METALAIRE®

AIR TERMINAL UNITS

INFOSOURCE CATALOG

The METALAIRE 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 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.

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.METALAIRE.COM, YOU PICK THE FORMAT FOR PRODUCT INFORMATION THAT BEST SUITS YOUR AIR DISTRIBUTION DESIGN NEEDS.

PRE-FLIGHT - Product Overview Catalog

The METALAIRE Pre-Flite 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 METALAIRE 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.metalaire.com.

INFOSOURCE CATALOG SUITE

- Complete Guide to Air Distribution Selection

The METALAIRE 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*
- *Air Terminal Unit Catalog*
- *Grilles & Registers Catalog*
- *Formations Catalog*

WEBSITE: WWW.METALAIRE.COM

METALAIRE 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.

METAL INDUSTRIES, INC.

METAL*AIRE

ATU • AIR TERMINAL UNITS

ATU - Air Terminal Units

6/2007

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 distri bution 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

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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

ATU - Air Terminal Units

Series FVI-500

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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

Series DH-500

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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 avail able 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*

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

Series SR-500

Pg. 213

Series SR-500 - Square Retrofit Air Terminal

- The METALAIRE® 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

ATU - Air Terminal Units

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.

Series RT-500

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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

Series BP-500

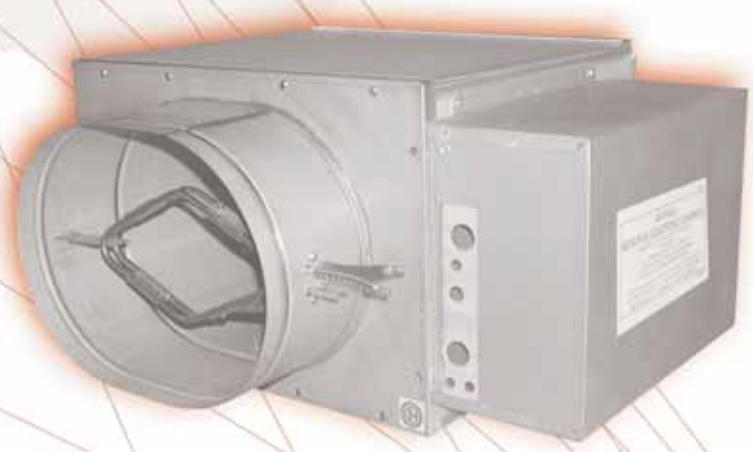
Pg. 243

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

TH-500 / High Performance

TL-500 / Low Profile (Maximum Height 12 1/2")



SINGLE DUCT AIR TERMINAL UNITS

TH/TL-500 - Table of Contents

ARI Certified Air Terminals

METALAIRE 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 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.

TH/TL-500 - Introduction

The METALAIRE 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 METALAIRE 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 MetalAire 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.metalaire.com or call your local METALAIRE 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.

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/ft^3. 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. ThemoPure 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.

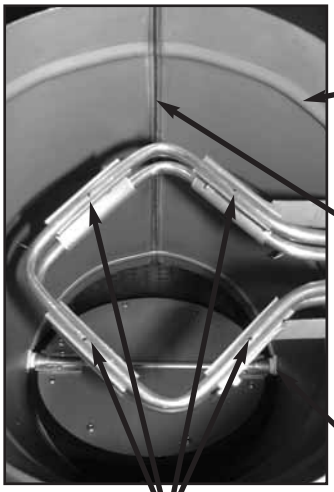
Features of the METALAIRE VAV Valve and Flow Sensor:

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.

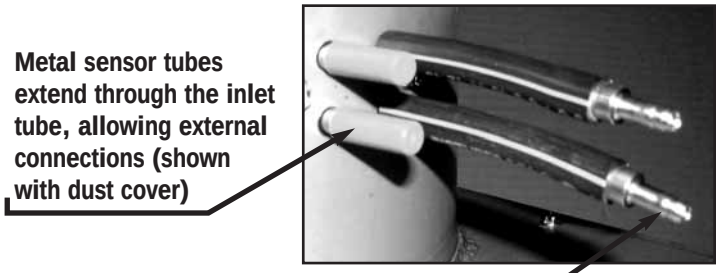


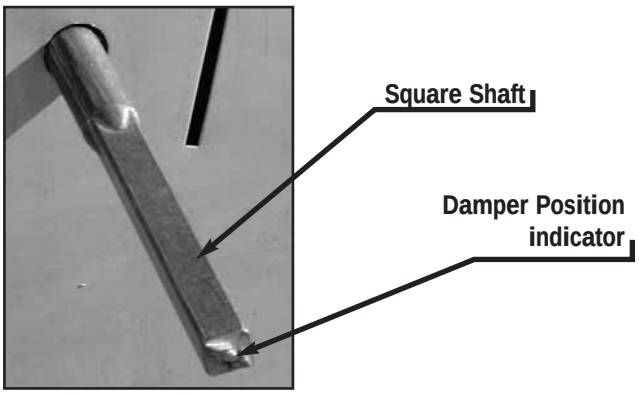
Flow Sensor

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".





Single Duct Air Terminal Units

6/2007

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.

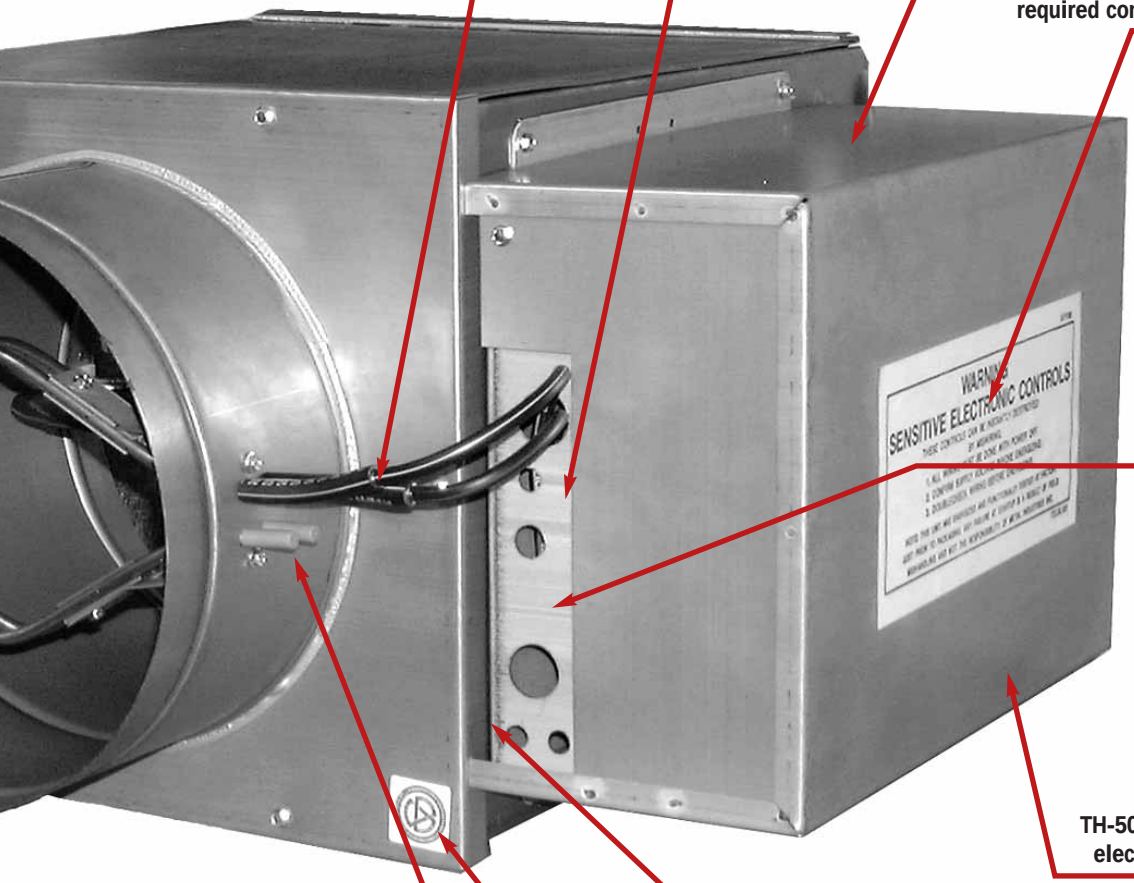
The inlet tube for the TH-500 includes a bead that strengthens the tube and provides recess for flex duct straps

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



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

METALAIRE® 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

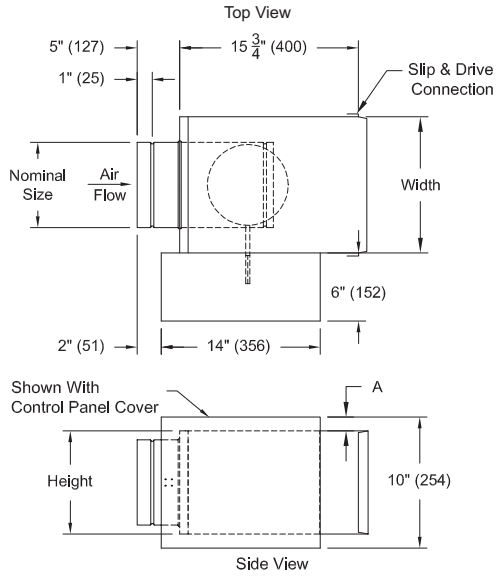
TH-500 - Air Terminal Dimensions

6" to 16" Case Sizes

Dimensions are in inches

High Performance Single Duct - Basic Unit

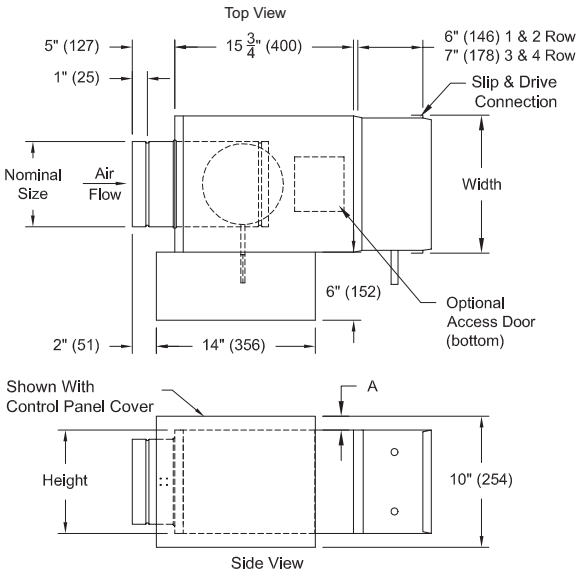
Model TH506 - *6" Inlet* Model TH512 - *12" Inlet*
Model TH508 - *8" Inlet* Model TH514 - *14" Inlet*
Model TH510 - *10" Inlet* Model TH516 - *16" Inlet*



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*

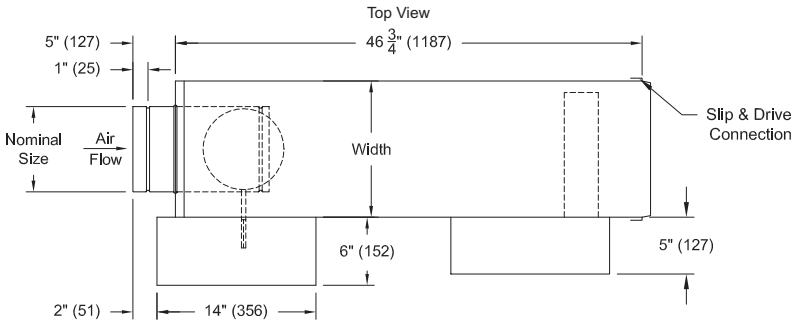


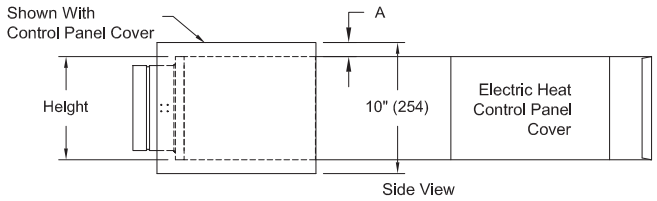
Model Number	Nominal Size In. (mm)	Height In. (mm)	Width In. (mm)	Dim. A In. (mm)	Unit Weight with			
					1R HW Coil	2R HW Coil	3R HW Coil	4R HW Coil
TH506	6 Dia. (152)	8 (203)	12 (305)	2 (51)	16.7 (7.6)	17.7 (8)	21.2 (9.6)	22.5 (10.2)
TH508	8 Dia. (203)	10 (254)	12 (305)	1 (25)	20 (9.1)	21.6 (9.8)	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*

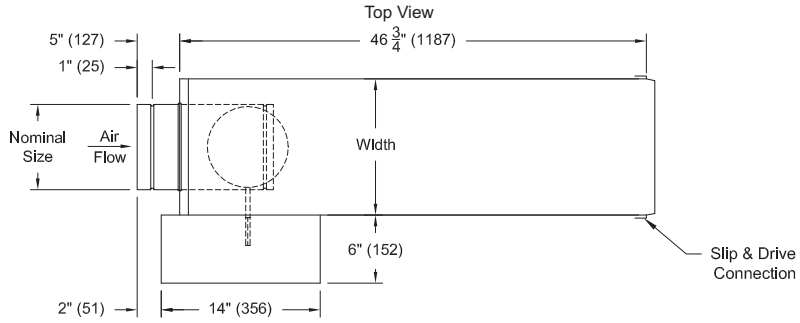


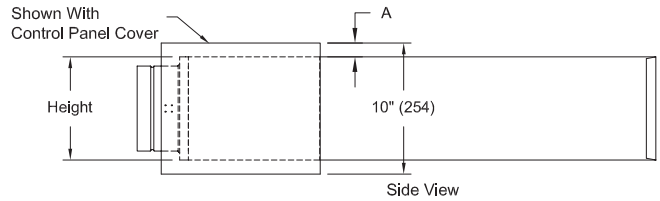


Model Number	Nominal Size In. (mm)	Height In. (mm)	Width In. (mm)	Dim. A In. (mm)	Unit Weight Lbs Kg
TH506	6 Dia. (152)	8 (203)	12 (305)	2 (51)	38 (17)
TH508	8 Dia. (203)	10 (254)	12 (305)	1 (25)	43 (20)
TH510	10 Dia. (254)	12 1/2 (318)	14 (356)	-	50 (23)
TH512	12 Dia. (305)	15 (381)	16 (406)	-	59 (27)
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*



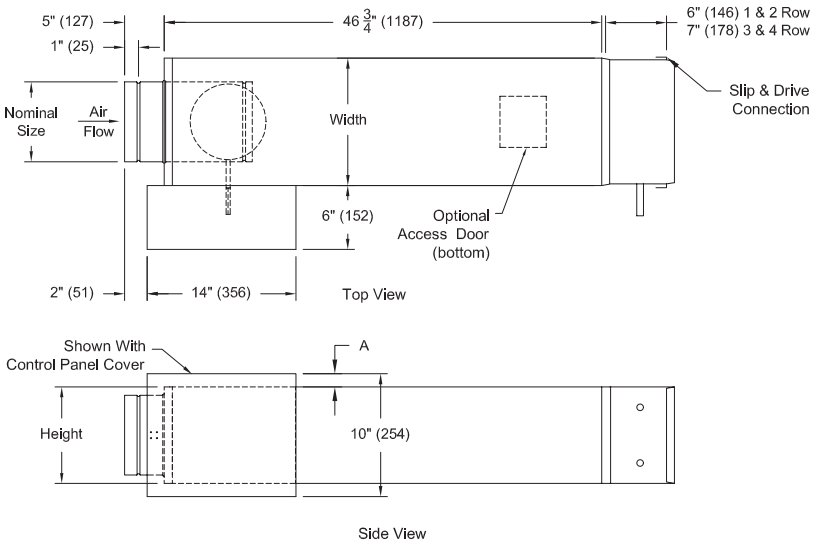


Model Number	Nominal Size In. (mm)	Height In. (mm)	Width In. (mm)	Dim. A In. (mm)	Unit Weight Lbs. (Kg)
TH506	6 Dia. (152)	8 (203)	12 (305)	2 (51)	24 (11)
TH508	8 Dia. (203)	10 (254)	12 (305)	1 (25)	28 (13)
TH510	10 Dia. (254)	12 1/2 (318)	14 (356)	-	34 (15)
TH512	12 Dia. (305)	15 (381)	16 (406)	-	41 (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*

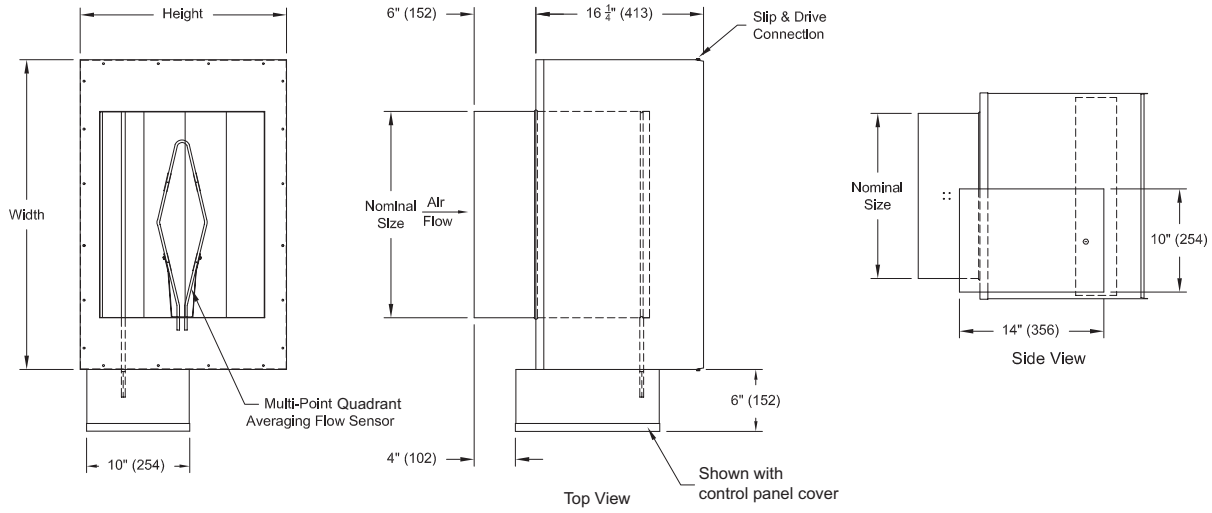


Model Number	Nominal Size In. (mm)	Height In. (mm)	Width In. (mm)	Dim. A In. (mm)	Unit Weight with 1R HW Coil	2R HW Coil	3R HW Coil	4R HW Coil
TH506	6 Dia. (152)	8 (203)	12 (305)	2 (51)	29 lbs 13 kg)	30 lbs (14 kg)	33 lbs (15 kg)	35 lbs (16 kg)
TH508	8 Dia. (203)	10 (254)	12 (305)	1 (25)	33 lbs (15 kg)	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" x16" & 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*

