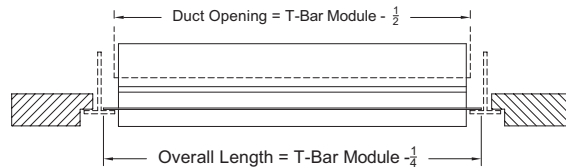
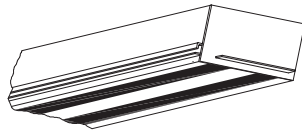
Series 6600-40-8 Drop Face

Supply - Drop Face

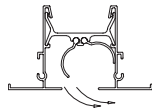
Model 6650-40-8 - 1/2" Slot Width
 Model 6675-40-8 - 3/4" Slot Width
 Model 6610-40-8 - 1" Slot Width



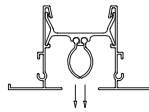
End Border Model 6600-40-8



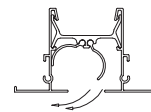
Air Deflection Patterns



Right Horizontal



Vertical Projection



Left Horizontal

Model 6650 (6650-40-8)								
S = 1/2" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 1/4	2 1/2	3 3/4	5	6 1/4	7 1/2	8 3/4	10
D1	1 5/8	2 7/8	4 1/8	5 3/8	6 5/8	7 7/8	9 1/8	10 3/8
D2	1 7/8	3 1/8	4 3/8	5 5/8	6 7/8	8 1/8	9 3/8	10 5/8
W	2 1/16	3 5/16	4 9/16	5 13/16	7 1/16	8 5/16	9 9/16	10 13/16

Model 6610 (6610-40-8)								
S = 1" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 3/4	3 1/2	5 1/4	7	8 3/4	10 1/2	12 1/4	14
D1	2 1/8	3 7/8	5 5/8	7 3/8	9 1/8	10 7/8	12 5/8	14 3/8
D2	2 3/8	4 1/8	5 7/8	7 5/8	9 3/8	11 1/8	12 7/8	14 5/8
W	2 9/16	4 5/16	6 1/16	7 13/16	9 9/16	11 5/16	13 1/16	14 13/16

Model 6675 (6675-40-8)								
S = 3/4" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 1/2	3	4 1/2	6	7 1/2	9	10 1/2	12
D1	1 7/8	3 3/8	4 7/8	6 3/8	7 7/8	9 3/8	10 7/8	12 3/8
D2	2 1/8	3 5/8	5 1/8	6 5/8	8 1/8	9 5/8	11 1/8	12 5/8
W	2 5/16	3 13/16	5 5/16	6 13/16	8 5/16	9 13/16	11 5/16	12 13/16

6600R return has same dimensions as 6600 supply but provided without pattern controllers to reduce sound and pressure drop

Linear Slot Diffusers



LSD

LSD - Linear Slot Diffusers

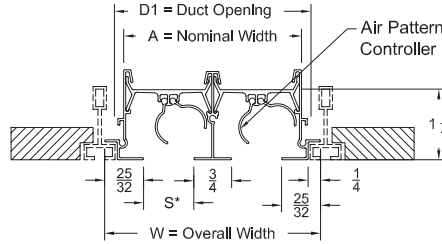
Linear Slot Diffusers

LSD

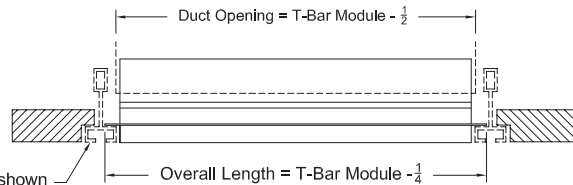
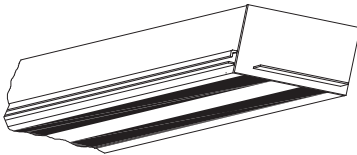
Series 6600-40-9 Narrow Tee

Supply - Narrow Tee - 9/16" Face

- Model 6650-40-9 - 1/2" Slot Width
- Model 6675-40-9 - 3/4" Slot Width
- Model 6610-40-9 - 1" Slot Width

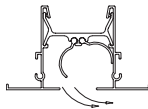


End Border Model 6600-40-9

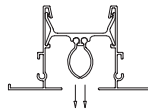


6600-40-9 Model shown with Bolt Grid as an alternate application

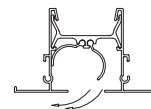
Air Deflection Patterns



Right Horizontal



Vertical Projection



Left Horizontal

Model 6650 (6650-40-9)		Number of Air Slots							
S = 1/2" Slot	1	2	3	4	5	6	7	8	
A	1 1/4	2 1/2	3 3/4	5	6 1/4	7 1/2	8 3/4	10	
D1	1 5/8	2 7/8	4 1/8	5 3/8	6 5/8	7 7/8	9 1/8	10 3/8	
W	2 1/16	3 5/16	4 9/16	5 13/16	7 1/16	8 5/16	9 9/16	10 13/16	

Model 6610 (6610-40-9)		Number of Air Slots							
S = 1" Slot	1	2	3	4	5	6	7	8	
A	1 3/4	3 1/2	5 1/4	7	8 3/4	10 1/2	12 1/4	14	
D1	2 1/8	3 7/8	5 5/8	7 3/8	9 1/8	10 7/8	12 5/8	14 3/8	
W	2 9/16	4 5/16	6 1/16	7 13/16	9 9/16	11 5/16	13 1/16	14 13/16	

Model 6675 (6675-40-9)		Number of Air Slots							
S = 3/4" Slot	1	2	3	4	5	6	7	8	
A	1 1/2	3	4 1/2	6	7 1/2	9	10 1/2	12	
D1	1 7/8	3 3/8	4 7/8	6 3/8	7 7/8	9 3/8	10 7/8	12 3/8	
W	2 5/16	3 13/16	5 5/16	6 13/16	8 5/16	9 13/16	11 5/16	12 13/16	

6600R return has same dimensions as 6600 supply but provided without pattern controllers to reduce sound and pressure drop



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LSD - Linear Slot Diffusers

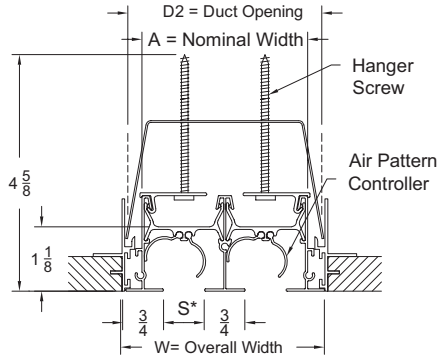
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Linear Slot Diffusers

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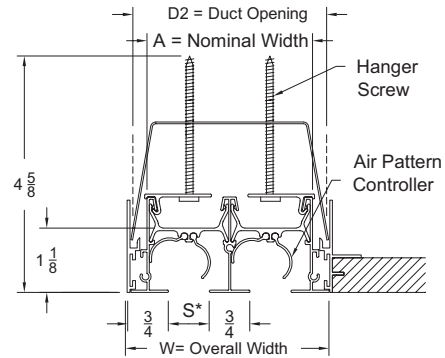
Series 6600-22-73-1
Concealed Spline/Plaster Frame → 3/4" Border w/ Concealed Mount

Supply - 3/4" Border - Concealed Spline/Plaster Frame
 Model 6650-22-73 - 1/2" Slot Width
 Model 6675-22-73 - 3/4" Slot Width
 Model 6610-22-73 - 1" Slot Width

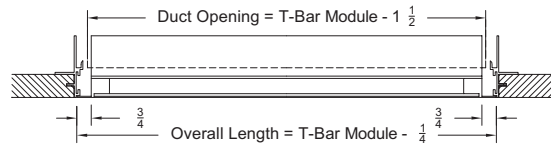
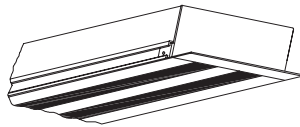


Series 6600-22-74-1
Wall Concealed Spline/Plaster Frame → 3/4" Border w/ Concealed Mount

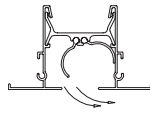
Supply - 3/4" Border - Concealed Spline/Plaster & Wall Frame
 Model 6650-22-74 - 1/2" Slot Width
 Model 6675-22-74 - 3/4" Slot Width
 Model 6610-22-74 - 1" Slot Width



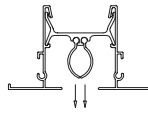
End Border
Models 6600-22-73 & 6600-22-74



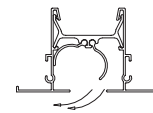
Air Deflection Patterns



Right Horizontal



Vertical Projection



Left Horizontal

Model 6650								
S = 1/2" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 1/4	2 1/2	3 3/4	5	6 1/4	7 1/2	8 3/4	10
D1	1 5/8	2 7/8	4 1/8	5 3/8	6 5/8	7 7/8	9 1/5	10 3/8
W	2	3 1/4	4 1/4	5 3/4	7	8 1/4	9 1/2	10 3/4

Model 6610								
S = 1" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 3/4	3 1/2	5 1/4	7	8 3/4	10 1/2	12 1/4	14
D1	2 1/8	3 7/8	5 5/8	7 3/8	9 1/8	10 7/8	12 5/8	14 3/8
W	2 1/2	4 1/4	6	7 3/4	9 1/2	11 1/4	13	14 3/4

Model 6675								
S = 3/4" Slot	Number of Air Slots							
	1	2	3	4	5	6	7	8
A	1 1/2	3	4 1/2	6	7 1/2	9	10 1/2	12
D1	1 7/8	3 3/8	4 7/8	6 3/8	7 7/8	9 3/8	10 7/8	12 3/8
W	2 1/4	3 3/4	5 1/4	6 3/4	8 1/4	9 3/4	11 1/4	12 3/4

6600R return has same dimensions as 6600 supply but provided without pattern controllers to reduce sound and pressure drop

Notes for Series 6600

1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 20 White frame with black pattern controller</p> <p>Optional Finish 21 Clear anodized with black pattern controller 28 Custom color</p>	<p>Mitered Corners (45°, 90° and 135°)335</p> <p>Replacement End Caps</p> <p>Insulated Boot Plenums</p> <p>Non-Insulated Boot Plenums</p> <p>Note: BP Boot Plenums are shipped separate for field installation</p>	<ul style="list-style-type: none"> • Sizes available in only 1-8 slots • Slot widths available 1/2" (6650), 3/4" (6675), and 1" (6610) • Longest single section is 8 feet • Continuous lengths are made in sections

LSD - Linear Slot Diffusers

Series 6600 - Performance

6650 1/2" Slot - CFM Per Linear Foot

Slots	Static Pressure	Horizontal Vertical	0.005	0.021	0.047	0.083	0.130	0.188	0.255	0.334	0.422	0.521
			0.004	0.015	0.033	0.058	0.091	0.132	0.179	0.234	0.295	0.365
1		CFM/LF	5	10	15	20	25	30	35	40	45	50
		Horizontal Throw, ft	1-1-6	3-6-12	6-10-14	10-12-17	11-13-19	12-14-20	13-16-22	14-17-24	14-18-25	15-19-26
		Vertical Throw, ft	2	7	9	11	12	13	14	15	16	17
		Horizontal NC	<15	<15	<15	17	22	27	30	34	36	38
		Vertical NC	<15	<15	<15	<15	<15	15	18	22	24	26
2		CFM/LF	10	20	30	40	50	60	70	80	90	100
		Horizontal Throw, ft	1-2-8	4-8-17	8-14-20	14-17-24	15-19-26	17-20-29	18-22-31	19-24-33	20-25-35	22-36-37
		Vertical Throw, ft	3	9	13	15	17	18	20	21	23	24
		Horizontal NC	<15	<15	<15	20	25	30	33	37	39	41
		Vertical NC	<15	<15	<15	<15	<15	18	21	25	27	29
3		CFM/LF	15	30	45	60	75	90	105	120	135	150
		Horizontal Throw, ft	2-4-13	6-13-20	13-18-25	17-20-29	19-23-32	20-25-35	22-27-38	18-22-31	19-24-33	20-25-35
		Vertical Throw, ft	5	11	16	18	21	23	24	26	28	29
		Horizontal NC	<15	<15	15	22	27	32	35	39	41	43
		Vertical NC	<15	<15	<15	<15	15	20	23	27	29	31
4		CFM/LF	20	40	60	80	100	120	140	160	180	200
		Horizontal Throw, ft	3-6-15	10-15-24	15-20-29	19-24-33	22-26-37	24-29-41	26-31-44	27-33-47	29-35-50	31-37-53
		Vertical Throw, ft	5	13	18	21	24	26	28	30	32	34
		Horizontal NC	<15	<15	17	24	29	33	36	40	42	44
		Vertical NC	<15	<15	<15	<15	17	21	24	28	30	32
5		CFM/LF	25	50	75	100	125	150	175	200	225	250
		Horizontal Throw, ft	3-7-16	11-16-25	16-23-32	22-26-3	24-30-42	26-32-46	29-35-49	31-37-53	32-40-56	34-42-59
		Vertical Throw, ft	6	19	23	26	29	32	34	37	39	41
		Horizontal NC	<15	<15	19	26	31	35	37	41	43	45
		Vertical NC	<15	<15	<15	<15	19	23	25	29	31	33
6		CFM/LF	30	60	90	120	150	180	210	240	270	300
		Horizontal Throw, ft	4-8-20	14-20-29	20-25-35	24-29-41	26-32-46	29-35-50	31-38-54	33-41-58	35-43-61	37-56-65
		Vertical Throw, ft	6	16	23	26	29	32	34	37	39	41
		Horizontal NC	<15	17	20	27	32	36	38	42	44	46
		Vertical NC	<15	<15	<15	15	20	24	26	30	32	35
7		CFM/LF	35	70	105	140	175	210	245	280	315	350
		Horizontal Throw, ft	5-9-18	12-18-31	18-27-38	24-31-44	29-35-49	31-38-54	34-41-59	36-44-63	38-47-66	40-49-70
		Vertical Throw, ft	7	17	24	28	31	34	37	40	42	45
		Horizontal NC	<15	18	21	28	33	37	39	43	45	47
		Vertical NC	<15	<15	<15	16	21	25	37	331	33	35
8		CFM/LF	40	80	120	160	200	240	280	320	360	400
		Horizontal Throw, ft	6-10-19	13-19-33	19-29-41	26-33-47	31-37-53	33-41-58	36-44-63	39-47-67	41-50-71	43-53-75
		Vertical Throw, ft	7	18	26	30	34	37	40	43	45	48
		Horizontal NC	<15	20	22	29	34	39	40	44	46	48
		Vertical NC	<15	<15	<15	17	22	27	28	32	34	36

See Page LSD-179 for Performance Notes

Linear Slot Diffusers



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LSD - Linear Slot Diffusers

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Series 6600 - Performance

6675 3/4" Slot - CFM Per Linear Foot

Slots	Static Pressure	Horizontal Vertical	0.011	0.024	0.042	0.066	0.095	0.129	0.168	0.213	0.263	0.318
			0.007	0.014	0.025	0.040	0.057	0.077	0.101	0.128	0.158	0.191
1		CFM/LF	10	15	20	25	30	35	40	45	50	55
		Horizontal Throw, ft	1-2-6	2-4-14	3-6-22	4-10-24	6-14-27	9-19-29	11-22-31	14-26-33	18-24-35	20-26-36
		Vertical Throw, ft	2	6	10	12	13	14	15	16	17	18
		Horizontal NC	<15	<15	<15	15	19	23	25	28	31	33
2		CFM/LF	20	30	40	50	60	70	80	90	100	110
		Horizontal Throw, ft	1-3-10	3-6-22	5-10-29	7-16-35	10-22-38	14-26-41	19-29-44	22-33-46	25-35-49	27-36-51
		Vertical Throw, ft	4	8	14	17	18	20	21	23	24	25
		Horizontal NC	<15	<15	<15	18	22	26	28	31	34	36
3		CFM/LF	30	45	60	75	90	105	120	135	150	165
		Horizontal Throw, ft	1-3-13	3-7-27	6-13-36	9-20-41	13-27-44	17-32-48	23-36-51	27-39-54	30-41-57	33-43-60
		Vertical Throw, ft	4	10	17	21	23	24	26	28	29	31
		Horizontal NC	<15	<15	<15	20	24	28	30	33	35	37
4		CFM/LF	40	60	80	100	120	140	160	180	200	220
		Horizontal Throw, ft	4-10-24	10-18-36	16-24-42	20-30-47	24-36-51	28-39-55	32-42-59	36-44-63	38-47-66	40-49-70
		Vertical Throw, ft	5	11	20	24	26	28	30	32	34	35
		Horizontal NC	<15	15	16	22	25	30	31	35	37	39
5		CFM/LF	50	75	100	125	150	175	200	225	250	275
		Horizontal Throw, ft	10-15-30	15-23-41	20-30-47	25-37-52	30-41-57	35-44-62	38-47-66	41-50-70	43-52-74	45-55-78
		Vertical Throw, ft	6	13	22	27	29	31	34	36	38	39
		Horizontal NC	<15	16	17	23	26	32	33	36	38	40
6		CFM/LF	60	90	120	150	180	210	240	270	300	330
		Horizontal Throw, ft	10-15-29	15-22-44	20-29-51	24-37-57	29-44-63	34-48-68	39-51-73	44-54-77	47-57-81	49-60-85
		Vertical Throw, ft	6	14	24	29	32	34	37	39	41	43
		Horizontal NC	<15	17	19	24	28	33	34	37	39	41
7		CFM/LF	70	105	140	175	210	245	280	315	350	385
		Horizontal Throw, ft	11-16-32	16-24-48	21-32-55	26-40-63	32-48-68	37-52-73	42-55-78	48-59-83	51-62-88	53-65-92
		Vertical Throw, ft	7	15	26	31	34	37	40	42	45	47
		Horizontal NC	16	18	20	24	29	34	35	38	40	42
8		CFM/LF	80	120	160	200	240	280	320	360	400	440
		Horizontal Throw, ft	11-17-34	17-25-51	23-34-59	28-42-66	34-51-73	40-55-78	45-59-84	51-63-89	54-66-94	57-70-9
		Vertical Throw, ft	7	16	28	34	37	40	43	45	48	50
		Horizontal NC	18	19	22	25	30	35	37	39	41	43
8		CFM/LF	80	120	160	200	240	280	320	360	400	440
		Horizontal Throw, ft	11-17-34	17-25-51	23-34-59	28-42-66	34-51-73	40-55-78	45-59-84	51-63-89	54-66-94	57-70-9
		Vertical Throw, ft	7	16	28	34	37	40	43	45	48	50
		Horizontal NC	18	19	22	25	30	35	37	39	41	43
8		CFM/LF	80	120	160	200	240	280	320	360	400	440
		Horizontal Throw, ft	11-17-34	17-25-51	23-34-59	28-42-66	34-51-73	40-55-78	45-59-84	51-63-89	54-66-94	57-70-9
		Vertical Throw, ft	7	16	28	34	37	40	43	45	48	50
		Horizontal NC	18	19	22	25	30	35	37	39	41	43
8		CFM/LF	80	120	160	200	240	280	320	360	400	440
		Horizontal Throw, ft	11-17-34	17-25-51	23-34-59	28-42-66	34-51-73	40-55-78	45-59-84	51-63-89	54-66-94	57-70-9
		Vertical Throw, ft	7	16	28	34	37	40	43	45	48	50
		Horizontal NC	18	19	22	25	30	35	37	39	41	43
8		CFM/LF	80	120	160	200	240	280	320	360	400	440
		Horizontal Throw, ft	11-17-34	17-25-51	23-34-59	28-42-66	34-51-73	40-55-78	45-59-84	51-63-89	54-66-94	57-70-9
		Vertical Throw, ft	7	16	28	34	37	40	43	45	48	50
		Horizontal NC	18	19	22	25	30	35	37	39	41	43
8		CFM/LF	80	120	160	200	240	280	320	360	400	440
		Horizontal Throw, ft	11-17-34	17-25-51	23-34-59	28-42-66	34-51-73	40-55-78	45-59-84	51-63-89	54-66-94	57-70-9
		Vertical Throw, ft	7	16	28	34	37	40	43	45	48	50
		Horizontal NC	18	19	22	25	30	35	37	39	41	43

See Page LSD-179 for Performance Notes

Linear Slot Diffusers

LSD

LSD - Linear Slot Diffusers

Series 6600 - Performance

6610 1" Slot - CFM Per Linear Foot

Slots	Static Pressure	Horizontal Vertical	0.008	0.030	0.047	0.068	0.092	0.120	0.152	0.188	0.227	0.270
			0.003	0.012	0.020	0.028	0.037	0.04	0.061	0.076	0.092	0.109
1		CFM/LF	10	20	25	30	35	40	45	50	55	60
		Horizontal Throw, ft	1-2-6	3-6-22	4-10-24	6-14-27	9-19-29	11-22-31	14-23-33	18-24-35	20-26-36	22-27-38
		Vertical Throw, ft	2	10	12	13	14	15	16	17	18	18
		Horizontal NC	<15	<15	<15	<15	19	22	24	26	28	30
		Vertical NC	<15	<15	<15	<15	<15	<15	<15	<15	16	18
2		CFM/LF	20	40	50	60	70	80	90	100	110	120
		Horizontal Throw, ft	1-3-10	5-10-29	7-16-35	10-22-38	14-26-41	19-29-44	22-33-46	25-35-49	27-36-51	29-38-54
		Vertical Throw, ft	4	14	17	18	20	21	23	24	25	26
		Horizontal NC	<15	<15	<15	<15	21	25	27	29	31	33
		Vertical NC	<15	<15	<15	<15	<15	<15	15	17	19	21
3		CFM/LF	30	60	75	90	105	120	135	150	165	180
		Horizontal Throw, ft	3-7-18	12-18-36	15-23-41	18-27-44	21-32-48	24-26-51	27-39-54	30-41-57	33-43-60	36-44-63
		Vertical Throw, ft	4	17	21	23	24	26	28	29	31	32
		Horizontal NC	<15	<15	<15	17	22	27	28	30	32	34
		Vertical NC	<15	<15	<15	<15	<15	15	16	18	20	22
4		CFM/LF	40	80	100	120	140	160	180	200	220	240
		Horizontal Throw, ft	4-10-24	16-24-42	20-30-47	24-36-51	28-39-55	32-42-59	36-44-63	38-47-66	40-49-70	42-51-73
		Vertical Throw, ft	5	20	24	26	28	30	32	34	35	37
		Horizontal NC	<15	<15	15	19	24	29	30	32	34	36
		Vertical NC	<15	<15	<15	<15	<15	17	18	20	22	24
5		CFM/LF	50	100	125	150	175	200	225	250	275	300
		Horizontal Throw, ft	10-15-30	20-30-47	25-37-52	30-41-57	35-44-62	38-47-66	41-50-70	43-52-74	45-55-78	47-57-81
		Vertical Throw, ft	6	24	29	32	34	37	39	41	43	45
		Horizontal NC	<15	<15	16	21	25	31	32	34	35	37
		Vertical NC	<15	<15	<15	<15	<15	19	20	22	23	25
6		CFM/LF	60	120	150	180	210	240	270	300	330	360
		Horizontal Throw, ft	10-15-29	20-29-51	24-37-57	29-44-63	34-48-68	39-51-73	44-54-77	47-57-81	49-60-85	51-63-89
		Vertical Throw, ft	6	24	29	32	34	37	39	41	43	45
		Horizontal NC	<15	15	17	22	27	33	34	35	36	38
		Vertical NC	<15	<15	<15	<15	<15	21	22	23	24	26
7		CFM/LF	70	140	175	210	245	280	315	350	385	420
		Horizontal Throw, ft	11-16-32	21-32-55	26-40-62	32-48-68	37-52-73	42-55-78	48-59-83	51-62-88	53-65-92	55-68-96
		Vertical Throw, ft	7	26	31	34	37	40	42	45	47	49
		Horizontal NC	<15	16	18	24	28	34	36	37	37	39
		Vertical NC	<15	<15	<15	<15	16	22	24	25	25	27
8		CFM/LF	80	160	200	240	280	320	360	400	440	480
		Horizontal Throw, ft	11-17-34	23-34-59	28-42-66	34-51-73	40-55-78	45-59-84	51-63-89	54-66-94	57-70-98	59-73-103
		Vertical Throw, ft	7	28	34	37	40	43	45	48	50	52
		Horizontal NC	<15	16	20	26	30	35	37	38	39	41
		Vertical NC	<15	<15	<15	<15	18	23	25	26	27	29

See Page LSD-179 for Performance Notes

Linear Slot Diffusers
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LSD - Linear Slot Diffusers

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Series 6600 - Performance

6650R - 1/2" Slot Width

Number of Slots	Negative Ps Inches of Water	.02	.04	.06	.08	.10	.15
1	CFM/Ft.	15	20	25	30	35	40
Ak/Ft=.03	NC	-	20	27	32	37	41
2	CFM/Ft.	35	50	60	70	80	95
Ak/Ft=.06	NC	-	22	27	32	37	41
3	CFM/Ft.	55	80	95	110	125	150
Ak/Ft=.09	NC	-	23	28	33	37	42
4	CFM/Ft.	70	100	120	140	155	190
Ak/Ft=.12	NC	-	24	30	34	37	44
5	CFM/Ft.	90	135	155	180	200	245
Ak/Ft=.15	NC	-	25	30	34	37	44
6	CFM/Ft.	110	155	195	220	245	300
Ak/Ft=.18	NC	-	26	33	37	40	96
7	CFM/Ft.	130	185	225	260	290	355
Ak/Ft=.21	NC	-	27	33	37	41	47
8	CFM/Ft.	140	200	245	280	310	385
Ak/Ft=.24	NC	-	28	34	38	42	48

6675R - 3/4" Slot Width

Number of Slots	Negative Ps Inches of Water	.02	.04	.06	.08	.10	.15
1	CFM/Ft.	25	35	45	50	55	70
Ak/Ft=.02	NC	-	21	29	32	35	42
2	CFM/Ft.	55	80	90	100	110	135
Ak/Ft=.08	NC	-	25	29	32	35	42
3	CFM/Ft.	90	115	140	160	180	220
Ak/Ft=.12	NC	-	26	32	36	40	46
4	CFM/Ft.	100	140	175	200	225	275
Ak/Ft=.12	NC	-	27	34	38	41	47
5	CFM/Ft.	140	185	225	260	290	360
Ak/Ft=.16	NC	-	28	34	38	42	48
6	CFM/Ft.	160	225	275	320	360	440
Ak/Ft=.20	NC	-	29	35	40	43	49
7	CFM/Ft.	175	250	305	350	395	480
Ak/Ft=.24	NC	-	30	36	40	44	50
8	CFM/Ft.	200	285	350	400	450	545
Ak/Ft=.32	NC	-	31	37	41	45	51

6610R - 1" Slot Width

Number of Slots	Negative Ps Inches of Water	.02	.04	.06	.08	.10	.15
1	CFM/Ft.	35	50	60	70	80	95
Ak/Ft=.06	NC	-	25	31	36	40	45
2	CFM/Ft.	70	100	125	140	155	190
Ak/Ft=.11	NC	-	27	33	37	41	47
3	CFM/Ft.	105	150	185	210	235	285
Ak/Ft=.17	NC	-	29	35	39	43	49
4	CFM/Ft.	140	200	250	280	310	380
Ak/Ft=.23	NC	-	31	37	41	45	51
5	CFM/Ft.	175	250	300	350	390	475
Ak/Ft=.28	NC	-	32	38	42	46	52
6	CFM/Ft.	210	300	375	420	465	570
Ak/Ft=.33	NC	-	33	40	43	47	53
7	CFM/Ft.	245	350	425	490	545	665
Ak/Ft=.39	NC	-	34	41	44	47	54
8	CFM/Ft.	280	400	475	560	620	760
Ak/Ft=.44	NC	-	35	42	45	48	55

See Page LSD-179 for Performance Notes

Linear Slot Diffusers

LSD

Series 6600 - Performance Notes

Performance Notes:

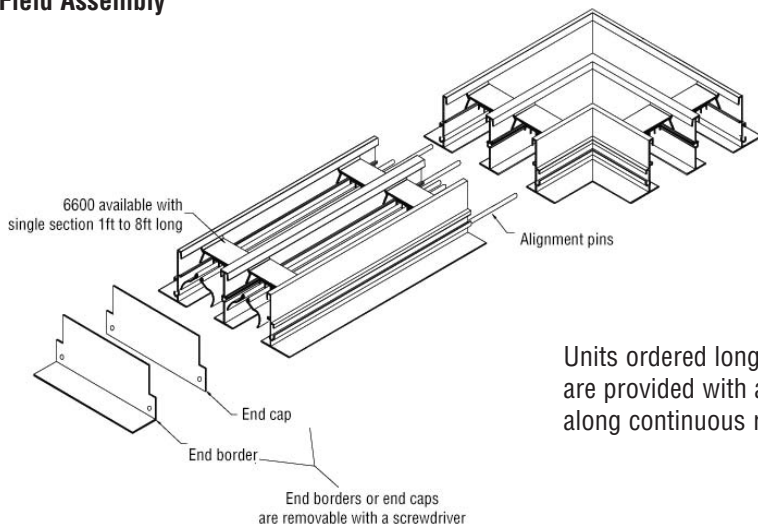
1. On units without BP/BPI plenums, pressure drop reported is across the diffuser element only. The field supply plenum pressure drop should be included when determining system fan requirements. A good approximation of the static pressure requirements can be calculated by adding the velocity pressure through the plenum inlet to the diffuser section pressure drop.
2. NC is based on a 4 ft section of diffuser. The following table should be used to calculate sound levels for lengths other than 4 ft.
3. To correct throws for lengths other than the 4 ft lengths used in determining catalog performance, throws should be adjusted per the following table:

NC Correction for Length					
Length (feet)	2	4	6	8	10
NC Correction	-2	+0	+2	+3	+5
Throw Correction Multiplier for Length					
Length (feet)	2	4	8	10	12
Throw Correction	.7	1.0	1.5	1.7	1.8

4. All pressures are in inches of water
5. Isothermal throws are given for terminal velocities of 150, 100 and 50 fpm, based upon 4 ft section
6. Vertical throw values are based on a 50 fpm terminal velocity
7. For Vertical supply, subtract one NC
8. For Returns minus pattern controllers, deduct 12 NC.
9. Throw values are based on a 1-way discharge from the slot. For 2-way discharges, throw is based upon the number and size of the slots throwing in each direction, with the total supply air flow split equally between all slots in the unit.
10. Data were collected in accordance to ASHRAE Standard 70-1991 "Method of Testing for Rating the Performance of Air Outlets and Inlets."

Series 6600 - Installation

Field Assembly

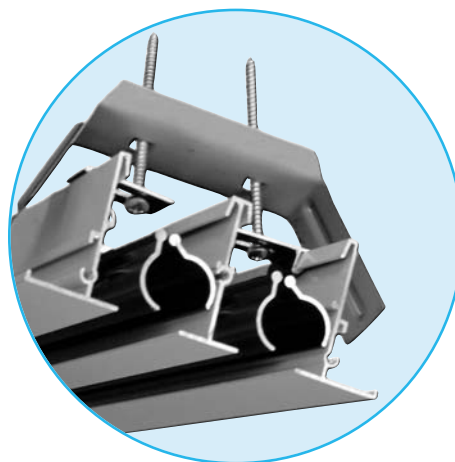
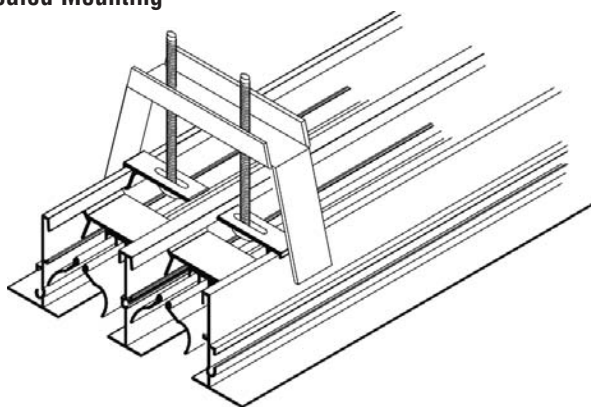


Units ordered longer than 8ft are shipped in multiple sections. Units are provided with alignment pins to keep the 6600 diffusers straight along continuous runs.

Linear Slot Diffusers

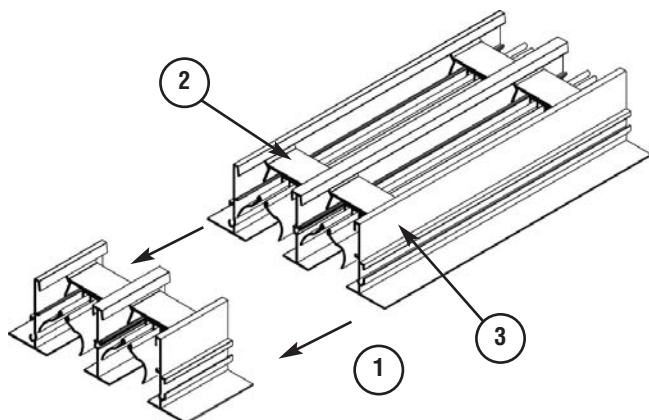
LSD

Concealed Mounting



- Concealed Mounting makes installation easy
- Units are inserted into hemmed plenum and secured in place by tightening screws through the face

Field Cutting



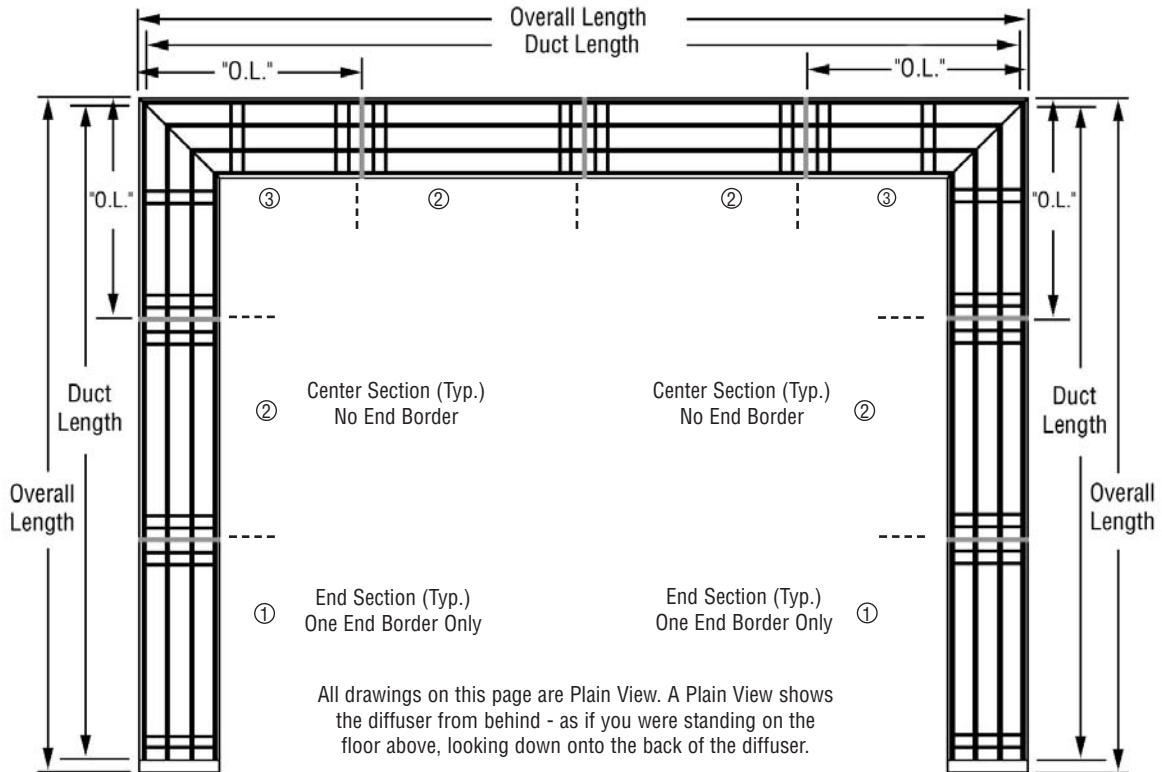
- 1 6600 can be field-cut to fit job conditions
- 2 Spacer is inserted to support pattern controllers
- 3 Screw or crimp to secure spacer in-place

LSD - Linear Slot Diffusers

Series 6600 - Continuous Run Dimensions

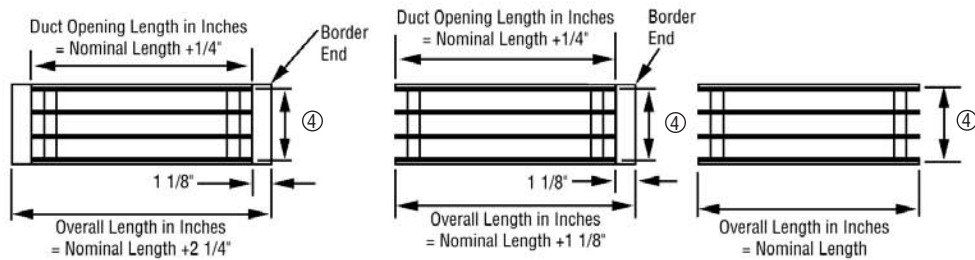
MODELS 6650-11-1 - Surface Mount

MODELS 6650-12-1 - Concealed Mounting



Linear Slot Diffusers
LSD

Single Section, Two End Borders (Not Shown) ① **End Section, One End Border** ② **Center Section, No End Borders**



③ See Page LSD-98 for 90° Mitered Corner Dimensions ("O.L.")

④ Note: For Duct Opening, Ceiling Opening, and Overall Width, see page LSD-83 - 90

LSD - Linear Slot Diffusers

3/2006

Linear Slot Diffusers

LSD

Mitered Corners → 45° Angle

Dimensions are in inches

Mitered Corners - 45° Angle - Extruded Aluminum

Slots: 1/2" (6650), 3/4" (6675) and 1" (6610)

Model MC6600-11-1 - 1 1/8" Border - Face Screw Mounting

Model MC6600-12-1 - 1 1/8" Border - Surface Mounting

Model MC6600-10-6 - 1 1/8" Border - T-bar Lay-in

Model MC6600-12-6 - 1 1/8" Border - T-bar Lay-in

Model MC6600-20-6 - 3/4" Border - T-bar Lay-in

Model MC6600-30-6 - 1/2" Border - T-bar Lay-in

Model MC6600-22-73 - 3/4" Border - Concealed Spline

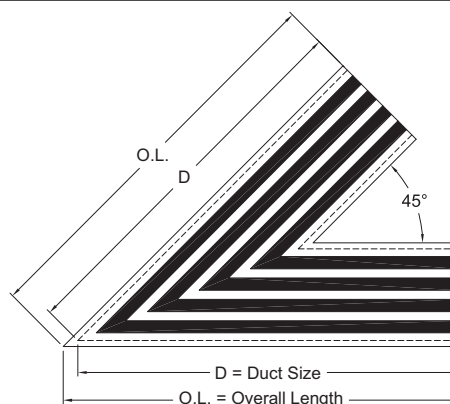
Model MC6600-22-74 - 3/4" Border - Concealed Spline

Model MC6600-40-7 - 25/32" Border - Concealed Spline

Model MC6600-42-7 - 25/32" Border - Concealed Mounting

Model MC6600-40-8 - 25/32" Border - Drop Face

Model MC6600-40-9 - 25/32" Border - Donn Finline



Number of Slots	Duct Size (All Models)	MC6600-11-1	MC6600-20-6	MC6600-30-6	MC6600-40-7	MC6600-40-9
		MC6600-12-1	MC6600-22-73		MC6600-42-7	
		MC6600-10-6	MC6600-22-74	MC6600-40-8		
		O.L.	O.L.	O.L.	O.L.	O.L.
1 - 2	24	24-3/4	24-27/32	24-5/16	24-29/32	24-29/32
3 - 5	36	36-3/4	36-27-32	36-5/16	36-29/32	36-29/32
6 - 8	48	48-3/4	48-27-32	48-5/16	48-29/32	48-29/32

Mitered Corners → 90° Angle

Mitered Corners - 90° Angle - Extruded Aluminum

Slots: 1/2" (6650), 3/4" (6675) and 1" (6610)

Model MC6600-11-1 - 1 1/8" Border - Face Screw Mounting

Model MC6600-12-1 - 1 1/8" Border - Surface Mounting

Model MC6600-10-6 - 1 1/8" Border - T-bar Lay-in

Model MC6600-12-6 - 1 1/8" Border - T-bar Lay-in

Model MC6600-20-6 - 3/4" Border - T-bar Lay-in

Model MC6600-30-6 - 1/2" Border - T-bar Lay-in

Model MC6600-22-73 - 3/4" Border - Concealed Spline

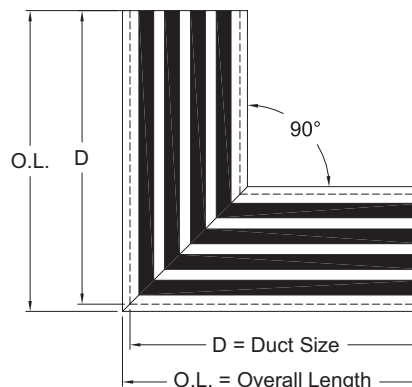
Model MC6600-22-74 - 3/4" Border - Concealed Spline

Model MC6600-40-7 - 25/32" Border - Concealed Spline

Model MC6600-42-7 - 25/32" Border - Concealed Mounting

Model MC6600-40-8 - 25/32" Border - Drop Face

Model MC6600-40-9 - 25/32" Border - Donn Finline



Number of Slots	Duct Size (All Models)	MC6600-11-1	MC6600-20-6	MC6600-30-6	MC6600-40-7	MC6600-40-9
		MC6600-12-1	MC6600-22-73		MC6600-42-7	
		MC6600-10-6	MC6600-22-74	MC6600-40-8		
		O.L.	O.L.	O.L.	O.L.	O.L.
1 - 3	12	12 23/32	12 11/32	12 1/8	12 3/8	12 3/8
4 - 8	24	24 23 32	24 11/32	24 1/8	24 3/8	24 3/8

LSD - Linear Slot Diffusers

Mitered Corners → 135° Angle

Mitered Corners - 135° Angle - Extruded Aluminum

Slots: 1/2" (6650), 3/4" (6675) and 1" (6610)

Model MC6600-11-1 - 1 1/8" Border - Face Screw Mounting

Model MC6600-12-1 - 1 1/8" Border - Surface Mounting

Model MC6600-10-6 - 1 1/8" Border - T-bar Lay-in

Model MC6600-12-6 - 1 1/8" Border - T-bar Lay-in

Model MC6600-20-6 - 3/4" Border - T-bar Lay-in

Model MC6600-30-6 - 1/2" Border - T-bar Lay-in

Model MC6600-22-73 - 3/4" Border - Concealed Spline

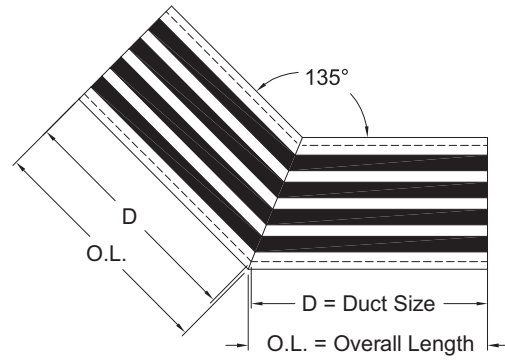
Model MC6600-22-74 - 3/4" Border - Concealed Spline

Model MC6600-40-7 - 25/32" Border - Concealed Spline

Model MC6600-42-7 - 25/32" Border - Concealed Mounting

Model MC6600-40-8 - 25/32" Border - Drop Face

Model MC6600-40-9 - 25/32" Border - Donn Finline



Number of Slots	Duct Size (All Models)	Mitered Corner Models (1/2", 3/4" or 1" Slot)				
		MC6600-11-1 MC6600-12-1 MC6600-10-6 MC6600-12-6	MC6600-20-6 MC6600-22-73 MC6600-22-74	MC6600-30-6	MC6600-40-7 MC6600-42-7 MC6600-40-8	MC6600-40-9
		O.L.	O.L.	O.L.	O.L.	O.L.
1 - 3	12	12-13/32	12-1/4	12-5/32	12-9/32	12-9/32
4 - 8	24	24-13-32	24-1/4	24-5/32	24-9/32	24-9-32

LSD - Linear Slot Diffusers

3/2006

➔ Linear Slot for Spiral Pipe ➔ Aluminum ➔ Series 6600SP ➔ Supply
 ➔ Series 6600SPR ➔ Return

Product Details

- ✪ The series 6600SP is designed to integrate into exposed spiral duct systems
- ✪ Series 6600SP pattern controllers are fully adjustable and can be set from horizontal to vertical discharge
- ✪ The series 6600SP operates effectively from minimum to maximum flow making this diffuser an excellent selection for variable volume systems
- ✪ Series 6600SPR is designed for return applications. The unit is supplied without pattern controllers to reduce pressure and noise



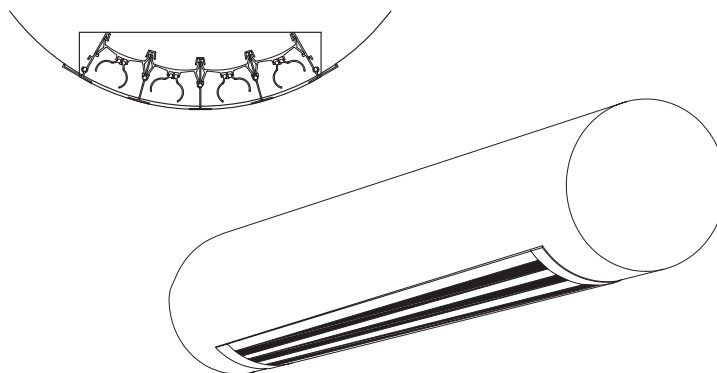
Model 6610SP Shown
 Standard Finish: 20 White Border
 with Black Pattern Controller

Linear Slot Diffusers

LSD

Linear Slot for Spiral Pipe - Aluminum - Surface Mount - 1 1/8" - Series 6600SP/6600SPR

- Model 6610SP-11-1 - Supply - Screw Mounted
- Model 6610SPR-11-1 - Return - Screw Mounted
- Model 6610SP-12-1 - Supply - Concealed Mounting Hardware
- Model 6610SPR-12-1 - Return - Concealed Mounting Hardware



6610SP is available only in a 1" Slot Width

Pipe Diameter	Available Slots
10" Round	1, 2
12" Round	1, 2, 3
14" Round	1, 2, 3
16" Round	1, 2, 3, 4
18" Round	1, 2, 3, 4
20" Round	1, 2, 3, 4
24" Round	1, 2, 3, 4
30" Round	1, 2, 3, 4

Notes for Models 66(50,75,10)-([10-6,12-6,20-6,30-6], [11-1,12-1], [40-7,42-7], [40-8], [40-9], [22-73,22-74])

1. Available Finishes	2. Construction Details
<p>Standard Finish: 20 White frame with black pattern controller</p> <p>Optional Finish (additional charge): 21 Clear anodized with black pattern controller 28 Custom color</p>	<ul style="list-style-type: none"> • Sizes available in only 1-4 slots • Slot widths 1" • Longest single section is 6 feet

LSD - Linear Slot Diffusers

Series 6600SP/6600SPR - Performance

6610 1" Slot - CFM Per Linear Foot

Slots	Static Pressure	Horizontal Vertical	0.008	0.030	0.047	0.068	0.092	0.120	0.152	0.188	0.227	0.270
			0.003	0.012	0.020	0.028	0.037	0.04	0.061	0.076	0.092	0.109
1		CFM/LF	10	20	25	30	35	40	45	50	55	60
		Horizontal Throw, ft	1-2-6	3-6-22	4-10-24	6-14-27	9-19-29	11-22-31	14-23-33	18-24-35	20-26-36	22-27-38
		Vertical Throw, ft	2	10	12	13	14	15	16	17	18	18
		Horizontal NC	<15	<15	<15	<15	19	22	24	26	28	30
		Vertical NC	<15	<15	<15	<15	<15	<15	<15	<15	16	18
2		CFM/LF	20	40	50	60	70	80	90	100	110	120
		Horizontal Throw, ft	1-3-10	5-10-29	7-16-35	10-22-38	14-26-41	19-29-44	22-33-46	25-35-49	27-36-51	29-38-54
		Vertical Throw, ft	4	14	17	18	20	21	23	24	25	26
		Horizontal NC	<15	<15	<15	<15	21	25	27	29	31	33
		Vertical NC	<15	<15	<15	<15	<15	<15	15	17	19	21
3		CFM/LF	30	60	75	90	105	120	135	150	165	180
		Horizontal Throw, ft	3-7-18	12-18-36	15-23-41	18-27-44	21-32-48	24-26-51	27-39-54	30-41-57	33-43-60	36-44-63
		Vertical Throw, ft	4	17	21	23	24	26	28	29	31	32
		Horizontal NC	<15	<15	<15	17	22	27	28	30	32	34
		Vertical NC	<15	<15	<15	<15	<15	15	16	18	20	22
4		CFM/LF	40	80	100	120	140	160	180	200	220	240
		Horizontal Throw, ft	4-10-24	16-24-42	20-30-47	24-36-51	28-39-55	32-42-59	36-44-63	38-47-66	40-49-70	42-51-73
		Vertical Throw, ft	5	20	24	26	28	30	32	34	35	37
		Horizontal NC	<15	<15	15	19	24	29	30	32	34	36
		Vertical NC	<15	<15	<15	<15	<15	17	18	20	22	24

Linear Slot Diffusers



LSD

See Page LSD-187 for Performance Notes



For more product information visit us at www.metalair.com



Series 6600SP/6600SPR Performance

6610R 1" Slot Width

Number of Slots	Negative Ps Inches of Water	.02	.04	.06	.08	.10	.15
1	CFM/Ft.	35	50	60	70	80	95
Ak/Ft=.06	NC	-	25	31	36	40	45
2	CFM/Ft.	70	100	125	140	155	190
Ak/Ft=.11	NC	-	27	33	37	41	47
3	CFM/Ft.	105	150	185	210	235	285
Ak/Ft=.17	NC	-	29	35	39	43	49
4	CFM/Ft.	140	200	250	280	310	380
Ak/Ft=.23	NC	-	31	37	41	45	51

See Page LSD-187 for Performance Notes

Linear Slot Diffusers



LSD

Series 6600SP/6600SPR - Performance Notes

Performance Notes:

- On units without BP/BPI plenums, pressure drop reported is across the diffuser element only. The field supply plenum pressure drop should be included when determining system fan requirements. A good approximation of the static pressure requirements can be calculated by adding the velocity pressure through the plenum inlet to the diffuser section pressure drop.
- NC is based on a 4 ft section of diffuser. The following table should be used to calculate sound levels for lengths other than 4 ft.
- To correct throws for lengths other than the 4 ft lengths used in determining catalog performance, throws should be adjusted per the following table:

NC Correction for Length			
Length (feet)	2	4	6
NC Correction	-2	+0	+2
Throw Correction Multiplier for Length			
Length (feet)	2	4	6
Throw Correction	.7	1.0	1.2

- All pressures are in inches of water
- Isothermal throws are given for terminal velocities of 150, 100 and 50 fpm, based upon 4 ft section
- Vertical throw values are based on a 50 fpm terminal velocity
- For Vertical supply, subtract one NC
- For Returns minus pattern controllers, deduct 12 NC.
- Throw values are based on a 1-way discharge from the slot. For 2-way discharges, throw is based upon the number and size of the slots throwing in each direction, with the total supply air flow split equally between all slots in the unit.
- Data were collected in accordance to ASHRAE Standard 70-1991 "Method of Testing for Rating the Performance of Air Outlets and Inlets."

Series 6600 SP - Specification

Air outlets shall be model 6600 (supply) or 6600SPR (return) linear slot diffusers manufactured by METALAIRE. Units shall be constructed of heavy gauge extruded aluminum. The units shall be the size and quantity as outline in the plans and specifications. Units shall be available with 1" slot widths.

For supply linear slot diffusers, the pattern controller shall be curved, aerodynamically shaped, capable of adjustment from the face of the diffuser. The pattern controller shall allow adjustment from vertical to horizontal patterns as well as damper the volume through the face of the diffuser. Pattern controllers shall be aluminum construction. Steel pattern controllers are not acceptable.

For return linear slot diffuser, the unit will be provided without pattern controllers to minimize pressure drop and noise.

Linear slot diffusers shall be available in one-piece sections up to 6ft. Units shall be available with one to four slots.

Supply units shall be furnished with the face white and the pattern controller black.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionize water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

LSD - Linear Slot Diffusers

3/2006

➔ Boot Plenums ➔ Insulated/Non-Insulated ➔ Series BP ➔ Steel

Product Details

- ✦ The series BP (non-insulated) and BPI (insulated) boot plenums are designed to connect the series 6600 linear slot diffusers to the ducted supply or return system
- ✦ Units provide an even distribution of air into the series 6600 diffuser to maximize induction and occupant comfort
- ✦ The series BPI boot plenum is fully insulated — including the end caps
- ✦ Units can be used for both ducted and plenum returns
- ✦ Factory tested and manufactured BP/BPI plenums are built to fit securely into the series 6600 of diffusers reducing installation cost and minimizing leakage
- ✦ Available with an optional quadrant locking damper
- ✦ Series BP & BPI are shipped separate from series 6600 linear slot diffusers and require field attachment



**Model BP Shown w/
6600 Series Linear Slot Diffuser**
(BP & BPI are shipped separate for field installation)

	Non Insulated				
	T-bar Lay-in	Surface Mount	Concealed Spline	Drop Face	Narrow Tee
Screw Mounted		BP-11-1 1 1/8" Border			
Concealed Mounting Hardware	BP-12-6 1 1/8" Border	BP-12-1 1 1/8" Border	BP-42-7 25/32" Border		
No Mounting Hardware	BP-10-6 1 1/8" Border		BP-40-7 25/32" Border	BP-40-8 25/32" Border	BP-40-9 25/32" Border
	BP-20-6 3/4" Border				
	BP-30-6 1/2" Border				

Concealed Spline/Plaster Mounting Frame	Concealed Wall Mounted Spline/Plaster Mounting Frame
BP-22-73 3/4" Border	BP-22-74 3/4" Border

	Insulated				
	T-bar Lay-in	Surface Mount	Concealed Spline	Drop Face	Narrow Tee
Screw Mounted		BPI-11-1 1 1/8" Border			
Concealed Mounting Hardware	BPI-12-6 1 1/8" Border	BPI-12-1 1 1/8" Border	BPI-42-7 25/32" Border		
No Mounting Hardware	BPI-10-6 1 1/8" Border		BPI-40-7 25/32" Border	BPI-40-8 25/32" Border	BPI-40-9 25/32" Border
	BPI-20-6 3/4" Border				
	BPI-30-6 1/2" Border				

Concealed Spline/Plaster Mounting Frame	Concealed Wall Mounted Spline/Plaster Mounting Frame
BPI-22-73 3/4" Border	BPI-22-74 3/4" Border

Linear Slot Diffusers

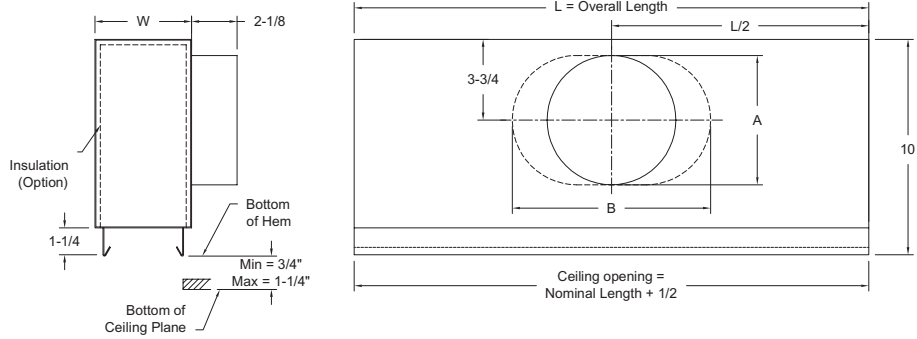
LSD

LSD - Linear Slot Diffusers

Non Insulated/Insulated Boot Plenums

Steel - Hemmed Plenums

- Model BP (BPI)-12-1 - *Surface Mount - 1 1/8" Border*
- Model BP (BPI)-12-6 - *T-bar Lay-in - 1 1/8" Border*
- Model BP (BPI)-22-73 - *Concealed Spline - 3/4" Border*
- Model BP (BPI)-22-74 - *Concealed Spline - 3/4" Border*
- Model BP (BPI)-42-7 - *Concealed Spline - 25/32" Border*



Available Nominal Lengths	24	36	48	60
---------------------------	----	----	----	----

Round Dim. (A)	Oval Dim. (A x B)
5 7/8	-
-	5 7/8 x 8 15/16
-	5 7/8 x 12 1/16
-	5 7/8 x 15 1/4
-	5 7/8 x 18 7/16

Available Nominal Lengths	24	36	48	60
---------------------------	----	----	----	----

Round Dim. (A)	Oval Dim. (A x B)
5 7/8	-
-	5 7/8 x 8 15/16
-	5 7/8 x 12 1/16
-	5 7/8 x 15 1/4
-	5 7/8 x 18 7/16

LSD - Linear Slot Diffusers

Series 6650 BP/BPI - Performance

6650 - 1 Slot Performance Data

6" Inlet 1 Slot	2' Length	CFM	15	30	45	60	75	90	105
		Static Pressure	0.010	0.038	0.086	0.153	0.240	0.345	0.470
		Horizontal Throw, ft	1-3-9	6-9-18	9-13-23	12-18-27	15-21-30	18-23-33	20-25-35
	4' Length	NC	<15	20	28	35	41	45	47
		CFM	30	60	90	120	150	180	210
		Static Pressure	0.016	0.063	0.142	0.252	0.394	0.567	0.772
8" Inlet 1 Slot	2' Length	Horizontal Throw, ft	2-4-7	5-7-15	7-11-21	10-15-24	12-18-27	15-21-30	17-23-32
		NC	<15	24	34	41	45	46	49
		CFM	40	70	100	130	160	190	220
	4' Length	Static Pressure	0.018	0.056	0.115	0.194	0.294	0.415	0.556
		Horizontal Throw, ft	3-5-10	6-9-17	8-12-22	11-16-25	13-20-28	16-22-31	18-23-33
		NC	<15	24	33	39	43	45	45
10" Inlet 1 Slot	2' Length	CFM	45	60	75	90	105	120	
		Static Pressure	0.056	0.126	0.225	0.351	0.505	0.688	0.899
		Horizontal Throw, ft	6-9-18	9-13-23	12-18-27	15-21-30	18-23-33	20-25-35	22-27-38
	4' Length	NC	<15	22	29	34	39	42	43
		CFM	60	90	120	150	180	210	240
		Static Pressure	0.036	0.082	0.146	0.227	0.328	0.446	0.582
12" Inlet 1 Slot	2' Length	Horizontal Throw, ft	5-7-15	7-11-21	10-15-22	12-18-27	15-21-30	17-23-32	20-24-35
		NC	19	27	34	40	45	48	51
		CFM	45	60	75	90	105	120	135
	4' Length	Static Pressure	0.047	0.083	0.129	0.186	0.254	0.331	0.419
		Horizontal Throw, ft	9-13-23	12-18-27	15-21-30	18-23-33	20-25-35	22-27-38	23-28-40
		NC	24	28	32	35	39	42	45
4' Length	CFM	90	120	150	180	210	240	270	
	Static Pressure	0.098	0.175	0.273	0.393	0.535	0.699	0.884	
	Horizontal Throw, ft	7-11-21	10-15-24	12-18-27	15-21-30	17-23-32	20-24-35	21-26-37	
4' Length	NC	23	30	36	41	45	48	51	

6650 - 2 Slot Performance Data

6" Inlet 2 Slot	2' Length	CFM	20	40	60	80	100	120	140
		Static Pressure	0.007	0.028	0.064	0.114	0.178	0.256	0.349
		Horizontal Throw, ft	1-2-8	4-8-17	8-12-25	11-17-31	14-21-35	17-25-38	19-29-41
	4' Length	NC	<15	15	25	32	38	43	46
		CFM	30	60	90	120	150	180	210
		Static Pressure	0.010	0.041	0.093	0.166	0.259	0.373	0.507
8" Inlet 2 Slot	2' Length	Horizontal Throw, ft	1-2-5	3-5-10	5-8-16	7-10-21	9-13-26	10-16-30	12-18-32
		NC	<15	<15	24	32	37	41	43
		CFM	25	45	65	85	105	125	145
	4' Length	Static Pressure	0.007	0.023	0.049	0.084	0.128	0.181	0.244
		Horizontal Throw, ft	1-3-10	5-9-19	9-14-27	12-18-32	15-22-35	17-26-39	20-29-42
		NC	<15	<15	23	29	35	39	43
10" Inlet 2 Slot	2' Length	CFM	50	90	130	170	210	250	290
		Static Pressure	0.014	0.045	0.094	0.161	0.245	0.348	0.468
		Horizontal Throw, ft	3-4-9	5-8-16	8-11-23	10-15-29	12-18-32	14-22-35	17-25-38
	4' Length	NC	<15	20	29	36	41	45	46
		CFM	35	55	75	95	115	135	155
		Static Pressure	0.013	0.032	0.059	0.095	0.139	0.191	0.252
12" Inlet 2 Slot	2' Length	Horizontal Throw, ft	3-6-15	7-11-23	10-16-30	13-20-34	16-24-37	19-28-40	21-30-43
		NC	<15	17	23	29	34	38	41
		CFM	70	110	150	190	230	270	310
	4' Length	Static Pressure	0.019	0.047	0.088	0.142	0.207	0.286	0.377
		Horizontal Throw, ft	4-6-12	6-10-19	9-13-26	11-16-31	13-20-34	16-23-37	18-27-39
		NC	<15	21	29	35	40	43	45
12" Inlet 2 Slot	2' Length	CFM	50	70	90	110	130	150	170
		Static Pressure	0.024	0.047	0.078	0.117	0.163	0.217	0.279
		Horizontal Throw, ft	6-10-21	10-15-29	12-19-33	15-23-36	18-27-39	21-30-42	24-32-45
	4' Length	NC	<15	<15	17	21	24	28	31
		CFM	100	140	180	220	260	300	340
		Static Pressure	0.027	0.053	0.087	0.130	0.181	0.241	0.310
4' Length	Horizontal Throw, ft	6-9-17	8-12-24	10-16-30	13-19-33	15-23-36	17-26-39	20-29-41	
	NC	16	23	29	34	38	41	43	

See Page LSD-199 for Performance Notes

LSD - Linear Slot Diffusers

Series 6650 BP/BPI - Performance

6650 3 Slot Performance Data

6" Inlet 3 Slot	2' Length	CFM	25	50	75	100	125	150	175
		Static Pressure	0.008	0.033	0.073	0.130	0.203	0.293	0.398
		Horizontal Throw, ft	1-2-7	3-7-17	7-13-25	11-17-34	14-21-39	17-25-42	20-30-46
	4' Length	NC	<15	15	24	31	36	40	43
		CFM	40	75	115	150	190	225	265
		Static Pressure	0.015	0.054	0.127	0.216	0.347	0.486	0.674
8" Inlet 3 Slot	2' Length	Horizontal Throw, ft	1-2-6	4-5-11	5-8-16	7-11-21	9-13-27	11-16-32	12-19-36
		NC	<15	<15	23	29	36	40	44
		CFM	35	55	80	105	130	155	180
	4' Length	Static Pressure	0.009	0.022	0.046	0.079	0.122	0.173	0.233
		Horizontal Throw, ft	2-3-12	4-9-19	8-14-27	12-18-35	15-22-39	18-26-43	20-31-46
		NC	<15	<15	21	28	33	37	41
10" Inlet 3 Slot	2' Length	CFM	70	110	160	210	260	310	360
		Static Pressure	0.021	0.052	0.109	0.188	0.289	0.410	0.553
		Horizontal Throw, ft	3-5-10	5-8-16	8-11-23	10-15-30	12-18-36	15-22-39	17-25-42
	4' Length	NC	<15	18	27	34	39	44	47
		CFM	45	65	90	115	140	165	190
		Static Pressure	0.011	0.023	0.044	0.072	0.106	0.147	0.195
12" Inlet 3 Slot	2' Length	Horizontal Throw, ft	3-6-15	5-11-22	10-15-31	13-20-37	16-24-41	19-28-44	21-32-48
		NC	<15	<15	21	27	32	36	39
		CFM	90	130	180	230	280	330	380
	4' Length	Static Pressure	0.023	0.048	0.091	0.149	0.221	0.307	0.407
		Horizontal Throw, ft	4-6-13	6-9-18	8-13-25	11-16-33	13-20-36	16-23-39	18-27-42
		NC	<15	20	27	33	38	42	45
12" Inlet 3 Slot	2' Length	CFM	65	85	110	135	160	185	210
		Static Pressure	0.022	0.038	0.063	0.095	0.133	0.178	0.229
		Horizontal Throw, ft	5-11-22	9-14-29	12-19-36	15-23-40	18-27-44	21-31-47	24-35-50
	4' Length	NC	<15	16	20	23	26	29	32
		CFM	130	170	220	270	320	370	420
		Static Pressure	0.027	0.046	0.077	0.117	0.164	0.219	0.282
		Horizontal Throw, ft	6-9-18	8-12-24	10-16-31	13-19-37	15-23-40	17-26-43	20-30-46
		NC	17	22	27	33	37	41	44

6650 4 Slot Performance Data

6" Inlet 4 Slot	2' Length	CFM	40	65	90	115	140	165	190
		Static Pressure	0.018	0.047	0.090	0.147	0.218	0.302	0.401
		Horizontal Throw, ft	1-3-12	3-8-19	7-13-26	11-17-34	14-21-41	16-24-44	19-28-48
	4' Length	NC	<15	16	24	30	36	39	42
		CFM	60	100	135	175	210	250	285
		Static Pressure	0.031	0.087	0.159	0.267	0.385	0.546	0.709
8" Inlet 4 Slot	2' Length	Horizontal Throw, ft	1-3-7	4-6-12	6-8-17	7-11-21	9-13-26	10-15-31	12-17-35
		NC	<15	16	24	31	35	37	40
		CFM	50	80	110	140	170	200	230
	4' Length	Static Pressure	0.014	0.036	0.069	0.112	0.164	0.228	0.301
		Horizontal Throw, ft	2-5-15	5-12-24	10-16-32	14-21-41	17-25-45	20-29-49	23-34-53
		NC	<15	17	24	30	35	39	42
10" Inlet 4 Slot	2' Length	CFM	75	120	165	210	255	300	345
		Static Pressure	0.022	0.056	0.107	0.173	0.255	0.353	0.467
		Horizontal Throw, ft	2-5-9	5-7-15	7-10-20	9-13-26	10-16-31	12-18-37	14-21-42
	4' Length	NC	<15	16	23	29	34	38	40
		CFM	60	90	120	150	180	210	240
		Static Pressure	0.014	0.032	0.056	0.088	0.127	0.173	0.226
12" Inlet 4 Slot	2' Length	Horizontal Throw, ft	3-7-18	7-13-26	12-18-35	15-22-42	18-26-46	21-31-50	24-35-54
		NC	<15	17	23	29	33	37	41
		CFM	95	135	180	225	270	315	360
	4' Length	Static Pressure	0.021	0.043	0.077	0.120	0.174	0.236	0.308
		Horizontal Throw, ft	4-6-12	6-8-17	7-11-22	9-14-28	11-17-33	13-19-38	15-22-41
		NC	<15	16	23	28	33	36	39
12" Inlet 4 Slot	2' Length	CFM	80	120	160	200	240	280	320
		Static Pressure	0.018	0.041	0.073	0.114	0.164	0.223	0.292
		Horizontal Throw, ft	5-12-24	12-18-35	16-24-44	20-29-49	24-35-54	27-41-58	31-44-62
	4' Length	NC	<15	<15	20	24	28	32	35
		CFM	120	180	240	300	360	420	480
		Static Pressure	0.018	0.040	0.071	0.111	0.159	0.217	0.283
		Horizontal Throw, ft	5-7-15	7-11-22	10-15-29	12-18-37	15-22-42	17-26-46	20-29-49
		NC	<15	19	25	31	35	39	42

See Page LSD-199 for Performance Notes

LSD - Linear Slot Diffusers

Series 6675 BP/BPI - Performance

6675 1 Slot Performance Data

6" Inlet 1 Slot	2' Length	CFM	20	35	50	65	80	95	110
		Static Pressure	0.014	0.043	0.088	0.148	0.224	0.316	0.424
		Horizontal Throw, ft	1-3-10	4-8-17	8-12-24	10-16-28	13-19-31	15-23-34	18-26-36
	4' Length	NC	<15	18	26	32	37	41	45
		CFM	30	52.5	75	97.5	120	142.5	165
		Static Pressure	0.009	0.026	0.054	0.091	0.137	0.194	0.259
8" Inlet 1 Slot	2' Length	Horizontal Throw, ft	2-3-6	4-5-11	5-8-15	7-10-20	8-12-24	10-14-27	11-17-29
		NC	<15	18	25	30	36	40	44
		CFM	40	60	85	105	130	150	175
	4' Length	Static Pressure	0.014	0.032	0.065	0.099	0.152	0.202	0.275
		Horizontal Throw, ft	3-4-8	4-6-12	6-9-17	7-11-21	9-13-25	10-15-27	12-18-30
		NC	<15	17	24	29	34	38	42
10" Inlet 1 Slot	2' Length	CFM	35	45	55	65	75	85	95
		Static Pressure	0.085	0.140	0.210	0.293	0.390	0.501	0.625
		Horizontal Throw, ft	4-8-17	7-11-22	9-13-26	10-16-28	12-18-30	14-20-32	15-23-34
	4' Length	NC	<15	17	22	26	30	33	35
		CFM	55	70	85	100	115	130	145
		Static Pressure	0.028	0.045	0.066	0.092	0.122	0.155	0.193
12" Inlet 1 Slot	2' Length	Horizontal Throw, ft	4-6-11	5-7-14	6-9-17	7-10-20	8-12-23	9-13-25	10-15-27
		NC	<15	17	21	25	28	31	34
		CFM	65	85	110	135	160	185	210
	4' Length	Static Pressure	0.022	0.038	0.063	0.095	0.133	0.178	0.229
		Horizontal Throw, ft	5-11-22	9-14-29	12-19-36	15-23-40	18-27-44	21-31-47	24-35-50
		NC	<15	16	20	23	26	29	32
12" Inlet 1 Slot	4' Length	CFM	130	170	220	270	320	370	420
		Static Pressure	0.027	0.046	0.077	0.117	0.164	0.219	0.282
		Horizontal Throw, ft	6-9-18	8-12-24	10-16-31	13-19-37	15-23-40	17-26-43	20-30-46
	4' Length	NC	17	22	27	33	37	41	44

6675 2 Slot Performance Data

6" Inlet 2 Slot	2' Length	CFM	30	55	80	105	130	155	180
		Static Pressure	0.009	0.029	0.061	0.105	0.161	0.228	0.308
		Horizontal Throw, ft	1-3-10	4-9-19	8-14-27	12-18-35	15-22-39	18-26-43	20-31-46
	4' Length	NC	<15	18	27	33	39	42	44
		CFM	45	85	120	160	195	235	270
		Static Pressure	0.009	0.033	0.065	0.116	0.172	0.250	0.330
8" Inlet 2 Slot	2' Length	Horizontal Throw, ft	1-3-6	4-6-12	6-8-17	8-11-23	9-14-28	11-17-33	13-19-37
		NC	<15	18	25	33	37	41	43
		CFM	45	65	85	105	125	145	165
	4' Length	Static Pressure	0.007	0.023	0.049	0.084	0.128	0.181	0.244
		Horizontal Throw, ft	1-3-10	5-9-19	9-14-27	12-18-32	15-22-35	17-26-39	20-29-42
		NC	<15	<15	23	29	35	39	43
10" Inlet 2 Slot	2' Length	CFM	70	100	130	160	190	220	250
		Static Pressure	0.014	0.028	0.047	0.071	0.100	0.135	0.174
		Horizontal Throw, ft	3-5-10	5-7-14	6-9-18	8-11-23	9-13-27	10-16-31	12-18-35
	4' Length	NC	<15	17	23	28	33	37	39
		CFM	50	70	90	110	130	150	170
		Static Pressure	0.023	0.045	0.074	0.111	0.155	0.207	0.265
12" Inlet 2 Slot	2' Length	Horizontal Throw, ft	3-7-17	6-12-24	10-15-31	12-19-36	15-22-39	17-25-42	19-29-45
		NC	<15	17	22	27	32	35	38
		CFM	75	105	135	165	195	225	255
	4' Length	Static Pressure	0.025	0.050	0.082	0.123	0.171	0.228	0.293
		Horizontal Throw, ft	4-5-11	5-7-15	6-10-19	8-12-23	9-14-28	11-16-32	12-18-36
		NC	<15	16	21	26	30	34	37
12" Inlet 2 Slot	2' Length	CFM	73	95	120	145	170	195	220
		Static Pressure	0.021	0.036	0.058	0.084	0.116	0.152	0.194
		Horizontal Throw, ft	7-12-25	11-16-32	14-20-38	16-25-42	19-29-45	22-33-48	25-36-51
	4' Length	NC	<15	18	21	25	28	31	34
		CFM	110	145	180	220	255	295	330
		Static Pressure	0.025	0.044	0.068	0.102	0.137	0.183	0.229
4' Length	Horizontal Throw, ft	5-8-16	7-10-21	8-13-25	10-16-31	12-18-36	14-21-38	16-23-41	
	NC	<15	20	24	29	33	36	39	

See Page LSD-199 for Performance Notes

LSD - Linear Slot Diffusers

Series 6675 BP/BPI - Performance

6675 3 Slot Performance Data

6" Inlet 3 Slot	2' Length	CFM	45	70	95	120	145	170	195
		Static Pressure	0.012	0.029	0.053	0.084	0.122	0.168	0.221
		Horizontal Throw, ft	1-3-12	3-8-19	6-13-26	10-17-33	13-20-40	16-24-45	18-27-48
	4' Length	NC	<15	17	24	30	35	39	41
		CFM	70	105	145	180	220	255	295
		Static Pressure	0.017	0.037	0.071	0.110	0.165	0.221	0.296
8" Inlet 3 Slot	2' Length	Horizontal Throw, ft	2-4-8	4-6-12	6-8-17	7-10-21	8-13-25	10-15-29	11-17-34
		NC	<15	17	24	29	34	38	41
		CFM	55	85	115	145	175	205	235
	4' Length	Static Pressure	0.012	0.029	0.054	0.082	0.124	0.171	0.224
		Horizontal Throw, ft	2-5-15	5-11-24	9-16-32	13-20-40	16-24-46	19-28-50	22-33-53
		NC	<15	18	25	30	35	39	42
10" Inlet 3 Slot	2' Length	CFM	85	130	175	220	265	310	355
		Static Pressure	0.013	0.031	0.057	0.090	0.130	0.178	0.233
		Horizontal Throw, ft	2-5-10	5-8-15	7-10-20	8-13-25	10-15-31	12-18-36	14-20-41
	4' Length	NC	<15	18	24	30	34	39	42
		CFM	65	100	130	160	190	220	250
		Static Pressure	0.015	0.037	0.062	0.094	0.132	0.177	0.229
12" Inlet 3 Slot	2' Length	Horizontal Throw, ft	3-7-18	7-14-28	12-18-36	15-22-44	18-26-48	20-30-51	23-35-55
		NC	<15	19	25	30	34	38	41
		CFM	100	150	195	240	285	330	375
	4' Length	Static Pressure	0.018	0.041	0.070	0.105	0.149	0.199	0.257
		Horizontal Throw, ft	3-6-12	6-9-17	8-11-23	9-14-28	11-16-33	13-19-38	14-22-42
		NC	<15	18	24	29	34	37	40
12" Inlet 3 Slot	2' Length	CFM	85	120	155	190	225	260	295
		Static Pressure	0.022	0.043	0.072	0.108	0.152	0.203	0.261
		Horizontal Throw, ft	5-11-24	10-17-33	14-21-43	18-26-48	21-31-2	24-36-56	27-41-59
	4' Length	NC	<15	<15	18	22	26	30	33
		CFM	130	180	235	285	340	390	445
		Static Pressure	0.016	0.031	0.053	0.078	0.111	0.146	0.190
4' Length	Horizontal Throw, ft	5-8-15	7-10-21	9-14-27	11-16-33	13-20-39	15-23-44	17-26-47	
	NC	<15	18	24	29	33	37	39	

Linear Slot Diffusers



LSD

6675 4 Slot Performance Data

6" Inlet 4 Slot	2' Length	CFM	50	80	110	140	170	200	230
		Static Pressure	0.011	0.029	0.055	0.089	0.131	0.181	0.239
		Horizontal Throw, ft	1-3-10	3-6-19	5-12-26	9-17-34	13-20-41	16-24-48	18-28-53
	4' Length	NC	<15	16	23	30	35	39	43
		CFM	75	120	165	210	255	300	345
		Static Pressure	0.016	0.042	0.079	0.129	0.190	0.263	0.348
8" Inlet 4 Slot	2' Length	Horizontal Throw, ft	1-3-8	3-6-12	6-8-17	7-11-21	9-13-26	10-15-30	12-17-35
		NC	<15	16	23	29	34	37	39
		CFM	70	100	130	160	190	220	250
	4' Length	Static Pressure	0.016	0.042	0.079	0.129	0.190	0.263	0.348
		Horizontal Throw, ft	2-5-11	5-8-15	7-10-20	8-12-24	10-14-29	11-17-33	13-19-38
		NC	<15	17	23	28	32	36	39
10" Inlet 4 Slot	2' Length	CFM	80	110	140	170	200	230	260
		Static Pressure	0.014	0.027	0.044	0.065	0.090	0.119	0.152
		Horizontal Throw, ft	3-6-19	5-12-26	8-1-34	13-20-41	16-24-48	18-28-53	21-31-56
	4' Length	NC	<15	17	23	27	32	35	38
		CFM	125	165	210	255	300	345	390
		Static Pressure	0.017	0.030	0.049	0.072	0.099	0.131	0.167
12" Inlet 4 Slot	2' Length	Horizontal Throw, ft	3-6-13	6-8-17	7-11-21	9-13-26	10-15-20	12-17-35	13-20-39
		NC	<15	16	22	26	30	34	37
		CFM	100	140	180	220	260	300	340
	4' Length	Static Pressure	0.007	0.014	0.023	0.034	0.047	0.063	0.081
		Horizontal Throw, ft	4-10-24	9-17-34	14-22-43	18-26-51	21-31-56	24-36-60	27-41-64
		NC	<15	16	20	23	26	29	32
4' Length	CFM	150	210	270	330	390	450	510	
	Static Pressure	0.014	0.028	0.046	0.069	0.096	0.128	0.164	
	Horizontal Throw, ft	5-8-15	7-11-21	9-14-27	11-17-33	13-20-39	15-23-45	17-26-50	
4' Length	NC	<15	19	24	28	32	36	39	

See Page LSD-199 for Performance Notes



For more product information visit us at www.metalair.com



LSD - Linear Slot Diffusers

Series 6610 BP/BPI - Performance

6610 1 Slot Performance Data

6" Inlet 1 Slot	2' Length	CFM	30	45	60	75	90	105	120
		Static Pressure	0.013	0.029	0.052	0.082	0.117	0.160	0.209
		Horizontal Throw, ft	2-5-12	5-9-19	8-12-25	10-16-30	12-19-33	15-22-35	17-25-38
	4' Length	NC	16	23	30	35	40	44	46
		CFM	45	70	90	115	135	160	180
		Static Pressure	0.012	0.029	0.048	0.078	0.107	0.151	0.191
8" Inlet 1 Slot	2' Length	Horizontal Throw, ft	2-4-8	4-6-12	5-8-16	7-10-20	8-12-23	9-14-28	10-16-30
		NC	16	23	29	34	39	43	46
		CFM	40	50	65	80	95	110	125
	4' Length	Static Pressure	0.032	0.051	0.085	0.129	0.182	0.244	0.316
		Horizontal Throw, ft	4-8-17	6-10-21	9-14-27	11-17-31	13-20-34	15-23-36	17-26-39
		NC	17	22	28	33	38	40	42
10" Inlet 1 Slot	2' Length	CFM	60	75	100	120	145	165	190
		Static Pressure	0.017	0.026	0.047	0.068	0.099	0.128	0.170
		Horizontal Throw, ft	3-5-10	4-6-13	6-9-17	7-10-21	8-13-25	10-14-29	11-16-31
	4' Length	NC	17	21	28	32	37	40	43
		CFM	40	55	70	85	100	115	130
		Static Pressure	0.044	0.083	0.134	0.197	0.273	0.361	0.461
12" Inlet 1 Slot	2' Length	Horizontal Throw, ft	4-8-17	7-11-23	10-15-29	12-18-32	14-21-35	16-24-37	18-27-39
		NC	16	24	30	35	38	39	39
		CFM	60	85	105	130	150	175	195
	4' Length	Static Pressure	0.016	0.033	0.050	0.076	0.102	0.138	0.172
		Horizontal Throw, ft	3-5-10	5-7-15	6-9-18	8-11-23	9-13-26	10-15-30	11-17-31
		NC	<15	21	26	31	35	39	41
12" Inlet 1 Slot	2' Length	CFM	48	65	80	95	110	125	140
		Static Pressure	0.018	0.033	0.050	0.071	0.095	0.123	0.154
		Horizontal Throw, ft	5-10-20	9-14-27	11-17-31	13-20-34	15-23-36	17-26-39	19-29-41
	4' Length	NC	<15	<15	19	23	26	29	32
		CFM	70	100	120	145	165	190	210
		Static Pressure	0.029	0.058	0.084	0.123	0.159	0.211	0.258
12" Inlet 1 Slot	2' Length	Horizontal Throw, ft	4-6-12	6-9-17	7-10-21	8-13-25	10-14-29	11-16-31	12-18-32
		NC	<15	21	25	30	33	35	37
		CFM	40	55	70	85	100	115	130

6610 2 Slot Performance Data

6" Inlet 2 Slot	2' Length	CFM	30	55	80	105	130	155	180
		Static Pressure	0.006	0.020	0.042	0.072	0.110	0.156	0.211
		Horizontal Throw, ft	1-2-7	2-6-16	5-12-24	9-15-31	13-19-38	15-23-43	18-26-46
	4' Length	NC	<15	18	27	33	39	42	44
		CFM	45	85	120	160	195	235	270
		Static Pressure	0.009	0.031	0.061	0.109	0.162	0.235	0.310
8" Inlet 2 Slot	2' Length	Horizontal Throw, ft	1-2-6	3-5-10	5-7-15	7-10-20	8-12-24	10-14-29	11-17-33
		NC	<15	18	25	33	37	41	43
		CFM	45	65	85	105	125	145	165
	4' Length	Static Pressure	0.017	0.035	0.059	0.090	0.128	0.172	0.223
		Horizontal Throw, ft	2-4-13	3-8-19	6-12-25	9-15-31	12-18-37	14-21-42	16-24-44
		NC	<15	18	24	29	33	37	40
10" Inlet 2 Slot	2' Length	CFM	70	100	130	160	190	220	250
		Static Pressure	0.014	0.028	0.047	0.071	0.100	0.135	0.174
		Horizontal Throw, ft	2-4-9	4-6-12	5-8-16	7-10-20	8-12-23	9-13-27	10-15-31
	4' Length	NC	<15	17	23	28	33	37	39
		CFM	50	70	90	110	130	150	170
		Static Pressure	0.023	0.045	0.074	0.111	0.155	0.207	0.265
12" Inlet 2 Slot	2' Length	Horizontal Throw, ft	2-5-15	4-9-21	7-13-26	10-16-32	13-19-38	15-22-42	17-25-45
		NC	<15	17	22	27	32	35	38
		CFM	75	105	135	165	195	225	255
	4' Length	Static Pressure	0.012	0.024	0.039	0.059	0.082	0.109	0.140
		Horizontal Throw, ft	2-5-9	4-6-13	6-8-17	7-10-20	8-12-24	9-14-28	10-16-31
		NC	<15	16	21	26	30	34	37
12" Inlet 2 Slot	2' Length	CFM	60	90	120	150	180	210	240
		Static Pressure	0.014	0.032	0.058	0.090	0.130	0.176	0.230
		Horizontal Throw, ft	3-7-18	7-13-26	12-18-35	15-22-42	18-26-46	21-31-50	24-35-54
	4' Length	NC	<15	17	21	26	29	33	36
		CFM	90	135	180	225	270	315	360
		Static Pressure	0.017	0.038	0.068	0.106	0.153	0.208	0.272
12" Inlet 2 Slot	2' Length	Horizontal Throw, ft	3-6-11	6-8-17	7-11-22	9-14-28	11-17-33	13-19-39	15-22-42
		NC	<15	18	24	30	34	38	41
		CFM	60	90	120	150	180	210	240

See Page LSD-199 for Performance Notes

LSD - Linear Slot Diffusers

Series 6610 BP/BPI - Performance

6610 3 Slot Performance Data

6" Inlet 3 Slot	2' Length	CFM	40	65	90	115	140	165	190
		Static Pressure	0.007	0.019	0.036	0.058	0.087	0.120	0.160
		Horizontal Throw, ft	1-2-6	2-4-16	4-8-22	6-13-28	9-17-34	12-20-40	15-23-46
	4' Length	NC	<15	16	23	29	34	38	41
		CFM	60	100	135	175	210	250	285
		Static Pressure	0.011	0.030	0.055	0.093	0.134	0.190	0.247
8" Inlet 3 Slot	2' Length	Horizontal Throw, ft	1-2-6	2-5-10	4-7-14	6-9-18	7-11-21	8-13-25	10-14-29
		NC	<15	16	22	28	33	37	40
		CFM	50	80	110	140	170	200	230
	4' Length	Static Pressure	0.010	0.026	0.049	0.080	0.117	0.162	0.215
		Horizontal Throw, ft	1-3-10	3-6-19	5-12-26	9-17-34	13-20-41	16-24-48	18-28-53
		NC	<15	17	24	29	34	38	42
10" Inlet 3 Slot	2' Length	CFM	75	120	165	210	255	300	345
		Static Pressure	0.008	0.022	0.041	0.066	0.098	0.135	0.179
		Horizontal Throw, ft	1-3-8	3-6-12	6-8-17	7-11-21	9-13-26	10-15-30	12-17-35
	4' Length	NC	<15	17	23	28	33	38	41
		CFM	60	110	140	170	200	230	260
		Static Pressure	0.008	0.028	0.045	0.066	0.092	0.122	0.155
12" Inlet 3 Slot	2' Length	Horizontal Throw, ft	2-4-14	5-12-26	9-17-34	13-20-41	16-24-48	18-28-53	21-31-56
		NC	<15	21	27	32	36	39	42
		CFM	90	165	210	255	300	345	390
	4' Length	Static Pressure	0.008	0.026	0.042	0.062	0.086	0.113	0.145
		Horizontal Throw, ft	2-4-9	6-8-17	7-11-21	9-13-26	10-15-30	12-17-35	13-20-39
		NC	<15	20	26	31	35	38	40
12" Inlet 3 Slot	2' Length	CFM	80	120	160	200	240	280	320
		Static Pressure	0.010	0.022	0.038	0.060	0.086	0.118	0.154
		Horizontal Throw, ft	3-6-19	6-14-29	11-19-38	16-24-48	19-29-54	22-34-58	26-38-62
	4' Length	NC	<15	<15	19	23	28	31	35
		CFM	120	180	240	300	360	420	480
		Static Pressure	0.009	0.021	0.038	0.059	0.084	0.115	0.150
		Horizontal Throw, ft	3-6-12	6-9-18	8-12-24	10-15-30	12-18-36	14-21-42	16-24-48
		NC	<15	18	25	30	35	38	41

6610 4 Slot Performance Data

6" Inlet 4 Slot	2' Length	CFM	50	80	110	140	170	200	230
		Static Pressure	0.009	0.022	0.042	0.069	0.101	0.140	0.185
		Horizontal Throw, ft	1-2-6	2-4-17	3-8-23	6-13-29	8-18-35	12-21-42	15-24-48
	4' Length	NC	<15	16	23	30	35	39	43
		CFM	75	120	165	210	255	300	345
		Static Pressure	0.012	0.032	0.060	0.098	0.144	0.200	0.264
8" Inlet 4 Slot	2' Length	Horizontal Throw, ft	1-2-6	2-5-10	4-7-14	6-9-18	7-11-22	9-13-26	10-15-30
		NC	<15	16	23	29	34	37	39
		CFM	70	100	130	160	190	220	250
	4' Length	Static Pressure	0.017	0.035	0.059	0.090	0.126	0.169	0.219
		Horizontal Throw, ft	1-3-13	3-6-21	5-11-27	7-17-33	10-20-39	14-23-46	17-26-52
		NC	<15	18	24	29	33	37	39
10" Inlet 4 Slot	2' Length	CFM	105	150	195	240	285	330	375
		Static Pressure	0.013	0.027	0.045	0.068	0.096	0.129	0.166
		Horizontal Throw, ft	2-4-9	3-6-13	5-8-17	7-10-21	8-12-25	10-14-29	11-16-32
	4' Length	NC	<15	19	26	32	36	40	42
		CFM	80	120	160	200	240	280	320
		Static Pressure	0.010	0.022	0.038	0.060	0.086	0.118	0.154
12" Inlet 4 Slot	2' Length	Horizontal Throw, ft	2-4-17	4-9-25	7-17-33	12-21-42	17-25-50	19-29-58	22-33-62
		NC	<15	19	26	32	36	40	42
		CFM	125	180	240	300	360	420	480
	4' Length	Static Pressure	0.012	0.025	0.044	0.069	0.100	0.136	0.178
		Horizontal Throw, ft	2-5-11	5-8-16	7-10-21	9-13-26	10-16-31	12-18-36	14-21-42
		NC	<15	18	25	30	35	39	42
12" Inlet 4 Slot	2' Length	CFM	90	140	190	240	290	340	390
		Static Pressure	0.007	0.017	0.031	0.050	0.073	0.101	0.132
		Horizontal Throw, ft	2-5-19	6-13-29	10-20-39	17-25-50	20-30-59	24-35-64	27-41-68
	4' Length	NC	<15	16	21	25	28	32	35
		CFM	135	210	285	360	435	510	585
		Static Pressure	0.008	0.020	0.038	0.060	0.088	0.120	0.158
		Horizontal Throw, ft	3-6-12	6-9-18	8-12-25	10-16-31	13-19-38	15-22-44	17-25-51
		NC	<15	19	25	30	35	39	42

See Page LSD-199 for Performance Notes

LSD - Linear Slot Diffusers

3/2006

Series BP/BPI - Return Air Performance

Return Air Performance 1/2" Slots (Duct Connected)

Number of Slots	Negative Ps Inches of Water	.02	.04	.06	.08	.10	.15
1	CFM/Ft.	15	20	25	30	35	40
Ak/Ft=.03	NC	--	20	27	32	37	41
2	CFM/Ft.	35	50	60	70	80	95
Ak/Ft=.06	NC	--	22	27	32	37	41
3	CFM/Ft.	55	80	95	110	125	150
Ak/Ft=.09	NC	--	23	28	33	37	42
4	CFM/Ft.	70	100	120	140	155	190
Ak/Ft=.12	NC	--	24	30	34	37	44
5	CFM/Ft.	90	135	155	180	200	245
Ak/Ft=.15	NC	--	25	30	34	37	44
6	CFM/Ft.	110	155	195	220	245	300
Ak/Ft=.18	NC	--	26	33	37	40	96
7	CFM/Ft.	130	185	225	260	290	355
Ak/Ft=.21	NC	--	27	33	37	41	47
8	CFM/Ft.	140	200	245	280	310	385
Ak/Ft=.24	NC	--	28	34	38	42	48

Return Air Performance 3/4" Slots (Duct Connected)

Number of Slots	Negative Ps Inches of Water	.02	.04	.06	.08	.10	.15
1	CFM/Ft.	25	35	45	50	55	70
Ak/Ft=.02	NC	--	21	29	32	35	42
2	CFM/Ft.	55	80	90	100	110	135
Ak/Ft=.08	NC	--	25	29	32	35	42
3	CFM/Ft.	90	115	140	160	180	220
Ak/Ft=.12	NC	--	26	32	36	40	46
4	CFM/Ft.	100	140	175	200	225	275
Ak/Ft=.12	NC	--	27	34	38	41	47
5	CFM/Ft.	140	185	225	260	290	360
Ak/Ft=.16	NC	--	28	34	38	42	48
6	CFM/Ft.	160	225	275	320	360	440
Ak/Ft=.20	NC	--	29	35	40	43	49
7	CFM/Ft.	175	250	305	350	395	480
Ak/Ft=.24	NC	--	30	36	40	44	50
8	CFM/Ft.	200	285	350	400	450	545
Ak/Ft=.32	NC	--	31	37	41	45	51

6610R 1" Slot Width

Number of Slots	Negative Ps Inches of Water	.02	.04	.06	.08	.10	.15
1	CFM/Ft.	35	50	60	70	80	95
Ak/Ft=.06	NC	--	25	31	36	40	45
2	CFM/Ft.	70	100	125	140	155	190
Ak/Ft=.11	NC	--	27	33	37	41	47
3	CFM/Ft.	105	150	185	210	235	285
Ak/Ft=.17	NC	--	29	35	39	43	49
4	CFM/Ft.	140	200	250	280	310	380
Ak/Ft=.23	NC	--	31	37	41	45	51
5	CFM/Ft.	175	250	300	350	390	475
Ak/Ft=.28	NC	--	32	38	42	46	52
6	CFM/Ft.	210	300	375	420	465	570
Ak/Ft=.33	NC	--	33	40	43	47	53
7	CFM/Ft.	245	350	425	490	545	665
Ak/Ft=.39	NC	--	34	41	44	47	54
8	CFM/Ft.	280	400	475	560	620	760
Ak/Ft=.44	NC	--	35	42	45	48	55

See Page LSD-199 for Performance Notes

Linear Slot Diffusers

LSD

Series BP - Performance Notes

Performance Notes:

- On units without BP/BPI plenums, pressure drop reported is across the diffuser element only. The field supply plenum pressure drop should be included when determining system fan requirements. A good approximation of the static pressure requirements can be calculated by adding the velocity pressure through the plenum inlet to the diffuser section pressure drop.
- NC is based on a 4ft section of diffuser. The following table should be used to calculate sound levels for lengths other than 4 ft.
- To correct throws for lengths other than the 4 ft lengths used in determining catalog performance, throws should be adjusted per the following table:

NC Correction for Length					
Length (feet)	2	4	6	8	10
NC Correction	-2	+0	+2	+3	+5
Throw Correction Multiplier for Length					
Length (feet)	2	4	8	10	12
Throw Correction	.7	1.0	1.5	1.7	1.8

- All pressures are in inches of water
- Isothermal throws are given for terminal velocities of 150, 100 and 50 fpm, based upon 4 ft section
- Vertical throw values are based on a 50 fpm terminal velocity
- For Vertical supply, subtract one NC
- For Returns minus pattern controllers, deduct 12 NC.
- Throw values are based on a 1-way discharge from the slot. For 2-way discharges, throw is based upon the number and size of the slots throwing in each direction, with the total supply air flow split equally between all slots in the unit.
- Data were collected in accordance to ASHRAE Standard 70-1991 "Method of Testing for Rating the Performance of Air Outlets and Inlets."

Series BP - Specification

Model BP – Non Insulated

Model BPI - Insulated

Boot plenums for model 6600 (supply) or 6600R (return) linear slot diffusers shall be provided by the manufacturer (Optional: manufactured by METALAIRE). The units shall be the size and quantity as outline in the plans and specifications. Units shall be constructed of coated steel. Optional: Units shall include 1/2 internal fiberglass insulation. Insulation must be applied to the end caps.

➔ Linear Louver Diffuser ➔ Model L-5000 ➔ Aluminum

Product Details

- ✦ The series L-5000 is a fixed pattern, high induction architectural linear slot diffuser. This diffuser is constructed from heavy aluminum extrusions and is available with either 1-way or 2-way opposite air discharge patterns
- ✦ Also available is an optional plenum that allows the 2-way opposite unit to become a supply/return diffuser. The optional L-5000 BP-SR has a dividing section built into the plenum making an effective choice for perimeter supply/return applications
- ✦ Units available in 18", 24", 30", 36", 42" or 48" lengths and can be selected for T-bar Lay-in or surface mounting applications
- ✦ 1-way units available in 3", 6", 9", 12" and 15" widths
- ✦ 2-way opposite units available in 6" and 12" widths
- ✦ The louvered face is secured with spring clips making removal easy for installation
- ✦ The series L-5000 is an excellent choice for VAV applications
- ✦ L-5000 surface mount diffuser available



Model L-5000 Shown

Standard Finish: 01 White

Linear Slot Diffusers

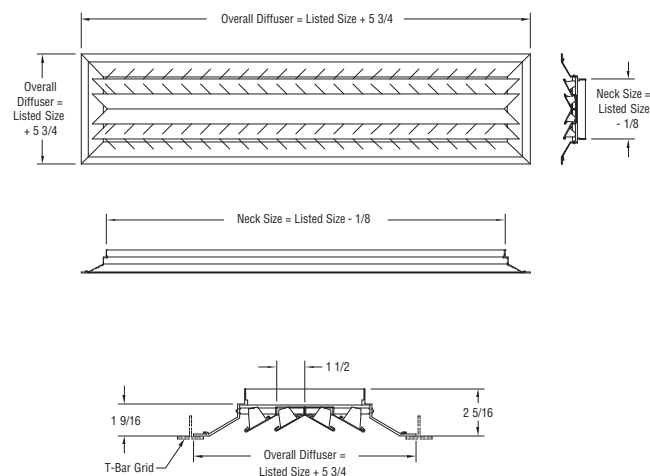
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Surface Mount

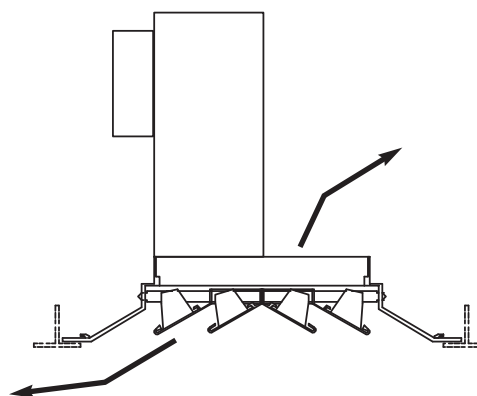
Dimensions are in inches

Series L-5000

Model L-5000-1 - Dimensions same as above (with screw holes)



The L-5000 can be used for combination Supply/Return applications.
Unit shown above with optional boot plenum.



Model L-5000 - Performance

Size in inches	Neck Velocity (VN) fpm	400	450	500	550	600	650	700
	Total Pressure	.057	.072	0.94	.110	.130	.168	.180
42 x 3 An .875	CFM ea. side	350	394	480	481	535	568	610
	Throw in ft.	11	12	14	15	15	17	18
42 x 4.5 An 1.312	CFM ea. side	525	591	656	722	788	853	919
	Throw in ft.	13	14	16	17	19	20	22

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM** - Cubic feet per minute (air)
- fpm** - Velocity of air stream in feet per minute
- Pt** - Total pressure (inches of water column)
- Throw** - Cataloged throw is horizontal distances in feet to the terminal velocities of 50 fpm with ambient supply air temperature.
- An** - Neck area

Series L-5000 - Specification

Linear ceiling diffusers shall be model L-5000 manufactured by METALAIRE. Units shall be aluminum construction and consist of a fixed pattern louvered core fastened into a border with spring loaded latches. Optional: Units shall be designed to be configured as a combination supply/return unit.

Core shall be removable without the use of tools. Outlets shall be engineered for high capacity applications and include straight deflector blades (without a horizontal lip). Units with a horizontal lip at the ends of the deflector blades are not acceptable. The units shall be the size and quantity as outline in the plans and specifications.

Outlets shall be available in a 1 or 2 way opposite discharge pattern. Units shall be designed to integrate into the specified ceiling system.

Options:

IV Induction Vanes

Units shall include IV induction vanes factory mounted onto the back side of the deflector vanes. IV vanes shall increase the induction rate of the diffuser.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

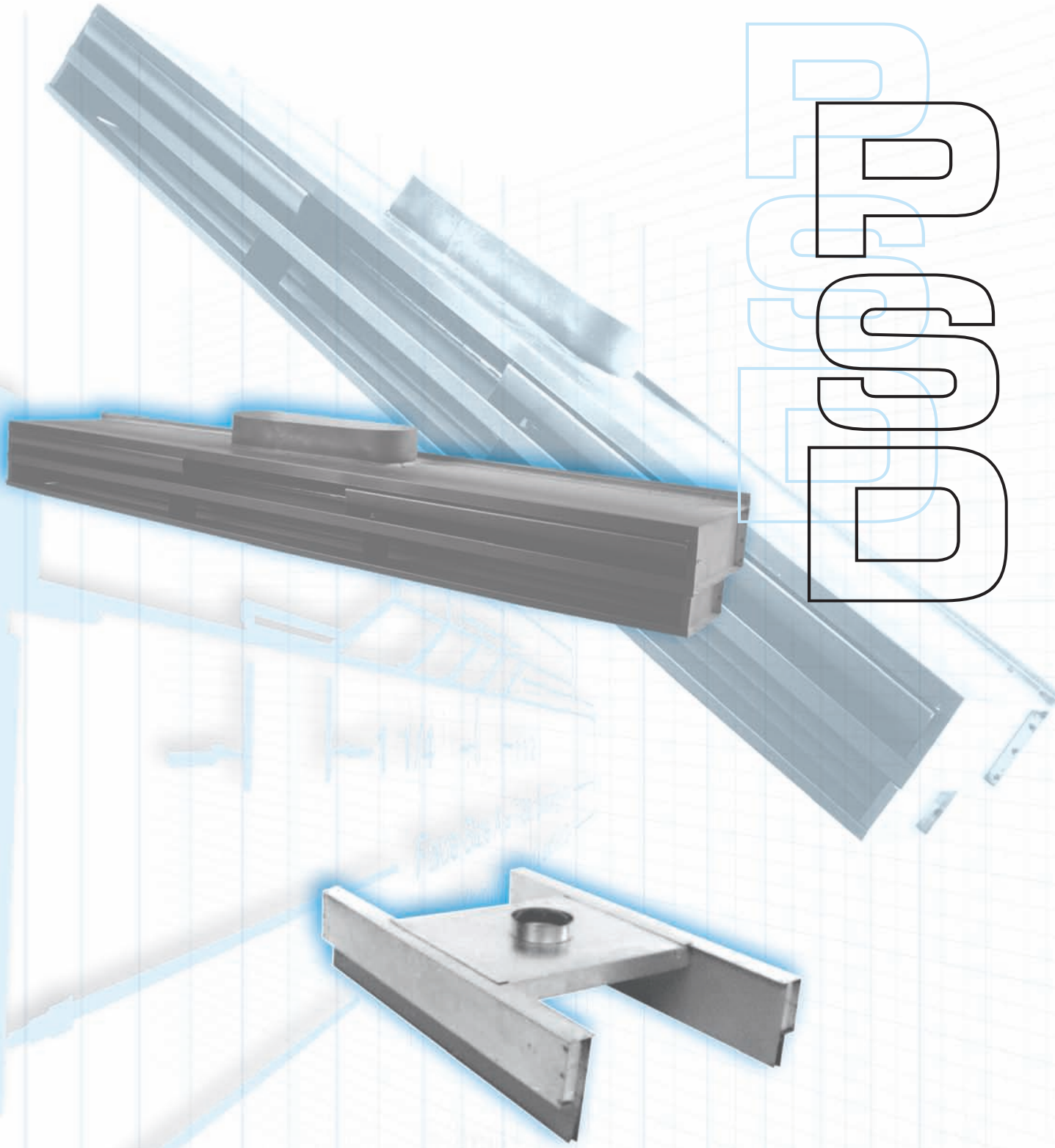
Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionize water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

PLENUM
SLOT
DIFFUSERS



**PLENUM
SLOT DIFFUSERS**



Series PHP
Pg. 206

Plenum Slot Diffusers - Adjustable Pattern Controller - Series PHP

- ★ Heavy duty extruded aluminum pattern controller and gasket for tight horizontal discharge pattern
- ★ Field adjustable pattern controllers allow adjustable horizontal and vertical throw
- ★ Units available in 1 to 4 slots to meet a wide range of applications and capabilities
- ★ Double hem face construction for rigidity and straightness
- ★ PHPR return model offers low pressure drop return; Integral light shield hides interior of unit
- ★ One-piece plenum construction ensures tight fit in ceiling grid
- ★ Optional 1/4" insulation on PHPI-6 units
- ★ Lay-in (type 6) integrates into 1" T-bar ceiling

	T-bar Lay-in		Fineline Ceilings			
	Supply	Return	Supply		Return	
Insulated	PHPSI-6	PHPRI-6	PHPSI-9 Supply w/ Center Tee	PHNSI-9 Supply w/ hat section	PHPRI-9 Return w/ Center Tee	PHNRI-9 Return w/ hat section
Non-Insulated	PHPS-6	PHPR-6	PHPS-9 Supply w/ Center Tee	PHNS-9 Supply w/ hat section	PHPR-9 Return w/ Center Tee	PHNR-9 Return w/ hat section

Plenum Slot Diffusers



Series PHC
Pg. 224

High Capacity Plenum Slot Diffusers - Fixed Pattern Controller - Series PHC

- ★ Aerodynamically shaped, heavy duty extruded aluminum curved blade pattern controller generates a tight horizontal discharge pattern
- ★ Excellent selection for perimeter applications, especially in cold climates because of its high induction ratio
- ★ Available with integral return, a low cost and efficient solution to return air into the ceiling plenum
- ★ Optional 1/4" insulation on PHCSI-6, PHCRI-6, PHCSI-DB-6, and PHCRI-DB-6

T-bar Lay-in				
Insulated	PHCSI-6 Supply	PHCRI-6 Supply - with Return	PHCSI-DB-6 Supply - with Down Blow	PHCRI-DB-6 Supply - with Down Blow & Return
Non-Insulated	PHCS-6 Supply	PHCR-6 Supply - with Return	PHCS-DB-6 Supply - with Down Blow	PHCR-DB-6 Supply - with Down Blow & Return

PSD



Series LT
Pg. 230

Light Troffer Diffusers - Fixed Pattern Controller - Series LT

- ★ Architecturally pleasing; Reduces ceiling clutter by integrating the ceiling diffuser into the light fixture
- ★ Each unit is customized to fit the specified light fixture ensuring a tight seal for optimum performance
- ★ Optional 1/2" internal insulation available
- ★ Available with single or double-sided supply configurations
- ★ Model DS-LT-6 double-sided diffusers are available with side or top inlet for installation flexibility
- ★ Matching single-sided plenum return unit model SSR-LT-6 is available

T-bar Lay-in				
Insulated	SSI-LT-6 Single Side	DSI-LT-6 Double Side - Side Inlet	DSTI-LT-6 Double Side - Top Inlet	SSRI-LT-6 Single Side Return
Non-Insulated	SS-LT-6 Single Side	DS-LT-6 Double Side - Side Inlet	DST-LT-6 Double Side - Top Inlet	SSR-LT-6 Single Side Return

PSD - Plenum Slot Diffusers

3/2006

➔ Plenum Slot Diffusers ➔ Supply/Return ➔ Series PHP

Product Details

- ★ Heavy duty extruded aluminum pattern controller and gasket for tight horizontal discharge pattern
- ★ Field adjustable pattern controllers allow adjustable horizontal and vertical throw
- ★ Units available in 1 to 4 slots to meet a wide range of applications and capabilities
- ★ Double hem face construction for rigidity and straightness
- ★ PHPR return model offers low pressure drop return; Integral light shield hides interior of unit
- ★ One-piece plenum construction ensures tight fit in ceiling grid
- ★ Optional 1/4" insulation on PHPI-6 units
- ★ Lay-in (type 6) integrates into 1" T-bar ceiling



Model PHP-6 Shown

Finish: 25 - WT - White Tees with Black Borders & Plenum Interior

Plenum Slot Diffusers

PSD

T-bar Lay-in - Supply

Dimensions are in inches

Adjustable Pattern Controller

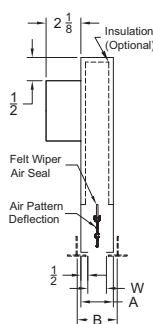
Non Insulated

Model PHPS-50-6 - 1/2" Slot Width
 Model PHPS-75-6 - 3/4" Slot Width
 Model PHPS-10-6 - 1" Slot Width
 Model PHPS-15-6 - 1 1/2" Slot Width

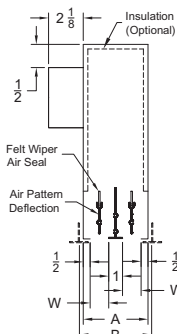
Insulated

Model PHPSI-50-6 - 1/2" Slot Width
 Model PHPSI-75-6 - 3/4" Slot Width
 Model PHPSI-10-6 - 1" Slot Width
 Model PHPSI-15-6 - 1 1/2" Slot Width

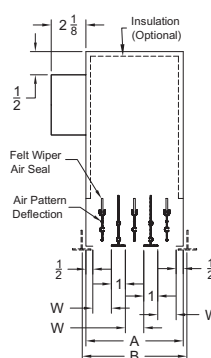
1 Slot



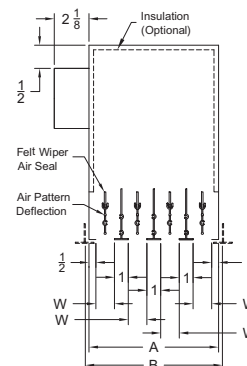
2 Slot



3 Slot

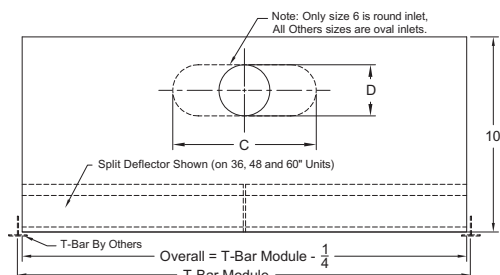


4 Slot



Supply - Plenum Slot Diffusers - Steel - Face View

Series PHPS(I)-6 - T-bar Lay-in



PSD - Plenum Slot Diffusers

T-bar Lay-in - Return

Dimensions are in inches

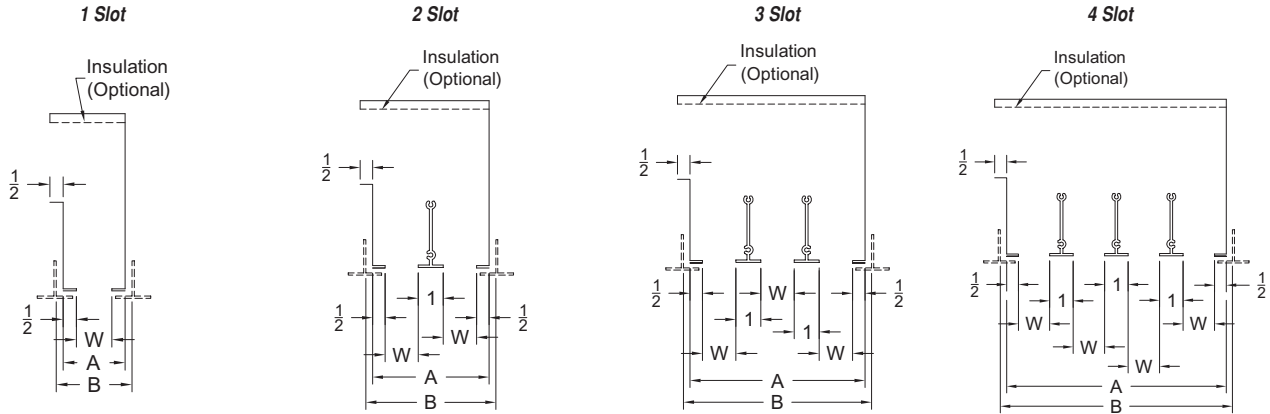
No Pattern Controller

Non Insulated

Model PHPR-50-6 - 1/2" Slot Width
 Model PHPR-75-6 - 3/4" Slot Width
 Model PHPR-10-6 - 1" Slot Width
 Model PHPR-15-6 - 1 1/2" Slot Width

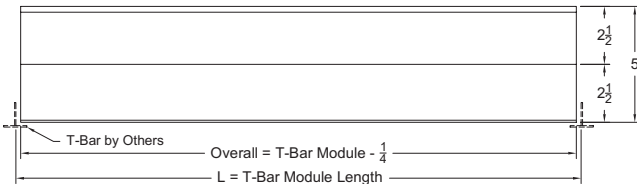
Insulated

Model PHPRI-50-6 - 1/2" Slot Width
 Model PHPRI-75-6 - 3/4" Slot Width
 Model PHPRI-10-6 - 1" Slot Width
 Model PHPRI-15-6 - 1 1/2" Slot Width



Return- Plenum Slot Diffusers - Face View

Series PHPR(I)-6 - T-bar Lay-in



Plenum Slot Diffusers

PSD

Inlet Size	C	D
6 Round	-	5 7/8
8 Oval	8 15/16	6
10 Oval	12 1/16	6
12 Oval	15 1/4	6

Models		L	W	1 Slot		2 Slots		3 Slots		4 Slots	
Supply	Return			A	B	A	B	A	B	A	B
PHPS(I)-50-6	PHPR(I)-50-6	24, 36, 48, 60	1/2	1 1/2	1 3/4	3	3 1/4	4 1/2	4 3/4	6	6 1/4
PHPS(I)-75-6	PHPR(I)-75-6	24, 36, 48, 60	3/4	1 3/4	2	3 1/2	3 3/4	5 1/4	5 1/2	7	7 1/4
PHPS(I)-10-6	PHPR(I)-10-6	24, 36, 48, 60	1	2	2 1/4	4	4 1/4	6	6 1/4	8	8 1/4
PHPS(I)-15-6	PHPR(I)-15-6	24, 36, 48, 60	1 1/2	2 1/2	2 3/4	5	5 1/4	7 1/2	7 3/4	10	10 1/4



For more product information visit us at www.metalair.com



PSD - Plenum Slot Diffusers

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Plenum Slot Diffusers

Donn Finline Ceiling - Supply - Adjustable Pattern Controller

Non Insulated

Model PHPS-75-9 - 3/4" Slot Width
 Model PHPS-10-9 - 1" Slot Width
 Model PHPS-15-9 - 1 1/2" Slot Width

Insulated

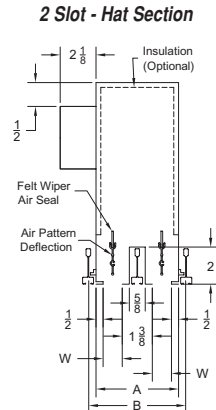
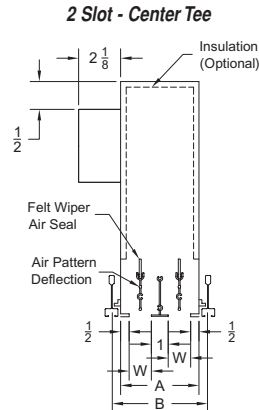
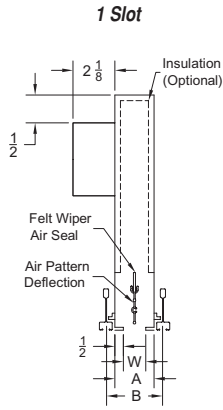
Model PHPSI-75-9 - 3/4" Slot Width
 Model PHPSI-10-9 - 1" Slot Width
 Model PHPSI-15-9 - 1 1/2" Slot Width

Non Insulated

Model PHNS-75-9 - 3/4" Slot Width
 Model PHNS-10-9 - 1" Slot Width
 Model PHNS-15-9 - 1 1/2" Slot Width

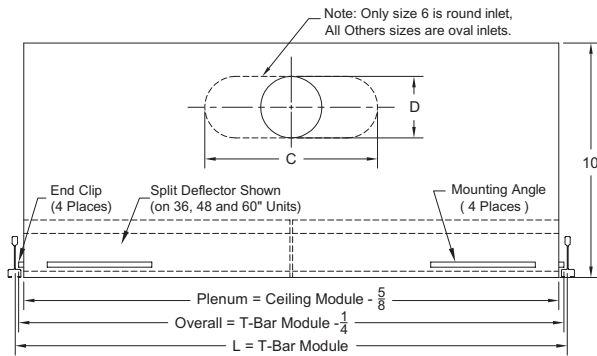
Insulated

Model PHNSI-75-9 - 3/4" Slot Width
 Model PHNSI-10-9 - 1" Slot Width
 Model PHNSI-15-9 - 1 1/2" Slot Width



Supply- Plenum Slot Diffusers - Face View

Series PHPS(I)-9 - Donn Finline Ceiling



Inlet Size	C	D
6 Round	-	5 7/8
8 Oval	8 15/16	6
10 Oval	12 1/16	6
12 Oval	15 1/4	6

Supply	L	W	1 Slot w/ Center Tee		2 Slots w/ Center Tee		2 Slots w/ Hat Section	
			A	B	A	B	A	B
PHPS(I)-75-9	24, 48	3/4	1 3/4	2 3/8	3 1/2	4 1/8	-	-
PHPS(I)-10-9	24, 48	1	2	2 5/8	4	4 5/8	-	-
PHPS(I)-15-9	24, 48	1 1/2	2 1/2	3 1/8	5	4 5/8	-	-
PHPS(I)-75-9	24, 48	-	-	-	-	-	3 7/8	4 1/4
PHPS(I)-10-9	24, 48	-	-	-	-	-	4 3/8	5
PHPS(I)-15-9	24, 48	-	-	-	-	-	5 3/8	6

PSD

PSD - Plenum Slot Diffusers

Plenum Slot Diffusers

PSD



Donn Finline Ceiling - Return - No Pattern Controller

Non Insulated

Model PHPR-75-9 - 3/4" Slot Width
 Model PHPR-10-9 - 1" Slot Width
 Model PHPR-15-9 - 1 1/2" Slot Width

Insulated

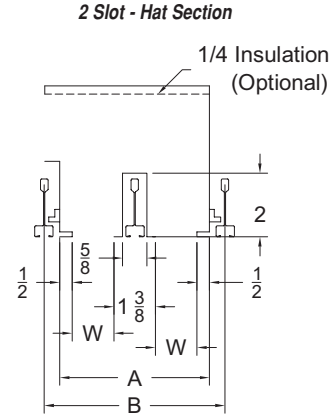
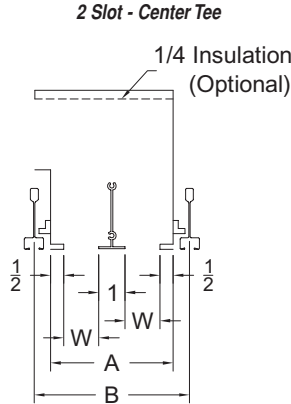
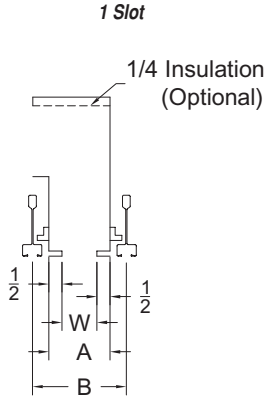
Model PHPRI-75-9 - 3/4" Slot Width
 Model PHPRI-10-9 - 1" Slot Width
 Model PHPRI-15-9 - 1 1/2" Slot Width

Non Insulated

Model PHNR-75-9 - 3/4" Slot Width
 Model PHNR-10-9 - 1" Slot Width
 Model PHNR-15-9 - 1 1/2" Slot Width

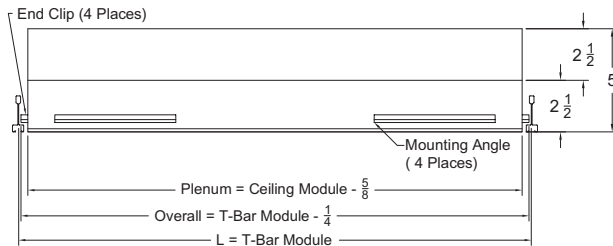
Insulated

Model PHNRI-75-9 - 3/4" Slot Width
 Model PHNRI-10-9 - 1" Slot Width
 Model PHNRI-15-9 - 1 1/2" Slot Width



Return- Plenum Slot Diffusers - Face View

Series PHPR(I)-9 - Donn Finline Ceiling



Inlet Size	C	D
6 Round	-	5 7/8
8 Oval	8 15/16	6
10 Oval	12 1/16	6
12 Oval	15 1/4	6

Return	L	W	1 Slot w/ Center Tee		2 Slots w/ Center Tee		2 Slots w/ Hat Section	
			A	B	A	B	A	B
PHPR(I)-75-9	24, 48	3/4	1 3/4	2 3/8	3 1/2	4 1/8	-	-
PHPR(I)-10-9	24, 48	1	2	2 5/8	4	4 5/8	-	-
PHPR(I)-15-9	24, 48	1 1/2	2 1/2	3 1/8	5	4 5/8	-	-
PHPR(I)-75-9	24, 48	-	-	-	-	-	3 7/8	4 1/4
PHPR(I)-10-9	24, 48	-	-	-	-	-	4 3/8	5
PHPR(I)-15-9	24, 48	-	-	-	-	-	5 3/8	6

1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 25-WT White Tees with Black Borders</p> <p>Optional Finish 26 White Tees and Borders 27 Black Tees and Borders</p>	<p>CN - (For units over 24") LQ - Locking quadrant damper T-1 - One outside tee T-2 - Two outside tee TC-1 - One outside tee TC-2 - Bar clips both ends TC-3 - One T-bar clip/One outside tee EN - End Notch EN-2 - End notch/Two outer tees</p>	<ul style="list-style-type: none"> Extruded aluminum pattern controller (supply) No pattern controller on return units One-piece electrogalvanized steel plenum with double hem face Internal insulation is 1/4" on one slot units

1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 25-WT White Tees with Black Borders</p> <p>Optional Finish 26 White Tees and Borders 27 Black Tees and Borders</p>	<p>CN - HS center hat section for 2 slot units (see PHNS models) LQ - Locking quadrant damper</p>	<ul style="list-style-type: none"> Extruded aluminum pattern controller on supply units, no pattern controller on return units One-piece electrogalvanized steel plenum with double hem face Units over 24" have a standard cross-notch Internal insulation is 1/4" on one slot units Available in lengths and slot widths as shown

PSD - Plenum Slot Diffusers

3/2006

Model PHPS-6 and PHPSI-6 One Slot - Performance

				CFM/LF											
				10	15	25	40	60	75	90	120				
Plenum Slot Diffusers	1/2" Slot Width	2' Length 6" Inlet	Horizontal	CFM	20	30	50	80	120	150	180	240			
			Ps	0.01	0.023	0.064	0.163	0.367	0.574	0.826	1.469				
		Pt	0.011	0.024	0.068	0.174	0.39	0.61	0.879	1.562					
		Throw	2 3 6	3 5 8	5 7 10	7 9 12	9 11 15	10 12 17	11 13 19	12 15 22					
		NC	-	<10	17	29	39	43	47	56					
		Vertical	Ps	0.013	0.029	0.082	0.209	0.471	0.736	1.06	1.885				
	Pt	0.014	0.031	0.086	0.22	0.495	0.773	1.113	1.978						
	Throw	1 1 3	1 2 4	2 3 7	4 5 11	5 8 16	7 10 20	8 12 24	11 16 32						
	NC	-	<10	15	29	38	42	45	52						
	3/4" Slot Width	4' Length 6" Inlet	Horizontal	CFM	40	60	100	160	240	300	360	-			
			Ps	0.01	0.023	0.063	0.16	0.36	0.563	0.81	-				
		Pt	0.013	0.028	0.079	0.201	0.453	0.708	1.02	-					
Throw		2 3 7	3 5 10	6 8 14	9 12 18	12 15 22	14 17 24	15 19 26	-						
NC		-	<10	20	32	42	46	50	-						
Vertical		Ps	0.013	0.029	0.08	0.205	0.462	0.722	1.039	-					
Pt	0.015	0.035	0.096	0.247	0.555	0.867	1.249	-							
Throw	2 3 5	3 4 8	4 6 13	7 10 20	10 15 30	13 19 38	15 23 46	-							
NC	-	<10	18	32	41	45	48	-							
PSD	5' Length 8" Inlet	Horizontal	CFM	50	75	125	200	300	375	450	-				
		Ps	0.01	0.022	0.061	0.157	0.353	0.551	0.794	-					
	Pt	0.011	0.025	0.07	0.18	0.405	0.633	0.912	-						
	Throw	3 4 8	4 6 12	7 11 16	11 14 20	14 17 24	16 19 27	17 21 29	-						
	NC	<10	11	22	34	44	48	52	-						
	Vertical	Ps	0.013	0.028	0.079	0.201	0.453	0.707	1.018	-					
Pt	0.014	0.032	0.088	0.224	0.505	0.789	1.136	-							
Throw	2 3 7	3 5 10	5 8 16	9 13 26	13 20 40	16 25 49	20 30 59	-							
NC	<10	12	26	39	46	50	55	-							
PSD	2' Length 8" Inlet	Horizontal	CFM	20	30	50	80	120	150	180	240				
		Ps	0.007	0.015	0.041	0.104	0.235	0.367	0.528	0.939					
		Pt	0.007	0.015	0.042	0.108	0.243	0.38	0.973	-					
		Throw	2 3 5	3 4 7	4 6 9	7 8 12	8 10 14	9 11 16	10 12 17	12 14 20					
	NC	-	-	<10	23	32	37	40	47						
	Vertical	Ps	0.008	0.017	0.048	0.123	0.277	0.433	0.623	1.108					
	Pt	0.008	0.018	0.05	0.127	0.285	0.446	0.642	1.141						
	Throw	1 1 2	1 2 3	2 3 5	3 4 9	4 7 13	5 8 16	7 10 20	9 13 26						
	NC	-	-	<10	24	36	41	45	54						
	4' Length 8" Inlet	Horizontal	CFM	40	60	100	160	240	300	360	-				
		Ps	0.006	0.014	0.04	0.102	0.23	0.36	0.518	-					
		Pt	0.007	0.016	0.046	0.117	0.264	0.412	0.593	-					
Throw		2 3 6	3 4 8	5 7 13	7 11 16	11 14 20	13 16 22	14 17 25	-						
NC	-	<10	15	26	35	40	43	-							
Vertical	Ps	0.008	0.017	0.047	0.121	0.272	0.424	0.611	-						
Pt	0.008	0.019	0.053	0.136	0.305	0.477	0.686	-							
Throw	1 2 4	2 3 6	3 5 10	6 8 17	8 12 25	10 15 31	12 19 37	-							
NC	<10	12	27	39	44	48	-	-							
5' Length 8" Inlet	Horizontal	CFM	50	75	125	200	300	375	450	-					
	Ps	0.006	0.014	0.039	0.1	0.226	0.353	0.508	-						
	Pt	0.008	0.017	0.048	0.124	0.278	0.434	0.626	-						
	Throw	2 4 7	4 6 11	6 9 14	10 13 18	13 16 22	14 18 25	16 19 27	-						
NC	-	<10	17	28	37	42	45	-							
Vertical	Ps	0.007	0.017	0.046	0.118	0.266	0.416	0.599	-						
Pt	0.009	0.02	0.055	0.142	0.319	0.498	0.717	-							
Throw	2 3 5	3 4 8	4 7 13	7 11 22	11 16 32	13 20 40	16 24 48	-							
NC	-	<10	14	29	41	46	50	-							

See Page PSD-217 for performance data notes

PSD - Plenum Slot Diffusers

Model PHPS-6 and PHPSI-6 One Slot - Performance

		CFM/LF										
		10	15	25	40	60	75	90	120	160		
1" Slot Width	2' Length 8" Inlet	Horizontal	CFM	20	30	50	80	120	150	180	240	320
			Ps	0.005	0.010	0.028	0.073	0.163	0.255	0.368	0.654	1.162
			Pt	0.005	0.011	0.030	0.076	0.172	0.268	0.387	0.687	1.222
		Throw	3 4 6	4 5 7	5 6 9	6 8 11	8 10 14	9 11 15	10 12 17	11 14 19	13 16 23	
		NC	-	<10	10	23	32	36	39	44	53	
		Vertical	Ps	0.007	0.016	0.044	0.113	0.254	0.396	0.571	1.015	1.804
	Pt		0.007	0.016	0.046	0.116	0.262	0.410	0.590	1.048	1.864	
	Throw		0 1 1	1 1 2	1 2 4	2 3 6	3 4 9	4 5 11	4 7 13	6 9 18	8 12 23	
	NC	-	-	<10	22	35	40	43	47	55		
	4' Length 8" Inlet	Horizontal	CFM	40	60	100	160	240	300	360	480	-
			Ps	0.004	0.010	0.028	0.071	0.160	0.250	0.361	0.641	-
			Pt	0.005	0.012	0.034	0.086	0.194	0.303	0.436	0.775	-
		Throw	1 2 4	2 3 7	4 5 11	6 9 16	9 13 19	11 15 22	13 17 24	16 19 28	-	
		NC	-	<10	13	26	35	39	42	47	-	
		Vertical	Ps	0.007	0.016	0.043	0.111	0.249	0.389	0.560	0.995	-
	Pt		0.008	0.018	0.049	0.125	0.282	0.441	0.635	1.129	-	
	Throw		1 2 3	2 2 5	3 4 8	4 6 13	6 10 19	8 12 24	10 14 29	13 19 38	-	
	NC	-	-	<10	25	38	43	46	50	-		
5' Length 10" Inlet	Horizontal	CFM	50	75	125	200	300	375	450	600	-	
		Ps	0.004	0.010	0.027	0.070	0.157	0.245	0.353	0.628	-	
		Pt	0.005	0.011	0.032	0.082	0.184	0.287	0.413	0.735	-	
	Throw	5 6 9	6 8 11	8 10 14	10 13 18	13 15 22	14 17 24	15 19 27	18 22 31	-		
	NC	-	<10	15	28	37	41	44	49	-		
	Vertical	Ps	0.007	0.015	0.042	0.108	0.244	0.381	0.549	0.975	-	
Pt		0.008	0.017	0.047	0.120	0.271	0.423	0.609	1.082	-		
Throw		1 2 4	2 3 7	4 5 11	6 9 18	9 13 26	11 16 33	13 20 39	18 26 53	-		
NC	-	<10	11	27	40	45	48	52	-			
1-1/2" Slot Width	2' Length 8" Inlet	Horizontal	CFM	20	30	50	80	120	150	180	240	320
			Ps	0.004	0.010	0.027	0.069	0.155	0.242	0.349	0.620	1.102
			Pt	0.005	0.010	0.028	0.073	0.163	0.255	0.368	0.654	1.162
		Throw	1 2 3	2 2 5	3 4 8	4 6 11	6 9 13	8 10 15	9 11 16	11 13 18	12 15 21	
		NC	-	-	<10	13	22	29	34	42	50	
		Vertical	Ps	0.003	0.007	0.020	0.052	0.117	0.183	0.263	0.468	0.831
	Pt		0.003	0.008	0.022	0.056	0.125	0.196	0.282	0.501	0.891	
	Throw		0 1 1	1 1 2	1 1 3	1 2 4	2 3 7	3 4 8	3 5 10	4 7 13	6 9 17	
	NC	-	-	-	<10	19	25	30	37	45		
	4' Length 8" Inlet	Horizontal	CFM	40	60	100	160	240	300	360	480	640
			Ps	0.004	0.009	0.026	0.068	0.152	0.237	0.342	0.608	1.081
			Pt	0.005	0.012	0.032	0.082	0.186	0.290	0.417	0.742	1.319
		Throw	2 2 5	2 3 7	4 6 12	6 9 15	9 13 18	12 15 21	13 16 23	15 18 26	17 21 30	
		NC	-	-	<10	16	25	32	37	45	53	
		Vertical	Ps	0.003	0.007	0.020	0.051	0.115	0.179	0.258	0.458	0.815
	Pt		0.004	0.009	0.026	0.066	0.148	0.231	0.333	0.593	1.054	
	Throw		1 1 2	1 2 4	2 3 6	3 5 10	5 7 14	6 9 18	7 11 21	10 14 29	13 19 38	
	NC	-	-	<10	12	22	28	33	40	48		
5' Length 10" Inlet	Horizontal	CFM	50	75	125	200	300	375	450	600	800	
		Ps	0.004	0.009	0.026	0.066	0.149	0.233	0.335	0.596	1.059	
		Pt	0.005	0.011	0.031	0.078	0.176	0.275	0.395	0.703	1.249	
	Throw	3 4 8	4 6 10	7 9 13	10 12 17	12 15 21	13 16 23	15 18 25	17 21 29	19 24 34		
	NC	-	-	<10	18	27	34	39	47	55		
	Vertical	Ps	0.003	0.007	0.020	0.050	0.112	0.176	0.253	0.449	0.799	
Pt		0.004	0.009	0.024	0.062	0.139	0.217	0.313	0.556	0.989		
Throw		1 2 3	2 2 5	3 4 8	4 7 13	7 10 20	8 12 25	10 15 30	13 20 40	18 27 53		
NC	-	-	<10	14	24	30	35	42	50			

See Page PSD-217 for performance data notes

Plenum Slot Diffusers

PSD

PSD - Plenum Slot Diffusers

3/2006

Model PHPS-6 and PHPSI-6 - Two Slot - Performance

		CFM/LF											
		10	15	25	40	60	75	90	120	160			
Plenum Slot Diffusers	1/2" Slot Width	2' Length 8" Inlet	Horizontal	CFM	20	30	50	80	120	150	180	240	320
			Ps	0.005	0.012	0.032	0.083	0.186	0.291	0.419	0.745	1.324	
			Pt	0.005	0.012	0.034	0.086	0.195	0.304	0.438	0.778	1.383	
		Throw	1 2 3	2 2 5	3 4 8	4 6 13	6 9 17	8 12 19	9 14 21	13 17 24	16 20 28		
		NC	-	-	<10	15	26	32	37	43	51		
		Vertical	Ps	0.005	0.011	0.029	0.075	0.169	0.264	0.380	0.675	1.200	
	Pt	0.005	0.011	0.031	0.079	0.177	0.277	0.398	0.708	1.259			
	Throw	0 0 2	0 1 3	1 2 6	3 5 9	5 7 14	6 9 17	7 10 21	9 14 28	12 19 37			
	NC	-	-	<10	14	26	33	37	44	51			
	4' Length 8" Inlet	Horizontal	CFM	40	60	100	160	240	300	360	480	640	
		Ps	0.005	0.011	0.032	0.081	0.183	0.285	0.411	0.730	1.298		
		Pt	0.006	0.014	0.038	0.096	0.216	0.338	0.486	0.864	1.536		
Throw		1 2 4	2 3 7	4 5 11	6 9 18	9 13 24	11 16 27	13 20 30	18 24 34	23 28 39			
NC		-	-	<10	18	29	35	40	46	54			
Vertical		Ps	0.005	0.010	0.029	0.074	0.165	0.258	0.372	0.662	1.176		
Pt	0.006	0.012	0.035	0.088	0.199	0.311	0.448	0.796	1.415				
Throw	0 1 2	1 1 5	2 3 8	4 7 13	7 10 20	8 12 24	10 15 29	13 20 39	17 26 52				
NC	-	-	<10	17	29	36	40	47	54				
5' Length 10" Inlet	Horizontal	CFM	50	75	125	200	300	375	450	600	800		
	Ps	0.005	0.011	0.031	0.079	0.179	0.279	0.402	0.715	1.272			
	Pt	0.006	0.013	0.036	0.091	0.206	0.321	0.463	0.822	1.462			
	Throw	2 3 5	3 4 8	4 6 13	7 10 21	10 16 27	13 19 30	16 23 33	21 27 38	25 31 44			
	NC	-	-	<10	20	31	37	42	48	56			
	Vertical	Ps	0.005	0.010	0.028	0.072	0.162	0.253	0.365	0.648	1.153		
Pt	0.005	0.012	0.033	0.084	0.189	0.295	0.425	0.755	1.343				
Throw	0 1 3	1 2 6	2 5 10	5 8 16	8 12 24	10 15 31	12 18 37	16 24 49	22 33 65				
NC	-	-	<10	19	31	38	42	49	56				
3/4" Slot Width	2' Length 8" Inlet	Horizontal	CFM	20	30	50	80	120	150	180	240	320	
		Ps	0.004	0.008	0.023	0.059	0.133	0.208	0.299	0.532	0.946		
		Pt	0.004	0.009	0.025	0.063	0.141	0.221	0.318	0.565	1.005		
		Throw	1 2 3	2 2 5	3 4 8	4 6 12	6 9 17	8 11 19	9 14 21	12 17 24	16 20 28		
		NC	-	-	-	<10	20	26	31	38	44		
		Vertical	Ps	0.003	0.008	0.021	0.054	0.122	0.191	0.275	0.490	0.871	
	Pt	0.004	0.008	0.023	0.058	0.131	0.204	0.294	0.523	0.930			
	Throw	0 0 2	0 1 3	1 2 6	3 5 9	5 7 14	6 9 17	7 10 21	9 14 27	12 18 37			
	NC	-	-	-	<10	17	26	31	37	42			
	4' Length 8" Inlet	Horizontal	CFM	40	60	100	160	240	300	360	480	640	
		Ps	0.004	0.008	0.023	0.058	0.130	0.204	0.293	0.521	0.927		
		Pt	0.005	0.010	0.028	0.073	0.164	0.256	0.369	0.656	1.165		
Throw		2 3 5	3 4 8	4 7 13	7 11 20	11 16 24	13 19 27	16 21 30	20 24 34	23 28 39			
NC		-	-	<10	14	23	29	34	41	47			
Vertical		Ps	0.003	0.008	0.021	0.053	0.120	0.188	0.270	0.480	0.854		
Pt	0.004	0.010	0.027	0.068	0.154	0.240	0.346	0.614	1.092				
Throw	0 1 2	1 1 5	1 3 8	4 6 13	6 10 19	8 12 24	10 14 29	13 19 38	17 25 51				
NC	-	-	-	<10	20	29	34	40	45				
5' Length 10" Inlet	Horizontal	CFM	50	75	125	200	300	375	450	600	800		
	Ps	0.003	0.008	0.022	0.056	0.125	0.196	0.282	0.501	0.890			
	Pt	0.004	0.009	0.026	0.067	0.152	0.237	0.342	0.607	1.080			
	Throw	2 3 5	3 4 8	4 6 13	7 10 21	10 15 27	13 19 30	15 23 33	21 27 38	25 31 44			
	NC	-	-	<10	16	25	31	36	43	49			
	Vertical	Ps	0.003	0.007	0.020	0.051	0.115	0.180	0.259	0.461	0.819		
Pt	0.004	0.009	0.025	0.063	0.142	0.222	0.319	0.568	1.009				
Throw	0 1 3	1 2 6	2 5 10	5 8 15	8 12 23	10 15 29	12 17 35	15 23 46	21 31 62				
NC	-	-	-	<10	22	31	36	42	47				

See Page PSD-217 for performance data notes

PSD - Plenum Slot Diffusers

Model PHPS-6 and PHPSI-6 - Two Slot - Performance

		CFM/LF										
		10	15	25	40	60	75	90	120	160		
1" Slot Width	2' Length 8" Inlet	Horizontal	CFM	20	30	50	80	120	150	180	240	320
			Ps	0.002	0.005	0.014	0.035	0.080	0.124	0.179	0.318	0.566
			Pt	0.002	0.005	0.015	0.039	0.088	0.137	0.198	0.352	0.626
		Throw	1 1 3	1 2 4	2 4 7	4 6 12	6 9 17	7 11 19	9 13 21	12 17 24	15 20 28	
		NC	-	-	-	<10	17	24	29	35	40	
		Vertical	Ps	0.002	0.005	0.013	0.034	0.077	0.120	0.172	0.306	0.545
	Pt	0.002	0.005	0.015	0.038	0.085	0.133	0.191	0.340	0.604		
	Throw	0 0 1	0 0 2	0 1 4	1 3 6	3 5 9	4 6 12	5 7 14	6 9 19	8 12 25		
	NC	-	-	-	<10	16	24	30	37	42		
	4' Length 8" Inlet	Horizontal	CFM	40	60	100	160	240	300	360	480	640
			Ps	0.002	0.005	0.014	0.035	0.078	0.122	0.176	0.312	0.555
			Pt	0.003	0.007	0.019	0.050	0.112	0.174	0.251	0.446	0.793
		Throw	1 2 4	2 3 6	4 5 11	6 9 17	9 13 24	11 16 27	13 19 30	17 24 34	23 28 39	
		NC	-	-	-	<10	20	27	32	38	43	
		Vertical	Ps	0.002	0.005	0.013	0.033	0.075	0.117	0.169	0.300	0.534
	Pt	0.003	0.007	0.019	0.048	0.109	0.170	0.244	0.435	0.772		
	Throw	0 0 1	0 1 2	1 2 5	2 4 9	4 7 13	5 8 16	7 10 20	9 13 26	12 18 35		
	NC	-	-	-	<10	19	27	33	40	45		
	5' Length 10" Inlet	Horizontal	CFM	50	75	125	200	300	375	450	600	800
			Ps	0.002	0.005	0.013	0.034	0.076	0.118	0.170	0.303	0.538
			Pt	0.003	0.006	0.018	0.046	0.102	0.160	0.230	0.410	0.728
		Throw	2 2 5	2 4 7	4 6 12	7 10 20	10 15 27	12 18 30	15 22 33	20 27 38	25 31 44	
		NC	-	-	<10	11	22	29	34	40	45	
		Vertical	Ps	0.002	0.005	0.013	0.032	0.073	0.114	0.164	0.291	0.518
Pt	0.003	0.006	0.017	0.044	0.100	0.156	0.224	0.398	0.708			
Throw	0 0 1	0 1 3	1 2 7	3 5 11	5 8 16	7 10 20	8 12 24	11 16 32	14 21 43			
NC	-	-	-	<10	21	29	35	42	47			
1-1/2" Slot Width	2' Length 8" Inlet	Horizontal	CFM	20	30	50	80	120	150	180	240	320
			Ps	0.001	0.002	0.007	0.018	0.040	0.062	0.089	0.159	0.282
			Pt	0.001	0.003	0.008	0.021	0.048	0.075	0.108	0.192	0.342
		Throw	1 1 3	1 2 4	2 3 7	4 5 11	5 8 16	7 10 19	8 12 21	11 16 24	14 20 28	
		NC	-	-	-	<10	12	17	21	29	37	
		Vertical	Ps	0.001	0.002	0.006	0.014	0.033	0.051	0.073	0.130	0.232
	Pt	0.001	0.003	0.007	0.018	0.041	0.064	0.092	0.164	0.291		
	Throw	0 0 0	0 0 1	0 0 2	1 1 4	1 3 7	2 4 8	3 5 10	4 7 13	6 9 18		
	NC	-	-	-	-	<10	10	15	23	30		
	4' Length 10" Inlet	Horizontal	CFM	40	60	100	160	240	300	360	480	640
			Ps	0.001	0.002	0.007	0.017	0.039	0.060	0.087	0.154	0.274
			Pt	0.002	0.003	0.010	0.025	0.056	0.087	0.125	0.223	0.396
		Throw	2 2 5	2 3 7	4 6 12	6 9 19	9 14 24	12 17 27	14 21 30	19 24 34	23 28 39	
		NC	-	-	-	<10	15	20	24	32	40	
		Vertical	Ps	0.001	0.002	0.005	0.014	0.032	0.049	0.071	0.127	0.225
	Pt	0.001	0.003	0.008	0.022	0.049	0.076	0.110	0.195	0.347		
	Throw	0 0 0	0 0 1	0 1 2	1 1 6	1 3 9	2 5 11	3 7 14	6 9 18	8 12 20		
	NC	-	-	-	-	<10	13	18	26	33		
	5' Length 12" Inlet	Horizontal	CFM	50	75	125	200	300	375	450	600	800
			Ps	0.001	0.002	0.006	0.016	0.037	0.058	0.083	0.148	0.263
			Pt	0.001	0.003	0.009	0.024	0.053	0.083	0.120	0.213	0.378
		Throw	2 2 5	2 4 7	4 6 12	6 9 19	9 14 27	12 18 30	14 21 33	19 27 38	25 31 44	
		NC	-	-	<10	11	17	22	26	34	42	
		Vertical	Ps	0.001	0.002	0.005	0.014	0.030	0.047	0.068	0.122	0.216
Pt	0.001	0.003	0.008	0.021	0.047	0.073	0.105	0.186	0.331			
Throw	0 0 1	0 0 1	0 1 4	1 2 8	2 6 12	4 7 15	6 9 18	8 12 23	10 16 31			
NC	-	-	-	<10	11	15	20	28	35			

See Page PSD-217 for performance data notes

Plenum Slot Diffusers

PSD

PSD - Plenum Slot Diffusers

3/2006

Model PHPS-6 and PHPSI-6 - Three Slot - Performance

		CFM/LF											
		25	40	60	80	100	120	160	200	250			
Plenum Slot Diffusers	1/2" Slot Width	2' Length 8" Inlet	Horizontal	CFM	50	80	120	160	200	240	320	400	500
			Ps	0.012	0.030	0.068	0.121	0.188	0.271	0.483	0.754	1.178	
			Pt	0.013	0.034	0.076	0.136	0.212	0.305	0.542	0.847	1.324	
		Throw	4 6 12	6 9 15	9 13 19	12 15 21	14 17 24	15 19 26	18 21 30	20 24 34	22 27 38		
		NC	-	<10	16	23	29	34	41	48	55		
		Vertical	Ps	0.009	0.023	0.052	0.092	0.144	0.207	0.368	0.576	0.900	
	Pt	0.010	0.027	0.060	0.107	0.167	0.241	0.428	0.669	1.045			
	Throw	0 1 3	1 2 7	2 4 11	3 7 15	5 9 18	7 11 21	10 15 25	12 18 27	15 22 31			
	NC	-	<10	11	20	26	31	36	40	46			
	4' Length 8" Inlet	Horizontal	CFM	100	160	240	320	400	480	640	800	1000	
		Ps	0.012	0.030	0.067	0.118	0.185	0.266	0.473	0.739	1.155		
		Pt	0.017	0.044	0.100	0.178	0.278	0.400	0.712	1.112	1.737		
Throw		4 6 12	6 9 19	9 14 26	13 19 30	16 24 34	19 26 37	25 30 43	28 34 48	31 38 54			
NC		<10	11	19	26	32	37	44	51	58			
Vertical		Ps	0.009	0.023	0.051	0.090	0.141	0.203	0.361	0.564	0.882		
Pt	0.015	0.037	0.084	0.150	0.234	0.337	0.600	0.937	1.464				
Throw	0 1 4	1 3 10	3 6 15	4 10 21	7 13 26	10 15 30	14 21 35	17 26 39	21 31 43				
NC	-	<10	14	23	29	34	39	43	49				
5' Length 10" Inlet	Horizontal	CFM	125	200	300	400	500	600	800	1000	1250		
	Ps	0.011	0.029	0.065	0.116	0.181	0.261	0.464	0.724	1.132			
	Pt	0.016	0.041	0.092	0.163	0.255	0.368	0.654	1.021	1.596			
	Throw	4 6 13	7 10 20	10 15 29	13 20 34	17 25 38	20 29 42	27 34 48	31 38 54	35 42 60			
	NC	<10	13	21	28	34	39	46	53	60			
	Vertical	Ps	0.009	0.022	0.050	0.089	0.138	0.199	0.354	0.553	0.864		
Pt	0.013	0.034	0.077	0.136	0.213	0.306	0.544	0.850	1.328				
Throw	1 1 5	1 3 12	3 7 18	6 12 24	9 15 30	12 18 34	16 24 39	21 31 43	25 34 49				
NC	-	<10	16	25	31	36	41	45	51				
3/4" Slot Width	2' Length 8" Inlet	Horizontal	CFM	50	80	120	160	200	240	320	400	500	
		Ps	0.008	0.022	0.049	0.087	0.135	0.195	0.346	0.541	0.845		
		Pt	0.010	0.025	0.057	0.101	0.159	0.228	0.406	0.634	0.991		
		Throw	3 5 9	5 8 15	8 11 19	10 15 21	13 17 24	15 19 26	18 21 30	20 24 34	22 27 38		
		NC	-	-	<10	18	23	27	34	40	45		
		Vertical	Ps	0.006	0.016	0.037	0.066	0.103	0.148	0.263	0.411	0.643	
	Pt	0.008	0.020	0.045	0.081	0.126	0.182	0.323	0.504	0.788			
	Throw	0 0 2	1 1 5	1 3 9	2 5 13	3 7 16	5 9 19	8 13 25	10 16 27	13 20 31			
	NC	-	-	<10	18	26	33	41	47	53			
	4' Length 10" Inlet	Horizontal	CFM	100	160	240	320	400	480	640	800	1000	
		Ps	0.008	0.021	0.048	0.085	0.133	0.191	0.339	0.530	0.829		
		Pt	0.011	0.029	0.065	0.115	0.180	0.259	0.461	0.720	1.126		
Throw		5 7 15	8 12 21	12 18 26	16 21 30	19 24 34	21 26 37	25 30 43	28 34 48	31 38 54			
NC		-	<10	15	21	26	30	37	43	48			
Vertical		Ps	0.006	0.016	0.036	0.065	0.101	0.145	0.258	0.403	0.630		
Pt	0.009	0.024	0.053	0.095	0.148	0.214	0.380	0.593	0.927				
Throw	1 2 7	2 5 13	5 10 19	8 13 25	11 16 27	13 19 30	17 25 35	21 27 39	25 31 43				
NC	-	<10	11	21	29	36	44	50	56				
5' Length 10" Inlet	Horizontal	CFM	125	200	300	400	500	600	800	1000	1250		
	Ps	0.008	0.021	0.047	0.083	0.130	0.187	0.333	0.520	0.812			
	Pt	0.013	0.033	0.074	0.131	0.204	0.294	0.523	0.817	1.276			
	Throw	6 8 17	9 13 24	13 20 29	18 24 34	22 27 38	24 29 42	28 34 48	31 38 54	35 42 60			
	NC	<10	10	17	23	28	32	39	45	50			
	Vertical	Ps	0.006	0.016	0.036	0.063	0.099	0.142	0.253	0.395	0.617		
Pt	0.011	0.028	0.062	0.111	0.173	0.249	0.443	0.692	1.081				
Throw	1 3 10	3 7 16	7 12 23	10 16 27	13 19 31	16 23 34	21 27 39	25 31 43	28 34 49				
NC	-	<10	13	23	31	38	46	52	58				

See Page PSD-217 for performance data notes

PSD - Plenum Slot Diffusers

Model PHPS-6 and PHPSI-6 - Three Slot - Performance

		CFM/LF										
		25	40	60	80	100	120	160	200	250		
1" Slot Width	2' Length 10" Inlet	Horizontal	CFM	50	80	120	160	200	240	320	400	500
			Ps	0.005	0.013	0.029	0.052	0.081	0.117	0.208	0.325	0.507
			Pt	0.006	0.015	0.033	0.060	0.093	0.134	0.238	0.372	0.581
		Throw	3 4 8	4 7 13	7 10 19	9 13 21	11 16 24	13 19 26	17 21 30	20 24 34	22 27 38	
		NC	-	-	<10	17	25	31	39	46	54	
		Vertical	Ps	0.004	0.010	0.022	0.039	0.062	0.089	0.158	0.247	0.386
	Pt		0.005	0.012	0.026	0.047	0.074	0.106	0.188	0.294	0.460	
	Throw		0 0 2	0 1 4	1 2 7	2 4 9	3 6 11	4 7 14	6 9 18	8 11 23	10 14 29	
	NC	-	-	<10	14	21	27	35	41	45		
	4' Length 10" Inlet	Horizontal	CFM	100	160	240	320	400	480	640	800	1000
			Ps	0.005	0.013	0.029	0.051	0.080	0.115	0.204	0.318	0.497
			Pt	0.008	0.020	0.046	0.081	0.127	0.183	0.325	0.508	0.794
		Throw	3 5 10	5 8 16	8 12 24	11 16 30	13 20 34	16 24 37	21 30 43	27 34 48	31 38 54	
		NC	-	<10	11	20	28	34	42	49	57	
		Vertical	Ps	0.004	0.010	0.022	0.039	0.060	0.087	0.155	0.242	0.378
	Pt		0.007	0.017	0.039	0.069	0.108	0.156	0.276	0.432	0.675	
	Throw		0 1 3	1 2 7	2 4 11	3 7 14	5 9 18	7 11 21	9 14 28	12 18 36	15 22 43	
	NC	-	-	<10	17	24	30	38	44	48		
5' Length 12" Inlet	Horizontal	CFM	125	200	300	400	500	600	800	1000	1250	
		Ps	0.005	0.012	0.028	0.050	0.078	0.112	0.200	0.312	0.487	
		Pt	0.008	0.020	0.044	0.079	0.123	0.177	0.315	0.492	0.768	
	Throw	4 6 11	6 9 18	9 13 26	12 18 34	15 22 38	18 26 42	24 34 48	29 38 54	35 42 60		
	NC	-	<10	13	22	30	36	44	51	59		
	Vertical	Ps	0.004	0.009	0.021	0.038	0.059	0.085	0.152	0.237	0.370	
Pt		0.007	0.017	0.038	0.067	0.104	0.150	0.267	0.417	0.651		
Throw		1 1 5	1 3 9	3 7 14	6 9 19	8 12 24	9 14 28	13 19 38	16 24 43	20 29 49		
NC	-	<10	12	19	26	32	40	46	50			
1-1/2" Slot Width	2' Length 10" Inlet	Horizontal	CFM	50	80	120	160	200	240	320	400	500
			Ps	0.003	0.006	0.015	0.026	0.041	0.058	0.104	0.162	0.254
			Pt	0.003	0.008	0.019	0.034	0.052	0.076	0.134	0.210	0.328
		Throw	2 3 6	3 5 10	5 7 15	7 10 20	8 12 24	10 15 26	13 20 30	16 24 34	21 27 38	
		NC	-	-	<10	11	15	19	27	33	40	
		Vertical	Ps	0.002	0.005	0.011	0.020	0.031	0.044	0.079	0.123	0.193
	Pt		0.003	0.007	0.015	0.027	0.043	0.062	0.109	0.171	0.267	
	Throw		0 0 1	0 1 3	1 2 4	1 3 6	2 4 7	3 4 9	4 6 12	5 7 15	6 9 18	
	NC	-	-	-	-	-	<10	16	20	24		
	4' Length 12" Inlet	Horizontal	CFM	100	160	240	320	400	480	640	800	1000
			Ps	0.002	0.006	0.014	0.025	0.040	0.057	0.102	0.159	0.249
			Pt	0.004	0.011	0.025	0.044	0.069	0.099	0.175	0.274	0.428
		Throw	2 3 7	4 5 11	5 8 16	7 11 22	9 14 27	11 16 32	14 22 43	18 27 48	23 34 5	
		NC	-	-	<10	14	18	22	30	36	43	
		Vertical	Ps	0.002	0.005	0.011	0.019	0.030	0.044	0.077	0.121	0.189
	Pt		0.004	0.009	0.021	0.038	0.059	0.085	0.151	0.236	0.369	
	Throw		0 0 2	1 1 4	1 3 6	2 4 9	3 5 11	4 6 13	6 9 17	7 11 22	9 14 27	
	NC	-	-	-	-	<10	13	19	23	27		
5' Length 12" Inlet	Horizontal	CFM	125	200	300	400	500	600	800	1000	1250	
		Ps	0.002	0.006	0.014	0.025	0.039	0.056	0.100	0.156	0.244	
		Pt	0.005	0.013	0.030	0.054	0.084	0.121	0.215	0.336	0.524	
	Throw	3 4 9	5 7 14	7 11 22	10 14 29	12 18 36	14 22 42	19 29 48	24 36 54	30 42 60		
	NC	-	<10	12	16	20	24	32	38	45		
	Vertical	Ps	0.002	0.005	0.011	0.019	0.030	0.043	0.076	0.119	0.185	
Pt		0.005	0.012	0.027	0.048	0.075	0.107	0.191	0.298	0.466		
Throw		0 1 3	1 2 6	2 4 9	4 6 11	5 7 14	6 9 17	8 11 23	9 14 28	12 18 35		
NC	-	-	-	<10	11	15	21	25	29			

See Page PSD-217 for performance data notes

Plenum Slot Diffusers

PSD

PSD - Plenum Slot Diffusers

3/2006

Model PHPS-6 and PHPSI-6 Four Slot - Performance

			CFM/LF											
			50	75	80	100	150	175	200	250	300			
Plenum Slot Diffusers	1/2" Slot Width	2' Length 8" Inlet	Horizontal	CFM	100	150	160	200	300	350	400	500	-	-
			P _s	0.033	0.074	0.084	0.131	0.295	0.401	0.524	0.819	-	-	
			P _t	0.039	0.087	0.099	0.154	0.347	0.473	0.617	0.965	-	-	
		Throw	9 12 16	12 14 20	12 15 21	13 16 23	16 20 28	18 22 30	19 23 33	21 26 36	-	-		
		NC	<10	15	17	23	35	39	42	48	-	-		
		Vertical	P _s	0.029	0.066	0.075	0.117	0.262	0.357	0.466	0.729	-	-	
	P _t	0.035	0.079	0.090	0.140	0.315	0.428	0.559	0.874	-	-			
	Throw	1 2 8	2 5 12	2 5 12	4 8 16	8 12 20	9 14 21	10 16 23	13 18 25	-	-			
	NC	<10	12	13	20	32	36	39	44	-	-			
	4' Length 10" Inlet	Horizontal	CFM	200	300	320	400	600	700	800	1000	-	-	
		P _s	0.032	0.072	0.082	0.129	0.289	0.394	0.514	0.803	-	-		
		P _t	0.044	0.099	0.113	0.176	0.396	0.539	0.704	1.100	-	-		
Throw		12 16 23	16 20 28	17 21 29	19 23 33	23 28 40	25 30 43	27 33 46	30 36 51	-	-			
NC		<10	18	20	26	38	42	45	51	-	-			
Vertical		P _s	0.029	0.064	0.073	0.114	0.257	0.350	0.457	0.714	-	-		
P _t	0.040	0.091	0.104	0.162	0.364	0.496	0.647	1.011	-	-				
Throw	1 3 11	3 7 16	3 8 17	5 11 22	11 16 28	13 19 30	15 22 32	18 25 36	-	-				
NC	<10	15	16	23	35	39	42	47	-	-				
5' Length 10" Inlet	Horizontal	CFM	250	375	400	500	750	875	1000	1250	-	-		
	P _s	0.031	0.071	0.081	0.126	0.283	0.386	0.504	0.787	-	-			
	P _t	0.050	0.113	0.128	0.200	0.450	0.613	0.801	1.251	-	-			
	Throw	13 18 26	18 22 31	19 23 33	21 26 36	26 31 45	28 34 48	30 36 51	33 41 58	-	-			
	NC	11	20	22	28	40	44	47	53	-	-			
	Vertical	P _s	0.028	0.063	0.072	0.112	0.252	0.343	0.448	0.700	-	-		
P _t	0.047	0.105	0.119	0.186	0.419	0.570	0.745	1.164	-	-				
Throw	2 4 13	4 9 19	4 10 21	7 13 25	13 19 31	15 22 33	17 25 36	21 28 40	-	-				
NC	12	17	18	25	37	41	44	49	-	-				
3/4" Slot Width	2' Length 8" Inlet	Horizontal	CFM	100	150	160	200	300	350	400	500	600		
		P _s	0.025	0.057	0.065	0.101	0.228	0.311	0.406	0.634	0.913			
		P _t	0.031	0.070	0.080	0.125	0.281	0.382	0.499	0.780	1.123			
		Throw	9 12 16	12 14 20	12 15 21	13 16 23	16 20 28	18 22 30	19 23 33	21 26 36	23 28 40			
		NC	-	-	<10	18	29	33	36	42	46			
		Vertical	P _s	0.025	0.057	0.065	0.101	0.227	0.310	0.404	0.632	0.910		
	P _t	0.031	0.070	0.080	0.124	0.280	0.381	0.498	0.777	1.119				
	Throw	1 1 5	1 3 10	2 3 11	2 5 13	5 10 20	7 12 21	9 13 23	11 17 25	13 20 28				
	NC	-	-	<10	16	29	33	37	41	44				
	4' Length 10" Inlet	Horizontal	CFM	200	300	320	400	600	700	800	1000	1200		
		P _s	0.025	0.056	0.064	0.099	0.224	0.305	0.398	0.622	0.895			
		P _t	0.037	0.083	0.094	0.147	0.331	0.450	0.588	0.919	1.323			
Throw		6 12 23	12 19 28	13 20 29	17 23 33	23 28 40	25 30 43	27 33 46	30 36 51	33 40 56				
NC		<10	14	15	21	32	36	39	45	49				
Vertical		P _s	0.025	0.056	0.063	0.099	0.223	0.304	0.396	0.620	0.892			
P _t	0.037	0.082	0.094	0.147	0.330	0.449	0.587	0.917	1.320					
Throw	2 5 13	5 10 20	6 11 20	9 13 23	13 20 28	16 21 30	18 23 32	21 25 36	23 28 39					
NC	<10	10	12	19	32	36	40	44	47					
5' Length 10" Inlet	Horizontal	CFM	250	375	400	500	750	875	1000	1250	1500			
	P _s	0.024	0.055	0.062	0.097	0.219	0.299	0.390	0.609	0.877				
	P _t	0.043	0.097	0.110	0.172	0.386	0.526	0.687	1.073	1.546				
	Throw	15 18 26	18 22 31	19 23 33	21 26 36	26 31 45	28 34 48	30 36 51	33 41 58	36 45 63				
	NC	<10	16	17	23	34	38	41	47	51				
	Vertical	P _s	0.024	0.055	0.062	0.097	0.219	0.297	0.389	0.607	0.874			
P _t	0.043	0.096	0.110	0.171	0.386	0.525	0.686	1.071	1.543					
Throw	4 8 16	8 12 22	9 13 23	11 16 25	16 22 31	19 24 33	21 25 36	23 28 40	25 31 44					
NC	<10	12	14	21	34	38	42	46	49					

See Page PSD-217 for performance data notes

PSD - Plenum Slot Diffusers

Model PHPS-6 and PHPSI-6 Four Slot - Performance

		CFM/LF										
		50	75	80	100	150	175	200	250	300		
1" Slot Width	2' Length 10" Inlet	Horizontal	CFM	100	150	160	200	300	350	400	500	600
			Ps	0.017	0.039	0.045	0.070	0.157	0.213	0.279	0.435	0.627
			Pt	0.020	0.046	0.052	0.082	0.183	0.250	0.326	0.510	0.734
		Throw	8 12 16	12 14 20	12 15 21	13 16 23	16 20 28	18 22 30	19 23 33	21 26 36	23 28 40	
		NC	-	-	<10	16	29	33	36	41	44	
		Vertical	Ps	0.017	0.037	0.042	0.066	0.149	0.203	0.265	0.414	0.596
	Pt		0.020	0.044	0.050	0.078	0.176	0.239	0.312	0.488	0.703	
	Throw		1 2 6	2 3 9	2 4 9	3 6 11	6 9 17	7 10 20	8 11 23	10 14 25	11 17 28	
	4' Length 10" Inlet	Horizontal	CFM	200	300	320	400	600	700	800	1000	1200
			Ps	0.017	0.038	0.044	0.068	0.154	0.209	0.273	0.427	0.615
			Pt	0.029	0.065	0.074	0.116	0.261	0.355	0.463	0.724	1.042
		Throw	11 16 23	16 20 28	17 21 29	19 23 33	23 28 40	25 30 43	27 33 46	30 36 51	33 40 56	
		NC	<10	11	13	19	32	36	39	46	47	
		Vertical	Ps	0.016	0.037	0.042	0.065	0.146	0.199	0.260	0.406	0.584
	Pt		0.028	0.063	0.072	0.112	0.253	0.344	0.450	0.703	1.012	
	Throw		1 3 9	3 6 13	3 7 14	5 9 18	9 13 27	10 16 30	12 18 32	15 22 36	18 27 39	
	5' Length 12" Inlet	Horizontal	CFM	250	375	400	500	750	875	1000	1250	1500
			Ps	0.017	0.038	0.043	0.067	0.151	0.205	0.268	0.418	0.602
Pt			0.028	0.063	0.072	0.112	0.252	0.343	0.447	0.699	1.007	
Throw		11 17 26	17 22 31	18 23 33	21 26 36	26 31 45	28 34 48	30 36 51	33 41 58	36 45 63		
NC		<10	13	15	21	34	38	41	46	49		
Vertical		Ps	0.016	0.036	0.041	0.064	0.143	0.195	0.254	0.398	0.572	
	Pt	0.027	0.061	0.069	0.109	0.244	0.332	0.434	0.678	0.977		
	Throw	2 5 12	5 9 18	6 9 19	8 12 24	12 18 31	14 21 33	16 24 36	20 28 40	24 31 44		
1-1/2" Slot Width	2' Length 10" Inlet	Horizontal	CFM	100	150	160	200	300	350	400	500	600
			Ps	0.016	0.037	0.042	0.066	0.148	0.202	0.264	0.412	0.593
			Pt	0.019	0.044	0.050	0.078	0.175	0.238	0.311	0.486	0.700
		Throw	6 10 16	10 14 20	10 15 21	13 16 23	16 20 28	18 22 30	19 23 33	21 26 36	23 28 40	
		NC	-	-	<10	10	19	23	27	33	38	
		Vertical	Ps	0.012	0.028	0.032	0.050	0.112	0.152	0.198	0.310	0.446
	Pt		0.015	0.035	0.039	0.061	0.138	0.188	0.246	0.384	0.553	
	Throw		1 1 3	1 2 4	1 2 5	2 3 6	3 4 9	3 5 10	4 6 12	5 7 15	6 9 18	
	4' Length 12" Inlet	Horizontal	CFM	200	300	320	400	600	700	800	1000	1200
			Ps	0.016	0.036	0.041	0.065	0.145	0.198	0.258	0.404	0.581
			Pt	0.023	0.053	0.060	0.093	0.210	0.286	0.373	0.583	0.840
		Throw	4 8 21	8 16 28	10 17 29	14 21 33	21 28 40	25 30 43	27 33 46	30 36 51	33 40 56	
		NC	-	-	<10	13	22	26	30	36	41	
		Vertical	Ps	0.012	0.027	0.031	0.049	0.109	0.149	0.194	0.304	0.437
	Pt		0.019	0.044	0.050	0.077	0.174	0.237	0.309	0.483	0.696	
	Throw		1 2 4	2 3 6	2 3 7	3 4 9	4 6 13	5 8 15	6 9 17	7 11 22	9 13 26	
	5' Length 12" Inlet	Horizontal	CFM	250	375	400	500	750	875	1000	1250	1500
			Ps	0.016	0.036	0.041	0.063	0.142	0.194	0.253	0.396	0.570
Pt			0.027	0.061	0.069	0.108	0.244	0.331	0.433	0.676	0.974	
Throw		7 14 26	14 21 31	15 22 33	19 26 36	26 31 45	28 34 48	30 36 51	33 41 58	36 45 63		
NC		<10	11	12	15	24	28	32	38	43		
Vertical		Ps	0.012	0.027	0.030	0.048	0.107	0.146	0.191	0.298	0.429	
	Pt	0.023	0.052	0.059	0.093	0.208	0.283	0.370	0.578	0.833		
	Throw	1 3 6	3 4 9	3 5 9	4 6 11	6 9 17	7 10 20	8 11 23	9 14 28	11 17 34		

Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic feet per minute (air)
- Pt - Total pressure (inches of water column)
- Ps - Static pressure = Pt - Pv (inches of water column)
- Throw - Isothermal horizontal throw (supply air temperature the same as average room air temperature) values are for 150 fpm - 100 fpm - 50 fpm velocities
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw) RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands

Two-way throw can be determined by dividing the supply air volume in each direction and using the One-way throw values listed. (See example below)

EXAMPLE:

PHPS-10-6, 10" inlet 1" Slot, 4-Slot, 4', 2-Way

Determine Ps, NC, and Throw at 600 CFM

1. Find Ps and NC using PHPS-10-6, 1" Slot, 4', 4-Slot data:

Ps = .154

NC = 32

For 2-way throw use PHPS-10-6, 1" Slot, 4', 10" inlet, 1-way, 2-Slot data at 300 CFM.

Horizontal Throw = 11-16-27 in each direction



Plenum Slot Diffusers

PSD

PSD - Plenum Slot Diffusers

3/2006

Models PHPR-6, PHPR-9, PHNR-9 - Performance

Plenum Slot Diffusers

			CFM/LF									
			Negative Ps	10	15	20	25	30	35	40	45	50
			0.016	0.032	0.052	0.076	0.103	0.134	0.168	0.206	0.246	
1/2" Slot Width	2' Length	1 Slot	Airflow	20	30	40	50	60	70	80	90	100
			NC	<15	<15	<15	<15	16	20	24	28	32
		2 Slot	Airflow	40	60	80	100	120	140	160	180	200
			NC	<15	<15	<15	15	19	23	27	31	35
	3 Slot	Airflow	60	90	120	150	180	210	240	270	300	
			NC	<15	<15	<15	16	21	25	29	33	36
		4 Slot	Airflow	80	120	160	200	240	280	320	360	400
			NC	<15	<15	<15	18	22	26	30	34	38
	4' Length	1 Slot	Airflow	40	60	80	100	120	140	160	180	200
			NC	<15	<15	<15	<15	18	22	26	30	34
		2 Slot	Airflow	80	120	160	200	240	280	320	360	400
			NC	<15	<15	<15	17	21	25	29	33	37
3 Slot	Airflow	120	180	240	300	360	420	480	540	600		
		NC	<15	<15	<15	18	23	27	31	35	38	
	4 Slot	Airflow	160	240	320	400	480	560	640	720	800	
		NC	<15	<15	15	20	24	28	32	36	40	
5' Length	1 Slot	Airflow	50	75	100	125	150	175	200	225	250	
		NC	<15	<15	<15	15	19	23	27	31	35	
	2 Slot	Airflow	100	150	200	250	300	350	400	450	500	
		NC	<15	<15	<15	18	22	26	30	34	38	
3 Slot	Airflow	150	225	300	375	450	525	600	675	750		
		NC	<15	<15	15	19	24	28	32	36	39	
	4 Slot	Airflow	200	300	400	500	600	700	800	900	1000	
		NC	<15	<15	16	21	25	29	33	37	41	

PSD

			CFM/LF									
			Negative Ps	10	15	20	25	30	40	50	60	70
			0.012	0.024	0.040	0.058	0.079	0.129	0.189	0.257	0.334	
3/4" Slot Width	2' Length	1 Slot	Airflow	20	30	40	50	60	80	100	120	140
			NC	<15	<15	<15	<15	<15	17	24	29	35
		2 Slot	Airflow	40	60	80	100	120	160	200	240	280
			NC	<15	<15	<15	<15	<15	20	27	32	38
	3 Slot	Airflow	60	90	120	150	180	240	300	360	420	
			NC	<15	<15	<15	<15	15	22	28	34	39
		4 Slot	Airflow	80	120	160	200	240	320	400	480	560
			NC	<15	<15	<15	<15	17	23	30	35	41
	4' Length	1 Slot	Airflow	40	60	80	100	120	160	200	240	280
			NC	<15	<15	<15	<15	<15	19	26	31	37
		2 Slot	Airflow	80	120	160	200	240	320	400	480	560
			NC	<15	<15	<15	<15	16	22	29	34	40
3 Slot	Airflow	120	180	240	300	360	480	600	720	840		
		NC	<15	<15	<15	<15	17	24	30	36	41	
	4 Slot	Airflow	160	240	320	400	480	640	800	960	1120	
		NC	<15	<15	<15	15	19	25	32	37	43	
5' Length	1 Slot	Airflow	50	75	100	125	150	200	250	300	350	
		NC	<15	<15	<15	<15	<15	20	27	32	38	
	2 Slot	Airflow	100	150	200	250	300	400	500	600	700	
		NC	<15	<15	<15	<15	17	23	30	35	41	
3 Slot	Airflow	150	225	300	375	450	600	750	900	1050		
		NC	<15	<15	<15	15	18	25	31	37	42	
	4 Slot	Airflow	200	300	400	500	600	800	1000	1200	1400	
		NC	<15	<15	<15	16	20	26	33	38	44	

PSD - Plenum Slot Diffusers

Models PHPR-6, PHPR-9, PHNR-9 - Performance

		CFM/LF										
		Negative Ps	20	30	40	50	60	70	80	90	100	
1" Slot Width	2' Length	1 Slot	Airflow	40	60	80	100	120	140	160	180	200
			NC	<15	<15	<15	15	19	23	26	30	34
		2 Slot	Airflow	80	120	160	200	240	280	320	360	400
			NC	<15	<15	<15	18	22	26	29	33	37
	3 Slot	Airflow	120	180	240	300	360	420	480	540	600	
			NC	<15	<15	15	19	23	27	31	35	38
		4 Slot	Airflow	160	240	320	400	480	560	640	720	800
			NC	<15	<15	16	21	25	29	32	36	40
	4' Length	1 Slot	Airflow	80	120	160	200	240	280	320	360	400
			NC	<15	<15	<15	17	21	25	28	32	36
		2 Slot	Airflow	160	240	320	400	480	560	640	720	800
			NC	<15	<15	15	20	24	28	31	35	39
3 Slot	Airflow	240	360	480	600	720	840	960	1080	1200		
		NC	<15	<15	17	21	25	29	33	37	40	
	4 Slot	Airflow	320	480	640	800	960	1120	1280	1440	1600	
		NC	<15	<15	18	23	27	31	34	38	42	
5' Length	1 Slot	Airflow	100	150	200	250	300	350	400	450	500	
		NC	<15	<15	<15	18	22	26	29	33	37	
	2 Slot	Airflow	200	300	400	500	600	700	800	900	1000	
		NC	<15	<15	16	21	25	29	32	36	40	
3 Slot	Airflow	300	450	600	750	900	1050	1200	1350	1500		
		NC	<15	<15	18	22	26	30	34	38	41	
	4 Slot	Airflow	400	600	800	1000	1200	1400	1600	1800	2000	
		NC	<15	15	19	24	28	32	35	39	43	

		CFM/LF										
		Negative Ps	20	30	40	50	60	80	100	125	150	
1-1/2" Slot Width	2' Length	1 Slot	Airflow	40	60	80	100	120	160	200	250	300
			NC	<15	<15	<15	<15	<15	22	28	36	42
		2 Slot	Airflow	80	120	160	200	240	320	400	500	600
			NC	<15	<15	<15	<15	17	25	31	39	45
	3 Slot	Airflow	120	180	240	300	360	480	600	750	900	
			NC	<15	<15	<15	15	19	26	33	40	47
		4 Slot	Airflow	160	240	320	400	480	640	800	1000	1200
			NC	<15	<15	<15	17	20	28	34	42	48
	4' Length	1 Slot	Airflow	80	120	160	200	240	320	400	500	600
			NC	<15	<15	<15	<15	16	24	30	38	44
		2 Slot	Airflow	160	240	320	400	480	640	800	1000	1200
			NC	<15	<15	<15	16	19	27	33	41	47
3 Slot	Airflow	240	360	480	600	720	960	1200	1500	1800		
		NC	<15	<15	<15	17	21	28	35	42	49	
	4 Slot	Airflow	320	480	640	800	960	1280	1600	2000	2400	
		NC	<15	<15	15	19	22	30	36	44	50	
5' Length	1 Slot	Airflow	100	150	200	250	300	400	500	625	750	
		NC	<15	<15	<15	<15	17	25	31	39	45	
	2 Slot	Airflow	200	300	400	500	600	800	1000	1250	1500	
		NC	<15	<15	<15	17	20	28	34	42	48	
3 Slot	Airflow	300	450	600	750	900	1200	1500	1875	2250		
		NC	<15	<15	<15	18	22	29	36	43	50	
	4 Slot	Airflow	400	600	800	1000	1200	1600	2000	2500	3000	
		NC	<15	<15	16	20	23	31	37	45	51	

Plenum Slot Diffusers

PSD

Series PHP - Specifications

Supply - T-bar Lay-in – Insulated/Non Insulated/Model PHCS(I)-6

Plenum slot supply diffusers shall be METALAIRES PHPS-6 (non-insulated) or PHPSI-6 (insulated). Plenum slot diffusers shall be of the sizes and mounting types as shown on the device schedule.