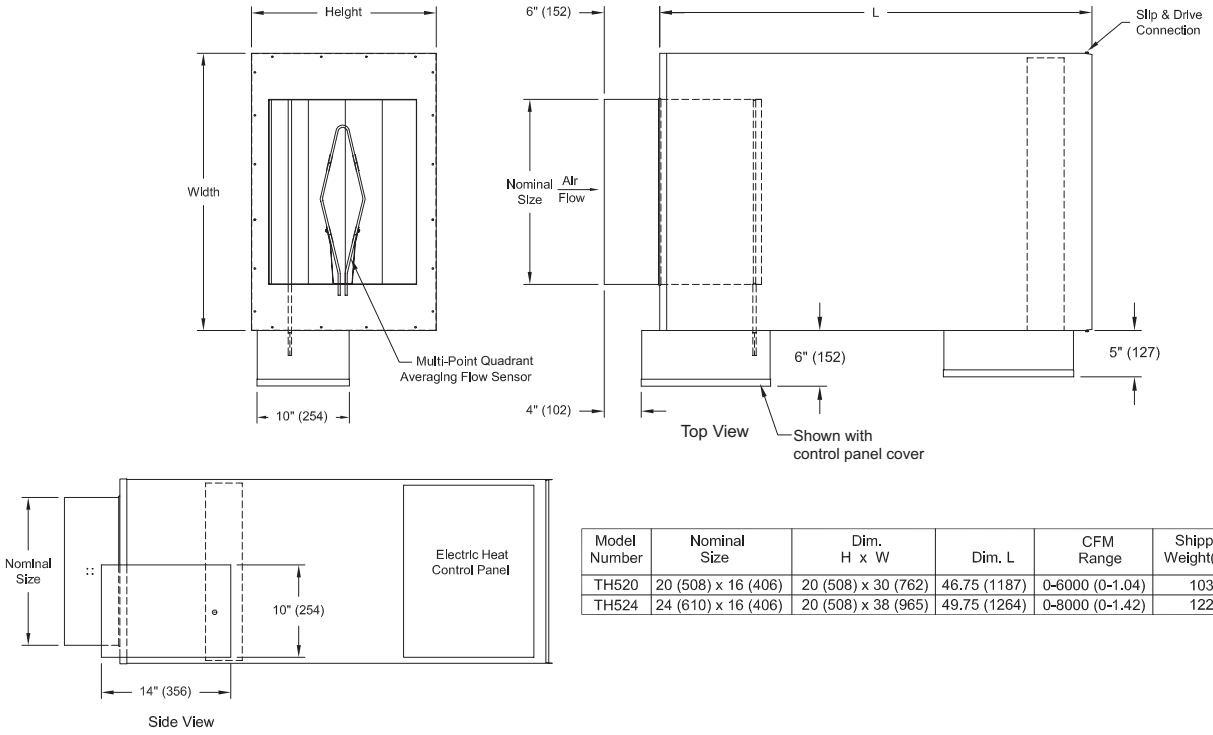


Model Number	Nominal Size	Dim. H x W	CFM Range	Shipping Weight(Lbs)(Kg)
TH520	20 (508) x 16 (406)	20 (508) x 30 (762)	0-6000 (0-1.04)	47 (21.4)
TH524	24 (610) x 16 (406)	20 (508) x 38 (965)	0-8000 (0-1.42)	58 (26.3)

TH-500 - Air Terminal Dimensions

High Performance Single Duct - With Electric Heat

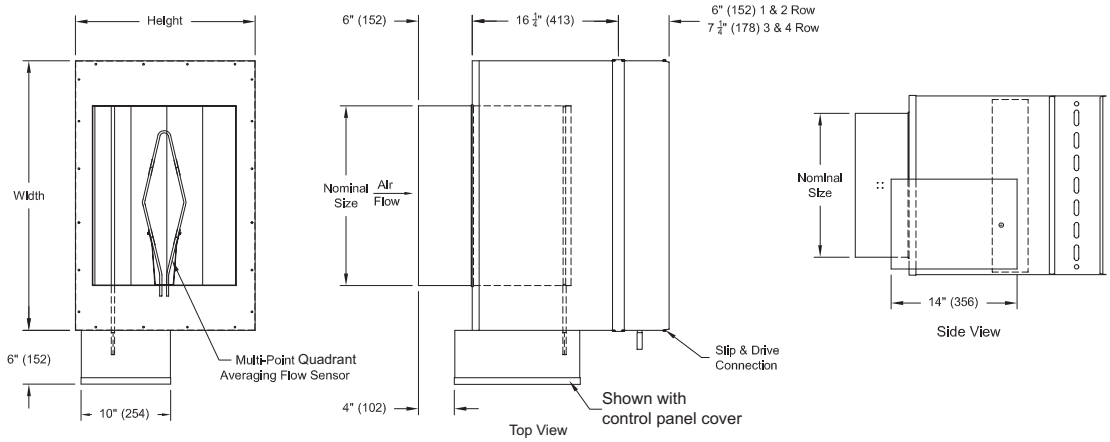
Model TH520 - *20" x 16" Rectangular Inlet*
Model TH524 - *24" x 16" Rectangular Inlet*



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)

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)

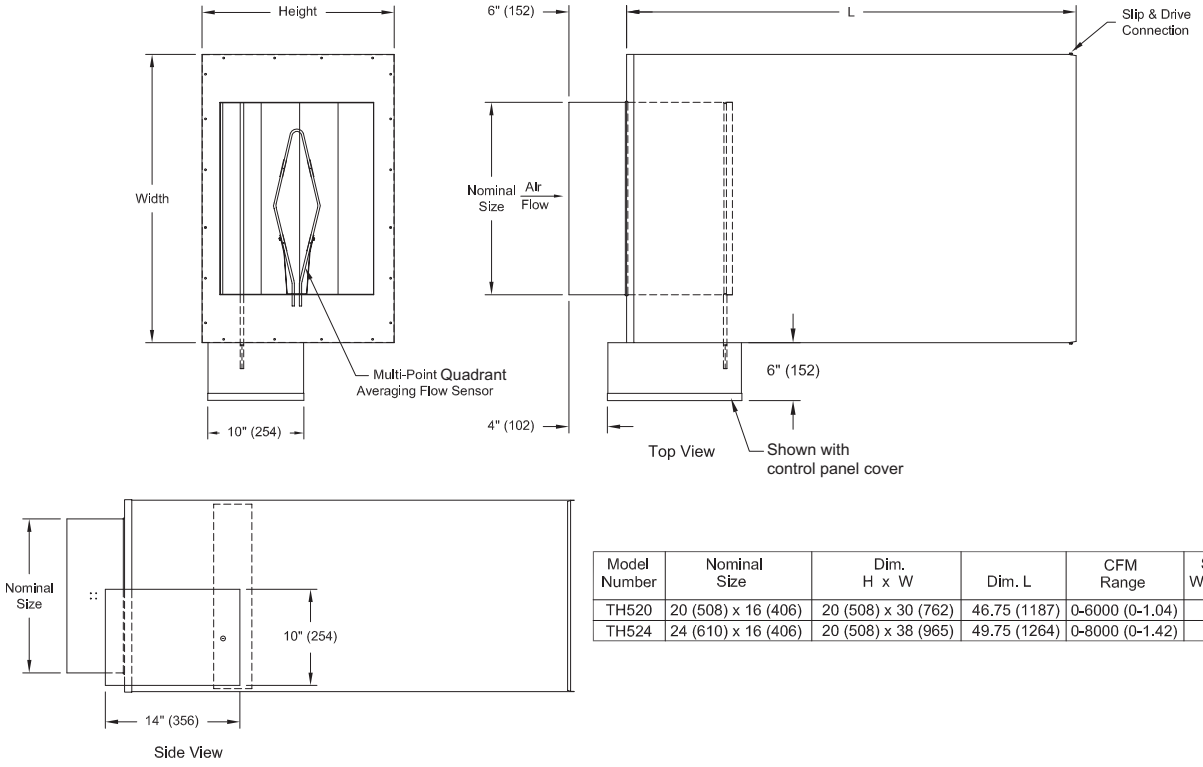
Weight* with 1R HW Coil	1R HW Inlet Tube Diameter	Weight* with 2R HW Coil	2R HW Inlet Tube Diameter	Weight* with 3R HW Coil	3R HW Inlet Tube Diameter	Weight* with 4R HW Coil	4R HW Inlet Tube Diameter
64.1 lbs (29 kg)	7/8 (22)	72.2 lbs (33 kg)	7/8 (22)	78.3 lbs (36 kg)	1 1/8 (28.6)	85.7 lbs (39 kg)	1 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

TH-500 - Air Terminal Dimensions

High Performance Single Duct - With Integral Sound Attenuator

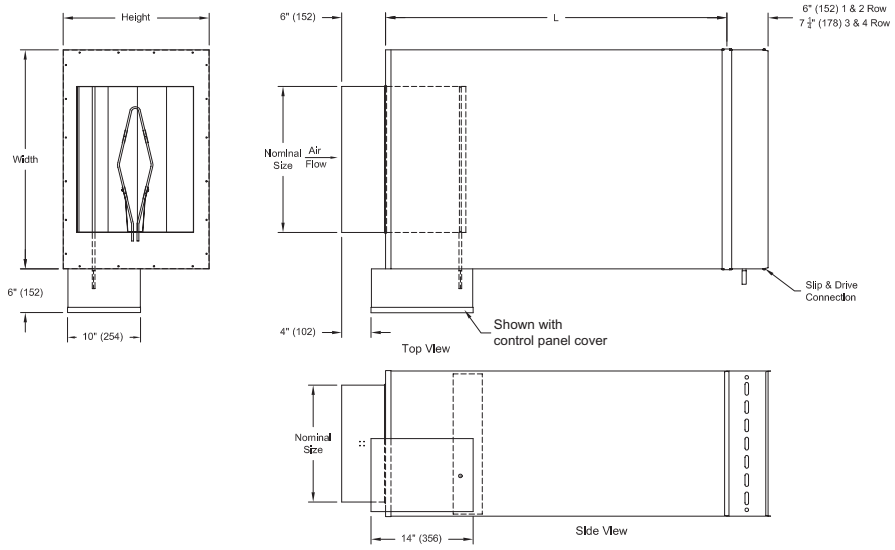
Model TH520 - *20" x 16" Rectangular Inlet*
Model TH524 - *24" x 16" Rectangular Inlet*



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)

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 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)

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 kWs 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*

$kW = \frac{BTU/hr}{3413}$	$dT = \frac{kW \times 3413}{CFM \times 1.085^*}$	$kW = \frac{CFM \times dT \times 1.085^*}{3413}$
$CFM = \frac{kW \times 3413}{dT \times 1.085^*}$	$CFM = \frac{kW \times 3413}{dT \times 1.085^*}$	

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*

TH-500 - Radiated Sound Power at Min., .5", & .75" Wg

Unit Size	Outlet Ps in. H20	CFM (L/s)		Min Ps in. H20 (Pa)		Min Ps: Octave Band Sound Power, Lw, dB						Min Ps: NC1 ARI 885-90	Min Ps: NC2 ARI 885-98	Inlet Pressure, Ps=0.5 inches of water (125 Pa): Octave Band Sound Power, Lw, dB						Inlet Pressure, Ps=0.5 inches of water (125 Pa): NC1 ARI 885-90	Inlet Pressure, Ps=0.5 inches of water (125 Pa): NC2 ARI 885-98	Inlet Pressure, Ps=0.75 inches of water (185 Pa): Octave Band Sound Power, Lw, dB						Inlet Pressure, Ps=0.75 inches of water (185 Pa): NC1 ARI 885-90	Inlet Pressure, Ps=0.75 inches of water (185 Pa): NC2 ARI 885-98
						2	3	4	5	6	7			2	3	4	5	6	7			2	3	4	5	6	7		
		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	-	-
		250	**(118)**	**0.059**	**(14.8)**	**43**	**36**	**26**	**23**	**22**	**15**	-	-	**50**	**40**	**32**	**27**	**23**	**18**	-	-	**52**	**42**	**36**	**30**	**25**	**22**	-	-
506	**0.25**	300	(142)	0.071	(17.6)	45	38	29	26	25	19	-	-	52	41	35	29	25	20	-	-	54	45	40	32	29	24	-	-
6 inch		**400**	**(189)**	**0.104**	**(25.8)**	**51**	**41**	**34**	**31**	**31**	**22**	-	-	**54**	**45**	**39**	**33**	**31**	**23**	-	-	**56**	**48**	**43**	**36**	**33**	**27**	-	-
		450	(212)	0.125	(31.0)	51	43	36	34	33	24	-	-	54	47	40	36	35	25	-	-	56	50	44	38	35	28	-	-
		500	**(236)**	**0.136**	**(33.9)**	**52**	**45**	**39**	**36**	**36**	**26**	-	-	**55**	**48**	**42**	**37**	**36**	**27**	-	-	**57**	**51**	**45**	**39**	**37**	**30**	-	-
		600	(283)	0.169	(42.1)	52	49	44	41	41	31	-	-	55	51	45	41	42	32	-	-	58	54	47	42	42	33	-	22
		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	37	31	24	21	-	-
		500	**(236)**	**0.046**	**(11.4)**	**47**	**39**	**26**	**24**	**19**	**18**	-	-	**53**	**43**	**36**	**30**	**23**	**19**	-	-	**55**	**46**	**39**	**33**	**26**	**22**	-	-
508		600	(283)	0.064	(15.9)	48	41	29	27	21	18	-	-	54	44	37	33	25	20	-	-	57	48	40	35	28	23	-	-
8 inch	**0.25**	**700**	**(330)**	**0.090**	**(22.4)**	**50**	**43**	**33**	**31**	**23**	**20**	-	-	**56**	**46**	**40**	**35**	**27**	**21**	-	-	**58**	**50**	**42**	**37**	**30**	**25**	-	-
		800	(378)	0.101	(25.2)	53	45	37	36	26	21	-	-	57	48	42	37	29	23	-	-	60	51	44	39	32	27	-	22
		900	**(425)**	**0.110**	**(27.4)**	**55**	**48**	**41**	**40**	**29**	**23**	-	-	**59**	**50**	**44**	**40**	**32**	**25**	-	**21**	**61**	**53**	**46**	**41**	**34**	**28**	-	**23**
		1000	(472)	0.128	(31.8)	55	50	45	42	32	26	-	-	60	52	46	42	34	27	-	22	62	54	48	44	36	30	21	25
		1100	**(519)**	**0.145**	**(36.0)**	**56**	**51**	**47**	**43**	**35**	**29**	-	**21**	**61**	**53**	**48**	**44**	**37**	**30**	-	**23**	**63**	**55**	**50**	**45**	**38**	**32**	**22**	**26**
		300	(142)	0.009	(2.2)	48	34	20	16	15	13	-	-	49	36	23	19	17	15	-	-	51	39	32	25	21	19	-	-
		400	**(189)**	**0.012**	**(2.9)**	**51**	**36**	**25**	**22**	**19**	**19**	-	-	**52**	**42**	**34**	**28**	**24**	**19**	-	-	**54**	**45**	**37**	**32**	**27**	**21**	-	-
		600	(283)	0.015	(3.8)	52	37	27	24	19	19	-	-	54	44	37	31	26	19	-	-	56	48	41	35	30	22	-	-
510		**800**	**(378)**	**0.039**	**(9.6)**	**53**	**39**	**30**	**27**	**20**	**19**	-	-	**55**	**46**	**39**	**35**	**29**	**20**	-	-	**57**	**50**	**43**	**38**	**32**	**23**	-	-
10 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	-	-
		1200	**(566)**	**0.078**	**(19.4)**	**55**	**45**	**37**	**34**	**27**	**21**	-	-	**59**	**51**	**45**	**41**	**34**	**24**	-	**21**	**60**	**53**	**46**	**42**	**36**	**27**	-	**22**
		1400	(661)	0.109	(27.2)	55	48	42	39	31	23	-	-	62	54	48	44	37	28	21	25	64	55	48	45	38	30	23	27
		1600	**(755)**	**0.133**	**(33.1)**	**59**	**51**	**47**	**44**	**35**	**27**	-	**21**	**63**	**56**	**51**	**47**	**40**	**32**	**22**	**26**	**65**	**57**	**51**	**47**	**40**	**33**	**25**	**29**
		1700	(802)	0.151	(37.7)	61	53	49	46	37	30	-	23	65	58	53	50	42	33	25	29	66	59	54	51	43	35	26	30
		450	**(212)**	**0.022**	**(5.5)**	**51**	**35**	**22**	**19**	**15**	**13**	-	-	**53**	**41**	**30**	**22**	**19**	**16**	-	-	**54**	**43**	**33**	**26**	**20**	**19**	-	-
		800	(378)	0.031	(7.7)	54	39	29	24	19	18	-	-	56	46	38	31	27	21	-	-	57	49	42	34	29	24	-	-
		1000	**(472)**	**0.037**	**(9.3)**	**55**	**41**	**32**	**26**	**20**	**18**	-	-	**56**	**48**	**40**	**33**	**29**	**23**	-	-	**58**	**50**	**44**	**36**	**31**	**25**	-	-
512		1200	(566)	0.044	(10.9)	56	44	35	28	22	19	-	-	57	49	42	35	31	24	-	-	58	51	45	38	33	27	-	-
12 inch	**0.25**	**1450**	**(684)**	**0.054**	**(13.5)**	**56**	**46**	**38**	**31**	**25**	**20**	-	-	**58**	**50**	**44**	**38**	**34**	**27**	-	-	**59**	**52**	**47**	**40**	**36**	**29**	-	**21**
		1700	(802)	0.074	(18.5)	57	48	42	34	28	22	-	-	59	51	47	40	37	29	-	21	61	53	49	42	38	31	-	23
		1950	**(920)**	**0.095**	**(23.6)**	**58**	**51**	**46**	**37**	**32**	**25**	-	-	**61**	**53**	**50**	**43**	**39**	**32**	**21**	**24**	**62**	**55**	**51**	**44**	**40**	**34**	**22**	**25**
		2200	(1038)	0.115	(28.7)	59	52	49	41	36	28	-	23	63	55	53	45	41	34	24	27	64	57	54	46	43	36	25	29
		2500	**(1180)**	**0.172**	**(42.8)**	**60**	**54**	**51**	**45**	**38**	**30**	**22**	**25**	**64**	**57**	**55**	**47**	**43**	**36**	**26**	**30**	**65**	**59**	**56**	**48**	**45**	**38**	**27**	**31**
		550	(260)	0.002	(0.5)	50	33	26	19	15	14	-	-	54	35	28	22	19	17	-	-	54	37	30	26	22	20	-	-
		925	**(437)**	**0.004**	**(1.0)**	**51**	**36**	**29**	**22**	**18**	**16**	-	-	**56**	**40**	**35**	**30**	**25**	**21**	-	-	**57**	**42**	**38**	**32**	**28**	**23**	-	-
		1300	(614)	0.024	(6.1)	54	40	31	26	22	19	-	-	59	49	44	38	36	34	-	21	59	51	45	38	37	34	-	21
514		**1600**	**(755)**	**0.042**	**(10.6)**	**54**	**43**	**34**	**28**	**25**	**20**	-	-	**60**	**50**	**44**	**40**	**37**	**34**	-	**22**	**61**	**53**	**45**	**41**	**38**	**34**	-	**23**
14 inch	**0.25**	1900	(897)	0.061	(15.1)	55	46	39	32	28	22	-	-	61	52	45	41	38	35	-	23	62	53	46	41	38	36	21	25
		2200	**(1038)**	**0.079**	**(19.6)**	**55**	**49**	**44**	**36**	**31**	**24**	-	-	**62**	**53**	**46**	**41**	**39**	**35**	**21**	**25**	**62**	**54**	**47**	**41**	**40**	**36**	**21**	**25**
		2600	(1227)	0.103	(25.6)	57	52	46	40	35	28	-	-	62	55	47	43	41	36	21	25	62	56	47	43	41	36	21	25
		3000	**(1416)**	**0.127**	**(31.5)**	**59**	**55**	**49**	**44**	**38**	**32**	-	**24**	**63**	**58**	**50**	**45**	**43**	**38**	**24**	**27**	**64**	**59**	**50**	**46**	**43**	**38**	**25**	**28**
		3250	(1534)	0.138	(34.4)	60	57	53	46	40	34	24	27	64	60	54	48	44	39	26	29	65	60	55	49	45	40	26	30
		750	**(354)**	**0.004**	**(0.9)**	**51**	**36**	**27**	**22**	**16**	**13**	-	-	**54**	**39**	**30**	**24**	**19**	**17**	-	-	**54**	**41**	**33**	**28**	**21**	**19**	-	-
		1100	(519)	0.015	(3.8)	53	40	31	25	20	17	-	-	56	45	36	29	24	20	-	-	56	47	39	32	26	22	-	-
		1500	**(708)**	**0.026**	**(6.5)**	**55**	**45**	**35**	**28**	**24**	**21**	-	-	**58**	**51**	**41**	**35**	**31**	**26**	-	-	**58**	**53**	**44**	**38**	**33**	**28**	-	**21**
516		1800	(850)	0.035	(8.7)	56	46	37	31	27	23	-	-	59	52	42	36	33	29	-	21	59	54	45	39	35	30	-	22
16 inch	**0.25**	**2400**	**(1133)**	**0.058**	**(14.4)**	**57**	**48**	**41**	**36**	**33**	**29**	-	-	**60**	**53**	**44**	**40**	**37**	**33**	-	**22**	**60**	**55**	**47**	**42**	**38**	**34**	-	**24**
		3200	(1510)	0.094	(23.5)	59	53	48	42	39	36	-	22	61	55	49	44	40	37	-	24	62	57	51	46	41	38	22	26
		3600	**(1699)**	**0.113**	**(28.1)**	**60**	**55**	**52**	**45**	**41**	**38**	**23**	**26**	**62**	**57**	**52**	**46**	**42**	**39**	**23**	**26**	**63**	**59**	**53**	**48**	**43**	**40**	**25**	**28**
		4000	(1888)	0.131	(32.7)	61	57	54	47	43	40	25	29	64	59	54	49	45	42	25	29	65	60	55	50	46	42	26	30
		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**	**30**	**33**
		1100	(519)	0.006	(1.5)	53	39	29	26	23	18	-	-	54	44	33	29	26	21	-	-	55	46	34	30	29	24	-	-
		1600	**(755)**	**0.013**	**(3.3)**	**55**	**43**	**35**	**34**	**29**	**22**	-	-	**56**	**49**	**42**	**38**	**31**	**28**	-	-	**57**	**52**	**45**	**40**	**33**	**30**	-	-
		1900	(897)	0.018	(4.5)	56	47	40	40	34	27	-	-	57	53	49	45	41	35	-	23	58	56	51	47	41	35	22	25
520		**2500**	**(1180)**	**0.031**	**(7.7)**	**57**	**51**	**45**	**45**	**39**	**32**	-	-	**59**	**57**	**53**	**48**	**43**	**37**	**24**	**27**	**60**	**58**	**54**	**49**	**43**	**37**	**25**	**29**
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
		3900	**(1841)**	**0.076**	**(18.9)**	**61**	**60**	**55**	**53**	**46**	**41**	**26**	**30**	**64**	**64**	**61**	**54**	**47**	**43**	**33**	**36**	**65**	**64**	**61**	**56**	**49**	**43**	**33**	**36**
		4600	(2171)	0.106	(26.4)	63	63	57	56	49	44	29	33	66	64	63	57	50	45	35	38	67	64	63	58	52	46	35	38
		5300	**(2502)**	**0.140**	**(34.9)**	**65**	**64**	**58**	**57**	**53**	**47**	**31**	**34**	**67**	**67**	**65**	**60**	**54**	**47**	**37**	**41**	**70**	**67**	**65**	**60**	**56**	**49**	**37**	**41**
		6200	(2926)	0.200	(49.7)	67	66	60	59	57	50	33	37	69	68	67	62	58	51	39	43	71	69	68	63	58	52	41	44
		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	38	36	30	24	-	-	57	50	45	38	32	25	-	-	58	52	48	39	35	28	-	22
		2000	**(944)**	**0.014**	**(3.5)**	**56**	**46**	**42**	**42**	**32**	**27**	-	-	**59**	**55**	**50**	**43**	**35**	**28**	**21**	**24**	**60**	**57**	**53**	**47**	**39**	**32**	**24**	**27**
524		3000	(1416)	0.031	(7.7)	59	53	50	51	41	35	23	24	63	59	56	51	42	35	27	31	64	62	59	53	45	39	31	34
24x16 inch	**0.25**	**4000**	**(1888)**	**0.056**	**(13.9)**	**62**	**59**	**56**	**56**	**48**	**42**	**28**	**31**	**66**	**64**	**62**	**58**	**49**	**42**	**34**	**37**	**68**	**65**	**63**	**59**	**51**	**45**	**35**	**38**
		5000	(2360)	0.087	(21.7)	66	64	59	60	53	47	32	34	70	68	66	63	55	48	38	42	72	68	67	63	56	50	39	43
		6000	**(2832)**	**0.125**	**(31.1)**	**69**	**66**	**61**	**61**	**56**	**50**	**34**	**37**	**73**	**70**	**68**	**63**	**58**	**51**	**41**	**44**	**74**	**71**	**69**	**64**	**59**	**53**	**42**	**45**
		6500	(3068)	0.152	(37.8)	70	67	62	61	57	51	34	38	74	72	69	65	59	53	42	45	75	72	70	66	61	55	43	46
		7200	**(3398)**	**0.186**	**(46.4)**	**72**	**68**	**64**	**63**	**58**	**53**	**36**	**39**	**76**	**73**	**71**	**67**	**60**	**55**	**44**	**47**	**76**	**74**	**72**	**68**	**62**	**57**	**45**	**48**