Diffusers shall have aluminum extruded deflector blades with a gasket tip to seal against the plenum side wall or slot divider. Units shall be adjustable from the slot opening to provide horizontal to vertical air patterns.

Inlets shall be round or oval, centrally located, with a minimum depth of 2 1/8" for ease of duct connection. Units with inlet depths less than 1-3/4" are not acceptable. For straightness and rigidity, plenums shall be fabricated using a single-piece panel construction and have a double metal thickness hem at the face. Plenum diffusers shall be constructed of corrosion resistant galvanized steel. Height of unit shall be 10" or greater to maximize diffuser performance. Units with heights less than 10" are not acceptable.

Units shall be available with 1/2", 3/4", 1", or 1-1/2" slot widths and be available with 1, 2, 3, or 4 independent supply slots. Diffuser face and air pattern controller shall be black. Optional tees shall be white.

Insulated diffusers shall be Model PHPSI. Insulation shall be internal, 1/4" matte face. End caps must be insulated.

Return - T-bar Lay-in – Insulated/Non Insulated/Model PHCR(I)-6

Plenum slot return diffusers shall be METALAIRES PHPR-6 (non-insulated) or PHPRI-6 (insulated). Return diffusers shall be of the sizes and mounting types as shown on the outlet schedule.

Units shall be designed for plenum return applications and match face appearance of the supply diffusers. Units shall include a light shield to minimize reflective light coming through the slot opening.

Plenum return units shall be constructed of corrosion resistant galvanized steel. For straightness and rigidity, plenums shall be fabricated using a double metal thickness hem at the face. Units fabricated without a double metal thickness hem at the face are not acceptable.

Units shall be available with 1/2", 3/4", 1", or 1-1/2" slot widths and be available with 1, 2, 3, or 4 independent supply slots. Diffuser face shall be black. Optional tees shall be white.

Supply - Donn Finline Ceilings – Center Tee - Insulated/Non Insulated/Model PHPS(I)-9

Plenum slot supply diffusers shall be METALAIRES PHPS-9 (non-insulated) or PHPSI-9 (insulated). Plenum slot diffusers shall be of the sizes and mounting types as shown on the device schedule.

Units shall be designed to integrate into 9/16" wide bolt slot or narrow tee systems and include a factory-mounted 1" wide white center tee on two-slot units. Diffusers shall have aluminum extruded deflector blades with a gasket tip to seal against the plenum side wall or slot divider. Units shall be adjustable from the slot opening to provide horizontal to vertical air patterns.

Inlets shall be round or oval, centrally located, with a minimum depth of 2 1/8" for ease of duct connection. Units with inlet depths less than 1-3/4" are not acceptable. For straightness and rigidity, plenums shall be fabricated using a single-piece panel construction and have a double metal thickness hem at the face. Plenum diffusers shall be constructed of corrosion resistant galvanized steel. Height of unit shall be 10" or greater. Units with heights less than 10" are not acceptable.

Units shall be available with 3/4", 1", or 1-1/2" slot widths and be available with 1 or 2 independent supply slots. Diffuser face and air pattern controller shall be white.

Insulated diffusers shall be Model PHPSI. Insulation shall be internal, 1/4" matte face. End caps must be insulated. Units without insulation on end caps will not be accepted.

Return - Donn Finline Ceilings – Center Tee - Insulated/Non Insulated/Model PHPR(I)-9

Plenum slot return diffusers shall be METALAIRES PHPR-9 (non-insulated) or PHPRI-9 (insulated). Return diffusers shall be of the sizes and mounting types as shown on the outlet schedule.

Units shall be designed for plenum return applications and match face appearance of the supply diffusers. Units shall include a light shield to minimize reflective light coming through the slot opening. Units shall be designed to integrate into a 9/16" wide bolt-slot or narrow tee system.

Plenum return units shall be constructed of corrosion resistant galvanized steel. For straightness and rigidity, plenums shall be fabricated with a double metal thickness hem at the face. Units fabricated without a double metal thickness at hem are not acceptable.

Units shall be available with 3/4", 1", or 1-1/2" slot widths and be available with 1 or 2 slots. Diffuser face shall be white. Optional tees shall be white.

Return - Donn Fineline Ceilings – Center Tee - Insulated/Non Insulated/Model PHPR(I)-9

Plenum slot return diffusers shall be METALAIRES PHPR-9 (non-insulated) or PHPRI-9 (insulated). Return diffusers shall be of the sizes and mounting types as shown on the outlet schedule.

Units shall be designed for plenum return applications and match face appearance of the supply diffusers. Units shall include a light shield to minimize reflective light coming through the slot opening. Units shall be designed to integrate into a 9/16" wide bolt-slot or narrow tee system.

Plenum return units shall be constructed of corrosion resistant galvanized steel. For straightness and rigidity, plenums shall be fabricated with a double metal thickness hem at the face. Units fabricated without a double metal thickness at hem are not acceptable.

Units shall be available with 3/4", 1", or 1-1/2" slot widths and be available with 1 or 2 slots. Diffuser face shall be white. Optional tees shall be white.

Supply - Donn Fineline Ceilings – Hat Section - Insulated/Non Insulated/Model PHNS(I)-9

Plenum slot supply diffusers shall be METALAIRES PHNS-9 (non-insulated) or PHNSI-9 (insulated). Plenum slot diffusers shall be of the sizes and mounting types as shown on the device schedule.

Units shall be designed to integrate into 9/16" wide bolt slot or narrow tee systems and include a center hat channel to fit over ceiling tee (by others) on two-slot units. Diffusers shall have aluminum extruded deflector blades with a gasket tip to seal against the plenum side wall or slot divider. Units shall be adjustable from the slot opening to provide horizontal to vertical air patterns.

Inlets shall be round or oval, centrally located, with a minimum depth of 2 1/8" for ease of duct connection. Units with inlet depths less than 1-3/4" are not acceptable. For straightness and rigidity, plenums shall be fabricated using a single-piece panel construction and have a double metal thickness hem at the face. Plenum diffusers shall be constructed of corrosion resistant galvanized steel. Height of unit shall be 10" or greater. Units with heights less than 10" are not acceptable.

Units shall be available with 3/4", 1", or 1-1/2" slot widths and be available with 1 or 2 independent supply slots. Diffuser face and air pattern controller shall be white.

Insulated diffusers shall be Model PHPSI. Insulation shall be internal, 1/4" matte face. End caps must be insulated. Units without insulation on end caps will not be accepted.

Return - Donn Fineline Ceilings – Hat Section - Insulated/Non Insulated/Model PHNR(I)-9

Plenum slot return diffusers shall be METALAIRES PHNR-9 (non-insulated) or PHNRI-9 (insulated). Return diffusers shall be of the sizes and mounting types as shown on the outlet schedule.

Units shall be designed for plenum return applications and match face appearance of the supply diffusers. Units shall include a light shield to minimize reflective light coming through the slot opening. Units shall be designed to integrate into a 9/16" wide bolt-slot or narrow tee system.

Plenum return units shall be constructed of corrosion resistant galvanized steel. For straightness and rigidity, plenums shall be fabricated with a double metal thickness hem at the face. Units fabricated without a double metal thickness at hem are not acceptable.

Units shall be available with 3/4", 1", or 1-1/2" slot widths and be available with 1 or 2 slots. Diffuser face shall be white. Optional tees shall be white.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

PSD - Plenum Slot Diffusers

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Series PHP - Model Specification Guide

Series PHP-6 - Plenum Slot Diffuser - T-bar Lay-in- Supply/Return

Model	Length	Tee		# of Slots	Inlet	Available Finishes	Available Options	
Supply - Adjustable Pattern Controller	24" 36" 48" 60"	CN	Standard (Center tee on 2-4)	1	6" round	Standard	CN	Cross Notch
<i>Non Insulated</i>		T-1	One Outside Tee	2	8" oval	25 - White Tee/ Black Border	LQ	Locking Quadrant Damper
PHPS-50-6 - 1/2" Slot Width		T-2	Two Outside Tees	3	10" oval		PH-TBPF	T-bar Plaster Frame
PHPS-75-6 - 3/4" Slot Width		TC-1	One Outside T-bar Clip	4	12" oval	Optional		
PHPS-10-6 - 1" Slot Width		TC-2	Bar Clips Both Ends			26 - All White		
PHPS-15-6 - 1 1/2" Slot Width		TC-3	One T-bar Clip/One Outside Tee			27 - All Black		
<i>Insulated</i>		EN	End Notch					
PHPSI-50-6 - 1/2" Slot Width		EN-2	End Notch/Two Tees					
PHPSI-75-6 - 3/4" Slot Width								
PHPSI-10-6 - 1" Slot Width								
PHPSI-15-6 - 1 1/2" Slot Width								
Return - No Pattern Controller								
<i>Non Insulated</i>								
PHPR-50-6 - 1/2" Slot Width								
PHPR-75-6 - 3/4" Slot Width								
PHPR-10-6 - 1" Slot Width								
PHPR-15-6 - 1 1/2" Slot Width								
<i>Insulated</i>								
PHPRI-50-6 - 1/2" Slot Width								
PHPRI-75-6 - 3/4" Slot Width								
PHPRI-10-6 - 1" Slot Width								
PHPRI-15-6 - 1 1/2" Slot Width								

Plenum Slot Diffusers

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PSD - Plenum Slot Diffusers

Series PHP - Model Specification Guide

Series PHP-9 - Plenum Slot Diffuser - Donn Fineline Ceilings - Supply/Return - Center Tee/Hat Section

Model	Length	# of Slots	Inlet	Available Finishes	Available Options		
Supply - Adjustable Pattern Controller	24" 48"	1	6" round	Standard	LQ Locking Quadrant Damper		
<i>Center Tee - Non Insulated</i> PHPS-75-9 - 3/4" Slot Width PHPS-10-9 - 1" Slot Width PHPS-15-9 - 1 1/2" Slot Width <i>Hat Section - Non Insulated</i> PHNS-75-9 - 3/4" Slot Width PHNS-10-9 - 1" Slot Width PHNS-15-9 - 1 1/2" Slot Width <i>Center Tee - Insulated</i> PHPSI-75-6 - 3/4" Slot Width PHPSI-10-6 - 1" Slot Width PHPSI-15-6 - 1 1/2" Slot Width <i>Hat Section - Insulated</i> PHNSI-75-6 - 3/4" Slot Width PHNSI-10-6 - 1" Slot Width PHNSI-15-6 - 1 1/2" Slot Width		2	8" oval	25 - White Tee/ Black Border			
	10" oval	Optional					
	12" oval						
	26 - All White						
	27 - All Black						
	Return - No Pattern Controller						
	<i>Center Tee - Non Insulated</i> PHPR-75-9 - 3/4" Slot Width PHPR-10-9 - 1" Slot Width PHPR-15-9 - 1 1/2" Slot Width <i>Hat Section - Non Insulated</i> PHNR-75-9 - 3/4" Slot Width PHNR-10-9 - 1" Slot Width PHNR-15-9 - 1 1/2" Slot Width <i>Center Tee - Insulated</i> PHPRI-75-6 - 3/4" Slot Width PHPRI-10-6 - 1" Slot Width PHPRI-15-6 - 1 1/2" Slot Width <i>Hat Section - Insulated</i> PHNRI-75-6 - 3/4" Slot Width PHNRI-10-6 - 1" Slot Width PHNRI-15-6 - 1 1/2" Slot Width						

Plenum Slot Diffusers



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PSD - Plenum Slot Diffusers

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➔ High Capacity Plenum Slot Diffusers ➔ Fixed Pattern Controller ➔ Series PHC

Product Details

- ✦ Aerodynamically shaped, heavy duty extruded aluminum curved blade pattern controller generates a tight horizontal discharge pattern
- ✦ Excellent selection for perimeter applications, especially in cold climates because of its high induction ratio
- ✦ Available with integral return, a low cost and efficient solution to return air into the ceiling plenum
- ✦ Optional 1/4" insulation on PHCSI-6, PHCRI-6, PHCSI-DB-6, and PHCRI-DB-6



Model PHC Shown

Finish: 25 - WT - White Tees with Black Borders & Plenum Interior

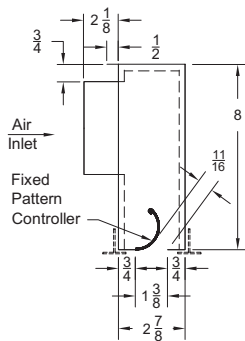
Dimensions are in inches

Plenum Slot Diffusers

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Supply - High Induction Plenum Diffusers - Fixed Curved Blade Non Insulated

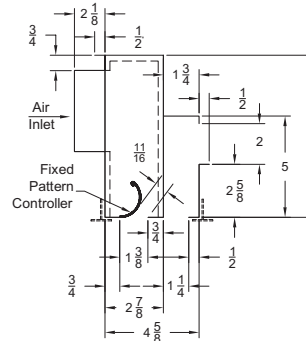
Model PHCS-6
Model PHCS-DB-6 - Center Down Blow
Insulated
Model PHCSI-6
Model PHCSI-DB-6 - Center Down Blow



Nominal Lengths	Available Inlets
24	24, 36, 48, 60
36	24, 36, 48, 60
48	24, 36, 48, 60
60	24, 36, 48, 60

Return - High Induction Plenum Diffusers - Fixed Curved Blade Non Insulated

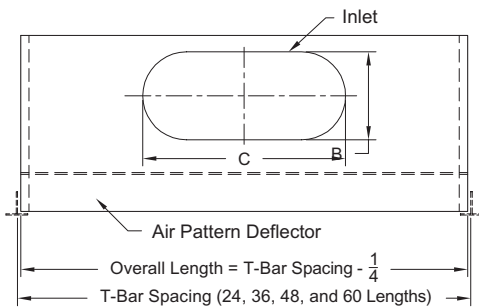
Model PHCR-6
Model PHCR-DB-6 - Center Down Blow
Insulated
Model PHCRI-6
Model PHCRI-DB-6 - Center Down Blow



Inlet Size	C	D
6 Round	3 15/16	6 15/16
8 Oval	3 15/16	8 15/16
10 Oval	3 15/16	13 15/16
12 Oval	3 15/16	15 15/16

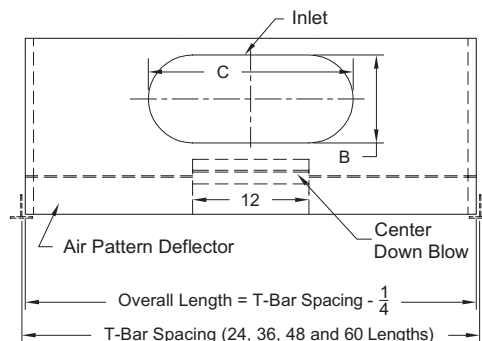
High Induction Supply/Return Plenum Diffusers - Louver Face - Fixed Curved Blade - Front View

Series PHCS(I)-6
Series PHCR(I)-6



High Induction Supply/Return Plenum Diffusers - Louver Face - Fixed Curved Blade - Center Down Blow Section - Front View

Series PHCS(I)-6 - Center Down Blow Section
Series PHCR(I)-6 - Center Down Blow Section



1. Available Finishes

Standard Finish:
Black Borders

2. Available Accessories

LQ - Locking quadrant damper

3. Construction Details

- Extruded aluminum pattern controller
- One-piece electrogalvanized steel plenum with double hem face
- Plenum inlets available in 6", 8", 10", 12" (inlets are round)

PSD - Plenum Slot Diffusers

Series PHCS-6 and PHCSI-6 - Performance

		CFM/LF									
		20	30	40	50	60	80	90	100	110	
6" Round Inlet	2' length	CFM	40	60	80	100	120	160	180	200	-
		Ps	0.010	0.022	0.040	0.062	0.089	0.159	0.201	0.248	-
		Pt	0.013	0.028	0.050	0.078	0.113	0.200	0.254	0.313	-
		Throw	1 2 7	2 5 11	4 7 14	6 9 18	7 11 19	10 14 22	11 16 24	12 18 25	-
	3' length	CFM	60	90	120	150	180	240	270	300	-
		Ps	0.013	0.029	0.052	0.081	0.117	0.208	0.263	0.324	-
		Pt	0.019	0.042	0.075	0.117	0.169	0.301	0.381	0.470	-
		Throw	1 3 7	3 5 11	5 7 14	6 9 18	7 11 22	10 14 27	11 16 28	12 18 30	-
	4' length	CFM	80	120	160	200	240	320	360	400	440
		Ps	0.015	0.033	0.059	0.092	0.132	0.235	0.298	0.368	0.445
		Pt	0.025	0.056	0.100	0.157	0.226	0.401	0.507	0.626	0.758
		Throw	2 5 10	5 7 14	6 10 19	8 12 24	10 14 27	13 19 31	14 22 33	16 24 35	18 26 36
5' length	CFM	100	150	200	250	300	400	450	500	-	
	Ps	0.015	0.034	0.061	0.095	0.137	0.243	0.308	0.380	-	
	Pt	0.031	0.071	0.125	0.196	0.282	0.502	0.635	0.784	-	
	Throw	4 6 12	6 9 18	8 12 24	10 15 27	12 18 30	16 24 35	18 26 37	20 27 39	-	
8" Oval Inlet	2' length	CFM	40	60	80	100	120	160	180	200	-
		Ps	0.006	0.014	0.026	0.040	0.058	0.103	0.130	0.161	-
		Pt	0.007	0.017	0.029	0.046	0.066	0.118	0.149	0.184	-
		Throw	0 1 3	1 2 5	2 3 7	3 4 8	3 5 10	5 7 14	5 8 15	6 8 16	-
	3' length	CFM	60	90	120	150	180	240	270	300	330
		Ps	0.009	0.020	0.036	0.056	0.081	0.143	0.181	0.224	0.271
		Pt	0.011	0.025	0.044	0.069	0.099	0.177	0.224	0.276	0.334
		Throw	1 2 5	2 4 8	3 5 10	4 6 13	5 8 15	7 10 18	8 11 19	8 13 20	9 14 21
	4' length	CFM	80	120	160	200	240	320	360	400	440
		Ps	0.011	0.025	0.044	0.069	0.099	0.176	0.223	0.275	0.333
		Pt	0.015	0.033	0.059	0.092	0.133	0.236	0.299	0.369	0.446
		Throw	2 3 7	3 5 10	5 7 14	6 8 16	7 10 18	9 14 20	10 15 21	11 16 23	12 17 24
5' length	CFM	100	150	200	250	300	400	450	500	550	
	Ps	0.013	0.028	0.050	0.079	0.113	0.201	0.255	0.314	0.380	
	Pt	0.018	0.041	0.074	0.115	0.166	0.294	0.373	0.460	0.557	
	Throw	3 4 8	4 6 13	6 8 16	7 11 18	8 13 20	11 16 23	13 17 24	14 18 25	15 19 27	

		CFM/LF										
		20	30	40	50	60	80	90	100	110	120	
10" Oval Inlet	3' length	CFM	60	90	120	150	180	240	270	300	330	360
		Ps	0.008	0.017	0.030	0.047	0.068	0.120	0.152	0.188	0.227	0.270
		Pt	0.009	0.019	0.034	0.054	0.077	0.137	0.174	0.214	0.260	0.309
		Throw	1 2 5	2 4 8	3 5 10	4 6 13	5 8 14	7 10 16	8 11 17	8 13 18	9 14 19	10 14 20
	4' length	CFM	80	120	160	200	240	320	360	400	440	480
		Ps	0.010	0.021	0.038	0.060	0.086	0.153	0.193	0.239	0.289	0.344
		Pt	0.011	0.026	0.046	0.072	0.103	0.183	0.232	0.286	0.346	0.412
		Throw	2 3 7	3 5 10	5 7 13	6 8 15	7 10 16	9 13 19	10 14 20	11 15 21	12 16 22	13 16 23
	5' length	CFM	100	150	200	250	300	400	450	500	550	600
		Ps	0.011	0.024	0.043	0.068	0.097	0.173	0.219	0.271	0.328	0.390
		Pt	0.014	0.031	0.055	0.086	0.124	0.221	0.279	0.345	0.417	0.497
		Throw	3 4 8	4 6 13	6 8 15	7 11 17	8 13 18	11 15 21	13 16 23	14 17 24	14 18 25	15 18 26
12" Oval Inlet	4' length	CFM	80	120	160	200	240	320	360	400	440	480
		Ps	0.008	0.019	0.033	0.052	0.075	0.134	0.170	0.209	0.253	0.301
		Pt	0.010	0.021	0.038	0.060	0.086	0.152	0.193	0.238	0.288	0.343
		Throw	2 3 6	3 5 10	4 6 13	5 8 15	6 10 16	8 13 19	10 14 20	11 15 21	12 16 22	13 16 23
	5' length	CFM	100	150	200	250	300	400	450	500	550	600
		Ps	0.010	0.023	0.040	0.063	0.091	0.162	0.205	0.253	0.306	0.364
		Pt	0.012	0.027	0.048	0.074	0.107	0.190	0.241	0.298	0.360	0.428
		Throw	3 4 8	4 6 12	5 8 15	7 10 17	8 12 18	11 15 21	12 16 22	13 17 23	14 17 25	15 18 26
	NC	-	-	<15	16	21	30	34	38	41	45	

See pages PSD-227 for performance data notes



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Plenum Slot Diffusers

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Series PHCS-DB-6 and PHCSI-DB-6 - Performance

Plenum Slot Diffusers

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			CFM/LF									
			20	30	40	50	60	70	80	90	100	110
6" Round Inlet 12" x 7/16" Down blow Slot	3' length	CFM	60	90	120	150	180	210	240	270	-	-
		Ps	0.049	0.111	0.198	0.309	0.445	0.606	0.791	1.001	-	-
		Pt	0.055	0.124	0.221	0.345	0.497	0.677	0.884	1.119	-	-
		Throw, H	1 3 9	3 7 13	6 9 18	7 11 22	9 13 25	10 16 27	12 18 28	13 20 30	-	-
	4' length	Throw, V	1 1 2	1 2 4	2 2 5	2 3 5	2 4 6	3 4 6	3 5 7	4 5 7	-	-
		NC	19	23	28	32	36	40	44	47	-	-
		CFM	80	120	160	200	240	280	320	360	-	-
		Ps	0.052	0.116	0.207	0.323	0.465	0.633	0.827	1.047	-	-
	5' length	Pt	0.062	0.140	0.248	0.388	0.558	0.760	0.993	1.256	-	-
		Throw, H	2 6 12	6 9 18	8 12 23	10 15 26	12 18 28	14 21 31	16 23 33	18 25 35	-	-
		Throw, V	1 2 3	2 2 5	2 3 5	3 4 6	3 5 7	4 5 7	4 5 8	5 6 8	-	-
		NC	<15	21	27	33	37	42	46	49	-	-
3' length	CFM	100	150	200	250	300	350	400	450	-	-	
	Ps	0.020	0.046	0.081	0.127	0.183	0.249	0.325	0.412	-	-	
	Pt	0.037	0.082	0.146	0.228	0.329	0.447	0.584	0.739	-	-	
	Throw, H	4 7 15	7 11 22	10 15 26	12 19 29	15 22 32	17 24 34	20 26 37	22 28 39	-	-	
4' length	Throw, V	1 2 4	2 3 5	3 4 6	3 5 7	4 5 7	5 6 8	5 6 8	5 6 9	-	-	
	NC	-	<15	20	27	34	39	44	49	-	-	
	CFM	60	90	120	150	180	210	240	270	300	-	
	Ps	0.031	0.069	0.122	0.191	0.275	0.375	0.489	0.619	0.764	-	
3' length	Pt	0.033	0.074	0.131	0.204	0.294	0.400	0.523	0.662	0.817	-	
	Throw, H	1 3 9	3 6 13	6 9 16	7 11 18	9 13 20	10 15 22	11 16 23	13 17 24	14 18 26	-	
	Throw, V	1 1 2	1 2 3	1 2 4	2 3 4	2 3 5	2 4 5	3 4 5	3 4 6	3 4 6	-	
	NC	15	20	24	28	33	37	40	44	47	-	
8" Oval Inlet 12" x 7/16" Down blow Slot	4' length	CFM	80	120	160	200	240	280	320	360	400	-
		Ps	0.018	0.040	0.071	0.111	0.160	0.218	0.285	0.360	0.445	-
		Pt	0.022	0.048	0.086	0.134	0.194	0.264	0.344	0.436	0.538	-
		Throw, H	2 6 11	6 9 16	8 11 19	9 14 21	11 16 23	13 18 25	15 19 27	16 20 28	17 21 30	-
	5' length	Throw, V	1 1 3	1 2 4	2 3 4	2 3 5	3 4 5	3 4 6	4 4 6	4 5 7	4 5 7	-
		NC	<15	17	23	29	33	37	41	45	49	-
		CFM	100	150	200	250	300	350	400	450	500	-
		Ps	0.016	0.035	0.063	0.098	0.141	0.192	0.251	0.317	0.391	-
	3' length	Pt	0.021	0.048	0.086	0.134	0.193	0.263	0.344	0.435	0.537	-
		Throw, H	4 7 14	7 11 18	9 14 21	12 17 23	14 18 26	16 20 28	17 21 30	18 22 32	19 23 33	-
		Throw, V	1 2 3	2 3 4	2 3 5	3 4 6	3 4 6	4 5 7	4 5 7	4 5 8	5 6 8	-
		NC	-	<15	15	23	29	35	40	44	47	-

			CFM/LF									
			20	30	40	50	60	70	80	90	100	110
10" Oval Inlet 12" x 7/16" Down blow Slot	3' length	CFM	60	90	120	150	180	210	240	270	300	330
		Ps	0.015	0.034	0.060	0.094	0.136	0.185	0.241	0.305	0.377	0.456
		Pt	0.016	0.036	0.065	0.101	0.145	0.198	0.258	0.327	0.404	0.488
		Throw, H	1 2 6	2 4 8	3 6 11	5 7 14	6 8 17	7 10 19	8 11 21	8 13 22	9 14 23	10 16 24
	4' length	Throw, V	1 1 2	1 1 2	1 2 3	1 2 4	2 2 4	2 3 5	2 3 5	2 4 5	3 4 5	3 4 6
		NC	<15	16	21	25	29	33	37	41	44	47
		CFM	80	120	160	200	240	280	320	360	400	440
		Ps	0.015	0.034	0.060	0.093	0.134	0.182	0.238	0.302	0.372	0.451
	5' length	Pt	0.017	0.038	0.067	0.105	0.151	0.206	0.269	0.340	0.420	0.508
		Throw, H	1 3 8	3 6 11	5 8 15	6 9 19	8 11 21	9 13 22	10 15 24	11 17 25	13 19 27	14 20 28
		Throw, V	1 1 2	1 2 3	1 2 4	2 3 4	2 3 5	3 4 5	3 4 6	3 4 6	4 4 6	4 5 7
		NC	-	<15	20	25	30	34	38	41	45	49
12" Oval Inlet 18" x 7/16" Down blow Slot	4' length	CFM	100	150	200	250	300	350	400	450	500	-
		Ps	0.014	0.031	0.055	0.086	0.124	0.169	0.221	0.280	0.345	-
		Pt	0.017	0.038	0.067	0.105	0.151	0.206	0.269	0.340	0.420	-
		Throw, H	2 5 9	5 7 14	6 9 19	8 12 21	9 14 23	11 16 25	13 19 27	14 20 29	16 21 30	-
	5' length	Throw, V	1 1 3	1 2 4	2 3 4	2 3 5	3 4 5	3 4 6	4 4 6	4 5 7	4 5 7	-
		NC	-	-	<15	21	28	34	39	43	47	-
		CFM	80	120	160	200	240	280	320	360	400	440
		Ps	0.013	0.029	0.051	0.080	0.115	0.157	0.205	0.259	0.320	0.387
	3' length	Pt	0.014	0.031	0.056	0.087	0.126	0.171	0.223	0.282	0.349	0.422
		Throw, H	1 3 7	3 5 11	5 7 14	6 9 18	7 11 20	8 12 22	10 14 23	11 16 25	12 18 26	13 19 27
		Throw, V	1 1 2	1 2 3	1 2 4	2 3 4	2 3 5	3 4 5	3 4 6	3 4 6	4 4 6	4 5 7
		NC	-	<15	18	24	28	32	36	40	43	47
5' length	CFM	100	150	200	250	300	350	400	450	500	550	
	Ps	0.012	0.027	0.049	0.076	0.109	0.149	0.194	0.246	0.303	0.367	
	Pt	0.014	0.031	0.056	0.087	0.125	0.171	0.223	0.282	0.348	0.421	
	Throw, H	2 4 9	4 7 13	6 9 18	7 11 21	9 13 23	10 16 24	12 18 26	13 20 28	15 21 29	16 22 31	
3' length	Throw, V	1 1 3	1 2 4	2 3 4	2 3 5	3 4 5	3 4 6	4 4 6	4 5 7	4 5 7	4 5 7	
	NC	-	-	<15	19	26	32	36	41	45	49	

Performance Notes for Series PHC:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- Horizontal throw values are at terminal velocities of 150, 100, and 50 fpm respectively.
- NC based on L_w Re 10^{-12} watts and 10dB room absorption. Where no value is shown, NC is less than 15.
- All pressures are in inches, W.G.

Series PHC - Specifications

Supply - T-bar Lay-in - Fixed Curved Blade - Insulated/Non Insulated/Model PHCS(I)-6

Plenum slot supply diffusers shall be METALAIRES PHCS-6 (non-insulated) or PHCSI-6 (insulated). Plenum slot diffusers shall be of the sizes and mounting types as shown on the device schedule.

Units shall have an aerodynamically shaped extruded aluminum curved blade deflector that provides a one way horizontal discharge pattern.

Inlets shall be centrally located, with a minimum depth of 2 1/8" for ease of duct connection. For straightness and rigidity, plenums shall be fabricated using a two piece panel construction and have a double metal thickness hem at the face. Units fabricated using single wrapper construction are not acceptable. Plenum diffusers shall be constructed of corrosion resistant galvanized steel.

Diffuser face and air pattern controller shall be black.

Insulated diffusers shall be model PHCSI-6. Insulation shall be internal, 1/4" matte face. End caps must be insulated. Units without insulation on end caps will not be accepted.

Return - T-bar Lay-in - Fixed Curved Blade - Insulated/Non Insulated/Model PHCR(I)-6

Plenum slot return diffusers shall be METALAIRES PHCR-6 (non-insulated) or PHCRI-6 (insulated). Plenum slot diffusers shall be of the sizes and mounting types as shown on the device schedule.

Plenum diffusers shall include a fixed curved blade supply air section and an integral plenum return section.

The supply section shall have an aerodynamically shaped extruded aluminum curved blade deflector that provides a one way horizontal discharge pattern.

Unit shall have an integral plenum return section designed for plenum return applications. Return section shall include a light shield to minimize reflective light coming through the slot opening.

Inlets shall be centrally located with a minimum depth of 2 1/8" for ease of duct connection. For straightness and rigidity, plenums shall be fabricated using a two piece panel construction and have a double metal thickness hem at the face. Units fabricated using single wrapper construction are not acceptable. Plenum diffusers shall be constructed of corrosion resistant galvanized steel.

Diffuser face and air pattern controller shall be black.

Insulated diffusers shall be model PHCRI-6. Supply section insulation shall be internal 1/4" matte face. End caps on the supply section must be insulated. Units without insulation on supply section end caps will not be accepted.

Supply - Center Down Blow - T-bar Lay-in - Fixed Curved Blade - Insulated/Non Insulated/Model PHCS(I)-DB-6

Plenum slot supply diffusers shall be METALAIRES PHCS-DB-6 (non-insulated) or PHCSI-DB-6 (insulated). Plenum slot diffusers shall be of the sizes and mounting types as shown on the device schedule.

Plenum diffusers shall include a fixed curved blade supply air section and a center down-blow section. The supply section shall have an aerodynamically shaped extruded aluminum curved blade deflector that provides a one way horizontal discharge pattern.

Plenum slot diffusers shall include an integral adjustable center down-blow section that provides a vertical jet of supply air. Volume and direction of discharge air through center down-blow section shall be adjustable through the face of the diffuser.

Inlets shall be centrally located, with a minimum depth of 2 1/8" for ease of duct connection. For straightness and rigidity, plenums shall be fabricated using a two piece panel construction and have a double metal thickness hem at the face. Units fabricated using single wrapper construction are not acceptable. Plenum diffusers shall be constructed of corrosion resistant galvanized steel.

Diffuser face and air pattern controller shall be black.

Insulated diffusers shall be model PHCSI-DB-6. Supply section insulation shall be internal 1/4" matte face. End caps must be insulated. Units without insulation on end caps will not be accepted.



Return - Center Down Blow - T-bar Lay-in - Fixed Curved Blade - Insulated/Non Insulated/Model PHCR(I)-DB-6

Plenum slot return diffusers shall be METALAIRE PHCR-DB-6 (non-insulated) or PHCRI-DB-6 (insulated). Plenum slot diffusers shall be of the sizes and mounting types as shown on the device schedule.

Plenum diffusers shall include a supply air section, a center down-blow section, and an integral plenum return section. The supply section shall have an aerodynamically shaped extruded aluminum curved blade deflector that provides a one way horizontal discharge pattern. Plenum slot diffuser shall include an integral adjustable center down-blow section that provides a vertical jet of supply air. Volume and direction of discharge air through center down-blow section shall be adjustable through the face of the diffuser. Unit shall also have an integral plenum return section designed for plenum return applications. Return section shall include a light shield to minimize reflective light coming through the slot opening.

Inlets shall be centrally located, with a minimum depth of 2 1/8" for ease of duct connection. For straightness and rigidity, plenums shall be fabricated using a two piece panel construction and have a double metal thickness hem at the face. Units fabricated using single wrapper construction are not acceptable. Plenum diffusers shall be constructed of corrosion resistant galvanized steel.

Diffuser face and air pattern controller shall be black.

Insulated diffusers shall be model PHCRI-DB-6. Supply section insulation shall be internal 1/4" matte face. End caps on the supply section must be insulated. Units without insulation on supply section end caps will not be accepted.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

PSD - Plenum Slot Diffusers

Series PHC - Model Specification Guide

Plenum Slot Diffuser - High Induction - Fixed Curved Blade
 Series PHC-6 - T-bar Lay-in

Model	Length	Inlet	Available Finishes	Available Options	
Supply		6" round	Standard	LQ	Locking Quadrant Damper
PHCS-6 - Non Insulated	24"	8" oval	27 - All Black		
PHCSI-6 - Insulated	36"	10" oval			
<i>Center Down Blow Section</i>	48"	12" oval			
PHCS-DB-6 - Non Insulated	60"				
PHCSI-DB-6 - Insulated					
Return					
PHCR-6 - Non Insulated					
PHCRI-6 - Insulated					
<i>Center Down Blow Section</i>					
PHCR-DB-6 - Non Insulated					
PHCRI-DB-6 - Insulated					

Plenum Slot Diffusers



PSD



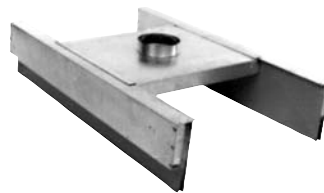
For more product information visit us at www.metalaire.com



➔ Light Troffer Diffusers ➔ Fixed Pattern Controller ➔ Series LT

Product Details

- ★ Architecturally pleasing; Reduces ceiling clutter by integrating the ceiling diffuser into the light fixture
- ★ Each unit is customized to fit the specified light fixture ensuring a tight seal for optimum performance
- ★ Optional 1/2" internal insulation available
- ★ Available with single or double-sided supply configurations
- ★ Model DS-LT-6 double-sided diffusers are available with side or top inlet for installation flexibility
- ★ Matching single-sided plenum return unit model SSR-LT-6 is available



Model LT Shown

Finish: 25 - WT - White Tees with Black Borders & Plenum Interior

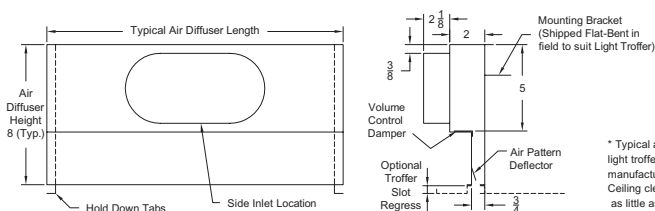
Plenum Slot Diffusers

PSD

Single Sided Supply

Dimensions are in inches

Light Troffer Diffuser - Galvanized Steel
Single Sided Supply - T-bar Lay-in
 Model SS-LT-6 - *Non Insulated*
 Model SSI-LT-6 - *Insulated*

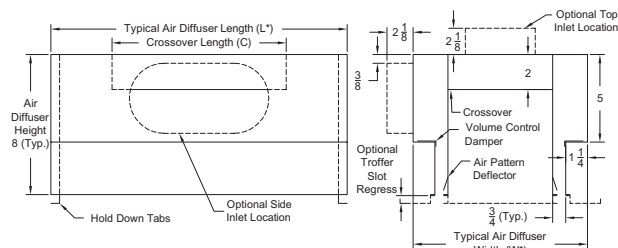


* Typical air diffuser lengths vary with air handling light troffer manufacturer. Specify the light fixture manufacturer's name and model number on all orders. Ceiling clearance required is typically 8" but can be as little as 6" above the ceiling line.

Double Sided Supply

Side Inlet - Light Troffer Diffuser - T-bar Lay-in
Double Sided Supply - Galvanized Steel
 Model DS-LT-6 - *Non Insulated*
 Model DSI-LT-6 - *Insulated*

Top Inlet - Light Troffer Diffuser - T-bar Lay-in
Double Sided Supply - Galvanized Steel
 Model DST-LT-6 - *Non Insulated*
 Model DSTI-LT-6 - *Insulated*



* Typical air diffuser widths and lengths vary with air handling light troffer manufacturer. Specify the light fixture manufacturer's name and model number on all orders. Ceiling clearance required is typically 8" but can be as little as 6" above the ceiling line. Top inlet units extend above this dimension. Entire diffuser is shipped completely assembled to the job site.

PSD - Plenum Slot Diffusers

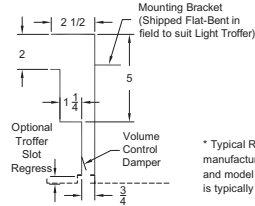
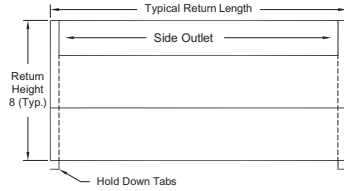
Single Sided Return

Light Troffer Diffuser - Galvanized Steel

Single Sided Return - T-bar Lay-in

Model SR-LT-6 - *Non Insulated*

Model SRI-LT-6 - *Insulated*



* Typical Return lengths vary with air handling light troffer manufacturer. Specify the light fixture manufacturer's name and model number on all orders. Ceiling clearance required is typically 8" but can be as little as 6" above the ceiling line.

1. Available Finishes	2. Construction Details
<p>Standard Finish: 24 Black Edges</p>	<ul style="list-style-type: none"> • Electrogalvanized steel plenum • Plenum inlets available in 4", 5" 6" and 7" (round or oval) • Other sizes may be available

Plenum Slot Diffusers



PSD

PSD - Plenum Slot Diffusers

3/2006

Series SS-LT-6 and SSI-LT-6 - Performance

		CFM/LF																								
		10			15			20			25			30			35			40			50			
2' length	5" Inlet	Horizontal	CFM	20		30		40		50		60		70		80		100								
			Ps	0.020		0.045		0.081		0.126		0.182		0.247		0.323		0.504								
			Pt	0.022		0.048		0.086		0.134		0.194		0.264		0.344		0.538								
		Throw	2	3	6	3	5	9	4	6	11	5	8	12	6	9	13	7	10	14	9	11	15	10	12	17
		NC	-			<15			15			22			28			33			37			44		
		Vertical	CFM	20		30		40		50		60		70		80		100								
	Ps	0.020		0.045		0.081		0.126		0.182		0.247		0.323		0.504										
	Pt	0.022		0.048		0.086		0.134		0.194		0.264		0.344		0.538										
	Throw	1	2	4	2	3	5	2	4	7	3	4	8	4	5	9	4	6	9	5	7	10	6	8	11	
	NC	-			<15			15			22			28			33			37			44			
	6" Inlet	Horizontal	CFM	20		30		40		50		60		70		80		100								
			Ps	0.019		0.043		0.077		0.121		0.174		0.237		0.309		0.483								
Pt			0.020		0.045		0.080		0.125		0.180		0.245		0.320		0.499									
Throw		2	3	6	3	5	9	4	6	11	5	8	12	6	9	13	7	10	14	9	11	15	10	12	17	
NC		-			<15			15			22			28			33			37			44			
Vertical		CFM	20		30		40		50		60		70		80		100									
Ps	0.019		0.043		0.077		0.121		0.174		0.237		0.309		0.483											
Pt	0.020		0.045		0.080		0.125		0.180		0.245		0.320		0.499											
Throw	1	2	4	2	3	5	2	4	7	3	4	8	4	5	9	4	6	9	5	7	10	6	8	11		
NC	-			<15			15			22			28			33			37			44				
3' length	5" Inlet	Horizontal	CFM	30		45		60		75		90		105		120		-								
			Ps	0.024		0.053		0.095		0.148		0.213		0.290		0.379		-								
			Pt	0.027		0.060		0.107		0.167		0.240		0.327		0.427		-								
		Throw	1	2	7	2	5	10	4	7	12	5	8	13	7	10	15	8	11	16	9	12	17	-	-	
		NC	-			<15			18			25			31			37			42			-		
		Vertical	CFM	30		45		60		75		90		105		120		-								
	Ps	0.021		0.048		0.085		0.133		0.192		0.261		0.341		-										
	Pt	0.024		0.055		0.097		0.152		0.219		0.298		0.390		-										
	Throw	1	2	4	2	3	6	3	4	8	3	5	9	4	6	10	5	7	11	5	8	12	-	-		
	NC	-			<15			18			25			31			37			42			-			
	6" Inlet	Horizontal	CFM	30		45		60		75		90		105		120		-								
			Ps	0.024		0.053		0.095		0.148		0.213		0.290		0.379		-								
Pt			0.025		0.057		0.100		0.157		0.226		0.308		0.402		-									
Throw		1	2	7	2	5	10	4	7	12	5	8	13	7	10	15	8	11	16	9	12	17	-	-		
NC		-			<15			18			25			31			37			42			-			
Vertical		CFM	30		45		60		75		90		105		120		-									
Ps	0.021		0.048		0.085		0.133		0.192		0.261		0.341		-											
Pt	0.023		0.051		0.091		0.142		0.205		0.279		0.365		-											
Throw	1	2	4	2	3	6	3	4	8	3	5	9	4	6	10	5	7	11	5	8	12	-	-			
NC	-			<15			18			25			31			37			42			-				
4' length	5" Inlet	Horizontal	CFM	40		60		80		100		120		140		-		-								
			Ps	0.028		0.062		0.111		0.173		0.250		0.340		-		-								
			Pt	0.033		0.075		0.132		0.207		0.298		0.406		-		-								
		Throw	1	2	6	2	4	9	4	6	10	5	7	12	6	9	13	7	10	14	-	-	-	-		
		NC	-			<15			23			30			37			44			-					
		Vertical	CFM	40		60		80		100		120		140		-		-								
	Ps	0.026		0.059		0.105		0.164		0.236		0.321		-		-										
	Pt	0.032		0.071		0.126		0.197		0.284		0.387		-		-										
	Throw	1	2	4	2	3	6	3	4	8	3	5	8	4	6	9	5	7	10	-	-	-	-			
	NC	-			<15			23			30			37			44			-						
	6" Inlet	Horizontal	CFM	40		60		80		100		120		140		-		-								
			Ps	0.028		0.062		0.111		0.173		0.250		0.340		-		-								
Pt			0.030		0.068		0.121		0.190		0.273		0.372		-		-									
Throw		1	2	6	2	4	9	4	6	10	5	7	12	6	9	13	7	10	14	-	-	-	-			
NC		-			<15			23			30			37			44			-						
Vertical		CFM	40		60		80		100		120		140		-		-									
Ps	0.026		0.059		0.105		0.164		0.236		0.321		-		-											
Pt	0.029		0.065		0.115		0.180		0.259		0.352		-		-											
Throw	1	2	4	2	3	6	3	4	8	3	5	8	4	6	9	5	7	10	-	-	-	-				
NC	-			<15			23			30			37			44			-							

See page PSD-235 for performance data notes

PSD - Plenum Slot Diffusers

Series DS-LT-6 and DSI-LT-6 - Top Inlet Performance

		CFM/LF										
		15	20	25	30	35	40	45	50	55	60	
2 x 2 (W x L)	5" Inlet	CFM	30	40	50	60	70	80	90	100	110	120
		Ps	0.014	0.026	0.040	0.057	0.078	0.102	0.129	0.160	0.193	0.230
		Horiz. Pt	0.017	0.031	0.048	0.070	0.095	0.124	0.156	0.193	0.234	0.278
		Throw	0 1 2	0 1 3	1 2 4	1 2 4	1 3 5	2 3 6	2 3 7	2 4 7	3 4 8	3 4 9
		NC	<15	<15	<15	<15	17	21	25	28	32	36
		CFM	30	40	50	60	70	80	90	100	110	120
	Ps	0.014	0.026	0.040	0.057	0.078	0.102	0.129	0.160	0.193	0.230	
	Vert. Pt	0.017	0.031	0.048	0.070	0.095	0.124	0.156	0.193	0.234	0.278	
	Throw	1 1 3	1 2 4	1 3 5	2 3 7	3 4 8	3 4 8	3 5 9	4 5 9	4 6 10	4 7 10	
	NC	<15	<15	<15	<15	17	21	25	28	32	36	
	CFM	30	40	50	60	70	80	90	100	110	120	
	Ps	0.013	0.024	0.037	0.054	0.073	0.096	0.121	0.150	0.181	0.216	
Horiz. Pt	0.015	0.027	0.042	0.060	0.081	0.106	0.135	0.166	0.201	0.239		
Throw	0 1 2	0 1 3	1 2 4	1 2 4	1 3 5	2 3 6	2 3 7	2 4 7	3 4 8	3 4 9		
NC	<15	<15	<15	<15	17	21	25	28	32	36		
CFM	30	40	50	60	70	80	90	100	110	120		
Ps	0.013	0.024	0.037	0.054	0.073	0.096	0.121	0.150	0.181	0.216		
Vert. Pt	0.015	0.027	0.042	0.060	0.081	0.106	0.135	0.166	0.201	0.239		
Throw	1 1 3	1 2 4	1 3 5	2 3 7	3 4 8	3 4 8	3 5 9	4 5 9	4 6 10	4 7 10		
NC	<15	<15	<15	<15	17	21	25	28	32	36		
3 x 3 (W x L)	5" Inlet	CFM	45	60	75	90	105	120	135	150	165	180
		Ps	0.017	0.030	0.048	0.069	0.093	0.122	0.154	0.191	0.231	0.274
		Horiz. Pt	0.024	0.043	0.067	0.096	0.130	0.170	0.215	0.266	0.322	0.383
		Throw	0 1 4	1 2 5	1 2 6	2 4 7	2 4 8	3 5 10	4 5 10	4 6 11	4 7 11	5 7 12
		NC	<15	<15	<15	16	21	25	29	32	35	37
		CFM	45	60	75	90	105	120	135	150	165	180
	Ps	0.017	0.030	0.048	0.069	0.093	0.122	0.154	0.191	0.231	0.274	
	Vert. Pt	0.024	0.043	0.067	0.096	0.130	0.170	0.215	0.266	0.322	0.383	
	Throw	0 1 3	1 2 4	1 2 5	2 3 7	2 4 7	3 4 8	3 5 8	4 5 9	4 6 9	4 7 9	
	NC	<15	<15	<15	16	21	25	29	32	35	37	
	CFM	45	60	75	90	105	120	135	150	165	180	
	Ps	0.015	0.027	0.042	0.061	0.083	0.108	0.137	0.169	0.205	0.244	
Horiz. Pt	0.019	0.033	0.051	0.074	0.101	0.132	0.167	0.206	0.249	0.296		
Throw	0 1 4	1 2 5	1 2 6	2 4 7	2 4 8	3 5 10	4 5 10	4 6 11	4 7 11	5 7 12		
NC	<15	<15	<15	16	21	25	29	32	35	37		
CFM	45	60	75	90	105	120	135	150	165	180		
Ps	0.015	0.027	0.042	0.061	0.083	0.108	0.137	0.169	0.205	0.244		
Vert. Pt	0.019	0.033	0.051	0.074	0.101	0.132	0.167	0.206	0.249	0.296		
Throw	0 1 3	1 2 4	1 2 5	2 3 7	2 4 7	3 4 8	3 5 8	4 5 9	4 6 9	4 7 9		
NC	<15	<15	<15	16	21	25	29	32	35	37		
1 x 4 2 x 4 4 x 4 (W x L)	5" Inlet	CFM	60	80	100	120	140	160	180	200	220	-
		Ps	0.023	0.042	0.065	0.094	0.127	0.166	0.210	0.260	0.314	-
		Horiz. Pt	0.035	0.063	0.099	0.142	0.193	0.252	0.319	0.394	0.477	-
		Throw	1 2 4	2 3 5	2 3 7	3 4 8	3 5 8	4 5 9	4 6 9	4 7 10	5 7 10	-
		NC	<15	<15	16	21	26	30	33	37	41	-
		CFM	60	80	100	120	140	160	180	200	220	-
	Ps	0.023	0.042	0.065	0.094	0.127	0.166	0.210	0.260	0.314	-	
	Vert. Pt	0.035	0.063	0.099	0.142	0.193	0.252	0.319	0.394	0.477	-	
	Throw	0 1 4	1 2 5	1 2 6	2 4 6	2 4 7	3 5 7	4 5 8	4 6 8	4 6 8	-	
	NC	<15	<15	16	21	26	30	33	37	41	-	
	CFM	60	80	100	120	140	160	180	200	220	-	
	Ps	0.021	0.037	0.058	0.083	0.113	0.148	0.187	0.231	0.280	-	
Horiz. Pt	0.027	0.047	0.074	0.107	0.145	0.189	0.240	0.296	0.358	-		
Throw	1 2 4	2 3 5	2 3 7	3 4 8	3 5 8	4 5 9	4 6 9	4 7 10	5 7 10	-		
NC	<15	<15	16	21	26	30	33	37	41	-		
CFM	60	80	100	120	140	160	180	200	220	-		
Ps	0.021	0.037	0.058	0.083	0.113	0.148	0.187	0.231	0.280	-		
Vert. Pt	0.027	0.047	0.074	0.107	0.145	0.189	0.240	0.296	0.358	-		
Throw	0 1 4	1 2 5	1 2 6	2 4 6	2 4 7	3 5 7	4 5 8	4 6 8	4 6 8	-		
NC	<15	<15	16	21	26	30	33	37	41	-		

Plenum Slot Diffusers



PSD

See page PSD-235 for performance data notes



For more product information visit us at www.metalaire.com



PSD - Plenum Slot Diffusers

3/2006

Series DS-LT-6 and DSI-LT-6 - Side Inlet Performance

		CFM/LF										
		15	20	25	30	35	40	45	50	55	60	
2 x 2 (W x L)	5" Inlet	CFM	30	40	50	60	70	80	90	100	110	120
		Ps	0.016	0.029	0.046	0.066	0.089	0.117	0.148	0.182	0.221	0.263
		Horiz. Pt	0.019	0.035	0.054	0.078	0.106	0.138	0.175	0.216	0.261	0.311
		Throw	0 1 2	0 1 4	1 2 6	1 2 9	1 3 10	2 4 11	2 5 11	3 6 12	3 7 13	4 9 13
	NC	-	-	-	<15	17	22	26	29	32	36	
	CFM	30	40	50	60	70	80	90	100	110	120	
	Ps	0.016	0.029	0.046	0.066	0.089	0.117	0.148	0.182	0.221	0.263	
	Vert. Pt	0.019	0.035	0.054	0.078	0.106	0.138	0.175	0.216	0.261	0.311	
	Throw	1 1 3	1 2 4	2 3 5	2 3 6	2 4 7	3 4 8	3 5 8	3 5 9	4 6 9	4 6 10	
	NC	-	-	-	<15	17	22	26	29	32	36	
	CFM	30	40	50	60	70	80	90	100	110	120	
	Ps	0.014	0.025	0.040	0.057	0.078	0.102	0.129	0.159	0.193	0.229	
Horiz. Pt	0.016	0.028	0.044	0.063	0.086	0.112	0.142	0.175	0.212	0.253		
Throw	0 1 2	0 1 4	1 2 6	1 2 9	1 3 10	2 4 11	2 5 11	3 6 12	3 7 13	4 9 13		
NC	-	-	-	<15	17	22	26	29	32	36		
CFM	30	40	50	60	70	80	90	100	110	120		
Ps	0.014	0.025	0.040	0.057	0.078	0.102	0.129	0.159	0.193	0.229		
Vert. Pt	0.016	0.028	0.044	0.063	0.086	0.112	0.142	0.175	0.212	0.253		
Throw	1 1 3	1 2 4	2 3 5	2 3 6	2 4 7	3 4 8	3 5 8	3 5 9	4 6 9	4 6 10		
NC	-	-	-	<15	17	22	26	29	32	36		
3 x 3 (W x L)	5" Inlet	CFM	45	60	75	90	105	120	135	150	165	180
		Ps	0.021	0.038	0.059	0.085	0.115	0.150	0.190	0.235	0.284	0.339
		Horiz. Pt	0.028	0.050	0.078	0.112	0.152	0.199	0.252	0.311	0.376	0.447
		Throw	0 1 4	1 2 5	1 2 6	2 4 7	2 4 8	3 5 9	4 5 11	4 6 11	4 6 12	5 7 12
	NC	-	-	<15	19	24	28	31	34	36	39	
	CFM	45	60	75	90	105	120	135	150	165	180	
	Ps	0.021	0.038	0.059	0.085	0.115	0.150	0.190	0.235	0.284	0.339	
	Vert. Pt	0.028	0.050	0.078	0.112	0.152	0.199	0.252	0.311	0.376	0.447	
	Throw	0 1 4	1 2 5	1 2 6	2 4 7	2 4 8	3 5 10	4 5 11	4 6 12	4 7 12	5 7 13	
	NC	-	-	<15	19	24	28	31	34	36	39	
	CFM	45	60	75	90	105	120	135	150	165	180	
	Ps	0.018	0.033	0.051	0.074	0.100	0.131	0.166	0.205	0.248	0.295	
Horiz. Pt	0.022	0.039	0.060	0.087	0.118	0.154	0.195	0.241	0.292	0.347		
Throw	0 1 4	1 2 5	1 2 6	2 4 7	2 4 8	3 5 9	4 5 11	4 6 11	4 6 12	5 7 12		
NC	-	-	<15	19	24	28	31	34	36	39		
CFM	45	60	75	90	105	120	135	150	165	180		
Ps	0.018	0.033	0.051	0.074	0.100	0.131	0.166	0.205	0.248	0.295		
Vert. Pt	0.022	0.039	0.060	0.087	0.118	0.154	0.195	0.241	0.292	0.347		
Throw	0 1 4	1 2 5	1 2 6	2 4 7	2 4 8	3 5 10	4 5 11	4 6 12	4 7 12	5 7 13		
NC	-	-	<15	19	24	28	31	34	36	39		
1 x 4 2 x 4 4 x 4 (W x L)	5" Inlet	CFM	60	80	100	120	140	160	180	200	-	-
		Ps	0.031	0.056	0.087	0.125	0.171	0.223	0.282	0.349	-	-
		Horiz. Pt	0.043	0.077	0.121	0.174	0.237	0.309	0.391	0.483	-	-
		Throw	1 2 3	1 2 4	2 3 5	2 3 6	2 4 7	3 4 8	3 5 9	3 5 10	-	-
	NC	-	<15	20	25	29	33	37	41	-	-	
	CFM	60	80	100	120	140	160	180	200	-	-	
	Ps	0.031	0.056	0.087	0.125	0.171	0.223	0.282	0.349	-	-	
	Vert. Pt	0.043	0.077	0.121	0.174	0.237	0.309	0.391	0.483	-	-	
	Throw	0 1 2	0 1 4	1 1 6	1 2 6	1 3 7	2 4 7	2 5 8	3 6 8	-	-	
	NC	-	<15	20	25	29	33	37	41	-	-	
	CFM	60	80	100	120	140	160	180	200	-	-	
	Ps	0.026	0.046	0.072	0.103	0.141	0.184	0.233	0.287	-	-	
Horiz. Pt	0.032	0.056	0.088	0.127	0.172	0.225	0.285	0.352	-	-		
Throw	1 2 3	1 2 4	2 3 5	2 3 6	2 4 7	3 4 8	3 5 9	3 5 10	-	-		
NC	-	<15	20	25	29	33	37	41	-	-		
CFM	60	80	100	120	140	160	180	200	-	-		
Ps	0.026	0.046	0.072	0.103	0.141	0.184	0.233	0.287	-	-		
Vert. Pt	0.032	0.056	0.088	0.127	0.172	0.225	0.285	0.352	-	-		
Throw	0 1 2	0 1 4	1 1 6	1 2 6	1 3 7	2 4 7	2 5 8	3 6 8	-	-		
NC	-	<15	20	25	29	33	37	41	-	-		

Plenum Slot Diffusers

PSD

Performance Notes for Series LT:

All data are tested in accordance with ANSI/ASHRAE 70-1991

- NC based on Lw Re 10^{-12} watts and a 10 dB room attenuation.
- Performance data is based on a regressed slot with air pattern deflectors supplied in the diffuser. Actual performance will vary depending on the light fixture and the configuration of the air pattern if supplied by the light fixture manufacturer.
- Total Pressure in inches W.G. and is the sum of velocity and static pressure.
- Throw values are at 150, 100 and 75 fpm terminal velocity or horizontal throw using isothermal air.

Performance data is supplied for selection purposes, and is based on a regressed slot with the pattern controller supplied in the diffuser. It should be noted that actual job performance will vary depending on the type of light fixture used, the configuration of the pattern controller if supplied by the light fixture manufacturer, and variances in the physical dimensions from one light fixture manufacturer to another.

Series LT - Specifications

Single Sided Supply - Light Troffer Diffuser - T-bar Lay-in - Insulated/Non Insulated/Model SS-LT(I)-6

Single sided supply light troffer diffusers shall be METALAIRES SS-LT-6 (non-insulated) or SSI-LT-6 (insulated). Light troffer diffusers shall be of the sizes as shown on the device schedule and shall be fabricated to fit the manufacturer and model of light fixture specified.

Diffuser shall be single sided with a side entrance inlet. Units shall be shipped fully assembled and include hold down tabs for positive alignment and locking the light troffer diffuser onto the slot of the light fixture.

Inlets shall be oval, centrally located, with a minimum depth of 2 1/8" for ease of duct connection. Light troffer diffusers shall be constructed of corrosion resistant galvanized steel.

Diffuser face shall be black.

Insulated diffusers shall be model SSI-LT-6. Internal insulation shall be 1/2" thick matte face. External insulation shall be 1/2" thick with a vapor barrier. Matening return should be model SSRI-LT-6, insulated or model SSR-LT-6, non insulated.

Double Sided Supply - Side/Top Inlet - Light Troffer Diffuser - T-bar Lay-in - Insulated/Non Insulated/Model DS-LT(I)-6

Double sided supply light troffer diffusers shall be METALAIRES DS-LT-6 or DST-LT-6 (non-insulated) or DSI-LT-6 or DSTI-LT-6 (insulated). Light troffer diffusers shall be of the sizes as shown on the device schedule and shall be fabricated to fit the manufacturer and model of light fixture specified.

Diffusers shall be double sided and be available with either a top or side entrance inlet. Units shall be shipped fully assembled and include hold down tabs for positive alignment and locking the light troffer diffuser onto the slot of the light fixture.

Side inlets shall be oval; top inlets shall be round.

Inlets shall be centrally located, with a minimum depth of 2 1/8" for ease of duct connection. Light troffer diffusers shall be constructed of corrosion resistant galvanized steel.

Diffuser face shall be black.

Insulated diffusers shall be model DSI-LT-6 or DSTI-LT-6. Internal insulation shall be 1/2" thick matte face. External insulation shall be 1/2" thick with a vapor barrier.

PSD - Plenum Slot Diffusers

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Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

Plenum Slot Diffusers

PSD

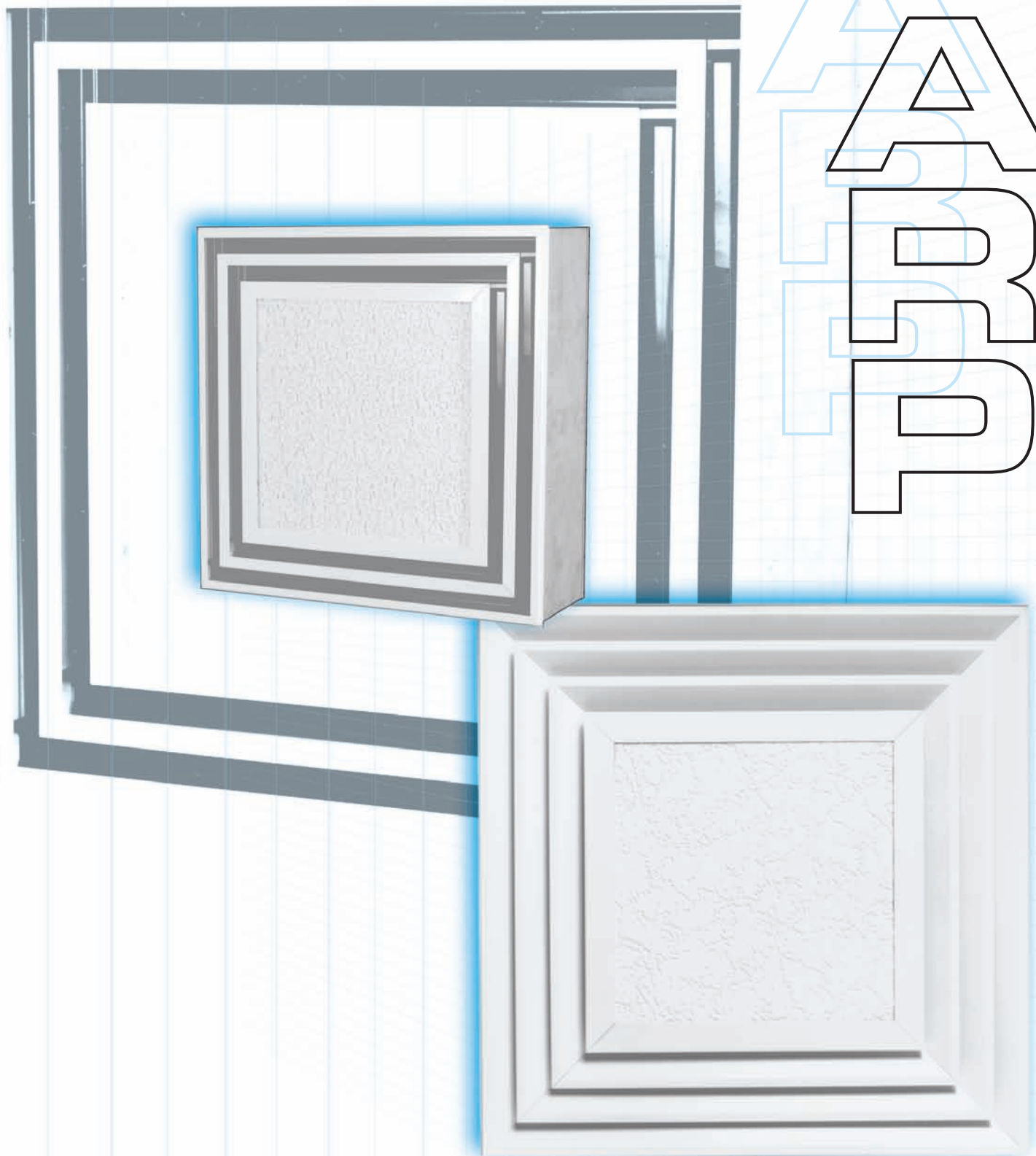
Series LT - Model Specification Guide

Plenum Slot Diffuser - Light Troffer Diffuser Series LT - T-bar Lay-in

Model	Length	Inlet	Available Finishes
Single Sided	24" 36" 48"	4"	Standard
<i>Supply</i>		5"	27 - All Black
SS-LT-6 - Non Insulated		6"	
SSI-LT-6 - Insulated		7"	
<i>Return</i>			
SSR-LT-6 - Non Insulated			
SSRI-LT-6 - Insulated			
Double Sided	12" x 48" 24" x 24" 24" x 48"		
<i>Side Inlet</i>			
DS-LT-6 - Non Insulated			
DSI-LT-6 - Insulated			
<i>Top Inlet</i>			
DST-LT-6 - Non Insulated			
DSTI-LT-6 - Insulated			



ARCHITECTURAL
DIFFUSERS



**ARCHITECTURAL
DIFFUSERS**



Model 5500DD

Pg. 242

Louvered Face - Fixed Deflection - Aluminum - Series 5500DD

- ✦ Series 5500DD offers an architectural air diffuser designed to excel in both performance and aesthetic appeal
- ✦ The unique horizontal lip on all sides of the diffuser face provides a horizontal air pattern that is tight to the ceiling. This attribute makes the series 5500DD ideally suited for maximum occupant comfort, even in variable volume systems
- ✦ The series 5500DD is shipped fully assembled and is designed to allow the ceiling tile to be installed (by others) from the face without having to remove the plenum. This means the center tile can be installed after the diffuser has been installed in the ceiling
- ✦ The series 5500DD, available in both supply and return models, is offered in a wide variety of border styles and slot configurations, allowing for maximum design flexibility
- ✦ Supply unit constructed with extruded aluminum face and steel backpan. Return units include steel light shield/baffle
- ✦ Available with 1 to 4 slots
- ✦ The series 5500DD is an excellent choice for VAV applications

	Louvered Face			
	Supply		Return	
Insulated	5500DDI-6 T-bar Lay-in	5500DDI-8 Tegular T-bar		
	5500DDI-9 24x24 Donn Finline			
Non-Insulated	5500DD-6 T-bar Lay-in	5500DD-8 Tegular T-bar	5500DDR-6 T-bar Lay-in	5500DDR-8 Tegular T-bar
	5500DD-9 24x24 Donn Finline		5500DDR-9 Fine LIne	

Architectural Rating Products



ARP



Model 6600SQ

Pg. 248

Modular Slot - Aluminum - Series 6600SQ

- ✦ The series 6600SQ provides outstanding operation flexibility. The supply units are shipped with pattern controllers that are individually adjustable from the face of the diffuser. This feature allows the direction of air flow to be adjusted a full 180°. The return is shipped without pattern controller to minimize sound and pressure drop
- ✦ The series 6600SQ is shipped fully assembled and is designed to allow the ceiling tile to be installed (by others) from the face without having to remove the plenum. This means the center tile can be installed after the diffuser has been installed in the ceiling
- ✦ The series 6600SQ, available in both supply and return models, is offered in a wide variety of border styles and slot configurations, allowing for maximum design flexibility
- ✦ Supply unit constructed with extruded aluminum face and pattern controllers, with a steel backpan. Return units include steel light shield/baffle
- ✦ Available with 1 to 4 slots
- ✦ The series 6600SQ is an excellent choice for VAV applications

	Modular Slot			
	Supply		Return	
Insulated	6600SQI-6 T-bar Lay-in	6600SQI-8 Tegular T-bar		
	6600SQI-9 Donn Finline			
Non-Insulated	6600SQ-6 T-bar Lay-in	6600SQ-8 Tegular T-bar	6600SQR-6 T-bar Lay-in	6600SQR-8 Tegular T-bar
	6600SQ-9 Donn Finline		6600SQR-9 Donn Finline	

↳ Louvered Face ↳ Series 5500DD ↳ Aluminum

Product Details

- ✦ Series 5500DD offers an architectural air diffuser designed to excel in both performance and aesthetic appeal
- ✦ The unique horizontal lip on all sides of the diffuser face provides a horizontal air pattern that is tight to the ceiling. This attribute makes the series 5500DD ideally suited for maximum occupant comfort, even in variable volume systems
- ✦ The series 5500DD is shipped fully assembled and is designed to allow the ceiling tile to be installed (by others) from the face without having to remove the plenum. This means the center tile can be installed after the diffuser has been installed in the ceiling
- ✦ The series 5500DD, available in both supply and return models, is offered in a wide variety of border styles and slot configurations, allowing for maximum design flexibility
- ✦ Supply unit constructed with extruded aluminum face and steel backpan. Return units include steel light shield/baffle
- ✦ Available with 1 to 4 slots
- ✦ The series 5500DD is an excellent choice for VAV applications



Model 5500DD-6 Shown

Standard Finish: 01 White

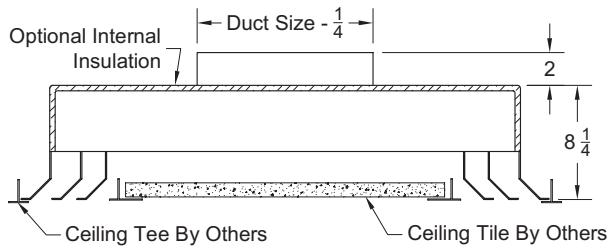
Dimensions are in inches

Supply - Non Insulated/Insulated - Fixed Louvered Face

Aluminum - T-bar Lay-in

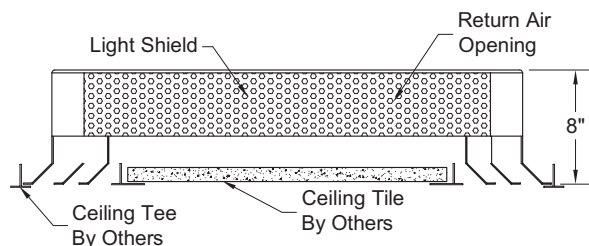
Model 5500DD-6 - Non insulated

Model 5500DDI-6 - Insulated



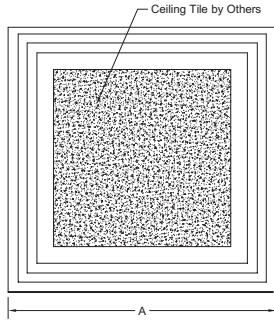
Return - Non Insulated - Aluminum - Fixed Louvered Face

Model 5500 DDR-6

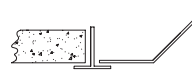


ARP - Architecturally Rated Products

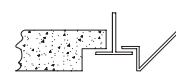
Face View



Ceiling Grid Systems



T-bar Lay-in (-6)



Tegular T-bar (-8)



Donn Finline (-6)

1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White w/black plenum</p> <p>Optional Finish (additional charge): 28 Custom color</p>	<p>D3 - Opposed Blade Damper189</p> <p>G3 - Equalizing Grid190</p> <p>BDS - Butterfly Damper190</p> <p>RSD - Radial Shutter Damper189</p> <p>TBPF - T-bar Plaster Frame189</p>	<ul style="list-style-type: none"> Insulated units have 1/2" Tuffskin insulation Center ceiling tile supplied by others, field installed. Return units are non-ducted, with light shields

Architectural Rating Products



ARP

ARP - Architecturally Rated Products

3/2006

Series 5500DD - Performance

Models 5500DD-6, 5500DDI-6/Supply

1 slot Type 24" x 1" 8 Inch Inlet	<i>CFM</i>	50	100	150	200	250	300	350
	<i>Total Pressure</i>	0.01	0.03	0.07	0.13	0.20	0.30	0.40
	<i>Static Pressure</i>	0.007	0.024	0.058	0.109	0.168	0.254	0.337
	<i>NC</i>	<20	<20	22	28	33	38	41
	<i>Throw</i>	2-3-5	4-5-7	5-6-9	6-8-10	7-9-12	8-11-14	9-12-16
2 slot Type 24" x 2" 8 Inch Inlet	<i>CFM</i>	100	150	200	250	300	350	400
	<i>Total Pressure</i>	0.02	0.05	0.08	0.12	0.18	0.24	0.31
	<i>Static Pressure</i>	0.014	0.038	0.059	0.088	0.134	0.177	0.227
	<i>NC</i>	<20	<20	22	28	33	38	41
	<i>Throw</i>	2-3-5	3-5-7	4-6-8	4-7-9	5-8-11	6-9-12	7-10-13
3 slot Type 24" x 3" 8 Inch Inlet	<i>CFM</i>	150	200	250	300	350	400	450
	<i>Total Pressure</i>	0.03	0.06	0.09	0.13	0.18	0.23	0.30
	<i>Static Pressure</i>	0.018	0.039	0.058	0.084	0.117	0.147	0.194
	<i>NC</i>	<20	<20	25	30	34	38	41
	<i>Throw</i>	3-4-6	4-5-7	4-6-8	5-7-9	5-8-10	6-9-12	7-10-14
4 slot Type 24" x 4" 8 Inch Inlet	<i>CFM</i>	200	250	300	350	400	450	500
	<i>Total Pressure</i>	0.05	0.08	0.11	0.16	0.20	0.26	0.32
	<i>Static Pressure</i>	0.029	0.048	0.064	0.097	0.117	0.154	0.195
	<i>NC</i>	<20	23	28	32	36	39	42
	<i>Throw</i>	3-4-9	3-5-7	4-6-8	5-7-10	5-8-11	6-9-12	6-10-13
4 slot Type 24" x 4" 10 Inch Inlet	<i>CFM</i>	250	300	350	400	450	500	550
	<i>Total Pressure</i>	0.061	0.085	0.123	0.151	0.196	0.247	0.298
	<i>Static Pressure</i>	0.48	0.085	0.123	0.151	0.196	0.247	0.298
	<i>NC</i>	20	25	29	33	36	39	41
	<i>Throw</i>	3-5-7	4-6-8	5-7-10	5-8-11	6-9-12	6-10-13	7-10-14

Architectural Rating Products



ARP

Series 5500DD - Performance

Models 5500DDR-6/Return

1 slot	CFM	100	125	165	200	225	275
	NC	<20	20	22	25	30	35
	Negative	0.02"	0.03"	0.06"	0.08"	0.10"	0.15"
2 slot	CFM	155	190	250	310	345	425
	NC	<20	22	24	27	32	37
	Negative	0.02"	0.03"	0.06"	0.08"	0.10"	0.15"
3 slot	CFM	225	275	360	450	505	620
	NC	21	24	25	29	34	38
	Negative	0.02"	0.03"	0.06"	0.08"	0.10"	0.15"
4 slot	CFM	295	350	430	590	660	810
	NC	22	25	27	30	35	40
	Negative	0.02"	0.03"	0.06"	0.08"	0.10"	0.15"

Inlet Size	6"	8"	9"	10"	12"	14"	16"
Total Ft. ²	0.196	0.349	0.441	0.545	0.785	1.07	1.40

Neck Velocity (fpm)	300	400	500	600	700	800	900	1000	1100	1200	1400	1600
Velocity Pressure	0.006	0.010	0.016	0.023	0.031	0.040	0.051	0.063	0.075	0.090	0.122	0.160

All data obtained in a manner as described in the ANSI/ASHRAE Standard 70-1991.

Horizontal throw - values are at terminal velocities of 150, 100 and 50 fpm respectively, using 4-way pattern.

NC - based on Lw Re 10-12 watts and minus a 10dB room absorption. Where no value is shown, NC is less than 20.

Static pressure - is for diffuser only.

Total pressure - includes plenum and inlet collar size listed and is the sum of velocity and static pressure.

To determine total pressure for other inlet sizes, divide the CFM by the square footage of the inlet size (chart below). The result is the duct velocity in feet per minute. From the velocity pressure chart, determine the velocity pressure and add it to the static pressure shown in the performance chart to determine the total pressure.

Example: determine TP for a four slot 6700SQ-50CD with a 9" inlet at 350 CFM. $350 / 0.441 = 794$ fpm duct velocity. 800 fpm duct velocity = $0.04 V_p + 0.045 S_p = 0.085 T.P.$ All values based on isothermal air. All pressures are in inches, W.G.



Series 5500DD - Specification

Supply Square and Rectangular Louvered Face - Aluminum/Series 5500DD (DDI)

Insulated

5500DDI-6 - T-bar Lay-in
5500DDI-9 - Donn Finline

Non-Insulated

5500DD-6 - T-bar Lay-in
5500DD-9 - Donn Finline

Air Outlets shall be model 5500DDI (insulated) or 5500DD (non-insulated) manufactured by METALAIRES. Units shall be square face ceiling supply diffusers and shall have a factory attached back. Back pan must be of sufficient height to allow center tile (by the ceiling system manufacturer) to be installed from the diffuser face without disassembling the face from the back pan. Devices without back pan attached to the diffuser face will not be allowed. The units shall be the size and quantity as outline in the plans and specifications.

Diffuser shall be one through four slots. The diffuser shall be designed to integrate with the ceiling type. It shall have horizontal deflection surfaces on the fixed pattern control blades which provide a horizontal ceiling pattern with a twenty degree cooling temperature differential at twenty percent of design volume.

Return Square and Rectangular Louvered Face - Aluminum/Series 5500 DDR

Non-Insulated

5500 DDR-6 - T-bar Lay-in
5500 DDR-9 - Donn Finline

Air Inlets shall be model 5500DD manufactured by METALAIRES. Units shall be square face ceiling return or exhaust diffusers and shall have a factory attached light shield. Light shield must be of sufficient height to allow center tile (by the ceiling system manufacturer) to be installed from the diffuser face without disassembling the face from the back pan. Devices without light shield attached to the diffuser face will not be allowed. The units shall be the size and quantity as outline in the plans and specifications.

Diffuser shall be one through four slots. The diffuser shall be designed to integrate with the ceiling type. Face shall have fixed louvers designed to match the appearance of the supply unit.

Round Neck Optional Dampers and Accessories

Butterfly Damper

METALAIRES model BDS aluminum round butterfly type dampers shall be provided. Damper shall consist of two butterfly style blades that can be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot that can be assessed through the face of the diffuser.

Radial Shutter Damper

METALAIRES model RSD steel round radial shutter damper shall be provided. Damper shall consist of gang operated radial blades that slide perpendicular to air flow direction. The damper shall be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot that can be assessed through the face of the diffuser.

Opposed Blade Damper

METALAIRES model D3 aluminum or SD3 Steel round opposed blade type dampers shall be provided. Damper shall consist of gang operated blades that can be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot that can be assessed through the face of the diffuser.

Equalizing Grid

METALAIRES model G3 aluminum round equalizing grid shall be provided. Equalizing grid shall consist of 1/2" x 1/2" x 1/2" aluminum cubed core mounting in an aluminum frame.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours



Model Specification Guide

Supply - Fixed Louver Face Architectural Diffusers Aluminum - Series 5500DD

Model	Inlet	Number of Slots	Module	Available Finishes	Available Options	
5500DD-6 - T-bar Lay-in	6"	1	24" x 24"	Standard	D3	Radial Opposed Blade Damper - Aluminum
5500DDI-6 - T-bar Lay-in - Insulated	8"	2		01 -White Face w/Black Back Pan	SD3	Radial Opposed Blade Damper - Steel
5500DD-8 - Tegular T-bar	10"	3		Options	G3	Equalizing Grid
5500DDI-8 - Tegular T-bar - Insulated	12"	4		28 - Custom Color	BDS	Butterfly Damper
5500DD-9 - Donn Finline					RSD	Radial Shutter Damper
5500DDI-9 - Donn Finline - Insulated					TBPF	T-bar Plaster Frame

Return/Exhaust - Fixed Louver Face Architectural Diffuser Aluminum - Series 5500DD

Model	Number of Slots	Module	Available Finishes
5500DDR-6- T-bar Lay-in 5500DDR-8- Tegular T-bar 5500DDR-9- Donn Finline	1	24" x 24"	Standard
	2		01 -White Face w/Black Back Pan
	3		Options
	4		28 - Custom Color



➔ Perforated Face ➔ Series 6600 SQ ➔ Aluminum

Product Details

- ✦ The series 6600SQ provides outstanding operation flexibility. The supply units are shipped with pattern controllers that are individually adjustable from the face of the diffuser. This feature allows the direction of air flow to be adjusted a full 180°. The return is shipped without pattern controller to minimize sound and pressure drop
- ✦ The series 6600SQ is shipped fully assembled and is designed to allow the ceiling tile to be installed (by others) from the face without having to remove the plenum. This means the center tile can be installed after the diffuser has been installed in the ceiling
- ✦ The series 6600SQ, available in both supply and return models, is offered in a wide variety of border styles and slot configurations, allowing for maximum design flexibility
- ✦ Supply unit constructed with extruded aluminum face and pattern controllers, with a steel backpan. Return units include steel light shield/baffle
- ✦ Available with 1 to 4 slots
- ✦ The series 6600SQ is an excellent choice for VAV applications

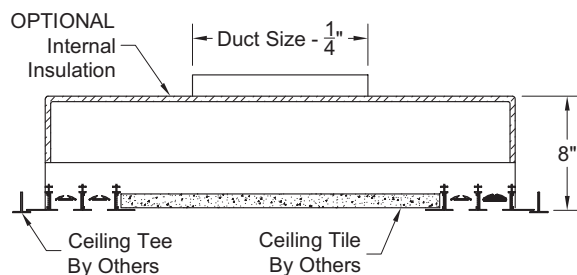


Model 6600 SQ-6 Shown
Standard Finish: 01 White

Dimensions are in inches

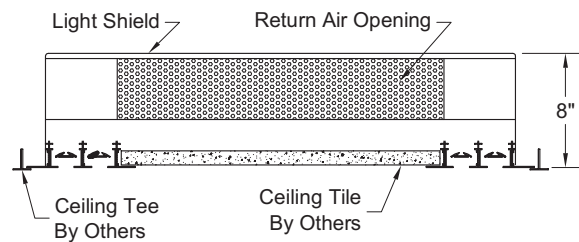
Supply - Non Insulated (Insulated) - Aluminum

Model 6600 SQ(I)-6 - T-bar Lay-in
Model 6600 SQ(I)-8 - Tegalur T-bar
Model 6600 SQ(I)-9 - Donn Finline



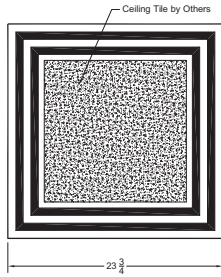
Return - Non Insulated - Aluminum

Model 6600 SQR-6 - T-bar Lay-in
Model 6600 SQR-8 - Tegalur T-bar
Model 6600 SQR-9 - Donn Finline



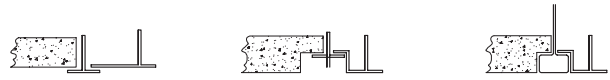
ARP - Architecturally Rated Products

Face View



Model	1 Slot		2 Slot		3 Slot		4 Slot	
	S	A	S	A	S	A	S	A
6650SQ-6	1/2"	2 3/4"	1/2"	4"	1/2"	5 1/4"	1/2"	6 1/2"
6675SQ-6	3/4"	3"	3/4"	4 1/2"	3/4"	6"	3/4"	7 1/2"
6610SQ-6	1"	3 1/4"	1"	5"	1"	6 3/4"	1"	8 1/2"

Ceiling Grid System



T-bar Lay-in (-6)
(6600SQ-6)

Tegular T-bar (-8)
(6600SQ-8)

Donn Finline (-6)
(6600SQ-9)

1. Available Finishes

Standard Finish:
20 White w/black pattern controllers
Optional Finish (additional charge):
28 Custom color

2. Available Accessories

D3 - Opposed Blade Damper - Aluminum336
SD3 - Opposed Blade Damper - Steel336
G3 - Equalizing Grid337
BDS - Butterfly Damper335

3. Construction Details

- Insulated units have 1/2" Tuffskin insulation
- Center ceiling tile supplied by others, field installed.
- Return units are non-ducted, with light shields
- Three slot widths available: 6650 (1/2"), 6675 (3/4"), and 6610 (1")

Architectural Rating Products



ARP

ARP - Architecturally Rated Products

3/2006

Series 6600SQ - Performance

1/2" Slot Width

1 slot Type 24" x 24" 6 Inch Inlet	CFM	50	100	150	175	200	225
	Horizontal	4-6-8	6-10-15	8-13-19	12-17-22	15-20-29	18-24-35
	Total Pressure	0.028	0.102	0.227	0.302	0.370	0.42
	Static Pressure	0.023	0.086	0.19	0.251	0.305	0.42
	NC	-	27	35	41	48	52
2 slot Type 24" x 24" 8 Inch Inlet	CFM	75	125	150	200	250	275
	Horizontal	3-5-7	4-7-10	5-8-12	7-10-15	9-3-19	11-18-22
	Total Pressure	0.034	0.059	0.122	0.021	0.312	0.39
	Static Pressure	0.03	0.051	0.11	0.18	0.28	0.35
	NC	-	-	24	29	38	45
3 slot Type 24" x 24" 8 Inch Inlet	CFM	100	150	200	225	250	300
	Horizontal	2-4-5	3-6-7	5-8-11	6-9-13	7-10-15	9-12-18
	Total Pressure	0.042	0.088	0.146	0.187	0.222	0.312
	Static Pressure	0.036	0.076	0.125	0.16	0.19	0.265
	NC	-	-	21	27	35	43
4 slot Type 24" x 24" 10 Inch Inlet	CFM	150	200	250	275	300	350
	Horizontal	3-5-6	5-7-8	7-10-12	8-11-14	9-13-17	11-15-21
	Total Pressure	0.061	0.103	0.153	0.191	0.209	0.282
	Static Pressure	0.056	0.094	0.14	0.175	0.19	0.255
	NC	-	22	28	32	37	40

3/4" Slot Width

1 slot Type 24" x 24" 6 Inch Inlet	CFM	50	100	150	200	250	300
	Horizontal	2-3-5	35-9	4-8-13	6-10-16	8-12-18	10-15-20
	Total Pressure	0.013	0.039	0.083	0.145	0.219	0.319
	Static Pressure	0.011	0.033	0.071	0.125	0.187	0.272
	NC	-	-	20	28	32	39
2 slot Type 24" x 24" 10 Inch Inlet	CFM	100	150	200	250	300	350
	Horizontal	2-4-7	3-6-10	5-8-13	6-10-16	7-12-18	8-14-20
	Total Pressure	0.015	0.033	0.068	0.087	0.124	0.172
	Static Pressure	0.013	0.026	0.049	0.074	0.105	0.145
	NC	-	-	20	24	26	31
3 slot Type 24" x 24" 10 Inch Inlet	CFM	150	200	250	300	350	400
	Horizontal	3-4-9	4-5-12	5-7-15	6-9-17	7-11-19	8-13-22
	Total Pressure	0.023	0.040	0.051	0.078	0.117	0.149
	Static Pressure	0.018	0.031	0.048	0.059	0.090	0.115
	NC	-	-	22	25	28	32
4 slot Type 24" x 24" 12 Inch Inlet	CFM	200	250	300	350	400	450
	Horizontal	3-4-8	4-5-11	6-9-15	7-10-18	8-11-20	8-13-22
	Total Pressure	0.025	0.038	0.064	0.075	0.092	0.117
	Static Pressure	0.021	0.031	0.044	0.062	0.075	0.094
	NC	-	-	-	22	25	28

Inlet Size	6"	8"	9"	10"	12"	14"	16"
Total Ft. ²	0.196	0.349	0.441	0.545	0.785	1.07	1.40

Neck Velocity (fpm)	300	400	500	600	700	800	900	1000	1100	1200	1400	1600
Velocity Pressure	0.006	0.010	0.016	0.023	0.031	0.040	0.051	0.063	0.075	0.090	0.122	0.160

All data obtained in a manner as described in the ANSI/ASHRAE Standard 70-1991.

Horizontal throw - values are at terminal velocities of 150, 100 and 50 fpm respectively, using 4-way pattern.

NC - based on Lw Re 10-12 watts and minus a 10 dB room absorption. Where no value is shown, NC is less than 20.

Static pressure - is for diffuser only.

Total pressure - includes plenum and inlet collar size listed and is the sum of velocity and static pressure.

To determine total pressure for other inlet sizes, divide the CFM by the square footage of the inlet size (chart below). The result is the duct velocity in feet per minute. From the velocity pressure chart, determine the velocity pressure and add it to the static pressure shown in the performance chart to determine the total pressure.

Example: determine TP for a four slot 6600SQ-50CD with a 9" inlet at 350 CFM. $350 / 0.441 = 794$ fpm duct velocity. 800 fpm duct velocity = $0.04 V_p + 0.045 S_p = 0.085 T.P.$ All values based on isothermal air. All pressures are in inches, W.G.

Architectural Rating Products



ARP

Series 6600SQ - Performance

1" Slot Width

1 slot Type 24" x 24" 8 Inch Inlet	CFM	100	150	200	250	300	350
	Horizontal	3-5-10	5-7-13	6-9-15	8-12-18	9-14-20	11-16-22
	Total Pressure	0.023	0.046	0.080	0.122	0.172	0.228
	Static Pressure	0.017	0.034	0.059	0.090	0.125	0.165
	NC	-	-	27	30	38	44
2 slot Type 24" x 24" 10 Inch Inlet	CFM	150	200	250	330	350	400
	Horizontal	2-4-10	3-6-12	5-8-15	7-10-17	8-13-21	8-15-24
	Total Pressure	0.030	0.050	0.074	0.103	0.137	0.169
	Static Pressure	0.025	0.041	0.061	0.084	0.110	0.135
	NC	-	-	22	28	35	39
3 slot Type 24" x 24" 12 Inch Inlet	CFM	200	250	300	350	400	450
	Horizontal	4-5-10	5-7-13	6-8-16	7-9-19	8-11-21	9-13-23
	Total Pressure	0.028	0.042	0.055	0.074	0.090	0.117
	Static Pressure	0.023	0.035	0.046	0.061	0.074	0.094
	NC	-	-	20	25	29	34
4 slot Type 24" x 24" 12 Inch Inlet	CFM	250	300	350	400	450	500
	Horizontal	4-5-10	5-7-13	6-8-15	7-10-19	7-11-20	8-12-22
	Total Pressure	0.034	0.048	0.059	0.071	0.091	0.107
	Static Pressure	0.027	0.038	0.045	0.55	0.68	0.081
	NC	-	20	23	27	30	33

Inlet Size	6"	8"	9"	10"	12"	14"	16"
Total Ft. ²	0.196	0.349	0.441	0.545	0.785	1.07	1.40

Neck Velocity (fpm)	300	400	500	600	700	800	900	1000	1100	1200	1400	1600
Velocity Pressure	0.006	0.010	0.016	0.023	0.031	0.040	0.051	0.063	0.075	0.090	0.122	0.160

All data obtained in a manner as described in the ANSI/ASHRAE Standard 70-1991.

Horizontal throw - values are at terminal velocities of 150, 100 and 50 fpm respectively, using 4-way pattern.

NC - based on Lw Re 10-12 watts and minus a 10 dB room absorption. Where no value is shown, NC is less than 20.

Static pressure - is for diffuser only.

Total pressure - includes plenum and inlet collar size listed and is the sum of velocity and static pressure.

To determine total pressure for other inlet sizes, divide the CFM by the square footage of the inlet size (chart below). The result is the duct velocity in feet per minute. From the velocity pressure chart, determine the velocity pressure and add it to the static pressure shown in the performance chart to determine the total pressure.

Example: determine TP for a four slot 6600SQ-50CD with a 9" inlet at 350 CFM. $350 / 0.441 = 794$ fpm duct velocity. 800 fpm duct velocity = $0.04 V_p + 0.045 S_p = 0.085 T.P.$ All values based on isothermal air. All pressures are in inches, W.G.



Series 6600 SQ - Specification

Supply Square and Rectangular Louvered Face - Aluminum/Series 6600SQ(I)

Insulated

6600SQI-6 - T-bar Lay-in
6600SQI-9 - Donn Fineline

Non-insulated

6600SQ-6 - T-bar Lay-in
6600SQ-9 - Donn Fineline

Air Outlets shall be model 6600SQI (insulated) or 6600SQ (non-insulated) manufactured by METALAIRES. Units shall be square face ceiling supply diffusers and shall have a factory attached back. Back pan must be of sufficient height to allow center tile (by the ceiling system manufacturer) to be installed from the diffuser face without disassembling the face from the back pan. Devices without back pan attached to the diffuser face will not be allowed. The units shall be the size and quantity as outline in the plans and specifications.

Outlet pattern controllers shall be curved, aerodynamically shaped, capable of adjustment from the face of the diffuser. The pattern controllers shall allow adjustment from vertical to horizontal patterns as well as damper the volume through the face of the diffuser. In the horizontal position, pattern controllers shall be field adjustable to obtain a 1 way, 2 way opposite, 2 way corner, 3 way, and 4 way directional air patterns. Pattern controllers shall be aluminum construction. Steel pattern controllers are not acceptable.

Diffuser shall be one through four slots. Units shall be available with 1/2", 3/4" or 1" slot widths. The diffuser shall be designed to integrate with the ceiling type.

Return Square and Rectangular Louvered Face - Aluminum/Series 6600SQR

Non-insulated

6600SQR-6 - T-bar Lay-in
6600SQR-9 - Donn Fineline

Air Inlets shall be model 6600SQR manufactured by METALAIRES. Units shall be square face ceiling return or exhaust diffusers and shall have a factory attached light shield. Light shield must be of sufficient height to allow center tile (by the ceiling system manufacturer) to be installed from the diffuser face without disassembling the face from the back pan. Devices without light shield attached to the diffuser face will not be allowed. The units shall be the size and quantity as outline in the plans and specifications.

Diffuser shall be one through four slots. Units shall be available with 1/2", 3/4" or 1" slot widths. The diffuser shall be designed to integrate with the ceiling type. Face shall be designed to match the appearance of the supply unit.

Round Neck Optional Dampers and Accessories

Butterfly Damper

METALAIRES model BDS aluminum round butterfly type dampers shall be provided. Damper shall consist of two butterfly style blades that can be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot that can be assessed through the face of the diffuser.

Radial Shutter Damper

METALAIRES model RSD steel round radial shutter damper shall be provided. Damper shall consist of gang operated radial blades that slide perpendicular to air flow direction. The damper shall be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot that can be assessed through the face of the diffuser.

Opposed Blade Damper

METALAIRES model D3 aluminum or SD3 steel round opposed blade type dampers shall be provided. Damper shall consist of gang operated blades that can be adjusted from full open to full closed. Damper shall be adjusted with a screw driver slot that can be assessed through the face of the diffuser.

Equalizing Grid

METALAIRES model G3 aluminum round equalizing grid shall be provided. Equalizing grid shall consist of 1/2" x 1/2" x 1/2" aluminum cubed core mounting in an aluminum frame.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Paint Specification

Process shall be anodic electrodeposition using an anodic acrylic paint. Units shall undergo pre-treatment including a pressurized spray stage using an alkaine cleaner and a de-ionized water rinse.

Film Properties shall meet or exceed the following standards:

Property	Test Method	Performance
Film thickness		.8-1.0 mils
Film Cure		320 F @ 20 min
Gloss – 60 deg.	ASTM D523-89	70-80%
Pencil Hardness	ASTM D3363-92A	HB-H
Crosshatch Adhesion	ASTM D3359-95	4B-5B
Direct Impact	ASTM D2794-93	100 in.lbs. Min
Reverse Impact	ASTM D2794-93	60 in.lbs. Min.
Salt Spray	ASTM B117-95	48-96 Hours
Humidity	ASTM D1735-92	500 Hours
Water Soak	ASTM D870-92	250 Hours

For more product information visit us at www.metalaires.com



Model Specification Guide

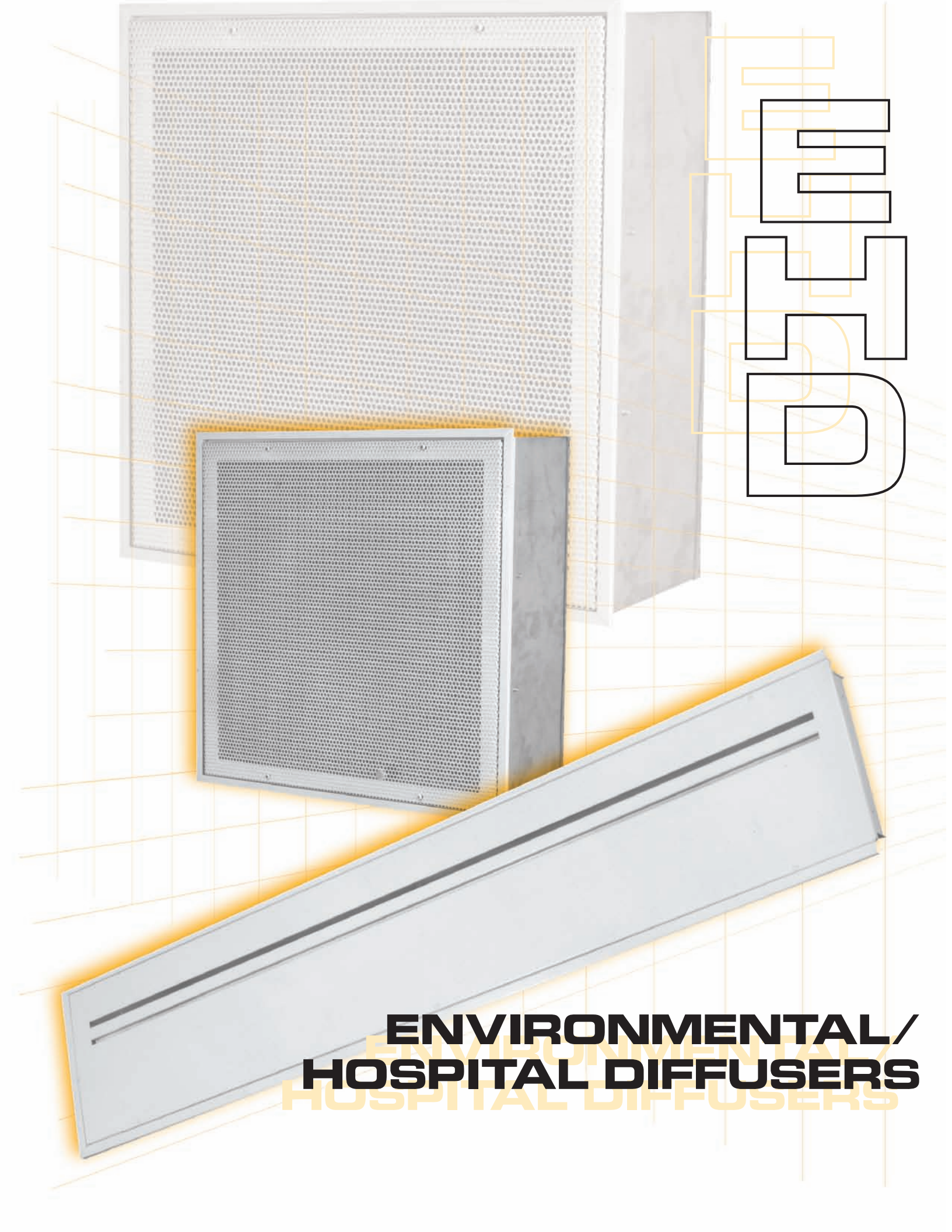
Supply - Modular Slot Architectural Diffusers Aluminum - Series 6600SQ

Model	Slot Width	Inlet	Number of Slots	Module	Available Finishes	Available Options
6600SQ-6 - T-bar Lay-in 6600SQI-6 - T-bar Lay-in - Insulated 6600SQ-8 - Tegular T-bar 6600SQI-8 - Tegular T-bar - Insulated 6600SQ-9 - Donn Finline 6600SQI-9 - Donn Finline - Insulated	1/2"	6"	1	24" x 24"	Standard	D3 Radial Opposed Blade Damper - aluminum
	3/4"	8"	2		20 - White Face w/Black Pattern Controllers	
	1"	10"	3		Optional	SD3 Radial Opposed Blade Damper - steel
		12"	4		28 - Custom Color	G3 Equalizing Grid
						BDS Butterfly Damper
						RSD Radial Shutter Damper
						TBPF T-bar Plaster Frame

Return/Exhaust - Modular Slot Architectural Diffuser Aluminum - Series 6600SQ

Model	Slot Width	Inlet	Number of Slots	Module	Available Finishes
6600SQR-6 T-bar Lay-in 6600SQR-8 Tegular T-bar 6600SQR-9 Donn Finline	1/2"	6"	1	24" x 24"	Standard
	3/4"	8"	2		01 - White Face
	1"	10"	3		Optional
		12"	4		28 - Custom Color





HOSPITAL

**ENVIRONMENTAL/
HOSPITAL DIFFUSERS**



Model HPL-CL

Pg. 260

Environmental/Hospital Diffusers - Laminar Flow - Series HPL-CL

- ✦ The HPL laminar flow diffusers are engineered for supply air distribution in critical environments such as hospital operating rooms and clean rooms. The diffusers are engineered to supply a low velocity vertical "piston" of conditioned air
- ✦ The HPL-CL laminar is easy to clean and sterilize. The face and core assembly can be removed from the face for cleaning. With the face and core assembly removed, the interior of the backpan and inlet collar are free of obstructions and easy to access
- ✦ The diffuser is available with a choice of three free areas for the perforated face: 23%, 40% and 51% maximizing the range of capacities for the HPL. The HPL is also available in aluminum or stainless steel construction

	Laminar Flow		
	Surface Mount	T-bar Lay-in	Special 1 1/2" T-bar Lay-in
Aluminum	HPL-CL-AL-1	HPL-CL-AL-6	HPL-CL-AL-6M
Stainless Steel	HPL-CL-SS-1	HPL-CL-SS-6	HPL-CL-SS-6M
SS Face/Aluminum Backpan	HPL-CL-SA-1	HPL-CL-SA-6	HPL-CL-SA-6M



Model HPL-HA

Pg. 266

Environmental/Hospital Diffusers - Laminar Flow - w/HEPA Filter Cell - Series HPL-HA

- ✦ When the application calls for the HEPA filters to be located in the supply diffuser, the HPL-HA is an excellent choice. The series HPL-HA laminar flow diffusers are engineered for supply air distribution in critical environments such as hospital operating rooms and clean rooms. The diffusers are engineered to supply a low velocity vertical "piston" of conditioned air
- ✦ The series HPL-HA design includes a HEPA filter cell accessible from the face of the diffuser. The face and core assembly can be removed from the face for cleaning. This feature allows the filters to be removed and replaced from the diffuser face
- ✦ The diffuser is available with a choice of three free areas for the perforated face: 23%, 40% and 51% maximizing the range of capacities for the HPL. The HPL is also available in aluminum or stainless steel construction
- ✦ Optional HEPA filters are available

	Laminar Flow		
	Surface Mount	T-bar Lay-in	Special 1 1/2" T-bar Lay-in
Aluminum	HPL-HA-AL-1	HPL-HA-AL-6	HPL-CL-HA-6M
Stainless Steel	HPL-HA-SS-1	HPL-HA-SS-6	HPL-CL-HA-6M
SS Face/Aluminum Backpan	HPL-HA-SA-1	HPL-HA-SA-6	HPL-CL-HA-6M



Model HPL-PR

Pg. 272

Environmental/Hospital Diffusers - Laminar Flow - Patient Isolation Applications - Series HPL-PR

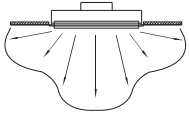
- ✦ The series HPL-PR is specifically engineered to improve patient comfort in critical health care applications such as isolation rooms and trauma centers. The unique design provides a "tent" of conditioned air around the patient
- ✦ The unique design of the patented HPL-PR provides filtered air to protect the patient and at the same time minimize the air velocities that impact the patient. This device provides a high level of comfort
- ✦ Series HPL-PR includes a HEPA filter section. Optional HEPA filters are available. HPL-PR configuration minimizes induction, distributing low velocity air with minimum aspiration
- ✦ Unit is aluminum construction and is available for Surface Mount and T-bar Lay-in applications, and is also available for special 1 1/2" wide T-bar Lay-in applications

	Laminar Flow - Patient Isolation Applications		
	Surface Mount	T-bar Lay-in	Special 1 1/2" T-bar Lay-in
Aluminum	HPL-PR-AL-1	HPL-PR-AL-6	HPL-PR-AL-6M
Stainless Steel	HPL-PR-SS-1	HPL-PR-SS-6	HPL-PR-SS-6M
SS Face/Aluminum Backpan	HPL-PR-SA-1	HPL-PR-SA-6	





Model HRD-CL
Pg. 278



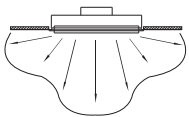
Environmental/Hospital Diffusers - Radial Discharge Pattern - Removable Face - Series HRD-CL

- ★ The HRD-CL radial discharge pattern diffusers are engineered for supply air distribution in critical environments such as chemistry labs and clean rooms. The diffusers are engineered to supply a low velocity of conditioned air in a radial pattern from the ceiling
- ★ The HRD-CL radial discharge pattern diffusers are easy to clean and sterilize. The face and core assembly can be removed from the face for cleaning. With the face and core assembly removed, the interior of the backpan and inlet collar are free of obstructions and easy to access
- ★ The diffuser is available in stainless steel or heavy aluminum construction. Units available in 90° or 180° throw

	Radial Discharge		
	Flush Mount	T-bar Lay-in	Special 1 1/2" T-bar Lay-in
Aluminum	HRD-CL-AL-1	HRD-CL-AL-6	HRD-CL-AL-6M
Stainless Steel	HRD-CL-SS-1	HRD-CL-SS-6	HRD-CL-SS-6M
SS Face/Aluminum Backpan	HRD-CL-SA-1	HRD-CL-SA-6	HRD-CL-SA-6M



Model HRD-HA
Pg. 284



Environmental/Hospital Diffusers - Radial Discharge Pattern - Removable Face w/HEPA Filter Series HRD-HA

- ★ The series HRD-HA radial discharge pattern diffusers includes a HEPA filter section and are engineered for supply air distribution in critical environments such as chemistry labs and clean rooms. The diffusers are engineered to supply a low velocity of conditioned air in a radial pattern from the ceiling
- ★ The series HRD-HA design includes a HEPA filter cell accessible from the face of the diffuser. The face and core assembly can be removed from the face for cleaning. This feature allows the filters to be removed and replaced from the diffuser face. Optional HEPA filters are available
- ★ The HRD-HA Radial Discharge Pattern Diffusers are easy to clean and sterilize. The face and core assembly can be removed from the face for cleaning. With the face and core assembly removed, the interior of the backpan and inlet collar are free of obstructions and easy to access
- ★ The diffuser is available in stainless steel or heavy aluminum construction. Units available in 90° or 180° throw
- ★ Optional HEPA Filters are available

	Radial Discharge - w/HEPA Filter Cell		
	Flush Mount	T-bar Lay-in	Special 1 1/2" T-bar Lay-in
Aluminum	HRD-HA-AL-1	HRD-HA-AL-6	HRD-HA-AL-6M
Stainless Steel	HRD-HA-SS-1	HRD-HA-SS-6	HRD-HA-SS-6M
SS Face/Aluminum Backpan	HRD-HA-SA-1	HRD-HA-SA-6	HRD-HA-SA-6M





Model Periflow
Pg. 290

Environmental/Hospital Diffusers - Laminar Flow - Operating Room Systems - Series Periflow

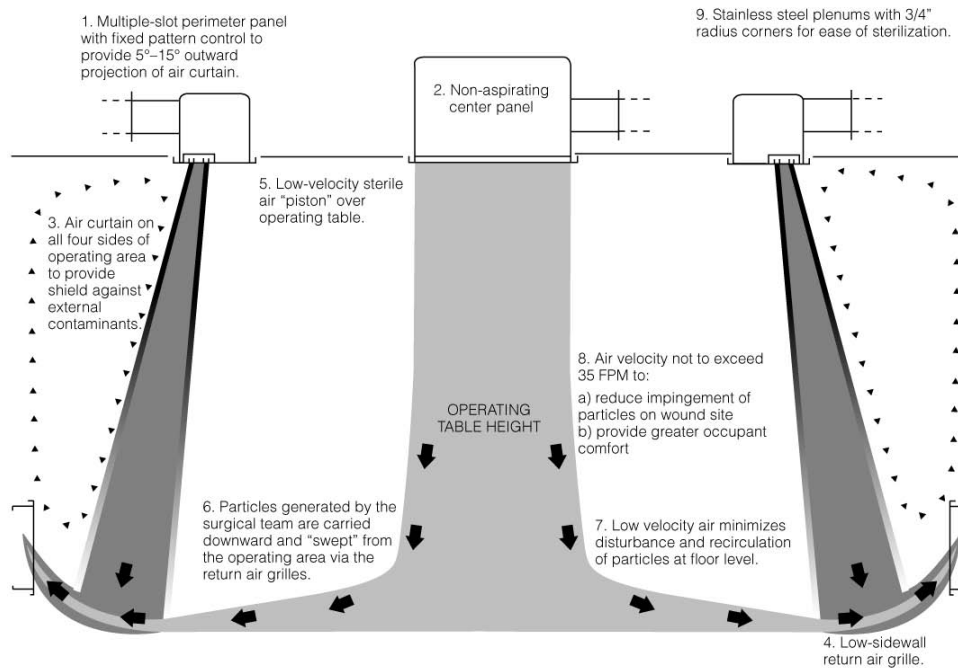
- ⊛ The Periflow operating room air distribution system provides control over particulate matter within the operating room environment
- ⊛ The system has been tested in accordance with the guidelines set forth by the Committee on Operating Room Environments of the American College of Surgeons as published in the January 1976 Bulletin and meets Class 1 Microbiological Air Cleanliness guidelines. The system provides the highest standard of air cleanliness for patients undergoing minor procedures or surgeries as critical as organ transplants
- ⊛ The system is in either stainless steel or heavy aluminum construction to ensure long-term durability and resistance to strong germicidal solutions. In addition, each system is custom designed and precisely fabricated to accommodate the specialized medical, mechanical, and electrical considerations of today's operating room environments
- ⊛ By its compact yet efficient design, the Periflow system allows the designer the flexibility to properly provide for all the various components competing for space above the operating room ceiling

Flush Mount
Periflow Laminar Flow Panels w/Perimeter Air Curtain

Environmental/Hospital Diffusers



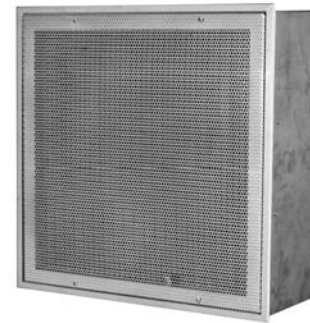
EHD



Environmental/Hospital Diffusers → Laminar Flow → Series HPL-CL

Product Details

- ✪ The HPL laminar flow diffusers are engineered for supply air distribution in critical environments such as hospital operating rooms and clean rooms. The diffusers are engineered to supply a low velocity vertical "piston" of conditioned air
- ✪ The HPL-CL laminar is easy to clean and sterilize. The face and core assembly can be removed from the face for cleaning. With the face and core assembly removed, the interior of the backpan and inlet collar are free of obstructions and easy to access
- ✪ The diffuser is available with a choice of three free areas for the perforated face: 23%, 40% and 51% maximizing the range of capacities for the HPL. The HPL is also available in aluminum or stainless steel construction



Model HPL-CL Shown
Standard Finish: 01 White

Environmental/Hospital Diffusers

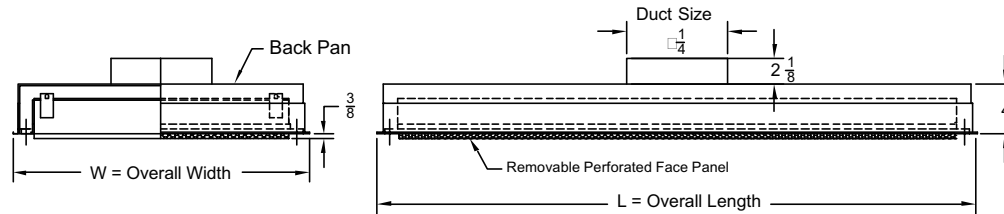


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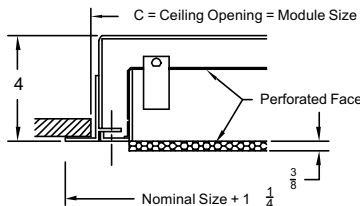
Aluminum Face & Backpan

Dimensions are in inches

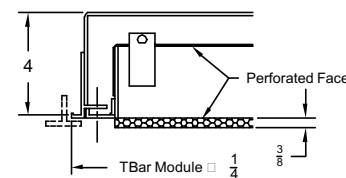
Hospital Diffuser - Laminar Flow
Aluminum Face & Backpan
Model HPL-CL-AL



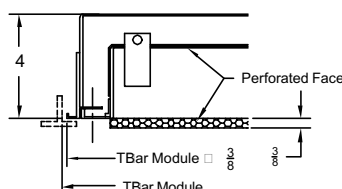
Hospital Diffuser - Laminar Flow
Surface Mount - Aluminum Face & Backpan
Model HPL-CL-AL-1



Hospital Diffuser - Laminar Flow
Standard T-bar Lay-in - Aluminum Face & Backpan
Model HPL-CL-AL-6



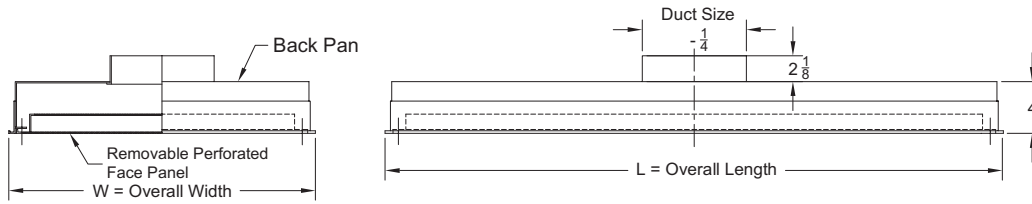
Hospital Diffuser - Laminar Flow
Special 1 1/2" T-bar Lay-in - Aluminum Face & Backpan
Model HPL-CL-AL-6M



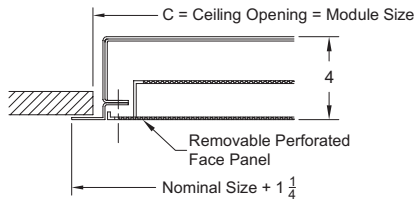
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	C	L	W	L	W	L	W
24 x 24	24 x 24	25 1/4	25 1/4	23 3/4	23 3/4	23 3/4	23 3/4
24 x 48	24 x 48	49 1/4	25 1/4	47 3/4	23 3/4	47 3/4	23 3/4

Stainless Steel Face & Aluminum Backpan

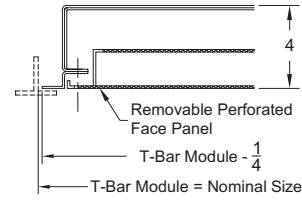
Hospital Diffuser - Laminar Flow
Stainless Steel Face & Aluminum Backpan
Model HPL-CL-SA



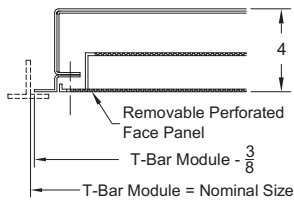
Hospital Diffuser - Laminar Flow
Surface Mount - Stainless Steel Face & Aluminum Backpan
Model HPL-CL-SA-1



Hospital Diffuser - Laminar Flow
Standard T-bar Lay-in - Stainless Steel Face & Aluminum Backpan
Model HPL-CL-SA-6



Hospital Diffuser - Laminar Flow
Special 1 1/2" T-bar Lay-in - Stainless Steel Face & Aluminum Backpan
Model HPL-CL-SA-6M



Nominal Size	Frame 1			Frame 6		Frame 6M	
	C	L	W	L	W	L	W
12 x 36	12 x 36	37 1/8	13 1/8	35 3/4	11 3/4	25 3/4	11 3/4
12 x 48	12 x 48	49 1/4	13 1/8	47 3/4	11 3/4	47 3/4	11 3/4
24 x 24	24 x 24	25 1/4	25 1/8	23 3/4	23 3/4	23 3/4	23 3/4
24 x 36	24 x 36	37 1/8	25 1/8	35 3/4	23 3/4	35 3/4	23 3/4
24 x 48	24 x 48	49 1/8	25 1/8	47 3/4	23 3/4	47 3/4	23 3/4

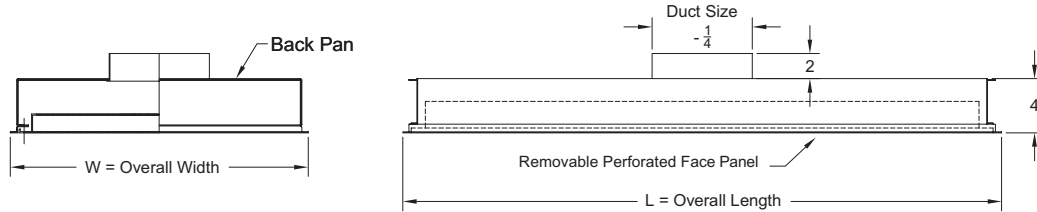
Environmental/Hospital Diffusers

EHD

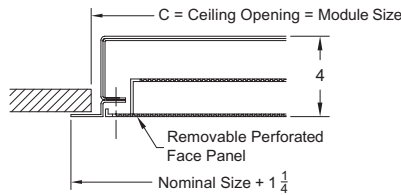


Stainless Steel Face & Backpan

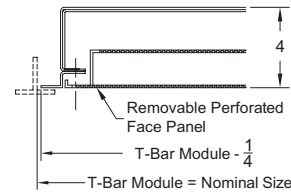
Hospital Diffuser - Laminar Flow
Stainless Steel Face & Backpan
Model HPL-CL-SS



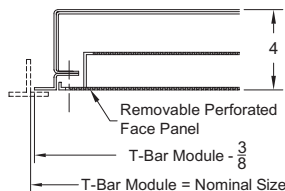
Hospital Diffuser - Laminar Flow
Surface Mount - Stainless Steel Face & Backpan
Model HPL-CL-SS-1



Hospital Diffuser - Laminar Flow
Standard T-bar Lay-in - Stainless Steel Face & Backpan
Model HPL-CL-SS-6



Hospital Diffuser - Laminar Flow
Special 1 1/2" T-bar Lay-in - Stainless Steel Face & Backpan
Model HPL-CL-SS-6M



Nominal Size	Frame 1			Frame 6		Frame 6M	
	C	L	W	L	W	L	W
24 x 24	24 x 24	25 1/8	25 1/8	23 3/4	23 3/4	23 3/4	23 3/4
24 x 48	24 x 48	49 1/4	25 1/8	47 3/4	23 3/4	47 3/4	23 3/4

Notes for Models HPL-CL-AL-1, HPL-CL-AL-6, HPL-CL-AL-6M

1. Available Finishes	2. Available Accessories	3. Construction Details
Standard Finish: 08 White epoxy powder coat	D3 - Aluminum Radial Opposed Blade Damper SD3 - Steel Radial Opposed Blade Damper RSD - Radial Shutter Damper CD - Cable Damper	<ul style="list-style-type: none"> Perforated faces are shipped with 2 safety cables 23%, 40%, 51% perforated face Round neck sizes available: 6, 8, 10, 12 & 14

Notes for Models HPL-CL-SA-1, HPL-CL-SA-6, HPL-CL-SA-6M

1. Available Finishes	2. Available Accessories	3. Construction Details
Standard Finish: 23 #3 Scratch	D3 - Aluminum Radial Opposed Blade Damper SD3 - Steel Radial Opposed Blade Damper RSD - Radial Shutter Damper CD - Cable Damper	<ul style="list-style-type: none"> Perforated faces are shipped with 2 safety cables 23%, 40%, 51% perforated face Round neck sizes available: 6, 8, 10, 12 & 14

Notes for Models HPL-CL-SS-1, HPL-CL-SS-6, HPL-CL-SS-6M

1. Available Finishes	2. Available Accessories	3. Construction Details
Standard Finish: 23 #3 Scratch	D3 - Aluminum Radial Opposed Blade Damper SD3 - Steel Radial Opposed Blade Damper RSD - Radial Shutter Damper CD - Cable Damper	<ul style="list-style-type: none"> Perforated faces are shipped with 2 safety cables 23%, 40%, 51% perforated face Round neck sizes available: 6, 8, 10, 12 & 14

Series HPL-CL - Performance

Models HPL-CL-AL-1, HPL-CL-AL-6, HPL-CL-AL-6M, HPL-CL-SA-1, HPL-CL-SA-6, HPL-CL-SA-6M,
HPL-CL-SS-1, HPL-CL-SS-6, HPL-CL-SS-6M

CFM Per SQ. Foot	HPL-CL 23% Face Free Area		HPL-CL 34% Face Free Area		HPL-CL 51% Face Free Area	
	Ps	NC	Ps	NC	Ps	NC
20	0.010	<15	0.005	<15	0.004	<15
30	0.021	<15	0.011	<15	0.010	<15
40	0.038	18	0.020	<15	0.017	<15
50	0.060	21	0.031	21	0.027	18
60	0.086	29	0.045	25	0.038	22
70	0.117	35	0.061	31	0.052	24
80	0.152	38	0.080	34	0.068	30
90	0.193	40	0.101	39	0.086	35
100	-	-	-	-	0.107	39

Performance Notes for Series HPL-CL:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- Ps - is static pressure loss through the diffuser and does not include velocity pressure
- NC - is based on Lw Re 10⁻¹² watts, includes 10dB room attenuation
- NC - is based on maximum inlet velocity of 500 fpm
- NC - is for single diffuser only

Multiple (adjacent): Panel Correction Factors

Total Sq. Footage	0.193	40	0.101	39	0.086	35
NC Correction	-	-	-	-	0.107	39

Velocity Profile: Average Velocity

	CFM Per Square Foot of Panel							
	10	20	30	40	50	60	70	80
Single Panel	20	35	50	65	70	80	90	100
Mult. Panels (1)	20	35	50	70	80	90	100	110
Mult. Panels (2)	25	40	60	80	100	110	120	130

Performance Notes:

Average velocity is in feet per minute and is based on readings 6 feet below panels using a 15° F temperature differential (cooling).

- Multiple panels:** (1) Average velocity for adjacent panels totaling 15 to 30 square feet.
(2) Average velocity for adjacent panels totaling 30 plus square feet.

Series HPL-CL - Specifications

Aluminum Construction

- Model HPL-CL-AL-1 – *Surface Mount*
- Model HPL-CL-AL-6 – *Standard T-bar Lay-in*
- Model HPL-CL-AL-6M – *Special 1 1/2" T-bar Lay-in*

Stainless Steel Construction

- Model HPL-CL-SS-1 – *Surface Mount*
- Model HPL-CL-SS-6 – *Standard T-bar Lay-in*
- Model HPL-CL-SS-6M – *Special 1 1/2" T-bar Lay-in*

Stainless Steel Face/Aluminum Backpan

- Model HPL-CL-SA-1 – *Surface Mount*
- Model HPL-CL-SA-6 – *Standard T-bar Lay-in*
- Model HPL-CL-SA-6M – *Special 1 1/2" T-bar Lay-in*

Air outlets shall be model HPL-CL-AL (aluminum) or HPL-CL-SS (stainless steel) or HPL-CL-SA (stainless steel face/aluminum backpan) manufactured by METALAIR. Diffuser shall include an upper and lower pressure chamber and shall generate a low velocity, vertical piston of discharge air.

Diffuser shall be constructed of a one-piece perforated face and core assembly that is removable from the backpan with 1/4" turn fasteners accessible from the face. Face and core assemblies mounted with internal spring clips or other mechanical fastening devices are not acceptable. Units shall include stainless steel safety chains attaching the face assembly to the backpan.

Core and face assembly shall be removable to allow sanitizing in an autoclave and allow access to the backpan for cleaning. With the core assembly removed, the inside of the backpan must be completely accessible for cleaning. Units with permanently fixed dampers, baffles or deflectors mounted in the backpan are not acceptable. Face shall be flush with the ceiling surface.

Perforated face shall have a

- 51% free area with 3/16" holes on 1/4" staggered centers.
- 40% free area with 1/8" holes on 3/16" staggered centers.
- 23% free area with 1/16" holes on 1/8" staggered centers.

Units shall have round inlets. Units shall be designed to integrate into the specified ceiling system. The units shall be the size and quantity as outline in the plans and specifications.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Finish Specification

Aluminum Face Diffusers: Units shall be painted with a powder coat, baked on epoxy.

Stainless Steel Face Diffusers: # 3 Scratch Finish



Series HPL-CL - Model Specification Guide

Series HPL-CL - Laminar Flow Hospital Diffusers

Model	Inlet	Module	Free Area	Available Finishes	Available Options	
Aluminum Face & Backpan	6"	24" x 12"	51%	08 - White epoxy (aluminum face)	D3	Radial Opposed Blade Damper - aluminum
HPL-CL-AL-1 - Surface Mount	8"	36" x 12"	40%	23 - #3 Scratch (stainless steel face)	SD3	Radial Opposed Blade Damper - steel
HPL-CL-AL-6 - T-bar Lay-in	9"	48" x 12"	23%			
HPL-CL-AL-6M - Special 1 1/2" T-bar Lay-in	10"	60" x 12"				
Stainless Steel Face & Backpan	12"	72" x 12"				
HPL-CL-SS-1 - Surface Mount	14"	24" x 24"				
HPL-CL-SS-6 - T-bar Lay-in		36" x 24"				
HPL-CL-SS-6M - Special 1 1/2" T-bar Lay-in		48" x 24"				
Stainless Steel Face & Aluminum Backpan		60" x 24"				
HPL-CL-SA-1 - Surface Mount		72" x 24"				
HPL-CL-SA-6 - T-bar Lay-in		48" x 36"				
HPL-CL-SA-6M - Special 1 1/2" T-bar Lay-in						

Environmental/Hospital Diffusers



EHD

➔ Laminar Flow ➔ w/HEPA Filter Cell ➔ Series HPL-HA

Product Details

- ⊛ When the application calls for the HEPA filters to be located in the supply diffuser, the HPL-HA is an excellent choice. The series HPL-HA laminar flow diffusers are engineered for supply air distribution in critical environments such as hospital operating rooms and clean rooms. The diffusers are engineered to supply a low velocity vertical "piston" of conditioned air
- ⊛ The series HPL-HA design includes a HEPA filter cell accessible from the face of the diffuser. The face and core assembly can be removed from the face for cleaning. This feature allows the filters to be removed and replaced from the diffuser face
- ⊛ The diffuser is available with a choice of three free areas for the perforated face: 23%, 40% and 51% maximizing the range of capacities for the HPL. The HPL is also available in aluminum or stainless steel construction
- ⊛ Optional HEPA filters are available



Model HPL-HA Shown

Standard Finish: 01 White

Environmental/Hospital Diffusers

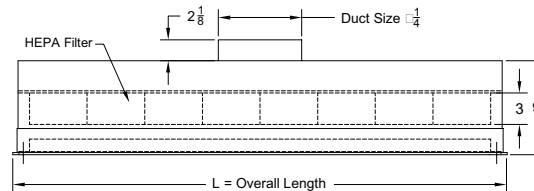
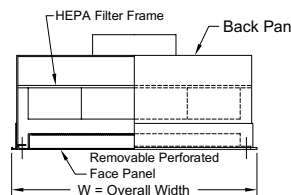


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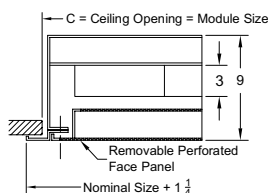
Aluminum Face & Backpan

Dimensions are in inches

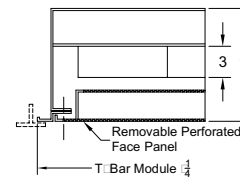
Hospital Diffuser - Laminar Flow - With HEPA Filter Cell
Aluminum Face & Backpan
 Model HPL-HA-AL



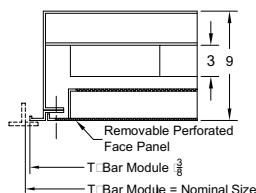
Hospital Diffuser - Laminar Flow - With HEPA Filter Cell
Surface Mount - Aluminum Face & Backpan
 Model HPL-HA-AL-1



Hospital Diffuser - Laminar Flow - With HEPA Filter Cell
Standard T-bar Lay-in - Aluminum Face & Backpan
 Model HPL-HA-AL-6



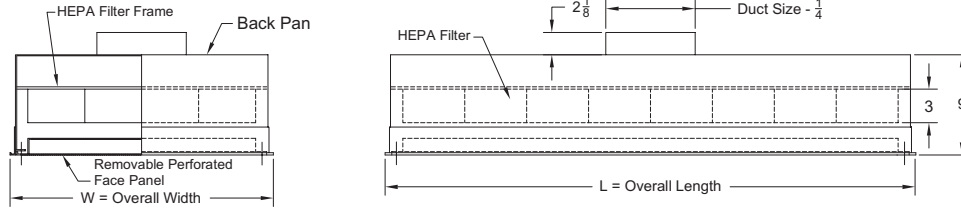
Hospital Diffuser - Laminar Flow - With HEPA Filter Cell
Special 1 1/2" T-bar Lay-in - Aluminum Face & Backpan
 Model HPL-HA-AL-6M



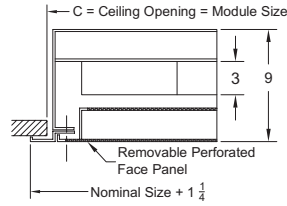
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	C	L	W	L	W	L	W
24 x 24	24 x 24	25 1/8	25 1/8	23 3/4	23 3/4	23 5/8	23 5/8
24 x 48	24 x 48	49 1/8	25 1/8	47 3/4	23 3/4	47 5/8	23 5/8

Stainless Steel Face & Aluminum Backpan

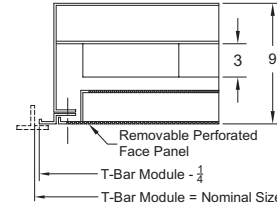
Hospital Diffuser - Laminar Flow - With HEPA Filter Cell
 Stainless Steel Face & Aluminum Backpan
 Model HPL-HA-SA



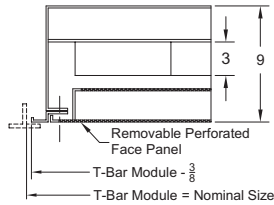
Hospital Diffuser - Laminar Flow - With HEPA Filter Cell
 Surface Mount - Stainless Steel Face & Aluminum Backpan
 Model HPL-HA-SA-1



Hospital Diffuser - Laminar Flow - With HEPA Filter Cell
 Standard T-bar Lay-in - Stainless Steel Face & Aluminum Backpan
 Model HPL-HA-SA-6



Hospital Diffuser - Laminar Flow - With HEPA Filter Cell
 Special 1 1/2" T-bar Lay-in - Stainless Steel Face & Aluminum Backpan
 Model HPL-HA-SA-6M



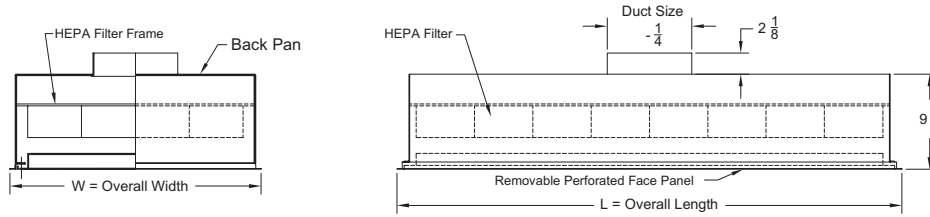
Nominal Size	Frame 1			Frame 6		Frame 6M	
	C	L	W	L	W	L	W
24 x 24	24 x 24	25 1/8	25 1/8	23 3/4	23 3/4	23 3/4	23 3/4
24 x 48	24 x 48	49 1/8	25 1/8	47 3/4	23 3/4	47 3/4	23 3/4

Environmental / Hospital Diffusers

EHD

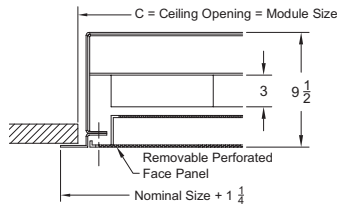
Stainless Steel Face & Backpan

Hospital Diffuser - Laminar Flow - With HEPA Filter Cell
Stainless Steel Face & Backpan
Model HPL-HA-SS

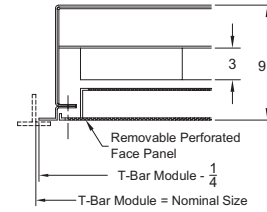


Environmental/Hospital Diffusers

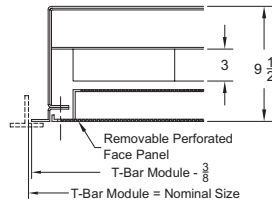
Hospital Diffuser - Laminar Flow - With HEPA Filter Cell
Surface Mount - Stainless Steel Face & Backpan
Model HPL-HA-SS-1



Hospital Diffuser - Laminar Flow - With HEPA Filter Cell
Standard T-bar Lay-in - Stainless Steel Face & Backpan
Model HPL-HA-SS-6



Hospital Diffuser - Laminar Flow - With HEPA Filter Cell
Special 1 1/2" T-bar Lay-in - Stainless Steel Face & Aluminum Backpan
Model HPL-HA-SS-6M



Nominal Size	Frame 1			Frame 6		Frame 6M	
	C	L	W	L	W	L	W
24 x 24	24 x 24	25 1/8	25 1/8	23 3/4	23 3/4	23 3/4	23 3/4
24 x 48	24 x 48	49 1/4	25 1/8	47 3/4	23 3/4	47 3/4	23 3/4

Notes for Models HPL-HA-AL-1, HPL-HA-AL-6, HPL-HA-AL-6M

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 08 White epoxy powder coat	CD - Cable Damper	HEPA Filter TP Test Port	<ul style="list-style-type: none"> Perforated faces are shipped with 2 safety cables 23%, 40%, 51% perforated face Round neck sizes available: 6, 8, 10, 12 & 14

Notes for Models HPL-HA-SA-1, HPL-HA-SA-6, HPL-HA-SA-6M

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 23 #3 scratch	CD - Cable Damper	HEPA Filter TP Test Port	<ul style="list-style-type: none"> Perforated faces are shipped with 2 safety cables 23%, 40%, 51% perforated face Round neck sizes available: 6, 8, 10, 12 & 14

Notes for Models HPL-HA-SS-1, HPL-HA-SS-6, HPL-HA-SS-6M

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 23 #3 scratch	CD - Cable Damper	HEPA Filter TP Test Port	<ul style="list-style-type: none"> Perforated faces are shipped with 2 safety cables 23%, 40%, 51% perforated face Round neck sizes available: 6, 8, 10, 12 & 14

Series HPL-HA - Performance

HPL-HA Performance Data Without HEPA Filter

CFM Per SQ. Foot	HPL-CL 23% Face Free Area		HPL-CL 34% Face Free Area		HPL-CL 51% Face Free Area	
	Ps	NC	Ps	NC	Ps	NC
20	0.010	<15	0.005	<15	0.004	<15
30	0.021	<15	0.011	<15	0.010	<15
40	0.038	18	0.020	<15	0.017	<15
50	0.060	21	0.031	21	0.027	18
60	0.086	29	0.045	25	0.038	22
70	0.117	35	0.061	31	0.052	24
80	0.152	38	0.080	34	0.068	30
90	0.193	40	0.101	39	0.086	35
100	-	-	-	-	0.107	39

HPL-HA Performance Data With 3" HEPA Filter

CFM Per SQ. Foot	HPL-CL 23% Face Free Area		HPL-CL 34% Face Free Area		HPL-CL 51% Face Free Area	
	Ps	NC	Ps	NC	Ps	NC
20	0.150	20	0.140	<20	0.130	<20
30	0.240	24	0.230	24	0.210	23
40	0.340	29	0.320	27	0.300	26
50	0.450	32	0.430	32	0.400	32
60	0.545	36	0.540	35	0.480	34
70	0.656	40	0.650	39	0.580	39
80	-	-	0.740	42	0.690	42
90	-	-	-	-	0.800	44
100	-	-	-	-	-	-

Performance Notes for Series HPL-HA:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- Ps** - is static pressure loss through the diffuser and does not include velocity pressure
- NC** - is based on L_w Re 10^{-12} watts, includes 10 dB room attenuation and a maximum inlet velocity of 500 fpm
- NC** - is for single diffuser only
- HEPA** - filter is a 3" deep filter, with an efficiency of 99.97% on D-3 micron particles

Series HPL-HA - Specifications

Aluminum Construction

- Model HPL-HA-AL-1 – *Surface Mount*
- Model HPL-HA-AL-6 – *Standard T-bar Lay-in*
- Model HPL-HA-AL-6M – *Special 1 1/2" T-bar Lay-in*

Stainless Steel Construction

- Model HPL-HA-SS-1 – *Surface Mount*
- Model HPL-HA-SS-6 – *Standard T-bar Lay-in*
- Model HPL-HA-SS-6M – *Special 1 1/2" T-bar Lay-in*

Stainless Steel Face/Aluminum Backpan

- Model HPL-HA-SA-1 – *Surface Mount*
- Model HPL-HA-SA-6 – *Standard T-bar Lay-in*
- Model HPL-HA-SA-6M – *Special 1 1/2" T-bar Lay-in*

Air outlets shall be model HPL-HA-AL (aluminum) or HPL-HA-SS (stainless steel) or HPL-HA-SA (stainless steel face/aluminum backpan) manufactured by METALAIRE. Diffuser shall include an upper and lower pressure chamber and shall generate a low velocity, vertical piston of discharge air. Unit shall also include an internal filter section to allow the installation and removal of a HEPA filter. Unit shall accept 3" beadpleat HEPA with filter held in place using a trapeze hanger system.

Diffuser shall be constructed of a one-piece perforated face and core assembly that is removable from the backpan with 1/4" turn fasteners accessible from the face. Face and core assemblies mounted with internal spring Clips or other mechanical fastening devices are not acceptable. Units shall include stainless steel safety chains attaching the face assembly to the backpan.

Optional: A factory installed 3" thick, 99.99% efficient filter on .30 microns shall be provided by the diffuser manufacturer.

Core and face assembly shall be removable to allow sanitizing in an autoclave and allow access to the backpan for cleaning. With the core assembly removed, the inside of the backpan must be completely accessible for cleaning. Units with permanently fixed dampers, baffles or deflectors mounted in the backpan are not acceptable. Face shall be flush with the ceiling surface.

Perforated face shall have a

- 51% free area with 3/16" holes on 1/4" staggered centers.
- 40% free area with 1/8" holes on 3/16" staggered centers.
- 23% free area with 1/16" holes on 1/8" staggered centers.

Units shall have round inlets. Units shall be designed to integrate into the specified ceiling system. The units shall be the size and quantity as outline in the plans and specifications.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Finish Specification

Aluminum Face Diffusers: Units shall be painted with a powder coat, baked on epoxy.

Stainless Steel Face Diffusers: # 3 Scratch Finish



Series HPL-HA - Model Specification Guide

Series HPL-CL - Laminar Flow Hospital Diffusers

Model	Inlet	Module	Free Area	Available Finishes	Available Options	
Aluminum Face & Backpan	6"	24" x 12"	51%	08 - White epoxy (aluminum face)	D3	Radial Opposed Blade Damper - aluminum
HPL-HA-AL-1 - Surface Mount	8"	36" x 12"	40%	23 - #3 Scratch (stainless steel face)	SD3	Radial Opposed Blade Damper - steel
HPL-HA-AL-6 - T-bar Lay-in	9"	48" x 12"	23%		HEPA	Filter (factory provided)
HPL-HA-AL-6M - Special 1 1/2" T-bar Lay-in	10"	60" x 12"			TP	Test Ports
Stainless Steel Face & Backpan	12"	72" x 12"				
HPL-HA-SS-1 - Surface Mount	14"	24" x 24"				
HPL-HA-SS-6 - T-bar Lay-in		36" x 24"				
HPL-HA-SS-6M - Special 1 1/2" T-bar Lay-in		48" x 24"				
Stainless Steel Face & Aluminum Backpan		60" x 24"				
HPL-HA-SA-1 - Surface Mount		72" x 24"				
HPL-HA-SA-6 - T-bar Lay-in		48" x 36"				
HPL-HA-SA-6M - Special 1 1/2" T-bar Lay-in						

Environmental/Hospital Diffusers



EHD

➔ Laminar Flow ➔ Patient Isolation Applications ➔ Series HPL-PR

Product Details

- ✪ The series HPL-PR is specifically engineered to improve patient comfort in critical health care applications such as isolation rooms and trauma centers. The unique design provides a "tent" of conditioned air around the patient
- ✪ The unique design of the patented HPL-PR provides filtered air to protect the patient and at the same time minimize the air velocities that impact the patient. This device provides a high level of comfort
- ✪ Series HPL-PR includes a HEPA filter section. Optional HEPA filters are available. HPL-PR configuration minimizes induction, distributing low velocity air with minimum aspiration
- ✪ Unit is aluminum construction and is available for surface mount and T-bar Lay-in applications, and is also available for special 1 1/2" wide T-bar Lay-in applications



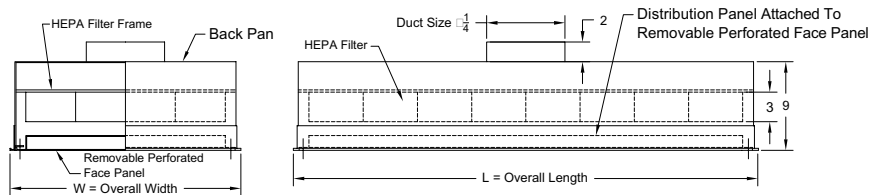
Model HPL-PR Shown

Standard Finish: 01 White

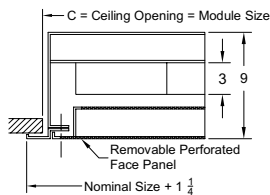
Aluminum Face & Backpan

Dimensions are in inches

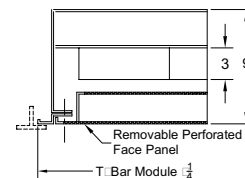
Hospital Diffuser - Patient Room Isolation
Aluminum Face & Backpan
Model HPL-PR-AL



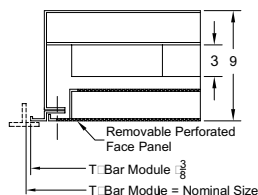
Hospital Diffuser - Patient Room Isolation
Surface Mount - Aluminum Face & Backpan
Model HPL-PR-AL-1



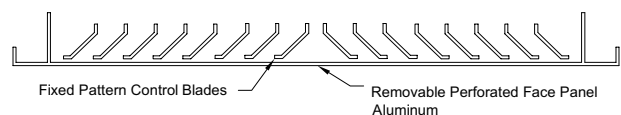
Hospital Diffuser - Patient Room Isolation
Standard T-bar Lay-in - Aluminum Face & Backpan
Model HPL-PR-AL-6



Hospital Diffuser - Patient Room Isolation
Special 1 1/2" T-bar Lay-in - Aluminum Face & Backpan
Model HPL-PR-AL-6M

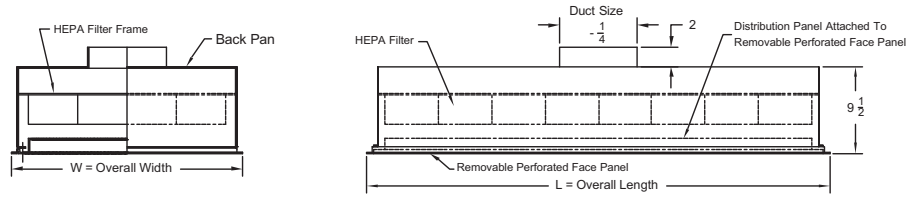


Cross Section: Diffuser Face

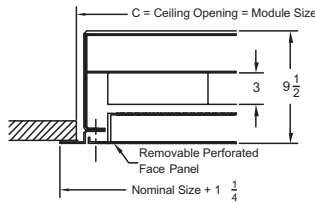


Stainless Steel Face & Aluminum Backpan

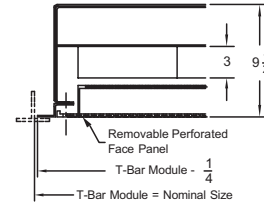
Hospital Diffuser - Patient Room Isolation
Stainless Steel Face & Aluminum Backpan
Model HPL-PR-SA



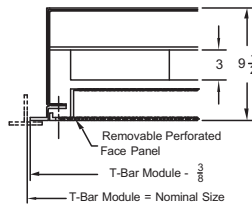
Hospital Diffuser - Patient Room Isolation
Surface Mount - Stainless Steel Face & Aluminum Backpan
Model HPL-PR-SA-1



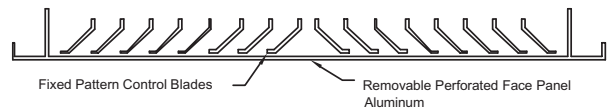
Hospital Diffuser - Patient Room Isolation
Standard T-bar Lay-in - Stainless Steel Face & Aluminum Backpan
Model HPL-PR-SA-6



Hospital Diffuser - Patient Room Isolation
Special 1 1/2" T-bar Lay-in - Stainless Steel Face & Aluminum Backpan
Model HPL-PR-SA-6M

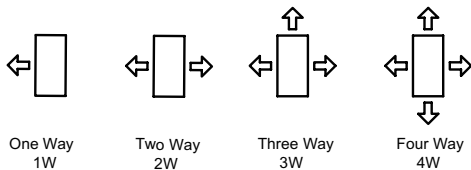


Cross Section: Diffuser Face



Series HPL-HA-AL, HPL-HA-SA

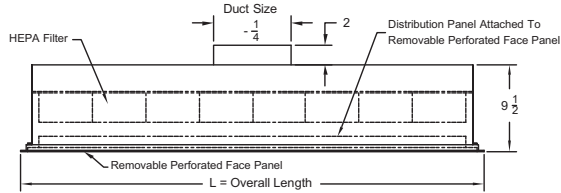
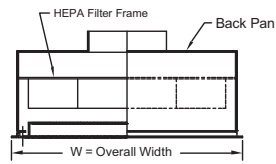
Air Patterns



Nominal Size	Frame 1			Frame 6		Frame 6M	
	C	L	W	L	W	L	W
12 x 36	12 x 36	37 1/8	13 1/8	35 3/4	11 3/4	35 3/4	11 3/4
12 x 48	12 x 48	49 1/4	13 1/8	47 3/4	11 3/4	47 3/4	11 3/4
24 x 24	24 x 24	25 1/4	25 1/8	23 3/4	23 3/4	23 3/4	23 3/4
24 x 36	24 x 36	37 1/8	25 1/8	35 3/4	23 3/4	35 3/4	23 3/4
24 x 48	24 x 48	49 1/8	25 1/8	47 3/4	23 3/4	47 3/4	23 3/4

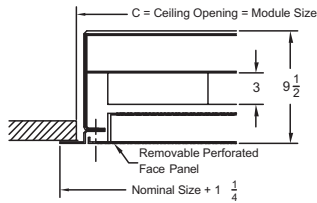
Stainless Steel Face & Backpan

Hospital Diffuser - Patient Room Isolation
 Stainless Steel Face & Backpan
 Model HPL-PR-SS

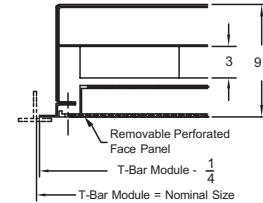


Environmental / Hospital Diffusers

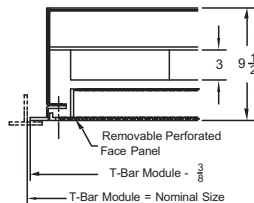
Hospital Diffuser - Patient Room Isolation
 Surface Mount - Stainless Steel Face & Backpan
 Model HPL-PR-SS-1



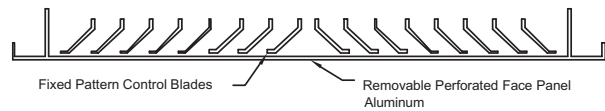
Hospital Diffuser - Patient Room Isolation
 Standard T-bar Lay-in - Stainless Steel Face & Backpan
 Model HPL-PR-SS-6



Hospital Diffuser - Patient Room Isolation
 Special 1 1/2" T-bar Lay-in - Stainless Steel Face & Aluminum Backpan
 Model HPL-PR-SS-6M

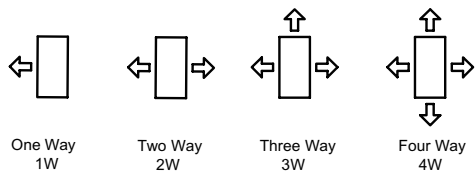


Cross Section: Diffuser Face



EHD

Air Patterns



Nominal Size	Frame 1			Frame 6		Frame 6M	
	C	L	W	L	W	L	W
12 x 36	12 x 36	37 1/8	13 1/8	35 3/4	11 3/4	35 3/4	11 3/4
12 x 48	12 x 48	49 1/4	13 1/8	47 3/4	11 3/4	47 3/4	11 3/4
24 x 24	24 x 24	25 1/4	25 1/8	23 3/4	23 3/4	23 3/4	23 3/4
24 x 36	24 x 36	37 1/8	25 1/8	35 3/4	23 3/4	35 3/4	23 3/4
24 x 48	24 x 48	49 1/8	25 1/8	47 3/4	23 3/4	47 3/4	23 3/4

Notes for Models HPL-PR-AL-1, HPL-PR-AL-6, HPL-PR-AL-6M

1. Available Finishes	2. Available Options	3. Construction Details
Standard Finish: 08 White epoxy powder coat	HEPA Filter CD - Cable Operated Damper TP - Test Port	<ul style="list-style-type: none"> Perforated faces are shipped with 2 safety cables 23%, 40%, 51% perforated face Round neck sizes available: 6, 8, 10, 12 & 14 Air patterns available: 1W, 2W, 2C, 3W, & 4W

Notes for Models HPL-PR-SA-1, HPL-PR-SA-6, HPL-PR-SA-6M

1. Available Finishes	2. Available Options	3. Construction Details
Standard Finish: 08 White epoxy powder coat - Backpan/23 3 scratch - Face	HEPA Filter CD - Cable Operated Damper TP - Test Port	<ul style="list-style-type: none"> Perforated faces are shipped with 2 safety cables 23%, 40%, 51% perforated face Round neck sizes available: 6, 8, 10, 12 & 14 Air patterns available: 1W, 2W, 2C, 3W, & 4W

Notes for Models HPL-PR-SS-1, HPL-PR-SS-6, HPL-PR-SS-6M

1. Available Finishes	2. Available Options	3. Construction Details
Standard Finish: 23 #3 scratch	D3 - Aluminum Radial Opposed Blade Damper SD3 - Steel Radial Opposed Blade Damper RSD - Radial Shutter Damper CD - Cable Damper	<ul style="list-style-type: none"> Perforated faces are shipped with 2 safety cables 23%, 40%, 51% perforated face Round neck sizes available: 6, 8, 10, 12 & 14

Series HPL-PR - Performance

HPL-PR Performance Data Without HEPA Filter

CFM Per SQ. Foot	20	30	40	50	60	70	80	90	100
Ps	0.003	0.007	0.013	0.020	0.028	0.039	0.051	0.064	0.079
NC	<17	<17	17	21	<28	34	37	40	41
Throw	1-1-3	1-1-4	1-2-6	1-3-8	2-4-10	2-5-11	3-6-13	5-8-16	6-10-20

HPL-PR Performance Data With HEPA Filter

CFM Per SQ. Foot	20	30	40	50	60	70	80	90	100
Ps	0.150	0.240	0.334	0.425	0.523	0.625	0.730	0.820	-
NC	<24	<24	29	32	35	39	42	45	-
Throw	1-1-3	1-1-4	1-2-6	1-3-8	2-4-10	2-5-11	3-6-13	5-8-16	-

Performance Notes for Series HPL-PR:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- Ps - is static pressure loss through the diffuser and does not include velocity pressure
- NC - is based on Lw Re 10⁻¹² watts, includes 10 dB room attenuation and a maximum inlet velocity of 500 fpm
Throw values are based on terminal velocity of 150, 100, and 75 fpm, respectively
- NC - values are for single diffuser only
- HEPA - filter is a 3" deep filter, with an efficiency of 99.97% on D-3 micron particles

Series HPL-PR - Specifications

Aluminum Construction

- Model HPL-PR-AL-1 – *Surface Mount*
- Model HPL-PR-AL-6 – *Standard T-bar Lay-in*
- Model HPL-PR-AL-6M – *Special 1 1/2" T-bar Lay-in*

Stainless Steel Construction

- Model HPL-PR-SS-1 – *Surface Mount*
- Model HPL-PR-SS-6 – *Standard T-bar Lay-in*
- Model HPL-PR-SS-6M – *Special 1 1/2" T-bar Lay-in*

Stainless Steel Face/Aluminum Backpan

- Model HPL-PR-SA-1 – *Surface Mount*
- Model HPL-PR-SA-6 – *Standard T-bar Lay-in*
- Model HPL-PR-SA-6M – *Special 1 1/2" T-bar Lay-in*

Air outlets shall be model HPL-PR-AL (aluminum) or HPL-PR-SS (stainless steel) or HPL-PR-SA (stainless steel face/aluminum backpan) manufactured by METALAIRE. Diffuser shall include an upper and lower pressure chamber and shall generate a low velocity, directional air pattern. Units shall be available in a 1, 2, 3, or 4 way fixed air pattern.

Diffuser shall be constructed of a one-piece perforated face and core assembly that is removable from the backpan with 1/4" turn fasteners accessible from the face. Face and core assemblies mounted with internal spring clips or other mechanical fastening devices are not acceptable. Units shall include stainless steel safety chains attaching the face assembly to the backpan.

Core and face assembly shall be removable to allow sanitizing in an autoclave and allow access to the backpan for cleaning. With the core assembly removed, the inside of the backpan must be completely accessible for cleaning. Units with permanently fixed dampers, baffles or deflectors mounted in the backpan are not acceptable. Face shall be flush with the ceiling surface.

Perforated face shall have a 51% free area with 3/16" holes on 1/4" staggered centers.

Units shall have round inlets. Units shall be designed to integrate into the specified ceiling system. The units shall be the size and quantity as outline in the plans and specifications.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Finish Specification

Aluminum Face Diffusers: Units shall be painted with a powdered coat, baked on epoxy.

Stainless Steel Face Diffusers: # 3 Scratch Finish



Series HPL-PR - Model Specification Guide

Series HPL-PR - Patient Room Isolation Hospital Diffusers

Model	Inlet	Module	Free Area	Available Finishes	Air Patterns	Available Options		
Aluminum Face & Backpan	6"	24" x 12"	51%	08 - White epoxy (aluminum face)	1W - One Way	D3	Radial Opposed Blade Damper - aluminum	
HPL-PR-AL-1 - Surface Mount	8"	36" x 12"	40%		2W - Two Way Opposite			
HPL-PR-AL-6 - T-bar Lay-in	9"	48" x 12"	23%	23 - #3 scratch (stainless steel face)	02C - Two Way Corner	SD3	Radial Opposed Blade Damper - steel	
HPL-PR-AL-6M - Special 1 1/2" T-bar Lay-in	10"	60" x 12"			3W - Three Way			
Stainless Steel Face & Backpan	12"	72" x 12"			4W - Four Way	HEPA	Filter (factory provided)	
HPL-PR-SS-1 - Surface Mount	14"	24" x 24"					TP	Test Ports
HPL-PR-SS-6 - T-bar Lay-in		36" x 24"						
HPL-PR-SS-6M - Special 1 1/2" T-bar Lay-in		48" x 24"						
Stainless Steel Face & Aluminum Backpan		60" x 24"						
HPL-PR-SA-1 - Surface Mount		72" x 24"						
HPL-PR-SA-6 - T-bar Lay-in		48" x 36"						
HPL-PR-SA-6M - Special 1 1/2" T-bar Lay-in								

Environmental/Hospital Diffusers



EHD



For more product information visit us at www.metalaire.com



➔ Radial Discharge Pattern ➔ Removable Face ➔ Series HRD-CL

Product Details

- ✪ The HRD-CL radial discharge pattern diffusers are engineered for supply air distribution in critical environments such as chemistry labs and clean rooms. The diffusers are engineered to supply a low velocity of conditioned air in a radial pattern from the ceiling
- ✪ The HRD-CL radial discharge pattern diffusers are easy to clean and sterilize. The face and core assembly can be removed from the face for cleaning. With the face and core assembly removed, the interior of the backpan and inlet collar are free of obstructions and easy to access
- ✪ The diffuser is available in stainless steel or heavy aluminum construction. Units available in 90° or 180° throw



Model HRD-CL Shown

Standard Finish: 01 White

Environmental/Hospital Diffusers

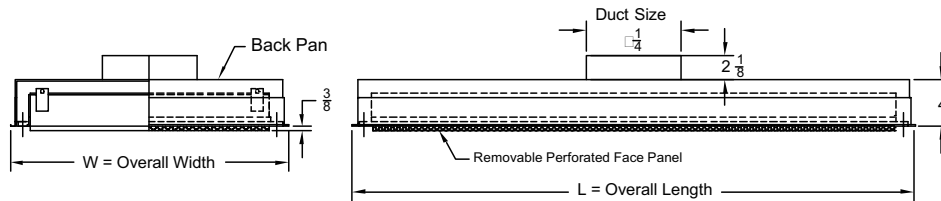


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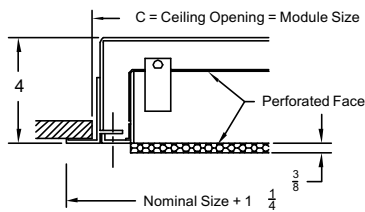
Aluminum Face & Backpan

Dimensions are in inches

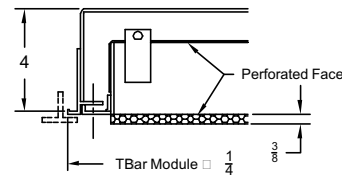
**Radial Discharge Pattern - Removable Face
Aluminum Face & Backpan**
Model HRD-CL-AL One Way
Model HRD-CL-AL Two Way



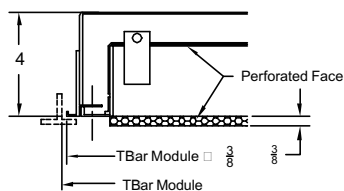
**Radial Discharge Pattern - Removable Face
Surface Mount - Aluminum Face & Backpan**
Model HRD-CL-AL-1



**Radial Discharge Pattern - Removable Face
Standard T-bar Lay-in - Aluminum Face & Backpan**
Model HRD-CL-AL-6



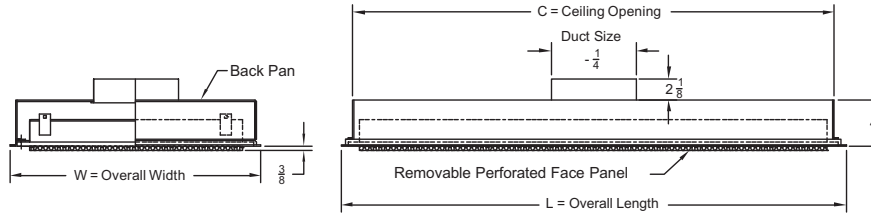
**Radial Discharge Pattern - Removable Face
Special 1 1/2" T-bar Lay-in - Aluminum Face & Backpan**
Model HRD-CL-AL-6M



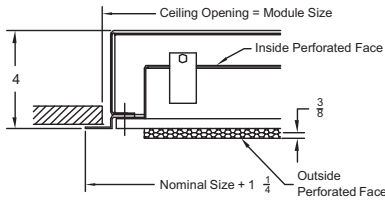
Nominal Size	Frame 1			Frame 6		Frame 6M	
	C	L	W	L	W	L	W
24 x 24	24 x 24	25 1/4	25 1/4	23 3/4	23 3/4	23 3/4	23 3/4
24 x 48	24 x 48	49 1/4	25 1/4	47 3/4	23 3/4	47 3/4	23 3/4

Stainless Steel Face & Aluminum Backpan

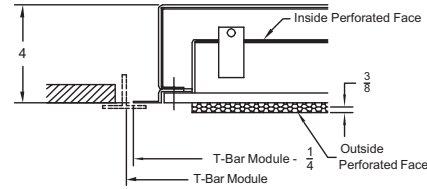
Radial Discharge Pattern - Removable Face
Stainless Steel Face & Aluminum Backpan
 Model HRD-CL-SA One Way
 Model HRD-CL-SA Two Way



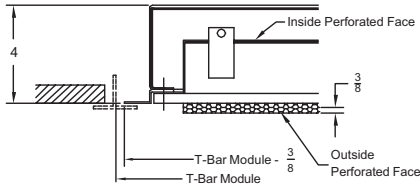
Radial Discharge Pattern - Removable Face
Surface Mount - Stainless Steel Face & Aluminum Backpan
 Model HRD-CL-SA-1



Radial Discharge Pattern - Removable Face
Standard T-bar Lay-in - Stainless Steel Face & Aluminum Backpan
 Model HRD-CL-SA-6



Radial Discharge Pattern - Removable Face
Special 1 1/2" T-bar Lay-in - Stainless Steel Face & Aluminum Backpan
 Model HRD-CL-SA-6M



Nominal Size	Frame 1			Frame 6		Frame 6M	
	C	L	W	L	W	L	W
24 x 24	24 x 24	25 1/8	25 1/8	23 3/4	23 3/4	23 3/4	23 3/4
24 x 48	24 x 48	49 1/8	25 1/8	47 3/4	23 3/4	47 3/4	23 3/4

- HRD-CL diffusers discharge air into a 180 degree, radial pattern
- Also available in a 90 degree discharge one-way unit
- HRD-CL generates a low velocity 180 pattern ideal for laboratory and clean room applications

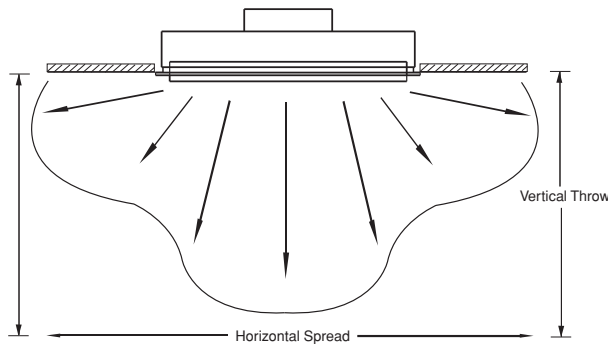


Illustration shows the 180° radial

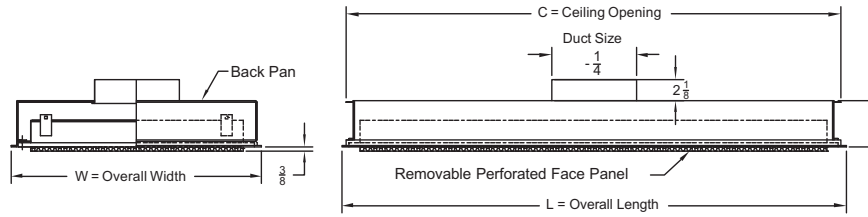
Stainless Steel Face & Backpan

Radial Discharge Pattern - Removable Face

Stainless Steel Face & Backpan

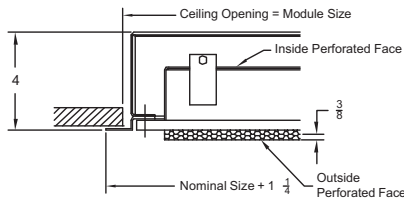
Model HRD-CL-SS One Way

Model HRD-CL-SS Two Way



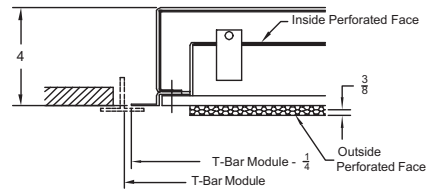
Radial Discharge Pattern - Removable Face Surface Mount - Stainless Steel Face & Backpan

Model HRD-CL-SS-1



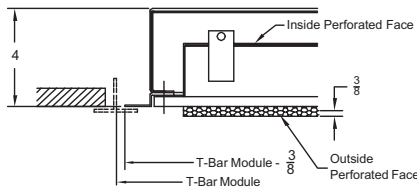
Radial Discharge Pattern - Removable Face Standard T-bar Lay-in - Stainless Steel Face & Backpan

Model HRD-CL-SS-6



Radial Discharge Pattern - Removable Face Special 1 1/2" T-bar Lay-in - Stainless Steel Face & Backpan

Model HRD-CL-SS-6M



Nominal Size	Frame 1			Frame 6		Frame 6M	
	C	L	W	L	W	L	W
24 x 24	24 x 24	25 1/8	25 1/8	23 3/4	23 3/4	23 3/4	23 3/4
24 x 48	24 x 48	49 1/8	25 1/8	47 3/4	23 3/4	47 3/4	23 3/4

Notes for Models HRD-CL-AL-1, HRD-CL-AL-6, HRD-CL-AL-6M

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 08 White epoxy powder coat	D3 - Aluminum radial opposed blade damper SD3 - Steel radial opposed blade damper RSD - Radial shutter damper	One way (90° discharge pattern) Two way (180° discharge pattern)	<ul style="list-style-type: none"> Perforated faces are shipped with 2 safety cables 51% perforated face Round neck sizes available: 6, 8, 10, 12 & 14

Notes for Models HRD-CL-SA-1, HRD-CL-SA-6, HRD-CL-SA-6M

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 23 #2B scratch	D3 - Aluminum radial opposed blade damper SD3 - Steel radial opposed blade damper RSD - Radial shutter damper	One way (90° discharge pattern) Two way (180° discharge pattern)	<ul style="list-style-type: none"> Perforated faces are shipped with 2 safety cables 23%, 40%, 51% perforated face Round neck sizes available: 6, 8, 10, 12 & 14

Notes for Models HRD-CL-SS-1, HRD-CL-SS-6, HRD-CL-SS-6M

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 23 #2B scratch	D3 - Aluminum radial opposed blade damper SD3 - Steel radial opposed blade damper RSD - Radial shutter damper	One way (90° discharge pattern) Two way (180° discharge pattern)	<ul style="list-style-type: none"> Perforated faces are shipped with 2 safety cables 23%, 40%, 51% perforated face Round neck sizes available: 6, 8, 10, 12 & 14



Series HRD-CL - Performance

Models HRD-CL-AL (-1, -6, -6M), HRD-CL-SS (-1, -6, -6M), HRD-CL-SA (-1, -6, -6M)/1-Way Pattern

Module Size and Inlet Size	1-Way Pattern				Horizontal Spread (feet)			Vertical Throw (feet)								
	Air Flow (CFM)	Ps (in wc.)	Pt (in wc.)	NC	10 Deg dT			10 Deg dT			15 Deg dT		20 Deg dT			
					100	75	50	100	75	50	100	75	50	100	75	50
24" x 24" 8" Inlet	150	0.019	0.030	<15	0	-1	-3	0	-1	-2	0	-1	-2	0	-1	-4
	200	0.033	0.054	<15	0	-1	-2	0	-1	-2	0	-1	-2	0	-1	-3
	250	0.052	0.084	18	1	-2	-5	1	-2	-4	1	-2	-5	1	-3	-6
	300	0.075	0.121	23	1	-3	-5	1	-2	-4	1	-2	-5	2	-4	-6
	400	0.133	0.215	32	2	-4	-6	2	-3	-5	2	-4	-6	3	-5	-7
	500	0.207	0.335	39	3	-5	-7	2	-4	-5	3	-5	-7	4	-6	-8
24" x 24" 10" Inlet	250	0.021	0.034	<15	1	-2	-5	0	-0	-1	1	-1	-3	0	-1	-3
	325	0.035	0.057	<15	1	-3	-6	0	-1	-2	1	-2	-4	1	-1	-4
	400	0.053	0.087	21	2	-4	-7	0	-1	-4	2	-2	-5	1	-2	-5
	475	0.075	0.122	27	3	-5	-8	1	-1	-4	2	-3	-5	1	-3	-5
	550	0.1	0.164	33	3	-5	-8	1	-2	-5	2	-3	-6	2	-3	-6
	625	0.13	0.212	37	4	-6	-9	1	-2	-5	2	-4	-7	2	-4	-7
24" x 48" 10" Inlet	300	0.03	0.049	<15	1	-2	-6	0	-0	-2	1	-2	-3	0	-1	-3
	400	0.053	0.087	19	2	-4	-7	0	-1	-3	1	-2	-5	1	-1	-5
	500	0.083	0.135	28	3	-5	-7	1	-1	-4	2	-3	-6	1	-2	-6
	600	0.12	0.195	34	4	-6	-8	1	-2	-5	2	-3	-7	1	-3	-7
	800	0.212	0.347	40	5	-7	-9	1	-3	-6	3	-5	-8	2	-5	-10
	900	0.269	0.439	40	6	-7	-10	2	-3	-7	3	-5	-9	3	-6	-10
24" x 48" 12" Inlet	500	0.048	0.074	19	1	-2	-5	1	-1	-4	1	-1	-6	1	-3	-6
	600	0.07	0.106	25	1	-3	-6	1	-2	-5	1	-2	-7	2	-4	-7
	700	0.095	0.145	30	2	-3	-7	1	-3	-6	1	-3	-8	2	-4	-9
	800	0.124	0.189	33	2	-4	-8	2	-3	-6	2	-4	-9	3	-5	-10
	900	0.157	0.239	39	3	-4	-8	2	-4	-7	2	-5	-10	4	-5	-11
	1000	0.194	0.295	42	3	-5	-9	3	-4	-8	3	-6	-10	4	-6	-11

Models HRD-CL-AL (-1, -6, -6M), HRD-CL-SS (-1, -6, -6M), HRD-CL-SA (-1, -6, -6M)/2-Way Pattern

Module Size and Inlet Size	2-Way Pattern				Horizontal Spread (feet)			Vertical Throw (feet)								
	Air Flow (CFM)	Ps (in wc.)	Pt (in wc.)	NC	10 Deg dT			10 Deg dT			15 Deg dT		20 Deg dT			
					100	75	50	100	75	50	100	75	50	100	75	50
24" x 24" 8" Inlet	150	0.019	0.030	<15	0	-1	-3	0	-1	-2	0	-1	-2	0	-1	-4
	200	0.033	0.054	15	1	-1	-4	0	-1	-3	0	-1	-4	1	-2	-5
	250	0.052	0.084	19	1	-2	-5	1	-2	-4	1	-2	-5	1	-3	-6
	300	0.075	0.121	23	1	-3	-5	1	-2	-4	1	-2	-5	2	-4	-6
	400	0.132	0.214	31	2	-4	-6	2	-3	-6	2	-4	-6	3	-5	-7
	500	0.207	0.335	39	3	-5	-7	2	-4	-6	3	-5	-7	4	-6	-8
24" x 24" 10" Inlet	250	0.023	0.036	<15	1	-2	-5	0	-0	-1	1	-1	-3	0	-1	-3
	325	0.039	0.061	<15	1	-3	-6	0	-1	-2	1	-2	-4	1	-1	-4
	500	0.092	0.145	29	3	-5	-10	1	-1	-4	2	-3	-6	1	-3	-6
	600	0.133	0.208	36	4	-6	-11	1	-2	-5	2	-3	-7	2	-3	-7
	700	0.181	0.284	41	5	-7	-12	1	-3	-6	3	-4	-7	2	-4	-8
	900	0.299	0.469	45	6	-9	-14	2	-4	-8	3	-5	-8	3	-5	-9
24" x 48" 10" Inlet	250	0.017	0.030	<15	1	-2	-5	0	-0	-1	0	-1	-2	0	-1	-2
	325	0.028	0.050	<15	1	-3	-6	0	-0	-2	1	-2	-3	0	-1	-3
	500	0.067	0.119	26	3	-5	-10	1	-1	-4	2	-2	-5	1	-2	-5
	600	0.096	0.172	33	4	-6	-11	1	-2	-4	2	-3	-6	1	-3	-6
	700	0.131	0.234	38	5	-7	-12	1	-2	-5	2	-3	-6	2	-3	-7
	900	0.217	0.387	42	6	-9	-14	2	-3	-6	3	-4	-7	3	-4	-8
24" x 48" 12" Inlet	500	0.067	0.092	19	3	-5	-10	1	-1	-4	1	-1	-5	1	-3	-6
	600	0.096	0.133	25	4	-6	-11	1	-2	-4	1	-2	-6	2	-3	-7
	700	0.131	0.181	30	5	-7	-12	1	-3	-5	1	-3	-7	2	-4	-8
	800	0.171	0.236	33	5	-8	-13	2	-3	-7	2	-4	-7	3	-5	-9
	900	0.217	0.299	39	6	-9	-14	2	-4	-7	2	-4	-8	3	-5	-9
	1000	0.268	0.369	42	3	-5	-10	2	-3	-7	3	-5	-8	4	-6	-10

Performance Notes for Series HRD-CL:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM** - Cubic Feet per Minute (air)
- Pv** - Velocity pressure (inches of water column)
- Pt** - Total pressure (inches of water column)
- Ps** - Static pressure = Pt - Pv (inches of water column)
- Throw** - Non-isothermal horizontal throw values are for 150 fpm - 100 fpm - 50 fpm velocities
- NC** - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw)
RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands



For more product information visit us at www.metalair.com



Environmental/Hospital Diffusers

EHD

Series HRD-CL - Specifications

Aluminum Construction

- Model HRD-CL-AL-1 – *Surface Mount*
- Model HRD-CL-AL-6 – *Standard T-bar Lay-in*
- Model HRD-CL-AL-6M – *Special 1 1/2" T-bar Lay-in*

Stainless Steel Construction

- Model HRD-CL-SS-1 – *Surface Mount*
- Model HRD-CL-SS-6 – *Standard T-bar Lay-in*
- Model HRD-CL-SS-6M – *Special 1 1/2" T-bar Lay-in*

Stainless Steel Face/Aluminum Backpan

- Model HRD-CL-SA-1 – *Surface Mount*
- Model HRD-CL-SA-6 – *Standard T-bar Lay-in*
- Model HRD-CL-SA-6M – *Special 1 1/2" T-bar Lay-in*

Air outlets shall be model HRD-CL-AL (aluminum) or HRD-CL-SS (stainless steel) or HRD-CL-SA (stainless steel face/aluminum backpan) manufactured by METALAIRE. Diffuser shall include an upper and lower pressure chamber and shall generate a 180°, two way, low velocity discharge pattern (optional: 90°, one way discharge pattern).