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.

TH-500 - Radiated Sound Power at 1", 2", & 3" Wg

Unit Size	Outlet Ps in. H2O	CFM (L/s)		Min Ps in. H2O (Pa)		Inlet Pressure, Ps=1 inch of water (250 Pa)								Inlet Pressure, Ps=2 inches of water (500 Pa)								Inlet Pressure, Ps=3 inches of water (750 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 6 inch	0.25	100	(47)	0.015	(3.8)	45	36	25	24	21	15	-	-	47	37	34	31	31	28	-	-	48	38	36	38	40	38	-	-
		200	(94)	0.038	(9.5)	51	43	39	31	28	24	-	-	53	43	41	38	37	35	-	-	54	44	41	41	42	41	-	-
		250	(118)	0.059	(14.8)	53	45	41	32	30	26	-	-	55	47	43	39	38	37	-	-	56	48	44	43	43	42	-	-
		300	(142)	0.071	(17.6)	55	48	45	35	32	28	-	-	56	48	46	41	40	38	-	-	57	49	46	44	44	43	-	-
		400	(189)	0.104	(25.8)	56	52	46	38	36	30	-	-	58	54	49	43	41	39	-	23	59	55	50	46	45	44	21	24
		450	(212)	0.125	(31.0)	57	53	46	40	37	31	-	21	59	55	50	44	42	39	21	24	60	56	52	47	46	44	23	26
		500	(236)	0.136	(33.9)	59	55	47	41	39	32	-	24	60	57	52	45	43	39	23	26	61	58	54	48	46	45	25	29
		600	(283)	0.169	(42.1)	60	57	48	43	43	34	22	26	63	61	54	47	44	40	27	31	64	62	57	49	47	46	29	32
508 8 inch	0.25	200	(94)	0.021	(5.3)	51	41	35	30	23	20	-	-	52	43	38	35	29	23	-	-	53	45	39	36	32	27	-	-
		300	(142)	0.029	(7.2)	55	46	42	36	28	24	-	-	55	46	43	40	35	33	-	-	56	47	45	42	40	38	-	-
		500	(236)	0.046	(11.4)	57	50	42	37	30	25	-	-	59	54	49	44	38	35	-	23	59	55	51	47	42	40	22	25
		600	(283)	0.064	(15.9)	59	52	43	38	31	27	-	21	61	57	51	45	39	36	22	26	61	59	54	49	43	41	25	29
		700	(330)	0.090	(22.4)	61	53	45	40	33	28	-	23	63	60	53	47	40	37	26	29	64	61	56	51	44	41	27	31
		800	(378)	0.101	(25.2)	62	54	46	41	35	30	21	25	65	61	54	48	41	37	27	31	67	64	58	52	45	42	31	34
		900	(425)	0.110	(27.4)	64	55	48	43	37	32	23	27	66	62	55	49	43	38	28	32	69	65	59	53	46	42	32	35
		1000	(472)	0.128	(31.8)	65	57	50	45	39	33	25	29	68	63	56	50	44	39	29	33	70	66	60	54	47	42	33	37
		1100	(519)	0.145	(36.0)	66	58	51	47	40	35	26	30	69	64	57	52	45	40	31	34	71	67	61	56	49	44	34	38
510 10 inch	0.25	300	(142)	0.009	(2.2)	52	41	35	28	23	20	-	-	54	45	40	32	26	22	-	-	56	47	42	35	29	26	-	-
		400	(189)	0.012	(2.9)	55	48	41	35	31	23	-	-	57	49	43	40	37	32	-	-	58	49	44	42	40	39	-	-
		600	(283)	0.015	(3.8)	57	50	45	38	33	25	-	-	59	55	49	43	39	35	-	24	60	56	50	45	42	40	21	25
		800	(378)	0.039	(9.6)	58	52	46	41	35	26	-	-	61	60	53	46	42	38	26	29	63	62	56	49	45	42	28	32
		1000	(472)	0.046	(11.5)	59	53	47	42	36	28	-	21	62	63	56	49	44	40	29	33	64	67	60	52	47	45	34	38
		1200	(566)	0.078	(19.4)	61	54	48	43	37	29	-	23	63	65	57	51	46	42	32	35	65	69	62	54	49	49	37	40
		1400	(661)	0.109	(27.2)	65	57	49	45	39	31	25	29	70	66	58	52	47	44	33	37	71	70	63	56	50	49	38	41
		1600	(755)	0.133	(33.1)	67	58	51	47	41	34	27	31	71	66	59	53	49	46	33	37	72	71	63	56	51	50	39	42
		1700	(802)	0.151	(37.7)	68	60	54	52	44	36	29	32	72	67	60	55	50	48	34	38	73	72	64	58	53	51	40	44
512 12 inch	0.25	450	(212)	0.022	(5.5)	55	46	40	31	25	20	-	-	58	50	42	36	30	25	-	-	59	50	45	40	35	30	-	21
		800	(378)	0.031	(7.7)	59	52	46	37	31	26	-	21	61	57	54	47	41	38	25	29	61	59	57	52	47	44	29	32
		1000	(472)	0.037	(9.3)	59	53	48	39	32	27	-	22	62	60	57	49	43	38	29	32	63	62	60	55	49	44	32	35
		1200	(566)	0.044	(10.9)	60	54	49	40	34	29	-	23	64	62	58	50	44	39	30	33	65	65	63	56	49	45	35	38
		1450	(684)	0.054	(13.5)	61	54	50	42	37	31	21	24	65	63	59	51	45	40	31	34	66	67	64	57	50	45	36	39
		1700	(802)	0.074	(18.5)	62	56	52	44	40	34	23	26	66	64	60	52	46	41	32	35	68	69	65	57	51	45	37	41
		1950	(920)	0.095	(23.6)	63	57	53	46	42	36	24	27	67	65	61	53	48	42	33	36	69	70	65	58	51	46	38	41
		2200	(1038)	0.115	(28.7)	65	59	55	48	44	38	26	30	69	66	62	55	50	44	34	37	71	70	66	59	53	47	38	42
		2500	(1180)	0.172	(42.8)	66	61	57	50	47	40	29	32	70	68	64	57	52	46	36	39	72	71	68	62	55	48	41	44
514 14 inch	0.25	550	(260)	0.002	(0.5)	55	39	32	28	24	22	-	-	58	43	37	32	28	24	-	-	60	46	41	37	30	26	-	22
		925	(437)	0.004	(1.0)	57	43	40	33	30	25	-	-	60	49	45	39	34	29	-	22	62	53	48	42	38	31	21	25
		1300	(614)	0.024	(6.1)	60	52	45	39	37	35	-	22	63	60	52	46	42	40	26	29	65	65	57	50	45	45	32	35
		1600	(755)	0.042	(10.6)	61	53	45	41	38	35	-	23	64	62	53	47	44	41	28	32	66	67	58	51	47	45	34	38
		1900	(897)	0.061	(15.1)	62	54	46	41	39	36	21	25	65	63	54	48	45	42	29	33	68	68	59	52	49	46	35	39
		2200	(1038)	0.079	(19.6)	62	56	47	42	41	37	21	25	66	64	55	49	47	43	31	34	69	69	60	54	50	47	37	40
		2600	(1227)	0.103	(25.6)	63	57	48	43	41	38	22	26	68	65	57	51	48	45	32	35	70	70	62	55	52	48	38	41
		3000	(1416)	0.127	(31.5)	65	60	50	46	43	39	26	29	69	66	58	52	49	45	33	37	71	70	63	55	53	49	38	41
		3250	(1534)	0.138	(34.4)	66	61	55	50	45	41	27	31	70	67	60	54	50	46	34	38	73	71	64	57	55	50	39	42
516 16 inch	0.25	750	(354)	0.004	(0.9)	55	43	35	30	24	20	-	-	57	47	42	36	31	26	-	-	59	51	47	40	36	30	-	21
		1100	(519)	0.015	(3.8)	57	49	41	34	29	24	-	-	59	53	49	44	38	32	-	23	61	56	51	49	40	35	22	25
		1500	(708)	0.026	(6.5)	59	55	46	40	36	30	-	24	61	59	55	50	45	42	26	30	63	61	57	53	49	47	29	32
		1800	(850)	0.035	(8.7)	60	56	47	41	37	32	21	25	63	61	57	52	47	44	29	32	65	64	60	56	52	49	32	35
		2400	(1133)	0.058	(14.4)	60	57	49	43	40	35	22	26	65	65	60	54	51	48	32	35	68	67	64	60	58	56	36	39
		3200	(1510)	0.094	(23.5)	63	59	53	47	43	39	25	28	68	66	62	57	55	52	34	37	70	70	66	63	63	62	38	42
		3600	(1699)	0.113	(28.1)	64	60	55	49	44	41	26	30	69	67	63	58	56	53	35	38	71	70	67	64	63	62	39	43
		4000	(1888)	0.131	(32.7)	66	61	55	50	47	43	27	31	70	68	63	59	57	54	35	39	72	71	67	65	64	63	39	43
		4400	(2077)	0.153	(38.0)	67	63	58	52	48	45	30	33	71	69	65	60	59	56	37	41	73	72	69	66	65	64	42	45
520 20x16 inch	0.25	1100	(519)	0.006	(1.5)	55	48	36	32	30	25	-	-	57	52	40	36	34	30	-	-	58	54	44	39	37	32	-	22
		1600	(755)	0.013	(3.3)	57	54	47	42	34	31	-	22	58	57	49	46	39	37	22	26	59	58	53	49	42	39	24	27
		1900	(897)	0.018	(4.5)	58	58	54	49	41	36	25	29	60	63	61	57	49	44	33	36	61	65	65	61	54	50	37	41
		2500	(1180)	0.031	(7.7)	60	60	56	51	43	37	27	31	63	65	63	58	51	45	35	38	65	68	67	62	55	51	39	43
		3200	(1510)	0.051	(12.7)	63	61	58	54	47	41	30	33	67	67	65	60	53	47	37	41	68	70	68	63	57	52	41	44
		3900	(1841)	0.076	(18.9)	67	64	61	57	51	43	33	36	69	69	66	62	55	49	38	42	70	72	69	65	58	53	42	45
		4600	(2171)	0.106	(26.4)	68	65	63	59	53	46	35	38	71	70	67	65	58	51	39	43	72	74	70	66	60	55	43	46
		5300	(2502)	0.140	(34.9)	73	68	65	61	58	50	37	41	73	71	68	65	60	53	41	44	74	75	70	68	62	57	44	47
		6200	(2926)	0.200	(49.7)	74	70	69	65	60	53	42	45	75	72	70	66	62	55	43	46	76	75	72	69	64	59	45	48
524 24x16 inch	0.25	1250	(590)	0.006	(1.4)	57	48	40	36	32	26	-	-	58	52	44	39	37	32	-	-	59	55	49	42	39	35	-	24
		1600	(755)	0.009	(2.3)	59	55	52	43	39	31	23	26	60	58	55	47	44	39	26	30	61	60	58	52	48	41	30	33
		2000	(944)	0.014	(3.5)	61	60	57	51	43	37	29	32	62	63	61	56	51	47	33	36	63	65	65	60	56	52	37	41
		3000	(1416)	0.031	(7.7)	66	64	61	56	48	42	33	36	67	66	65	60	54	49	37	41	69	69	68	63	58	53	41	44
		4000	(1888)	0.056	(13.9)	70	66	65	59	54	48	37	41	72	70	68	63	57	52	41	44	74	72	71	66	60	55	44	47
		5000	(2360)	0.087	(21.7)	74	69	68	63	58	52	41	44	77	72	72	67	61	54	45	48	79	75	74	69	63	57	47	50
		6000	(2832)	0.125	(31.1)	76	71	70	64	61	55	43	46	81	75	74	69	63	57	47	50	83	77	76	72	65	59	49	53
		6500	(3068)	0.152	(37.8)	77	73	71	67	62	56	44	47	82	77	75	72	65	59	48	51	84	79	77	74	67	60	50	54
		7200	(3398)	0.186	(46.4)	78	75	72	69	63	58	45	48	83	79	76	74	67	60	49	53	85	81	79	76	69	62	53	56

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.