Diffuser shall be constructed of a one-piece perforated face and core assembly that is removable from the backpan with 1/4" turn fasteners accessible from the face. Face and core assemblies mounted with internal spring clips or other mechanical fastening devices are not acceptable. Core Assembly to have non-adjustable pattern controllers mounted on the face assembly. Units shall include stainless steel safety chains attaching the face assembly to the backpan.

Core and face assembly shall be removable to allow sanitizing in an autoclave and allow access to the backpan for cleaning. With the core assembly removed, the inside of the backpan must be completely accessible for cleaning. Units with permanently fixed dampers, baffles or deflectors mounted in the backpan are not acceptable. Face shall project no further than 3/8" below the border of the diffuser. Perforated face shall have a 51% free area with 3/16" holes on 1/4" staggered centers. Units shall have round inlets.

Units shall have round inlets. Units shall be designed to integrate into the specified ceiling system. The units shall be the size and quantity as outline in the plans and specifications.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Finish Specification

Aluminum Face Diffusers: Units shall be painted with a powder coat, baked on epoxy.

Stainless Steel Face Diffusers: # 2B Mill Finish



Series HRD-CL - Model Specification Guide

Series HRD-CL - Hospital Diffusers - Removable Face

Model	Inlet	Module	Discharge Pattern	Available Finishes	Available Options	
Aluminum Face & Backpan	6"	24" x 24"	90° - One Way	08 - White epoxy (aluminum face)	D3	Radial Opposed Blade Damper - aluminum
HRD-CL-AL-1 - Surface Mount	8"	48" x 24"	180° - Two Way	23 - #2B Stainless (stainless steel face)		
HRD-CL-AL-6 - T-bar Lay-in	9"					
HRD-CL-AL-6M - Special 1 1/2" T-bar Lay-in	10"					
Stainless Steel Face & Backpan	12"					
HRD-CL-SS-1 - Surface Mount	14"					
HRD-CL-SS-6 - T-bar Lay-in						
HRD-CL-SS-6M - Special 1 1/2" T-bar Lay-in						
Stainless Steel Face & Aluminum Backpan						
HRD-CL-SA-1 - Surface Mount						
HRD-CL-SA-6 - T-bar Lay-in						
HRD-CL-SA-6M - Special 1 1/2" T-bar Lay-in						

Environmental/Hospital Diffusers



EHD

➔ Radial Discharge Pattern ➔ Removable Face w/HEPA Filter ➔ Series HRD-HA

Product Details

- ✦ The series HRD-HA radial discharge pattern diffusers includes a HEPA filter section and are engineered for supply air distribution in critical environments such as chemistry labs and clean rooms. The diffusers are engineered to supply a low velocity of conditioned air in a radial pattern from the ceiling
- ✦ The series HRD-HA design includes a HEPA filter cell accessible from the face of the diffuser. The face and core assembly can be removed from the face for cleaning. This feature allows the filters to be removed and replaced from the diffuser face. Optional HEPA filters are available
- ✦ The HRD-HA Radial Discharge Pattern Diffusers are easy to clean and sterilize. The face and core assembly can be removed from the face for cleaning. With the face and core assembly removed, the interior of the backpan and inlet collar are free of obstructions and easy to access
- ✦ The diffuser is available in stainless steel or heavy aluminum construction. Units available in 90° or 180° throw
- ✦ Optional HEPA Filters are available



Model HRD-HA Shown

Standard Finish: 01 White

Environmental/Hospital Diffusers



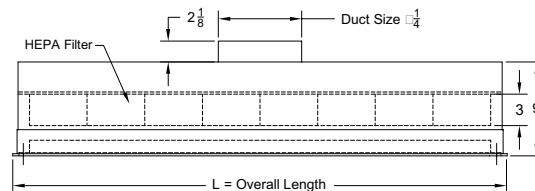
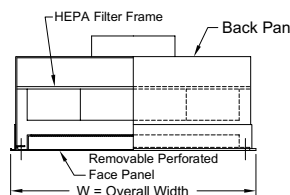
EHD

Aluminum Face & Backpan

Dimensions are in inches

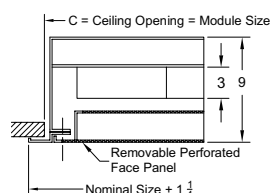
Radial Discharge Pattern - Removable Face With HEPA Filter Aluminum Face & Backpan

Model HRD-HA-AL One Way
Model HRD-HA-AL Two Way



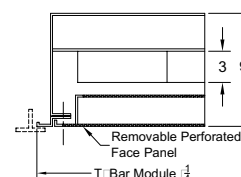
Radial Discharge Pattern - Removable Face With HEPA Filter Surface Mount - Aluminum Face & Backpan

Model HRD-HA-AL-1

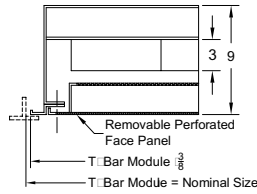


Radial Discharge Pattern - Removable Face With HEPA Filter Standard T-bar Lay-in - Aluminum Face & Backpan

Model HRD-HA-AL-6



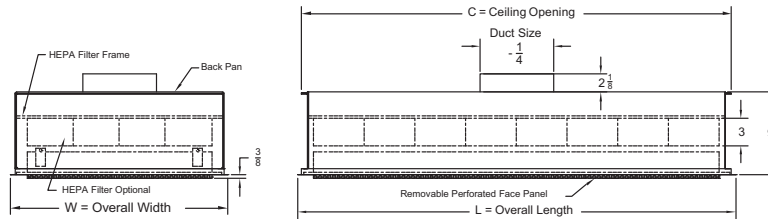
**Radial Discharge Pattern - Removable Face With HEPA Filter
Special 1 1/2" T-bar Lay-in - Aluminum Face & Backpan
Model HRD-HA-AL-6M**



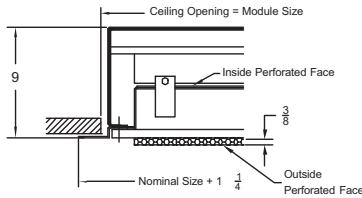
Nominal Size	Frame 1			Frame 6		Frame 6M	
	C	L	W	L	W	L	W
24 x 24	24 x 24	25 1/4	25 1/4	23 3/4	23 3/4	23 3/4	23 3/4
24 x 48	24 x 48	49 1/4	25 1/4	47 3/4	23 3/4	47 3/4	23 3/4

Stainless Steel Face & Aluminum Backpan

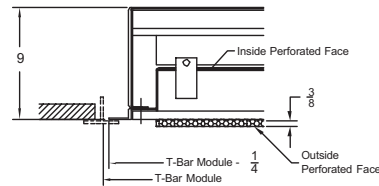
**Radial Discharge Pattern - Removable Face With HEPA Filter
Stainless Steel Face & Aluminum Backpan
Model HRD-HA-SA One Way
Model HRD-HA-SA Two Way**



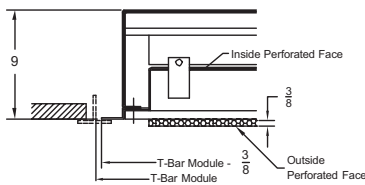
**Radial Discharge Pattern - Removable Face With HEPA Filter
Surface Mount - Stainless Steel Face & Aluminum Backpan
Model HRD-HA-SA-1**



**Radial Discharge Pattern - Removable Face With HEPA Filter
Standard T-bar Lay-in - Stainless Steel Face & Aluminum Backpan
Model HRD-HA-SA-6**



**Radial Discharge Pattern - Removable Face With HEPA Filter
Special 1 1/2" T-bar Lay-in - Stainless Steel Face & Aluminum Backpan
Model HRD-HA-SA-6M**



Nominal Size	Frame 1			Frame 6		Frame 6M	
	C	L	W	L	W	L	W
24 x 24	24 x 24	25 1/8	25 1/8	23 3/4	23 3/4	23 3/4	23 3/4
24 x 48	24 x 48	49 1/8	25 1/8	47 3/4	23 3/4	47 3/4	23 3/4

- HRD-HA diffusers discharge air into a 180 degree, radial pattern
- Also available in a 90 degree discharge one-way unit
- HRD-HA generates a low velocity 180 pattern ideal for laboratory and clean room applications

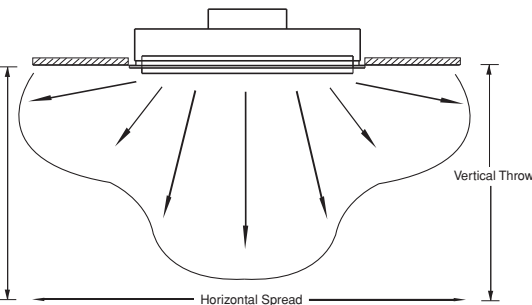


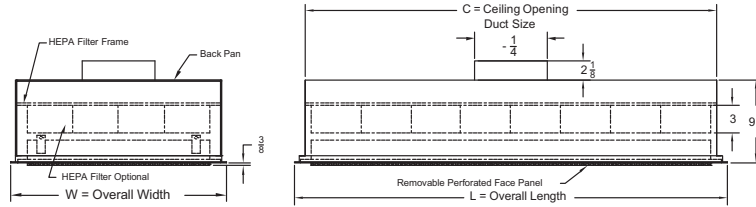
Illustration shows the 180° radial

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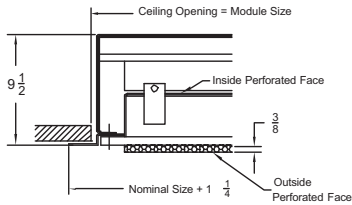


Stainless Steel Face & Backpan

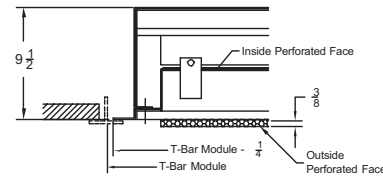
Radial Discharge Pattern - Removable Face With HEPA Filter
Stainless Steel Face & Backpan
 Model HRD-HA-SS One Way
 Model HRD-HA-SS Two Way



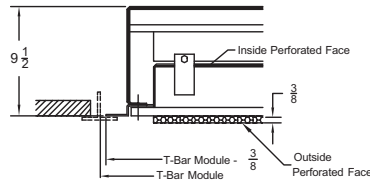
Radial Discharge Pattern - Removable Face With HEPA Filter
Surface Mount - Stainless Steel Face & Backpan
 Model HRD-HA-SS-1



Radial Discharge Pattern - Removable Face With HEPA Filter
Standard T-bar Lay-in - Stainless Steel Face & Backpan
 Model HRD-HA-SS-6



Radial Discharge Pattern - Removable Face With HEPA Filter
Special 1 1/2" T-bar Lay-in - Stainless Steel Face & Backpan
 Model HRD-HA-SS-6M



Nominal Size	Frame 1			Frame 6		Frame 6M	
	C	L	W	L	W	L	W
24 x 24	24 x 24	25 1/8	25 1/8	23 3/4	23 3/4	23 3/4	23 3/4
24 x 48	24 x 48	49 1/8	25 1/8	47 3/4	23 3/4	47 3/4	23 3/4

Notes for Models HRD-HA-AL-1, HRD-HA-AL-6, HRD-HA-AL-6M

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 01 White	CD - Cable Damper	One way (90° discharge pattern) Two way (180° discharge pattern) HEPA Filter	<ul style="list-style-type: none"> Perforated faces are shipped with 2 safety cables 51% perforated face Round neck sizes available: 6, 8, 10, 12 & 14

Notes for Models HRD-HA-SA-1, HRD-HA-SA-6, HRD-HA-SA-6M

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 23 #2B scratch	CD - Cable Damper	One way (90° discharge pattern) Two way (180° discharge pattern) HEPA Filter	<ul style="list-style-type: none"> Perforated faces are shipped with 2 safety cables 23%, 40%, 51% perforated face Round neck sizes available: 6, 8, 10, 12 & 14

Notes for Models HRD-HA-SS-1, HRD-HA-SS-6, HRD-HA-SS-6M

1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 23 #2B scratch	CD - Cable Damper	One way (90° discharge pattern) Two way (180° discharge pattern) HEPA Filter	<ul style="list-style-type: none"> Perforated faces are shipped with 2 safety cables 23%, 40%, 51% perforated face Round neck sizes available: 6, 8, 10, 12 & 14

Series HRD-HA - Performance

Models HRD-HA-AL (-1, -6, -6M), HRD-HA-SS (-1, -6, -6M), HRD-HA-SA (-1, -6, -6M)/1-Way Pattern

Module Size and Inlet Size	1-Way Pattern				Horizontal Spread (feet)			Vertical Throw (feet)								
	Air Flow (CFM)	Ps (in wc.)	Pt (in wc.)	NC	10 Deg dT			10 Deg dT			15 Deg dT		20 Deg dT			
					100	75	50	100	75	50	100	75	50	100	75	50
24" x 24" 8" Inlet	150	0.019	0.030	<15	0	- 1	- 3	0	- 1	- 2	0	- 1	- 2	0	- 1	- 4
	200	0.033	0.054	<15	0	- 1	- 2	0	- 1	- 2	0	- 1	- 2	0	- 1	- 3
	250	0.052	0.084	18	1	- 2	- 5	1	- 2	- 4	1	- 2	- 5	1	- 3	- 6
	300	0.075	0.121	23	1	- 3	- 5	1	- 2	- 4	1	- 2	- 5	2	- 4	- 6
	400	0.133	0.215	32	2	- 4	- 6	2	- 3	- 5	2	- 4	- 6	3	- 5	- 7
500	0.207	0.335	39	3	- 5	- 7	2	- 4	- 5	3	- 5	- 7	4	- 6	- 8	
24" x 24" 10" Inlet	250	0.021	0.034	<15	1	- 2	- 5	0	- 0	- 1	1	- 1	- 3	0	- 1	- 3
	325	0.035	0.057	<15	1	- 3	- 6	0	- 1	- 2	1	- 2	- 4	1	- 1	- 4
	400	0.053	0.087	21	2	- 4	- 7	0	- 1	- 4	2	- 2	- 5	1	- 2	- 5
	475	0.075	0.122	27	3	- 5	- 8	1	- 1	- 4	2	- 3	- 5	1	- 3	- 5
	550	0.1	0.164	33	3	- 5	- 8	1	- 2	- 5	2	- 3	- 6	2	- 3	- 6
	625	0.13	0.212	37	4	- 6	- 9	1	- 2	- 5	2	- 4	- 7	2	- 4	- 7
24" x 48" 10" Inlet	300	0.03	0.049	<15	1	- 2	- 6	0	- 0	- 2	1	- 2	- 3	0	- 1	- 3
	400	0.053	0.087	19	2	- 4	- 7	0	- 1	- 3	1	- 2	- 5	1	- 1	- 5
	500	0.083	0.135	28	3	- 5	- 7	1	- 1	- 4	2	- 3	- 6	1	- 2	- 6
	600	0.12	0.195	34	4	- 6	- 8	1	- 2	- 5	2	- 3	- 7	1	- 3	- 7
	800	0.212	0.347	40	5	- 7	- 9	1	- 3	- 6	3	- 5	- 8	2	- 5	- 10
	900	0.269	0.439	40	6	- 7	- 10	2	- 3	- 7	3	- 5	- 9	3	- 6	- 10
24" x 48" 12" Inlet	500	0.048	0.074	19	1	- 2	- 5	1	- 1	- 4	1	- 1	- 6	1	- 3	- 6
	600	0.07	0.106	25	1	- 3	- 6	1	- 2	- 5	1	- 2	- 7	2	- 4	- 7
	700	0.095	0.145	30	2	- 3	- 7	1	- 3	- 6	1	- 3	- 8	2	- 4	- 9
	800	0.124	0.189	33	2	- 4	- 8	2	- 3	- 6	2	- 4	- 9	3	- 5	- 10
	900	0.157	0.239	39	3	- 4	- 8	2	- 4	- 7	2	- 5	- 10	4	- 5	- 11
	1000	0.194	0.295	42	3	- 5	- 9	3	- 4	- 8	3	- 6	- 10	4	- 6	- 11

Models HRD-HA-AL (-1, -6, -6M), HRD-HA-SS (-1, -6, -6M), HRD-HA-SA (-1, -6, -6M)/2-Way Pattern

Module Size and Inlet Size	2-Way Pattern				Horizontal Spread (feet)			Vertical Throw (feet)								
	Air Flow (CFM)	Ps (in wc.)	Pt (in wc.)	NC	10 Deg dT			10 Deg dT			15 Deg dT		20 Deg dT			
					100	75	50	100	75	50	100	75	50	100	75	50
24" x 24" 8" Inlet	150	0.019	0.030	<15	0	- 1	- 3	0	- 1	- 2	0	- 1	- 2	0	- 1	- 4
	200	0.033	0.054	15	1	- 1	- 4	0	- 1	- 3	0	- 1	- 4	1	- 2	- 5
	250	0.052	0.084	19	1	- 2	- 5	1	- 2	- 4	1	- 2	- 5	1	- 3	- 6
	300	0.075	0.121	23	1	- 3	- 5	1	- 2	- 4	1	- 2	- 5	2	- 4	- 6
	400	0.132	0.214	31	2	- 4	- 6	2	- 3	- 6	2	- 4	- 6	3	- 5	- 7
	500	0.207	0.335	39	3	- 5	- 7	2	- 4	- 6	3	- 5	- 7	4	- 6	- 8
24" x 24" 10" Inlet	250	0.023	0.036	<15	1	- 2	- 5	0	- 0	- 1	1	- 1	- 3	0	- 1	- 3
	325	0.039	0.061	<15	1	- 3	- 6	0	- 1	- 2	1	- 2	- 4	1	- 1	- 4
	500	0.092	0.145	29	3	- 5	- 10	1	- 1	- 4	2	- 3	- 6	1	- 3	- 6
	600	0.133	0.208	36	4	- 6	- 11	1	- 2	- 5	2	- 3	- 7	2	- 3	- 7
	700	0.181	0.284	41	5	- 7	- 12	1	- 3	- 6	3	- 4	- 7	2	- 4	- 8
	900	0.299	0.469	45	6	- 9	- 14	2	- 4	- 8	3	- 5	- 8	3	- 5	- 9
24" x 48" 10" Inlet	250	0.017	0.030	<15	1	- 2	- 5	0	- 0	- 1	0	- 1	- 2	0	- 1	- 2
	325	0.028	0.050	<15	1	- 3	- 6	0	- 0	- 2	1	- 2	- 3	0	- 1	- 3
	500	0.067	0.119	26	3	- 5	- 10	1	- 1	- 4	2	- 2	- 5	1	- 2	- 5
	600	0.096	0.172	33	4	- 6	- 11	1	- 2	- 4	2	- 3	- 6	1	- 3	- 6
	700	0.131	0.234	38	5	- 7	- 12	1	- 2	- 5	2	- 3	- 6	2	- 3	- 7
	900	0.217	0.387	42	6	- 9	- 14	2	- 3	- 6	3	- 4	- 7	3	- 4	- 8
24" x 48" 12" Inlet	500	0.067	0.092	19	3	- 5	- 10	1	- 1	- 4	1	- 1	- 5	1	- 3	- 6
	600	0.096	0.133	25	4	- 6	- 11	1	- 2	- 4	1	- 2	- 6	2	- 3	- 7
	700	0.131	0.181	30	5	- 7	- 12	1	- 3	- 5	1	- 3	- 7	2	- 4	- 8
	800	0.171	0.236	33	5	- 8	- 13	2	- 3	- 7	2	- 4	- 7	3	- 5	- 9
	900	0.217	0.299	39	6	- 9	- 14	2	- 3	- 7	2	- 4	- 8	3	- 5	- 9
	1000	0.268	0.369	42	3	- 5	- 10	2	- 4	- 7	3	- 5	- 8	4	- 6	- 10

Performance Notes for Series HRD-HA:

All data are tested in accordance with ANSI/ASHRAE 70-1991

Definition of Units:

- CFM - Cubic Feet per Minute (air)
- Pv - Velocity pressure (inches of water column)
- Pt - Total pressure (inches of water column)
- Ps - Static pressure = Pt - Pv (inches of water column)
- Throw - Non-isothermal horizontal throw values are for 150 fpm - 100 fpm - 50 fpm velocities
- NC - Noise criterion, sound pressure level. NC ratings are based on sound power level (Lw)

RE: 10E-12 watts minus a 10 dB room attenuation in all octave bands

For more product information visit us at www.metalair.com



Series HRD-HA - Specifications

Aluminum Construction

- Model HRD-HA-AL-1 – *Surface Mount*
- Model HRD-HA-AL-6 – *Standard T-bar Lay-in*
- Model HRD-HA-AL-6M – *Special 1 1/2" T-bar Lay-in*

Stainless Steel Construction

- Model HRD-HA-SS-1 – *Surface Mount*
- Model HRD-HA-SS-6 – *Standard T-bar Lay-in*
- Model HRD-HA-SS-6M – *Special 1 1/2" T-bar Lay-in*

Stainless Steel Face/Aluminum Backpan

- Model HRD-HA-SA-1 – *Surface Mount*
- Model HRD-HA-SA-6 – *Standard T-bar Lay-in*
- Model HRD-HA-SA-6M – *Special 1 1/2" T-bar Lay-in*

Air outlets shall be model HRD-HA-AL (aluminum) or HRD-HA-SS (stainless steel) or HRD-HA-SA (stainless steel face/aluminum backpan) manufactured by METALAIRE. Diffuser shall include an upper and lower pressure chamber and shall generate a 180, two way, low velocity discharge pattern (optional: 90°, one way discharge pattern). Unit shall also include an internal filter section to allow the installation and removal of a HEPA filter. Unit shall accept 3" beadpleat HEPA with filter held in place using a trapeze hanger system.

Diffuser shall be constructed of a one-piece perforated face and core assembly that is removable from the backpan with 1/4" turn fasteners accessible from the face. Face and core assemblies mounted with internal spring clips or other mechanical fastening devices are not acceptable. Core Assembly to have non-adjustable pattern controllers mounted on the face assembly. Units shall include stainless steel safety chains attaching the face assembly to the backpan.

Optional: A factory installed 3" thick, 99.99% efficient filter on .30 microns shall be provided by the diffuser manufacturer.

Core and face assembly shall be removable to allow sanitizing in an autoclave and allow access to the backpan for cleaning. With the core assembly removed, the inside of the backpan must be completely accessible for cleaning. Units with permanently fixed dampers, baffles or deflectors mounted in the backpan are not acceptable. Face shall project no further than 3/8" below the border of the diffuser. Perforated face shall have a 51% free area with 3/16" holes on 1/4" staggered centers. Units shall have round inlets.

Units shall have round inlets. Units shall be designed to integrate into the specified ceiling system. The units shall be the size and quantity as outline in the plans and specifications.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Finish Specification

Aluminum Face Diffusers: Units shall be painted with a powder coat, baked on epoxy.

Stainless Steel Face Diffusers: #2B Mill Finish



Series HRD-HA - Model Specification Guide

Series HRD-HA - Hospital Diffusers - Removable Face With HEPA Filter

Model	Inlet	Module	Discharge Pattern	Available Finishes	Available Options	
Aluminum Face & Backpan	6"	24" x 24"	90° - One Way	08 - White epoxy (aluminum face)	D3	Radial Opposed Blade Damper - aluminum
HRD-HA-AL-1 - Surface Mount	8"	48" x 24"	180° - Two Way	23 - #2B Stainless (stainless steel face)		
HRD-HA-AL-6 - T-bar Lay-in	9"					
HRD-HA-AL-6M - Special 1 1/2" T-bar Lay-in	10"					
Stainless Steel Face & Backpan	12"					
HRD-HA-SS-1 - Surface Mount	14"				SD3	Radial Opposed Blade Damper - steel
HRD-HA-SS-6 - T-bar Lay-in					HEPA	Filter (factory provided)
HRD-HA-SS-6M - Special 1 1/2" T-bar Lay-in					TP	Test Ports
Stainless Steel Face & Aluminum Backpan						
HRD-HA-SA-1 - Surface Mount						
HRD-HA-SA-6 - T-bar Lay-in						
HRD-HA-SA-6M - Special 1 1/2" T-bar Lay-in						

Environmental/Hospital Diffusers



EHD

➔ Laminar Flow ➔ Operating Room Distribution Systems ➔ Periflow System

Product Details

- ✦ The Periflow operating room air distribution system provides control over particulate matter within the operating room environment
- ✦ The system has been tested in accordance with the guidelines set forth by the Committee on Operating Room Environments of the American College of Surgeons as published in the January, 1976 Bulletin, and meets Class 1 Microbiological Air Cleanliness guidelines. The system provides the highest standard of air cleanliness for patients undergoing minor procedures or surgeries as critical as organ transplants
- ✦ The system is in either stainless steel or heavy aluminum construction to ensure long-term durability and resistance to strong germicidal solutions. In addition, each system is custom designed and precisely fabricated to accommodate the specialized medical, mechanical, and electrical considerations of today's operating room environments
- ✦ By its compact yet efficient design, the Periflow system allows the designer the flexibility to properly provide for all the various components competing for space above the operating room ceiling

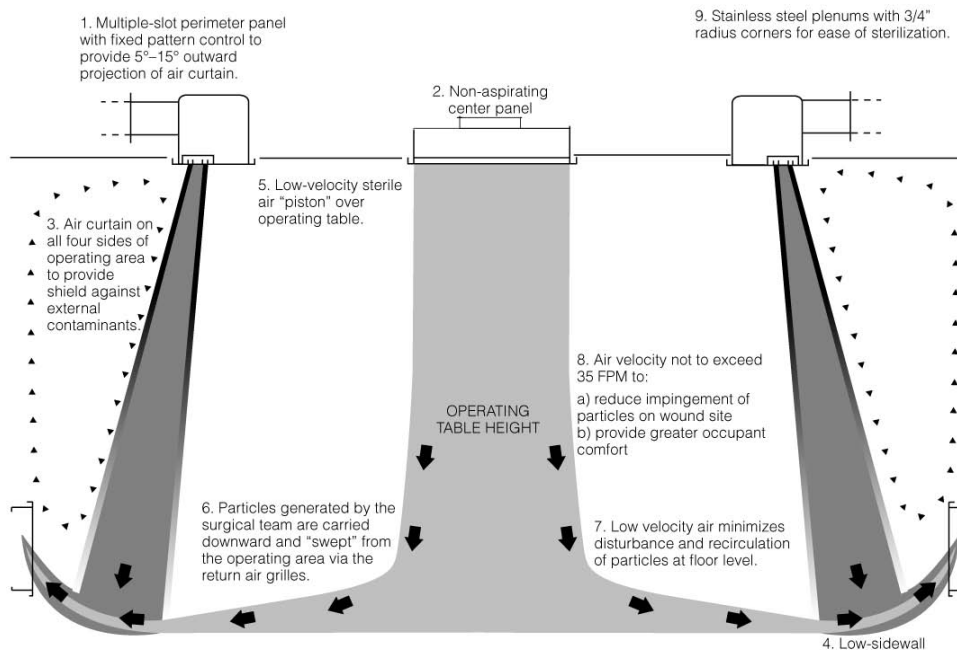


Model Periflow Shown

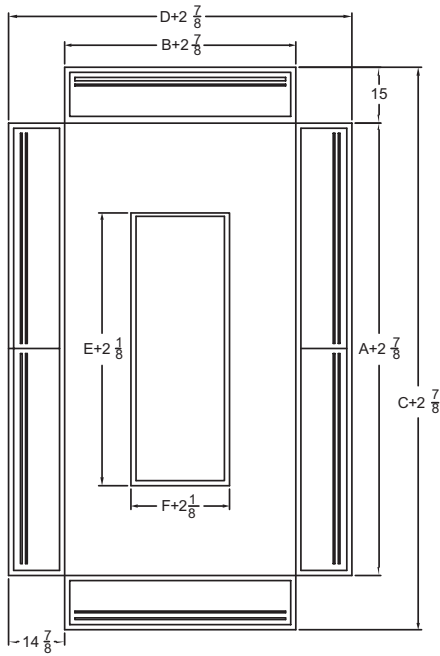
Standard Finish: 01 White



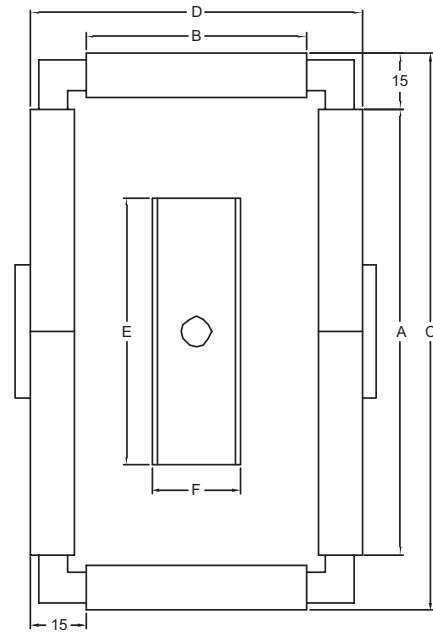
Principles of Operation - Periflow System



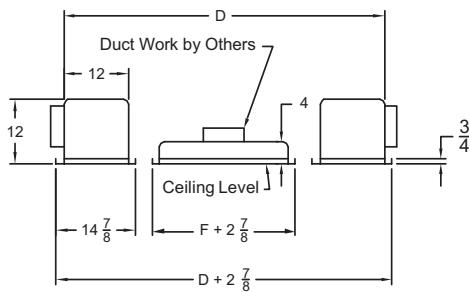
Reflected Ceiling View



Duct Top View



Typical Section View



Model	Nominal Duct Sizes		Overall Duct Sizes		Center Panel Duct Sizes		CFM Range
	A	B	C	D	E	F	
84	8'	4'	10' 6"	6' 6"	5'	2'	800-1000
104	10'	4'	12' 6"	6' 6"	6'	2'	1000-2000
124	12'	4'	14' 6"	6' 6"	8'	1' 6"	1100-2200
85	8'	5'	10' 6"	7' 6"	5'	2'	900-1800
105	10'	5'	12' 6"	7' 6"	6'	2'	1050-2010
125	12'	5'	14' 6"	7' 6"	8'	1' 6"	1150-2300
86	8'	6'	10' 6"	8' 6"	4'	3'	1000-2000
106	10'	6'	12' 6"	8' 6"	5'	3'	1100-2200
126	12'	6'	14' 6"	8' 6"	7'	2'	1200-2400
108	10'	8'	12' 6"	10' 6"	7'	2'	1200-2400
128	12'	8'	14' 6"	10' 6"	8'	2'	1350-2700
148	14'	8'	16' 6"	10' 6"	9'	2'	1500-3000

1. Available Finishes	2. Construction Details
Standard Finish: AL Periflow: Exterior - White epoxy powder coat Interior - Mill finish SS Periflow: Exterior - Scratch Interior - Smooth	AL Periflow: Plenum - H3003 Aluminum .050" Frame - H3003 Aluminum .063" SS Periflow: Plenum - 304 SS 20 Ga Frame - 304 SS 18 Ga

Periflow System - Performance

Velocities

Center Panels (in Feet Per Minute)

Distance in Feet	CFM per Square Foot of Panel		
	25	35	45
2'	40	42	45
4'	35	38	45
6'	28	32	35

Perimeter Panels (in Feet Per Minute)

Distance in Feet	CFM per Lineal Foot of Panel		
	25	35	45
2'	110	120	130
4'	70	75	80
6'	35	50	65

Velocities are in Feet Per Minute (fpm) at the distance listed in feet from the face of the diffuser. Values shown for center panels are average velocity; values shown for perimeter are peak velocity.

System Static Requirement

CFM per Square/Lineal Foot	Center Panel	Perimeter Panel
25'	.067	.025
30'	.098	.035
35'	.130	.050
40'	.170	.060
45'	.210	.080

Static pressure values are in inches W.G. and are based on an inlet velocity of 500 fpm. Center panel values are based on CFM per square foot of face panel and perimeter panels are based on CFM per lineal foot of panel.

Noise Criteria

CFM per Lineal Foot of Perimeter Panel	NC
25'	<20
30'	23
35'	30
40'	34
45'	37

All values are based on Model 148 (44 perimeter feet) and a single center panel. Add one (1) NC for each additional four (4) lineal feet of perimeter panel. Add three (3) NC for each additional four (4) square feet of center panel over a cumulative total of ten (10) square feet. All values are based on 10dB room absorption and PWL dB ref. 10-12 watts. System NC values are based on 1/3 of total airflow to the center panels.

Selecting a Periflow Operating Room System

Determine the CFM required based on the number of room changes per hour that are required. The formula for this is as follows:

$$\frac{\text{Total changes per hour x room volume}}{60 \text{ min/hr}} = \text{Required CFM}$$

After determining the total CFM required, select the Periflow System with a mid-range CFM as close as possible to the total required CFM. The perimeter system will receive two-thirds of the CFM. Selection of the mid supply will be maintained. Maximum recommended CFM per lineal foot perimeter supply is 45.

Structural and Seismic Considerations

For structural and seismic calculations, the perimeter plenum system (including elbows) will weigh 12.7 lbs. per lineal foot and the center panels will weigh 7.6 lbs per square foot.

The above weights are based on the standard construction and plenum height as shown on the Periflow specification drawing.

Periflow System - Specifications

Hospital Operating Room Air Distribution System - Air Curtain System

1. Air distribution and particle control for the operating room(s) shall consist of a non-aspirating center panel(s) providing air supply over the operating table. The air velocity from the center panel(s) shall not exceed 40 fpm at operating table height. An air curtain shall be provided from fixed, nonadjustable multiple slot panels surrounding the operating table height. This air curtain shall not exceed 60 fpm or be of a laminar pattern but shall project air outward at not less than a 5-degree angle, but no more than a 15-degree angle, outward from the operating table with a temperature differential between supply and ambient room temperature of 0 to 20 degrees Fahrenheit (cooling). Systems that do not contain an air current as an inherent part of their design shall not be acceptable.
2. All components of the system shall be fabricated of stainless steel. All ductwork supplied by the contractor from the HEPA filters to the system shall be provided to permit manual sterilization of the ductwork. Factory supplied plenums shall be constructed of a minimum of 20-gauge Type 304 (18-8) stainless steel with a 3/4 inch radius for ease of sterilization. The center panel(s) shall be constructed of 20-gauge Type 304 stainless steel. The perimeter panel(s) shall be constructed of a minimum 18-gauge Type 304 stainless steel. All exposed surfaces shall be supplied with #4 (scratch) finish. All interior surfaces shall be supplied with #2B (smooth) finish to prevent the accumulation of particulate matter. Systems using materials other than stainless steel or supplying component with a painted or coated finish shall not be acceptable.
3. The contractor shall supply manual balancing dampers at each inlet connection to the system also constructed of a minimum of 20-gauge stainless steel. Each center panel shall be provided with a single inlet connection and the perimeter plenum system shall be supplied with two inlet connections. Systems utilizing more than two inlet connections to the perimeter plenum shall not be acceptable.
4. A stainless steel perforated pressure plate supplied by the system manufacturer shall be permanently attached to both the center and perimeter panels to provide equal air distribution over the diffuser face. Both center and perimeter panels shall be retained by quarter turn fasteners for ease of removal for sterilization. The manufacturer shall supply clip-on safety cables to retain the face panels after the quarter turn fasteners are released.
5. An installation shall have been tested in accordance with the "Recommended Procedure for the Determination of Microbiological Air Cleanliness," as published by the Committee on Operating Room Environment of the American College of Surgeons (January, 1976 Bulletin) by an Independent Microbiological Testing Laboratory. The proposed system shall have met the requirements for Class 1 Microbiological Air Cleanliness as set forth in this procedure. Copies of the Independent Laboratory's test report shall be provided to the engineer for prior approval. The manufacturer shall submit a listing of 25 or more systems of the setup as shown.
6. **Optional:** The manufacturer shall provide the services of a qualified factory engineer or technician to supervise the balancing of the system(s). The manufacturer shall provide a complete balancing report to the engineer within two weeks of completion of the system(s) balancing.
7. The air distribution and airborne article control system for the operating room(s) shall be the Periflow Operating Room System as manufactured by METALAIRE or approved equal.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Periflow System - Microbiologic Air Cleanliness Summary

PathCon, Inc. of Atlanta, Georgia, conducted field tests on one Periflow Air Operating Room System. These tests were conducted in accordance with the Recommended Procedures of the Committee on Operating Room Environment of the American College of Surgeons in an article entitled "Definition of Surgical Microbiological Clean Air," published in the January, 1976 Bulletin of the College.

In this document, three (3) classes of air cleanliness as well as the methodology for taking samples were defined. The three (3) classes of microbiologic air cleanliness are as follows:

Class 1: Viable microbiological airborne to average less than one particle per cubic foot of air with a minimum sample of 30 cubic feet of air.

Class 5: Viable microbiological airborne particle counts to average more than one and up to five per cubic foot of air with a minimum sample of ten cubic feet.

Class 20: Viable microbiological airborne particle counts not to average more than five and not to exceed 20 per cubic foot of air with a minimum sample of ten cubic feet.

The test was conducted in an operating room 26' 6" x 22' 0" with a ten foot ceiling height. The Periflow System installed was the standard Model 1610 with a single 2' x 6' center panel. The CFM was 1820 for the perimeter panels (35 CFM per lineal foot) and 500 CFM for the center panel (45 CFM per square foot) for a total of 25 room changes per hour.

The test procedure was to collect samples of air utilizing two Anderson Six Stage Impaction Samplers, one placed at the operating table and the other located outside the air curtain near the door of the operating room. Samples were collected on three runs with volunteers to simulate the surgical team and a patient and one sample was collected with no one in the room as a control sample. Each run was 30 minutes in length as described in the American College of Surgeons Procedures.

The summary of the samples is presented in the table shown below. The air sampling results are of bacterial colony counts per plate after 72 hours of incubation. Each sample represents thirty cubic feet of air (30 Ft.³)

Run*	Six Stage Impaction Samplers	Count at Operating Table with Air Curtain	Count Outside Air Curtain
1	1	0	20
	2	1	4
	3	0	4
	4	0	5
	5	1	6
	6	0	175
	Total	2	214
	Allowable	30 Max	-
2	1	0	8
	2	1	4
	3	0	2
	4	2	3
	5	7	7
	6	0	0
	Total	10	24
	Allowable	30 Max	-
3	1	5	8
	2	1	4
	3	0	2
	4	0	3
	5	1	7
	6	0	0
	Total	7	24
	Allowable	30 Max	-
4	1	0	13
	2	0	12
	3	0	83
	4	1	3
	5	1	4
	6	0	1
	Total	2	100
	Allowable	30 Max	-

* Samples 1 through 3 were taken under simulated operating conditions. Sample four is a control sample.

The Conclusion of PathCon Laboratories:

"All four samples taken within the air curtain produced by the Periflow System were within the recommended guidelines (for Class 1 Microbiologic Air Cleanliness) as recommended by the ACS. The mean count obtained in the air curtain was 0.125 CFU/Ft³. This is well below the 1 colony forming unit per cubic foot level recommended by the ACS. Comparison sampling outside the air curtain revealed counts 4.8 greater than the ACS recommended level. In summary, the Periflow System was capable of delivering air with microbial counts well within the recommended guidelines even when ambient air exceeded recommended levels."



Periflow System - Assembly, Operation & Maintenance Procedures

Operation and Maintenance Procedures

Initial Start Up

Once the Periflow System has been properly installed (according to the installation diagrams supplied with the submittal) the system must be balanced in accordance with the schedule shown on the plans. It is essential that the CFM be supplied to the center panel, and that the perimeter is adjusted to the values shown on the schedule. This is accomplished by adjusting the inlet dampers (supplied by others) until the proper CFM levels are obtained. Failure to properly balance the system may compromise the perimeter air curtain, so care must be taken in balancing the system.

Decontamination

After the system is balanced and before the system is placed into operation, all components of the system downstream of the HEPA filter (including duct work) must be decontaminated. All face panels (both center and perimeter) are supplied with quarter turn fasteners on staggered centers. The fasteners are staggered to prevent improper installation of the center panels.

To decontaminate the system, first remove the center panel and perimeter face panels. This is done by turning the quarter turn fastener with a flathead screwdriver to the unlocked position. The center panel and pressure plate that is attached is further secured by a safety cable and snap. Unsnap the safety cable to complete the removal. The center panels can then be sterilized by immersion in a germicidal solution or placed in an autoclave if available. With the face panels removed, the distribution plenums are now accessible. These are provided with round corners to facilitate cleaning. All surfaces should be sterilized by wiping with a germicidal solution, including all duct work downstream of the HEPA filter. Failure to sterilize all components downstream of the HEPA filter may result in contamination of the operating area by microbiologically active particles.

Once all components of the system are sterilized, the center panels can be reinstalled. Care should be taken not to contaminate the now sterilized center panels during re-installation. Sterile clothing and gloves for maintenance personnel are recommended. Maintenance personnel should be instructed to reattach the safety cable prior to securing the face panels to the plenum using the quarter turn fastener. Once the balancing and decontamination process has been complete, the Periflow System is ready for use.

Maintaining the System

All components of the Periflow System are fabricated from stainless steel to provide years of durable use. It is essential that the decontamination process listed above is repeated after the HEPA filters are changed.

While the Periflow System does not contain movable parts that require continual maintenance, an ongoing maintenance program is recommended. The Periflow System is designed to minimize the accumulation of particulates and in that respect, is essentially self-cleaning. However, the possibility does exist for the occasional contaminant to escape from the HEPA filter and become lodged in the system. It is recommended that the decontamination process be repeated periodically, depending upon the usage of the particular operating room.

Assembly & Installation

The Periflow System has been designed to provide the most efficient operating room air distribution system available while minimizing usage of ceiling space. To ensure proper installation, a drawing illustrating the assembly and installation details must accompany each Periflow submittal.

A few of the design features of the Periflow System which contribute to the ease of assembly and installation are as follows:

- *Perimeter plenums are shipped in maximum lengths of 12' and supplied with pre-drilled flanges at either end. Longer sections are also flanged and supplied with pre-drilled bolt holes for connecting sections.*
- *Connecting elbows are flanged to meet the flanges at either end of the perimeter plenum (also supplied with pre-drilled bolt holes).*
- *Plenums are shipped first so installation with threaded rod (by others) can be completed before the ceiling is installed.*
- *Diffuser mounting frame is shipped loose to be installed after the ceiling to allow for any ceiling irregularities.*
- *The plenum flange is pre-notched to accommodate the quarter turn fasteners that are permanently affixed to the diffuser face panels.*
- *All inlet connections are provided with flanges for ease of duct connection. Raw connections are also available if so specified.*

Periflow System - Appendix

PathCon Laboratories was selected to perform the Periflow% System microbiologic air cleanliness tests based on their impressive qualifications, experience and expertise in the area of microbial analysis.

Members of the PathCon staff were part of the CDC's control team for spearheading the first isolation of Legionella bacteria (Legionnaire's Disease) in 1978. In addition, they were also instrumental in developing laboratory methods and standards for isolating the bacteria which are now in use throughout the world. The primary emphasis of this laboratory is to assist the industry in reducing business-associated disease risks. They offer investigation and consultation services to determine the quality of the indoor air and water in environmental and occupational settings.

NEW

Earthquake Tab

Attach Tabs

Overall Face S

T-Bar Mo

ENGINEERED POLYMER PRODUCTS

ENGINEERED POLYMER PRODUCTS



Model EP5000
Pg. 300

Engineered Polymer Ceiling Diffusers - Louver Face - Series EP5000

- ✦ For use in ceiling applications which call for a clean, smooth appearance, lightweight, corrosion resistant, and ease of installation
- ✦ For flush surface mount or inverted T-bar Lay-in ceiling grid systems

Surface Mount	T-bar Lay-in
EP5000-1	EP5000-6



Model EPCC5
Pg. 304

Engineered Polymer Cube Core - Eggcrate Return/Exhaust - Series EPCC5

- ✦ Attractive 1/2" x 1/2" grid by 1/2" deep design
- ✦ Available for non-ducted applications
- ✦ Can be used with an aluminum transition for use with round duct.

Surface Mount	T-bar Lay-in
EP-CC5-1	EP-CC5-6



Model EPRH
Pg. 308

Engineered Polymer Grilles & Registers - Louver Face Return/Exhaust - Series EPRH

- ✦ Fixed 45° angled deflecting blades provide a vision obscured appearance
- ✦ Horizontal 45° angled fixed vanes are on 3/4" centers



EPP - Engineered Polymer Products

3/2006

➔ Square Louver Face ➔ Injection Molded Engineered Polymer ➔ Series EP5000

Product Details

- ✦ For use in ceiling applications which call for a clean, smooth appearance, lightweight, corrosion resistant, and ease of installation
- ✦ For flush surface mount or inverted T-bar Lay-in ceiling grid systems



Model EP5000 Shown

Standard Finish: 01 White

Dimensions are in inches

Square Louver Face Ceiling Diffusers - Injection Molded Engineered Polymer Model EP5000 - (Options with Dampers are not showed)		Face View Model EP5000
		<p>Size 9 x 9, 12 x 12, 18 x 18 (Face View)</p>
<p>Kit Contains 4 Baffles 9 x 9 Neck Size</p>	<p>Kit Contains 8 Baffles 12 x 12 Neck Size</p>	<p>Kit Contains 12 Baffles 18 x 18 Neck Size</p>

Blank off kits contain sufficient number of baffles to blank off entire neck area of diffuser. Only that number of baffles should actually be used to either blank off sections to create 1, 2 or 3 way air patterns instead of standard 4-way pattern or reduce neck area around entire perimeter (inner or outer ring) for reduced air flow.

*Actual neck opening is 6" x 6" (155 x 155) on 9" x 9" (228 x 228) diffuser.

Models	Listed Size	Collar		Face (A)	Ceiling Opening (D)
	Neck/Face	Inside (B)	Neck (C)		
5000-1	9" x 9"/12" x 12" (228 x 228/300 x 300)	8 7/8" x 8 7/8" (225 x 225)	9 1/8" x 9 1/8" (231 x 231)	11 5/8" x 11 5/8" (295 x 295)	9 1/4 (235)
	12" x 12"/18" x 18" (300 x 300/455 x 455)	11 7/8" x 11 7/8" (300 x 300)	12 1/8" x 12 1/8" (308 x 308)	17 9/16" x 17 9/16" (446 x 446)	14 3/4 (375)
	18" x 18"/24" x 24" (455 x 455/600 x 600)	17 3/4" x 17 3/4" (450 x 450)	18" x 18" (455 x 455)	23 3/4" x 23 3/4" (603 x 603)	20 11/16 (525)
5000-6	9" x 9"/12" x 12" (228 x 228/300 x 300)	8 7/8" x 8 7/8" (225 x 225)	9 1/8" x 9 1/8" (231 x 231)	11 5/8" x 11 5/8" (295 x 295)	9 1/4 (235)
	18" x 18"/24" x 24" (455 x 455/600 x 600)	17 3/4" x 17 3/4" (450 x 450)	18" x 18" (231 x 231)	23 3/4" x 23 3/4" (603 x 603)	20 11/16 (525)

Engineered Polymer Products



EPP

1. Available Finishes	2. Available Accessories	3. Construction Details
Standard Finish: 01 White	Square and Rectangular Neck: EPTR - Polymer Square to Round Transition EP-OBDS5 - Polymer Opposed Blade Damper TREP - Aluminum Square to Round Transition TREP - Deep Aluminum or Polymer Square to Round Transition	<ul style="list-style-type: none"> Sizes Available only as listed White finish is through-color Matte white (not Painted)

Series EP5000 - Performance

Models EP5000 (-1, -6)

Neck Size Inches (mm)	Neck Vel. fpm (M/s) Pt Inches (Pa)	300 (1.5)	400 (2.0)	500 (2.5)	600 (3.0)	700 (3.5)
		0.036 (9)	0.060 (15)	0.092 (23)	0.133 (33)	0.173 (4.3)
6" x 6" (150 x 150)	CFM (Ls)	72 (34)	95 (45)	119 (56)	144 (68)	167 (79)
	Throw Max. Ft. (M)	5 (1.5)	7 (2.0)	8 (2.5)	10 (3.0)	12 (3.5)
	Throw Min. Ft. (M)	3 (1.0)	3 (1.0)	5 (1.5)	5 (1.5)	7 (2.0)
	NC	-	-	-	-	19
12" x 12" (150 x 150)	CFM (Ls)	286 (135)	381 (180)	477 (225)	572 (270)	668 (315)
	Throw Max. Ft. (M)	8 (2.5)	12 (3.5)	15 (4.5)	16 (5.0)	20 (6.0)
	Throw Min. Ft. (M)	5 (1.5)	7 (2.0)	7 (2.0)	8 (2.5)	10 (3.0)
	NC	-	21	26	31	34
18" x 18" (150 x 150)	CFM (Ls)	644 (304)	858 (405)	1073 (504)	1288 (608)	1502 (709)
	Throw Max. Ft. (M)	13 (4.0)	16 (5.0)	21 (6.5)	26 (8.0)	30 (9.0)
	Throw Min. Ft. (M)	7 (2.0)	8 (2.5)	8 (2.5)	13 (4.0)	15 (4.5)
	NC	23	30	35	38	42

Series EP5000 - Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991
 Throw distances are rounded to the nearest foot or one half meter.
 Throws are based on 4-way air pattern and terminal velocities for a maximum throw of 80 fpm (0.4 M/s) and for a minimum throw of 120 fpm (0.61 M/s).

NC is based on 10 dB room absorption.

Pt is the total pressure drop across the diffuser in inches W.G. (Pa) = Pst + Pv.

Ps is static pressure in inches W.G.

Neck sizes are nominal in inches and millimeters.

For directional throws, reduce the CFM (Ls) by the following percentages:

3-Way - Reduce airflow by 25%; all other values unchanged.

2-Way - Reduce airflow by 50%; all other values unchanged.

1-Way - Reduce airflow by 75%; all other values unchanged.

Definition of Units:

Ls - Liters per second

CFM - Ls/0.4719

Pa - Pascal

Inch of W.G. - Pa/249

M/s - Meters per second

fpm - Feet per minute (M/s x 197)

mm - millimeters

mm - Inches x 25.4

* - Pressure drop less than 0.001

— - NC less than 15

Correction factors for 45° blade deflection:

Throw x 0.55 NC + 8 dB Ps x 3.1



Series EP5000 - Specifications

Supply Square Louvered Face - Engineered Polymer Ceiling Diffusers

EP5000-1 - *Surface Mounted*

EP5000-6 - *T-bar Lay-in*

Air Outlets shall be engineered polymer model EP5000 provided by METALAIRE. Units shall consist of a fixed 4 way pattern louvered core fastened into a border. Border shall be molded in a single piece eliminating corner seams. Louvered core shall be fastened with integral clips and be removable from the face. Units shall include a mounting bracket assemble, accessible by removing the face.

Outlets shall be engineered for high capacity applications and include straight deflector blades (without a horizontal lip). Units with a horizontal lip at the ends of the deflector blades are not acceptable. The units shall be the size and quantity as outline in the plans and specifications.

Units shall be constructed entirely of rigid injection molded engineered polymer. The material shall be ultraviolet light stable and shall not become brittle with age. Units shall allow cleaning with commercial solvents, in a dishwasher, or steam cleaned without damaging the product.

The engineered polymer shall be tested in an independent laboratory. Units shall be NFPA standard 90A and 90B compliant. Units shall also be UL 94V rated with a flame spread of 0 and a smoke development rating of 35.

Units shall be designed to integrate into the specified ceiling system.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Optional Dampers

Engineered Polymer opposed blade dampers shall be provided. Damper shall be lever operated through the face of the diffuser.



EPP - Engineered Polymer Products

Series EP5000 - Model Specification Guide

Square Louver Face Ceiling Diffusers Model EP5000-1 - Flush Surface Mount

Model	Available Neck		Air Pattern	Available Finishes	Available Options	
5000-1 - Flush Surface Mount	9"	9"	Standard	Standard	EP-OBDS	Opposed Blade Damper - Polymer
	12"	12"	S4-Sq - 4-Way	01 - White		
	18"	18"				

Square Louver Face Ceiling Diffusers Model EP5000-6 - T-Bar Lay-In

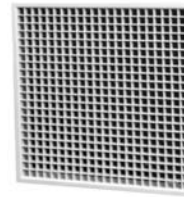
Model	Available Neck		Available Neck	Air Pattern	Available Finishes	Available Options	
5000-6 - T-bar Lay-in	18"	18"	24" x 24"	Standard	Standard	EP-OBDS	Oppose Blade Damper - Polymer
				S4-Sq - 4-Way	01 - White		



➔ Engineered Polymer Cube Core ➔ Eggcrate Return/Exhaust ➔ Series EPCC5

Product Details

- ★ Attractive 1/2" x 1/2" grid by 1/2" deep design
- ★ Available for non-ducted applications
- ★ Can be used with an aluminum transition for use with round duct.

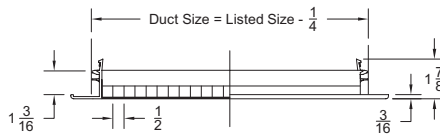


Model EPCC5 Shown

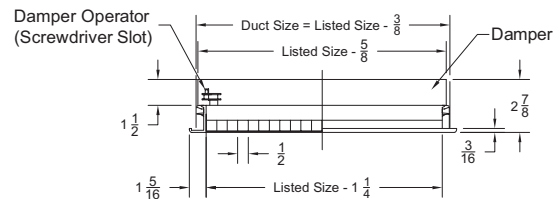
Standard Finish: 01 White

Dimensions are in inches

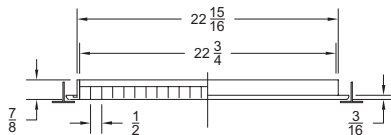
Engineered Polymer Grilles and Registers - Eggcrate Return/Exhaust Series EP-CC5 - 1/2" x 1/2" x 1/2" - Surface Mount
Model EP-CC5-1 - *Cube Core Grille*



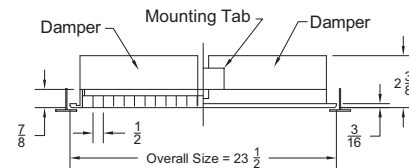
Engineered Polymer Cube Core Registers - Eggcrate Return/Exhaust Series EP-CC5 - 1/2" x 1/2" x 1/2" - Surface Mount
Model EP-CC5D-1 - *Damper*



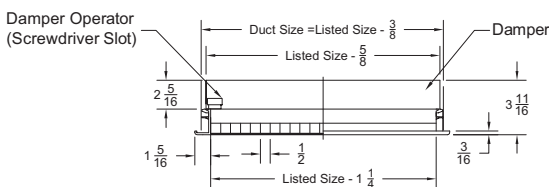
Engineered Polymer Cube Core Grille - Eggcrate Return/Exhaust Series EP-CC5 - 1/2" x 1/2" x 1/2" - T-bar Lay-in
Model EP-CC5-6



Engineered Polymer Cube Core Registers - Eggcrate Return/Exhaust Series EP-CC5 - 1/2" x 1/2" x 1/2" - T-bar Lay-in
Model EP-CC5D-6 - *Damper*



Engineered Polymer Cube Core Grille - Eggcrate Return/Exhaust Series EP-CC5DP-1 - 1/2" x 1/2" x 1/2" - Surface Mount
Model EP-CC5DP-1 - *Polymer Damper*

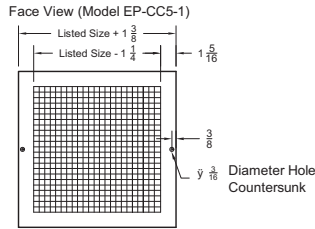


Engineered Polymer Products

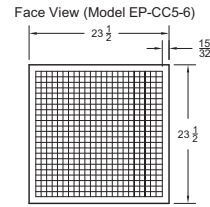


EPP

Engineered Polymer Grilles and Registers - Eggcrate Return/Exhaust
Series EP-CC5 - 1/2" x 1/2" x 1/2" - Surface Mount
 Model EP-CC5-1 - *Cube Core Grille*



Engineered Polymer Cube Core Registers - Eggcrate Return/Exhaust
Series EP-CC5 - 1/2" x 1/2" x 1/2" - Surface Mount
 Model EP-CC5D-1 - *Damper*



1. Available Finishes	2. Available Accessories	3. Construction Details
Standard Finish: 01 White	Shipped Unattached EP-0BD - Polymer Opposed Blade Damper (For Grille)	<ul style="list-style-type: none"> Sizes Available only as listed White finish is through-color Matte white (not Painted)

Series EPCC5 - Performance

Models EPCC5 (-1, -6)

Flow Rate CFM (Ls)		Size Inches (mm)					
		6" x 6" (150 x 150)	8" x 8" (200 x 200)	10" x 10" (250 x 250)	12" x 6" (300 x 150)	12" x 12" (300 x 300)	23" x 23" (584 x 584)
52 (25)	Ps Inches (Pa) NC	0.008 (2) -	0.004 (1) -				
106 (50)	Ps Inches (Pa) NC	0.032 (8) -	0.008 (2) -	0.004 (1) -	0.008 (2) -		
212 (100)	Ps Inches (Pa) NC	0.125 (32) 28	0.036 (9) 18	0.016 (4) -	0.028 (7) -	0.008 (2) -	
318 (150)	Ps Inches (Pa) NC		0.060 (15) 28	0.032 (8) 18	0.060 (15) 23	0.016 (4) -	
424 (200)	Ps Inches (Pa) NC		0.161 (40) 36	0.060 (15) 25	0.108 (27) 33	0.028 (7) 15	.002 (.5) -
530 (250)	Ps Inches (Pa) NC		0.241 (60) 42	0.088 (22) 30	0.173 (43) 37	0.044 (11) 22	.004 (1) -
636 (300)	Ps Inches (Pa) NC			0.120 (30) 35	0.241 (62) 42	0.052 (13) 27	.006 (1.5) -
848 (400)	Ps Inches (Pa) NC			0.241 (60) 43	* -	0.108 (27) 35	0.10 (2.5) -
1060 (500)	Ps Inches (Pa) NC					0.160 (40) 41	.016 (4) -

See Page EPP-306 for Performance Notes



Series EPCC5 - Performance Notes:

Series EPCC5 - Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991
Throw distances are rounded to the nearest foot or one half meter.
Throws are based on 4-way air pattern and terminal velocities for a maximum throw of 80 fpm (0.4 M/s) and for a minimum throw of 120 fpm (0.61 M/s).

NC is based on 10 dB room absorption.

Pt is the total pressure drop across the diffuser in inches W.G. (Pa) = Ps + Pv.

Ps is static pressure in inches W.G.

Neck sizes are nominal in inches and millimeters.

For directional throws, reduce the CFM (Ls) by the following percentages:

3-Way - Reduce airflow by 25%; all other values unchanged.

2-Way - Reduce airflow by 50%; all other values unchanged.

1-Way - Reduce airflow by 75%; all other values unchanged.

Definition of Units:

Ls	- Liters per second
CFM	- Ls/0.4719
Pa	- Pascal
Inch of W.G.	- Pa/249
M/s	- Meters per second
fpm	- Feet per minute (M/s x 197)
mm	- millimeters
mm	- Inches x 25.4
*	- Pressure drop less than 0.001
---	- NC less than 15

Correction factors for 45° blade deflection:

Throw x 0.55 NC + 8 dB Ps x 3.1

Series EPCC5 - Specifications

Return/Exhaust Grilles - Engineered Polymer

EP-CC5-1 - *Surface Mounted*

EP-CC5-6 - *T-bar Lay-in*

Air Inlets shall be model EP-CC5 provided by METALAIR. Units shall have a 1/2" x 1/2" x 1/2" cubed core. Units shall be return or exhaust grilles constructed of an engineered polymer single piece molded border. The units shall be the size and quantity as outline in the plans and specifications.

Units shall be constructed entirely of rigid injection molded engineered polymer. The material shall be ultraviolet light stable and shall not become brittle with age. Units shall allow cleaning with commercial solvents, in a dishwasher, or steam cleaned without damaging the product.

The engineered polymer shall be tested in an independent laboratory. Units shall be NFPA standard 90A and 90B compliant. Units shall also be UL 94V rated with a flame spread of 0 and a smoke development rating of 35.

Units shall be designed to integrate into the specified ceiling system or wall mounting application.

Optional Dampers

Engineered Polymer opposed blade dampers shall be provided. Damper shall be lever operated through the face of the diffuser.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.



Series EPCC5 - Model Specification Guide

Return Exhaust - Cubed Core - Sidewall/Ceiling

Model EPCC5-1 - 1/2" x 1/2" x 1/2" Cube Core

Model	Available Neck		Available Finishes	Available Options	
EP-CC5-1 - 1/2" x 1/2" x 1/2" Cube Core	6"	6"	Standard	EP-OBD	Opposed Blade Damper
	8"	8"	01 - White		
	12"	12"			
	12"	6"			
	12"	12"			
	22"	22"			

Model EPCC5-6 - Core Only T-bar Lay-in

Model	Available Neck		Module	Available Finishes	Available Options	
EP-CC5-6- 1/2" x 1/2" x 1/2" Cube Core	22"	22"	24" x 24"	Standard	EP-OBD	Opposed Blade Damper
				01 - White		



↳ Louver Face Return/Exhaust ↳ Series EPRH

Product Details

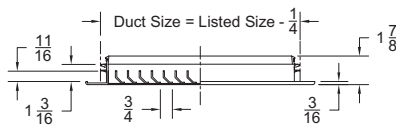
- ✪ Fixed 45° angled deflecting blades provide a vision obscured appearance
- ✪ Horizontal 45° angled fixed vanes are on 3/4" centers



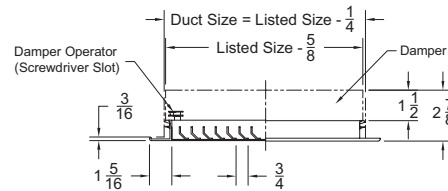
Model EPRH Shown
Standard Finish: 01 White

Dimensions are in inches

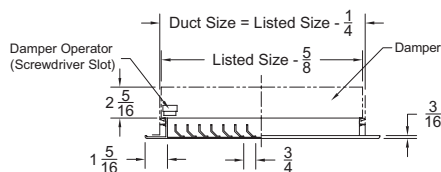
Engineered Polymer Grille - Louver Face Return/Exhaust
Series EPRH - Surface Mount
Model EPRH-1 - 45° Fixed Blades



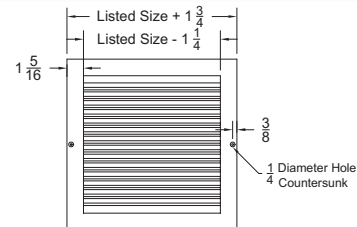
Engineered Polymer Register with Aluminum Damper - Louver Face Return/Exhaust
Series EPRH - Surface Mount
Model EPRHD-1 - 45° Fixed Blades



Engineered Polymer Grille with Polymer Damper - Louver Face Return/Exhaust
Series EPRHDP-1 - Surface Mount
Model EPRHDP-1 - 45° Fixed Blades



Engineered Polymer Grilles and Registers - Louver Face Return/Exhaust
Series EPRH - Face View (All models)



1. Available Finishes	2. Available Accessories	3. Construction Details
<p>Standard Finish: 01 White</p>	<p>EP-0BD - Polymer Opposed Blade Damper (For Grille)</p>	<ul style="list-style-type: none"> Sizes Available only as listed White finish is through-color Matte white (not Painted)

Engineered Polymer Products



EPP

Series EPCC5 - Performance

Model EPRH-1

Flow Rate CFM (Ls)		Size Inches (mm)				
		6" x 6" (150 x 150)	8" x 8" (200 x 200)	10" x 10" (250 x 250)	12" x 6" (300 x 150)	12" x 12" (300 x 300)
52	Ps Inches (Pa)	0.028 (7)	0.008 (2)	*	0.004 (1)	
(25)	NC	-	-	-	-	
106	Ps Inches (Pa)	0.108 (27)	0.040 (10)	0.016 (4)	0.024 (6)	
(50)	NC	20	-	-	-	
212	Ps Inches (Pa)		0.140 (35)	0.060 (15)	0.108 (27)	0.028 (7)
(100)	NC		-	-	-	-
318	Ps Inches (Pa)			0.120 (30)	0.221 (55)	0.060 (15)
(150)	NC			27	34	19
424	Ps Inches (Pa)			0.060 (15)	0.402 (100)	0.100 (25)
(200)	NC			25	42	27
530	Ps Inches (Pa)					0.153 (38)
(250)	NC					32
636	Ps Inches (Pa)					0.201 (50)
(300)	NC					36

Series EPRH - Performance Notes:

All data are tested in accordance with ANSI/ASHRAE 70-1991
 Throw distances are rounded to the nearest foot or one half meter.
 Throws are based on 4-way air pattern and terminal velocities for a
 maximum throw of 80 fpm (0.4 M/s) and for a minimum throw of 120
 fpm (0.61 M/s).

NC is based on 10 dB room absorption.

Pt is the total pressure drop across the diffuser in inches W.G. (Pa) = Ps + Pv.

Ps is static pressure in inches W.G.

Neck sizes are nominal in inches and millimeters.

For directional throws, reduce the CFM (Ls) by the following percentages:

3-Way - Reduce airflow by 25%; all other values unchanged.

2-Way - Reduce airflow by 50%; all other values unchanged.

1-Way - Reduce airflow by 75%; all other values unchanged.

Definition of Units:

Ls - Liters per second

CFM - Ls/0.4719

Pa - Pascal

Inch of W.G. - Pa/249

M/s - Meters per second

fpm - Feet per minute (M/s x 197)

mm - millimeters

mm - Inches x 25.4

* - Pressure drop less than 0.001

— - NC less than 15

Correction factors for 45° blade deflection:

Throw x 0.55 NC + 8 dB Ps x 3.1



Series EP-RH - Specifications

Return Grilles - Engineered Polymer

EPRH-1 – *Surface Mounted*

Air Inlets shall be model EP-RH provided by METALAIRE. Units shall be return or exhaust grilles constructed of an engineered polymer single piece molded border and a single set of fixed deflection blades. The units shall be the size and quantity as outline in the plans and specifications.

Units shall be constructed entirely of rigid injection molded engineered polymer. The material shall be ultraviolet light stable and shall not become brittle with age. Units shall allow cleaning with commercial solvents, in a dishwasher, or steam cleaned without damaging the product.

The engineered polymer shall be tested in an independent laboratory. Units shall be NFPA standard 90A and 90B compliant. Units shall also be UL 94V rated with a flame spread of 0 and a smoke development rating of 35.

Units shall be designed to integrate into the specified ceiling system.

Performance Specification

The manufacturer shall provide published performance data. Data shall be tested in accordance to ANSI/ASHRAE Standard 70-1991.

Optional Dampers

Engineered Polymer opposed blade dampers shall be provided. Damper shall be lever operated through the face of the diffuser.

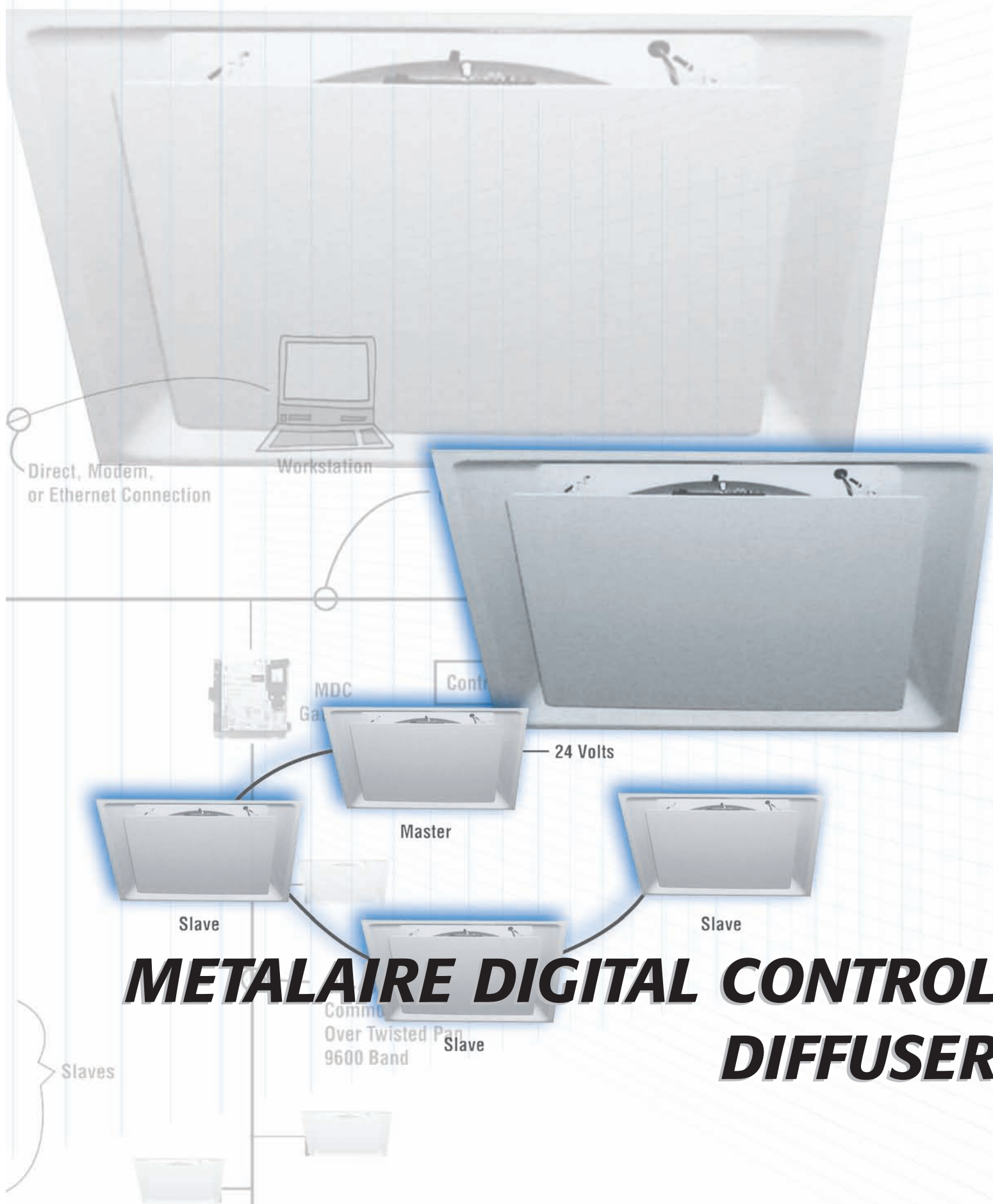


Series EP-RH - Model Specification Guide

Sidewall Return Grille - Horizontal Blades Model EP-RH-1 - Louver Grille for Surface Mounting

Model	Available Neck		Available Finishes	Available Options	
EP-RH-1	6"	6"	Standard	EP-OBD	Opposed Blade Damper
	8"	8"	01 - White		
	10"	10"			
	12"	6"			
	12"	12"			





Direct, Modem,
or Ethernet Connection

Workstation

MDC

Contr

24 Volts

Master

Slave

Slave

METALAIRE DIGITAL CONTROL DIFFUSER

Comm
Over Twisted Pair
9600 Band
Slave

Slaves

METALAIRE Digital Control Diffuser - Introduction

The METALAIRE MDC diffusers is engineered to provide a high induction/high performance diffuser with microprocessor based, direct digital control.

The diffuser maximizes comfort in both heating and cooling conditions. The MDC provides all the power you would expect from a VAV box controller with the added advantage of providing superior room air induction and higher levels of occupant comfort. The MDC also allows for smaller zone design leading directly to happier building occupants and increased office productivity.

The power of the MDC Diffuser is not only the on-board electronics but also the high induction characteristic of the unit. As the amount of required air is reduced, the damper of the MDC begins to close. This increases the discharge velocity of the supply air leading directly to increased air throw distance and total air induction. Higher induction means better comfort.

Each master unit can control up to three slave units giving the HVAC designer a wide range of options when laying out air distribution zones in a building. A highly reliable wax actuator for precision control powers the MDC damper. The wax actuator is maintenance free and provides ultra quiet operation.

The MDC can be setup and operated using the METALAIRE HHC – Hand Held Control Unit. The handheld remote uses bi-directional infrared (IR) communications and supports two modes: user and installer. In the user mode, the room occupant can use the HHC to adjust the heating and cooling set point. In the password protected installer mode, the HHC has the power to fully configure and control the diffuser. Built into the HHC

are easy to follow labels for the installer and building operator.

The diffuser has on-board intelligence that monitors the room temperature, the supply air temperatures and varies the volume of supply air to provide the highest level of occupant comfort.

The MDC diffuser has the built in ability to function as a stand-alone device or expand to integrate into a large building control system communicating over a wide area network. A network of MDC diffusers can communicate by BACnet MS/TP with the MDC gateway. The diffuser can talk to any building automation control systems using BACnet, Modbus, Lonworks, or Johnson N2. The MDC diffuser is support with high-powered system tools including the METALAIRE Gateway and the METALAIRE Portal Device.

The MDC Diffuser is your solution to improved comfort and productivity whether your building requires one diffuser to take care of a problem zone or multiple diffusers to provide comfort to a worldwide operation.

Another advantage of the MDC diffuser is that the room sensor and the associated installation costs can be eliminated. The diffuser has a built in sensor that accurately measures room temperature.



MDC Features

Superior personal comfort

The main function of an air distribution system is to provide comfort to a building's occupants. The MDC is an economical solution to maximize personal comfort by allowing smaller zone control. MDC diffuser installed in an individual's office gives the occupant the ability to set the temperature for both heating and cooling comfort.

This diffuser is also an excellent choice for large open office areas. By using a master unit along with 3 slave diffusers, the MDC can cut large work spaces into small occupant zones maximizes comfort and increasing productivity.

Flexibility

The MDC has the flexibility to operate in applications ranging from office buildings, retail stores, schools, hospitals, and conference centers. Flexibility built into the MDC allows the diffuser to be applied to a wide range of applications providing superior control and occupant comfort.

Expandability

The MDC has the power and expandability to operate stand-alone or communicate on a wide area network. As a native BACnet device, the MDC can start as a stand-alone unit to control the temperature in a single zone. By adding a communication link, the expansion of the system is unlimited.

Interoperability

All MDC diffusers are native BACnet devices and communicate using MS/TP protocol. These devices can communicate to any BACnet system regardless of system manufacturer giving building owners and operators the freedom to select and change building controls even after the system is installed. Using the METALAIRE Portal, the MDC diffusers can be set-up to communicate with Modbus or Johnson Control's N2 protocol. With the addition of a Serial LonTalk Adapter, the MDC can be integrated into a Lon system.

Ease of Installation

Installation of the MDC is quick and easy. In the basic configuration, the MDC only requires a 24 power connection and the unit will begin operation as a stand alone device. Add a twisted pair connection and you now can communicate over a multitude of building automation systems.

Ease of Start-up, Operation, and Trouble Shooting

The MDC is easy to configure using the HHC hand held control. The HHC uploads all the operation functions for the MDC operation. Built into each controller are LEDs designed to make trouble shooting easy. Installers and building operators from the floor can see the LEDs indicating normal operation, transferring firmware, auto-detecting baud rate, hardware failure, manual mode, and firmware error. Indicators also show TX transmit and RX receive displays.

Economic Alternative to a conventional VAV system

When looking at the MDC diffuser, one must consider the cost compared to a conventional system. The MDC first costs are comparable to a conventional system when the entire installation labor and control wiring is considered.



➔ Digital Controlled Diffuser ➔ Series MDC ➔ Steel

Product Details

✦ Superior Personal Comfort

The main function of an air distribution system is to provide comfort to a building's occupants. The MDC® is an economical solution to maximize personal comfort by allowing smaller zone control. An MDC® diffuser installed in an individual's office gives the occupant the ability to set the temperature for both heating and cooling comfort

✦ Flexibility

The MDC® has the flexibility to operate in applications ranging from office buildings, retail stores, schools, hospitals, and conference centers. Flexibility built into the MDC® allows the diffuser to be applied to a wide range of applications providing superior control and occupant comfort

✦ Interoperability

All MDC® diffusers are native BACnet devices and communicate using MS/TP protocol. These devices can communicate to any BACnet system regardless of system manufacturer giving building owners and operators the freedom to select and change building controls even after the system is installed. Using the METALAIRE® Portal, the MDC® diffusers can be set-up to communicate with Modbus or Johnson Control's N2 protocol. With the addition of a Serial LonTalk adapter, the MDC® can be integrated into a Lon system

✦ Ease of Installation

Installation of the MDC® is quick and easy. In the basic configuration, the MDC® only requires a 24 power connection and the unit will begin operation as a stand alone device. Add a twisted pair connection and you now can communicate over a multitude of building automation systems

✦ Ease of Start-up, Operation, and Trouble Shooting

The MDC® is easy to configure using the HHC hand held control. The HHC uploads all the operation functions for the MDC® operation. Built into each controller are LEDs designed to make trouble shooting easy. Installers and building operators from the floor can view the LEDs indicating normal operation, transferring firmware, auto-detecting baud rate, hardware failure, manual mode, and firmware error. Indicators also show TX transmit and RX receive displays

✦ Economic Alternative to a Conventional VAV System

When looking at the MDC® diffuser, one must consider the cost compared to a conventional system. The initial cost of an MDC® system is comparable to a conventional system when the entire installation, labor and control wiring is considered



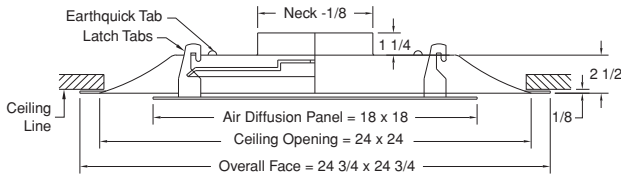
Model MDC Shown

Standard Finish: 01 White

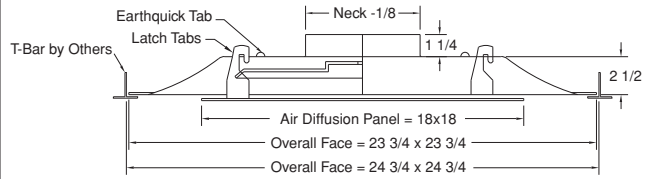
3/2006 MDC - METALAIRE Digital Control Diffuser

Dimensions are in inches

Digital Controlled Diffuser - Steel 18" x 18" Square Bottom Panel Model MDC-1 - Surface Mount



Digital Controlled Diffuser - Steel 18" x 18" Square Bottom Panel Model MDC-6 - T-bar Lay-in



1. Available Finishes	2. Available Accessories	3. Available Options	4. Construction Details
Standard Finish: 01 White	HHC - Hand held controller MDC-G - MDC Gateway	120/24 - Volt Transformer 240/24 - Volt Transformer 277/24 - Volt Transformer 120/277/24 - Dual Voltage Transformer	<ul style="list-style-type: none"> MDC diffuser is shipped with all components and wiring harnesses required for installation Requires the additional of the HHC hand held remote to set-up and operate the MDC Diffusers

Model MDC - Performance

	Damper Percent Open		20	30	40	50	60	70	80	90	100
			Inlet Static Pressure 0.1	Airflow Rate, CFM Velocity Pressure, in. w.c. Total Pressure, in. w.c. NC Throw	45 0.003 0.103 <15 1-2-4	60 0.006 0.106 <15 1-2-4	75 0.009 0.109 16 2-2-5	85 0.012 0.112 16 2-2-5	95 0.015 0.115 17 2-2-5	105 0.018 0.118 18 2-3-5	115 0.021 0.121 18 2-3-5
6"	Inlet Static Pressure 0.2	Airflow Rate, CFM Velocity Pressure, in. w.c. Total Pressure, in. w.c. NC Throw	80 0.010 0.210 20 2-4-6	100 0.016 0.216 21 2-4-6	120 0.023 0.223 22 3-4-7	135 0.029 0.229 22 3-4-7	150 0.036 0.236 23 3-4-8	165 0.044 0.244 24 3-4-8	180 0.052 0.252 24 3-4-8	190 0.058 0.258 24 3-4-8	205 0.068 0.268 25 3-4-8
	Inlet Static Pressure 0.3	Airflow Rate, CFM Velocity Pressure, in. w.c. Total Pressure, in. w.c. NC Throw	90 0.013 0.313 23 3-4-6	115 0.021 0.321 25 3-4-7	140 0.032 0.332 26 3-4-8	160 0.041 0.341 27 3-5-8	185 0.055 0.355 28 3-5-9	205 0.068 0.368 29 3-5-9	220 0.078 0.378 29 3-5-10	240 0.093 0.393 30 3-5-10	255 0.105 0.405 30 3-5-10
	Inlet Static Pressure 0.4	Airflow Rate, CFM Velocity Pressure, in. w.c. Total Pressure, in. w.c. NC Throw	105 0.018 0.418 25 3-5-7	140 0.032 0.432 27 3-5-8	165 0.044 0.444 29 4-5-8	195 0.061 0.461 31 4-6-9	215 0.075 0.475 32 4-6-9	240 0.093 0.493 33 4-6-10	265 0.114 0.514 34 4-6-10	285 0.131 0.531 35 4-6-11	305 0.150 0.550 36 4-6-11
	Inlet Static Pressure 0.5	Airflow Rate, CFM Velocity Pressure, in. w.c. Total Pressure, in. w.c. NC Throw	120 0.023 0.523 30 4-5-7	155 0.039 0.539 32 4-6-8	190 0.058 0.558 34 4-6-9	220 0.078 0.578 35 4-6-9	245 0.097 0.597 36 4-6-10	275 0.122 0.622 37 4-7-11	300 0.146 0.646 37 5-7-11	320 0.166 0.666 38 5-7-11	345 0.192 0.692 38 5-7-12

	Damper Percent Open		20	30	40	50	60	70	80	90	100
			Inlet Static Pressure 0.1	Airflow Rate, CFM Velocity Pressure, in. w.c. Total Pressure, in. w.c. NC Throw	50 0.001 0.101 16 1-2-4	65 0.002 0.102 16 1-2-4	85 0.004 0.104 17 2-2-5	100 0.005 0.105 17 2-2-5	115 0.007 0.107 18 2-3-5	130 0.009 0.109 18 2-3-5	145 0.011 0.111 19 2-3-6
8"	Inlet Static Pressure 0.2	Airflow Rate, CFM Velocity Pressure, in. w.c. Total Pressure, in. w.c. NC Throw	80 0.003 0.203 25 2-3-6	110 0.006 0.206 26 2-4-7	135 0.009 0.209 26 2-4-7	155 0.012 0.212 27 3-4-8	180 0.017 0.217 27 3-4-8	200 0.020 0.220 27 3-4-8	220 0.025 0.225 28 3-4-9	235 0.028 0.228 28 3-4-9	255 0.033 0.233 28 3-4-9
	Inlet Static Pressure 0.3	Airflow Rate, CFM Velocity Pressure, in. w.c. Total Pressure, in. w.c. NC Throw	95 0.005 0.305 29 2-4-6	130 0.009 0.309 30 3-4-7	160 0.013 0.313 31 3-4-8	190 0.018 0.318 31 3-5-9	220 0.025 0.325 32 3-5-9	245 0.031 0.331 32 3-5-10	270 0.037 0.337 33 4-5-10	295 0.045 0.345 33 4-5-11	320 0.052 0.352 33 4-6-11
	Inlet Static Pressure 0.4	Airflow Rate, CFM Velocity Pressure, in. w.c. Total Pressure, in. w.c. NC Throw	120 0.007 0.407 32 3-5-7	160 0.013 0.413 33 3-5-8	195 0.019 0.419 34 4-5-9	230 0.027 0.427 35 4-6-10	265 0.036 0.436 36 4-6-10	295 0.045 0.445 37 4-6-11	325 0.054 0.454 38 4-6-11	355 0.064 0.464 38 4-7-12	385 0.076 0.476 39 4-7-12
	Inlet Static Pressure 0.5	Airflow Rate, CFM Velocity Pressure, in. w.c. Total Pressure, in. w.c. NC Throw	125 0.008 0.508 35 3-5-7	175 0.016 0.516 36 4-6-8	220 0.025 0.525 38 4-6-9	260 0.035 0.535 38 4-6-10	300 0.046 0.546 39 5-7-11	335 0.057 0.557 39 5-7-12	370 0.070 0.570 40 5-7-12	405 0.084 0.584 40 5-7-13	440 0.099 0.599 40 5-8-13



For more product information visit us at www.metalaire.com



METALAIRE Digital Control Diffuser



MDC

MDC - METALAIRE Digital Control Diffuser 3/2006

Model MDC - Performance

Damper Percent Open		20	30	40	50	60	70	80	90	100	
10"	Inlet Static Pressure 0.1	Airflow Rate, CFM Velocity Pressure, in. w.c. Total Pressure, in. w.c. NC Throw	50 0.001 0.101 17 1-2-4	75 0.001 0.101 18 1-2-4	95 0.002 0.102 19 2-2-5	120 0.003 0.103 19 2-3-5	140 0.004 0.104 20 2-3-6	160 0.005 0.105 21 2-3-6	180 0.007 0.107 21 2-3-6	200 0.008 0.108 22 2-3-7	220 0.010 0.110 22 2-3-7
	Inlet Static Pressure 0.2	Airflow Rate, CFM Velocity Pressure, in. w.c. Total Pressure, in. w.c. NC Throw	80 0.001 0.201 30 2-3-6	115 0.003 0.203 30 2-3-7	145 0.004 0.204 30 2-4-7	180 0.007 0.207 31 3-4-8	210 0.009 0.209 31 3-4-9	245 0.013 0.213 31 3-5-9	275 0.016 0.216 31 3-5-10	305 0.019 0.219 32 3-5-10	335 0.024 0.224 32 4-5-11
	Inlet Static Pressure 0.3	Airflow Rate, CFM Velocity Pressure, in. w.c. Total Pressure, in. w.c. NC Throw	105 0.002 0.302 35 2-4-7	145 0.004 0.304 35 3-4-8	190 0.008 0.308 36 3-5-9	225 0.011 0.311 36 3-5-10	265 0.015 0.315 36 4-5-10	305 0.019 0.319 36 4-6-11	340 0.024 0.324 36 4-6-12	375 0.029 0.329 37 4-6-12	410 0.035 0.335 37 4-7-13
	Inlet Static Pressure 0.4	Airflow Rate, CFM Velocity Pressure, in. w.c. Total Pressure, in. w.c. NC Throw	130 0.004 0.404 39 3-5-7	185 0.007 0.407 40 4-5-9	235 0.012 0.412 40 4-6-10	280 0.016 0.416 41 4-6-11	325 0.022 0.422 41 4-7-11	370 0.029 0.429 41 5-7-12	415 0.036 0.436 42 5-7-13	460 0.044 0.444 42 5-8-14	500 0.052 0.452 42 5-8-14
	Inlet Static Pressure 0.5	Airflow Rate, CFM Velocity Pressure, in. w.c. Total Pressure, in. w.c. NC Throw	135 0.004 0.504 41 3-5-7	195 0.008 0.508 41 4-6-9	205 0.013 0.513 41 4-6-10	305 0.019 0.519 42 5-7-11	360 0.027 0.527 42 5-7-12	410 0.035 0.535 42 5-8-13	460 0.044 0.544 42 5-8-14	510 0.055 0.555 43 6-9-14	560 0.066 0.566 43 6-9-15

Damper Percent Open		20	30	40	50	60	70	80	90	100	
12"	Inlet Static Pressure 0.1	Airflow Rate, CFM Velocity Pressure, in. w.c. Total Pressure, in. w.c. NC Throw	50 0.000 0.100 19 1-2-3	75 0.001 0.101 20 1-2-4	100 0.001 0.101 20 2-2-5	125 0.002 0.102 21 2-3-5	150 0.002 0.102 22 2-3-6	170 0.003 0.103 23 2-3-6	195 0.004 0.104 23 2-3-6	220 0.005 0.105 24 2-3-7	240 0.006 0.106 25 2-3-7
	Inlet Static Pressure 0.2	Airflow Rate, CFM Velocity Pressure, in. w.c. Total Pressure, in. w.c. NC Throw	75 0.001 0.201 29 2-2-5	110 0.001 0.201 29 2-3-6	145 0.002 0.202 30 2-3-7	185 0.003 0.203 31 2-4-7	220 0.005 0.205 31 3-4-8	260 0.007 0.207 31 3-4-9	295 0.009 0.209 32 3-5-9	330 0.011 0.211 32 3-5-10	370 0.014 0.214 33 4-5-11
	Inlet Static Pressure 0.3	Airflow Rate, CFM Velocity Pressure, in. w.c. Total Pressure, in. w.c. NC Throw	95 0.001 0.301 35 2-3-6	145 0.002 0.302 36 3-4-8	190 0.004 0.304 36 3-4-9	235 0.006 0.306 37 3-5-10	280 0.008 0.308 37 3-5-10	330 0.011 0.311 37 4-6-11	375 0.014 0.314 38 4-6-12	420 0.018 0.318 38 4-6-13	465 0.022 0.322 38 4-7-13
	Inlet Static Pressure 0.4	Airflow Rate, CFM Velocity Pressure, in. w.c. Total Pressure, in. w.c. NC Throw	115 0.001 0.401 38 2-4-7	170 0.003 0.403 39 3-4-8	225 0.005 0.405 40 3-5-10	280 0.008 0.408 41 4-6-11	335 0.011 0.411 41 4-6-12	390 0.015 0.415 42 4-7-13	440 0.020 0.420 42 5-7-13	495 0.025 0.425 43 5-7-14	550 0.031 0.431 43 5-8-15
	Inlet Static Pressure 0.5	Airflow Rate, CFM Velocity Pressure, in. w.c. Total Pressure, in. w.c. NC Throw	125 0.002 0.502 41 3-4-7	190 0.004 0.504 42 3-5-9	255 0.007 0.507 42 4-6-10	315 0.010 0.510 43 4-6-11	380 0.015 0.515 43 5-7-12	440 0.020 0.520 43 5-8-13	505 0.026 0.526 44 5-8-14	565 0.032 0.532 44 6-9-15	630 0.040 0.540 44 6-9-16

Damper Percent Open		20	30	40	50	60	70	80	90	100	
14"	Inlet Static Pressure 0.1	Airflow Rate, CFM Velocity Pressure, in. w.c. Total Pressure, in. w.c. NC Throw	50 0.000 0.100 21 1-1-3	75 0.000 0.100 22 1-2-4	105 0.001 0.101 23 1-2-4	130 0.001 0.101 24 2-2-5	160 0.001 0.101 25 2-3-5	190 0.002 0.102 25 2-3-6	220 0.003 0.103 26 2-3-7	250 0.003 0.103 27 2-3-7	280 0.004 0.104 27 2-4-7
	Inlet Static Pressure 0.2	Airflow Rate, CFM Velocity Pressure, in. w.c. Total Pressure, in. w.c. NC Throw	75 0.000 0.200 29 1-2-4	115 0.001 0.201 30 2-3-6	155 0.001 0.201 31 2-3-6	195 0.002 0.202 31 2-4-7	235 0.003 0.203 32 3-4-7	275 0.004 0.204 33 3-4-9	315 0.005 0.205 33 3-5-9	355 0.007 0.207 34 3-5-10	400 0.009 0.209 34 4-5-11
	Inlet Static Pressure 0.3	Airflow Rate, CFM Velocity Pressure, in. w.c. Total Pressure, in. w.c. NC Throw	90 0.000 0.300 36 2-3-5	140 0.001 0.301 37 2-3-7	190 0.002 0.302 37 3-4-8	240 0.003 0.303 38 3-4-9	290 0.005 0.305 38 3-5-10	345 0.006 0.306 38 4-5-11	395 0.009 0.309 39 4-6-12	445 0.011 0.311 39 4-6-12	500 0.014 0.314 39 4-7-13
	Inlet Static Pressure 0.4	Airflow Rate, CFM Velocity Pressure, in. w.c. Total Pressure, in. w.c. NC Throw	105 0.001 0.401 38 2-3-6	165 0.001 0.401 39 3-4-8	225 0.003 0.403 40 3-5-9	285 0.004 0.404 40 4-5-11	345 0.006 0.406 41 4-6-12	405 0.009 0.409 42 4-6-13	465 0.012 0.412 42 5-7-14	530 0.015 0.415 43 5-7-15	590 0.019 0.419 43 5-8-15
	Inlet Static Pressure 0.5	Airflow Rate, CFM Velocity Pressure, in. w.c. Total Pressure, in. w.c. NC Throw	125 0.001 0.501 42 2-4-7	190 0.002 0.502 42 3-5-9	255 0.004 0.504 43 4-5-10	325 0.006 0.506 44 4-6-11	390 0.008 0.508 44 4-7-13	460 0.012 0.512 45 5-7-14	530 0.015 0.515 45 5-8-15	600 0.020 0.520 46 6-8-16	670 0.024 0.524 46 6-9-16

METALAIRE Digital Control Diffuser



MDC

Model MDC - Application Guide

How the MDC Controls temperature to maximize room comfort

The MDC measure both the supply and room air temperature. The DDC controller reacts to meet the requested room set point by either increasing or decreasing the volume of air through the diffuser. The MDC can be set for both maximum and minimum flow.

How the damper is controlled

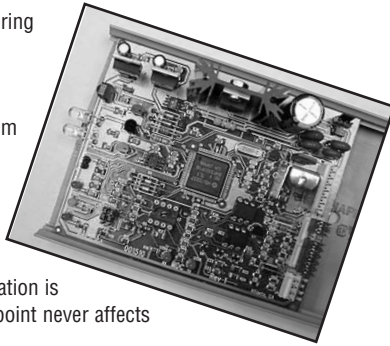
- 1) In COOL mode, the damper is positioned using proportional/integral stepped control. If the Room Temp does not reach cool set point (CSP) within (1) minute, the damper position is bumped to the next proportional band and control of integral timer is reset. Both minimum and maximum flow can be set.
- 2) In HEAT mode, the damper is positioned using staged proportional/integral control. Both minimum and maximum flow can be set.
- 3) Anytime a minimum or maximum set point is requested, the actuator is set to the appropriate maximum or minimum position.

Slave actuator synchronization:

The MDC has a built-in function that allows for the synchronization between a master and slave unit. When a no-flow condition is detected, the master and slave will continue control for 5 minutes of no-flow. If a no-flow condition is detected for more than 5 minutes, then the actuator for both the master and slave are de-energize allowing for both units to go full open and resetting the start point between the master and slave. To allow the system to synchronize requires the system to shut down for a minimum of 15 minutes each day. It is recommended that this occur during un-occupied periods.

Changing the set points:

The MDC will maintain a minimum of 2°F between the Cooling and Heating set points. If the COOL set point is lowered, if the difference is less than 2°F, the heating setpoint will be lowered automatically until the 2°F separation is reached. Raising the COOL set point never affects the HEAT set point.



If the heating set point is raised, if the difference between the HEAT and COOL is less than 2°F, the cooling set point will automatically be raised until the 2°F separation is reached. Lowering the HEAT set point never affects the COOL set point.

Units of Measure

The MDC can be setup to show either degrees °C or °F

Details on Set Points

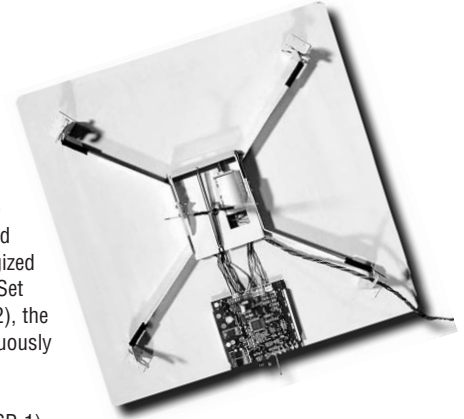
All set points (Analog Values - AVS) and Binary Value (BVS) °F or °C are stored in EEPROM. The set points are limited to the following ranges:

Description	Default Set Point Values	Range
Cooling Set Point	CSP = 76°F	70°F (21.0°C) – 80°F (26.5°C)
Heating Set Point	HSP = 70°F	68°F (20.0°C) – 78°F (25.5°C)

Auxiliary heat rules

Built into every MDC is the ability to operate auxiliary heat such as baseboard or heating panels using a 24-volt on/off contactor built into the controller. Rules which apply to remote heaters

- 1) The Auxiliary Heat output is either ON or OFF
- 2) The Auxiliary Heat contactor ignores the HEAT/COOL mode and is continuously energized if the Room Present Set PointTemp <= (PSP-2), the ASH output is continuously energized.
- 3) If Room Temp >= (PSP-1), ASH output is de-energized.
- 4) If Room Temp is between (PSP-2) and (PSP-1), keep last state (3° dead band).



Duct heater rules

The MDC can control electric duct heat installed up stream from the diffuser.

- 1) The duct heater is only activated in cool mode only. It is activated at Room Temp <= (CSP-2), and de-activated at Room Temp = CSP.
- 2) Since the duct heater raises the supply temp the Cool to Heat mode can only be changed while the duct heater is OFF, or if the supply air temp exceeds 110 °F while it is ON which indicates warm air being supplied to the heater.

HEAT/COOL mode rules:

- 1) No time delays between modes.
- 2) If Supply Temp > Room Temp, HEAT mode
- 3) If Supply Temp < Room Temp, COOL mode

Setting Minimum and Maximum Flows

Set the cool and heat minimum and the cool and heat maximum using a flow hood for accurate measurement. The following are suggested steps in the balance procedure.

- 1) Set the MDC damper with the handheld to one of the manual modes, such as Cool Maximum. The damper position in percent open may be monitored with the handheld while the damper is in manual mode.
- 2) After no more than 5 minutes, measure the airflow in CFM with a calibrated flow hood.
- 3) Adjust the Cool Maximum set point in percent, up to increase airflow or down to decrease airflow in 1% increments toward the desired airflow in CFM measured with the flow hood. Then wait for damper to move into position while monitoring it with the handheld.
- 4) Measure and adjust airflow again with the flow hood until within 5 – 10% of desired setting in CFM.
- 5) Repeat this for all 4 cool and heat minimum and maximum set points.

Model MDC - Application Guide

Operation with a wall mounted Stat

The MDC has the built feature allowing the use of the METALAIRE T-Stat. Once installed and the MDC powered up, the controller will run a continuous test to determine if a wall mounted METALAIRE T-Stat is installed. (The system runs a continuous test in the event a temporary T-Stat was used and removed). If the METALAIRE T-Stat is found, the MDC will use the room temperature and set points from the T-Stat only. If the T-Stat is not located, then the MDC will use the on-board sensor to measure local room temp and set points for operation.

When adjusting the temperature offset on the METALAIRE T-Stat, the cool and heat set points in on the MDC are NOT adjusted. The temperature set points are maintained at the METALAIRE T-Stat. An offset is added or subtracted to whichever cool or heat is in use at that time. These set points when set are limited to within the range of 68°F to 80°F.

The Occupied and F or C parameters have 3 sources of data. They are the METALAIRE T-Stat, or the MDC handheld and BACnet. BACnet temperature parameters are always in Fahrenheit. The Cool Set point and Heat Set point have 2 sources of data, which are the MDC handheld and BACnet. The 2 sources of data for Room Temp are the METALAIRE T-Stat or the MDC thermistor on the PCB. This data is updated on a first come, first serve basis with only one BACnet object type for each. The last to change data is the present value.

The METALAIRE T-Stat and MDC will share the following BACnet objects.

Parameter	Logistat Basic/Plus/Pro	MDC260	BACnet Object
Room Temp.	Analog Input #16 (read only)	Room Temp (AN_2 read only)	ZT_AIS
Cool Set point	+/- (0 - 3)°F Temp Offset	Analog Value #1 (writable)	MDC_AVS
Heat Set point	+/- (0 - 3)°F Temp Offset	Analog Value #4 (writable)	MDC_AVS
Occupied	Device Variable (read only)	Binary Value #16 (read only)	BVS
°F or °C	AI #16 (Eikon metric global)	Binary Value #1 (writable)	BVS

METALAIRE HHC Hand Held Controller

The HHC is an easy to use tool to communicate directly to the MDC diffuser. The HHC is an infrared device with 2-way communication. The HHC has two modes of operation, user mode or installer mode. The user mode allows for room occupants to adjust set points, read supply air temperatures and see room air temperatures.

The installer mode converts the HHC into a setup tool and maintenance tool. The Hand Held Controller can be used to set temperatures, addresses, minimums and maximums flows. One HHC is all that is needed to set all the MDC on a project.

How to use the HHC Hand Held Controller

The HHC works by sending requests for information to the MDC. The results of each request is displayed on the 2 line by 16 character LCD located on the HHC. The first or top line is the description of the data or label.

The second or bottom line is the present data to be read or changed. An equal sign in the extreme left of the second line of the LCD denotes the process of editing data. The acknowledgement of data entry or cancellation from the HHC to the MDC is displayed on the LCD second line with "Accepted", "Cancelled", or "Invalid". The acknowledgement does not change until a command key is pressed. In this way command keys can be pressed without any changes to data to verify the present data. The data to be read or edited is as follows:

The MDC has the power to call up pre-programmed commands as well as the ability to adjust a number of set points maximizing the flexibility of the diffuser. Using either the HHC hand held controller or by plugging into the communications port on the MDC, the following Set Points can be adjusted:

Set Points

- BACnet Address
- Cooling set point
- Cool min damper position
- Cool max damper position
- Heating set point
- Heat min damper position
- Heat max damper position
- Temp Units F or C (Local)
- Room occupied/unoccupied

Commands

The MDC has a number of pre-programmed Commands. These commands can be executed either by use of the HHC Hand Held Controller or by plugging into the communication port on the MDC.

The available commands include:

- Move damper to minimum cool position
- Move damper to maximum cool position
- Move damper to minimum heat position
- Move damper to maximum heat position
- Read room temperature
- Read source temperature
- Read damper position
- Read air flow

Data Manipulation Keys:

These data manipulation keys make changing set points and passwords easier. The up and down arrow keys increase or decrease the data by a pre-set amount regardless of cursor position. The cursor on the HHC is not moved by the UP/DOWN arrow keys.

Number Keys (0-9)

Data is entered with the number keys from left to right starting with the most significant digit. The number keys may work in combination with the up and down arrow keys.

Command Keys:

1. **Accept (Enter) Keys:** When pressed after data has been changed and is valid, the modified data will be stored in eeprom as the present value.
2. **Cancel Key :** Aborts present edit session, but does not change modes. Displays original data in eeprom.
3. **Display Keys :** These display keys are only pressed once to display the result. The room temperature, supply temperature, damper position and flow are updated once every 4 seconds.



Model MDC - Application Guide

- Room or Supply Temperature** : The resolution for Supply and Room Temperature is 1 °F and for Celsius the resolution is 0.5 °C.
- Damper Position** : Damper Position is shown as percent open in 1% increments from open to close.
- Airflow** : is shown as percent flow in 20% increments or less.

Set Point Keys

Set Point keys require several screens and data entry.

Cool Set Point Key

The Cool Set Point may be set in user mode only. The range is 70°F - 80°F (21°C - 26.5°C). If an entry is out of range, invalid entry will be displayed. Rolls over to 70 when 80 is incremented and back to 70 if decremented. The default cool setpoint (CSP) is 76 °F. Key press order: CoolSetPnt, UP/DN, Accept/Cancel

Heat Set Point Key

May be set in user mode only. The range is 68°F - 78°F (20°C - 25.5°C). Rolls over to 68 when 78 is incremented and back to 68 if decremented. The default heat setpoint (HSP) is 70 °F.

Key press order: HeatSetPnt, UP/DN, Accept/Cancel

Mode Key

The mode key sets key functions for User and Install mode. Install mode will exit when the mode key is pressed again or after 15 minutes. The range for the password is 0 to 9999. When 2-New Password is selected, the old password must be entered first in order to set the new one. When in edit mode, there is nothing displayed on the data line except an '=' at the beginning of the line. The default password is 2345.

Key press order: Mode, 1/2, UP/DN, Accept/Cancel

The MDC diffusers can communicate through either the HHC Hand Held Controller or through the network communication port.

The following Set Points and Commands are accessed in the Install Mode Only



COOLMIN KEY

Sets the cool minimum damper position. A percent open is entered within the range of 0% to 30% in 1% increments. When 30% is reached, the number rolls over to 0% and back to 30% if decremented. The default cool min (CMIN) is 5% (t_unit = 73°C).

Key press order: CoolMin, UP/DN, Accept/Cancel

COOLMAX KEY

Sets the cool maximum damper position. A percent open is entered within the range of 60% to 100% in 1% increments. When 100% is reached, the number rolls over to 60% and back to 100% if decremented. The default cool max (CMAX) is 100%(t_unit = 52°C).

Key press order: CoolMax, UP/DN, Accept/Cancel

HEATMIN KEY

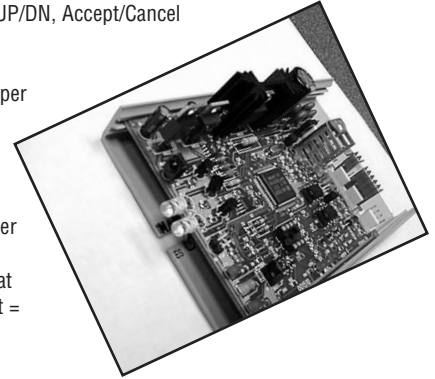
Sets the heat minimum damper position. A percent open is entered within the range of 0% to 30% in 1% increments. When 30% is reached, the number rolls over to 0% and back to 30% if decremented. The default heat

min (HMIN) is 5% (t_unit = 73°C).

Key press order: HeatMin, UP/DN, Accept/Cancel

HEATMAX KEY

Sets the heat maximum damper position. A percent flow is entered within the range of 60% to 100% in 1% increments. When 100% is reached, the number rolls over to 60% and back to 100% if decremented. The default heat max (HMAX) is 100%(t_unit = 52°C).



Command Keys:

- Accept (Enter) Keys:** When pressed after data has been changed and is valid, the modified data will be stored in eeprom as the present value.
- Cancel Key:** Aborts present edit session, but does not change modes. Displays original data in eeprom.
- Display Keys:** These display keys are only pressed once to display the result. The room temperature, supply temperature, damper position and flow are updated once every 4 seconds.
- Room or Supply Temperature:** The resolution for Supply and Room Temperature is 1 °F and for Celsius the resolution is 0.5 °C.
- Damper Position:** Damper Position is shown as percent open in 1% increments from open to close.
- Airflow:** is shown as percent flow in 20% increments or less.

Set Point Keys

Set Point keys require several screens and data entry.

Cool Set Point Key

The Cool Set Point may be set in user mode only. The range is 70°F - 80°F (21°C - 26.5°C). If an entry is out of range, invalid entry will be displayed. Rolls over to 70 when 80 is incremented and back to 70 if decremented. The default cool setpoint (CSP) is 76 °F.

Key press order: CoolSetPnt, UP/DN, Accept/Cancel

Heat Set Point Key

Rolls over to 68 when 78 is incremented and back to 68 if decremented. The default heat setpoint (HSP) is 70 °F.

Key press order: HeatSetPnt, UP/DN, Accept/Cancel

Mode Key

The mode key sets key functions for User and Install mode. Install mode will exit when the mode key is pressed again or after 15 minutes. The range for the password is 0 to 9999. When 2-New Password is selected, the old password must be entered first in order to set the new one. When in edit mode, there is nothing displayed on the data line except an '=' at the beginning of the line.

The default password is 2345.

Key press order: Mode, 1/2, UP/DN, Accept/Cancel

The MDC diffusers can communicate through either the HHC Hand Held Controller or through the network communication port.

Model MDC - Application Guide

The following Set Points and Commands are accessed in the Install Mode Only

COOLMIN KEY

Sets the cool minimum damper position. A percent open is entered within the range of 0% to 30% in 1% increments. When 30% is reached, the number rolls over to 0% and back to 30% if decremented. The default cool min (CMIN) is 5% (t_unit = 73°C).

Key press order: CoolMin, UP/DN, Accept/Cancel

COOLMAX KEY

Sets the cool maximum damper position. A percent open is entered within the range of 60% to 100% in 1% increments. When 100% is reached, the number rolls over to 60% and back to 100% if decremented. The default cool max (CMAX) is 100%(t_unit = 52°C).

Key press order: CoolMax, UP/DN, Accept/Cancel

HEATMIN KEY

Sets the heat minimum damper position. A percent open is entered within the range of 0% to 30% in 1% increments. When 30% is reached, the number rolls over to 0% and back to 30% if decremented. The default heat min (HMIN) is 5% (t_unit = 73°C).

Key press order: HeatMin, UP/DN, Accept/Cancel

HEATMAX KEY

Sets the heat maximum damper position. A percent flow is entered within the range of 60% to 100% in 1% increments. When 100% is reached, the number rolls over to 60% and back to 100% if decremented. The default heat max (HMAX) is 100%(t_unit = 52°C).

Key press order: HeatMax, UP/DN, Accept/Cancel

ADDRESS KEY

Sets the BACnet MS/TP address for the MDC260. The acceptable range is 1 - 254. When 255 is reached, the number rolls over to 0 and back to 255 if decremented. The default address is 0 or 255 which ever prevents participation on the network.

Key press order: Address, UP/DN, Accept/Cancel

DAMPER MAN/AUTO KEY

Sets damper control to auto or manual. In auto, the MDC260 algorithm controls the damper. In manual, the damper is open or closed according to the accepted enumeration. The red error LED will blink slowly while in manual mode. This is a non-volatile parameter. The enumerations are auto(1), full open(2), cool max(3), heat max(4), cool min(5), heat min(6), and full close(7). Rolls over from full close(7) to auto(1) and back. The default enumeration is auto(1).

Auto(1)	MDC control
Full open(2)	T_unit = 52°C or 100% flow
Cool Max(3)	AV CMAX set point
Heat Max(4)	AV HMAX set point
Cool Min(5)	AV CMIN set point
Heat Min(6)	AV HMIN set point
Full close(7)	T_unit >= 74°C or <= 10% flow

Key press order: Dmpr M/A, UP/DN, Accept/Cancel

HEATER_TYPE KEY

Sets the Auxiliary Heater Type to the enumerated value of remote(0) or duct(1). The default Aux. Heater Type is remote.

Key press order: HeaterType

DUCT_HTR_OT KEY

Sets the Duct Heater Over Temp power off (only applies to duct heaters). A temperature is entered within the range of 90°F to 120°F in 1° increments. When 120°F is reached, the number rolls over to 90°F and back to 120°F if decremented. The default Duct Heater Overtemp is 110°F.

Key press order: DuctHtrOT, UP/DN, Accept/Cancel

1. The IR remote handheld specification is in filename "IRH-03.doc". The hand held keys are identified on the following page. A template will be necessary for the install mode on the handheld. Keys with the same function whether in User or Install mode are listed below.

Mode	Numbers 0-9
Up Arrow	Accept
Down Arrow	Cancel

We have 14 keys available for multiple functions. The following is a list of key functions that are different for each mode.

Key #	User mode	Install mode
2		
3		
5	CoolSetPnt	
6	HeatSetPnt	
8		CoolMin
9		HeatMin
10		CoolMax
11		HeatMax
12		Address
13		Auto/Manual
16		DamperPos
17	SourceTemp	
18	RoomTemp	
19	Flow	
20	Occupied	HeaterType
21	°F/°C	DuctHtrOT

BACnet Identification Number

ASHRAE has assigned METALAIRE the following BACnet Vendor Identification Number: 45



Model MDC - Communication Network Protocol

Communication Network Protocol is BACnet Master Slave/Token Passing (class 2)			
Object Type	Instance	Description	BACnet Property Type
Device	Variable	MDC device object	Tied to BACnet address
File	1	Main firmware file	
Analog Input	1	Source (Supply) Temp (AN_3 - thermistor) UNITS= ° F only	PROPTYPE_TEMP_REAL PA_RO, PA_S
Analog Input	2	Damper Position (AN_4 - LM35DM) UNITS= PERCENT RANGE=0..100	PROPTYPE_FLT_12_4 PA_RO, PA_S
Analog Input	15	Flow sensor – Delta T (AN_5 - heated thermistor) UNITS=PERCENT RANGE=0..100	PROPTYPE_FLT_12_4 PA_RO, PA_S
Analog Input	16	Zone Temp (AN_0 or AN_2 - thermistor) UNITS= ° F only	PROPTYPE_TEMP_REAL PA_RO, PA_S
Analog Input	17	Setpoint adjust offset UNITS = °F only RANGE=0..3 Determined by AI16	PROPTYPE_FLT_12_4 PA_WR, PA_S
Analog Value	1	Cool Set point UNITS= °F only RANGE=70..80	PROPTYPE_TEMP_REAL PA_WR, PA_N
Analog Value	2	Heat Set point UNITS= ° F only RANGE=68..78	PROPTYPE_TEMP_REAL PA_WR, PA_N
Analog Value	3	Cool Minimum Damper Position UNITS= PERCENT RANGE=0..30	PROPTYPE_FLT_12_4 PA_WR, PA_N
Analog Value	4	Heat Minimum Damper Position UNITS= PERCENT RANGE=0..30	PROPTYPE_FLT_12_4 PA_WR, PA_N
Analog Value	5	Cool Maximum Damper Position UNITS= PERCENT RANGE=60..100	PROPTYPE_FLT_12_4 PA_WR, PA_N
Analog Value	6	Heat Maximum Damper Position UNITS= PERCENT RANGE=60..100	PROPTYPE_FLT_12_4 PA_WR, PA_N
Analog Value	7	Duct Heater Overtemp UNITS= °F only RANGE=90..140	PROPTYPE_TEMP_REAL PA_WR, PA_N
Analog Value	16	Timed Local Override (Logistat switch) UNITS=SECONDS	PROPTYPE_U16_REAL PA_WR, PA_S
Multi-State Value	1	Damper Control Enumerated (auto(1), full open(2), cool max(3), heat max(4), cool min(5), heat min(6), full close(7))	PROPTYPE_U8_CMND PA_WR, PA_N
Binary Value	1	Units = °F or °C Enumerated (Off = °F, On = °C) Units = °F or °C	PROPTYPE_ENUM_8 PA_WR, PA_N
Binary Value	2	Heater Type Enumerated (Off = Remote, On = Duct)	PROPTYPE_ENUM_8 PA_WR, PA_N
Binary Value	16	Occupied/Unoccupied Enumerated (Off = UnOcc., On = Occ.)	PROPTYPE_ENUM_8 PA_RO, PA_S



Control System Diagram

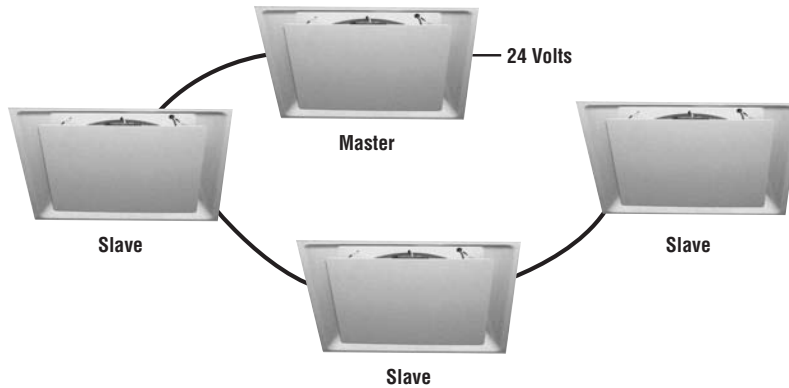
MDC Stand Alone



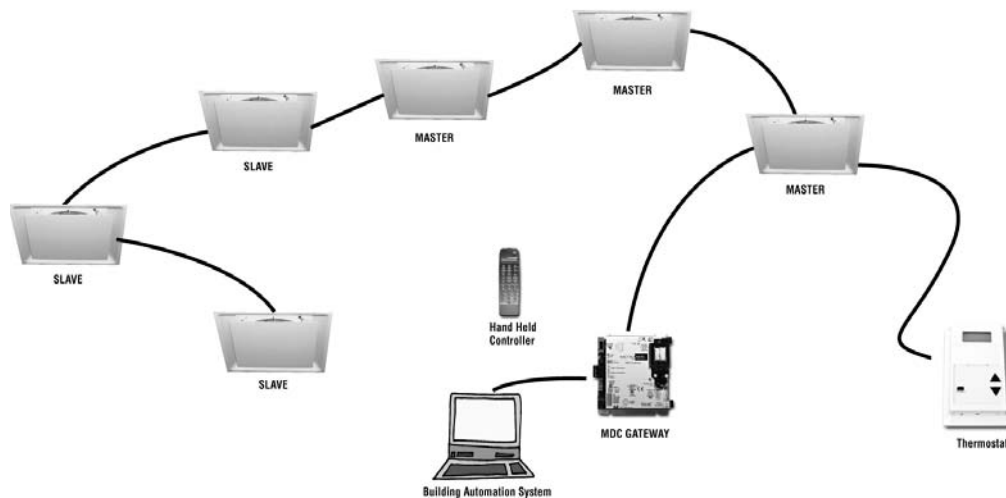
Simple Installation
Requires 24 Volt Connection

MDC Master/Slave Units

Master MDC unit can control up to 3 slaves units



Expands to integrate into BACnet system



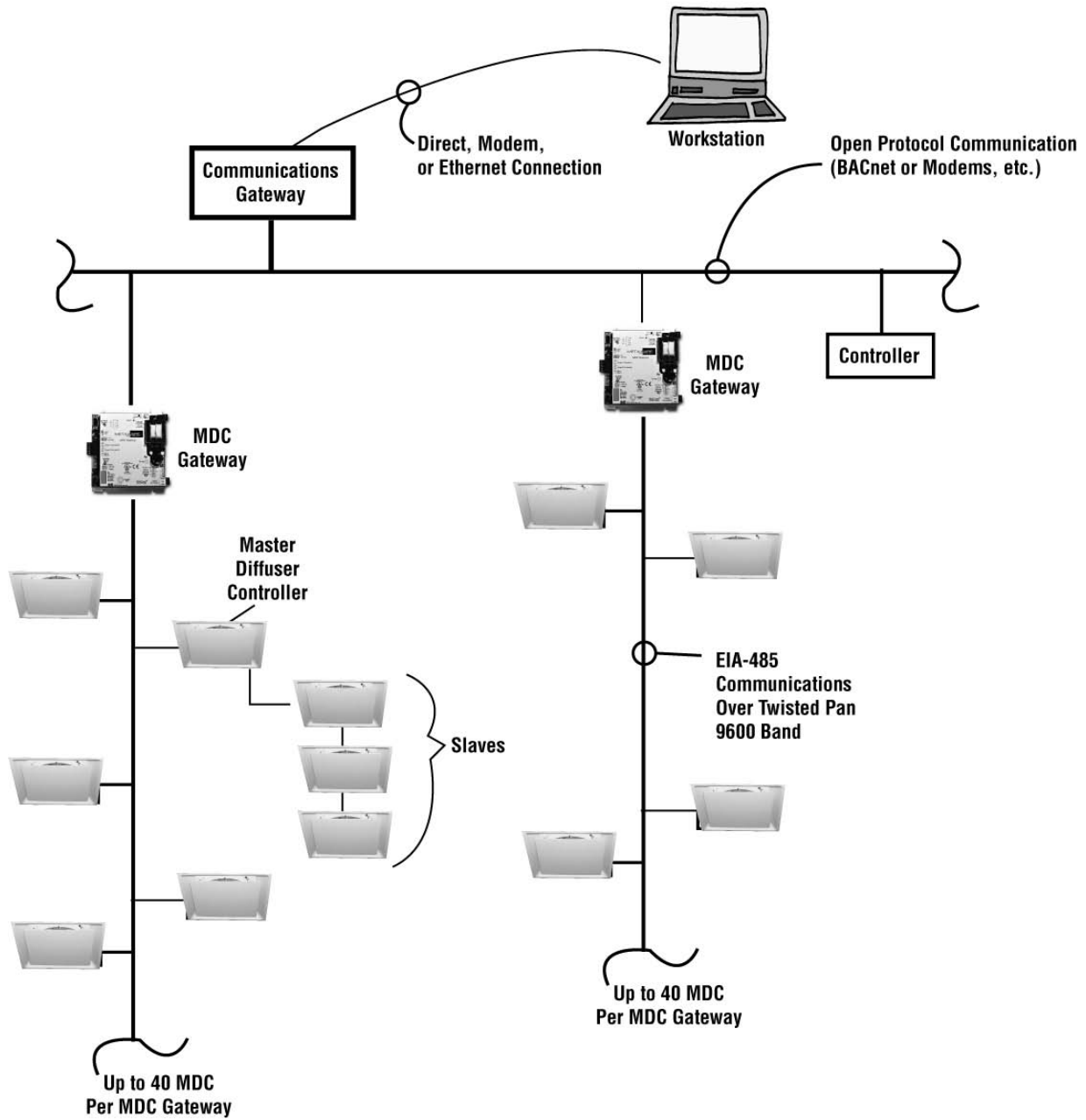
METALAIRE Digital Control Diffuser



MDC

Control System Diagram

MDC Stand Alone



METALAIRE Digital Control Diffuser

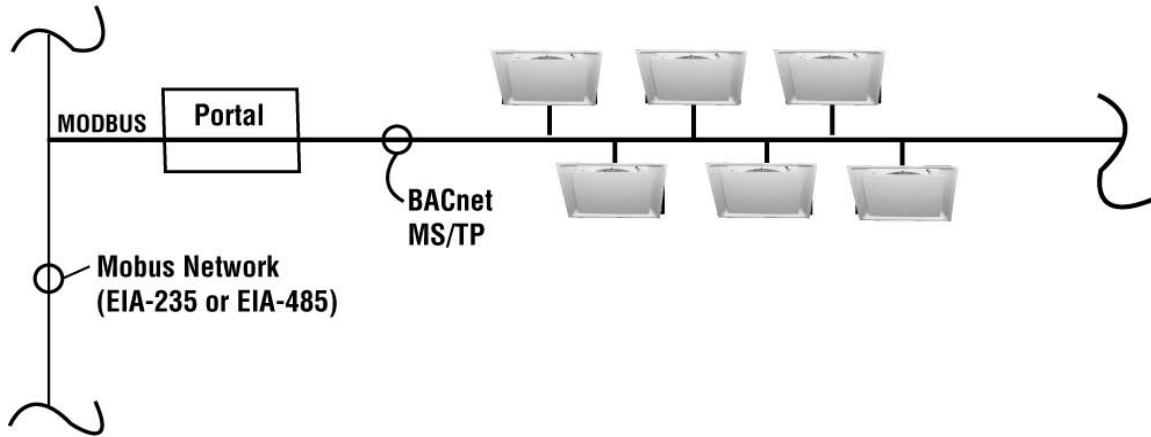


MDC

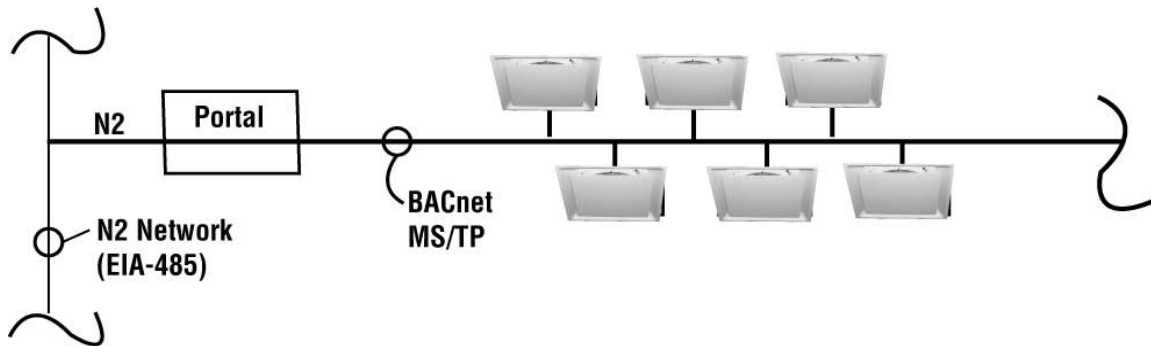
Model MDC - Control System Diagram

MDC Stand Alone

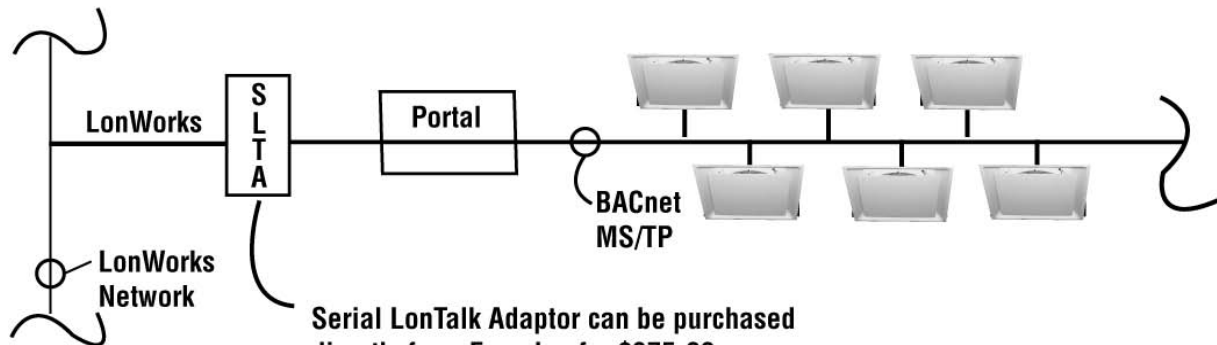
• MODBUS



• Johnson Control's N2 Protocol



• LonWorks

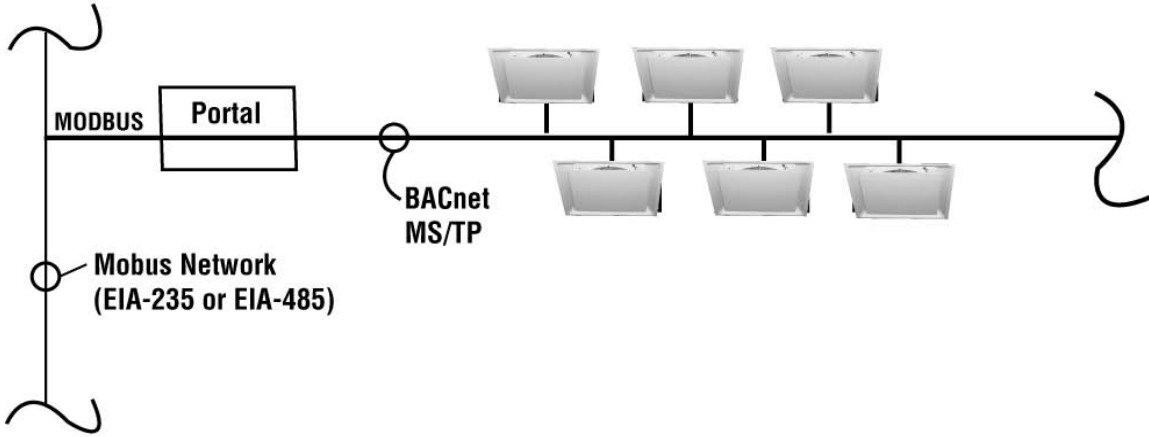


Serial LonTalk Adaptor can be purchased directly from Ecmelon for \$375.00

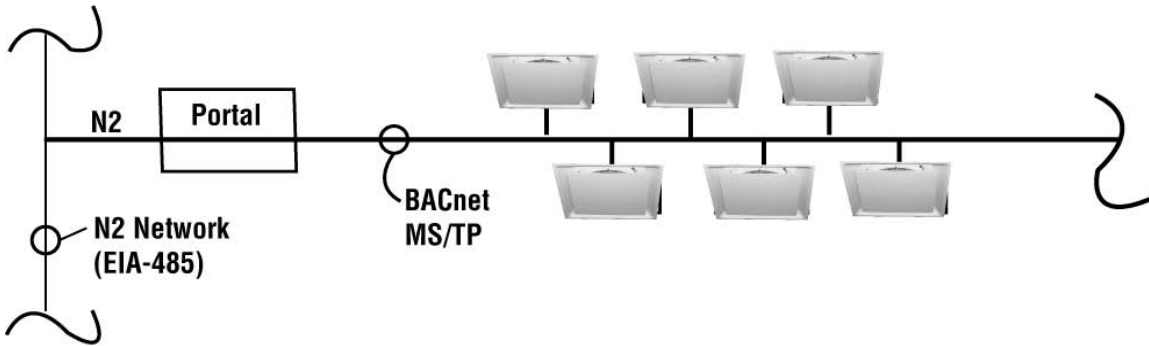
Model MDC - Control System Diagram

MDC Stand Alone

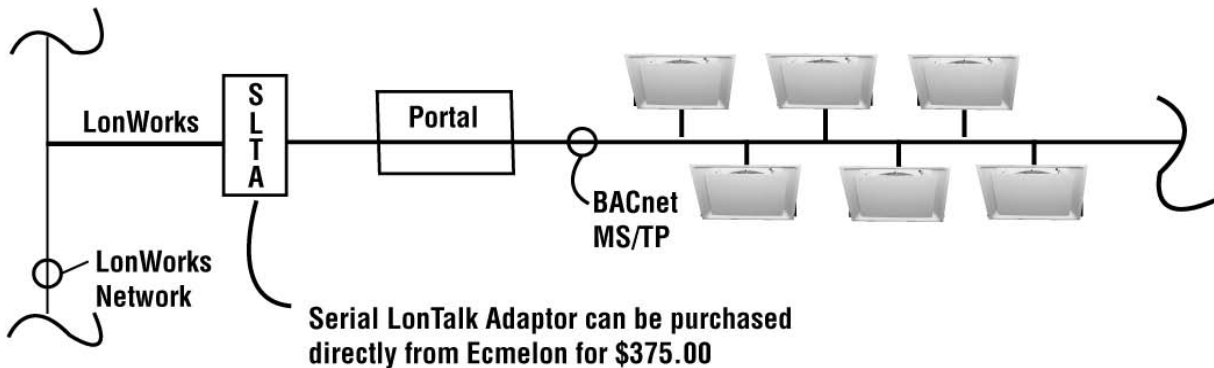
• MODBUS



• Johnson Control's N2 Protocol



• LonWorks



Model MDC - Installation and Product Specifications

USAGE of MDC

The Metal-Aire Diffuser Controller (MDC) is designed for controlling a diffuser(s) using a hot wax actuator to maintain zone temperature. The MDC may control one diffuser and up to 3 slave diffusers. The MDC module has a stand-alone control algorithm, but should be connected on a network to allow convenient firmware upgrades. A network of MDC modules may communicate by BACnet MS/TP with the MDC gateway. The user may view or change parameters using the handheld remote. The handheld remote uses bi-directional infrared (IR) communications and supports two modes: user and installer. The user mode allows changing of heating and cooling set points, occupied status. User mode also allows viewing measurements such as room temperature, source air temperature, and air flow. The installer mode is used for configuring the MDC after installation.

SPECIFICATIONS

POWER

24 VAC +/-10% (1), 50-60Hz,
24 VA module (2)
8 VA/hot wax actuator (total of 4)
12 VA heater control output
68 VA total, 2.8A maximum
(Single Class 2 source, 100 VA or less)

(1) The +/-10% specification does not apply to the hot wax actuator, which is very sensitive to low voltage conditions.

(2) This includes additional power for an array type flow sensor. The existing module is 12 VA.

OUTPUTS

2 opto-isolated Triac outputs:
ACT rating 0.35 A (one hot wax actuator)
DO1 rating 1.05 A (three hot wax actuators maximum)
DO2 rating 0.5A
Note: ACT and DO1 outputs are connected together on the printed circuit board.

INPUT RESOLUTION

10 bit.

COMMUNICATION

9600 bps or 38.4 kbps, automatically detected
(determined by MDC gateway module).

ENVIRONMENTAL OPERATING RANGE

0 to 130 °F (-17.8 to 54.4 °C)

STATUS INDICATION

Visual (LED) indicators.

PROTECTION

Metal oxide Varistor (power, digital outputs, Logistat inputs).
Transient voltage suppressor (Logistat). Zener protection
(communications).

MEMORY

60KB Flash EPROM and 2KB of RAM, 8KB non-volatile storage for configuration data.

MOUNTING

Mount the MDC using 4" snaptrack on the lower plate of the diffuser near the edge with the infrared (IR) components facing down. Mounting the MDC near the edge is required to use the handheld remote and view status LEDs.

CONNECTORS

AMP MTA-100 22 AWG receptacle part number 640440-x, where x is the number of terminals

CRIMPING TOOL :

An AMP crimping tool is also needed which consists of a handle (part # 58074-1) and a head assembly (part # 58246-1).

THERMISTORS :

The MDC requires the following thermistors to sense air flow.

Source Air

Alpha Mini-Series, 62A1002-C3
10,000 ohms @ 25 °C, 28AWG, 2 inch leads

Flow Sensor

Alpha Mini-Series, 62A2251-C3
2252 ohms @ 25 °C, 28AWG, 2 inch leads

FLOW SENSOR WIRING

Use a 13" long 22AWG stranded, 4 conductor cable to connect the flow and source air temperature thermistors to the MDC as shown in setup diagram (page 21).

NOTE: The source air and flow thermistors look almost identical. Make sure the 2252 ohm thermistor is connected to the FLWA and FLWB terminals.

POWER WIRING/TRANSFORMER SIZING

The most important power consideration is providing adequate voltage to the hot wax actuators. The MDC is designed for a +/-10% voltage range, but the hot wax actuator does not work well at lower voltage. The power dissipation of the hot wax actuator and the resulting heating time varies drastically with supply voltage, as the table 1 shows.

Table 1 – Actuator Heating Time

Supply Voltage (VRMS)	Heating Time (23 - 7°C)
22.5	83 ?
27	8.3

Note: The triac output on the MDC has a typical voltage drop of 0.9 V regardless of the number of hot wax actuators used.

TRANSFORMER SIZING RECOMMENDATION

- one MDC, 4 diffusers use 100 VA transformer.
- two MDCs, two diffusers, 100 VA transformer.

Basic Power Guidelines

- Install 24 VAC transformer as close as possible to first MDC.
- Minimize length of power wiring (less than 50 ft total if possible)
- Use 14 AWG for power wiring.
- Avoid using slaved diffusers in areas known for low-line conditions.
- Oversize transformer to minimize voltage drop in windings.



Model MDC - Installation and Product Specifications

- With slaved diffusers, run a separate ground wire to the other diffusers. See setup diagram (page 21).

LEDs

The MDC module has diagnostic LEDs to assist in troubleshooting.

RUN LED (Green)	
Sequence	Meaning
2 times per second	Normal operation/Auto Mode transferring firmware
5 times per second	
Once every 2 seconds	Auto-detecting baud rate

ERROR LED (Red)	
Sequence	Meaning
Once every 2 seconds	Manual Mode
5 times per second	transferring firmware
2 times per second	Firmware error Transfer memory to the module to correct

COMMUNICATION LEDs

- TX On when module transmits on network port.
RX On when module receives data on network port.

ADDRESSING

The MDC stores the BACnet MS/TP address in non-volatile memory (EEPROM). The handheld remote must be used to set the address. To set the address, enter installer mode and use the address button using the following key sequences:

Mode Key
1
enter password up to 4 digits (for production default is 2345, for beta modules default is 1)
Accept
Address button
Enter address
Accept button

Note:

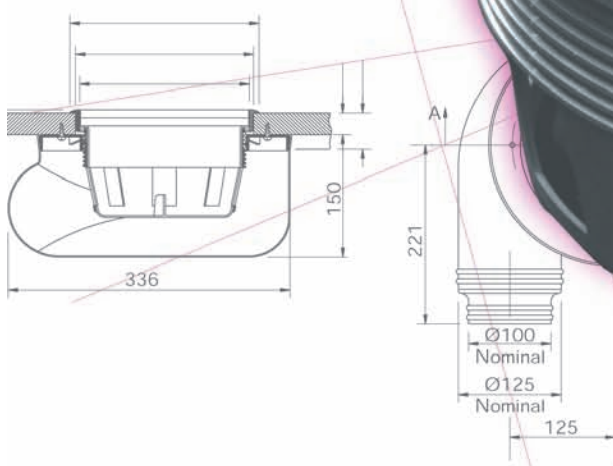
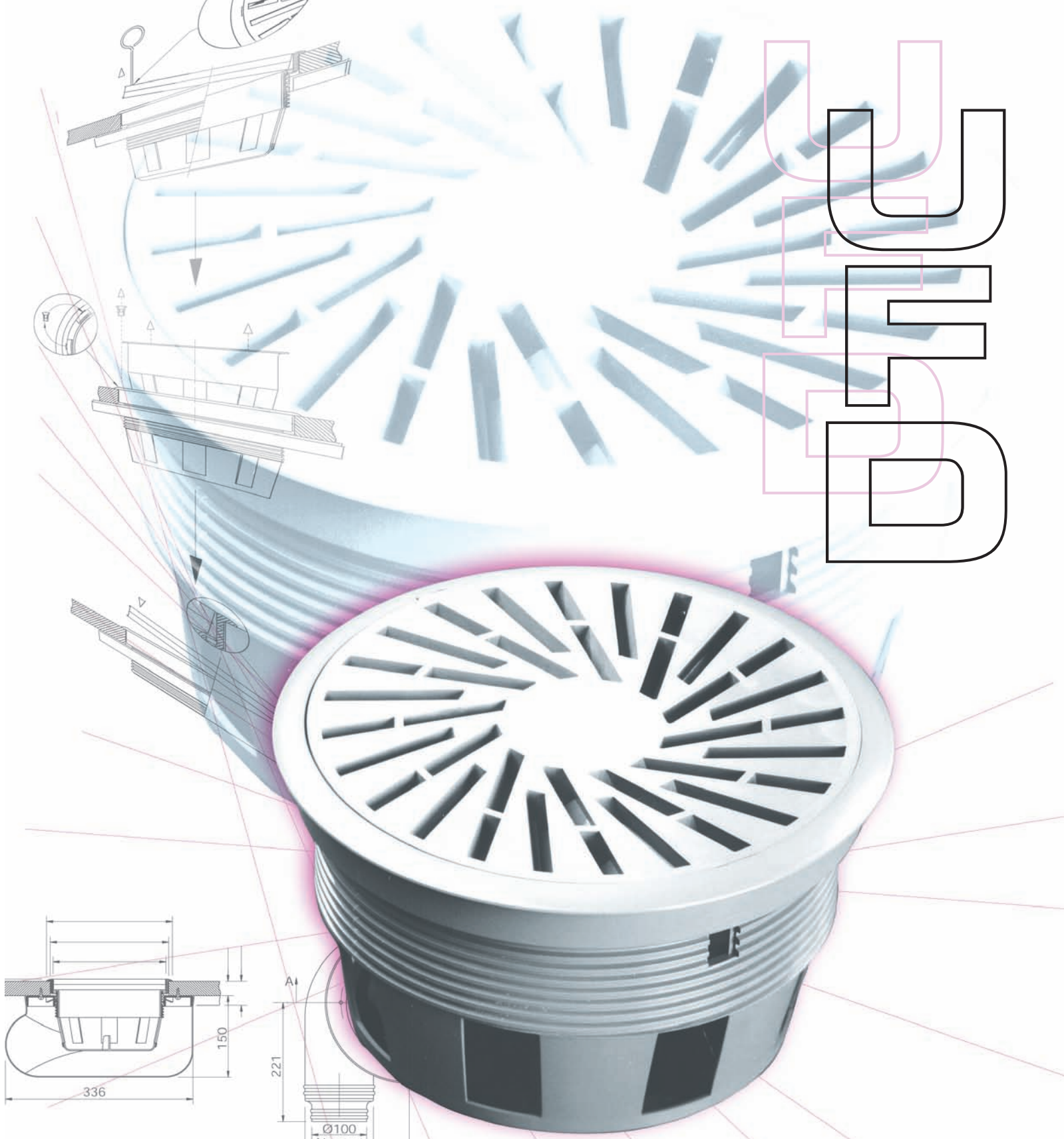
The password can be changed by selecting option 2 instead of option 1.

HANDHELD REMOTE

When using the remote, point it upward toward the MDC's infrared (IR) sensors near the edge of the diffuser. For reliable communications between the remote and MDC, the remote must be pointed used within a cone of approximately 15 - 20° from vertical below MDC's IR sensor.



U U F D



WFOP & WFOPV

UNDERFLOOR DIFFUSER

UNDERFLOOR
DIFFUSER

➔ Aircell Polymer Floor Diffuser ➔ Series WFO

Product Details

- ★ Unique "flip-over" design
- ★ Memory locating peg
- ★ Easy fit locking collar
- ★ Concealed bracket for concrete/slab flooring
- ★ Combined damper/dirt tray with incremental damper positioning



Model WFO Shown

Series WFO - Introduction

The METALAIRE Aircell WFO series floor diffuser offers the choice of horizontal or vertical air patterns with its flip over design, as well as a host of other unique & patented features. The WFOV low pressure vertical supply disc offers vertical projection with a 50% increase in air volume capacity, compared with standard WFO units.

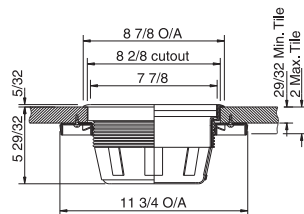
The WFO diffusers disc has been designed to resist permanent deformation when subjected to point loads up to 500 kg and all materials used are fire retardant. The WFOV diffuser disc is suitable for point loads up to 300 kg.

Dimensions are in inches

Aircell Polymer Floor Diffusers - Pressurized Floor Void

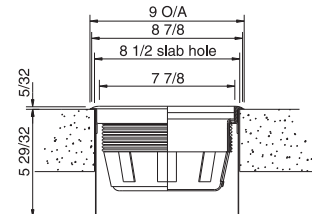
Model WFO - Tile Installation

Model WFOV - Low pressure vertical air pattern



Aircell Polymer Floor Diffusers - Pressurized Void

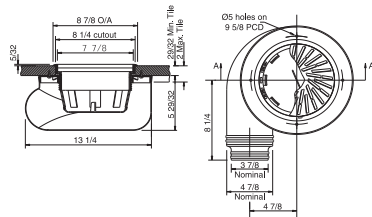
Model WFOs - Slab Floor Installation Supplied with a steel adaptor collar which is cast into the floor slab. The diffuser can then be installed into the collar with concealed spring clips



Aircell Polymer Floor Diffusers-Ducted Insulation with Plenum Supplied

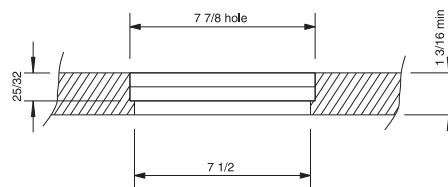
Model WFOP - Plenum snap fits onto the locking collar

Model WFOVP - Low pressure vertical air pattern disk



Aircell Polymer Floor Diffusers - Step Drilled Installation

Model WFOD - The diffuser disc only is supplied, suitable for installation into pre-cut holes in floor tiles



1. Available Finishes

Standard Finish:

WFO diffusers are available in a state grey finish (RAL 7037 Mid Grey) as standard. Other colors can be specified subject to a minimum quantity.

2. Advantages

- Ability to change between horizontal and vertical settings instantly
- Commissioning settings are retained once set using the memory locating peg
- Reduced installation time with easy fit locking collar
- Quick fit plenum

Underfloor Diffuser



UFD

AAA
CCC
CCC



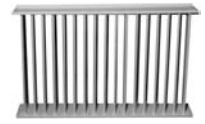
ACCESSORIES
ACCESSORIES

Ceiling Diffusers - Accessories

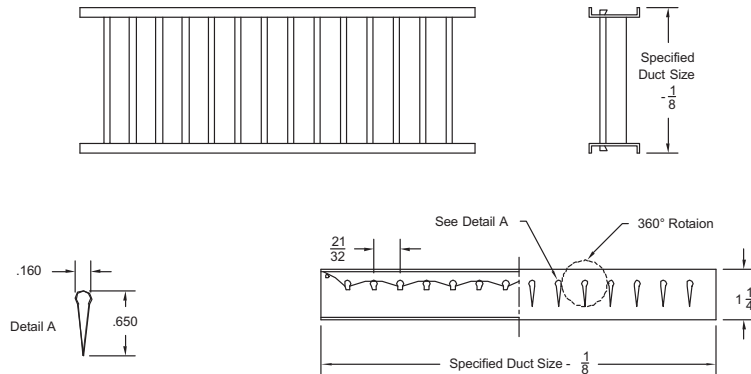
3/2006

Square/Rectangular Equalizing Grid ➔ Aluminum ➔ Model L9

- ✦ Designed to provide uniform airflow in branch ducts
- ✦ Pre-tensioned blades adjust individually and may be set at an angle at the branch take-off to provide a rake-off effect

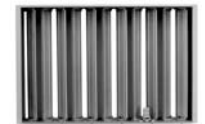


Dimensions are in inches

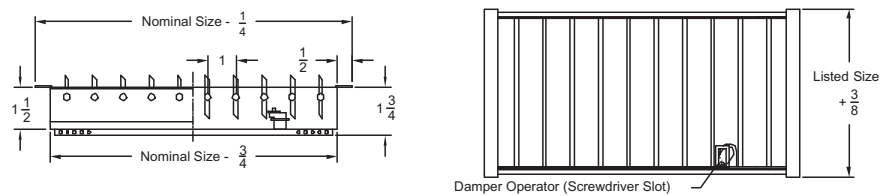


Opposed Blade Damper for Grilles ➔ Aluminum ➔ Model OBDA

- ✦ Tapered blades set in a U-channel frame
- ✦ Opposed blades on 1" centers
- ✦ Screwdriver slot operator



Dimensions are in inches

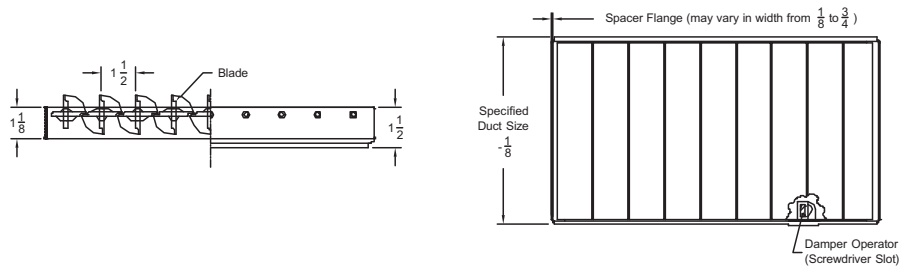


Opposed Blade Damper for Grilles ➔ Steel ➔ Model OBD

- ✦ Blades taper at edge to reduce pressure drop and provide tight closure
- ✦ Screwdriver slot operator



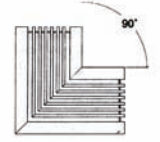
Dimensions are in inches



Ceiling Diffusers - Accessories

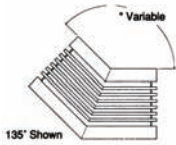
Optional Mitered Corners

Available for installation in ceiling, floor, sill or sidewall applications, the standard horizontal (flat) mitered corner section includes an angle of 90° and is available in 0°, 15°, and 30° deflection. The corner section contains two (2) feet of straight grille, one foot on either side of the miter line (see page 8 for detail drawing). When specifying a corner section with 15° or 30° deflection, it is imperative to specify the direction of the air throw - either toward the inside or the outside of the corner. Normally inactive, corner sections are of one piece welded construction and are not supplied with dampers equalizing grids, or other accessories.



Standard Finish: 01 White

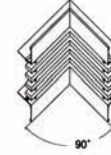
Special Horizontal



Vertical Outside

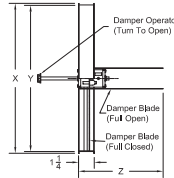
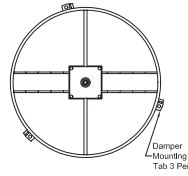


Vertical Inside



Butterfly Damper → Aluminum → Sizes 12 and Under → Model 900D*

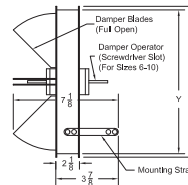
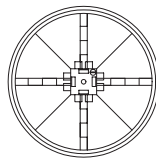
- For attachment to Model 900
- 2 butterfly style blades for 6" - 12" sizes
- 8 blade radial style for 14" size
- Blades adjusted through diffuser face
- Damper supplied with mounting hardware



900D & 900D* Models			
Damper Sizes	X	Y	Z
6	5 15/16	5 5/8	3
8	7 15/16	7 5/8	4
10	9 15/16	9 5/8	5
12	11 15/16	11 5/8	6
14	13 15/16	13 5/8	7

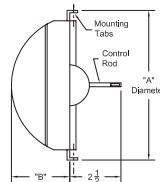
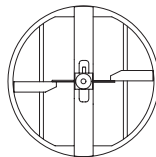
Opposed Blade Damper → Aluminum → Sizes 14 for Series 900 → Model 900D

- For attachment to Model 900
- 2 butterfly style blades for 6" - 12" sizes
- 8 blade radial style for 14" size
- Blades adjusted through diffuser face
- Damper supplied with mounting hardware



Butterfly Damper → Steel → Model BDS

- Two butterfly style blades
- Blades are adjusted through diffuser face



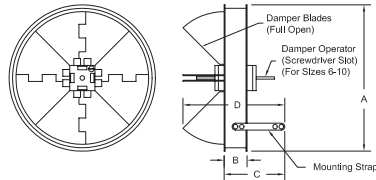
Diffuser Neck Size	BDS Dimension	
	A	B
6	5.374	2.172
8	7.374	3.172
10	9.374	4.172
12	11.374	5.172
14	13.374	6.172
15	14.374	7
16	15.374	7.172

Ceiling Diffusers - Accessories

3/2006

Radial Opposed Blade Damper ➔ Aluminum ➔ Model D3

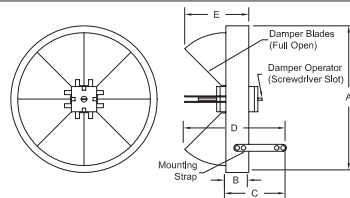
- ✱ For use in round air diffusers
- ✱ Designed to provide full radial volume control resulting in lower than normal pressure losses
- ✱ Overlapping blade design insures positive shut-off when required



Size	A	B	C	D
6	5 7/8	1 1/4	3 1/4	4 3/4
8	7 7/8	1 1/4	3 1/4	5 1/4
10	9 7/8	1 1/4	3 1/4	6
12	11 7/8	2 1/8	3 7/8	6 5/8
14	13 7/8	2 1/8	3 7/8	7 1/8
16	15 7/8	2 1/8	3 7/8	8 7/8
18	17 7/8	2 1/8	3 7/8	9 3/8
20	19 7/8	2 1/8	3 7/8	9 7/8

Radial Opposed Blade Damper ➔ Steel ➔ Model SD3

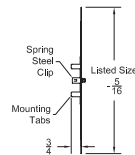
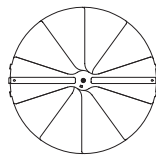
- ✱ For use in round air diffusers
- ✱ Designed to provide full radial volume control resulting in lower than normal pressure losses
- ✱ Overlapping blade design insures positive shut-off when required



Size	A	B	C	D	E
6	5 7/8	1 7/8	3 7/8	4 1/8	2 1/8
8	7 7/8	1 7/8	3 7/8	4 1/8	2 1/8
10	9 7/8	1 7/8	3 7/8	5 5/8	3 5/8
12	11 7/8	1 7/8	3 5/8	6	4 1/4
14	13 7/8	1 7/8	3 5/8	6 3/4	5
16	15 7/8	1 7/8	3 5/8	7 3/8	5 5/8
18	17 7/8	1 7/8	3 5/8	8 1/8	6 3/8
20	19 7/8	1 7/8	3 5/8	8 7/8	7 1/8
24	23 7/8	1 7/8	3 5/8	7 3/4	6
30	29 7/8	1 7/8	6	11 5/8	7 1/2
36	35 7/8	1 7/8	6	13 1/8	9

Radial Shutter Damper ➔ Galvanized Steel ➔ Model RSD

- ✱ Cost effective alternative to butterfly style dampers
- ✱ Design permits very precise damper control and does not interfere with diffuser air patterns



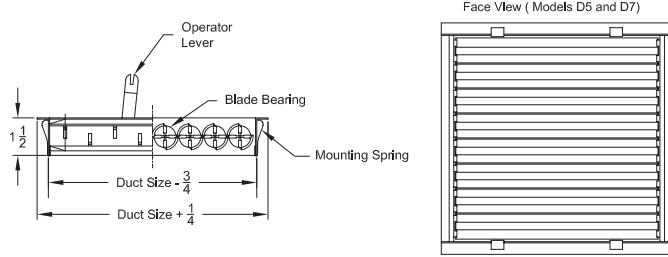
Available Sizes
6
10
12

Ceiling Diffusers - Accessories

SEC - Security Products - Accessories

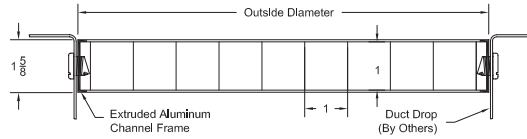
Opposed Blade Damper For 5000/7000 Series ➔ Steel ➔ Model D5/D7 ➔ Aluminum ➔ Model D5A/D7A

- ✦ Opposed blade volume damper for use with all series 5000 and 5500 diffuser models
- ✦ Damper operator is accessible at the diffuser face



Equalizing Grid ➔ Extruded Aluminum ➔ Model G3

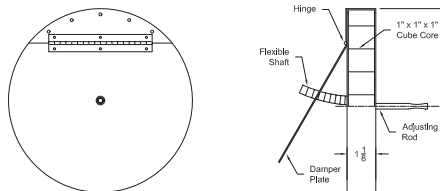
- ✦ For use in round air diffusers
- ✦ Designed to provide full radial volume control resulting in lower than normal pressure losses
- ✦ Overlapping blade design insures positive shut-off when required



Diffuser Neck Diameter								
6	8	10	12	14	16	18	20	24
G3 Outside Diameter								
5 3/4	7 3/4	9 3/4	11 3/4	13 3/4	15 3/4	17 3/4	19 3/4	23 3/4

Combination Grid/Damper ➔ Extruded Aluminum ➔ Model GD3

- ✦ For use with all diffusers
- ✦ Designed to provide maximum air flow equalization through use of a blade matrix system, thus ensuring lowest possible pressure losses in drop
- ✦ Dampers not available on 24" grid



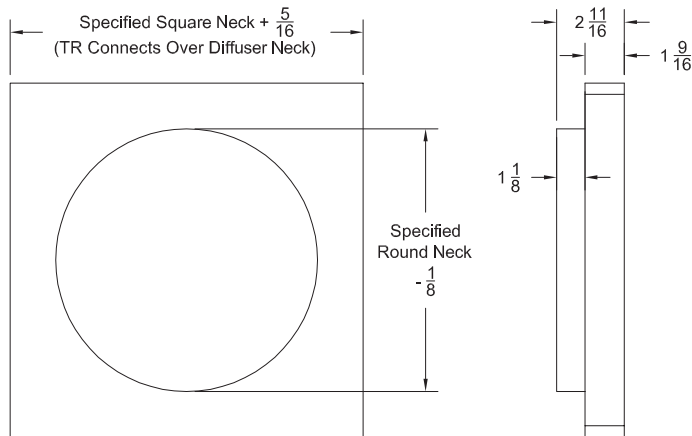
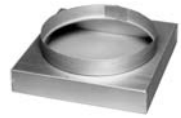
Dimension								
Size	6	8	10	12	14	16	18	20
D	5 7/8	7 7/8	9 7/8	11 7/8	13 7/8	15 7/8	17 7/8	19 7/8

Ceiling Diffusers - Accessories

3/2006

Square to Round Transitions ➔ Model TR

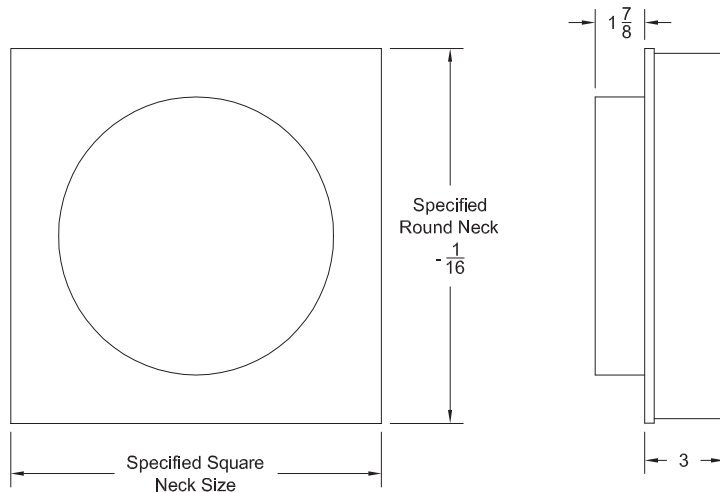
- ✦ Square to round transitions slip fit over the square neck or register to permit installation to round or flex-duct
- ✦ 2 11/16" overall depth



Available Sizes	
Square Neck Size	Round Neck Sizes
6 x 6	4, 5, & 6
8 x 8	5, 6, 7 & 8
9 x 9	5, 6, 7, 8 & 9
10 x 10	5, 6, 7, 8, 9 & 10
12 x 12	5, 6, 7, 8, 9, 10, 11 & 12
14 x 14	5, 6, 7, 8, 9, 10, 11, 12, & 14
15 x 15	5, 6, 7, 8, 9, 10, 11, 12, 14 & 15
16 x 16	5, 6, 7, 8, 9, 10, 11, 12, 14, 15 & 16
18 x 18	5, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16 & 18
22 x 22	5, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16, 18, 20 & 22

Square to Round Deep Transitions ➔ Model TR DEEP

- ✦ Square to round transitions slip fit over the square neck or register to permit installation to round or flex-duct
- ✦ 4 7/8" overall depth



Available Sizes	
Square Neck Size	Round Duct Sizes
6 x 6	5 & 6
8 x 8	5, 6, 7 & 8
9 x 9	5, 6, 7, 8 & 9
10 x 10	5, 6, 7, 8, 9 & 10
12 x 12	5, 6, 7, 8, 9, 10, 11 & 12
14 x 14	5, 6, 7, 8, 9, 10, 11, 12 & 14
15 x 15	5, 6, 7, 8, 9, 10, 11, 12, 14 & 15
16 x 16	5, 6, 7, 8, 9, 10, 11, 12, 14, 15 & 16
18 x 18	5, 6, 7, 8, 9, 10, 11, 12, 14, 15, 16 & 18

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5200	.DCD-58	EPRH	.EPP-308
5500	.DCD-46	G3	.ACC-337
5500 DAF-CC5	.DCD-84	GD3	.ACC-337
5500DD	.ARP-242	HPL-CL	.EHD-260
5500S	.DCD-48	HPL-HA	.EHD-266
5700	.DCD-62	HPL-PR	.EHD-272
5750	.DCD-68	HRD-CL	.EHD-278
5800	.DCD-74	HRD-HA	.EHD-284
6600	.LSD-166	L-5000	.LSD-200
6600SP	.LSD-184	L9	.ACC-334
6600SQ	.ARP-248	LT	.PSD-230
7000	.PCD-104	MITERED CORNERS	ACC-335
7300	.PCD-114	MDC®	.MDC-316
7350	.PCD-116	OBD	.ACC-334
7500	.PCD-118	OBDA	.ACC-334
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7600	.PCD-134	PHC	.PSD-224
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D3	.ACC-336	TR DEEP	.ACC-338
		WFO	.UFD-332

METAL*LAIRE®

AIR TERMINAL UNITS **INFOSOURCE CATALOG**

The METAL*LAIRE Air Terminal Units Catalog suite is the leading product catalog in the industry. Included in these catalogs are the complete product listings, drawings, product features and benefits, product performance data, specifications, and model specifications. These catalogs are organized to make it quick and easy to find the information you are looking for.

Revised: June 29, 2007



At METAL*LAIRE®, we continually work to improve our products. Product descriptions, dimensions, and performance are subject to change without notice. For the most current available literature visit our web page at www.metalaire.com. Contact your local METAL*LAIRE® representative to verify product or performance details.

ATU • AIR TERMINAL UNITS

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TH-500



Series TH-500
Pg. 9

Series TH-500 - High Performance - Single Duct Air Terminal Units

- ✦ Series TH-500 Air Terminals are designed to regulate the flow of conditioned air in single duct air distribution systems. They are available in a wide range of standard control sequences and work equally well in constant volume and variable volume systems
- ✦ Series TH-500 Air Terminals can be specified with hot water coils, electric heat, sound attenuators, and other optional accessories
- ✦ Series TH-500 Air Terminals feature a low leakage single blade damper. The TH series is available with pneumatic, electric, analog electric, and DDC (by others) factory mounted controls
- ✦ Series TH-500 Air Terminals are available for both pressure independent and pressure dependent applications
- ✦ Series TH-500 Air Terminals are recommended for use in duct systems with static pressures up to 3" water gauge

TL-500



Series TL-500
Pg. 9

Series TL-500 - Low Profile - Single Duct Air Terminal Units

- ✦ Series TL-500 Air Terminals are designed to regulate the flow of conditioned air in single duct air distribution systems. They are available in a wide range of standard control sequences and work equally well in constant volume and variable volume systems. The maximum height of the TL series is 12 1/2"
- ✦ Series TL-500 Air Terminals can be specified with hot water coils, electric heat, sound attenuators, and other optional accessories
- ✦ Series TL-500 Air Terminals feature a low leakage single blade damper
- ✦ Series TL-500 is also available with pneumatic, electric, analog electric, and DDC (by others) factory mounted controls
- ✦ Series TL-500 Air Terminals are available for both system system pressure independent and system pressure dependent applications

FCI-600



Series FCI-600
Pg. 77

Series FCI-600 - Constant Volume Air Terminal Units

- ✦ Series FCI-600 fan-powered terminal units are designed to provide superior comfort control to zones with both heating and cooling requirements. The fan in a constant volume (or series) fan powered terminal, runs continuously during occupied hours. FCI is available with an optional ECM motor for improved energy efficiency and control
- ✦ Series FCI-600 provides cooling through the primary air valve. The primary air valve controls the volume of air that is discharged into the terminal unit. The cooled air is delivered to the space through the terminal's fan. When heating is required, the Series FCI-600 initially provides plenum air that is drawn through the induction inlet
- ✦ Series FCI-600 is available with a wide range of control options and accessories to meet your design requirements; whether they be for factory mounted direct digital controls, pneumatic, or analog applications
- ✦ Series FCI-600 is available in 6 casing sizes with a wide range of primary inlet sizes offering the flexibility to meet both your capacity and sound requirements

FCL-600



Series FCL-600
Pg. 77

Series FCL-600 - Low Profile Constant Volume Air Terminal Units

- ✦ Series FCL-600 low Profile fan-powered terminal units are designed to provide superior comfort control in applications with restricted heights. The FCL-600 series can also be selected for projects with limited heights in the ceiling plenum.
- ✦ The FCL is designed to be applied in zones with both heating and cooling requirements. The fan in a constant volume (or series) fan powered terminal, runs continuously during occupied hours.
- ✦ Series FCL-600 provides cooling through the primary air valve. The primary air valve controls the volume of air that is discharged into the terminal unit. The cooled air is delivered to the space through the terminal's fan. When heating is required, the Series FCL-600 initially provides plenum air that is drawn through the induction inlet.
- ✦ Series FCL-600 is available with a wide range of control options and accessories to meet your design requirements; whether they be for factory mounted direct digital controls, pneumatic, or analog applications.
- ✦ Series FCL-600 is available in 2 casing sizes and offers the flexibility to meet both your capacity and sound requirements.

ATU



Series FVI-500
Pg. 135

Series FVI-500 - Parallel Fan Powered Air Terminal Units

- ✦ Series FVI-500 fan-powered terminal units are designed to provide superior comfort control to zones with both heating and cooling requirements. The fan in a variable volume (or parallel) fan powered terminal, runs only upon requirements for heat
- ✦ Series FVI-500 provides variable volume cooling through the primary air valve. The primary air valve controls the volume of cooled air that is discharged into the space. In a parallel fan-powered terminal unit, the primary air does not pass through the fan. When heating is required, the Series FVI-500 initially provides plenum air that is drawn through the induction inlet
- ✦ Series FVI-500 is available with a wide range of control options and accessories to meet your design requirements; whether they be for factory mounted direct digital controls, pneumatic, or analog applications
- ✦ Series FVI-500 is available in 7 casing sizes with a wide range of primary inlet sizes offering the flexibility to meet both your capacity and sound requirements

FVI-500



Series DH-500
Pg. 179

Series DH-500 - High Performance - Dual Duct Air Terminal Units

- ✦ Series DH-500 (patent pending) High Performance Dual Duct Air Terminals are designed to regulate the flow of conditioned air in dual duct air distribution systems. In a dual duct system, both heated and cooled air are provided to the air terminal and mixed to provide the desired discharge temperature. The DH-500 has been engineered to provide a 1:30* mixing ratio, the highest in the industry. They are available with a wide range of standard control sequences
- ✦ Series DH-500 Air Terminals feature a low leakage single blade damper in the heating and cooling inlets
- ✦ The DH series is available with pneumatic, electric, analog electronic, and DDC (by others) factory mounted controls
- ✦ DH-500 air terminals are available for both system pressure independent and system pressure dependent applications
- ✦ Series DH-500 Air Terminals are recommended for use in duct systems with static pressures up to 3" water gauge

* Series DH-500 is Patent Pending

DH-500



Series DD-500
Pg. 179

Series Dual Duct Air Terminal Units

- ✦ Series DD-500 Dual Duct air terminals are designed to regulate the flow of conditioned air in dual duct air distribution systems. In a dual duct system, both heated and cooled air are provided to the air terminal and mixed in downstream duct work (by others) to provide the desired discharge temperature. The DD-500 is available with a wide range of standard control sequences
- ✦ Series DD-500 Air Terminals feature a low leakage single blade damper. The DD-500 series is available with pneumatic, electric, analog electronic, and DDC (by others) factory mounted controls. DD-500 air terminals are available for both system pressure independent and system pressure dependent applications
- ✦ Series DD-500 air terminals are recommended for use in duct systems with static pressures up to 3" water gauge

DD-500



Series SR-500
Pg. 213

Series SR-500 - Square Retrofit Air Terminal

- ✦ The METALAIR® Series SR-500 is a retrofit product designed to fit into existing low pressure square or rectangular duct systems
- ✦ The height of the installation plate varies with the duct height
- ✦ A flow sensor access panel is mounted in the installation plate in front of the damper blades
- ✦ Damper position can be controlled by any pressure dependent or pressure independent pneumatic, electric, or electronic control sequence available for the Series SR TH-500 Single Duct Air Terminal
- ✦ Series SR Retrofit dampers are constructed of 20 gauge zinc coated steel
- ✦ Series SR-500 units are intended for VAV applications in low pressure/low velocity applications, but may be used in duct systems with static pressure up to 4" water gauge and at a maximum rated velocity of 3000 fpm

SR-500



ATU

RA-500



Series RA-500
Pg. 219

Series RA-500 - Retrofit Terminal

- ✦ Series RA retrofit assemblies are customized retrofit valves designed to slip into existing mechanically regulated single or dual duct terminals to convert to variable volume operation.
- ✦ Units allow the conversion of existing constant volume systems to a more energy efficient, variable volume system.
- ✦ RA assemblies are currently available to fit most of the competitive terminals manufactured from the 60's to 80's.
- ✦ The RA valves can be installed, in most applications, without disrupting existing ductwork. Units are installed by removing existing volume regulators and inserting the RA valve.
- ✦ One or two valves in a single panel may be controlled by a single actuator
- ✦ Control sequences for the RA-500 are available to convert mechanically regulated constant single or dual duct air terminals into pneumatic VAV single duct or dual duct.

RT-500



Series RT-500
Pg. 233

Series RT-5000 - Round Retrofit Air Terminal

- ✦ Series RT-500 Retrofit Air Terminals are designed to regulate the flow of conditioned air in single or dual duct air distribution systems and are also used to provide positive or negative pressures in laboratory flow hood applications
- ✦ Series RT-500 Retrofit Air Terminals are primarily used to convert mechanically regulated constant volume single or dual duct air terminals to more efficient variable volume air terminals without disrupting total system operation
- ✦ Series RT-500 is ready installed into existing duct-work in front of an old air terminal
- ✦ This series features the the proven, low leakage Series TH-500 Air Terminal Damper
- ✦ Control components are shipped piped and wired
- ✦ Control linkage design allows the damper to be easily field repositioned 90° without the use of tools
- ✦ Constructed of 20 gauge zinc coated steel
- ✦ Recommend for use in duct systems with static pressures up to 3" water gauge

BP-500



Series BP-500
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Series BP-500 - Bypass Terminal

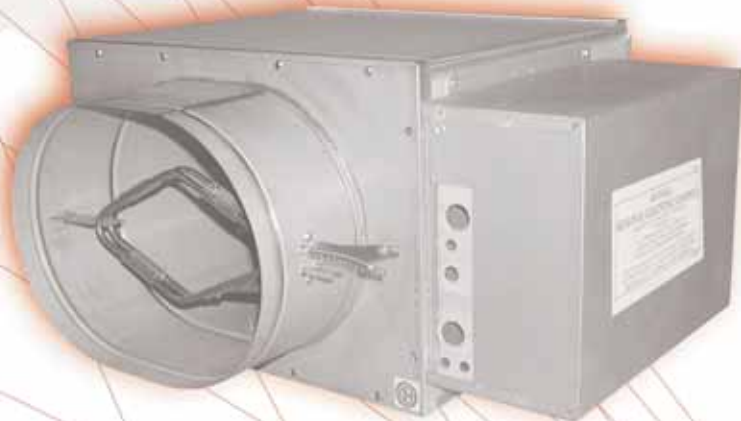
- ✦ Series BP-500 Bypass Air Terminals are designed to achieve VAV delivery of conditioned air to a room in single duct, constant volume air distribution systems
- ✦ Series BP-500 Bypass Air Terminals are available with a variety of standard control sequences
- ✦ Series BP-500 Bypass Air Terminals use a primary air damper working in concert with a bypass port damper
- ✦ Construction is of galvanized steel
- ✦ Units are available for system pressure dependent and system pressure independent applications

ATU

TH-500 / High Performance



TL-500 / Low Profile (Maximum Height 12 1/2")



SINGLE DUCT AIR TERMINAL UNITS

Single Duct Air Terminal Units

6/2007

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ARI Certified Air Terminals

METALAIRES Series TH/TL-500 Single Duct Air Terminals have been tested by the Air-Conditioning and Refrigeration Institute (ARI TH/TL-500) and have been found qualified to bear the certification mark of this independent testing agency.

ARI Certification testing is conducted in accordance with Industry Standard 880 which ensures that the performance data published in this catalog have been independently tested and found to be accurate and repeatable. Accessories which can be attached to the Series TH/TL-500 Air Terminals are not a part of the ARI certification program but ratings can be affected by their use.

Additional information on these testing programs can be obtained from your local METALAIRES representative.

At METALAIRES, we continually work to improve our products. Product descriptions, dimensions, and performance are subject to change without notice. For the most current available literature visit our web page at www.metalaires.com. Contact your local METALAIRES representative to verify product or performance details.

Single Duct Air Terminal Units



TH-500



For more product information visit us at www.metalaires.com



Single Duct Air Terminal Units

TH/TL-500 - Introduction

The METALAIRES Series TH-500 High Performance and TL-500 Low Profile Air Terminals are designed to regulate conditioned air flow in single duct air distribution systems. Available with a wide range of standard control sequences, each works equally well in constant volume and variable volume systems.

The Series TH-500 and TL-500 are available for both system pressure independent and system pressure dependent applications. Series TH-500 and TL-500 Air Terminals are recommended for use in duct systems with static pressures up to 3" water gauge.

TH-500 High Performance Single Duct Air Terminal Unit

The TH-500 is our high performance single duct air terminal product line. This series is available in a wide range of sizes with available capacities from 80 to 8000 CFM. The TH-500 sets the standard in the industry for construction, performance, and quality.

The TH-500 air terminal is supplied with a round inlet collar on unit sizes 6"-16" and rectangular inlets on sizes 20" and 24". Outlets are rectangular with slip and drive connections. Units include an external 20-gauge control mounting panel. Control panel covers are included on all units.

TL-500 Low Profile Single Duct Air Terminal Unit

The TL-500 is our low profile single duct air terminal product line. This series is designed with the maximum height of all sizes not exceeding 12 1/2". TH-500 units are available in a wide range of sizes with available capacities from 80 to 4000 CFM. The TL-500 offers superior performance in applications with limited plenum heights.

The TL-500 Air Terminal is supplied with a round inlet collar on unit sizes 6"-10" and an oval inlet on sizes 12" – 16". Outlets are rectangular with slip and drive connections. Units include an external 20-gauge control mounting panel. Control panel covers are included on all units.

Options and accessories for the TH-500 and TL-500

Controls

The METALAIRES single duct air terminals are available with pneumatic, electronic, analog electronic, or DDC (by others) factory mounted controls. See pages 68-73 for a complete list of available control options.

Hot water coils

Single duct terminals are available with 1, 2, 3, or 4 row hot water coils. 3 and 4 row coils are by special order only, contact your MetalAir representative for more information. Complete performance information including capacities and pressure drops are included in this catalog.

Sound Attenuator

The Sound Attenuator is available for applications which require exceptionally low sound levels. Refer to the product drawings for dimensions.

Electric Heat

Series TH/TL-500 air terminals may be specified with a wide range of UL listed electric heaters. Units are shipped with integral sound attenuator as standard.

Optional Liners

A wide range of optional internal liners are available for special environmental or acoustic applications. Included in the product offering are metal liners, Thermopure (closed cell foam) and foil face liners. For details see page 78.

For answers to all your questions on the Series TH/TL-500 series, visit us at www.metalair.com or call your local METALAIRES representative.

Series TH-500 Single Duct Air Terminal Unit

The TH-500 is a high performance single duct air terminal available in a wide range of sizes to fit your application requirements.



Series TL-500 Single Duct Air Terminal Unit

The TL-500 is a low profile single duct air terminal with a maximum height of 12 1/2". This series is an excellent choice for projects with low plenum heights.



Single Duct Air Terminal Units

TH-500

Options & Accessories for Air Terminal Units

Thermopure Insulation

ThermoPure insulation is a closed cell, washable, durable, and non-wicking insulation material that is ideal for critical care facilities such as hospitals and medical facilities as well as high humidity or corrosive environments. ThermoPure is mold and mildew resistant and the closed-cell structure minimizes moisture movement and condensation. It has been tested in accordance with USTC #P91-112.2 for mold growth and in accordance with 10.111 for humidity. After a 60-day period the material showed no evidence of mold growth or insulation deterioration, including the adhesive.