TH-500 - Discharge Sound Power at Min., .5" & .75" Wg

Unit Size	Outlet Ps in. H20	CFM (L/s)		Min Ps in. H20 (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 885-90	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		
		100	**(47)**	**0.015**	**(3.8)**	**52**	**38**	**24**	**21**	**20**	**17**	-	-	**53**	**48**	**37**	**37**	**33**	**28**	-	-	**54**	**52**	**43**	**40**	**37**	**34**	-	-
		200	(94)	0.038	(9.5)	54	43	35	31	23	19	-	-	56	50	40	41	35	31	-	-	57	54	45	44	39	36	-	-
		250	**(118)**	**0.059**	**(14.8)**	**55**	**45**	**38**	**35**	**27**	**23**	-	-	**58**	**51**	**43**	**42**	**37**	**33**	-	-	**59**	**56**	**47**	**45**	**40**	**37**	-	-
506	**0.25**	300	(142)	0.071	(17.6)	56	48	44	39	30	25	-	-	60	53	45	45	38	35	-	-	60	57	49	47	41	38	-	-
6 inch		**400**	**(189)**	**0.104**	**(25.8)**	**57**	**54**	**50**	**46**	**37**	**33**	-	-	**61**	**58**	**50**	**50**	**42**	**40**	-	-	**63**	**61**	**53**	**52**	**45**	**42**	-	-
		450	(212)	0.125	(31.0)	59	56	52	48	40	37	-	-	61	59	53	52	44	42	-	-	63	62	55	54	47	43	-	-
		500	**(236)**	**0.136**	**(33.9)**	**60**	**59**	**54**	**52**	**44**	**40**	-	-	**62**	**61**	**55**	**54**	**47**	**44**	-	-	**64**	**64**	**57**	**56**	**48**	**45**	-	**22**
		600	(283)	0.169	(42.1)	62	63	58	57	49	46	-	21	64	65	59	58	51	48	-	24	66	67	61	59	52	49	22	26
		200	**(94)**	**0.021**	**(5.3)**	**52**	**40**	**36**	**34**	**28**	**25**	-	-	**55**	**50**	**45**	**40**	**34**	**30**	-	-	**56**	**53**	**49**	**43**	**37**	**34**	-	-
		300	(142)	0.029	(7.2)	53	42	38	36	30	27	-	-	57	54	47	43	38	33	-	-	58	57	51	46	41	37	-	-
		500	**(236)**	**0.046**	**(11.4)**	**54**	**46**	**40**	**38**	**31**	**29**	-	-	**60**	**58**	**51**	**48**	**41**	**37**	-	-	**62**	**61**	**53**	**51**	**45**	**40**	-	-
508		600	(283)	0.064	(15.9)	56	49	45	42	33	30	-	-	62	60	53	51	43	39	-	-	64	62	55	53	46	42	-	-
8 inch	**0.25**	**700**	**(330)**	**0.090**	**(22.4)**	**57**	**53**	**49**	**46**	**38**	**31**	-	-	**64**	**62**	**55**	**54**	**45**	**40**	-	-	**65**	**64**	**57**	**55**	**48**	**43**	-	**22**
		800	(378)	0.101	(25.2)	59	56	53	50	43	36	-	-	65	63	57	56	47	43	-	-	67	65	59	58	50	45	-	21
		900	**(425)**	**0.110**	**(27.4)**	**61**	**59**	**56**	**54**	**47**	**41**	-	-	**67**	**65**	**59**	**58**	**50**	**45**	-	**21**	**68**	**67**	**61**	**60**	**52**	**47**	**22**	**24**
		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
		1100	**(519)**	**0.145**	**(36.0)**	**63**	**62**	**60**	**58**	**55**	**49**	-	-	**69**	**68**	**63**	**62**	**56**	**50**	**24**	**25**	**71**	**69**	**65**	**64**	**56**	**51**	**25**	**26**
		300	(142)	0.009	(2.2)	51	46	37	35	28	26	-	-	53	54	46	44	38	34	-	-	54	56	48	46	42	38	-	-
		400	**(189)**	**0.012**	**(2.9)**	**52**	**48**	**39**	**38**	**30**	**28**	-	-	**54**	**55**	**48**	**47**	**42**	**37**	-	-	**55**	**58**	**51**	**50**	**45**	**42**	-	-
		600	(283)	0.015	(3.8)	53	52	42	39	31	29	-	-	56	56	50	49	43	38	-	-	58	60	53	52	46	43	-	-
510		**800**	**(378)**	**0.039**	**(9.6)**	**57**	**54**	**43**	**40**	**33**	**30**	-	-	**58**	**58**	**52**	**50**	**44**	**39**	-	-	**60**	**61**	**55**	**54**	**47**	**43**	-	-
10 inch	**0.25**	1000	(472)	0.046	(11.5)	59	59	50	49	41	37	-	-	61	61	54	53	45	41	-	-	62	63	57	56	49	45	-	-
		1200	**(566)**	**0.078**	**(19.4)**	**60**	**63**	**55**	**54**	**46**	**43**	-	-	**64**	**65**	**58**	**56**	**48**	**44**	-	**21**	**65**	**66**	**60**	**58**	**51**	**47**	**21**	**22**
		1400	(661)	0.109	(27.2)	62	65	59	58	50	47	-	21	67	69	62	60	52	48	25	26	68	70	63	61	54	50	26	27
		1600	**(755)**	**0.133**	**(33.1)**	**64**	**67**	**62**	**62**	**54**	**51**	**22**	**24**	**70**	**71**	**66**	**64**	**56**	**52**	**27**	**28**	**71**	**72**	**66**	**65**	**57**	**53**	**28**	**29**
		1700	(802)	0.151	(37.7)	65	68	64	63	56	53	24	25	71	72	68	66	58	55	28	29	72	73	69	68	60	56	29	31
		450	**(212)**	**0.022**	**(5.5)**	**56**	**49**	**44**	**40**	**30**	**28**	-	-	**57**	**51**	**48**	**41**	**31**	**30**	-	-	**59**	**54**	**52**	**45**	**35**	**34**	-	-
		800	(378)	0.031	(7.7)	58	52	47	43	33	33	-	-	59	59	51	45	35	33	-	-	61	62	55	49	39	37	-	-
		1000	**(472)**	**0.037**	**(9.3)**	**59**	**55**	**49**	**46**	**35**	**35**	-	-	**61**	**61**	**53**	**48**	**38**	**37**	-	-	**62**	**63**	**57**	**51**	**42**	**40**	-	-
512		1200	(566)	0.044	(10.9)	60	57	52	49	39	39	-	-	63	63	55	51	42	40	-	-	64	64	58	53	45	43	-	-
12 inch	**0.25**	**1450**	**(684)**	**0.054**	**(13.5)**	**62**	**60**	**55**	**52**	**44**	**43**	-	-	**65**	**65**	**58**	**54**	**46**	**44**	-	**21**	**65**	**66**	**61**	**56**	**49**	**47**	**21**	**22**
		1700	(802)	0.074	(18.5)	64	63	59	56	49	47	-	-	67	67	61	57	51	48	22	24	67	68	63	59	53	50	24	25
		1950	**(920)**	**0.095**	**(23.6)**	**66**	**65**	**62**	**59**	**53**	**51**	-	**21**	**68**	**69**	**64**	**61**	**55**	**52**	**25**	**26**	**68**	**69**	**65**	**61**	**56**	**53**	**25**	**26**
		2200	(1038)	0.115	(28.7)	68	67	64	61	57	55	22	24	69	71	67	63	59	56	27	28	70	71	68	64	60	57	27	28
		2500	**(1180)**	**0.172**	**(42.8)**	**70**	**69**	**66**	**63**	**59**	**57**	**25**	**26**	**71**	**72**	**69**	**65**	**61**	**58**	**28**	**29**	**72**	**72**	**70**	**66**	**62**	**59**	**28**	**29**
		550	(260)	0.002	(0.5)	56	48	43	39	30	29	-	-	57	50	45	41	32	30	-	-	58	51	47	43	35	32	-	-
		925	**(437)**	**0.004**	**(1.0)**	**61**	**54**	**50**	**44**	**38**	**32**	-	-	**62**	**55**	**51**	**46**	**40**	**39**	-	-	**63**	**56**	**52**	**48**	**43**	**41**	-	-
		1300	(614)	0.024	(6.1)	67	67	60	56	53	46	22	24	68	67	60	58	54	46	22	24	69	67	61	58	55	50	22	24
514		**1600**	**(755)**	**0.042**	**(10.6)**	**68**	**67**	**64**	**61**	**56**	**49**	**22**	**24**	**69**	**68**	**64**	**61**	**57**	**50**	**24**	**25**	**69**	**68**	**64**	**61**	**58**	**52**	**24**	**25**
14 inch	**0.25**	1900	(897)	0.061	(15.1)	68	68	65	61	58	52	24	25	69	68	66	62	59	53	24	25	69	69	66	63	59	54	25	26
		2200	**(1038)**	**0.079**	**(19.6)**	**69**	**69**	**66**	**64**	**60**	**55**	**25**	**26**	**70**	**69**	**67**	**64**	**60**	**55**	**25**	**26**	**70**	**70**	**67**	**64**	**60**	**56**	**26**	**27**
		2600	(1227)	0.103	(25.6)	71	72	68	65	60	57	28	29	71	73	68	65	61	57	29	31	72	73	68	66	61	57	29	31
		3000	**(1416)**	**0.127**	**(31.5)**	**74**	**73**	**71**	**67**	**61**	**59**	**29**	**31**	**74**	**74**	**72**	**67**	**61**	**59**	**31**	**32**	**74**	**75**	**72**	**68**	**62**	**59**	**32**	**33**
		3250	(1534)	0.138	(34.4)	75	74	72	69	63	60	31	32	76	75	73	70	64	62	32	33	76	75	73	71	65	64	32	33
		750	**(354)**	**0.004**	**(0.9)**	**58**	**56**	**50**	**48**	**45**	**41**	-	-	**60**	**58**	**53**	**52**	**46**	**42**	-	-	**61**	**59**	**54**	**53**	**48**	**44**	-	-
		1100	(519)	0.015	(3.8)	60	61	55	53	47	43	-	-	62	62	58	54	48	43	-	-	63	64	59	55	50	45	-	-
		1500	**(708)**	**0.026**	**(6.5)**	**62**	**63**	**59**	**55**	**49**	**44**	-	-	**66**	**66**	**61**	**55**	**49**	**44**	**21**	**22**	**67**	**68**	**64**	**58**	**52**	**46**	**24**	**25**
516		1800	(850)	0.035	(8.7)	64	65	62	57	52	45	-	21	68	68	62	57	52	46	24	25	69	70	66	59	54	48	26	27
16 inch	**0.25**	**2400**	**(1133)**	**0.058**	**(14.4)**	**68**	**68**	**64**	**60**	**55**	**49**	**24**	**25**	**72**	**71**	**65**	**60**	**55**	**51**	**27**	**28**	**72**	**72**	**67**	**62**	**56**	**52**	**28**	**29**
		3200	(1510)	0.094	(23.5)	72	70	65	61	56	54	26	27	73	73	69	63	58	55	29	31	74	73	69	64	59	55	29	31
		3600	**(1699)**	**0.113**	**(28.1)**	**73**	**71**	**67**	**62**	**57**	**54**	**27**	**28**	**73**	**73**	**70**	**64**	**59**	**56**	**29**	**31**	**74**	**73**	**71**	**65**	**60**	**56**	**29**	**31**
		4000	(1888)	0.131	(32.7)	74	73	72	65	58	55	29	31	74	73	72	65	59	56	29	31	74	74	73	66	61	57	31	32
		4400	**(2077)**	**0.153**	**(38.0)**	**75**	**74**	**73**	**67**	**60**	**57**	**31**	**32**	**76**	**75**	**74**	**68**	**62**	**59**	**32**	**33**	**76**	**75**	**75**	**69**	**63**	**60**	**32**	**33**
		1100	(519)	0.006	(1.5)	59	57	53	50	47	41	-	-	60	58	55	52	49	43	-	-	61	59	56	52	51	45	-	-
		1600	**(755)**	**0.013**	**(3.3)**	**63**	**62**	**60**	**53**	**49**	**43**	-	-	**64**	**63**	**61**	**55**	**51**	**46**	-	-	**65**	**64**	**62**	**56**	**54**	**49**	-	-
		1900	(897)	0.018	(4.5)	67	68	62	57	51	45	24	25	67	69	65	60	55	49	25	26	68	70	67	62	58	53	26	27
520		**2500**	**(1180)**	**0.031**	**(7.7)**	**68**	**68**	**64**	**59**	**54**	**48**	**24**	**25**	**71**	**73**	**69**	**63**	**59**	**53**	**29**	**31**	**71**	**74**	**70**	**65**	**61**	**56**	**31**	**32**
20x16 inch	**0.25**	3200	(1510)	0.051	(12.7)	69	68	65	61	56	51	24	25	73	76	72	67	62	57	33	34	74	77	74	69	64	59	34	35
		3900	**(1841)**	**0.076**	**(18.9)**	**70**	**70**	**67**	**63**	**58**	**53**	**26**	**27**	**76**	**78**	**74**	**70**	**65**	**61**	**35**	**37**	**76**	**79**	**76**	**71**	**67**	**62**	**37**	**38**
		4600	(2171)	0.106	(26.4)	73	73	70	66	61	56	29	31	76	79	76	71	67	63	37	38	77	80	77	72	68	64	38	39
		5300	**(2502)**	**0.140**	**(34.9)**	**75**	**77**	**74**	**70**	**65**	**59**	**34**	**35**	**77**	**79**	**76**	**71**	**69**	**63**	**37**	**38**	**78**	**80**	**78**	**73**	**70**	**65**	**38**	**39**
		6200	(2926)	0.200	(49.7)	77	79	76	72	68	62	37	38	79	80	77	73	70	65	38	39	79	81	79	74	71	66	39	40
		1250	**(590)**	**0.006**	**(1.4)**	**58**	**56**	**54**	**50**	**44**	**38**	-	-	**60**	**58**	**56**	**53**	**46**	**40**	-	-	**61**	**59**	**57**	**54**	**48**	**42**	-	-
		1600	(755)	0.009	(2.3)	62	61	59	51	48	41	-	-	64	63	60	55	50	43	-	-	65	64	60	56	52	44	-	-
		2000	**(944)**	**0.014**	**(3.5)**	**67**	**69**	**65**	**57**	**53**	**47**	**25**	**26**	**68**	**70**	**65**	**59**	**55**	**48**	**26**	**27**	**69**	**72**	**68**	**62**	**59**	**53**	**28**	**29**
524		3000	(1416)	0.031	(7.7)	72	73	68	62	57	51	29	31	73	76	71	65	61	55	33	34	73	76	73	67	63	58	33	34
24x16 inch	**0.25**	**4000**	**(1888)**	**0.056**	**(13.9)**	**73**	**73**	**68**	**64**	**59**	**55**	**29**	**31**	**77**	**79**	**75**	**69**	**65**	**61**	**37**	**38**	**77**	**79**	**76**	**71**	**67**	**62**	**37**	**38**
		5000	(2360)	0.087	(21.7)	75	74	69	67	62	59	31	32	80	80	77	72	68	64	38	39	80	81	78	73	69	65	39	40
		6000	**(2832)**	**0.125**	**(31.1)**	**79**	**75**	**71**	**69**	**68**	**61**	**32**	**33**	**82**	**81**	**77**	**73**	**69**	**64**	**39**	**40**	**83**	**82**	**78**	**74**	**70**	**66**	**40**	**41**
		6500	(3068)	0.152	(37.8)	80	76	73	72	70	69	33	34	83	82	78	75	72	70	40	41	83	82	79	76	74	71	40	41
		7200	**(3398)**	**0.186**	**(46.4)**	**82**	**78**	**75**	**79**	**74**	**73**	**35**	**37**	**84**	**83**	**79**	**79**	**75**	**74**	**41**	**42**	**84**	**83**	**80**	**79**	**76**	**75**	**41**	**42**

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 1", 2", & 3" Wg

Unit Size	Outlet Ps in. H20	CFM (L/s)		Min Ps in. H20 (Pa)		Inlet Pressure, Ps=1 inch of water (250 Pa)								Inlet Pressure, Ps=2 inches of water (500 Pa)								Inlet Pressure, Ps=3 inches of water (750 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		
		100	(47)	0.015	(3.8)	55	56	48	44	41	40	-	-	55	56	53	50	51	49	-	-	56	57	54	54	55	53	-	-
		200	(94)	0.038	(9.5)	58	58	51	47	42	40	-	-	59	59	57	54	52	50	-	-	60	59	59	57	55	53	-	-
		250	(118)	0.059	(14.8)	60	59	52	48	43	41	-	-	61	60	58	55	53	50	-	-	62	61	60	58	55	54	-	-
506		300	(142)	0.071	(17.6)	61	61	54	50	44	42	-	-	63	62	60	56	53	51	-	-	64	63	63	59	56	54	-	21
6 inch	0.25	400	(189)	0.104	(25.8)	63	64	57	53	47	44	-	22	66	67	65	59	54	52	22	26	67	68	65	61	57	55	24	27
		450	(212)	0.125	(31.0)	64	65	58	55	49	45	-	24	67	67	66	60	55	52	22	26	68	69	66	62	57	56	25	28
		500	(236)	0.136	(33.9)	67	67	60	57	50	47	22	26	68	68	67	61	56	53	24	27	69	70	67	63	59	56	26	29
		600	(283)	0.169	(42.1)	69	68	63	60	53	50	24	27	70	69	68	64	58	55	25	28	71	74	70	65	60	58	31	34
		200	(94)	0.021	(5.3)	58	56	52	47	41	39	-	-	59	57	55	50	46	44	-	-	62	59	57	53	50	48	-	-
		300	(142)	0.029	(7.2)	60	60	54	50	45	42	-	-	61	61	59	55	53	48	-	-	64	63	60	58	58	54	-	21
		500	(236)	0.046	(11.4)	64	63	56	53	48	44	-	21	66	65	62	59	55	50	-	24	68	67	65	62	60	55	22	26
508		600	(283)	0.064	(15.9)	64	65	57	55	49	45	-	24	67	66	63	60	56	51	21	25	70	68	67	63	60	56	24	27
8 inch	0.25	700	(330)	0.090	(22.4)	65	66	59	57	51	46	21	25	68	68	64	61	57	52	24	27	71	69	68	64	61	57	25	28
		800	(378)	0.101	(25.2)	68	67	61	59	52	48	22	24	70	69	65	63	58	53	25	26	72	71	69	66	62	57	27	28
		900	(425)	0.110	(27.4)	70	68	63	61	54	49	24	25	72	71	66	64	59	53	27	28	74	72	70	67	63	58	28	29
		1000	(472)	0.128	(31.8)	71	69	64	63	55	51	25	26	73	72	68	66	60	54	28	29	75	74	71	68	63	59	31	32
		1100	(519)	0.145	(36.0)	72	70	66	65	58	53	26	27	74	73	70	68	61	55	29	31	76	75	72	69	65	60	32	33
		300	(142)	0.009	(2.2)	55	58	50	48	45	40	-	-	57	60	55	53	48	45	-	-	60	62	58	55	52	48	-	-
		400	(189)	0.012	(2.9)	57	61	55	53	47	46	-	-	62	64	60	58	56	54	-	22	65	67	62	61	60	58	22	26
		600	(283)	0.015	(3.8)	61	63	56	55	49	47	-	21	65	67	63	61	57	55	22	26	67	70	66	65	61	59	26	29
510		800	(378)	0.039	(9.6)	63	64	58	57	51	48	-	-	68	70	65	63	58	56	26	27	69	73	69	67	63	60	29	31
10 inch	0.25	1000	(472)	0.046	(11.5)	64	65	59	59	52	49	-	21	70	72	67	65	59	56	28	29	71	75	71	68	63	61	32	33
		1200	(566)	0.078	(19.4)	66	67	62	61	54	50	22	24	72	74	68	66	60	57	31	32	73	77	71	69	64	61	34	35
		1400	(661)	0.109	(27.2)	69	70	64	63	56	52	26	27	73	75	69	67	61	58	32	33	75	79	72	70	65	62	37	38
		1600	(755)	0.133	(33.1)	72	74	67	65	57	54	31	32	74	76	70	68	62	59	33	34	76	79	72	70	65	62	37	38
		1700	(802)	0.151	(37.7)	73	75	70	69	62	58	32	33	76	77	71	70	64	60	34	35	78	80	73	72	67	63	38	39
		450	(212)	0.022	(5.5)	60	56	55	49	40	38	-	-	64	61	59	57	50	47	-	-	66	62	61	59	55	51	-	-
		800	(378)	0.031	(7.7)	62	64	59	53	44	41	-	-	66	69	65	62	57	52	25	26	67	70	66	65	62	57	26	27
		1000	(472)	0.037	(9.3)	63	65	61	54	46	43	-	21	67	71	68	64	58	54	27	28	68	72	70	68	63	58	28	29
512		1200	(566)	0.044	(10.9)	64	66	62	56	49	46	21	22	69	72	70	65	59	55	28	29	69	74	72	70	64	59	31	32
12 inch	0.25	1450	(684)	0.054	(13.5)	65	67	63	58	52	49	22	24	70	73	71	66	61	57	29	31	71	75	74	71	65	61	32	33
		1700	(802)	0.074	(18.5)	67	68	65	60	55	52	24	25	72	74	72	67	62	58	31	32	73	76	75	72	66	62	33	34
		1950	(920)	0.095	(23.6)	68	70	66	62	58	55	26	27	73	75	72	68	63	60	32	33	75	77	76	73	67	63	34	35
		2200	(1038)	0.115	(28.7)	70	71	69	65	61	57	27	28	74	76	73	69	65	61	33	34	76	78	76	74	68	64	35	37
		2500	(1180)	0.172	(42.8)	73	72	71	67	63	60	28	29	76	77	75	70	66	63	34	35	77	79	77	76	69	65	37	38
		550	(260)	0.002	(0.5)	59	52	49	45	36	34	-	-	62	55	51	49	40	38	-	-	64	58	54	50	48	42	-	-
		925	(437)	0.004	(1.0)	64	57	53	50	45	43	-	-	66	61	59	52	49	47	-	-	68	63	61	55	51	48	-	-
		1300	(614)	0.024	(6.1)	69	68	62	58	56	53	24	25	71	73	68	63	59	58	29	31	73	75	70	66	62	60	32	33
514		1600	(755)	0.042	(10.6)	69	69	64	61	58	55	25	26	72	75	69	65	61	59	32	33	74	76	71	67	63	61	33	34
14 inch	0.25	1900	(897)	0.061	(15.1)	70	69	66	63	60	56	25	26	72	76	70	66	62	60	33	34	74	77	72	68	64	62	34	35
		2200	(1038)	0.079	(19.6)	70	71	67	64	60	56	27	28	73	76	71	67	63	60	33	34	75	77	73	69	65	63	34	35
		2600	(1227)	0.103	(25.6)	72	73	69	66	61	57	29	31	74	76	72	68	64	61	33	34	76	78	75	70	66	64	35	37
		3000	(1416)	0.127	(31.5)	74	76	72	69	62	60	33	34	75	77	73	69	65	62	34	35	77	79	76	70	67	65	37	38
		3250	(1534)	0.138	(34.4)	77	76	74	72	67	64	33	34	78	77	75	74	69	65	34	35	79	80	78	75	71	67	38	39
		750	(354)	0.004	(0.9)	62	60	56	54	50	46	-	-	64	62	58	56	52	48	-	-	65	63	60	58	53	50	-	-
		1100	(519)	0.015	(3.8)	64	65	61	57	52	48	-	21	66	67	65	61	58	52	22	24	67	68	66	63	60	55	24	25
		1500	(708)	0.026	(6.5)	68	70	67	61	54	49	26	27	70	74	70	70	64	58	31	32	70	75	73	72	69	63	32	33
516		1800	(850)	0.035	(8.7)	70	71	69	62	56	50	27	28	72	75	71	71	64	59	32	33	72	77	74	75	70	64	34	35
16 inch	0.25	2400	(1133)	0.058	(14.4)	72	73	69	63	58	53	29	31	75	76	73	71	65	60	33	34	77	78	75	76	70	65	35	37
		3200	(1510)	0.094	(23.5)	74	74	70	64	60	56	31	32	76	77	74	71	66	62	34	35	79	79	76	76	71	65	37	38
		3600	(1699)	0.113	(28.1)	74	74	71	65	61	57	31	32	77	78	75	72	67	63	35	37	79	80	78	76	72	66	38	39
		4000	(1888)	0.131	(32.7)	75	75	74	67	62	58	32	33	78	78	76	74	69	64	35	37	80	81	79	78	73	67	39	40
		4400	(2077)	0.153	(38.0)	77	76	75	70	65	61	33	34	80	79	77	76	70	66	37	38	81	82	80	78	74	69	40	41
		1100	(519)	0.006	(1.5)	62	60	57	54	52	47	-	-	66	63	60	57	54	50	-	-	68	66	64	60	58	53	21	22
		1600	(755)	0.013	(3.3)	66	65	62	58	55	50	-	21	70	68	65	61	59	59	24	25	72	70	67	65	63	62	26	27
		1900	(897)	0.018	(4.5)	68	72	69	65	61	56	28	29	73	76	76	74	71	67	33	34	74	79	80	79	76	73	37	38
520		2500	(1180)	0.031	(7.7)	71	75	72	68	64	59	32	33	76	80	78	75	72	68	38	39	77	82	81	79	77	73	40	41
20x16 inch	0.25	3200	(1510)	0.051	(12.7)	74	78	75	70	66	61	35	37	78	82	80	77	74	69	40	41	79	84	83	80	78	74	42	44
		3900	(1841)	0.076	(18.9)	76	80	77	73	68	64	38	39	79	84	82	78	75	71	42	44	81	86	84	81	79	75	45	46
		4600	(2171)	0.106	(26.4)	78	81	79	74	70	66	39	40	81	85	83	79	77	73	44	45	82	87	85	82	80	77	46	47
		5300	(2502)	0.140	(34.9)	78	81	79	74	71	67	39	40	82	86	84	80	78	75	45	46	83	88	86	82	81	79	47	48
		6200	(2926)	0.200	(49.7)	80	82	80	76	72	68	40	41	83	87	85	82	79	77	46	47	84	89	87	84	82	80	48	50
		1250	(590)	0.006	(1.4)	61	60	58	54	50	43	-	-	63	62	60	58	55	46	-	-	65	63	62	60	59	50	-	-
		1600	(755)	0.009	(2.3)	65	65	61	57	53	46	-	21	67	68	65	62	58	52	24	25	69	70	67	65	61	58	26	27
		2000	(944)	0.014	(3.5)	69	73	70	65	62	57	29	31	71	77	76	73	71	69	34	35	73	79	79	78	75	73	37	38
		3000	(1416)	0.031	(7.7)	74	77	75	69	66	61	34	35	76	81	80	75	73	70	39	40	77	83	82	78	77	74	41	42
524		4000	(1888)	0.056	(13.9)	77	80	78	72	68	64	38	39	80	84	83	78	75	72	42	44	82	87	84	80	79	76	46	47
24x16 inch	0.25	5000	(2360)	0.087	(21.7)	80	82	78	73	70	67	40	41	86	86	84	80	77	74	45	46	87	89	86	82	80	78	48	50
		6000	(2832)	0.125	(31.1)	83	83	79	74	71	68	41	42	87	87	85	81	78	75	46	47	89	90	87	83	81	79	50	51
		6500	(3068)	0.152	(37.8)	84	83	80	77	75	72	41	42	88	89	86	82	79	77	48	50	91	90	88	84	82	80	50	51
		7200	(3398)	0.186	(46.4)	85	84	81	80	78	76	42	44	89	89	87	84	81	79	48	50	92	91	89	86	83	81	51	52

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.

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 - Hot Water Coils MBH Selection Data

TH-506 Imperial Units

	GPM	Head Loss (Ft-hd)	CFM 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
	Airside 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
	Airside 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	-
	Airside 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	-
	Airside 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	Head Loss (kPa)	L/s 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
	Airside 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
	Airside 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	-
	Airside 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	-
	Airside 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

TH-500 - Hot Water Coils MBH Selection Data

TH-508 Imperial Units

	GPM	Head Loss (Ft-hd)	CFM 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	Head Loss (kPa)	L/s 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

TH-500 - Hot Water Coils MBH Selection Data

TH-510 Imperial Units

	GPM	Head Loss (Ft-hd)	CFM 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	Head Loss (kPa)	L/s 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

TH-500 - Hot Water Coils MBH Selection Data

TH-512 Imperial Units

	GPM	Head Loss (Ft-hd)	CFM 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	Head Loss (kPa)	L/s 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

TH-500 - Hot Water Coils MBH Selection Data

TH-514 Imperial Units

	GPM	Head Loss (Ft-hd)	CFM 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	Head Loss (kPa)	L/s 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

TH-500 - Hot Water Coils MBH Selection Data

TH-516 Imperial Units

	GPM	Head Loss (Ft-hd)	CFM 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**	**-**
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**	**113.2**	**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	-	-	-
	Airside 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	-	-	-	-	-
	Airside 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	Head Loss (kPa)	L/s 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
	Airside 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	-
	Airside 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	-	-	-
	Airside 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	-	-	-	-	-
	Airside Ps (kPa)		**0.10**	**0.15**	**0.19**	**-**	**-**	**-**	**-**	**-**

Refer to Table-B on Page TH-36 for Metric Notes

TH-500 - Hot Water Coils MBH Selection Data

TH-520 Imperial Units

	GPM	Head Loss (Ft-hd)	CFM 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	Head Loss (kPa)	L/s 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

TH-500 - Hot Water Coils MBH Selection Data

TH-524 Imperial Units

	GPM	Head Loss (Ft-hd)	CFM 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	Head Loss (kPa)	L/s 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

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 = $\frac{\textbf{927 x MBH}}{\textbf{CFM}}$

6. Water Temperature Drop = $\frac{\textbf{2.04 x MBH}}{\textbf{GPM}}$

7. For water valve sizing, contact your METALAIRE representative. For data values other than those listed, interpolate or use the METALAIRE Terminal Selection Program. Contact your METALAIRE 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 = $\frac{\textbf{kW x 579}}{\textbf{air flow in L/s}}$

6. Water Temperature Drop = $\frac{\textbf{kW x 0.17}}{\textbf{water flow in L/s}}$

7. For water valve sizing, contact your METALAIRE representative. For data values other than those listed, interpolate or use the Metal Industries computerized engineering program. Contact your METALAIRE 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.

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WITH THE CHOICE OF OUR PRE-FLITE CATALOG, QUICK SELECT CATALOG, INFOSOURCE CATALOG, INFOSOURCE CD AND OUR WEB SITE, WWW.METALAIRE.COM, YOU PICK THE FORMAT FOR PRODUCT INFORMATION THAT BEST SUITS YOUR AIR DISTRIBUTION DESIGN NEEDS.

PRE-FLIGHT - Product Overview Catalog

The METALAIRE Pre-Flite 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.

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- Complete Guide to Air Distribution Selection

The METALAIRE 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.

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- *Ceiling Diffusers Catalog*
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- *Grilles & Registers Catalog*
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WEBSITE: WWW.METALAIRE.COM

METALAIRE 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.

METAL INDUSTRIES, INC.

METAL*AIRE

Single Duct Air Terminal Units

6/2007

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.

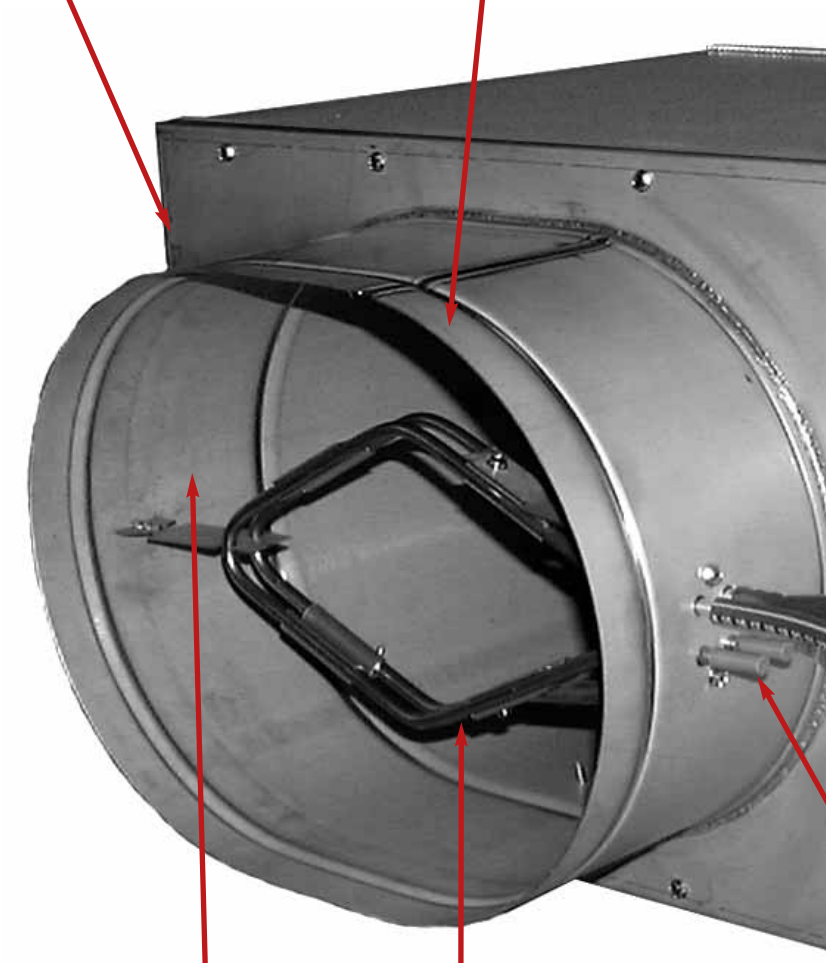
Series TL-500 Air Terminals feature a low leakage single blade damper.