Thermopure Insulation

ThermoPure is 100% Fiber Glass free, assuring no downstream brush off, and is provided at a density of 1.5 lbs/ft³. The material is Polyolefin (Polyethylene) and exhibits unique thermal, physical, and chemical resistance properties. It is chemically resistant to most hydrocarbon-based solvents and has a broad installation temperature range. Additionally, because of the closed cell design, it offers low thermal conductivity and the lowest vapor transmission and water absorption rates of the commercially available insulations. The "R" value per wall thickness is 13% greater than Elatomaric (rubber) foam insulation and the water vapor transmission rate is 0.00 perm-in.

ThermoPure has been tested in accordance with both UL-723 (25/50) and ASTM E84 and has a flame spread of 10 and a smoke density of 30. It also meets UL 181 and UL 94 horizontal burn test standards. ThermoPure also meets many other state and local specifications, please contact your METALAIRE representative for a complete list of specification compliance.

ThermoPure's mold and mildew resistance, broad thermal range, and resistance to degradation make it a perfect choice for applications such as hospitals, high humidity environments, clean rooms, food processing areas, low temperature installations, and corrosive or chemical processing environments.



Single Duct Air Terminal Units

Features of the METALAIRE VAV Valve and Flow Sensor:

Inlet Valve

The METALAIRE® inlet valve assembly has a seamless butt weld on a round inlet tube to minimize leakage and prevent the damper from binding. The damper shaft rotates in a long life, self-lubricating Kepital® (acetal resin material) bearing. The damper shaft is composed of die cast aluminum and includes a damper position indicator. The actuator connects to a square end to prevent the actuator screw(s) from slipping.

The damper blade is manufactured with a flexible gasket and mounted without adhesives to provide an excellent close off seal. Included on the damper gasket are slits around the perimeter to prevent damper noise at low turn down. The damper is constructed of double thickness 24-gauge steel. Damper leakage is less than 1% of maximum CFM at 3.0" static pressure.

The primary air valve has a bead rolled into the tube, which strengthens the tube and serves as a stop and prevents field attached flex duct from slipping.

Flow Sensor

The METALAIRE multi-quadrant averaging flow sensor is a highly accurate, multi-ported device designed to provide true flow readings, even with varying flex duct inlet conditions. The sensor amplifies the input signal providing accurate flow control at low supply air volumes. Velocity pressure is read as a 4-point average that maintains +/- 5% accuracy regardless of inlet conditions.

The sensor provides two control ports and two accessory ports, all with brass barbed fittings to prevent connecting tubing from slipping. All flow sensor piping connections are made with external ports that extend through the damper tube allowing for easy inspection. This is a major advantage over competitors' sensors where the tubing attachment is inside the air valve. The metal construction of METALAIRE flow sensors assures long life and durability. Competing manufacturers typically provide plastic flow sensors, fittings, and balancing tees.

The METALAIRE flow sensor provides an accurate signal to controllers operating within a typical 0.03" to 1.0" velocity pressure range. For low flow controller applications, the sensor can be used to provide a signal down to 0.01".

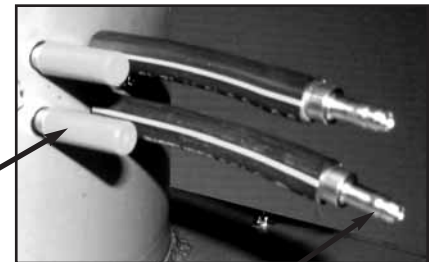


Bead formed on inlet tube for rigidity and to allow for a tight flex duct connection

Seamless weld

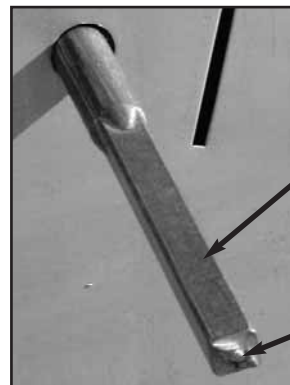
Kepital bearings

Average Velocity is obtained in 4 quadrants



Metal sensor tubes extend through the inlet tube, allowing external connections (shown with dust cover)

Brass barbed fittings for tube connection to VAV controller



Square Shaft

Damper Position indicator

Single Duct Air Terminal Units



TH-500

Single Duct Air Terminal Units

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SERIES TH-500

High Performance-Single Duct Air Terminal Units

Series TH-500 Air Terminals are designed to regulate the flow of conditioned air in single duct air distribution systems. They are available in a wide range of standard control sequences and work equally well in constant volume and variable volume systems.

Series TH-500 Air Terminals can be specified with hot water coils, electric heat, sound attenuators, and other optional accessories.

Series TH-500 Air Terminals feature a low leakage single blade damper. The TH series is available with pneumatic, electric, analog electric, and DDC (by others) factory mounted controls.

Series TH-500 Air Terminals are available for both pressure independent and pressure dependent applications.

Series TH-500 Air Terminals are recommended for use in duct systems with static pressures up to 3" water gauge.

The inlet tube for the TH-500 includes a bead that strengthens the tube and provides recess for flex duct straps

For set-up and balancing purposes, all units are shipped with a convenient balancing chart located on the outside of the terminal for conversion from velocity pressure to CFM

Units size 6 through 16 are constructed with a seamless butt weld to minimize leakage and prevent the damper from binding

Multiquadrant Averaging Flow Sensor provides an accurate flow signal without requiring an immediate upstream straight duct connection (Shipped standard on all units)

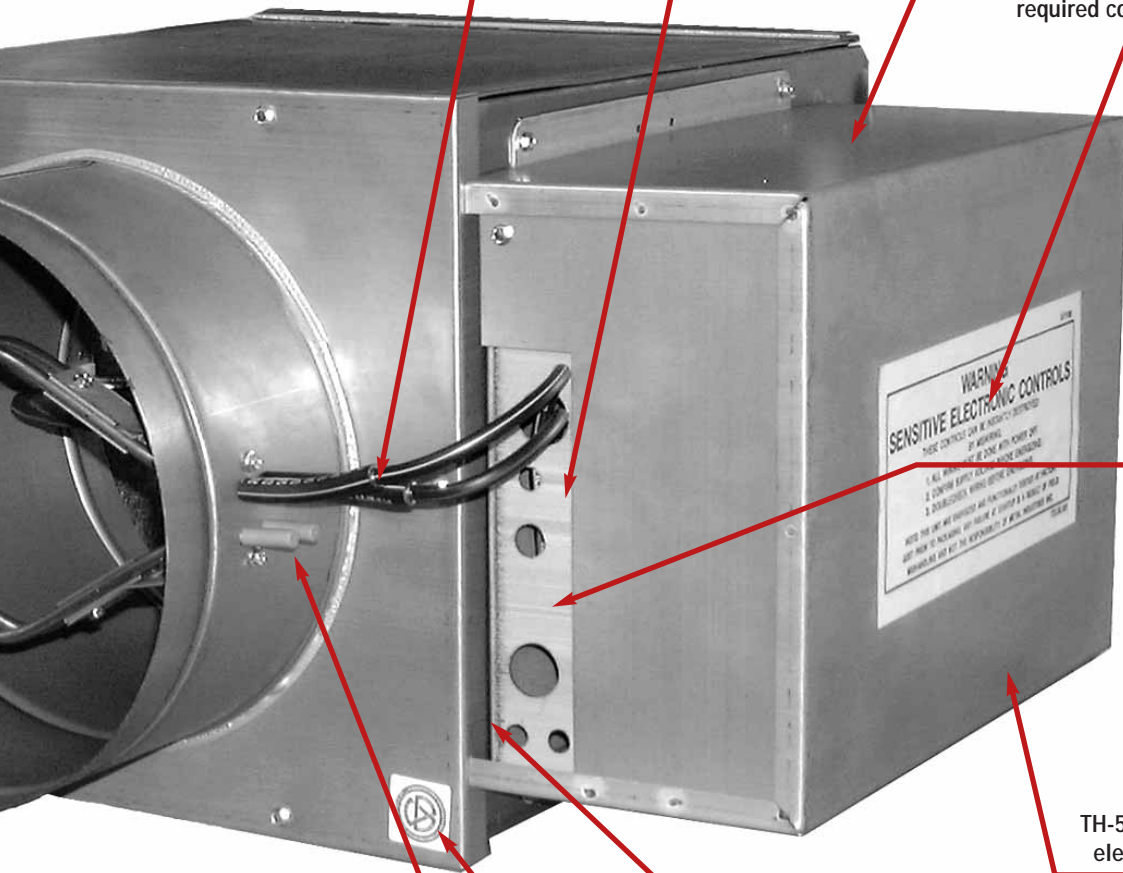


Single Duct Air Terminal Units



TH-500

Single Duct Air Terminal Units



For long life and continuous operation, the damper rotates in a self-lubricating Kepital® (acetal resin) bearing

All units include barbed fittings to secure tubing tightly in place

Control mounting plate and control cover are shipped standard on all units (right hand controls and coil connections are standard)

METALAIRE® factory can mount controls by others. Terminal unit is shipped with the required control and power wiring diagrams

WARNING
SENSITIVE ELECTRONIC CONTROLS
THESE CONTROLS DO NOT REQUIRE PROTECTION BY WIRING. BY WIRING TO A CONTROL PANEL WITH POINT WIRE & SUBSEQUENTLY WIRING THESE CONTROLS TO ALL WIRING SYSTEMS, YOU ARE RESPONSIBLE FOR THE PROTECTION OF THESE CONTROLS. WITH THE LINE AND GROUND AND CONTINUOUSLY TESTED AT 1000V AC FOR 10 MINUTES TO VERIFY THE PROTECTION OF THESE CONTROLS. METALAIRE WILL NOT BE RESPONSIBLE FOR ANY DAMAGE TO THESE CONTROLS.

Control panel includes stand-offs to allow mounting of controls without penetrating the casing

TH-500 is available with pneumatic, electric, analog, or digital controls

Standard insulation is dual density glass fiber. Optional liners are available including Thermopure (closed cell foam), foil face and metal liner

All TH-500 terminal units are ARI certified and shipped with the ARI seal

All units are shipped with easy access balancing taps. The extra ports can be used to read CFM (through velocity pressure) directly at the unit

Single Duct Air Terminal Units



TH-500



Single Duct Air Terminal Units

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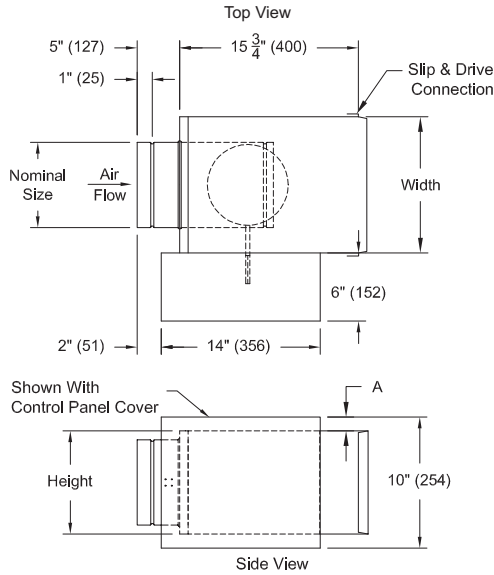
TH-500 - Air Terminal Dimensions

6" to 16" Case Sizes

Dimensions are in inches

High Performance Single Duct - Basic Unit

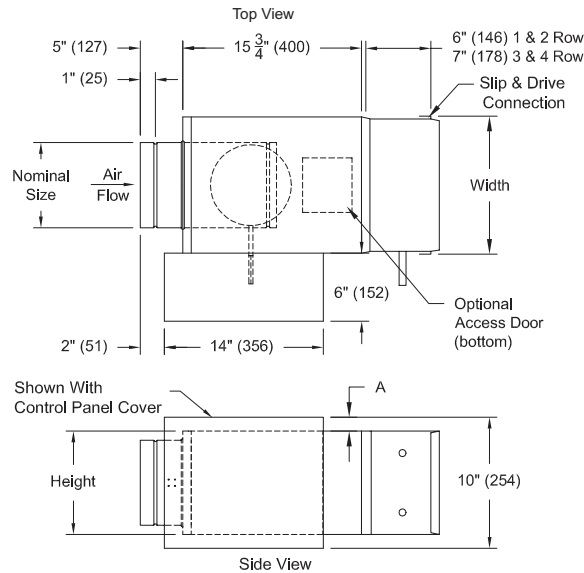
Model TH506 - 6" Inlet Model TH512 - 12" Inlet
 Model TH508 - 8" Inlet Model TH514 - 14" Inlet
 Model TH510 - 10" Inlet Model TH516 - 16" Inlet



Model Number	Nominal Size In. (mm)	Height In. (mm)	Width In. (mm)	Dim. A In. (mm)	Unit Weight
TH506	6 Dia. (152)	8 (203)	12 (305)	2 (51)	12 lbs 5.4 kg
TH508	8 Dia. (203)	10 (254)	12 (305)	1 (25)	15 lbs 6.8 kg
TH510	10 Dia. (254)	12 1/2 (318)	14 (356)	-	18 lbs 8.2 kg
TH512	12 Dia. (305)	15 (381)	16 (406)	-	22 lbs 9.9 kg
TH514	14 Dia. (356)	17 1/2 (445)	20 (508)	-	24 lbs 11 kg
TH516	16 Dia. (406)	18 (457)	24 (610)	-	29 lbs 13 kg

High Performance Single Duct - With Hot Water Coils

Model TH506 - 6" Inlet Model TH512 - 12" Inlet
 Model TH508 - 8" Inlet Model TH514 - 14" Inlet
 Model TH510 - 10" Inlet Model TH516 - 16" Inlet



Model Number	Nominal Size In. (mm)	Height In. (mm)	Width In. (mm)	Dim. A In. (mm)	Unit Weight with			
					1R HW Coil	2R HW Coil	3R HW Coil	4R HW Coil
TH506	6 Dia. (152)	8 (203)	12 (305)	2 (51)	16.7 (7.6)	17.7 (8)	21.2 (9.6)	22.5 (10.2)
TH508	8 Dia. (203)	10 (254)	12 (305)	1 (25)	20 (9.1)	21.6 (9.8)	26 (11.8)	27.7 (12.6)
TH510	10 Dia. (254)	12 1/2 (318)	14 (356)	-	24.3 (11)	26.6 (12)	32.4 (14.7)	24.8 (15.8)
TH512	12 Dia. (305)	15 (381)	16 (406)	-	31 (14.1)	34.3 (15.6)	40.1 (18.2)	43.4 (19.7)
TH514	14 Dia. (356)	17 1/2 (445)	20 (508)	-	34.1 (15.5)	38.9 (17.7)	48 (21.8)	52.8 (24.2)
TH516	16 Dia. (406)	18 (457)	24 (610)	-	42.3 (19.2)	48 (21.8)	53.7 (24.3)	59.4 (26.9)

Single Duct Air Terminal Units



TH-500



For more product information visit us at www.metalaire.com

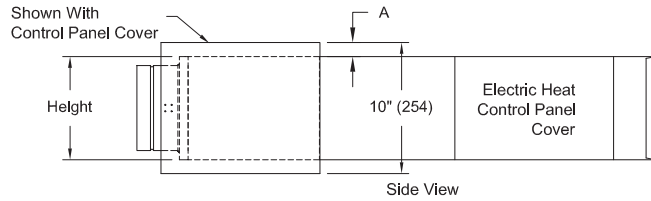
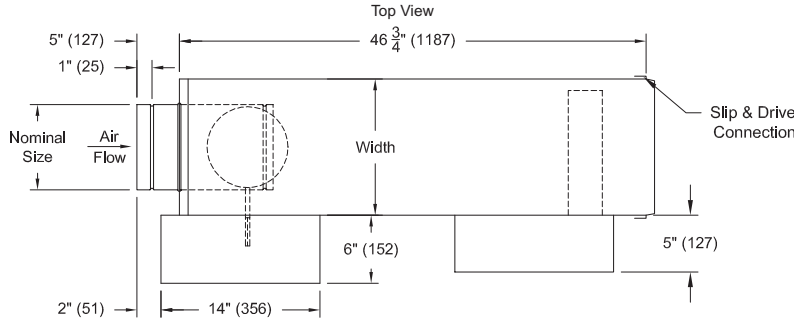


Single Duct Air Terminal Units

TH-500 - Air Terminal Dimensions

High Performance Single Duct - Electric Heat With Integral Sound Attenuator

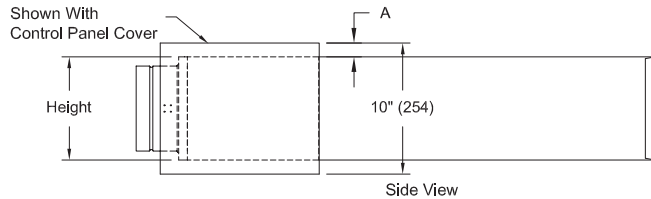
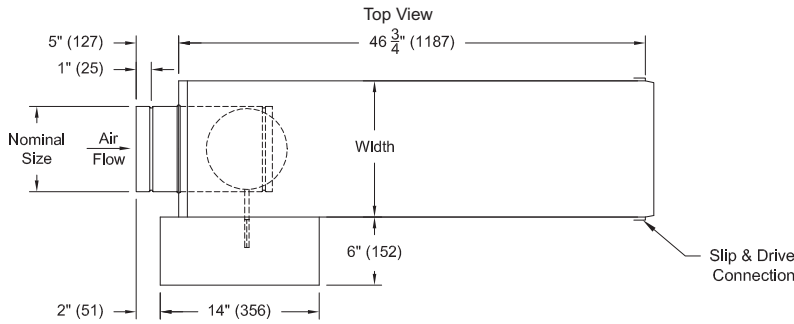
Model TH506 - 6" Inlet Model TH512 - 12" Inlet
 Model TH508 - 8" Inlet Model TH514 - 14" Inlet
 Model TH510 - 10" Inlet Model TH516 - 16" Inlet



Model Number	Nominal Size In. (mm)	Height In. (mm)	Width In. (mm)	Dim. A In. (mm)	Unit Weight Lbs. Kg
TH506	6 Dia. (152)	8 (203)	12 (305)	2 (51)	38 (17)
TH508	8 Dia. (203)	10 (254)	12 (305)	1 (25)	43 (20)
TH510	10 Dia. (254)	12 1/2 (318)	14 (356)	-	50 (23)
TH512	12 Dia. (305)	15 (381)	16 (406)	-	59 (27)
TH514	14 Dia. (356)	17 1/2 (445)	20 (508)	-	67 (30)
TH516	16 Dia. (406)	18 (457)	24 (610)	-	77 (35)

High Performance Single Duct - With Sound Attenuator

Model TH506 - 6" Inlet Model TH512 - 12" Inlet
 Model TH508 - 8" Inlet Model TH514 - 14" Inlet
 Model TH510 - 10" Inlet Model TH516 - 16" Inlet



Model Number	Nominal Size In. (mm)	Height In. (mm)	Width In. (mm)	Dim. A In. (mm)	Unit Weight Lbs. (Kg)
TH506	6 Dia. (152)	8 (203)	12 (305)	2 (51)	24 (11)
TH508	8 Dia. (203)	10 (254)	12 (305)	1 (25)	28 (13)
TH510	10 Dia. (254)	12 1/2 (318)	14 (356)	-	34 (15)
TH512	12 Dia. (305)	15 (381)	16 (406)	-	41 (19)
TH514	14 Dia. (356)	17 1/2 (445)	20 (508)	-	47 (21)
TH516	16 Dia. (406)	18 (457)	24 (610)	-	54 (25)

Single Duct Air Terminal Units



TH-500

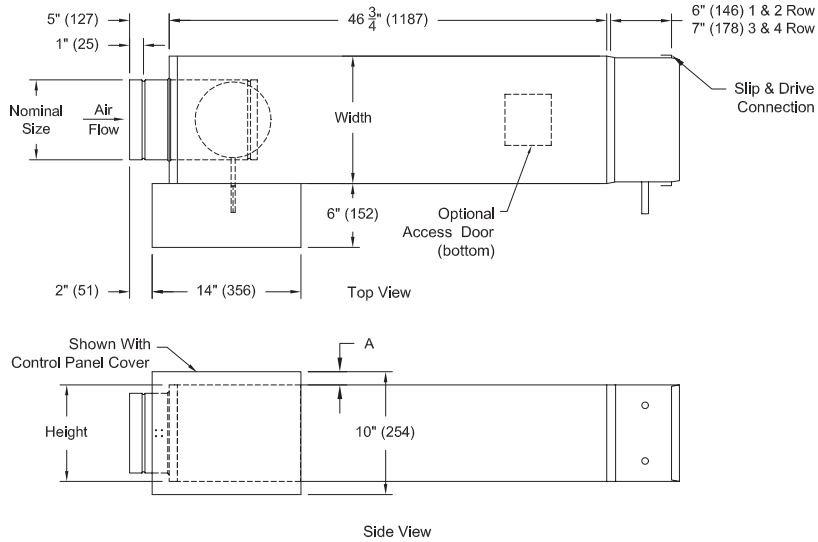
Single Duct Air Terminal Units

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TH-500 - Air Terminal Dimensions

High Performance Single Duct - With Sound Attenuator and Hot Water Coils

Model TH506 - 6" Inlet Model TH512 - 12" Inlet
 Model TH508 - 8" Inlet Model TH514 - 14" Inlet
 Model TH510 - 10" Inlet Model TH516 - 16" Inlet

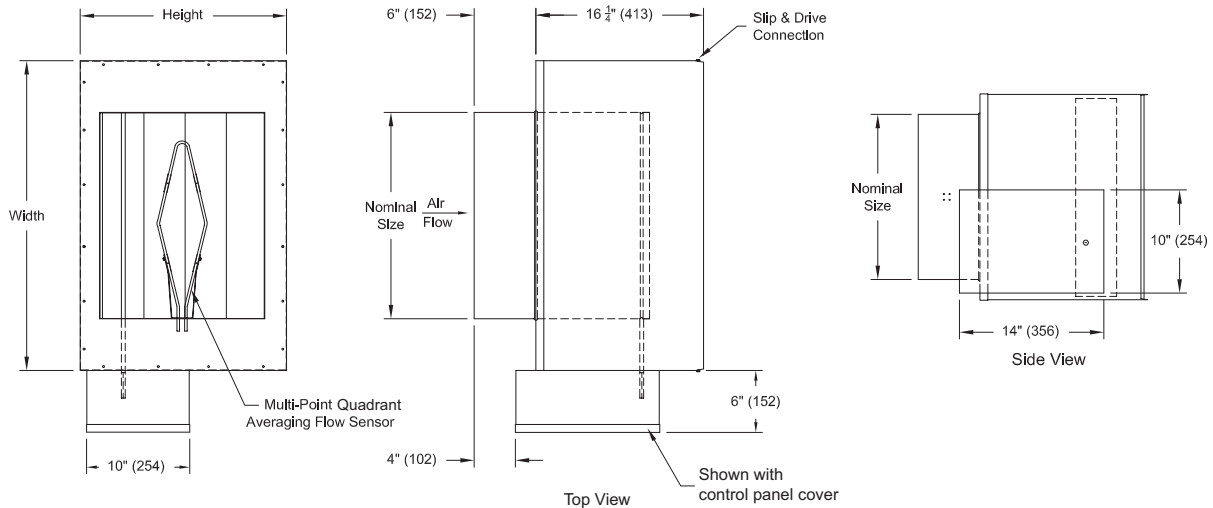


Model Number	Nominal Size In. (mm)	Height In. (mm)	Width In. (mm)	Dim. A In. (mm)	Unit Weight with			
					1R HW Coil	2R HW Coil	3R HW Coil	4R HW Coil
TH506	6 Dia. (152)	8 (203)	12 (305)	2 (51)	29 lbs (13 kg)	30 lbs (14 kg)	33 lbs (15 kg)	35 lbs (16 kg)
TH508	8 Dia. (203)	10 (254)	12 (305)	1 (25)	33 lbs (15 kg)	35 lbs (16 kg)	39 lbs (18 kg)	41 lbs (19 kg)
TH510	10 Dia. (254)	12 1/2 (318)	14 (356)	-	40 lbs (18 kg)	43 lbs (20 kg)	48 lbs (22 kg)	51 lbs (23 kg)
TH512	12 Dia. (305)	15 (381)	16 (406)	-	43 lbs (20 kg)	48 lbs (22 kg)	51 lbs (23 kg)	56 lbs (26 kg)
TH514	14 Dia. (356)	17 1/2 (445)	20 (508)	-	48 lbs (22 kg)	51 lbs (23 kg)	56 lbs (26 kg)	60 lbs (27 kg)
TH516	16 Dia. (406)	18 (457)	24 (610)	-	51 lbs (23 kg)	56 lbs (26 kg)	60 lbs (27 kg)	68 lbs (30 kg)

20" x 16" & 24" x 16" Case Sizes

High Performance Single Duct - Basic Unit

Model TH520 - 20" x 16" Rectangular Inlet
 Model TH524 - 24" x 16" Rectangular Inlet



Model Number	Nominal Size	Dim. H x W	CFM Range	Shipping Weight(Lbs)(Kg)
TH520	20 (508) x 16 (406)	20 (508) x 30 (762)	0-6000 (0-1.04)	47 (21.4)
TH524	24 (610) x 16 (406)	20 (508) x 38 (965)	0-8000 (0-1.42)	58 (26.3)

Single Duct Air Terminal Units



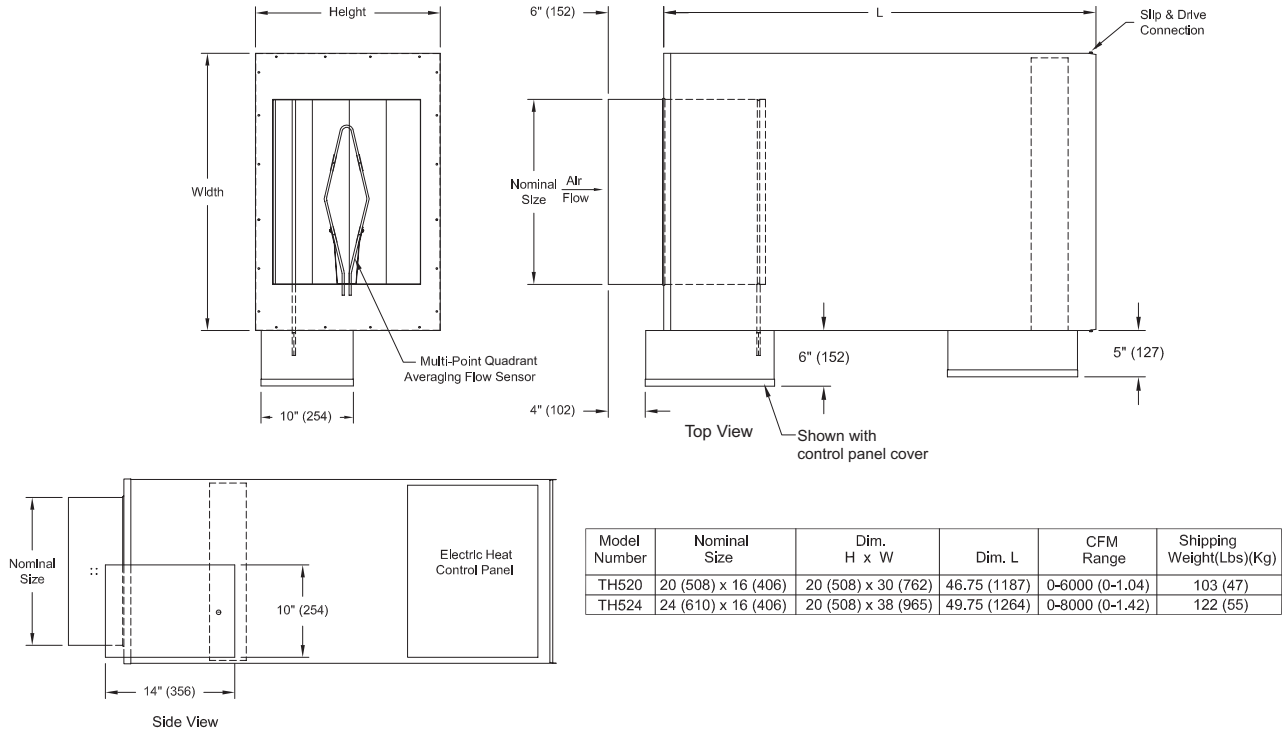
TH-500

Single Duct Air Terminal Units

TH-500 - Air Terminal Dimensions

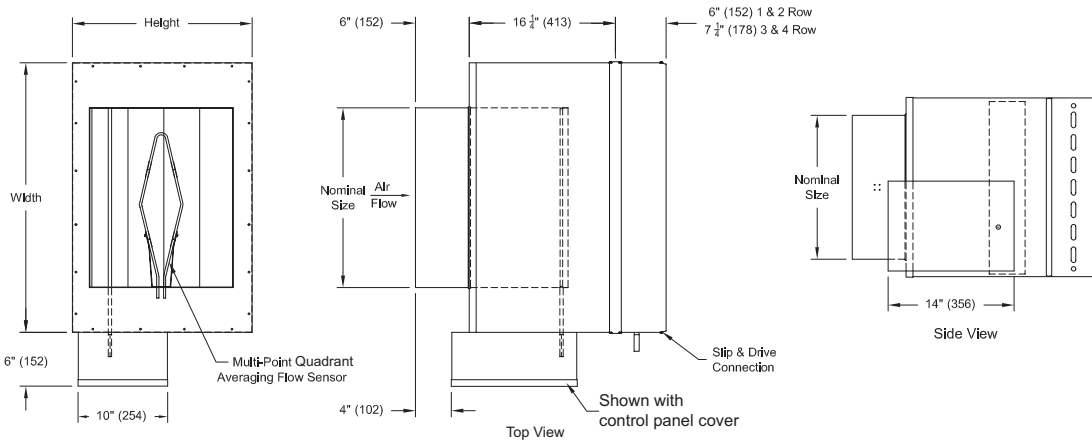
High Performance Single Duct - With Electric Heat

Model TH520 - 20" x 16" Rectangular Inlet
 Model TH524 - 24" x 16" Rectangular Inlet



High Performance Single Duct - With Hot Water Coils

Model TH520 - 20" x 16" Rectangular Inlet
 Model TH524 - 24" x 16" Rectangular Inlet



Model Number	Nominal Size	Dim. H x W	CFM Range	Shipping Weight(Lbs)(Kg)
TH520	20 (508) x 16 (406)	20 (508) x 30 (762)	0-6000 (0-1.04)	47 (21.4)
TH524	24 (610) x 16 (406)	20 (508) x 38 (965)	0-8000 (0-1.42)	58 (26.3)

Weight* with 1R HW Coil	1R HW Inlet Tube Diameter	Weight* with 2R HW Coil	2R HW Inlet Tube Diameter	Weight* with 3R HW Coil	3R HW Inlet Tube Diameter	Weight* with 4R HW Coil	4R HW Inlet Tube Diameter
64.1 lbs (29 kg)	7/8 (22)	72.2 lbs (33 kg)	7/8 (22)	78.3 lbs (36 kg)	1 1/8 (28.6)	85.7 lbs (39 kg)	1 1/8 (28.6)
78.5 lbs (36 kg)	7/8 (22)	88.6 lbs (40 kg)	7/8 (22)	98.7 lbs (45 kg)	1 1/8 (28.6)	108.8 lbs (50 kg)	1 1/8 (28.6)

* Dry weight

Single Duct Air Terminal Units



TH-500

Single Duct Air Terminal Units

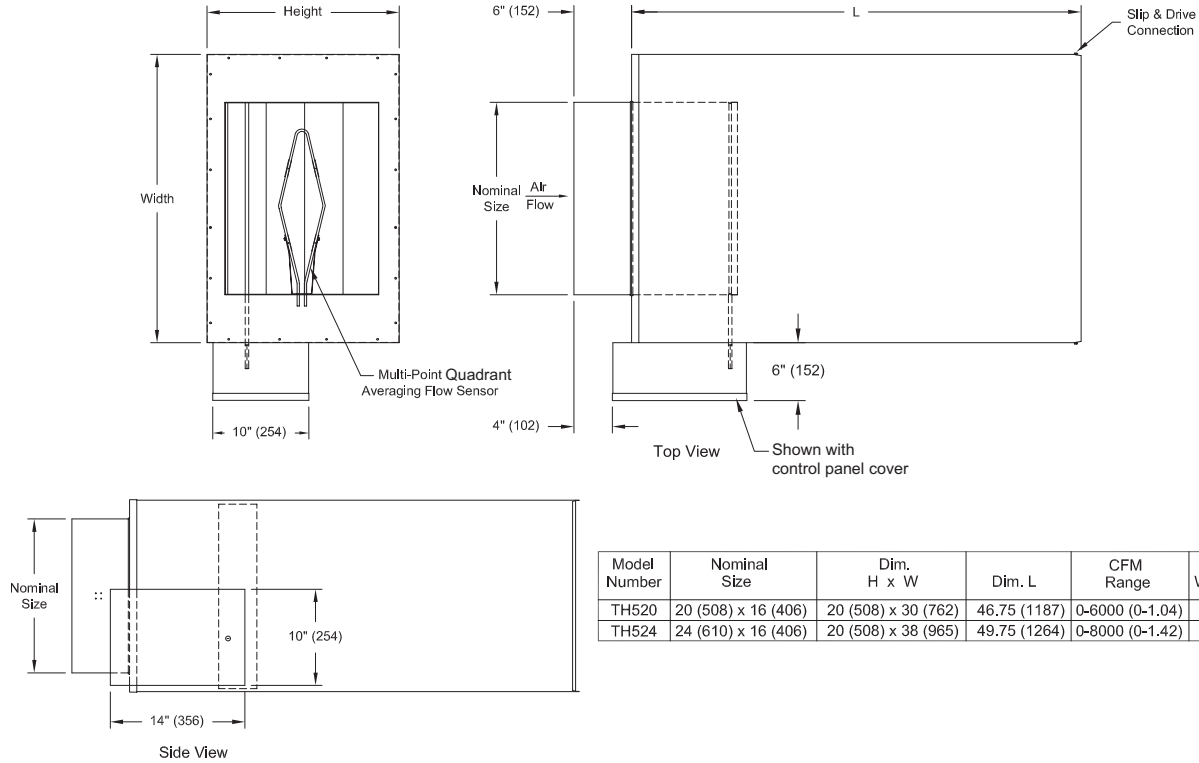
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TH-500 - Air Terminal Dimensions

High Performance Single Duct - With Integral Sound Attenuator

Model TH520 - 20" x 16" Rectangular Inlet

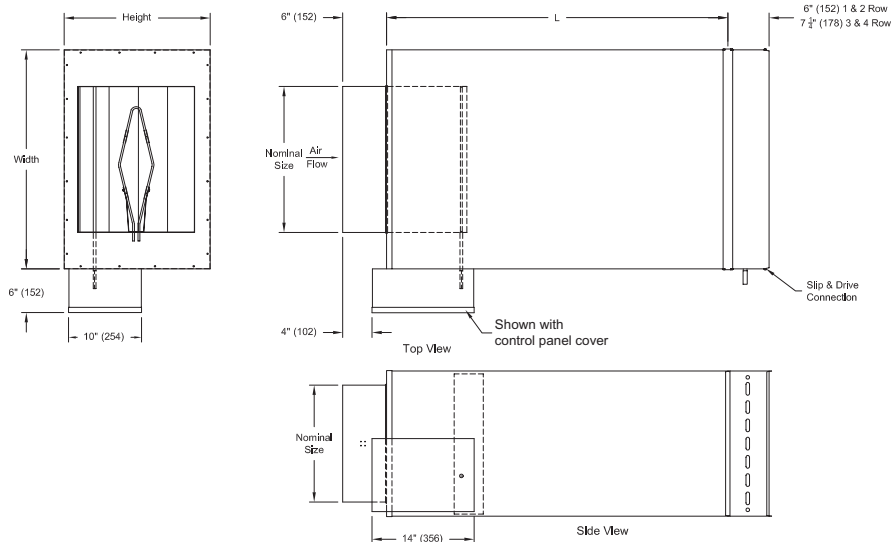
Model TH524 - 24" x 16" Rectangular Inlet



High Performance Single Duct - With Sound Attenuator and Hot Water Coils

Model TH520 - 20" x 16" Rectangular Inlet

Model TH524 - 24" x 16" Rectangular Inlet



Model Number	Nominal Size	Dim. H x W	Dim. L	CFM Range	Shipping Weight(Lbs)(Kg)
TH520	20 (508) x 16 (406)	20 (508) x 30 (762)	46.75 (1187)	0-6000 (0-1.04)	77 (35)
TH524	24 (610) x 16 (406)	20 (508) x 38 (965)	49.75 (1264)	0-8000 (0-1.42)	93 (42)

Weight* with 1R HW Coll	1R HW Inlet Tube Diameter	Weight* with 2R HW Coll	2R HW Inlet Tube Diameter	Weight* with 3R HW Coll	3R HW Inlet Tube Diameter	Weight* with 4R HW Coll	4R HW Inlet Tube Diameter
64.1 lbs (29 kg)	7/8 (22)	72.2 lbs (33 kg)	7/8 (22)	78.3 lbs (36 kg)	1 1/8 (28,6)	85.7 lbs (39 kg)	1 1/8 (28,6)
78.5 lbs (36 kg)	7/8 (22)	88.6 lbs (40 kg)	7/8 (22)	98.7 lbs (45 kg)	1 1/8 (28,6)	108.8 lbs (50 kg)	1 1/8 (28,6)

Single Duct Air Terminal Units



TH-500



For more product information visit us at www.metalaire.com



Single Duct Air Terminal Units

TH-500 - ARI Rating Points at 1.5" Inlet Pressure

ARI Certified Radiated Sound Power, 1.5" Inlet Static Pressure								
Unit Size	Min Ps	CFM	Octave Band					
			2	3	4	5	6	7
506	0.10	400	57	53	47	40	37	33
508	0.09	700	62	59	49	43	37	32
510	0.05	1100	60	56	51	44	38	34
512	0.05	1600	64	59	55	48	43	37
514	0.07	2100	63	58	49	44	42	39
516	0.08	2800	64	64	58	51	48	45
520	0.09	4400	70	66	64	61	54	47
524	0.09	5300	76	71	70	65	59	53



ARI Certified Discharge Sound Power, 1.5" Inlet Static Pressure								
Unit Size	Min Ps	CFM	Octave Band					
			2	3	4	5	6	7
506	0.10	400	65	66	61	57	52	49
508	0.09	700	66	67	61	59	55	50
510	0.05	1100	69	70	63	61	55	52
512	0.05	1600	68	70	68	61	57	54
514	0.07	2100	71	72	67	65	62	58
516	0.08	2800	73	74	73	66	61	56
520	0.09	4400	79	82	81	76	73	68
524	0.09	5300	86	83	83	78	74	70

STATEMENT OF STANDARD TEST CONFORMITY

METALAIRE tests all TH-500 air terminal units for engineering performance in accordance with the following standards: American National Standards Institute (ANSI)/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)/International Organization for Standardization (ISO)/Air-Conditioning & Refrigeration Institute (ARI).

- ARI Standard 880-98 Standard for Air Terminals
- ANSI/ASHRAE 130-1996 Methods of Testing for Rating Ducted Air Terminal Units
- ASHRAE Standard 41.1-1986 (RA 91) Standard Method for Temperature Measurement
- ASHRAE Standard 41.2-1987 Standard Methods for Laboratory Air Measurements
- ASHRAE Standard 41.3-1989 Standard Methods for Pressure Measurement
- ISO 5219-1984 Air distribution and air diffusion - Laboratory aerodynamic testing and rating of air terminal devices

Casing Leakage, CFM				
Inlet Size	0.25" ΔPs	0.50" ΔPs	1.00" ΔPs	1.50" ΔPs
6	2	3	4	5
8	2	3	5	6
10	3	4	6	8
12	3	5	7	9
14	4	6	9	11
16	5	7	10	12
20	5	7	10	12
24	6	8	12	14

Damper Leakage, CFM			
Inlet Size	1.5" ΔPs	3.0" ΔPs	6.0" ΔPs
6	3	4	7
8	3	4	7
10	4	5	7
12	4	5	7
14	4	6	8
16	4	6	8
20	N/A	N/A	N/A
24	N/A	N/A	N/A

Selection Recommendations for TH-500			
Inlet Size	Minimum CFM	Minimum CFM with Electric Heat	CFM @1"
6	105	165	600
8	190	220	1100
10	290	350	1700
12	430	500	2500
14	550	775	3250
16	750	975	4400
20	1100	1400	6200
24	1250	1800	7200

Notes:

1. Minimum CFM (without electric heat) is based on a signal velocity pressure of 0.03 in w.c..
2. The minimum CFM with electric heat values reported and a minimum of 0.03" downstream static pressure will provide sufficient total pressure to operate the airflow switch. For performance below these CFM values, please consult the factory.
3. Maximum CFM is based on a signal velocity pressure of 1.0 in w.c..
4. For Selections outside the above ranges, contact your local METALAIRE Representative.

TH-500 - Electric Heat Notes & kW Ranges

NOTES:

1. D Ps is the static pressure difference across the TH assembly, with the damper in the fully open position.
2. To obtain total pressure (Pt), add the velocity pressure (Pv) for a given CFM to the static pressure (Ps) of the desired configuration.
3. Damper leakage at shut-off is less than 1% at the maximum capacity of the air terminal at 3 inches of static pressure, for units 6 through 16.
4. It is recommended that air terminals be selected in the upper middle range of their listed capacity for maximum efficiency.
5. The lowest CFM flows shown above only imply a range; all terminals are capable of shut-off.
The minimum pressure independent controlled flow is dependent on the controller specified.
6. Low flows: High gain sensors are available for flow control down to 50 CFM if desired. On 6" inlet only
Warning: Most flow controllers are limited to a 5/1 flow control range.
7. Air terminals are not recommended for operation in ambient temperatures over 95°F.
For protection of controls, do not store in ambient temperatures over 115° F.
8. A minimum of 0.03 inches of water is required to set the flow switch in the electric heater.
Warning: Flow rates with static pressures below 0.03 inches of water will not activate the electric heater. Consult Factory.
9. Heaters equal or less than 6.0 kW are specifiable to the nearest 0.2 kW. Heaters from 6.0 to 10.0 kW are specifiable to the nearest 0.5 kW.
Heaters from 10.5 to Max kW are specifiable to the nearest 1.0 kW.
10. **Minimum flow rate for electric heat is 70 CFM/kW. Lower CFM's can cause nuisance tripping, excessive discharge temperatures, rapid cycling, and rapid element failure. Electric Heat units running below 70 CFM/kW will void all warranties (See Selection Recommendations for TH-500 on page TH-21).**
11. Higher kW's consult factory for availability. Min of 70 CFM/kW.
12. For optimum thermal comfort, the suggested discharge temperature should not exceed 20°F above room set point.
13. We do not recommend discharge temperatures in excess of 115°F to protect heater coils.

Single Phase				
Size	Heater Voltage	Min kW/St	Max kW	Max Steps
6	120	1.0	4	2
	208	.5	4	2
	240	.5	4	2
	277	.5	4	2
	480	1	4	2
8	120	1.0	5	3
	208	.5	8	3
	240	.5	8	3
	277	.5	8	3
	480	1	5	3
10	120	.5	5	3
	208	.5	9.5	3
	240	.5	9.5	3
	277	.5	12	3
	480	1	13	3
12	120	.5	5	3
	208	.5	9.5	3
	240	.5	9.5	3
	277	.5	12	3
	480	.5	13	3
14	120	.5	5	3
	208	.5	9.5	3
	240	.5	9.5	3
	277	.5	12	3
	480	.5	13	3
16	120	1.4	5	3
	208	.5	9.5	3
	240	.5	9.5	3
	277	.5	12	3
	480	.5	13	3
20	120	.5	5	3
	208	.5	9.5	3
	240	.5	9.5	3
	277	.5	12	3
	480	.5	13	3
24	120	.5	5	3
	208	.5	9.5	3
	240	.5	9.5	3
	277	.5	12	3
	480	.5	13	3

Three Phase				
Size	Heater Voltage	Min kW/St	Max kW	Max Steps
6	208	.5	4	2
	240	.5	4	2
	480	1.9	4	2
8	208	1.5	8	3
	240	1.5	8	3
	480	1.5	8	3
10	208	1.5	13	3
	240	1.5	13	3
	480	1.5	15	3
12	208	1.5	16	3
	240	1.5	16	3
	480	1.5	23	3
14	208	1.5	16	3
	240	1.5	16	3
	480	1.5	24	3
16	208	1.5	16	3
	240	1.5	16	3
	480	1.5	39	3
20	208	1.5	16	3
	240	1.5	16	3
	480	1.5	39	3
24	208	1.5	16	3
	240	1.5	16	3
	480	1.5	39	3

Electric heat selection

- A. Specify electric duct heaters using voltage, kW and number of steps.
- B. Use above chart to select voltage. Calculate required kW using following equations:

* air density at sea level - reduce by 0.036 for each 1000 feet of altitude above sea level

$$kW = \frac{BTU/hr}{3413} \quad dT = \frac{kW \times 3413}{CFM \times 1.085^*} \quad kW = \frac{CFM \times dT \times 1.085^*}{3413}$$

$$CFM = \frac{kW \times 3413}{dT \times 1.085^*} \quad CFM = \frac{kW \times 3413}{dT \times 1.085^*}$$

Where

- BTU/hr = Required heating capacity
- CFM = volume of air during heating. Typically 30% to 100% of maximum cooling air volume
- dT = desired air temperature rise across the electric heater in °F
- Inlet air temperature = primary air temperature, usually 55°F

Single Duct Air Terminal Units



TH-500



Single Duct Air Terminal Units

TH-500 - Radiated Sound Power at Min., .5", & .75" Wg

Unit Size	Outlet Ps in. H ₂ O	CFM (L/s)	Min Ps in. H ₂ O (Pa)	Min Ps														Inlet Pressure, P _s =0.5 inches of water (125 Pa)														Inlet Pressure, P _s =0.75 inches of water (185 Pa)																																																									
				Octave Band Sound Power, Lw, dB							NC1 ARI 885-890	NC2 ARI 885-890	Octave Band Sound Power, Lw, dB							NC1 ARI 885-890	NC2 ARI 885-890	Octave Band Sound Power, Lw, dB							NC1 ARI 885-890	NC2 ARI 885-890																																																											
				2	3	4	5	6	7	8			2	3	4	5	6	7	8			2	3	4	5	6	7	8																																																													
506 6 inch	0.25	100 (47)	0.015 (3.8)	40	32	17	14	12	10	-	-	41	32	22	20	16	10	-	-	43	34	24	22	18	13	-	-	200 (94)	0.038 (9.5)	42	35	23	20	19	12	-	-	48	38	30	25	20	16	-	-	50	40	34	28	24	20	-	-																																				
		508 8 inch	0.25	200 (94)	0.021 (5.3)	42	33	20	16	15	15	-	-	48	36	25	20	17	16	-	-	50	39	30	26	20	19	-	-	300 (142)	0.029 (7.2)	45	36	22	18	18	18	-	-	51	40	33	25	20	19	-	-	53	43	36	30	23	19	-	-																																		
				510 10 inch	0.25	400 (189)	0.012 (2.9)	51	36	25	22	19	19	-	-	52	42	34	28	24	19	-	-	54	45	37	31	24	19	-	-	800 (378)	0.039 (9.6)	53	39	30	27	20	19	-	-	55	46	39	35	29	20	-	-	57	50	43	38	32	23	-	-																																
						512 12 inch	0.25	1000 (472)	0.046 (11.5)	53	40	33	31	23	19	-	-	57	49	42	38	31	22	-	-	58	51	45	40	34	25	-	-	1700 (802)	0.151 (37.7)	61	53	49	46	37	30	-	-	63	56	51	47	40	32	-	-	65	58	53	50	42	33	-	-																														
								514 14 inch	0.25	550 (260)	0.002 (0.5)	50	33	26	19	15	14	-	-	54	35	28	22	19	17	-	-	56	40	35	30	25	21	-	-	925 (437)	0.004 (1.0)	51	36	29	22	18	16	-	-	56	48	40	33	29	23	-	-	57	49	42	35	31	24	-	-																												
										516 16 inch	0.25	1100 (519)	0.015 (3.8)	53	40	31	25	20	17	-	-	56	45	36	29	24	20	-	-	58	51	41	35	31	26	-	-	1800 (850)	0.035 (8.7)	56	46	37	31	27	23	-	-	59	52	42	36	33	29	-	-	60	53	44	40	37	33	-	-																										
												520 20x16 inch	0.25	3200 (1510)	0.051 (12.7)	59	56	50	49	45	37	21	25	62	61	58	51	45	40	30	33	63	61	58	53	46	40	30	33	4000 (1899)	0.113 (28.1)	60	55	52	45	41	38	23	26	62	62	57	52	46	42	39	23	63	63	59	53	48	43	40	25	4400 (2077)	0.153 (38.0)	62	59	56	48	44	41	27	31	65	61	57	50	46	43	29	32	66	62	58	51	47	44
524 24x16 inch	0.25													1250 (590)	0.006 (1.4)	53	39	32	28	22	19	-	-	55	42	36	30	25	20	-	-	56	44	38	32	28	22	-	-	1600 (755)	0.009 (2.3)	54	42	36	30	24	-	-	-	57	50	45	38	32	25	-	-	59	55	50	43	35	28	-	-																								

See Page TH-27 For NC Calculations

NC CALCULATIONS

The current ARI Standard for NC calculations is ARI 885-98. Other terminal manufacturers may catalog performance based on ARI 885-90. Using this older, obsolete standard will provide lower NC levels compared to the 1998 standard. To allow for fair and accurate performance comparisons, METALAIRE publishes the NC levels for both the 1990 standard and the 1998 current standard.



Single Duct Air Terminal Units

TH-500 - Discharge Sound Power at Min., .5" & .75" Wg

Unit Size	Outlet Ps in. H ₂ O	CFM (L/s)	Min Ps in. H ₂ O (Pa)	Min Ps														Inlet Pressure, P _s =0.5 inches of water (125 Pa)														Inlet Pressure, P _s =0.75 inches of water (185 Pa)													
				Octave Band Sound Power, Lw, dB							NC1 ARI 885-	NC2 ARI 885-	Octave Band Sound Power, Lw, dB							NC1 ARI 885-	NC2 ARI 885-	Octave Band Sound Power, Lw, dB							NC1 ARI 885-	NC2 ARI 885-															
				2	3	4	5	6	7	2			3	4	5	6	7	2	3			4	5	6	7																				
6 inch	0.25	100 (47)	0.015 (3.8)	52	38	24	21	20	17	-	-	53	48	37	37	33	28	-	-	54	52	43	40	37	34	-	-																		
		8 inch	0.25	200 (94)	0.021 (5.3)	52	40	36	34	28	25	-	-	55	50	45	40	34	30	-	-	56	53	49	43	37	34	-	-																
				10 inch	0.25	300 (142)	0.029 (7.2)	53	42	38	36	30	27	-	-	57	54	47	43	38	33	-	-	58	57	51	46	41	37	-	-														
						12 inch	0.25	400 (189)	0.046 (11.4)	54	46	40	38	31	29	-	-	60	58	51	48	41	37	-	-	62	61	53	51	45	40	-	-												
								14 inch	0.25	500 (236)	0.064 (15.9)	56	49	45	42	33	30	-	-	62	60	53	51	43	39	-	-	64	62	55	53	46	42	-	-										
										16 inch	0.25	600 (283)	0.090 (22.4)	57	53	49	46	38	31	-	-	64	62	55	54	45	40	-	-	65	64	57	55	48	43	-	-								
20x16 inch	0.25											800 (378)	0.110 (27.4)	61	59	56	54	47	41	-	-	67	65	59	58	50	45	-	-	68	67	61	60	52	47	22	24								
		24x16 inch	0.25									1000 (472)	0.128 (31.8)	62	61	58	56	51	46	-	-	68	67	61	60	52	47	22	24	70	68	63	63	54	49	24	25								

See Page TH-27 For NC Calculations

NC CALCULATIONS

The current ARI Standard for NC calculations is ARI 885-98. Other terminal manufacturers may catalog performance based on ARI 885-90. Using this older, obsolete standard will provide lower NC levels compared to the 1998 standard. To allow for fair and accurate performance comparisons, METALAIRE publishes the NC levels for both the 1990 standard and the 1998 current standard.

Single Duct Air Terminal Units

TH-500 - Sound Path Attenuation Assumptions

NC CALCULATIONS

The current ARI Standard for NC calculations is ARI 885-98. Other terminal manufacturers may catalog performance based on ARI 885-90. Using this older, obsolete standard will provide lower NC levels compared to the 1998 standard. To allow for fair and accurate performance comparisons, METALAIRES publishes the NC levels for both the 1990 standard and the 1998 current standard.

ARI 885-90 Radiated Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	3	2	1	1	1	1
Ceiling Effect	9	10	12	14	15	15
Room Effect	9	10	10	11	12	13
Total dB Reduction	21	22	23	26	28	29

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-90.

- Parameters:
- 1) Mineral fiber ceiling tile, 5/8" thick (35 lb/ft³ density).
 - 2) Room size is 3000 ft³.
 - 3) Unit is located 10 ft from measurement point.

ARI 885-90 Discharge Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	3	2	1	1	1	1
Duct Lining	1	3	8	22	23	13
End Reflection	11	6	2	0	0	0
Flex Duct	6	9	23	25	22	13
Room Effect	9	10	10	11	12	13
Total dB Reduction	30	30	44	59	58	40

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-90.

- Parameters:
- 1) Fiberglass duct lining is 1 inch thick, 12" x 12" duct length is 5 feet.
 - 2) Flex duct is 8 inches in diameter and 6 feet in length for run to diffuser.
 - 3) Flex duct has a vinyl core.
 - 4) Room size is 3000 ft³.
 - 5) Unit is located 10 ft from measurement point.
 - 6) Attenuation credit based on a 300 CFM flow division using 10 log (# space) not shown above

ARI 885-98 Radiated Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Ceiling/Space Effect	16	18	20	26	31	36
Total dB Reduction	18	19	20	26	31	36

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-98.

- Parameters:
- 1) Mineral fiber ceiling tile, 5/8" thick (35 lb/ft³ density).
 - 2) The plenum space is at least 3 ft deep and either wide (>30 ft) or insulated.

* Combined effect including absorption of the ceiling tile, plenum absorption and room absorption.
(New to ARI 885-98. ARI 885-90 had separate lines for these absorptions.)

ARI 885-98, APPE defined "Medium" application from 300 to 700 CFM

ARI 885-98 Discharge Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Duct Lining	2	4	10	20	20	14
End Reflection	9	5	2	0	0	0
Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
Total dB Reduction	24	26	37	48	50	36

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-98.

- Parameters:
- 1) 12" x 12" x 5' duct with 1 inch thick fiberglass lining.
 - 2) Flex duct is 8 inches in diameter and 5 feet in length for run to diffuser.
 - 3) Flex duct has a vinyl core.
 - 4) Room size is 2400 ft³ (size of standard test room).
 - 5) Unit is located 5 ft from measurement point.
 - 6) Attenuation credit based on a 300 CFM flow division using 10 log (# space) not shown above

ARI 885-98, APPE defined "Large" application 700 CFM & greater

ARI 885-98 Discharge Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Duct Lining	2	3	9	18	17	12
End Reflection	9	5	2	0	0	0
Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
Total dB Reduction	24	25	36	46	47	34

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-98.

- Parameters:
- 1) 15" x 15" x 5' duct with 1 inch thick fiberglass lining.
 - 2) Flex duct is 8 inches in diameter and 5 feet in length for run to diffuser.
 - 3) Flex duct has a vinyl core.
 - 4) Room size is 2400 ft³ (size of standard test room).
 - 5) Unit is located 5 ft from measurement point.
 - 6) Attenuation credit based on a 300 CFM flow division using 10 log (# space) not shown above

Single Duct Air Terminal Units

6/2007

TH-500 - Hot Water Coils MBH Selection Data

TH-506 Imperial Units			CFM							
	GPM	Head Loss (Ft-hd)	100	200	300	350	400	450	500	600
1-Row 1-Circuit	0.5	0.1	5.1	6.9	8.0	8.4	8.7	9.0	9.3	9.7
	1	0.47	5.6	7.9	9.4	10.0	10.5	10.9	11.4	12.0
	2	1.79	6.0	8.6	10.4	11.1	11.8	12.3	12.9	13.8
	3	3.91	6.1	8.9	10.8	11.6	12.3	12.9	13.5	14.7
	4	6.83	6.2	9.0	11.0	11.8	12.6	13.2	13.8	14.9
Airsides Ps (in. wc.)			0.01	0.04	0.08	0.1	0.13	0.15	0.19	0.25
2-Row 2-Circuit	1	0.12	8.3	12.2	14.7	15.7	16.5	17.2	17.9	19.0
	2	0.47	9.0	13.8	17.1	18.5	19.7	20.7	21.7	23.3
	3	1.02	9.2	14.4	18.2	19.7	21.0	22.3	23.4	25.3
	5	2.75	9.4	15.0	19.1	20.8	22.3	23.7	25.0	27.2
	6	3.92	9.5	15.2	19.4	21.1	22.7	24.1	25.5	27.8
Airsides Ps (in. wc.)			0.03	0.09	0.17	0.22	0.27	0.33	0.4	0.54
3-Row 4-Circuit	3	0.42	11.0	17.8	22.6	24.6	26.3	27.9	29.3	-
	4	0.75	11.1	18.3	23.5	25.7	27.6	29.3	30.9	-
	5	1.16	11.2	18.6	24.1	26.4	28.4	30.3	32.0	-
	6	1.66	11.3	18.9	24.5	26.9	29.0	30.9	32.7	-
	8	2.93	11.4	19.2	25.1	27.5	29.8	31.9	33.8	-
Airsides Ps (in. wc.)			0.04	0.13	0.25	0.33	0.41	0.5	0.59	-
4-Row 6-Circuit	6	1.11	12.3	21.3	28.1	31.0	33.6	35.9	38.1	-
	7	1.5	12.4	21.5	28.5	31.5	34.2	36.6	38.9	-
	8	1.96	12.4	21.6	28.8	31.8	34.6	37.2	39.5	-
	9	2.47	12.5	21.8	29.1	32.1	35.0	37.6	40.0	-
	10	3.05	12.5	21.9	29.3	32.4	35.3	38.0	40.4	-
Airsides Ps (in. wc.)			0.05	0.17	0.34	0.43	0.54	0.66	0.79	-

Refer to Table-A on Page TH-36 for Imperial Notes

TH-506 Metric Units			L/s							
	L/s	Head Loss (kPa)	45	95	140	165	190	210	235	285
1-Row 1-Circuit	0.03	0.03	1.5	2.0	2.3	2.4	2.6	2.6	2.7	2.8
	0.06	0.16	1.6	2.3	2.8	2.9	3.1	3.2	3.3	3.5
	0.13	0.60	1.8	2.5	3.1	3.3	3.4	3.6	3.8	4.0
	0.19	1.31	1.8	2.6	3.2	3.4	3.6	3.8	4.0	4.3
	0.25	2.29	1.8	2.7	3.2	3.5	3.7	3.9	4.1	4.4
Airsides Ps (kPa)			0.002	0.01	0.02	0.02	0.03	0.04	0.05	0.06
2-Row 2-Circuit	0.06	0.04	2.4	3.6	4.3	4.6	4.8	5.0	5.2	5.6
	0.13	0.16	2.6	4.0	5.0	5.4	5.8	6.1	6.4	6.8
	0.19	0.34	2.7	4.2	5.3	5.8	6.2	6.5	6.9	7.4
	0.32	0.92	2.8	4.4	5.6	6.1	6.6	7.0	7.3	8.0
	0.38	1.32	2.8	4.5	5.7	6.2	6.7	7.1	7.5	8.1
Airsides Ps (kPa)			0.01	0.02	0.04	0.05	0.07	0.08	0.10	0.13
3-Row 4-Circuit	0.19	0.14	3.2	5.2	6.6	7.2	7.7	8.2	8.6	-
	0.25	0.25	3.3	5.4	6.9	7.5	8.1	8.6	9.1	-
	0.32	0.39	3.3	5.5	7.1	7.7	8.3	8.9	9.4	-
	0.38	0.56	3.3	5.5	7.2	7.9	8.5	9.1	9.6	-
	0.50	0.98	3.3	5.6	7.3	8.1	8.7	9.3	9.9	-
Airsides Ps (kPa)			0.01	0.03	0.06	0.08	0.10	0.12	0.15	-
4-Row 6-Circuit	0.38	0.37	3.6	6.2	8.2	9.1	9.8	10.5	11.2	-
	0.44	0.50	3.6	6.3	8.4	9.2	10.0	10.7	11.4	-
	0.50	0.66	3.6	6.3	8.4	9.3	10.2	10.9	11.6	-
	0.57	0.83	3.7	6.4	8.5	9.4	10.3	11.0	11.7	-
	0.63	1.02	3.7	6.4	8.6	9.5	10.4	11.1	11.9	-
Airsides Ps (kPa)			0.01	0.04	0.08	0.11	0.13	0.16	0.20	-

Refer to Table-B on Page TH-36 for Metric Notes

Single Duct Air Terminal Units



TH-500

Single Duct Air Terminal Units

TH-500 - Hot Water Coils MBH Selection Data

TH-508 Imperial Units			CFM							
	GPM	Head Loss (Ft-hd)	300	400	500	600	700	800	900	1000
1-Row 1-Circuit	0.5	0.17	9.2	10.1	10.8	11.3	11.8	12.2	12.5	12.8
	1	0.64	10.9	12.2	13.3	14.1	14.8	15.5	16.0	16.5
	2	2.42	12.0	13.7	15.0	16.1	17.1	18.0	18.7	19.4
	3	5.3	12.5	14.3	15.7	17.0	18.1	19.0	19.9	20.7
	4	9.25	12.7	14.6	16.1	17.5	18.6	19.6	20.5	21.4
Airside Ps (in. wc.)			0.05	0.08	0.11	0.15	0.2	0.25	0.31	0.37
2-Row 2-Circuit	1	0.17	16.6	18.7	20.4	21.7	22.8	23.8	24.6	25.3
	2	0.64	19.2	22.3	24.7	26.0	28.5	30.0	31.3	32.5
	3	1.39	20.3	23.8	26.6	29.0	31.1	32.9	34.5	36.0
	4.5	3.04	21.2	25.0	28.1	30.8	33.2	35.2	37.1	38.8
	6	5.31	21.6	25.6	28.9	31.8	34.3	36.5	38.6	40.4
Airside Ps (in. wc.)			0.1	0.17	0.24	0.33	0.43	0.54	0.65	0.78
3-Row 4-Circuit	3	0.5	25.2	29.7	33.3	36.3	38.8	41.1	-	-
	4	0.87	26.1	31.0	35.0	38.4	41.3	43.9	-	-
	5	1.35	26.6	31.8	36.1	39.8	42.9	45.7	-	-
	6	1.93	27.0	32.4	36.9	40.8	44.1	47.1	-	-
	7	2.62	27.3	32.9	37.5	41.5	45.0	48.2	-	-
Airside Ps (in. wc.)			0.16	0.25	0.37	0.5	0.64	0.8	-	-
4-Row 6-Circuit	4	0.54	29.5	35.3	40.1	44.0	47.5	-	-	-
	5	0.85	30.2	36.4	41.5	45.9	49.7	-	-	-
	6	1.22	30.7	37.2	42.6	47.2	51.3	-	-	-
	8	2.15	31.3	38.2	44.0	49.0	53.5	-	-	-
	10	3.34	31.7	38.8	44.9	50.2	54.9	-	-	-
Airside Ps (in. wc.)			0.21	0.34	0.49	0.66	0.86	-	-	-

Refer to Table-A on Page TH-36 for Imperial Notes

TH-508 Metric Units			L/s							
	L/s	Head Loss (kPa)	140	190	235	285	330	380	425	475
1-Row 1-Circuit	0.03	0.06	2.7	3.0	3.2	3.3	3.5	3.6	3.7	3.7
	0.06	0.21	3.2	3.6	3.9	4.1	4.4	4.5	4.7	4.8
	0.13	0.81	3.5	4.0	4.4	4.7	5.0	5.3	5.5	5.7
	0.19	1.78	3.7	4.2	4.6	5.0	5.3	5.6	5.8	6.1
	0.25	3.10	3.7	4.3	4.7	5.1	5.5	5.8	6.0	6.3
Airside Ps (kPa)			0.012	0.02	0.03	0.04	0.05	0.06	0.08	0.09
2-Row 2-Circuit	0.06	0.06	4.9	5.5	6.0	6.4	6.7	7.0	7.2	7.4
	0.13	0.21	5.6	6.5	7.2	7.6	8.4	8.8	9.2	9.5
	0.19	0.47	6.0	7.0	7.8	8.5	9.1	9.7	10.1	10.5
	0.28	1.02	6.2	7.3	8.2	9.0	9.7	10.3	10.9	11.4
	0.38	1.78	6.3	7.5	8.5	9.3	10.1	10.7	11.3	11.9
Airside Ps (kPa)			0.02	0.04	0.06	0.08	0.11	0.13	0.16	0.19
3-Row 4-Circuit	0.19	0.17	7.4	8.7	9.8	10.6	11.4	12.0	-	-
	0.25	0.29	7.6	9.1	10.3	11.2	12.1	12.9	-	-
	0.32	0.45	7.8	9.3	10.6	11.7	12.6	13.4	-	-
	0.38	0.65	7.9	9.5	10.8	12.0	12.9	13.8	-	-
	0.44	0.88	8.0	9.6	11.0	12.2	13.2	14.1	-	-
Airside Ps (kPa)			0.04	0.06	0.09	0.12	0.16	0.20	-	-
4-Row 6-Circuit	0.25	0.18	8.6	10.3	11.7	12.9	13.9	-	-	-
	0.32	0.29	8.8	10.7	12.2	13.5	14.6	-	-	-
	0.38	0.41	9.0	10.9	12.5	13.9	15.0	-	-	-
	0.50	0.72	9.2	11.2	12.9	14.4	15.7	-	-	-
	0.63	1.12	9.3	11.4	13.2	14.7	16.1	-	-	-
Airside Ps (kPa)			0.05	0.08	0.12	0.16	0.21	-	-	-

Refer to Table-B on Page TH-36 for Metric Notes



Single Duct Air Terminal Units

6/2007

TH-500 - Hot Water Coils MBH Selection Data

TH-510 Imperial Units			CFM							
	GPM	Head Loss (Ft-hd)	400	600	800	1000	1200	1400	1500	1600
1-Row 2-Circuit	1	0.12	13.6	15.7	17.1	18.3	19.1	19.9	20.2	20.5
	2	0.46	15.7	18.5	20.7	22.3	23.7	24.9	25.4	25.8
	3	1.01	16.5	19.8	22.2	24.2	25.8	27.2	27.8	28.4
	4	1.76	17.0	20.5	23.2	25.3	27.1	28.6	29.3	29.9
	5	2.71	17.3	21.0	23.8	26.0	27.9	29.5	30.3	30.9
Airside Ps (in. wc.)			0.04	0.08	0.13	0.19	0.27	0.35	0.39	0.44
2-Row 3-Circuit	1	0.1	20.6	24.0	26.3	27.9	29.0	30.2	-	-
	2	0.37	24.9	30.1	34.0	36.9	38.9	41.2	-	-
	3	0.82	26.8	33.0	37.7	41.4	43.9	46.9	-	-
	4.5	1.8	28.8	35.3	40.7	45.1	48.2	51.8	-	-
	6	3.16	29.0	36.5	42.4	47.2	50.6	54.7	-	-
Airside Ps (in. wc.)			0.09	0.18	0.28	0.41	0.57	0.73	-	-
3-Row 6-Circuit	4	0.55	34.3	43.0	49.6	54.7	58.2	-	-	-
	6	1.22	36.0	45.9	53.6	59.8	64.1	-	-	-
	8	2.16	36.9	47.5	55.9	62.7	67.6	-	-	-
	10	3.36	37.5	48.5	57.4	64.7	69.9	-	-	-
	12	4.82	37.9	49.3	58.4	66.1	71.5	-	-	-
Airside Ps (in. wc.)			0.13	0.26	0.43	0.62	0.91	-	-	-
4-Row 8-Circuit	5	0.68	40.0	51.4	60.1	67.0	-	-	-	-
	7	1.65	37.7	54.0	63.9	71.9	-	-	-	-
	9	2.18	42.2	55.6	66.3	75.0	-	-	-	-
	11	3.24	42.8	56.6	67.8	77.1	-	-	-	-
	13	4.52	43.2	57.4	69.0	78.7	-	-	-	-
Airside Ps (in. wc.)			0.18	0.35	0.57	0.83	-	-	-	-

Refer to Table-A on Page TH-36 for Imperial Notes

TH-510 Metric Units			L/s							
	L/s	Head Loss (kPa)	190	285	380	475	565	660	710	755
1-Row 2-Circuit	0.06	0.04	4.0	4.6	5.0	5.4	5.6	5.8	5.9	6.0
	0.13	0.15	4.6	5.4	6.1	6.5	7.0	7.3	7.4	7.6
	0.19	0.34	4.8	5.8	6.5	7.1	7.6	8.0	8.2	8.3
	0.25	0.59	5.0	6.0	6.8	7.4	7.9	8.4	8.6	8.8
	0.32	0.91	5.1	6.1	7.0	7.6	8.2	8.7	8.9	9.1
Airside Ps (kPa)			0.010	0.02	0.03	0.05	0.07	0.09	0.10	0.11
2-Row 3-Circuit	0.06	0.03	6.0	7.0	7.7	8.2	8.5	8.9	-	-
	0.13	0.12	7.3	8.8	10.0	10.8	11.4	12.1	-	-
	0.19	0.28	7.8	9.7	11.0	12.1	12.9	13.8	-	-
	0.28	0.60	8.5	10.3	11.9	13.2	14.1	15.2	-	-
	0.38	1.06	8.5	10.7	12.4	13.8	14.8	16.0	-	-
Airside Ps (kPa)			0.02	0.04	0.07	0.10	0.14	0.18	-	-
3-Row 6-Circuit	0.25	0.18	10.1	12.6	14.5	16.0	17.1	-	-	-
	0.38	0.41	10.5	13.5	15.7	17.5	18.8	-	-	-
	0.50	0.72	10.8	13.9	16.4	18.4	19.8	-	-	-
	0.63	1.13	11.0	14.2	16.8	19.0	20.5	-	-	-
	0.76	1.62	11.1	14.4	17.1	19.4	21.0	-	-	-
Airside Ps (kPa)			0.03	0.06	0.11	0.15	0.23	-	-	-
4-Row 8-Circuit	0.32	0.23	11.7	15.1	17.6	19.7	-	-	-	-
	0.44	0.55	11.1	15.8	18.7	21.1	-	-	-	-
	0.57	0.73	12.4	16.3	19.4	22.0	-	-	-	-
	0.69	1.09	12.5	16.6	19.9	22.6	-	-	-	-
	0.82	1.52	12.7	16.8	20.2	23.1	-	-	-	-
Airside Ps (kPa)			0.04	0.09	0.14	0.21	-	-	-	-

Refer to Table-B on Page TH-36 for Metric Notes

Single Duct Air Terminal Units



TH-500

Single Duct Air Terminal Units

TH-500 - Hot Water Coils MBH Selection Data

TH-512 Imperial Units			CFM							
	GPM	Head Loss (Ft-hd)	800	1000	1200	1400	1600	1800	2000	2200
1-Row 2-Circuit	1	0.15	20.2	21.6	22.7	23.6	24.3	25.0	25.6	26.1
	2	0.55	24.4	26.5	28.2	29.7	30.9	32.0	33.0	33.9
	3	1.21	26.3	28.7	30.8	32.6	34.1	35.4	36.7	37.8
	4	2.11	27.3	30.0	32.3	34.2	36.0	37.5	38.8	40.1
	5	3.25	28.0	30.9	33.3	35.4	37.2	38.8	40.3	41.6
	Airside Ps (in. wc.)		0.08	0.11	0.15	0.2	0.25	0.31	0.37	0.44
2-Row 4-Circuit	1	0.06	28.5	30.3	31.5	32.8	33.7	34.5	35.1	-
	2	0.25	37.5	40.8	43.1	45.7	47.5	49.1	50.5	-
	3	0.54	41.9	46.2	49.1	52.6	55.1	57.3	59.3	-
	4.5	1.2	45.5	50.6	54.3	58.6	61.8	64.6	67.1	-
	6	2.12	47.6	53.2	57.3	62.2	65.8	69.0	71.9	-
	Airside Ps (in. wc.)		0.17	0.24	0.33	0.43	0.54	0.65	0.78	-
3-Row 6-Circuit	4	0.61	56.5	62.9	67.4	72.6	76.4	-	-	-
	6	1.35	60.8	68.5	73.9	80.5	85.2	-	-	-
	8	2.39	63.2	71.7	77.7	85.1	90.5	-	-	-
	10	3.71	64.7	73.7	80.2	88.1	95.0	-	-	-
	12	5.32	65.8	75.1	81.9	90.3	96.5	-	-	-
	Airside Ps (in. wc.)		0.25	0.37	0.49	0.64	0.8	-	-	-
4-Row 8-Circuit	5	0.73	67.7	76.3	83.3	89.3	-	-	-	-
	7	1.42	71.6	81.5	89.8	96.9	-	-	-	-
	9	2.34	73.9	84.6	93.8	101.8	-	-	-	-
	11	3.48	75.4	86.8	96.6	105.1	-	-	-	-
	13	4.85	76.6	88.3	98.6	107.6	-	-	-	-
	Airside Ps (in. wc.)		0.34	0.49	0.66	0.86	-	-	-	-

Refer to Table-A on Page TH-36 for Imperial Notes

TH-512 Metric Units			L/s							
	L/s	Head Loss (kPa)	378	472	566	661	755	850	944	1038
1-Row 2-Circuit	0.06	0.05	5.9	6.3	6.6	6.9	7.1	7.3	7.5	7.6
	0.13	0.18	7.1	7.8	8.3	8.7	9.1	9.4	9.7	9.9
	0.19	0.41	7.7	8.4	9.0	9.5	10.0	10.4	10.8	11.1
	0.25	0.71	8.0	8.8	9.5	10.0	10.5	11.0	11.4	11.8
	0.32	1.09	8.2	9.1	9.8	10.4	10.9	11.4	11.8	12.2
	Airside Ps (kPa)		0.020	0.03	0.04	0.05	0.06	0.08	0.09	0.11
2-Row 4-Circuit	0.06	0.02	8.4	8.9	9.2	9.6	9.9	10.1	10.3	-
	0.13	0.08	11.0	12.0	12.6	13.4	13.9	14.4	14.8	-
	0.19	0.18	12.3	13.5	14.4	15.4	16.2	16.8	17.4	-
	0.28	0.40	13.3	14.8	15.9	17.2	18.1	18.9	19.7	-
	0.38	0.71	13.9	15.6	16.8	18.2	19.3	20.2	21.1	-
	Airside Ps (kPa)		0.04	0.06	0.08	0.11	0.13	0.16	0.19	-
3-Row 6-Circuit	0.25	0.20	16.6	18.5	19.8	21.3	22.4	-	-	-
	0.38	0.45	17.8	20.1	21.7	23.6	25.0	-	-	-
	0.50	0.80	18.5	21.0	22.8	24.9	26.5	-	-	-
	0.63	1.25	19.0	21.6	23.5	25.8	27.9	-	-	-
	0.76	1.79	19.3	22.0	24.0	26.5	28.3	-	-	-
	Airside Ps (kPa)		0.06	0.09	0.12	0.16	0.20	-	-	-
4-Row 8-Circuit	0.32	0.24	19.9	22.4	24.4	26.2	-	-	-	-
	0.44	0.48	21.0	23.9	26.3	28.4	-	-	-	-
	0.57	0.79	21.7	24.8	27.5	29.8	-	-	-	-
	0.69	1.17	22.1	25.4	28.3	30.8	-	-	-	-
	0.82	1.63	22.4	25.9	28.9	31.5	-	-	-	-
	Airside Ps (kPa)		0.08	0.12	0.16	0.21	-	-	-	-

Refer to Table-B on Page TH-36 for Metric Notes



Single Duct Air Terminal Units

6/2007

TH-500 - Hot Water Coils MBH Selection Data

TH-514 Imperial Units			CFM							
	GPM	Head Loss (Ft-hd)	1000	1300	1600	2000	2300	2600	3000	3300
1-Row 2-Circuit	1	0.21	25.7	27.7	29.2	30.8	31.7	32.5	33.4	33.9
	2	0.79	31.9	35.1	37.7	40.4	42.1	43.5	45.2	46.3
	3	1.73	34.7	38.6	41.7	45.1	47.2	49.1	51.2	52.7
	4	3.01	36.3	40.6	44.1	47.9	50.3	52.4	54.2	55.6
	5	4.63	37.3	41.9	45.6	49.7	52.4	54.7	57.4	59.2
	Airside Ps (in. wc.)		0.06	0.09	0.13	0.19	0.25	0.31	0.39	0.46
2-Row 4-Circuit	1	0.08	35.1	37.5	39.1	40.8	41.8	42.6	43.4	-
	2	0.3	47.2	52.4	56.1	59.8	62.1	64.0	66.1	-
	3	0.66	53.8	60.2	65.3	70.6	73.9	76.7	79.9	-
	4.5	1.45	59.0	66.9	73.4	80.3	84.6	88.4	92.7	-
	6	2.54	62.1	70.9	78.2	86.2	91.2	95.7	100.8	-
	Airside Ps (in. wc.)		0.13	0.2	0.28	0.41	0.52	0.64	0.82	-
3-Row 6-Circuit	4	0.7	72.9	82.5	90.1	98.0	101.3	-	-	-
	6	1.55	79.0	90.8	100.5	110.8	115.2	-	-	-
	8	2.73	82.3	95.5	106.4	118.4	123.6	-	-	-
	10	4.23	84.4	98.6	110.4	123.5	129.2	-	-	-
	12	6.06	85.9	100.7	113.1	127.1	133.2	-	-	-
	Airside Ps (in. wc.)		0.19	0.3	0.43	0.62	0.73	-	-	-
4-Row 8-Circuit	5	0.81	87.1	100.0	110.2	120.9	-	-	-	-
	7	1.57	92.5	107.7	120.1	133.5	-	-	-	-
	9	2.58	95.7	112.4	126.3	141.6	-	-	-	-
	11	3.84	97.8	115.5	130.5	147.1	-	-	-	-
	13	5.34	99.3	117.8	133.5	151.6	-	-	-	-
	Airside Ps (in. wc.)		0.26	0.4	0.57	0.83	-	-	-	-

Refer to Table-A on Page TH-36 for Imperial Notes

TH-514 Metric Units			L/s							
	L/s	Head Loss (kPa)	472	614	755	944	1086	1227	1416	1558
1-Row 2-Circuit	0.06	0.07	7.5	8.1	8.6	9.0	9.3	9.5	9.8	10.0
	0.13	0.27	9.4	10.3	11.0	11.8	12.3	12.8	13.3	13.6
	0.19	0.58	10.2	11.3	12.2	13.2	13.8	14.4	15.0	15.4
	0.25	1.01	10.6	11.9	12.9	14.0	14.7	15.4	15.9	16.3
	0.32	1.55	10.9	12.3	13.4	14.6	15.4	16.0	16.8	17.4
	Airside Ps (kPa)		0.015	0.02	0.03	0.05	0.06	0.08	0.10	0.11
2-Row 4-Circuit	0.06	0.03	10.3	11.0	11.5	12.0	12.3	12.5	12.7	-
	0.13	0.10	13.8	15.4	16.4	17.5	18.2	18.8	19.4	-
	0.19	0.22	15.8	17.7	19.2	20.7	21.7	22.5	23.4	-
	0.28	0.49	17.3	19.6	21.5	23.5	24.8	25.9	27.2	-
	0.38	0.85	18.2	20.8	22.9	25.3	26.7	28.0	29.6	-
	Airside Ps (kPa)		0.03	0.05	0.07	0.10	0.13	0.16	0.20	-
3-Row 6-Circuit	0.25	0.23	21.4	24.2	26.4	28.7	29.7	-	-	-
	0.38	0.52	23.2	26.6	29.5	32.5	33.8	-	-	-
	0.50	0.92	24.1	28.0	31.2	34.7	36.2	-	-	-
	0.63	1.42	24.8	28.9	32.4	36.2	37.9	-	-	-
	0.76	2.03	25.2	29.5	33.2	37.3	39.0	-	-	-
	Airside Ps (kPa)		0.05	0.07	0.11	0.15	0.18	-	-	-
4-Row 8-Circuit	0.32	0.27	25.5	29.3	32.3	35.5	-	-	-	-
	0.44	0.53	27.1	31.6	35.2	39.2	-	-	-	-
	0.57	0.87	28.0	33.0	37.0	41.5	-	-	-	-
	0.69	1.29	28.7	33.9	38.3	43.1	-	-	-	-
	0.82	1.79	29.1	34.5	39.2	44.4	-	-	-	-
	Airside Ps (kPa)		0.06	0.10	0.14	0.21	-	-	-	-

Refer to Table-B on Page TH-36 for Metric Notes

Single Duct Air Terminal Units



TH-500

Single Duct Air Terminal Units

TH-500 - Hot Water Coils MBH Selection Data

TH-516 Imperial Units			CFM							
	GPM	Head Loss (Ft-hd)	1600	2000	2300	2600	3000	3300	3600	4000
1-Row 2-Circuit	1	0.24	31.7	33.4	34.4	35.2	36.2	36.8	37.3	38.0
	2	0.89	41.1	44.2	46.1	47.7	49.6	50.8	51.9	53.2
	3	1.95	45.6	49.5	51.9	54.0	56.4	58.1	59.5	61.3
	4	3.39	48.3	52.6	55.4	57.8	60.6	62.5	64.2	66.3
	5	5.21	50.4	54.7	57.7	60.4	63.5	65.6	67.5	69.8
Airsides Ps (in. wc.)			0.1	0.14	0.18	0.22	0.29	0.34	0.39	0.47
2-Row 4-Circuit	1	0.08	41.7	43.5	44.5	45.3	46.2	46.8	47.2	-
	2	0.32	60.1	64.3	66.8	68.9	71.2	72.7	74.0	-
	3	0.72	70.3	76.2	79.9	83.0	86.5	88.8	90.9	-
	4.5	1.58	79.0	86.8	91.7	95.9	100.8	104.0	107.0	-
	6	2.76	84.3	93.3	99.0	104.0	109.8	113.7	117.2	-
Airsides Ps (in. wc.)			0.21	0.3	0.39	0.47	0.6	0.71	0.82	-
3-Row 6-Circuit	4	0.74	96.8	105.7	111.0	115.6	120.8	-	-	-
	6	1.65	107.9	119.5	126.8	133.2	140.4	-	-	-
	8	2.9	114.2	127.7	136.3	143.8	152.5	-	-	-
	10	4.49	118.3	133.1	142.5	150.9	160.7	-	-	-
	12	6.43	121.2	136.9	147.0	156.0	166.7	-	-	-
Airsides Ps (in. wc.)			0.31	0.46	0.58	0.71	0.9	-	-	-
4-Row 8-Circuit	5	0.85	117.8	129.8	137.1	-	-	-	-	-
	7	1.65	128.2	143.3	152.7	-	-	-	-	-
	9	2.7	134.6	151.7	162.6	-	-	-	-	-
	11	4.02	138.9	157.5	169.5	-	-	-	-	-
	12	4.77	140.6	159.8	172.2	-	-	-	-	-
Airsides Ps (in. wc.)			0.42	0.61	0.77	-	-	-	-	-

Refer to Table-A on Page TH-36 for Imperial Notes

TH-516 Metric Units			L/s							
	L/s	Head Loss (kPa)	755	945	1085	1230	1415	1560	1700	1890
1-Row 2-Circuit	0.06	0.08	9.3	9.8	10.1	10.3	10.6	10.8	10.9	11.1
	0.13	0.30	12.1	13.0	13.5	14.0	14.5	14.9	15.2	15.6
	0.19	0.65	13.4	14.5	15.2	15.8	16.5	17.0	17.5	18.0
	0.25	1.14	14.2	15.4	16.2	16.9	17.8	18.3	18.8	19.4
	0.32	1.75	14.8	16.0	16.9	17.7	18.6	19.2	19.8	20.5
Airsides Ps (kPa)			0.025	0.03	0.04	0.05	0.07	0.08	0.10	0.12
2-Row 4-Circuit	0.06	0.03	12.2	12.7	13.0	13.3	13.5	13.7	13.9	-
	0.13	0.11	17.6	18.9	19.6	20.2	20.9	21.3	21.7	-
	0.19	0.24	20.6	22.3	23.4	24.3	25.4	26.1	26.7	-
	0.28	0.53	23.2	25.5	26.9	28.1	29.6	30.5	31.4	-
	0.38	0.93	24.7	27.3	29.0	30.5	32.2	33.3	34.4	-
Airsides Ps (kPa)			0.05	0.07	0.10	0.12	0.15	0.18	0.20	-
3-Row 6-Circuit	0.25	0.25	28.4	31.0	32.6	33.9	35.4	-	-	-
	0.38	0.55	31.6	35.1	37.2	33.2	41.2	-	-	-
	0.50	0.97	33.5	37.4	40.0	42.2	44.7	-	-	-
	0.63	1.51	34.7	39.0	41.8	44.3	47.1	-	-	-
	0.76	2.16	35.6	40.1	43.1	45.8	48.9	-	-	-
Airsides Ps (kPa)			0.08	0.11	0.14	0.18	0.22	-	-	-
4-Row 8-Circuit	0.32	0.29	34.6	38.1	40.2	-	-	-	-	-
	0.44	0.55	37.6	42.0	44.8	-	-	-	-	-
	0.57	0.91	39.5	44.5	47.7	-	-	-	-	-
	0.69	1.35	40.7	46.2	49.7	-	-	-	-	-
	0.76	1.60	41.2	46.9	50.5	-	-	-	-	-
Airsides Ps (kPa)			0.10	0.15	0.19	-	-	-	-	-

Refer to Table-B on Page TH-36 for Metric Notes



Single Duct Air Terminal Units

6/2007

TH-500 - Hot Water Coils MBH Selection Data

TH-520 Imperial Units			CFM							
	GPM	Head Loss (Ft-hd)	1500	2000	2500	3000	3500	4000	5000	6000
1-Row 4-Circuit	2	0.25	43.9	48.0	51.1	53.6	55.6	57.2	59.9	62.0
	4	0.96	53.0	59.3	64.2	68.3	71.7	74.6	79.4	83.2
	6	2.12	57.0	64.4	70.3	75.2	79.4	83.0	89.1	94.0
	8	3.72	59.2	67.3	73.8	79.3	84.0	88.9	95.0	100.6
	10	5.77	60.7	69.2	76.2	82.0	87.0	91.4	98.9	105.1
Airside Ps (in. wc.)			0.05	0.08	0.11	0.15	0.2	0.25	0.37	0.51
2-Row 6-Circuit	6	1.55	90.8	104.1	114.7	123.3	130.6	136.8	146.9	-
	8	2.73	95.9	111.0	123.2	133.3	141.9	149.4	161.7	-
	10	4.23	99.2	115.6	129.0	140.1	149.7	158.1	172.1	-
	12	6.06	101.6	118.9	133.1	145.1	155.5	164.5	179.8	-
	14	8.21	103.4	121.4	136.2	148.9	159.8	169.4	185.7	-
Airside Ps (in. wc.)			0.1	0.17	0.24	0.33	0.43	0.54	0.78	-
3-Row 8-Circuit	6	1.21	104.3	120.4	133.1	143.4	152.0	159.3	-	-
	8	2.14	109.8	128.3	143.2	155.5	165.9	174.9	-	-
	10	3.33	113.4	133.4	149.8	163.6	175.4	185.6	-	-
	12	4.77	115.9	137.0	154.6	169.4	182.2	193.4	-	-
	14	6.47	117.7	139.7	158.1	173.8	187.4	199.4	-	-
Airside Ps (in. wc.)			0.12	0.2	0.3	0.42	0.55	0.69	-	-
4-Row 12-Circuit	6	0.84	118.7	137.2	151.4	162.8	172.1	-	-	-
	8	1.48	125.9	147.5	164.7	178.8	190.6	-	-	-
	10	2.31	130.5	154.3	173.7	189.5	203.4	-	-	-
	12	3.32	133.7	159.1	180.1	197.7	212.8	-	-	-
	14	4.51	136.0	162.7	184.9	203.7	220.0	-	-	-
Airside Ps (in. wc.)			0.17	0.27	0.4	0.56	0.73	-	-	-

Refer to Table-A on Page TH-36 for Imperial Notes

TH-520 Metric Units			L/s							
	L/s	Head Loss (kPa)	710	945	1180	1415	1650	1890	2360	2830
1-Row 4-Circuit	0.13	0.08	12.9	14.1	15.0	15.7	16.3	16.8	17.6	18.2
	0.25	0.32	15.5	17.4	18.8	20.0	21.0	21.9	23.3	24.4
	0.38	0.71	16.7	18.9	20.6	22.1	23.3	24.3	26.1	27.6
	0.50	1.25	17.4	19.7	21.7	23.2	24.6	26.1	27.9	29.5
	0.63	1.94	17.8	20.3	22.3	24.0	25.5	26.8	29.0	30.8
Airside Ps (kPa)			0.012	0.02	0.03	0.04	0.05	0.06	0.09	0.13
2-Row 6-Circuit	0.38	0.52	26.6	30.5	33.6	36.2	38.3	40.1	43.1	-
	0.50	0.92	28.1	32.6	36.1	39.1	41.6	43.8	47.4	-
	0.63	1.42	29.1	33.9	37.8	41.1	43.9	46.4	50.5	-
	0.76	2.03	29.8	34.9	39.0	42.5	45.6	48.2	52.7	-
	0.88	2.76	30.3	35.6	40.0	43.7	46.9	49.7	54.5	-
Airside Ps (kPa)			0.02	0.04	0.06	0.08	0.11	0.13	0.19	-
3-Row 8-Circuit	0.38	0.41	30.6	35.3	39.0	42.1	44.6	46.7	-	-
	0.50	0.72	32.2	37.6	42.0	45.6	48.7	51.3	-	-
	0.63	1.12	33.3	39.1	43.9	48.0	51.4	54.4	-	-
	0.76	1.60	34.0	40.2	45.3	49.7	53.4	56.7	-	-
	0.88	2.17	34.5	41.0	46.4	51.0	55.0	58.5	-	-
Airside Ps (kPa)			0.03	0.05	0.07	0.10	0.14	0.17	-	-
4-Row 12-Circuit	0.38	0.28	34.8	40.2	44.4	47.7	50.5	-	-	-
	0.50	0.50	36.9	43.3	48.3	52.4	55.9	-	-	-
	0.63	0.78	38.3	45.3	50.9	55.6	59.7	-	-	-
	0.76	1.11	39.2	46.7	52.8	58.0	62.4	-	-	-
	0.88	1.51	39.9	47.7	54.2	59.7	64.5	-	-	-
Airside Ps (kPa)			0.04	0.07	0.10	0.14	0.18	-	-	-

Refer to Table-B on Page TH-36 for Metric Notes

Single Duct Air Terminal Units



TH-500

Single Duct Air Terminal Units

TH-500 - Hot Water Coils MBH Selection Data

TH-524 Imperial Units			CFM							
	GPM	Head Loss (Ft-hd)	2000	3000	4000	5000	5500	6000	7000	8000
1-Row 4-Circuit	2	0.28	53.4	59.7	63.9	66.9	68.2	69.3	71.1	72.7
	4	1.07	66.3	76.8	84.2	89.8	92.2	94.3	98.0	101.1
	6	2.36	72.1	84.8	94.1	101.2	104.3	107.1	112.0	116.2
	8	4.15	75.5	89.6	100.0	108.2	111.7	114.9	120.6	125.5
	10	6.43	77.6	92.7	103.9	112.8	116.6	120.2	126.4	131.9
	Airside Ps (in. wc.)		0.05	0.1	0.17	0.25	0.29	0.34	0.44	0.56
2-Row 6-Circuit	2	0.2	74.8	82.9	87.8	91.1	92.4	93.5	-	-
	4	0.77	100.8	117.3	128.4	136.5	139.7	142.6	-	-
	6	1.7	104.1	135.5	151.0	162.7	167.5	171.9	-	-
	8	2.73	111.0	146.8	165.4	179.7	185.8	191.2	-	-
	10	4.63	126.2	154.4	175.3	191.6	198.6	204.9	-	-
	Airside Ps (in. wc.)		0.11	0.22	0.36	0.52	0.62	0.71	-	-
3-Row 9-Circuit	6	1.11	129.7	155.3	172.9	186.0	191.3	-	-	-
	8	1.96	138.3	168.8	190.6	207.2	214.2	-	-	-
	10	3.05	143.9	177.8	202.7	222.1	230.3	-	-	-
	12	4.38	147.8	184.3	211.6	233.1	242.3	-	-	-
	14	5.94	150.7	189.2	218.3	241.6	251.6	-	-	-
	Airside Ps (in. wc.)		0.14	0.28	0.46	0.67	0.8	-	-	-
4-Row 12-Circuit	6	0.87	148.4	177.4	196.9	210.9	-	-	-	-
	8	1.55	159.4	195.0	220.0	238.6	-	-	-	-
	10	2.41	166.5	206.9	236.1	258.5	-	-	-	-
	12	3.46	171.5	215.5	248.0	273.3	-	-	-	-
	14	4.7	175.1	221.9	257.1	284.8	-	-	-	-
	Airside Ps (in. wc.)		0.18	0.37	0.61	0.9	-	-	-	-

Refer to Table-A on Page TH-36 for Imperial Notes

TH-524 Metric Units			L/s							
	L/s	Head Loss (kPa)	945	1415	1890	2360	2595	2830	3300	3775
1-Row 4-Circuit	0.13	0.09	15.6	17.5	18.7	19.6	20.0	20.3	20.9	21.3
	0.25	0.36	19.4	22.5	24.7	26.3	27.0	27.6	28.7	29.7
	0.38	0.79	21.1	24.9	27.6	29.7	30.6	31.4	32.8	34.1
	0.50	1.39	22.1	26.3	29.3	31.7	32.7	33.7	35.4	36.8
	0.63	2.16	22.8	27.2	30.5	33.1	34.2	35.2	37.1	38.7
	Airside Ps (kPa)		0.012	0.02	0.04	0.06	0.07	0.08	0.11	0.14
2-Row 6-Circuit	0.13	0.07	21.9	24.3	25.7	26.7	27.1	27.4	-	-
	0.25	0.26	29.6	34.4	37.7	40.0	41.0	41.8	-	-
	0.38	0.57	30.5	39.7	44.3	47.7	49.1	50.4	-	-
	0.50	0.92	32.6	43.0	48.5	52.7	54.5	56.1	-	-
	0.63	1.55	37.0	45.3	51.4	56.2	58.2	60.1	-	-
	Airside Ps (kPa)		0.03	0.05	0.09	0.13	0.15	0.18	-	-
3-Row 9-Circuit	0.38	0.37	38.0	45.5	50.7	54.5	56.1	-	-	-
	0.50	0.66	40.6	49.5	55.9	60.8	62.8	-	-	-
	0.63	1.02	42.2	52.1	59.5	65.1	67.5	-	-	-
	0.76	1.47	43.3	54.0	62.0	68.4	71.1	-	-	-
	0.88	1.99	44.2	55.5	64.0	70.8	73.8	-	-	-
	Airside Ps (kPa)		0.03	0.07	0.11	0.17	0.20	-	-	-
4-Row 12-Circuit	0.38	0.29	43.5	52.0	57.7	61.8	-	-	-	-
	0.50	0.52	46.7	57.2	64.5	70.0	-	-	-	-
	0.63	0.81	48.8	60.7	69.2	75.8	-	-	-	-
	0.76	1.16	50.3	63.2	72.7	80.1	-	-	-	-
	0.88	1.58	51.4	65.1	75.4	83.5	-	-	-	-
	Airside Ps (kPa)		0.04	0.09	0.15	0.22	-	-	-	-

Refer to Table-B on Page TH-36 for Metric Notes



Single Duct Air Terminal Units

Hot Water Coils Notes

Table-A

IMPERIAL NOTES

1. Values shown in the previous charts assume the following conditions: 180°F EWT, and 65°F EAT. For other conditions of entering water, air temperatures and air flow, see note 5.
2. Tabulated values are in MBH (Thousands of BTU per hour).
3. Head Loss is in feet of water.
4. MBH values are based on a DT (temperature difference) of 115° F between entering air and entering water. For other DTs, multiply the MBH values by the factors below:

DT	Factor
50	.44
60	.52
70	.61
80	.70
90	.79

DT	Factor
100	.88
115	1.00
125	1.07
140	1.20
150	1.30

5. Air Temperature Rise = $\frac{927 \times \text{MBH}}{\text{CFM}}$

6. Water Temperature Drop = $\frac{2.04 \times \text{MBH}}{\text{GPM}}$

7. For water valve sizing, contact your METALAIR representative. For data values other than those listed, interpolate or use the METALAIR Terminal Selection Program. Contact your METALAIR representative for additional information.

8. All hot water coils are 10 Fins per inch (FPI), except 3 and 4 row 520 and 524 models. These coils are 8 FPI.

Table-B

METRIC NOTES

1. Values shown in the previous charts assume the following conditions: Standard Atmospheric Conditions, 82°C EWT, and 18°C EAT. For other conditions of entering water, air temperatures and air flows, see note 5.
2. Tabulated values are in kW (Thousands of watts).
3. Head loss is in kPa.
4. kW values are based on a DT (temperature difference) between entering air and entering water of 64°C. For other DTs, multiply the kW values by the factors below:

DT	Factor
30	.48
35	.55
40	.63
50	.78

DT	Factor
60	.94
64	1.00
70	1.08
80	1.24

5. Air Temperature Rise = $\frac{\text{kW} \times 579}{\text{air flow in L/s}}$

6. Water Temperature Drop = $\frac{\text{kW} \times 0.17}{\text{water flow in L/s}}$

7. For water valve sizing, contact your METALAIR representative. For data values other than those listed, interpolate or use the Metal Industries computerized engineering program. Contact your METALAIR representative for additional information.

8. All hot water coils are 10 Fins per inch (FPI), except 3 and 4 row 520 and 524 models. These coils are 8 FPI.



Single Duct Air Terminal Units

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SERIES TL-500

Low Profile-Single Duct Air Terminal Units

Series TL-500 Air Terminals are designed to regulate the flow of conditioned air in single duct air distribution systems. They are available in a wide range of standard control sequences and work equally well in constant volume and variable volume systems. The maximum height of the TL series is 12 1/2".

Series TL-500 Air Terminals can be specified with hot water coils, electric heat, sound attenuators, and other optional accessories.

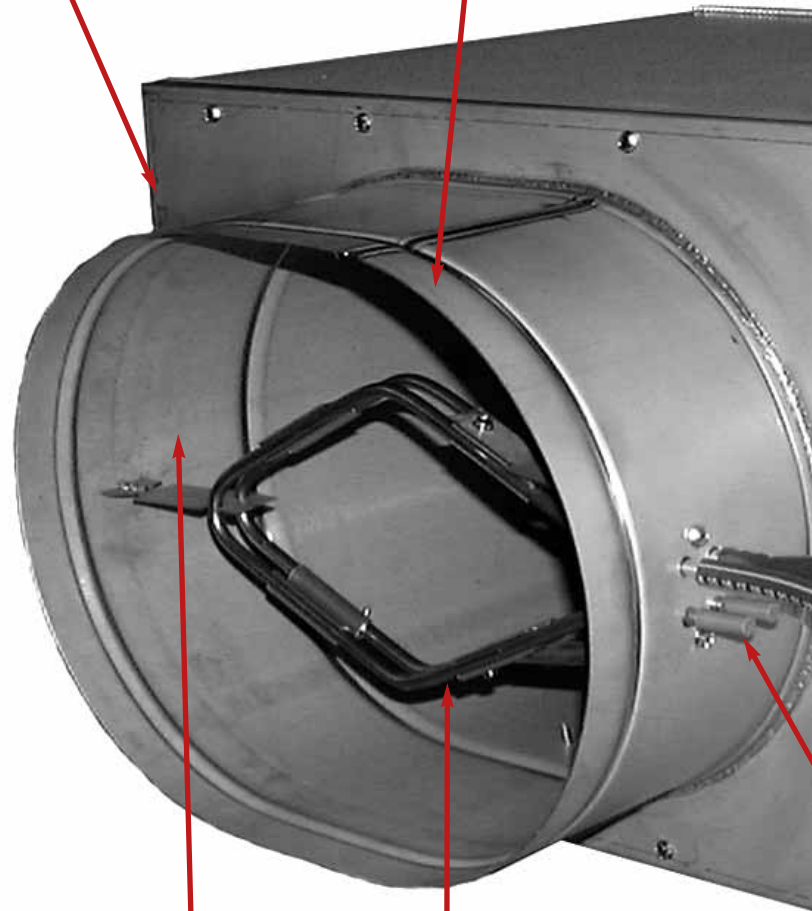
Series TL-500 Air Terminals feature a low leakage single blade damper.

Series TL-500 is also available with pneumatic, electric, analog electric, and DDC (by others) factory mounted controls.

Series TL-500 Air Terminals are available for both system system pressure independent and system pressure dependent applications.

The inlet tube for the TL-500 includes a bead that strengthens the tube and serves as a stop to keep attached flex duct from slipping

For set-up and balancing purposes, all units are shipped with a convenient balancing chart located on the outside of the terminal for conversion from velocity pressure to CFM



Units are constructed with a seamless butt weld to minimize leakage and prevent the damper from binding

Multiquadrant Averaging Flow Sensor provides an accurate flow signal without requiring an immediate upstream straight duct connection (Shipped standard on all units)

Single Duct Air Terminal Units



TL-500

Single Duct Air Terminal Units

Maximum Height 12 1/2"

All units include barbed fittings to secure tubing tightly in place

Control mounting plate and control cover are shipped standard on all units(right hand controls and coil connections are standard)

For long life and continuous operation, the damper rotates in a self-lubricating Kepital® (acetal resin) bearing

Control panel includes stand-offs to allow mounting of controls without penetrating the casing

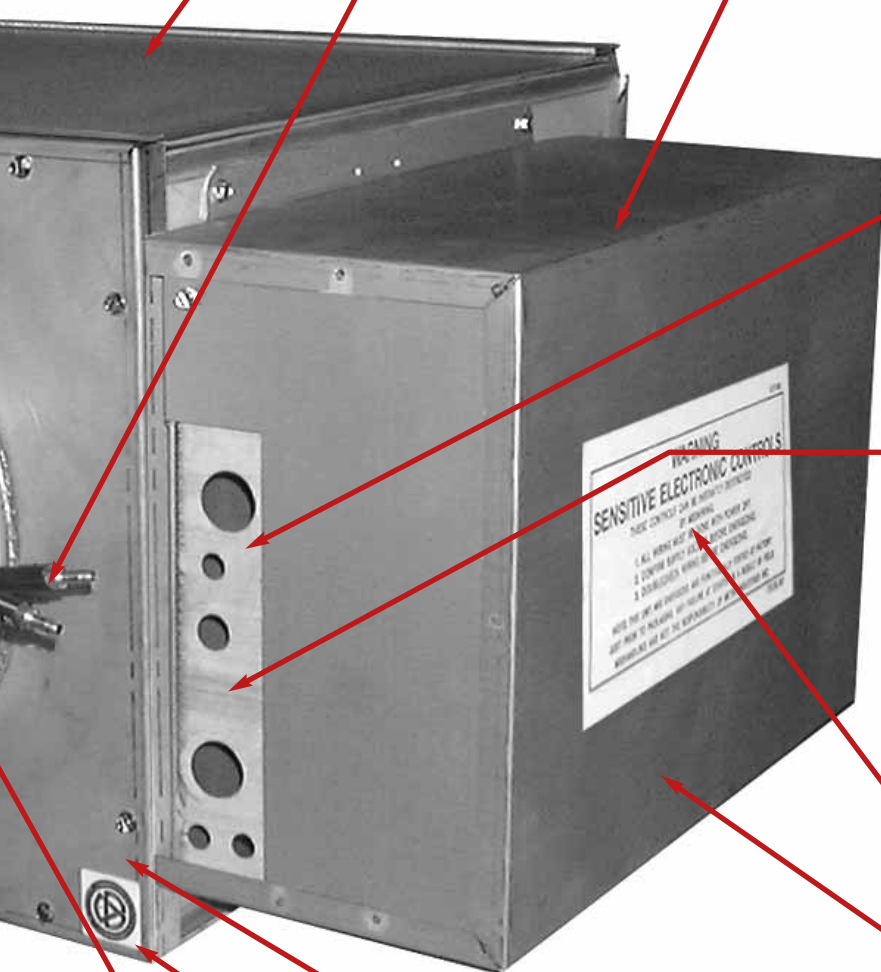
METALAIRE® factory can mount controls by others. Terminal unit is shipped with the required control and power wiring diagrams

TL-500 is available with pneumatic, electric, analog or digital controls

Standard insulation is dual density glass fiber. Optional liners are available including Thermopure (closed cell foam), foil face, and metal liner

All TL-500 terminal units are ARI certified and shipped with the ARI seal

All units are shipped with easy access balancing taps. The extra ports can be used to read CFM (through velocity pressure) directly at the unit



Single Duct Air Terminal Units



TL-500



Single Duct Air Terminal Units

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TL-500 - Air Terminal Dimensions

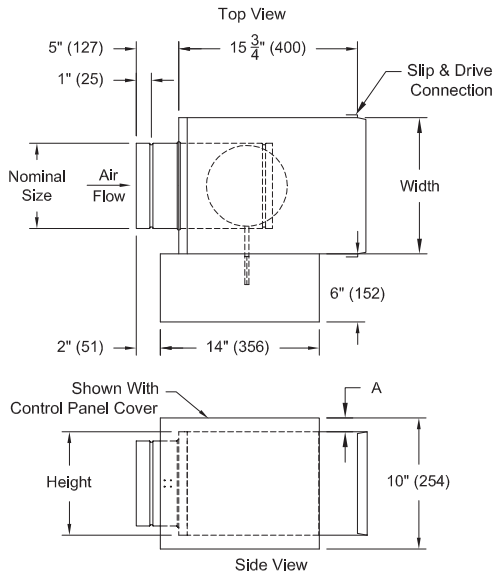
Dimensions are in inches

Low Profile Single Duct - Basic Unit - Round Inlet

Model TL506 - 6" Round Inlet

Model TL508 - 8" Round Inlet

Model TL510 - 10" Round Inlet



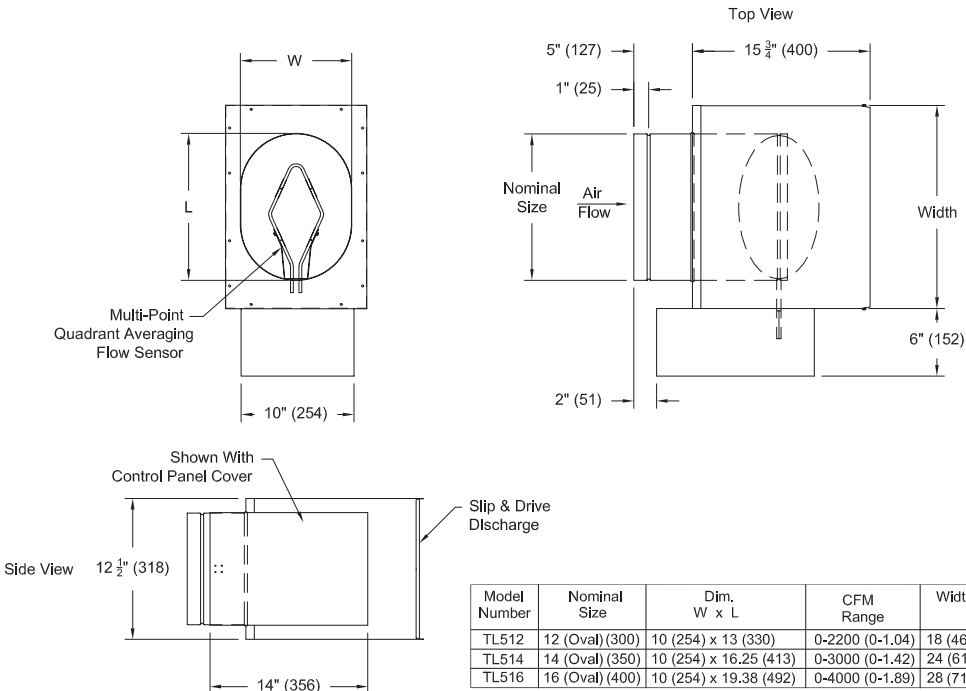
Model Number	Nominal Size In. (mm)	Height In. (mm)	Width In. (mm)	Dim. A In. (mm)	Unit Weight
TL506	6 Dia. (152)	8 (203)	12 (305)	2 (51)	12 lbs 5.4 kg
TL508	8 Dia. (203)	10 (254)	12 (305)	1 (25)	15 lbs 6.8 kg
TL510	10 Dia. (254)	12 1/2 (318)	14 (356)	-	18 lbs 8.2 kg

Low Profile Single Duct - Basic Unit - Oval Inlet

Model TL512 - 12" Oval Inlet

Model TL514 - 14" Oval Inlet

Model TL516 - 16" Oval Inlet



Model Number	Nominal Size	Dim. W x L	CFM Range	Width	Shipping Weight (Lbs)(Kg)
TL512	12 (Oval) (300)	10 (254) x 13 (330)	0-2200 (0-1.04)	18 (460)	23 Lbs (10.4 Kg)
TL514	14 (Oval) (350)	10 (254) x 16.25 (413)	0-3000 (0-1.42)	24 (610)	26 Lbs (11.8 Kg)
TL516	16 (Oval) (400)	10 (254) x 19.38 (492)	0-4000 (0-1.89)	28 (710)	30 Lbs (13.6 Kg)

Single Duct Air Terminal Units



TL-500



For more product information visit us at www.metalaire.com

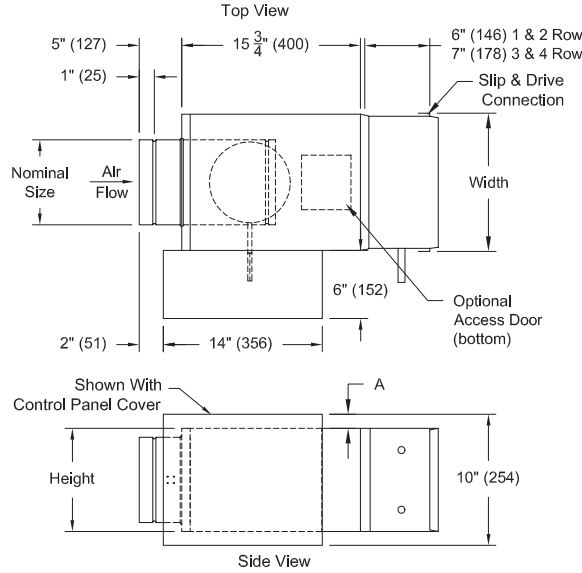


Single Duct Air Terminal Units

TL-500 - Air Terminal Dimensions

Low Profile Single Duct - With Hot Water Coils - Round Inlet

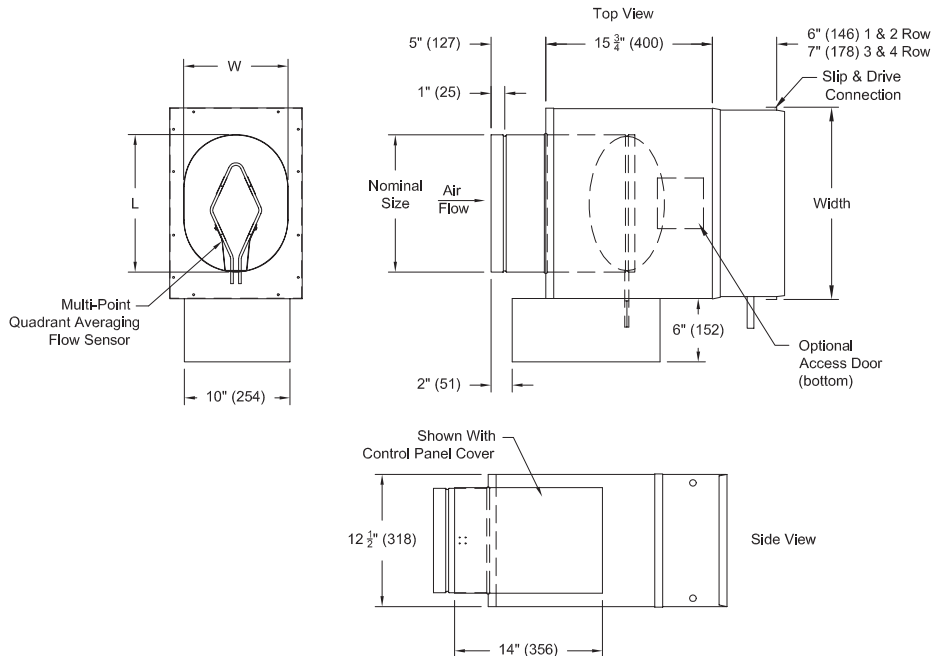
- Model TL506 - 6" Round Inlet
- Model TL508 - 8" Round Inlet
- Model TL510 - 10" Round Inlet



Model Number	Nominal Size In. (mm)	Height In. (mm)	Width In. (mm)	Dim. A In. (mm)	Unit Weight with			
					1R HW Coil	2R HW Coil	3R HW Coil	4R HW Coil
TL506	6 Dia. (152)	8 (203)	12 (305)	2 (51)	29 lbs (13 kg)	30 lbs (14 kg)	33 lbs (15 kg)	35 lbs (16 kg)
TL508	8 Dia. (203)	10 (254)	12 (305)	1 (25)	33 lbs (15 kg)	35 lbs (16 kg)	39 lbs (18 kg)	41 lbs (19 kg)
TL510	10 Dia. (254)	12 1/2 (318)	14 (356)	-	40 lbs (18 kg)	43 lbs (20 kg)	48 lbs (22 kg)	51 lbs (23 kg)

Low Profile Single Duct - With Hot Water Coils - Oval Inlet

- Model TL512 - 12" Oval Inlet
- Model TL514 - 14" Oval Inlet
- Model TL516 - 16" Oval Inlet



Model Number	Nominal Size	Dim. W x L	CFM Range	Width	Unit Weight with			
					1R HW Coil	2R HW Coil	3R HW Coil	4R HW Coil
TL512	12 (Oval) (300)	10 (254) x 13 (330)	0-2200 (0-1.04)	18 (460)	31 lbs (14 kg)	34 lbs (15 kg)	40 lbs (18 kg)	43 lbs (19 kg)
TL514	14 (Oval) (350)	10 (254) x 16.25 (413)	0-3000 (0-1.42)	24 (610)	34 lbs (15 kg)	39 lbs (17 kg)	48 lbs (21 kg)	53 lbs (24 kg)
TL516	16 (Oval) (400)	10 (254) x 19.38 (492)	0-4000 (0-1.89)	28 (710)	42 lbs (19 kg)	48 lbs (21 kg)	54 lbs (25 kg)	59 lbs (26 kg)

Single Duct Air Terminal Units



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Single Duct Air Terminal Units

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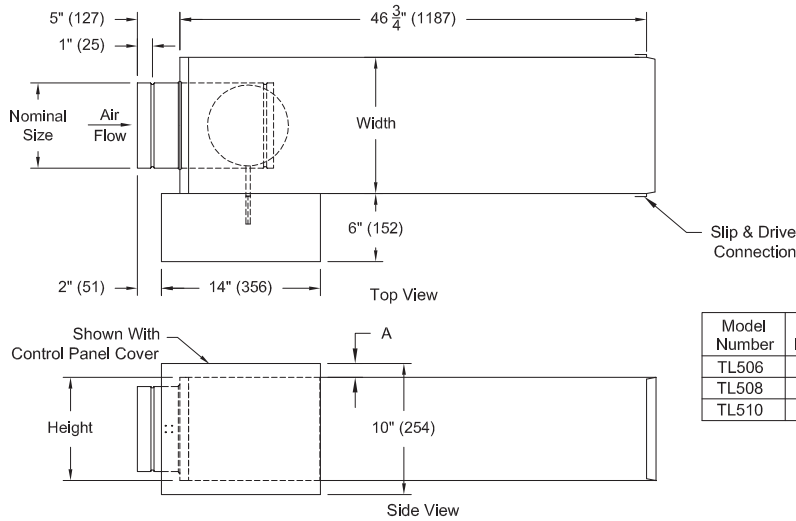
TL-500 - Air Terminal Dimensions

Low Profile Single Duct - Integral Sound Attenuator - Round Inlet

Model TL506 - 6" Round Inlet

Model TL508 - 8" Round Inlet

Model TL510 - 10" Round Inlet



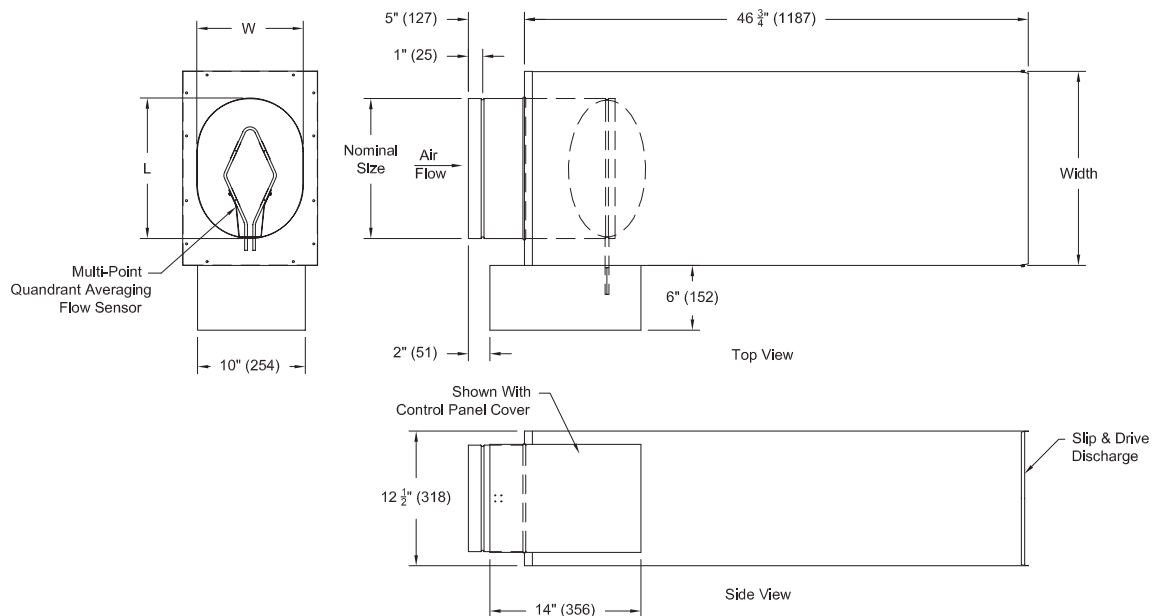
Model Number	Nominal Size	Height	Width	Dim. A	Unit Weight	
					Lbs	Kg
TL506	6" Dia. (152)	8" (203)	12" (305)	2" (51)	24	(11)
TL508	8" Dia. (203)	10" (254)	12" (305)	1" (25)	28	(13)
TL510	10" Dia. (254)	12" 1/2 (318)	14" (356)	-	34	(15)

Low Profile Single Duct - Integral Sound Attenuator - Oval Inlet

Model TL512 - 12" Oval Inlet

Model TL514 - 14" Oval Inlet

Model TL516 - 16" Oval Inlet



Model Number	Nominal Size	Dim. W x L	CFM Range	Width	Shipping Weight (Lbs)(Kg)
TL512	12 (Oval) (300)	10 (254) x 13 (330)	0-2200 (0-1.04)	18 (460)	41 Lbs (19 Kg)
TL514	14 (Oval) (350)	10 (254) x 16.25 (413)	0-3000 (0-1.42)	24 (610)	47 Lbs (21 Kg)
TL516	16 (Oval) (400)	10 (254) x 19.38 (492)	0-4000 (0-1.89)	28 (710)	54 Lbs (25 Kg)

Single Duct Air Terminal Units



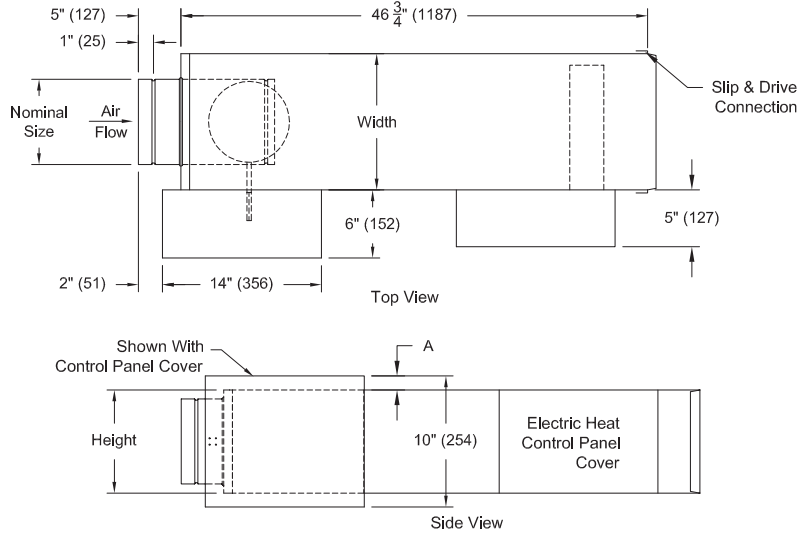
TL-500

Single Duct Air Terminal Units

TL-500 - Air Terminal Dimensions

Low Profile Single Duct - Electric Heat With Integral Sound Attenuator - Round Inlet

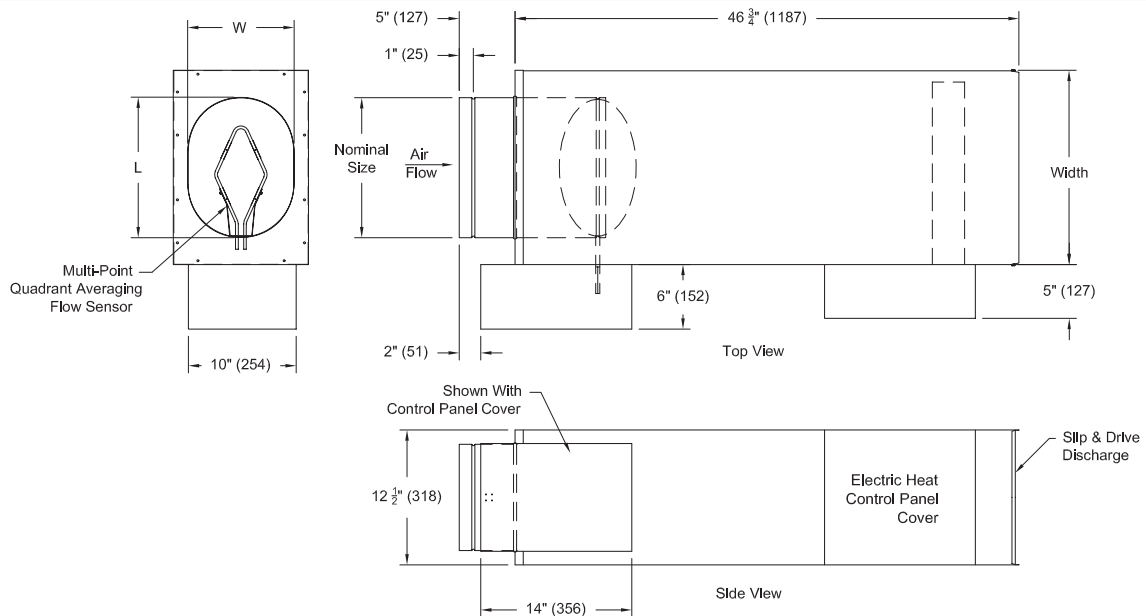
- Model TL506 - 6" Round Inlet
- Model TL508 - 8" Round Inlet
- Model TL510 - 10" Round Inlet



Model Number	Nominal Size		Height		Width		Dim. A		Unit Weight	
	In.	(mm)	In.	(mm)	In.	(mm)	In.	(mm)	Lbs	Kg
TL506	6 Dia.	(152)	8	(203)	12	(305)	2	(51)	38	(17)
TL508	8 Dia.	(203)	10	(254)	12	(305)	1	(25)	43	(20)
TL510	10 Dia.	(254)	12 1/2	(318)	14	(356)	-	-	50	(23)

Low Profile Single Duct - Electric Heat With Integral Sound Attenuator - Oval Inlet

- Model TL512 - 12" Oval Inlet
- Model TL514 - 14" Oval Inlet
- Model TL516 - 16" Oval Inlet



Model Number	Nominal Size	Dim. W x L	CFM Range	Width	Shipping Weight (Lbs)(Kg)
TL512	12 (Oval) (300)	10 (254) x 13 (330)	0-2200 (0-1.04)	18 (460)	59 Lbs (27 Kg)
TL514	14 (Oval) (350)	10 (254) x 16.25 (413)	0-3000 (0-1.42)	24 (610)	67 Lbs (30 Kg)
TL516	16 (Oval) (400)	10 (254) x 19.38 (492)	0-4000 (0-1.89)	28 (710)	77 Lbs (35 Kg)

Single Duct Air Terminal Units



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Single Duct Air Terminal Units

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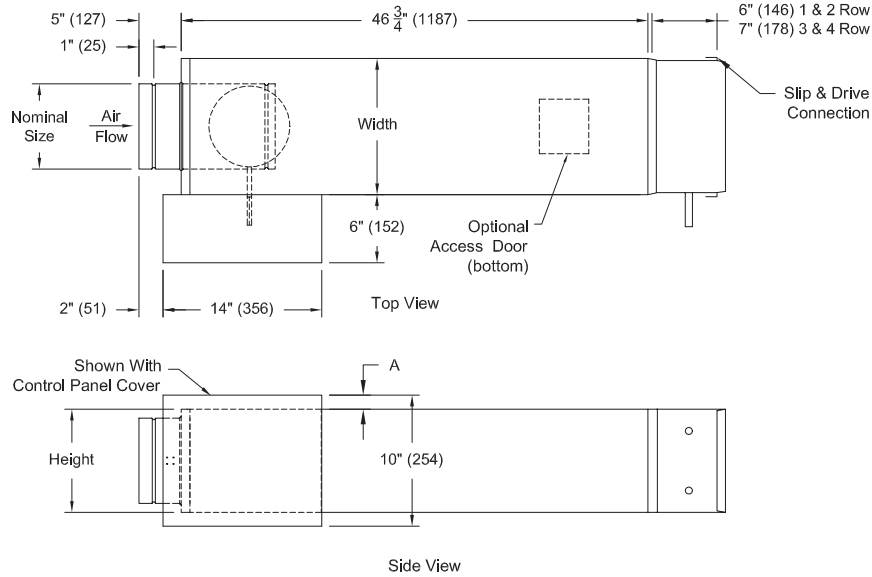
TL-500 - Air Terminal Dimensions

Low Profile Single Duct - Hot Water Coils With Integral Sound Attenuator - Round Inlet

Model TL506 - 6" Round Inlet

Model TL508 - 8" Round Inlet

Model TL510 - 10" Round Inlet



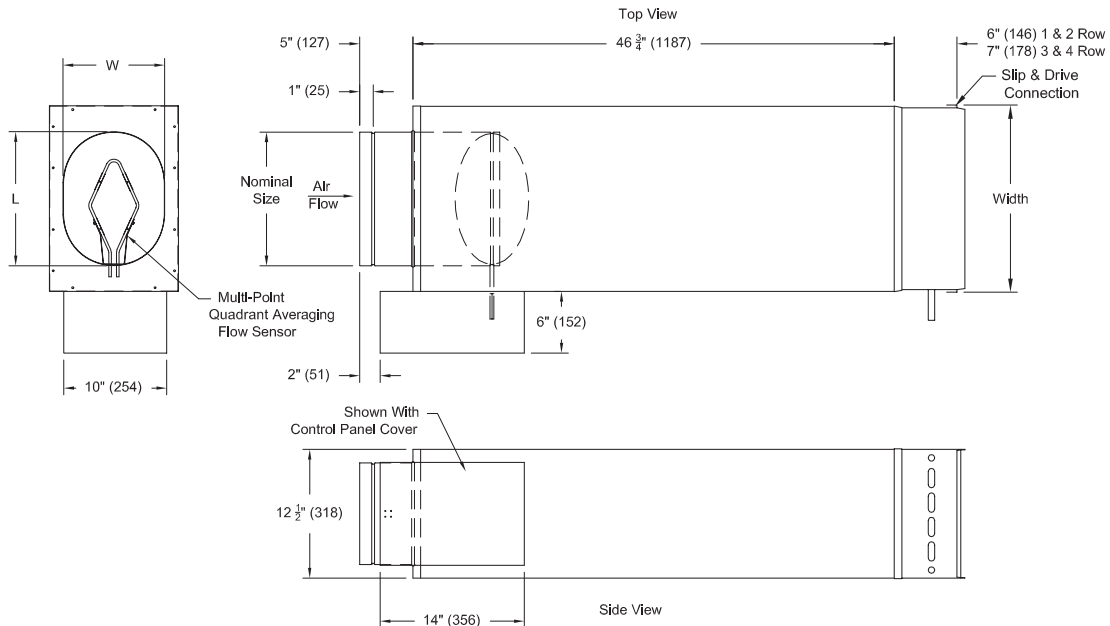
Model Number	Nominal Size	Height	Width	Dim. A	Unit Weight with			
					1R HW Coil	2R HW Coil	3R HW Coil	4R HW Coil
TL506	6 Dia. (152)	8 (203)	12 (305)	2 (51)	29 lbs (13 kg)	30 lbs (14 kg)	33 lbs (15 kg)	35 lbs (16 kg)
TL508	8 Dia. (203)	10 (254)	12 (305)	1 (25)	33 lbs (15 kg)	35 lbs (16 kg)	39 lbs (18 kg)	41 lbs (19 kg)
TL510	10 Dia. (254)	12 1/2 (318)	14 (356)	-	40 lbs (18 kg)	43 lbs (20 kg)	48 lbs (22 kg)	51 lbs (23 kg)

Low Profile Single Duct - Hot Water Coils With Integral Sound Attenuator - Oval Inlet

Model TL512 - 12" Oval Inlet

Model TL514 - 14" Oval Inlet

Model TL516 - 16" Oval Inlet



Model Number	Nominal Size	Dim. W x L	CFM Range	Width	Unit Weight with			
					1R HW Coil	2R HW Coil	3R HW Coil	4R HW Coil
TL512	12 (Oval) (300)	10 (254) x 13 (330)	0-2200 (0-1.04)	18 (460)	31 lbs (14 kg)	34 lbs (15 kg)	40 lbs (18 kg)	43 lbs (19 kg)
TL514	14 (Oval) (350)	10 (254) x 16.25 (413)	0-3000 (0-1.42)	24 (610)	34 lbs (15 kg)	39 lbs (17 kg)	48 lbs (21 kg)	53 lbs (24 kg)
TL516	16 (Oval) (400)	10 (254) x 19.38 (492)	0-4000 (0-1.89)	28 (710)	42 lbs (19 kg)	48 lbs (21 kg)	54 lbs (25 kg)	59 lbs (26 kg)

Single Duct Air Terminal Units



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For more product information visit us at www.metalair.com



Single Duct Air Terminal Units

TL-500 - ARI Rating Points at 1.5" Inlet Pressure



ARI Certified Radiated Sound Power, 1.5" Inlet Static Pressure								
Unit Size	Min Ps	CFM	Octave Band					
			2	3	4	5	6	7
506	0.10	400	57	53	47	40	37	33
508	0.09	700	62	59	49	43	37	32
510	0.05	1100	60	56	51	44	38	34
512	0.10	1500	64	59	55	48	43	37
514	0.11	1950	63	58	49	44	42	39
516	0.09	2400	64	64	58	51	48	45

ARI Certified Discharge Sound Power, 1.5" Inlet Static Pressure								
Unit Size	Min Ps	CFM	Octave Band					
			2	3	4	5	6	7
506	0.10	400	65	66	61	57	52	49
508	0.09	700	66	67	61	59	55	50
510	0.05	1100	69	70	63	61	55	52
512	0.10	1500	68	70	68	61	57	54
514	0.11	1950	71	72	67	65	62	58
516	0.09	2400	73	74	73	66	61	56

STATEMENT OF STANDARD TEST CONFORMITY

METALAIRE tests all TL-500 air terminal units for engineering performance in accordance with the following standards: American National Standards Institute (ANSI) / American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) / International Organization for Standardization (ISO) / Air-Conditioning & Refrigeration Institute (ARI).

- ARI Standard 880-98 Standard for Air Terminals
- ANSI/ASHRAE 130-1996 Methods of Testing for Rating Ducted Air Terminal Units
- ASHRAE Standard 41.1-1986 (RA 91) Standard Method for Temperature Measurement
- ASHRAE Standard 41.2-1987 Standard Methods for Laboratory Air Measurements
- ASHRAE Standard 41.3-1989 Standard Methods for Pressure Measurement
- ISO 5219-1984 Air distribution and air diffusion - Laboratory aerodynamic testing and rating of air terminal devices

Selection Recommendations for TL-500			
Inlet Size	Minimum CFM	Minimum CFM with Electric Heat	CFM @1"
6	105	165	600
8	190	220	1100
10	290	350	1700
12	340	500	1965
14	450	775	2600
16	545	975	3150

Notes:

1. Minimum CFM (without electric heat) is based on a signal velocity pressure of 0.03 in w.c..
2. The minimum CFM with electric heat values reported and a minimum of 0.03" downstream static pressure will provide sufficient total pressure to operate the airflow switch. For performance below these CFM values, please consult the factory.
3. Maximum CFM is based on a signal velocity pressure of 1.0 in w.c..
4. For Selections outside the above ranges, contact your local METALAIRE Representative.

Leakage

Casing: Less than 1% of rated capacity @ 1.0" downstream pressure.

Damper: Less than 1% of rated capacity with 3.0" inlet pressure.



Single Duct Air Terminal Units

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TL-500 - Electric Heat Notes & kW Ranges

NOTES:

1. D Ps is the static pressure difference across the TL assembly with the damper in the fully open position.
2. To obtain total pressure (Pt), add the velocity pressure (Pv) for a given CFM to the static pressure (Ps) of the desired configuration.
3. Damper leakage at shut-off is less than 1% at the maximum capacity of the air terminal at 3 inches of static pressure, for units 6 through 16.
4. It is recommended that air terminals be selected in the upper middle range of their listed capacity for maximum efficiency.
5. The lowest CFM flows shown above only imply a range; all terminals are capable of shut-off. The minimum pressure independent controlled flow is dependent on the controller specified.
6. Low flows: High gain sensors are available for flow control down to 50 CFM if desired. On 6" Inlet only
Warning: Most flow controllers are limited to a 5/1 flow control range.
7. Air terminals are not recommended for operation in ambient temperatures over 95°F.
For protection of controls, do not store in ambient temperatures over 115° F.
8. A minimum of 0.03 inches of water is required to set the flow switch in the electric heater.
Warning: Flow rates with static pressures below 0.03 inches of water will not activate the electric heater. Consult factory.
9. Heaters equal or less than 6.0 kW are specifiable to the nearest 0.2 kW. Heaters from 6.0 to 10.0 kW are specifiable to the nearest 0.5 kW. Heaters from 10.5 to Max kW are specifiable to the nearest 1.0 kW.
10. Minimum flow rate for electric heat is 70 CFM/kW. Lower CFM's can cause nuisance tripping, excessive discharge temperatures, rapid cycling, and rapid element failure. Electric Heat units running below 70 CFM/kW will void all warranties (See Selection Recommendations for TL-500 on page TL-49).
11. Higher kW's consult factory for availability. Min of 70 CFM/kW.
12. For optimum thermal comfort, the suggested discharge temperature should not exceed 20°F above room set point.
13. We do not recommend discharge temperatures in excess of 115°F to protect heater coils.

Single Phase				
Size	Heater Voltage	Min kW/St	Max kW	Max Steps
6	120	1.0	4	2
	208	.5	4	2
	240	.5	4	2
	277	.5	4	2
	480	1	4	2
8	120	1.0	5	3
	208	.5	8	3
	240	.5	8	3
	277	.5	8	3
	480	1	5	3
10	120	.5	5	3
	208	.5	9.5	3
	240	.5	9.5	3
	277	.5	12	3
	480	1	13	3
12	120	.5	5	3
	208	.5	9.5	3
	240	.5	9.5	3
	277	.5	12	3
	480	.5	13	3
14	120	.5	5	3
	208	.5	9.5	3
	240	.5	9.5	3
	277	.5	12	3
	480	.5	13	3
16	120	1.4	5	3
	208	.5	9.5	3
	240	.5	9.5	3
	277	.5	12	3
	480	.5	13	3

Three Phase				
Size	Heater Voltage	Min kW/St	Max kW	Max Steps
6	208	.5	4	2
	240	.5	4	2
	480	1.6	4	2
8	208	1.5	8	3
	240	1.5	8	3
	480	1.5	8	3
10	208	1.5	13	3
	240	1.5	13	3
	480	1.5	15	3
12	208	1.5	16	3
	240	1.5	16	3
	480	1.5	23	3
14	208	1.5	16	3
	240	1.5	16	3
	480	1.5	24	3
16	208	1.5	16	3
	240	1.5	16	3
	480	1.5	39	3

Electric heat selection

- A. Specify electric duct heaters using voltage, kW and number of steps.
B. Use above chart to select voltage. Calculate required kW using following equations:

* air density at sea level - reduce by 0.036 for each 1000 feet of altitude above sea level

$kW = \frac{BTU/hr}{3413}$	$dT = \frac{kW \times 3413}{CFM \times 1.085^*}$	$kW = \frac{CFM \times dT \times 1.085^*}{3413}$
$CFM = \frac{kW \times 3413}{dT \times 1.085^*}$	$CFM = \frac{kW \times 3413}{dT \times 1.085^*}$	

Where

- BTU/hr = Required heating capacity
- CFM = volume of air during heating. Typically 30% to 100% of maximum cooling air volume.
- dT = desired air temperature rise across the electric heater.
- Inlet air temperature = primary air temperature, usually 55°F.

Single Duct Air Terminal Units



TL-500

Single Duct Air Terminal Units

TL-500 - Sound Path Attenuation Assumptions

NC CALCULATIONS

The current ARI Standard for NC calculations is ARI 885-98. Other terminal manufacturers may catalog performance based on ARI 885-90. Using this older, obsolete standard will provide lower NC levels compared to the 1998 standard. To allow for fair and accurate performance comparisons, METALAIRE publishes the NC levels for both the 1990 standard and the 1998 current standard.

ARI 885-90 Radiated Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	3	2	1	1	1	1
Ceiling Effect	9	10	12	14	15	15
Room Effect	9	10	10	11	12	13
Total dB Reduction	21	22	23	26	28	29

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-90.

Parameters:

- 1) Mineral fiber ceiling tile, 5/8" thick (35 lb/ft² density).
- 2) Room size is 3000 ft³.
- 3) Unit is located 10 ft from measurement point.

ARI 885-90 Discharge Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	3	2	1	1	1	1
Duct Lining	1	3	8	22	23	13
End Reflection	11	6	2	0	0	0
Flex Duct	6	9	23	25	22	13
Room Effect	9	10	10	11	12	13
Total dB Reduction	30	30	44	59	58	40

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-90.

Parameters:

- 1) Fiberglass duct lining is 1 inch thick, 12" x 12" duct length is 5 feet.
- 2) Flex duct is 8 inches in diameter and 6 feet in length for run to diffuser.
- 3) Flex duct has a vinyl core.
- 4) Room size is 3000 ft³.
- 5) Unit is located 10 ft from measurement point.
- 6) Attenuation credit based on a 300 CFM flow division using 10 log (# space) not shown above

ARI 885-98 Radiated Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Ceiling/Space Effect	16	18	20	26	31	36
Total dB Reduction	18	19	20	26	31	36

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-98.

Parameters:

- 1) Mineral fiber ceiling tile, 5/8" thick (35 lb/ft² density).
- 2) The plenum space is at least 3 ft deep and either wide (>30 ft) or insulated.

* Combined effect including absorption of the ceiling tile, plenum absorption and room absorption.
(New to ARI 885-98. ARI 885-90 had separate lines for these absorptions.)

ARI 885-98, APPE defined "Medium" application from 300 to 700 CFM

ARI 885-98 Discharge Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Duct Lining	2	4	10	20	20	14
End Reflection	9	5	2	0	0	0
Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
Total dB Reduction	24	26	37	48	50	36

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-98.

Parameters:

- 1) 12" x 12" x 5' duct with 1 inch thick fiberglass lining.
- 2) Flex duct is 8 inches in diameter and 5 feet in length for run to diffuser.
- 3) Flex duct has a vinyl core.
- 4) Room size is 2400 ft³ (size of standard test room).
- 5) Unit is located 5 ft from measurement point.
- 6) Attenuation credit based on a 300 CFM flow division using 10 log (# space) not shown above

ARI 885-98, APPE defined "Large" application 700 CFM & greater

ARI 885-98 Discharge Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Duct Lining	2	3	9	18	17	12
End Reflection	9	5	2	0	0	0
Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
Total dB Reduction	24	25	36	46	47	34

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-98.

Parameters:

- 1) 15" x 15" x 5' duct with 1 inch thick fiberglass lining.
- 2) Flex duct is 8 inches in diameter and 5 feet in length for run to diffuser.
- 3) Flex duct has a vinyl core.
- 4) Room size is 2400 ft³ (size of standard test room).
- 5) Unit is located 5 ft from measurement point.
- 6) Attenuation credit based on a 300 CFM flow division using 10 log (# space) not shown above

Single Duct Air Terminal Units

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TL-500 - Hot Water Coils MBH Selection Data

TL-506 Imperial Units								
	GPM	Head Loss (Ft-hd)	CFM					
			100	200	300	400	500	600
1-Row 1-Circuit	0.5	0.1	5.1	6.9	8.0	8.7	9.3	9.7
	1	0.47	5.6	7.9	9.4	10.5	11.4	12.0
	2	1.79	6.0	8.6	10.4	11.8	12.9	13.8
	3	3.91	6.1	8.9	10.8	12.3	13.5	14.7
	4	6.83	6.2	9.0	11.0	12.6	13.8	14.9
	Airsides Ps (in. wc.)		0.01	0.04	0.08	0.13	0.19	0.25
2-Row 2-Circuit	1	0.12	8.3	12.2	14.7	16.5	17.9	19.0
	2	0.47	9.0	13.8	17.1	19.7	21.7	23.3
	3	1.02	9.2	14.4	18.2	21.0	23.4	25.3
	5	2.75	9.4	15.0	19.1	22.3	25.0	27.2
	6	3.92	9.5	15.2	19.4	22.7	25.5	27.8
	Airsides Ps (in. wc.)		0.03	0.09	0.17	0.27	0.4	0.54
3-Row 4-Circuit	3	0.42	11.0	17.8	22.6	26.3	29.3	-
	4	0.75	11.1	18.3	23.5	27.6	30.9	-
	5	1.16	11.2	18.6	24.1	28.4	32.0	-
	6	1.66	11.3	18.9	24.5	29.0	32.7	-
	8	2.93	11.4	19.2	25.1	29.8	33.8	-
	Airsides Ps (in. wc.)		0.04	0.13	0.25	0.41	0.59	-
4-Row 6-Circuit	6	1.11	12.3	21.3	28.1	33.6	38.1	-
	7	1.5	12.4	21.5	28.5	34.2	38.9	-
	8	1.96	12.4	21.6	28.8	34.6	39.5	-
	9	2.47	12.5	21.8	29.1	35.0	40.0	-
	10	3.05	12.5	21.9	29.3	35.3	40.4	-
	Airsides Ps (in. wc.)		0.05	0.17	0.34	0.54	0.79	-

Refer to Table-A on Page TL-58 for Imperial Notes

TL-506 Metric Units								
	L/s	Head Loss (kPa)	L/s					
			45	95	140	190	235	285
1-Row 1-Circuit	0.03	0.03	1.5	2.0	2.3	2.6	2.7	2.8
	0.06	0.16	1.6	2.3	2.8	3.1	3.3	3.5
	0.13	0.60	1.8	2.5	3.1	3.4	3.8	4.0
	0.19	1.31	1.8	2.6	3.2	3.6	4.0	4.3
	0.25	2.29	1.8	2.7	3.2	3.7	4.1	4.4
	Airsides Ps (kPa)		0.002	0.01	0.02	0.03	0.05	0.06
2-Row 2-Circuit	0.06	0.04	2.4	3.6	4.3	4.8	5.2	5.6
	0.13	0.16	2.6	4.0	5.0	5.8	6.4	6.8
	0.19	0.34	2.7	4.2	5.3	6.2	6.9	7.4
	0.32	0.92	2.8	4.4	5.6	6.6	7.3	8.0
	0.38	1.31	2.8	4.5	5.7	6.7	7.5	8.1
	Airsides Ps (kPa)		0.01	0.02	0.04	0.07	0.10	0.13
3-Row 4-Circuit	0.19	0.14	3.2	5.2	6.6	7.7	8.6	-
	0.25	0.25	3.3	5.4	6.9	8.1	9.1	-
	0.32	0.39	3.3	5.5	7.1	8.3	9.4	-
	0.38	0.56	3.3	5.5	7.2	8.5	9.6	-
	0.50	0.98	3.3	5.6	7.3	8.7	9.9	-
	Airsides Ps (kPa)		0.01	0.03	0.06	0.10	0.15	-
4-Row 6-Circuit	0.38	0.37	3.6	6.2	8.2	9.8	11.2	-
	0.44	0.50	3.6	6.3	8.4	10.0	11.4	-
	0.50	0.66	3.6	6.3	8.4	10.2	11.6	-
	0.57	0.83	3.7	6.4	8.5	10.3	11.7	-
	0.63	1.02	3.7	6.4	8.6	10.4	11.9	-
	Airsides Ps (kPa)		0.01	0.04	0.08	0.13	0.20	-

Refer to Table-B on Page TL-58 for Metric Notes

Single Duct Air Terminal Units



TL-500

Single Duct Air Terminal Units

TL-500 - Hot Water Coils MBH Selection Data

TL-508 Imperial Units			CFM							
	GPM	Head Loss (Ft-hd)	300	400	500	600	700	800	900	1000
			1-Row 1-Circuit	0.5	0.17	9.2	10.1	10.8	11.3	11.8
1	0.64	10.9		12.2	13.3	14.1	14.8	15.5	16.0	16.5
2	2.42	12.0		13.7	15.0	16.1	17.1	18.0	18.7	19.4
3	5.3	12.5		14.3	15.7	17.0	18.1	19.0	19.9	20.7
4	9.25	12.7		14.6	16.1	17.5	18.6	19.6	20.5	21.4
Airside Ps (in. wc.)			0.05	0.08	0.11	0.15	0.2	0.25	0.31	0.37
2-Row 2-Circuit	1	0.17	16.6	18.7	20.4	21.7	22.8	23.8	24.6	25.3
	2	0.64	19.2	22.3	24.7	26.0	28.5	30.0	31.3	32.5
	3	1.39	20.3	23.8	26.6	29.0	31.1	32.9	34.5	36.0
	4.5	3.04	21.2	25.0	28.1	30.8	33.2	35.2	37.1	38.8
	6	5.31	21.6	25.6	28.9	31.8	34.3	36.5	38.6	40.4
Airside Ps (in. wc.)			0.1	0.17	0.24	0.33	0.43	0.54	0.65	0.78
3-Row 4-Circuit	3	0.5	25.2	29.7	33.3	36.3	38.8	41.1	-	-
	4	0.87	26.1	31.0	35.0	38.4	41.3	43.9	-	-
	5	1.35	26.6	31.8	36.1	39.8	42.9	45.7	-	-
	6	1.93	27.0	32.4	36.9	40.8	44.1	47.1	-	-
	7	2.62	27.3	32.9	37.5	41.5	45.0	48.2	-	-
Airside Ps (in. wc.)			0.16	0.25	0.37	0.5	0.64	0.8	-	-
4-Row 6-Circuit	4	0.54	29.5	35.3	40.1	44.0	47.5	-	-	-
	5	0.85	30.2	36.4	41.5	45.9	49.7	-	-	-
	6	1.22	30.7	37.2	42.6	47.2	51.3	-	-	-
	8	2.15	31.3	38.2	44.0	49.0	53.5	-	-	-
	10	3.34	31.7	38.8	44.9	50.2	54.9	-	-	-
Airside Ps (in. wc.)			0.21	0.34	0.49	0.66	0.86	-	-	-

Refer to Table-A on Page TL-58 for Imperial Notes

TL-508 Metric Units			L/s							
	L/s	Head Loss (kPa)	140	190	235	285	330	380	425	475
			1-Row 1-Circuit	0.03	0.06	2.7	3.0	3.2	3.3	3.5
0.06	0.21	3.2		3.6	3.9	4.1	4.4	4.5	4.7	4.8
0.13	0.81	3.5		4.0	4.4	4.7	5.0	5.3	5.5	5.7
0.19	1.77	3.7		4.2	4.6	5.0	5.3	5.6	5.8	6.1
0.25	3.10	3.7		4.3	4.7	5.1	5.5	5.8	6.0	6.3
Airside Ps (kPa)			0.01	0.02	0.03	0.04	0.05	0.06	0.08	0.09
2-Row 2-Circuit	0.06	0.06	4.9	5.5	6.0	6.4	6.7	7.0	7.2	7.4
	0.13	0.21	5.6	6.5	7.2	7.6	8.4	8.8	9.2	9.5
	0.19	0.47	6.0	7.0	7.8	8.5	9.1	9.7	10.1	10.5
	0.28	1.02	6.2	7.3	8.2	9.0	9.7	10.3	10.9	11.4
	0.38	1.78	6.3	7.5	8.5	9.3	10.1	10.7	11.3	11.9
Airside Ps (kPa)			0.02	0.04	0.06	0.08	0.11	0.13	0.16	0.19
3-Row 4-Circuit	0.19	0.17	7.4	8.7	9.8	10.6	11.4	12.0	-	-
	0.25	0.29	7.6	9.1	10.3	11.2	12.1	12.9	-	-
	0.32	0.45	7.8	9.3	10.6	11.7	12.6	13.4	-	-
	0.38	0.65	7.9	9.5	10.8	12.0	12.9	13.8	-	-
	0.44	0.88	8.0	9.6	11.0	12.2	13.2	14.1	-	-
Airside Ps (kPa)			0.04	0.06	0.09	0.12	0.16	0.20	-	-
4-Row 6-Circuit	0.25	0.18	8.6	10.3	11.7	12.9	13.9	-	-	-
	0.32	0.28	8.8	10.7	12.2	13.5	14.6	-	-	-
	0.38	0.41	9.0	10.9	12.5	13.9	15.0	-	-	-
	0.50	0.72	9.2	11.2	12.9	14.4	15.7	-	-	-
	0.63	1.12	9.3	11.4	13.2	14.7	16.1	-	-	-
Airside Ps (kPa)			0.05	0.08	0.12	0.16	0.21	-	-	-

Refer to Table-B on Page TL-58 for Metric Notes

Single Duct Air Terminal Units

6/2007

TL-500 - Hot Water Coils MBH Selection Data

TL-510 Imperial Units			CFM							
	GPM	Head Loss (Ft-hd)								
			400	600	800	1000	1200	1400	1500	1600
1-Row 2-Circuit	1	0.12	13.6	15.7	17.1	18.3	19.1	19.9	20.2	20.5
	2	0.46	15.7	18.5	20.7	22.3	23.7	24.9	25.4	25.8
	3	1.01	16.5	19.8	22.2	24.2	25.8	27.2	27.8	28.4
	4	1.76	17.0	20.5	23.2	25.3	27.1	28.6	29.3	29.9
	5	2.71	17.3	21.0	23.8	26.0	27.9	29.5	30.3	30.9
	Airside Ps (in. wc.)			0.04	0.08	0.13	0.19	0.27	0.35	0.39
2-Row 3-Circuit	1	0.1	20.6	24.0	26.3	27.9	29.0	30.2	-	-
	2	0.37	24.9	30.1	34.0	36.9	38.9	41.2	-	-
	3	0.82	26.8	33.0	37.7	41.4	43.9	46.9	-	-
	4.5	1.8	28.8	35.3	40.7	45.1	48.2	51.8	-	-
	6	3.16	29.0	36.5	42.4	47.2	50.6	54.7	-	-
	Airside Ps (in. wc.)			0.09	0.18	0.28	0.41	0.57	0.73	-
3-Row 6-Circuit	4	0.55	34.3	43.0	49.6	54.7	58.2	-	-	-
	6	1.22	36.0	45.9	53.6	59.8	64.1	-	-	-
	8	2.16	36.9	47.5	55.9	62.7	67.6	-	-	-
	10	3.36	37.5	48.5	57.4	64.7	69.9	-	-	-
	12	4.82	37.9	49.3	58.4	66.1	71.5	-	-	-
	Airside Ps (in. wc.)			0.13	0.26	0.43	0.62	0.91	-	-
4-Row 8-Circuit	5	0.68	40.0	51.4	60.1	67.0	-	-	-	-
	7	1.65	37.7	54.0	63.9	71.9	-	-	-	-
	9	2.18	42.2	55.6	66.3	75.0	-	-	-	-
	11	3.24	42.8	56.6	67.8	77.1	-	-	-	-
	13	4.52	43.2	57.4	69.0	78.7	-	-	-	-
	Airside Ps (in. wc.)			0.18	0.35	0.57	0.83	-	-	-

Refer to Table-A on Page TL-58 for Imperial Notes

TL-510 Metric Units			L/s							
	L/s	Head Loss (kPa)								
			190	285	380	475	565	660	710	755
1-Row 2-Circuit	0.06	0.04	4.0	4.6	5.0	5.4	5.6	5.8	5.9	6.0
	0.13	0.15	4.6	5.4	6.1	6.5	7.0	7.3	7.4	7.6
	0.19	0.34	4.8	5.8	6.5	7.1	7.6	8.0	8.2	8.3
	0.25	0.59	5.0	6.0	6.8	7.4	7.9	8.4	8.6	8.8
	0.32	0.91	5.1	6.1	7.0	7.6	8.2	8.7	8.9	9.1
	Airside Ps (kPa)			0.01	0.02	0.03	0.05	0.07	0.09	0.10
2-Row 3-Circuit	0.06	0.03	6.0	7.0	7.7	8.2	8.5	8.9	-	-
	0.13	0.12	7.3	8.8	10.0	10.8	11.4	12.1	-	-
	0.19	0.27	7.8	9.7	11.0	12.1	12.9	13.8	-	-
	0.28	0.60	8.5	10.3	11.9	13.2	14.1	15.2	-	-
	0.38	1.06	8.5	10.7	12.4	13.8	14.8	16.0	-	-
	Airside Ps (kPa)			0.02	0.04	0.07	0.10	0.14	0.18	-
3-Row 6-Circuit	0.25	0.18	10.1	12.6	14.5	16.0	17.1	-	-	-
	0.38	0.41	10.5	13.5	15.7	17.5	18.8	-	-	-
	0.50	0.72	10.8	13.9	16.4	18.4	19.8	-	-	-
	0.63	1.12	11.0	14.2	16.8	19.0	20.5	-	-	-
	0.76	1.61	11.1	14.4	17.1	19.4	21.0	-	-	-
	Airside Ps (kPa)			0.03	0.06	0.11	0.15	0.23	-	-
4-Row 8-Circuit	0.32	0.23	11.7	15.1	17.6	19.7	-	-	-	-
	0.44	0.55	11.1	15.8	18.7	21.1	-	-	-	-
	0.57	0.73	12.4	16.3	19.4	22.0	-	-	-	-
	0.69	1.08	12.5	16.6	19.9	22.6	-	-	-	-
	0.82	1.51	12.7	16.8	20.2	23.1	-	-	-	-
	Airside Ps (kPa)			0.04	0.09	0.14	0.21	-	-	-

Refer to Table-B on Page TL-58 for Metric Notes

Single Duct Air Terminal Units



TL-500

Single Duct Air Terminal Units

TL-500 - Hot Water Coils MBH Selection Data

TL-512 Imperial Units			CFM							
	GPM	Head Loss (Ft-hd)	CFM							
			500	700	900	1100	1300	1500	1700	1800
1-Row 2-Circuit	1	0.14	16.6	18.7	20.2	21.4	22.3	23.1	23.8	24.1
	2	0.53	19.5	22.4	24.6	26.4	27.9	29.2	30.3	30.8
	3	1.16	20.7	24.0	26.6	28.7	30.5	32.1	33.5	34.1
	4	2.02	21.3	24.9	27.7	30.1	32.1	33.8	35.3	36.0
	5	3.11	21.8	25.5	28.9	31.0	33.1	34.9	36.6	37.3
	Airside Ps (in. wc.)			0.04	0.07	0.11	0.15	0.20	0.26	0.32
2-Row 4-Circuit	1	0.11	24.8	27.9	30.2	31.8	33.1	-	-	-
	2	0.41	30.5	35.7	39.6	42.7	45.2	-	-	-
	3	0.91	33.1	39.3	44.2	48.1	51.4	-	-	-
	4.5	2	35.1	42.2	47.9	52.6	56.6	-	-	-
	6	3.51	36.2	43.8	50.1	55.3	59.7	-	-	-
	Airside Ps (in. wc.)			0.09	0.15	0.23	0.32	0.4	-	-
3-Row 6-Circuit	4	0.58	42.6	51.4	58.3	-	-	-	-	-
	6	1.29	44.9	55.0	63.1	-	-	-	-	-
	8	2.28	46.1	57.0	65.9	-	-	-	-	-
	10	3.54	46.9	58.3	67.6	-	-	-	-	-
	12	5.08	47.4	59.1	68.9	-	-	-	-	-
	Airside Ps (in. wc.)			0.13	0.23	0.34	-	-	-	-
4-Row 8-Circuit	5	0.7	49.8	61.3	-	-	-	-	-	-
	7	1.37	51.7	64.5	-	-	-	-	-	-
	9	2.26	52.8	66.4	-	-	-	-	-	-
	11	3.37	53.5	67.7	-	-	-	-	-	-
	13	4.69	54.1	68.6	-	-	-	-	-	-
	Airside Ps (in. wc.)			0.17	0.30	-	-	-	-	-

Refer to Table-A on Page TL-58 for Imperial Notes

TL-512 Metric Units			L/s							
	L/s	Head Loss (kPa)	L/s							
			236	330	425	519	614	708	802	850
1-Row 2-Circuit	0.06	0.05	4.9	5.5	5.9	6.3	6.5	6.8	7.0	7.1
	0.13	0.18	5.7	6.6	7.2	7.7	8.2	8.6	8.9	9.0
	0.19	0.39	6.1	7.0	7.8	8.4	9.0	9.4	9.8	10.0
	0.25	0.68	6.3	7.3	8.1	8.8	9.4	9.9	10.4	10.6
	0.32	1.04	6.4	7.5	8.5	9.1	9.7	10.2	10.7	10.9
	Airside Ps (kPa)			0.01	0.02	0.03	0.04	0.05	0.06	0.08
2-Row 4-Circuit	0.06	0.04	7.3	8.2	8.8	9.3	9.7	-	-	-
	0.13	0.14	8.9	10.5	11.6	12.5	13.2	-	-	-
	0.19	0.30	9.7	11.5	13.0	14.1	15.1	-	-	-
	0.28	0.67	10.3	12.4	14.0	15.4	16.6	-	-	-
	0.38	1.17	10.6	12.9	14.7	16.2	17.5	-	-	-
	Airside Ps (kPa)			0.02	0.04	0.06	0.08	0.10	-	-
3-Row 6-Circuit	0.25	0.19	12.5	15.1	17.1	-	-	-	-	-
	0.38	0.43	13.2	16.1	18.5	-	-	-	-	-
	0.50	0.76	13.5	16.7	19.3	-	-	-	-	-
	0.63	1.18	13.8	17.1	19.8	-	-	-	-	-
	0.76	1.70	13.9	17.3	20.2	-	-	-	-	-
	Airside Ps (kPa)			0.03	0.06	0.08	-	-	-	-
4-Row 8-Circuit	0.32	0.23	14.6	18.0	-	-	-	-	-	-
	0.44	0.46	15.2	18.9	-	-	-	-	-	-
	0.57	0.76	15.5	19.5	-	-	-	-	-	-
	0.69	1.13	15.7	19.8	-	-	-	-	-	-
	0.82	1.57	15.9	20.1	-	-	-	-	-	-
	Airside Ps (kPa)			0.04	0.07	-	-	-	-	-

Refer to Table-B on Page TL-58 for Metric Notes

Single Duct Air Terminal Units

6/2007

TL-500 - Hot Water Coils MBH Selection Data

TL-514 Imperial Units			CFM						
	GPM	Head Loss (Ft-hd)							
			500	800	1100	1400	1700	2000	2500
1-Row 2-Circuit	1	0.17	19.0	22.4	24.6	26.3	27.6	28.6	29.9
	2	0.63	22.2	27.2	30.7	33.3	35.5	37.2	39.6
	3	1.38	23.6	29.3	33.4	36.6	39.3	41.5	44.5
	4	2.42	24.3	30.5	35.0	38.6	41.5	44.0	47.4
	5	3.72	24.8	31.2	36.0	39.8	43.0	45.7	49.4
Airside Ps (in. wc.)			0.02	0.05	0.09	0.14	0.19	0.26	0.38
2-Row 4-Circuit	1	0.12	27.3	32.4	35.5	37.7	39.3	40.5	42.0
	2	0.48	33.7	42.2	48.0	52.3	55.7	58.4	62.0
	3	1.05	36.5	46.8	54.3	60.0	64.5	68.3	73.4
	4.5	2.31	38.6	50.5	59.4	66.4	72.1	77.0	83.6
	6	4.04	39.8	52.6	60.6	67.9	76.7	82.2	89.8
Airside Ps (in. wc.)			0.05	0.12	0.20	0.30	0.41	0.54	0.78

Refer to Table-A on Page TL-58 for Imperial Notes

TL-514 Metric Units			L/s						
	L/s	Head Loss (kPa)							
			236	378	519	661	802	944	1180
1-Row 2-Circuit	0.06	0.06	5.6	6.6	7.2	7.7	8.1	8.4	8.8
	0.13	0.21	6.5	8.0	9.0	9.8	10.4	10.9	11.6
	0.19	0.46	6.9	8.6	9.8	10.7	11.5	12.2	13.0
	0.25	0.81	7.1	8.9	10.3	11.3	12.2	12.9	13.9
	0.32	1.24	7.3	9.2	10.6	11.7	12.6	13.4	14.5
Airside Ps (kPa)			0.00	0.01	0.02	0.03	0.05	0.06	0.09
2-Row 4-Circuit	0.06	0.04	8.0	9.5	10.4	11.0	11.5	11.9	12.3
	0.13	0.16	9.9	12.4	14.1	15.3	16.3	17.1	18.2
	0.19	0.35	10.7	13.7	15.9	17.6	18.9	20.0	21.5
	0.28	0.77	11.3	14.8	17.4	19.5	21.2	22.6	24.5
	0.38	1.35	11.7	15.4	17.8	19.9	22.5	24.1	26.3
Airside Ps (kPa)			0.01	0.03	0.05	0.07	0.10	0.13	0.19

Refer to Table-B on Page TL-58 for Metric Notes

Single Duct Air Terminal Units



TL-500

Single Duct Air Terminal Units

TL-500 - Hot Water Coils MBH Selection Data

TL-516 Imperial Units			CFM						
	GPM	Head Loss (Ft-hd)	CFM						
			800	1200	1600	2000	2400	2800	3200
1-Row 2-Circuit	1	0.19	24.0	27.1	29.2	30.8	32.0	32.9	33.7
	2	0.7	29.2	34.1	37.6	40.3	42.5	44.3	45.9
	3	1.54	31.5	37.3	41.6	45.0	47.8	50.1	52.1
	4	2.68	32.8	39.2	44.0	47.8	51.0	53.6	56.0
	5	4.13	33.6	40.4	45.6	49.7	53.1	56.0	58.6
Airside Ps (in. wc.)			0.04	0.08	0.13	0.20	0.27	0.35	0.44
2-Row 4-Circuit	1	0.14	34.1	38.3	40.9	42.7	44.1	45.1	-
	2	0.52	44.5	52.6	58.1	62.2	65.3	67.9	-
	3	1.15	49.4	59.8	67.3	73.0	77.5	81.3	-
	4.5	2.52	53.4	65.8	75.1	82.4	88.4	93.4	-
	6	4.4	55.6	69.3	79.7	88.1	95.0	100.8	-
Airside Ps (in. wc.)			0.09	0.18	0.29	0.42	0.56	0.73	-

Refer to Table-A on Page TL-58 for Imperial Notes

TL-516 Metric Units			L/s						
	L/s	Head Loss (kPa)	L/s						
			378	566	755	944	1133	1322	1510
1-Row 2-Circuit	0.06	0.06	7.0	7.9	8.6	9.0	9.4	9.7	9.9
	0.13	0.23	8.6	10.0	11.0	11.8	12.5	13.0	13.5
	0.19	0.52	9.2	10.9	12.2	13.2	14.0	14.7	15.3
	0.25	0.90	9.6	11.5	12.9	14.0	14.9	15.7	16.4
	0.32	1.38	9.9	11.9	13.4	14.6	15.6	16.4	17.2
Airside Ps (kPa)			0.01	0.02	0.03	0.05	0.07	0.09	0.11
2-Row 4-Circuit	0.06	0.05	10.0	11.2	12.0	12.5	12.9	13.2	-
	0.13	0.17	13.0	15.4	17.0	18.2	19.2	19.9	-
	0.19	0.38	14.5	17.5	19.7	21.4	22.7	23.8	-
	0.28	0.84	15.6	19.3	22.0	24.2	25.9	27.4	-
	0.38	1.47	16.3	20.3	23.4	25.8	27.9	29.6	-
Airside Ps (kPa)			0.02	0.04	0.07	0.10	0.14	0.18	-

Refer to Table-B on Page TL-58 for Metric Notes



Single Duct Air Terminal Units

6/2007

TL-500 - Hot Water Coils Notes

Table-A

IMPERIAL NOTES

1. Values shown in the previous charts assume the following conditions: 180°F EWT, and 65°F EAT. For other conditions of entering water, air temperatures and air flow, see note 5.

2. Tabulated values are in MBH (Thousands of BTU per hour).

3. Head Loss is in feet of water.

4. MBH values are based on a DT (temperature difference) of 115° F between entering air and entering water. For other DTs, multiply the MBH values by the factors below:

DT	Factor
50	.44
60	.52
70	.61
80	.70
90	.79

DT	Factor
100	.88
115	1.00
125	1.07
140	1.20
150	1.30

5. Air Temperature Rise = $\frac{927 \times \text{MBH}}{\text{CFM}}$

6. Water Temperature Drop = $\frac{2.04 \times \text{MBH}}{\text{GPM}}$

7. For water valve sizing, contact your METALAIR representative. For data values other than those listed, interpolate or use the METALAIR Terminal Selection Program. Contact your METALAIR representative for additional information.

8. All hot water coils are 10 Fins per inch (FPI).

Table-B

METRIC NOTES

1. Values shown in the previous charts assume the following conditions: Standard Atmospheric Conditions, 82°C EWT, and 18°C EAT. For other conditions of entering water, air temperatures and air flows, see note 5.

2. Tabulated values are in kW (Thousands of watts).

3. Head loss is in kPa.

4. kW values are based on a DT (temperature difference) between entering air and entering water of 64°C. For other DTs, multiply the kW values by the factors below:

DT	Factor
30	.48
35	.55
40	.63
50	.78

DT	Factor
60	.94
64	1.00
70	1.08
80	1.24

5. Air Temperature Rise = $\frac{\text{kW} \times 579}{\text{air flow in L/s}}$

6. Water Temperature Drop = $\frac{\text{kW} \times 0.17}{\text{water flow in L/s}}$

7. For water valve sizing, contact your METALAIR representative. For data values other than those listed, interpolate or use the Metal Industries computerized engineering program. Contact your METALAIR representative for additional information.

8. All hot water coils are 10 Fins per inch (FPI).



LEADING THE INDUSTRY IN PRODUCT LITERATURE

WITH THE CHOICE OF OUR PRE-FLITE CATALOG, QUICK SELECT CATALOG, INFOSOURCE CATALOG, INFOSOURCE CD AND OUR WEB SITE, WWW.METALAIRES.COM, YOU PICK THE FORMAT FOR PRODUCT INFORMATION THAT BEST SUITS YOUR AIR DISTRIBUTION DESIGN NEEDS.

PRE-FLIGHT - Product Overview Catalog

The METALAIRES Pre-Flight catalog is a condensed reference guide containing concise listings of our entire product line including grilles, registers, diffusers, and air terminal units. This catalog can be used to help select the type of device, along with available border styles. The catalog includes photos of each model along with the features and model guide, a great tool when you are trying to select a device for your project.

QUICK SELECT CATALOG - Air Distribution Selection Made Easy

The METALAIRES Quick Select Catalog is designed to save you time selecting air distribution equipment. This catalog is a compact version of our InfoSource Catalogs and includes drawings and performance for our most popular products. The Quick Select Catalog is broken into product types with each section beginning with a model summary that includes features and benefits of our products. To obtain product information not included in the Quick Select Catalog, simply go to our web site at www.metalaires.com.

INFOSOURCE CATALOG SUITE

- Complete Guide to Air Distribution Selection

The METALAIRES InfoSource Catalog suite is the leading product catalog in the industry. Included in these catalogs are the complete product listings, drawings, product features and benefits, product performance data, specifications, and model specifications. These catalogs are organized to make it quick and easy to find the information you are looking for.

INFOSOURCE CD

Our InfoSource CD has set the standard in the industry for air distribution product selection. This CD contains a complete library of all our catalogs and submittals along with our air terminal unit selection program.

INFOSOURCE CATALOG SUITE

- Ceiling Diffusers Catalog
- Grilles & Registers Catalog
- Air Terminal Unit Catalog
- Formations Catalog

WEBSITE: WWW.METALAIRES.COM

METALAIRES leads the industry with a web site that contains all the product literature and performance data needed to design your air distribution system. Our web site includes all our submittals, catalogs, installation manuals, as well as as other valuable information to aid you in air distribution design.



METALAIRES

TH/TL-500 - Control Sequences

BASIC AIR TERMINAL

(100) Without Controls:

Specify when controls are to be field mounted and supplied by others.

PNEUMATICALLY CONTROLLED AIR TERMINALS

Pressure dependent pneumatic air terminal actuators are powered directly by branch line pressure signals from the room thermostat. Pressure independent pneumatic air terminal actuators are powered by signals from a flow control device which balances pressure readings from the main air supply and the branch air pressure from the thermostat. The damper's position is regulated by the flow control which operates within preset minimum and maximum flow rates.

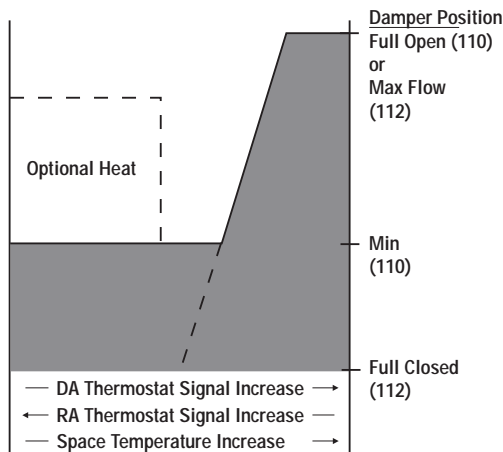
A **direct acting thermostat** causes an increase in branch pressure as the room temperature rises. A reverse acting thermostat causes a decrease in branch pressure as the room temperature rises. Since the pneumatic actuator is a spring return device, the damper can be connected so that without main pressure it will return to normally closed position to shut off air flow to the room, or to a normally open position to permit unobstructed air flow to the room.

Multi-function flow controllers for pressure independent applications can be field modified for use with a direct or reverse acting thermostat and the damper actuator can be switched to either normal position without adding control components. The Series TH/TL-500 readily accommodates this type of controller versatility since its control linkage design allows the primary air damper to be repositioned without the use of tools from normally open to normally closed, or vice versa, without removing or relocating the damper actuator.

Pneumatic/Pressure Dependent

Actuator responds directly to a signal from a room thermostat. Furnished with a mechanical air flow stop. Heat optional.

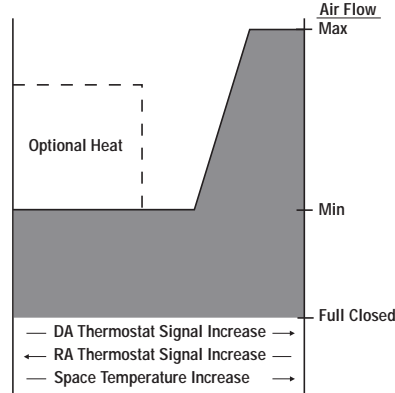
- (110) **Normally closed** for use with a direct acting room thermostat.
- (112) **Normally open** for use with a reverse acting room thermostat.



Single Duct Air Terminal Units

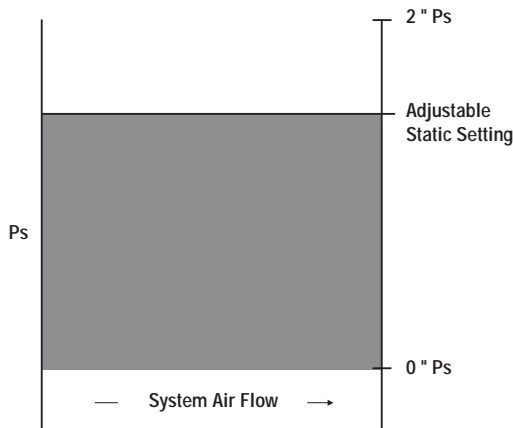
TH/TL-500 - Pneumatic Control Sequences

Pneumatic
Pressure Independent
114 - DA/NC
115 - DA/NO
116 - RA/NC
117 - RA/NO



- (114) **Variable Volume.** Normally closed. For use with direct acting thermostat. Optional heat is energized by the thermostat after air flow has reached a preset minimum.
- (115) **Variable Volume.** Normally open. For use with direct acting thermostat. Optional heat is energized by the thermostat after air flow has reached a preset minimum.
- (116) **Variable Volume.** Normally closed. For use with reverse acting thermostat. Optional heat is energized by the thermostat after air flow has reached a preset minimum.
- (117) **Variable Volume.** Normally open. For use with reverse acting thermostat. Optional heat is energized by the thermostat after air flow has reached a preset minimum.

Pneumatic
140 Static Control (0" - 2")



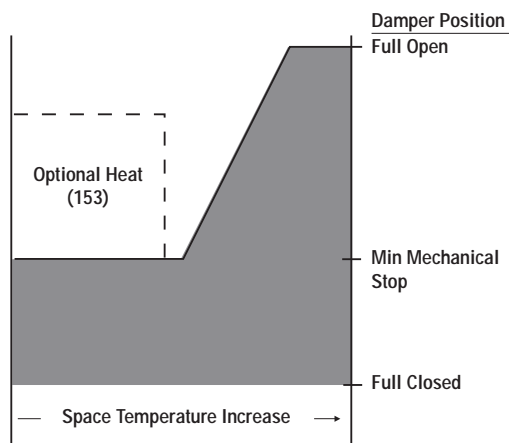
- (140) **Static Control.** Normally open or normally closed. Local or remote pickup senses duct static and signals controller to maintain constant static at sensing point. It may be used for direct static control or as a by-pass flow method. 0" - 2" range.



TH/TL-500 - Electric Control Sequences

ELECTRICALLY CONTROLLED AIR TERMINALS

Reversible electric actuators are pressure dependent and are powered directly by signals from the room thermostat. As room temperature rises, the actuator opens the damper to permit a higher flow of cooling air into the room. As room temperature falls, the actuator closes the damper to reduce air flow to the room. The electric actuator is not a spring return device. If there is a loss of power to the air terminal, the damper will remain in the position it occupied at the time of the failure. A mechanical stop is provided with each electric control sequence to assure minimum air flow to the room. The modulating actuator provides floating proportional control of supply air to the room and can be left in a stalled position indefinitely. A 24 volt, bimetallic room thermostat is a standard component of each electric control sequence, with the exception of 157N. A transformer is required to reduce line voltage to 24 volts to operate the thermostat and the actuator. 50 VA transformer that reduce 120, 240, or 277 line voltage to 24 control voltage are optional with each electric control sequence, as is a control panel cover to enclose the low voltage controls used.



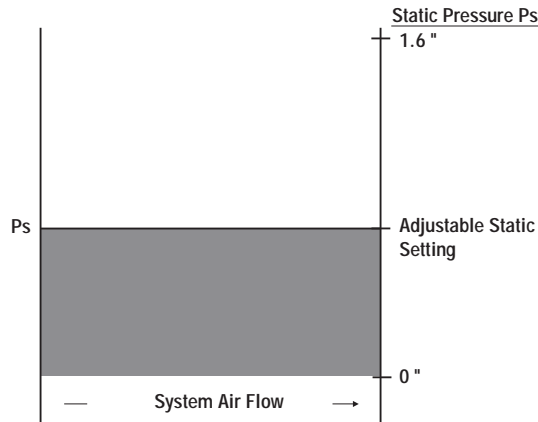
- (152) **Cooling Only.** As room temperature rises, the thermostat signals the actuator to open the damper to its fully open position. As room temperature falls, the thermostat signals the actuator to close the damper to a mechanically determined minimum point.
- (153) **Cooling with Heat.** As room temperature rises, the thermostat signals the actuator to open the damper to its fully open position. As room temperature falls, the thermostat signals the actuator to close the damper to a mechanically determined minimum point. At this point, an electrical accessory switch energizes optional heat at the minimum air flow rate. Up to two stages of heat are available.



Single Duct Air Terminal Units

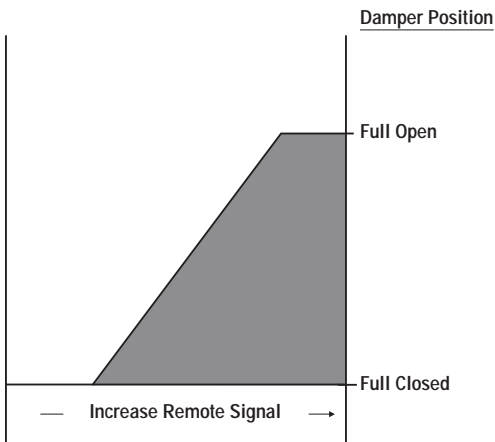
TH/TL-500 - Electric Control Sequences

Electric
156 Static Control (0" - 1.6")



(156) **Static Control.** Static sensor - at terminal or remote - senses static variations and signals controller to maintain static. 0" - 1.6" range

Electric
157 Floating, Electric Control



(157) **Floating, Electric Control.** Actuator modulates air flow in response to controller (by others) signals. Signal, 24 VAC, may be from a static, velocity or other controller requiring air flow modulation (Flow sensor and thermostat optional).



TH/TL-500 - Analog Control Sequences

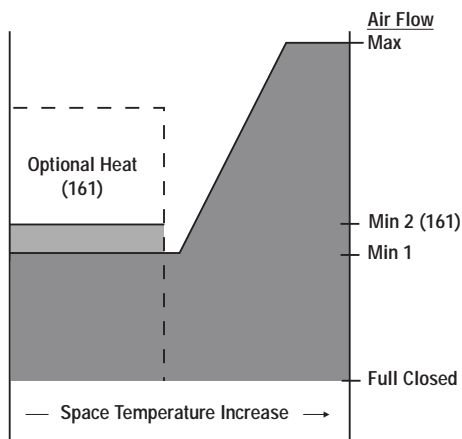
ANALOG ELECTRONICALLY CONTROLLED AIR TERMINALS

Analog electronic flow controls are the only electrical devices available for use with electric or electronic damper actuators that achieve pressure independent control so that variations in supply static pressure do not affect air flow conditions to the room. The analog electronic room thermostats supplied with the control sequences detailed on this page have field adjustable flow limit set points. The thermostat electronically signals the actuator to open or close the damper in response to room temperature within preset air flow limits. The electric and electronic actuators are not spring return devices. If there is a loss of power to the air terminal, the damper will remain in the position it occupied at the time of the power failure.

These state-of-the-art control sequences are available with both analog and computer compatible digital input/output controller options. Numerous control arrangements are possible with electronic control sequencing which are not discussed in this catalog.

All electric and electronic components used in these sequences use low voltage (24 volt) controls and are readily enclosed with a standard control panel cover. A standard 50 VA transformer that reduces 120, 240, or 277 line voltage to 24 control voltage is wired into the control sequence as a standard component. It is assumed that 120 line voltage is being supplied to the air terminal if a different line voltage is not specifically listed.

Electronic Control
Pressure Independent
160 Cooling Only
161 Cooling with Reheat



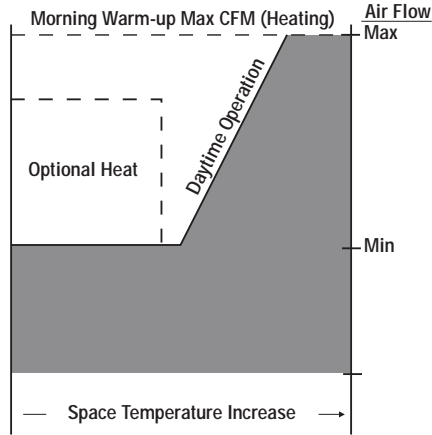
- (160) **Cooling Only.** Electronic thermostat (analog models with integral, adjustable, maximum and minimum flow limits) signals electronic flow controller to regulate damper position. The damper is rotated to its maximum open position as room temperature rises and to its minimum open position as room temperature falls.
- (161) **Cooling with Heat.** Electronic thermostat (analog models with integral, adjustable, maximum and minimum flow limits) signals electronic flow controller to regulate damper position. The damper is rotated to its maximum open position as room temperature rises and to its minimum open position as room temperature falls. After the damper has reached its minimum position, the thermostat actuates optional heat at an independently selected set point. Up to three stages of heat are available depending on the control manufacturer selected.



Single Duct Air Terminal Units

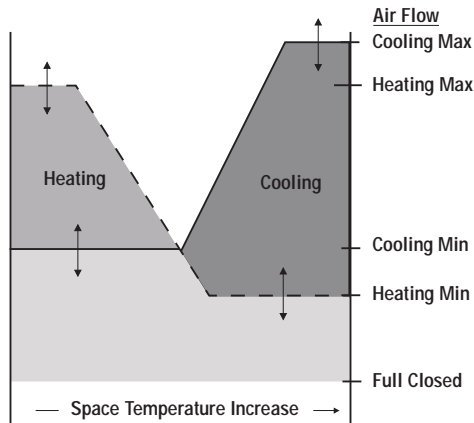
TH/TL-500 - Analog Electronic Control Sequences

Electronic Control
Pressure Independent
164 Night Shutdown/Morning Warm-up



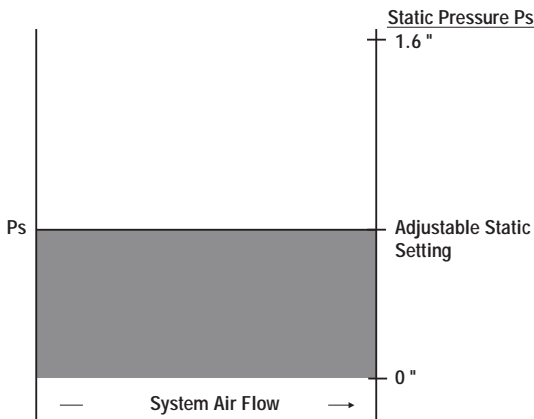
(164) **Night Shutdown/Morning Warm-up. Daytime Operation:** Electronic thermostat (analog models with integral, adjustable, maximum and minimum flow limits) signals electronic flow controller to regulate damper position. The damper is rotated to its maximum open position as room temperature rises and to its minimum open position as room temperature falls. After the damper has reached its minimum position, the thermostat actuates optional heat at an independently selected set point. Up to three stages of heat are available depending on the control manufacturer selected.
Night Shutdown/Morning Warm-up: With central system off, no air or duct mounted heat is supplied to the room. At morning warm-up, a duct sensor detects warm air in the central system and drives air terminal to maximum CFM. During warm-up, duct heat is held off. When duct sensor detects cold air in the central system, air terminal automatically reverts to daytime operation.

Electronic Control
Pressure Independent
165 Heating Cooling Change over



(165) **Heating/Cooling Changeover:** A duct thermostat switches a heat/cool relay to make the system operate in the appropriate heating or cooling mode.
Cooling Mode: Electronic thermostat (analog models with integral, adjustable, maximum and minimum flow limits) signals electronic flow controller to regulate damper position. The damper is rotated to its maximum open position as room temperature rises and to its minimum open position as room temperature falls.
Heating Mode: In the heating mode, damper is modulated in response to the heating signals from the electronic room thermostat.

Electric
156 Static Control (0" - 1.6")



(173) **Electronic Static Control.** Static sensor - local or remote - senses variations and signals controller accordingly. For direct static control or bypass static control. 0"-2" range.



Single Duct Air Terminal Units

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TH/TL-500 - DDC Electronic Control Capability

DDC ELECTRONIC CONTROL CAPABILITY

The majority of controls installed in HVAC systems today are direct digital controls (DDC). METALAIRE can mount and wire any manufacturer's control product that fits on our standard control panel regardless of the brand (one controller/actuator). Mounting of other manufactures control enclosures or transformer is not available.

In those cases where it is desirable to have the controls field mounted and wired, a basic air terminal without controls can be purchased from METALAIRE. The basic unit includes a control panel and cover.

In either case where controls are to be factory mounted and wired by METALAIRE or field installed by the control manufacturer, most types of DDC controllers require a flow sensor. METALAIRE will provide our multipoint quadrant averaging flow sensor which is compatible with all electronic control devices currently on the market. We can mount a control manufacturer's compatible sensor for an additional cost.

METALAIRE offers a unique service for today's fast-paced, technology-hungry HVAC markets with high performance air terminals that are compatible with all direct digital control packages. This approach is highly encouraged by control manufacturers and HVAC design engineers alike. METALAIRE is committed to providing the finest air terminal devices that will operate seamlessly with any control manufacturer's equipment.

For answers to specific compatibility questions, please contact your local METALAIRE representative.

Single Duct Air Terminal Units



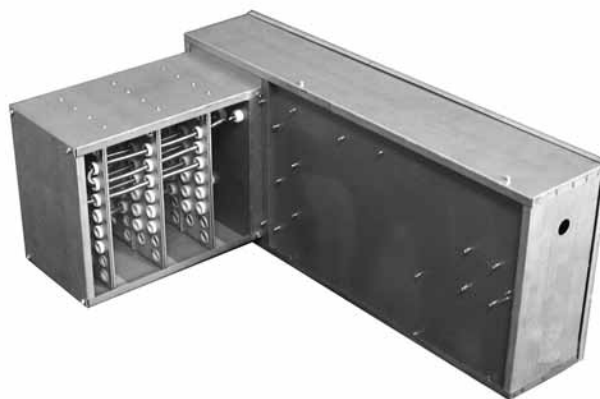
TH-500

Single Duct Air Terminal Units

TH/TL-500 - Accessories and Components

ELECTRIC HEAT

Electric heater elements, as illustrated on this page, are enclosed in an insulated plenum which is integral to the air terminal. The discharge end of the plenum has slip and drive connections for easy connection to an additional air terminal unit accessory or to downstream ductwork. ETL® listed heaters are provided with an air static switch to improve air flow through the elements. Heaters controlled electrically or electronically with a 24 VAC control circuit to operate compatibly with the low voltage controls on the air terminal. The location of the heater elements in the plenum downstream of the air terminal provides adequate distance for the flow of supply air to expand once past the damper so that there are no hot spots in the heater. Heater plenums are internally insulated with 1/2", 1.5 lb/ft³ density fiberglass insulation. When an air terminal is ordered with clean room lining and electric heat, the heater plenum is either internally lined with optional foil or backed insulation, metal lined, or closed cell foam or may be externally insulated in the field.



Selection Recommendations for TH-500		
Inlet Size	Minimum CFM with Electric Heat	Maximum CFM
6	165	600
8	220	1100
10	350	1700
12	500	2500
14	775	3250
16	975	4400
20	1400	6200
24	1800	7200

Notes:

1. The minimum CFM with electric heat values reported and a minimum of 0.03" downstream static pressure will provide sufficient total pressure to operate the airflow switch. For performance below these CFM values, please consult the factory.
2. Maximum CFM is based on a signal velocity pressure of 1.0 in W.C.
3. For Selections outside the above ranges, contact your local METALAIR Representative

Selection Recommendations for TL-500		
Inlet Size	Minimum CFM with Electric Heat	Maximum CFM
6	165	600
8	220	1100
10	350	1700
12	500	1965
14	775	2600
16	975	3150

Notes:

1. The minimum CFM with electric heat values reported and a minimum of 0.03" downstream static pressure will provide sufficient total pressure to operate the airflow switch. For performance below these CFM values, please consult the factory.
2. Maximum CFM is based on a signal velocity pressure of 1.0 in W.C.
3. For Selections outside the above ranges, contact your local METALAIR Representative

All accessories which can be attached to the Series TH/TL-500 Air Terminals are not a part of the ARI certification program but ratings can be affected by their use.



For more product information visit us at www.metalair.com



Single Duct Air Terminal Units

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TH/TL-500 - Accessories and Components

HOT WATER COILS

When ordered with the air terminal, the hot water coil is shipped attached with slip and drive connections to the air terminal casing. The discharge end of the casing has slip and drive connections for easy connection to either an additional air terminal unit accessory or to downstream ductwork. The hot water coil is constructed of aluminum fin and copper serpentine-type tubes with sweat connections tested at 300 psig. Coil selection may be made using METALAIRES Terminal Selection Program on CD. Contact your METALAIRES representative for a copy. The hot water housing must be externally insulated after installation in the field. Hot water coils are tested in accordance to ARI. Options, at an additional charge on hot water coils, include access doors for inspection and cleaning, and inlet/outlet on opposite sides of coils.



Diameters Are O.D. Dimensions

TH-500								
Unit	1 Row		2 Row		3 Row		4 Row	
Size	Inlet Tube Diameter	#Fins/Inch	Inlet Tube Diameter	#Fins/Inch	Inlet Tube Diameter	#Fins/Inch	Inlet Tube Diameter	#Fins/Inch
506	5/8" (15.8)	10	7/8" (22.2)	10	7/8" (22.2)	10	7/8" (22.2)	10
508	5/8" (15.8)	10	7/8" (22.2)	10	7/8" (22.2)	10	7/8" (22.2)	10
510	5/8" (15.8)	10	7/8" (22.2)	10	7/8" (22.2)	10	7/8" (22.2)	10
512	7/8" (22.2)	10	7/8" (22.2)	10	7/8" (22.2)	10	7/8" (22.2)	10
514	5/8" (15.8)	10	7/8" (22.2)	10	7/8" (22.2)	10	7/8" (22.2)	10
516	5/8" (15.8)	10	7/8" (22.2)	10	7/8" (22.2)	10	7/8" (22.2)	10
520	7/8" (22.2)	10	7/8" (22.2)	10	1 1/8" (28.6)	8	1 1/8" (28.6)	8
524	7/8" (22.2)	10	7/8" (22.2)	10	1 1/8" (28.6)	8	1 1/8" (28.6)	8

TL-500				
Unit	1 Row		2 Row	
Size	Inlet Tube Diameter	#Fins/Inch	Inlet Tube Diameter	#Fins/Inch
506	5/8" (15.8)	10	7/8" (22.2)	10
508	5/8" (15.8)	10	7/8" (22.2)	10
510	5/8" (15.8)	10	7/8" (22.2)	10
512	5/8" (15.8)	10	5/8" (22.2)	10
514	5/8" (15.8)	10	5/8" (22.2)	10
516	5/8" (15.8)	10	5/8" (22.2)	10

All accessories which can be attached to the Series TH/TL-500 Air Terminals are not a part of the ARI certification program but ratings can be affected by their use.

Single Duct Air Terminal Units



TH-500

Single Duct Air Terminal Units

TH/TL-500 - Accessories and Components

SOUND ATTENUATORS

The optional acoustically lined sound attenuator is designed to further reduce discharge sound levels from the air terminal. The sound attenuator and the TH/TL are a one piece, integral unit. The discharge end of the sound attenuator has slip and drive connections for easy connection to an additional air terminal unit accessory or to downstream ductwork. The chart below gives reductions to the discharge sound power figures at minimum static pressure for each octave band. When the TH/TL-500 is ordered with a sound attenuator and clean room lining, the sound attenuator must be shipped with the foil backed or closed cell foam insulation lining. These liners reduce the insertion loss values by approximately 50%.

TH-500						
Air Terminal	Band Frequency (Hz)					
Size	2 / 125	3 / 250	4 / 500	5 / 1000	6 / 2000	7 / 4000
506	1	1	3	10	13	8
508	1	1	3	9	11	8
510	1	1	3	8	10	7
512	1	1	2	7	9	6
514	1	1	2	7	7	6
516	1	1	2	6	7	5
520	1	1	2	6	6	5
524	1	1	2	6	5	4

TL-500						
Air Terminal	Band Frequency (Hz)					
Size	2 / 125	3 / 250	4 / 500	5 / 1000	6 / 2000	7 / 4000
506	1	1	3	10	13	8
508	1	1	3	9	11	8
510	1	1	3	8	10	7
512	1	1	3	7	9	6
514	1	1	2	7	9	6
516	1	1	2	7	7	6



Single Duct Air Terminal Units



TH-500

All accessories which can be attached to the Series TH/TL-500 Air Terminals are not a part of the ARI certification program but ratings can be affected by their use.

TH/TL-500 - Accessories and Components

STANDARD LINER

Standard units are shipped with 1/2" thick, 1.5 lbs/ft³ dual density glass fiber, coated to prevent air flow erosion to 6000 fpm surface velocity. Insulation to comply with UL 181 and NFPA 90A. All exposed edges shall be coated with NFPA 90A approved sealant to prevent entrainment of fibers in the airstream.

OPTIONAL LINER

Available as an option is 1" thick, 1.5 lbs/ft³ dual density glass fiber, coated to prevent air flow erosion to 6000 fpm surface velocity. Insulation to comply with UL 181 and NFPA 90A. All exposed edges shall be coated with NFPA 90A approved sealant to prevent entrainment of fibers in the airstream.

CLEAN ROOM LINERS

METALAIRE has developed a series of HVAC systems "clean room" liners for use in applications such as health care or laboratory.

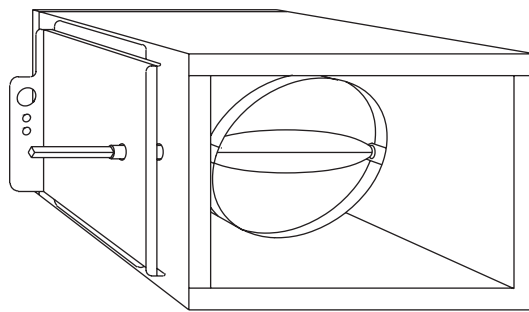
FOIL BACKED LINER 1/2" THICK, 1 1/2 LBS DENSITY, FOIL BACKED LINER 1" THICK, 4 LBS DENSITY

An optional foil backed lining can be applied to the Series TH/TL-500 Air Terminal, the sound attenuator, and electric heat plenum accessories. 1.5 lbs/ft³ density, 1/2" thick foil backed fiberglass material is available as a clean room liner in applications where discharge noise performance is more critical. The discharge noise performance for an air terminal with the foil backed clean room liner is equal to the current catalog data for a standard air terminal. Foil backed liner meets the requirements of UL 181 and NFPA 90A. Another foil option is the heavy duty, 1" thick, 4 lbs/ft³ density liner. This liner includes metal "Z" brackets that totally enclose the insulation ends eliminating exposure to the air stream. The metal brackets also secure the insulation inside the terminal. The liner is an excellent choice for "clean room" applications that require low sound. This foil backed liner meets the requirements of UL 181 and NFPA 90A.

THERMOPURE 1/2" OR 1" THICK, This innovative closed cell foam eliminates fiberglass completely, while meeting or exceeding the performance of fiberglass. ThermoPure has a 25/50 fire/smoke rating, 1.5 lbs/ft³ density, 6000 fpm velocity rating, and holds its thermal integrity, even when wet. It meets the UL 181 tests for mold and mildew resistance. Surfaces are washable if desired. Sound attenuators and electric heat plenums are shipped with ThermoPure or foil backed insulation for an additional fee. These accessories may also be ordered without insulation in which case they require external insulation after installation in the duct work. Hot water coils are shipped without insulation and must be externally insulated in the field.

METAL LINER

A special sheet metal liner that fits inside of the Series TH/TL-500 Air Terminal is thoroughly sealed to completely isolate the coated fibrous glass insulation material from the air stream. The liner provides a virtually nondestructible nonporous duct surface that cannot dry out, rip, tear or break off in the air stream no matter how long the air terminal operates in the system, but effectively inhibits bacteria growth. The use of the metal liner makes the air terminal casing more rigid and retains the functionality of factory applied interior insulation for condensation protection and noise reduction. The discharge noise levels cataloged for the air terminal are increased somewhat by the addition of the metal liner and should not be considered if the application involves installation in an area where higher noise levels are not acceptable.



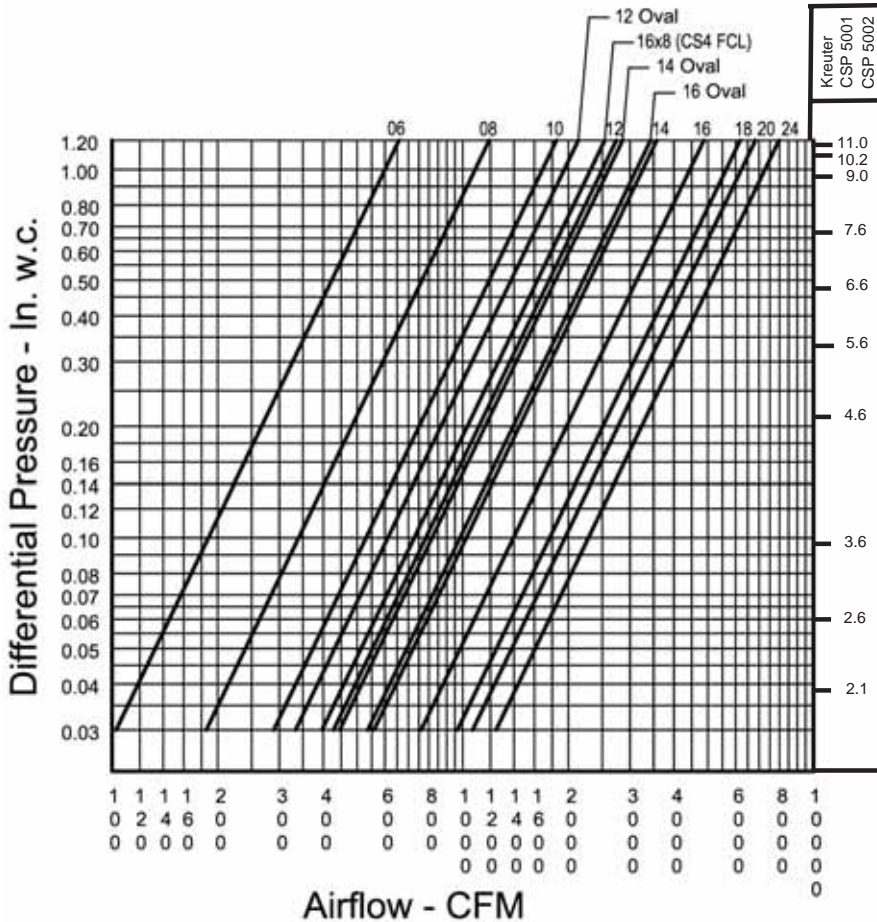
The Optional Metal Liner

All accessories which can be attached to the Series TH/TL-500 Air Terminals are not a part of the ARI certification program but ratings can be affected by their use.



Single Duct Air Terminal Units

TH-500 - Calibration for MI Multi-Point Quadrant Averaging Flow Sensor



ATU Model	Inlet Size	Flow Coefficient
TH, FC	06 Round	600
FV, DD	08 "	1100
DH, BP	10 "	1700
RT, RA	12 "	2500
TL (6-10)	14 "	3250
FCL Cs2 (6-8)	16 "	4400
12 TL	12 Oval	1965
14 TL	14 "	2600
16 TL	16 "	3150
FCL Cs4	16x8 Rect.	2340
FC & FV Cs7	18x16 "	5600
TH20	20x16 "	6200
TH24	24x16 "	7200

$$Cfm = \sqrt{\Delta p} \times \text{Flow Coefficient}$$

Data is with Sensor Mounted in Round Duct, except for Rectangular Sizes 18, 20 and 24 Widths x 16 Height and 16 x 8 (FCL Case 4)

* Some controllers do not operate consistently below 0.030 in. w.c.

Selection Recommendations for TH-500					
Inlet Size	Minimum CFM	Minimum CFM with Electric Heat	CFM @ 1"	Inlet Area	K
6	105	165	600	0.20	1.72
8	190	220	1100	0.35	1.61
10	290	350	1700	0.55	1.65
12	430	500	2500	0.79	1.58
14	550	775	3250	1.07	1.73
16	750	975	4400	1.40	1.61
20	1100	1400	6200	2.22	2.06
24	1250	1800	7200	2.67	2.20

$$CFM = \sqrt{\Delta p} \times Cfm @ 1"$$

or

$$CFM = \sqrt{\Delta p / K} \times 4005 \times \text{Inlet Area}$$

Notes:

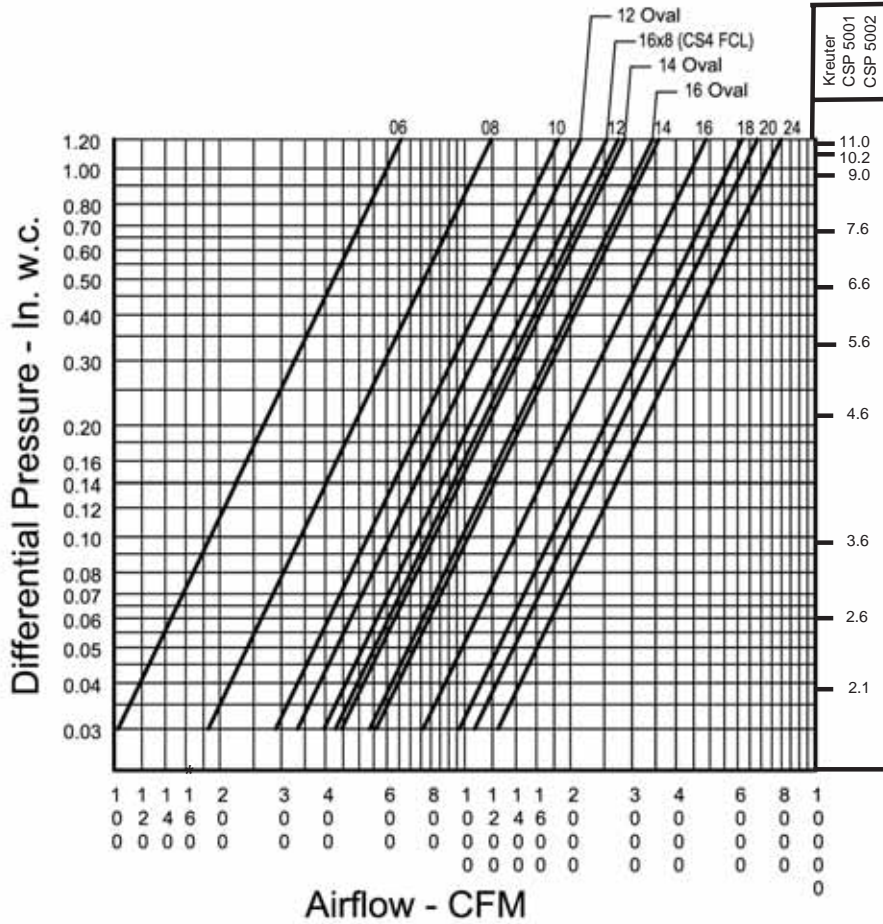
1. Minimum CFM (without electric heat) is based on a signal velocity pressure of 0.03 in W.C.
2. The minimum CFM with electric heat values reported and a minimum of 0.03" downstream static pressure will provide sufficient total pressure to operate the airflow switch. For performance below these CFM values, please consult the factory.
3. Maximum CFM is based on a signal velocity pressure of 1.0 in W.C.



Single Duct Air Terminal Units

6/2007

TL-500 - Calibration for MI Multi-Point Quadrant Averaging Flow Sensor



ATU Model	Inlet Size	Flow Coefficient
TH, FC	06 Round	600
FV, DD	08 "	1100
DH, BP	10 "	1700
RT, RA	12 "	2500
TL (6-10)	14 "	3250
FCL Cs2 (6-8)	16 "	4400
12 TL	12 Oval	1965
14 TL	14 "	2600
16 TL	16 "	3150
FCL Cs4	16x8 Rect.	2340
FC & FV Cs7	18x16 "	5600
TH20	20x16 "	6200
TH24	24x16 "	7200

$$Cfm = \sqrt{\Delta p} \times \text{Flow Coefficient}$$

Data is with Sensor Mounted in Round Duct, except for Rectangular Sizes 18, 20 and 24 Widths x 16 Height and 16 x 8 (FCL Case 4)

* Some controllers do not operate consistently below 0.030 in. w.c.

Unit sizes 12, 14, and 16 have oval inlets. 6, 8, and 10 are round.

Selection Recommendations for TL-500					
Inlet Size	Minimum CFM	Minimum CFM with Electric Heat	CFM @ 1"	Inlet Area	K
6	105	165	600	0.20	1.72
8	190	220	1100	0.35	1.61
10	290	350	1700	0.55	1.65
12	340	500	1965	0.75	2.36
14	450	775	2600	0.98	2.27
16	545	975	3150	1.20	2.31

$$CFM = \sqrt{\Delta p} \times Cfm @ 1"$$

or

$$CFM = \sqrt{\Delta p / K} \times 4005 \times \text{Inlet Area}$$

Notes:

1. Minimum CFM (without electric heat) is based on a signal velocity pressure of 0.03 in W.C.
2. The minimum CFM with electric heat values reported and a minimum of 0.03" downstream static pressure will provide sufficient total pressure to operate the airflow switch. For performance below these CFM values, please consult the factory.
3. Maximum CFM is based on a signal velocity pressure of 1.0 in W.C.
4. For Selections outside the above ranges, contact your local METALAIR Representative

Single Duct Air Terminal Units



TH-500

TH-500 - Product Specifications and Highlights

1. Single Duct Variable Volume Air Terminals shall be METALAIRE Model TH-500. The units shall be the size and capacity as outlined in the plans and specifications. Casing dimensions shall be checked to ensure the terminals fit the available space.
2. Air terminals shall be certified under the American Refrigeration Institute (ARI) Standard 880-98 Certification Program and carry the ARI seal. All NC values shall be calculated per ARI Standard 885-98. Units with NC values calculated per ARI-885-90 will not be accepted. Terminal units shall be either ETL® or UL® listed as a complete assembly. Terminal electrical components, including actuators and low voltage controls shall be UL® listed. All electrical components including both line voltage and low voltage shall be mounted in a metal control enclosure. Units shall have a single point field wiring connection. Units shall be manufactured and wired per UL-1995 and in accordance with the National Electric Code.
3. All terminals shall be shipped as a single unit requiring no field assembly. Accessories including hot water coils and electric heaters shall be factory mounted.
4. The air terminals shall be constructed of zinc coated steel. Unit sizes 6 through 16 inch shall have a round inlet for field duct connection. Unit sizes 20 and 24 shall include a rectangular inlet for field duct connection. Units shall have a universal control-mounting panel constructed of 20-gauge steel. Panel shall include stand-offs to allow controls to be mounted without penetrating the terminal casing. Low pressure downstream casing shall be 22-gauge.
5. Inlet valve assembly on unit sizes 6 through 16 inch shall have a seamless butt weld on a round inlet tube to minimize leakage and prevent the damper from binding. Inlet tubes with overlapping welds or non-continuous, skipped welds are not acceptable. Damper shaft shall rotate in a self-lubricating Kepital® (acetal resin material) bearing. Damper shaft shall be die cast aluminum. Damper shaft end shall include a casted damper position indicator. End of shaft on which actuator is installed shall be square to prevent actuator tightening screw(s) from slipping. Round damper shaft ends are not acceptable.

Damper tube shall be free of obstructions including damper stops to allow the free rotation of the damper. Mechanical damper stops located in the inlet tube are not acceptable. A flexible gasket-mounted in the damper blade without adhesives shall provide damper seal. Damper gasket shall include slit partitioning around the perimeter to prevent damper noise at low flows near full close off. Damper gaskets without perimeter slit partitioning are not acceptable. Damper shall be a double thickness of 24-gauge steel and leakage through the damper assembly shall be less than 1% of maximum CFM at 3" static pressure.

Inlet air valve shall have structural beads machine formed into the tube. One external bead shall be provided for the attachment of flexible duct. Inlet air valve flow sensor shall be multipoint quadrant averaging with flow sampling of both velocity pressure and flow differential pressure from four quadrants, and shall contain two control ports and two accessory ports. Flow sensors sampling only velocity pressure in all four quadrants are not acceptable. Sensors reading differential pressure with less than 8 measuring points are not acceptable. All piping connections to the flow sensor must be made with external ports that extend through damper tube. Units with piping connections made in the primary air stream are not acceptable. Flow sensors with plastic piping connections of any kind are not acceptable.

Unit sizes 20 and 24 shall have a rectangular blade damper assembly. At an inlet velocity of 2000 fpm, the differential static pressure required to operate any terminal size shall not exceed 0.14" w.g. for the basic terminal.

6. Air Terminals shall be internally insulated with 1/2" thick, 1.5 lbs/ft³ dual density glass fiber, coated to prevent air flow erosion to 6000 fpm surface velocity. Insulation to comply with UL 181 and NFPA 90A. All exposed edges shall be coated with NFPA 90A approved sealant to prevent entrainment of fibers in the air stream.

7. Sound ratings for the terminal shall not exceed ____ NC at ____ static pressure. Sound performance shall be ARI certified. Each individual terminal unit shall bear an ARI label.

Options and Accessories

1. Hot Water Coils - Hot Water Coils are to be factory mounted in an extended air terminal casing with the number of rows and circuits as required to meet the capacities as shown in the schedule. Hot water coils shall be enclosed in a minimum 20-gauge coated steel casing allowing attachment to metal ductwork with a slip and drive connection. Fins shall be rippled and sine wave type constructed from heavy gauge aluminum. Corrugated configured coils are not acceptable. Tubes shall be copper with a minimum wall thickness of 0.016" with male solder header connections. Fins shall be mechanically bonded to the tubes. Coils shall be leak tested to 300 psi with minimum burst pressure of 2000 psi at ambient temperature. Coil performance data shall be based on tests run in accordance with ARI Standard 410. Coils must be ARI rated and include an ARI label.

2. Electric Reheat Coils - Electric Reheat Coils are to be factory mounted on the outlet end of the TH-500 Series Air Terminal with the sizes and with kilowatts, operating and control voltages, steps and accessories as outlined in the plans and specifications. The heaters shall be ETL® listed for zero clearance, tested in accordance with UL® Standard 1996 and the National Electric Code (NEC). Heater casings shall be constructed of heavy-duty zinc-coated steel. Element wire shall be high grade nichrome alloy derated to 50 watts per square inch density. Element wire shall be supported by moisture resistant steatite ceramics. Ceramics to be enclosed in reinforcement brackets spaced across the heater element rack at 2" to 4" intervals. Controls shall be contained in a NEMA 1 control cabinet with a hinged, latching door. A permanent wiring diagram shall be affixed to the inside of the control cabinet door for field reference. The heating element rack shall be recessed 1" into the duct to assure adequate air temperature readings for proper operation of safety switches.

Each Electric Duct Heater shall be shipped with a ETL® label certifying that it meets or exceeds the safety requirements of Standard 1996. Each heater will have an automatic primary overtemperature limit switch, a manual reset overtemperature limit switch, air static or fan relay type air proving switch and fusing if the heater exceeds 48 amps as required by UL®. A terminal block for line and control voltage shall be provided for simplified field wiring. A P. E. switch or contactor per step shall be provided for each stage of heat.

Optional Insulations

1. Fiberglass Dual Density Liner 1" Thick

Air Terminals shall be internally insulated with 1" thick, 1.5 lbs/ft³ dual density glass fiber, coated to prevent air flow erosion to 6000 fpm surface velocity. Insulation to comply with UL 181 and NFPA 90A. All exposed edges shall be coated with NFPA 90A approved sealant to prevent entrainment of fibers in the airstream.

2. ThermoPure Fiber-Free Liner 1/2" Thick

Air Terminal shall be internally insulated with 1/2" thick, 1.5 lbs./ft³ dual density fiber free liner, rated to prevent air flow erosion to 6000 fpm surface velocity. Insulation to comply with UL 181 and NFPA 255 (25/50). Material shall be chemically resistant to most hydrocarbon based solvents. Material shall not support mold growth or demonstrated degradation while subject to air erosion when tested in accordance to UL 181 and UMC 10-1.

3. Thermopure Fiber-Free Liner 1" Thick

Air Terminal shall be internally insulated with 1" thick, 1.5 lbs/ft³ fiber free liner, rated to prevent air flow erosion to 6000 fpm surface velocity. Insulation to comply with UL 181 and NFPA 255 (25/50). Material shall be chemically resistant to most hydrocarbon based solvents. Material shall not support mold growth or demonstrated degradation while subject to air erosion when tested in accordance to UL 181 and UMC 10-1.2.

TH-500 - Suggested Division 15 Specifications

4. Foil Face Liner 1/2" Thick, 1 1/2 lbs/ft³ density

Foil Face Linear Air Terminal shall be internally insulated with 1/2" thick, 1.5 lbs/ft³ dual density fibrous glass with foil face, rated to prevent air flow erosion to 6000 fpm surface velocity. Insulation to comply with UL 181 and NFPA 90A. All exposed edges shall be coated with NFPA 90A approved sealant to prevent entrainment of fibers in the airstream. Liners made of Mylar, Tedlar, Silane, or woven fiberglass cloths are not acceptable.

5. Foil Face Liner 1" Thick, 4 lbs/ft³ density

Foil Face Linear Air Terminal shall be internally insulated with 1" thick, 4 lbs/ft³ dual density fibrous glass with foil face, rated to prevent air flow erosion to 6000 fpm surface velocity. Insulation to comply with UL 1821 and NFPA 90A. All edges shall be encased within metal strips welded to the casing. Liner shall secure insulation into terminal unit. Liners made of Mylar, Tedlar, Silane, or woven fiberglass cloths not acceptable.

6. Metal Liner

Liner shall be constructed of metal and totally eliminate exposure of insulation in the air stream. Internal insulation to comply with UL 181 and NFPA 90A. Liners made of Mylar, Tedlar, Silane, or woven fiberglass cloths are not acceptable.

Manufacturer shall provide:

1. Factory mounting and wiring of DDC controls shall be as specified in section 15. Mounting shall include manufacturer's flow sensor, transformer (if required by DDC controls manufacturer), and an enclosure protecting DDC controls and wiring.
2. Analog electronic controls with flow adjustments shall be as specified in section 15 and be provided by the terminal unit manufacturer.
3. Pneumatic controls shall be as specified in section 15.

Manufacturer shall provide terminal units with factory set flow adjustments as required per the terminal unit schedule.



Single Duct Air Terminal Units

TL-500 - Product Specifications and Highlights

1. Low Profile Single Duct Variable Volume Air Terminals shall be METALAIRE Model TL-500. The units shall be the size and capacity as outlined in the plans and specifications. Casing dimensions shall be checked to ensure the terminals fit the available space.
2. Air terminals shall be certified under the American Refrigeration Institute (ARI) Standard 880-98 Certification Program and carry the ARI seal. All NC values shall be calculated per ARI Standard 885-98. Units with NC values calculated per ARI-885-90 will not be accepted. Terminal units shall be either ETL® or UL® listed as a complete assembly. Terminal electrical components, including actuators and low voltage controls shall be UL® listed. All electrical components including both line voltage and low voltage shall be mounted in a metal control enclosure. Units shall have a single point field wiring connection. Units shall be manufactured and wired per UL-1995 and in accordance with the National Electric Code.
3. All terminals shall be shipped as a single unit requiring no field assembly. Accessories including hot water coils and electric heaters shall be factory mounted.
4. Units shall be low profile with the maximum height not to exceed 12 1/2". The air terminals shall be constructed of zinc coated steel. Units shall have a round or oval inlet for field duct connection. Units shall have a universal control-mounting panel constructed of 20-gauge steel. Panel shall include stand-offs to allow controls to be mounted without penetrating the terminal casing. Low pressure downstream casing shall be 22-gauge.
5. Inlet valve assembly shall have a seamless butt weld on a round or oval inlet tube to minimize leakage and prevent the damper from binding. Inlet tubes with overlapping welds or non-continuous, skipped welds are not acceptable. Damper shaft shall rotate in a self-lubricating Kepital® (acetal resin material) bearing. Damper shaft shall be die cast aluminum. Damper shaft end shall include a casted damper position indicator. End of shaft on which actuator is installed shall be square to prevent actuator tightening screw(s) from slipping. Round damper shaft ends are not acceptable.

Damper tube shall be free of obstructions including damper stops to allow the free rotation of the damper. Mechanical damper stops located in the inlet tube are not acceptable. A flexible gasket mounted in the damper blade without adhesives shall provide damper seal. Damper gasket shall include slit partitioning around the perimeter to prevent damper noise at low flows near full close off. Damper gaskets without perimeter slit partitioning are not acceptable. Damper shall be a double thickness of 24-gauge steel and leakage through the damper assembly shall be less than 1% of maximum CFM at 3" static pressure.

Inlet air valve shall have structural beads machine formed into the tube. One external bead shall be provided for the attachment of flexible duct. Inlet air valve flow sensor shall be multipoint quadrant averaging with flow sampling of both velocity pressure and flow differential pressure from four quadrants, and shall contain two control ports and two accessory ports. Flow sensors sampling only velocity pressure in all four quadrants are not acceptable. Sensors reading differential pressure with less than 8 measuring points are not acceptable. All piping connections to the flow sensor must be made with external ports that extend through damper tube. Units with piping connections made in the primary air stream are not acceptable. Flow sensors with plastic piping connections of any kind are not acceptable.

At an inlet velocity of 2000 fpm, the differential static pressure required to operate any terminal size shall not exceed 0.14" w.g. for the basic terminal.

6. Air Terminals shall be internally insulated with 1/2" thick, 1.5 lbs/ft³ dual density glass fiber, coated to prevent air flow erosion to 6000 fpm surface velocity. Insulation to comply with UL 181 and NFPA 90A. All exposed edges shall be coated with NFPA 90A approved sealant to prevent entrainment of fibers in the air stream.

7. Sound ratings for the terminal shall not exceed ____ NC at ____ static pressure. Sound performance shall be ARI certified. Each individual terminal unit shall bear an ARI label.

Options and Accessories

1. Hot Water Coils - Hot Water Coils are to be factory mounted in an extended air terminal casing with the number of rows and circuits as required to meet the capacities as shown in the schedule. Hot water coils shall be enclosed in a minimum 20-gauge coated steel casing allowing attachment to metal ductwork with a slip and drive connection. Fins shall be rippled and sine wave type constructed from heavy gauge aluminum. Corrugated configured coils are not acceptable. Tubes shall be copper with a minimum wall thickness of 0.016" with male solder header connections. Fins shall be mechanically bonded to the tubes. Coils shall be leak tested to 300 psi with minimum burst pressure of 2000 psi at ambient temperature. Coil performance data shall be based on tests run in accordance with ARI Standard 410. Coils must be ARI rated and include an ARI label.

2. Electric Reheat Coils - Electric Reheat Coils are to be factory mounted on the outlet end of the TL-500 Series Air Terminal with the sizes and with kilowatts, operating and control voltages, steps and accessories as outlined in the plans and specifications. The heaters shall be ETL® listed for zero clearance, tested in accordance with UL® Standard 1996 and the National Electric Code (NEC). Heater casings shall be constructed of heavy-duty zinc-coated steel.

Element wire shall be high grade nichrome alloy derated to 50 watts per square inch density. Element wire shall be supported by moisture resistant steatite ceramics. Ceramics to be enclosed in reinforcement brackets spaced across the heater element rack at 2" to 4" intervals. Controls shall be contained in a NEMA 1 control cabinet with a hinged, latching door. A permanent wiring diagram shall be affixed to the inside of the control cabinet door for field reference. The heating element rack shall be recessed 1" into the duct to assure adequate air temperature readings for proper operation of safety switches.

Each Electric Duct Heater shall be shipped with a ETL® label certifying that it meets or exceeds the safety requirements of Standard 1996. Each heater will have an automatic primary overtemperature limit switch, a manual reset overtemperature limit switch, air static or fan relay type air proving switch and fusing if the heater exceeds 48 amps as required by UL®. A terminal block for line and control voltage shall be provided for simplified field wiring. A P. E. switch or contactor per step shall be provided for each stage of heat.

Optional Insulations

1. Fiberglass Dual Density Liner 1" Thick

Air Terminals shall be internally insulated with 1" thick, 1.5 lbs/ft³ dual density glass fiber, coated to prevent air flow erosion to 6000 fpm surface velocity. Insulation to comply with UL 181 and NFPA 90A. All exposed edges shall be coated with NFPA 90A approved sealant to prevent entrainment of fibers in the airstream.

2. ThermoPure Fiber-Free Liner 1/2" Thick

Air Terminal shall be internally insulated with 1/2" thick, 1.5 lbs/ft³ dual density fiber free liner, rated to prevent air flow erosion to 6000 fpm surface velocity. Insulation to comply with UL 181 and NFPA 255 (25/50). Material shall be chemically resistant to most hydrocarbon based solvents. Material shall not support mold growth or demonstrated degradation while subject to air erosion when tested in accordance to UL 181 and UMC 10-1.

3. Thermopure Fiber-Free Liner 1" Thick

Air Terminal shall be internally insulated with 1" thick, 1.5 lbs./ft³ fiber free liner, rated to prevent air flow erosion to 6000 fpm surface velocity. Insulation to comply with UL 181 and NFPA 255 (25/50). Material shall be chemically resistant to most hydrocarbon based solvents. Material shall not support mold growth or demonstrated degradation while subject to air erosion when tested in accordance to UL 181 and UMC 10-1.2.

TL-500 - Suggested Division 15 Specifications

4. Foil Face Liner 1/2" Thick, 1 1/2 lbs/ft³ density

Foil Face Linear Air Terminal shall be internally insulated with 1/2" thick, 1.5 lbs./ft³ dual density fibrous glass with foil face, rated to prevent air flow erosion to 6000 fpm surface velocity. Insulation to comply with UL 181 and NFPA 90A. All exposed edges shall be coated with NFPA 90A approved sealant to prevent entrainment of fibers in the airstream. Liners made of Mylar, Tedlar, Silane, or woven fiberglass cloths are not acceptable.

5. Foil Face Liner 1" Thick, 4 lbs/ft³ density

Foil Face Linear Air Terminal shall be internally insulated with 1" thick, 4 lbs/ft³ dual density fibrous glass with foil face, rated to prevent air flow erosion to 6000 fpm surface velocity. Insulation to comply with UL 1821 and NFPA 90A. All edges shall be encased within metal strips welded to the casing. Liner shall secure insulation into terminal unit. Liners made of Mylar, Tedlar, Silane, or woven fiberglass cloths not acceptable.

6. Metal Liner

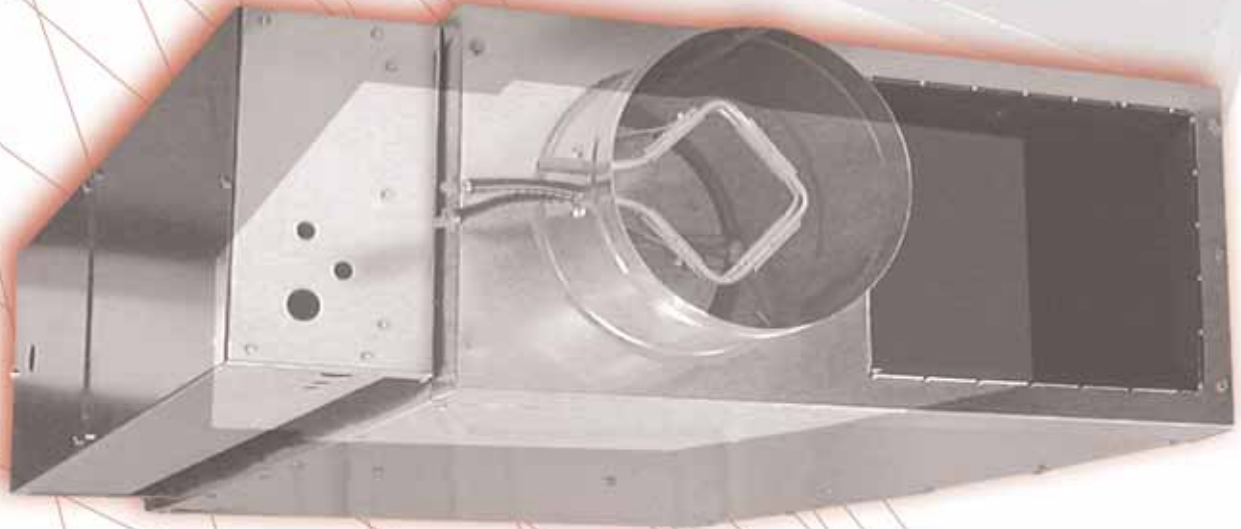
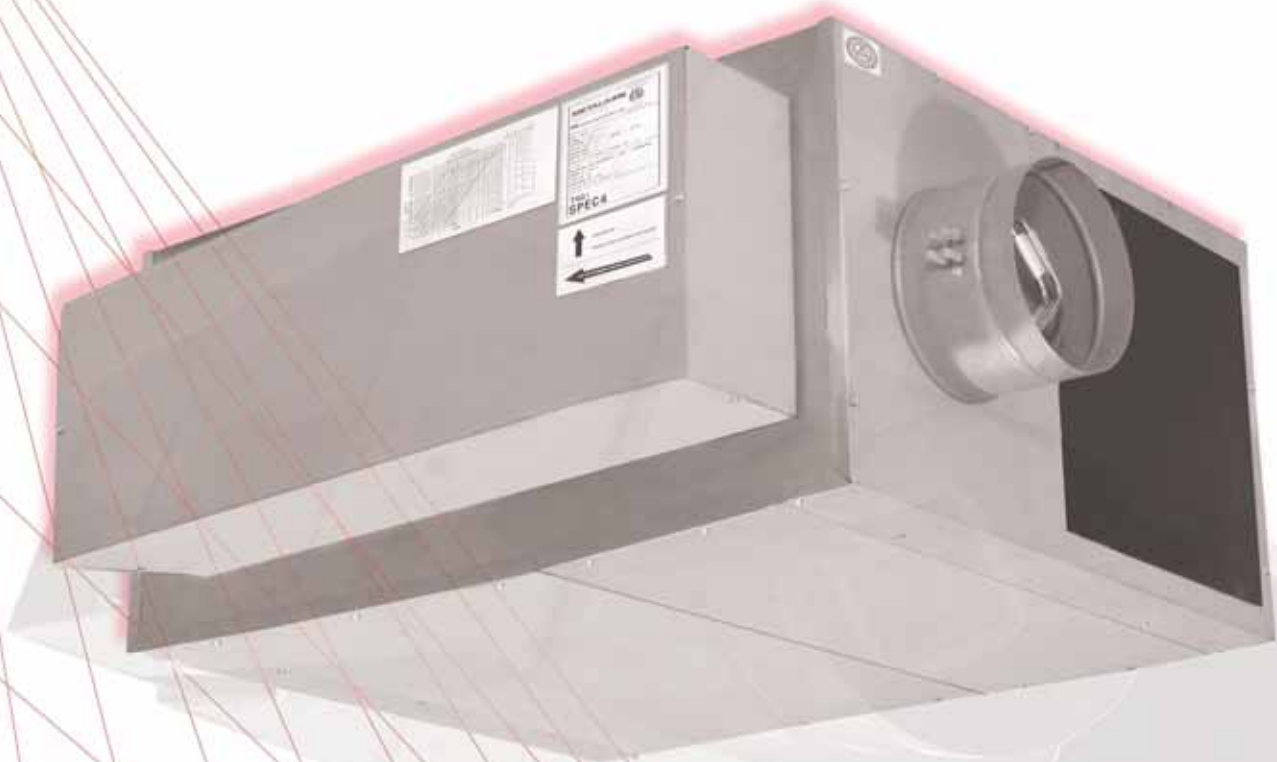
Liner shall be constructed of metal and totally eliminate exposure of insulation in the air stream. Internal insulation to comply with UL 181 and NFPA 90A. Liners made of Mylar, Tedlar, Silane, or woven fiberglass cloths are not acceptable.

Manufacturer shall provide:

1. Factory mounting and wiring of DDC controls shall be as specified in section 15. Mounting shall include manufacturer's flow sensor, transformer (if required by DDC controls manufacturer), and an enclosure protecting DDC controls and wiring.
2. Analog electronic controls with flow adjustments shall be as specified in section 15 and be provided by the terminal unit manufacturer.
3. Pneumatic controls shall be as specified in section 15.

Manufacturer shall provide terminal units with factory set flow adjustments as required per the terminal unit schedule.





FCL-600 / Low Profile Constant Volume Fan Powered

SERIES FAN POWERED AIR TERMINAL UNITS

Series Fan Powered Air Terminal Units

6/2007

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MA Multi-Point Quadrant Averaging Flow



ARI CERTIFIED AIR TERMINALS

METALAIRES Series FCI-600 and FCL-600 Air Terminals have been tested by the Air-Conditioning and Refrigeration Institute (ARI) and have been found qualified to bear the certification mark of this independent testing agency.

ARI Certification testing is conducted in accordance with Industry Standard 880 which ensures that the performance data published in this catalog have been independently tested and found to be accurate and repeatable. Accessories which can be attached to the Series FCI-600 and FCL-600 Air Terminals are not a part of the ARI certification program but ratings can be affected by their use.

Additional information on these testing programs can be obtained from your local METALAIRES representative.

At METALAIRES, we continually work to improve our products. Product descriptions, dimensions, and performance are subject to change without notice. For the most current available literature visit our web page at www.metalaires.com. Contact your local METALAIRES representative to verify product or performance details.

Series Fan Powered Air Terminal Units



FCI-600



For more product information visit us at www.metalaires.com



Series Fan Powered Air Terminal Units

FCI-600/FCL-600 - Introduction

The FCI-600 and FCL-600 series fan-powered terminal units are designed to provide superior comfort control to zones with both heating and cooling requirements. The fan in a constant volume (or series) fan powered terminal runs continuously during occupied hours. Because the fan provides a constant discharge volume into the space, air motion is uniform and the sound level is constant providing maximum occupant comfort.

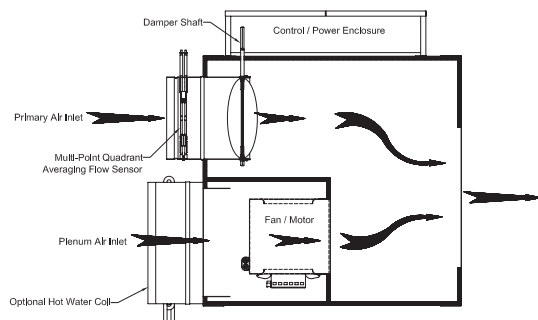
Both the FCI-600 and FCL-600 provide cooling through the primary air valve, which controls the volume of air that is discharged into the terminal unit. The cooled air is then delivered to the space through the terminal's fan. When heating is required, the air terminal initially provides plenum air that is drawn through the induction inlet. This heats a space economically using the wasted heat located in the ceiling plenum. As additional heat is required, optional electric or hot water heat can be turned on to meet the zone load requirement.

The FCI-600 and FCL-600 are available with a wide range of control options and accessories to meet your design requirements. Whether your requirements are for factory mounted direct digital controls, pneumatic, or analog, we can meet your control needs.

The FCI-600 is available in six casing sizes with a wide range of primary inlet sizes offering flexibility to meet both capacity and sound requirements. The FCL-600 is available in two casing sizes. Superior design and construction make the FCI-600 and FCL-600 easy to install and maintain.

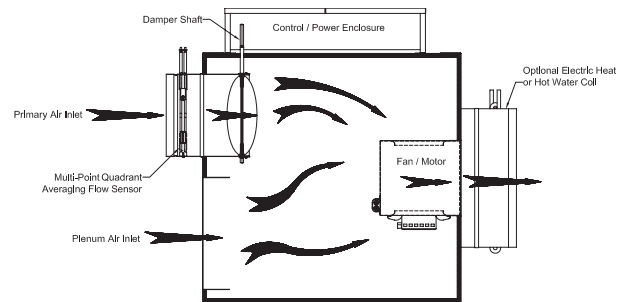
Types of Fan Powered Units

FVI-500 PARALLEL FAN POWERED UNIT



In a Variable Volume (or parallel) terminal unit, the fan runs only when heating is required. In cooling, the unit functions the same as a single duct VAV terminal.

FCI-600/FCL-600 SERIES FAN-POWERED TERMINAL UNIT



In a Constant Volume (or series) fan powered terminal, the fan runs continuously. Both primary and induced air are discharged through the fan.



Options & Accessories for Air Terminal Units

50 Hz Motors

The FVI-500 can be selected with an optional 208-240 Volt 50/60 Hz motor for domestic or international use. Contact your local METALAIRE representative for further information.

Controls

METALAIRE air terminal units are available with pneumatic, electronic, analog electronic, or DDC (by others) factory mounted controls. See www.metalaire.com or contact your local METALAIRE representative for a complete list of available control options.

ECM Motors

Optional ECM motors are available for the FVI-500. See page FVI-157 for details.

Hot Water Coils

Air terminals are available with 1, 2, 3, or 4 row hot water coils. Some performance information including capacities and pressure drops are in this catalog, more detailed information is found in the InfoSource catalog or at www.metalaire.com.

Sound Attenuation

A sound attenuator is available for single duct applications that require exceptionally low sound levels. An inlet attenuator is available for fan-powered units. Refer to the product drawings for dimensions.

Electric Heat

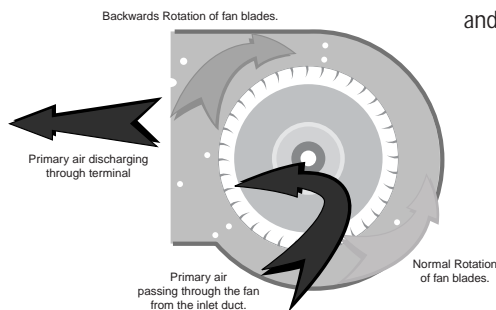
Air Terminals may be specified with a wide range of UL listed Electric Heaters. Units with electric heat are shipped with an integral sound attenuator as standard.

Optional Liners

A wide range of optional internal liners are available for special environmental or acoustic applications. Included in the product offering are metal liners, ThermoPure (closed cell foam) and foil face liners. For answers to all your questions on air terminal units visit us at www.metalaire.com or call your local METALAIRE representative.

Optional Electronic Anti-Reverse Rotation Device

The fan wheel in a constant fan box may rotate backwards when primary air from the inlet duct is passing through the fan and the motor is not running. In some cases, the fan motor cannot overcome the torque developed by the fan wheel when rotating backwards. The result is insufficient air delivery due to the reversed motor direction. To prevent reverse rotation constant



Electronic Anti-Reverse Rotation Device

For more product information visit us at www.metalaire.com

fan power boxes require a means to energize the fan motor with primary fan system start-up. Alternately, motor torque can be provided to overcome the reverse rotation. Other manufacturers choose to deal with this issue by running their motors with larger capacitors than recommended by the motor manufacturers. Oversized capacitors will cause the motors to run less efficiently, run hotter than normal, and draw more current. All of this will result in reduced motor life and increased energy costs. METALAIRE'S Model FCI-600 is available with an optional electronic anti-reverse rotation device, which will prevent running in reverse. This option does not draw additional current while running and will not cause the motor to run at higher temperatures. The results are greater efficiency, quieter motors, longer motor life, and happier building owners.

Thermopure Insulation

ThermoPure insulation is a closed cell, washable, durable, and non-wicking insulation material that is ideal for critical care facilities such as hospitals and medical facilities as well as high humidity or corrosive environments. ThermoPure is mold and mildew resistant and the closed-cell structure minimizes moisture movement and condensation. It has been tested in accordance with USTC #P91-112.2 for mold growth and in accordance with

10.111 for humidity. After a 60-day period the material showed no evidence of mold growth or insulation deterioration, including the adhesive.



Thermopure Insulation

ThermoPure is 100% Fiber Glass free, assuring no downstream brush off, and is provided at a density of 1.5 lbs/ft³. The material is Polyolefin (Polyethylene) and exhibits unique thermal, physical, and chemical resistance properties. It is chemically resistant to most hydrocarbon-based solvents and has a broad installation temperature range. Additionally, because of the closed cell design, it offers low thermal conductivity and the lowest vapor transmission and water absorption rates of the commercially available insulations. The "R" value per wall thickness is 13% greater than Elatomaric (rubber) foam insulation and the water vapor transmission rate is 0.00 perm-in.

ThermoPure has been tested in accordance with both UL-723 (25/50) and ASTM E84 and has a flame spread of 10 and a smoke density of 30. It also meets UL 181 and UL 94 horizontal burn test standards. ThermoPure also meets many other state and local specifications, please contact your METALAIRE representative for a complete list of specification compliance.

ThermoPure's mold and mildew resistance, broad thermal range, and resistance to degradation make it a perfect choice for applications such as hospitals, high humidity environments, clean rooms, food processing areas, low temperature installations, and corrosive or chemical processing environments.



Series Fan Powered Air Terminal Units

Features of the METALAIRE VAV Valve and Flow Sensor:

Inlet Valve

The METALAIRE® inlet valve assembly has a seamless butt weld on a round inlet tube to minimize leakage and prevent the damper from binding. The damper shaft rotates in a long life, self-lubricating Kepital® (acetal resin material) bearing. The damper shaft is composed of die cast aluminum and includes a damper position indicator. The actuator connects to a square end to prevent the actuator screw(s) from slipping.

The damper blade is manufactured with a flexible gasket and mounted without adhesives to provide an excellent close off seal. Included on the damper gasket are slits around the perimeter to prevent damper noise at low turn down. The damper is constructed of double thickness 24-gauge steel. Damper leakage is less than 1% of maximum CFM at 3.0" static pressure.

The primary air valve has a bead rolled into the tube, which strengthens the tube and serves as a stop and prevents field attached flex duct from slipping.

Flow Sensor

The METALAIRE multi-quadrant averaging flow sensor is a highly accurate, multi-ported device designed to provide true flow readings, even with varying flex duct inlet conditions. The sensor amplifies the input signal providing accurate flow control at low supply air volumes. Velocity pressure is read as a 4-point average that maintains +/- 5% accuracy regardless of inlet conditions.

The sensor provides two control ports and two accessory ports, all with brass barbed fittings to prevent connecting tubing from slipping. All flow sensor piping connections are made with external ports that extend through the damper tube allowing for easy inspection. This is a major advantage over competitors' sensors where the tubing attachment is inside the air valve. The metal construction of METALAIRE flow sensors assures long life and durability. Competing manufacturers typically provide plastic flow sensors, fittings, and balancing tees.

The METALAIRE flow sensor provides an accurate signal to controllers operating within a typical 0.03" to 1.0" velocity pressure range. For low flow controller applications, the sensor can be used to provide a signal down to 0.01".



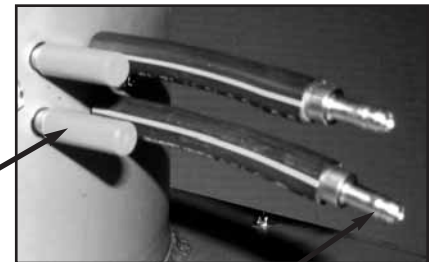
Bead formed on inlet tube for rigidity and to allow for a tight flex duct connection

Seamless weld

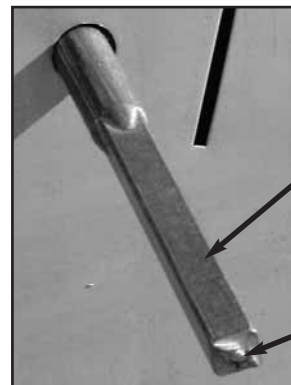
Kepital bearings

Average Velocity is obtained in 4 quadrants

Metal sensor tubes extend through the inlet tube, allowing external connections (shown with dust cover)



Brass barbed fittings for tube connection to VAV controller



Square Shaft

Damper Position indicator

Series Fan Powered Air Terminal Units

FCI-600

Series Fan Powered Air Terminal Units

6/2007



SERIES FCI-600

Constant Volume Air Terminal Units

Series FCI-600 fan-powered terminal units are designed to provide superior comfort control to zones with both heating and cooling requirements. The fan in a constant volume (or series) fan powered terminal, runs continuously during occupied hours. FCI is available with an optional ECM motor for improved energy efficiency and control.

Series FCI-600 provides cooling through the primary air valve. The primary air valve controls the volume of air that is discharged into the terminal unit. The cooled air is delivered to the space through the terminal's fan. When heating is required, the Series FCI-600 initially provides plenum air that is drawn through the induction inlet.

Series FCI-600 is available with a wide range of control options and accessories to meet your design requirements; whether they be for factory mounted direct digital controls, pneumatic, or analog applications.

Series FCI-600 is available in 6 casing sizes with a wide range of primary inlet sizes offering the flexibility to meet both your capacity and sound requirements.

All units include an SCR solid state fan speed controller. Motors are designed to work in conjunction with the SCR controller

Multiquadrant Averaging Flow Sensor provides an accurate flow signal without requiring an immediate upstream straight duct connection (Shipped standard on all units)

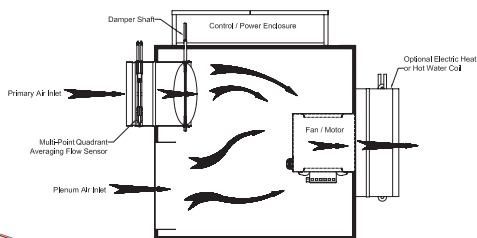
All electrical wiring is connected using quick-disconnect bulkhead fittings allowing easy servicing of electrical components

Control panel includes stand-offs to allow mounting of controls without penetrating the casing

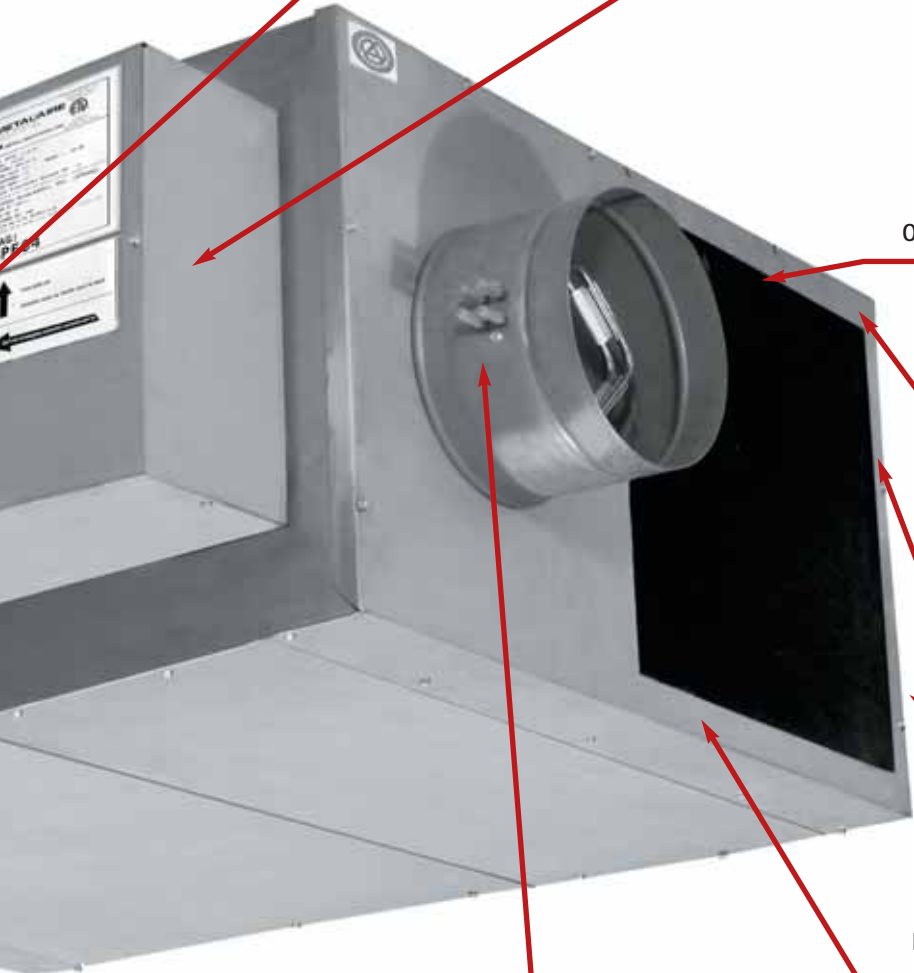
Series Fan Powered Air Terminal Units



FCI-600



Series Fan Powered Air Terminal Units



For long life and continuous operation, the damper shaft rotates in a self-lubricating Kepital® (acetal resin) bearing

Round primary inlet tubes are constructed with a seamless butt weld for rigidity and to eliminate leakage. It also includes a bead that strengthens the tube and provides recess for flex duct straps

Optional filter rack is available for 1" thick filters

Inlet panel is one-piece construction to increase rigidity and to reduce radiated sound

All units are ETL® listed to UL® Standard 1995 and CSA-C22.2 No. 236. All electrical components are UL® certified and listed

1" thick fiberglass insulation is standard

Hand Adjustable Restrictor Plates Top & Bottom For Balancing

All units are shipped with easy access balancing taps. The extra ports can be used to read CFM (through velocity pressure) directly at the unit

Series Fan Powered Air Terminal Units



FCI-600



Series Fan Powered Air Terminal Units

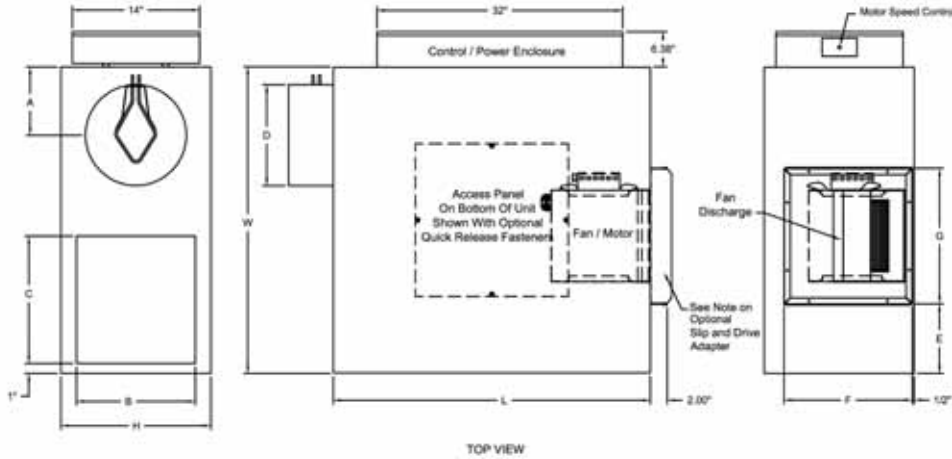
6/2007

FCI-600 - Air Terminal Dimensions

Dimensions are in inches

Series Fan Powered - Basic Unit

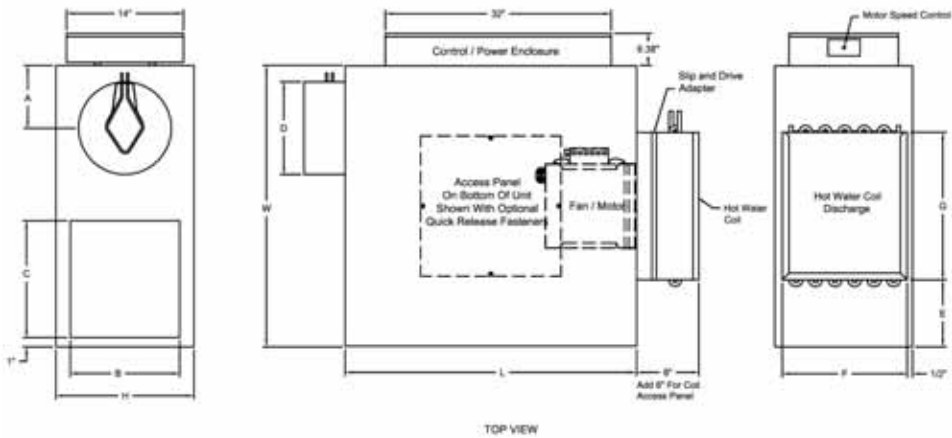
- Case Size 2 - 8" Inlet Case Size 5 - 14" Inlet
- Case Size 3 - 10" Inlet Case Size 6 - 16" Inlet
- Case Size 4 - 12" Inlet Case Size 7 - 18" x 16" Inlet



Casing Size	Inlet Diameter D		Horse Power	Unit Height H	Unit Width W	Unit Length L	Inlet Loc. A	Ind. Inlet Height B	Ind. Inlet Width C	Discharge Loc. E	Discharge Height F	Discharge Width G
	Standard	Optional										
2	8 (203)	6, 10, 12	1/8	17 1/2 (445)	30 (762)	36 (914)	7 (178)	14 (356)	14 (356)	7 (178)	15 (381)	16 (406)
3	10 (254)	6, 8, 12, 14	1/8	17 1/2 (445)	36 (914)	40 (1016)	8 (203)	14 (356)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
4	12 (305)	8, 10, 14	1/4	17 1/2 (445)	36 (914)	40 (1016)	8 (203)	14 (356)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
5	14 (356)	10, 12, 16	1/3	20 (508)	40 (1016)	40 (1016)	10 (254)	16 (406)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
6	16 (406)	10, 12, 14	1	20 (508)	42 (1067)	42 (1067)	10 (254)	16 (406)	20 (508)	9 (228)	18 (457)	22 (559)
7	18 x 16 (457 x 406)	12, 14, 16	(2) 3/4	20 (508)	46 (1168)	46 (1168)	11 (279)	16 (406)	22 (559)	4 (102)	20 (508)	38 (962)

Series Fan Powered - With Hot Water Coil on Discharge Port

- Case Size 2 - 8" Inlet Case Size 5 - 14" Inlet
- Case Size 3 - 10" Inlet Case Size 6 - 16" Inlet
- Case Size 4 - 12" Inlet Case Size 7 - 18" x 16" Inlet



Casing Size	Inlet Diameter D		Horse Power	Unit Height H	Unit Width W	Unit Length L	Inlet Loc. A	Ind. Inlet Height B	Ind. Inlet Width C	Discharge Loc. E	Standard Hot Water Coil	
	Standard	Optional									Discharge Height F	Discharge Width G
2	8 (203)	6, 10, 12	1/2	17 1/2 (445)	30 (762)	36 (914)	7 (178)	14 (356)	14 (356)	7 (178)	15 (381)	16 (406)
4	12 (305)	8, 10, 14	1/2	17 1/2 (445)	36 (914)	40 (1016)	8 (203)	14 (356)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
6	16 (406)	10, 12, 14	1	20 (508)	42 (1067)	42 (1067)	10 (254)	16 (406)	20 (508)	9 (228)	18 (457)	22 (559)

Series Fan Powered Air Terminal Units



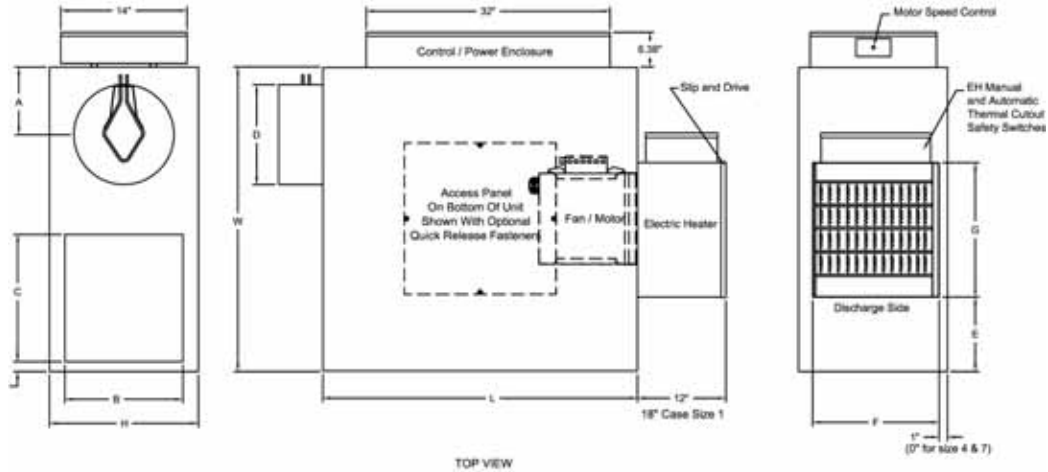
FCI-600

Series Fan Powered Air Terminal Units

FCI-600 - Air Terminal Dimensions

Series Fan Powered - With Electric Heat

- Case Size 2 - 8" Inlet Case Size 5 - 14" Inlet
- Case Size 3 - 10" Inlet Case Size 6 - 16" Inlet
- Case Size 4 - 12" Inlet Case Size 7 - 18" x 16" Inlet



Casing Size	Inlet Diameter D		Horse Power	Unit Height H	Unit Width W	Unit Length L	Inlet Loc. A	Ind. Inlet Height B	Ind. Inlet Width C	Discharge Loc. E	Discharge Height F	Discharge Width G
	Standard	Optional										
2	8 (203)	6, 10, 12	1/8	17 1/2 (445)	30 (762)	36 (914)	7 (178)	14 (356)	14 (356)	7 (178)	15 (381)	16 (406)
3	10 (254)	8, 8, 12, 14	1/8	17 1/2 (445)	36 (914)	40 (1016)	8 (203)	14 (356)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
4	12 (305)	8, 10, 14	1/4	17 1/2 (445)	36 (914)	40 (1016)	8 (203)	14 (356)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
5	14 (356)	10, 12, 16	1/3	20 (508)	40 (1016)	40 (1016)	10 (254)	16 (406)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
6	16 (406)	10, 12, 14	1	20 (508)	42 (1067)	42 (1067)	10 (254)	16 (406)	20 (508)	9 (228)	18 (457)	22 (559)
7	18 x 16 (457 x 406)	12, 14, 16	(2) 3/4	20 (508)	46 (1168)	46 (1168)	11 (279)	16 (406)	22 (559)	4 (102)	20 (508)	38 (962)

Approximate Shipping Weight	
CASE	FCI
2	124 LBS.
3	165 LBS.
4	165 LBS.
5	198 LBS.
6	220 LBS.
7	260 LBS.

Series Fan Powered Air Terminal Units



FCI-600



For more product information visit us at www.metalair.com



Series Fan Powered Air Terminal Units

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FCI-600 - ARI Rating Points

ARI Certified Radiated Sound Power, Fan Only								
Unit Size	Fan CFM	Octave Band						Electrical Power (Watts)
		2	3	4	5	6	7	
208	400	57	54	49	39	40	37	145
310	700	62	59	49	41	41	38	230
412	1200	66	62	51	46	45	42	420
514	1800	71	68	56	53	53	50	810
616	2400	77	73	63	61	57	56	1300
718	2700	78	75	70	66	64	61	1700



ARI Certified Discharge Sound Power, 1.5" Inlet Static Pressure									
Unit Size	Fan CFM	Primary CFM	Min Ps	Octave Band					
				2	3	4	5	6	7
208	400	400	0.03	61	55	59	56	55	54
310	700	700	0.03	68	65	64	64	60	59
412	1200	1200	0.01	69	70	70	70	67	66
514	1800	1800	0.09	78	75	74	74	72	71
616	2400	2400	0.07	79	79	80	79	77	77
718	2700	2700	0.09	82	74	73	72	71	69

ARI Certified Discharge Sound Power, Fan Only								
Unit Size	Fan CFM	Octave Band						Electrical Power (Watts)
		2	3	4	5	6	7	
208	400	58	51	56	51	49	48	145
310	700	67	63	59	49	49	48	230
412	1200	64	66	66	65	62	60	420
514	1800	73	72	72	72	70	69	810
616	2400	80	78	80	76	75	75	1300
718	2700	79	71	70	69	68	67	1700

STATEMENT OF STANDARD TEST CONFORMITY

METALAIRE tests all FCI-600 air terminal units for engineering performance in accordance with the following standards: American National Standards Institute (ANSI)/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)/International Organization for Standardization (ISO)/Air-Conditioning & Refrigeration Institute (ARI).

- ARI Standard 880-98
Standard for Air Terminals
- ANSI/ASHRAE 130-1996
Methods of Testing for Rating Ducted Air Terminal Units
- ASHRAE Standard 41.1-1986 (RA 91)
Standard Method for Temperature Measurement
- ASHRAE Standard 41.2-1987
Standard Methods for Laboratory Air Measurements
- ASHRAE Standard 41.3-1989
Standard Methods for Pressure Measurement
- ISO 5219-1984 Air distribution and air diffusion -
Laboratory aerodynamic testing and rating of air terminal devices

Series Fan Powered Air Terminal Units



FCI-600



For more product information visit us at www.metalaire.com



Series Fan Powered Air Terminal Units

FCI-600 - Motor Amperage Ratings and Damper Leakage

		Standard PSC Motor Amperage Ratings	
		115V-1 Phase 60 Hz	277V-1 Phase 60 Hz
Case Size	Motor HP	Name Plate Amps	Name Plate Amps
2	1/8	2.6	0.9
3	1/8	2.6	0.9
4	1/4	4.8	1.9
5	1/3	8.8	3.6
6	1	N/A	6.2
7	3/4 (Qty 2)	22.8 (2 motors)	8.6 (2 motors)

Inlet Size	Damper Leakage, CFM		
	1.5" DPS	3.0" DPS	6.0" DPS
6	3	4	7
8	2	4	7
10	4	5	7
12	4	5	7
14	4	6	8
16	4	6	8

Motors also available: 208-240V, 50/60 Hz.
Contact your METALAIRES Representative for details.

		ECM Motor Amperage Ratings	
		115V-1 Phase 60 Hz	277V-1 Phase 60 Hz
Case Size	Motor HP	Name Plate Amps	Name Plate Amps
2	1/2	7.7	4.1
4	1/2	7.7	4.1
6	1	12.8	6.9



Series Fan Powered Air Terminal Units

6/2007

FCI-600 - Radiated Sound Power at Fan Only, .5", .75" Wg

Case	Inlet	Outlet Ps in. H2O	CFM (L/s)	Min Ps in. H2O (Pa)	Fan Only										sure, Ps = 0.5 inches of water							sure, Ps = 0.75 inches of water												
					Octave Band Sound Power, Lw, dB										NC1	NC2	Octave Band Sound Power, Lw, dB							NC1	NC2	Octave Band Sound Power, Lw, dB							NC1	NC2
					2	3	4	5	6	7	ARI 885-	ARI 885-	2	3	4	5	6	7	ARI 885-	ARI 885-	2	3	4	5	6	7	ARI 885-	ARI 885-						
					90	98	90	98	90	98	90	98																						
2	8	0.25	200 (94)	0.007 (1.6)	55	52	47	39	40	36	18	21	57	53	51	43	44	39	22	25	56	53	50	44	45	41	21	24						
			300 (142)	0.017 (4.2)	56	53	48	39	40	36	19	22	57	54	51	43	44	39	22	25	57	54	51	45	46	41	22	25						
			400 (189)	0.031 (7.7)	57	54	49	39	40	37	20	23	59	55	53	43	44	40	24	27	59	55	51	45	46	43	22	25						
			500 (236)	0.045 (11.2)	60	57	50	39	41	37	22	26	60	56	53	43	44	40	24	27	61	57	53	45	47	42	24	27						
			600 (283)	0.076 (18.9)	62	60	50	43	43	39	26	29	62	59	53	46	46	41	25	28	63	60	53	47	47	43	26	29						
			750 (354)	0.110 (27.4)	66	63	52	49	53	48	29	33	66	63	53	46	46	45	29	33	67	64	54	48	47	46	31	34						
3	10	0.25	300 (142)	0.006 (1.4)	60	56	49	37	36	33	21	25	61	58	50	42	40	37	24	27	61	57	50	43	41	38	22	26						
			400 (189)	0.010 (2.6)	60	56	49	37	36	33	21	25	61	58	50	42	40	37	24	27	61	58	50	43	42	39	24	27						
			500 (236)	0.016 (4.0)	60	56	49	37	36	33	21	25	61	58	50	42	40	37	24	27	62	58	51	44	42	39	24	27						
			600 (283)	0.023 (5.8)	62	57	49	39	38	36	22	26	62	59	50	43	41	38	25	28	63	60	51	45	44	41	26	29						
			700 (330)	0.032 (7.9)	62	59	49	41	41	38	25	28	64	61	51	45	44	41	27	31	64	61	51	46	45	43	27	31						
			800 (378)	0.041 (10.3)	64	61	49	44	43	41	27	31	65	63	51	47	46	43	29	33	66	63	52	48	47	45	29	33						
900 (425)	0.052 (13.0)	65	62	50	45	45	44	28	32	66	64	52	48	47	46	31	34	67	65	53	50	49	47	32	35									
4	12	0.25	400 (189)	0.001 (0.3)	59	57	45	39	36	31	22	26	61	57	46	40	37	33	22	26	61	57	46	40	38	34	22	26						
			600 (283)	0.003 (0.6)	59	57	45	39	36	31	22	26	61	57	46	40	37	33	22	26	61	58	47	41	39	35	24	27						
			800 (378)	0.005 (1.2)	61	58	46	40	38	33	24	27	63	60	48	42	40	36	26	29	64	61	49	44	42	38	27	31						
			1000 (472)	0.008 (2.0)	64	61	48	44	42	38	27	31	67	63	51	46	44	41	29	33	68	63	51	47	45	42	29	33						
			1200 (566)	0.014 (3.5)	66	62	51	46	45	42	28	32	70	66	53	49	48	45	33	37	70	67	54	50	48	46	34	38						
			1400 (661)	0.023 (5.7)	69	65	53	49	49	46	32	35	73	69	56	52	51	48	37	40	73	69	56	52	51	49	37	40						
1600 (755)	0.037 (9.2)	71	67	55	52	52	49	34	38	75	70	58	54	53	51	38	41	74	67	60	55	52	50	36	40									
5	14	0.25	1000 (472)	0.029 (7.2)	63	60	50	43	42	37	26	29	65	61	51	45	42	38	27	31	66	62	52	47	44	39	28	32						
			1200 (566)	0.041 (10.3)	65	61	52	45	44	40	27	31	67	63	52	47	44	40	29	33	68	64	53	48	46	42	31	34						
			1400 (661)	0.056 (14.0)	67	64	53	48	47	43	31	34	70	65	54	49	47	44	32	35	70	66	55	50	49	45	33	37						
			1600 (755)	0.074 (18.3)	69	66	54	50	50	47	33	37	71	68	55	51	50	47	35	39	72	68	56	52	51	47	35	39						
			1800 (849)	0.093 (23.2)	71	68	56	53	53	50	35	39	73	70	57	53	52	50	38	41	74	71	58	54	53	50	39	42						
			2000 (944)	0.115 (28.6)	73	70	57	54	54	52	38	41	75	72	59	55	54	52	40	44	76	73	60	56	55	52	41	45						
6	16	0.25	1600 (755)	0.030 (7.5)	70	65	60	55	50	48	32	35	71	66	60	55	49	47	33	37	72	66	60	55	49	47	34	38						
			1800 (849)	0.039 (9.7)	72	67	60	57	52	50	34	38	73	67	61	56	51	49	35	39	73	68	61	56	51	49	35	39						
			2000 (944)	0.048 (11.9)	74	69	61	58	54	52	37	40	74	69	62	57	52	50	37	40	74	70	62	58	53	50	38	41						
			2200 (1038)	0.058 (14.4)	75	71	62	59	55	54	39	42	75	70	62	59	54	52	38	41	76	71	62	59	54	52	39	43						
			2400 (1133)	0.069 (17.2)	77	73	63	61	57	56	41	45	77	72	63	60	56	53	40	44	77	72	63	61	56	54	40	44						
			2600 (1227)	0.081 (20.2)	80	75	64	64	60	58	44	48	78	73	64	62	57	55	41	45	79	74	65	62	58	55	43	46						
2800 (1321)	0.096 (23.8)	83	78	66	69	64	62	48	52	80	75	66	63	59	57	44	48	80	75	66	63	59	57	44	48									
7	18 x 16	0.25	2200 (1038)	0.068 (17.0)	73	71	67	64	62	59	39	43	75	72	68	64	62	60	41	44	76	73	69	65	62	60	42	45						
			2500 (1180)	0.082 (20.5)	75	73	69	66	64	60	42	45	77	74	70	66	64	61	43	46	77	75	70	66	64	62	44	47						
			2700 (1274)	0.091 (22.8)	78	75	70	66	64	61	44	47	79	77	72	67	64	61	46	50	80	78	73	67	65	62	47	51						
			3000 (1416)	0.105 (26.1)	79	76	71	67	65	62	45	48	80	78	73	68	65	62	47	51	81	79	74	68	66	63	47	51						
			4000 (1888)	0.151 (37.6)	82	80	75	71	70	65	50	53	83	81	76	71	69	65	51	54	83	82	77	71	69	65	52	55						
			4400 (1888)	0.163 (40.5)	83	81	76	73	72	67	51	54	84	82	77	74	72	68	52	55	84	83	78	74	73	69	53	57						

See Page FCI-92 For NC Calculations

NC CALCULATIONS

The current ARI Standard for NC calculations is ARI 885-98. Other terminal manufacturers may catalog performance based on ARI 885-90. Using this older, obsolete standard will provide lower NC levels compared to the 1998 standard. To allow for fair and accurate performance comparisons, METALAIR publishes the NC levels for both the 1990 standard and the 1998 current standard.

Series Fan Powered Air Terminal Units



FCI-600



Series Fan Powered Air Terminal Units

FCI-600 - Radiated Sound Power at 1", 1.5", 2" Wg

Case	Inlet	Outlet Ps in. H2O	CFM (L/s)	Min Ps in. H2O (Pa)	sure, Ps = 1.0 inches of water								sure, Ps = 1.5 inches of water								sure, Ps = 2.0 inches of water										
					Octave Band Sound Power, Lw, dB							NC1 ARI 885-885-	NC2 ARI 885-885-	Octave Band Sound Power, Lw, dB							NC1 ARI 885-885-	NC2 ARI 885-885-	Octave Band Sound Power, Lw, dB							NC1 ARI 885-885-	NC2 ARI 885-885-
					2	3	4	5	6	7	90	98	2	3	4	5	6	7	90	98	2	3	4	5	6	7	90	98			
2	8	0.25	200 (94)	0.007 (1.6)	54	52	50	45	47	43	21	24	54	52	50	48	51	48	22	24	55	52	51	51	54	51	25	25			
			300 (142)	0.017 (4.2)	57	54	51	46	48	44	22	25	57	54	52	49	52	48	23	26	58	55	53	52	55	52	26	27			
			400 (189)	0.031 (7.7)	59	54	48	47	49	46	20	22	60	58	53	50	53	51	24	27	63	59	54	53	56	54	27	29			
			500 (236)	0.045 (11.2)	62	58	53	47	49	45	24	27	63	59	54	50	53	49	25	29	64	60	55	52	56	52	27	30			
			600 (283)	0.076 (18.9)	64	60	54	49	49	45	26	29	65	61	54	51	52	49	27	31	66	62	55	54	55	52	28	32			
			750 (354)	0.110 (27.4)	68	64	55	49	50	47	31	34	68	65	55	53	53	51	32	35	69	65	56	54	55	52	32	35			
3	10	0.25	300 (142)	0.006 (1.4)	61	57	49	43	43	40	22	26	61	57	51	47	47	45	22	26	61	57	53	49	50	49	24	27			
			400 (189)	0.010 (2.6)	61	58	50	44	44	41	24	27	62	58	52	47	48	46	24	27	62	59	53	50	51	49	25	28			
			500 (236)	0.016 (4.0)	62	59	51	45	45	42	25	28	63	60	53	49	49	47	26	29	64	61	55	51	52	51	27	31			
			600 (283)	0.023 (5.8)	63	60	51	46	46	43	26	29	64	61	53	49	49	47	27	31	65	62	55	52	52	51	28	32			
			700 (330)	0.032 (7.9)	65	62	52	47	47	45	28	32	66	63	54	50	50	48	29	33	67	64	56	52	53	51	31	34			
			800 (378)	0.041 (10.3)	66	64	53	49	49	47	31	34	68	65	55	51	51	49	32	35	68	66	57	53	54	52	33	37			
900 (425)	0.052 (13.0)	68	66	54	51	51	49	33	37	69	67	56	52	53	51	34	38	70	67	58	54	55	53	34	38						
4	12	0.25	400 (189)	0.001 (0.3)	61	58	46	41	40	36	24	27	61	58	48	44	43	41	24	27	62	60	51	46	46	45	26	29			
			600 (283)	0.003 (0.6)	62	59	48	43	41	38	25	28	63	60	50	45	44	43	26	29	64	61	52	48	47	46	27	31			
			800 (378)	0.005 (1.2)	65	62	50	45	43	40	28	32	66	63	52	47	46	44	29	33	67	64	54	49	49	47	31	34			
			1000 (472)	0.008 (2.0)	68	64	52	48	46	43	31	34	70	66	54	50	48	46	33	37	71	67	56	51	50	48	34	38			
			1200 (566)	0.014 (3.5)	71	67	55	50	49	46	34	38	72	69	59	54	51	48	37	40	73	70	58	53	52	50	38	41			
			1400 (661)	0.023 (5.7)	73	69	57	53	52	49	37	40	74	71	61	55	53	51	39	42	75	72	60	55	54	52	40	44			
1600 (755)	0.037 (9.2)	74	70	62	57	51	50	36	40	75	73	63	57	54	52	41	45	80	68	66	61	55	53	44	48						
5	14	0.25	1000 (472)	0.029 (7.2)	68	64	54	50	48	42	31	34	70	66	57	53	53	46	33	37	71	68	60	56	57	49	35	39			
			1200 (566)	0.041 (10.3)	69	65	54	50	48	43	32	35	71	67	57	53	53	46	34	38	71	68	60	56	57	49	35	39			
			1400 (661)	0.056 (14.0)	71	67	56	52	50	46	34	38	72	68	58	54	54	48	35	39	73	70	61	57	59	50	38	41			
			1600 (755)	0.074 (18.3)	73	69	57	53	52	48	37	40	74	70	59	56	55	50	38	41	75	71	61	57	60	52	39	42			
			1800 (849)	0.093 (23.2)	75	72	59	55	54	51	40	44	76	73	61	57	57	52	41	45	77	73	62	58	61	53	41	45			
			2000 (944)	0.115 (28.6)	77	73	60	57	56	53	41	45	77	74	62	58	59	54	42	46	78	75	63	59	62	55	44	47			
6	16	0.25	1600 (755)	0.030 (7.5)	72	67	60	55	49	47	34	38	73	68	61	56	50	48	35	39	74	69	61	57	51	49	37	40			
			1800 (849)	0.039 (9.7)	74	68	61	57	51	49	36	40	74	69	61	57	52	49	37	40	75	70	62	58	53	50	38	41			
			2000 (944)	0.048 (11.9)	75	70	62	58	53	51	38	41	76	71	62	58	53	51	39	43	77	72	63	59	54	52	40	44			
			2200 (1038)	0.058 (14.4)	76	71	63	59	55	52	39	43	77	72	63	60	55	53	40	44	78	73	64	60	55	54	41	45			
			2400 (1133)	0.069 (17.2)	78	73	64	61	57	54	41	45	78	73	64	62	57	55	41	45	79	74	64	63	58	57	43	46			
			2600 (1227)	0.081 (20.2)	79	75	65	62	58	56	44	47	80	75	65	62	58	56	44	48	81	75	65	62	58	56	45	49			
2800 (1321)	0.096 (23.8)	80	75	66	63	59	57	44	48	81	76	67	63	59	57	45	49	82	75	66	64	60	58	46	50						
7	18 x 16	0.25	2200 (1038)	0.068 (17.0)	76	74	69	65	62	60	42	46	78	75	70	65	62	61	44	47	80	77	74	66	63	60	47	50			
			2500 (1180)	0.082 (20.5)	78	76	71	67	64	62	45	48	80	77	72	67	64	63	46	50	82	79	76	68	65	62	49	53			
			2700 (1274)	0.091 (22.8)	80	78	73	67	65	62	47	51	81	80	75	68	65	62	50	53	83	80	77	69	66	63	50	54			
			3000 (1416)	0.105 (26.1)	81	79	74	68	66	63	48	52	82	81	76	69	66	63	51	54	85	82	79	71	68	65	53	56			
			4000 (1888)	0.151 (37.6)	83	82	77	71	69	65	52	55	84	83	78	71	68	65	53	57	89	86	83	75	72	69	57	60			
			4400 (2076)	0.163 (40.5)	84	83	79	75	73	70	53	57	85	84	79	76	74	71	54	58	90	87	85	78	75	73	59	62			

See Page FCI-92 For NC Calculations

NC CALCULATIONS

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Series Fan Powered Air Terminal Units



FCI-600

Series Fan Powered Air Terminal Units

6/2007

FCI-600 - Discharge Sound Power at Fan Only, .5", .75" Wg

Case	Inlet	Outlet Ps in. H2O	CFM (L/s)	Min Ps in. H2O (Pa)	Fan Only							Inlet Pressure, Ps = 0.5 inches of water (125 Pa)							Inlet Pressure, Ps = 0.75 inches of water (187 Pa)																	
					Octave Band Sound Power, Lw, dB							NC1 ARI 885- 90	NC2 ARI 885- 98	Octave Band Sound Power, Lw, dB							NC1 ARI 885- 90	NC2 ARI 885- 98	Octave Band Sound Power, Lw, dB							NC1 ARI 885- 90	NC2 ARI 885- 98					
					2	3	4	5	6	7	2	3	4	5	6	7	2	3	4	5	6	7	2	3	4	5	6	7	2	3	4	5	6	7		
					2	3	4	5	6	7	2	3	4	5	6	7	2	3	4	5	6	7	2	3	4	5	6	7	2	3	4	5	6	7		
2	8	0.25	200 (94)	0.010 (2.5)	51	49	43	33	24	20	-	-	54	51	44	36	28	23	-	-	55	52	45	38	31	26	-	-	55	52	46	39	31	29	-	-
			400 (189)	0.033 (8.2)	52	50	44	35	27	23	-	-	55	52	45	38	31	26	-	-	56	53	47	41	34	32	-	-	56	53	47	41	34	32	-	-
			500 (236)	0.051 (12.7)	54	52	46	38	30	26	-	-	57	53	46	41	34	29	-	-	58	54	48	44	37	35	-	-	58	54	48	44	37	35	-	-
			600 (283)	0.076 (18.9)	55	54	48	40	33	28	-	22	58	55	48	43	38	31	-	24	59	56	50	46	41	37	21	25	59	56	50	46	41	37	21	25
			700 (330)	0.112 (27.9)	56	55	49	42	36	30	-	24	59	57	50	45	40	35	22	26	60	58	52	47	42	39	24	27	60	58	52	47	42	39	24	27
			800 (378)	0.144 (35.9)	58	57	51	45	39	34	22	26	61	60	53	48	43	38	26	29	62	61	54	49	44	41	27	31	62	61	54	49	44	41	27	31
		900 (425)	0.175 (43.6)	59	59	53	47	42	38	25	28	62	62	56	51	46	41	28	32	63	63	56	51	46	43	29	33	63	63	56	51	46	43	29	33	
4	12	0.25	400 (189)	0.008 (2.0)	50	49	43	34	28	23	-	-	51	49	46	35	30	24	-	-	52	49	46	37	31	26	-	-	52	49	46	37	31	26	-	-
			700 (330)	0.021 (5.2)	55	54	48	41	35	29	-	22	56	54	51	41	37	30	22	25	57	54	51	43	38	32	22	25	57	54	51	43	38	32	22	25
			1000 (472)	0.044 (11.0)	61	61	54	46	39	39	27	31	62	61	57	47	41	40	29	32	64	61	57	49	43	42	29	32	64	61	57	49	43	42	29	32
			1200 (566)	0.063 (15.7)	64	62	57	50	44	45	29	32	65	63	58	50	45	46	30	33	66	63	59	51	45	46	31	34	66	63	59	51	45	46	31	34
			1400 (661)	0.086 (21.4)	67	64	59	54	48	49	31	34	68	66	60	53	48	49	33	37	68	66	61	53	48	49	33	37	68	66	61	53	48	49	33	37
		1600 (755)	0.113 (28.1)	69	68	62	57	51	52	35	39	70	68	62	56	51	52	35	39	71	68	63	56	51	52	35	39	71	68	63	56	51	52	35	39	
6	16	0.25	800 (378)	0.016 (4.0)	61	56	56	46	38	33	27	31	62	56	57	47	40	34	29	32	63	56	57	47	40	35	29	32	63	56	57	47	40	35	29	32
			1100 (519)	0.029 (7.2)	64	59	58	50	43	38	30	33	65	59	59	51	45	39	31	34	66	59	59	51	45	40	31	34	66	59	59	51	45	40	31	34
			1500 (708)	0.049 (12.2)	67	61	60	54	47	43	32	35	67	61	60	55	49	44	32	35	68	61	60	55	49	45	32	35	68	61	60	55	49	45	32	35
			1700 (802)	0.066 (16.4)	69	63	62	56	49	45	34	37	69	63	62	57	51	46	34	37	70	63	62	57	51	47	34	37	70	63	62	57	51	47	34	37
			1950 (920)	0.084 (20.9)	71	65	65	59	53	49	37	41	74	65	63	59	54	50	36	40	74	66	63	60	54	50	36	40	74	66	63	60	54	50	36	40
			2200 (1038)	0.103 (25.7)	72	66	65	61	55	52	37	41	74	67	63	61	56	53	36	40	75	67	64	61	56	53	38	41	75	67	64	61	56	53	38	41
		2400 (1133)	0.123 (30.6)	75	68	66	64	58	55	38	42	76	68	65	63	58	55	39	43	77	69	65	64	59	56	40	44	77	69	65	64	59	56	40	44	

See Page FCI-92 For NC Calculations

NC CALCULATIONS

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Series Fan Powered Air Terminal Units



FCI-600



For more product information visit us at www.metalaire.com



Series Fan Powered Air Terminal Units

FCI-600 - Discharge Sound Power at 1", 1.5", 2" Wg

Case	Inlet	Outlet Ps in. H2O	CFM (L/s)	Min Ps in. H2O (Pa)	sure, Ps = 1.0 inches of water							sure, Ps = 1.5 inches of water							sure, Ps = 2.0 inches of water												
					Octave Band Sound Power, Lw, dB							NC1	NC2	Octave Band Sound Power, Lw, dB							NC1	NC2	Octave Band Sound Power, Lw, dB							NC1	NC2
					2	3	4	5	6	7	90	885-	885-	2	3	4	5	6	7	90	885-	885-	2	3	4	5	6	7	90	885-	885-
2	8	0.25	200 (94)	0.007 (1.6)	55	49	53	48	45	42	< 15	< 15	55	49	54	48	46	42	< 15	< 15	55	49	53	48	46	42	< 15	< 15			
			300 (142)	0.017 (4.2)	58	52	56	52	50	48	< 15	< 15	58	52	56	52	50	48	< 15	< 15	58	52	56	52	50	48	< 15	< 15			
			400 (189)	0.031 (7.7)	61	55	59	56	55	53	< 15	< 15	61	55	59	56	55	54	< 15	< 15	62	55	59	56	55	54	< 15	< 15			
			500 (236)	0.045 (11.2)	63	58	61	58	58	57	< 15	15	64	59	62	59	59	58	15	16	64	60	62	60	59	58	16	18			
			600 (283)	0.076 (18.9)	66	62	63	62	61	61	19	20	66	63	64	62	62	61	20	21	67	63	64	62	62	61	20	21			
			750 (354)	0.110 (27.4)	70	66	67	67	67	66	24	24	70	66	67	67	66	66	24	24	71	67	68	67	67	66	25	25			
3	10	0.25	300 (142)	0.006 (1.4)	64	61	60	59	55	54	18	19	65	61	60	59	56	54	18	19	65	62	61	60	57	55	19	20			
			400 (189)	0.010 (2.6)	64	61	60	59	55	54	18	19	65	61	60	59	56	54	18	19	65	62	61	60	57	55	19	20			
			500 (236)	0.016 (4.0)	64	61	60	59	55	54	18	19	65	61	60	59	56	54	18	19	65	62	61	60	57	55	19	20			
			600 (283)	0.023 (5.8)	65	62	61	60	57	56	19	20	66	62	62	61	58	56	19	20	67	63	62	62	58	57	20	21			
			700 (330)	0.032 (7.9)	67	64	63	63	60	58	21	22	68	65	64	64	60	59	22	24	68	65	64	64	61	60	22	24			
			800 (378)	0.041 (10.3)	69	66	65	65	62	61	24	24	69	66	66	66	62	61	24	24	70	67	66	66	63	62	25	25			
			900 (425)	0.052 (13.0)	69	66	66	66	63	62	24	24	70	67	67	67	63	63	25	25	71	67	67	67	64	63	25	25			
4	12	0.25	400 (189)	0.001 (0.3)	58	59	60	58	55	52	15	16	60	61	61	60	56	54	18	19	61	62	62	61	57	55	19	20			
			600 (283)	0.003 (0.6)	59	60	61	59	55	53	16	18	61	61	62	61	57	54	18	19	62	63	63	62	58	56	20	21			
			800 (378)	0.005 (1.2)	62	63	63	62	59	57	20	20	63	64	64	63	60	58	21	21	64	65	65	64	61	59	22	22			
			1000 (472)	0.008 (2.0)	65	66	66	66	62	61	24	24	66	67	67	67	63	62	25	25	67	68	68	67	64	63	26	26			
			1200 (566)	0.014 (3.5)	68	69	69	69	66	65	27	27	69	70	70	70	67	66	28	28	70	71	70	70	67	67	29	29			
			1400 (661)	0.023 (5.7)	71	72	72	72	69	69	31	31	71	73	73	73	70	70	32	32	72	74	73	73	71	70	33	33			
			1600 (755)	0.037 (9.2)	73	74	74	75	72	72	33	33	73	75	74	75	72	72	34	34	74	76	75	76	73	73	35	35			
5	14	0.25	1000 (472)	0.029 (7.2)	70	63	61	59	57	55	20	21	71	64	62	61	59	57	21	22	71	64	62	61	59	57	21	22			
			1200 (566)	0.041 (10.3)	71	66	64	63	61	59	24	24	72	67	65	64	62	60	25	25	72	67	65	64	62	60	25	25			
			1400 (661)	0.056 (14.0)	73	69	67	67	65	63	27	27	74	70	68	68	66	64	28	28	74	70	68	68	66	64	28	28			
			1600 (755)	0.074 (18.3)	75	72	70	70	68	66	31	31	76	73	71	71	69	67	32	32	76	73	71	71	69	67	32	32			
			1800 (849)	0.093 (23.2)	76	74	73	73	71	70	33	33	78	75	74	74	72	71	34	34	78	75	74	74	72	71	34	34			
			2000 (944)	0.115 (28.6)	78	77	75	76	75	74	37	37	79	78	76	77	76	75	38	38	79	78	76	77	76	75	38	38			
6	16	0.25	1600 (755)	0.030 (7.5)	72	73	74	71	70	70	32	32	72	73	71	69	68	31	31	73	73	74	72	70	69	32	32				
			1800 (849)	0.039 (9.7)	74	74	75	73	72	71	33	33	74	74	75	73	71	70	33	33	75	74	75	73	72	71	33	33			
			2000 (944)	0.048 (11.9)	75	76	76	75	74	73	35	35	76	75	76	75	73	72	34	34	76	76	76	75	73	73	35	35			
			2200 (1038)	0.058 (14.4)	77	77	78	77	75	75	37	37	77	77	78	77	75	75	37	37	78	77	78	77	75	75	37	37			
			2400 (1133)	0.069 (17.2)	78	79	79	79	77	77	39	39	79	79	80	79	77	77	39	39	79	79	80	79	78	77	39	39			
			2600 (1227)	0.081 (20.2)	80	81	82	81	80	79	41	41	80	81	81	81	79	79	41	41	81	81	82	81	79	79	41	41			
			2800 (1321)	0.096 (23.8)	82	83	84	83	82	82	44	44	81	82	83	83	81	81	42	42	81	82	84	82	81	81	42	42			
7	18 x 16	0.25	2200 (1038)	0.068 (17.0)	79	71	70	69	68	67	31	32	79	72	71	70	69	68	31	32	80	72	71	70	69	68	32	34			
			2500 (1180)	0.082 (20.5)	80	72	71	70	69	68	32	34	81	72	72	71	70	69	34	35	81	73	72	71	70	69	34	35			
			2700 (1274)	0.091 (22.8)	81	73	72	71	70	69	34	35	82	74	73	72	71	69	35	36	82	74	73	72	71	70	35	36			
			3000 (1416)	0.105 (26.1)	83	75	74	73	72	71	36	38	83	76	75	74	73	72	36	38	84	76	75	74	73	72	38	39			
			4000 (1888)	0.151 (37.6)	85	77	76	75	74	73	39	40	86	78	77	76	74	74	40	41	86	78	77	76	75	74	40	41			
			4400 (2076)	0.163 (40.5)	86	78	77	76	75	74	40	41	87	79	78	77	75	75	41	43	87	80	79	77	76	75	41	43			

See Page FCI-92 For NC Calculations

NC CALCULATIONS

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Series Fan Powered Air Terminal Units

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FCI-600 - Sound Path Attenuation Assumptions

NC CALCULATIONS

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ARI 885-90 Radiated Sound Path Assumptions						
Assumptions	Octave Band					
	2	3	4	5	6	7
Environmental Effect	3	2	1	1	1	1
Ceiling Effect	9	10	12	14	15	15
Room Effect	9	10	10	11	12	13
Total dB Reduction	21	22	23	26	28	29

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-90.

- Parameters:
- 1) Mineral fiber ceiling tile, 5/8" thick (35 lb/ft³ density)
 - 2) Room size is 3000 ft³.
 - 3) Unit is located 10 ft from measurement point.

ARI 885-90 Discharge Sound Path Assumptions						
Assumptions	Octave Band					
	2	3	4	5	6	7
Environmental Effect	3	2	1	1	1	1
Duct Lining	1	3	8	22	23	13
End Reflection	11	6	2	0	0	0
Flex Duct	6	9	23	25	22	13
Room Effect	9	10	10	11	12	13
Total dB Reduction	30	30	44	59	58	40

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-90.

- Parameters:
- 1) Fiberglass duct lining is 1 inch thick. 12 x 12 duct length is 5 feet.
 - 2) Flex duct is 8 inches in diameter and 6 feet in length for run to diffuser.
 - 3) Flex duct has a vinyl core.
 - 4) Room size is 3000 ft³.
 - 5) Unit is located 10 ft from measurement point.
 - 6) Sound power split; attenuation credit based on unit feeding one outlet (10 log (# outlets = 1)).

ARI 885-98 Discharge Sound Path Assumptions						
Assumptions	Octave Band					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Duct Lining	2	4	10	20	20	14
End Reflection	9	5	2	0	0	0
Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
Power Split	3	3	3	3	3	3
Total dB Reduction	27	29	40	51	53	39

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-98.

- Parameters:
- 1) Fiberglass duct lining is 1 inch thick. 12 x 12 duct length is 5 feet.
 - 2) Flex duct is 8 inches in diameter and 5 feet in length for run to diffuser.
 - 3) Flex duct has a vinyl core.
 - 4) Room size is 2400 ft³.
 - 5) Unit is located 5 ft from measurement point.
 - 6) Sound power split; attenuation credit based on unit feeding two outlets (10 log (# outlets = 2)).

ARI 885-98, Appendix E defines "Large" for applications 700 CFM and greater

ARI 885-98 Radiated Sound Path Assumptions						
Assumptions	Octave Band					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Ceiling/Space Effect*	16	18	20	26	31	36
Total dB Reduction	18	19	20	26	31	36

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-98.

- Parameters:
- 1) Mineral fiber ceiling tile, 5/8" thick (35 lb/ft³ density)
 - 2) The plenum space is at least 3 ft deep and either wide (> 30 ft) or insulated.

* - combined effect including absorption of the ceiling tile, plenum absorption and room absorption. (New to ARI 885-98. ARI 885-90 had separate lines for these absorptions.)

ARI 885-98, Appendix E defines "Small" for applications less than 300 CFM

ARI 885-98 Discharge Sound Path Assumptions						
Assumptions	Octave Band					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Duct Lining	2	6	12	25	29	18
End Reflection	9	5	2	0	0	0
Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
Power Split	0	0	0	0	0	0
Total dB Reduction	24	28	39	53	59	40

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-98.

- Parameters:
- 1) Fiberglass duct lining is 1 inch thick. 8 x 8 duct length is 5 feet.
 - 2) Flex duct is 8 inches in diameter and 5 feet in length for run to diffuser.
 - 3) Flex duct has a vinyl core.
 - 4) Room size is 2400 ft³.
 - 5) Unit is located 5 ft from measurement point.
 - 6) Sound power split; attenuation credit based on unit feeding one outlet (10 log (# outlets = 1)).

ARI 885-98, Appendix E defines "Medium" for applications from 300 to 700 CFM

ARI 885-98 Discharge Sound Path Assumptions						
Assumptions	Octave Band					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Duct Lining	2	4	10	20	20	14
End Reflection	9	5	2	0	0	0
Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
Power Split	3	3	3	3	3	3
Total dB Reduction	27	29	40	51	53	39

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-98.

- Parameters:
- 1) Fiberglass duct lining is 1 inch thick. 12 x 12 duct length is 5 feet.
 - 2) Flex duct is 8 inches in diameter and 5 feet in length for run to diffuser.
 - 3) Flex duct has a vinyl core.
 - 4) Room size is 2400 ft³.
 - 5) Unit is located 5 ft from measurement point.
 - 6) Sound power split; attenuation credit based on unit feeding two outlets (10 log (# outlets = 2)).

ARI 885-98, Appendix E defines "Large" for applications 700 CFM and greater



Series Fan Powered Air Terminal Units

FCI-600 - Hot Water Coil MBH Selection Data/Imperial Units

Unit Size	Rows	GPM	Head Loss (Ft-H ₂ O)	CFM						
				200	300	350	400	450	500	600
2	One	1	0.14	10.5	12.7	13.6	14.4	15.1	15.7	16.8
		2	0.55	11.5	14.3	15.5	16.5	17.5	18.3	19.8
		4	2.11	12.2	15.4	16.7	17.9	19.0	20.1	21.9
		6	4.62	12.4	15.8	17.2	18.5	19.6	20.7	22.7
	Airside Ps (in. w.c.)		0.01	0.01	0.02	0.02	0.03	0.03	0.05	
2	Two	1	0.06	14.4	17.9	19.2	20.4	21.4	22.3	-
		2	0.24	16.3	21.0	23.0	24.7	26.3	27.7	-
		4	0.95	17.5	23.1	25.5	27.7	29.7	31.6	-
		6	2.12	18.0	24.0	26.5	28.9	31.1	33.2	-
	Airside Ps (in. w.c.)		0.02	0.03	0.04	0.05	0.06	0.07	-	
Unit Size	Rows	GPM	Head Loss (Ft-H ₂ O)	CFM						
				350	400	500	550	650	750	800
3	One	1	0.21	15.9	16.8	18.5	19.8	20.4	21.5	22.0
		2	0.78	18.1	19.4	21.6	22.6	24.4	26.0	26.7
		4	3.00	19.5	21.0	23.7	24.9	27.1	29.0	29.9
		6	6.57	20.0	21.6	24.5	25.7	28.1	30.2	31.2
	Airside Ps (in. w.c.)		0.01	0.01	0.02	0.02	0.03	0.03	0.04	
3	Two	1	0.08	21.6	23.0	25.4	26.3	28.0	29.5	30.1
		2	0.30	25.7	27.8	31.5	33.1	36.0	38.4	39.6
		4	1.15	28.4	31.1	35.8	37.9	41.8	45.2	46.9
		6	2.54	29.4	32.3	37.5	39.8	44.2	48.1	49.9
	Airside Ps (in. w.c.)		0.02	0.03	0.04	0.05	0.06	0.08	0.09	
Unit Size	Rows	GPM	Head Loss (Ft-H ₂ O)	CFM						
				800	1000	1100	1200	1300	1400	1500
4	One	1	0.21	22.0	23.6	24.3	24.9	25.4	25.9	26.4
		2	0.79	26.7	29.2	30.2	31.2	32.1	33.0	33.7
		4	3.01	29.9	33.1	34.5	35.8	37.0	38.2	39.2
		6	6.59	31.2	34.7	36.3	37.7	39.1	40.3	41.5
	Airside Ps (in. w.c.)		0.04	0.06	0.07	0.08	0.09	0.10	0.11	
4	Two	1	0.08	30.1	32.1	33.0	33.7	34.4	35.0	35.5
		2	0.30	39.6	43.4	45.1	46.6	47.9	49.1	50.3
		4	1.15	46.9	52.5	55.0	57.3	59.4	61.4	63.3
		6	2.54	49.9	56.5	59.4	62.1	64.6	67.0	69.2
	Airside Ps (in. w.c.)		0.09	0.13	0.15	0.17	0.19	0.22	0.25	
Unit Size	Rows	GPM	Head Loss (Ft-H ₂ O)	CFM						
				1200	1350	1475	1725	1850	1975	2100
5	One	1	0.21	24.9	25.7	26.3	27.3	27.8	28.2	28.6
		2	0.79	31.2	32.6	33.6	35.3	36.1	36.8	37.5
		4	3.01	35.8	37.6	39.0	41.4	42.5	43.6	44.5
		6	6.59	37.7	39.7	41.2	44.0	45.2	46.4	47.5
	Airside Ps (in. w.c.)		0.08	0.1	0.11	0.15	0.16	0.18	0.20	
5	Two	1	0.08	33.7	34.7	35.4	36.5	-	-	-
		2	0.30	46.6	48.5	50.0	52.5	-	-	-
		4	1.15	57.3	60.5	62.8	67.0	-	-	-
		6	2.54	62.1	65.8	68.7	73.8	-	-	-
	Airside Ps (in. w.c.)		0.17	0.21	0.24	0.31	-	-	-	
Unit Size	Rows	GPM	Head Loss (Ft-H ₂ O)	CFM						
				1650	1800	1950	2100	2250	2400	2600
6	One	1	0.22	28.2	28.8	29.3	29.8	30.2	30.7	31.2
		2	0.84	36.5	37.5	38.5	39.4	40.2	40.9	41.9
		4	3.20	42.7	44.2	45.6	46.8	48.0	49.1	50.5
		6	7.00	45.4	47.0	48.6	50.0	51.4	52.6	54.2
	Airside Ps (in. w.c.)		0.11	0.13	0.15	0.17	0.2	0.22	0.25	
6	Two	1	0.08	37.4	38.1	38.6	39.2	39.6	40.0	-
		2	0.31	53.8	55.3	56.6	57.8	58.9	59.9	-
		4	1.20	68.5	71.0	73.2	75.3	77.3	79.1	-
		6	2.65	75.3	78.3	81.1	83.8	86.2	88.5	-
	Airside Ps (in. w.c.)		0.25	0.29	0.33	0.37	0.42	0.46	-	
Unit Size	Rows	GPM	Head Loss (Ft-H ₂ O)	CFM						
				1500	2000	2500	2750	3000	3500	4000
7	One	1	0.07	32.9	35.1	36.6	37.2	37.8	38.7	39.4
		2	0.28	44.5	48.9	52.1	53.5	54.7	56.9	58.6
		4	1.07	53.8	60.6	65.9	68.2	70.2	73.9	77.1
		6	2.36	57.9	65.8	72.2	75.0	77.5	82.1	86.0
	Airside Ps (in. w.c.)		0.03	0.05	0.07	0.09	0.10	0.13	0.16	
7	Two	1	0.05	42.4	44.7	46.2	46.8	47.3	-	-
		2	0.20	62.6	68.6	72.9	74.6	76.1	-	-
		4	0.77	81.0	92.1	100.6	104.1	107.4	-	-
		6	1.70	89.6	103.6	114.7	119.5	123.8	-	-
	Airside Ps (in. w.c.)		0.07	0.11	0.16	0.19	0.22	-	-	

Series Fan Powered Air Terminal Units



FCI-600



Performance Notes see page FCI-95 Table A

For more product information visit us at www.metalair.com



Series Fan Powered Air Terminal Units

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FCI-600 - Hot Water Coil MBH Selection Data / Metric Units

Unit Size	Rows	L/s	Head Loss (kPa)	L/s						
				95	140	190	235	285	330	375
2	One	0.06	0.42	3.1	3.7	4.0	4.2	4.4	4.6	4.9
		0.13	1.64	3.4	4.2	4.5	4.8	5.1	5.4	5.8
		0.25	6.31	3.6	4.5	4.9	5.3	5.6	5.9	6.4
		0.38	13.81	3.6	4.6	5.0	5.4	5.8	6.1	6.7
		Airside Ps (kPa)		0.002	0.002	0.005	0.005	0.007	0.007	0.012
2	Two	0.06	0.18	4.2	5.2	5.6	6.0	6.3	6.5	-
		0.13	0.72	4.8	6.2	6.7	7.3	7.7	8.1	-
		0.25	2.84	5.1	6.8	7.5	8.1	8.7	9.3	-
		0.38	6.34	5.3	7.0	7.8	8.5	9.1	9.7	-
		Airside Ps (kPa)		0.005	0.007	0.010	0.012	0.015	0.017	-
Unit Size	Rows	L/s	Head Loss (kPa)	L/s						
3	One	0.06	0.63	4.6	4.9	5.4	5.8	6.0	6.3	6.4
		0.13	2.33	5.3	5.7	6.3	6.6	7.2	7.6	7.8
		0.25	8.97	5.7	6.2	6.9	7.3	7.9	8.5	8.8
		0.38	19.64	5.9	6.3	7.2	7.5	8.2	8.9	9.1
		Airside Ps (kPa)		0.002	0.002	0.005	0.005	0.007	0.007	0.010
3	Two	0.06	0.24	6.3	6.7	7.4	7.7	8.2	8.6	8.8
		0.13	0.90	7.5	8.2	9.2	9.7	10.5	11.3	11.6
		0.25	3.44	8.3	9.1	10.5	11.1	12.2	13.3	13.7
		0.38	7.59	8.6	9.5	11.0	11.7	13.0	14.1	14.6
		Airside Ps (kPa)		0.005	0.007	0.010	0.012	0.015	0.020	0.022
Unit Size	Rows	L/s	Head Loss (kPa)	L/s						
4	One	0.06	0.63	6.4	6.9	7.1	7.3	7.5	7.6	7.7
		0.13	2.36	7.8	8.5	8.9	9.2	9.4	9.7	9.9
		0.25	9.00	8.8	9.7	10.1	10.5	10.9	11.2	11.5
		0.38	19.70	9.1	10.2	10.6	11.1	11.5	11.8	12.2
		Airside Ps (kPa)		0.010	0.015	0.017	0.020	0.022	0.025	0.027
4	Two	0.06	0.24	8.8	9.4	9.7	9.9	10.1	10.3	10.4
		0.13	0.90	11.6	12.7	13.2	13.7	14.0	14.4	14.7
		0.25	3.44	13.7	15.4	16.1	16.8	17.4	18.0	18.5
		0.38	7.59	14.6	16.6	17.4	18.2	18.9	19.6	20.3
		Airside Ps (kPa)		0.022	0.032	0.037	0.042	0.047	0.055	0.062
Unit Size	Rows	L/s	Head Loss (kPa)	L/s						
5	One	0.06	0.63	7.3	7.5	7.7	8.0	8.1	8.3	8.4
		0.13	2.36	9.2	9.5	9.8	10.4	10.6	10.8	11.0
		0.25	9.00	10.5	11.0	11.4	12.1	12.5	12.8	13.1
		0.38	19.70	11.1	11.6	12.1	12.9	13.3	13.6	13.9
		Airside Ps (kPa)		0.020	0.025	0.027	0.037	0.040	0.045	0.050
5	Two	0.06	0.24	9.9	10.2	10.4	10.7	-	-	-
		0.13	0.90	13.7	14.2	14.7	15.4	-	-	-
		0.25	3.44	16.8	17.8	18.4	19.6	-	-	-
		0.38	7.59	18.2	19.3	20.1	21.6	-	-	-
		Airside Ps (kPa)		0.042	0.052	0.060	0.077	-	-	-
Unit Size	Rows	L/s	Head Loss (kPa)	L/s						
6	One	0.06	0.66	8.3	8.4	8.6	8.7	8.9	9.0	9.1
		0.13	2.51	10.7	11.0	11.3	11.5	11.8	12.0	12.3
		0.25	9.56	12.5	13.0	13.4	13.7	14.1	14.4	14.8
		0.38	20.92	13.3	13.8	14.2	14.7	15.1	15.4	15.9
		Airside Ps (kPa)		0.027	0.032	0.037	0.042	0.050	0.055	0.062
6	Two	0.06	0.24	11.0	11.2	11.3	11.5	11.6	11.7	-
		0.13	0.93	15.8	16.2	16.6	16.9	17.3	17.6	-
		0.25	3.59	20.1	20.8	21.5	22.1	22.7	23.2	-
		0.38	7.92	22.1	23.0	23.8	24.6	25.3	26.0	-
		Airside Ps (kPa)		0.062	0.072	0.082	0.092	0.105	0.115	-
Unit Size	Rows	L/s	Head Loss (kPa)	L/s						
7	One	0.06	0.21	9.6	10.3	10.7	10.9	11.1	11.3	11.6
		0.13	0.84	13.0	14.3	15.3	15.7	16.0	16.7	17.2
		0.25	3.20	15.8	17.8	19.3	20.0	20.6	21.7	22.6
		0.38	7.05	17.0	19.3	21.2	22.0	22.7	24.1	25.2
		Airside Ps (kPa)		0.007	0.012	0.017	0.022	0.025	0.032	0.040
7	Two	0.06	0.15	12.4	13.1	13.5	13.7	13.9	-	-
		0.13	0.60	18.4	20.1	21.4	21.9	22.3	-	-
		0.25	2.30	23.8	27.0	29.5	30.5	31.5	-	-
		0.38	5.08	26.3	30.4	33.6	35.0	36.3	-	-
		Airside Ps (kPa)		0.017	0.027	0.040	0.047	0.055	-	-

Series Fan Powered Air Terminal Units



FCI-600

For Performance Notes see page FCI-95 Table B



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Series Fan Powered Air Terminal Units

FCI-600 - Hot Water Coils Notes

Table-A

IMPERIAL NOTES

- Hot water coil data are for discharge mounted coils.
- Values shown in the previous charts assume the following conditions: 180°F EWT, and 65°F EAT. For other conditions of entering water, air temperatures and air flow, see note 5.
- Tabulated values are in MBH (Thousands of BTU per hour).
- Head Loss is in feet of water.
- MBH values are based on a DT (temperature difference) of 115° F between entering air and entering water. For other DTs, multiply the MBH values by the factors below:

DT	Factor
50	.44
60	.52
70	.61
80	.70
90	.79

DT	Factor
100	.88
115	1.00
125	1.07
140	1.20
150	1.30

$$6. \text{ Air Temperature Rise} = \frac{927 \times \text{MBH}}{\text{CFM}}$$

$$7. \text{ Water Temperature Drop} = \frac{2.04 \times \text{MBH}}{\text{GPM}}$$

8. For water valve sizing, contact your METALAIR representative. For data values other than those listed, interpolate or use the METALAIR Terminal Selection Program. Contact your METALAIR representative for additional information.

9. All hot water coils are 10 Fins per inch (FPI).

Table-B

METRIC NOTES

- Hot water coil data are for discharge mounted coils.
- Values shown in the previous charts assume the following conditions: Standard Atmospheric Conditions, 82°C EWT, and 18°C EAT. For other conditions of entering water, air temperatures and air flows, see note 5.
- Tabulated values are in kW (Thousands of watts).
- Head loss is in kPa.
- kW values are based on a DT (temperature difference) between entering air and entering water of 64°C. For other DTs, multiply the kW values by the factors below:

DT	Factor
30	.48
35	.55
40	.63
50	.78

DT	Factor
60	.94
64	1.00
70	1.08
80	1.24

$$6. \text{ Air Temperature Rise} = \frac{\text{kW} \times 579}{\text{air flow in L/s}}$$

$$7. \text{ Water Temperature Drop} = \frac{\text{kW} \times 0.17}{\text{water flow in L/s}}$$

8. For water valve sizing, contact your METALAIR representative. For data values other than those listed, interpolate or use the Metal Industries computerized engineering program. Contact your METALAIR representative for additional information.

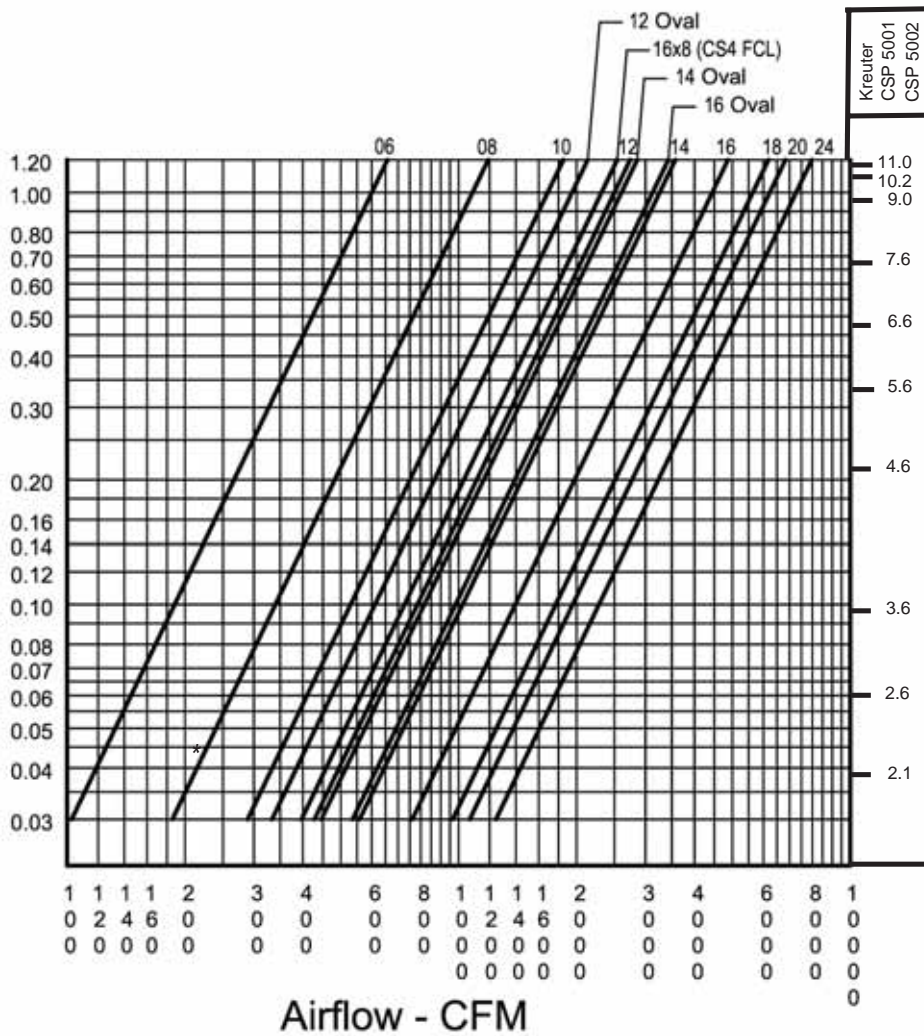
9. All hot water coils are 10 Fins per inch (FPI).



Series Fan Powered Air Terminal Units

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FCI-600 - Calibration for MI Multi-Point Quadrant Averaging Flow Sensor



ATU Model	Inlet Size	Flow Coefficient
TH, FC	06 Round	600
FV, DD	08 "	1100
DH, BP	10 "	1700
RT, RA	12 "	2500
TL (6-10)	14 "	3250
FCL Cs2 (6-8)	16 "	4400
12 TL	12 Oval	1965
14 TL	14 "	2600
16 TL	16 "	3150
FCL Cs4	16x8 Rect.	2340
FC & FV Cs7	18x16 "	5600
TH20	20x16 "	6200
TH24	24x16 "	7200

$$Cfm = \sqrt{\Delta p} \times \text{Flow Coefficient}$$

Data is with Sensor Mounted in Round Duct, except for Rectangular Sizes 18, 20 and 24 Widths x 16 Height and 16 x 8 (FCL Case 4)

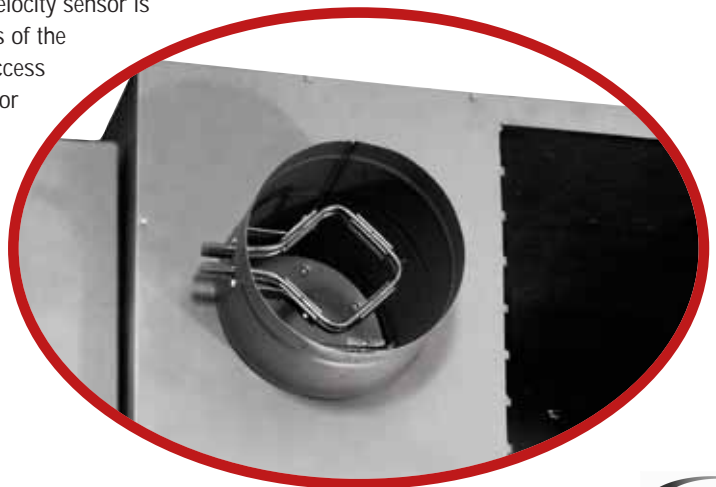
*Some controllers do not operate consistently below 0.030 in. w.c.

PRIMARY AIR VALVE AND MULTI-POINT QUADRANT AVERAGING FLOW SENSOR

Primary air valve has a bead rolled into the tube, which strengthens the tube and serves as a stop to prevent field-attached flex duct from slipping. The primary valve velocity sensor is multi-ported and arranged to sense velocity in each of four quadrants of the inlet. Those port readings are then inherently averaged back to the access

FCI-600 Fan Powered Unit - K Factors			
Inlet Size	Inlet Area	CFM @ 1"	K Factor
6	0.20	600	1.72
8	0.35	1100	1.61
10	0.55	1700	1.65
12	0.79	2500	1.58
14	1.07	3250	1.73
16	1.40	4400	1.61
18 x 16	2.00	5600	2.05

ports. The sensor has two control ports and two accessory ports. Piping connections are made externally.



Series Fan Powered Air Terminal Units

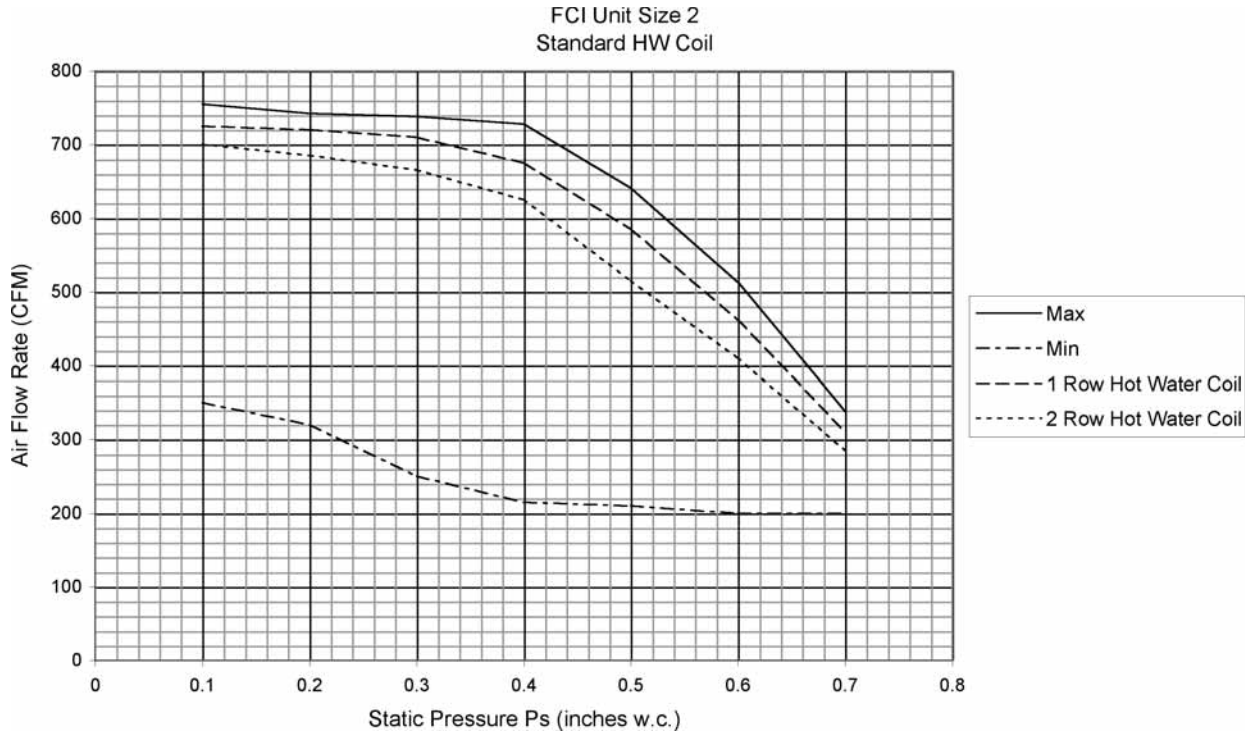


FCI-600

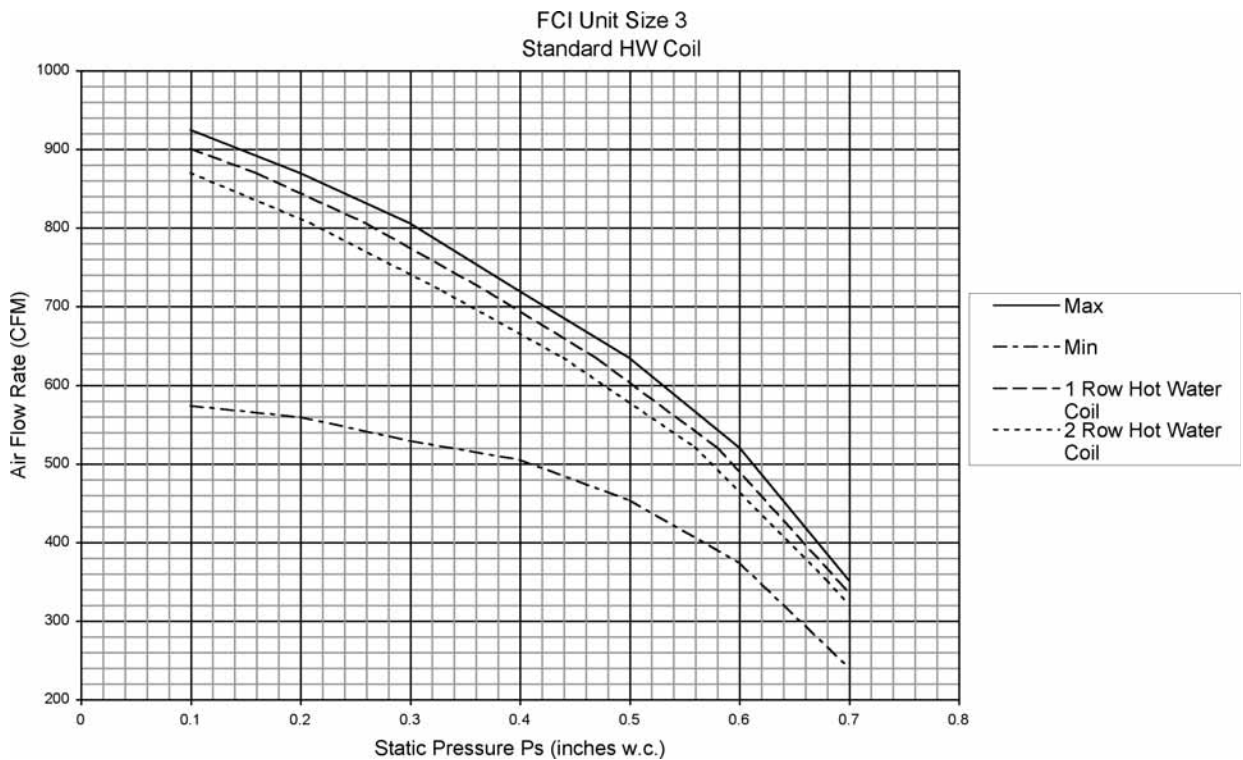
Series Fan Powered Air Terminal Units

FCI-600 - Fan Performance Charts

FAN CURVES



FAN CURVES



Series Fan Powered Air Terminal Units



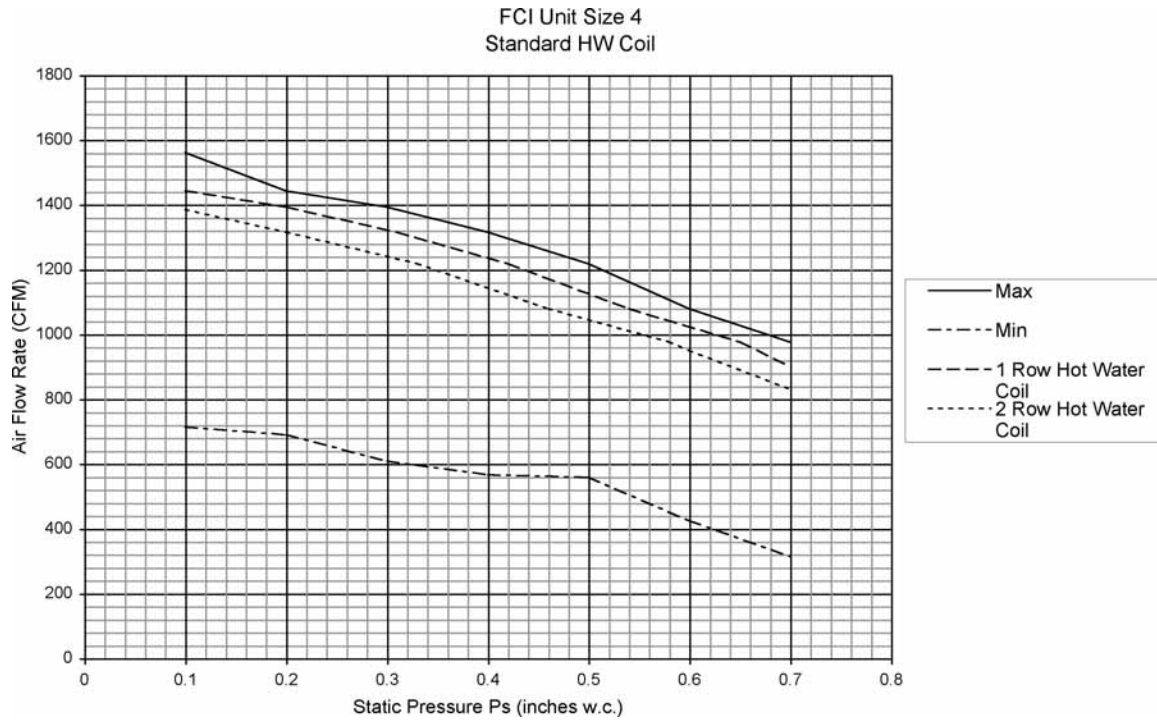
FCI-600

Series Fan Powered Air Terminal Units

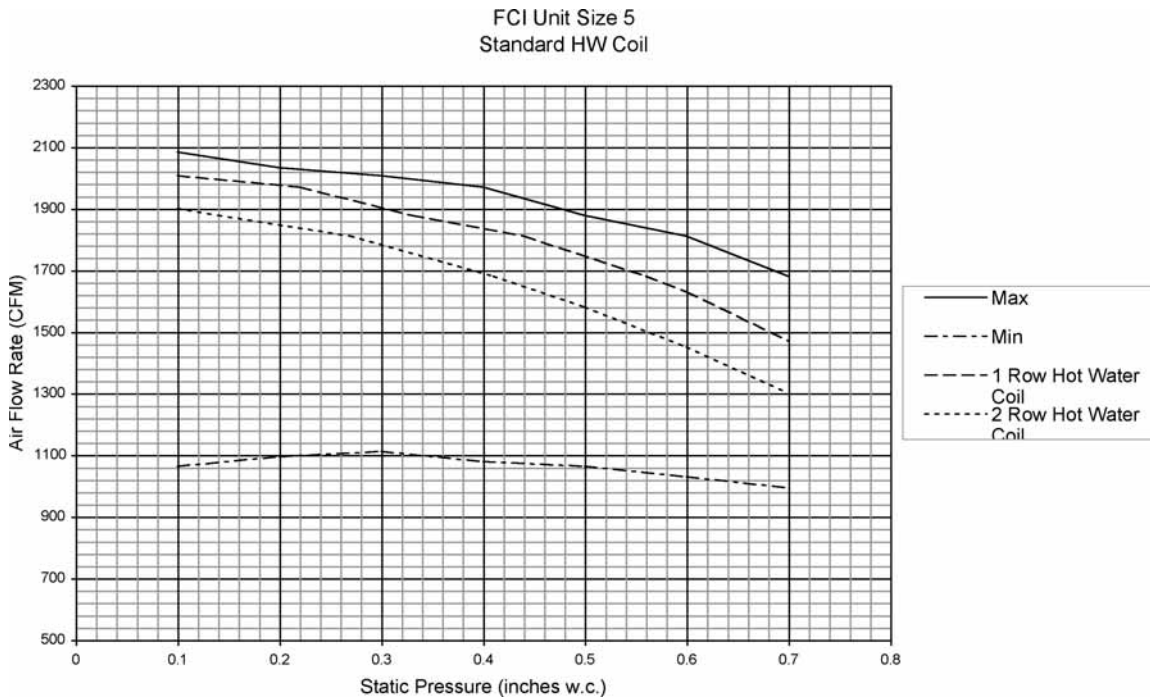
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FCI-600 - Fan Performance Charts

FAN CURVES



FAN CURVES



Series Fan Powered Air Terminal Units

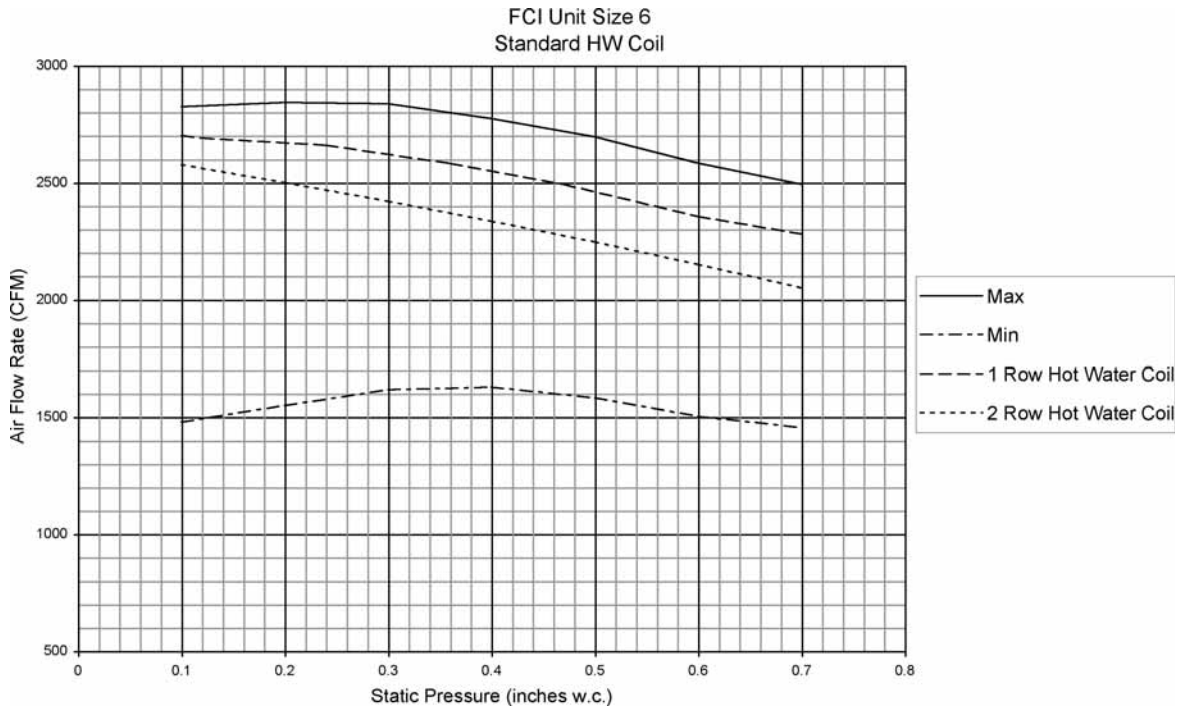


FCI-600

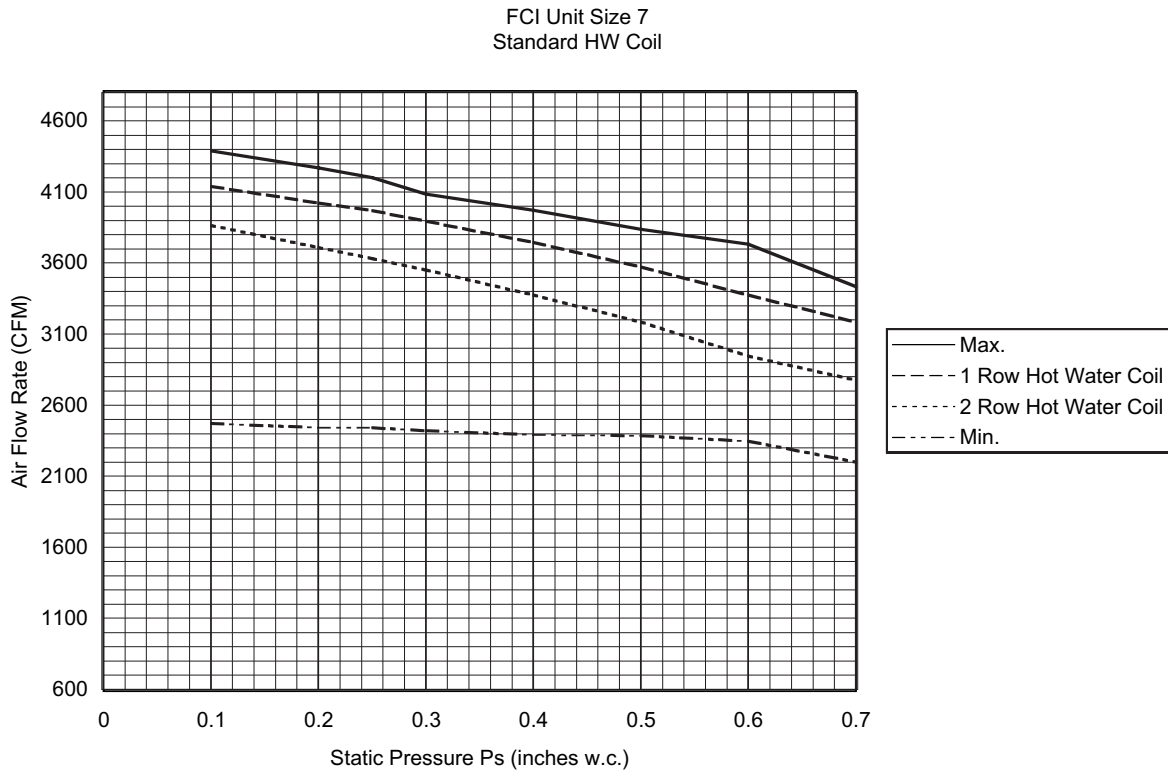
Series Fan Powered Air Terminal Units

FCI-600 - Fan Performance Charts

FAN CURVES



FAN CURVES



Series Fan Powered Air Terminal Units



FCI-600

ECM Motor

METALAIRE offers the optional GE ECM™ 2.3 motor for the FCI-600 Series Fan Powered Terminal. Add the ECM motor to the FCI-600, and you have an ultra high efficient air terminal.

What is an ECM motor?

ECM stands for Electronically Commutated Motors. This technology was developed by GE. The GE ECM™ is a brushless-DC motor with built in speed and torque controls.

Unlike a conventional induction motor, GE's ECM™ motor regulates itself by automatically changing its torque and speed to maintain a preprogrammed level of constant airflow over a wide range of external static pressures and does so without the use of airflow sensors. The ECM's regulated airflow output remains constant over that same range of static pressure.

For optimum heating the ECM system can be programmed to deliver just the right level of airflow for both low and high stage heating comfort.

Features and Benefits

- **Ultra-high efficiency**

ECM 2.3 efficiencies are as high as 82%. At full load the ECM 2.3 is 20% more efficient than a standard induction motor. At low speed the ECM is over 30% more efficient than a standard induction motor. On constant fan speed, the ECM consumes 60-80 Watts as compared to 400 watts for the induction motor. The permanent magnet DC design allows it to maintain its efficiency over its wide speed range.

- **Programmability**

Programming options for the ECM 2.3 include: start/stop ramp rates, on/off blower delays and many other functions all stored in the motor's memory. Even its speed and torque characteristics can be customized to meet specific performance requirements.

- **Self regulating constant airflow**

The GE ECM variable-speed motor can run in a wide range of speeds. The motor can be programmed to deliver constant airflow into a wide range of external static pressures in an air distribution system. This is all accomplished without the use of external sensors.

ECM Controls

METALAIRE engineering has carefully integrated the ECM motor into each terminal blower assembly resulting in a terminal fan that produces a constant CFM over a wide range of operating pressures.

The CFM can be adjusted from the specified minimum CFM to the specified maximum CFM by sending the fan a flow index signal. A fan control interface allows external adjustment of the flow index and provides fan on/off control.

GE ECM™ Control Interfaces

Metalair offers two fan control interface devices for fan terminals equipped with the GE ECM motor.

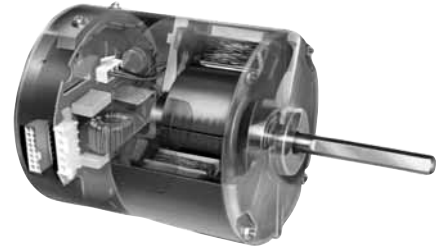
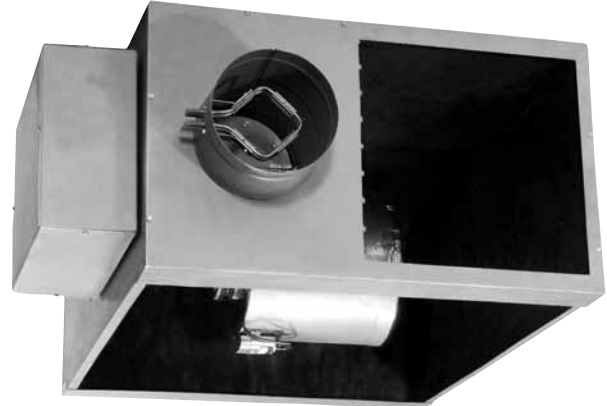
Model ECM-VCU (Option 58)

The visual fan control interface allows local adjustment of the fan CFM and indicates the fan RPM on an illuminated numerical display. The visual control interface may also be used where automation systems only turn the fan on or off.

Model ECM-RPM (Option 57)

The automation fan control interface allows an automation system to control fan on/off, fan CFM and to monitor the fan RPM from the automation console.

Both control interfaces provide a means to monitor fan RPM. This is an important value to record after air balance, and can be used to diagnose system problems.



Optional ECM Motor is available with FVI-500 Series Fan Powered Terminal Units.



Series Fan Powered Air Terminal Units

ECM Controls

Model ECM-RPM - Remote Adjustment

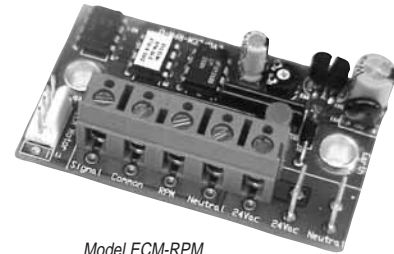
The ECM-RPM allows industry standard 2-10 Vdc controls to adjust and monitor General Electric's ECM Motor™. These are fractional horsepower air moving motors featuring an internal microprocessor. The design provides exceptional efficiency, performance and motor life. The motor may be factory configured to provide constant mass airflow or constant torque.

The ECM-RPM allows remote adjustment of the output from 0% to 100% of the programmed control range. A lamp on the control continuously flashes out the flow index, so instruments are not required to read the value.

The "ECM-RPM" version provides low voltage ON/OFF control by switching the motor's "GO" control when the input signal drops below the 2 volt (4 mA) operating point.

Specifications

Power	NEC Class II Only
	24 Vac ± 20% 50/60 Hz 2 W, 4 VA + 1VA/Motor
Control Signal	2-10 Vdc = 0-100%
	4-20 mA = 0-100%
	ON/OFF Control



Model ECM-RPM

Model ECM-VCU - Manual Adjustment

The ECM-VCU control allows accurate manual adjustment and monitoring of fans using General Electric's ECM Motor. These are fractional horsepower air moving motors featuring an internal microprocessor. The design provides exceptional efficiency, performance and motor life. These self regulating motors may be factory configured so the fan will provide constant mass airflow.

Operation

GE ECM™ motors configured for Vspd operation are factory configured for external torque or airflow adjustment. The configuration data includes the fan manufacturer's specified adjustment range. A numerical flow index accurately adjusts the fan to the desired torque or airflow. The flow index is a number from 0-100 having a linear relationship to the minimum to maximum torque or airflow range specified by the motor fan.

The ECM-VCU allows local on/off and fan airflow adjustment. Rotating a single screwdriver adjuster changes the variable output signal to the motor from off to full output. While rotating the adjuster, a numerical flow index is locked on the illuminated numerical display. After adjustment, the display shows fan RPM.

The ECM-VCU may also be used where automation systems only turn the fan on or off.

Specifications

Power	NEC Class II Only
	24 Vac ± 20% 50/60 Hz 4 W, 6 VA
Flow Index Adjustment	270° rotation
	F Off-0-100



Model ECM-VCU



Series Fan Powered Air Terminal Units

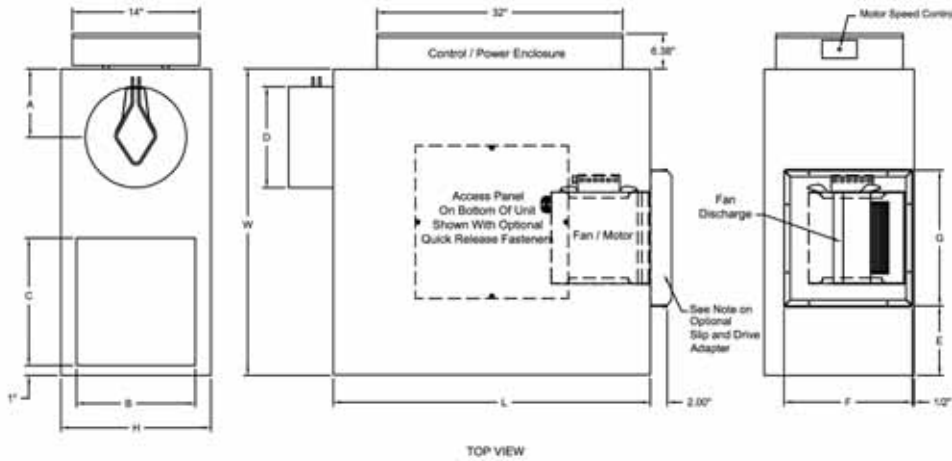
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FCI-600 - ECM - Air Terminal Dimensions

Dimensions are in inches

Series Fan Powered - ECM Motor - Basic Unit

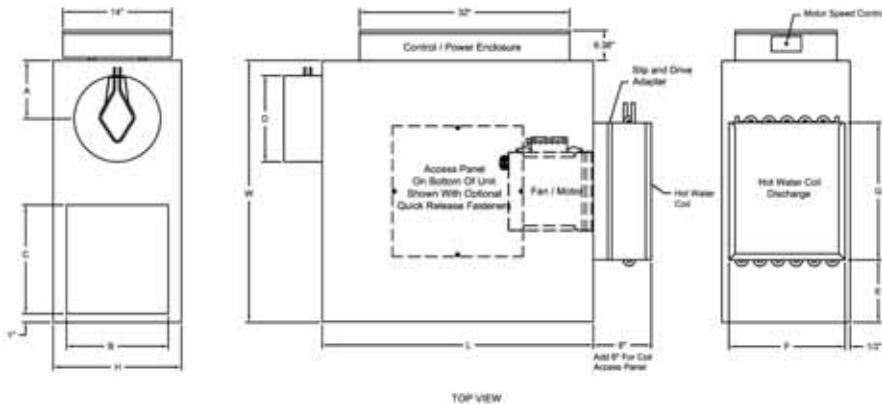
- Case Size 2 - 8" Inlet
- Case Size 4 - 12" Inlet
- Case Size 6 - 16" Inlet



Casing Size	Inlet Diameter D		Horse Power	Unit Height H	Unit Width W	Unit Length L	Inlet Loc. A	Ind. Inlet Height B	Ind. Inlet Width C	Discharge Loc. E	Discharge Height F	Discharge Width G
	Standard	Optional										
2	8 (203)	6, 10, 12	1/8	17 1/2 (445)	30 (762)	36 (914)	7 (178)	14 (356)	14 (356)	7 (178)	15 (381)	16 (406)
3	10 (254)	6, 8, 12, 14	1/8	17 1/2 (445)	36 (914)	40 (1016)	8 (203)	14 (356)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
4	12 (305)	8, 10, 14	1/4	17 1/2 (445)	36 (914)	40 (1016)	8 (203)	14 (356)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
5	14 (356)	10, 12, 16	1/3	20 (508)	40 (1016)	40 (1016)	10 (254)	16 (406)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
6	16 (406)	10, 12, 14	1	20 (508)	42 (1067)	42 (1067)	10 (254)	16 (406)	20 (508)	9 (228)	18 (457)	22 (559)
7	18 x 16 (457 x 406)	12, 14, 16	(2) 3/4	20 (508)	46 (1168)	48 (1168)	11 (279)	16 (406)	22 (559)	4 (102)	20 (508)	38 (962)

Series Fan Powered - ECM Motor - With Hot Water Coil

- Case Size 2 - 8" Inlet
- Case Size 4 - 12" Inlet
- Case Size 6 - 16" Inlet



Casing Size	Inlet Diameter D		Horse Power	Unit Height H	Unit Width W	Unit Length L	Inlet Loc. A	Ind. Inlet Height B	Ind. Inlet Width C	Discharge Loc. E	Discharge Height F	Discharge Width G
	Standard	Optional										
2	8 (203)	6, 10, 12	1/2	17 1/2 (445)	30 (762)	36 (914)	7 (178)	14 (356)	14 (356)	7 (178)	15 (381)	16 (406)
4	12 (305)	8, 10, 14	1/2	17 1/2 (445)	36 (914)	40 (1016)	8 (203)	14 (356)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
6	16 (406)	10, 12, 14	1	20 (508)	42 (1067)	42 (1067)	10 (254)	16 (406)	20 (508)	9 (228)	18 (457)	22 (559)

Series Fan Powered Air Terminal Units



FCI-600

Series Fan Powered Air Terminal Units

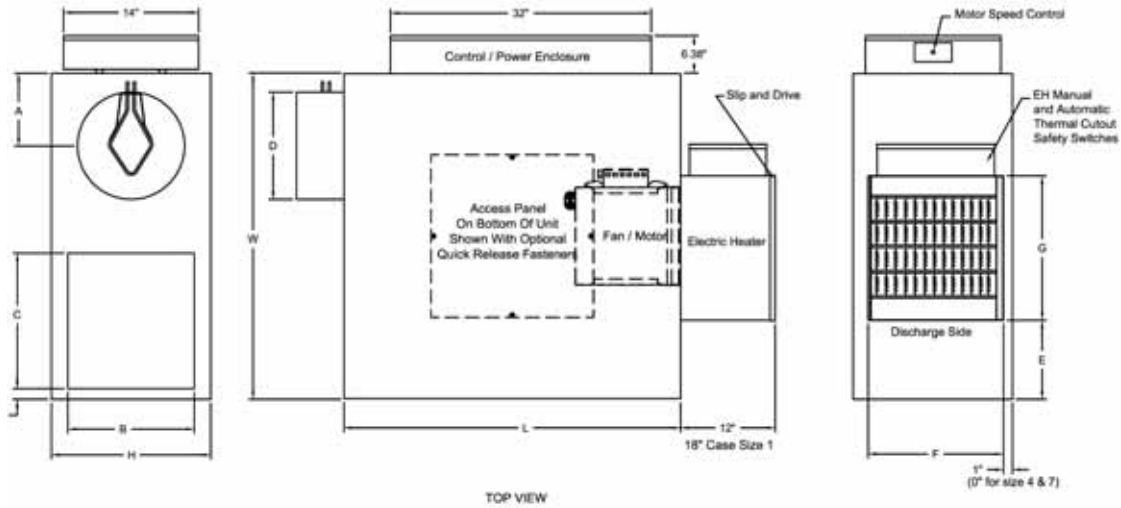
FCI-600 - ECM - Air Terminal Dimensions

Series Fan Powered - ECM Motor - With Electric Heat

Case Size 2 - 8" Inlet

Case Size 4 - 12" Inlet

Case Size 6 - 16" Inlet



Casing Size	Inlet Diameter D		Horse Power	Unit Height H	Unit Width W	Unit Length L	Inlet Loc. A	Ind. Inlet Height B	Ind. Inlet Width C	Discharge Loc. E	Discharge Height F	Discharge Width G
	Standard	Optional										
2	8 (203)	6, 10, 12	1/8	17 1/2 (445)	30 (762)	36 (914)	7 (178)	14 (356)	14 (356)	7 (178)	15 (381)	16 (406)
3	10 (254)	6, 8, 12, 14	1/8	17 1/2 (445)	36 (914)	40 (1016)	8 (203)	14 (356)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
4	12 (305)	8, 10, 14	1/4	17 1/2 (445)	36 (914)	40 (1016)	8 (203)	14 (356)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
5	14 (356)	10, 12, 16	1/3	20 (508)	40 (1016)	40 (1016)	10 (254)	16 (406)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
6	16 (406)	10, 12, 14	1	20 (508)	42 (1067)	42 (1067)	10 (254)	16 (406)	20 (508)	9 (228)	18 (457)	22 (559)
7	18 x 16 (457 x 406)	12, 14, 16	(2) 3/4	20 (508)	46 (1168)	46 (1168)	11 (279)	16 (406)	22 (559)	4 (102)	20 (508)	38 (952)

Series Fan Powered Air Terminal Units



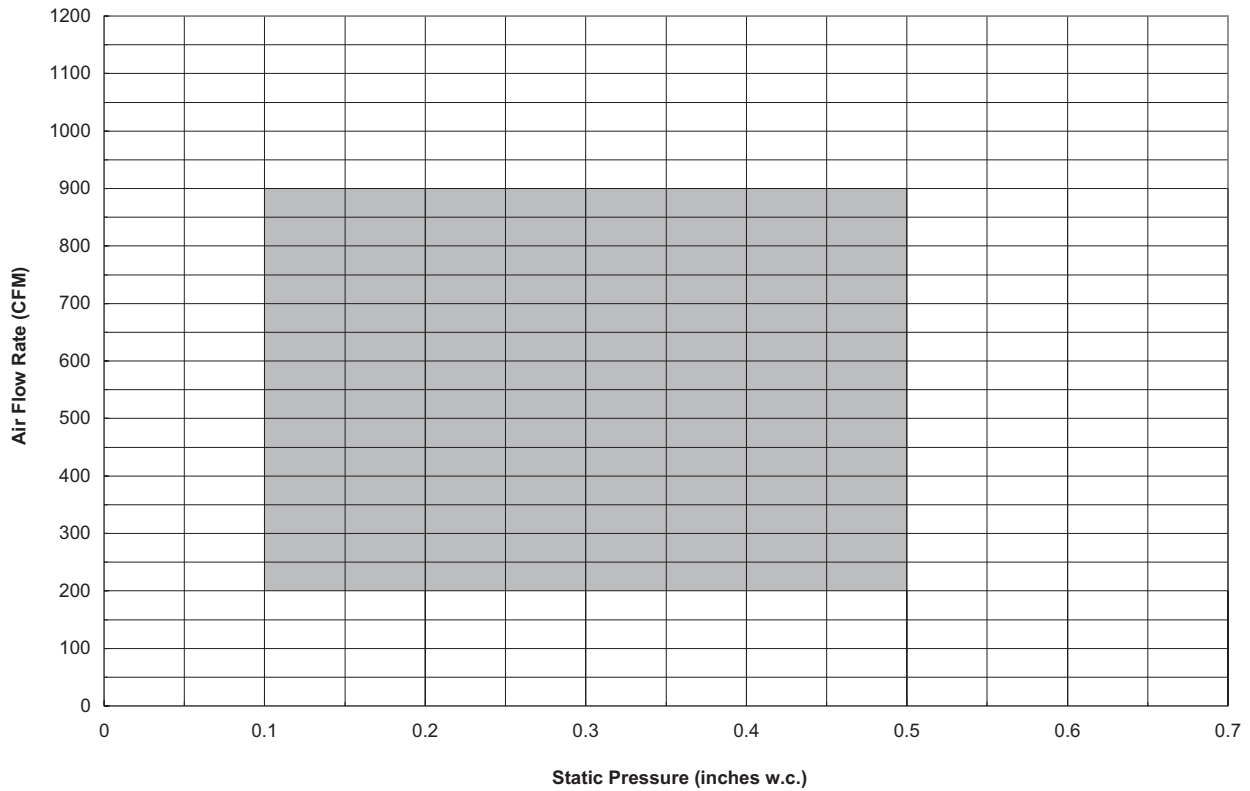
FCI-600

Series Fan Powered Air Terminal Units

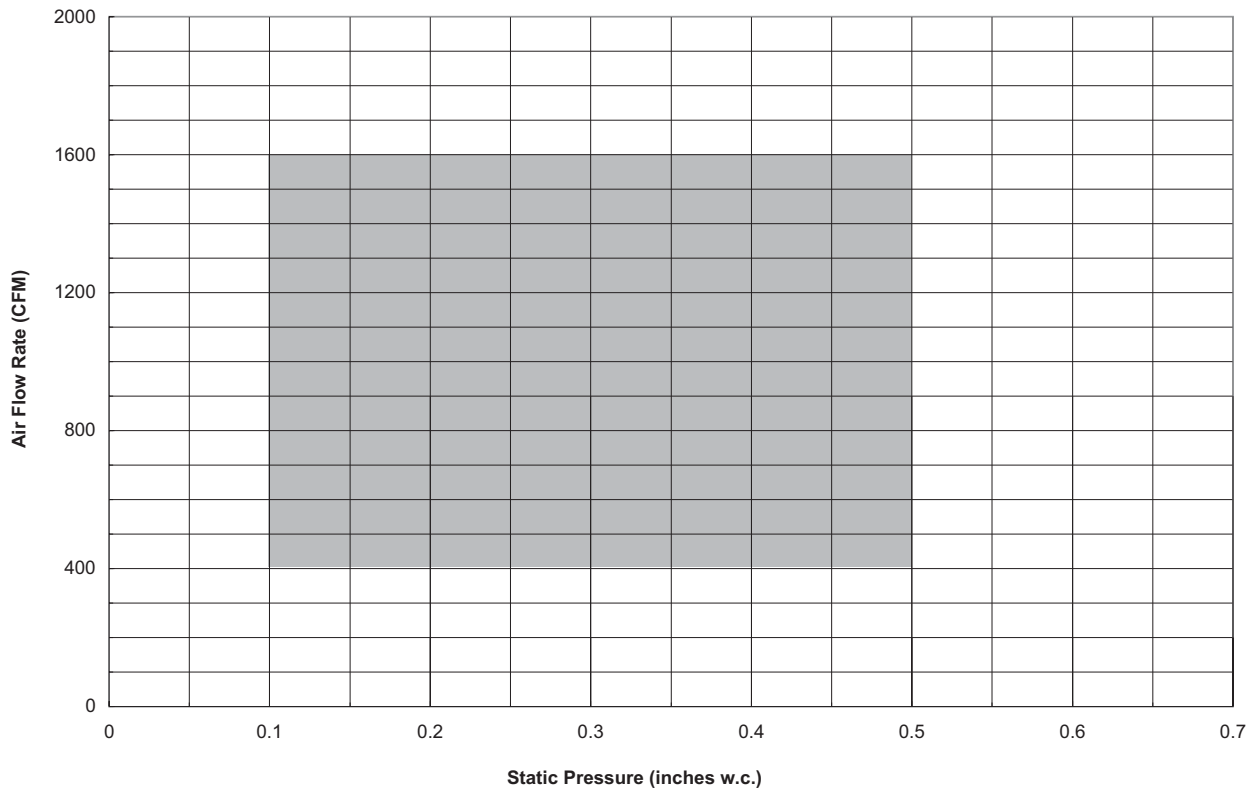
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ECM FCI-600 - Fan Performance Charts

UNIT SIZE 2



UNIT SIZE 4



Series Fan Powered Air Terminal Units

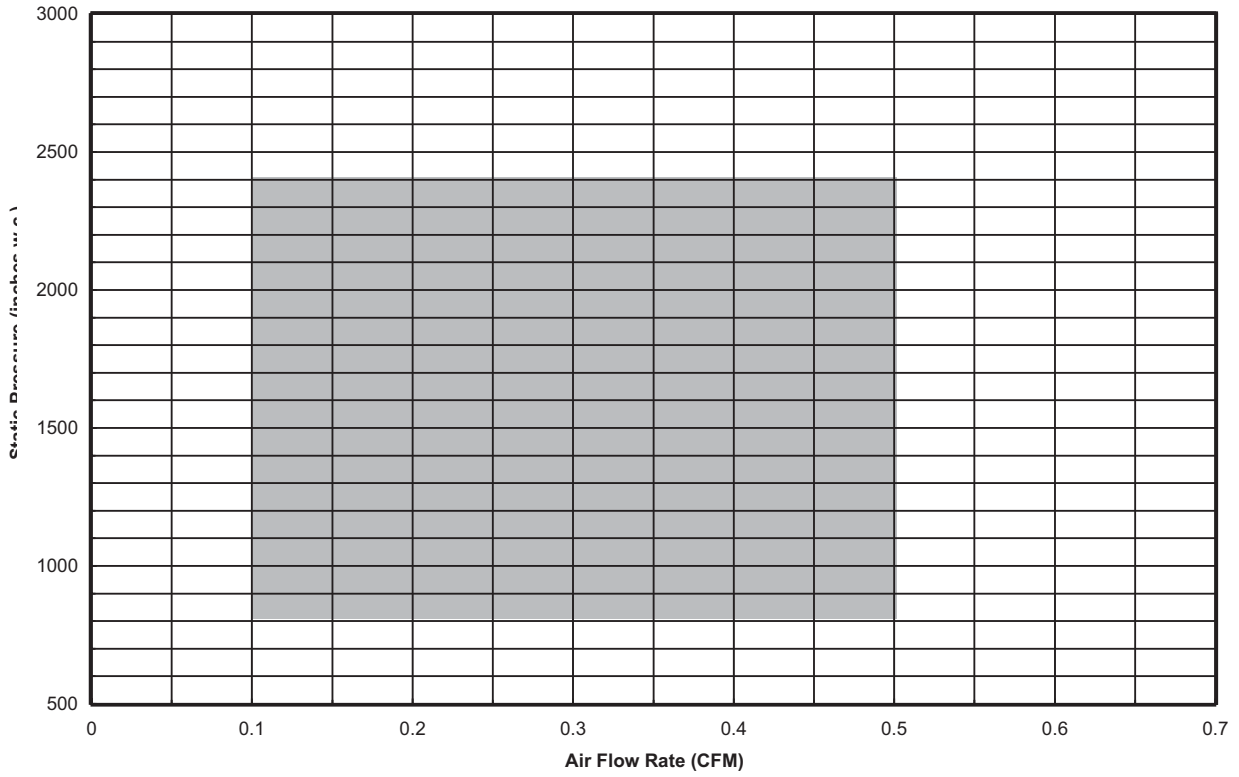


FCI-600

Series Fan Powered Air Terminal Units

ECM FCI-600 - Fan Performance Charts

UNIT SIZE 6



Shaded area represents operating range of fan performance

Series Fan Powered Air Terminal Units



FCI-600

Series Fan Powered Air Terminal Units

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SERIES FCL-600

Low Profile Constant Volume Air Terminal Units

Series FCL-600 low Profile fan-powered terminal units are designed to provide superior comfort control in applications with restricted heights. The FCL-600 series can also be selected for projects with limited heights in the ceiling plenum.