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

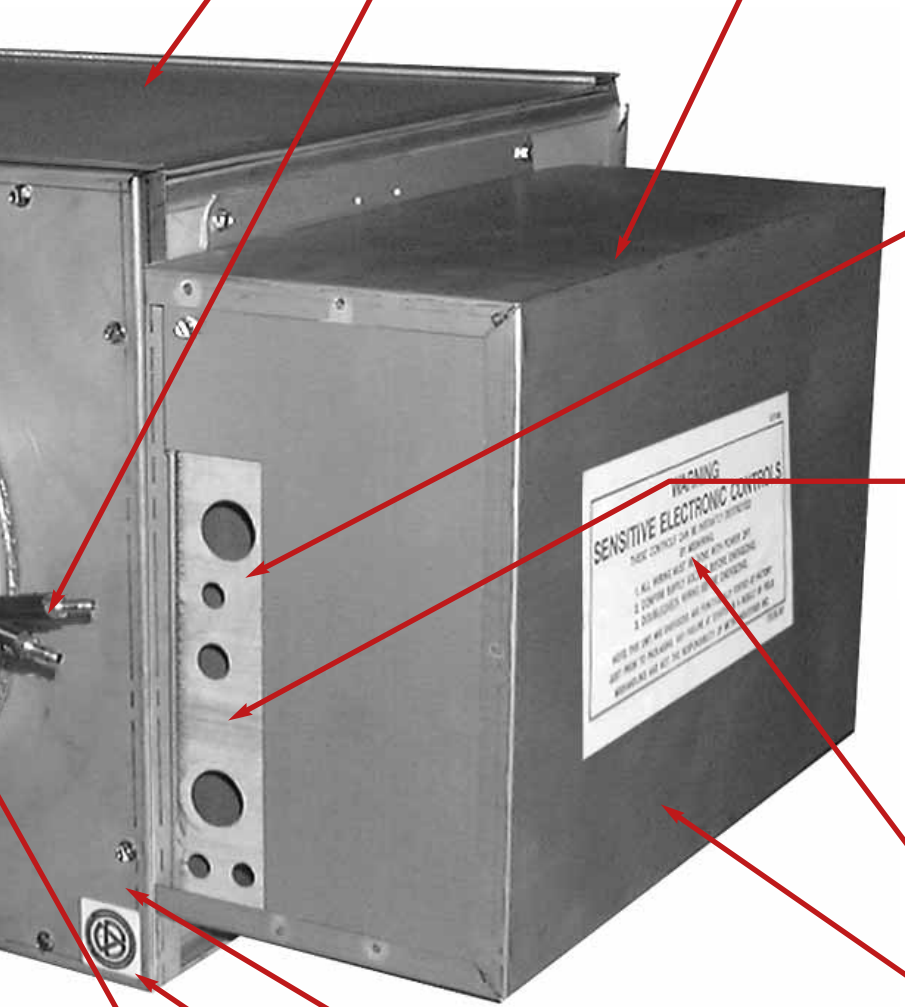
Multiquadrant Averaging Flow Sensor provides an accurate flow signal without requiring an immediate upstream straight duct connection (Shipped standard on all units)

Single Duct Air Terminal Units

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

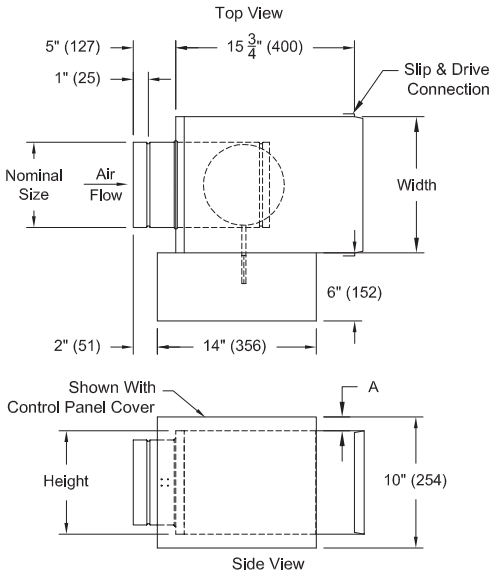
All units are shipped with easy access balancing taps. The extra ports can be used to read CFM (through velocity pressure) directly at the unit

TL-500 - Air Terminal Dimensions

Dimensions are in inches

Low Profile Single Duct - Basic Unit - Round Inlet

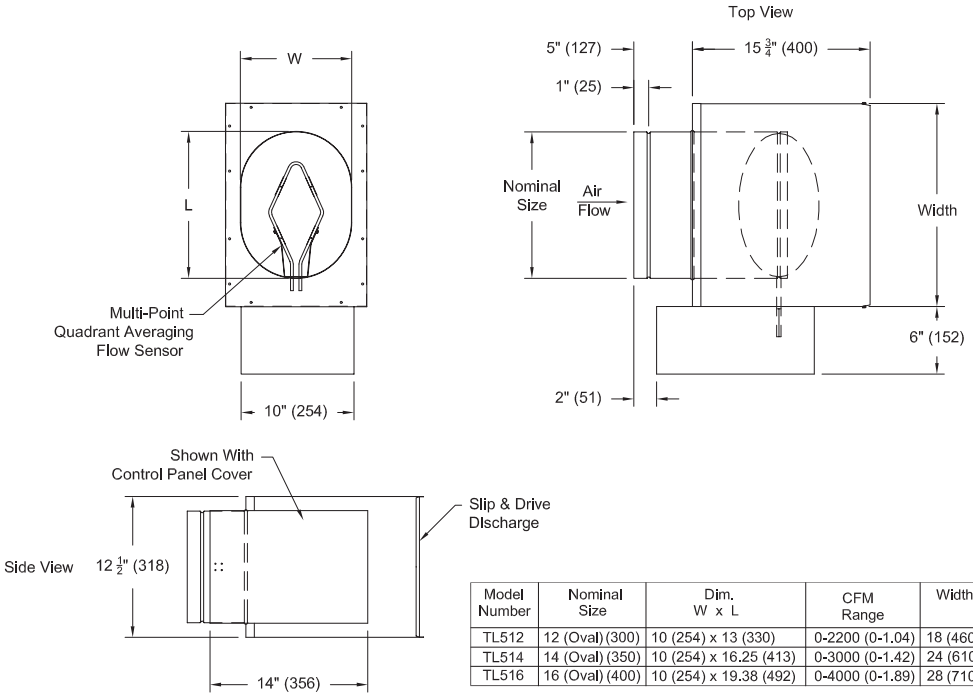
Model TL506 - *6" Round Inlet*
Model TL508 - *8" Round Inlet*
Model TL510 - *10" Round Inlet*



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*

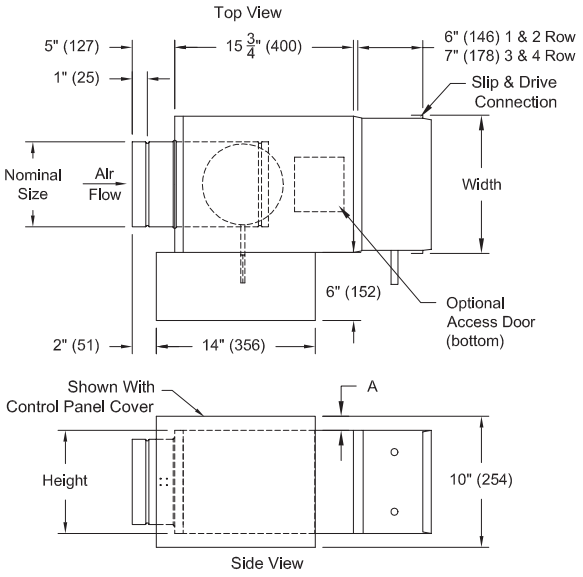


Model Number	Nominal Size	Dim. W x L	CFM Range	Width	Shipping Weight (Lbs)(Kg)
TL512	12 (Oval) (300)	10 (254) x 13 (330)	0-2200 (0-1.04)	18 (460)	23 Lbs (10.4 Kg)
TL514	14 (Oval) (350)	10 (254) x 16.25 (413)	0-3000 (0-1.42)	24 (610)	26 Lbs (11.8 Kg)
TL516	16 (Oval) (400)	10 (254) x 19.38 (492)	0-4000 (0-1.89)	28 (710)	30 Lbs (13.6 Kg)

TL-500 - Air Terminal Dimensions

Low Profile Single Duct - With Hot Water Coils - Round Inlet

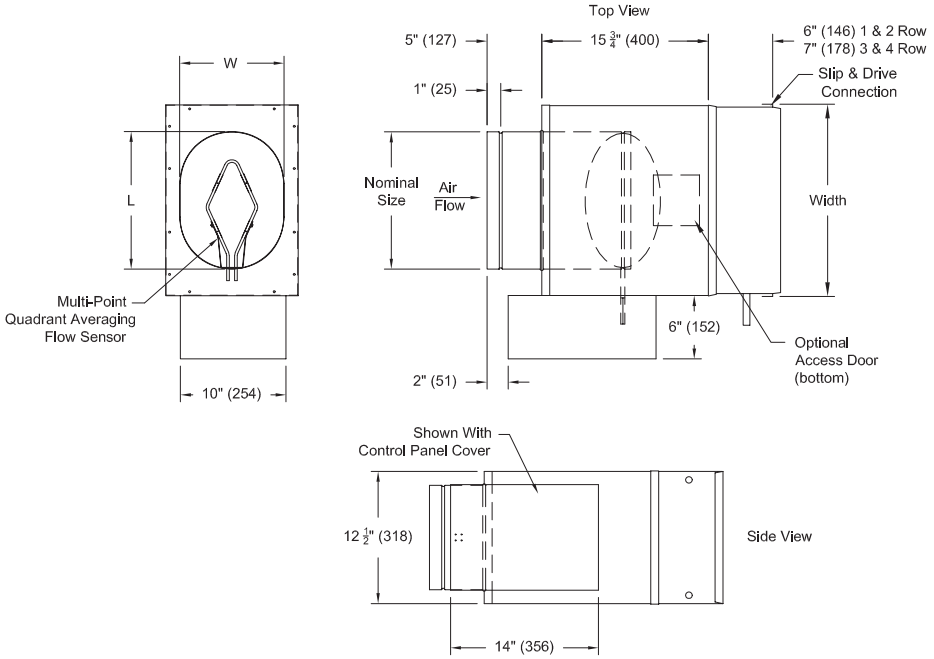
Model TL506 - *6" Round Inlet*
Model TL508 - *8" Round Inlet*
Model TL510 - *10" Round Inlet*



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*

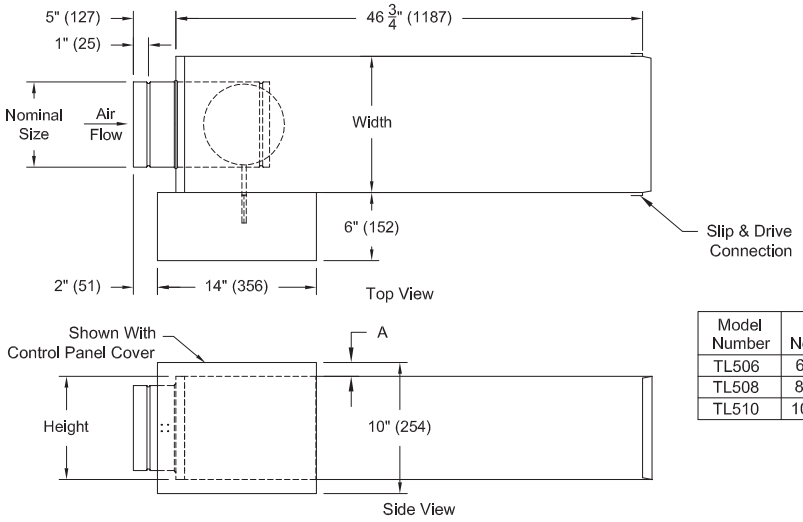


Model Number	Nominal Size	Dim. W x L	CFM Range	Width	Unit Weight with 1R HW Coil	2R HW Coil	3R HW Coil	4R HW Coil
TL512	12 (Oval) (300)	10 (254) x 13 (330)	0-2200 (0-1.04)	18 (460)	31 lbs (14 kg)	34 lbs (15 kg)	40 lbs (18 kg)	43 lbs (19 kg)
TL514	14 (Oval) (350)	10 (254) x 16.25 (413)	0-3000 (0-1.42)	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)

TL-500 - Air Terminal Dimensions

Low Profile Single Duct - Integral Sound Attenuator - Round Inlet

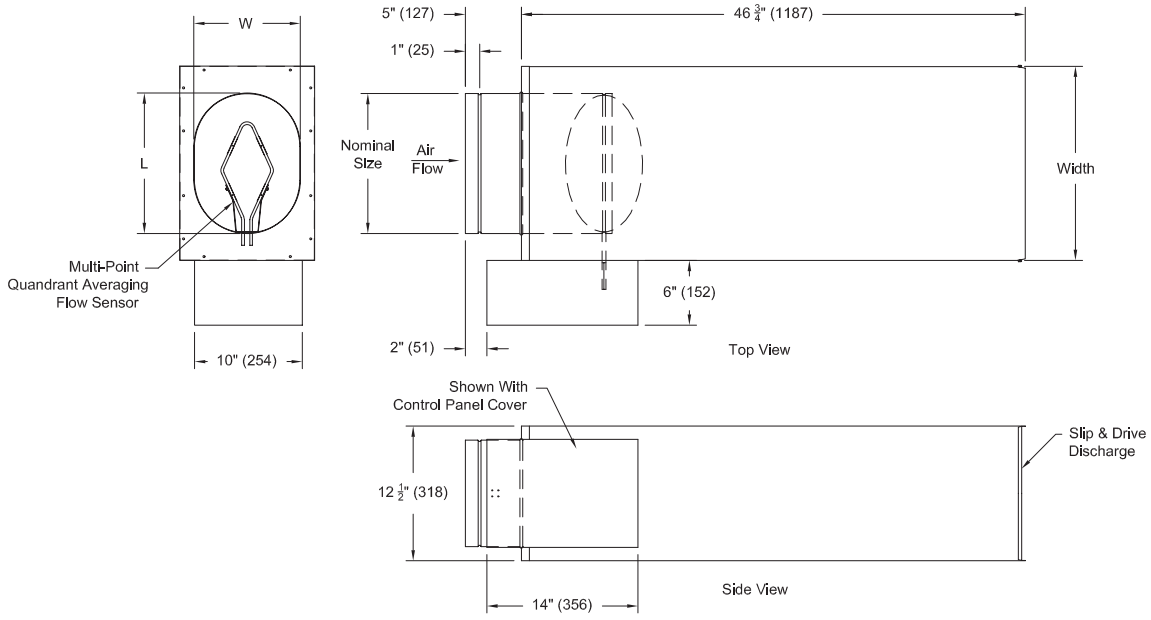
Model TL506 - *6" Round Inlet*
Model TL508 - *8" Round Inlet*
Model TL510 - *10" Round Inlet*



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*

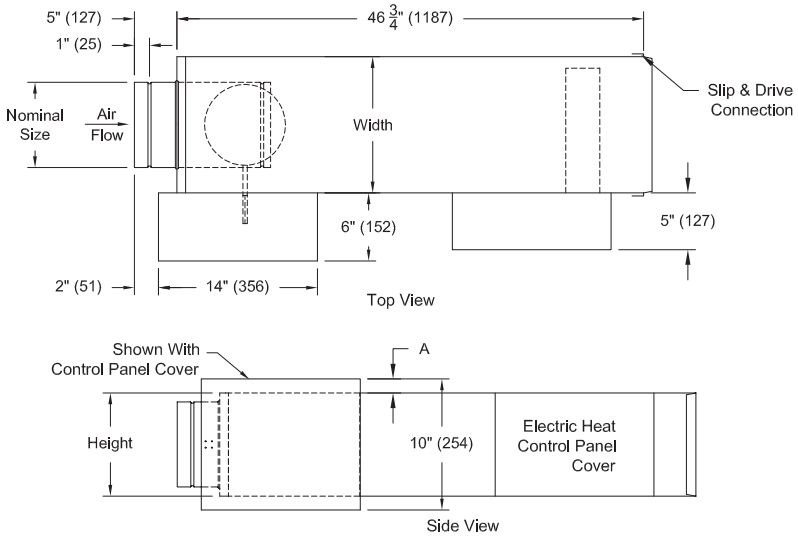


Model Number	Nominal Size	Dim. W x L	CFM Range	Width	Shipping Weight (Lbs)(Kg)
TL512	12 (Oval) (300)	10 (254) x 13 (330)	0-2200 (0-1.04)	18 (460)	41 Lbs (19 Kg)
TL514	14 (Oval) (350)	10 (254) x 16.25 (413)	0-3000 (0-1.42)	24 (610)	47 Lbs (21 Kg)
TL516	16 (Oval) (400)	10 (254) x 19.38 (492)	0-4000 (0-1.89)	28 (710)	54 Lbs (25 Kg)

TL-500 - Air Terminal Dimensions

Low Profile Single Duct - Electric Heat With Integral Sound Attenuator - Round Inlet

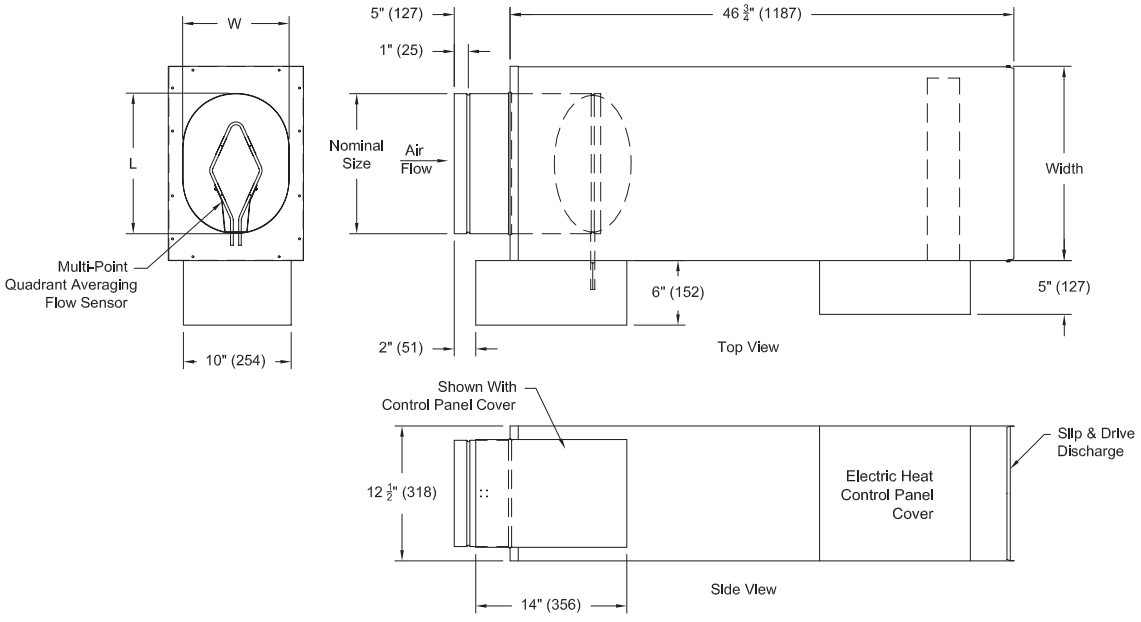
Model TL506 - *6" Round Inlet*
Model TL508 - *8" Round Inlet*
Model TL510 - *10" Round Inlet*



Model Number	Nominal Size In. (mm)	Height In. (mm)	Width In. (mm)	Dim. A In. (mm)	Unit Weight 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*

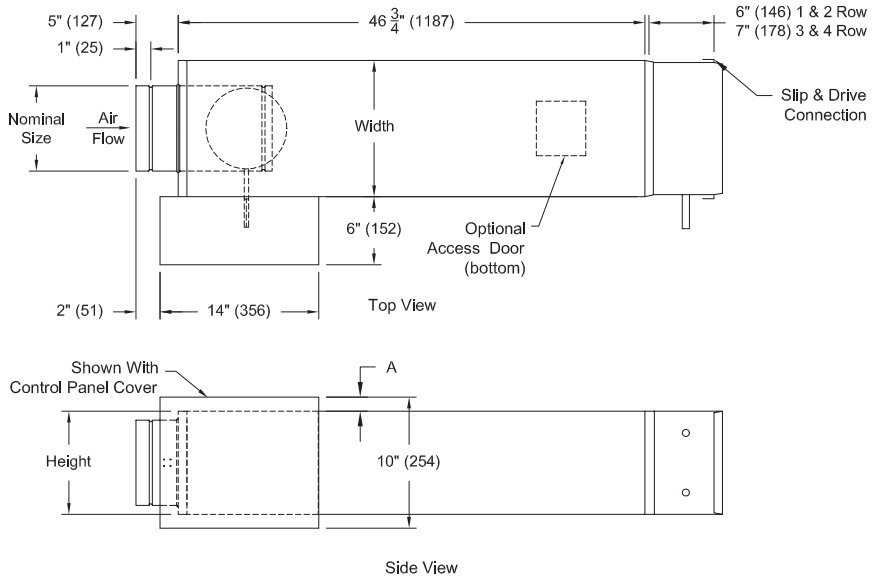


Model Number	Nominal Size	Dim. W x L	CFM Range	Width	Shipping Weight (Lbs)(Kg)
TL512	12 (Oval) (300)	10 (254) x 13 (330)	0-2200 (0-1.04)	18 (460)	59 Lbs (27 Kg)
TL514	14 (Oval) (350)	10 (254) x 16.25 (413)	0-3000 (0-1.42)	24 (610)	67 Lbs (30 Kg)
TL516	16 (Oval) (400)	10 (254) x 19.38 (492)	0-4000 (0-1.89)	28 (710)	77 Lbs (35 Kg)