The FCL-600 is designed to be applied in zones with both heating and cooling requirements. The fan in a constant volume (or series) fan powered terminal, runs continuously during occupied hours.

Series FCL-600 provides cooling through the primary air valve. The primary air valve controls the volume of air that is discharged into the terminal unit. The cooled air is delivered to the space through the terminal's fan. When heating is required, the Series FCL-600 initially provides plenum air that is drawn through the induction inlet.

Series FCL-600 is available with a wide range of control options and accessories to meet your design requirements; whether they be for factory mounted direct digital controls, pneumatic, or analog applications.

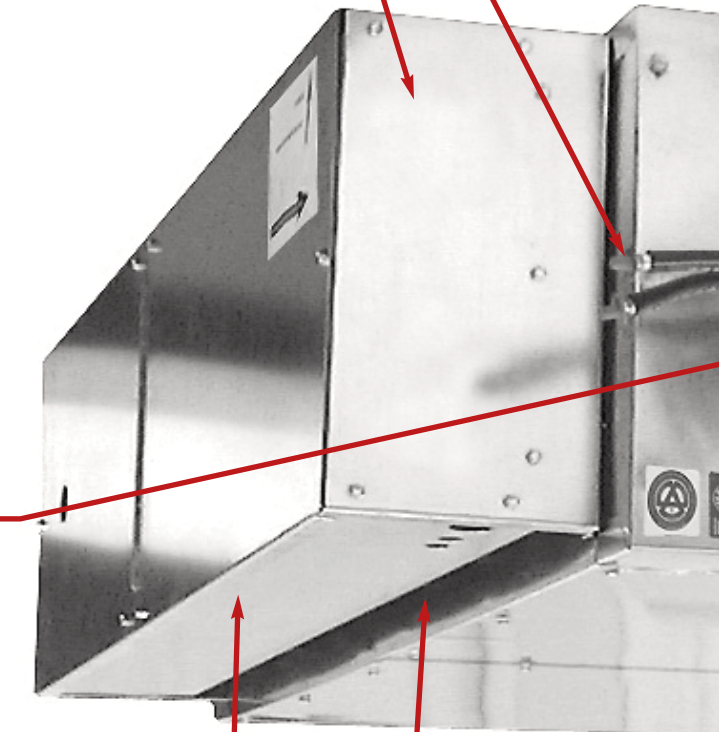
Series FCL-600 is available in 2 casing sizes and offers the flexibility to meet both your capacity and sound requirements.

All units are shipped with easy access balancing taps. The extra ports can be used to read CFM (through velocity pressure) directly at the unit

All units include an SCR solid state fan speed controller. Motors are designed to work in conjunction with the SCR controller

Multiquadrant Averaging Flow Sensor provides an accurate flow signal without requiring an immediate upstream straight duct connection (Shipped standard on all units)

All electrical wiring is connected using quick-disconnect bulkhead fittings allowing easy servicing of electrical components

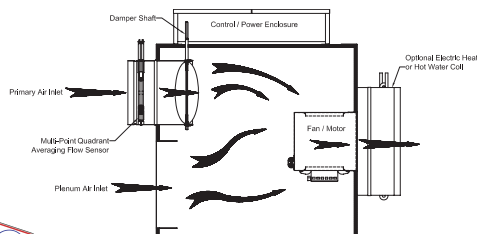


Control panel includes stand-offs to allow mounting of controls without penetrating the casing

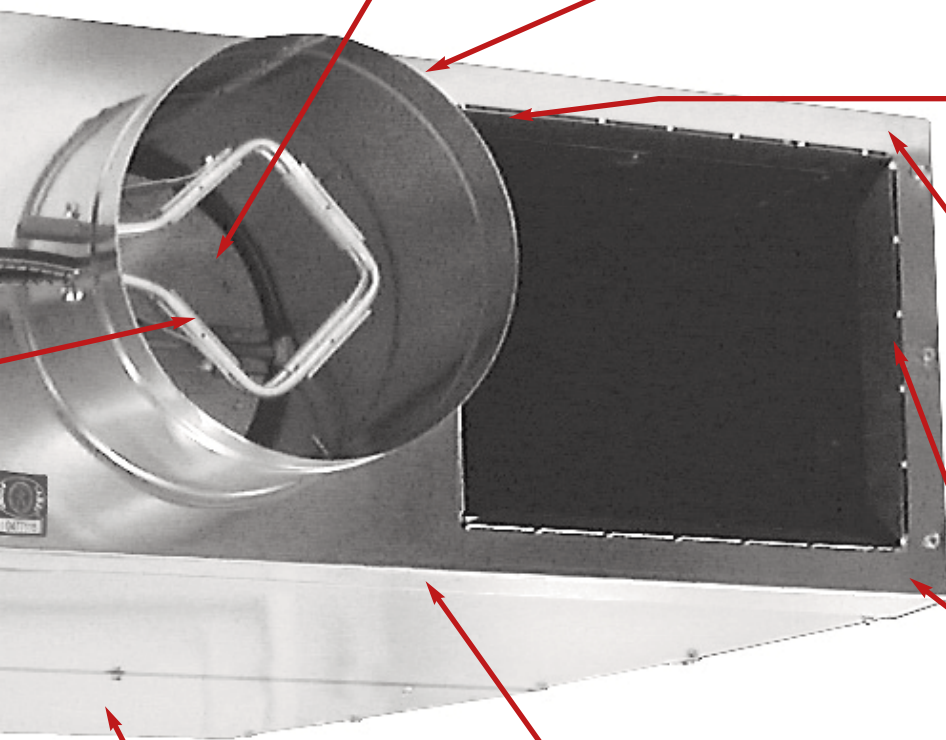
Low Profile Constant Volume Fan Powered Air Terminal Units



FCL-600



Series Fan Powered Air Terminal Units



For long life and continuous operation, the damper shaft rotates in a self-lubricating Kepital® (acetal resin) bearing

Round primary inlet tubes are constructed with a seamless butt weld for rigidity and to eliminate leakage. It also includes a bead that strengthens the tube and provides recess for flex duct straps

Optional filter rack is available for 1" thick filters

Inlet panel is one-piece construction to increase rigidity and to reduce radiated sound

All units are ETL® listed to UL® Standard 1995 and CSA-C22.2 No. 236. All electrical components are UL® certified and listed

1" thick fiberglass insulation is standard

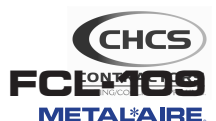
2" wide mounting lip provides easy installation and removal of access panel. Panels can be removed without disturbing trapeze-type hangers

Units are shipped with balanced single speed energy saving motors manufactured specifically for the torque requirements of each terminal. Motors are of energy efficient design

Low Profile Constant Volume Fan Powered Air Terminal Units



FCL-600



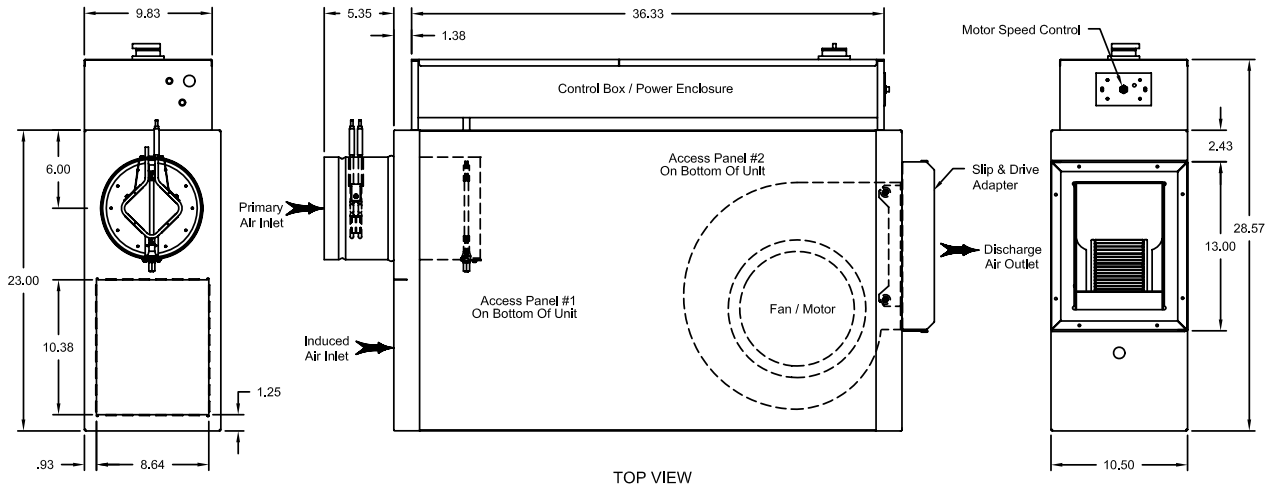
Series Fan Powered Air Terminal Units

6/2007

FCL-600 - Air Terminal Dimensions

Dimensions are in inches

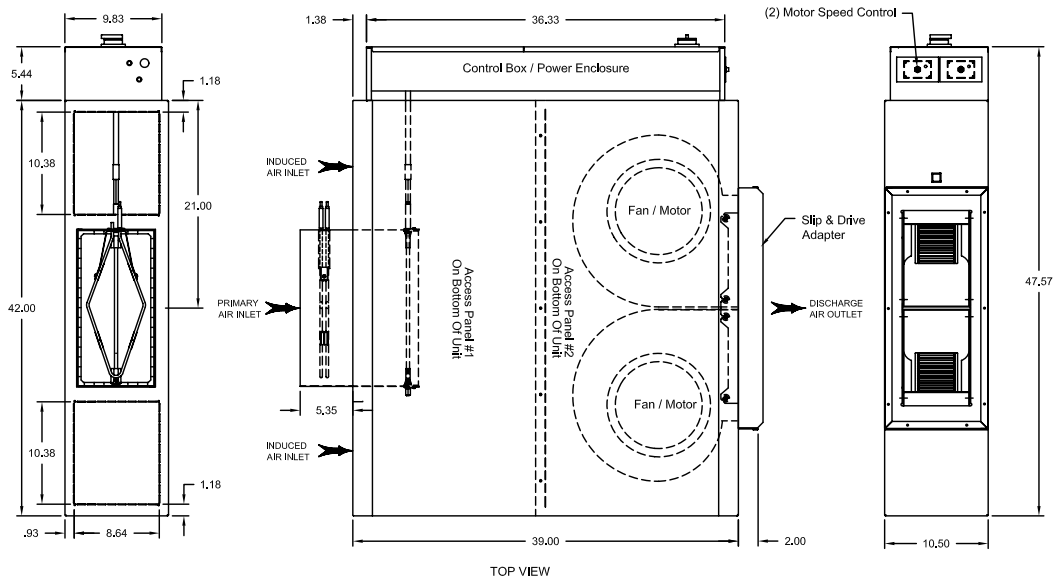
Series Low Profile Fan Powered - Basic Unit
Case Size 2 - 8" Inlet



Unit Size	Inlet Diameter		Unit Height	Unit Width	Unit Length	Inlet Loc.	Ind. Inlet Height	Ind. Inlet Width	Discharge Loc.	Discharge Height	Discharge Width	Shipping Weight
	Standard	(mm)										
2	8	(203)	10 1/2 (267)	23 (284)	39 (991)	6 (152)	8.64 (219)	10.38 (264)	2.43 (62)	10 1/2 (267)	13 (330)	94 lbs.

Dimensions are in inches (mm); Airflow CFM (L/s) and Product Information is Subject to be Change Without Notice
** For Fan CFM @ a specific ESP see catalog for Fan Curves.

Series Low Profile Fan Powered - Basic Unit
Case Size 4 - 16" x 8" Inlet



Unit Size	Inlet Diameter		Unit Height	Unit Width	Unit Length	Inlet Loc.	Ind. Inlet Height	Ind. Inlet Width	Discharge Loc.	Discharge Height	Discharge Width	Shipping Weight
	Standard	(mm)										
4	16	(406) x 8 (203)	10 1/2 (267)	42 (1067)	39 (991)	21 (533)	8.64 (219)	10.38 (264)	8.79 (223)	10 1/2 (267)	24.50 (622)	154 Lbs.

Dimensions are in inches (mm); Airflow CFM (L/s) and Product Information is Subject to be Change Without Notice
** For Fan CFM @ a specific ESP see catalog for Fan Curves.

Low Profile Constant Volume Fan Powered Air Terminal Units



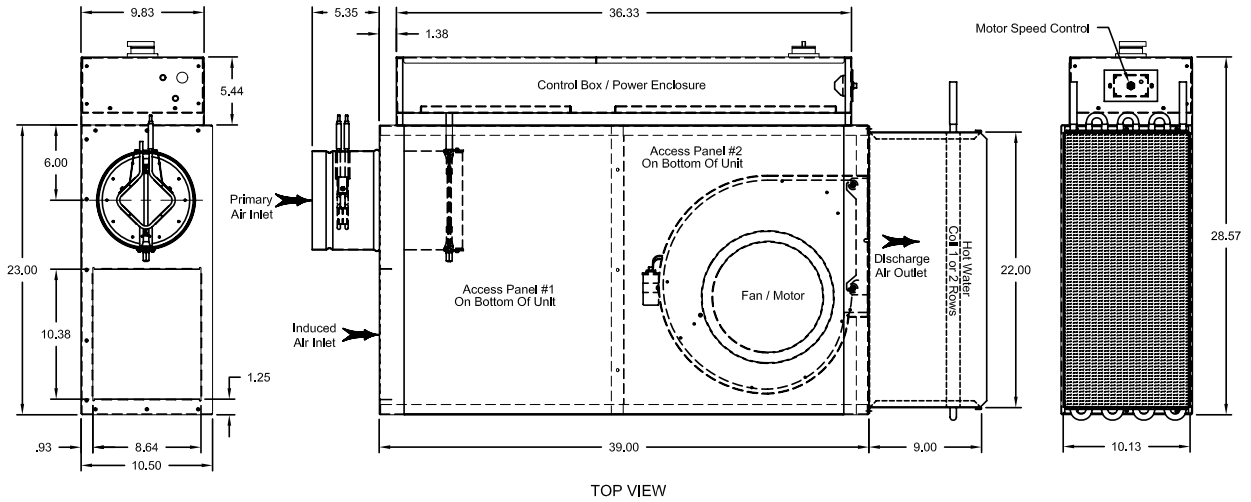
FCL-600

Series Fan Powered Air Terminal Units

FCL-600 - Air Terminal Dimensions

Dimensions are in inches

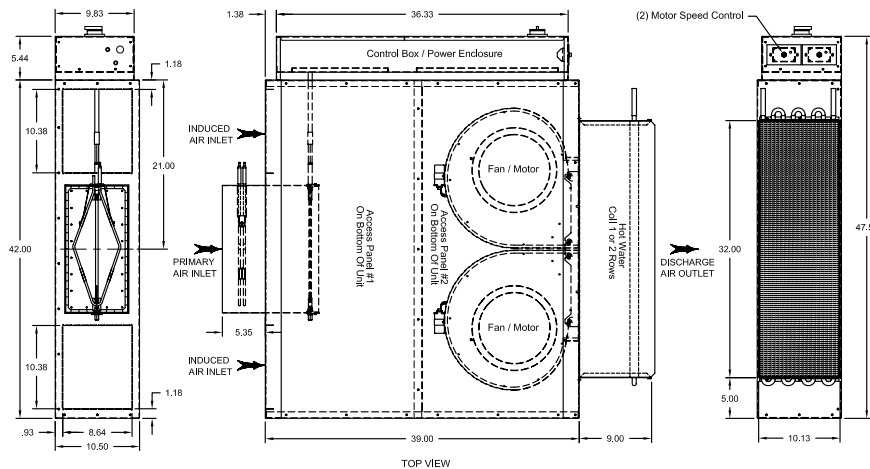
Series Low Profile Fan Powered - With Hot Water Coil on Discharge Port
Case Size 2 - 8" Inlet



Unit Size	Inlet Diameter Standard	Unit Height	Unit Width	Unit Length	Inlet Loc.	Ind. Inlet Height	Ind. Inlet Width	Standard Hot water Coil, 1 Or 2 Rows		
								Discharge Length	Discharge Height	Discharge Width
2	8 (203)	10 1/2 (267)	23 (284)	39 (991)	6 (152)	8.64 (219)	10.38 (264)	9 (229)	10 1/8 (257)	22 (559)

Dimensions are in inches (mm); Airflow CFM (L/s) and Product Information is Subject to be Change Without Notice
** For Fan CFM @ a specific ESP see catalog for Fan Curves.

Series Low Profile Fan Powered - With Hot Water Coil on Discharge Port
Case Size 4 - 16" x 8" Inlet



Unit Size	Inlet Diameter Standard	Unit Height	Unit Width	Unit Length	Inlet Loc.	Ind. Inlet Height	Ind. Inlet Width	Standard Hot Water Coil, 1 Or 2 Rows			
								Discharge Loc.	Discharge Length	Discharge Height	Discharge Width
4	8 (203) x 16 (406)	10 1/2 (267)	42 (1067)	39 (991)	21 (533)	8.64 (219)	10.38 (264)	5.00 (127)	9 (229)	10 1/8 (257)	32 (813)

Dimensions are in inches (mm); Airflow CFM (L/s) and Product Information is Subject to be Change Without Notice
** For Fan CFM @ a specific ESP see catalog for Fan Curves.

Electrical Data

Unit Size	Motor HP	Motor Full Load Amps		
		120V 1Ø 60 Hz	208/240V 1Ø 60 Hz	277V 1Ø 60 Hz
4	2 1/4	11.6	4.8	3.6

Low Profile Constant Volume Fan Powered Air Terminal Units

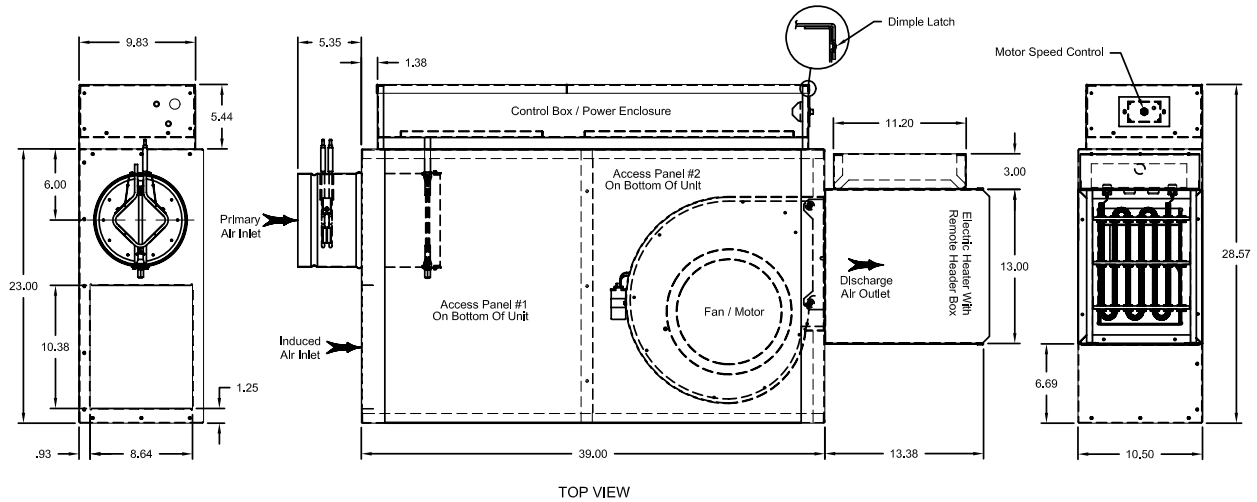
FCL-600

Series Fan Powered Air Terminal Units

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FCL-600 - Air Terminal Dimensions

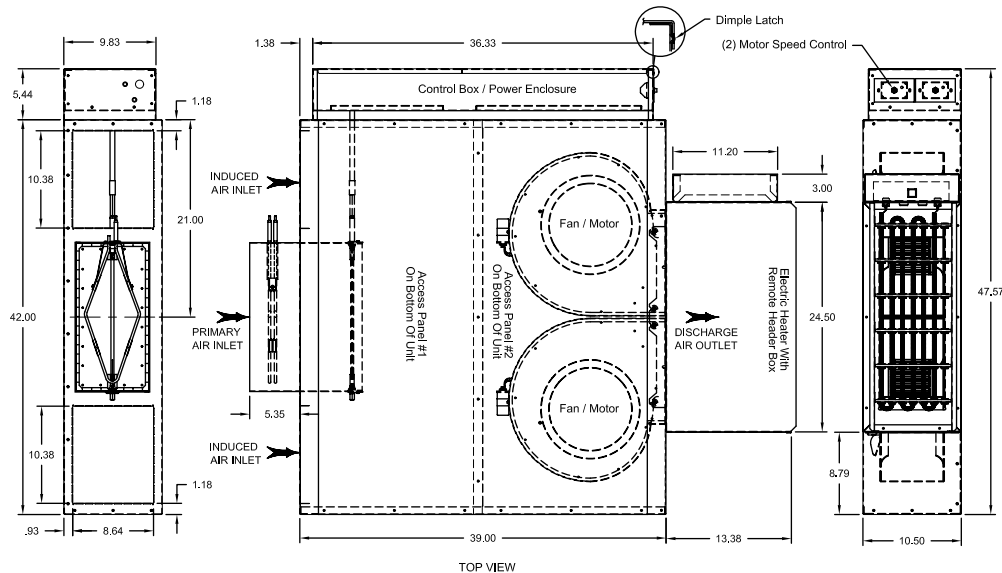
Series Fan Powered - With Electric Heat
Case Size 2 - 8" Inlet



Unit Size	Inlet Diameter Standard	Inlet Diameter Optional	Unit Height	Unit Width	Unit Length	Inlet Loc.	Ind. Inlet Height	Ind. Inlet Width	Electric Heater With Remote Header Box				Shipping weight†
									Discharge Loc.	Discharge Height	Discharge Width	Discharge Length	
2	8 (203)	6 (152)	10 1/2 (267)	23 (284)	39 (991)	6 (152)	8.64 (219)	10.38 (264)	2.43 (62)	10 1/2 (267)	13 (330)	13.38 (340)	124 Lbs

Dimensions are in inches (mm); Airflow CFM (L/s) and Product Information is Subject to be Change Without Notice
** For Fan CFM @ a specific ESP see catalog for Fan Curves.

Series Fan Powered - With Electric Heat
Case Size 4 - 16" x 8" Inlet



Unit Size	Inlet Diameter Standard	Unit Height	Unit Width	Unit Length	Inlet Loc.	Ind. Inlet Height	Ind. Inlet Width	Electric Heater With Remote Header Box			
								Discharge Loc.	Discharge Height	Discharge Width	Discharge Length
4	16 (406) x 8 (203)	10 1/2 (267)	42 (1067)	39 (991)	21 (533)	8.64 (219)	10.38 (264)	8.79 (223)	10 1/2 (267)	24.50 (622)	13.38 (340)

Dimensions are in inches (mm); Airflow CFM (L/s) and Product Information Is Subject to be Change Without Notice
** For Fan CFM @ a specific ESP see catalog for Fan Curves.

Low Profile Constant Volume Fan Powered Air Terminal Units



FCL-600

Series Fan Powered Air Terminal Units

FCL-600 - ARI Rating Points



ARI Certified Radiated Sound Power, Fan Only								
Unit Size	Fan CFM	Octave Band						Electrical Power (Watts)
		2	3	4	5	6	7	
208	400	57	54	49	39	40	37	145
310	700	62	59	49	41	41	38	230
412	1200	66	62	51	46	45	42	420
514	1800	71	68	56	53	53	50	810
616	2400	77	73	63	61	57	56	1300
718	2700	78	75	70	66	64	61	1700

ARI Certified Discharge Sound Power, 1.5" Inlet Static Pressure									
Unit Size	Fan CFM	Primary CFM	Min Ps	Octave Band					
				2	3	4	5	6	7
208	400	400	0.03	61	55	59	56	55	54
310	700	700	0.03	68	65	64	64	60	59
412	1200	1200	0.01	69	70	70	70	67	66
514	1800	1800	0.09	78	75	74	74	72	71
616	2400	2400	0.07	79	79	80	79	77	77
718	2700	2700	0.09	82	74	73	72	71	69

ARI Certified Discharge Sound Power, Fan Only								
Unit Size	Fan CFM	Octave Band						Electrical Power (Watts)
		2	3	4	5	6	7	
208	400	58	51	56	51	49	48	145
310	700	67	63	59	49	49	48	230
412	1200	64	66	66	65	62	60	420
514	1800	73	72	72	72	70	69	810
616	2400	80	78	80	76	75	75	1300
718	2700	79	71	70	69	68	67	1700

STATEMENT OF STANDARD TEST CONFORMITY

METALAIRE tests all FCI-600 air terminal units for engineering performance in accordance with the following standards: American National Standards Institute (ANSI)/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE)/International Organization for Standardization (ISO)/Air-Conditioning & Refrigeration Institute (ARI).

- ARI Standard 880-98 Standard for Air Terminals
- ANSI/ASHRAE 130-1996 Methods of Testing for Rating Ducted Air Terminal Units
- ASHRAE Standard 41.1-1986 (RA 91) Standard Method for Temperature Measurement
- ASHRAE Standard 41.2-1987 Standard Methods for Laboratory Air Measurements
- ASHRAE Standard 41.3-1989 Standard Methods for Pressure Measurement
- ISO 5219-1984 Air distribution and air diffusion - Laboratory aerodynamic testing and rating of air terminal devices

		Standard PSC Motor Amperage Ratings	
		115V-1 Phase 60 Hz	277V-1 Phase 60 Hz
Case Size	Motor HP	Name Plate Amps	Name Plate Amps
2	1/4	3.2	1.3
4	1/4 (Qty 2)	6.4 (2 motors)	2.6 (2 motors)

Motors also available 208-240 50/60 Hz. Contact your METALAIRE Representative for details.

FCL-600 Selection Recommendations			
Inlet Size	Minimum CFM	Maximum CFM	K
6	350	600	1.72
8	350	1000	1.61
16 x 8	675	1825	2.31

Low Profile Constant Volume Fan Powered Air Terminal Units



FCL-600



Series Fan Powered Air Terminal Units

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FCL-600 - Radiated Sound Power at Fan Only, .5", .75" Wg

Case	Inlet	Outlet Ps	CFM (L/s)	Min Ps in. H ₂ O (Pa)	Fan Only														Inlet Pressure, Ps = 0.5 inches of water (125 Pa)							Inlet Pressure, Ps = 0.75 inches of water (187 Pa)						
					Octave Band Sound Power, Lw, dB							NC1 ARI	NC2 ARI	Octave Band Sound Power, Lw, dB							NC1 ARI	NC2 ARI	Octave Band Sound Power, Lw, dB							NC1 ARI	NC2 ARI	
					2	3	4	5	6	7	85- 90	85- 98	2	3	4	5	6	7	85- 90	85- 98	2	3	4	5	6	7	85- 90	85- 98				
					90	98	90	98	90	98	90	98	90	98	90	98	90	98	90	98	90	98	90	98	90	98	90	98				
2	8	0.25	350 (165)	0.028 (7)	49	50	52	44	32	23	23	26	52	53	53	45	35	28	24	27	54	54	54	46	37	31	25	29				
			440 (208)	0.043 (11)	51	51	53	45	34	25	24	27	53	53	54	46	36	29	25	29	55	55	54	47	37	31	25	29				
			500 (236)	0.073 (19)	54	52	54	47	36	28	25	29	56	55	55	47	38	31	26	30	57	56	55	48	39	33	26	30				
			800 (378)	0.180 (45)	63	59	58	54	46	39	30	33	63	61	59	54	47	41	31	34	34	63	62	59	54	48	41	31	34			
			1000 (472)	0.251 (63)	69	63	61	58	52	46	33	36	67	65	61	58	54	47	33	36	36	68	66	62	59	53	46	34	37			
4	16x8	0.25	625 (295)	0.031 (8)	62	55	56	50	37	29	27	31	57	55	56	48	37	30	27	31	57	56	56	48	39	33	27	31				
			850 (401)	0.045 (11)	62	57	58	52	40	32	30	33	59	57	58	50	40	33	30	33	60	58	58	51	41	36	30	33				
			1100 (519)	0.160 (40)	62	61	60	55	44	37	32	35	63	61	60	54	43	37	32	35	64	61	61	54	45	39	33	36				
			1350 (637)	0.240 (60)	65	63	63	58	48	41	35	38	67	64	63	57	48	42	35	38	67	65	63	58	48	43	35	38				
			1650 (779)	0.320 (80)	67	67	65	62	52	46	37	41	70	68	65	61	51	45	37	41	70	68	65	61	52	46	37	41				
1750 (826)	0.380 (95)	69	67	65	62	53	46	37	41	70	68	65	61	52	47	37	41	71	69	66	62	53	48	38	42							
1825 (861)	0.415 (103)	69	70	66	65	55	49	38	42	72	70	66	63	54	48	38	42	72	70	67	63	54	49	39	43							

FCL-600 - Radiated Sound Power at 1", 1.5", 2" Wg

Case	Inlet	Outlet Ps	CFM (L/s)	Min Ps in. H ₂ O (Pa)	Inlet Pressure, Ps = 1.0 inches of water (250 Pa)														Inlet Pressure, Ps = 1.5 inches of water (375 Pa)							Inlet Pressure, Ps = 2.0 inches of water (500 Pa)						
					Octave Band Sound Power, Lw, dB							NC1 ARI	NC2 ARI	Octave Band Sound Power, Lw, dB							NC1 ARI	NC2 ARI	Octave Band Sound Power, Lw, dB							NC1 ARI	NC2 ARI	
					2	3	4	5	6	7	85- 90	85- 98	2	3	4	5	6	7	85- 90	85- 98	2	3	4	5	6	7	85- 90	85- 98				
					90	98	90	98	90	98	90	98	90	98	90	98	90	98	90	98	90	98	90	98	90	98	90	98				
2	8	0.25	350 (165)	0.028 (7)	55	56	54	47	38	33	25	29	57	58	56	49	41	39	27	31	59	60	57	51	42	41	29	32				
			440 (208)	0.043 (11)	56	56	55	48	39	34	26	30	58	58	56	49	42	39	27	31	60	61	57	52	43	42	29	32				
			500 (236)	0.073 (19)	58	57	56	49	40	35	27	31	60	60	57	50	43	39	29	32	61	61	58	52	44	42	30	33				
			800 (378)	0.180 (45)	64	63	60	55	48	41	32	35	66	66	61	56	48	42	33	37	67	67	62	57	49	44	34	38				
			1000 (472)	0.251 (63)	68	67	63	59	53	45	35	38	70	70	64	60	52	44	38	41	71	71	65	60	53	45	39	42				
4	16x8	0.25	625 (295)	0.031 (8)	58	56	57	49	41	36	29	32	59	58	58	51	45	43	30	33	60	59	59	53	47	45	31	34				
			850 (401)	0.045 (11)	61	59	58	52	43	38	30	33	62	60	59	53	46	44	31	34	62	61	61	55	48	46	33	36				
			1100 (519)	0.160 (40)	64	62	61	55	46	41	33	36	64	63	62	55	48	45	34	37	65	64	63	57	50	48	35	38				
			1350 (637)	0.240 (60)	68	65	64	58	49	44	36	39	68	67	64	58	51	47	36	39	69	67	65	60	52	50	37	41				
			1650 (779)	0.320 (80)	71	69	66	61	52	47	38	42	72	70	67	61	54	49	39	43	72	70	68	63	55	52	41	44				
1750 (826)	0.380 (95)	71	69	66	62	53	48	38	42	72	70	67	62	54	50	39	43	72	71	68	64	56	53	41	44							
1825 (861)	0.415 (103)	69	71	67	63	55	49	39	43	74	72	68	63	55	50	41	44	74	72	70	65	57	53	43	46							

See Page FCL-116 For NC Calculations

NC CALCULATIONS

The current ARI Standard for NC calculations is ARI 885-98. Other terminal manufacturers may catalog performance based on ARI 885-90. Using this older, obsolete standard will provide lower NC levels compared to the 1998 standard. To allow for fair and accurate performance comparisons, METALAIR publishes the NC levels for both the 1990 standard and the 1998 current standard.

Low Profile Constant Volume Fan Powered Air Terminal Units



FCL-600



For more product information visit us at www.metalair.com



Series Fan Powered Air Terminal Units

FCL-600 - Discharge Sound Power Fan Only, .5", .75" Wg

Case	Inlet	Outlet Ps	CFM (L/s)	Min Ps in. H ₂ O (Pa)	Fan Only							Inlet Pressure, Ps = 0.5 inches of water (125 Pa)							Inlet Pressure, Ps = 0.75 inches of water (187 Pa)												
					Octave Band Sound Power, Lw, dB							NC1 ARI	NC2 ARI	Octave Band Sound Power, Lw, dB							NC1 ARI	NC2 ARI	Octave Band Sound Power, Lw, dB							NC1 ARI	NC2 ARI
					2	3	4	5	6	7	885- 90	885- 98	2	3	4	5	6	7	885- 90	885- 98	2	3	4	5	6	7	885- 90	885- 98			
					2	3	4	5	6	7	885- 90	885- 98	2	3	4	5	6	7	885- 90	885- 98	2	3	4	5	6	7	885- 90	885- 98			
2	8	0.25	350 (165)	0.028 (7)	53	55	58	51	51	51	-	-	54	56	55	57	58	36	-	-	54	57	53	54	55	36	-	-			
			440 (208)	0.043 (11)	57	57	59	53	54	54	-	-	57	59	57	60	61	40	-	-	58	60	57	59	60	40	-	-			
			500 (236)	0.073 (18)	59	58	61	55	55	56	-	-	60	61	59	61	63	42	-	-	60	62	59	62	64	42	-	-			
			800 (378)	0.180 (45)	68	69	69	64	65	68	25	26	64	69	66	69	72	51	25	26	67	70	66	70	72	52	26	27			
			1000 (472)	0.251 (63)	74	75	75	71	72	75	32	33	67	74	70	74	78	58	31	32	71	75	71	75	78	58	32	33			
4	16x8	0.25	625 (295)	0.031 (8)	59	57	59	56	52	48	-	-	48	50	53	50	46	39	-	-	55	57	58	56	52	46	-	-			
			850 (401)	0.045 (11)	64	62	62	60	57	54	-	-	64	62	62	60	57	53	-	-	65	63	62	61	57	53	-	-			
			1100 (519)	0.160 (40)	71	68	67	66	63	61	24	25	70	65	65	63	61	58	-	21	71	64	64	62	59	56	-	21			
			1350 (637)	0.240 (60)	77	73	70	70	67	66	29	31	71	68	68	67	64	62	24	25	73	68	67	66	64	62	24	25			
			1650 (779)	0.320 (80)	79	76	74	74	72	70	33	34	81	75	72	72	69	68	32	34	79	74	71	71	68	67	31	32			
			1750 (826)	0.380 (95)	80	77	75	75	73	72	34	35	84	77	74	73	71	70	36	38	85	77	74	74	71	70	38	39			
			1825 (861)	0.415 (103)	81	79	76	76	75	73	37	38	85	80	75	75	73	72	38	39	84	80	75	75	73	72	38	39			

FCL-600 - Discharge Sound Power at 1", 1.5", 2" Wg

Case	Inlet	Outlet Ps	CFM (L/s)	Min Ps in. H ₂ O (Pa)	Inlet Pressure, Ps = 1.0 inches of water (250 Pa)							Inlet Pressure, Ps = 1.5 inches of water (375 Pa)							Inlet Pressure, Ps = 2.0 inches of water (500 Pa)												
					Octave Band Sound Power, Lw, dB							NC1 ARI	NC2 ARI	Octave Band Sound Power, Lw, dB							NC1 ARI	NC2 ARI	Octave Band Sound Power, Lw, dB							NC1 ARI	NC2 ARI
					2	3	4	5	6	7	885- 90	885- 98	2	3	4	5	6	7	885- 90	885- 98	2	3	4	5	6	7	885- 90	885- 98			
					2	3	4	5	6	7	885- 90	885- 98	2	3	4	5	6	7	885- 90	885- 98	2	3	4	5	6	7	885- 90	885- 98			
2	8	0.25	350 (165)	0.028 (7)	55	58	51	51	51	37	-	-	57	59	56	58	60	37	-	-	59	60	57	59	61	38	-	-			
			440 (208)	0.043 (11)	58	60	56	57	58	40	-	-	60	61	59	61	63	41	-	-	60	62	59	61	63	41	-	-			
			500 (236)	0.073 (18)	61	62	60	62	64	42	-	-	62	64	61	63	65	44	-	22	62	64	61	63	65	43	-	22			
			800 (378)	0.180 (45)	70	71	67	70	72	52	27	28	69	72	68	71	73	53	28	29	69	72	68	71	74	53	28	29			
			1000 (472)	0.251 (63)	76	76	72	75	78	59	33	34	73	77	73	76	79	60	34	35	74	77	73	76	79	60	34	35			
4	16x8	0.25	625 (295)	0.031 (8)	61	65	63	62	58	53	-	24	60	56	55	52	48	42	-	-	60	57	57	54	49	44	-	-			
			850 (401)	0.045 (11)	66	64	63	61	57	53	-	-	69	65	64	62	59	54	-	21	69	66	64	63	59	56	21	22			
			1100 (519)	0.160 (40)	71	62	62	60	57	54	-	21	71	69	66	65	62	59	25	26	72	70	67	65	62	59	26	27			
			1350 (637)	0.240 (60)	75	68	67	66	63	61	25	26	76	72	70	69	66	64	28	29	77	72	70	69	66	64	28	29			
			1650 (779)	0.320 (80)	77	73	70	70	67	66	29	31	79	74	72	71	68	66	31	32	80	76	73	72	69	67	33	34			
			1750 (826)	0.380 (95)	79	77	74	74	72	70	34	35	80	78	75	75	73	71	35	37	80	79	75	75	73	71	37	38			
			1825 (861)	0.415 (103)	80	80	75	76	74	72	38	38	81	81	76	77	75	73	39	40	81	81	76	78	75	73	39	40			

See Page FCL-116 For NC Calculations

NC CALCULATIONS

The current ARI Standard for NC calculations is ARI 885-98. Other terminal manufacturers may catalog performance based on ARI 885-90. Using this older, obsolete standard will provide lower NC levels compared to the 1998 standard. To allow for fair and accurate performance comparisons, METALAIRE publishes the NC levels for both the 1990 standard and the 1998 current standard.



Series Fan Powered Air Terminal Units

FCL-600 - Sound Path Attenuation Assumptions

NC CALCULATIONS

The current ARI Standard for NC calculations is ARI 885-98. Other terminal manufacturers may catalog performance based on ARI 885-90. Using this older, obsolete standard will provide lower NC levels compared to the 1998 standard. To allow for fair and accurate performance comparisons, METALAIRE publishes the NC levels for both the 1990 standard and the 1998 current standard.

ARI 885-90 Radiated Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	3	2	1	1	1	1
Ceiling Effect	9	10	12	14	15	15
Room Effect	9	10	10	11	12	13
Total dB Reduction	21	22	23	26	28	29

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-90.

- Parameters:
- 1) Mineral fiber ceiling tile, 5/8" thick (35 lb/ft² density).
 - 2) Room size is 3000 ft³.
 - 3) Unit is located 10 ft from measurement point.

ARI 885-90 Discharge Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	3	2	1	1	1	1
Duct Lining	1	3	8	22	23	13
End Reflection	11	6	2	0	0	0
Flex Duct	6	9	23	25	22	13
Room Effect	9	10	10	11	12	13
Total dB Reduction	30	30	44	59	58	40

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-90.

- Parameters:
- 1) Fiberglass duct lining is 1 inch thick, 12" x 12" duct length is 5 feet.
 - 2) Flex duct is 8 inches in diameter and 6 feet in length for run to diffuser.
 - 3) Flex duct has a vinyl core.
 - 4) Room size is 3000 ft³.
 - 5) Unit is located 10 ft from measurement point.
 - 6) Attenuation credit based on a 300 CFM flow division using 10 log (# space) not shown above

ARI 885-98 Radiated Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Ceiling/Space Effect	16	18	20	26	31	36
Total dB Reduction	18	19	20	26	31	36

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-98.

- Parameters:
- 1) Mineral fiber ceiling tile, 5/8" thick (35 lb/ft³ density).
 - 2) The plenum space is at least 3 ft deep and either wide (>30 ft) or insulated.

* Combined effect including absorption of the ceiling tile, plenum absorption and room absorption.
(New to ARI 885-98. ARI 885-90 had separate lines for these absorptions.)

ARI 885-98, APPE defined "Medium" application from 300 to 700 CFM

ARI 885-98 Discharge Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Duct Lining	2	4	10	20	20	14
End Reflection	9	5	2	0	0	0
Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
Total dB Reduction	24	26	37	48	50	36

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-98.

- Parameters:
- 1) 12" x 12" x 5' duct with 1 inch thick fiberglass lining.
 - 2) Flex duct is 8 inches in diameter and 5 feet in length for run to diffuser.
 - 3) Flex duct has a vinyl core.
 - 4) Room size is 2400 ft³ (size of standard test room).
 - 5) Unit is located 5 ft from measurement point.
 - 6) Attenuation credit based on a 300 CFM flow division using 10 log (# space) not shown above

ARI 885-98, APPE defined "Large" application 700 CFM & greater

ARI 885-98 Discharge Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Duct Lining	2	3	9	18	17	12
End Reflection	9	5	2	0	0	0
Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
Total dB Reduction	24	25	36	46	47	34

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-98.

- Parameters:
- 1) 15" x 15" x 5' duct with 1 inch thick fiberglass lining.
 - 2) Flex duct is 8 inches in diameter and 5 feet in length for run to diffuser.
 - 3) Flex duct has a vinyl core.
 - 4) Room size is 2400 ft³ (size of standard test room).
 - 5) Unit is located 5 ft from measurement point.
 - 6) Attenuation credit based on a 300 CFM flow division using 10 log (# space) not shown above



Series Fan Powered Air Terminal Units

FCL-600 - Hot Water Coil MBH Selection Data/Imperial Units

Unit Size	Rows	GPM	Head Loss (ft-H ₂ O)	CFM							
				350	425	575	675	750	850	900	1000
2	One	1	0.92	13.8	15.0	16.9	18.0	18.7	19.5	19.8	20.5
		2	3.50	15.4	16.9	19.5	20.9	21.8	22.9	23.4	24.4
		3	7.66	16.0	17.7	20.5	22.0	23.1	24.4	25.0	26.1
		Airside Ps	0.02	0.03	0.05	0.06	0.08	0.10	0.11	0.13	
2	Two	1	0.24	19.9	21.8	24.7	26.2	27.2	28.4	28.9	29.8
		2	0.92	23.2	25.9	30.4	32.8	34.4	36.3	37.2	38.8
		3	2.01	24.6	27.7	32.8	35.7	37.6	40.0	41.0	43.1
		Airside Ps	0.05	0.07	0.11	0.14	0.17	0.21	0.23	0.27	
Unit Size	Rows	GPM	Head Loss (ft-H ₂ O)	CFM							
				675	800	975	1125	1300	1475	1650	1825
4	One	1	1.21	21.1	22.5	24.1	25.2	26.3	27.3	28.1	28.8
		2	4.58	24.7	26.6	28.9	30.6	32.3	33.9	35.2	36.4
		3	10.00	26.2	28.4	31.0	33.0	35.0	36.8	38.4	39.8
		Airside Ps	0.03	0.05	0.06	0.08	0.10	0.13	0.16	0.19	
4	Two	1	0.32	29.6	31.5	33.6	35.0	36.4	37.5	-	-
		2	1.20	37.3	40.4	44.2	46.8	49.5	51.9	-	-
		3	2.62	40.7	44.5	49.1	52.6	56.0	59.1	-	-
		Airside Ps	0.08	0.10	0.14	0.18	0.22	0.28	-	-	

For Performance Notes see page FCL-119 Table A



Series Fan Powered Air Terminal Units

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FCL-600 - Hot Water Coil MBH Selection Data / Metric Units

Unit Size	Rows	L/s	Head Loss (kPa)	L/s							
				165	200	270	315	355	400	425	470
2	One	0.06	2.75	4.0	4.4	5.0	5.3	5.5	5.7	5.8	6.0
		0.13	10.46	4.5	5.0	5.7	6.1	6.4	6.7	6.9	7.2
		0.19	22.90	4.7	5.2	6.0	6.5	6.8	7.1	7.3	7.6
		Airside Ps (kPa)	0.00	0.01	0.01	0.01	0.02	0.02	0.02	0.03	0.03
2	Two	0.06	0.72	5.8	6.4	7.3	7.7	8.0	8.3	8.5	8.7
		0.13	2.75	6.8	7.6	8.9	9.6	10.1	10.6	10.9	11.4
		0.19	6.01	7.2	8.1	9.6	10.5	11.0	11.7	12.0	12.6
		Airside Ps (kPa)	0.01	0.02	0.03	0.03	0.04	0.05	0.06	0.07	
Unit Size	Rows	L/s	Head Loss (kPa)	L/s							
				315	375	460	530	610	695	775	860
4	One	0.06	3.62	6.2	6.6	7.1	7.4	7.7	8.0	8.2	8.5
		0.13	13.69	7.2	7.8	8.5	9.0	9.5	9.9	10.3	10.7
		0.19	29.89	7.7	8.3	9.1	9.7	10.3	10.8	11.3	11.7
		Airside Ps (kPa)	0.01	0.01	0.01	0.02	0.02	0.03	0.04	0.05	
4	Two	0.06	0.96	8.7	9.2	9.8	10.3	10.7	11.0	-	-
		0.13	3.59	10.9	11.9	12.9	13.7	14.5	15.2	-	-
		0.19	7.83	11.9	13.1	14.4	15.4	16.4	17.3	-	-
		Airside Ps (kPa)	0.02	0.02	0.03	0.04	0.05	0.07	-	-	

For Performance Notes see page FCL-119 Table B

Low Profile Constant Volume Fan Powered Air Terminal Units



FCL-600

Series Fan Powered Air Terminal Units

FCL-600 - Hot Water Coils Notes

Table-A

IMPERIAL NOTES

- Hot water coil data for discharge mounted coils.
- Values shown in the previous charts assume the following conditions: 180°F EWT, and 65°F EAT. For other conditions of entering water, air temperatures and air flow, see note 5.
- Tabulated values are in MBH (Thousands of BTU per hour).
- Head Loss is in feet of water.
- MBH values are based on a DT (temperature difference) of 115° F between entering air and entering water. For other DTs, multiply the MBH values by the factors below:

DT	Factor
50	.44
60	.52
70	.61
80	.70
90	.79

DT	Factor
100	.88
115	1.00
125	1.07
140	1.20
150	1.30

6. Air Temperature Rise = $\frac{927 \times \text{MBH}}{\text{CFM}}$

7. Water Temperature Drop = $\frac{2.04 \times \text{MBH}}{\text{GPM}}$

8. For water valve sizing, contact your METALAIR representative. For data values other than those listed, interpolate or use the METALAIR Terminal Selection Program. Contact your METALAIR representative for additional information.

9. All hot water coils are 10 Fins per inch (FPI).

Table-B

METRIC NOTES

- Hot water coil data for discharge mounted coils.
- Values shown in the previous charts assume the following conditions: Standard Atmospheric Conditions, 82°C EWT, and 18°C EAT. For other conditions of entering water, air temperatures and air flows, see note 5.
- Tabulated values are in kW (Thousands of watts).
- Head loss is in kPa.
- kW values are based on a DT (temperature difference) between entering air and entering water of 64°C. For other DTs, multiply the kW values by the factors below:

DT	Factor
30	.48
35	.55
40	.63
50	.78

DT	Factor
60	.94
64	1.00
70	1.08
80	1.24

6. Air Temperature Rise = $\frac{\text{kW} \times 579}{\text{air flow in L/s}}$

7. Water Temperature Drop = $\frac{\text{kW} \times 0.17}{\text{water flow in L/s}}$

8. For water valve sizing, contact your METALAIR representative. For data values other than those listed, interpolate or use the Metal Industries computerized engineering program. Contact your METALAIR representative for additional information.

9. All hot water coils are 10 Fins per inch (FPI).

Low Profile Constant Volume Fan Powered Air Terminal Units



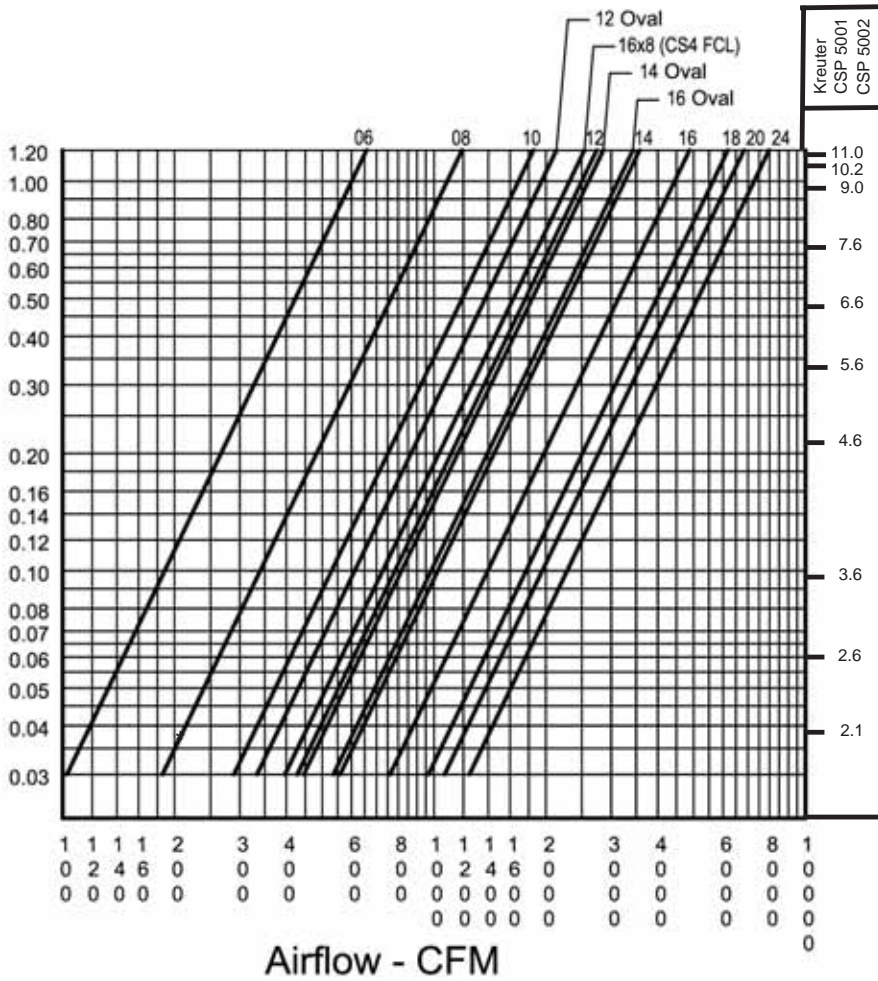
FCL-600



Series Fan Powered Air Terminal Units

6/2007

FCL-600 - Calibration for MI Multi-Point Quadrant Averaging Flow Sensor



ATU Model	Inlet Size	Flow Coefficient
TH, FC	06 Round	600
FV, DD	08 "	1100
DH, BP	10 "	1700
RT, RA	12 "	2500
TL (6-10)	14 "	3250
FCL Cs2 (6-8)	16 "	4400
12 TL	12 Oval	1965
14 TL	14 "	2600
16 TL	16 "	3150
FCL Cs4	16x8 Rect.	2340
FC & FV Cs7	18x16 "	5600
TH20	20x16 "	6200
TH24	24x16 "	7200

$$Cfm = \sqrt{\Delta p} \times \text{Flow Coefficient}$$

Data is with Sensor Mounted in Round Duct, except for Rectangular Sizes 18, 20 and 24 Widths x 16 Height and 16 x 8 (FCL Case 4)

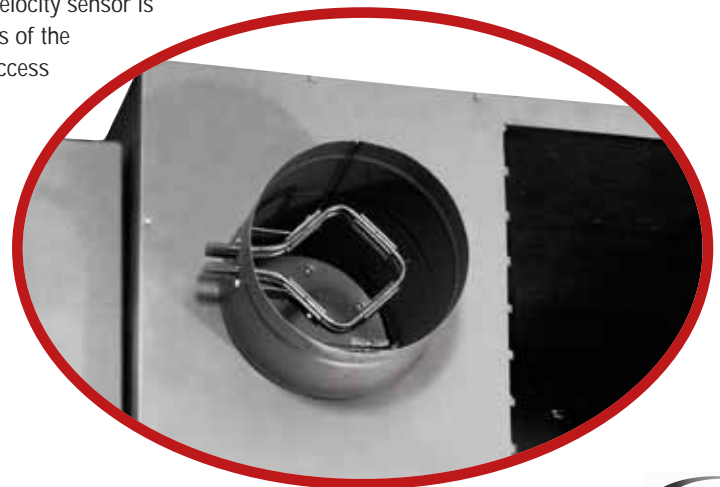
Low Profile Constant Volume Fan Powered Air Terminal Units

Some controllers do not operate consistently below 0.030 in. w.c.

PRIMARY AIR VALVE AND MULTI-POINT QUADRANT AVERAGING FLOW SENSOR

Primary air valve has a bead rolled into the tube, which strengthens the tube and serves as a stop to prevent field-attached flex duct from slipping. The primary valve velocity sensor is multi-ported and arranged to sense velocity in each of four quadrants of the inlet. Those port readings are then inherently averaged back to the access ports. The sensor has two control ports and two accessory ports. Piping connections are made externally.

FCL-600 Fan Powered Unit - K Factors			
Inlet Size	Inlet Area	CFM @ 1"	K
6	0.20	600	1.72
8	0.35	1100	1.61
16 x 8	0.89	2340	2.31



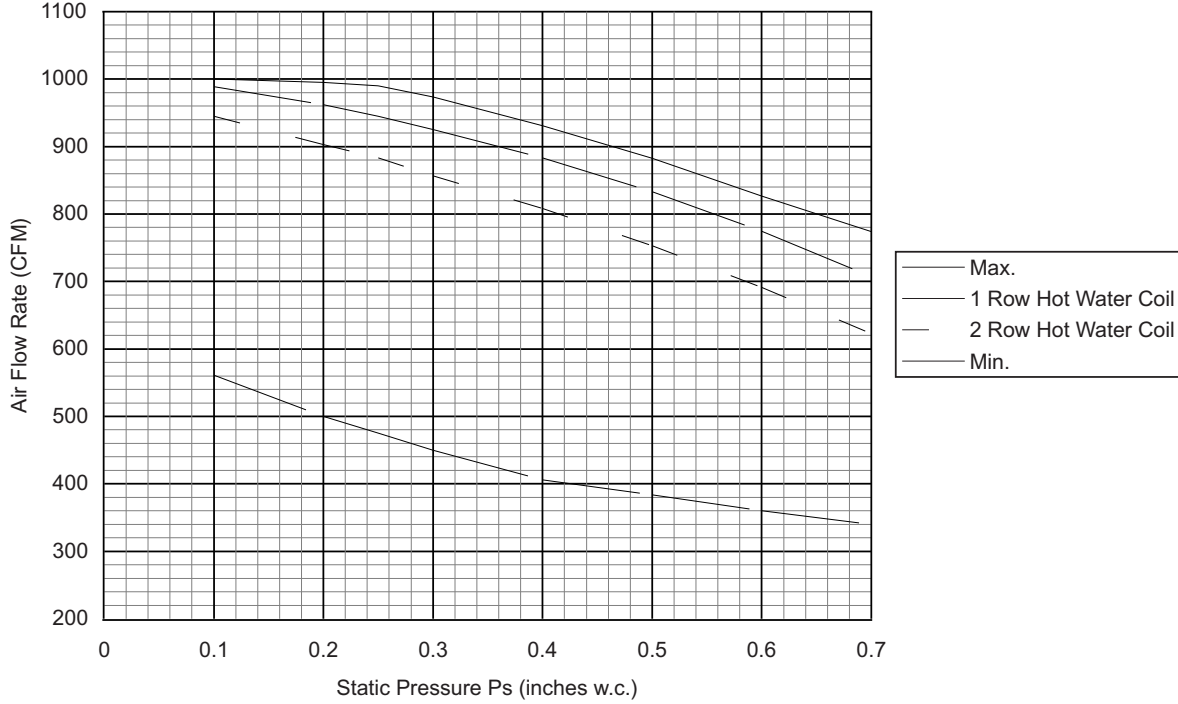
FCL-600

Series Fan Powered Air Terminal Units

FCL-600 - Fan Performance Charts

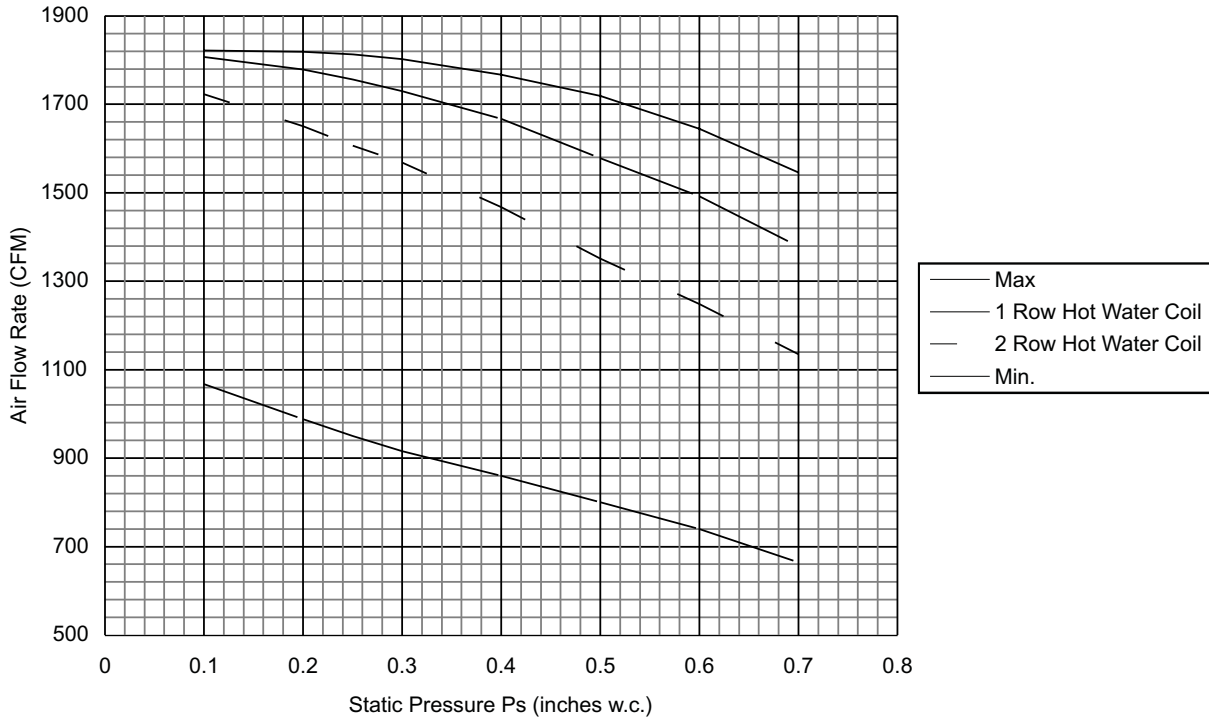
FAN CURVES

FCL Unit Size 2
Standard HW Coil



FAN CURVES

FCL Unit Size 4
Standard HW Coil



Low Profile Constant Volume Fan Powered Air Terminal Units



FCL-600



For more product information visit us at www.metalaire.com



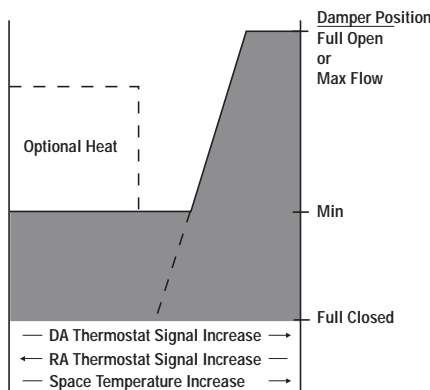
FCI/FCL-600 - Control Sequences

PNEUMATICALLY CONTROLLED AIR TERMINALS

Pressure dependent pneumatic air terminal actuators are powered directly by branch line pressure signals from the room thermostat. Pressure independent pneumatic air terminal actuators are powered by signals from a flow control device which balances pressure readings from the main air supply and the branch air pressure from the thermostat. The damper's position is regulated by the flow controller which operates within preset minimum and maximum flow rates.

A **direct acting (DA) thermostat** causes an increase in branch pressure as the room temperature rises. A **reverse acting (RA) thermostat** causes a decrease in branch pressure as the room temperature rises. Since the pneumatic actuator is a spring return device, the damper can be connected so that without main pressure it will return to normally closed (NC) position to shut off air flow to the room, or to a normally open (NO) position to permit unobstructed air flow to the room.

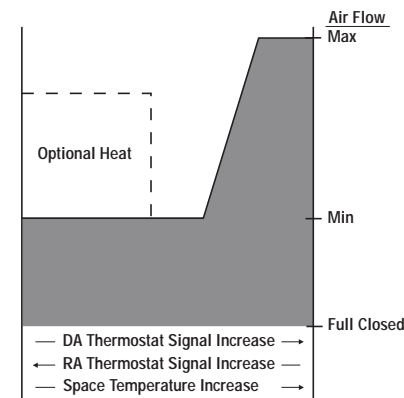
Standard pressure independent control sequences feature the multi-function VAV controller. Multi-function flow controllers can be field modified for use with a direct or reverse acting thermostat and the damper actuator can be switched to either normally opened or normally closed without adding control components.



Pneumatic Pressure Dependent

- 910 - DA/NC Full Closed* to adjustable MAX air stop
- 912 - RA/NO Full Open to adjustable MIN air stop

* Damper normal position can be field set by rotating actuator on the control panel, resulting in an adjustable default start/stop position.



Pneumatic Pressure Independent

- 914 - DA/NC
- 915 - DA/NO
- 916 - RA/NC
- 917 - RA/NO

(914) Variable Volume. Normally closed. For use with direct acting thermostat. Optional heat is energized by the thermostat after air flow has reached a preset minimum.

(915) Variable Volume. Normally open. For use with direct acting thermostat. Optional heat is energized by the thermostat after air flow has reached a preset minimum.

(916) Variable Volume. Normally closed. For use with reverse acting thermostat. Optional heat is energized by the thermostat after air flow has reached a preset minimum.

(917) Variable Volume. Normally open. For use with reverse acting thermostat. Optional heat is energized by the thermostat after air flow has reached a preset minimum.



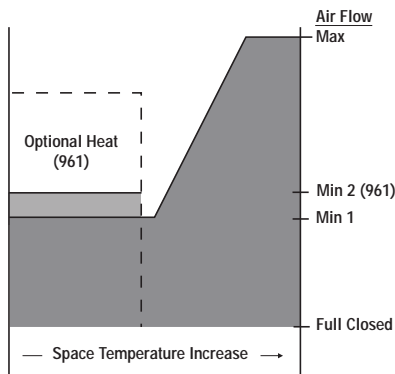
FCI/FCL-600 - Analog Electronic Control Sequences

ANALOG ELECTRONICALLY CONTROLLED SERIES FAN - POWERED TERMINAL UNITS

Analog electronic flow controls are electrical devices that achieve pressure independent control. Variations in supply static pressure do not affect air flow conditions to the room. The analog electronic room thermostats supplied with the control sequences detailed on this page have field adjustable flow limit set points. The thermostat electronically signals the actuator to open or close the damper in response to the temperature of the room within preset air flow limits. The electric actuators are not spring return devices. If there is a loss of power to the air terminal, the damper will remain in the position it occupied at the time of the power failure.

Numerous control arrangements are possible with electronic control sequencing which are not discussed in this catalog. Contact the factory for special sequence requirements.

All of the electric and electronic components used in these sequences use low voltage (24 volt) controls and are enclosed with a standard control panel cover. A standard 50 VA transformer that reduces 120, 240 or 277 line voltage to 24 control voltage is wired into the control sequence as a standard component.



Analog Electronic Control
Pressure Independent
960 Cooling Only
961 Cooling with Reheat

(960) Cooling Only.

Electronic thermostat (analog models with integral, adjustable, maximum and minimum flow limits) signals electronic flow controller to regulate damper position. The damper is rotated to its maximum open position as room temperature rises and to its minimum open position as room temperature falls.

With both 960 and 961 sequences, the constantly operating fan maintains constant air-flow to the room by supplementing the varying flows of cooled primary air with induced plenum air.

(961) Cooling with Heat.

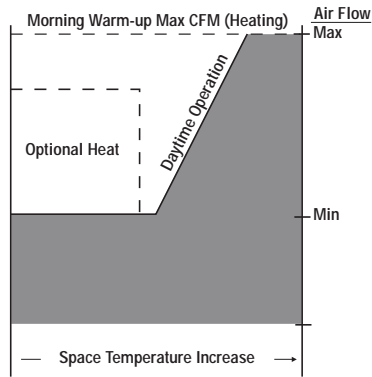
Electronic thermostat (analog models with integral, adjustable, maximum and minimum flow limits) signals electronic flow controller to regulate damper position.

The damper is rotated to its maximum open position as room temperature rises and to its minimum open position as room temperature falls. After the damper has reached its minimum position, the thermostat actuates optional heat at an independently selected set point. Up to three stages of heat are available.



FCI/FCL-600 - Analog Electronic Control Sequences

Analog Electronic Control
Pressure Independent
964 Morning Warm-up



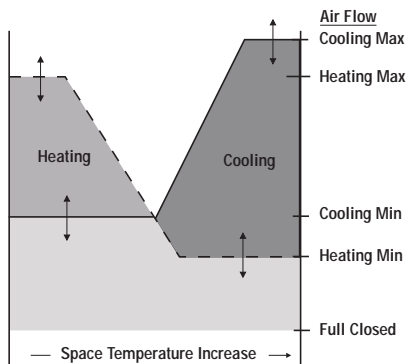
(964) Night Shutdown/Morning Warm-up.

Daytime Operation: Electronic thermostat (analog models with integral, adjustable, maximum and minimum flow limits) signals electronic flow controller to regulate damper position. The damper is rotated to its maximum open position as room temperature rises and to its minimum open position as room temperature falls. After the damper has reached its minimum position, the thermostat actuates optional heat at an independently selected set point. Up to three stages of heat are available.

Morning Warm-up: Upon reception of a morning warm-up signal, the electronic controller modulates the primary air damper position to its maximum flow position and warm central air is supplied to the air terminal. The optional heat is de-energized while the system operates in this mode.

Analog Electronic Control
Pressure Independent
965 Heating Cooling Changeover

Electronic Control
Pressure Independent
165 Heating Cooling Change over



(965) Heating/Cooling Changeover: Either a duct thermostat or remote input signal switches a heat/cool relay to make the system operate in the appropriate heating or cooling mode.

Cooling Mode: Electronic thermostat signals electronic flow controller to regulate primary air damper position. The damper is modulated to its adjustable maximum flow position as room temperature rises and to its adjustable minimum flow position as room temperature falls. Since the primary air damper is at its minimum airflow position, fan induced plenum air is supplied to the room until the room temperature reaches the set point.

Heating Mode: In the heating mode, the primary air damper is modulated in response to signals from the electronic room thermostat. Plenum air is induced proportionally to maintain a constant volume of airflow to the room.



Series Fan Powered Air Terminal Units

FCI/FCL-600 - DDC Electronic Control Capability

DDC ELECTRONIC CONTROL CAPABILITY SERIES FAN - POWERED TERMINAL UNITS

The majority of controls installed in HVAC systems are direct digital electronic. METALAIRE can mount and wire any manufacturer's control product that fits on our standard control panel regardless of the brand (one controller/actuator). Mounting of other manufactures control enclosures or transformer is not available.

In those cases where it is desirable to have the controls field mounted and wired, a basic air terminal without controls can be purchased from METALAIRE. The basic unit includes a control panel and cover.

Whether controls are to be factory mounted and wired by METALAIRE or field installed by the control manufacturer, many types of DDC controllers require a flow sensor. METALAIRE will provide its own multi-point flow sensor which is compatible with most electronic control devices currently on the market, or mount a control manufacturer's compatible sensor.

METALAIRE offers a unique service for today's fast-paced, technology-hungry HVAC markets with high performance air terminals that are compatible with all digital electronic control packages. This approach is highly endorsed by control manufacturers and HVAC design engineers alike. METALAIRE is dedicated to providing the best air terminal device to operate with any control manufacturer's equipment.

For answers to specific compatibility questions, please contact your local METALAIRE representative.



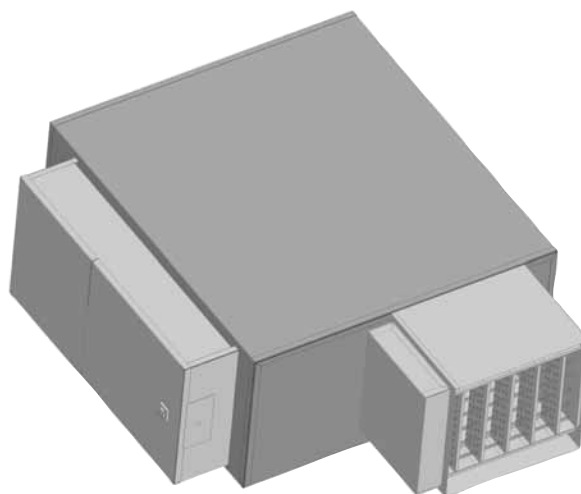
FCI/FCL-600 - Air Terminals Accessories and Components

ELECTRIC HEAT

Electric heater elements, as illustrated on this page, are integral to the air terminal. The discharge end has slip and drive connections for easy connection to downstream ductwork. ETL® listed heaters are provided with a fan interlock relay. Heaters that will be controlled electronically must include a 24 VAC control circuit to operate compatibly with the low voltage controls on the air terminal. Heater plenums are internally insulated with 1", 1.5-lb/ft³ density fiberglass insulation. When an air terminal is ordered with clean room lining and electric heat, the heater plenum is either internally lined with optional foil backed insulation or closed cell foam or may be externally insulated in the field.

INCLUDED WITH EACH HEATER ASSEMBLY:

- Heater and cabinet mounted on the discharge of the FCI
- Electric heater is interlocked into fan control relay
- De-energizing magnetic contactors per step
- Primary automatic reset high temperature limit (disc type)
- Backup manual reset high temperature limit (disc type)
- Non-fused transformer with voltage to match heater voltage
- Single point power wiring connection
- Heater is shipped factory mounted and wired



ELECTRIC HEATER ASSEMBLY CONSTRUCTION DETAILS

Electric Reheat Coils are factory mounted on the discharge of the Air Terminal. The heaters are ETL® listed for zero clearance, are tested in accordance with UL® Standard 1995, CSA-C22.2 No. 236 and the National Electric Code (NEC). Heater casings are constructed of heavy-duty zinc-coated steel. Element wire is high grade nichrome alloy derated to 50 watts per square inch density. Element wire is supported by moisture-resistant steatite ceramics. Ceramics are enclosed in reinforcement brackets spaced across the heater element rack at 2" to 4" intervals. Controls are contained in a NEMA 1 control cabinet with a hinged, latching door. A permanent wiring diagram is affixed to the inside of the control cabinet door for field reference.

All accessories which can be attached to the Series FCI-600/FCL-600 Air Terminals are not a part of the ARI certification program but ratings can be affected by their use.



Series Fan Powered Air Terminal Units

FCI/FCL-600 Air Terminals Electric Heater Assembly Capacities

ELECTRIC HEATER ASSEMBLY CAPACITIES

FCI

Single Phase					Three Phase				
Size	Heater Voltage	Min kW/St	Max kW	Max Steps	Size	Heater Voltage	Min kW/St	Max kW	Max Steps
2	120	.5	5	3	2	208	.5	13	3
	208	.5	8.5	3		240	.5	14.5	3
	240	.5	10	3		480	1.5	17	3
	277	.5	11.5	3		3	208	.5	13
	480	.5	11.5	3	240		.5	14.5	3
3	120	.5	5	3	3	480	1.5	17	3
	208	.5	8.5	3		4	208	.5	13
	240	.5	10	3	240		1.5	15	3
	277	.5	11.5	3	480		1.5	25	3
	480	.5	11.5	3	5	208	.5	13	3
4	120	.5	5	3		240	1.5	15	3
	208	.5	8.5	3	480	1.5	25	3	
	240	.5	10	3	6	208	.5	13	3
	277	.5	11.5	3		240	1.5	15	3
	480	.5	17	3	480	1.5	25	3	
5	120	.5	5	3	7	208	.5	13	3
	208	.5	8.5	3		240	1.5	15	3
	240	.5	10	3	480	1.5	25	3	
	277	.5	11.5	3	6	208	.5	13	3
	480	.5	17	3		240	1.5	15	3
6	120	.5	5	3		480	1.5	25	3
	208	.5	8.5	3	7	208	.5	13	3
	240	.5	10	3		240	1.5	15	3
	277	.5	11.5	3	480	1.5	25	3	
	480	.5	17	3	7	208	.5	13	3
7	120	.5	5	3		240	1.5	15	3
	208	.5	8.5	3		480	1.5	25	3
	240	.5	10	3	7	208	.5	13	3
	277	.5	11.5	3		240	1.5	15	3
	480	.5	17	3		480	1.5	25	3

FCL

Single Phase					Three Phase				
Size	Heater Voltage	Min kW/St	Max kW	Max Steps	Size	Heater Voltage	Min kW/St	Max kW	Max Steps
2	120	0.5	5.0	3	2	208	0.5	8.0	3
	208	0.5	8.0	3		240	0.5	8.0	3
	240	0.5	8.0	3		480	0.5	8.0	3
	277	0.5	8.0	3	4	120	0.5	5.0	3
	480	0.5	8.0	3		208	0.5	8.5	3
4	120	0.5	5.0	3	240	0.5	10.0	3	
	208	0.5	8.5	3	277	0.5	11.0	3	
	240	0.5	10.0	3	480	0.5	15.0	3	
	277	0.5	11.0	3	2	208	0.5	8.0	3
4	120	0.5	5.0	3		240	0.5	8.0	3
	208	0.5	8.5	3		480	0.5	8.0	3
	240	0.5	10.0	3	4	208	1.5	13.0	3
	277	0.5	11.0	3		240	1.5	15.0	3
480	0.5	15.0	3	480	1.5	15.0	3		

NOTES:

1. Heaters equal or less than 5 kW are specifiable to the nearest 0.2 kW. Heaters greater than 5 kW and less than 10 kW are specifiable to the nearest 0.5 kW
2. Minimum flow rate for electric heat is 70 CFM/kW. Lower CFM's can cause nuisance tripping, excessive discharge temperatures, rapid cycling, and rapid element failure. Electric Heat units running below 70 CFM/kW will void all warranties.
3. For optimum thermal comfort, the suggested discharge temperature should not exceed 20°F above room set point.
4. We do not recommend discharge temperatures in excess of 115°F to protect heater coils.
5. Maximum number of steps at minimum kW is one step.
6. If more than 1 heater is wired into a building's circuit breaker (multi-outlet branch circuit) each heater will require the addition of power side fusing.

Electric heat selection:

- A. Specify electric duct heaters using voltage, kW, and number of steps.
- B. Use above chart to select voltage. Calculate required kW using following equations:

$$kW = \frac{BTU/hr}{3413} \quad kW = \frac{CFM \times dT \times 1.085^*}{3413} \quad dT = \frac{kW \times 3413}{CFM \times 1.085^*}$$

$$CFM = \frac{kW \times 3413}{dT \times 1.085^*} \quad CFM = \frac{kW \times 3413}{dT \times 1.085^*}$$

* air density at sea level - reduce by 0.036 for each 1000 feet of altitude above sea level

Where:

- BTU / Hr = Required heating capacity
- CFM = volume of air during heating. Typically 100% of maximum cooling air volume.
- dT = desired air temperature rise across the electric heater.
- Inlet air temperature = primary air temperature, usually 55 F.



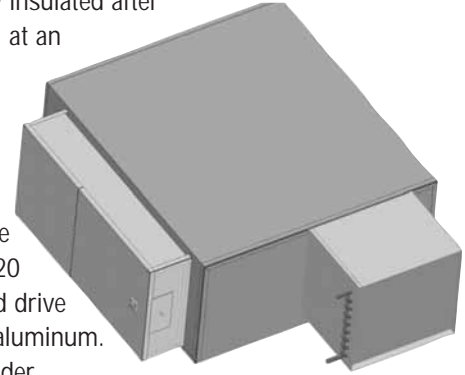
Series Fan Powered Air Terminal Units

6/2007

FCI/FCL-600 - Air Terminals Accessories and Components

HOT WATER COILS

When ordered with the air terminal, the hot water coil is shipped attached with slip and drive connections to the air terminal casing. The discharge end of the casing has slip and drive connections for easy connection to downstream ductwork. The hot water coil is constructed of aluminum fin and copper serpentine-type tubes with sweat connections tested at 300 psig. Coil selection may be made using METALAIRE Terminal Selection Program on CD. Contact your METALAIRE representative for a copy. The hot water housing must be externally insulated after installation in the field. Hot water coils are tested in accordance to ARI. Options, at an additional charge on hot water coils, include access doors for inspection and cleaning, and inlet/outlet on opposite sides of coils.



HOT WATER COIL CONSTRUCTION DETAILS

Hot Water Coils are factory mounted to the discharge of the terminal and include a factory mounted discharge plenum section. Hot water coils are enclosed in a 20 gauge coated steel casing allowing attachment to metal ductwork with a slip and drive connection. Fins are rippled and sine wave type constructed from heavy gauge aluminum. Tubes are copper with a minimum wall thickness of 0.016" with male solder header connections. Fins are mechanically bonded to the tubes. Coils are leak tested to 300 psi with minimum burst of 2000 psi at ambient temperature. Coil performance data is based on tests run in accordance with ARI standard 410. Coils are ARI rated and include an ARI label.

FCI

Tubing Connections (outside dimension)		
Case Size	Standard HW Coil Inches (mm)	
	1 Row	2 Row
2	7/8 (22.2)	7/8 (22.2)
3	5/8 (15.8)	7/8 (22.2)
4	5/8 (15.8)	7/8 (22.2)
5	5/8 (15.8)	7/8 (22.2)
6	5/8 (15.8)	7/8 (22.2)
7	7/8 (22.2)	7/8 (22.2)

FCL

Tubing Connections (Outlet Dimensions)		
Case Size	Standard HW Coil, inches(mm)	
	1 Row	2 Row
2	7/8 (22)	7/8 (22)
4	7/8 (22)	7/8 (22)

Outlet Dimensions		
Case Size	Standard HW Coil Inches (mm) 1, 2 Row	
	H	W
2	15 (381)	16 (406)
3	17.5 (445)	20 (508)
4	17.5 (445)	20 (508)
5	17.5 (445)	20 (508)
6	18 (457)	22 (559)
7	20 (508)	38 (952)

Outlet Dimensions		
Case Size	Standard HW Coil 1 and 2 Row, inches(mm)	
	Height	Width
2	10.125 (233)	22 (550)
4	10.125 (233)	33 (825)

Fins Per Inch	
Case Size	Standard HW Coil
	1 and 2 Row
2	10
4	10

Fin Per Inch	
Case Size	Standard HW Coil
	1 & 2 Row
2	10
3	10
4	10
5	10
6	10
7	10

Series Fan Powered Air Terminal Units

FCI-600

All accessories which can be attached to the Series FCI-600/FCL-600 Air Terminals are not a part of the ARI certification program but ratings can be affected by their use.

Series Fan Powered Air Terminal Units

FCI/FCL-600 - Air Terminals Accessories and Components

CLEAN ROOM LINERS

METALAIRE has developed two types of "clean room" liners for use in health care, laboratory and penal institutions when required by specification.

FOIL BACKED LINER

An optional lining of 4 lb/ft³ density, 1" thick foil backed fiberglass can be applied to the Series FCI-600 Air Terminal. The FCL-600 Series is available with 1.5 lb/ft³ density, 1/2" thick foil backed fiberglass. The material is available as a clean room liner in applications where discharge noise performance is more critical. Foil backed liner meets the requirements of UL 181 and NFPA 90A. (Hot water coils are shipped without insulation and must be externally insulated in the field.)

THERMOPURE

This innovative closed cell foam eliminates fiberglass completely, while meeting or exceeding the performance of fiberglass. ThermoPure has a 25/50 fire/smoke rating, 1.5 lb/ft³ density, 6000 fpm velocity rating, and holds its thermal integrity, even when wet. It meets the UL 181 tests for mold and mildew resistance. Surfaces are washable if desired. (Hot water coils are shipped without insulation and must be externally insulated in the field.)

OPTIONAL ELECTRONIC ANTI-REVERSE ROTATION DEVICE

The fan wheel in a constant fan box may rotate backwards whenever the fan motor is not running and primary air from the inlet duct is passing through the fan. In some cases the torque developed by the fan wheel when rotating backwards cannot be overcome by the starting torque of the fan motor. In this condition the fan motor will run in reverse rotation, resulting in insufficient airflow delivery.

Constant fan boxes must have means to coordinate energizing the fan motor with start up of the Primary Fan System to prevent the reverse rotation or a positive method to create enough motor torque to reverse the rotation of the fan wheel.

Other manufacturers choose to deal with this issue by running their motors with larger capacitors than recommended by the motor manufacturers. The oversized capacitor will cause the motors to run less efficiently, run hotter than normal and draw more current than with a proper capacitor. All of this will result in reduced motor life and increased energy costs.

METALAIRE'S Model FCI-600 is available with an optional Electronic Anti-Reverse Rotation Device which will positively prevent the reverse rotation of any fan. This option does not draw additional current while running and will not cause the motor to run at higher temperatures.

The results are greater efficiency, quieter motors, longer motor life and happier building owners.

OTHER AVAILABLE OPTIONS

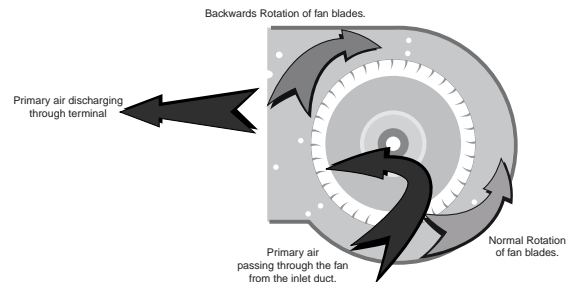
- 20-gauge construction
- Filter rack with 1" thick filter
- Inlet attenuator
- Hot water coil access panel
- Insulated end caps for hot water coils.

FCI

FILTER SIZES PER CASE SIZE	
Case Size	Filter Size
2	16" x 16" x 1"
3	20" x 16" x 1"
4	20" x 16" x 1"
5	20" x 20" x 1"
6	24" x 20" x 1"
7	20" x 20" x 1"

FCL

Filter Sizes Per Case Size	
Case Size	Filter Size
2	10 x 12
4	10 x 12, quantity 2



FCI-600 - Product Specifications and Highlights

1. Series Fan-Powered Terminal Units shall be METALAIRE Model FCI-600. The units shall be the size and capacity as outlined in the plans and specifications. Casing dimensions shall be checked to ensure the terminals fit the available space.

2. Air terminals shall be certified under the American Refrigeration Institute (ARI) Standard 880-98 Certification Program and carry the ARI seal. All NC values shall be calculated per ARI Standard 885-98. Units with NC values calculated per ARI-885-90 will not be accepted. Terminal units shall be either ETL® or UL® listed as a complete assembly. Terminal electrical components, including motor and low voltage controls shall be UL® listed. All electrical components including both line voltage and low voltage shall be mounted in a metal control enclosure. Units shall have a single point field wiring connection. Units shall be manufactured and wired per UL-1995 and in accordance with the National Electric Code.

3. All terminals shall be shipped as a single unit requiring no field assembly. Accessories including hot water coils, electric heaters, and fan and motor assemblies shall be factory mounted.

4. The air terminals shall be constructed of zinc coated steel. The casing shall be a minimum of 22-gauge. The terminal primary air inlet valve shall be a round inlet for field duct connection. The primary control damper shall be a single blade, round damper operating within a 20-gauge round tube. The terminal unit discharge shall allow for a rectangular flanged duct connection. Units shall have a universal control-mounting panel constructed of 20-gauge steel. Panel shall include stand-offs to allow controls to be mounted without penetrating the terminal casing. Fan mounting deck shall be a minimum of 18-gauge.

Optional: Unit shall include filter rack in the induced air inlet and shipped from the manufacturer with a 1" thick construction filter.

5. Primary inlet valve assembly shall have a seamless butt weld on round inlet tube to minimize leakage and prevent the damper from binding on overlapping seam welds. Inlet tubes with overlapping welds or non-continuous, skipped welds are not acceptable. Damper shaft shall rotate in a self-lubricating Kepital® (acetel resin material) bearing. Damper shaft shall be die cast aluminum. Damper shaft end shall include a cast damper position indicator. End of shaft where actuator is installed shall be square to prevent actuator screw(s) from slipping. Round damper shaft ends are not acceptable.

Damper tube shall be free of obstructions including damper stops to allow the free rotation of the damper. Mechanical damper stops located in the inlet tube are not acceptable. A flexible gasket mounted in the damper blade without adhesives shall provide damper seal. Damper gasket shall include slit partitioning around the perimeter to prevent damper noise at low flows near full close off. Damper gaskets without perimeter slit partitioning are not acceptable. Damper shall be a double thickness of 24-gauge steel and leakage through the damper assembly shall be less than 1% of maximum CFM at 3" static pressure.

Primary air valve shall have structural beads machine formed into the tube. One external bead shall be provided for the attachment of flexible duct. Primary valve flow sensor shall be multipoint quadrant averaging with flow sampling of both velocity pressure and flow differential pressure from four quadrants, and shall contain two control ports and two accessory ports. Flow sensors sampling only velocity pressure in all four quadrants are not acceptable. Sensors reading differential pressure with fewer than 8 measuring points are not acceptable. All piping connections to the flow sensor must be made with external ports that extend through damper tube. Units with piping connections made in the primary air stream are not acceptable. Flow sensors with plastic piping connections of any kind are not acceptable.

At an inlet velocity of 2000 fpm, the differential static pressure required to operate any terminal size shall not exceed 0.14" wg. for the primary air valve.

6. Unit shall have a bottom fan access panel and a separate bottom primary inlet access panel. Single bottom access panels are not acceptable.

7. Terminal shall include 3" wide bottom-mounting surfaces on opposite ends designed to accept bottom-mounting hardware including trapeze type. Bottom-mounting surfaces shall allow mounting hardware to be installed without interfering with access or removal of the bottom access panels. Units designed for installation using sheet metal straps only are not acceptable.

Optional: Unit shall include factory-mounted hangers designed to accept treaded rod up to 5/16" in. diameter.

8. Air Terminals shall be internally insulated with 1" thick, 1.5 lb/ft³ dual density glass fiber, coated to prevent airflow erosion to 6000 fpm surface velocity. Insulation to comply with UL 181 and NFPA 90A. Units shall be constructed so that no insulation edges are exposed to the air stream. Insulation edges at induction inlet shall be encapsulated in a metal strip to prevent air stream exposure. Sealants to prevent insulation end erosion are not acceptable.

9A. Fan shall be a forward curve, dynamically balanced with a direct drive motor. Motors shall be of energy efficient design, single phase, 60 cycle, (120) (208) (277) volts. The motor shall be single speed custom designed and manufactured specifically to meet the torque requirements for each size terminal. Motors shall be permanent split capacitor type and include thermal overload protection. Unit construction to include isolation between the motor and fan housing.

Units shall include an SCR solid state fan speed controller providing infinite adjustment of the fan within the manufacturer's designed operating range. The SCR shall include a minimum voltage stop. Motors shall be specifically designed to work in conjunction with the SCR controller.

9B. Optional ECM Motor Fan shall be a forward curve, dynamically balanced with a direct drive motor. Units shall include energy efficient, General Electric electronically commutated motors model ECM 2.3. Motors shall be 60 cycle, (120) (277) volts. The motor shall be single speed manufactured specifically to meet the torque requirements for each size terminal.

ECM controls:

a. Units shall include the model ECM-RPM controller by METALAIRE. Controller shall allow remote adjustment of the motor. Controller shall accept either a 2-10 Vdc signal or 4-20 mA signal to control RPM. Control shall also allow the option for a 1 Vdc signal to turn off the fan.

b. Units shall include the model ECM-VCU controller by METALAIRE. Controller shall allow manual motor adjustment. Controller shall have a 4 digit LED display indicating motor RPM. The display shall also show a flow index.

10. Sound ratings for the terminal shall not exceed ____ NC at ____ static pressure. Sound performance shall be ARI certified. The specified NC for the radiated and discharge path attenuation function shall be based upon the calculations found in current ARI Terminal Unit Application Standard 885-98 (data submitted per the previous ARI Standard 885-90 are not acceptable).

Series Fan Powered Air Terminal Units

FCI-600 - Product Specifications and Highlights

Options and Accessories

1. Hot Water Coils - Hot Water Coils are to be factory mounted to the (discharge outlet) of the terminal. The number of rows and circuits shall meet the capacities as shown in the schedule. Hot water coils shall be enclosed in a minimum 20-gauge coated steel casing allowing attachment to metal ductwork with a slip and drive connection. Fins shall be corrugated sinusoidal wave type constructed from heavy gauge aluminum. Tubes shall be copper with a minimum wall thickness is 0.016" with male solder header connections. Fins shall be mechanically bonded to the tubes. Coils shall be leak tested to 300 psi with minimum burst of 2000 psi at ambient temperature. Coil performance data shall be rated and presented in accordance with ARI standard 410. Coils must be ARI rated and include an ARI label.

2. Electric Reheat Coils - Electric Reheat Coils are to be factory mounted on the discharge of the Air Terminal with the sizes and with kilowatts, operating and control voltages, steps, and accessories as outlined in the plans and specifications. The heaters shall be ETL® listed for zero clearance, tested in accordance with UL® Standard 1995, CSA-C22.2 No. 236 and in accordance with the National Electric Code (NEC). Heater casings shall be constructed of heavy-duty zinc-coated steel. Element wire shall be high grade nichrome alloy rated to 45 watts per square inch density. Element wire shall be supported by moisture resistant steatite ceramics. Ceramics to be enclosed in reinforcement brackets spaced across the heater element rack at 2" to 4" intervals. Controls shall be contained in NEMA 1 control cabinet with a hinged, latching door. A permanent wiring diagram shall be affixed to the inside of the control cabinet door for field reference.

Optional Insulations

1. Insulation shall be ThermoPure Fiber-Free Liner internally located. Liner shall be 1" thick, 1.5 lb/ft³ dual density fiber-free, rated to prevent air flow erosion to 6000 fpm surface velocity. Insulation to comply with UL 181 and NFPA 255 (25/50). Material shall be chemically resistant to hydrocarbon-based solvents. Material shall not support mold growth or demonstrated degradation while subject to air erosion when tested in accordance to UL 181 and UMC 10-1.

2. Insulation shall be Foil Face Liner internally located 1" thick, 4 lb/ft³ dual density fibrous glass, rated to prevent air flow erosion to 6000 fpm surface velocity. Insulation to comply with UL 181 and NFPA 90A. No liner edges shall be exposed to the air stream. All liner must be nonporous and have all cut edges sealed to prevent erosion by means of longitudinal galvanized metal sealing strips the length of the casing, adding to the rigidity of the terminal unit.

Additionally, all discharge edges must be sealed to prevent erosion by means of mechanically fastened galvanized steel sealing strips in each corner. Liners made of Mylar, Tedlar, Silane, or woven fiberglass cloths are not acceptable.

Manufacturer shall provide:

1. Factory mounting and wiring of DDC controls shall be as specified in section 15. Mounting shall include manufacturer's flow sensor, transformer (if required by DDC controls manufacturer), and an enclosure protecting DDC controls and wiring.
2. Analog electronic controls with flow adjustments shall be as specified in section 15 and be provided by the terminal unit manufacturer.
3. Pneumatic controls shall be as specified in section 15. Manufacturer shall provide terminal units with factory set flow adjustments as required per the terminal unit schedule.



FCL-600 - Product Specifications and Highlights

1. Series Fan-Powered Terminal Units shall be METALAIRE low profile Model FCL-600. The units shall be the size and capacity as outlined in the plans and specifications. Height of the terminals shall not exceed 10". Casing dimensions shall be checked to ensure the terminals fit the available space.

2. Air terminals shall be certified under the American Refrigeration Institute (ARI) Standard 880-98 Certification Program and carry the ARI seal. All NC values shall be calculated per ARI Standard 885-98. Units with NC values calculated per ARI-885-90 will not be accepted. Terminal units shall be either ETL® or UL® listed as a complete assembly. Terminal electrical components, including motor and low voltage controls shall be UL® listed. All electrical components including both line voltage and low voltage shall be mounted in a metal control enclosure. Units shall have a single point field wiring connection. Units shall be manufactured and wired per UL-1995 and in accordance with the National Electric Code.

3. All terminals shall be shipped as a single unit requiring no field assembly. Accessories including hot water coils, electric heaters, and fan and motor assemblies shall be factory mounted.

4. The air terminals shall be constructed of zinc coated steel. The casing shall be a minimum of 22-gauge. The terminal primary air inlet valve shall be a round inlet for field duct connection. The primary control damper shall be a single blade, round damper operating within a 20-gauge round tube. The terminal unit discharge shall allow for a rectangular flanged duct connection. Units shall have a universal control-mounting panel constructed of 20-gauge steel. Panel shall include stand-offs to allow controls to be mounted without penetrating the terminal casing. Fan mounting deck shall be a minimum of 18-gauge.

Optional: Unit shall include filter rack in the induced air inlet and shipped from the manufacturer with a 1" thick construction filter.

5. Primary inlet valve assembly shall have a seamless butt weld on round inlet tube to minimize leakage and prevent the damper from binding on overlapping seam welds. Inlet tubes with overlapping welds or non-continuous, skipped welds are not acceptable. Damper shaft shall rotate in a self-lubricating Kepital® (acetal resin material) bearing. Damper shaft shall be die cast aluminum. Damper shaft end shall include a cast damper position indicator. End of shaft where actuator is installed shall be square to prevent actuator screw(s) from slipping. Round damper shaft ends are not acceptable.

Damper tube shall be free of obstructions including damper stops to allow the free rotation of the damper. Mechanical damper stops located in the inlet tube are not acceptable. A flexible gasket mounted in the damper blade without adhesives shall provide damper seal. Damper gasket shall include slit partitioning around the perimeter to prevent damper noise at low flows near full close off. Damper gaskets without perimeter slit partitioning are not acceptable. Damper shall be a double thickness of 24 gauge steel and leakage through the damper assembly shall be less than 1% of maximum CFM at 3" static pressure.

Primary air valve shall have structural beads machine formed into the tube. One external bead shall be provided for the attachment of flexible duct. Primary valve flow sensor shall be multipoint quadrant averaging with flow sampling of both velocity pressure and flow differential pressure from four quadrants, and shall contain two control ports and two accessory ports. Flow sensors sampling only velocity pressure in all four quadrants are not acceptable. Sensors reading differential pressure with less than 8 measuring points are not acceptable. All piping connections to the flow sensor must be made with external ports that extend through damper tube. Units with piping connections made in the primary air stream are not acceptable. Flow sensors with plastic piping connections of any kind are not acceptable.

At an inlet velocity of 2000 fpm, the differential static pressure required to operate any terminal size shall not exceed .14" wg. for the primary air valve.

6. Unit shall have a bottom fan access panel and a separate bottom primary inlet access panel. Single bottom access panels are not acceptable.

7. Terminal shall include 2" wide bottom-mounting surfaces on opposite ends designed to accept bottom-mounting hardware including trapeze type. Bottom-mounting surfaces shall allow mounting hardware to be installed without interfering with access or removal of the bottom access panels. Units designed for installation using sheet metal straps only are not acceptable. (Optional: Unit shall include factory-mounted hangers designed to accept treaded rod up to 5/16" in diameter.)

8. Air Terminals shall be internally insulated with 1/2" thick, 1 1/2 lbs. dual density glass fiber, coated to prevent airflow erosion to 6000 FPM surface velocity. Insulation to comply with UL 181 and NFPA 90A. Units shall be constructed so that no insulation edges are exposed to the air stream. Insulation edges at induction inlet shall be encapsulated in a metal strip to prevent exposure in the air stream. Sealants to prevent erosion of insulation ends are not acceptable.

9A. Fan shall be a forward curve, dynamically balanced with a direct drive motor. Motors shall be of energy efficient design, single phase, 60 cycle, (120) (208) (277) volts. The motor shall be single speed custom designed and manufactured specifically to meet the torque requirements for each size terminal. Motors shall be permanent split capacitor type and include thermal overload protection. Unit construction to include isolation between the motor and fan housing.

Units shall include an SCR solid state fan speed controller providing infinite adjustment of the fan within the manufacturer's designed operating range. The SCR shall include a minimum voltage stop. Motors shall be specifically designed to work in conjunction with the SCR controller.

FCL-600 - Product Specifications and Highlights

Options and Accessories

1. Hot Water Coils

Hot Water Coils are to be factory mounted to the (induction port) (discharge outlet) of the terminal. The number of rows and circuits shall meet the capacities as shown in the schedule. Hot water coils shall be enclosed in a minimum 20 gauge coated steel casing allowing attachment to metal ductwork with a slip and drive connection. Fins shall be corrugated sinusoidal wave type constructed from heavy gauge aluminum. Tubes shall be copper with a minimum wall thickness of .016" with male solder header connections. Fins shall be mechanically bonded to the tubes. Coils shall be leak tested to 300 psi with minimum burst of 2000 psi at ambient temperature. Coil performance data shall be rated and presented in accordance with ARI standard 410. Coils must be ARI rated and include an ARI label.

2. Electric Reheat Coils

Electric Reheat Coils are to be factory mounted on the discharge of the Air Terminal with the sizes and with kilowatts, operating and control voltages, steps and accessories as outlined in the plans and specifications. The heaters shall be ETL® listed for zero clearance, tested in accordance with UL® Standard 1995, CSA-C22.2 No. 236 and in accordance with the National Electric Code (NEC). Heater casings shall be constructed of heavy-duty zinc-coated steel. Element wire shall be high grade nichrome alloy rated to 45 watts per square inch density. Element wire shall be supported by moisture resistant steatite ceramics. Ceramics to be enclosed in reinforcement brackets spaced across the heater element rack at 2" to 4" intervals. Controls shall be contained in a NEMA 1 control cabinet with a hinged, latching door. A permanent wiring diagram shall be affixed to the inside of the control cabinet door for field reference.

Optional Insulations

1. Insulation shall be ThermoPure Fibre-Free Liner internally located. Liner shall be 1/2" thick, 1.5 lbs. dual density fiber-free, rated to prevent air flow erosion to 6000 FPM surface velocity. Insulation to comply with UL 181 and NFPA 255 (25/50). Material shall be chemically resistant to hydrocarbon-based solvents. Material shall not support mold growth or demonstrated degradation while subject to air erosion when tested in accordance to UL 181 and UMC 10-1.

Additionally, all discharge edges must be sealed to prevent erosion by means of mechanically fastened galvanized steel sealing strips in each corner. Liners made of Mylar, Tedlar, Silane, or woven fiberglass cloths are not acceptable.

Manufacturer shall provide:

1. Factory mounting and wiring of DDC controls shall be as specified in section 15. Mounting shall include manufacturer's flow sensor, transformer (if required by DDC controls manufacturer), and an enclosure protecting DDC controls and wiring.
2. Analog electronic controls with flow adjustments shall be as specified in section 15 and be provided by the terminal unit manufacturer.
3. Pneumatic controls shall be as specified in section 15.
Manufacturer shall provide terminal units with factory set flow adjustments as required per the terminal unit schedule.



LEADING THE INDUSTRY IN PRODUCT LITERATURE

WITH THE CHOICE OF OUR PRE-FLITE CATALOG, QUICK SELECT CATALOG, INFOSOURCE CATALOG, INFOSOURCE CD AND OUR WEB SITE, WWW.METALAIRES.COM, YOU PICK THE FORMAT FOR PRODUCT INFORMATION THAT BEST SUITS YOUR AIR DISTRIBUTION DESIGN NEEDS.

PRE-FLIGHT - Product Overview Catalog

The METALAIRES Pre-Flight catalog is a condensed reference guide containing concise listings of our entire product line including grilles, registers, diffusers, and air terminal units. This catalog can be used to help select the type of device, along with available border styles. The catalog includes photos of each model along with the features and model guide, a great tool when you are trying to select a device for your project.



QUICK SELECT CATALOG - Air Distribution Selection Made Easy

The METALAIRES Quick Select Catalog is designed to save you time selecting air distribution equipment. This catalog is a compact version of our InfoSource Catalogs and includes drawings and performance for our most popular products. The Quick Select Catalog is broken into product types with each section beginning with a model summary that includes features and benefits of our products. To obtain product information not included in the Quick Select Catalog, simply go to our web site at www.metalaires.com.



INFOSOURCE CATALOG SUITE

- Complete Guide to Air Distribution Selection

The METALAIRES InfoSource Catalog suite is the leading product catalog in the industry. Included in these catalogs are the complete product listings, drawings, product features and benefits, product performance data, specifications, and model specifications. These catalogs are organized to make it quick and easy to find the information you are looking for.



INFOSOURCE CD

Our InfoSource CD has set the standard in the industry for air distribution product selection. This CD contains a complete library of all our catalogs and submittals along with our air terminal unit selection program.



INFOSOURCE CATALOG SUITE

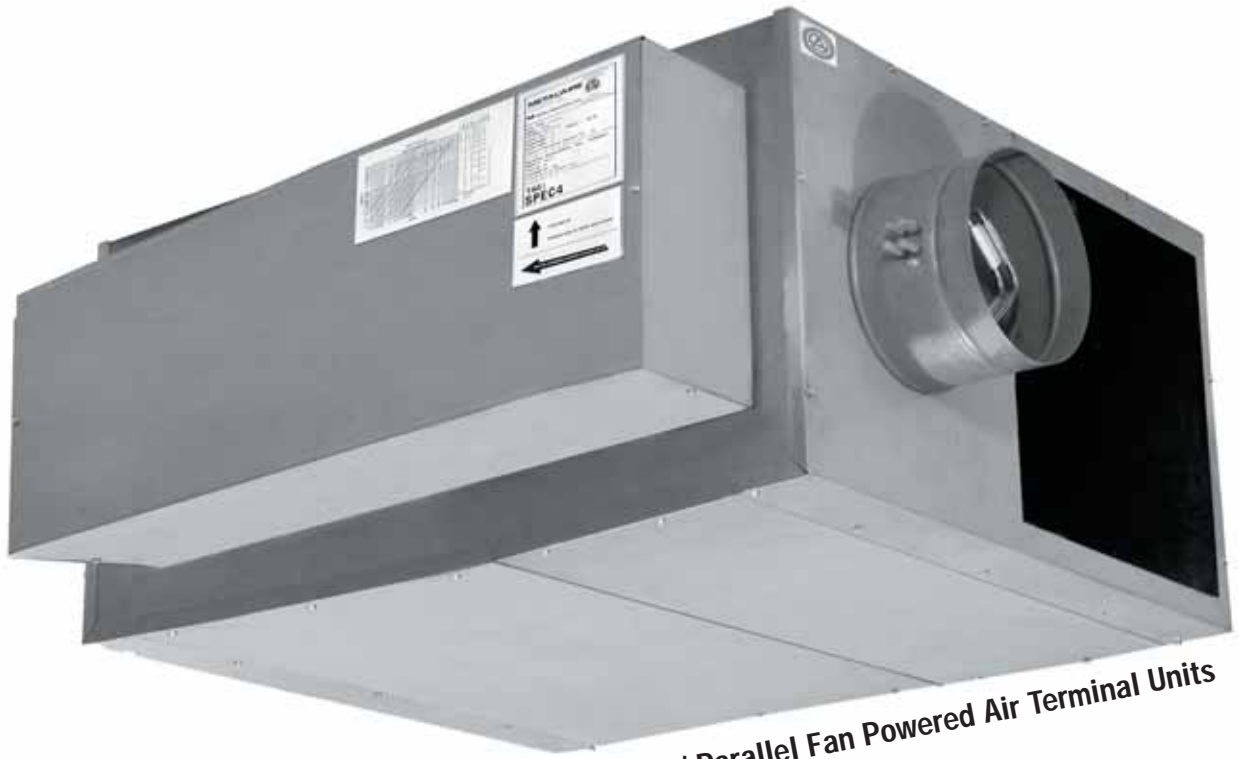
- Ceiling Diffusers Catalog
- Grilles & Registers Catalog
- Air Terminal Unit Catalog
- Formations Catalog

WEBSITE: WWW.METALAIRES.COM

METALAIRES leads the industry with a web site that contains all the product literature and performance data needed to design your air distribution system. Our web site includes all our submittals, catalogs, installation manuals, as well as other valuable information to aid you in air distribution design.



METALAIRES



FVI-500 / Parallel Fan Powered Air Terminal Units

PARALLEL FAN POWERED AIR TERMINAL UNITS

Parallel Fan Powered Air Terminal Units

6/2007

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ARI CERTIFIED AIR TERMINALS

METALAIRE® Series FVI-500 Air Terminals have been tested by the Air-Conditioning and Refrigeration Institute (ARI) and have been found qualified to bear the certification mark of this independent testing agency.

ARI Certification testing is conducted in accordance with Industry Standard 880 which ensures that the performance data published in this catalog have been independently tested and found to be accurate and repeatable. Accessories which can be attached to the Series FVI-500 Air Terminals are not a part of the ARI certification program but ratings can be affected by their use.

Additional information on these testing programs can be obtained from your local METALAIRE representative.

At METALAIRE, we continually work to improve our products. Product descriptions, dimensions, and performance are subject to change without notice. For the most current available literature visit our web page at www.metalaire.com. Contact your local METALAIRE representative to verify product or performance details.

Parallel Fan Powered Air Terminal Units



FVI-500



For more product information visit us at www.metalaire.com



FVI-500 - Introduction

FVI-500 is a Parallel Fan-Powered Terminal Unit designed to provide superior comfort control to zones with both heating and cooling requirements throughout a year.

The FVI-500 provides variable volume cooling through the primary air valve. The primary air valve controls the volume of cooled air that is discharged into the space. In a parallel fan-powered terminal unit, the primary air does not pass through the fan.

When heating is required, the FVI-500 initially provides plenum air that is drawn through the induction inlet. This is an economical way of heating a space using the waste heat located in the ceiling plenum. As additional heat is required, optional electric or hot water heat can be turned on to meet the load requirement of the zone. The fan in a parallel fan-powered terminal only runs when space conditions call for heat. When heat is required, the fan provides a constant discharge volume into the space, and uniform air motion.

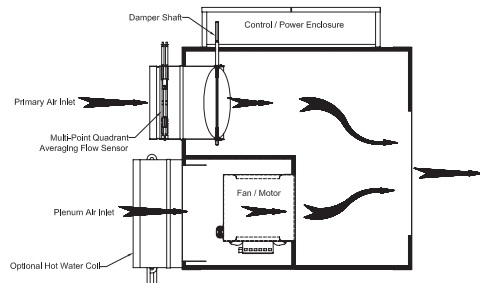
The FVI-500 is also engineered to address IAQ concerns with the capability to handle up to 20% of maximum primary air while operating in heating mode.

The FVI-500 is available with a wide range of control options and accessories to meet your design requirements. Whether your requirements are for factory mounted direct digital controls, pneumatic, analog, or electric, we can meet your control needs.

The FVI-500 is available in seven casing sizes and a wide range of primary inlet sizes offering the flexibility to meet both capacity and sound requirements. The terminal's superior design and construction make the FVI-500 easy to install and maintain.

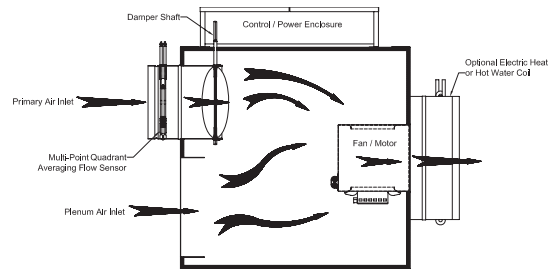
Types of Fan Powered Units

FVI-500 PARALLEL FAN POWERED UNIT



In a variable volume or parallel terminal unit, the fan runs only when heating is required. In cooling, the unit functions the same as a single duct VAV terminal.

FCI-600 / FCL-600 SERIES FAN-POWERED TERMINAL UNIT



In a Constant Volume (or series) fan powered terminal, the fan runs continuously. Both primary and induced air are discharged through the fan.



Options & Accessories for Air Terminal Units

50 Hz Motors

The FVI-500 can be selected with an optional 208-240 Volt 50/60 Hz motor for domestic or international use. Contact your local METALAIRE representative for further information.

Controls

METALAIRE air terminal units are available with pneumatic, electronic, analog electronic, or DDC (by others) factory mounted controls. See www.metalaire.com or contact your local METALAIRE representative for a complete list of available control options.

ECM Motors

Optional ECM motors are available for the FVI-500. See page FVI-157 for details.

Hot Water Coils

Air terminals are available with 1, 2, 3, or 4 row hot water coils. Some performance information including capacities and pressure drops are in this catalog, more detailed information is found in the InfoSource catalog or at www.metalaire.com.

Sound Attenuation

A sound attenuator is available for single duct applications that require exceptionally low sound levels. An inlet attenuator is available for fan-powered units. Refer to the product drawings for dimensions.

Electric Heat

Air Terminals may be specified with a wide range of UL listed Electric Heaters. Units with electric heat are shipped with an integral sound attenuator as standard.

Optional Liners

A wide range of optional internal liners are available for special environmental or acoustic applications. Included in the product offering are metal liners, Thermopure (closed cell foam) and foil face liners. For answers to all your questions on air terminal units visit us at www.metalaire.com or call your local METALAIRE representative.

Thermopure Insulation

ThermoPure insulation is a closed cell, washable, durable, and non-wicking insulation material that is ideal for critical care facilities such as hospitals and medical facilities as well as high humidity or corrosive environments. ThermoPure is mold and mildew resistant and the closed-cell structure minimizes moisture movement and condensation. It has been tested in accordance with USTC #P91-112.2 for mold growth and in accordance with 10.111 for humidity. After a 60-day period the material showed no evidence of mold growth or insulation deterioration, including the adhesive.

ThermoPure is 100% Fiber Glass free, assuring no downstream brush off, and is provided at a density of 1.5 lbs/ft³. The material is Polyolefin (Polyethylene) and exhibits unique thermal, physical, and chemical resistance properties. It is chemically resistant to most hydrocarbon-based solvents and has a broad installation temperature range. Additionally, because of the closed cell design, it offers low thermal conductivity and the lowest vapor transmission and water absorption rates of the commercially available insulations. The "R" value per wall thickness is 13% greater than Elatomaric (rubber) foam insulation and the water vapor transmission rate is 0.00 perm-in.

ThermoPure has been tested in accordance with both UL-723 (25/50) and ASTM E84 and has a flame spread of 10 and a smoke density of 30. It also meets UL 181 and UL 94 horizontal burn test standards. ThermoPure also meets many other state and local specifications, please contact your METALAIRE representative for a complete list of specification compliance.

ThermoPure's mold and mildew resistance, broad thermal range, and resistance to degradation make it a perfect choice for applications such as hospitals, high humidity environments, clean rooms, food processing areas, low temperature installations, and corrosive or chemical processing environments.



Thermopure Insulation



Parallel Fan Powered Air Terminal Units

Features of the METALAIRE VAV Valve and Flow Sensor:

Inlet Valve

The METALAIRE® inlet valve assembly has a seamless butt weld on a round inlet tube to minimize leakage and prevent the damper from binding. The damper shaft rotates in a long life, self-lubricating Kepital® (acetal resin material) bearing. The damper shaft is composed of die cast aluminum and includes a damper position indicator. The actuator connects to a square end to prevent the actuator screw(s) from slipping.

The damper blade is manufactured with a flexible gasket and mounted without adhesives to provide an excellent close off seal. Included on the damper gasket are slits around the perimeter to prevent damper noise at low turn down. The damper is constructed of double thickness 24-gauge steel. Damper leakage is less than 1% of maximum CFM at 3.0" static pressure.

The primary air valve has a bead rolled into the tube, which strengthens the tube and serves as a stop and prevents field attached flex duct from slipping.

Flow Sensor

The METALAIRE multi-quadrant averaging flow sensor is a highly accurate, multi-ported device designed to provide true flow readings, even with varying flex duct inlet conditions. The sensor amplifies the input signal providing accurate flow control at low supply air volumes. Velocity pressure is read as a 4-point average that maintains +/- 5% accuracy regardless of inlet conditions.

The sensor provides two control ports and two accessory ports, all with brass barbed fittings to prevent connecting tubing from slipping. All flow sensor piping connections are made with external ports that extend through the damper tube allowing for easy inspection. This is a major advantage over competitors' sensors where the tubing attachment is inside the air valve. The metal construction of METALAIRE flow sensors assures long life and durability. Competing manufacturers typically provide plastic flow sensors, fittings, and balancing tees.

The METALAIRE flow sensor provides an accurate signal to controllers operating within a typical 0.03" to 1.0" velocity pressure range. For low flow controller applications, the sensor can be used to provide a signal down to 0.01".



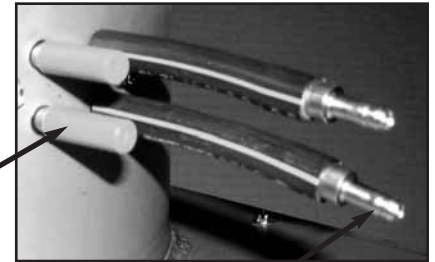
Bead formed on inlet tube for rigidity and to allow for a tight flex duct connection

Seamless weld

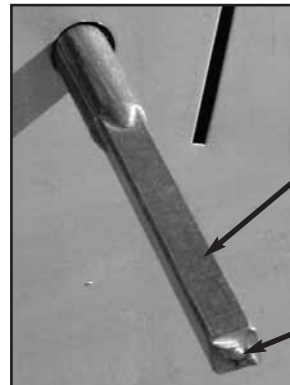
Kepital bearings

Average Velocity is obtained in 4 quadrants

Metal sensor tubes extend through the inlet tube, allowing external connections (shown with dust cover)



Brass barbed fittings for tube connection to VAV controller



Square Shaft

Damper Position indicator

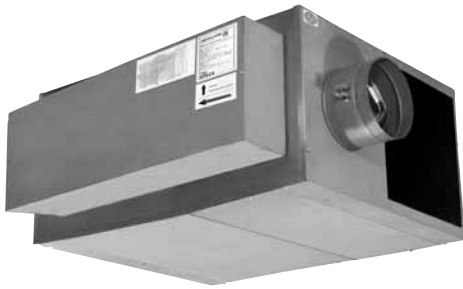
Parallel Fan Powered Air Terminal Units



FVI-500

Parallel Fan Powered Air Terminal Units

6/2007



FVI-500

Parallel Fan Powered Terminal Units

FVI-500 fan-powered terminal units are designed to provide superior comfort control to zones with both heating and cooling requirements. The fan in a variable volume (or parallel) fan powered terminal, runs only upon requirements for heat.

FVI-500 provides variable volume cooling through the primary air valve. The primary air valve controls the volume of cooled air that is discharged into the space. In a parallel fan-powered terminal unit, the primary air does not pass through the fan. When heating is required, the FVI-500 initially provides plenum air that is drawn through the induction inlet.

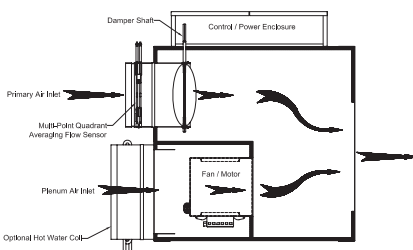
FVI-500 is available with a wide range of control options and accessories to meet your design requirements; whether they be for factory mounted direct digital controls, pneumatic, or analog applications.

FVI-500 is available in 7 casing sizes with a wide range of primary inlet sizes offering the flexibility to meet both your capacity and sound requirements.

Parallel Fan Powered Air Terminal Units



FVI-500



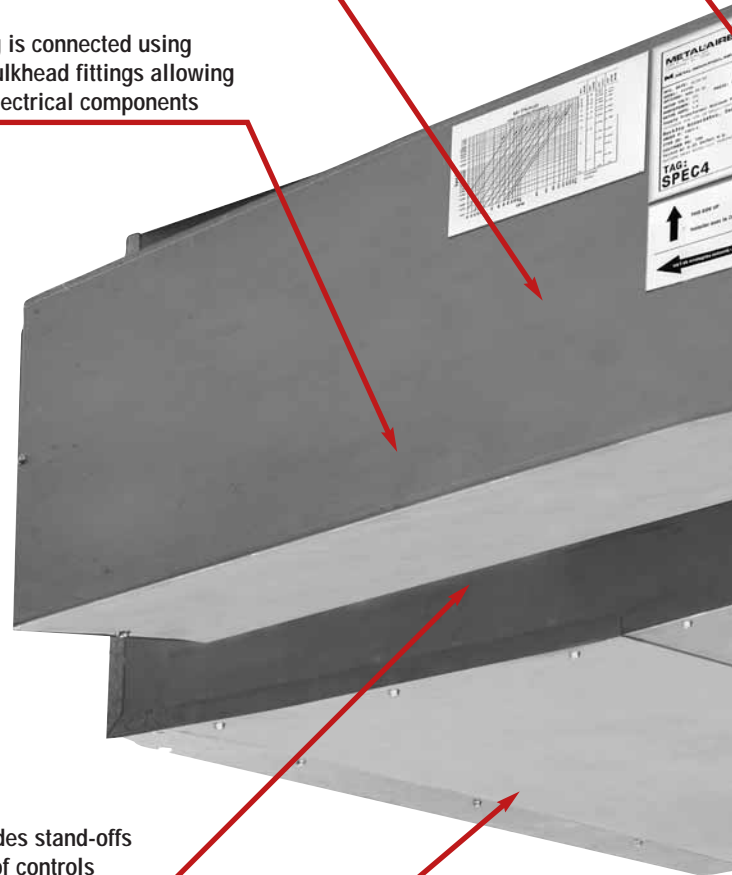
Multiquadrant Averaging Flow Sensor provides an accurate flow signal without requiring an immediate upstream straight duct connection (Shipped standard on all units)

All units include an SCR solid state fan speed controller. Motors are designed to work in conjunction with the SCR controller

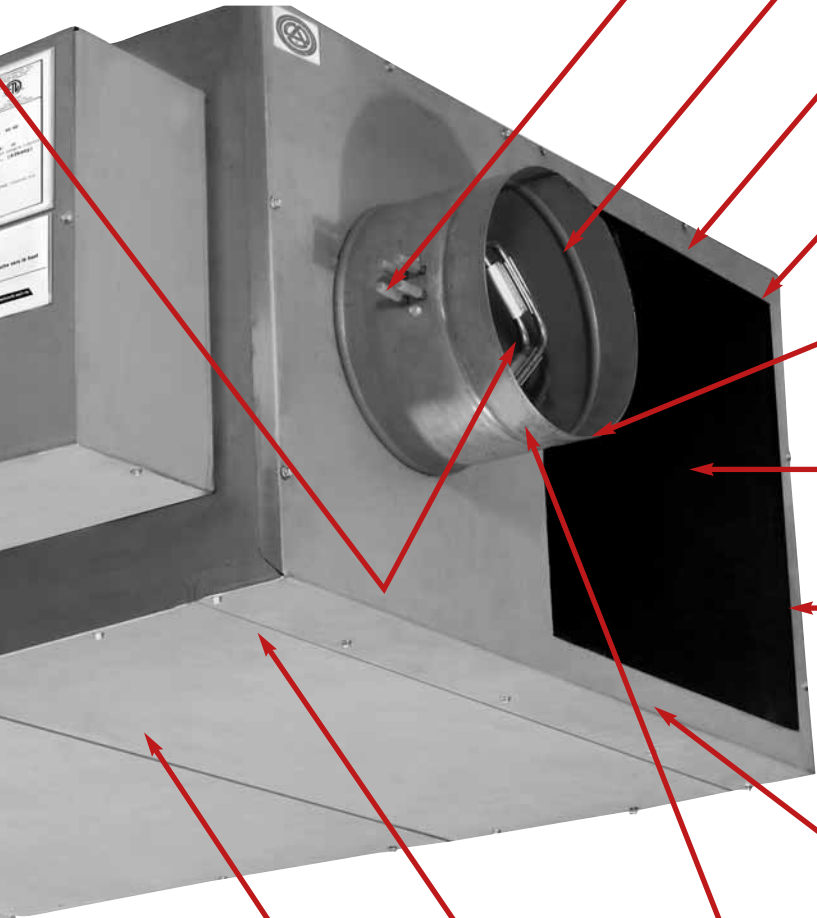
All electrical wiring is connected using quick-disconnect bulkhead fittings allowing easy servicing of electrical components

Control panel includes stand-offs to allow mounting of controls without penetrating the casing

18 gauge fan mounting bracket is designed to allow easy removal of fan assembly for servicing



Parallel Fan Powered Air Terminal Units



All units are shipped with easy access balancing taps. The extra ports can be used to read CFM (through velocity pressure) directly at the unit

For long life and continuous operation, the damper shaft rotates in a self-lubricating Kepital® (acetal resin) bearing

Optional filter rack is available for 1" thick filters

Inlet panel is one-piece construction to increase rigidity and to reduce radiated sound

The inlet tube includes a bead that strengthens the tube and provides recess for flex duct straps

All units are ETL® listed to UL® Standard 1995 and CSA-C22.2 No. 236
All electrical components are UL® certified and listed

1" thick fiberglass insulation is standard

Induced air inlet baffles ensure uniform loading of the fan and reduce radiated sound levels

Round primary inlet tubes are constructed with a seamless butt weld for rigidity and to eliminate leakage

3" wide mounting lip provides easy installation and removal of access panel. Panels can be removed without disturbing trapeze-type hangers

Units are shipped with balanced single speed energy saving motors manufactured specifically for the torque requirements of each terminal. Motors are of energy efficient design

Parallel Fan Powered Air Terminal Units



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Parallel Fan Powered Air Terminal Units

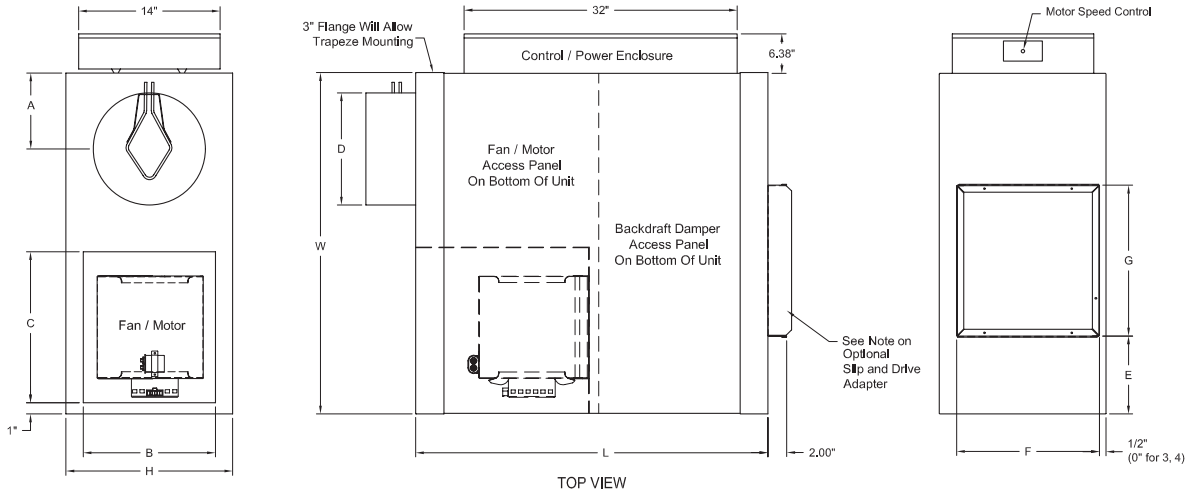
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FVI-500 - Air Terminal Dimensions

Dimensions are in inches

Parallel Fan Powered - Basic Unit

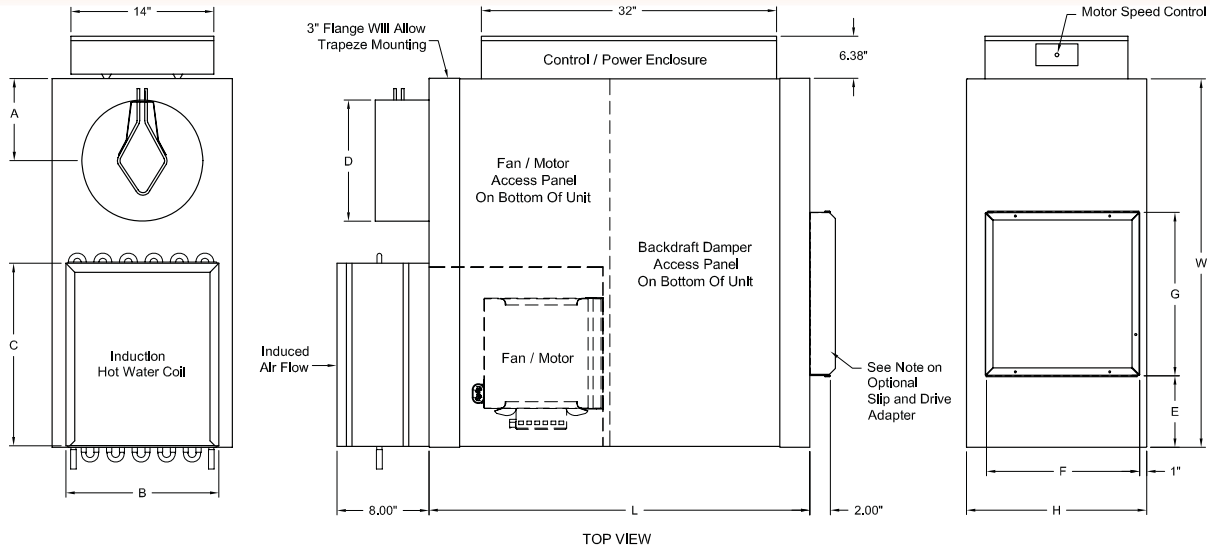
- Case Size 1 - 6" Inlet Case Size 4 - 12" Inlet Case Size 7 - 18" x 16" Inlet
- Case Size 2 - 8" Inlet Case Size 5 - 14" Inlet
- Case Size 3 - 10" Inlet Case Size 6 - 16" Inlet



Casing Size	Inlet Diameter D		Horse Power	Unit Height H	Unit Width W	Unit Length L	Inlet Loc. A	Ind. Inlet Height B	Ind. Inlet Width C	Discharge Loc. E	Discharge Height F	Discharge Width G
	Standard	Optional										
1	6 (152)	8, 10	1/8	17 1/2 (445)	30 (762)	36 (914)	6 (152)	14 (356)	14 (356)	7 (178)	15 (381)	16 (406)
2	8 (203)	6, 8, 10, 12	1/6	17 1/2 (445)	30 (762)	36 (914)	7 (178)	14 (356)	14 (356)	7 (178)	15 (381)	16 (406)
3	10 (254)	6, 8, 12, 14	1/4	17 1/2 (445)	36 (914)	40 (1016)	8 (203)	14 (356)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
4	12 (305)	8, 10, 14	1/4	17 1/2 (445)	36 (914)	40 (1016)	8 (203)	14 (356)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
5	14 (356)	10, 12, 16	1/3	20 (508)	40 (1016)	40 (1016)	10 (254)	16 (406)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
6	16 (406)	10, 12, 14	1/2	20 (508)	42 (1067)	42 (1067)	10 (254)	16 (406)	20 (508)	9 (229)	18 (457)	22 (559)
7	18x16 (457x406)	12, 14, 16	1	20 (508)	42 (1067)	42 (1067)	10 (254)	16 (406)	20 (508)	6 (152)	20 (508)	30 (762)

Parallel Fan Powered - With Hot Water Coil on Induction Port

- Case Size 1 - 6" Inlet Case Size 4 - 12" Inlet
- Case Size 2 - 8" Inlet Case Size 5 - 14" Inlet
- Case Size 3 - 10" Inlet Case Size 6 - 16" Inlet



Casing Size	Inlet Diameter D		Horse Power	Unit Height H	Unit Width W	Unit Length L	Inlet Loc. A	Hot Water Coil		Discharge Loc. E	Discharge Height F	Discharge Width G
	Standard	Optional						Height B	Width C			
1	6 (152)	8, 10	1/8	17 1/2 (445)	30 (762)	36 (914)	6 (152)	15 (381)	16 (406)	7 (178)	15 (381)	16 (406)
2	8 (203)	6, 10	1/6	17 1/2 (445)	30 (762)	36 (914)	7 (178)	15 (381)	16 (406)	7 (178)	15 (381)	16 (406)
3	10 (254)	6, 8, 12	1/4	17 1/2 (445)	36 (914)	40 (1016)	8 (203)	17 1/2 (445)	20 (508)	8 (203)	17 1/2 (445)	20 (508)
4	12 (305)	8, 10, 14	1/4	17 1/2 (445)	36 (914)	40 (1016)	8 (203)	17 1/2 (445)	20 (508)	8 (203)	17 1/2 (445)	20 (508)
5	14 (356)	10, 12, 16	1/3	20 (508)	40 (1016)	40 (1016)	10 (254)	17 1/2 (445)	20 (508)	8 (203)	17 1/2 (445)	20 (508)
6	16 (406)	10, 12, 14	1/2	20 (508)	42 (1067)	42 (1067)	10 (254)	18 (457)	22 (559)	9 (229)	18 (457)	22 (559)

Parallel Fan Powered Air Terminal Units



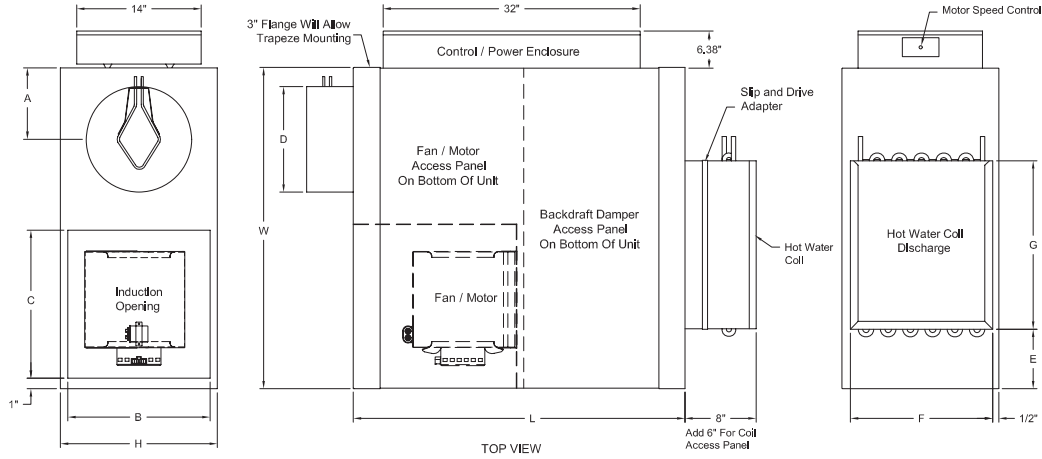
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Parallel Fan Powered Air Terminal Units

FVI-500 - Air Terminal Dimensions

Parallel Fan Powered - With Hot Water Coil on Discharge Port

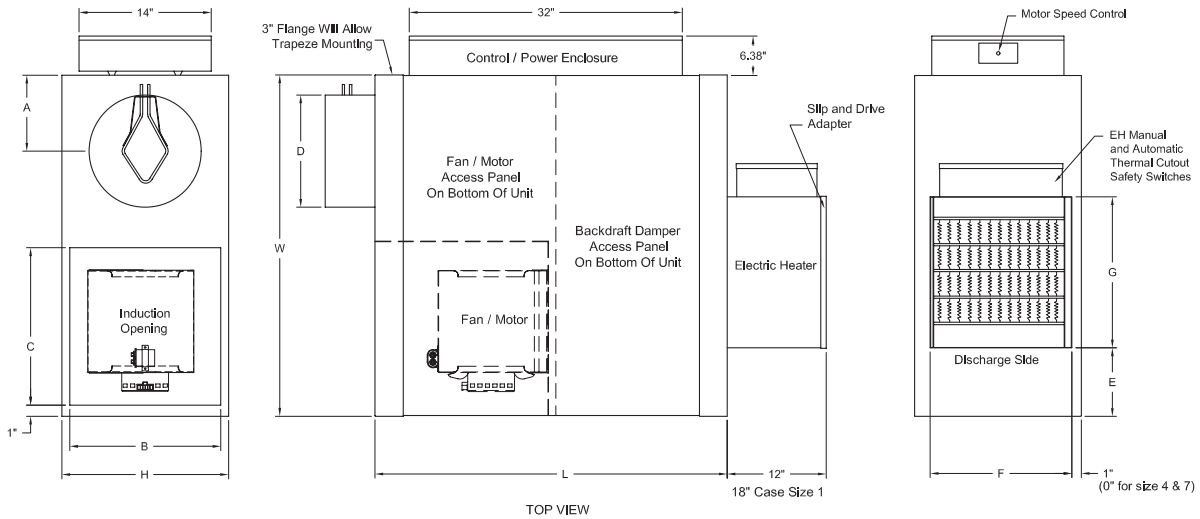
Case Size 1 - 6" Inlet Case Size 4 - 12" Inlet Case Size 7 - 18" x 16" Inlet
 Case Size 2 - 8" Inlet Case Size 5 - 14" Inlet
 Case Size 3 - 10" Inlet Case Size 6 - 16" Inlet



Casing Size	Inlet Diameter D		Horse Power	Unit Height H	Unit Width W	Unit Length L	Inlet Loc. A	Ind. Inlet Height B	Ind. Inlet Width C	Standard Hot Water Coil		
	Standard	Optional								Discharge Loc. E	Discharge Loc. F	Discharge Loc. G
1	6 (152)	8, 10	1/8	17 1/2 (445)	30 (762)	36 (914)	6 (152)	14 (356)	14 (356)	7 (178)	15 (381)	16 (406)
2	8 (203)	6, 10, 12	1/6	17 1/2 (445)	30 (762)	36 (914)	7 (178)	14 (356)	14 (356)	7 (178)	15 (381)	16 (406)
3	10 (254)	6, 8, 12, 14	1/4	17 1/2 (445)	36 (914)	40 (1016)	8 (203)	14 (356)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
4	12 (305)	8, 10, 14	1/4	17 1/2 (445)	36 (914)	40 (1016)	8 (203)	14 (356)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
5	14 (356)	10, 12, 16	1/3	20 (508)	40 (1016)	40 (1016)	10 (254)	16 (406)	18 (457)	8 (203)	17 1/2 (445)	20 (508)
6	16 (406)	10, 12, 14	1/2	20 (508)	42 (1067)	42 (1067)	10 (254)	16 (406)	20 (508)	9 (228)	18 (457)	22 (559)
7	18x16 (457x406)	12, 14, 16	1	20 (508)	42 (1067)	42 (1067)	10 (254)	16 (406)	20 (508)	6 (152)	20 (508)	30 (762)

Parallel Fan Powered - With Electric Heat

Case Size 1 - 6" Inlet Case Size 4 - 12" Inlet Case Size 7 - 18" x 16" Inlet
 Case Size 2 - 8" Inlet Case Size 5 - 14" Inlet
 Case Size 3 - 10" Inlet Case Size 6 - 16" Inlet



Casing Size	Inlet Diameter D		Horse Power	Unit Height H	Unit Width W	Unit Length L	Inlet Loc. A	Ind. Inlet Height B	Ind. Inlet Width C	Discharge Loc. E	Discharge Loc. F	Discharge Loc. G
	Standard	Optional										
1	6 (152)	8, 10	1/8	17 1/2 (445)	30 (762)	36 (914)	6 (152)	14 (356)	14 (356)	5 (127)	15 (381)	16 (406)
2	8 (203)	6, 10, 12	1/6	17 1/2 (445)	30 (762)	36 (914)	7 (178)	14 (356)	14 (356)	5 (127)	15 (381)	16 (406)
3	10 (254)	6, 8, 12, 14	1/4	17 1/2 (445)	36 (914)	40 (1016)	8 (203)	14 (356)	18 (457)	7 1/4 (184)	15 (381)	16 (406)
4	12 (305)	8, 10, 14	1/4	17 1/2 (445)	36 (914)	40 (1016)	8 (203)	14 (356)	18 (457)	3 1/4 (83)	17 1/2 (445)	20 (508)
5	14 (356)	10, 12, 16	1/3	20 (508)	40 (1016)	40 (1016)	10 (254)	16 (406)	18 (457)	6 5/8 (168)	17 1/2 (445)	20 (508)
6	16 (406)	10, 12, 14	1/2	20 (508)	42 (1067)	42 (1067)	10 (254)	16 (406)	20 (508)	8 (203)	17 1/2 (445)	20 (508)
7	18x16 (457x406)	12, 14, 16	1	20 (508)	42 (1067)	42 (1067)	10 (254)	16 (406)	20 (508)	4 (102)	20 (508)	30 (762)

Parallel Fan Powered Air Terminal Units



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Parallel Fan Powered Air Terminal Units

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FVI-500 - ARI Rating Points

ARI Certified Radiated Sound Power, Fan Only								
Unit Size	Fan CFM	Octave Band						Electrical Power (Watts)
		2	3	4	5	6	7	
106	270	62	62	55	53	45	43	150
208	440	65	63	56	52	45	43	160
310	780	65	63	59	56	51	49	290
412	1000	68	66	61	60	52	51	490
514	1200	74	69	62	60	57	54	680
616	1800	76	73	67	63	57	56	760
718	2600	77	74	71	69	62	61	1430

ARI Certified Radiated Sound Power, 1.5" Inlet Static Pressure									
Unit Size	Primary CFM	Min Ps	Octave Band						Electrical Power (Watts)
			2	3	4	5	6	7	
106	400	0.16	61	54	48	46	42	39	150
208	700	0.14	62	56	52	46	42	40	160
310	1100	0.16	66	60	54	53	45	41	290
412	1600	0.13	68	60	54	50	47	43	490
514	2100	0.15	71	64	58	53	50	46	680
616	2800	0.16	72	66	60	55	51	47	760
718	3750	0.13	77	71	67	63	58	52	1430

ARI Certified Discharge Sound Power, Fan Only								
Unit Size	Fan CFM	Octave Band						Electrical Power (Watts)
		2	3	4	5	6	7	
106	270	59	59	53	48	46	43	150
208	440	60	59	51	52	46	46	160
310	780	66	64	57	56	54	51	290
412	1000	67	66	58	62	57	54	490
514	1200	71	69	62	60	57	54	680
616	1800	73	70	67	69	63	64	760
718	2600	79	76	75	73	70	73	1430

ARI Certified Discharge Sound Power, 1.5" Inlet Static Pressure									
Unit Size	Primary CFM	Min Ps	Octave Band						Electrical Power (Watts)
			2	3	4	5	6	7	
106	400	0.16	61	57	53	47	45	44	150
208	700	0.14	66	61	58	54	49	49	160
310	1100	0.16	68	64	59	52	49	49	290
412	1600	0.13	72	68	63	60	55	53	490
514	2100	0.15	74	69	64	59	58	54	680
616	2800	0.16	77	73	68	62	61	60	760
718	3750	0.13	84	81	76	75	74	77	1430

STATEMENT OF STANDARD TEST CONFORMITY

METALAIRE tests all FVI-500 air terminal units for engineering performance in accordance with the following standards: Air-Conditioning & Refrigeration Institute (ARI), American National Standards Institute (ANSI)/American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE).

- **ARI Standard 880-98**
Standard for Air Terminals
- **ANSI/ASHRAE 130-1996**
Methods of Testing for Rating Ducted Air Terminal Units
- **ASHRAE Standard 41.1-1986 (RA 91)**
Standard Method for Temperature Measurement
- **ASHRAE Standard 41.2-1987**
Standard Methods for Laboratory Air Measurements
- **ASHRAE Standard 41.3-1989**
Standard Methods for Pressure Measurement

Parallel Fan Powered Air Terminal Units



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For more product information visit us at www.metalaire.com



Parallel Fan Powered Air Terminal Units

FVI-500 - Motor Amperage Ratings and Damper Leakage

		Standard PSC Motor Amperage Ratings	
		115V-1 Phase 60 Hz	277V-1 Phase 60 Hz
Case Size	Motor HP	Name Plate Amps	Name Plate Amps
1	1/8	2.6	0.9
2	1/6	3.1	1.2
3	1/4	4.8	1.9
4	1/4	4.8	1.9
5	1/3	8.8	3.6
6	1/2	9.8	3.6
7	1	N/A	6.2

Motors also available 208-240 50/60 Hz.
Contact your METALAIRE Representative for details.

		ECM Motor Amperage Ratings	
		115V-1 Phase 60 Hz	277V-1 Phase 60 Hz
Case Size	Motor HP	Name Plate Amps	Name Plate Amps
3	1/2	7.7	4.1
6	1	12.8	6.9

Inlet Size	Damper Leakage, CFM		
	1.5" DPS	3.0" DP's	6.0" DP's
6	3	4	7
8	2	4	7
10	4	5	7
12	4	5	7
14	4	6	8
16	4	6	8

All accessories which can be attached to the Series FVI-500 Air Terminals are not a part of the ARI certification program but ratings can be affected by their use.



Parallel Fan Powered Air Terminal Units

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FVI-500 - Radiated Sound Power at Fan Only

Case	Inlet	Outlet Ps in. H ₂ O	CFM (L/s)	Fan Only								NC1 ARI 885- 90	NC2 ARI 885- 98
				Octave Band Sound Power, Lw, dB									
				2	3	4	5	6	7				
1	6	0.25	150 (71)	59	57	52	48	41	38	23	26		
			200 (94)	60	59	53	50	43	41	25	28		
			250 (118)	62	61	55	53	44	43	27	31		
			300 (142)	64	63	56	54	46	45	29	33		
			400 (189)	66	67	59	58	50	49	34	38		
			450 (212)	68	69	61	60	52	51	37	40		
2	8	0.25	250 (118)	63	60	55	51	44	41	26	30		
			300 (142)	64	61	56	51	44	41	27	31		
			350 (165)	65	62	56	52	45	42	28	32		
			400 (189)	65	63	56	52	45	43	29	33		
			500 (236)	66	64	56	52	46	43	31	34		
			600 (283)	67	65	57	53	46	44	32	35		
3	10	0.25	125 (59)	50	47	46	39	36	28	-	-		
			300 (142)	54	51	49	44	41	34	-	23		
			425 (201)	58	54	53	46	43	37	24	27		
			675 (319)	64	61	57	53	48	45	29	32		
			800 (378)	66	64	59	57	52	49	31	34		
			925 (437)	69	67	62	60	54	53	34	38		
4	12	0.25	1175 (555)	76	73	67	67	60	61	41	45		
			1225 (578)	77	73	68	67	61	62	41	45		
			500 (236)	61	60	56	53	45	42	27	31		
			700 (330)	64	63	58	56	48	46	30	33		
			900 (425)	67	66	60	59	50	50	33	37		
			1100 (519)	70	68	62	62	53	53	35	39		
5	14	0.25	1300 (614)	72	71	64	66	56	57	39	42		
			1500 (708)	75	74	66	69	58	61	42	46		
			1575 (743)	76	74	66	69	58	62	42	46		
			800 (378)	64	60	53	47	44	41	26	29		
			950 (448)	66	63	58	55	52	49	30	33		
			1100 (519)	71	67	62	60	56	53	34	38		
6	16	0.25	1300 (614)	75	70	63	61	58	54	38	41		
			1500 (708)	78	73	65	63	60	56	41	45		
			1700 (802)	80	75	66	65	61	57	44	48		
			1800 (850)	81	76	67	66	62	59	45	49		
			800 (378)	62	58	52	46	42	40	24	27		
			1000 (472)	66	63	60	55	47	45	32	35		
7	18x16	0.25	1250 (590)	72	69	64	59	52	50	37	40		
			1400 (661)	73	71	65	61	54	53	39	42		
			1650 (779)	74	72	66	62	56	55	40	44		
			1800 (850)	76	73	67	63	57	56	41	45		
			2160 (1020)	78	75	68	65	59	58	44	47		
			1875 (885)	72	67	61	56	47	46	34	38		
8	18x16	0.25	2100 (991)	74	68	62	57	49	48	36	40		
			2400 (1133)	75	71	65	62	54	53	39	42		
			2600 (1227)	77	74	71	69	62	61	44	47		
			2800 (1322)	78	75	73	72	66	64	46	49		
			3000 (1416)	80	76	75	73	67	66	48	51		
			3125 (1475)	81	77	76	74	68	66	49	53		

Parallel Fan Powered Air Terminal Units



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See Page FVI-152 For NC Calculations

NC CALCULATIONS

The current ARI Standard for NC calculations is ARI 885-98. Other terminal manufacturers may catalog performance based on ARI 885-90. Using this older, obsolete standard will provide lower NC levels compared to the 1998 standard. To allow for fair and accurate performance comparisons, METALAIRE publishes the NC levels for both the 1990 standard and the 1998 current standard.

Parallel Fan Powered Air Terminal Units

FVI-500 - Discharge Sound Power Fan Only

Case	Inlet	Outlet Ps in. H ₂ O	CFM (L/s)	Fan Only								NC1 ARI 885- 90	NC2 ARI 885- 98
				Octave Band Sound Power, Lw, dB									
				2	3	4	5	6	7				
1	6	0.25	150 (71)	53	52	48	41	41	37	-	-		
			200 (94)	56	54	50	44	43	39	-	-		
			250 (118)	58	57	52	47	45	42	-	-		
			300 (142)	60	60	55	50	47	45	-	-		
			400 (189)	64	63	57	53	51	48	-	21		
			450 (212)	67	65	60	56	54	50	-	24		
550 (260)	69	68	62	59	57	52	24	27					
2	8	0.25	250 (118)	55	53	47	47	42	38	-	-		
			300 (142)	56	55	48	48	43	40	-	-		
			350 (165)	57	57	50	50	44	42	-	-		
			400 (189)	59	58	51	51	45	44	-	-		
			500 (236)	62	61	53	53	47	48	-	-		
			600 (283)	65	64	55	56	50	52	-	22		
775 (366)	67	66	58	59	53	57	21	22					
3	10	0.25	125 (59)	43	41	36	28	27	27	-	-		
			300 (142)	48	47	42	35	35	35	-	-		
			425 (201)	54	51	45	39	37	36	-	-		
			675 (319)	63	60	53	50	47	46	-	-		
			800 (378)	66	65	58	57	55	54	-	21		
			925 (437)	70	68	60	61	58	57	24	25		
			1175 (555)	72	70	62	62	60	59	26	27		
1225 (578)	73	71	64	63	62	60	27	28					
4	12	0.25	500 (236)	60	58	54	52	50	46	-	-		
			700 (330)	64	62	56	55	54	50	-	-		
			900 (425)	66	65	58	57	56	53	-	21		
			1100 (519)	69	67	59	63	59	56	22	24		
			1300 (614)	71	70	61	62	62	59	26	27		
			1500 (708)	73	72	63	64	63	61	28	29		
1575 (743)	74	72	64	65	64	63	28	29					
5	14	0.25	800 (378)	60	56	50	46	43	40	-	-		
			950 (448)	63	63	58	55	52	49	-	-		
			1100 (519)	68	67	62	60	56	53	22	24		
			1300 (614)	72	70	62	61	58	55	26	27		
			1500 (708)	73	71	63	62	60	60	27	28		
			1700 (802)	74	73	64	64	61	63	29	31		
1800 (850)	75	73	65	65	62	65	29	31					
6	16	0.25	800 (378)	58	55	55	52	48	44	-	-		
			1000 (472)	61	58	57	56	51	48	-	-		
			1250 (590)	64	61	60	55	54	52	-	-		
			1400 (661)	66	63	62	60	56	54	-	-		
			1650 (779)	70	67	65	61	60	60	22	24		
			1800 (850)	73	70	67	69	63	64	26	27		
2160 (1020)	75	72	68	67	66	65	28	29					
7	18x16	0.25	1875 (885)	71	68	70	65	64	67	24	25		
			2100 (991)	74	71	72	68	66	69	27	28		
			2400 (1133)	77	74	74	71	69	71	31	32		
			2600 (1227)	79	76	75	73	70	73	33	34		
			2800 (1322)	81	78	76	75	72	74	35	37		
			3000 (1416)	82	79	77	76	74	74	37	38		
3125 (1475)	83	80	77	77	76	75	38	39					

Parallel Fan Powered Air Terminal Units



FVI-500

See Page FVI-152 For NC Calculations

NC CALCULATIONS

The current ARI Standard for NC calculations is ARI 885-98. Other terminal manufacturers may catalog performance based on ARI 885-90. Using this older, obsolete standard will provide lower NC levels compared to the 1998 standard. To allow for fair and accurate performance comparisons, METALAIR publishes the NC levels for both the 1990 standard and the 1998 current standard.



For more product information visit us at www.metalair.com



Parallel Fan Powered Air Terminal Units

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FVI-500 - Discharge Sound Power .5", .75", 1" WG

Case	Inlet	Outlet Ps in. H ₂ O	CFM (L/s)	Min Ps in. H ₂ O (Pa)	Inlet Pressure, P _s = 0.5 inches of water (125 Pa)												Inlet Pressure, P _s = 0.75 inches of water (187 Pa)												Inlet Pressure, P _s = 1.0 inches of water (250 Pa)											
					Octave Band Sound Power, Lw, dB							NC1 ARI	NC2 ARI	Octave Band Sound Power, Lw, dB							NC1 ARI	NC2 ARI	Octave Band Sound Power, Lw, dB							NC1 ARI	NC2 ARI									
					2	3	4	5	6	7	885-90	885-98	2	3	4	5	6	7	885-90	885-98	2	3	4	5	6	7	885-90	885-98												
					2	3	4	5	6	7	2	3	4	5	6	7	2	3	4	5	6	7	2	3	4	5	6	7												
1	6	0.25	100 (47)	0.080 (20.0)	56	49	44	45	37	34	-	-	57	52	47	46	38	36	-	-	58	53	51	46	41	38	-	-												
			200 (94)	0.100 (24.9)	58	51	46	45	38	36	-	-	58	53	48	46	40	38	-	-	59	54	51	46	42	39	-	-												
			250 (118)	0.110 (27.5)	59	52	46	46	39	37	-	-	59	54	49	46	41	39	-	-	59	55	52	46	43	41	-	-												
			300 (142)	0.127 (31.6)	59	53	48	46	41	39	-	-	59	55	50	46	42	40	-	-	60	56	52	46	44	41	-	-												
			400 (189)	0.160 (39.7)	60	54	51	46	42	42	-	-	60	55	52	46	43	42	-	-	61	56	52	47	44	43	-	-												
			450 (212)	0.176 (43.8)	61	56	52	47	44	44	-	-	61	57	53	48	45	44	-	-	62	58	54	48	45	44	-	-												
			500 (236)	0.192 (47.9)	62	58	54	48	45	45	-	-	62	58	54	48	46	46	-	-	63	59	54	48	46	46	-	-												
600 (283)	0.241 (60.1)	63	60	57	49	48	47	-	-	64	60	57	49	49	48	-	-	65	61	58	50	49	48	-	-															
2	8	0.25	200 (94)	0.084 (20.9)	51	48	44	46	37	29	-	-	52	49	44	47	37	30	-	-	54	51	45	48	37	30	-	-												
			300 (142)	0.094 (23.5)	55	51	46	48	40	35	-	-	56	52	48	49	40	34	-	-	58	54	50	50	39	34	-	-												
			400 (189)	0.105 (26.2)	57	53	48	49	42	38	-	-	59	54	50	50	42	38	-	-	60	56	52	51	42	37	-	-												
			500 (236)	0.116 (28.8)	60	55	50	50	44	41	-	-	61	56	52	51	44	41	-	-	62	58	53	52	44	41	-	-												
			650 (307)	0.138 (34.4)	63	57	52	51	46	45	-	-	63	58	54	52	47	45	-	-	64	60	55	53	47	45	-	-												
			800 (378)	0.161 (40.1)	65	60	55	52	49	49	-	-	66	61	56	53	50	49	-	-	66	62	58	55	50	50	-	-												
			875 (413)	0.175 (43.5)	68	61	56	53	50	51	-	-	68	63	58	54	51	52	-	-	69	64	59	56	52	52	-	-												
950 (448)	0.188 (46.9)	70	63	57	54	52	53	-	-	70	64	59	55	53	54	-	-	70	66	61	57	54	55	21	22															
1100 (519)	0.227 (56.6)	73	65	60	55	54	57	22	23	73	66	62	56	56	58	22	23	73	68	63	58	57	60	24	25															
3	10	0.25	300 (142)	0.088 (21.9)	52	50	41	38	35	30	-	-	54	52	42	41	37	31	-	-	58	54	46	43	39	33	-	-												
			500 (236)	0.103 (25.7)	55	52	44	40	38	34	-	-	58	54	46	43	40	35	-	-	60	56	50	45	42	37	-	-												
			775 (366)	0.125 (31.1)	60	55	48	44	43	38	-	-	62	57	51	46	44	40	-	-	64	59	54	48	45	41	-	-												
			925 (437)	0.136 (33.9)	62	56	50	47	45	43	-	-	64	58	52	48	47	44	-	-	66	60	55	50	47	45	-	-												
			1075 (507)	0.158 (39.3)	64	58	52	50	47	47	-	-	65	59	54	52	48	48	-	-	67	61	56	52	49	48	-	-												
			1325 (625)	0.190 (47.2)	68	60	56	52	48	47	-	-	69	62	57	53	49	48	-	-	70	63	59	53	50	49	-	-												
			1450 (684)	0.204 (50.9)	71	61	58	54	53	51	-	-	71	63	59	54	53	52	-	-	71	64	60	55	54	53	-	-												
1625 (767)	0.254 (63.2)	73	63	61	57	56	55	22	23	73	64	61	57	56	56	22	23	73	66	62	58	57	57	22	23															
1700 (802)	0.270 (67.2)	74	64	62	58	57	56	23	25	74	64	63	59	57	57	23	25	75	66	63	59	58	57	25	26															
4	12	0.25	450 (212)	0.076 (18.9)	55	51	43	41	37	32	-	-	58	54	47	44	40	35	-	-	61	57	51	45	39	35	-	-												
			650 (307)	0.084 (20.9)	58	53	46	44	40	36	-	-	60	56	49	46	43	38	-	-	63	59	53	48	42	39	-	-												
			900 (425)	0.094 (23.4)	61	55	50	47	43	38	-	-	63	58	52	49	45	42	-	-	65	60	55	51	45	42	-	-												
			1100 (519)	0.100 (25.0)	63	57	52	50	46	44	-	-	65	59	54	52	48	44	-	-	66	61	56	52	48	45	-	-												
			1300 (614)	0.107 (26.6)	65	59	54	55	49	47	-	-	66	61	56	55	50	47	-	-	68	63	58	56	50	48	-	-												
			1500 (708)	0.118 (29.4)	68	60	57	57	53	50	-	-	69	62	58	57	53	51	-	-	69	64	60	57	53	51	-	-												
			1800 (850)	0.143 (35.5)	72	63	61	60	55	53	21	22	72	64	62	61	56	54	21	22	73	66	63	62	57	55	22	23												
2200 (1038)	0.182 (45.3)	75	65	64	67	62	61	25	26	76	66	64	68	62	62	26	27	76	68	66	66	62	61	26	27															
2500 (1180)	0.212 (52.7)	76	65	65	68	64	63	26	27	77	66	66	68	65	64	27	29	77	70	68	69	65	64	27	29															
5	14	0.25	550 (260)	0.072 (18.0)	57	50	46	41	40	38	-	-	60	53	49	43	42	40	-	-	62	57	52	44	43	41	-	-												
			775 (366)	0.081 (20.1)	59	52	48	43	42	40	-	-	61	55	50	45	43	41	-	-	63	58	53	47	43	42	-	-												
			1000 (472)	0.090 (22.5)	60	54	49	45	44	42	-	-	62	56	52	47	46	45	-	-	64	59	54	49	47	44	-	-												
			1500 (708)	0.106 (26.5)	63	57	53	49	48	46	-	-	65	59	55	51	49	48	-	-	67	61	57	52	50	51	-	-												
			1950 (920)	0.134 (33.3)	66	60	57	53	53	51	-	-	68	62	58	54	54	51	-	-	69	63	59	55	55	52	-	-												
			2200 (1038)	0.149 (37.0)	68	64	59	55	55	53	-	-	70	65	60	56	56	53	-	-	72	66	61	57	57	53	21	22												
			2675 (1263)	0.209 (52.0)	70	66	62	59	59	57	21	22	72	66	63	60	59	56	21	22	73	67	63	60	59	55	22	24												
3000 (1416)	0.246 (61.2)	74	70	66	62	61	60	26	27	75	72	67	63	62	61	28	29	75	73	68	64	63	61	29	31															
3250 (1534)	0.278 (69.3)	76	72	67	64	63	62	28	29	76	73	68	65	64	62	29	31	77	74	69	66	64	63	31	32															
6	16	0.25	750 (354)	0.083 (20.6)	58	51	47	42	32	30	-	-	61	53	49	43	38	32	-	-	62	55	50	43	39	33	-	-												
			950 (448)	0.088 (21.8)	60	53	48	43	35	32	-	-	63	55	50	45	40	35	-	-	64	56	52	45	41	39	-	-												
			1525 (720)	0.104 (25.9)	64	60	53	47	41	35	-	-	65	60	54	49	45	41	-	-	67	60	56	49	46	45	-	-												
			1800 (850)	0.115 (28.7)	67	61	54	49	43	38	-	-	68	62	56	50	47	45	-	-	69	62	58	51	49	47	-	-												
			2400 (1133)	0.138 (34.3)	72	66	59	52	50	48	21	22	73	66	60	54	52	51	22	23	73	67	61	56	55	54	22	24												
			3000 (1416)	0.165 (41.2)	75	69	61	56	56	55	25	26	75	69	63	58	58	57	25	26	76	70	65	60	59	59	28	27												
			3500 (1652)	0.188 (46.9)	77	70	63	58	60	58	27	29	77	71	64	60	61	60	27	29	77	72	65	61	61	60	28	29												
4000 (1888)	0.218 (54.3)	78	71	64	62	61	60	29	30	78	72	65	63	61																										

Parallel Fan Powered Air Terminal Units

FVI-500 - Discharge Sound Power 1.5", 2" WG

Case	Inlet	Outlet Ps in. H ₂ O	CFM (L/s)	Min Ps in. H ₂ O (Pa)	Inlet Pressure, Ps = 1.5 inches of water (125 Pa)								Inlet Pressure, Ps = 2.0 inches of water (187 Pa)									
					Octave Band Sound Power, Lw, dB							NC1 ARI 885-	NC2 ARI 885-	Octave Band Sound Power, Lw, dB							NC1 ARI 885-	NC2 ARI 885-
					2	3	4	5	6	7	90	98	2	3	4	5	6	7	90	98		
1	6	0.25	100 (47)	0.080 (20.0)	58	54	51	46	42	39	-	-	59	56	52	47	43	41	-	-		
			200 (94)	0.100 (24.9)	59	55	52	46	43	40	-	-	61	57	53	48	44	42	-	-		
			250 (118)	0.110 (27.5)	60	56	52	47	44	41	-	-	62	57	54	49	44	43	-	-		
			300 (142)	0.127 (31.6)	60	56	53	47	44	42	-	-	62	58	55	49	45	44	-	-		
			400 (189)	0.160 (39.7)	61	57	53	47	45	44	-	-	63	59	56	50	46	46	-	-		
			450 (212)	0.176 (43.8)	63	58	54	50	46	45	-	-	64	61	57	52	48	47	-	-		
			500 (236)	0.192 (47.9)	64	60	55	52	47	47	-	-	65	63	58	53	49	49	-	21		
			600 (283)	0.241 (60.1)	66	62	59	54	50	49	-	-	67	64	60	54	51	50	-	22		
2	8	0.25	200 (94)	0.084 (20.9)	56	53	48	50	40	39	-	-	59	55	51	50	42	35	-	-		
			300 (142)	0.094 (23.5)	60	55	52	51	41	36	-	-	62	57	53	52	44	38	-	-		
			400 (189)	0.105 (26.2)	62	57	54	52	44	39	-	-	63	59	55	54	46	41	-	-		
			500 (236)	0.116 (28.8)	63	59	55	53	46	43	-	-	64	60	56	53	47	45	-	-		
			650 (307)	0.138 (34.4)	65	60	58	54	49	48	-	-	66	61	58	55	50	49	-	-		
			800 (378)	0.161 (40.1)	67	63	60	55	51	51	-	-	68	64	61	56	52	52	-	-		
			875 (413)	0.175 (43.5)	70	65	61	57	53	52	-	21	71	66	62	58	54	53	21	22		
			950 (448)	0.188 (46.9)	72	67	63	58	56	55	22	24	73	68	65	59	58	57	24	25		
1100 (519)	0.227 (56.6)	74	69	64	59	58	61	25	26	75	70	66	60	59	62	26	27					
3	10	0.25	300 (142)	0.088 (21.9)	60	56	48	44	41	35	-	-	61	58	50	47	43	38	-	-		
			500 (236)	0.103 (25.7)	62	58	52	46	45	39	-	-	63	59	55	48	46	44	-	-		
			775 (366)	0.125 (31.1)	65	60	55	49	47	44	-	-	66	61	59	51	49	46	-	-		
			925 (437)	0.136 (33.9)	67	61	57	51	48	46	-	-	68	63	58	53	52	48	-	-		
			1075 (507)	0.158 (39.3)	68	63	59	52	49	48	-	-	69	64	60	56	54	49	-	-		
			1325 (625)	0.190 (47.2)	71	65	60	53	50	49	-	21	72	66	62	57	55	54	21	22		
			1450 (684)	0.204 (50.9)	73	66	62	56	55	51	22	23	74	68	63	58	56	56	24	25		
			1625 (767)	0.254 (63.2)	74	67	63	59	58	57	23	25	75	69	64	60	58	57	25	26		
1700 (802)	0.270 (67.2)	76	68	64	60	59	58	26	27	76	71	65	61	60	59	27	28					
4	12	0.25	450 (212)	0.076 (18.9)	62	58	53	47	41	37	-	-	63	59	54	49	45	42	-	-		
			650 (307)	0.084 (20.9)	64	60	55	49	44	40	-	-	66	61	56	52	46	45	-	-		
			900 (425)	0.094 (23.4)	66	61	57	52	47	43	-	-	67	62	58	54	50	47	-	-		
			1100 (519)	0.100 (25.0)	67	63	58	54	49	46	-	-	68	64	60	57	52	50	-	-		
			1300 (614)	0.107 (26.6)	69	65	59	57	51	49	-	21	71	66	62	60	55	54	21	22		
			1500 (708)	0.118 (29.4)	71	67	61	58	53	51	22	24	73	68	64	63	56	55	24	25		
			1800 (850)	0.143 (35.5)	74	70	64	63	58	56	26	27	76	70	66	64	59	57	26	27		
			2200 (1038)	0.182 (45.3)	77	71	68	67	64	62	27	29	79	73	69	68	65	63	30	31		
2500 (1180)	0.212 (52.7)	78	72	70	69	67	65	29	30	80	75	71	70	68	66	32	33					
5	14	0.25	550 (260)	0.072 (18.0)	63	58	53	45	44	43	-	-	64	59	54	46	45	43	-	-		
			775 (366)	0.081 (20.1)	64	59	54	48	45	44	-	-	65	60	56	49	46	45	-	-		
			1000 (472)	0.090 (22.5)	65	60	55	51	48	46	-	-	67	62	57	52	49	48	-	-		
			1500 (708)	0.106 (26.5)	68	62	58	54	51	50	-	-	71	65	61	55	55	52	-	21		
			1950 (920)	0.134 (33.3)	73	67	62	57	56	53	22	24	74	69	64	59	58	55	25	26		
			2200 (1038)	0.149 (37.0)	74	70	65	59	58	55	26	27	75	71	66	61	60	56	27	28		
			2675 (1263)	0.209 (52.0)	75	71	66	61	60	57	27	28	76	73	67	63	61	60	29	31		
			3000 (1416)	0.246 (61.2)	76	74	69	65	64	62	31	32	77	75	70	66	65	63	32	33		
3250 (1534)	0.278 (69.3)	78	75	70	67	65	64	32	33	78	76	71	68	67	66	33	34					
6	16	0.25	750 (354)	0.083 (20.6)	63	58	51	45	41	40	-	-	64	58	53	57	43	42	-	-		
			950 (448)	0.088 (21.8)	65	58	54	47	43	42	-	-	66	59	56	50	45	44	-	-		
			1525 (720)	0.104 (25.9)	68	61	57	50	47	46	-	-	69	62	59	53	51	50	-	-		
			1800 (850)	0.115 (28.7)	70	64	59	53	52	51	-	-	71	66	63	57	53	52	21	22		
			2400 (1133)	0.138 (34.3)	75	68	62	58	57	56	25	26	77	70	66	60	58	57	27	29		
			3000 (1416)	0.165 (41.2)	77	74	69	65	63	61	31	32	79	77	70	64	62	61	34	35		
			3500 (1652)	0.188 (46.9)	78	75	70	65	65	62	32	33	81	78	72	67	66	63	35	37		
			4000 (1888)	0.218 (54.3)	81	76	71	67	66	63	33	34	84	81	73	68	67	64	39	40		
4400 (2077)	0.247 (61.4)	83	77	72	68	67	65	35	36	85	82	74	69	68	66	40	41					
7	18 x 16	0.25	975 (460)	0.178 (44.4)	62	57	50	48	41	35	-	-	63	59	52	49	45	40	-	-		
			1200 (566)	0.021 (5.2)	66	63	57	56	51	49	-	-	68	64	61	59	55	52	-	-		
			1600 (755)	0.028 (6.9)	70	66	59	58	56	52	21	22	72	67	62	61	60	59	22	24		
			2000 (944)	0.036 (9.0)	75	71	61	60	58	57	27	28	76	72	68	66	62	64	28	29		
			2500 (1180)	0.056 (14.0)	78	74	63	61	60	59	31	32	79	75	69	68	65	65	32	33		
			3300 (1558)	0.098 (24.4)	81	79	75	73	71	70	37	38	82	80	76	74	72	71	38	39		
			4200 (1982)	0.170 (42.4)	84	82	78	78	77	77	40	41	85	83	79	80	79	73	41	42		
			5000 (2360)	0.298 (74.2)	85	83	81	79	78	77	41	42	86	84	82	81	79	78	42	44		
5600 (2643)	0.454 (113.0)	86	84	82	80	79	78	42	44	87	85	83	82	80	79	44	45					

Parallel Fan Powered Air Terminal Units

See Page FVI-152 For NC Calculations

NC CALCULATIONS

The current ARI Standard for NC calculations is ARI 885-98. Other terminal manufacturers may catalog performance based on ARI 885-90. Using this older, obsolete standard will provide lower NC levels compared to the 1998 standard. To allow for fair and accurate performance comparisons, METALAIRE publishes the NC levels for both the 1990 standard and the 1998 current standard.



FVI-500 - Sound Path Attenuation Assumptions

NC CALCULATIONS

The current ARI Standard for NC calculations is ARI 885-98. Other terminal manufacturers may catalog performance based on ARI 885-90. Using this older, obsolete standard will provide lower NC levels compared to the 1998 standard. To allow for fair and accurate performance comparisons, METALAIRE publishes the NC levels for both the 1990 standard and the 1998 current standard.

ARI 885-90 Radiated Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	3	2	1	1	1	1
Ceiling Effect	9	10	12	14	15	15
Room Effect	9	10	10	11	12	13
Total dB Reduction	21	22	23	26	28	29

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-90.

- Parameters:
- 1) Mineral fiber ceiling tile, 5/8" thick (35 lb/ft³ density).
 - 2) Room size is 3000 ft³.
 - 3) Unit is located 10 ft from measurement point.

ARI 885-90 Discharge Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	3	2	1	1	1	1
Duct Lining	1	3	8	22	23	13
End Reflection	11	6	2	0	0	0
Flex Duct	6	9	23	25	22	13
Room Effect	9	10	10	11	12	13
Total dB Reduction	30	30	44	59	58	40

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-90.

- Parameters:
- 1) Fiberglass duct lining is 1 inch thick, 12" x 12" duct length is 5 feet.
 - 2) Flex duct is 8 inches in diameter and 6 feet in length for run to diffuser.
 - 3) Flex duct has a vinyl core.
 - 4) Room size is 3000 ft³.
 - 5) Unit is located 10 ft from measurement point.
 - 6) Attenuation credit based on a 300 CFM flow division using 10 log (# space) not shown above

ARI 885-98 Radiated Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Ceiling/Space Effect	16	18	20	26	31	36
Total dB Reduction	18	19	20	26	31	36

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-98.

- Parameters:
- 1) Mineral fiber ceiling tile, 5/8" thick (35 lb/ft³ density).
 - 2) The plenum space is at least 3 ft deep and either wide (>30 ft) or insulated.

* Combined effect including absorption of the ceiling tile, plenum absorption and room absorption.
(New to ARI 885-98. ARI 885-90 had separate lines for these absorptions.)

ARI 885-98, APPE defined "Medium" application from 300 to 700 CFM

ARI 885-98 Discharge Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Duct Lining	2	4	10	20	20	14
End Reflection	9	5	2	0	0	0
Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
Total dB Reduction	24	26	37	48	50	36

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-98.

- Parameters:
- 1) 12" x 12" x 5' duct with 1 inch thick fiberglass lining.
 - 2) Flex duct is 8 inches in diameter and 5 feet in length for run to diffuser.
 - 3) Flex duct has a vinyl core.
 - 4) Room size is 2400 ft³ (size of standard test room).
 - 5) Unit is located 5 ft from measurement point.
 - 6) Attenuation credit based on a 300 CFM flow division using 10 log (# space) not shown above

ARI 885-98, APPE defined "Large" application 700 CFM & greater

ARI 885-98 Discharge Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Duct Lining	2	3	9	18	17	12
End Reflection	9	5	2	0	0	0
Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
Total dB Reduction	24	25	36	46	47	34

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-98.

- Parameters:
- 1) 15" x 15" x 5' duct with 1 inch thick fiberglass lining.
 - 2) Flex duct is 8 inches in diameter and 5 feet in length for run to diffuser.
 - 3) Flex duct has a vinyl core.
 - 4) Room size is 2400 ft³ (size of standard test room).
 - 5) Unit is located 5 ft from measurement point.
 - 6) Attenuation credit based on a 300 CFM flow division using 10 log (# space) not shown above



Parallel Fan Powered Air Terminal Units

FVI-500 - Hot Water Coil MBH Selection Data/Imperial Units

Unit Size	Rows	GPM	Head Loss (Ft-H ₂ O)	CFM							
				225	300	350	375	400	425	475	500
1	One	1	0.15	11.1	12.7	13.6	14.0	14.4	14.7	15.4	15.7
		2	0.59	12.3	14.3	15.5	16.0	16.5	17.0	17.9	18.3
		4	2.26	13.0	15.4	16.7	17.3	17.9	18.5	19.6	20.1
		6	4.96	13.3	15.8	17.2	17.8	18.5	19.1	20.2	20.7
		Airside Ps	0.01	0.01	0.02	0.02	0.02	0.03	0.03	0.03	0.03
1	Two	1	0.06	15.4	17.9	19.2	19.8	20.4	20.9	21.9	22.3
		2	0.25	17.6	21.0	23.0	23.9	24.7	25.5	27.0	27.7
		4	0.95	19.0	23.1	25.5	26.7	27.7	28.8	30.7	31.6
		6	2.12	19.6	24.0	26.3	27.8	28.9	30.1	32.2	33.2
		Airside Ps	0.02	0.03	0.04	0.05	0.05	0.06	0.07	0.07	0.07
Unit Size	Rows	GPM	Head Loss (Ft-H ₂ O)	CFM							
				350	450	525	550	600	725	800	875
2	One	1	0.15	13.6	15.1	16.0	16.3	16.8	17.9	18.5	18.9
		2	0.59	15.5	17.5	18.7	19.1	19.8	21.4	22.3	23.0
		4	2.26	16.7	19.0	20.5	21.0	21.9	23.9	24.9	25.9
		6	4.96	17.2	19.6	21.3	21.8	22.7	24.9	26.0	27.0
		Airside Ps	0.02	0.03	0.04	0.04	0.05	0.06	0.07	0.07	0.09
2	Two	1	0.06	19.2	21.4	22.7	23.1	23.8	25.6	26.2	26.8
		2	0.25	23.0	26.3	28.4	29.0	30.2	33.3	34.2	35.5
		4	0.95	25.5	29.7	32.5	36.4	35.0	39.3	40.6	42.4
		6	2.12	26.5	31.1	34.2	35.2	37.0	41.9	43.3	45.4
		Airside Ps	0.04	0.06	0.08	0.09	0.10	0.15	0.16	0.19	0.19
Unit Size	Rows	GPM	Head Loss (Ft-H ₂ O)	CFM							
				545	625	700	800	975	1050	1125	1200
3	One	1	0.21	19.1	20.1	21.0	22.0	23.4	23.9	24.4	24.9
		2	0.79	22.5	24.0	25.2	26.7	28.9	29.7	30.5	31.2
		4	3.00	24.8	26.5	28.1	29.9	32.7	33.8	34.9	35.8
		6	6.58	25.6	27.5	29.2	31.2	34.3	35.5	36.6	37.7
		Airside Ps	0.02	0.03	0.03	0.04	0.05	0.06	0.07	0.08	0.08
3	Two	1	0.08	26.3	27.7	28.8	30.1	31.9	32.6	33.2	33.7
		2	0.30	32.9	35.3	37.2	39.6	43.0	44.3	45.5	46.6
		4	1.15	37.7	40.9	43.6	46.9	51.9	53.8	55.6	57.3
		6	2.54	39.6	43.1	46.2	49.9	55.7	58.0	60.1	62.1
		Airside Ps	0.05	0.06	0.07	0.09	0.12	0.14	0.15	0.17	0.17
Unit Size	Rows	GPM	Head Loss (Ft-H ₂ O)	CFM							
				785	925	1000	1075	1175	1275	1375	1400
4	One	1	0.21	21.8	23.0	23.6	24.1	24.7	25.3	25.8	25.9
		2	0.79	26.5	28.3	29.2	30.0	31.0	31.9	32.8	33.0
		4	3.00	29.6	32.0	33.1	34.2	35.5	36.7	37.9	38.2
		6	6.58	30.9	33.5	34.7	35.9	37.4	38.7	40.0	40.3
		Airside Ps	0.04	0.05	0.06	0.06	0.08	0.09	0.10	0.10	0.10
4	Two	1	0.08	29.9	31.4	32.1	32.8	33.5	34.2	34.8	35.0
		2	0.30	39.2	42.1	43.4	44.7	46.2	47.6	48.8	49.1
		4	1.15	46.4	50.5	52.5	54.4	56.8	58.9	60.9	61.4
		6	2.54	49.4	54.2	56.5	58.7	61.4	64.0	66.4	67.0
		Airside Ps	0.08	0.11	0.13	0.14	0.16	0.19	0.21	0.22	0.22
Unit Size	Rows	GPM	Head Loss (Ft-H ₂ O)	CFM							
				975	1070	1150	1225	1300	1400	1550	1650
5	One	1	0.21	23.4	24.1	24.6	25.0	25.4	25.9	26.6	27.0
		2	0.79	28.9	29.9	30.7	31.5	32.1	33.0	34.1	34.8
		4	3.01	32.7	34.1	35.2	36.1	37.0	38.2	39.7	40.7
		6	6.59	34.3	35.8	37.0	38.1	39.1	40.3	42.1	43.2
		Airside Ps	0.05	0.06	0.07	0.08	0.09	0.10	0.12	0.14	0.14
5	Two	1	0.08	31.9	32.7	33.4	33.9	34.4	35.0	35.8	36.2
		2	0.30	43.0	44.6	45.8	46.9	47.9	49.1	50.8	51.8
		4	1.15	51.9	54.3	56.2	57.9	59.4	61.4	64.1	65.8
		6	2.54	55.7	58.5	60.8	62.8	64.6	67.0	70.3	72.3
		Airside Ps	0.12	0.14	0.16	0.18	0.19	0.22	0.26	0.29	0.29
Unit Size	Rows	GPM	Head Loss (Ft-H ₂ O)	CFM							
				1175	1275	1395	1450	1550	1625	1700	1800
6	One	1	0.22	25.8	26.4	27.0	27.3	27.5	28.1	28.4	28.8
		2	0.84	32.4	33.4	34.5	34.9	35.3	36.3	36.8	37.5
		4	3.19	37.2	38.5	40.0	40.6	41.2	42.5	43.2	44.2
		6	6.99	39.1	40.6	42.2	43.0	43.6	45.1	45.9	47.0
		Airside Ps	0.06	0.07	0.09	0.09	0.10	0.11	0.12	0.12	0.13
6	Two	1	0.08	34.7	35.4	36.1	36.4	37.0	37.3	37.7	38.1
		2	0.31	47.9	49.3	50.9	51.6	52.7	53.5	54.3	55.3
		4	1.20	58.9	61.2	63.7	64.8	66.7	68.0	69.3	71.0
		6	2.65	63.7	66.5	69.5	70.8	73.1	74.7	76.3	78.3
		Airside Ps	0.14	0.16	0.19	0.20	0.22	0.24	0.26	0.29	0.29
Unit Size	Rows	GPM	Head Loss (Ft-H ₂ O)	CFM							
				2000	2200	2400	2600	2800	3000	3200	3400
7	One	1	0.31	35.2	35.9	36.6	37.2	37.7	38.2	38.6	39.0
		3	2.51	53.5	55.4	57.1	58.7	60.2	61.5	62.8	64.0
		6	9.52	61.2	63.8	66.1	68.2	70.3	72.1	73.9	75.6
		9	20.81	64.3	67.1	69.7	72.1	74.4	76.5	78.5	80.5
		Airside Ps	0.07	0.09	0.10	0.12	0.13	0.15	0.17	0.19	0.19
7	Two	1	0.11	44.2	44.9	45.5	46.0	46.5	46.9	-	-
		3	0.89	79.5	82.3	84.8	87.1	89.2	91.0	-	-
		6	3.41	97.9	102.3	106.3	110.1	113.6	116.8	-	-
		9	7.50	105.8	111.1	115.9	120.5	124.7	128.6	-	-
		Airside Ps	0.16	0.19	0.22	0.25	0.29	0.32	-	-	-

Parallel Fan Powered Air Terminal Units



FVI-500



For Performance Notes see page FVI-155 Table A

For more product information visit us at www.metalaire.com



Parallel Fan Powered Air Terminal Units

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FVI-500 - Hot Water Coil MBH Selection Data / Metric Units

Unit Size	Rows	L/s	Head Loss (kPa)	L/s							
				95	140	190	235	285	330	375	450
1	One	0.06	0.45	3.3	3.7	4.0	4.1	4.2	4.3	4.5	4.6
		0.13	1.76	3.6	4.2	4.5	4.7	4.8	5.0	5.3	5.4
		0.25	6.76	3.8	4.5	4.9	5.1	5.3	5.4	5.7	5.9
		0.38	14.83	3.9	4.6	5.0	5.2	5.4	5.6	5.9	6.1
		Airside Ps (kPa)		0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01
1	Two	0.06	0.18	4.5	5.2	5.6	5.8	6.0	6.1	6.4	6.5
		0.13	0.75	5.2	6.2	6.7	7.0	7.3	7.5	7.9	8.1
		0.25	2.84	5.6	6.8	7.5	7.8	8.1	8.4	9.0	9.3
		0.38	6.34	5.7	7.0	7.7	8.1	8.5	8.8	9.5	9.7
		Airside Ps (kPa)		0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02
Unit Size	Rows	L/s	Head Loss (kPa)	L/s							
				165.2	210	245	260	285	340	375	415
2	One	0.06	0.45	4.0	4.4	4.7	4.8	4.9	5.2	5.4	5.6
		0.13	1.76	4.5	5.1	5.5	5.6	5.8	6.3	6.5	6.7
		0.25	6.76	4.9	5.6	6.0	6.2	6.4	7.0	7.3	7.6
		0.38	14.83	5.0	5.8	6.2	6.4	6.7	7.3	7.6	7.9
		Airside Ps (kPa)		0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02
2	Two	0.06	0.18	5.6	6.3	6.7	6.8	7.0	7.5	7.7	7.9
		0.13	0.75	6.7	7.7	8.3	8.5	8.9	9.8	10.0	10.4
		0.25	2.84	7.5	8.7	9.5	10.7	10.3	11.5	11.9	12.4
		0.38	6.34	7.8	9.1	10.0	10.3	10.8	12.3	12.7	13.3
		Airside Ps (kPa)		0.01	0.01	0.02	0.02	0.02	0.04	0.04	0.05
Unit Size	Rows	L/s	Head Loss (kPa)	L/s							
				255	295	330.4	375	460	530	565	640
3	One	0.06	0.63	5.6	5.9	6.2	6.4	6.9	7.0	7.2	7.3
		0.13	2.36	6.6	7.0	7.4	7.8	8.5	8.7	8.9	9.2
		0.25	8.97	7.3	7.8	8.2	8.8	9.6	9.9	10.2	10.5
		0.38	19.67	7.5	8.1	8.6	9.1	10.1	10.4	10.7	11.1
		Airside Ps (kPa)		0.00	0.01	0.01	0.01	0.01	0.01	0.01	0.02
3	Two	0.06	0.24	7.7	8.1	8.4	8.8	9.4	9.6	9.7	9.9
		0.13	0.90	9.7	10.4	10.9	11.6	12.6	13.0	13.3	13.7
		0.25	3.44	11.0	12.0	12.8	13.8	15.2	15.8	16.3	16.8
		0.38	7.59	11.6	12.6	13.5	14.6	16.3	17.0	17.6	18.2
		Airside Ps (kPa)		0.01	0.01	0.02	0.02	0.03	0.03	0.04	0.04
Unit Size	Rows	L/s	Head Loss (kPa)	L/s							
				370	440	470	510	650	660	710	660
4	One	0.06	0.63	6.4	6.7	6.9	7.1	7.2	7.4	7.6	7.6
		0.13	2.36	7.8	8.3	8.5	8.8	9.1	9.4	9.6	9.7
		0.25	8.97	8.7	9.4	9.7	10.0	10.4	10.8	11.1	11.2
		0.38	19.67	9.1	9.8	10.2	10.5	11.0	11.4	11.7	11.8
		Airside Ps (kPa)		0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02
4	Two	0.06	0.24	8.8	9.2	9.4	9.6	9.8	10.0	10.2	10.3
		0.13	0.90	11.5	12.3	12.7	13.1	13.5	14.0	14.3	14.4
		0.25	3.44	13.6	14.8	15.4	16.0	16.6	17.3	17.9	18.0
		0.38	7.59	14.5	15.9	16.6	17.2	18.0	18.8	19.5	19.6
		Airside Ps (kPa)		0.02	0.03	0.03	0.03	0.04	0.05	0.05	0.05
Unit Size	Rows	L/s	Head Loss (kPa)	L/s							
				460	505	545	575	615	660	732	780
5	One	0.06	0.63	6.9	7.1	7.2	7.3	7.5	7.6	7.8	7.9
		0.13	2.36	8.5	8.8	9.0	9.2	9.4	9.7	10.0	10.2
		0.25	9.00	9.6	10.0	10.3	10.6	10.9	11.2	11.7	11.9
		0.38	19.70	10.1	10.5	10.9	11.2	11.5	11.8	12.3	12.7
		Airside Ps (kPa)		0.01	0.01	0.02	0.02	0.02	0.02	0.03	0.03
5	Two	0.06	0.24	9.4	9.6	9.8	9.9	10.1	10.3	10.5	10.6
		0.13	0.90	12.6	13.1	13.4	13.8	14.0	14.4	14.9	15.2
		0.25	3.44	15.2	15.9	16.5	17.0	17.4	18.0	18.8	19.3
		0.38	7.59	16.3	17.2	17.8	18.4	18.9	19.6	20.6	21.2
		Airside Ps (kPa)		0.03	0.03	0.04	0.04	0.05	0.05	0.06	0.07
Unit Size	Rows	L/s	Head Loss (kPa)	L/s							
				555	600	660	685	730	770	800	850
6	One	0.06	0.66	7.6	7.7	7.9	8.0	8.1	8.2	8.3	8.4
		0.13	2.51	9.5	9.8	10.1	10.2	10.4	10.6	10.8	11.0
		0.25	9.53	10.9	11.3	11.7	11.9	12.1	12.5	12.7	13.0
		0.38	20.89	11.5	11.9	12.4	12.6	12.8	13.2	13.5	13.8
		Airside Ps (kPa)		0.01	0.02	0.02	0.02	0.02	0.03	0.03	0.03
6	Two	0.06	0.24	10.2	10.4	10.6	10.7	10.8	10.9	11.0	11.2
		0.13	0.93	14.0	14.5	14.9	15.1	15.5	15.7	15.9	16.2
		0.25	3.59	17.3	17.9	18.7	19.0	19.6	20.0	20.3	20.8
		0.38	7.92	18.7	19.5	20.4	20.8	21.4	21.9	22.4	23.0
		Airside Ps (kPa)		0.03	0.04	0.05	0.05	0.05	0.06	0.06	0.07
Unit Size	Rows	L/s	Head Loss (kPa)	L/s							
				945	1135	1325	1225	1700	1795	1890	2125
7	One	0.06	0.93	10.3	10.5	10.7	10.9	11.1	11.2	11.3	11.4
		0.19	7.50	15.7	16.2	16.7	17.2	17.7	18.0	18.4	18.8
		0.38	28.46	17.9	18.7	19.4	20.0	20.6	21.1	21.7	22.2
		0.57	62.20	18.9	19.7	20.4	21.1	21.8	22.4	23.0	23.6
		Airside Ps (kPa)		0.02	0.02	0.02	0.03	0.03	0.04	0.04	0.05
7	Two	0.06	0.33	15.1	15.3	15.5	13.5	13.6	13.8	-	-
		0.19	2.66	27.1	28.1	28.9	25.5	26.2	26.7	-	-
		0.38	10.19	33.4	34.9	36.2	32.3	33.3	34.3	-	-
		0.57	22.42	36.1	37.9	39.5	35.3	36.6	37.7	-	-
		Airside Ps (kPa)		0.04	0.05	0.05	0.06	0.07	0.08	-	-

Parallel Fan Powered Air Terminal Units



FVI-500

For Performance Notes see page FVI-155 Table B



For more product information visit us at www.metalair.com



Parallel Fan Powered Air Terminal Units

FVI-500 - Hot Water Coils Notes

Table-A

IMPERIAL NOTES

- Hot water coil data are correct for both discharge & induction mounted coils with exception to case 7.
- Values shown in the previous charts assume the following conditions: 180°F EWT, and 65°F EAT. For other conditions of entering water, air temperatures and air flow, see note 5.
- Tabulated values are in MBH (Thousands of BTU per hour).
- Head Loss is in feet of water.
- MBH values are based on a DT (temperature difference) of 115° F between entering air and entering water. For other DTs, multiply the MBH values by the factors below:

DT	Factor
50	.44
60	.52
70	.61
80	.70
90	.79

DT	Factor
100	.88
115	1.00
125	1.07
140	1.20
150	1.30

6. Air Temperature Rise = $\frac{927 \times \text{MBH}}{\text{CFM}}$

7. Water Temperature Drop = $\frac{2.04 \times \text{MBH}}{\text{GPM}}$

8. For water valve sizing, contact your METALAIR representative. For data values other than those listed, interpolate or use the METALAIR Terminal Selection Program. Contact your METALAIR representative for additional information.

9. All hot water coils are 10 Fins per inch (FPI).

Table-B

METRIC NOTES

- Hot water coil data are correct for both discharge & induction mounted coils with exception to case 7.
- Values shown in the previous charts assume the following conditions: Standard Atmospheric Conditions, 82°C EWT, and 18°C EAT. For other conditions of entering water, air temperatures and air flows, see note 5.
- Tabulated values are in kW (Thousands of watts).
- Head loss is in kPa.
- kW values are based on a DT (temperature difference) between entering air and entering water of 64°C. For other DTs, multiply the kW values by the factors below:

DT	Factor
30	.48
35	.55
40	.63
50	.78

DT	Factor
60	.94
64	1.00
70	1.08
80	1.24

6. Air Temperature Rise = $\frac{\text{kW} \times 579}{\text{air flow in L/s}}$

7. Water Temperature Drop = $\frac{\text{kW} \times 0.17}{\text{water flow in L/s}}$

8. For water valve sizing, contact your METALAIR representative. For data values other than those listed, interpolate or use the METALAIR Terminal Selection Program. Contact your METALAIR representative for additional information.

9. All hot water coils are 10 Fins per inch (FPI).

Outlet Dimensions		
Case Size	Standard HW Coil inches (mm)	
	H	W
1	15 (381)	16 (406)
2	15 (381)	16 (406)
3	17.5 (445)	20 (508)
4	17.5 (445)	20 (508)
5	17.5 (445)	20 (508)
6	17.5 (445)	20 (508)
7	20 (550)	30 (762)

Parallel Fan Powered Air Terminal Units



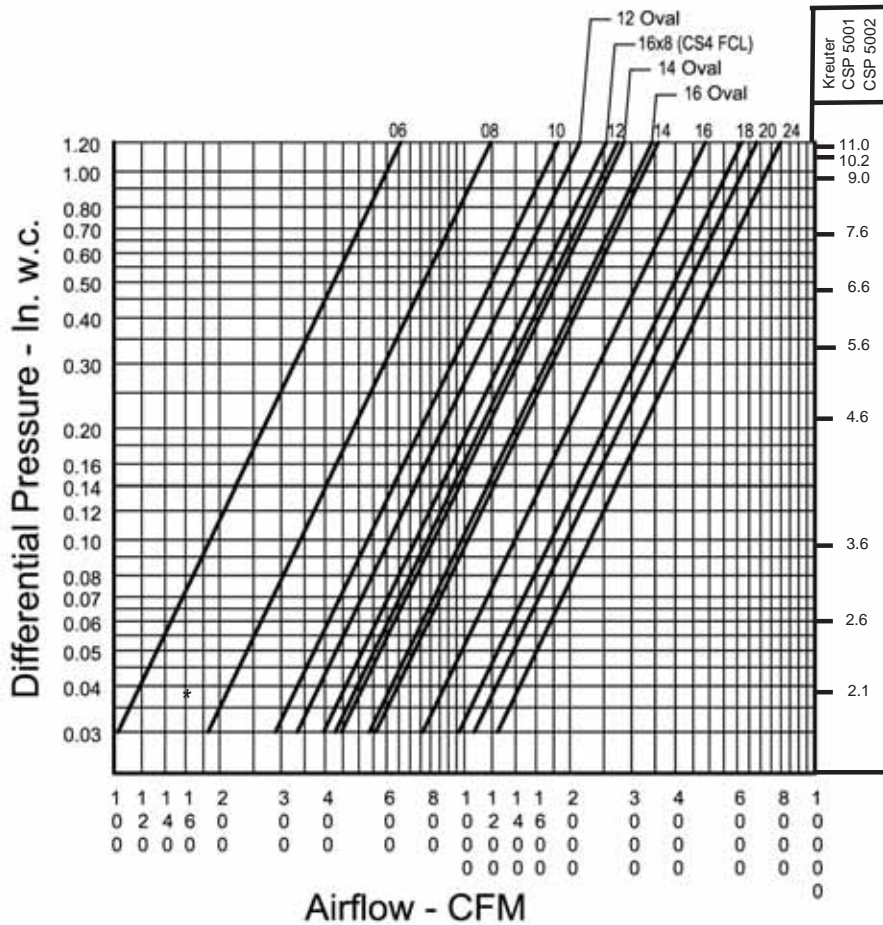
FVI-500



Parallel Fan Powered Air Terminal Units

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FVI-500 - Calibration for METALAIRE Multi-Point Quadrant Averaging Sensor



ATU Model	Inlet Size	Flow Coefficient
TH, FC	06 Round	600
FV, DD	08 "	1100
DH, BP	10 "	1700
RT, RA	12 "	2500
TL (6-10)	14 "	3250
FCL Cs2 (6-8)	16 "	4400
12 TL	12 Oval	1965
14 TL	14 "	2600
16 TL	16 "	3150
FCL Cs4	16x8 Rect.	2340
FC & FV Cs7	18x16 "	5600
TH20	20x16 "	6200
TH24	24x16 "	7200

$$Cfm = \sqrt{\Delta p} \times \text{Flow Coefficient}$$

Data is with Sensor Mounted in Round Duct, except for Rectangular Sizes 18, 20 and 24 Widths x 16 Height and 16 x 8 (FCL Case 4)

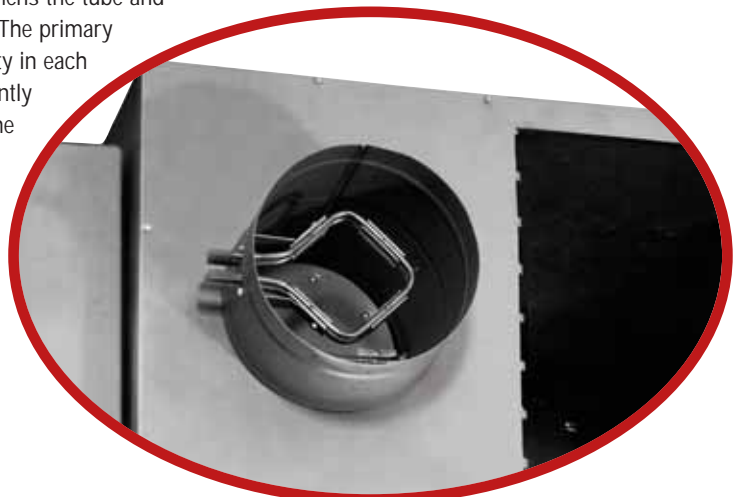
* Some controllers do not operate consistently below 0.030 in. w.c.

PRIMARY AIR VALVE AND MULTI-POINT QUADRANT AVERAGING FLOW SENSOR

Primary air valve has a bead rolled into the tube, which strengthens the tube and serves as a stop to prevent field-attached flex duct from slipping. The primary valve velocity sensor is multi-ported and arranged to sense velocity in each of four quadrants of the inlet. Those port readings are then inherently

FVI-500 Fan Powered Unit - K Factors			
Inlet Size	Inlet Area	CFM @ 1"	K Factor
6	0.20	600	1.72
8	0.35	1100	1.61
10	0.55	1700	1.65
12	0.79	2500	1.58
14	1.07	3250	1.73
16	1.40	4400	1.61
18 x 16	2.00	5600	2.05

averaged back to the access ports. The sensor has two control ports and two accessory ports. Piping connections are made externally.



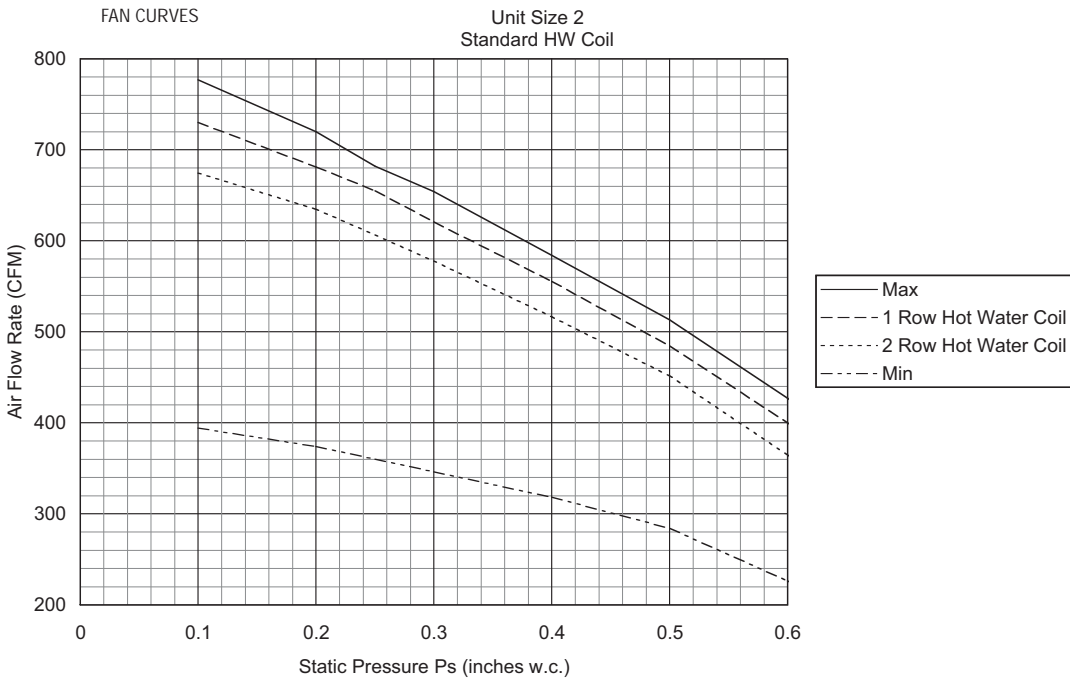
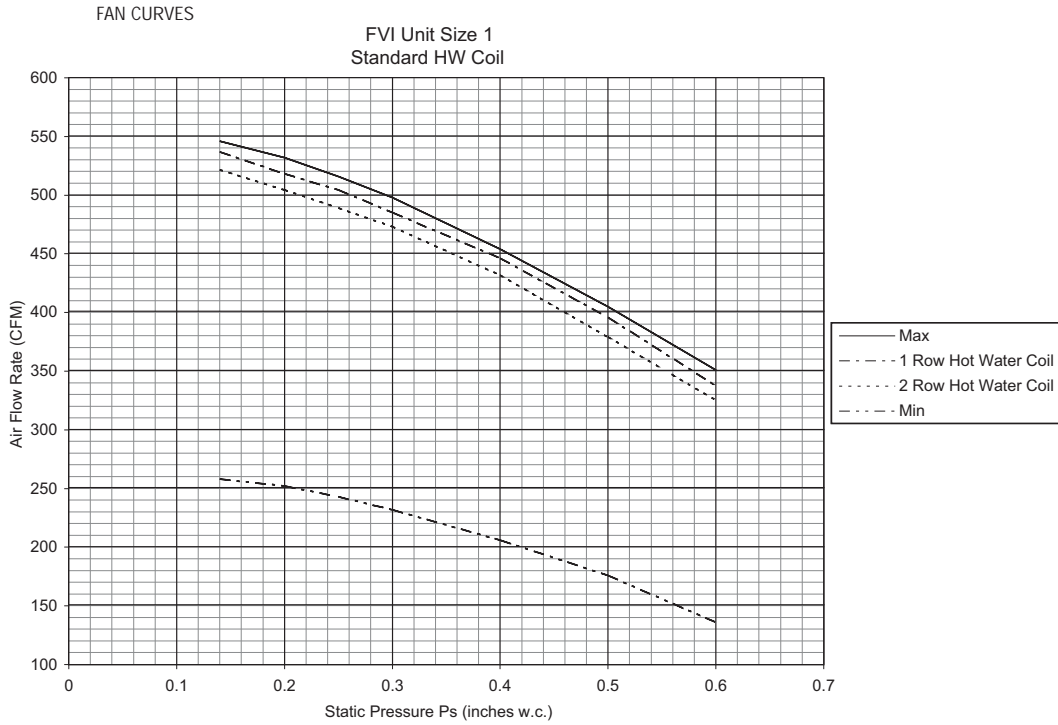
Parallel Fan Powered Air Terminal Units



FVI-500

Parallel Fan Powered Air Terminal Units

FVI-500 - Fan Performance Charts



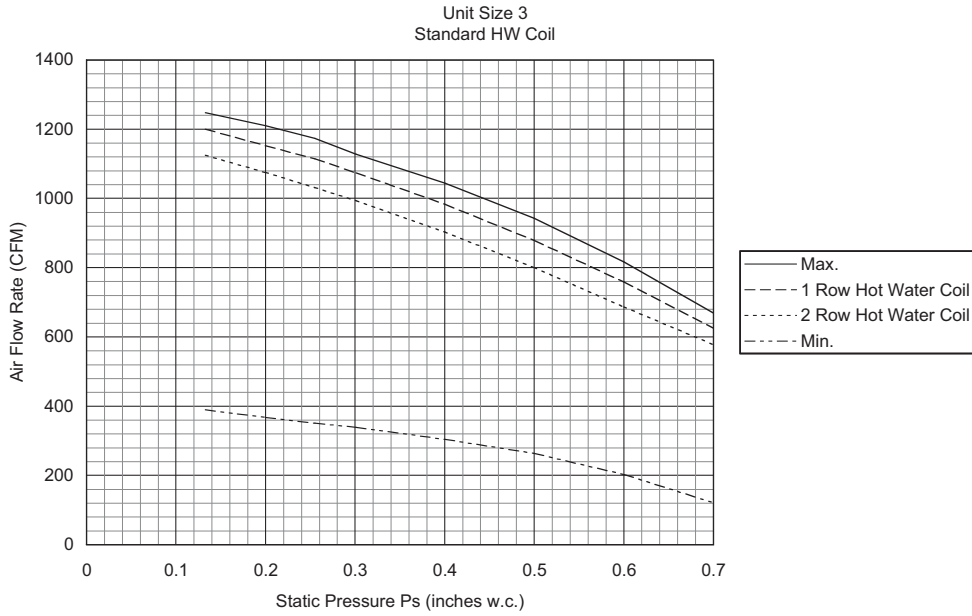
Parallel Fan Powered Air Terminal Units



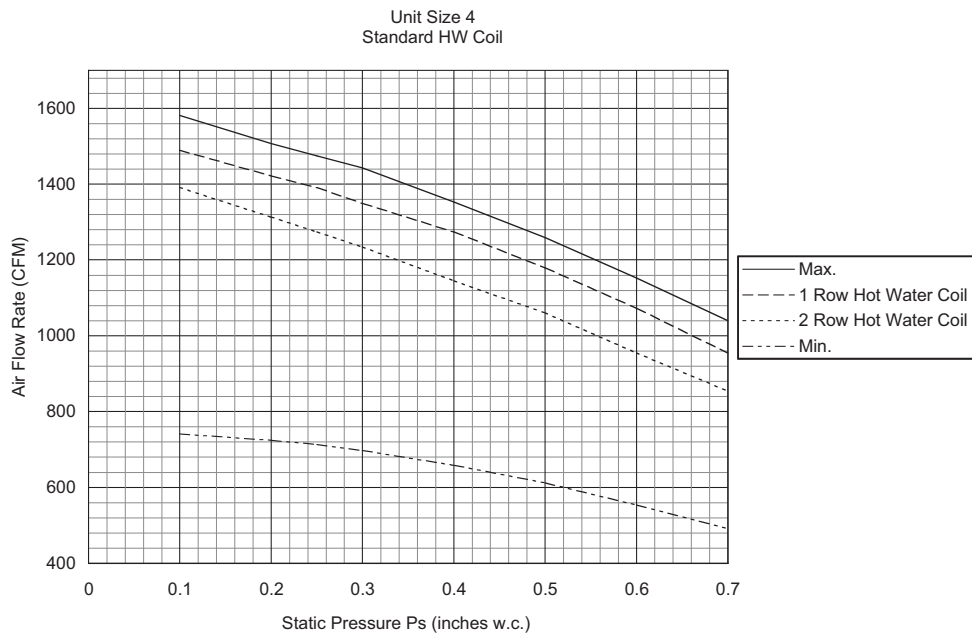
FVI-500

FVI-500 - Fan Performance Charts

FAN CURVES



FAN CURVES



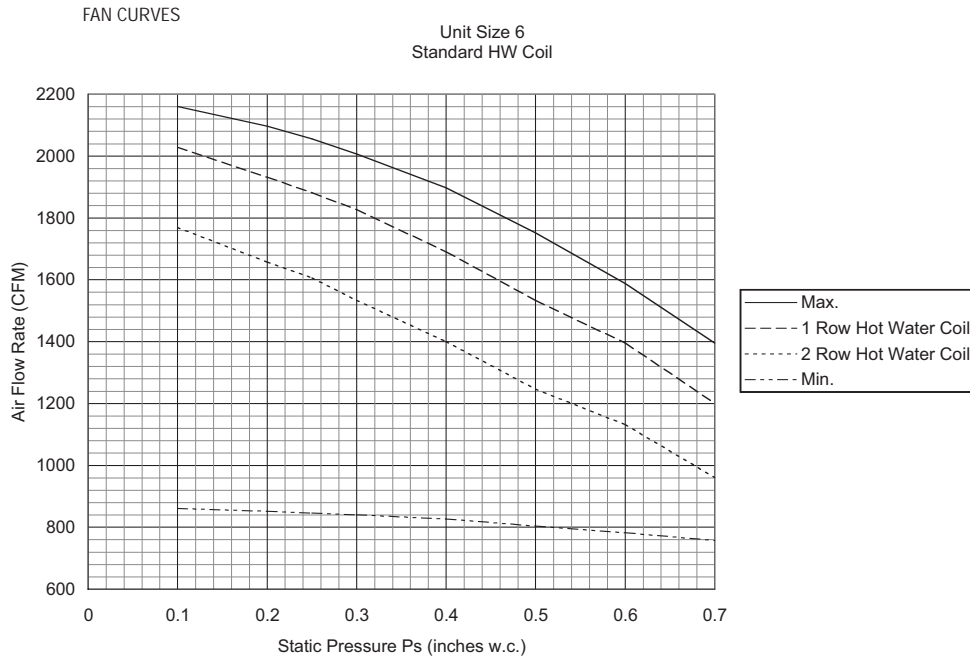
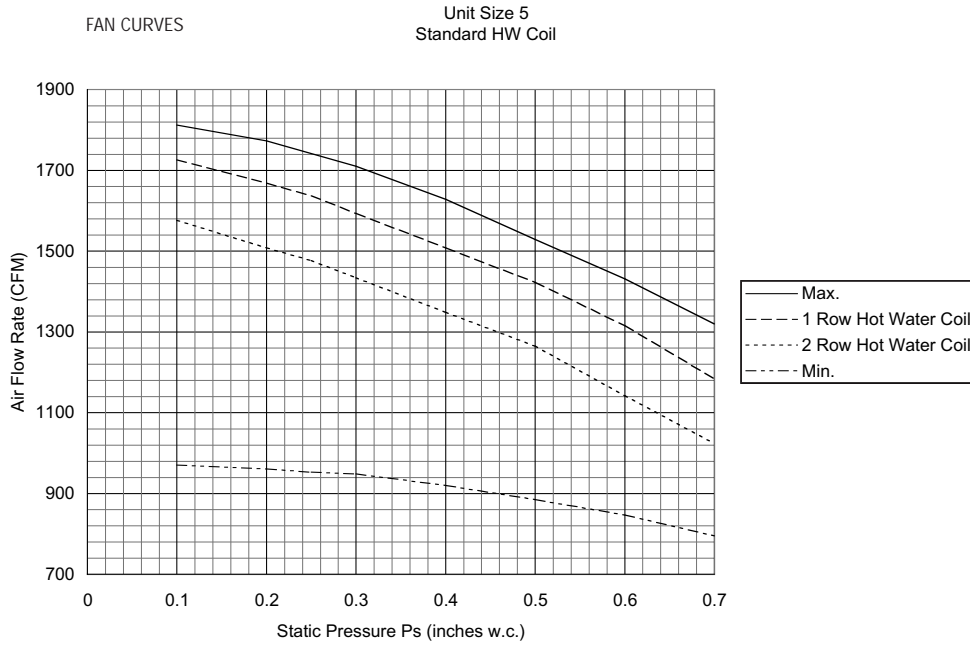
Parallel Fan Powered Air Terminal Units



FVI-500

Parallel Fan Powered Air Terminal Units

FVI-500 - Fan Performance Charts



Parallel Fan Powered Air Terminal Units



FVI-500



For more product information visit us at www.metalair.com

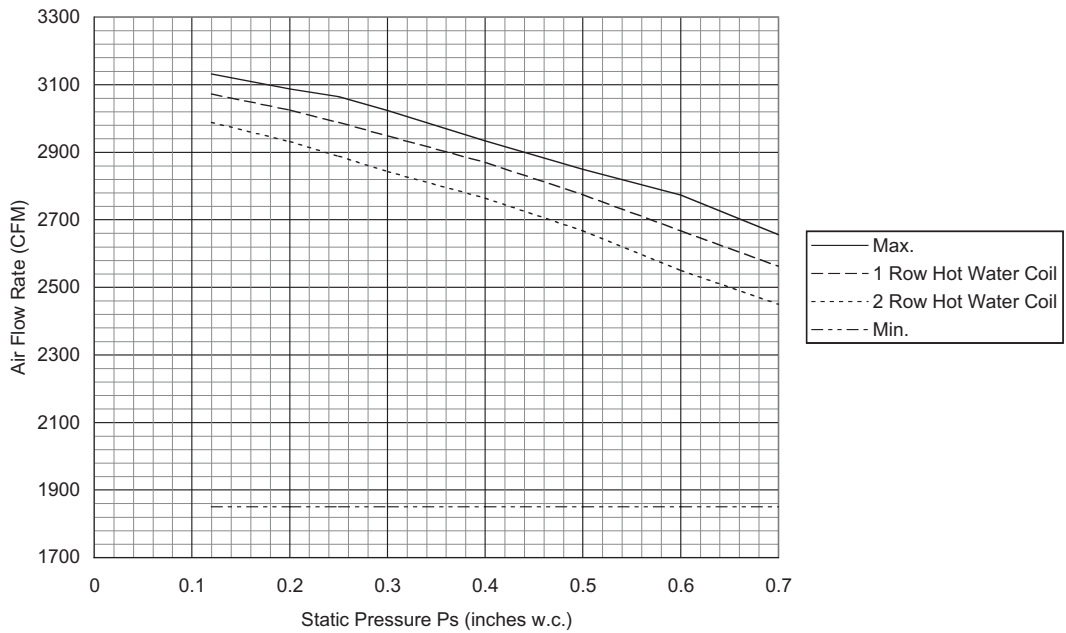


Parallel Fan Powered Air Terminal Units

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FVI-500 - Fan Performance Charts

FVI Unit Size 7
Standard HW Coil



Parallel Fan Powered Air Terminal Units



FVI-500

Parallel Fan Powered Air Terminal Units

ECM Motor

METALAIRE offers the optional GE ECM™ 2.3 motor for the FVI-500 Parallel Fan Powered Terminal. Add the ECM motor to the FVI-500, and you have an ultra high efficient air terminal.

What is an ECM motor?

ECM stands for Electronically Commutated Motors. This technology was developed by GE. The GE ECM™ is a brushless-DC motor with built in speed and torque controls.

Unlike a conventional induction motor, GE's ECM™ motor regulates itself by automatically changing its torque and speed to maintain a pre-programmed level of constant airflow over a wide range of external static pressures and does so without the use of airflow sensors. The ECM's regulated airflow output remains constant over that same range of static pressure.

For optimum heating the ECM system can be programmed to deliver just the right level of airflow for both low and high stage heating comfort.

Features and Benefits

- **Ultra-high efficiency**
ECM 2.3 efficiencies are as high as 82%. At full load the ECM 2.3 is 20% more efficient than a standard induction motor. At low speed the ECM is over 30% more efficient than a standard induction motor. On constant fan speed, the ECM consumes 60-80 Watts as compared to 400 watts for the induction motor. The permanent magnet DC design allows it to maintain its efficiency over its wide speed range.
- **Programmability**
Programming options for the ECM 2.3 include: start/stop ramp rates, on/off blower delays and many other functions all stored in the motor's memory. Even its speed and torque characteristics can be customized to meet specific performance requirements.
- **Self regulating constant airflow**
The GE ECM variable speed motor can run in a wide range of speeds. The motor can be programmed to deliver constant airflow into a wide range of external static pressures in an air distribution system. This is all accomplished without the use of external sensors.

ECM Controls

METALAIRE engineering has carefully integrated the ECM motor into each terminal blower assembly resulting in a terminal fan that produces a constant CFM over a wide range of operating pressures.

The CFM can be adjusted from the specified minimum CFM to the specified maximum CFM by sending the fan a flow index signal. A fan control interface allows external adjustment of the flow index and provides fan on/off control.

GE ECM™ Control Interfaces

Metalair offers two fan control interface devices for fan terminals equipped with the GE ECM motor.

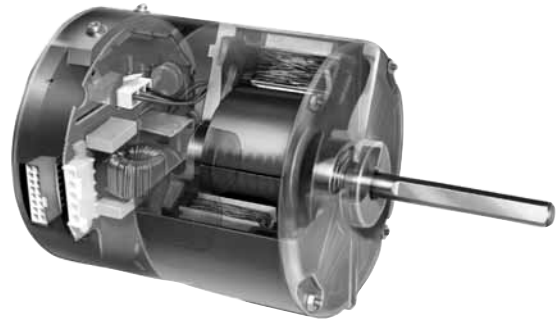
Model ECM-VCU Option 58

The visual fan control interface allows local adjustment of the fan CFM and indicates the fan RPM on an illuminated numerical display. The visual control interface may also be used where automation systems only turn the fan on or off.

Model ECM-RPM Option 57

The automation fan control interface allows an automation system to control fan on/off, fan CFM, and to monitor the fan RPM from the automation console.

Both control interfaces provide a means to monitor fan RPM. This is an important value to record after air balance, and can be used to diagnose system problems.



Optional ECM Motor is available with FVI-500 Series Fan Powered Terminal Units.



Parallel Fan Powered Air Terminal Units



FVI-500

Model ECM-RPM - Remote Adjustment

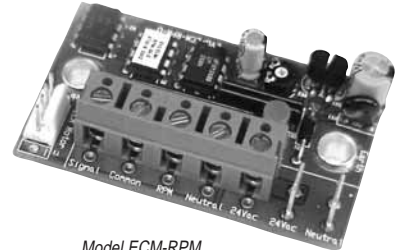
The ECM-RPM allows industry standard 2-10 Vdc controls to adjust and monitor General Electric's ECM Motor™. These are fractional horsepower air moving motors featuring an internal microprocessor. The design provides exceptional efficiency, performance and motor life. The motor may be factory configured to provide constant mass airflow or constant torque.

The ECM-RPM allows remote adjustment of the output from 0% to 100% of the programmed control range. A lamp on the control continuously flashes out the flow index, so instruments are not required to read the value.

The "ECM-RPM" version provides low voltage ON/OFF control by switching the motor's "GO" control when the input signal drops below the 2 volt (4 mA) operating point.

Specifications

Power	NEC Class II Only 24 Vac ± 20% 50/60 Hz 2 W, 4 VA + 1VA/Motor
Control Signal	2-10 Vdc = 0-100% 4-20 mA = 0-100% ON/OFF Control



Model ECM-RPM

Model ECM-VCU - Manual Adjustment

The ECM-VCU control allows accurate manual adjustment and monitoring of fans using General Electric's ECM Motor. These are fractional horsepower air moving motors featuring an internal microprocessor. The design provides exceptional efficiency, performance and motor life. These self regulating motors may be factory configured so the fan will provide constant mass airflow.

Operation

GE ECM™ motors configured for Vspd operation are factory configured for external torque or airflow adjustment. The configuration data includes the fan manufacturer's specified adjustment range. A numerical flow index accurately adjusts the fan to the desired torque or airflow. The flow index is a number from 0-100 having a linear relationship to the minimum to maximum torque or airflow range specified by the motor fan.

The ECM-VCU allows local on/off and fan airflow adjustment. Rotating a single screwdriver adjuster changes the variable output signal to the motor from off to full output. While rotating the adjuster, a numerical flow index is locked on the illuminated numerical display. After adjustment, the display shows fan RPM.

The ECM-VCU may also be used where automation systems only turn the fan on or off.

Specifications

Power	NEC Class II Only 24 Vac ± 20% 50/60 Hz 4 W, 6 VA
Flow Index Adjustment	270° rotation F Off-0-100



Model ECM-VCU



Parallel Fan Powered Air Terminal Units

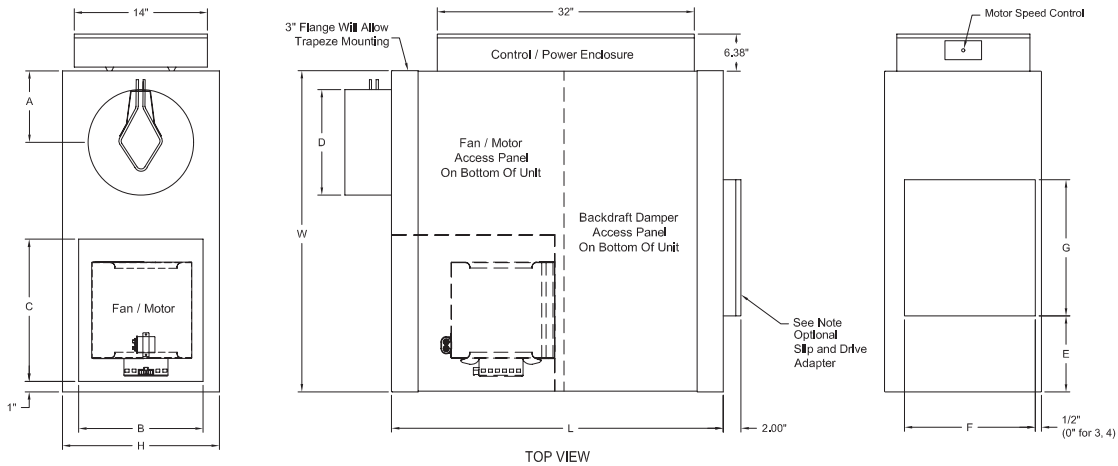
ECM FVI-500 - Air Terminal Dimensions

Dimensions are in inches

Parallel Fan Powered - ECM Motor - Basic Unit

Case Size 3 - 10" Inlet

Case Size 6 - 16" Inlet

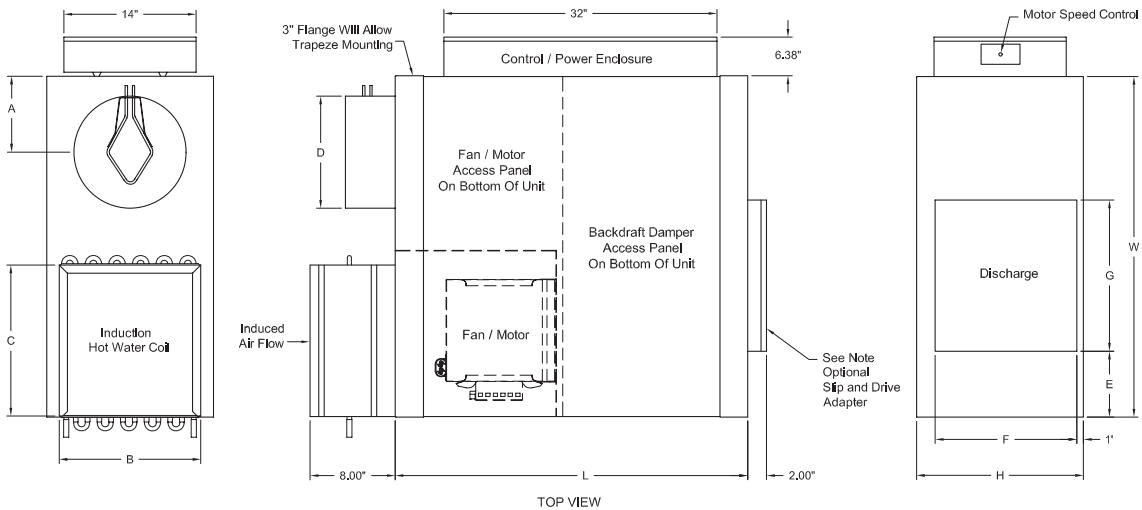


Casing Size	Inlet Diameter D		Horse Power	Max/Min Fan ** Airflow CFM @ external 0" to 0.7" w.c. (0.5" w.c. size 1 & 2)	Unit Height H	Unit Width W	Unit Length L	Inlet Loc. A	Ind. Inlet Height B	Ind. Inlet Width C	Discharge Loc. E	Discharge Height F	Discharge Width G
	Standard	Optional											
3	10 (254)	6, 8, 12, 14	1/2	860/225 (406/106)	17 1/2 (445)	36 (914)	36 (914)	8 (203)	14 (356)	18 (457)	9 (229)	15 1/2 (394)	18 (457)
6	16 (406)	10, 12, 14	1	1875/960 (884/453)	20 (508)	42 (1067)	42 (1067)	10 (254)	16 (406)	20 (508)	10 (254)	16 (406)	20 (508)

Parallel Fan Powered - ECM Motor - With Hot Water Coil on Induction Port

Case Size 3 - 10" Inlet

Case Size 6 - 16" Inlet



Casing Size	Inlet Diameter D		Horse Power	Unit Height H	Unit Width W	Unit Length L	Inlet Loc. A	Ind. Inlet Height B	Ind. Inlet Width C	Discharge Loc. E	Discharge Height F	Discharge Width G
	Standard	Optional										
3	10 (254)	6, 8, 12, 14	1/2	17 1/2 (445)	36 (914)	36 (914)	8 (203)	14 (356)	18 (457)	9 (229)	15 1/2 (394)	18 (457)
6	16 (406)	10, 12, 14	1	20 (508)	42 (1067)	42 (1067)	10 (254)	16 (406)	20 (508)	10 (254)	16 (406)	20 (508)

Parallel Fan Powered Air Terminal Units



FVI-500

Parallel Fan Powered Air Terminal Units

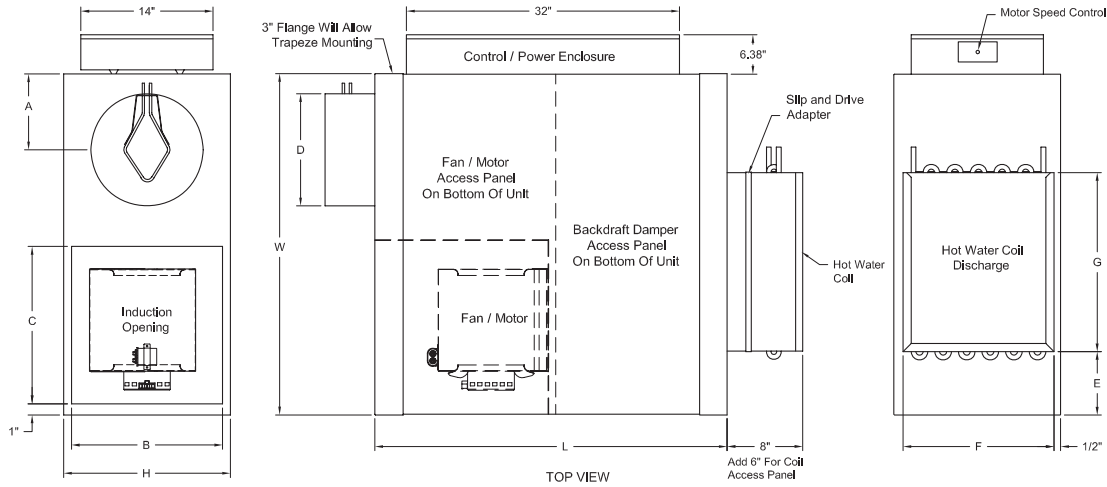
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ECM FVI-500 - Air Terminal Dimensions

Parallel Fan Powered - ECM Motor - With Hot Water Coil on Discharge Port

Case Size 3 - 10" Inlet

Case Size 6 - 16" Inlet

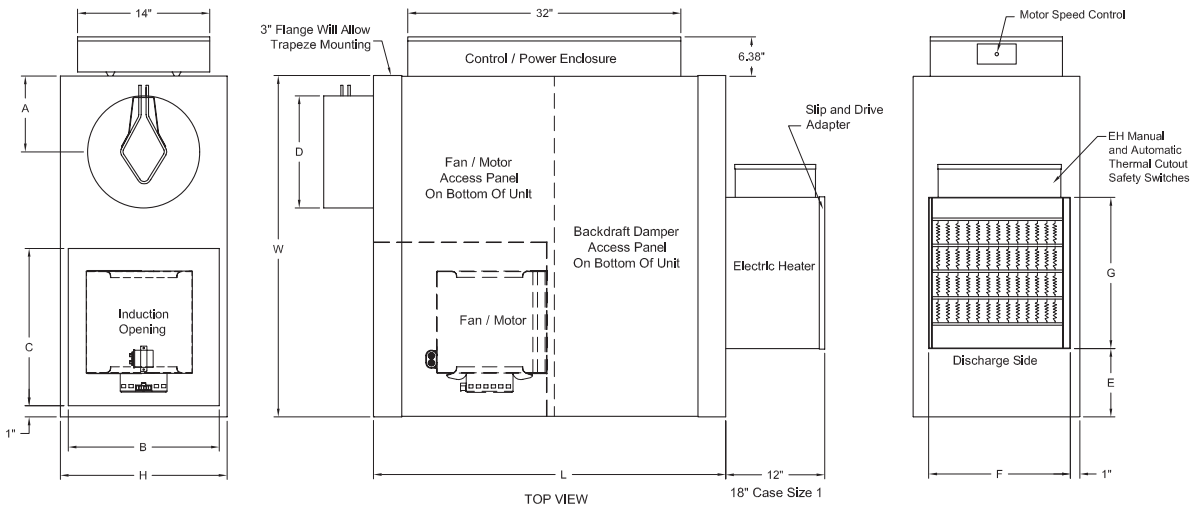


Casing Size	Inlet Diameter D		Horse Power	Max/Min Fan ** Airflow CFM @ external 0" to 0.7" w.c. (0.5" w.c. size 1 & 2)	Unit Height H	Unit Width W	Unit Length L	Inlet Loc. A	Ind. Inlet Height B	Ind. Inlet Width C	Standard Hot Water Coil		
	Standard	Optional									Discharge Loc. E	Discharge Height F	Discharge Width G
3	10 (254)	6, 8, 12, 14	1/2	860/225 (406/106)	17 1/2 (445)	36 (914)	36 (914)	8 (203)	14 (356)	18 (457)	9 (229)	15 1/2 (394)	18 (457)
6	16 (406)	10, 12, 14	1	1875/960 (884/453)	20 (508)	42 (1067)	42 (1067)	10 (254)	16 (406)	20 (508)	10 (254)	18 (457)	22 (559)

Parallel Fan Powered - ECM Motor - With Electric Heat

Case Size 3 - 10" Inlet

Case Size 6 - 16" Inlet



Casing Size	Inlet Diameter D		Horse Power	Max/Min Fan ** Airflow CFM @ external 0" to 0.7" w.c. (0.5" w.c. size 1 & 2)	Unit Height H	Unit Width W	Unit Length L	Inlet Loc. A	Ind. Inlet Height B	Ind. Inlet Width C	Discharge Loc. E	Discharge Height F	Discharge Width G
	Standard	Optional											
3	10 (254)	6, 8, 12, 14	1/2	860/225 (406/106)	17 1/2 (445)	36 (914)	36 (914)	8 (203)	14 (356)	18 (457)	9 (229)	15 (381)	16 (406)
6	16 (406)	10, 12, 14	1	1875/960 (884/453)	20 (508)	42 (1067)	42 (1067)	10 (254)	16 (406)	20 (508)	10 (254)	17 1/2 (445)	20 (508)

Parallel Fan Powered Air Terminal Units



FVI-500

Parallel Fan Powered Air Terminal Units

ECM FVI-500 - Radiated Sound Power at Fan Only

Case	Inlet	Outlet Ps in. H ₂ O	CFM (L/s)	Fan Only							NC1 ARI	NC2 ARI
				Octave Band Sound Power, Lw, dB								
				2	3	4	5	6	7	90	98	
3	10	0.25	375 (177)	50	49	42	37	36	35	-	-	
			425 (201)	54	51	45	39	37	36	-	-	
			500 (236)	57	54	48	44	41	40	-	-	
			675 (319)	63	60	53	50	47	46	-	-	
			800 (378)	66	65	58	57	55	54	-	21	
925 (437)	70	68	60	61	58	57	24	25				
1100 (519)	72	70	62	62	60	59	26	27				
6	16	0.25	625 (295)	56	53	52	48	45	41	-	-	
			800 (378)	58	55	55	52	48	44	-	-	
			1000 (472)	61	58	57	56	51	48	-	-	
			1250 (590)	64	61	60	55	54	52	-	-	
			1400 (661)	66	63	62	60	56	54	-	-	
			1650 (779)	70	67	65	61	60	60	22	24	
2000 (944)	74	71	67	64	64	62	27	28				
2400 (1132.8)	79	76	71	69	68	66	33	34				

See Page FVI-152 For NC Calculations

ECM FVI-500 - Radiated Sound Power at .5", .75", 1" WG

Case	Inlet	Outlet Ps in. H ₂ O	CFM (L/s)	Min Ps in. H ₂ O (Pa)	Inlet Pressure, Ps = 0.5 inches of water (125 Pa)							Inlet Pressure, Ps = 0.75 inches of water (187 Pa)							Inlet Pressure, Ps = 1.0 inches of water (250 Pa)												
					Octave Band Sound Power, Lw, dB							NC1 ARI	NC2 ARI	Octave Band Sound Power, Lw, dB							NC1 ARI	NC2 ARI	Octave Band Sound Power, Lw, dB							NC1 ARI	NC2 ARI
					2	3	4	5	6	7	90	98	2	3	4	5	6	7	90	98	2	3	4	5	6	7	90	98			
3	10	0.25	300 (142)	0.088 (21.9)	52	49	44	40	31	24	-	-	53	49	45	41	32	25	-	-	55	50	46	42	33	27	-	-			
			500 (236)	0.103 (25.7)	54	51	46	42	34	25	-	-	56	52	47	43	35	27	-	-	21	57	53	49	45	37	29	-	23		
			775 (366)	0.125 (31.1)	56	53	47	43	35	27	-	21	59	55	49	45	37	32	-	-	24	62	58	51	47	40	36	24	27		
			925 (437)	0.136 (33.9)	57	55	49	45	36	28	-	24	60	57	50	47	38	32	22	26	63	59	53	48	41	37	25	28			
			1075 (507)	0.158 (39.3)	58	57	52	48	36	28	23	26	60	59	52	48	39	34	25	28	65	61	54	49	42	37	27	31			
			1325 (625)	0.190 (47.2)	65	61	55	50	37	29	27	31	65	61	56	51	41	36	27	31	65	64	57	53	45	38	31	34			
			1450 (684)	0.204 (50.9)	66	63	57	53	37	32	29	33	66	63	58	53	42	37	30	33	66	65	59	55	47	39	32	35			
1625 (767)	0.254 (63.2)	68	65	59	54	38	33	32	35	69	65	60	55	43	38	32	35	69	66	60	56	48	40	33	37						
1700 (802)	0.270 (67.2)	69	67	61	56	39	34	34	38	70	67	62	57	44	39	34	38	70	68	63	58	49	41	35	39						
6	16	0.25	750 (354)	0.083 (20.6)	49	44	35	30	26	24	-	-	51	46	37	33	29	28	-	-	53	48	39	36	32	31	-	-			
			950 (448)	0.088 (21.8)	52	45	37	33	29	26	-	-	54	47	39	35	32	30	-	-	56	50	42	38	35	32	-	-			
			1525 (720)	0.104 (25.9)	57	47	40	36	32	28	-	-	59	49	42	38	35	32	-	-	21	61	53	47	42	38	33	-	23		
			1800 (850)	0.115 (28.7)	60	48	44	42	37	30	-	22	62	54	48	47	41	36	21	25	64	59	53	49	45	41	25	28			
			2400 (1133)	0.138 (34.3)	65	58	52	48	43	37	25	29	67	60	54	49	45	40	27	31	68	62	56	51	47	42	29	32			
			3000 (1416)	0.165 (41.2)	69	63	57	51	47	41	30	34	70	64	57	52	48	43	31	35	71	65	58	53	49	44	32	36			
			3500 (1652)	0.188 (46.9)	73	66	60	55	49	45	35	39	74	67	61	56	50	46	36	40	74	68	62	57	52	47	36	40			
4000 (1888)	0.218 (54.3)	75	68	62	57	51	47	38	41	75	69	63	58	52	49	38	41	76	69	64	59	53	50	39	43						
4400 (2077)	0.247 (61.4)	77	71	65	59	53	49	40	44	78	72	65	59	54	51	41	45	78	72	66	60	56	52	41	45						

See Page FVI-152 For NC Calculations

ECM FVI-500 - Radiated Sound Power at 1.5", 2" WG

Case	Inlet	Outlet Ps in. H ₂ O	CFM (L/s)	Min Ps in. H ₂ O (Pa)	Inlet Pressure, Ps = 1.5 inches of water (375 Pa)							Inlet Pressure, Ps = 2.0 inches of water (700 Pa)										
					Octave Band Sound Power, Lw, dB							NC1 ARI	NC2 ARI	Octave Band Sound Power, Lw, dB							NC1 ARI	NC2 ARI
					2	3	4	5	6	7	90	98	2	3	4	5	6	7	90	98		
3	10	0.25	300 (142)	0.088 (21.9)	57	51	47	45	36	30	-	21	59	53	49	46	38	33	-	23		
			500 (236)	0.103 (25.7)	59	54	50	47	39	32	21	24	60	56	51	49	41	35	22	25		
			775 (366)	0.125 (31.1)	63	59	52	49	42	39	25	28	64	62	55	52	45	42	28	32		
			925 (437)	0.136 (33.9)	65	60	53	51	43	40	26	29	65	64	57	53	45	42	31	34		
			1075 (507)	0.158 (39.3)	66	60	54	52	45	41	26	30	66	65	59	54	46	43	32	35		
			1325 (625)	0.190 (47.2)	67	64	62	55	48	42	34	37	67	65	62	55	48	43	34	37		
			1450 (684)	0.204 (50.9)	67	65	61	56	49	43	33	38	68	66	63	56	49	43	35	38		
1625 (767)	0.254 (63.2)	70	67	62	57	50	44	34	38	71	68	64	58	51	45	36	39					
1700 (802)	0.270 (67.2)	71	69	64	59	51	46	37	40	72	70	65	61	52	47	38	41					
6	16	0.25	750 (354)	0.083 (20.6)	56	50	43	39	35	33	-	-	58	52	46	42	37	35	-	-		
			950 (448)	0.088 (21.8)	58	52	50	42	37	39	21	24	60	56	52	48	45	43	23	26		
			1525 (720)	0.104 (25.9)	64	56	53	46	44	43	24	27	66	62	57	50	49	48	29	32		
			1800 (850)	0.115 (28.7)	67	62	57	53	49	46	29	32	68	65	60	58	55	51	32	35		
			2400 (1133)	0.138 (34.3)	70	64	59	54	50	47	31	35	72	67	62	59	55	51	34	38		
			3000 (1416)	0.165 (41.2)	73	67	61	56	51	47	35	39	75	69	64	60	57	53	38	41		
			3500 (1652)	0.188 (46.9)	76	69	64	59	53	49	39	43	78	71	66	61	58	54	41	45		
4000 (1888)	0.218 (54.3)	78	71	66	61	55	52	41	45	81	73	68	63	59	57	45	49					
4400 (2077)	0.247 (61.4)	80	73	68	62	58	54	44	48	83	75	70	65	62	60	48	52					

See Page FVI-152 For NC Calculations

NC CALCULATIONS

The current ARI Standard for NC calculations is ARI 885-98. Other terminal manufacturers may catalog performance based on ARI 885-90. Using this older, obsolete standard will provide lower NC levels compared to the 1998 standard. To allow for fair and accurate performance comparisons, METALAIRE publishes the NC levels for both the 1990 standard and the 1998 current standard.



Parallel Fan Powered Air Terminal Units

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ECM FVI-500 - Discharge Sound Power at Fan Only

Case	Inlet	Outlet Ps in. H ₂ O	CFM (L/s)	Fan Only										
				Octave Band Sound Power, Lw, dB							NC1 ARI 885-	NC2 ARI 885-		
				2	3	4	5	6	7	90			98	
3	10	0.25	375 (177)	55	51	49	44	41	34	-	23	-	-	
			425 (201)	58	54	53	48	43	37	24	27	-	-	
			500 (236)	60	57	55	50	46	41	26	30	-	-	
			675 (319)	64	61	57	53	48	45	29	32	-	-	
			800 (378)	66	64	59	57	52	49	31	34	-	-	
			925 (437)	69	67	62	60	54	53	34	38	-	-	
1100 (519)	76	73	67	67	60	61	41	45	-	-				
6	16	0.25	625 (295)	58	53	47	40	38	36	-	21	-	-	
			800 (378)	62	58	52	45	42	40	24	27	-	-	
			1000 (472)	66	63	60	55	47	45	32	35	-	-	
			1250 (590)	72	69	64	59	52	50	37	40	-	-	
			1400 (661)	73	71	65	61	54	53	39	42	-	-	
			1650 (779)	74	72	66	62	56	55	40	44	-	-	
2000 (944)	77	74	68	64	59	58	42	46	-	-				
2400 (1133)	80	76	71	67	64	62	45	48	-	-				

See Page FVI-152 For NC Calculations

ECM FVI-500 - Discharge Sound Power at .5", .75" WG

Case	Inlet	Outlet Ps in. H ₂ O	CFM (L/s)	Min Ps in. H ₂ O (Pa)	Inlet Pressure, Ps = 0.5 inches of water (125 Pa)												Inlet Pressure, Ps = 0.75 inches of water (187 Pa)												Inlet Pressure, Ps = 1.0 inches of water (250 Pa)											
					Octave Band Sound Power, Lw, dB							NC1 ARI 885-	NC2 ARI 885-	Octave Band Sound Power, Lw, dB							NC1 ARI 885-	NC2 ARI 885-	Octave Band Sound Power, Lw, dB							NC1 ARI 885-	NC2 ARI 885-									
					2	3	4	5	6	7	90			98	2	3	4	5	6	7			90	98	2	3	4	5	6			7	90	98						
3	10	0.25	300 (142)	0.088 (21.9)	52	50	41	38	35	30	-	-	54	52	42	41	37	31	-	-	58	54	46	43	39	33	-	-												
			500 (236)	0.103 (25.7)	55	52	44	40	38	34	-	-	58	54	46	43	40	35	-	-	60	56	50	45	42	37	-	-	-	-										
			775 (368)	0.125 (31.1)	60	55	48	44	43	38	-	-	62	57	51	46	44	40	-	-	64	59	54	48	45	41	-	-	-	-										
			925 (437)	0.136 (33.9)	62	56	50	47	45	43	-	-	64	58	52	48	47	44	-	-	66	60	55	50	47	45	-	-	-	-										
			1075 (507)	0.158 (39.3)	64	58	52	50	47	47	-	-	65	59	54	52	48	48	-	-	67	61	56	52	49	48	-	-	-	-										
			1325 (625)	0.190 (47.2)	68	60	56	52	48	47	-	-	69	62	57	53	49	48	-	-	70	63	59	53	50	49	-	-	-	-										
			1450 (684)	0.204 (50.9)	71	61	58	54	53	51	-	21	71	63	59	54	53	52	-	21	71	64	60	56	54	53	-	21	-	-										
			1625 (767)	0.254 (63.2)	73	63	61	57	56	55	22	23	73	64	61	57	56	56	22	23	73	66	62	58	57	57	22	23	-	-										
			1700 (802)	0.270 (67.2)	74	64	62	58	57	56	23	25	74	64	63	59	57	57	23	25	75	66	63	59	58	57	25	26	-	-										
			750 (354)	0.083 (20.6)	58	51	47	42	32	30	-	-	61	53	49	43	38	32	-	-	62	55	50	43	39	33	-	-	-	-										
			950 (445)	0.088 (21.9)	60	53	48	43	35	32	-	-	63	55	50	45	40	35	-	-	64	56	52	45	41	39	-	-	-	-										
			1525 (729)	0.104 (25.9)	64	60	53	47	41	35	-	-	65	60	54	49	45	41	-	-	67	60	56	49	46	45	-	-	-	-										
1800 (850)	0.115 (28.7)	67	61	54	49	43	38	-	-	68	62	56	50	47	45	-	-	69	62	58	51	49	47	-	-	-	-													
2400 (1133)	0.138 (34.3)	72	66	59	52	50	48	21	22	73	66	60	54	52	51	22	23	73	67	61	56	55	54	22	24	-	-													
3000 (1416)	0.165 (41.2)	75	69	61	56	56	55	25	26	75	69	63	58	58	57	25	26	76	70	65	60	59	59	26	27	-	-													
3500 (1652)	0.188 (46.9)	77	70	63	58	60	58	27	29	77	71	64	60	61	60	27	29	77	72	65	61	61	60	28	29	-	-													
4000 (1888)	0.218 (54.3)	78	71	64	62	61	60	29	30	79	72	65	63	61	61	30	31	80	73	67	64	62	61	31	32	-	-													
4400 (2077)	0.247 (61.4)	80	72	65	65	64	62	31	32	81	73	66	65	64	63	32	34	82	74	68	66	65	63	34	35	-	-													

See Page FVI-152 For NC Calculations

ECM FVI-500 - Discharge Sound Power at 1", 1.5", 2" WG

Case	Inlet	Outlet Ps in. H ₂ O	CFM (L/s)	Min Ps in. H ₂ O (Pa)	Inlet Pressure, Ps = 1.5 inches of water (375 Pa)												Inlet Pressure, Ps = 2.0 inches of water (500 Pa)											
					Octave Band Sound Power, Lw, dB							NC1 ARI 885-	NC2 ARI 885-	Octave Band Sound Power, Lw, dB							NC1 ARI 885-	NC2 ARI 885-						
					2	3	4	5	6	7	90			98	2	3	4	5	6	7			90	98				
3	10	0.25	300 (142)	0.088 (21.9)	60	56	48	44	41	35	-	-	61	58	50	47	43	38	-	-								
			500 (236)	0.103 (25.7)	62	58	52	46	45	39	-	-	63	59	55	48	46	44	-	-								
			775 (368)	0.125 (31.1)	65	60	55	49	47	44	-	-	66	61	59	51	49	46	-	-								
			925 (437)	0.136 (33.9)	67	61	57	51	48	46	-	-	68	63	58	53	52	48	-	-								
			1075 (507)	0.158 (39.3)	68	63	59	52	49	48	-	-	69	64	60	56	54	49	-	-								
			1325 (625)	0.190 (47.2)	71	65	60	53	50	49	-	21	72	66	62	57	55	54	21	22								
			1450 (684)	0.204 (50.9)	73	66	62	56	55	51	22	23	74	68	63	58	56	56	24	25								
1625 (767)	0.254 (63.2)	74	67	63	59	58	57	23	25	75	69	64	60	58	57	25	26											
1700 (802)	0.270 (67.2)	76	68	64	60	59	58	26	27	76	71	65	61	60	59	27	28											
750 (354)	0.083 (20.6)	63	56	51	45	41	40	-	-	64	58	53	57	43	42	-	-											
950 (445)	0.088 (21.9)	65	58	54	47	43	42	-	-	66	59	56	50	45	44	-	-											
1525 (729)	0.104 (25.9)	68	61	57	50	47	46	-	-	69	62	59	53	51	50	-	-											
1800 (850)	0.115 (28.7)	70	64	59	53	52	51	-	-	71	66	63	57	53	52	21	22											
2400 (1133)	0.138 (34.3)	75	68	62	58	57	56	25	26	77	70	66	60	58	57	27	29											
3000 (1416)	0.165 (41.2)	77	74	69	65	63	61	31	32	79	77	70	64	62	61	34	35											
3500 (1652)	0.188 (46.9)	78	75	70	65	65	62	32	33	81	78	72	67	66	63	35	37											
4000 (1888)	0.218 (54.3)	81	76	71	67	66	63	33	34	84	81	73	68	67	64	39	40											
4400 (2077)	0.247 (61.4)	83	77	72	68	67	65	35	36	85	82	74	69	68	66	40	41											

See Page FVI-152 For NC Calculations

NC CALCULATIONS

The current ARI Standard for NC calculations is ARI 885-98. Other terminal manufacturers may catalog performance based on ARI 885-90. Using this older, obsolete standard will provide lower NC levels compared to the 1998 standard. To allow for fair and accurate performance comparisons, METALAIR publishes the NC levels for both the 1990 standard and the 1998 current standard.

Parallel Fan Powered Air Terminal Units

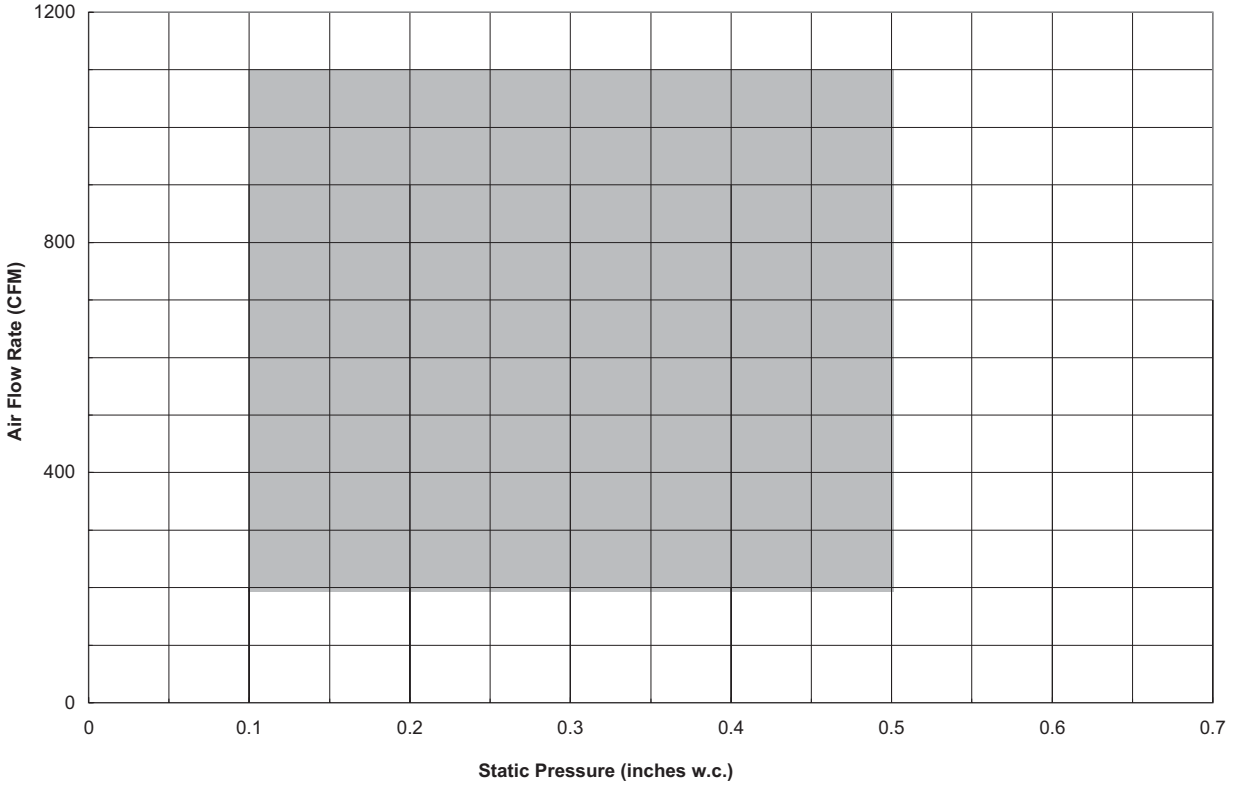


FVI-500

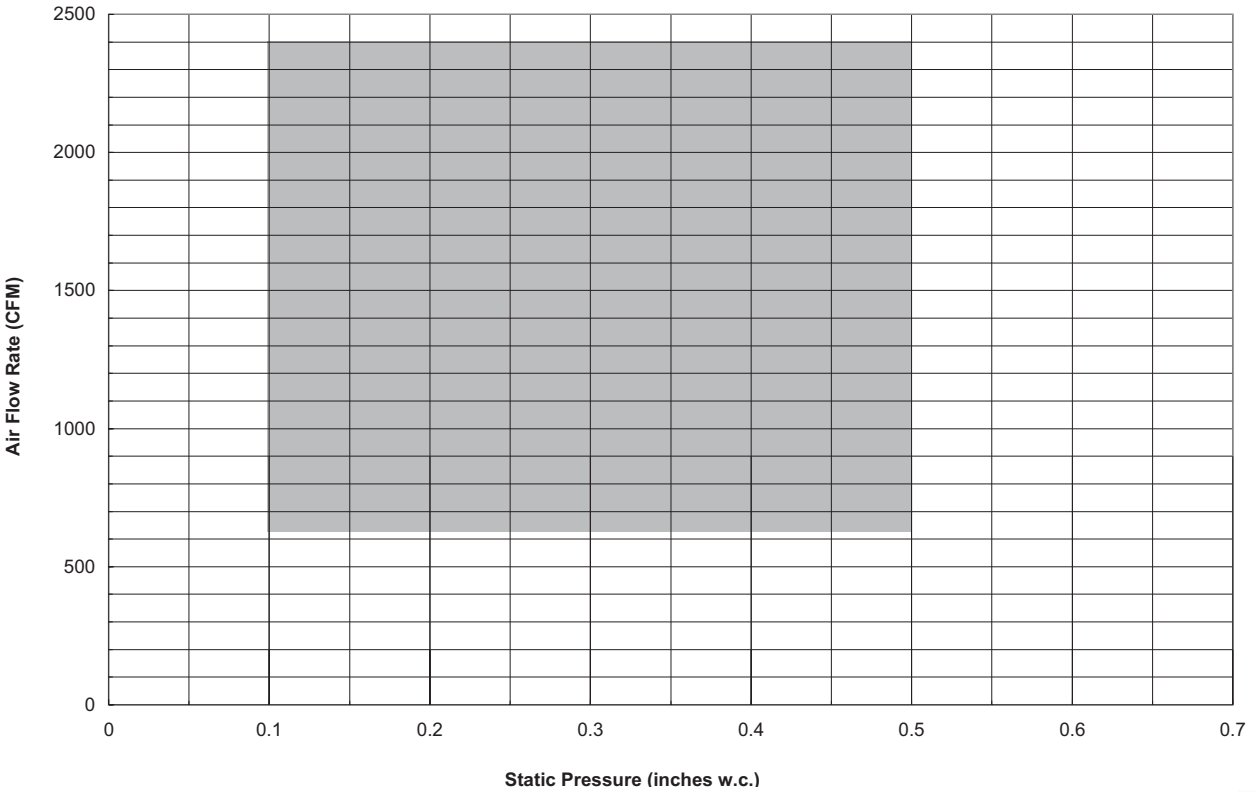
Parallel Fan Powered Air Terminal Units

ECM FVI-500 - Fan Performance Charts

UNIT SIZE 3



UNIT SIZE 6



Parallel Fan Powered Air Terminal Units



FVI-500



For more product information visit us at www.metalair.com



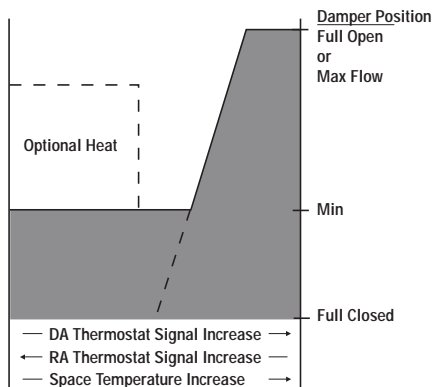
FVI-500 - Control Sequences

PNEUMATICALLY CONTROLLED AIR TERMINALS

Pressure dependent pneumatic air terminal actuators are powered directly by branch line pressure signals from the room thermostat. Pressure independent pneumatic air terminal actuators are powered by signals from a flow control device which balances pressure inputs readings from the thermostat along with pressure inputs from the flow sensor to determine the needed flow and corresponding damper position. The damper's position is determined by the flow controller which controls the preset minimum and maximum flow rates.

A direct acting (DA) thermostat causes an increase in actuation pressure as the room temperature rises. A reverse acting (RA) thermostat causes a decrease in actuator pressure as the room temperature rises. Since the pneumatic actuator is a spring return device, the damper can be configured so that without main pressure it will return to normally closed (NC) position to shut off air flow to the room, or to a normally open (NO) position to permit unobstructed air flow to the room.

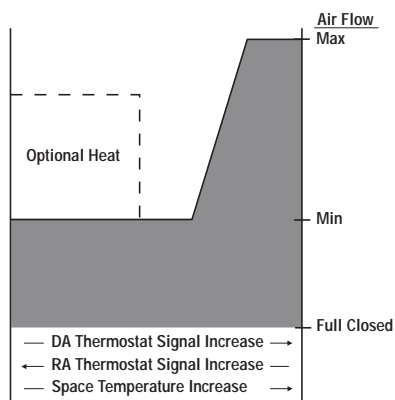
Standard pressure independent control sequences feature our multi-function VAV controller. Multi-function flow controllers can be field modified for use with a direct or reverse acting thermostat and the damper actuator can be switched to either normally opened or normally closed without adding control components.



Pneumatic Pressure Dependent

- 810 - DA/NC Full Closed* to adjustable MAX air stop
- 812 - RA/NO Full Open to adjustable MIN air stop

* Damper normal position can be field-set by rotating actuator on the control panel, resulting in an adjustable default start/stop position.



Pneumatic Pressure Independent

- 814 - DA/NC
- 815 - DA/NO
- 816 - RA/NC
- 817 - RA/NO

(814) **Variable Volume.** Normally closed. For use with direct acting thermostat. Optional heat is energized by the thermostat after air flow has reached a preset minimum.

(815) **Variable Volume.** Normally open. For use with direct acting thermostat.

Optional heat is energized by the thermostat after air flow has reached a preset minimum.

(816) **Variable Volume.** Normally closed. For use with reverse acting thermostat.

Optional heat is energized by the thermostat after air flow has reached a preset minimum.

(817) **Variable Volume.** Normally open. For use with reverse acting thermostat.

Optional heat is energized by the thermostat after air flow has reached a preset minimum.

Parallel Fan Powered Air Terminal Units



FVI-500

FVI-500 - Analog Electronic Control Sequences

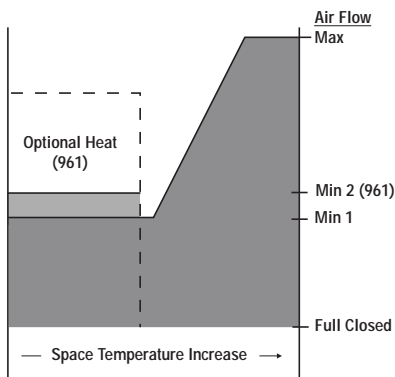
ANALOG ELECTRONICALLY CONTROLLED FAN INDUCTION AIR TERMINALS

Analog electronic flow control devices are available for use with electric damper actuators that will provide pressure independent control. Variations in primary static pressure do not affect air flow volume to the room. The analog electronic room thermostat supplied with the control sequences detailed on this page have field adjustable flow limit set points. The thermostat electronically signals the actuator to open or close the damper in response to the conditions in the space within your predetermined air flow limits. The electric actuator is not a spring return device. If there is a loss of power to the air terminal, the damper will remain at the position it was at when the power loss occurred.

Numerous control sequences are possible with our analog electronic control packages. Please contact the factory for additional standard and special sequence options.

All of the electric and electronic components used in these sequences use low voltage (24 volt) controls and are enclosed with a standard control panel cover. A standard 50 VA transformer that converts 120V, 240V or 277V line voltage to 24V control voltage is wired into the control sequence as a standard component.

Analog Electronic Control Pressure Independent 860 Cooling Only 861 Cooling with Reheat



(860) Cooling Only.

The electronic thermostat (analog models with integral, adjustable, maximum and minimum flow limits) signals the electronic flow controller to regulate the dampers position. The damper is rotated to its maximum open position as room temperature rises and to its minimum open position as room temperature falls in proportion to the temperature conditions in the space.

With both 960 and 961 sequences, the constantly operating fan maintains constant air flow to the room by combining the varying flows of cooled primary air with fan induced plenum air.

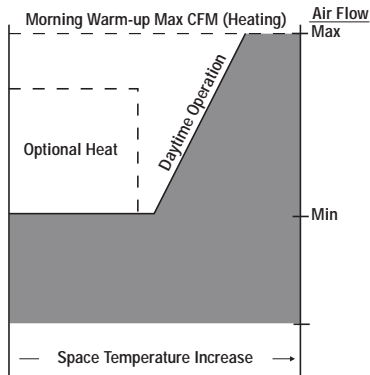
(861) Cooling with Reheat.

The electronic thermostat (analog models with integral, adjustable, maximum and minimum flow limits) signals the electronic flow controller to regulate the dampers position. The damper is rotated to its maximum open position as room temperature rises and to its minimum open position as room temperature falls in proportion to the temperature conditions in the space. After the damper has reached its minimum position, the thermostat activates the optional heat at an independently selected set point. Up to three stages of heat are available.



FVI-500 - Analog Electronic Control Sequences

Analog Electronic Control
Pressure Independent
864 Morning Warm-up

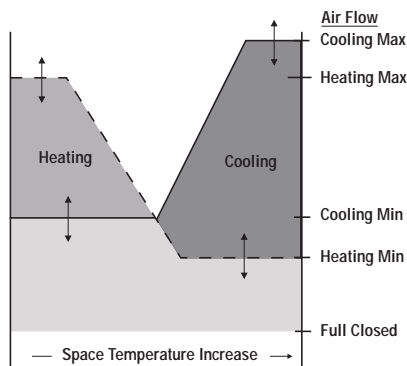


(864) Night Shutdown/Morning Warm-up.

Daytime Operation: The electronic thermostat (analog models with integral, adjustable, maximum and minimum flow limits) signals the electronic flow controller to regulate the dampers position. The damper is rotated to its maximum open position as room temperature rises and to its minimum open position as room temperature falls in proportion to the temperature conditions in the space. After the damper has reached its minimum position, the thermostat activates optional heat at an independently selected set point. Up to three stages of heat are available.

Morning Warm-up: Upon receipt of a morning warm-up signal, the analog electronic controller modulates the primary air damper position to its maximum flow position and warm primary air is supplied to the air terminal. The optional heat is de-energized while the system operates in this mode.

Analog Electronic Control
Pressure Independent
865 Heating Cooling Changeover



(865) Heating/Cooling Changeover: A duct thermostat or a remote input signal switches the heat/cool relay to force the system to operate in the desired heating or cooling mode.

Cooling Mode: The electronic thermostat signals the analog electronic flow controller to regulate primary air damper position. The damper is rotated to its maximum flow settings as room temperature rises and to its minimum flow setting as room temperature falls in proportion to the temperature conditions in the space. When the primary air damper is at its minimum airflow position, fan induced plenum air is supplied to the room until the room temperature reaches the set point.

Heating Mode: In the heating mode, the primary air damper is modulated in response to signals from the analog electronic room thermostat. Plenum air is induced proportionally to maintain a constant volume of airflow to the room.

Parallel Fan Powered Air Terminal Units



FVI-500

Parallel Fan Powered Air Terminal Units

FVI-500 - DDC Electronic Control Capability

DDC ELECTRONIC CONTROL CAPABILITY

The majority of controls installed in HVAC systems today are direct digital controls (DDC). METALAIRE can mount and wire any manufacturer's control product that fits on our standard control panel regardless of the brand (one controller/actuator). Mounting of other manufactures control enclosures or transformer is not available.

In those cases where it is desirable to have the controls field mounted and wired, a basic air terminal without controls can be purchased from METALAIRE. The basic unit includes a control panel and cover.

In either case where controls are to be factory mounted and wired by METALAIRE or field installed by the control manufacturer, most types of DDC controllers require a flow sensor. METALAIRE will provide our multi-point quadrant averaging flow sensor which is compatible with all electronic control devices currently on the market. We can mount a control manufacturer's compatible sensor for an additional cost.

METALAIRE offers a unique service for today's fast-paced, technology-hungry HVAC markets with high performance air terminals that are compatible with all direct digital control packages. This approach is highly encouraged by control manufacturers and HVAC design engineers alike. METALAIRE is committed to providing the finest air terminal devices that will operate seamlessly with any control manufacturer's equipment.

For answers to specific compatibility questions, please contact your local METALAIRE representative.



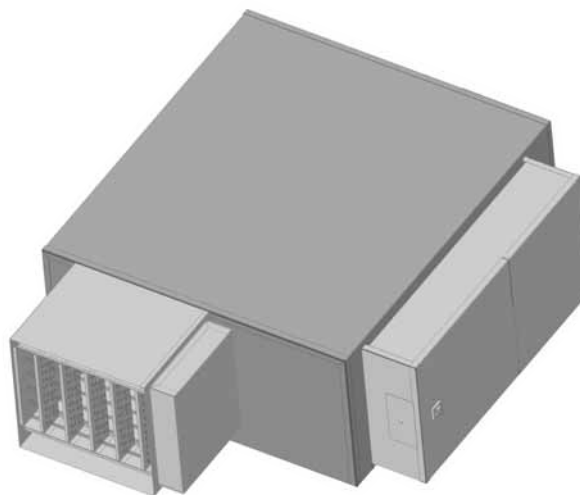
FVI-500 - Accessories and Components - Electric Heat

ELECTRIC HEAT

METALAIRE electric heat products are integral to our air terminals. The discharge termination of the electric heater has slip and drive connections for easy connection to downstream ductwork. Our ETL® listed heaters are provided with a fan interlock relay for safety requirements. Heaters that will be controlled electronically must include a 24 VAC control circuit to operate with the low voltage controls on the air terminal. Heater plenums are internally insulated with 1", 1.5 lb/ft³ density fiberglass insulation. When an air terminal is ordered with one of our insulation options and electric heat, the heater plenum will be insulated with the same material unless otherwise specified.

INCLUDED WITH EACH HEATER ASSEMBLY:

- Heater and control cabinet mounted on the discharge of the FVI
- Electric heater is electrically interlocked with the fan control relay
- De-energizing magnetic contactors for each step
- Primary automatic reset high temperature limit (disc type)
- Backup manual reset high temperature limit (disc type)
- Non-fused transformer with primary voltage matching the heater voltage
- Single point power wiring connection
- Heater is shipped factory mounted and wired



ELECTRIC HEATER ASSEMBLY CONSTRUCTION DETAILS

Electric heater units are factory mounted on the discharge of the air terminal. The heaters are ETL® listed for zero clearance installation to adjacent materials, and are tested in accordance with UL® Standard 1995, CSA-C22.2 No. 236 and the National Electric Code (NEC). Heater casings are constructed of heavy-duty galvanized steel. Element wires are high grade nichrome alloy rated to 50 watts per square inch heat density. Element wires are supported by heat and moisture resistant steatite ceramic insulators. The ceramic insulations are enclosed in reinforcement brackets spaced along the heater element rack at 2" to 4" intervals. Controls are contained in a NEMA 1 control cabinet with a hinged inlocking, latching door that disconnects power to the unit when the door is open. A permanent wiring diagram is affixed to the inside of the control cabinet door for field reference.



FVI-500 - Air Terminals Electric Heater Assembly Capacities

Single Phase					Three Phase				
Case Size	Heater Voltage	Minimum kW/St	Maximum kW	Maximum Steps	Case Size	Heater Voltage	Minimum kW/St	Maximum kW	Maximum Steps
1	120	.5	5	2	1	208	.5	13	3
	208	.5	8.5	2		240	.5	14.5	3
	240	.5	10	2		480	1.5	17	3
	277	.5	11.5	2	2	208	.5	13	3
	480	.5	11.5	2		240	.5	14.5	3
				480		1.5	17	3	
2	120	.5	5	3	3	208	.5	13	3
	208	.5	8.5	3		240	.5	14.5	3
	240	.5	10	3		480	1.5	17	3
	277	.5	11.5	3	4	208	.5	13	3
	480	.5	11.5	3		240	1.5	15	3
				480		1.5	25	3	
3	120	.5	5	3	5	208	.5	13	3
	208	.5	8.5	3		240	1.5	15	3
	240	.5	10	3		480	1.5	25	3
	277	.5	11.5	3	6	208	.5	13	3
	480	.5	11.5	3		240	1.5	15	3
				480		1.5	25	3	
4	120	.5	5	3	7	208	.5	13	3
	208	.5	8.5	3		240	1.5	15	3
	240	.5	10	3		480	1.5	25	3
	277	.5	11.5	3					
	480	.5	17	3					
5	120	.5	5	3					
	208	.5	8.5	3					
	240	.5	10	3					
	277	.5	11.5	3					
	480	.5	17	3					
6	120	.5	5	3					
	208	.5	8.5	3					
	240	.5	10	3					
	277	.5	11.5	3					
	480	.5	17	3					
7	120	.5	5	3					
	208	.5	8.5	3					
	240	.5	10	3					
	277	.5	11.5	3					
	480	.5	17	3					

NOTES:

- Heaters equal to or less than 5 kW are specifiable to the nearest 0.2 kW. Heaters greater than 10 kW are specifiable to the nearest 0.5 kW
- Minimum flow rate for electric heat is 70 CFM/kW. Lower CFM's can cause nuisance tripping, excessive discharge temperatures, rapid cycling, and rapid element failure. Electric Heat units operating below 70 CFM/KW will void all warranties.**
- For optimum thermal comfort, the suggested discharge temperature should not exceed 20°F above room set point.
- We do not recommend discharge temperatures in excess of 115°F to prolong heater life.
- Maximum number of steps at minimum kW is one step.
- If more than 1 heater is wired into a building's circuit breaker (multi-outlet branch circuit) each heater will require the addition of power side fusing.

Electric heat selection:

A. Specify electric duct heaters using voltage, kW, and number of steps.

B. Use above chart to select voltage. Calculate required kW using following equations:

$$kW = \frac{BTU/hr}{3413} \quad kW = \frac{CFM \times dT \times 1.085^*}{3413} \quad dT = \frac{kW \times 3413}{CFM \times 1.085^*}$$

$$CFM = \frac{kW \times 3413}{dT \times 1.085^*} \quad CFM = \frac{kW \times 3413}{dT \times 1.085^*}$$

* air density at sea level - reduce by 0.036 for each 1000 feet of altitude above sea level

Where:

BTU / Hr = Required heating capacity

CFM = volume of air during heating. Typically 30% to 100% of maximum cooling air volume.

dT = desired air temperature rise across the electric heater.

inlet air temperature = primary air temperature, usually 65°F.



Parallel Fan Powered Air Terminal Units

6/2007

FVI-500 - Accessories and Components - Hot Water Coils

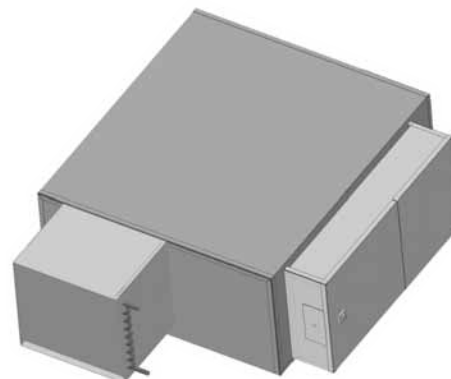
HOT WATER COILS

When ordered with the air terminal, the hot water coil is shipped attached with slip and drive connections to the air terminal casing. The discharge end of the coil has slip and drive connections for easy connection to downstream ductwork. The hot water coil is constructed of aluminum fins and copper serpentine-type tubes with thermally brazed connections tested at 300 psig. Coil selection may be made using the METALAIRE Terminal Selection Program available on CD. Contact your METALAIRE representative for a copy. Options, for an additional charge on hot water coils, include access doors for inspection and cleaning, and inlet/outlet on opposite sides of coils.

HOT WATER COIL CONSTRUCTION DETAILS

Hot water coils are enclosed in a 20 gauge galvanized certified steel casing providing attachment to metal ductwork with a slip and drive connection. Fins are corrugated modified sine wave type constructed from heavy gauge refridgeration grade aluminum. All hot water coils are 10 fins per inch (FPI). Tubes are copper with a minimum wall thickness of 0.016" with male solder header connections. Fins and tubes are mechanically bonded to zero clearance for maximum heat transfer. Coils are leak tested to 300 psi with minimum burst pressure of 2000 psi at ambient temperature. Coil performance data is presented in accordance with ARI standard 410. Coils are ARI rated and include an ARI label.

METALAIRE offers both conventional induction mounted water coils or coils may be mounted on the unit discharge. When coils are mounted on the discharge, the entire coil assembly must be externally insulated in the field by others to prevent condensation when the boiler is off and the unit is operating in cooling mode. Also, when hot water coils are discharge mounted, the coil pressure drop must be factored in when determining total unit minimum primary pressure. In the case of induction mounted coils the coil is not the primary airstream.



Tubing Connections (outside dimension)		
Case Size	Standard HW Coil inches (mm)	
	1 Row	2 Row
1	0.875 (22.2)	0.875 (22.2)
2	0.875 (22.2)	0.875 (22.2)
3	0.625 (19.2)	0.875 (22.2)
4	0.625 (19.2)	0.875 (22.2)
5	0.875 (22.2)	0.875 (22.2)
6	0.875 (22.2)	0.875 (22.2)
7	0.875 (22.2)	0.875 (22.2)

Discharge & Induction Mounted Coils Dimensions		
Case Size	Standard HW Coil inches (mm) 1, 2, 3, 4 Row	
	H	W
1	15 (381)	16 (406)
2	17.5 (445)	16 (406)
3	17.5 (445)	20 (508)
4	17.5 (445)	20 (508)
5	17.5 (445)	20 (508)
6	17.5 (445)	22 (559)
7	20 (508)	38 (965)

Parallel Fan Powered Air Terminal Units



FVI-500

FVI-500 - Accessories and Components

CLEAN ROOM LINERS

METALAIRE has developed two types of "clean room" liners for use in health care, laboratory and penal institutions when required by specification.

FOIL FACED LINER

An optional foil faced lining can be applied to the Series FVI-500 Air Terminal. 4 lbs/ft³ density, 1" thick foil backed fiberglass material is available as a clean room liner in applications where discharge noise performance is more critical. Foil faced liner meets the requirements of UL 181 and NFPA 90A.

THERMOPURE

This innovative closed cell foam eliminates fiberglass completely, while meeting or exceeding the thermal performance of fiberglass. ThermoPure has a 25/50 fire/smoke rating, 1.5 lbs/ft³ density, 6000 fpm velocity rating, and maintains its thermal integrity, even when wet. It meets UL 181 tests for mold and mildew resistance. Surfaces are washable if desired.

OTHER OPTIONS AVAILABLE

- 20 gauge construction
- Filter rack with 1" thick filter
- Inlet attenuator
- Hot water coil access panel
- Insulated end caps for hot water coils

FVI FILTER SIZES	
Case Size	Filter Size
1	16" x 16" x 1"
2	16" x 16" x 1"
3	20" x 16" x 1"
4	20" x 16" x 1"
5	20" x 20" x 1"
6	24" x 20" x 1"
7	24" x 20" x 1"

Approximate Shipping Weight	
CASE	FVI
1	120 LBS.
2	124 LBS.
3	165 LBS.
4	165 LBS.
5	198 LBS.
6	220 LBS.
7	220 LBS.



FVI-500 - Specifications and Highlights

1. Parallel Fan-Powered Terminal Units shall be METALAIRE Model FVI-500. The units shall be the size and capacity as outlined in the plans and specifications. Casing dimensions shall be checked to ensure the terminals fit the available space.

2. Air terminals shall be certified under the American Refrigeration Institute (ARI) Standard 880-98 Certification Program and carry the ARI seal. All NC values shall be calculated per ARI Standard 885-98. Units with NC values calculated per ARI-885-90 will not be accepted. Terminal units shall be either ETL® or UL® listed as a complete assembly. Terminal electrical components, including motor and low voltage controls shall be UL® listed. All electrical components including both line voltage and low voltage shall be mounted in a metal control enclosure. Units shall have a single point field wiring connection. Units shall be manufactured and wired per UL-1995 and in accordance with the National Electric Code.

3. All terminals shall be shipped as a single unit requiring no field assembly. Accessories including hot water coils, electric heaters, and fan and motor assemblies shall be factory mounted.

4. The air terminals shall be constructed of zinc coated steel. The casing shall be a minimum of 22-gauge. The terminal primary air inlet valve shall be a round inlet for field duct connection. The primary control damper shall be a single blade, round damper operating within a 20-gauge round tube. The terminal unit discharge shall allow for a rectangular flanged duct connection. Units shall have a universal control-mounting panel constructed of 20-gauge steel. Panel shall include stand-offs to allow controls to be mounted without penetrating the terminal casing. Fan mounting deck shall be a minimum of 18-gauge.

Optional: Unit shall include filter rack in the induced air inlet and shipped from the manufacturer with a 1" thick construction filter.

5. Primary inlet valve assembly shall have a seamless butt weld on round inlet tube to minimize leakage and prevent the damper from binding on overlapping seam welds. Inlet tubes with overlapping welds or non-continuous, skipped welds are not acceptable. Damper shaft shall rotate in a self-lubricating Kepital® (acetal resin material) bearing. Damper shaft shall be die cast aluminum. Damper shaft end shall include a cast damper position indicator. End of shaft where actuator is installed shall be square to prevent actuator screw(s) from slipping. Round damper shaft ends are not acceptable.

Damper tube shall be free of obstructions including damper stops to allow the free rotation of the damper. Mechanical damper stops located in the inlet tube are not acceptable. A flexible gasket mounted in the damper blade without adhesives shall provide damper seal. Damper gasket shall include slit partitioning around the perimeter to prevent damper noise at low flows near full close off. Damper gaskets without perimeter slit partitioning are not acceptable. Damper shall be a double thickness of 24-gauge steel and leakage through the damper assembly shall be less than 1% of maximum CFM at 3" static pressure.

Primary air valve shall have structural beads machine formed into the tube. One external bead shall be provided for the attachment of flexible duct. Primary valve flow sensor shall be multipoint quadrant averaging with flow sampling of both velocity pressure and flow differential pressure from four quadrants, and shall contain two control ports and two accessory ports. Flow sensors sampling only velocity pressure in all four quadrants are not acceptable. Sensors reading differential pressure with less than 8 measuring points are not acceptable. All piping connections to the flow sensor must be made with external ports that extend through damper tube. Units with piping connections made in the primary air stream are not acceptable. Flow sensors with plastic piping connections of any kind are not acceptable.

At an inlet velocity of 2000 fpm, the differential static pressure required to operate any terminal size shall not exceed 0.14" w.g. for the primary air valve.

6. Unit shall have a bottom fan access panel and a separate bottom primary inlet access panel. Single bottom access panels are not acceptable.

7. Terminal shall include 3" wide bottom-mounting surfaces on opposite ends designed to accept bottom-mounting hardware including trapeze type. Bottom-mounting surfaces shall allow mounting hardware to be installed without interfering with access or removal of the bottom access panels. Units designed for installation using sheet metal straps only are not acceptable.

Optional: Unit shall include factory-mounted hangers designed to accept treaded rod up to 5/16" diameter.

8. Air Terminals shall be internally insulated with 1" thick, 1 1/2 lbs/ft³ dual density glass fiber, coated to prevent airflow erosion to 6000 fpm surface velocity. Insulation to comply with UL 181 and NFPA 90A. Units shall be constructed so that no insulation edges are exposed to the air stream. Insulation edges at induction inlet shall be encapsulated in a metal strip to prevent exposure in the air stream. Sealants to prevent erosion of insulation ends are not acceptable.

9A. Fan shall be a forward curve, dynamically balanced with a direct drive motor. Motors shall be of energy efficient design, single phase, 60 cycle, (120) (208) (277) volts. The motor shall be single speed custom designed and manufactured specifically to meet the torque requirements for each size terminal. Motors shall be permanent split capacitor type and include thermal overload protection. Unit construction to include isolation between the motor and fan housing. Units shall include an SCR solid state fan speed controller providing infinite adjustment of the fan within the manufacturer's designed operating range. The SCR shall include a minimum voltage stop. Motors shall be specifically designed to work in conjunction with the SCR controller.

9B. Optional ECM Motor Fan shall be a forward curve, dynamically balanced with a direct drive motor. Units shall include energy efficient, General Electric electronically commutated motors model ECM 2.3. Motors shall be 60 cycle, (120) (277) volts. The motor shall be single speed manufactured specifically to meet the torque requirements for each size terminal.

ECM controls:

a. Units shall include the model ECM-RPM controller by METALAIRE. Controller shall allow remote adjustment of the motor. Controller shall accept either a 2-10 Vdc signal or 4-20 mA signal to control RPM. Control shall also allow the option for a 1 Vdc signal to turn off the fan.

b. Units shall include the model ECM-VCU controller by METALAIRE. Controller shall allow manual adjustment of the motor. Controller shall have a 4 digit LED display indicating motor RPM. The display shall also show a flow index.

10. Sound ratings for the terminal shall not exceed ____ NC at ____ static pressure. Sound performance shall be ARI certified. The specified NC for the radiated and discharge path attenuation function shall be based upon the calculations found in current ARI Terminal Unit Application Standard 885-98 (data submitted per the previous ARI Standard 885-90 are not acceptable).



Parallel Fan Powered Air Terminal Units

FVI-500 - Specifications and Highlights

Options and Accessories

1. Hot Water Coils

Hot water coils are to be factory mounted to the (induction port) (discharge outlet) of the terminal. The number of rows and circuits shall meet the capacities as shown in the schedule. Hot water coils shall be enclosed in a minimum 20-gauge coated steel casing allowing attachment to metal ductwork with a slip and drive connection. Fins shall be corrugated sinusoidal wave type constructed from heavy gauge aluminum. Tubes shall be copper with a minimum wall thickness of 0.016" with male solder header connections. Fins shall be mechanically bonded to the tubes. Coils shall be leak tested to 300 psi with minimum burst of 2000 psi at ambient temperature. Coil performance data shall be rated and presented in accordance with ARI standard 410. Coils must be ARI rated and include an ARI label.

2. Electric Reheat Coils

Electric reheat coils are to be factory mounted on the discharge of the air terminal with the sizes and with kilowatts, operating and control voltages, steps and accessories as outlined in the plans and specifications. The heaters shall be ETL® listed for zero clearance, tested in accordance with UL® Standard 1995, CSA-C22.2 No. 236 and in accordance with the National Electric Code (NEC). Heater casings shall be constructed of heavy-duty zinc-coated steel. Element wire shall be high grade nichrome alloy rated to 45 watts per square inch density. Element wire shall be supported by moisture resistant steatite ceramics. Ceramics to be enclosed in reinforcement brackets spaced across the heater element rack at 2" to 4" intervals. Controls shall be contained in a NEMA 1 control cabinet with a hinged, latching door. A permanent wiring diagram shall be affixed to the inside of the control cabinet door for field reference.

Optional Insulations

1. Insulation shall be ThermoPure Fiber-Free Liner internally located. Liner shall be 1" thick, 1.5 lbs/ft3 dual density fiber-free, rated to prevent air flow erosion to 6000 fpm surface velocity. Insulation to comply with UL 181 and NFPA 255 (25/50). Material shall be chemically resistant to hydrocarbon-based solvents. Material shall not support mold growth or demonstrated degradation while subject to air erosion when tested in accordance to UL 181 and UMC 10-1.

2. Insulation shall be Foil Face Liner internally located 1" thick, 4 lbs/ft3 dual density fibrous glass, rated to prevent air flow erosion to 6000 fpm surface velocity. Insulation to comply with UL 181 and NFPA 90A. No liner edges shall be exposed to the air stream. All liner must be nonporous and have all cut edges sealed to prevent erosion by means of longitudinal galvanized metal sealing strips the length of the casing, adding to the rigidity of the terminal unit.

Additionally, all discharge edges must be sealed to prevent erosion by means of mechanically fastened galvanized steel sealing strips in each corner. Liners made of Mylar, Tedlar, Silane, or woven fiberglass cloths are not acceptable.

Manufacturer shall provide:

1. Factory mounting and wiring of DDC controls shall be as specified in section 15. Mounting shall include manufacturer's flow sensor, transformer (if required by DDC controls manufacturer), and an enclosure protecting DDC controls and wiring.
2. Analog electronic controls with flow adjustments shall be as specified in section 15 and be provided by the terminal unit manufacturer.
3. Pneumatic controls shall be as specified in section 15. Manufacturer shall provide terminal units with factory set flow adjustments as required per the terminal unit schedule.



DH-500 / High Performance Dual Duct Air Terminal Unit



DD-500 / Dual Duct Air Terminal Unit



***DUAL DUCT
AIR TERMINAL UNITS***

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ARI Certified Air Terminals

METALAIRES Series DH/DD-500 Dual Duct Air Terminals have been tested by the Air-Conditioning and Refrigeration Institute and have been found qualified to bear the certification mark of this independent testing agency.

ARI Certification testing is conducted in accordance with Industry Standard 880 which ensures that the performance data published in this catalog have been independently tested and found to be accurate and repeatable. Accessories which can be attached to the Series DH/DD-500 Air Terminals are not a part of the ARI certification program but ratings can be affected by their use.

Additional information on these testing programs can be obtained from your local METALAIRES representative.

At METALAIRES, we continually work to improve our products. Product descriptions, dimensions, and performance are subject to change without notice. For the most current available literature visit our web page at www.metalaires.com. Contact your local METALAIRES representative to verify product or performance details.



DH/DD-500 - Introduction

SERIES DH-500

Series DH-500 (patent pending) High Performance Dual Duct Air Terminals are designed to regulate the flow of conditioned air in dual duct air distribution systems. In a dual duct system, both heated and cooled air are provided to the air terminal and mixed to provide the desired discharge temperature. The DH-500 has been engineered to provide a 1:30* mixing ratio, the highest in the industry. They are available with a wide range of standard control sequences.

Series DH-500 Air Terminals feature a low leakage single blade damper in the heating and cooling inlets.

The DH series is available with pneumatic, electric, analog electronic, and DDC (by others) factory mounted controls.

DH-500 Air Terminals are available for both system pressure independent and system pressure dependent applications.

Series DH-500 Air Terminals are recommended for use in duct systems with static pressures up to 3" water gauge

**Mixing ratio is the ratio between a 1°F temperature difference in the discharge air stream and the difference between the hot deck and cold deck temperature*



SERIES DD-500

Series DD-500 Dual Duct air terminals are designed to regulate the flow of conditioned air in dual duct air distribution systems. In a dual duct system, both heated and cooled air are provided to the air terminal and mixed in plenum provided by others to provide the desired discharge temperature. The DD-500 is available with a wide range of standard control sequences.

Series DD-500 Air Terminals feature a low leakage single blade damper. The DD-500 series is available with pneumatic, electric, analog electronic, and DDC (by others) factory mounted controls. DD-500 air terminals are available for both system pressure independent and system pressure dependent applications.

Series DD-500 air terminals are recommended for use in duct systems with static pressures up to 3" water gauge.



Options & Accessories for Air Terminal Units

Controls

METALAIRE air terminal units are available with pneumatic, electronic, analog electronic, or DDC (by others) factory mounted controls. See www.metalaire.com or contact your local METALAIRE representative for a complete list of available control options.

Optional Liners

A wide range of optional internal liners are available for special environmental or acoustic applications. Included in the product offering are metal liners, ThermoPure (closed cell foam) and foil face liners. For answers to all your questions on air terminal units visit us at www.metalaire.com or call your local METALAIRE representative.

Thermopure Insulation

ThermoPure insulation is a closed cell, washable, durable, and non-wicking insulation material that is ideal for critical care facilities such as hospitals and medical facilities as well as high humidity or corrosive environments. ThermoPure is mold and mildew resistant and the closed-cell structure minimizes moisture movement and condensation. It has been tested in accordance with USTC #P91-112.2 for mold growth and in accordance with 10.111 for humidity. After a 60-day period the material showed no evidence of mold growth or insulation deterioration, including the adhesive.

ThermoPure is 100% Fiber Glass free, assuring no downstream brush off, and is provided at a density of 1.5 lbs/ft³. The material is Polyolefin (Polyethylene) and exhibits unique thermal, physical, and chemical resistance properties. It is chemically resistant to most hydrocarbon-based solvents and has a broad installation temperature range. Additionally, because of the closed cell design, it offers low thermal conductivity and the lowest vapor transmission and water absorption rates of the commercially available insulations. The "R" value per wall thickness is 13% greater than Elatomaric (rubber) foam insulation and the water vapor transmission rate is 0.00 perm-in. ThermoPure has been tested in accordance with both UL-723 (25/50) and ASTM E84 and has a flame spread of 10 and a smoke density of 30. It also meets UL 181 and UL 94 horizontal burn test standards. ThermoPure also meets many other state and local specifications, please contact your METALAIRE representative for a complete list of specification compliance.



Thermopure Insulation

ThermoPure's mold and mildew resistance, broad thermal range, and resistance to degradation make it a perfect choice for applications such as hospitals, high humidity environments, clean rooms, food processing areas, low temperature installations, and corrosive or chemical processing environments.



Duct Duct Air Terminal Units

Features of the METALAIRE VAV Valve and Flow Sensor:

Inlet Valve

The METALAIRE® inlet valve assembly has a seamless butt weld on a round inlet tube to minimize leakage and prevent the damper from binding. The damper shaft rotates in a long life, self-lubricating Kepital® (acetal resin material) bearing. The damper shaft is composed of die cast aluminum and includes a damper position indicator. The actuator connects to a square end to prevent the actuator screw(s) from slipping.

The damper blade is manufactured with a flexible gasket and mounted without adhesives to provide an excellent close off seal. Included on the damper gasket are slits around the perimeter to prevent damper noise at low turn down. The damper is constructed of double thickness 24-gauge steel. Damper leakage is less than 1% of maximum CFM at 3.0" static pressure.

The primary air valve has a bead rolled into the tube, which strengthens the tube and serves as a stop and prevents field attached flex duct from slipping.

Flow Sensor

The METALAIRE multi-quadrant averaging flow sensor is a highly accurate, multi-ported device designed to provide true flow readings, even with varying flex duct inlet conditions. The sensor amplifies the input signal providing accurate flow control at low supply air volumes. Velocity pressure is read as a 4-point average that maintains +/- 5% accuracy regardless of inlet conditions.

The sensor provides two control ports and two accessory ports, all with brass barbed fittings to prevent connecting tubing from slipping. All flow sensor piping connections are made with external ports that extend through the damper tube allowing for easy inspection. This is a major advantage over competitors' sensors where the tubing attachment is inside the air valve. The metal construction of METALAIRE flow sensors assures long life and durability. Competing manufacturers typically provide plastic flow sensors, fittings, and balancing tees.

The METALAIRE flow sensor provides an accurate signal to controllers operating within a typical 0.03" to 1.0" velocity pressure range. For low flow controller applications, the sensor can be used to provide a signal down to 0.01".

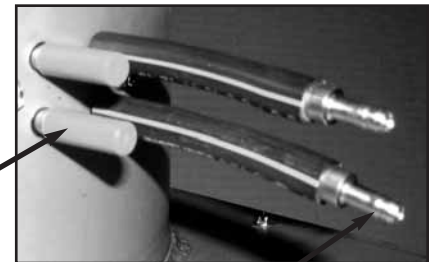


Bead formed on inlet tube for rigidity and to allow for a tight flex duct connection

Seamless weld

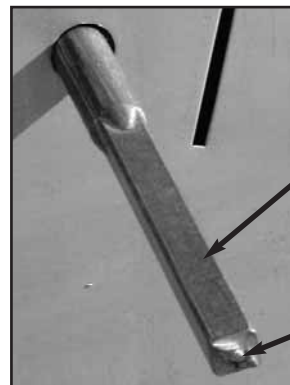
Kepital bearings

Average Velocity is obtained in 4 quadrants



Metal sensor tubes extend through the inlet tube, allowing external connections (shown with dust cover)

Brass barbed fittings for tube connection to VAV controller



Square Shaft

Damper Position indicator

Dual Duct Air Terminal Units



DD-500



SERIES DH-500

(Patent Pending)

High Performance-Dual Duct Air Terminal Units

Series DH-500 (patent pending) High Performance Dual Duct Air Terminals are designed to regulate the flow of conditioned air in dual duct air distribution systems. In a dual duct system, both heated and cooled air are provided to the air terminal and mixed to provide the desired discharge temperature. The DH-500 has been engineered to provide a 1:30* mixing ratio, the highest in the industry. They are available with a wide range of standard control sequences.

Series DH-500 Air Terminals feature a low leakage single blade damper in the heating and cooling inlets.

The DH series is available with pneumatic, electric, analog electronic, and DDC (by others) factory mounted controls.

DH-500 Air Terminals are available for both system pressure independent and system pressure dependent applications.

Series DH-500 Air Terminals are recommended for use in duct systems with static pressures up to 3" water gauge

**Mixing ratio is the ratio between a 1°F temperature difference in the discharge air stream and the difference between the hot deck and cold deck temperature*

#Series DH-500 is Patent Pending

The inlet tubes are free of obstructions, including stops, allowing the damper to rotate 360° within the inlet tube

The inlet tubes for the DH-500 includes a bead that strengthens the tube and serves as a stop to keep attached flex duct from slipping

For set-up and balancing purposes, all units are shipped with a convenient balancing chart located on the outside of the terminal for conversion from velocity pressure to CFM

The DH-500 damper gaskets has slits around the perimeter to prevent a low frequency vibration and corresponding noise at near shut-off

Units inlet tubes are constructed with a seamless butt weld to minimize leakage and prevent the damper from binding

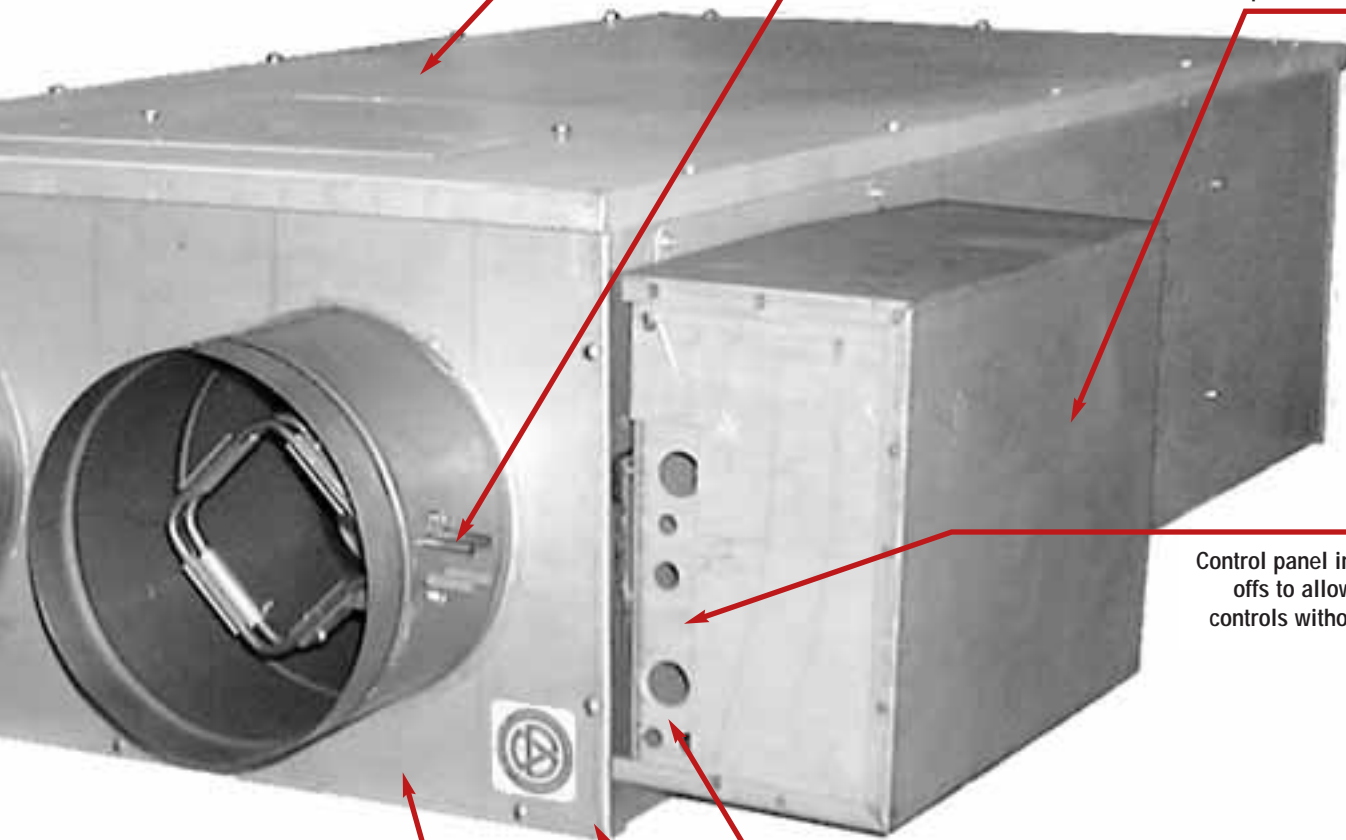
Multiquadrant Averaging Flow Sensor provides an accurate flow signal without the requirement of a straight duct connection immediately upstream (Shipped standard on all units).

Dual Duct Air Terminal Units



DH-500

Dual Duct Air Terminal Units



All units are shipped with easy access balancing taps. The extra ports can be used to read CFM (through velocity pressure) directly at the unit

DH-500 includes a integral mixing section (patent pending) designed to provide an industry leading 1:30 mixing ratio

DH-500 is available with pneumatic electric, analog or digital controls. METALAIRES® factory mounts controls by others. This program ships each terminal unit with the required control and power wiring diagrams

Control panel includes stand-offs to allow mounting of controls without penetrating

For long life and continuous operation, the damper rotates in a self-lubricating Kepital® (acetal resin) bearing. Control mounting plate is shipped standard on all units. Control cover is available as an option

All DH-500 terminal units are ARI certified and shipped with the ARI seal

Standard insulation is dual density glass fiber. Optional liners are available including Thermopure (closed cell foam), foil face, and metal liner

Dual Duct Air Terminal Units



DH-500



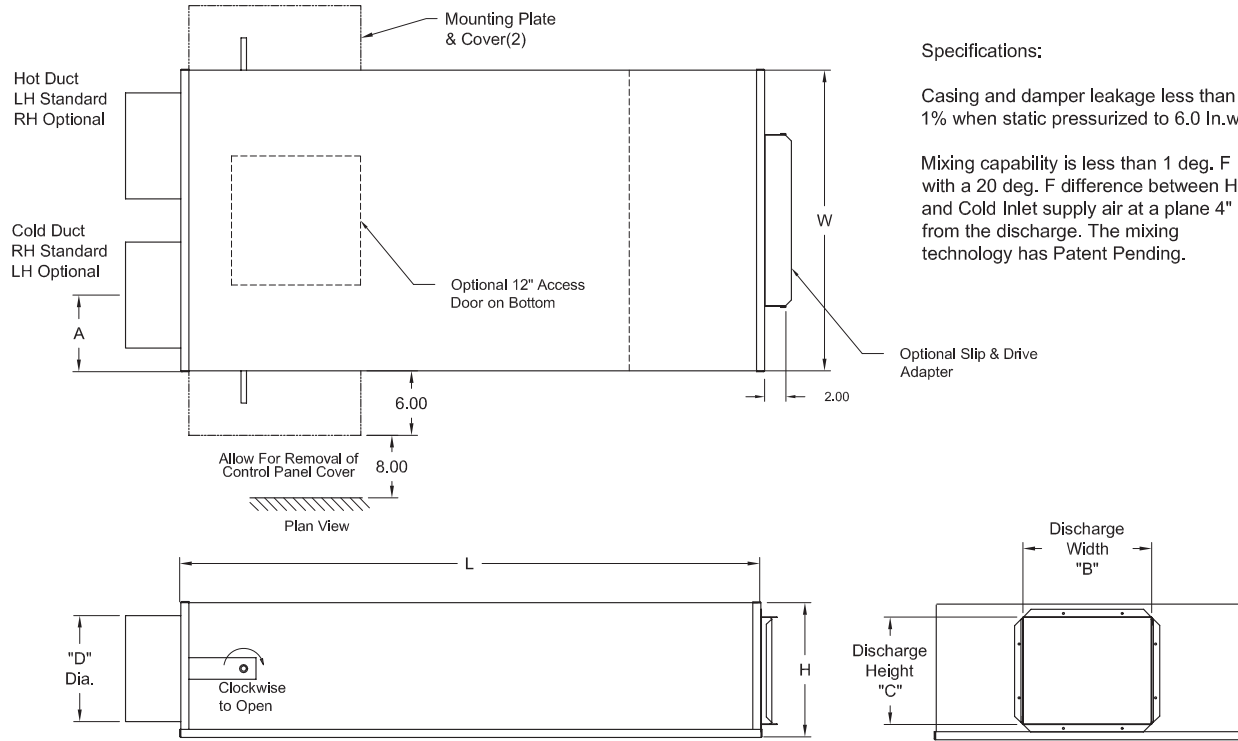
Dual Duct Air Terminal Units

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DH-500 - Air Terminal Dimensions

DH-500

Dimensions are in inches



Specifications:

Casing and damper leakage less than 1% when static pressurized to 6.0 In.w.c.

Mixing capability is less than 1 deg. F with a 20 deg. F difference between Hot and Cold Inlet supply air at a plane 4" from the discharge. The mixing technology has Patent Pending.

Inlet Diameter D		Unit Height H	Unit Width W	Unit Length L	Inlet Duct Location A	Discharge Width B	Discharge Height C	Shipping weight lb
Standard Both Ducts	Optional Hot Duct							
6 (152)	-	10 (254)	20 (508)	40 (1016)	5 (127)	8 (203)	6 (152)	55
8 (203)	6	12 1/2 (318)	24 (610)	48 (1219)	6 (152)	10 (254)	8 (203)	72
10 (254)	6, 8	12 1/2 (318)	28 (711)	58 (1473)	7 (178)	12 (305)	10 (254)	94
12 (305)	6, 8, 10	15 (381)	32 (813)	72 (1829)	8 (203)	14 (356)	12 (305)	124
14 (356)	6, 8, 10, 12	17 1/2 (445)	36 (914)	72 (1829)	9 (229)	17 (432)	14 (356)	140
16 (406)	6, 8, 10, 12, 14	18 (457)	40 (1016)	72 (1829)	10 (254)	20 (508)	15 (381)	164

Dimensions are in inches (mm)

* "A" Dim will change as the Hot inlet diameter changes. Example, the standard unit size is 10" Cold Inlet(A = 7") and the Hot Inlet is an 8"(A = 6").

Dual Duct Air Terminal Units



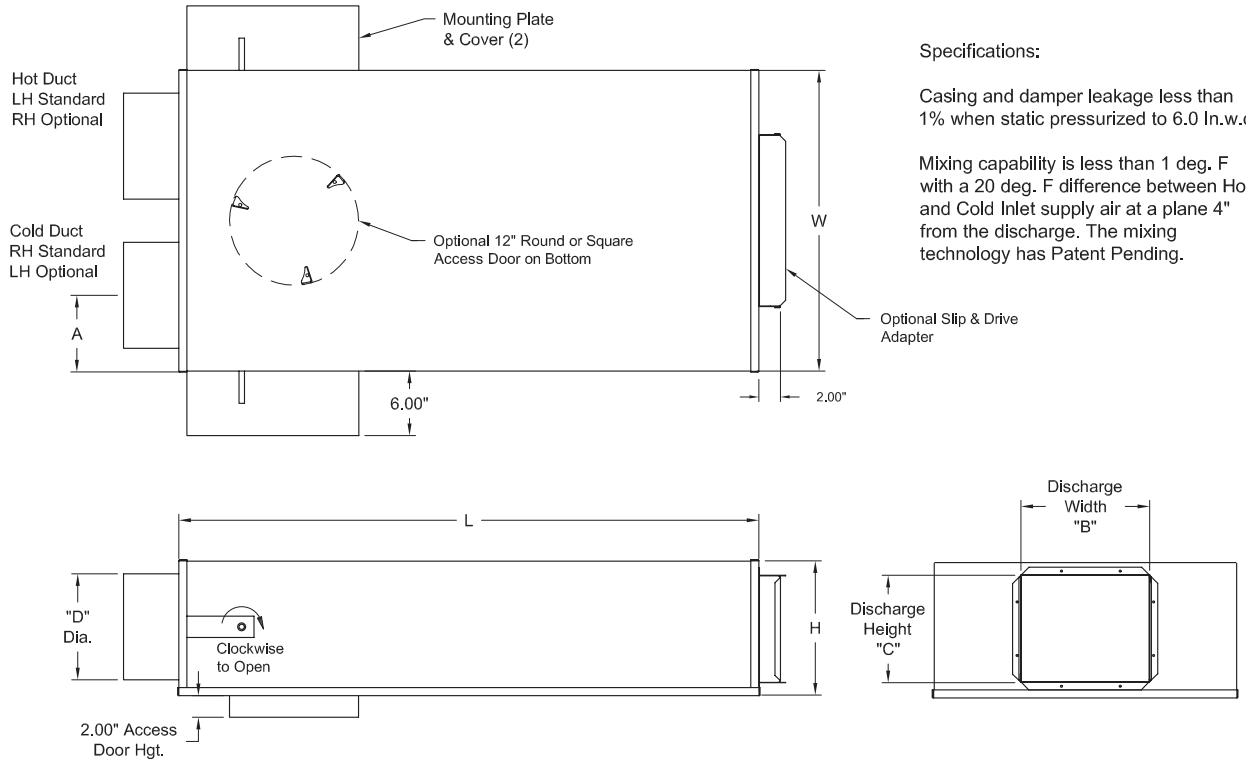
DH-500

Dual Duct Air Terminal Units

DH-500 UT - Air Terminal Dimensions

DH-500 UT

Dimensions are in inches



Specifications:

Casing and damper leakage less than 1% when static pressurized to 6.0 In.w.c.

Mixing capability is less than 1 deg. F with a 20 deg. F difference between Hot and Cold Inlet supply air at a plane 4" from the discharge. The mixing technology has Patent Pending.

Inlet Diameter D		Unit Height H	Unit Width W	Unit Length L	Inlet Duct Location A	Discharge Width B	Discharge Height C
Standard Both Ducts	Optional Hot Duct						
6 (152)	-	10 (254)	20 (508)	40 (1016)	5 (127)	8 (203)	6 (152)
8 (203)	6	12 1/2 (318)	24 (610)	48 (1219)	6 (152)	10 (254)	8 (203)
10 (254)	6, 8	12 1/2 (318)	28 (711)	58 (1473)	7 (178)	12 (305)	10 (254)
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16 (406)	6, 8, 10, 12, 14	18 (457)	40 (1016)	72 (1829)	10 (254)	20 (508)	15 (381)

Dimensions are in inches (mm)

* "A" Dim will change as the Hot inlet diameter changes. Example, the standard unit size is 10" Cold Inlet (A = 7") and the Hot Inlet is an 8" (A = 6").

Unit Size 16 DH500 is not certified to meet UT Specifications

Dual Duct Air Terminal Units



DH-500

DH-500 - ARI Rating Points

ARI Certified Radiated Sound Power, 1.5" Inlet Pressure								
Unit Size	Min Ps	CFM	Octave Band					
			2	3	4	5	6	7
506	0.33	400	61	55	44	41	39	34
508	0.42	700	63	57	46	42	41	36
510	0.37	1100	67	60	49	45	43	38
512	0.49	1600	70	62	52	47	45	41
514	0.45	2100	72	63	55	48	46	43
516	0.49	2800	78	67	59	52	50	48



ARI Certified Discharge Sound Power, 1.5" Inlet Pressure								
Unit Size	Min Ps	CFM	Octave Band					
			2	3	4	5	6	7
506	0.33	400	67	54	45	41	36	34
508	0.42	700	68	55	44	42	36	34
510	0.37	1100	69	58	46	44	40	38
512	0.49	1600	69	59	53	46	48	46
514	0.45	2100	70	60	54	56	54	52
516	0.49	2800	77	61	60	60	63	58

STATEMENT OF STANDARD TEST CONFORMITY

METALAIRE tests all DH-500 air terminal units for engineering performance in accordance with the following standards: American National Standards Institute (ANSI) / American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) / International Organization for Standardization (ISO) / Air-Conditioning & Refrigeration Institute (ARI).

- ARI Standard 880-98 Standard for Air Terminals
- ANSI/ASHRAE 130-1996 Methods of Testing for Rating Ducted Air Terminal Units
- ASHRAE Standard 41.1-1986 (RA 91) Standard Method for Temperature Measurement
- ASHRAE Standard 41.2-1987 Standard Methods for Laboratory Air Measurements
- ASHRAE Standard 41.3-1989 Standard Methods for Pressure Measurement
- ISO 5219-1984 Air distribution and air diffusion - Laboratory aerodynamic testing and rating of air terminal devices.

Selection Recommendations for DH-500

Selection Recommendations for DH-500		
Inlet Size	Minimum CFM	CFM @1"
6	105	600
8	190	1100
10	290	1700
12	430	2500
14	550	3250
16	750	4400

Notes:

1. Minimum CFM is based on a signal velocity pressure of 0.03 in W.C.
2. Maximum CFM is based on signal velocity pressure of 1.0 in W.C.
3. For Selections outside the above ranges, contact your local METALAIRE Representative



Dual Duct Air Terminal Units

DH-500 - Radiated Sound Power at Min., 1", 2" Wg

Unit Size	Outlet Ps in. H2O	CFM (L/s)	Min Ps in. H20 (Pa)		Min Ps				Inlet Pressure, Ps=1 inches of water (125 Pa)				Inlet Pressure, Ps=2 inches of water (185 Pa)														
					Octave Band Sound Power, Lw, dB							NC1 ARI	NC2 ARI	Octave Band Sound Power, Lw, dB							NC1 ARI	NC2 ARI					
					2	3	4	5	6	7	85-85	85-98	2	3	4	5	6	7	85-85	85-98	2	3	4	5	6	7	85-85
506 6 inch	0.25	100 (47)	0.021 (5.1)	46	36	32	28	28	20	-	-	55	45	34	30	30	22	-	-	57	51	41	38	34	32	-	-
		200 (94)	0.083 (20.7)	48	40	34	30	30	22	-	-	56	47	36	32	32	24	-	-	59	52	42	39	35	33	-	-
		250 (118)	0.130 (32.4)	49	41	35	31	31	23	-	-	57	49	38	34	34	26	-	-	59	53	43	39	36	33	-	-
		300 (142)	0.186 (46.4)	51	44	36	32	32	24	-	-	58	51	40	36	36	28	-	-	61	55	44	41	37	34	-	-
		400 (189)	0.333 (82.9)	55	49	37	34	33	26	-	-	60	54	42	39	38	31	-	-	63	56	46	43	40	37	-	-
		450 (212)	0.420 (104.6)	57	53	41	37	37	31	-	-	61	57	45	41	41	35	-	-	64	59	49	45	43	40	-	-
		500 (236)	0.519 (129.3)	60	56	45	41	41	35	-	-	63	59	48	44	44	38	-	-	66	61	51	48	45	43	-	-
600 (283)	0.749 (186.6)	61	58	47	43	44	37	-	-	64	61	50	46	47	40	-	-	67	63	52	49	49	45	-	21		
508 8 inch	0.25	200 (94)	0.034 (8.5)	48	38	27	22	23	15	-	-	57	47	36	31	32	24	-	-	59	53	43	39	36	34	-	-
		300 (142)	0.077 (19.2)	51	42	31	26	27	19	-	-	58	49	38	33	34	26	-	-	61	54	44	40	37	35	-	-
		500 (236)	0.215 (53.6)	54	46	35	30	31	23	-	-	59	51	40	35	36	28	-	-	61	55	45	40	38	35	-	-
		600 (283)	0.306 (76.2)	56	49	38	33	34	26	-	-	60	53	42	37	38	30	-	-	63	57	46	42	39	36	-	-
		700 (330)	0.421 (104.9)	59	53	41	37	37	30	-	-	62	56	44	40	40	33	-	-	65	58	48	44	42	39	-	-
		800 (378)	0.542 (135.1)	61	57	45	40	41	35	-	-	63	59	47	42	43	37	-	-	66	61	51	46	45	42	-	-
		900 (425)	0.686 (170.8)	64	60	49	44	45	39	-	-	65	61	50	45	46	40	-	-	68	63	53	49	47	45	-	-
1000 (472)	0.858 (213.7)	66	63	52	47	49	42	-	-	66	63	52	47	49	42	-	-	69	65	54	50	51	47	-	21		
1100 (519)	1.023 (254.7)	68	66	55	50	53	45	21	22	67	65	54	49	52	44	-	21	70	67	56	52	54	49	22	24		
510 10 inch	0.25	300 (142)	0.027 (6.8)	52	41	30	25	25	17	-	-	61	50	39	34	34	26	-	-	63	56	46	42	38	36	-	-
		500 (236)	0.075 (18.8)	54	44	33	28	28	20	-	-	62	52	41	36	36	28	-	-	65	57	47	43	39	37	-	-
		700 (330)	0.148 (36.8)	55	46	35	30	30	22	-	-	63	54	43	38	38	30	-	-	65	58	48	43	40	37	-	-
		900 (425)	0.244 (60.8)	57	49	38	33	33	25	-	-	64	56	45	40	40	32	-	-	67	60	49	45	41	38	-	-
		1100 (519)	0.365 (90.9)	61	54	42	38	37	30	-	-	66	59	47	43	42	35	-	-	69	61	51	47	44	41	-	-
		1300 (614)	0.509 (126.8)	63	58	46	41	41	35	-	-	67	62	50	45	45	39	-	-	70	64	54	49	47	44	-	-
		1400 (661)	0.590 (147.0)	66	61	50	45	45	39	-	-	69	64	53	48	48	42	-	-	72	66	56	52	49	47	21	22
1500 (708)	0.678 (168.9)	67	63	52	47	48	41	-	-	70	66	55	50	51	44	21	22	73	68	57	53	53	49	24	25		
1700 (802)	0.871 (216.9)	69	66	55	50	52	44	21	22	71	68	57	52	54	46	24	25	74	70	59	55	56	51	26	27		
512 12 inch	0.25	450 (212)	0.039 (9.7)	53	40	31	24	25	17	-	-	62	49	40	33	34	26	-	-	64	55	47	41	38	36	-	-
		800 (378)	0.123 (30.6)	56	44	35	28	29	21	-	-	63	51	42	35	36	28	-	-	66	56	48	42	39	37	-	-
		1000 (472)	0.192 (47.8)	59	48	39	32	33	25	-	-	64	53	44	37	38	30	-	-	66	57	49	42	40	37	-	-
		1200 (566)	0.276 (68.7)	61	51	42	35	36	28	-	-	65	55	46	39	40	32	-	-	68	59	50	44	41	38	-	-
		1450 (684)	0.403 (100.3)	64	55	45	39	39	32	-	-	67	58	48	42	42	35	-	-	70	62	52	47	43	41	-	-
		1600 (755)	0.491 (122.3)	67	59	48	43	42	36	-	-	69	61	50	45	44	38	-	-	72	63	54	49	46	44	21	22
		1950 (920)	0.727 (181.0)	69	63	52	46	46	41	-	-	70	64	53	47	47	42	-	-	73	66	57	51	49	47	22	23
2200 (1038)	0.929 (231.4)	72	66	56	50	50	45	21	22	72	66	56	50	50	45	21	22	75	68	59	54	51	50	25	26		
2500 (1180)	1.193 (297.1)	74	69	59	53	54	48	25	26	73	68	58	52	53	47	24	25	76	70	60	55	55	52	26	27		
514 14 inch	0.25	550 (260)	0.031 (7.7)	55	41	34	25	26	19	-	-	64	50	43	34	35	28	-	-	66	56	50	42	39	38	-	-
		925 (437)	0.087 (21.7)	58	45	38	29	30	23	-	-	65	52	45	36	37	30	-	-	68	57	51	43	40	39	-	-
		1300 (614)	0.173 (43.0)	61	49	42	33	34	27	-	-	66	54	47	38	39	32	-	-	68	58	52	43	41	39	-	-
		1600 (755)	0.262 (65.3)	63	52	45	36	37	30	-	-	67	56	49	40	41	34	-	-	70	60	53	45	42	40	-	-
		1900 (897)	0.370 (92.2)	66	56	48	40	40	34	-	-	69	59	51	43	43	37	-	-	72	63	55	48	44	43	21	22
		2100 (991)	0.452 (112.6)	69	60	51	44	43	38	-	-	71	62	53	46	45	40	-	21	74	64	57	50	47	46	23	25
		2600 (1227)	0.692 (172.4)	71	64	55	47	47	43	-	21	72	65	56	48	48	44	21	22	75	67	60	52	50	49	25	26
3000 (1416)	0.922 (229.7)	74	67	59	51	51	47	23	25	74	67	59	51	51	47	23	25	77	69	62	55	52	52	27	29		
3250 (1534)	1.082 (269.6)	76	70	62	54	55	50	26	27	75	69	61	53	54	49	25	26	78	71	63	56	56	54	29	30		
516 16 inch	0.25	750 (354)	0.035 (8.6)	61	45	38	29	30	24	-	-	70	54	47	38	39	33	-	-	72	60	54	46	43	43	21	22
		1100 (519)	0.075 (18.6)	64	49	42	33	34	28	-	-	71	56	49	40	41	35	-	21	74	61	55	47	44	44	23	25
		1500 (708)	0.140 (34.9)	67	53	46	37	38	32	-	-	72	58	51	42	43	37	21	22	74	62	56	47	45	44	23	25
		1800 (850)	0.200 (49.9)	69	56	49	40	41	35	-	-	73	60	53	44	45	39	22	23	76	64	57	49	46	45	26	27
		2400 (1133)	0.357 (88.8)	72	60	52	44	44	39	21	22	75	63	55	47	47	42	25	26	78	67	59	52	48	48	29	30
		2800 (1322)	0.487 (121.3)	75	64	55	48	47	43	25	26	77	66	57	50	49	45	27	29	80	68	61	54	51	51	31	32
		3600 (1699)	0.804 (200.1)	77	68	59	51	51	48	27	29	78	69	60	52	52	49	29	30	81	71	64	56	54	54	32	34
4000 (1888)	0.994 (247.6)	80	71	63	55	55	52	31	32	80	71	63	55	55	52	31	32	83	73	66	59	56	57	35	36		
4400 (2077)	1.201 (299.2)	82	74	66	58	59	55	34	35	81	73	65	57	58													

Dual Duct Air Terminal Units

6/2007

DH-500 - Discharge Sound Power at Min., 1", 2" Wg

Unit Size	Outlet Ps in. H2O	CFM (L/s)	Min Ps in. H2O (Pa)	Min Ps					Inlet Pressure, Ps=1 inches of water (125 Pa)								Inlet Pressure, Ps=2 inches of water (185 Pa)													
				Octave Band Sound Power, Lw, dB							NC1 ARI	NC2 ARI	Octave Band Sound Power, Lw, dB							NC1 ARI	NC2 ARI	Octave Band Sound Power, Lw, dB							NC1 ARI	NC2 ARI
				2	3	4	5	6	7	90	98	2	3	4	5	6	7	90	98	2	3	4	5	6	7	90	98			
506 6 inch	0.25	100 (47)	0.021 (5.1)	52	35	33	28	25	20	-	-	61	44	35	30	27	22	-	-	63	50	42	38	31	32	-	-			
		200 (94)	0.083 (20.7)	54	39	35	30	27	22	-	-	62	46	37	32	29	24	-	-	65	51	43	39	32	33	-	-			
		250 (118)	0.130 (32.4)	55	40	37	32	29	24	-	-	63	48	39	34	31	26	-	-	65	52	44	39	33	33	-	-			
		300 (142)	0.186 (46.4)	57	43	39	34	31	26	-	-	64	50	41	36	33	28	-	-	67	54	45	41	34	34	-	-			
		400 (189)	0.333 (82.9)	61	48	39	34	32	26	-	-	66	53	43	39	35	31	-	-	69	55	47	43	37	37	-	21			
		450 (212)	0.420 (104.6)	63	52	42	37	34	31	-	-	67	56	46	41	38	35	-	-	70	58	50	45	40	40	-	22			
500 (236)	0.519 (129.3)	66	55	46	41	38	35	-	-	69	58	49	44	41	38	-	21	72	60	52	48	42	43	21	25					
600 (283)	0.749 (186.6)	67	57	48	43	41	37	-	-	70	60	51	46	44	40	-	22	73	62	53	49	46	45	22	26					
508 8 inch	0.25	200 (94)	0.034 (8.5)	53	36	25	22	18	13	-	-	62	45	34	31	27	22	-	-	64	51	41	39	31	32	-	-			
		300 (142)	0.077 (19.2)	56	40	29	26	22	17	-	-	63	47	36	33	29	24	-	-	66	52	42	40	32	33	-	-			
		500 (236)	0.215 (53.6)	59	44	33	30	26	21	-	-	64	49	38	35	31	26	-	-	66	53	43	40	33	33	-	-			
		600 (283)	0.306 (76.2)	61	47	36	33	29	24	-	-	65	51	40	37	33	28	-	-	68	55	44	42	34	34	-	-			
		700 (330)	0.421 (104.9)	64	51	39	37	32	28	-	-	67	54	42	40	35	31	-	-	70	56	46	44	37	37	-	22			
		800 (378)	0.542 (135.1)	66	55	43	40	36	33	-	-	68	57	45	42	38	35	-	-	71	59	49	46	40	40	-	21			
		900 (425)	0.686 (170.8)	69	58	47	44	40	37	-	-	70	59	48	45	41	38	-	-	73	61	51	49	42	43	22	23			
		1000 (472)	0.858 (213.7)	71	61	50	47	44	40	-	21	71	61	50	47	44	40	-	21	74	63	52	50	46	45	23	25			
1100 (519)	1.023 (254.7)	73	64	53	50	48	43	22	23	72	63	52	49	47	42	21	22	75	65	54	52	49	47	25	26					
510 10 inch	0.25	300 (142)	0.027 (6.8)	54	39	27	24	22	17	-	-	63	48	36	33	31	26	-	-	65	54	43	41	35	36	-	-			
		500 (236)	0.075 (18.8)	56	42	30	27	25	20	-	-	64	50	38	35	33	28	-	-	67	55	44	42	36	37	-	-			
		700 (330)	0.148 (36.8)	57	44	32	29	27	22	-	-	65	52	40	37	35	30	-	-	67	56	45	42	37	37	-	-			
		900 (425)	0.244 (60.8)	59	47	35	32	30	25	-	-	66	54	42	39	37	32	-	-	69	58	46	44	38	38	-	-			
		1100 (519)	0.365 (90.9)	63	52	39	37	34	30	-	-	68	57	44	42	39	35	-	-	71	59	48	46	41	41	-	21			
		1300 (614)	0.509 (126.8)	65	56	43	40	38	35	-	-	69	60	47	44	42	39	-	-	72	62	51	48	44	44	21	22			
		1400 (661)	0.590 (147.0)	68	59	47	44	42	39	-	-	71	62	50	47	45	42	-	21	74	64	53	51	46	47	23	25			
		1500 (708)	0.678 (168.9)	69	61	49	46	45	41	-	-	72	64	52	49	48	44	21	22	75	66	54	52	50	49	25	26			
1700 (802)	0.871 (216.9)	71	64	52	49	49	44	-	21	73	66	54	51	51	46	22	23	76	68	56	54	53	51	26	27					
512 12 inch	0.25	450 (212)	0.039 (9.7)	52	37	32	23	28	22	-	-	61	46	41	32	37	31	-	-	63	52	48	40	41	41	-	-			
		800 (378)	0.123 (30.6)	55	41	36	27	32	26	-	-	62	48	43	34	39	33	-	-	65	53	49	41	42	42	-	-			
		1000 (472)	0.192 (47.8)	58	45	40	31	36	30	-	-	63	50	45	36	41	35	-	-	65	54	50	41	43	42	-	-			
		1200 (566)	0.276 (68.7)	60	48	43	34	39	33	-	-	64	52	47	38	43	37	-	-	67	56	51	43	44	43	-	-			
		1450 (684)	0.403 (100.3)	63	52	46	38	42	37	-	-	66	55	49	41	45	40	-	-	69	59	53	46	46	46	-	-			
		1600 (755)	0.491 (122.3)	66	56	49	42	45	41	-	-	68	58	51	44	47	43	-	-	71	60	55	48	49	49	-	21			
		1950 (920)	0.727 (181.0)	68	60	53	45	49	46	-	-	69	61	54	46	50	47	-	-	72	63	58	50	52	52	21	22			
		2200 (1038)	0.929 (231.4)	71	63	57	49	53	50	-	21	71	63	57	49	53	50	-	21	74	65	60	53	54	55	23	25			
2500 (1180)	1.193 (297.1)	73	66	60	52	57	53	22	23	72	65	59	51	56	52	21	22	75	67	61	54	58	57	25	26					
514 14 inch	0.25	550 (260)	0.031 (7.7)	53	38	33	33	34	28	-	-	62	47	42	42	43	37	-	-	64	53	49	50	47	47	-	-			
		925 (437)	0.087 (21.7)	56	42	37	37	38	32	-	-	63	49	44	44	45	39	-	-	66	54	50	51	48	48	-	-			
		1300 (614)	0.173 (43.0)	59	46	41	41	42	36	-	-	64	51	46	46	47	41	-	-	66	55	51	51	49	48	-	-			
		1600 (755)	0.262 (65.3)	61	49	44	44	45	39	-	-	65	53	48	48	49	43	-	-	68	57	52	53	50	49	-	-			
		1900 (897)	0.370 (92.2)	64	53	47	48	48	43	-	-	67	56	50	51	51	46	-	-	70	60	54	56	52	52	-	-			
		2100 (991)	0.452 (112.6)	67	57	50	52	51	47	-	-	69	59	52	54	53	49	-	-	72	61	56	58	55	55	21	22			
		2600 (1227)	0.692 (172.4)	69	61	54	55	55	52	-	-	70	62	55	56	56	53	-	-	73	64	59	60	58	58	22	23			
		3000 (1416)	0.922 (229.7)	72	64	58	59	59	56	21	22	72	64	58	59	59	56	21	22	75	66	61	63	60	61	25	26			
3250 (1534)	1.082 (269.6)	74	67	61	62	63	59	23	25	73	66	60	61	62	58	22	23	76	68	62	64	64	63	26	27					
516 16 inch	0.25	750 (354)	0.035 (8.6)	60	39	39	37	43	34	-	-	69	48	48	46	52	43	-	-	71	54	55	54	56	53	-	21			
		1100 (519)	0.075 (18.6)	63	43	43	41	47	38	-	-	70	50	50	48	54	45	-	-	73	55	56	55	57	54	22	23			
		1500 (708)	0.140 (34.9)	66	47	47	45	51	42	-	-	71	52	52	50	56	47	-	21	73	56	57	55	58	54	22	23			
		1800 (850)	0.200 (49.9)	68	50	50	48	54	45	-	-	72	54	54	52	58	49	21	22	75	58	58	57	59	55	25	26			
		2400 (1133)	0.357 (88.8)	71	54	53	52	57	49	-	21	74	57	56	55	60	52	23	25	77	61	60	60	61	58	27	29			
		2800 (1322)	0.487 (121.3)	74	58	56	56	60	53	23	25	76	60	58	58	62	55	26	27	79	62	62	62	64	61	30	31			
		3600 (1699)	0.804 (200.1)	76	62	60	59	64	58	26	27	77	63	61	60	65	59	27	29	80	65	65	64	67	64	31	32			
		4000 (1888)	0.994 (247.6)	79	65	64	63	68	62	30	31	79	65	64	63	68	62	30	31	82	67	67	67	69	67	34	35			
4400 (2077)	1.201 (299.2)	81	68	67	66	72	65	32	34	80	67	66	65	71	64	31	32	83	69	68	68	73	69	35	36					

See Page DH-191 For NC Calculations

NC CALCULATIONS

The current ARI Standard for NC calculations is ARI 885-98. Other terminal manufacturers may catalog performance based on ARI 885-90. Using this older, obsolete standard will provide lower NC levels compared to the 1998 standard. To allow for fair and accurate performance comparisons, METALAIRE publishes the NC levels for both the 1990 standard and the 1998 current standard.



DH-500



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Dual Duct Air Terminal Units

DH-500 - Sound Path Attenuation Assumptions

NC CALCULATIONS

The current ARI Standard for NC calculations is ARI 885-98. Other terminal manufacturers may catalog performance based on ARI 885-90. Using this older, obsolete standard will provide lower NC levels compared to the 1998 standard. To allow for fair and accurate performance comparisons, METALAIRE publishes the NC levels for both the 1990 standard and the 1998 current standard.

ARI 885-90 Radiated Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	3	2	1	1	1	1
Ceiling Effect	9	10	12	14	15	15
Room Effect	9	10	10	11	12	13
Total dB Reduction	21	22	23	26	28	29

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-90.

- Parameters:
- 1) Mineral fiber ceiling tile, 5/8" thick (35 lb/ft³ density).
 - 2) Room size is 3000 ft³.
 - 3) Unit is located 10 ft from measurement point.

ARI 885-90 Discharge Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	3	2	1	1	1	1
Duct Lining	1	3	8	22	23	13
End Reflection	11	6	2	0	0	0
Flex Duct	6	9	23	25	22	13
Room Effect	9	10	10	11	12	13
Total dB Reduction	30	30	44	59	58	40

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-90.

- Parameters:
- 1) Fiberglass duct lining is 1 inch thick, 12" x 12" duct length is 5 feet.
 - 2) Flex duct is 8 inches in diameter and 6 feet in length for run to diffuser.
 - 3) Flex duct has a vinyl core.
 - 4) Room size is 3000 ft³.
 - 5) Unit is located 10 ft from measurement point.
 - 6) Attenuation credit based on a 300 CFM flow division using 10 log (# space) not shown above

ARI 885-98 Radiated Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Ceiling/Space Effect	16	18	20	26	31	36
Total dB Reduction	18	19	20	26	31	36

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-98.

- Parameters:
- 1) Mineral fiber ceiling tile, 5/8" thick (35 lb/ft³ density).
 - 2) The plenum space is at least 3 ft deep and either wide (>30 ft) or insulated.

* Combined effect including absorption of the ceiling tile, plenum absorption and room absorption.
(New to ARI 885-98. ARI 885-90 had separate lines for these absorptions.)

ARI 885-98, APPE defined "Medium" application from 300 to 700 CFM

ARI 885-98 Discharge Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Duct Lining	2	4	10	20	20	14
End Reflection	9	5	2	0	0	0
Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
Total dB Reduction	24	26	37	48	50	36

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-98.

- Parameters:
- 1) 12" x 12" x 5' duct with 1 inch thick fiberglass lining.
 - 2) Flex duct is 8 inches in diameter and 5 feet in length for run to diffuser.
 - 3) Flex duct has a vinyl core.
 - 4) Room size is 2400 ft³ (size of standard test room).
 - 5) Unit is located 5 ft from measurement point.
 - 6) Attenuation credit based on a 300 CFM flow division using 10 log (# space) not shown above

ARI 885-98, APPE defined "Large" application 700 CFM & greater

ARI 885-98 Discharge Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Duct Lining	2	3	9	18	17	12
End Reflection	9	5	2	0	0	0
Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
Total dB Reduction	24	25	36	46	47	34

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-98.

- Parameters:
- 1) 15" x 15" x 5' duct with 1 inch thick fiberglass lining.
 - 2) Flex duct is 8 inches in diameter and 5 feet in length for run to diffuser.
 - 3) Flex duct has a vinyl core.
 - 4) Room size is 2400 ft³ (size of standard test room).
 - 5) Unit is located 5 ft from measurement point.
 - 6) Attenuation credit based on a 300 CFM flow division using 10 log (# space) not shown above





SERIES DD-500

Dual Duct Air Terminal Units

Series DD-500 Dual Duct air terminals are designed to regulate the flow of conditioned air in dual duct air distribution systems. In a dual duct system, both heated and cooled air are provided to the air terminal and mixed in plenum provided by others to provide the desired discharge temperature. The DD-500 is available with a wide range of standard control sequences.

Series DD-500 Air Terminals feature a low leakage single blade damper. The DD-500 series is available with pneumatic, electric, analog electronic, and DDC (by others) factory mounted controls. DD-500 air terminals are available for both system pressure independent and system pressure dependent applications.

Series DD-500 air terminals are recommended for use in duct systems with static pressures up to 3" water gauge.

Units inlet tubes are constructed with a seamless butt weld to minimize leakage and prevent the damper from binding

The inlet tubes are free of obstructions, including stops, allowing the damper to rotate 360 degrees within the inlet tube

Multiquadrant Averaging Flow Sensor provides an accurate flow signal without the requirement of a straight duct connection immediately upstream (Shipped standard on all units).

The DD-500 damper gaskets has slits around the perimeter to prevent a low frequency vibration and corresponding noise at near shut-off

Standard insulation is dual density glass fiber. Optional liners are available including Thermopure (closed cell foam), foil face, and metal liner

Dual Duct Air Terminal Units



DD-500

Duct Duct Air Terminal Units

All DD-500 terminal units are ARI certified and shipped with the ARI seal

For set-up and balancing purposes, all units are shipped with a convenient balancing chart located on the outside of the terminal for conversion from velocity pressure to CFM

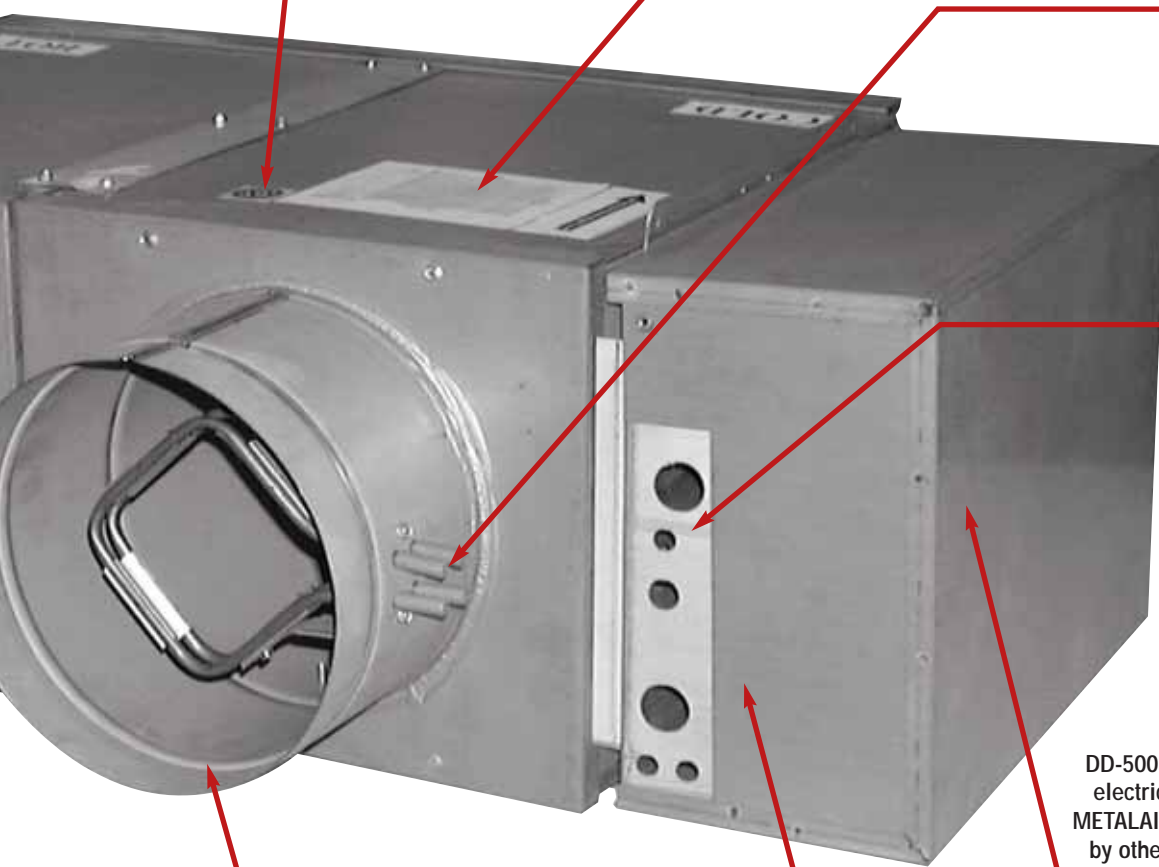
All units are shipped with easy access balancing taps. The extra ports can be used to read CFM (through velocity pressure) directly at the unit

Control panel includes stand-offs to allow mounting of controls without penetrating the

DD-500 is available with pneumatic electric, analog or digital controls. METALAIRE® factory mounts controls by others. This program ships each terminal unit with the required control and power wiring diagrams

For long life and continuous operation, the damper rotates in a self-lubricating Kepital® (acetal resin) bearing. Control mounting plate is shipped standard on all units. Control cover is provided as standard

The inlet tubes for the DD-500 includes a bead that strengthens the tube and serves as a stop to keep attached flex duct from slipping



Dual Duct Air Terminal Units



DD-500



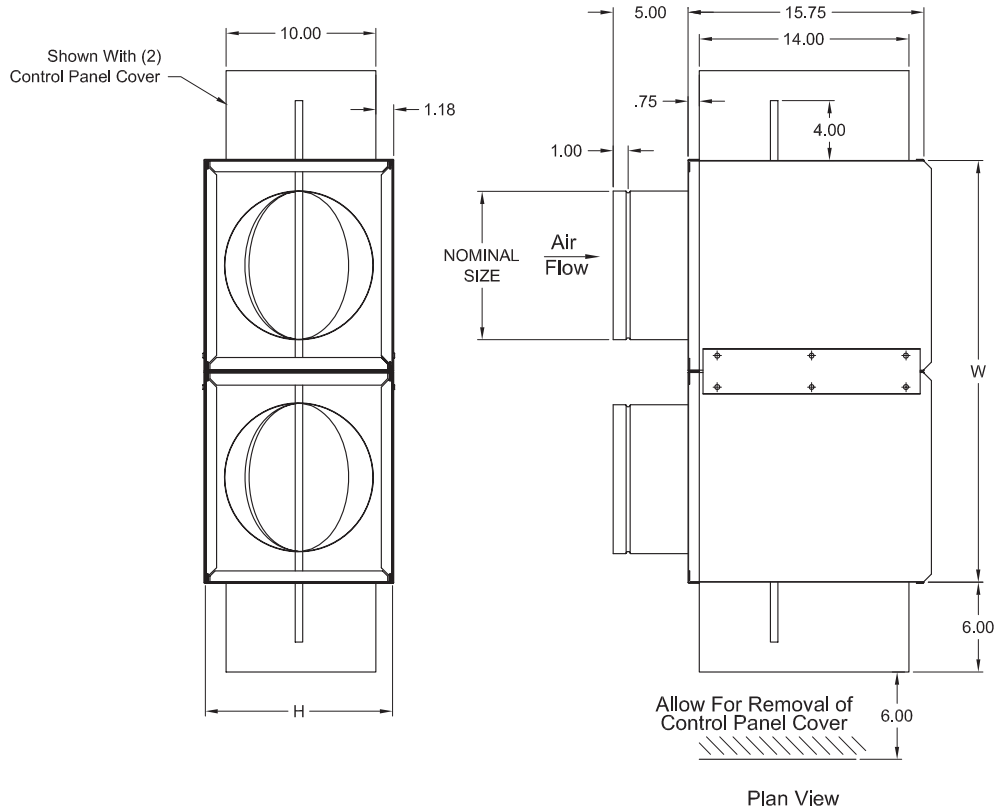
Dual Duct Air Terminal Units

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DD-500 - Air Terminal Dimensions

DD-500

Dimensions are in inches



Plan View

MODEL NUMBER	NOMINAL SIZE		H (Height)		W (Width)	
	In	(mm)	In	(mm)	In	(mm)
DD-506	6" Dia	(152)	8"	(203)	24.016"	(610)
DD-508	8" Dia	(203)	10"	(254)	24.016"	(610)
DD-510	10" Dia	(254)	12.50"	(318)	28.016"	(712)
DD-512	12" Dia	(305)	15"	(381)	32.016"	(813)
DD-514	14" Dia	(356)	17.50"	(445)	40.016"	(1016)
DD-516	16" Dia	(406)	18"	(457)	48.016"	(1220)

Dual Duct Air Terminal Units



DD-500

DD-500 - ARI Rating Points

ARI CERTIFIED PERFORMANCE

ARI Certified Radiated Sound Power, 1.5" Inlet Static Pressure								
Unit Size	Min Ps	CFM	Octave Band					
			2	3	4	5	6	7
506	0.10	400	57	53	47	40	37	33
508	0.09	700	62	59	49	43	37	32
510	0.05	1100	60	56	51	44	38	34
512	0.05	1600	64	59	55	48	43	37
514	0.07	2100	63	58	49	44	42	39
516	0.08	2800	64	64	58	51	48	45



ARI Certified Discharge Sound Power, 1.5" Inlet Static Pressure								
Unit Size	Min Ps	CFM	Octave Band					
			2	3	4	5	6	7
506	0.10	400	65	66	61	57	52	49
508	0.09	700	66	67	61	59	55	50
510	0.05	1100	69	70	63	61	55	52
512	0.05	1600	68	70	68	61	57	54
514	0.07	2100	71	72	67	65	62	58
516	0.08	2800	73	74	73	66	61	56

STATEMENT OF STANDARD TEST CONFORMITY

METALAIRE tests all DD-500 air terminal units for engineering performance in accordance with the following standards: American National Standards Institute (ANSI) / American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) / International Organization for Standardization (ISO) / Air-Conditioning & Refrigeration Institute (ARI).

- ARI Standard 880-98 Standard for Air Terminals
- ANSI/ASHRAE 130-1996 Methods of Testing for Rating Ducted Air Terminal Units
- ASHRAE Standard 41.1-1986 (RA 91) Standard Method for Temperature Measurement
- ASHRAE Standard 41.2-1987 Standard Methods for Laboratory Air Measurements
- ASHRAE Standard 41.3-1989 Standard Methods for Pressure Measurement
- ISO 5219-1984 Air distribution and air diffusion - Laboratory aerodynamic testing and rating of air terminal devices.