TL-500 - Air Terminal Dimensions

Low Profile Single Duct - Hot Water Coils With Integral Sound Attenuator - Round Inlet

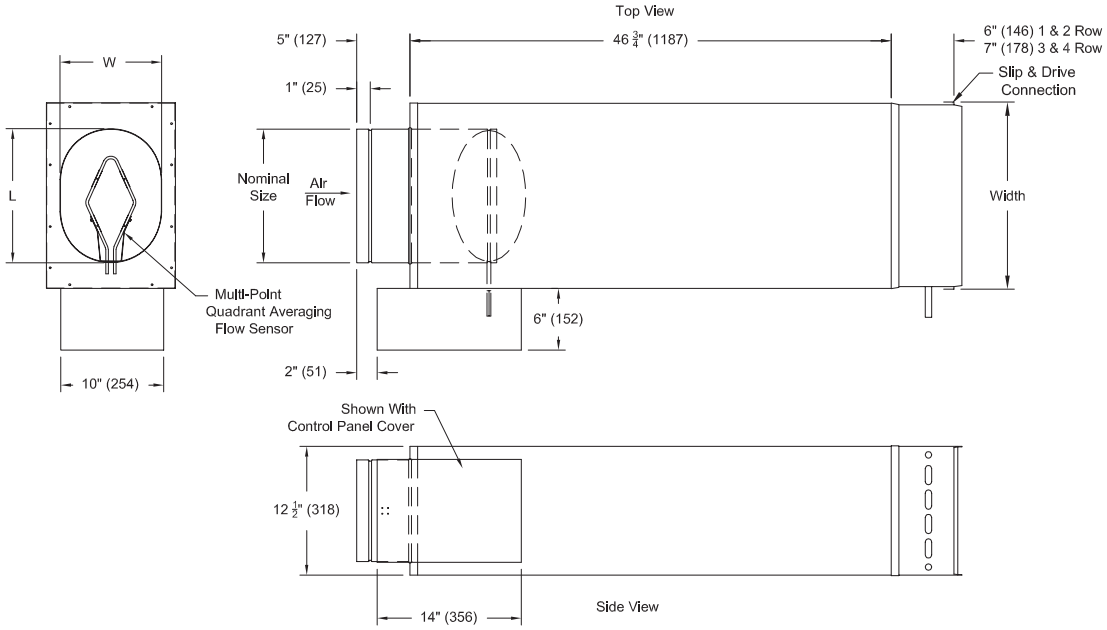
Model TL506 - *6" Round Inlet*
Model TL508 - *8" Round Inlet*
Model TL510 - *10" Round Inlet*



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)

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

Leakage

Casing: Less than 1% of rated capacity @ 1.0" downstream pressure.

Damper: Less than 1% of rated capacity with 3.0" inlet pressure.

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.

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 kWs 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.*

TL-500 - Radiated Sound Power at Min., .5", .75" Wg

Unit Size	Outlet Ps in. H20	CFM (L/s)		Min Ps in. H20 (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 885-90	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 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	-	-
		250	**(118)**	**0.059**	**(14.8)**	**43**	**36**	**26**	**23**	**22**	**15**	-	-	**50**	**40**	**32**	**27**	**23**	**18**	-	-	**52**	**42**	**36**	**30**	**25**	**22**	-	-
		300	(142)	0.071	(17.6)	45	38	29	26	25	19	-	-	52	41	35	29	25	20	-	-	54	45	40	32	29	24	-	-
		400	**(189)**	**0.104**	**(25.8)**	**51**	**41**	**34**	**31**	**31**	**22**	-	-	**54**	**45**	**39**	**33**	**31**	**23**	-	-	**56**	**48**	**43**	**36**	**33**	**27**	-	-
		450	(212)	0.125	(31.0)	51	43	36	34	33	24	-	-	54	47	40	36	35	25	-	-	56	50	44	38	35	28	-	-
		500	**(236)**	**0.136**	**(33.9)**	**52**	**45**	**39**	**36**	**36**	**26**	-	-	**55**	**48**	**42**	**37**	**36**	**27**	-	-	**57**	**51**	**45**	**39**	**37**	**30**	-	-
		600	(283)	0.169	(42.1)	52	49	44	41	41	31	-	-	55	51	45	41	42	32	-	-	58	54	47	42	42	33	-	22
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	37	31	24	21	-	-
		500	**(236)**	**0.046**	**(11.4)**	**47**	**39**	**26**	**24**	**19**	**18**	-	-	**53**	**43**	**36**	**30**	**23**	**19**	-	-	**55**	**46**	**39**	**33**	**26**	**22**	-	-
		600	(283)	0.064	(15.9)	48	41	29	27	21	18	-	-	54	44	37	33	25	20	-	-	57	48	40	35	28	23	-	-
		700	**(330)**	**0.090**	**(22.4)**	**50**	**43**	**33**	**31**	**23**	**20**	-	-	**56**	**46**	**40**	**35**	**27**	**21**	-	-	**58**	**50**	**42**	**37**	**30**	**25**	-	-
		800	(378)	0.101	(25.2)	53	45	37	36	26	21	-	-	57	48	42	37	29	23	-	-	60	51	44	39	32	27	-	22
		900	**(425)**	**0.110**	**(27.4)**	**55**	**48**	**41**	**40**	**29**	**23**	-	-	**59**	**50**	**44**	**40**	**32**	**25**	-	**21**	**61**	**53**	**46**	**41**	**34**	**28**	-	**23**
		1000	(472)	0.128	(31.8)	55	50	45	42	32	26	-	-	60	52	46	42	34	27	-	22	62	54	48	44	36	30	21	25
		1100	**(519)**	**0.145**	**(36.0)**	**56**	**51**	**47**	**43**	**35**	**29**	-	**21**	**61**	**53**	**48**	**44**	**37**	**30**	-	**23**	**63**	**55**	**50**	**45**	**38**	**32**	**22**	**26**
510 10 inch	0.25	300	(142)	0.009	(2.2)	48	34	20	16	15	13	-	-	49	36	23	19	17	15	-	-	51	39	32	25	21	19	-	-
		400	**(189)**	**0.012**	**(2.9)**	**51**	**36**	**25**	**22**	**19**	**19**	-	-	**52**	**42**	**34**	**28**	**24**	**19**	-	-	**54**	**45**	**37**	**32**	**27**	**21**	-	-
		600	(283)	0.015	(3.8)	52	37	27	24	19	19	-	-	54	44	37	31	26	19	-	-	56	48	41	35	30	22	-	-
		800	**(378)**	**0.039**	**(9.6)**	**53**	**39**	**30**	**27**	**20**	**19**	-	-	**55**	**46**	**39**	**35**	**29**	**20**	-	-	**57**	**50**	**43**	**38**	**32**	**23**	-	-
		1000	(472)	0.046	(11.5)	53	40	33	31	23	19	-	-	57	49	42	38	31	22	-	-	58	51	45	40	34	25	-	-
		1200	**(566)**	**0.078**	**(19.4)**	**55**	**45**	**37**	**34**	**27**	**21**	-	-	**59**	**51**	**45**	**41**	**34**	**24**	-	**21**	**60**	**53**	**46**	**42**	**36**	**27**	-	**22**
		1400	(661)	0.109	(27.2)	55	48	42	39	31	23	-	-	62	54	48	44	37	28	21	25	64	55	48	45	38	30	23	27
		1600	**(755)**	**0.133**	**(33.1)**	**59**	**51**	**47**	**44**	**35**	**27**	-	**21**	**63**	**56**	**51**	**47**	**40**	**32**	**22**	**26**	**65**	**57**	**51**	**47**	**40**	**33**	**25**	**29**
		1700	(802)	0.151	(37.7)	61	53	49	46	37	30	-	23	65	58	53	50	42	33	25	29	66	59	54	51	43	35	26	30
512 12 inch	0.25	**350**	**(165)**	**0.005**	**(1.3)**	**50**	**33**	**20**	**18**	**13**	**12**	-	-	**52**	**39**	**28**	**21**	**17**	**15**	-	-	**53**	**41**	**31**	**25**	**18**	**17**	-	-
		430	(203)	0.008	(1.9)	51	35	22	19	15	13	-	-	53	41	30	22	19	16	-	-	54	43	33	26	20	19	-	-
		770	**(363)**	**0.025**	**(6.2)**	**54**	**39**	**29**	**24**	**19**	**18**	-	-	**56**	**46**	**38**	**31**	**27**	**21**	-	-	**57**	**49**	**42**	**34**	**29**	**24**	-	-
		960	(453)	0.039	(9.6)	55	41	32	26	20	18	-	-	56	48	40	33	29	23	-	-	58	50	44	36	31	25	-	-
		1150	**(543)**	**0.056**	**(13.8)**	**56**	**44**	**35**	**28**	**22**	**19**	-	-	**57**	**49**	**42**	**35**	**31**	**24**	-	-	**58**	**51**	**45**	**38**	**33**	**27**	-	-
		1400	(661)	0.083	(20.5)	56	46	38	31	25	20	-	-	58	50	44	38	34	27	-	-	59	52	47	40	36	29	-	21
		1630	**(769)**	**0.112**	**(27.9)**	**57**	**48**	**42**	**34**	**28**	**22**	-	-	**59**	**51**	**47**	**40**	**37**	**29**	-	**21**	**61**	**53**	**49**	**42**	**38**	**31**	-	**23**
		1870	(883)	0.148	(36.7)	58	51	46	37	32	25	-	-	61	53	50	43	39	32	21	24	62	55	51	44	40	34	22	25
		1965	**(927)**	**0.163**	**(40.6)**	**58**	**52**	**47**	**38**	**33**	**27**	-	**21**	**61**	**54**	**51**	**44**	**40**	**34**	**22**	**25**	**62**	**56**	**52**	**45**	**41**	**36**	**23**	**26**
514 14 inch	0.25	450	(212)	0.006	(1.5)	50	33	26	19	15	14	-	-	54	35	28	22	19	17	-	-	54	37	30	26	22	20	-	-
		850	**(401)**	**0.021**	**(5.3)**	**51**	**36**	**29**	**22**	**18**	**16**	-	-	**56**	**40**	**35**	**30**	**25**	**21**	-	-	**57**	**42**	**38**	**32**	**28**	**23**	-	-
		1200	(566)	0.043	(10.6)	54	40	31	26	22	19	-	-	59	49	44	38	36	34	-	21	59	51	45	38	37	34	-	21
		1465	**(691)**	**0.064**	**(15.8)**	**54**	**43**	**34**	**28**	**25**	**20**	-	-	**60**	**50**	**44**	**40**	**37**	**34**	-	**22**	**61**	**53**	**45**	**41**	**38**	**34**	-	**23**
		1740	(821)	0.090	(22.3)	55	46	39	32	28	22	-	-	61	52	45	41	38	35	-	23	62	53	46	41	38	36	21	25
		2015	**(951)**	**0.120**	**(29.9)**	**55**	**49**	**44**	**36**	**31**	**24**	-	-	**62**	**53**	**46**	**41**	**39**	**35**	**21**	**25**	**62**	**54**	**47**	**41**	**40**	**36**	**21**	**25**
		2380	(1123)	0.167	(41.7)	57	52	46	40	35	28	-	-	62	55	47	43	41	36	21	25	62	56	47	43	41	36	21	25
		2600	**(1227)**	**0.200**	**(49.7)**	**59**	**55**	**48**	**44**	**39**	**32**	-	**24**	**63**	**57**	**50**	**45**	**42**	**38**	**22**	**26**	**63**	**58**	**50**	**46**	**42**	**38**	**24**	**27**
516 16 inch	0.25	545	(257)	0.005	(1.2)	50	35	26	21	15	12	-	-	53	38	29	23	18	16	-	-	53	40	32	27	20	18	-	-
		945	**(446)**	**0.015**	**(3.6)**	**53**	**40**	**31**	**25**	**20**	**17**	-	-	**56**	**45**	**36**	**29**	**24**	**20**	-	-	**56**	**47**	**39**	**32**	**26**	**22**	-	-
		1285	(607)	0.027	(6.6)	55	45	35	28	24	21	-	-	58	51	41	35	31	26	-	-	58	53	44	38	33	28	-	21
		1545	**(729)**	**0.038**	**(9.5)**	**56**	**46**	**37**	**31**	**27**	**23**	-	-	**59**	**52**	**42**	**36**	**33**	**29**	-	**21**	**59**	**54**	**45**	**39**	**35**	**30**	-	**22**
		2060	(972)	0.068	(16.8)	57	48	41	36	33	29	-	-	60	53	44	40	37	33	-	22	60	55	47	42	38	34	-	24
		2745	**(1296)**	**0.119**	**(29.6)**	**59**	**53**	**48**	**42**	**39**	**36**	-	**22**	**61**	**55**	**49**	**44**	**40**	**37**	-	**24**	**62**	**57**	**51**	**46**	**41**	**38**	**22**	**26**
		3085	(1456)	0.150	(37.3)	60	55	52	45	41	38	23	26	62	57	52	46	42	39	23	26	63	59	53	48	43	40	25	28
		3150	**(1487)**	**0.156**	**(38.8)**	**60**	**56**	**52**	**46**	**42**	**39**	**23**	**26**	**62**	**58**	**53**	**47**	**43**	**40**	**24**	**27**	**63**	**59**	**54**	**48**	**44**	**40**	**25**	**29**

See Page TL-51 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.