Casing Leakage, CFM				
Inlet Size	0.25" I Ps	0.50" I Ps	1.00" I Ps	1.50" I Ps
6	2	3	4	5
8	2	3	5	6
10	3	4	6	8
12	3	5	7	9
14	4	6	9	11
16	5	7	10	12

Damper Leakage, CFM			
Inlet Size	1.5" I Ps	3.0" I Ps	6.0" I Ps
6	3	4	7
8	3	4	7
10	4	5	7
12	4	5	7
14	4	6	8
16	4	6	8

Selection Recommendations for DD-500		
Inlet Size	Minimum CFM	CFM @1"
6	105	600
8	190	1100
10	290	1700
12	430	2500
14	550	3250
16	750	4400

Notes:

1. Minimum CFM is based on a signal velocity pressure of 0.03 in W.C.
2. Maximum CFM is based on signal velocity pressure of 1.0 in W.C.
3. For Selections outside the above ranges, contact your local METALAIRE Representative



Dual Duct Air Terminal Units

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DD-500 - Radiated Sound Power at Min., .5", .75" Wg

Unit Size	Outlet Ps in. H2O	CFM (L/s)	Min Ps in. H2O (Pa)	Min Ps							Inlet Pressure, Ps=0.5 inches of water (125 Pa)							Inlet Pressure, Ps=0.75 inches of water (185 Pa)															
				Octave Band Sound Power, Lw, dB							NC1 ARI 885-98	NC2 ARI 885-98	Octave Band Sound Power, Lw, dB							NC1 ARI 885-98	NC2 ARI 885-98	Octave Band Sound Power, Lw, dB							NC1 ARI 885-98	NC2 ARI 885-98			
				2	3	4	5	6	7	90	2	3	4	5	6	7	90	2	3	4	5	6	7	90	2	3	4	5	6	7	90		
											< 15							< 15	< 15								< 15						
506 6 inch	0.25	100 (47)	0.015 (3.8)	43	35	20	17	15	13	< 15	44	35	25	23	19	13	< 15	46	37	27	25	21	16	< 15	46	37	27	25	21	16	< 15	< 15	
		200 (94)	0.038 (9.5)	45	38	26	23	22	15	< 15	51	41	33	28	23	19	< 15	53	43	37	31	27	23	< 15	53	43	37	31	27	23	< 15	< 15	
		250 (118)	0.059 (14.8)	46	39	29	26	25	18	< 15	53	43	35	30	26	21	< 15	55	45	39	33	28	25	< 15	55	45	39	33	28	25	< 15	< 15	
		300 (142)	0.071 (17.6)	48	41	32	29	28	22	< 15	55	44	38	32	28	23	< 15	56	47	43	35	32	27	< 15	56	47	43	35	32	27	< 15	< 15	
		400 (189)	0.104 (25.8)	54	44	37	34	34	25	< 15	57	48	42	36	34	26	< 15	58	51	46	39	36	30	< 15	58	51	46	39	36	30	< 15	< 15	
		450 (212)	0.125 (31.0)	54	46	39	37	36	27	< 15	57	50	43	39	38	28	< 15	58	53	47	41	38	31	< 15	58	53	47	41	38	31	< 15	< 15	
		500 (236)	0.136 (33.9)	55	48	42	39	39	29	< 15	58	51	45	40	39	30	< 15	60	54	48	42	40	33	< 15	60	54	48	42	40	33	< 15	< 15	
600 (283)	0.169 (42.1)	55	52	47	44	44	34	< 15	58	54	48	44	44	35	< 15	61	57	50	45	45	36	< 15	61	57	50	45	45	36	< 15	< 15			
508 8 inch	0.25	200 (94)	0.021 (5.3)	45	36	23	19	18	18	< 15	51	39	28	23	20	19	< 15	53	42	33	29	23	22	< 15	53	42	33	29	23	22	< 15	< 15	
		300 (142)	0.029 (7.2)	48	39	25	21	21	21	< 15	54	43	36	28	23	22	< 15	56	46	40	34	27	24	< 15	56	46	40	34	27	24	< 15	< 15	
		500 (236)	0.046 (11.4)	50	42	29	27	22	21	< 15	56	46	39	33	26	22	< 15	58	49	42	36	29	25	< 15	58	49	42	36	29	25	< 15	< 15	
		600 (283)	0.064 (15.9)	51	44	32	30	24	21	< 15	57	47	40	36	28	23	< 15	58	51	43	38	31	26	< 15	58	51	43	38	31	26	< 15	< 15	
		700 (330)	0.090 (22.4)	53	46	36	34	26	23	< 15	59	49	43	38	30	24	< 15	61	53	45	40	33	28	< 15	61	53	45	40	33	28	< 15	< 15	
		800 (378)	0.101 (25.2)	56	48	40	39	29	24	< 15	60	51	45	40	32	26	< 15	62	54	47	42	35	30	< 15	62	54	47	42	35	30	< 15	< 15	
		900 (425)	0.110 (27.4)	58	51	44	43	32	26	< 15	62	53	47	43	35	28	< 15	64	56	49	44	37	31	< 15	64	56	49	44	37	31	< 15	< 15	
1000 (472)	0.128 (31.8)	58	53	48	45	35	29	< 15	62	55	49	45	37	30	< 15	65	57	51	47	39	33	< 15	65	57	51	47	39	33	< 15	< 15			
1100 (519)	0.145 (36.0)	59	54	50	46	38	32	< 15	64	56	51	47	40	33	< 15	66	58	53	48	41	35	< 15	66	58	53	48	41	35	< 15	< 15			
510 10 inch	0.25	300 (142)	0.009 (2.2)	51	37	23	19	18	16	< 15	52	39	26	22	20	18	< 15	54	42	35	28	24	22	< 15	54	42	35	28	24	22	< 15	< 15	
		400 (189)	0.012 (2.9)	54	39	28	25	22	22	< 15	55	45	37	31	27	22	< 15	56	47	40	35	30	24	< 15	56	47	40	35	30	24	< 15	< 15	
		600 (283)	0.015 (3.8)	55	40	30	27	22	22	< 15	57	47	40	34	29	22	< 15	58	51	44	38	33	25	< 15	58	51	44	38	33	25	< 15	< 15	
		800 (378)	0.039 (9.6)	56	42	33	30	23	22	< 15	58	49	42	38	32	23	< 15	60	53	46	41	35	26	< 15	60	53	46	41	35	26	< 15	< 15	
		1000 (472)	0.046 (11.5)	56	43	36	34	26	22	< 15	60	52	45	41	34	25	< 15	62	54	48	43	37	28	< 15	62	54	48	43	37	28	< 15	< 15	
		1200 (566)	0.078 (19.4)	58	48	40	37	30	24	< 15	62	54	48	44	37	27	< 15	63	56	49	45	39	30	< 15	63	56	49	45	39	30	< 15	< 15	
		1400 (661)	0.109 (27.2)	58	51	45	42	34	26	< 15	62	57	51	47	40	31	< 15	64	58	51	48	41	33	< 15	64	58	51	48	41	33	< 15	< 15	
1600 (755)	0.133 (33.1)	62	54	50	47	38	30	< 15	65	59	54	50	43	35	< 15	68	60	54	50	43	36	< 15	68	60	54	50	43	36	< 15	< 15			
1700 (802)	0.151 (37.7)	64	56	52	49	40	33	< 15	68	61	56	53	45	36	< 15	70	62	57	54	46	38	< 15	70	62	57	54	46	38	< 15	< 15			
512 12 inch	0.25	450 (212)	0.022 (5.5)	54	38	25	22	18	16	< 15	56	44	33	25	22	19	< 15	57	46	36	29	23	22	< 15	57	46	36	29	23	22	< 15	< 15	
		800 (378)	0.031 (7.7)	57	42	32	27	22	21	< 15	59	49	41	34	30	24	< 15	60	52	45	37	32	27	< 15	60	52	45	37	32	27	< 15	< 15	
		1000 (472)	0.037 (9.3)	58	44	35	29	23	21	< 15	59	51	43	36	32	26	< 15	61	53	47	39	34	28	< 15	61	53	47	39	34	28	< 15	< 15	
		1200 (566)	0.044 (10.9)	59	47	38	31	25	22	17	< 15	60	52	45	38	34	27	< 15	62	54	48	41	36	30	< 15	62	54	48	41	36	30	< 15	< 15
		1450 (684)	0.054 (13.5)	59	49	41	34	28	23	17	< 15	61	53	47	41	37	30	< 15	62	55	50	43	39	32	< 15	62	55	50	43	39	32	< 15	< 15
		1700 (802)	0.074 (18.5)	60	51	45	37	31	25	18	< 15	62	54	50	43	40	32	< 15	64	56	52	45	41	34	< 15	64	56	52	45	41	34	< 15	< 15
		1950 (920)	0.095 (23.6)	61	54	49	40	35	28	20	< 15	64	56	53	46	42	35	< 15	65	58	54	47	43	37	< 15	65	58	54	47	43	37	< 15	< 15
2200 (1038)	0.115 (28.7)	62	55	52	44	39	31	23	< 15	66	58	56	48	44	37	< 15	67	60	57	49	46	39	< 15	67	60	57	49	46	39	< 15	< 15		
2500 (1180)	0.172 (42.8)	63	57	54	48	41	33	25	< 15	67	60	58	50	46	39	< 15	68	62	59	51	48	41	< 15	68	62	59	51	48	41	< 15	< 15		
514 14 inch	0.25	550 (260)	0.002 (0.5)	53	36	29	22	18	17	< 15	57	38	31	25	22	20	< 15	57	40	33	29	25	23	< 15	57	40	33	29	25	23	< 15	< 15	
		925 (437)	0.004 (1.0)	54	39	32	25	21	19	< 15	59	43	38	33	28	24	< 15	60	45	41	35	31	26	< 15	60	45	41	35	31	26	< 15	< 15	
		1300 (614)	0.024 (6.1)	57	43	34	29	25	22	< 15	62	52	47	41	39	37	< 15	62	54	48	41	40	37	< 15	62	54	48	41	40	37	< 15	< 15	
		1600 (755)	0.042 (10.6)	57	46	37	31	28	23	< 15	63	53	47	43	40	37	< 15	64	56	48	44	41	37	< 15	64	56	48	44	41	37	< 15	< 15	
		1900 (897)	0.061 (15.1)	58	49	42	35	31	25	16	< 15	64	55	48	44	41	38	< 15	65	56	49	44	41	39	< 15	65	56	49	44	41	39	< 15	< 15
		2200 (1038)	0.079 (19.6)	58	52	47	39	34	27	18	< 15	65	56	49	44	42	38	< 15	65	57	50	44	43	39	< 15	65	57	50	44	43	39	< 15	< 15
		2600 (1227)	0.103 (25.6)	60	55	49	43	38	31	20	< 15	65	58	50	46	44	39	< 15	65	59	50	46	44	39	< 15	65	59	50	46	44	39	< 15	< 15
3000 (1416)	0.127 (31.5)	62	58	52	47	41	35	24	< 15	66	61	53	48	46	41	< 15	67	62	53	49	46	41	< 15	67	62	53	49	46	41	< 15	< 15		
3250 (1534)	0.138 (34.4)	63	60	56	49	43	37	27	< 15	67	63	57	51	47	42	< 15	68	63	58	52													

Dual Duct Air Terminal Units

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DD-500 - Discharge Sound Power at Min., .5", .75" Wg

Unit Size	Outlet Ps in. H2O	CFM (L/s)	Min Ps in. H2O (Pa)	Min Ps											Inlet Pressure, Ps=0.5 inches of water (125 Pa)						Inlet Pressure, Ps=0.75 inches of water (185 Pa)														
				Octave Band Sound Power, Lw, dB							NC1 ARI 885-98	NC2 ARI 885-98	Octave Band Sound Power, Lw, dB					NC1 ARI 885-98	NC2 ARI 885-98	Octave Band Sound Power, Lw, dB					NC1 ARI 885-98	NC2 ARI 885-98									
				2	3	4	5	6	7	90	2	3	4	5	6	7	2	3	4	5	6	7	90	98											
506 6 inch	0.25	100 (47)	0.015 (3.8)	55	41	27	24	23	20	<15	<15	56	51	40	40	36	31	<15	<15	57	55	46	43	40	37	<15	<15	57	55	46	43	40	37	<15	<15
		200 (94)	0.038 (9.5)	57	46	38	34	26	22	<15	<15	59	53	43	44	38	34	<15	<15	60	57	48	47	42	39	<15	<15	60	57	48	47	42	39	<15	<15
		250 (118)	0.059 (14.8)	58	48	41	38	30	26	<15	<15	61	54	46	45	40	36	<15	<15	62	59	50	50	48	43	<15	<15	62	59	50	48	43	40	<15	<15
		300 (142)	0.071 (17.6)	59	51	47	42	33	28	<15	<15	63	56	48	48	41	38	<15	<15	63	60	52	50	44	41	<15	<15	63	60	52	50	44	41	<15	<15
		400 (189)	0.104 (25.8)	60	57	53	49	40	36	<15	<15	64	61	53	53	45	43	<15	<15	66	64	56	55	48	45	<15	<15	66	64	56	55	48	45	<15	<15
		450 (212)	0.125 (31.0)	62	59	55	51	43	40	15	16	64	62	56	55	47	45	19	20	66	65	58	57	50	46	22	24	66	65	58	57	50	46	22	24
		500 (236)	0.136 (33.9)	63	62	57	55	47	43	19	20	65	64	58	57	50	47	21	22	67	67	60	59	51	48	25	26	67	67	60	59	51	48	25	26
600 (283)	0.169 (42.1)	65	66	61	60	52	49	24	25	67	68	62	61	54	51	26	27	69	70	64	62	55	52	28	29	69	70	64	62	55	52	28	29		
508 8 inch	0.25	200 (94)	0.021 (5.3)	55	43	39	37	31	28	<15	<15	58	53	48	43	37	33	<15	<15	59	56	52	46	40	37	<15	<15	59	56	52	46	40	37	<15	<15
		300 (142)	0.029 (7.2)	56	45	41	39	33	30	<15	<15	60	57	50	46	41	36	<15	<15	61	60	54	49	44	40	<15	<15	61	60	54	49	44	40	<15	<15
		500 (236)	0.046 (11.4)	57	49	43	41	34	32	<15	<15	63	61	54	51	44	40	18	19	65	64	56	54	48	43	21	22	65	64	56	54	48	43	21	22
		600 (283)	0.064 (15.9)	59	52	48	45	36	33	<15	<15	65	63	56	54	46	42	20	21	67	65	58	56	49	45	22	24	67	65	58	56	49	45	22	24
		700 (330)	0.090 (22.4)	60	56	52	49	41	34	<15	<15	67	65	58	57	48	43	22	24	68	67	60	58	51	46	25	26	68	67	60	58	51	46	25	26
		800 (378)	0.101 (25.2)	62	59	56	53	46	39	15	15	68	66	60	59	50	46	24	24	70	68	62	61	53	48	26	26	70	68	62	61	53	48	26	26
		900 (425)	0.110 (27.4)	64	62	59	57	50	44	19	19	70	68	62	61	53	48	26	26	71	70	64	63	55	50	28	28	71	70	64	63	55	50	28	28
1000 (472)	0.128 (31.8)	65	64	61	59	54	49	21	21	71	70	64	63	55	50	28	28	73	71	66	66	57	52	29	29	73	71	66	66	57	52	29	29		
1100 (519)	0.145 (36.0)	66	65	63	61	58	52	22	22	72	71	66	65	59	53	29	29	74	72	68	67	59	54	31	31	74	72	68	67	59	54	31	31		
510 10 inch	0.25	300 (142)	0.009 (2.2)	54	49	40	38	31	29	<15	<15	56	57	49	47	41	37	<15	<15	57	59	51	49	45	41	<15	<15	57	59	51	49	45	41	<15	<15
		400 (189)	0.012 (2.9)	55	51	42	41	33	31	<15	<15	57	58	51	50	45	40	<15	<15	58	61	54	53	48	45	<15	<15	58	61	54	53	48	45	<15	<15
		600 (283)	0.015 (3.8)	56	55	45	42	34	32	<15	<15	59	59	53	52	46	41	15	16	61	63	56	55	49	46	20	21	61	63	56	55	49	46	20	21
		800 (378)	0.039 (9.6)	60	57	46	43	36	33	<15	<15	61	61	55	53	47	42	18	18	63	64	58	57	50	46	21	21	63	64	58	57	50	46	21	21
		1000 (472)	0.046 (11.5)	62	62	53	52	44	40	19	19	64	64	57	56	48	44	21	21	65	66	60	59	52	48	24	24	65	66	60	59	52	48	24	24
		1200 (566)	0.078 (19.4)	63	66	58	57	49	46	24	24	67	68	61	59	51	47	26	26	68	69	63	61	54	50	27	27	68	69	63	61	54	50	27	27
		1400 (661)	0.109 (27.2)	65	68	62	61	53	50	26	26	70	72	65	63	55	51	31	31	71	73	66	64	57	53	32	32	71	73	66	64	57	53	32	32
1600 (755)	0.133 (33.1)	67	70	65	65	57	54	28	28	73	74	69	67	59	55	33	33	74	75	69	68	60	56	34	34	74	75	69	68	60	56	34	34		
1700 (802)	0.151 (37.7)	68	71	67	66	59	56	29	29	74	75	71	69	61	58	34	34	75	76	72	71	63	59	35	35	75	76	72	71	63	59	35	35		
512 12 inch	0.25	450 (212)	0.022 (5.5)	59	52	47	43	33	31	<15	<15	60	54	51	44	34	33	<15	<15	62	57	55	48	38	37	<15	<15	62	57	55	48	38	37	<15	<15
		800 (378)	0.031 (7.7)	61	55	50	46	36	36	<15	<15	62	62	54	48	38	36	19	19	64	65	58	52	42	40	22	22	64	65	58	52	42	40	22	22
		1000 (472)	0.037 (9.3)	62	58	52	49	38	38	<15	<15	64	64	56	51	41	40	21	21	65	66	60	54	45	43	24	24	65	66	60	54	45	43	24	24
		1200 (566)	0.044 (10.9)	63	60	55	52	42	42	16	16	66	66	58	54	45	43	24	24	67	67	61	56	48	46	25	25	67	67	61	56	48	46	25	25
		1450 (684)	0.054 (13.5)	65	63	58	55	47	46	20	20	68	68	61	57	49	47	26	26	68	69	64	59	52	50	27	27	68	69	64	59	52	50	27	27
		1700 (802)	0.074 (18.5)	67	66	62	59	52	50	24	24	70	70	64	60	54	51	28	28	70	71	66	62	56	53	29	29	70	71	66	62	56	53	29	29
		1950 (920)	0.095 (23.6)	69	68	65	62	56	54	26	26	71	72	67	64	58	55	31	31	71	72	68	64	59	56	31	31	71	72	68	64	59	56	31	31
2200 (1038)	0.115 (28.7)	71	70	67	64	60	58	28	28	72	74	70	66	62	59	33	33	73	74	71	67	63	60	33	33	73	74	71	67	63	60	33	33		
2500 (1180)	0.172 (42.8)	73	72	69	66	62	60	31	31	74	75	72	68	64	61	34	34	75	75	73	69	65	62	34	34	75	75	73	69	65	62	34	34		
514 14 inch	0.25	550 (280)	0.002 (0.5)	59	51	46	42	33	32	<15	<15	60	53	48	44	35	33	<15	<15	61	54	50	46	38	35	<15	<15	61	54	50	46	38	35	<15	<15
		925 (437)	0.004 (1.0)	64	57	53	47	41	35	<15	<15	65	58	54	49	43	42	<15	<15	66	59	55	51	46	44	<15	<15	66	59	55	51	46	44	<15	<15
		1300 (614)	0.024 (6.1)	70	70	63	59	56	49	28	28	71	70	63	61	57	49	28	28	72	70	64	61	58	53	28	28	72	70	64	61	58	53	28	28
		1600 (755)	0.042 (10.6)	71	70	67	64	59	52	28	28	72	71	67	64	60	53	29	29	72	71	67	64	61	55	29	29	72	71	67	64	61	55	29	29
		1900 (897)	0.061 (15.1)	71	71	68	64	61	55	29	29	72	71	69	65	62	56	29	29	72	72	69	66	62	57	31	31	72	72	69	66	62	57	31	31
		2200 (1038)	0.079 (19.6)	72	72	69	67	63	58	31	31	73	72	70	67	63	58	31	31	73	73	70	67	63	59	32	32	73	73	70	67	63	59	32	32
		2600 (1227)	0.103 (25.6)	74	75	71	68	63	60	34	34	74	76	71	68	64	60	35	35	75	76	71	69	64	60	35	35	75	76	71					

Duct Duct Air Terminal Units

DD-500 - Discharge Sound Power at 1", 2", 3" Wg

Unit Size	Outlet Ps in. H2O	CFM (L/s)	Min Ps in. H2O (Pa)	Min Ps										Inlet Pressure, Ps=0.5 inches of water (125 Pa)								Inlet Pressure, Ps=0.75 inches of water (185 Pa)							
				Octave Band Sound Power, Lw, dB						NC1 ARI	NC2 ARI	Octave Band Sound Power, Lw, dB						NC1 ARI	NC2 ARI	Octave Band Sound Power, Lw, dB						NC1 ARI	NC2 ARI		
				2	3	4	5	6	7	885-90	885-98	2	3	4	5	6	7	885-90	885-98	2	3	4	5	6	7	885-90	885-98		
				2	3	4	5	6	7	90	98	2	3	4	5	6	7	90	98	2	3	4	5	6	7	90	98		
506 6 inch	0.25	100 (47)	0.015 (3.8)	55	41	27	24	23	20	< 15	< 15	56	51	40	40	36	31	< 15	< 15	57	55	46	43	40	37	< 15	< 15		
		200 (94)	0.038 (9.5)	57	46	38	34	26	22	< 15	< 15	59	53	43	44	38	34	< 15	< 15	60	57	48	47	42	39	< 15	< 15		
		250 (118)	0.059 (14.8)	58	48	41	38	30	26	< 15	< 15	61	54	46	45	40	36	< 15	< 15	62	59	50	48	43	40	15	18		
		300 (142)	0.071 (17.6)	59	51	47	42	33	28	< 15	< 15	63	56	48	48	41	38	< 15	< 15	63	60	52	50	44	41	16	18		
		400 (189)	0.104 (25.8)	60	57	53	49	40	36	< 15	< 15	64	61	53	53	45	43	18	19	66	64	56	55	48	45	21	22		
		450 (212)	0.125 (31.0)	62	59	55	51	43	40	15	16	64	62	56	55	47	45	19	20	66	65	58	57	50	46	22	24		
600 (236)	0.136 (33.9)	63	62	57	55	47	43	19	20	65	64	58	57	50	47	21	22	67	67	60	59	51	48	25	26				
800 (283)	0.169 (42.1)	65	66	61	60	52	49	24	25	67	68	62	61	54	51	26	27	69	70	64	62	55	52	28	29				
508 8 inch	0.25	200 (94)	0.021 (5.3)	55	43	39	37	31	28	< 15	< 15	58	53	48	43	37	33	< 15	< 15	59	56	52	46	40	37	< 15	< 15		
		300 (142)	0.029 (7.2)	56	45	41	39	33	30	< 15	< 15	60	57	50	46	41	36	< 15	< 15	61	60	54	49	44	40	16	18		
		500 (236)	0.046 (11.4)	57	49	43	41	34	32	< 15	< 15	63	61	54	51	44	40	18	19	65	64	56	54	48	43	21	22		
		600 (283)	0.064 (15.9)	59	52	48	45	36	33	< 15	< 15	65	63	56	54	46	42	20	21	67	65	58	56	49	45	22	24		
		700 (330)	0.090 (22.4)	60	56	52	49	41	34	< 15	< 15	67	65	58	57	48	43	22	24	68	67	60	58	51	46	25	26		
		800 (378)	0.101 (25.2)	62	59	56	53	46	39	15	15	68	66	60	59	50	46	24	24	70	68	62	61	53	48	26	26		
900 (425)	0.110 (27.4)	64	62	59	57	50	44	19	19	70	68	62	61	53	48	26	26	71	70	64	63	55	50	28	28				
1000 (472)	0.128 (32.6)	65	64	61	59	54	49	21	21	71	70	64	63	55	50	28	28	73	71	66	66	57	52	29	29				
1100 (519)	0.145 (38.0)	66	65	63	61	58	52	22	22	72	71	66	65	59	53	29	29	74	72	68	67	59	54	31	31				
510 10 inch	0.25	300 (142)	0.009 (2.2)	54	49	40	38	31	29	< 15	< 15	56	57	49	47	41	37	< 15	< 15	57	59	51	49	45	41	15	16		
		400 (189)	0.012 (2.9)	55	51	42	41	33	31	< 15	< 15	57	58	51	50	45	40	< 15	< 15	58	61	54	53	48	45	18	18		
		600 (283)	0.015 (3.8)	56	55	45	42	34	32	< 15	< 15	59	59	53	52	46	41	15	16	61	63	56	55	49	46	20	21		
		800 (378)	0.039 (9.6)	60	57	46	43	36	33	< 15	< 15	61	61	55	53	47	42	18	18	63	64	58	57	50	46	21	21		
		1000 (472)	0.046 (11.5)	62	62	53	52	44	40	19	19	64	64	57	56	48	44	21	21	65	66	60	59	52	48	24	24		
		1200 (566)	0.078 (19.4)	63	66	58	57	49	46	24	24	67	68	61	59	51	47	26	26	68	69	63	61	54	50	27	27		
1400 (661)	0.109 (27.2)	65	68	62	61	53	50	26	26	70	72	65	63	55	51	31	31	71	73	66	64	57	53	32	32				
1600 (755)	0.133 (33.1)	67	70	65	65	57	54	28	28	73	74	69	67	59	55	33	33	74	75	69	68	60	56	34	34				
1700 (802)	0.151 (37.7)	68	71	67	66	59	56	29	29	74	75	71	69	61	58	34	34	75	76	72	71	63	59	35	35				
512 12 inch	0.25	450 (212)	0.022 (5.5)	59	52	47	43	33	31	< 15	< 15	60	54	51	44	34	33	< 15	< 15	62	57	55	48	38	37	< 15	< 15		
		800 (378)	0.031 (7.7)	61	55	50	46	36	36	< 15	< 15	62	62	54	48	38	36	19	19	64	65	58	52	42	40	22	22		
		1000 (472)	0.037 (9.3)	62	58	52	49	38	38	< 15	< 15	64	64	56	51	41	40	21	21	65	66	60	54	45	43	24	24		
		1200 (566)	0.044 (10.9)	63	60	55	52	42	42	16	16	66	66	58	54	45	43	24	24	67	67	61	56	48	46	25	25		
		1450 (684)	0.054 (13.5)	65	63	58	55	47	46	20	20	68	68	61	57	49	47	26	26	68	69	64	59	52	50	27	27		
		1700 (802)	0.074 (18.5)	67	66	62	59	52	50	24	24	70	70	64	60	54	51	28	28	70	71	66	62	56	53	29	29		
1950 (920)	0.095 (23.6)	69	68	65	62	56	54	26	26	71	72	67	64	58	55	31	31	71	72	68	64	59	56	31	31				
2200 (1038)	0.115 (28.7)	71	70	67	64	60	58	28	28	72	74	70	66	62	59	33	33	73	74	71	67	63	60	33	33				
2500 (1180)	0.172 (42.8)	73	72	69	66	62	60	31	31	74	75	72	68	64	61	34	34	75	75	73	69	65	62	34	34				
514 14 inch	0.25	550 (260)	0.002 (0.5)	59	51	46	42	33	32	< 15	< 15	60	53	48	44	35	33	< 15	< 15	61	54	50	46	38	35	< 15	< 15		
		925 (437)	0.004 (1.0)	64	57	53	47	41	35	< 15	< 15	65	58	54	49	43	42	< 15	< 15	66	59	55	51	46	44	15	16		
		1300 (614)	0.024 (6.1)	70	70	63	59	56	49	28	28	71	70	63	61	57	49	28	28	72	70	64	61	58	53	28	28		
		1600 (755)	0.042 (10.6)	71	70	67	64	59	52	28	28	72	71	67	64	60	53	29	29	72	71	67	64	61	55	29	29		
		1900 (897)	0.061 (15.1)	71	71	68	64	61	55	29	29	72	71	69	65	62	56	29	29	72	72	69	66	62	57	31	31		
		2200 (1038)	0.079 (19.6)	72	72	69	67	63	58	31	31	73	72	70	67	63	58	31	31	73	73	70	67	63	59	32	32		
2600 (1227)	0.103 (25.6)	74	75	71	68	63	60	34	34	74	76	71	68	64	60	35	35	75	76	71	69	64	60	35	35				
3000 (1416)	0.127 (31.5)	77	76	74	70	64	62	35	35	77	77	75	70	64	62	37	37	77	78	75	71	65	62	38	38				
3250 (1534)	0.138 (34.4)	78	77	75	72	66	63	37	37	79	78	76	73	67	65	38	38	79	78	76	74	68	67	38	38				
516 16 inch	0.25	750 (354)	0.004 (0.9)	61	59	53	51	48	44	15	15	63	61	56	55	49	45	18	18	64	62	57	56	51	47	19	19		
		1100 (519)	0.015 (3.8)	63	64	58	56	50	46	21	21	65	65	61	57	51	46	22	22	66	67	62	58	53	48	25	25		
		1500 (708)	0.026 (6.5)	65	66	62	58	52	47	24	24	69	69	64	58	52	47	27	27	70	71	67	61	55	49	29	29		
		1800 (850)	0.035 (8.7)	67	68	65	60	55	48	26	26	71	71	65	60	55	49	29	29	72	73	69	62	57	51	32	32		
		2400 (1133)	0.058 (14.4)	71	71	67	63	58	52	29	29	75	74	68	63	58	54	33	33	75	75	70	65	59	55	34</			

DD-500 - Sound Path Attenuation Assumptions

NC CALCULATIONS

The current ARI Standard for NC calculations is ARI 885-98. Other terminal manufacturers may catalog performance based on ARI 885-90. Using this older, obsolete standard will provide lower NC levels compared to the 1998 standard. To allow for fair and accurate performance comparisons, METALAIRE publishes the NC levels for both the 1990 standard and the 1998 current standard.

ARI 885-90 Radiated Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	3	2	1	1	1	1
Ceiling Effect	9	10	12	14	15	15
Room Effect	9	10	10	11	12	13
Total dB Reduction	21	22	23	26	28	29

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-90.

- Parameters:
- 1) Mineral fiber ceiling tile, 5/8" thick (35 lb/ft² density).
 - 2) Room size is 3000 ft³.
 - 3) Unit is located 10 ft from measurement point.

ARI 885-90 Discharge Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	3	2	1	1	1	1
Duct Lining	1	3	8	22	23	13
End Reflection	11	6	2	0	0	0
Flex Duct	6	9	23	25	22	13
Room Effect	9	10	10	11	12	13
Total dB Reduction	30	30	44	59	58	40

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-90.

- Parameters:
- 1) Fiberglass duct lining is 1 inch thick, 12" x 12" duct length is 5 feet.
 - 2) Flex duct is 8 inches in diameter and 6 feet in length for run to diffuser.
 - 3) Flex duct has a vinyl core.
 - 4) Room size is 3000 ft³.
 - 5) Unit is located 10 ft from measurement point.
 - 6) Attenuation credit based on a 300 CFM flow division using 10 log (# space) not shown above

ARI 885-98 Radiated Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Ceiling/Space Effect	16	18	20	26	31	36
Total dB Reduction	18	19	20	26	31	36

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-98.

- Parameters:
- 1) Mineral fiber ceiling tile, 5/8" thick (35 lb/ft³ density).
 - 2) The plenum space is at least 3 ft deep and either wide (>30 ft) or insulated.

* Combined effect including absorption of the ceiling tile, plenum absorption and room absorption.
(New to ARI 885-98. ARI 885-90 had separate lines for these absorptions.)

ARI 885-98, APPE defined "Medium" application from 300 to 700 CFM

ARI 885-98 Discharge Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Duct Lining	2	4	10	20	20	14
End Reflection	9	5	2	0	0	0
Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
Total dB Reduction	24	26	37	48	50	36

NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-98.

- Parameters:
- 1) 12" x 12" x 5' duct with 1 inch thick fiberglass lining.
 - 2) Flex duct is 8 inches in diameter and 5 feet in length for run to diffuser.
 - 3) Flex duct has a vinyl core.
 - 4) Room size is 2400 ft³ (size of standard test room).
 - 5) Unit is located 5 ft from measurement point.
 - 6) Attenuation credit based on a 300 CFM flow division using 10 log (# space) not shown above

ARI 885-98, APPE defined "Large" application 700 CFM & greater

ARI 885-98 Discharge Sound Path Assumptions						
Attenuation	Octave Band					
	2	3	4	5	6	7
Environmental Effect	2	1	0	0	0	0
Duct Lining	2	3	9	18	17	12
End Reflection	9	5	2	0	0	0
Flex Duct	6	10	18	20	21	12
Space Effect	5	6	7	8	9	10
Total dB Reduction	24	25	36	46	47	34

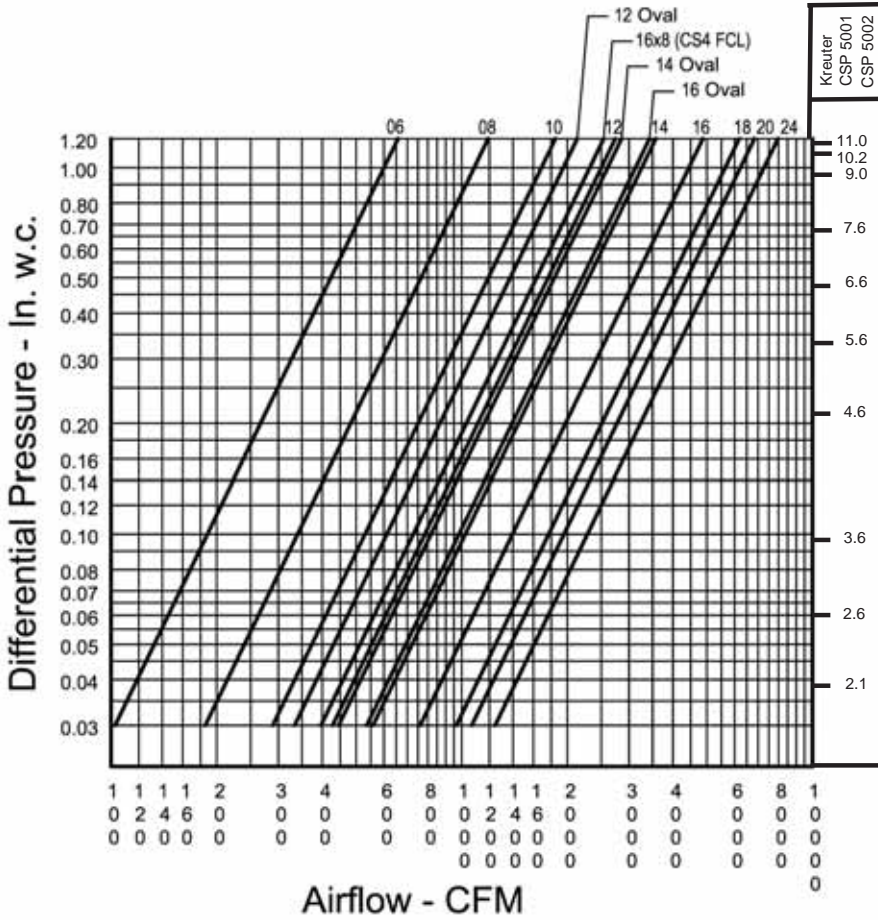
NOTE: Attenuation assumptions are based upon factors located in the ARI Standard 885-98.

- Parameters:
- 1) 15" x 15" x 5' duct with 1 inch thick fiberglass lining.
 - 2) Flex duct is 8 inches in diameter and 5 feet in length for run to diffuser.
 - 3) Flex duct has a vinyl core.
 - 4) Room size is 2400 ft³ (size of standard test room).
 - 5) Unit is located 5 ft from measurement point.
 - 6) Attenuation credit based on a 300 CFM flow division using 10 log (# space) not shown above



Duct Duct Air Terminal Units

DD-500 - Calibration for MI Pickup



ATU Model	Inlet Size	Flow Coefficient
TH, FC	06 Round	600
FV, DD	08 "	1100
DH, BP	10 "	1700
RT, RA	12 "	2500
TL (6-10)	14 "	3250
FCL Cs2 (6-8)	16 "	4400
12 TL	12 Oval	1965
14 TL	14 "	2600
16 TL	16 "	3150
FCL Cs4	16x8 Rect.	2340
FC & FV Cs7	18x16 "	5600
TH20	20x16 "	6200
TH24	24x16 "	7200

$$Cfm = \sqrt{\Delta p} \times \text{Flow Coefficient}$$

Data is with Sensor Mounted in Round Duct, except for Rectangular Sizes 18, 20 and 24 Widths x 16 Height and 16 x 8 (FCL Case 4)

* Some controllers do not operate consistently below 0.030 in. w.c.

$$CFM = \sqrt{\Delta p} \times Cfm @ 1''$$

or

$$CFM = \sqrt{\Delta p/K} \times 4005 \times \text{Inlet Area}$$

Inlet Size	Minimum CFM	CFM @ 1"	Inlet Area	K
6	105	600	0.20	1.72
8	190	1100	0.35	1.61
10	290	1700	0.55	1.65
12	430	2500	0.79	1.58
14	550	3250	1.07	1.73
16	750	4400	1.40	1.61

Notes:

1. Minimum CFM (without electric heat) is based on sensor velocity pressure of 0.03 in W.C.
2. Maximum CFM is based on a sensor velocity pressure of 1.0 in W.C.

Dual Duct Air Terminal Units



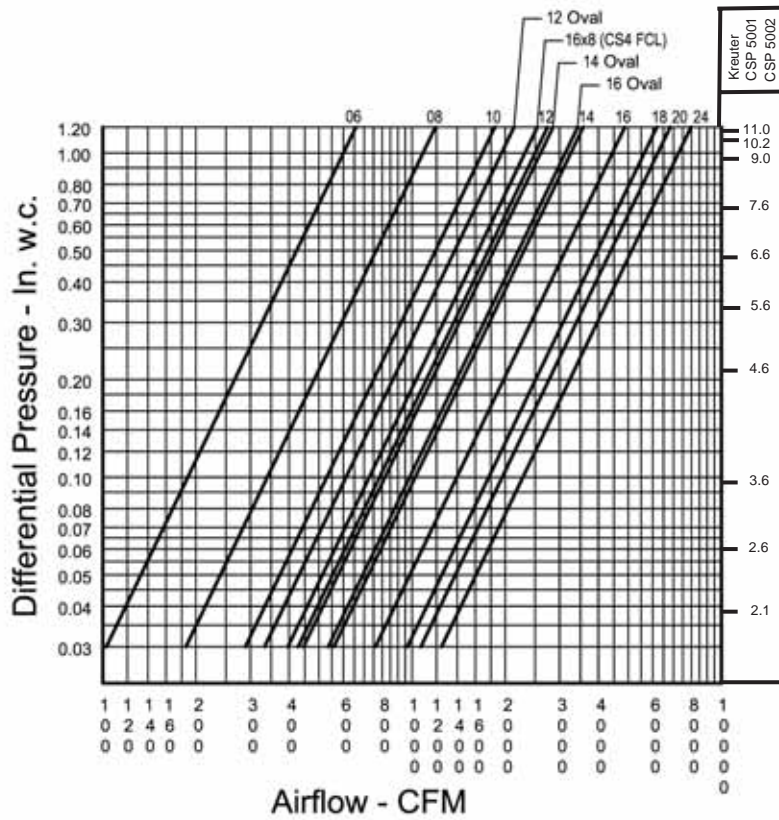
DD-500



Dual Duct Air Terminal Units

6/2007

DH-500 - Calibration for MI Pickup



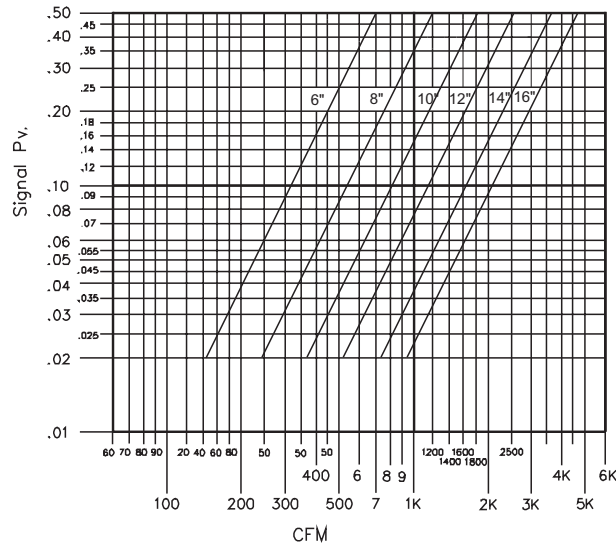
* Some controllers do not operate consistently below 0.030 in. w.c.

$$cfm = C * \sqrt{\Delta Pv}$$

or

$$fpm = F * \sqrt{\Delta Pv}$$

500 DH Discharge Airflow Sensor



Selection Recommendations for DH-500				
Inlet Size	Minimum CFM	CFM @ 1"	Inlet Area	K
6	105	600	0.20	1.72
8	190	1100	0.35	1.61
10	290	1700	0.55	1.65
12	430	2500	0.79	1.58
14	550	3250	1.07	1.73
16	750	4400	1.40	1.61

Notes:

1. Minimum CFM (without electric heat) is based on sensor velocity pressure of 0.03 in W.C.
2. Maximum CFM is based on a sensor velocity pressure of 1.0 in W.C.

For more product information visit us at www.metalair.com

Dual Duct Air Terminal Units



DH-500



Control Sequences

BASIC AIR TERMINAL

(200B) Without Controls:

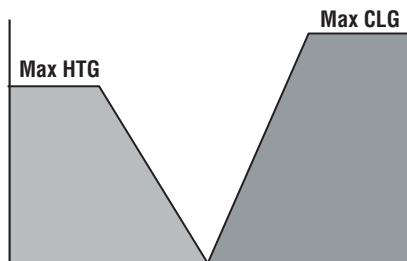
Specify when controls are to be field mounted and supplied by others.

PNEUMATICALLY CONTROLLED AIR TERMINALS

Pressure dependent pneumatic air terminal actuators are powered directly by branch line pressure signals from the room thermostat. Pressure independent pneumatic air terminal actuators are powered by signals from a flow control device which balances pressure readings from the main air supply and the branch air pressure from the thermostat. The damper's position is regulated by the signal from the room thermostat.

A **direct acting thermostat** causes an increase in branch pressure as the room temperature rises. A reverse acting thermostat causes a decrease in branch pressure as the room temperature rises. Since the pneumatic actuator is a spring return device, the damper can be connected so that without main pressure it will return to normally closed position to shut off air flow to the room, or to a normally open position to permit unobstructed air flow to the room.

Multi-function flow controllers for pressure independent applications can be field modified for use with a direct or reverse acting thermostat and the damper actuator can be switched to either normal position without adding control components. The Series DH / DD-500 readily accommodates this type of controller versatility since its control linkage design allows the primary air damper to be repositioned without the use of tools from normally open to normally closed, or vice versa, without removing or relocating the damper actuator.



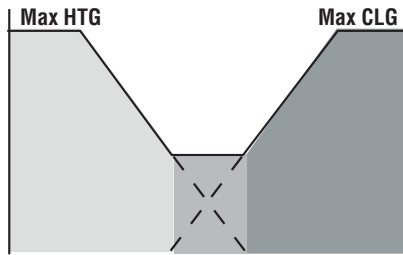
Pneumatic
Pressure Independent
Variable Volume with Dual Flow controllers and Zero Minimum Sensors
located in Hot Duct and Cold Duct Inlets

238M - NO Cold Duct - NC Hot Duct - DA Thermostat
239M - NO Cold Duct - NC Hot Duct - RA Thermostat
240M - NC Cold Duct - NO Hot Duct - DA Thermostat
241M - NC Cold Duct - NO Hot Duct - RA Thermostat

- (238) Dual Variable Volume with Dual Flow controllers and Zero Minimum Sensors. Normally Opened Cold Duct, Normally Closed Hot Duct. For use with direct acting thermostat.
- (239) Dual Variable Volume with Dual Flow controllers and Zero Minimum Sensors. Normally Opened Cold Duct, Normally Closed Hot Duct. For use with reverse acting thermostat.
- (240) Dual Variable Volume with Dual Flow controllers and Zero Minimum Sensors. Normally Closed Cold Duct, Normally Open Hot Duct. For use with direct acting thermostat.
- (241) - Dual Variable Volume with Dual Flow controllers and Zero Minimum Sensors. Normally Closed Cold Duct, Normally Open Hot Duct. For use with reverse acting thermostat.



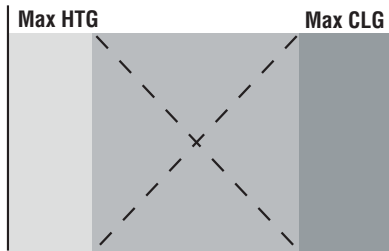
Pneumatic Control Sequences



Pneumatic
Pressure Independent
Variable Volume with Dual Flow controllers and mixing Sensors located in Hot Duct and Cold Duct Inlets

244M - NO Cold Duct - NC Hot Duct - DA Thermostat
245M - NO Cold Duct - NC Hot Duct - RA Thermostat

- (244) Dual Variable Volume with Dual Flow controllers with mixing. Normally Opened Cold Duct, Normally Closed Hot Duct. For use with direct acting thermostat.
- (245) Dual Variable Volume with Dual Flow controllers with mixing. Normally Opened Cold Duct, Normally Closed Hot Duct. For use with reverse acting thermostat.



Pneumatic
Pressure Independent
Constant Volume with Dual Flow controllers and mixing Sensors located in Down Stream Hot Duct Sensor and Cold Duct Inlet Sensor

Flow controller modulates cold duct damper in response to signals from the room thermostat within pre-set maximum to minimum CFM range while hot duct damper remains closed.

If the set point is still not reached, the unit switches from the cooling minimum to the heating minimum CFM with hot air and cold air blending.

If the room temperature still remains below the set point, the cold duct damper goes to minimum or closed and the hot duct damper is modulated between it minimum and maximum CFM range until the set point is reached.

242M - NO Cold Duct - NC Hot Duct - DA Thermostat
243M - NO Cold Duct - NC Hot Duct - RA Thermostat

- (242) Dual Variable Volume with Dual Flow controllers with mixing. Normally Opened Cold Duct, Normally Closed Hot Duct. For use with direct acting thermostat.
- (243) Dual Variable Volume with Dual Flow controllers with mixing. Normally Opened Cold Duct, Normally Closed Hot Duct. For use with reverse acting thermostat.



Analog Control Sequences

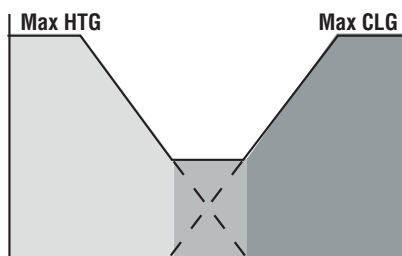
ANALOG ELECTRONICALLY CONTROLLED AIR TERMINALS

Analog electronic flow controls are the only electrical devices available for use with electric or electronic damper actuators that achieve pressure independent control so that variations in supply static pressure do not affect air flow conditions to the room. The analog electronic room thermostats supplied with the control sequences detailed on this page have field adjustable flow limit set points. The thermostat electronically signals the actuator to open or close the damper in response to the temperature of the room within preset air flow limits. The electric and electronic actuators are not spring return devices. If there is a loss of power to the air terminal, the damper will remain in the position it occupied at the time of the power failure.

These state-of-the-art control sequences are available with both analog and computer compatible, digital input/output controller options. Numerous control arrangements are possible with electronic control sequencing which are not discussed in this catalog.

All of the electric and electronic components used in these sequences use low voltage (24 volt) controls and are readily enclosed with a standard control panel cover. A standard 40 VA transformer that reduces 120, 240 or 277 line voltage to 24 control voltage is wired into the control sequence as a standard component.

Analog Electronic Control Pressure Independent Variable Volume with Dual Flow controllers and mixing Sensors located in Hot Duct and Cold Duct Inlets



(263) Hot and cold duct damper actuators operate in sequence. The cold duct damper is opened and closed to vary the cooling air flow between maximum and minimum flow limits.

A further drop in room temperature provides mixed hot and cold air at the minimum flow limit until the cold duct damper is closed.

The hot duct damper is then opened and closed to vary hot air flow to the space within an adjustable maximum and minimum air flow range.



Electronic Control Capacity

DDC ELECTRONIC CONTROL CAPABILITY

A large and growing number of manufacturers are developing digital and analog electronic controls for HVAC applications. Regardless of the brand of controls chosen for your installation, METALAIRE can mount and wire any manufacturer's control product that fits on our standard control panel regardless of the brand (one controller/actuator). Mounting of other manufactures control enclosures or transformer is not available.

In those cases where it is desirable to have the controls field mounted and wired, a basic air terminal without controls can be purchased from METALAIRE. The basic unit includes a control panel that will accommodate the mounting of all currently available manufacturers' equipment.

Whether controls are to be factory mounted and wired by METALAIRE or field installed by the control manufacturer, many types of electronic controllers require a flow sensor. METALAIRE will provide its own multi-point flow sensor which is compatible with most electronic control devices currently on the market, or mount a control manufacturer's compatible sensor.

By focusing on developing a universally functional air terminal that is compatible with all electronic control packages, METALAIRE offers a unique service to today's fast-paced, technology-hungry HVAC market. This approach is highly endorsed by control manufacturers and HVAC design engineers alike. METALAIRE is dedicated to providing the best air terminal device to operate with any control manufacturer's equipment.

Consult your local METALAIRE representative for the latest information on both availability and pricing of electronic controls.



Accessories and Components

DD-500 STANDARD LINER

Standard units are shipped with 1/2" thick, 1.5 lbs/ft³ dual density glass fiber, coated to prevent air flow erosion to 6000 FPM surface velocity. Insulation complies with UL 181 and NFPA 90A. All exposed edges are coated with NFPA 90A approved sealant to prevent entrainment of fibers in the airstream.

DH-500 STANDARD LINER

DD-500 OPTIONAL LINER

Standard on DH-500 and available as an option on DD500 is 1" thick, 1.5 lbs/ft³ dual density glass fiber, coated to prevent air flow erosion to 6000 FPM surface velocity. Insulation complies with UL 181 and NFPA 90A. All exposed edges are coated with NFPA 90A approved sealant to prevent entrainment of fibers in the airstream.

CLEAN ROOM LINERS

METALAIR has developed a series of HVAC systems "clean room" liners for use in applications such as health care or laboratory.

FOIL BACKED LINER 1/2" THICK, 1.5 LBS./FT³ DENSITY

An optional foil backed lining can be applied to the Series DH / DD-500 Air Terminal, the sound attenuator, and electric heat plenum accessories. 1.5 lbs./ft³ density, 1/2" thick foil backed fiberglass material is available as a clean room liner in applications where discharge noise performance is more critical. The discharge noise performance for an air terminal with the foil backed clean room liner is equal to the current catalog data for a standard air terminal. Foil backed liner meets the requirements of UL 181 and NFPA 90A.

FOIL BACKED LINER 1" THICK, 4 LBS./FT³ DENSITY

Another foil option is the heavy duty, 1" thick, 4 lbs/ft³ density liner. This liner includes insulation ends which eliminate exposure to the air stream. The casing design secures the insulation inside the terminal. The liner is an excellent choice for "clean room" applications that require low sound. This foil backed liner meets the requirements of UL 181 and NFPA 90A.

THERMOPURE 1/2" OR 1" THICK

This innovative closed cell foam eliminates fiberglass completely, while meeting or exceeding the performance of fiberglass. ThermoPure has a 25/50 fire/smoke rating, 1.5 lbs./ft³ density, 6000 FPM. velocity rating, and holds its thermal integrity, even when wet. It meets the UL 181 tests for mold and mildew resistance. Surfaces are washable if desired.

METAL LINER

A special sheet metal liner that fits inside of the Series DH / DD-500 Air Terminal is thoroughly sealed to completely isolate the coated fibrous glass insulation material from the air stream. The liner provides a virtually nondestructible nonporous duct surface that cannot dry out, rip, tear, or break off in the air stream no matter how long the air terminal operates in the system, but effectively inhibits bacteria growth. The use of the metal liner makes the air terminal casing more rigid and retains the functionality of factory applied interior insulation for condensation protection and noise reduction. The discharge noise levels cataloged for the air terminal are increased somewhat by the addition of the metal liner and should be considered if the application involves installation in an area where higher noise levels are not acceptable.

All accessories which can be attached to the Series DH / DD-500 Air Terminals are not a part of the ARI certification program but ratings can be affected by their use.



DH-500 - Product Specifications and Highlights

1. Dual Duct Variable Volume Air Terminals shall be METALAIRE Model DH-500. The units shall be the size and capacity as outlined in the plans and specifications. Casing dimensions shall be checked to ensure the terminals fit the available space.

2. Air terminals shall be certified under the American Refrigeration Institute (ARI) Standard 880-98 Certification Program and carry the ARI seal. All NC values shall be calculated per ARI Standard 885-98. Units with NC values calculated per ARI-885-90 will not be accepted. Terminal units shall be either ETL® or UL® listed as a complete assembly. Terminal electrical components, including actuators and low voltage controls shall be UL® listed. All electrical components including both line voltage and low voltage shall be mounted in a metal control enclosure. Units shall have a single point field wiring connection. Units shall be manufactured and wired per UL-1995 and in accordance with the National Electric Code.

3. All terminals shall be shipped as a single unit requiring no field assembly.

4. The air terminals shall be constructed of zinc coated steel. Unit sizes shall have two inlets, one for heated supply air and one for cooled supply air. Inlets shall be round for field duct connection. Units shall have two universal control-mounting panels located on opposite sides of the terminal, constructed of 20-gauge steel. Panels shall include stand-offs to allow controls to be mounted without penetrating the terminal casing. Low pressure downstream casing shall be 22 gauge.

5. Inlet valve assemblies shall have a seamless butt weld on a round inlet tube to minimize leakage and prevent the damper from binding. Inlet tubes with overlapping welds or non-continuous, skipped welds are not acceptable. Damper shafts shall rotate in a self-lubricating Kepital® (acetal resin material) bearing. Damper shafts shall be die cast aluminum. Damper shafts end shall include a casted damper position indicator. The end of both shafts on which actuator is installed shall be square to prevent actuator tightening screw(s) from slipping. Round damper shaft ends are not acceptable.

Damper tubes shall be free of obstructions including damper stops to allow the free rotation of the damper. Mechanical damper stops located in the inlet tubes are not acceptable. A flexible gasket mounted in the damper blade without adhesives shall provide damper seal. Damper gaskets shall include slit partitioning around the perimeter to prevent damper noise at low flows near full close off. Damper gaskets without perimeter slit partitioning are not acceptable. Dampers shall be a double thickness of 24 gauge steel and

leakage through the damper assembly shall be less than 1% of maximum CFM at 3" static pressure.

Both hot and cold inlet air valve shall have structural beads machine formed into the tube. One external bead shall be provided for the attachment of flexible duct. Inlet air valves flow sensors shall be multipoint quadrant averaging with flow sampling of both velocity pressure and flow differential pressure from four quadrants, and shall contain two control ports and two accessory ports for each valve. Flow sensors sampling only velocity pressure in all four quadrants are not acceptable. Sensors reading differential pressure with less than 8 measuring points are not acceptable. All piping connections to the flow sensors must be made with external ports that extend through damper tube. Units with piping connections made in the primary air stream are not acceptable. Flow sensors with plastic piping connections of any kind are not acceptable.

Units shall have a minimum 1:30 mixing ratio. Mixing ratio is defined as the ratio between a 1°F difference in the mixed discharge air stream and the difference between the hot duct and cold duct temperature measured in °F.

At an inlet velocity of 2000 fpm, the differential static pressure required to operate any terminal size shall not exceed .14" wg. for the basic terminal.

6. Air Terminals shall be internally insulated with 1/2" thick, 1.5 lbs/ft³ dual density glass fiber, coated to prevent air flow erosion to 6000 FPM surface velocity. Insulation to comply with UL 181 and NFPA 90A. All exposed edges shall be coated with NFPA 90A approved sealant to prevent entrainment of fibers in the air stream.

7. Sound ratings for the terminal shall not exceed ____ NC at ____ static pressure. Sound performance shall be ARI certified. Each individual terminal unit shall bear an ARI label.



DH-500 - Suggested Division 15 Specifications

Optional Insulations

1. *Fiberglass Dual Density Liner 1" Thick*

Air Terminals shall be internally insulated with 1" thick, 1.5 lbs/ft³ dual density glass fiber, coated to prevent air flow erosion to 6000 fpm surface velocity. Insulation to comply with UL 181 and NFPA 90A. All exposed edges shall be coated with NFPA 90A approved sealant to prevent entrainment of fibers in the airstream.

2. *ThermoPure Fiber-Free Liner 1/2" Thick*

Air Terminal shall be internally insulated with 1/2" thick, 1.5 lbs./ft³ dual density fiber free liner, rated to prevent air flow erosion to 6000 fpm surface velocity. Insulation to comply with UL 181 and NFPA 255 (25/50). Material shall be chemically resistant to most hydrocarbon based solvents. Material shall not support mold growth or demonstrated degradation while subject to air erosion when tested in accordance to UL 181 and UMC 10-1.

3. *Thermopure Fiber-Free Liner 1" Thick*

Air Terminal shall be internally insulated with 1" thick, 1.5 lbs/ft³ fiber free liner, rated to prevent air flow erosion to 6000 fpm surface velocity. Insulation to comply with UL 181 and NFPA 255 (25/50). Material shall be chemically resistant to most hydrocarbon based solvents. Material shall not support mold growth or demonstrated degradation while subject to air erosion when tested in accordance to UL 181 and UMC 10-1.2.



DD-500 - Product Specifications and Highlights

1. Dual Duct Variable Volume Air Terminals shall be METALAIRE Model DD-500. The units shall be the size and capacity as outlined in the plans and specifications. Casing dimensions shall be checked to ensure the terminals fit the available space.

2. Air terminals shall be certified under the American Refrigeration Institute (ARI) Standard 880-98 Certification Program and carry the ARI seal. All NC values shall be calculated per ARI Standard 885-98. Units with NC values calculated per ARI-885-90 will not be accepted. Terminal units shall be either ETL® or UL® listed as a complete assembly. Terminal electrical components, including actuators and low voltage controls shall be UL® listed. All electrical components including both line voltage and low voltage shall be mounted in a metal control enclosure. Units shall have a single point field wiring connection. Units shall be manufactured and wired per UL-1995 and in accordance with the National Electric Code.

3. All terminals shall be shipped as a single unit requiring no field assembly.

4. The air terminals shall be constructed of zinc coated steel. Unit sizes shall have two inlets, one for heated supply air and one for cooled supply air. Inlets shall be round for field duct connection. Units shall have two universal control-mounting panels located on opposite sides of the terminal, constructed of 20-gauge steel. Panels shall include stand-offs to allow controls to be mounted without penetrating the terminal casing. Low pressure downstream casing shall be 22 gauge.

5. Inlet valve assemblies shall have a seamless butt weld on a round inlet tube to minimize leakage and prevent the damper from binding. Inlet tubes with overlapping welds or non-continuous, skipped welds are not acceptable. Damper shafts shall rotate in a self-lubricating Kepital® (acetal resin material) bearing. Damper shafts shall be die cast aluminum. Damper shafts end shall include a casted damper position indicator. The end of both shafts on which actuator is installed shall be square to prevent actuator tightening screw(s) from slipping. Round damper shaft ends are not acceptable.

Damper tubes shall be free of obstructions including damper stops to allow the free rotation of the damper. Mechanical damper stops located in the inlet tubes are not acceptable. A flexible gasket mounted in the damper blade without adhesives shall provide damper seal. Damper gaskets shall include slit partitioning around the perimeter to prevent damper noise at low flows near full close off. Damper gaskets without perimeter slit partitioning are not acceptable.

Dampers shall be a double thickness of 24 gauge steel and leakage through the damper assembly shall be less than 1% of maximum CFM at 3" static pressure.

Both hot and cold inlet air valve shall have structural beads machine formed into the tube. One external bead shall be provided for the attachment of flexible duct. Inlet air valves flow sensors shall be multipoint quadrant averaging with flow sampling of both velocity pressure and flow differential pressure from four quadrants, and shall contain two control ports and two accessory ports for each valve. Flow sensors sampling only velocity pressure in all four quadrants are not acceptable. Sensors reading differential pressure with less than 8 measuring points are not acceptable. All piping connections to the flow sensors must be made with external ports that extend through damper tube. Units with piping connections made in the primary air stream are not acceptable. Flow sensors with plastic piping connections of any kind are not acceptable.

At an inlet velocity of 2000 fpm, the differential static pressure required to operate any terminal size shall not exceed .14" wg. for the basic terminal.

6. Air Terminals shall be internally insulated with 1/2" thick, 1.5 lbs/ft³ dual density glass fiber, coated to prevent air flow erosion to 6000 FPM surface velocity. Insulation to comply with UL 181 and NFPA 90A. All exposed edges shall be coated with NFPA 90A approved sealant to prevent entrainment of fibers in the air stream.

7. Sound ratings for the terminal shall not exceed ____ NC at ____ static pressure. Sound performance shall be ARI certified. Each individual terminal unit shall bear an ARI label.



DD-500 - Suggested Division 15 Specifications

Optional Insulations

1. Fiberglass Dual Density Liner 1" Thick

Air Terminals shall be internally insulated with 1" thick, 1.5 lbs/ft³ dual density glass fiber, coated to prevent air flow erosion to 6000 fpm surface velocity. Insulation to comply with UL 181 and NFPA 90A. All exposed edges shall be coated with NFPA 90A approved sealant to prevent entrainment of fibers in the airstream.

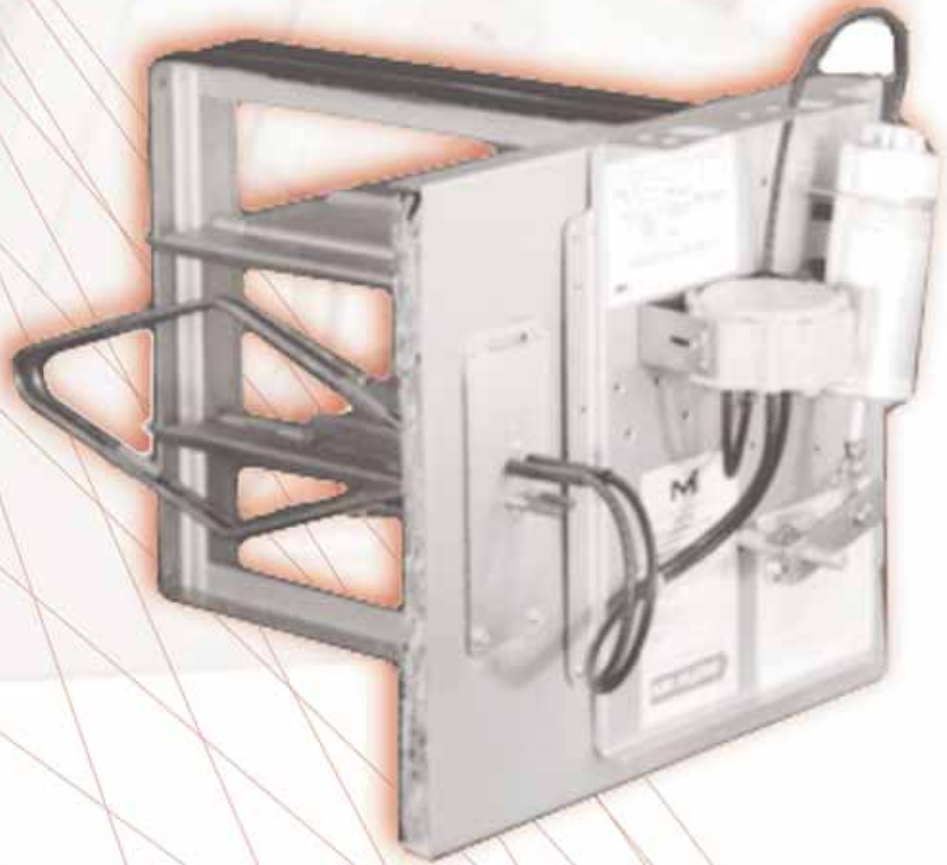
2. ThermoPure Fiber-Free Liner 1/2" Thick

Air Terminal shall be internally insulated with 1/2" thick, 1.5 lbs./ft³ dual density fiber free liner, rated to prevent air flow erosion to 6000 fpm surface velocity. Insulation to comply with UL 181 and NFPA 255 (25/50). Material shall be chemically resistant to most hydrocarbon based solvents. Material shall not support mold growth or demonstrated degradation while subject to air erosion when tested in accordance to UL 181 and UMC 10-1.

3. Thermopure Fiber-Free Liner 1" Thick

Air Terminal shall be internally insulated with 1" thick, 1.5 lbs/ft³ fiber free liner, rated to prevent air flow erosion to 6000 fpm surface velocity. Insulation to comply with UL 181 and NFPA 255 (25/50). Material shall be chemically resistant to most hydrocarbon based solvents. Material shall not support mold growth or demonstrated degradation while subject to air erosion when tested in accordance to UL 181 and UMC 10-1.2.





***Square Retrofit
Air Terminal Units***

Square Retrofit Air Terminal Units

6/2007

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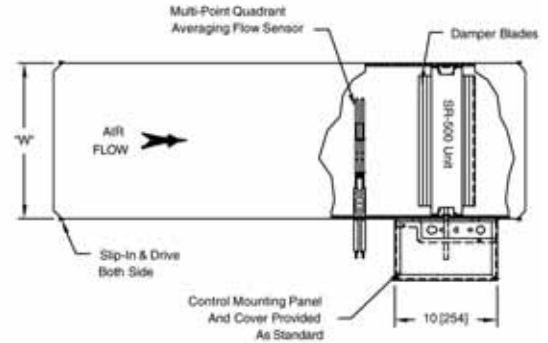
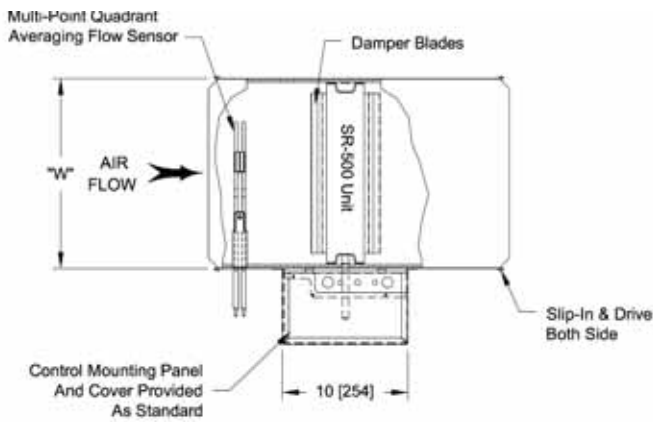
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At METALAIRE, we continually work to improve our products. Product descriptions, dimensions, and performance are subject to change without notice. For the most current available literature visit our web page at www.metalaire.com. Contact your local METALAIRE representative to verify product or performance details.

PLAN VIEW

502D

502EX



SIDE VIEW

502D

502EX

SR-502D&EX Dimensional Data

The 500 is available in 3 terminal versions: as a slip unit for existing ductwork, Model 502B: in 24" duct section for a basic VAV terminal, Model 502D: or as a 46" exhaust unit with inlet sound attenuation and flow sensor. As the Series 502EX Exhaust Air Terminal.



SIDE VIEW



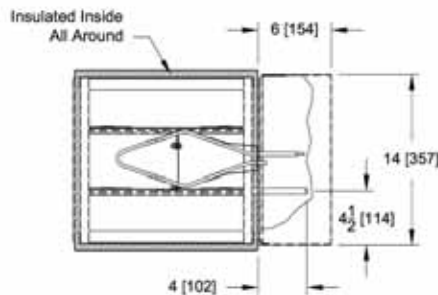
SIDE VIEW

Duct Height "H"	Duct Width "W"
6 [152] - 24 [610]	10 [254] - 36 [914]

Duct Height "H"	Duct Width "W"
6 [152] - 24 [610]	10 [254] - 36 [914]

FRONT VIEW

502B



FRONT VIEW

Square Retrofit Air Terminal Units



SR-500



For more product information visit us at www.metalaire.com



Square Retrofit Air Terminal Units

SR-500 - Introduction

The METALAIRE Series SR-500 is a retrofit product designed to fit into existing low pressure square or rectangular duct systems. It features a fully gasketed zinc coated steel opposed blade damper mounted on a 16" long insulated installation plate. The height of the installation plate varies with the duct height. A flow sensor access panel is mounted in the installation plate in front of the damper blades.

This arrangement provides a most economical means of controlling air flow to a zone. Damper position can be controlled by any pressure dependent or pressure independent pneumatic, electric or electronic control sequence available for the Series TH-500 Single Duct Air Terminal.

Series SR-500 Square and Rectangular Duct Retrofit units are available in sizes from 10" wide x 6" high to 36" wide x 24" high in 1" increments. On units that are greater than 10" high, the SR is furnished with the same METALAIRE control mounting panel and cover used on all other Series 500 Air Terminal units. This panel provides an external mounting point for all controller types making them readily accessible for adjustment or replacement.

Construction

Series SR Retrofit dampers are constructed of heavy duty, zinc coated steel. Standard gauges are: blades and frames –16 gauge; installation plate and universal mounting panel –20 gauge. Blades are typically 5 1/2" wide mounted on 5" centers with the top and bottom blade varying to accommodate specified damper size. Installation plate is lined with 1" thick dual density coated fibrous glass. Insulation meets the requirements of NFPA 90A.

Performance

Series SR-500 units are intended for VAV applications in low pressure (to 1") low velocity (to 1500ft/min) applications but may be used in duct systems with static pressures up to 4" water gauge and at a maximum rated velocity of 3000 FPM. Leakage of a STD unit typically will not exceed 3% at 4" static pressure. Optional edge seals are also available. Supply air capacities range from 100 CFM to 18,000 CFM.

Controls

Series SR-500 Retrofit dampers can be specified with pneumatic, electric or electronic controls from most major control manufacturers. Standard control sequences can be selected from among those shown in the Series TH-500 catalog.

Series SR-500 Retrofit
with pneumatic controls. Shown
with optional pickup and controls



Model 502B Shown



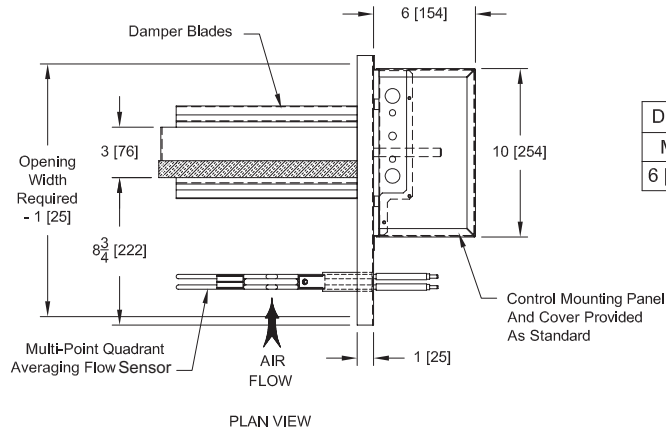
Square Retrofit Air Terminal Units

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SR-500 - Dimensional Data

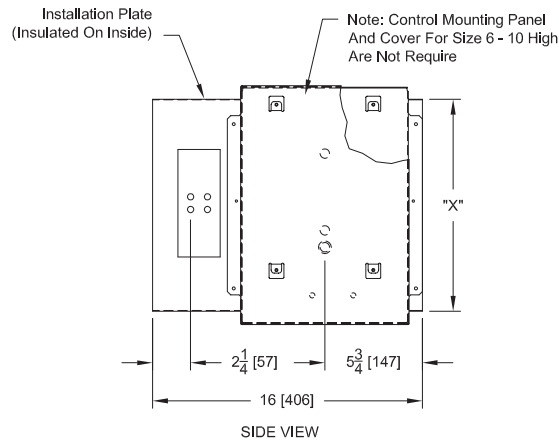
PLAN VIEW

Dimensions are in inches

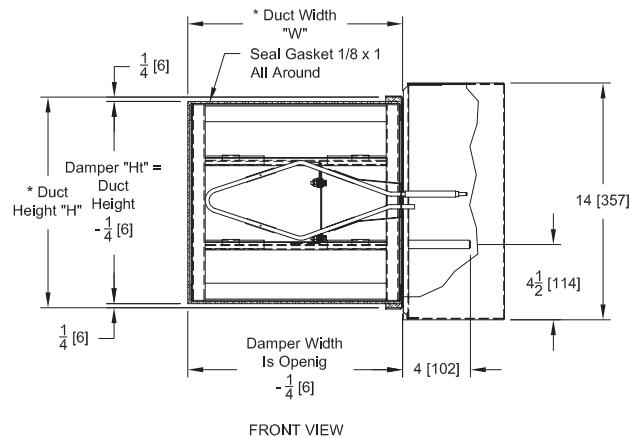


Duct Height "H"		Duct Width "W"	
Min.	Max.	Min.	Max.
6 [152]	24 [610]	10 [254]	36 [914]

SIDE VIEW



FRONT VIEW



Square Retrofit Air Terminal Units



SR-500

Square Retrofit Air Terminal Units

Application

SR dampers are intended for low pressure supply ducts feeding air outlets, converting constant volume systems to variable volume. SR dampers are best suited to low flows (for higher flows and tight closeoff, consider the gasketed RT or RA type units). Sound levels will depend on the quality of the duct into which the SR is installed; for quietest applications, use in ducts below 1" static and at design velocities of 1500 ft/min or less.

Higher statics and velocities may be used (to 2" and 3000 ft/min) if units are located in sections where at least 20-30 feet of lined duct exists before the first outlet. Order width x height.

SR-500 - Velocity Pressure

To determine the pressure drop P_s of the open SR Retrofit Damper, calculate the square inch area of the damper. Convert square inches to square feet. Divide the volume of air being handled by the damper in CFM by the area of the damper in square feet. The result is the velocity of air at the damper in feet per minute (FPM). Locate the point where FPM intersects curve on the accompanying graph. Read P_s at the point of intersection from the values at the top of the graph.

Example: 18" x 12" duct (net inside dimension) handling 2400 CFM. Damper frame is 1" on all sides. Actual damper area in an 18" x 12" duct is therefore 16" x 10" or 160 square inches. Divide 160 sq. in. by 144 (sq. in. in a sq. ft.) to obtain 1.11 square feet of area. 2400 CFM divided by 1.11 sq. ft. equals 2160 FPM velocity at damper. From graph on the right, the P_s is 0.25" water gauge.

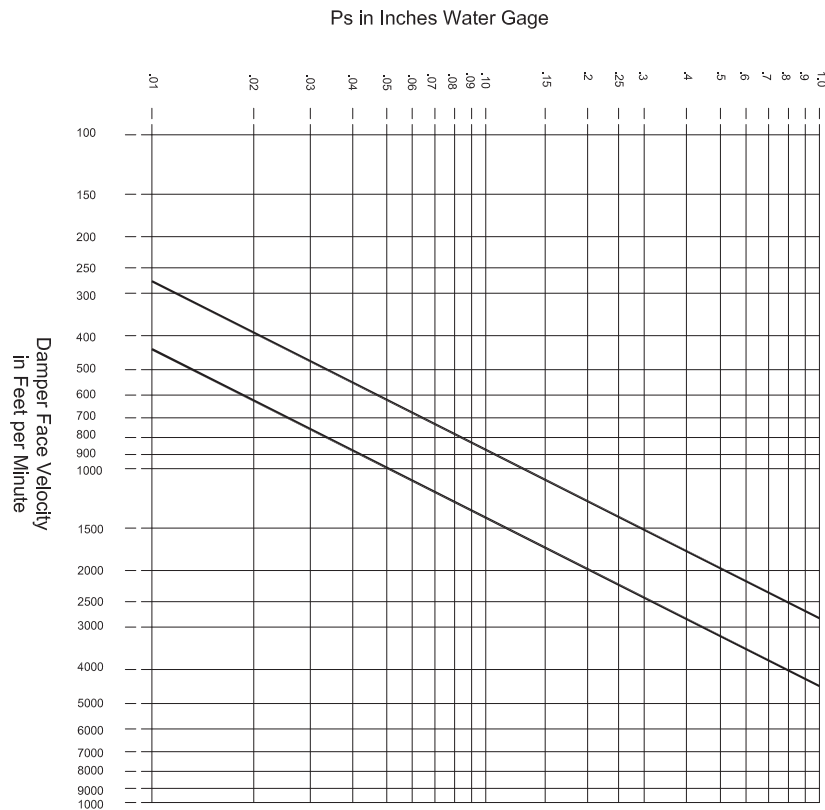
In formula form:

$$P_s = \left(\frac{\text{Velocity}}{4200} \right)^2$$

$$P_v = \left(\frac{\text{Velocity}}{2800} \right)^2$$

The velocity pressure signal accuracy can be affected by the approach ductwork. Elbows, T's or takeoffs just before the SR damper may shift the above P_v line up or down slightly, but this does not affect controllability.

To produce an accurate "as installed" graph, determine the velocity with a pitot traverse or other approved method, read the flow sensor signal at the same time. Locate the intersection on the above graph and draw a line parallel to the existing



Flow Sensor is an amplifying design and its signal is stronger than the standard pitot tube signal

Series SR Flow Curve

Square Retrofit Air Terminal Units



SR-500

SR-500 - Suggested Specifications

Provide METALAIRE Series RT-500 Retrofit Air Terminals or Series RT-500 Retrofit Assemblies, constructed of zinc coated steel, with a single blade, round damper operating within a round chamber. Damper seal shall be provided by a flexible gasket mounted in the damper blade without adhesives. Damper shall be a double thickness of 24 gauge steel and leakage around the damper shall be less than 1% of maximum CFM at 3" static pressure.

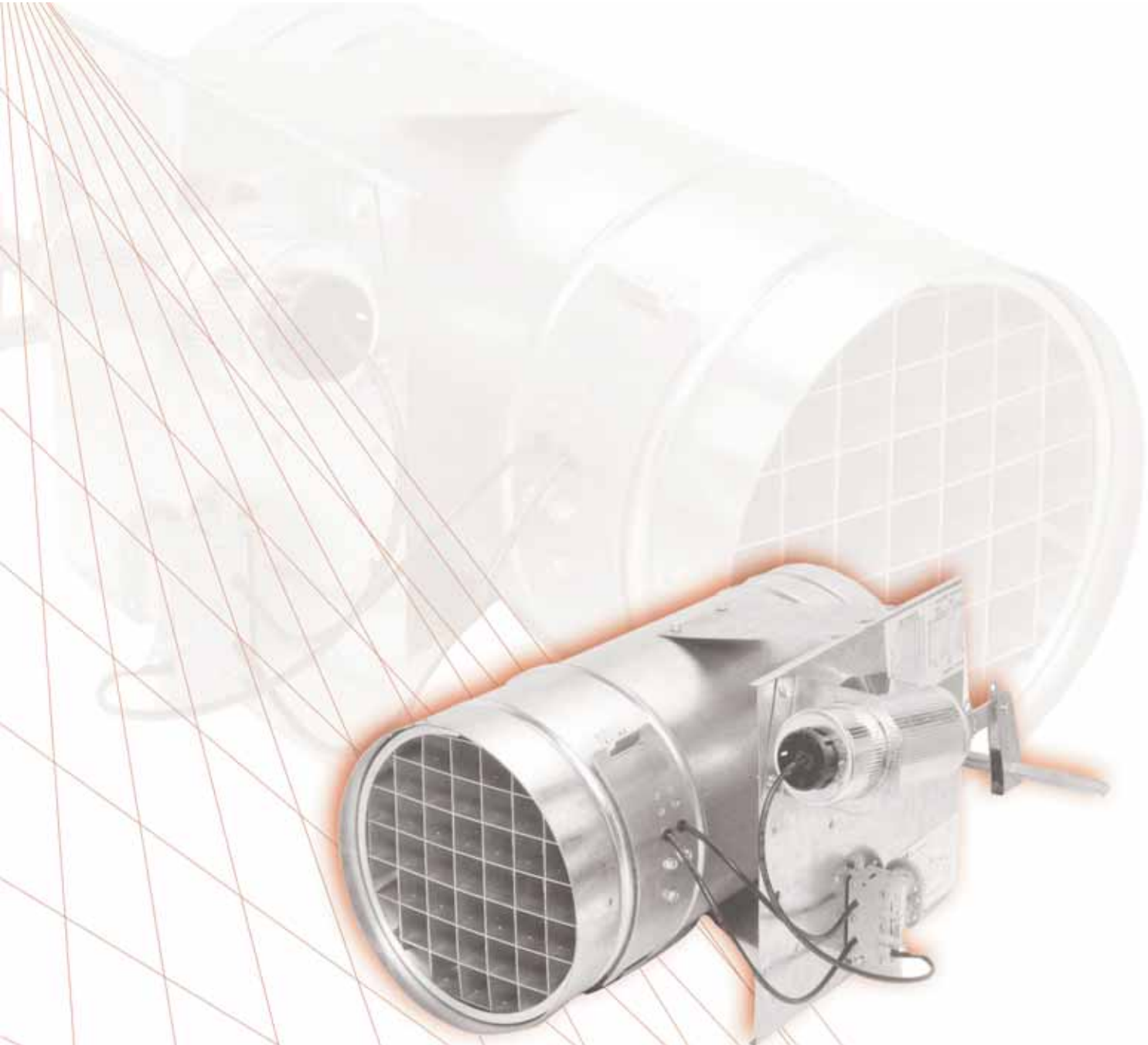
Construction to be 20 gauge steel for the Air Terminal or Assembly damper cylinder and universal control mounting panel. Air Terminals and Retrofit Assemblies shall be provided with control linkage design that allows the damper to be repositioned so that the damper can be switched from normally open to normally closed, or vice versa, without removing or relocating the damper actuator.

Construction of Series SR-500 Retrofit Damper to be 16 gauge for damper blades and frame; 20 gauge for installation plate and mounting panel. Installation plate shall be lined with 1" thick dual density coated fibrous glass and meet the requirements of NFPA 90A. Damper blades shall be fully gasketed.

Air Terminals with flow sensing devices shall be provided with an access door to permit damper inspection and removal of the air flow sensor.

Each retrofit unit shall have a Direction of Flow label. Each Air Terminal and Retrofit Assembly shall have a control piping/wiring diagram specific to that unit affixed to the control mounting panel and shall be marked with specific settings and location tagging. Retrofit unit manufacturer to provide pressure dependent or pressure independent pneumatic or electronic controls or pressure dependent electric controls as described in the terminal unit section and/or on drawings. Electric actuator to be 24 VAC, reversible, stall type. Motors which can be damaged by stalling are not acceptable.





***Round Retrofit
Air Terminal Units***

Round Retrofit Air Terminal Units

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At METALAIRE, we continually work to improve our products. Product descriptions, dimensions, and performance are subject to change without notice. For the most current available literature visit our web page at www.metalaire.com. Contact your local METALAIRE representative to verify product or performance details.

Round Retrofit Air Terminal Units



RT-500



For more product information visit us at www.metalaire.com



Round Retrofit Air Terminal Units

RT-500 - Introduction

Description

Series RT-500 Retrofit Air Terminals are designed to regulate the flow of conditioned air in single or dual duct air distribution systems and are also used to provide positive or negative pressures in laboratory flow hood applications. They are primarily used to convert mechanically regulated constant volume single or dual duct air terminals to more efficient variable volume air terminals without disrupting total system operation. The Series RT-500 Retrofit Air Terminal is readily installed into existing ductwork in front of an old air terminal. The Series RT-500 Retrofit Air Terminal features the proven, low leakage Series TH-500 Air Terminal damper. Control components are shipped piped and wired. The control linkage design allows the damper to be easily field repositioned 90 degrees without the use of tools.

Construction

Series RT-500 Retrofit Air Terminal casings and control mounting panels are constructed of 20 gauge zinc coated steel. Damper gasket material is closed cell polyethylene foam that complies with the requirements of NFPA 90A. Standard sizes 6", 8", 10", 12", 14" and 16" Series RT-500 Retrofit Air Terminals are 16" long. They include a flow sensor and are available with any standard pressure dependent or independent control sequence as shown in the Series TH-500 catalog.

Performance

Series RT-500 Air Terminals are recommended for use in duct systems with static pressures up to 3" water gauge. Supply air capacities range from 100 CFM to 4200 CFM. If necessary, they can be operated at inlet pressures up to 6" water gauge.

Controls

Series RT-500 Retrofit Air Terminals can be specified with pneumatic, electric, or electronic controls, from most major control manufacturers. In detailed are the standard control sequences covering virtually every design application. Additional control sequence arrangements can be found in the TH-500 Air Terminal Catalog or the DD-500 Air Terminal Catalog.

Series RT-500 Retrofit with Pressure Dependent Pneumatic Controls



Series RT-500 Retrofit with Pressure Dependent Electric Controls



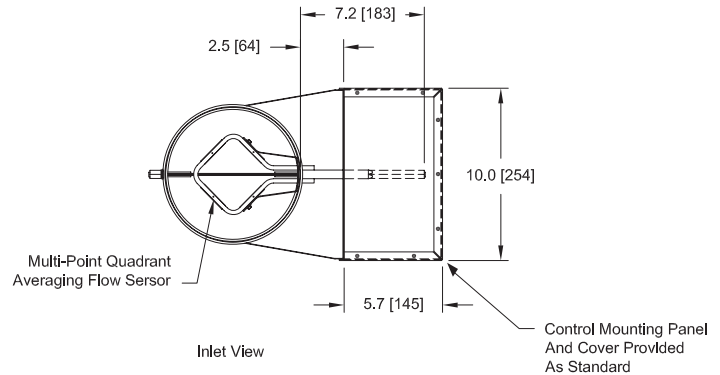
Round Retrofit Air Terminal Units

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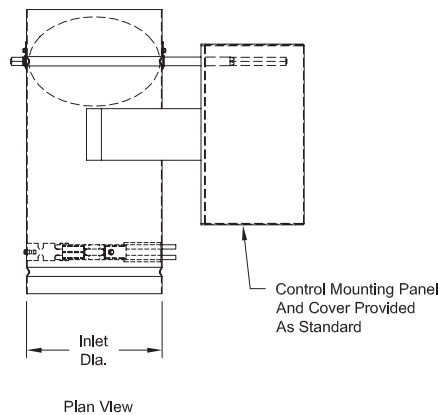
RT-500 - Dimensional Data

Basic Air Terminal

The basic RT-500 Air Terminal is supplied with an externally mounted 20 gauge control mounting panel, which, as shown in the illustrations to the right is 10" high and 10" wide. The overall length of 16" includes two 1" slip-in duct connection collars, one at each end of the Retrofit Air Terminal. The Series RT-500 is supplied with a flow sensor that permits its use with any pressure dependent or pressure independent control sequence available on the Series TH-500 Air Terminal. By substituting a 600 control sequence number for any existing 100 control sequence number the Series RT-500 Air Terminal is substituted for the TH-500 Air Terminal.



Terminal Size	CFM	Min. Ps.
6	200	0.06
	400	0.16
	600	0.35
8	400	0.05
	700	0.16
	1000	0.32
10	600	0.04
	1000	0.11
	1600	0.28
12	1200	0.07
	1800	0.15
	2400	0.25
14	1800	0.08
	2500	0.15
	3200	0.23
16	2800	0.10
	3300	0.14
	3800	0.18
	4200	0.22



* 1/8 LESS THAN NOML. DIAMETER

MODEL NO.	NOMINAL DIAMETER	CFM RANGE	Min. Pressure
RT506	6 (152)	0 - 200	0.06
		0 - 400	0.16
		0 - 600	0.35
RT508	8 (203)	0 - 400	0.05
		0 - 700	0.16
		0 - 1000	0.32
RT510	10 (254)	0 - 600	0.04
		0 - 1000	0.11
		0 - 1600	0.28
RT512	12 (305)	0 - 1200	0.07
		0 - 1800	0.15
		0 - 2400	0.25
RT514	14 (356)	0 - 1800	0.08
		0 - 2500	0.15
		0 - 3200	0.23
RT516	16 (406)	0 - 2800	0.10
		0 - 3300	0.14
		0 - 3800	0.18
		0 - 4200	0.22

UNITS ARE MANUFACTURED OF 20 GA. GALVANIZED STEEL.

Round Retrofit Air Terminal Units



RT-500

Sound

Since RT terminals are principally applied before a variety of existing terminals and normally operate at flows below the original terminals, resultant sound levels will be lower than those which existed before the retrofit. Therefore, sound data on the basic RT-500 are not applicable.

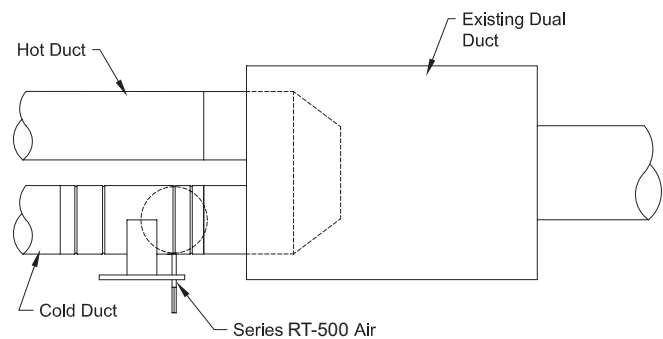
RT-500 - Application Data

Dual Duct Retrofit

Many existing dual duct air terminals are equipped with mechanical constant volume regulators. These regulators require a minimum static pressure at the air terminal of 1 to 1.5 inches water gauge. These older constant volume dual duct systems can be upgraded to variable volume systems with Series RT-500 Retrofit Air Terminals installed in the duct leading to the air terminal. There are two basic approaches to a dual duct retrofit as described below.

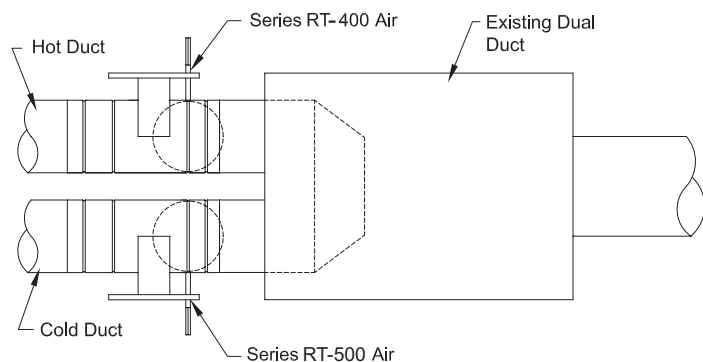
Approach One

The first approach is used in interior zones where no heating capability is required. It involves converting the dual duct unit to a single duct VAV air terminal. Install a Series RT-500 Air Terminal in the cold supply duct. Connect the thermostat line to the Series RT-500 Air Terminal. Lock the remaining dual duct terminal hot damper in a closed position. If the damper was installed in a normally closed position in the hot duct, it will automatically close when the thermostat line is switched to the Series RT-500 Air Terminal. If the damper is mounted in a normally open position in the hot duct, connect the existing motor line to the main air supply line. The main control air pressure will keep the damper in a closed position at all times. The existing mechanical regulator may be left in place or removed and discarded. If the mechanical regulator is left in the existing air terminal, however, the original system pressure will still be required.



Approach Two

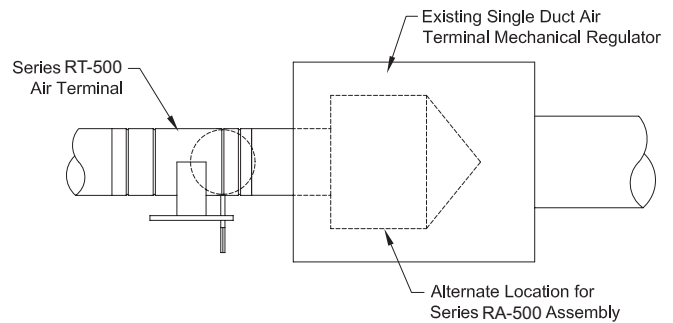
The second approach is used in exterior zones where heating capability must be retained. It involves installing a Series RT-500 Air Terminal in each supply duct feeding the existing dual duct air terminal. The existing dual duct dampers may be removed, locked into a completely open position, or integrated with a compatible dual duct control sequence. An example of the last condition would be to install a normally closed Series RT-500 Air Terminal in the hot duct feeding a dual duct with a normally closed damper on the hot side. The dampers are operated together by teeing the two damper actuators into the same pneumatic line. A variety of dual duct dual VAV control sequences are available. Some control sequences require only one flow controller and others utilize an existing air terminal damper as one of the two retrofit dampers. Dual duct VAV conversions can perform any of the control sequences described in the single and dual duct air terminal catalogs and more. Please consult the factory for assistance with custom retrofit applications.



RT-500 - Application Data

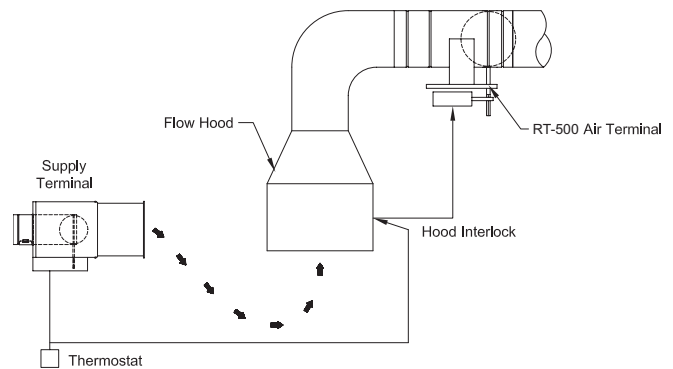
Single Duct Retrofit

A single duct air terminal equipped with a high pressure mechanical constant volume regulator can be upgraded by inserting a Series RT-500 Retrofit Air Terminal in front of the casing of the existing air terminal. By leaving the existing air terminal in place, the Retrofit installation requires a minimum amount of duct modification and the existing air terminal casing can be used to attenuate sound. All of the control sequences used with the Series TH-500 Single Duct Air Terminal may be specified for use with the Series RT-500 Retrofit Air Terminal.



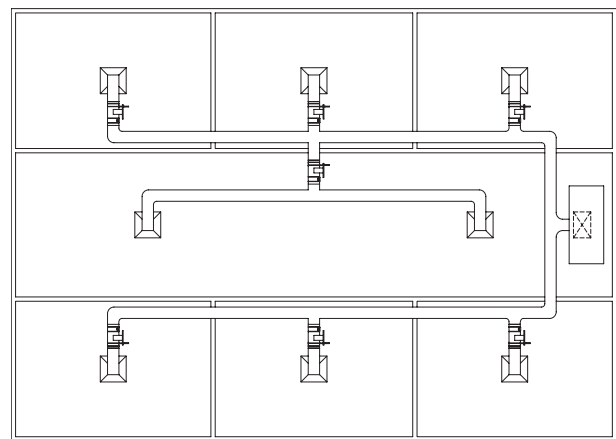
Laboratory Flow Hood Applications

Series RT-500 Retrofit Air Terminals can be used to provide positive or negative pressures in a laboratory space to prevent fumes or chemicals from infiltrating into or exfiltrating out of the lab. An RT Air Terminal may be interconnected in an exhaust hood or return air system with the supply air system or makeup air system. Alternately, the air terminal may be controlled with a static or variable pressure sensing device so that the unit will respond to changing laboratory functions which require constant or variable air volume while maintaining positive or negative pressure in the laboratory space. For a control method suitable to accomplish any flow hood application, please consult the factory.



Zone Control Applications

Series RT-500 Retrofit Air Terminals can also be used to achieve zone control in low pressure single duct or multi-zone systems. Install the RT Air Terminal in the branch duct before the diffusers supplying the zone to be controlled. Any single duct pneumatic, electric or electronic control sequence can be used to modulate the Retrofit damper to vary supply air to the room. The RT Air Terminal can also be sequenced to turn on electric or hot water duct heat.



RT-500 - Control Sequences

BASIC AIR TERMINAL

(600B) Without Controls:

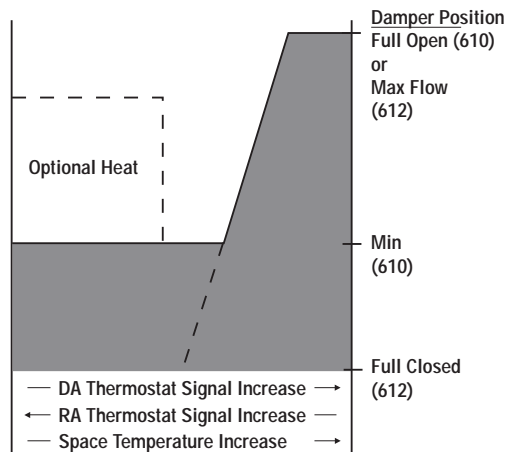
Specify when controls are to be field mounted and supplied by others.

PNEUMATICALLY CONTROLLED AIR TERMINALS

Pressure dependent pneumatic air terminal actuators are powered directly by branch line pressure signals from the room thermostat. Pressure independent pneumatic air terminal actuators are powered by signals from a flow control device which balances pressure readings from the main air supply and the branch air pressure from the thermostat. The damper's position is regulated by the flow control which operates within preset minimum and maximum flow rates.

A **direct acting thermostat** causes an increase in branch pressure as the room temperature rises. A reverse acting thermostat causes a decrease in branch pressure as the room temperature rises. Since the pneumatic actuator is a spring return device, the damper can be connected so that without main pressure it will return to normally closed position to shut off air flow to the room, or to a normally open position to permit unobstructed air flow to the room.

Multi-function flow controllers for pressure independent applications can be field modified for use with a direct or reverse acting thermostat and the damper actuator can be switched to either normal position without adding control components. The Series TH/TL-500 readily accommodates this type of controller versatility since its control linkage design allows the primary air damper to be repositioned without the use of tools from normally open to normally closed, or vice versa, without removing or relocating the damper actuator.



Pneumatic/Pressure Dependent

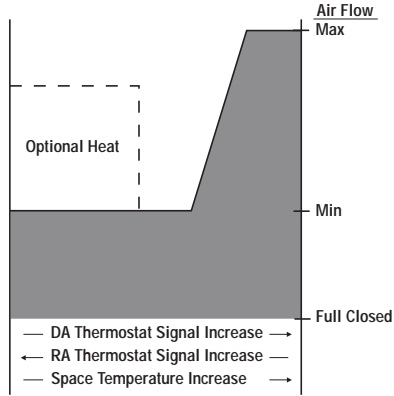
Actuator responds directly to a signal from a room thermostat. Furnished with a mechanical air flow stop. Heat optional.

- (610) **Normally closed** for use with a direct acting room thermostat.
- (612) **Normally open** for use with a reverse acting room thermostat.



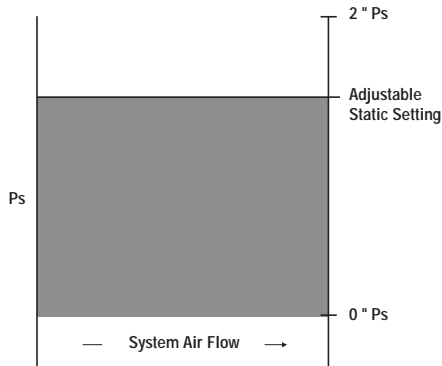
RT-500 - Pneumatic Control Sequences

Pneumatic
Pressure Independent
614 - DA/NC
615 - DA/NO
616 - RA/NC
617 - RA/NO



- (614) **Variable Volume.** Normally closed. For use with direct acting thermostat. Optional heat is energized by the thermostat after air flow has reached a preset minimum.
- (615) **Variable Volume.** Normally open. For use with direct acting thermostat. Optional heat is energized by the thermostat after air flow has reached a preset minimum.
- (616) **Variable Volume.** Normally closed. For use with reverse acting thermostat. Optional heat is energized by the thermostat after air flow has reached a preset minimum.
- (617) **Variable Volume.** Normally open. For use with reverse acting thermostat. Optional heat is energized by the thermostat after air flow has reached a preset minimum.

Pneumatic
640 Static Control (0" - 2")



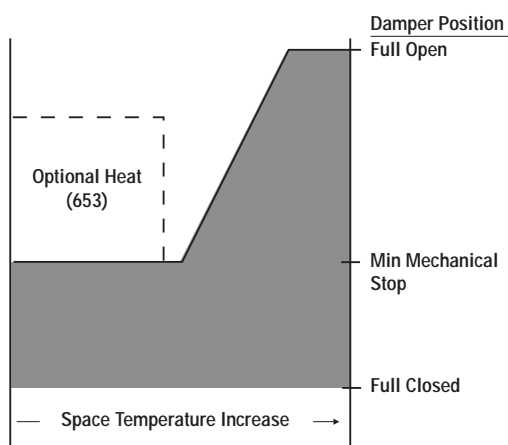
- (640) **Static Control.** Normally open or normally closed. Local or remote pickup senses duct static and signals controller to maintain constant static at sensing point. It may be used for direct static control or as a by-pass flow method. 0" - 2" range.



RT-500 - Electric Control Sequences

ELECTRICALLY CONTROLLED AIR TERMINALS

Reversible electric actuators are pressure dependent and are powered directly by signals from the room thermostat. As room temperature rises, the actuator opens the damper to permit a higher flow of cooling air into the room. As room temperature falls, the actuator closes the damper to reduce air flow to the room. The electric actuator is not a spring return device. If there is a loss of power to the air terminal, the damper will remain in the position it occupied at the time of the failure. A mechanical stop is provided with each electric control sequence to assure minimum air flow to the room. The modulating actuator provides floating proportional control of supply air to the room and can be left in a stalled position indefinitely. A 24 volt, bimetallic room thermostat is a standard component of each electric control sequence, with the exception of 157N. A transformer is required to reduce line voltage to 24 volts to operate the thermostat and the actuator. 50 VA transformer that reduce 120, 240, or 277 line voltage to 24 control voltage are optional with each electric control sequence, as is a control panel cover to enclose the low voltage controls used.



(652) **Cooling Only.** As room temperature rises, the thermostat signals the actuator to open the damper to its fully open position. As room temperature falls, the thermostat signals the actuator to close the damper to a mechanically determined minimum point.

(653) **Cooling with Heat.** As room temperature rises, the thermostat signals the actuator to open the damper to its fully open position. As room temperature falls, the thermostat signals the actuator to close the damper to a mechanically determined minimum point. At this point, an electrical accessory switch energizes optional heat at the minimum air flow rate. Up to two stages of heat are available.

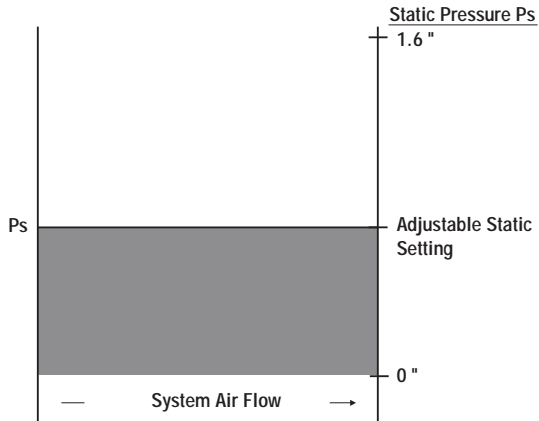


Round Retrofit Air Terminal Units

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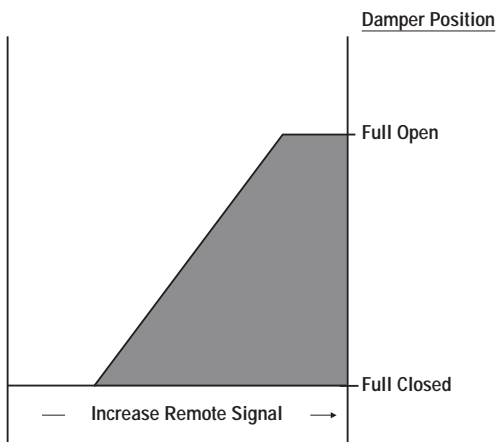
RT-500 - Electric Control Sequences

Electric
656 Static Control (0" - 1.6")



(656) **Static Control.** Static sensor - at terminal or remote - senses static variations and signals controller to maintain static. 0" - 1.6" range

Electric
657 Floating, Electric Control



(657) **Floating, Electric Control.** Actuator modulates air flow in response to controller (by others) signals. Signal, 24 VAC, may be from a static, velocity or other controller requiring air flow modulation (Flow sensor and thermostat optional).

Round Retrofit Air Terminal Units



RT-500

RT-500 - Analog Control Sequences

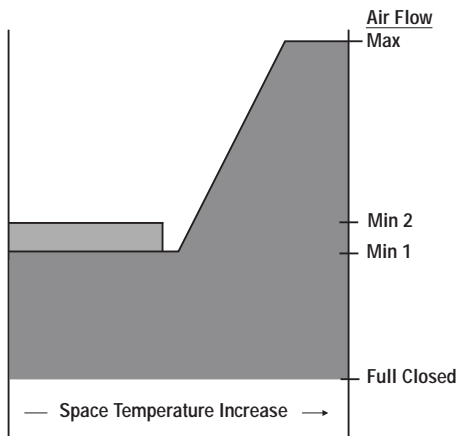
ANALOG ELECTRONICALLY CONTROLLED AIR TERMINALS

Analog electronic flow controls are the only electrical devices available for use with electric or electronic damper actuators that achieve pressure independent control so that variations in supply static pressure do not affect air flow conditions to the room. The analog electronic room thermostats supplied with the control sequences detailed on this page have field adjustable flow limit set points. The thermostat electronically signals the actuator to open or close the damper in response to room temperature within preset air flow limits. The electric and electronic actuators are not spring return devices. If there is a loss of power to the air terminal, the damper will remain in the position it occupied at the time of the power failure.

These state-of-the-art control sequences are available with both analog and computer compatible digital input/output controller options. Numerous control arrangements are possible with electronic control sequencing which are not discussed in this catalog.

All electric and electronic components used in these sequences use low voltage (24 volt) controls and are readily enclosed with a standard control panel cover. A standard 50 VA transformer that reduces 120, 240, or 277 line voltage to 24 control voltage is wired into the control sequence as a standard component. It is assumed that 120 line voltage is being supplied to the air terminal if a different line voltage is not specifically listed.

Electronic Control
Pressure Independent
660 Cooling Only

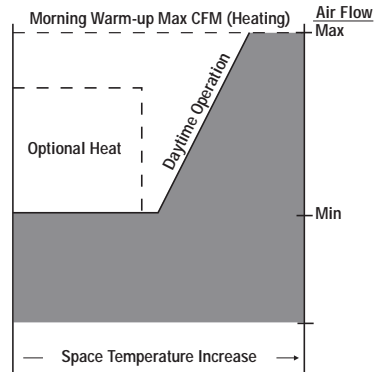


(660) **Cooling Only.** Electronic thermostat (analog models with integral, adjustable, maximum and minimum flow limits) signals electronic flow controller to regulate damper position. The damper is rotated to its maximum open position as room temperature rises and to its minimum open position as room temperature falls.



RT-500 - Electric Control Sequences

Electronic Control
Pressure Independent
664 Night Shutdown/Morning Warm-up

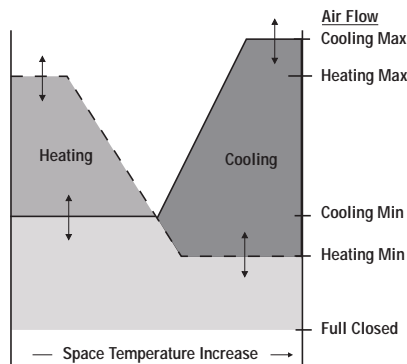


(664) Night Shutdown/Morning Warm-up. Daytime Operation:

Electronic thermostat (analog models with integral, adjustable, maximum and minimum flow limits) signals electronic flow controller to regulate damper position. The damper is rotated to its maximum open position as room temperature rises and to its minimum open position as room temperature falls. After the damper has reached its minimum position, the thermostat actuates optional heat at an independently selected set point. Up to three stages of heat are available depending on the control manufacturer selected.

Night Shutdown/Morning Warm-up: With central system off, no air or duct mounted heat is supplied to the room. At morning warm-up, a duct sensor detects warm air in the central system and drives air terminal to maximum CFM. During warm-up, duct heat is held off. When duct sensor detects cold air in the central system, air terminal automatically reverts to daytime operation.

Electronic Control
Pressure Independent
665 Heating Cooling Change over

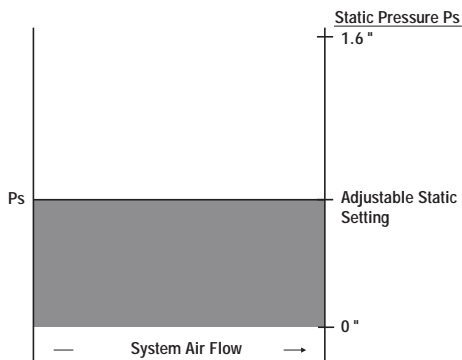


(665) Heating/Cooling Changeover: A duct thermostat switches a heat/cool relay to make the system operate in the appropriate heating or cooling mode.

Cooling Mode: Electronic thermostat (analog models with integral, adjustable, maximum and minimum flow limits) signals electronic flow controller to regulate damper position. The damper is rotated to its maximum open position as room temperature rises and to its minimum open position as room temperature falls.

Heating Mode: In the heating mode, damper is modulated in response to the heating signals from the electronic room thermostat.

Electric
656 Static Control (0" - 1.6")



(673) Electronic Static Control. Static sensor - local or remote - senses variations and signals controller accordingly. For direct static control or bypass static control. 0"-2" range.



Round Retrofit Air Terminal Units

RT-500 - DDC Electronic Control Capability

DDC ELECTRONIC CONTROL CAPABILITY

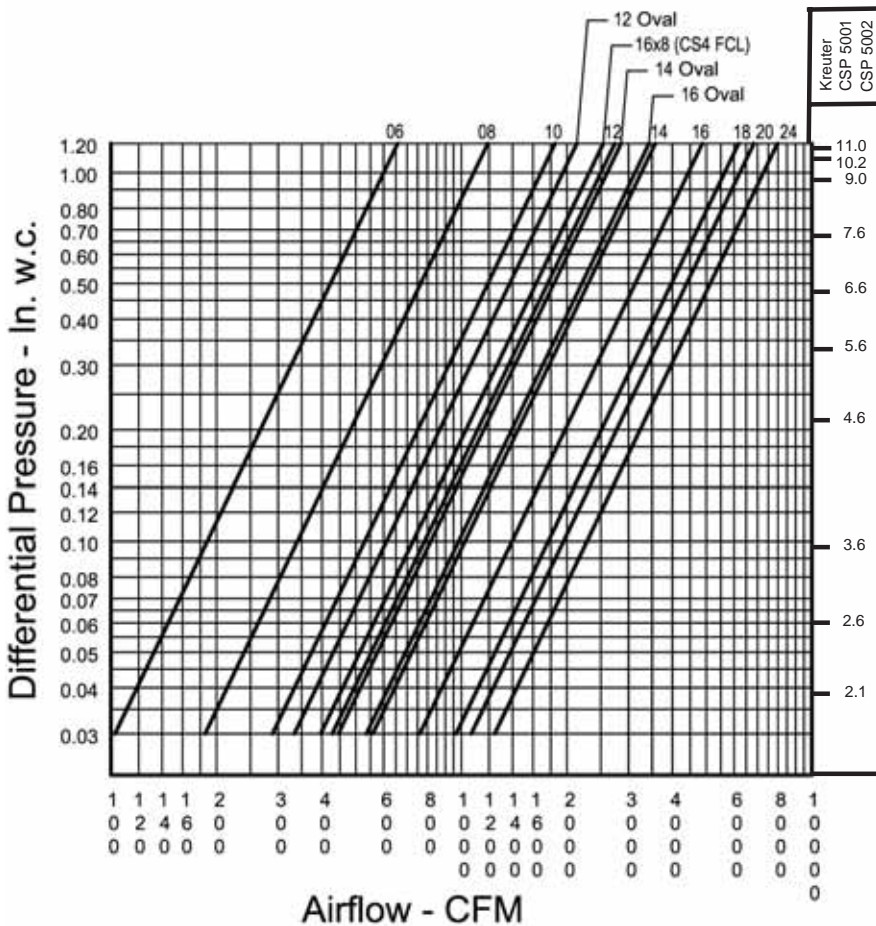
The majority of controls installed in HVAC systems today are direct digital controls (DDC). METALAIRE can mount and wire any manufacturer's control product that fits on our standard control panel regardless of the brand (one controller/actuator). Mounting of other manufactures control enclosures or transformer is not available.

In those cases where it is desirable to have the controls field mounted and wired, a basic air terminal without controls can be purchased from METALAIRE. The basic unit includes a control panel and cover.

In either case where controls are to be factory mounted and wired by METALAIRE or field installed by the control manufacturer, most types of DDC controllers require a flow sensor. METALAIRE will provide our multipoint quadrant averaging flow sensor which is compatible with all electronic control devices currently on the market. We can mount a control manufacturer's compatible sensor for an additional cost.

METALAIRE offers a unique service for today's fast-paced, technology-hungry HVAC markets with high performance air terminals that are compatible with all direct digital control packages. This approach is highly encouraged by control manufacturers and HVAC design engineers alike. METALAIRE is committed to providing the finest air terminal devices that will operate seamlessly with any control manufacturer's equipment.

For answers to specific compatibility questions, please contact your local METALAIRE representative.



ATU Model	Inlet Size	Flow Coefficient
TH, FC	06 Round	600
FV, DD	08 "	1100
DH, BP	10 "	1700
RT, RA	12 "	2500
TL (6-10)	14 "	3250
FCL Cs2 (6-8)	16 "	4400
12 TL	12 Oval	1965
14 TL	14 "	2600
16 TL	16 "	3150
FCL Cs4	16x8 Rect.	2340
FC & FV Cs7	18x16 "	5600
TH20	20x16 "	6200
TH24	24x16 "	7200

$$Cfm = \sqrt{\Delta p} \times \text{Flow Coefficient}$$

Data is with Sensor Mounted in Round Duct, except for Rectangular Sizes 18, 20 and 24 Widths x 16 Height and 16 x 8 (FCL Case 4)

Round Retrofit Air Terminal Units



RT-500

LEADING THE INDUSTRY IN PRODUCT LITERATURE

WITH THE CHOICE OF OUR PRE-FLITE CATALOG, QUICK SELECT CATALOG, INFOSOURCE CATALOG, INFOSOURCE CD AND OUR WEB SITE, WWW.METALAIRES.COM, YOU PICK THE FORMAT FOR PRODUCT INFORMATION THAT BEST SUITS YOUR AIR DISTRIBUTION DESIGN NEEDS.

PRE-FLIGHT - Product Overview Catalog

The METALAIRES Pre-Flight catalog is a condensed reference guide containing concise listings of our entire product line including grilles, registers, diffusers, and air terminal units. This catalog can be used to help select the type of device, along with available border styles. The catalog includes photos of each model along with the features and model guide, a great tool when you are trying to select a device for your project.



QUICK SELECT CATALOG - Air Distribution Selection Made Easy

The METALAIRES Quick Select Catalog is designed to save you time selecting air distribution equipment. This catalog is a compact version of our InfoSource Catalogs and includes drawings and performance for our most popular products. The Quick Select Catalog is broken into product types with each section beginning with a model summary that includes features and benefits of our products. To obtain product information not included in the Quick Select Catalog, simply go to our web site at www.metalaires.com.



INFOSOURCE CATALOG SUITE

- Complete Guide to Air Distribution Selection

The METALAIRES InfoSource Catalog suite is the leading product catalog in the industry. Included in these catalogs are the complete product listings, drawings, product features and benefits, product performance data, specifications, and model specifications. These catalogs are organized to make it quick and easy to find the information you are looking for.



INFOSOURCE CD

Our InfoSource CD has set the standard in the industry for air distribution product selection. This CD contains a complete library of all our catalogs and submittals along with our air terminal unit selection program.



INFOSOURCE CATALOG SUITE

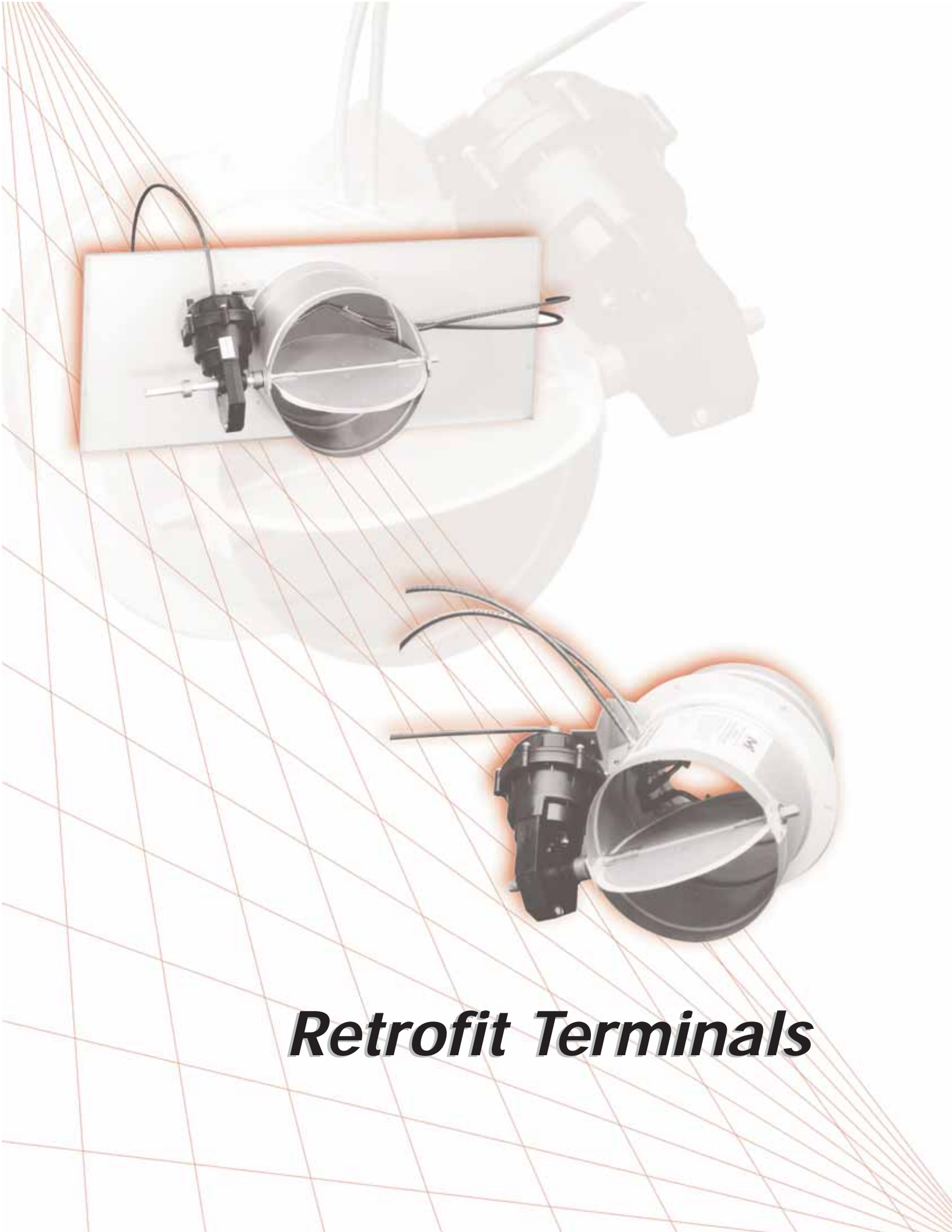
- Ceiling Diffusers Catalog
- Grilles & Registers Catalog
- Air Terminal Unit Catalog
- Formations Catalog

WEBSITE: WWW.METALAIRES.COM

METALAIRES leads the industry with a web site that contains all the product literature and performance data needed to design your air distribution system. Our web site includes all our submittals, catalogs, installation manuals, as well as as other valuable information to aid you in air distribution design.



METALAIRES



Retrofit Terminals

Retrofit Terminal Units

6/2007

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At METALAIRE, we continually work to improve our products. Product descriptions, dimensions, and performance are subject to change without notice. For the most current available literature visit our web page at www.metalaire.com. Contact your local METALAIRE representative to verify product or performance details.

Retrofit Terminal



RA-500

RA-500 - General Information

Description

METALAIRES Series RA-500 Retrofit Assemblies are customized Series RT retrofit valves designed to slip into existing mechanically regulated single or dual duct air terminals. This type of retrofitting is especially popular today since the retrofitted mechanical air terminal is more energy efficient, more cost effective and is converted with minimal disruption in building air conditioning service. The existing mechanical regulator is removed and replaced with the custom RA module.

Retrofitted mechanical air terminals require flow controllers to achieve pressure independence. These controls are available from METALAIRES mounted on separate panels. The panels are field secured to the outside of the air terminal during the retrofit procedure. Pneumatic or electronic control sequences are available for this purpose. METALAIRES will also mount and wire digital controls provided by others for a fee.

A list of major manufacturers' mechanical air terminals detail each of their air terminal model number, inlet size and flow range and cross references it with the required METALAIRES Retrofit Assembly Drawing Number and valve size. The list represents most of the known manufacturers' equipment, but is not all inclusive*.

Construction

The round RA valve mounted on a square or rectangular panel. This type is used on a majority of retrofit jobs. One or two valves in a single panel may be controlled by a single actuator. Each valve is furnished with its own flow sensor.

Controls

Control sequences for the Series RA-500 Retrofit Assemblies are currently available to convert mechanically regulated dual duct air terminals into single or dual duct pneumatic or electric air terminals, or current single duct mechanical units to VAV terminals.

**Custom Retrofit Assemblies will be designed for any mechanically regulated air terminal not already shown if sample units or dimensional documentation can be made available to METALAIRES's Engineering Department.*

Contact your local METALAIRES representative for further information on custom retrofit assemblies.

Series RA-500 Multivalve Unit with Flow Sensor



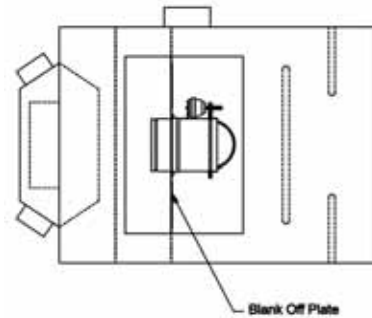
Series RA-500 Panel Mounted



Series RA-500 Control Panels



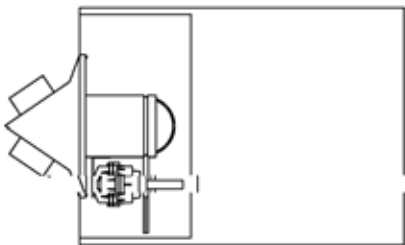
RA-500 - Technical Data



Titus® HD, TDH, TDL, TSH, LD, HS Series
 Replace all mechanical regulators with combination of flanged retrofit assembly(ies) and blank off plate(s) through bottom access panel. One actuator per valve, field or factory mounts on valve body. Flow controller panel is mounted in the field on outside of HD air terminal casing.

Titus®

The Titus® Series of single and dual duct mechanical air terminals may have as many as ten mechanical regulators. They were originally manufactured in a variety of sizes to deliver from 50 to 3120 CFM. Retrofitting these air terminals requires the removal of all mechanical regulators. The regulators are replaced with up to 4 METALAIRE RA retrofit valves to achieve the desired CFM. The remaining holes left as a result of removing the mechanical regulators are covered with blank-off plates. Retrofit is achieved through a bottom access panel. Control submittal 590 illustrates the METALAIRE Retrofit Assembly for Titus® Series air terminals. A chart detailing the number of nominal 8 retrofit valves and blank-off plates required to retrofit each size air terminal is presented on the submittal. Each valve is furnished with a multi-point air flow sensor. Order RA Assembly 590A for sizes 4 thru 7. Order 590B for larger sizes in multiples depending on CFM desired. Blank-off plates can be field fabricated, or ordered as 590X.

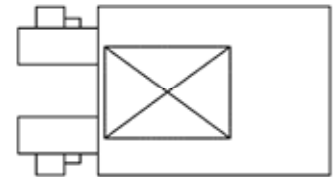


Tuttle & Bailey MVC Series
 Replace mechanical regulator(s) with panel mounted single round retrofit valve through bottom access panel. A divider panel, if present, must be cut to provide clearance for the new valve. One actuator per valve, field or factory mounted on valve body. Flow Controller panel mounted on MVC air terminal casing in the field.

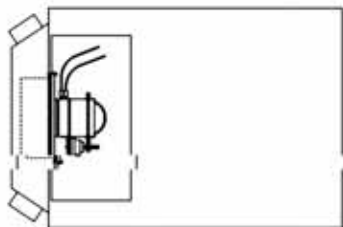
Tuttle & Bailey®

Tuttle & Bailey Series MPM-MVC mechanical air terminals require a single METALAIRE RA retrofit valve per air terminal. Tuttle & Bailey air terminals were built in a variety of sizes to deliver from 100 to 2600 CFM. Retrofitting these Tuttle & Bailey air terminals requires removing the mechanical regulator(s) and replacing it (them) with a single, panel mounted retrofit valve equipped with a multi-point air flow sensor.

The size of the valve and the panel it is mounted on varies with the size of the retrofitted air terminal. Retrofit is achieved through a bottom access panel. A divider panel, if present, must be cut to provide clearance for the new valve. Control sequence drawings 591A through 591F illustrate the dimensions of the panel and valve required for each MVC air terminal model.



MPM Series and alternate method for MVC series. Replace inlet damper assembly with dual flange mounted RA valves. Remove and discard internal regulator.

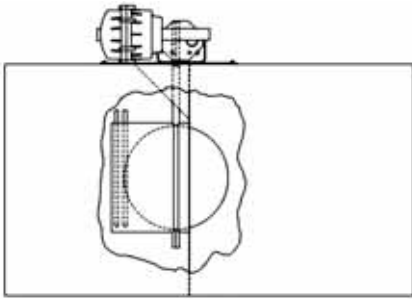


Anemostat® HV-C Series
 Replace mechanical regulator(s) with panel mounted single or dual round retrofit valves. Retrofit is achieved through a bottom access panel. One actuator per valve or pair of valves, field or factory mounted on valve body. Flow Controller panel mounted on HVC air terminal casing in the field.

Anemostat®

Anemostat® Series HV-C mechanical air terminals may require 1, 2, 4, 5, 7 or 8 METALAIRE RA retrofit valves mounted on 1 or 4 panels. Each valve is equipped with a multi-point air flow sensor. Anemostat® HV-C air terminals were originally manufactured in a variety of sizes to deliver from 150 to 5400 CFM. Retrofitting the Anemostat® air terminals requires removing the mechanical regulator(s) and replacing it (them) with the appropriate number of retrofit valves usually mounted in a single panel, but in the case of the largest air terminal, 6 valves in 4 panels are required. Retrofit is achieved through a bottom access panel. Control sequence drawings 592A through 592G illustrate the dimensions of the panel and valve(s) required for each HV-C air terminal model.

RA-500 - Technical Data

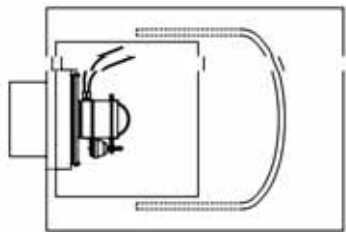


Barber-Colman HS and HD Series

Replace mechanical regulator(s) with panel mounted single or dual round or oval retrofit valves. Retrofit is achieved through a side access panel. One actuator and flow controller are mounted on outside of the HS or HD side access panel in the field.

Barber-Colman®

Barber-Colman HS, and HD mechanical air terminals require 1 or 2 METALAIRES RA round or oval retrofit valves mounted on a single panel. Each valve is equipped with a multi-point air flow sensor. Barber Colman's HS and HD air terminals were originally manufactured in a variety of sizes to deliver from 100 to 5000 CFM. Retrofitting the Barber-Colman air terminals requires removing the mechanical regulator(s) and replacing it (them) with 1 or 2 valves mounted in an appropriately sized panel. Each replacement valve is furnished with a multi-point flow sensor. Retrofit is achieved through a side access panel. Controls, including the actuator, are mounted on the outside of this panel. Control sequence drawings 593A through 593G illustrate the dimensions of the panel and valve(s) required for each HS or HD air terminal model.

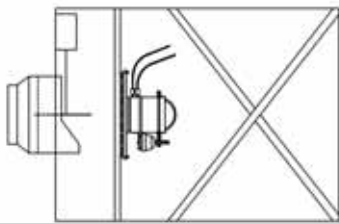


Buensod H and HL Series

Replace mechanical regulator(s) with 1, 2 or 3 panel mounted round or oval retrofit valves. Retrofit is achieved through a bottom access panel. One panel mounted round or oval retrofit valve(s). One actuator per air terminal field or factory mounted on 1 valve body. Flow controller panel mounted on H or HL air terminal in the field.

Buensod®

Buensod Model H and HL mechanical air terminals require from 1 to 3 METALAIRES RA round retrofit valves, each valve mounted on a single panel and furnished with a multi-point air flow sensor. Buensod Model H and HL air terminals were originally manufactured in a variety of sizes to deliver from 50 to 4800 CFM. Retrofitting the Buensod air terminals requires removing the mechanical regulator(s) and replacing it (them) with the appropriate number of panel mounted retrofit valves. Retrofit is achieved through a bottom access panel. Control sequence drawings 594B through 594I illustrate the number and dimensions of panels and valves required for each H or HL air terminal.



Krueger CVM Series

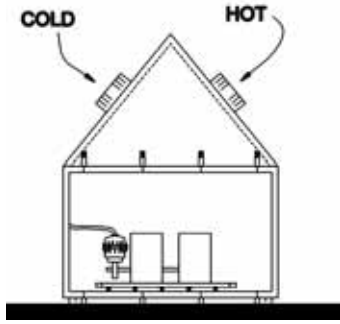
Replace mechanical regulator(s) with 1 or 2 panels, each supporting 1 or 2 round retrofit valves. One actuator per panel, field or factory mounted on 1 valve body. Flow Controller panel mounted on CVM air terminal casing in the field.

Krueger®

Krueger Model CVM mechanical air terminals require 1 or 2 METALAIRES RA round retrofit valves mounted in a single panel or 4 valves mounted in two panels. Each valve is furnished with a multi-point air flow sensor. Krueger CVM air terminals were originally manufactured in a variety of sizes to deliver from 100 to 3900 CFM.

Retrofitting the Krueger air terminals requires removing the mechanical regulator(s) and replacing it (them) with a panel containing the appropriate number and size retrofit valves. Control sequence drawings 595A through 595D illustrate the number of valves and the dimensions of the panel required for each CVM air terminal.

RA-500 - Technical Data

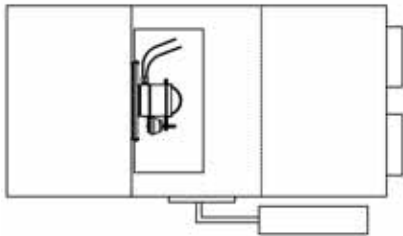


Connor Series

Replace mechanical regulator(s) with panel mounted single or dual round retrofit valves. Retrofit is achieved through a bottom access panel. One actuator per valve or pair of valves, field or factory mounted on valve body. Flow Controller panel mounted on HVE air terminal casing in the field.

Connor®

Connor Series HV, SD, DD, DS, RH and DC mechanical air terminals may require 1 or 2 METALAIRE RA retrofit valves mounted on 1 to 4 panels. Each valve is equipped with a multi-point air flow sensor. Connor HV air terminals were originally manufactured in a variety of sizes to deliver from 100 to 4000 CFM. Retrofitting the Connor air terminals requires removing the mechanical regulator(s) and replacing it (them) with the appropriate number of retrofit valves usually mounted in a single panel, but in the case of the largest air terminal, 8 valves in 4 panels are required. Retrofit is achieved through a bottom access panel. Control sequence drawings 596A through 592F illustrate the dimensions of the panel and valve(s) required for each air terminal model.



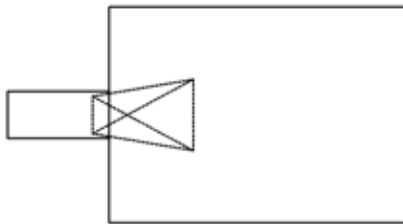
Carnes Series

Replace mechanical regulator(s) with 1 or 2 panels, each supporting 1 or 2 round retrofit valves. One actuator per panel, field or factory mounted on 1 valve body. Flow Controller panel mounted on air terminal casing in the field.

Carnes®

Carnes Models MH, SH and TH mechanical air terminals require 1, 2 or 3 METALAIRE RA round retrofit valves mounted in a single panel. Each valve is furnished with a multi-point air flow sensor. Carnes air terminals were originally manufactured in a variety of sizes to deliver from 100 to 2000 CFM.

Retrofitting the Carnes air terminals requires removing the mechanical regulator(s) and replacing it (them) with a panel containing the appropriate number and size retrofit valves. Control sequence drawings 597A through 597H illustrate the number of valves and the dimensions of the panel required for each air terminal.



Trane Series

Replace mechanical regulator (inlet valve) with a flanged retrofit valve. Flow controller is factory mounted on retrofit unit.

Trane® Series

Trane models VD, VC and VF mechanical air terminal require a single retrofit valve, the same nominal size as the terminal inlet. Retrofit valve is equipped with a flow sensor.

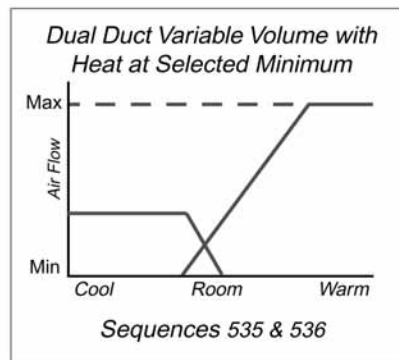
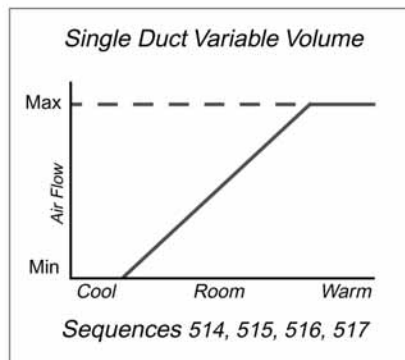
Retrofitting requires removing the original inlet mechanical regulator and replacing it with a retrofit unit. Trane retrofit can be shipped with controls mounted and wired.

RA-500 - Control Sequences

Control sequences for the Series RA-500 Retrofit Assemblies are currently available to convert mechanically regulated dual duct air terminals into single or dual duct pneumatic or electric air terminals. Pressure dependent sequences (510N and 550N) are comprised of an appropriate number of actuators mounted on the valves. No control panel is required with these sequences since flow control devices are not used.

Pressure independent control sequences are available to convert mechanically regulated dual duct air terminals into pneumatic single or dual duct air terminals. The retrofit valve assembly with its associated actuator(s) is mounted inside the mechanical air terminal. A flow control device and any associated controls are mounted on the outside of the air terminal. The existing dual duct actuator is used to control the mixing damper on dual duct conversions.

Pneumatic Pressure Independent Control Sequences Converting single or Dual Duct Terminals To:



Variable Volume Single Duct

Thermostat signals flow control to modulate retrofit valve damper position between selected maximum and minimum flow positions. Mixing dampers in existing dual duct air terminal are locked in position; the hot damper is closed and the cold damper is open.

- (514) Normally closed retrofit valve damper for use with a direct acting thermostat.
- (515) Normally open retrofit valve damper for use with a direct acting thermostat.
- (516) Normally closed retrofit valve damper for use with a reverse acting thermostat.
- (517) Normally open retrofit valve damper for use with a reverse acting thermostat.

Variable Volume Dual Duct Cooling with Heat at Selected Minimum

Thermostat signals a single flow control to regulate retrofit valve damper position. As the room cools, cold air flow is reduced to a selected minimum flow rate. If the room temperature continues to fall below the thermostat setpoint hot and cold air are mixed at the minimum flow setting. If the room requires more heat, the air terminal delivers just hot air at the minimum flow rate until the room is back up to the setpoint.

- (535) Existing dual duct mixing damper must be field set normally open to hot duct. Retrofit valve damper is normally open for use with a direct acting thermostat.
- (536) Existing dual duct mixing damper must be field set normally open to cold duct. Retrofit valve damper is normally open for use with a reverse acting thermostat.

RA-500 - Application & Installation

Installation

RA Retrofit Assembly valves are intended for use as replacements for mechanical constant volume regulators in circa 1960-1970 single and dual duct air terminals.

RA valves are custom designed for each of several manufacturers' air terminals, i.e., Titus®, Tuttle and Baily, Anemostat®, Buensod, Carnes, Krueger, Barber-Colman, Connor and Trane.

For all terminals refer to the submittal sheets for arrangement of replacement RA air valves.

All listed manufacturers' air terminals have access doors or panels near the mechanical regulators.

Some of these terminals use multiple regulators. In such cases multiple RA valve assemblies are used to retrofit the mechanical regulators.

For all manufacturers the following procedures must be followed while removing and reinstalling the new RA air valves.

1. After opening the access to the interior of these old air terminals, it is best to use a small vacuum to remove years of dust and dirt that has collected on the regulator.
2. Remove existing mechanical regulator(s) and vacuum any remaining dirt and dust. Clean old gasket material from seat where regulator has been secured to insure a good seal for new RA valve plate.
3. Secure new RA air valve and plate to existing seat where old regulator was secured. Reuse existing studs, nuts or cap screws that were used to attach old mechanical regulator to seat.
4. Drill or punch holes in side of old casing for passage of the velocity pressure tubes (2). Drill another hole for pneumatic air tube to pneumatic actuator(s) or wire if electric actuator is used on RA air valve. Tubing grommets require a 3/8" hole, wire grommet requires one 9/16" hole.

If multiple valves and actuators are used header low pickup lines together, high pickup lines together, and branch air lines, or wires, to actuators together and extend to outside of existing casing.

5. Install control panel on side of existing casing and connect piping as per control diagram. After insuring all lines are properly connected, close opening with access panel first removed.

6. Connect main air and branch line tubes to controller per control diagram. If additional relays are used in control sequence be sure they are set and piped or wired correctly.

After retrofitting to of the existing air terminals, central fan system modifications should be considered.

Notes:

1. On most larger air terminals, multiple regulators were used. Blank-off plates are used to cover excess holes where mechanical regulators were removed but spaces were not required for new RA valves, due to higher capacity of each RA unit. A simple blank-off plate may be field fabricated, or ordered from the factory.
2. On Tuttle and Bailey terminals, a central metal baffle runs horizontally across the air terminal. It must be notched to make room for the new RA air valve.

Application

Multi-story buildings constructed during the 1960's and 70's were often air conditioned with systems employing single or dual duct, medium to high pressure, mechanical constant volume regulators. These systems require large amounts of energy to operate. The total system air volume required to run them is equal to the sum of the maximum air flow required for each zone in the building at its peak load condition. This large volume of air, moving through an extensive duct system and mechanical regulators often requires central fan static pressures of 6" water gauge or more.

System retrofit reduces energy consumption in several ways. First, high resistance mechanical regulators are replaced with low resistance retrofit valves. Second, the retrofit valves are operated with state of the art variable volume controls. This results in greatly reduced total air flow requirements since only the instantaneous load of the building must be supplied rather than the building peak design CFM. The maximum instantaneous load is generally about 65 to 75% of the peak load requirement. Typically, building air flow requirement changes throughout the day so that the retrofitted building fan will spend 60% of its operating time at or below 50% of its original capacity.

Finally, the smaller air flow requirement and lower static pressure of the valves combine to reduce total duct static. This permits the central fan horsepower to be reduced by about 50% even during peak cooling periods.

It is impossible to accurately predict the precise effect retrofitting will have on a particular building without a complete engineering review. However, a building that has an air conditioning system operating continuously typically operates at less than 50% capacity for more than 60% of its total operating hours over the course of a year. This coupled with a 50% reduction in fan horsepower actually translates into an even greater savings over a full year's time.

In addition, CFC substitutes are available which actually increase the efficiency of the chiller, but reduce its capacity by 4-5%. Since retrofitting reduces the chiller peak load by a much greater amount, the owner may become environmentally safe and avoid future, more costly solutions.



RA-500 - Selection Data

Mechanical Air Terminal Data				METALAIRE Model RA-500 Retrofit Assembly Data*			
Manufacturer's Name (Models)	Size	Inlet Size	Flow Range	Quantity Needed*	Order Number	Valves Size(s)	Total Capacity
Anemostat [®] HV-C	5	5"	150-174	1	592A	6"	600
	5	5"	175-300	1	592B	6"	600
	6	6"	200-300	1	592B	6"	600
	6	6"	300-500	1	592C	6"	600
	7	7"	300-500	1	592C	6"	600
	7	7"	450-750	1	592D	6"	1200
	8	8"	450-750	1	592D	6"	1200
	8	8"	700-1150	1	592E	6"	1200
	10	10"	700-1150	1	592E	6"	1200
	10	10"	1000-1300	1	592F	10"	1600
	12	12"	1000-1500	1	592F	10"	1600
	12	12"	1501-2100	1	592G	10"	2200
	14	14"	1600-2200	2	592E	2-6"	2400
	14	14"	2201-4000	4	2-592D&E	4-6"	4800
	16	16"	3000-4000	3	1-592D,F&G	2-6", 3-10"	5000
	16	16"	4001-5400	4	1-592D,E,F,G	4-6", 3-10"	6200
Barber-Colman HS, HD	5	5"	100-400	1	593A	6"	600
	6	6"	300-600	1	593B	8"	1000
	8	8"	600-900	1	593C	8"	1000
	10	10"	900-1600	1	593D	10"	1600
	12	12"	1600-2400	1	593E	10"	3200
	14	14"	2400-3400	1	593F	12" Oval	4400
	16	16"	3400-5000	1	593G	12" Oval	6000
Buensod H, HL	4H	4"	50-230	1	594B	6"	600
	5H	5"	200-350	1	594B	6"	600
	6H	6"	300-450	1	594B	6"	600
	7H	7"	400-650	1	594C	8"	1000
	8H	8"	600-850	1	594D	8"	1000
	9H	9"	800-1050	1	594D	8"	1000
	10H	10"	1000-1300	1	594E	10"	1600
	HLA	30 x14"	1200-2000	2	594D	2-8"	2000
	HLB	30 x14"	2000-2500	2	594E	2-10"	3200
	HLC	40 x16"	2500-3000	1	594H	3-8"	3000
	HLD	40 x16"	3000-4000	1	594I	3-10"	4800

* One RA unit may have up to three valves. Since RA valves have higher capacities than existing mechanical regulators, select quantity of RA units by retrofitted CFM desired and blank off extra openings. RA assemblies are offered as basic units (502B), units with pneumatic actuators (510N or 512N), and units with 24V floating electric actuators (550N, 552N, or 554N). All RA units include the Metal*Aire[®] multipoint, averaging and amplifying flow sensor. See submittal drawings for full descriptions.

Caution: Manufacturers sometimes vary mounting dimensions without changing model numbers. It is recommended that several RA assemblies be tested at the installation site before large orders are manufactured.

EXAMPLE:

Anemostat HVE-14 terminal, originally 3500 CFM; retrofitted capacity 4800 CFM. To approximately match original CFM, drop one of the 592D or E assemblies (1200 CFM, leaving 3600 CFM new capacity) and blank off that regulator position.

Retrofit Terminal Units

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RA-500 - Selection Data

Mechanical Air Terminal Data				METALAIRE Model RA-500 Retrofit Assembly Data*			
Manufacturer's Name	Size	Inlet Size	Flow Range	Quantity Needed	Order Number	Valves Size(s)	Total Capacity
Krueger CVM	4	4"	100-200	1	595A	6"	600
	5	5"	175-300	1	595A	6"	600
	6	6"	300-450	1	595A	6"	600
	7	7"	400-600	1	595B	8"	1000
	8	8"	500-800	1	595B	8"	1000
	9	9"	700-1000	1	595B	8"	1000
	10	10"	800-1200	1	595C	2-6"	1200
	12	12"	1000-1600	1	595D	6," 8"	1600
	1212	12 1/2 x 12"	1500-2500	2	595C	4-6"	2400
1614	16 1/2 x 16"	1800-3000	2	592D	2-6", 2-8"	3200	
2014	20 1/2 x 20"	2400-3900	2	595D	2-6", 2-8"	3200	
Titus® HD, LD, HS, TD,TS	A	4-5-6"	50-240	1	590A	8"	1000
	B	6-7-8"	100-480	1	590A	8"	1000
	C	7-8-9-10"	150-720	2	590A	8"	2000
	D	9-10-12"	200-960	2	590A	8"	2000
	E	12-14"	250-1200	2	590A	8"	2000
	F	14-16"	350-1680	2	590A	8"	2000
	G	20 x 16"	450-2160	3	590A	8"	3000
	H	20 x 16/24x16	550-2640	3	590A	8"	4000
	J	24 x 16	650-3120	4	590A	8"	4000
Tuttle & Bailey MPM-MVC (see alternate methods pg. 11)	A	5"	50-200	1	591A	6"	600
	AB	5"	100-350	1	591B	6"	600
	B	6"	150-550	1	591B	6"	600
	C	7"	200-800	1	591C	8"	1000
	D	8"	800-1300	1	591D	10"	1600
	E	10"	500-2000	1	591E	12" Oval	2200
Connor SD, DD, DS, RH, DC	4	4"	100-200	1	596A	6"	600
	5	5"	150-325	1	596B	6"	600
	6	6"	250-425	1	596C	6"	600
	7	7"	350-650	1	595D	2-6	1200
	8	8"	500-850	1	596E	2-6	1200
	10	10"	650-1200	1	596F	2-6	1200
	12	12"	800-1800	2	596E	4-6	2400
	14	14"	1500-3000	4	596E	8-6	4800
16	16"	2100-4000	4	596F	8-6	4800	
Carnes MH, SH, TH	1004/2004	4"	75-200	1	597A	6	600
	0005	5"	175-350	1	597B	6	600
	0006	6"	250-500	1	597C	6	600
	0007	7"	325-650	1	597D	6	600
	0008	8"	425-850	1	597E	2-6	1200
	0009	9"	550-1100	1	597F	2-6	1200
	0010	10"	700-1400	1	597G	3-6	1800
	0012	12"	1000-2000	1	597H	2-8	2000
Trane VD, VC, VF	03	5"	300	1	598A	1-6	600
	06	6"	600	1	598A	1-6	600
	11	8"	1100	1	598B	1-8	1000
	17	10"	1700	1	598C	1-10	1600
	24	12"	2400	1	598D	1-12	2400
	32	14"	3200	1	598E	1-14	3200
	42	16"	4200	1	598F	1-16	4200

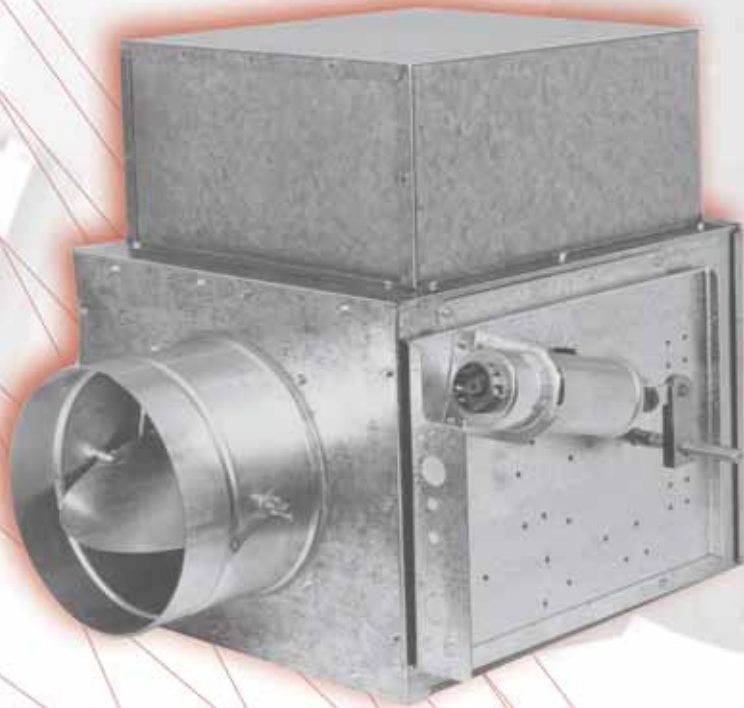
*One RA unit may have multiple valves. Since RA valves have higher capacities than existing mechanical regulators, select quantity of RA units by retrofitted CFM desired and blank off extra openings. RA assemblies are offered as basic units (502B), units with pneumatic actuators (510N) and units with 24V floating electric actuators (550N). All RA units include the Metal*Aire® multipoint, averaging and amplifying flow sensor. See submittal drawings for full descriptions.

Caution: Manufacturers sometimes vary mounting dimensions without changing model numbers. It is recommended that several RA assemblies be tested at the installation site before large orders are manufactured.

Retrofit Terminal



RA-500



Bypass Terminals

Bypass Terminal Units

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At METALAIRE, we continually work to improve our products. Product descriptions, dimensions, and performance are subject to change without notice. For the most current available literature visit our web page at www.metalaire.com. Contact your local METALAIRE representative to verify product or performance details.

Bypass Terminal



BP-500



For more product information visit us at www.metalaire.com



BP-500 - Introduction

Description

Series BP-500 Bypass Air Terminals are designed to achieve variable air volume delivery of conditioned air to a room in single duct, constant volume air distribution systems. Variable air volume control is achieved by directing air flow either to the room or to a bypass port in direct response to signals from the room thermostat. Series BP-500 Bypass Air Terminals are available with a variety of standard control sequences. Series BP-500 Air Terminals use a primary air damper working in concert with a bypass port damper. As the primary air damper closes, the bypass port damper opens, and vice versa so that a constant volume of air is delivered by the air terminal, but varying amounts are delivered to the room or the bypass plenum. A locking quadrant on the inlet balancing damper determines the total air flow through the air terminal. The round (or oval) primary air valve is enclosed in an insulated sheet metal casing. Primary air damper blades have precision die cast zinc alloy shafts which rotate in self lubricating custom Kepital® bearings resulting in extremely low friction damper operation. Control components are shipped piped and wired and a piping/wiring diagram is affixed to the bottom of the box for field reference.

Construction

Series BP-500 Air Terminals are constructed of galvanized steel. The terminal casing, inlet plate and damper (damper contains two 24 ga. layers) consist of 22 ga. steel. The universal control mounting panel and damper cylinder are 20 ga. steel. Insulation is 1/2" thick, 1.5 lbs./ft³ dual density, coated fibrous glass that complies with the requirements of NFPA 90A, ASTM C-665 and UL-181. The outlet plenum interior wall is lined with 24 ga. metal, preventing air flow insulation exposure to the room. Series BP-500 Air Terminals are available in standard sizes of 6", 8", 10", 12", 14", and 16". Sizes 6", 8", and 10" have round inlet collars and sizes 12", 14", and 16" have equivalent flat oval collars. All basic terminals are 18 1/2 in height and 21 1/4 in overall length.

Performance

Series BP-500 Air Terminals are available for system pressure dependent and system pressure independent applications. They are recommended for use in duct systems with static pressures up to 2" water gauge. Supply air capacities range from 200 to 4000 CFM, depending on air terminal size.

Controls

Series BP-500 Air Terminals can be specified with pneumatic, electric or electronic controls. Standard control sequences, covering virtually every design application.

Series BP-500 with Downstream
Sound Attenuator



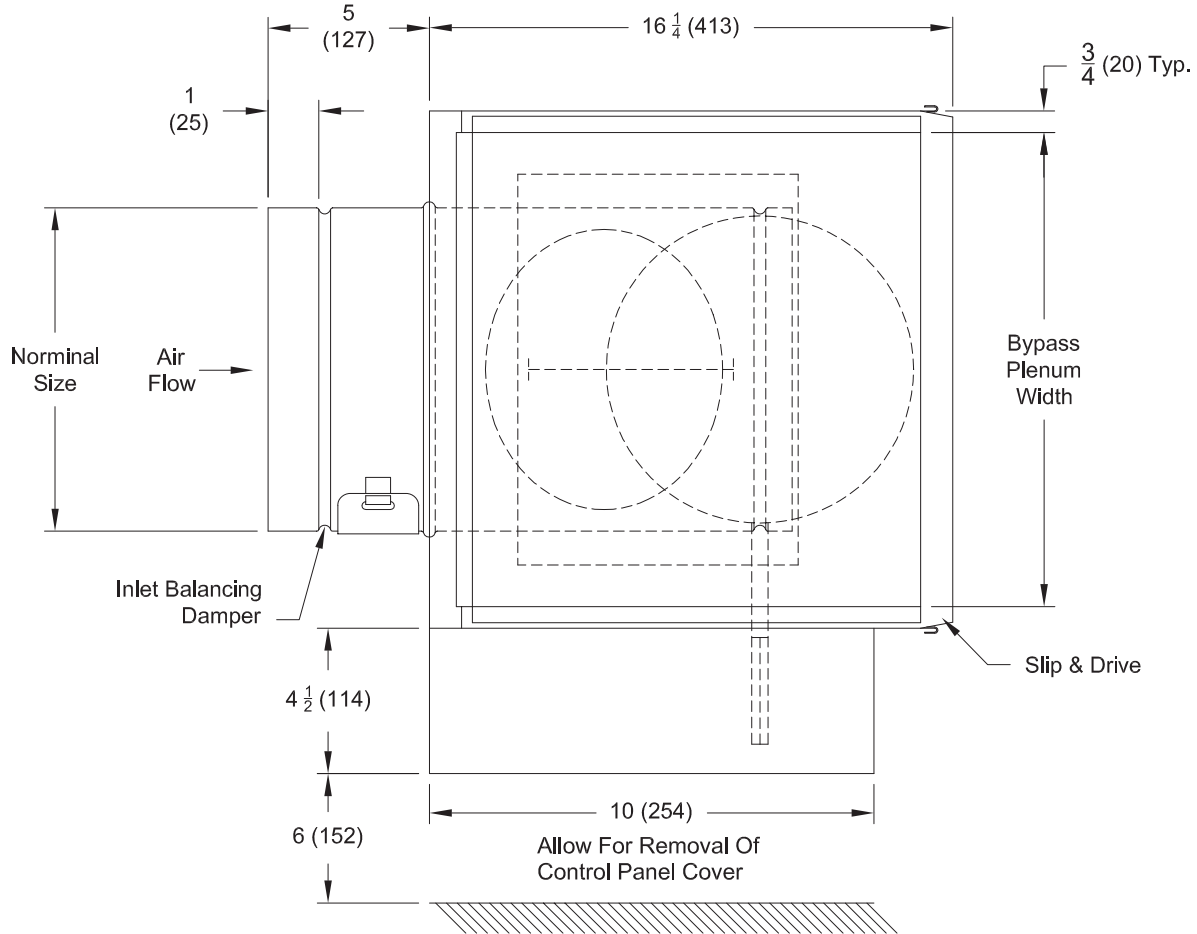
Bypass Terminal Units

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BP-500 - Dimension Data

BASIC AIR TERMINAL

Dimensions are in inches



Model No.	Inlet Size	Width
BP-506	6" Round	12"
BP-508	8" Round	14"
BP-510	10" Round	16"
BP-512	12" Oval	18"
BP-514	14" Oval	24"
BP-516	16" Oval	28"

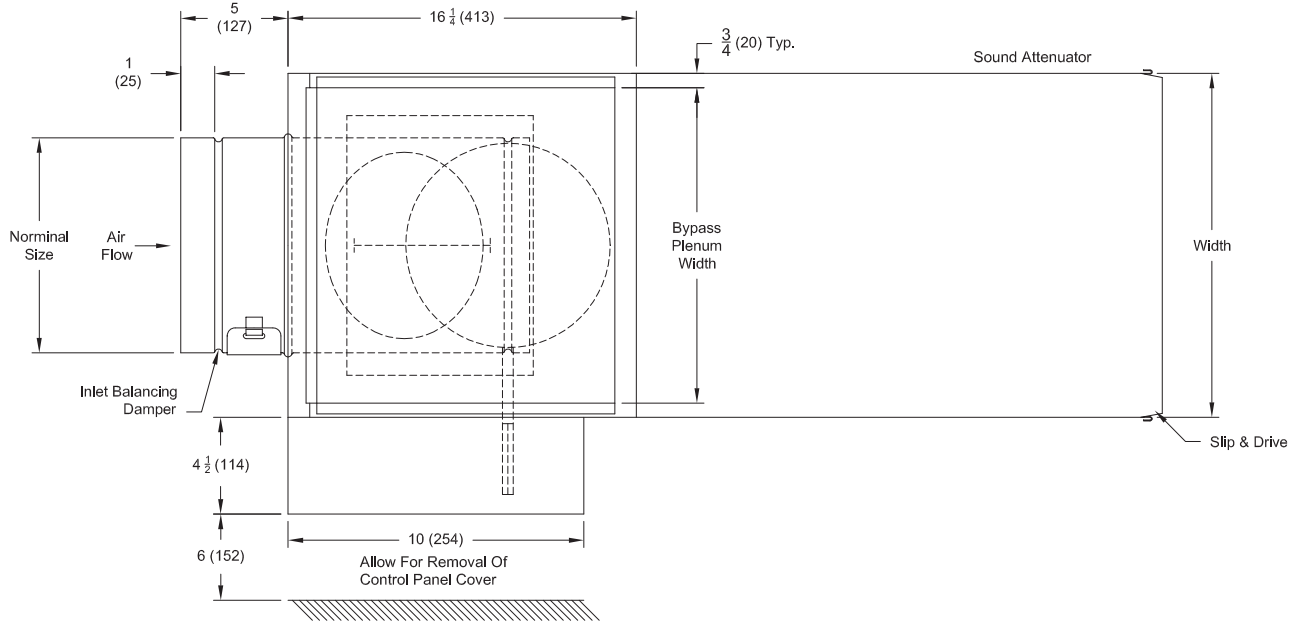
Bypass Terminal



BP-500

BP-500 - Dimension Data

AIR TERMINAL WITH SOUND ATTENUATOR



Bypass Terminal



BP-500

Bypass Terminal Units

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BP-500 - Performance Data

Size	CFM	Minimum Ps	NC Lp @ (derived from Sound Power Data, pages 4 & 5)					
			Minimum Ps		1" Ps		1 1/2" Ps+ Minimum Ps	
			Discharge	Radiated	Discharge	Radiated	Discharge	Radiated
506	200	0.03	20	<20	20	20	21	20
	300	0.08	20	<20	20	28	24	20
	400	0.13	20	<20	20	26	25	20
	600	0.30	20	<20	27	27	34	20
508	400	0.02	20	<20	20	<20	20	20
	500	0.03	20	<20	21	20	22	20
	700	0.05	20	<20	25	20	28	20
	1000	0.10	20	<20	30	22	34	26
510	600	0.02	20	<20	20	20	28	20
	800	0.03	20	<20	25	20	32	20
	1000	0.04	20	<20	26	20	34	21
	1600	0.10	21	<20	31	20	37	32
512	1100	0.04	20	<20	22	20	31	24
	1200	0.05	20	<20	23	20	29	24
	1700	0.09	20	<20	25	20	31	26
	2200	0.15	21	20	28	26	31	32
514	1500	0.05	20	<20	26	20	32	24
	1800	0.07	20	<20	28	20	35	23
	2400	0.13	20	<20	32	20	37	29
	3000	0.20	30	21	36	27	44	34
516	2000	0.06	20	<20	28	20	33	25
	2800	0.12	20	20	30	25	30	28
	3200	0.16	22	20	32	25	32	31
	3600	0.21	25	20	32	26	32	33
	4000	0.25	31	22	36	29	43	35

Notes:

- All data are calculated in accordance with International Standard ISO 3741 comparison method and Industry Standard 880.
- NC Lp = Lw - 10 dB room absorption.
- Discharge NC levels on this table reflect a reduction of 10 dB room absorption per band plus 5 feet of lined metal duct the same size as the air terminal discharge and a maximum of 300 CFM per diffuser. To obtain actual room NC levels, all discharge duct, number of diffusers and difference in room attenuation factors must be considered. Refer to page 18 for additional information on sound reduction factors.
- NC levels for discharge do not include attenuation of electric heat section. To include these, reduce listed NC values by one-half of the values listed on page 18 for lined sheet metal duct.
- Air Terminals are not intended for continuous operation in ambients over 95°F. Do not store in ambients over 115°F.

Bypass Terminal



BP-500

Bypass Terminal Units

BP-500 - Radiated Sound Power

Discharge Sound Power

Size	CFM	Min. Ps	Minimum Ps							1" Ps						
			2	3	4	5	6	7	NC	2	3	4	5	6	7	NC
6	200	0.03	51	40	35	32	30	22	20	60	59	56	54	49	47	20
	300	0.08	50	48	44	43	35	25	20	62	64	61	61	53	51	20
	400	0.13	55	55	51	51	44	39	20	65	66	64	65	56	54	20
	600	0.30	66	66	63	62	55	52	20	71	74	71	73	63	60	27
8	400	0.02	57	44	39	36	36	25	20	62	64	63	64	55	52	20
	500	0.03	57	49	45	43	33	23	20	65	65	64	66	57	53	21
	700	0.05	59	57	55	53	45	38	20	69	69	69	70	61	57	25
	1000	0.10	66	66	63	63	55	49	22	74	75	75	75	67	62	30
10	600	0.02	57	46	42	37	28	24	20	63	63	64	62	55	53	20
	800	0.03	58	54	49	46	37	27	20	68	68	68	65	58	56	25
	1000	0.04	60	59	55	52	44	38	20	69	70	70	68	61	58	26
	1600	0.10	65	63	65	61	58	54	21	74	74	76	74	66	64	31
12	1100	0.04	54	49	47	45	37	27	20	66	67	67	61	66	56	22
	1200	0.05	58	51	50	48	40	32	20	67	68	67	67	61	58	23
	1500	0.09	58	58	57	55	48	42	20	69	70	73	72	66	61	25
	2200	0.15	62	60	61	61	55	51	21	72	74	76	76	70	65	28
14	1500	0.05	54	58	54	47	41	36	20	70	72	71	65	61	58	26
	1800	0.07	54	61	61	54	49	46	20	71	73	75	67	63	59	28
	2400	0.13	65	67	68	62	56	53	20	75	77	79	72	67	63	32
	3000	0.20	73	73	74	68	63	60	30	78	80	84	76	70	67	36
16	2000	0.06	55	53	55	53	45	38	20	71	69	69	67	62	58	28
	2800	0.12	62	62	64	63	56	51	20	73	76	76	74	68	64	30
	3200	0.16	66	77	68	67	60	55	27	75	77	78	76	70	66	32
	3600	0.21	69	70	73	72	65	60	25	75	79	81	78	72	66	32
4000	0.25	72	73	74	72	65	60	31	78	79	82	80	74	69	36	

Radiated Sound Power

6	200	0.03	35	35	29	29	20	20	<20	53	48	47	40	38	33	20
	300	0.08	45	39	42	35	27	20	<20	60	54	48	45	42	38	28
	400	0.13	50	46	45	43	36	29	<20	60	54	49	46	44	41	26
	600	0.30	54	49	46	47	41	39	<20	62	56	50	51	46	45	27
8	400	0.02	45	38	33	26	20	20	<20	61	56	50	46	42	36	20
	500	0.03	51	42	37	33	23	20	<20	63	57	53	48	46	38	20
	700	0.05	60	53	45	40	31	27	<20	66	59	53	50	48	40	20
	1000	0.10	66	55	48	46	40	35	<20	72	61	53	52	46	42	22
10	600	0.02	56	35	30	23	20	20	<20	65	59	49	43	38	34	20
	800	0.03	51	43	38	32	24	20	<20	67	60	55	50	41	37	20
	1000	0.04	57	48	44	39	32	27	<20	68	63	60	50	43	40	20
	1600	0.10	59	51	52	46	40	35	<20	72	65	63	54	48	45	20
12	1100	0.04	50	48	45	37	28	20	<20	71	65	56	51	46	42	20
	1200	0.05	50	46	46	40	31	23	<20	70	67	58	52	48	44	20
	1500	0.09	58	52	47	42	34	28	<20	74	70	60	55	50	46	20
	2200	0.15	63	57	50	45	38	32	20	75	70	63	57	53	49	26
14	1500	0.05	58	49	47	42	34	25	<20	68	67	63	59	55	50	20
	1800	0.07	58	50	48	44	37	33	<20	69	67	62	60	56	51	20
	2400	0.13	56	58	58	53	48	49	20	74	69	65	63	59	53	20
	3000	0.20	71	68	64	57	52	50	20	76	73	68	66	60	55	27
16	2000	0.06	57	54	53	48	40	21	<20	70	70	68	55	51	46	20
	2800	0.12	60	62	61	57	50	43	20	74	73	71	58	52	49	25
	3200	0.16	62	63	62	59	52	40	20	74	74	72	60	54	51	25
	3600	0.21	67	68	67	64	58	53	20	75	75	73	62	57	57	26
4000	0.25	72	71	67	62	58	55	22	77	77	75	65	60	60	29	

Notes:

- All data are calculated in accordance with International Standard ISO 3741 comparison method and ARI Industry Standard 880.
- Discharge Noise Criteria (NC) is equal to the Sound Power Level minus attenuation factors for 5 feet of lined duct and a maximum of 300 CFM per diffuser plus 10 dB for room absorption.
- Radiated Noise Criteria (NC) is equal to the Sound Power Level minus one-half the values of a 40-44 STC ceiling and 10 dB for room absorption. The 40-44 STC is a typical 5/8" thick rigid type.

Bypass Terminal



BP-500



BP-500 - Control Sequences

BASIC AIR TERMINAL

(300B) Without Controls:

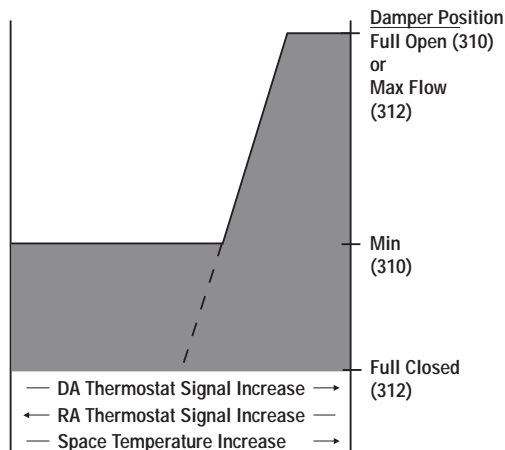
Specify when controls are to be field mounted and supplied by others.

PNEUMATICALLY CONTROLLED AIR TERMINALS

Pressure dependent pneumatic air terminal actuators are powered directly by branch line pressure signals from the room thermostat. Pressure independent pneumatic air terminal actuators are powered by signals from a flow control device which balances pressure readings from the main air supply and the branch air pressure from the thermostat. The damper's position is regulated by the flow control which operates within preset minimum and maximum flow rates.

A **direct acting thermostat** causes an increase in branch pressure as the room temperature rises. A reverse acting thermostat causes a decrease in branch pressure as the room temperature rises. Since the pneumatic actuator is a spring return device, the damper can be connected so that without main pressure it will return to normally closed position to shut off air flow to the room, or to a normally open position to permit unobstructed air flow to the room.

Multi-function flow controllers for pressure independent applications can be field modified for use with a direct or reverse acting thermostat and the damper actuator can be switched to either normal position without adding control components. The Series BP-500 readily accommodates this type of controller versatility since its control linkage design allows the primary air damper to be repositioned without the use of tools from normally open to normally closed, or vice versa, without removing or relocating the damper actuator.



Pneumatic/Pressure Dependent

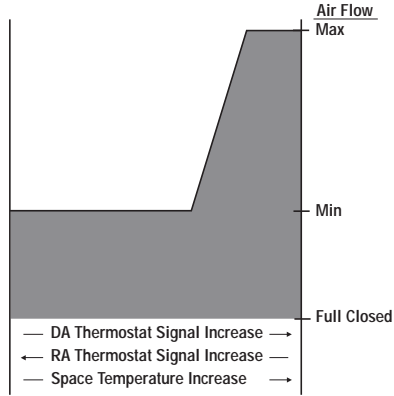
Actuator responds directly to a signal from a room thermostat. Furnished with a mechanical air flow stop.

- (310) **Normally closed** for use with a direct acting room thermostat.
- (312) **Normally open** for use with a reverse acting room thermostat.



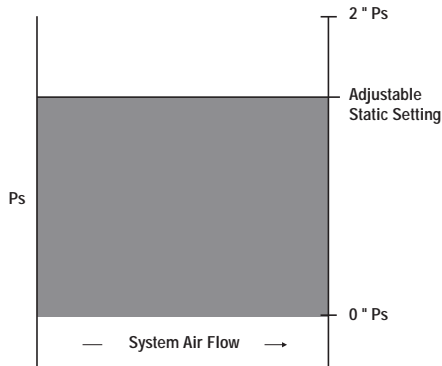
BP-500 - Pneumatic Control Sequences

Pneumatic
Pressure Independent
314 - DA/NC
315 - DA/NO
316 - RA/NC
317 - RA/NO



- (314) **Variable Volume.** Normally closed. For use with direct acting thermostat.
- (315) **Variable Volume.** Normally open. For use with direct acting thermostat.
- (316) **Variable Volume.** Normally closed. For use with reverse acting thermostat.
- (317) **Variable Volume.** Normally open. For use with reverse acting thermostat.

Pneumatic
340 Static Control (0" - 2")



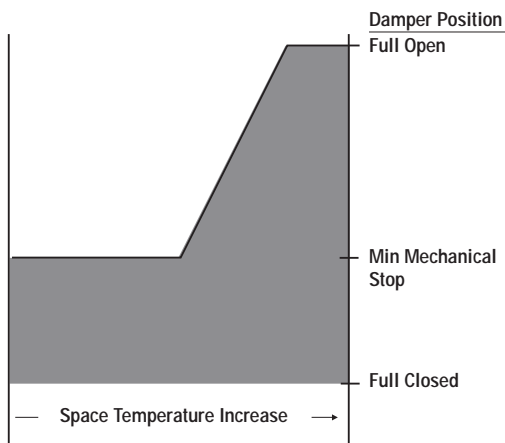
- (340) **Static Control.** Normally open or normally closed.
Local or remote pickup senses duct static and signals controller to maintain constant static at sensing point. It may be used for direct static control or as a by-pass flow method. 0" - 2" range.



BP-500 - Electric Control Sequences

ELECTRICALLY CONTROLLED AIR TERMINALS

Reversible electric actuators are pressure dependent and are powered directly by signals from the room thermostat. As room temperature rises, the actuator opens the damper to permit a higher flow of cooling air into the room. As room temperature falls, the actuator closes the damper to reduce air flow to the room. The electric actuator is not a spring return device. If there is a loss of power to the air terminal, the damper will remain in the position it occupied at the time of the failure. A mechanical stop is provided with each electric control sequence to assure minimum air flow to the room. The modulating actuator provides floating proportional control of supply air to the room and can be left in a stalled position indefinitely. A 24 volt, bimetallic room thermostat is a standard component of each electric control sequence, with the exception of 357. A transformer is required to reduce line voltage to 24 volts to operate the thermostat and the actuator. 50 VA transformer that reduce 120, 240, or 277 line voltage to 24 control voltage are optional.



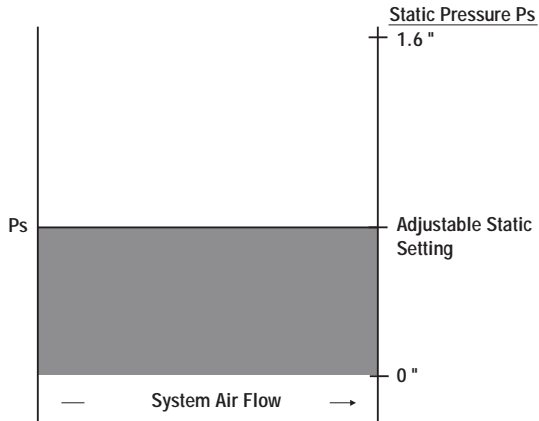
(352) **Cooling Only.** As room temperature rises, the thermostat signals the actuator to open the damper to its fully open position. As room temperature falls, the thermostat signals the actuator to close the damper to a mechanically determined minimum point.



BP-500 - Electric Control Sequences

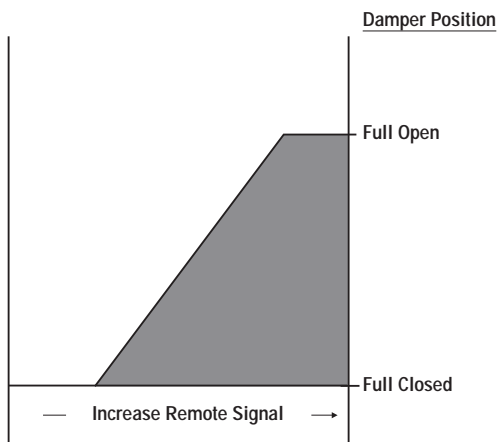
Electric
373 Static Control (0" - 1.6")

(356) **Static Control.** Static sensor - at terminal or remote - senses static variations and signals controller to maintain static. 0" - 1.6" range



Electric
357 Floating, Electric Control

(357) **Floating, Electric Control.** Actuator modulates air flow in response to controller (by others) signals. Signal, 24 VAC, may be from a static, velocity or other controller requiring air flow modulation (Flow sensor and thermostat optional).



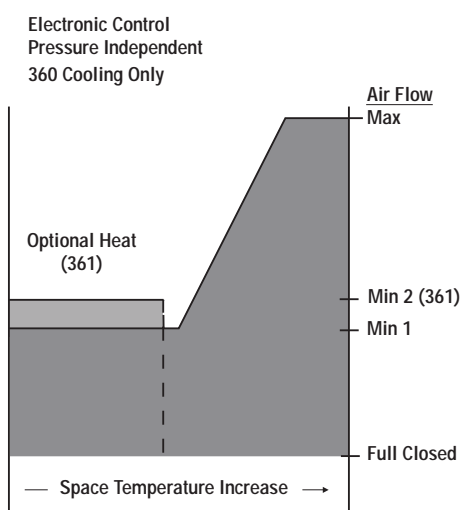
BP-500 - Analog Control Sequences

ANALOG ELECTRONICALLY CONTROLLED AIR TERMINALS

Analog electronic flow controls are the only electrical devices available for use with electric or electronic damper actuators that achieve pressure independent control so that variations in supply static pressure do not affect air flow conditions to the room. The analog electronic room thermostats supplied with the control sequences detailed on this page have field adjustable flow limit set points. The thermostat electronically signals the actuator to open or close the damper in response to room temperature within preset air flow limits. The electric and electronic actuators are not spring return devices. If there is a loss of power to the air terminal, the damper will remain in the position it occupied at the time of the power failure.

These state-of-the-art control sequences are available with both analog and computer compatible digital input/output controller options. Numerous control arrangements are possible with electronic control sequencing which are not discussed in this catalog.

All electric and electronic components used in these sequences use low voltage (24 volt) controls and are readily enclosed with a standard control panel cover. A standard 50 VA transformer that reduces 120, 240, or 277 line voltage to 24 control voltage is wired into the control sequence as a standard component. It is assumed that 120 line voltage is being supplied to the air terminal if a different line voltage is not specifically listed.

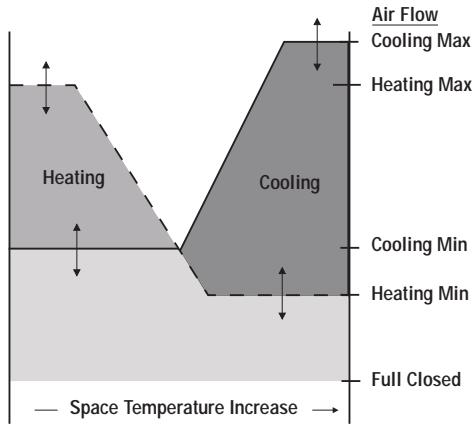


(360) **Cooling Only.** Electronic thermostat (analog models with integral, adjustable, maximum and minimum flow limits) signals electronic flow controller to regulate damper position. The damper is rotated to its maximum open position as room temperature rises and to its minimum open position as room temperature falls.



BP-500 - Analog Electronic Control Sequences

Electronic Control
Pressure Independent
365 Heating Cooling Change over

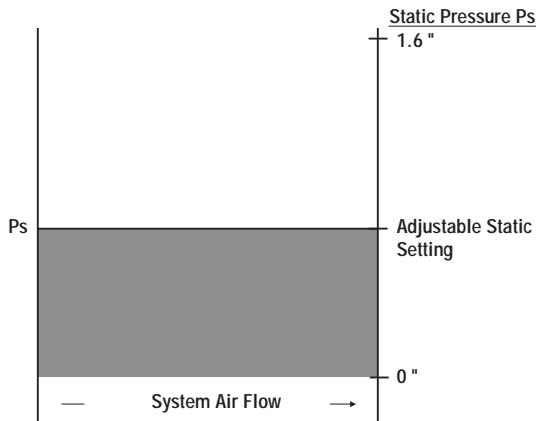


(365) **Heating/Cooling Changeover:** A duct thermostat switches a heat/cool relay to make the system operate in the appropriate heating or cooling mode.

Cooling Mode: Electronic thermostat (analog models with integral, adjustable, maximum and minimum flow limits) signals electronic flow controller to regulate damper position. The damper is rotated to its maximum open position as room temperature rises and to its minimum open position as room temperature falls.

Heating Mode: In the heating mode, damper is modulated in response to the heating signals from the electronic room thermostat.

Electric
373 Static Control (0" - 1.6")



(373) **Electronic Static Control.** Static sensor - local or remote - senses variations and signals controller accordingly. For direct static control or bypass static control. 0"-2" range.



BP-500 - DDC Electronic Control Capability

DDC ELECTRONIC CONTROL CAPABILITY

The majority of controls installed in HVAC systems today are direct digital controls (DDC). METALAIRE can mount and wire any manufacturer's control product that fits on our standard control panel regardless of the brand (one controller/actuator). Mounting of other manufactures control enclosures or transformer is not available.

In those cases where it is desirable to have the controls field mounted and wired, a basic air terminal without controls can be purchased from METALAIRE. The basic unit includes a control panel and cover.

In either case where controls are to be factory mounted and wired by METALAIRE or field installed by the control manufacturer, most types of DDC controllers require a flow sensor. METALAIRE will provide our multipoint quadrant averaging flow sensor which is compatible with all electronic control devices currently on the market and shipped loose for downstream installation.

METALAIRE offers a unique service for today's fast-paced, technology-hungry HVAC markets with high performance air terminals that are compatible with all direct digital control packages. This approach is highly encouraged by control manufacturers and HVAC design engineers alike. METALAIRE is committed to providing the finest air terminal devices that will operate seamlessly with any control manufacturer's equipment.

For answers to specific compatibility questions, please contact your local METALAIRE representative.

Bypass Terminal



BP-500

Equations, Conversions & Factors

Formulas

VP =	$(\text{fpm} / 4,005)^2$
CFM =	Cubic feet per minute
TP =	Total Pressure
SP =	Static Pressure
VP =	Velocity Pressure
fpm =	feet per minute
ΔP =	Differential Pressure
ΔP_s =	Static Differential Pressure
ΔP_T =	Total Differential Pressure
Area Factor =	Dimension in Square Feet
VP =	TP - SP
TP =	SP + VP
SP =	TP - VP
CFM =	fpm x Area Factor
ΔP_T =	$TP_1 - TP_2$
ΔP_s =	$SP_1 - SP_2$
ΔP =	$(\text{CFM} / K)^2$
fpm =	$\text{CFM} / \text{Area Factor}$
K =	$\text{CFM} / \sqrt{\Delta P}$

Water Coils

MBH =	1,000s of Btus per Hour
Btu =	British Thermal Unit
gpm =	Gallons per Minute
ΔT =	$(\text{EWT} - \text{LWT})$
Air ΔT =	$927 \times \text{MBH} / \text{cfm}$
$H_2O \Delta T$ =	$2.04 \times \text{MBH} / \text{gpm}$
1 foot of head =	0.4335 psi
7.5 Gallons =	1 Cubic Foot

Imperial to Metric Conversions

multiply	by	to get
Ft of water	2.989	kPa
GPM	0.0631	L/s
CFM	0.472	L/s
in w.c.	249.088	Pa
MBH	0.2931	kW
Gallons	3.79	Litres

Electric Coils

kW =	Kilowatts
Air ΔT =	$(\text{LWT} - \text{EWT})$
kW =	$\text{cfm} \times \Delta T / 3,160$
ΔT =	$\text{kW} \times 3160 / \text{cfm}$
1 MBH =	$\text{kW} \times 3.41$

Power

W =	Watts
A =	Amps
hp =	Horsepower
V =	Volts
E_1 =	Efficiency
PF =	Power Factor

1 HUMAN AT REST = 100 WATTS = 341 BTU'S

Power AC Circuits (Single Phase)

PF =	$W / (V \times A)$
A =	$746 \times \text{HP} / (V \times E \times \text{PF})$
E =	$746 \times \text{HP} / (V \times A \times \text{PF})$
kW =	$V \times A \times E \times \text{PF} / 1,000$
hp =	$V \times A \times E \times \text{PF} / 746$

Power AC Circuits (3 Phase)

PF =	$W / (V \times A \times 1.732)$
A =	$746 \times \text{HP} / (1.732 \times V \times E \times \text{PF})$
E =	$746 \times \text{HP} / (V \times A \times \text{PF} \times 1.732)$
kW =	$V \times A \times \text{PF} \times 1.732 / 1000$
hp =	$V \times A \times 1.732 \times E \times \text{PF} / 746$

U.S. Galvanized Sheet Metal Gauges	
Gauge No.	Thickness (inches)
26	.0217
24	.0276
22	.0336
20	.0396
18	.0516
16	.0635
14	.0785

Reheat Coils:

Several types of terminal devices are available with reheat coils, both hot water and electric. When determining the heat requirement for a terminal, the engineer will often start with the known zone heating demand, typically expressed in BTUH, or more conveniently, MBH (thousands of BTUs). The room load requirements for heating are then used to determine the Room Entering Air temperature (EAT_r) now becomes the required LAT of the VAV box (ignoring any duct heat losses). The coil can now be sized according to:

$$\text{BTUH (coil)} = 1.085 * (\text{LAT} - \text{EAT}_c) * \text{CFM}$$

Where;

LAT =	The coil leaving air temperature
EAT =	Coil entering air temperature, (primary or mixed air)
CFM =	Cubic feet per minute

Now that the coil requirements are known, published catalog data may be used to select the proper hot water or electric coil.



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BP-500	BP-243
DD-500	DD-179
DH-500	DH-179
FCI-600	FCI-77
FCL-600	FCL-77
FVI-500	FVI-135
RA-500	RA-219
RT-500	RT-233
SR-500	SR-213
TH-500	TH-9
TL-500	TL-9