TL-500 - Radiated Sound Power at 1", 2", 3" Wg

Unit Size	Outlet Ps in. H20	CFM (L/s)		Min Ps in. H20 (Pa)		Inlet Pressure, Ps=1 inch of water (250 Pa)								Inlet Pressure, Ps=2 inches of water (500 Pa)								Inlet Pressure, Ps=3 inches of water (750 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		
		100	**(47)**	**0.015**	**(3.8)**	**45**	**36**	**25**	**24**	**21**	**15**	**-**	**-**	**47**	**37**	**34**	**31**	**31**	**28**	**-**	**-**	**48**	**38**	**36**	**38**	**40**	**38**	**-**	**-**
		200	(94)	0.038	(9.5)	51	43	39	31	28	24	-	-	53	43	41	38	37	35	-	-	54	44	41	41	42	41	-	-
		250	**(118)**	**0.059**	**(14.8)**	**53**	**45**	**41**	**32**	**30**	**26**	**-**	**-**	**55**	**47**	**43**	**39**	**38**	**37**	**-**	**-**	**56**	**48**	**44**	**43**	**43**	**42**	**-**	**-**
506	**0.25**	300	(142)	0.071	(17.6)	55	48	45	35	32	28	-	-	56	48	46	41	40	38	-	-	57	49	46	44	44	43	-	-
6 inch		**400**	**(189)**	**0.104**	**(25.8)**	**56**	**52**	**46**	**38**	**36**	**30**	**-**	**-**	**58**	**54**	**49**	**43**	**41**	**39**	**-**	**23**	**59**	**55**	**50**	**46**	**45**	**44**	**21**	**24**
		450	(212)	0.125	(31.0)	57	53	46	40	37	31	-	21	59	55	50	44	42	39	21	24	60	56	52	47	46	44	23	26
		500	**(236)**	**0.136**	**(33.9)**	**59**	**55**	**47**	**41**	**39**	**32**	**-**	**24**	**60**	**57**	**52**	**45**	**43**	**39**	**23**	**26**	**61**	**58**	**54**	**48**	**46**	**45**	**25**	**29**
		600	(283)	0.169	(42.1)	60	57	48	43	43	34	22	26	63	61	54	47	44	40	27	31	64	62	57	49	47	46	29	32
		200	**(94)**	**0.021**	**(5.3)**	**51**	**41**	**35**	**30**	**23**	**20**	**-**	**-**	**52**	**43**	**38**	**35**	**29**	**23**	**-**	**-**	**53**	**45**	**39**	**36**	**32**	**27**	**-**	**-**
		300	(142)	0.029	(7.2)	55	46	42	36	28	24	-	-	55	46	43	40	35	33	-	-	56	47	45	42	40	38	-	-
		500	**(236)**	**0.046**	**(11.4)**	**57**	**50**	**42**	**37**	**30**	**25**	**-**	**-**	**59**	**54**	**49**	**44**	**38**	**35**	**-**	**23**	**59**	**55**	**51**	**47**	**42**	**40**	**22**	**25**
508		600	(283)	0.064	(15.9)	59	52	43	38	31	27	-	21	61	57	51	45	39	36	22	26	61	59	54	49	43	41	25	29
8 inch	**0.25**	**700**	**(330)**	**0.090**	**(22.4)**	**61**	**53**	**45**	**40**	**33**	**28**	**-**	**23**	**63**	**60**	**53**	**47**	**40**	**37**	**26**	**29**	**64**	**61**	**56**	**51**	**44**	**41**	**27**	**31**
		800	(378)	0.101	(25.2)	62	54	46	41	35	30	21	25	65	61	54	48	41	37	27	31	67	64	58	52	45	42	31	34
		900	**(425)**	**0.110**	**(27.4)**	**64**	**55**	**48**	**43**	**37**	**32**	**23**	**27**	**66**	**62**	**55**	**49**	**43**	**38**	**28**	**32**	**69**	**65**	**59**	**53**	**46**	**42**	**32**	**35**
		1000	(472)	0.128	(31.8)	65	57	50	45	39	33	25	29	68	63	56	50	44	39	29	33	70	66	60	54	47	42	33	37
		1100	**(519)**	**0.145**	**(36.0)**	**66**	**58**	**51**	**47**	**40**	**35**	**26**	**30**	**69**	**64**	**57**	**52**	**45**	**40**	**31**	**34**	**71**	**67**	**61**	**56**	**49**	**44**	**34**	**38**
		300	(142)	0.009	(2.2)	52	41	35	28	23	20	-	-	54	45	40	32	26	22	-	-	56	47	42	35	29	26	-	-
		400	**(189)**	**0.012**	**(2.9)**	**55**	**48**	**41**	**35**	**31**	**23**	**-**	**-**	**57**	**49**	**43**	**40**	**37**	**32**	**-**	**-**	**58**	**49**	**44**	**42**	**40**	**39**	**-**	**-**
		600	(283)	0.015	(3.8)	57	50	45	38	33	25	-	-	59	55	49	43	39	35	-	24	60	56	50	45	42	40	21	25
510		**800**	**(378)**	**0.039**	**(9.6)**	**58**	**52**	**46**	**41**	**35**	**26**	**-**	**-**	**61**	**60**	**53**	**46**	**42**	**38**	**26**	**29**	**63**	**62**	**56**	**49**	**45**	**42**	**28**	**32**
10 inch	**0.25**	1000	(472)	0.046	(11.5)	59	53	47	42	36	28	-	21	62	63	56	49	44	40	29	33	64	67	60	52	47	45	34	38
		1200	**(566)**	**0.078**	**(19.4)**	**61**	**54**	**48**	**43**	**37**	**29**	**-**	**23**	**63**	**65**	**57**	**51**	**46**	**42**	**32**	**35**	**65**	**69**	**62**	**54**	**49**	**49**	**37**	**40**
		1400	(661)	0.109	(27.2)	65	57	49	45	39	31	25	29	70	66	58	52	47	44	33	37	71	70	63	56	50	49	38	41
		1600	**(755)**	**0.133**	**(33.1)**	**67**	**58**	**51**	**47**	**41**	**34**	**27**	**31**	**71**	**66**	**59**	**53**	**49**	**46**	**33**	**37**	**72**	**71**	**63**	**56**	**51**	**50**	**39**	**42**
		1700	(802)	0.151	(37.7)	68	60	54	52	44	36	29	32	72	67	60	55	50	48	34	38	73	72	64	58	53	51	40	44
		350	**(165)**	**0.005**	**(1.3)**	**54**	**44**	**38**	**30**	**24**	**18**	**-**	**-**	**57**	**48**	**40**	**35**	**29**	**23**	**-**	**-**	**58**	**48**	**43**	**39**	**34**	**28**	**-**	**-**
		430	(203)	0.008	(1.9)	55	46	40	31	25	20	-	-	58	50	42	36	30	25	-	-	59	50	45	40	35	30	-	21
		770	**(363)**	**0.025**	**(6.2)**	**59**	**52**	**46**	**37**	**31**	**26**	**-**	**21**	**61**	**57**	**54**	**47**	**41**	**38**	**25**	**29**	**61**	**59**	**57**	**52**	**47**	**44**	**29**	**32**
512		960	(453)	0.039	(9.6)	59	53	48	39	32	27	-	22	62	60	57	49	43	38	29	32	63	62	60	55	49	44	32	35
12 inch	**0.25**	**1150**	**(543)**	**0.056**	**(13.8)**	**60**	**54**	**49**	**40**	**34**	**29**	**-**	**23**	**64**	**62**	**58**	**50**	**44**	**39**	**30**	**33**	**65**	**65**	**63**	**56**	**49**	**45**	**35**	**38**
		1400	(661)	0.083	(20.5)	61	54	50	42	37	31	21	24	65	63	59	51	45	40	31	34	66	67	64	57	50	45	36	39
		1630	**(769)**	**0.112**	**(27.9)**	**62**	**56**	**52**	**44**	**40**	**34**	**23**	**26**	**66**	**64**	**60**	**52**	**46**	**41**	**32**	**35**	**68**	**69**	**65**	**57**	**51**	**45**	**37**	**41**
		1870	(883)	0.148	(36.7)	63	57	53	46	42	36	24	27	67	65	61	53	48	42	33	36	69	70	65	58	51	46	38	41
		1965	**(927)**	**0.163**	**(40.6)**	**63**	**58**	**54**	**47**	**43**	**38**	**25**	**29**	**67**	**66**	**62**	**54**	**49**	**44**	**34**	**37**	**69**	**71**	**66**	**59**	**52**	**48**	**39**	**42**
		450	(212)	0.006	(1.5)	55	39	32	28	24	22	-	-	58	43	37	32	28	24	-	-	60	46	41	37	30	26	-	22
		850	**(401)**	**0.021**	**(5.3)**	**57**	**43**	**40**	**33**	**30**	**25**	**-**	**-**	**60**	**49**	**45**	**39**	**34**	**29**	**-**	**22**	**62**	**53**	**48**	**42**	**38**	**31**	**21**	**25**
		1200	(566)	0.043	(10.6)	60	52	45	39	37	35	-	22	63	60	52	46	42	40	26	29	65	65	57	50	45	45	32	35
514		**1465**	**(691)**	**0.064**	**(15.8)**	**61**	**53**	**45**	**41**	**38**	**35**	**-**	**23**	**64**	**62**	**53**	**47**	**44**	**41**	**28**	**32**	**66**	**67**	**58**	**51**	**47**	**45**	**34**	**38**
14 inch	**0.25**	1740	(821)	0.090	(22.3)	62	54	46	41	39	36	21	25	65	63	54	48	45	42	29	33	68	68	59	52	49	46	35	39
		2015	**(951)**	**0.120**	**(29.9)**	**62**	**56**	**47**	**42**	**41**	**37**	**21**	**25**	**66**	**64**	**55**	**49**	**47**	**43**	**31**	**34**	**69**	**69**	**60**	**54**	**50**	**47**	**37**	**40**
		2380	(1123)	0.167	(41.7)	63	57	48	43	41	38	22	26	68	65	57	51	48	45	32	35	70	70	62	55	52	48	38	41
		2600	**(1227)**	**0.200**	**(49.7)**	**64**	**59**	**51**	**46**	**42**	**39**	**25**	**28**	**69**	**67**	**60**	**54**	**49**	**46**	**34**	**38**	**71**	**72**	**65**	**58**	**53**	**49**	**40**	**44**
		545	(257)	0.005	(1.2)	54	42	34	29	23	19	-	-	56	46	41	35	30	25	-	-	58	50	46	39	35	29	-	-
		945	**(446)**	**0.015**	**(3.6)**	**57**	**49**	**41**	**34**	**29**	**24**	**-**	**-**	**59**	**53**	**49**	**44**	**38**	**32**	**-**	**23**	**61**	**56**	**51**	**49**	**40**	**35**	**22**	**25**
		1285	(607)	0.027	(6.6)	59	55	46	40	36	30	-	24	61	59	55	50	45	42	26	30	63	61	57	53	49	47	29	32
516		**1545**	**(729)**	**0.038**	**(9.5)**	**60**	**56**	**47**	**41**	**37**	**32**	**21**	**25**	**63**	**61**	**57**	**52**	**47**	**44**	**29**	**32**	**65**	**64**	**60**	**56**	**52**	**49**	**32**	**35**
16 inch	**0.25**	2060	(972)	0.068	(16.8)	60	57	49	43	40	35	22	26	65	65	60	54	51	48	32	35	68	67	64	60	58	56	36	39
		2745	**(1296)**	**0.119**	**(29.6)**	**63**	**59**	**53**	**47**	**43**	**39**	**25**	**28**	**68**	**66**	**62**	**57**	**55**	**52**	**34**	**37**	**70**	**70**	**66**	**63**	**63**	**62**	**38**	**42**
		3085	(1456)	0.150	(37.3)	64	60	55	49	44	41	26	30	69	67	63	58	56	53	35	38	71	70	67	64	63	62	39	43
		3150	**(1487)**	**0.156**	**(38.8)**	**64**	**60**	**56**	**50**	**45**	**41**	**27**	**31**	**69**	**67**	**65**	**59**	**57**	**53**	**37**	**41**	**71**	**70**	**69**	**65**	**64**	**63**	**42**	**45**

See Page TL-51 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.

TL-500 - Discharge Sound Power at Min., .5", .75" Wg

Unit Size	Outlet Ps in. H20	CFM (L/s)		Min Ps in. H20 (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 885-90	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 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**	-	-
		200	(94)	0.038	(9.5)	54	43	35	31	23	19	-	-	56	50	40	41	35	31	-	-	57	54	45	44	39	36	-	-
		250	**(118)**	**0.059**	**(14.8)**	**55**	**45**	**38**	**35**	**27**	**23**	-	-	**58**	**51**	**43**	**42**	**37**	**33**	-	-	**59**	**56**	**47**	**45**	**40**	**37**	-	-
		300	(142)	0.071	(17.6)	56	48	44	39	30	25	-	-	60	53	45	45	38	35	-	-	60	57	49	47	41	38	-	-
		400	**(189)**	**0.104**	**(25.8)**	**57**	**54**	**50**	**46**	**37**	**33**	-	-	**61**	**58**	**50**	**50**	**42**	**40**	-	-	**63**	**61**	**53**	**52**	**45**	**42**	-	-
		450	(212)	0.125	(31.0)	59	56	52	48	40	37	-	-	61	59	53	52	44	42	-	-	63	62	55	54	47	43	-	-
		500	**(236)**	**0.136**	**(33.9)**	**60**	**59**	**54**	**52**	**44**	**40**	-	-	**62**	**61**	**55**	**54**	**47**	**44**	-	-	**64**	**64**	**57**	**56**	**48**	**45**	-	**22**
		600	(283)	0.169	(42.1)	62	63	58	57	49	46	-	21	64	65	59	58	51	48	-	24	66	67	61	59	52	49	22	26
508 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**	-	-
		300	(142)	0.029	(7.2)	53	42	38	36	30	27	-	-	57	54	47	43	38	33	-	-	58	57	51	46	41	37	-	-
		500	**(236)**	**0.046**	**(11.4)**	**54**	**46**	**40**	**38**	**31**	**29**	-	-	**60**	**58**	**51**	**48**	**41**	**37**	-	-	**62**	**61**	**53**	**51**	**45**	**40**	-	-
		600	(283)	0.064	(15.9)	56	49	45	42	33	30	-	-	62	60	53	51	43	39	-	-	64	62	55	53	46	42	-	-
		700	**(330)**	**0.090**	**(22.4)**	**57**	**53**	**49**	**46**	**38**	**31**	-	-	**64**	**62**	**55**	**54**	**45**	**40**	-	-	**65**	**64**	**57**	**55**	**48**	**43**	-	**22**
		800	(378)	0.101	(25.2)	59	56	53	50	43	36	-	-	65	63	57	56	47	43	-	-	67	65	59	58	50	45	-	21
		900	**(425)**	**0.110**	**(27.4)**	**61**	**59**	**56**	**54**	**47**	**41**	-	-	**67**	**65**	**59**	**58**	**50**	**45**	-	**21**	**68**	**67**	**61**	**60**	**52**	**47**	**22**	**24**
		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
		1100	**(519)**	**0.145**	**(36.0)**	**63**	**62**	**60**	**58**	**55**	**49**	-	-	**69**	**68**	**63**	**62**	**56**	**50**	**24**	**25**	**71**	**69**	**65**	**64**	**56**	**51**	**25**	**26**
510 10 inch	0.25	300	(142)	0.009	(2.2)	51	46	37	35	28	26	-	-	53	54	46	44	38	34	-	-	54	56	48	46	42	38	-	-
		400	**(189)**	**0.012**	**(2.9)**	**52**	**48**	**39**	**38**	**30**	**28**	-	-	**54**	**55**	**48**	**47**	**42**	**37**	-	-	**55**	**58**	**51**	**50**	**45**	**42**	-	-
		600	(283)	0.015	(3.8)	53	52	42	39	31	29	-	-	56	56	50	49	43	38	-	-	58	60	53	52	46	43	-	-
		800	**(378)**	**0.039**	**(9.6)**	**57**	**54**	**43**	**40**	**33**	**30**	-	-	**58**	**58**	**52**	**50**	**44**	**39**	-	-	**60**	**61**	**55**	**54**	**47**	**43**	-	-
		1000	(472)	0.046	(11.5)	59	59	50	49	41	37	-	-	61	61	54	53	45	41	-	-	62	63	57	56	49	45	-	-
		1200	**(566)**	**0.078**	**(19.4)**	**60**	**63**	**55**	**54**	**46**	**43**	-	-	**64**	**65**	**58**	**56**	**48**	**44**	-	**21**	**65**	**66**	**60**	**58**	**51**	**47**	**21**	**22**
		1400	(661)	0.109	(27.2)	62	65	59	58	50	47	-	21	67	69	62	60	52	48	25	26	68	70	63	61	54	50	26	27
		1600	**(755)**	**0.133**	**(33.1)**	**64**	**67**	**62**	**62**	**54**	**51**	**22**	**24**	**70**	**71**	**66**	**64**	**56**	**52**	**27**	**28**	**71**	**72**	**66**	**65**	**57**	**53**	**28**	**29**
		1700	(802)	0.151	(37.7)	65	68	64	63	56	53	24	25	71	72	68	66	58	55	28	29	72	73	69	68	60	56	29	31
512 12 inch	0.25	**350**	**(165)**	**0.005**	**(1.3)**	**55**	**48**	**43**	**38**	**29**	**26**	-	-	**56**	**49**	**46**	**39**	**30**	**28**	-	-	**58**	**52**	**49**	**43**	**34**	**31**	-	-
		430	(203)	0.008	(1.9)	56	49	44	40	30	28	-	-	57	51	48	41	31	30	-	-	59	54	52	45	35	34	-	-
		770	**(363)**	**0.025**	**(6.2)**	**58**	**52**	**47**	**43**	**33**	**33**	-	-	**59**	**59**	**51**	**45**	**35**	**33**	-	-	**61**	**62**	**55**	**49**	**39**	**37**	-	-
		960	(453)	0.039	(9.6)	59	55	49	46	35	35	-	-	61	61	53	48	38	37	-	-	62	63	57	51	42	40	-	-
		1150	**(543)**	**0.056**	**(13.8)**	**60**	**57**	**52**	**49**	**39**	**39**	-	-	**63**	**63**	**55**	**51**	**42**	**40**	-	-	**64**	**64**	**58**	**53**	**45**	**43**	-	-
		1400	(661)	0.083	(20.5)	62	60	55	52	44	43	-	-	65	65	58	54	46	44	-	21	65	66	61	56	49	47	21	22
		1630	**(769)**	**0.112**	**(27.9)**	**64**	**63**	**59**	**56**	**49**	**47**	-	-	**67**	**67**	**61**	**57**	**51**	**48**	**22**	**24**	**67**	**68**	**63**	**59**	**53**	**50**	**24**	**25**
		1870	(883)	0.148	(36.7)	66	65	62	59	53	51	-	21	68	69	64	61	55	52	25	26	68	69	65	61	56	53	25	26
		1965	**(927)**	**0.163**	**(40.6)**	**67**	**66**	**63**	**60**	**55**	**52**	**21**	**22**	**69**	**70**	**65**	**62**	**57**	**53**	**26**	**27**	**69**	**70**	**66**	**62**	**58**	**54**	**26**	**27**
514 14 inch	0.25	450	(212)	0.006	(1.5)	56	48	43	39	30	29	-	-	57	50	45	41	32	30	-	-	58	51	47	43	35	32	-	-
		850	**(401)**	**0.021**	**(5.3)**	**61**	**54**	**50**	**44**	**38**	**32**	-	-	**62**	**55**	**51**	**46**	**40**	**39**	-	-	**63**	**56**	**52**	**48**	**43**	**41**	-	-
		1200	(566)	0.043	(10.6)	67	67	60	56	53	46	22	24	68	67	60	58	54	46	22	24	69	67	61	58	55	50	22	24
		1465	**(691)**	**0.064**	**(15.8)**	**68**	**67**	**64**	**61**	**56**	**49**	**22**	**24**	**69**	**68**	**64**	**61**	**57**	**50**	**24**	**25**	**69**	**68**	**64**	**61**	**58**	**52**	**24**	**25**
		1740	(821)	0.090	(22.3)	68	68	65	61	58	52	24	25	69	68	66	62	59	53	24	25	69	69	66	63	59	54	25	26
		2015	**(951)**	**0.120**	**(29.9)**	**69**	**69**	**66**	**64**	**60**	**55**	**25**	**26**	**70**	**69**	**67**	**64**	**60**	**55**	**25**	**26**	**70**	**70**	**67**	**64**	**60**	**56**	**26**	**27**
		2380	(1123)	0.167	(41.7)	71	72	68	65	60	57	28	29	71	73	68	65	61	57	29	31	72	73	68	66	61	57	29	31
		2600	**(1227)**	**0.200**	**(49.7)**	**73**	**74**	**70**	**66**	**61**	**59**	**31**	**32**	**73**	**74**	**72**	**67**	**62**	**59**	**31**	**32**	**74**	**75**	**72**	**68**	**62**	**60**	**32**	**33**
516 16 inch	0.25	545	(257)	0.005	(1.2)	57	55	49	47	44	40	-	-	59	57	52	51	45	41	-	-	60	58	53	52	47	43	-	-
		945	**(446)**	**0.015**	**(3.6)**	**60**	**61**	**55**	**53**	**47**	**43**	-	-	**62**	**62**	**58**	**54**	**48**	**43**	-	-	**63**	**64**	**59**	**55**	**50**	**45**	-	-
		1285	(607)	0.027	(6.6)	62	63	59	55	49	44	-	-	66	66	61	55	49	44	21	22	67	68	64	58	52	46	24	25
		1545	**(729)**	**0.038**	**(9.5)**	**64**	**65**	**62**	**57**	**52**	**45**	-	**21**	**68**	**68**	**62**	**57**	**52**	**46**	**24**	**25**	**69**	**70**	**66**	**59**	**54**	**48**	**26**	**27**
		2060	(972)	0.068	(16.8)	68	68	64	60	55	49	24	25	72	71	65	60	55	51	27	28	72	72	67	62	56	52	28	29
		2745	**(1296)**	**0.119**	**(29.6)**	**72**	**70**	**65**	**61**	**56**	**54**	**26**	**27**	**73**	**73**	**69**	**63**	**58**	**55**	**29**	**31**	**74**	**73**	**69**	**64**	**59**	**55**	**29**	**31**
		3085	(1456)	0.150	(37.3)	73	71	67	62	57	54	27	28	73	73	70	64	59	56	29	31	74	73	71	65	60	56	29	31
		3150	**(1487)**	**0.156**	**(38.8)**	**73**	**72**	**67**	**63**	**58**	**55**	**28**	**29**	**73**	**74**	**70**	**65**	**60**	**57**	**31**	**32**	**74**	**75**	**71**	**66**	**61**	**57**	**32**	**33**

See Page TL-51 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

TL-500 - Discharge Sound Power at 1", 2", 3" Wg

Unit Size	Outlet Ps in. H20	CFM (L/s)		Min Ps in. H20 (Pa)		Inlet Pressure, Ps=1 inch of water (250 Pa)								Inlet Pressure, Ps=2 inches of water (500 Pa)								Inlet Pressure, Ps=3 inches of water (750 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 6 inch	0.25	**100**	**(47)**	**0.015**	**(3.8)**	**55**	**56**	**48**	**44**	**41**	**40**	-	-	**55**	**56**	**53**	**50**	**51**	**49**	-	-	**56**	**57**	**54**	**54**	**55**	**53**	-	-
		200	(94)	0.038	(9.5)	58	58	51	47	42	40	-	-	59	59	57	54	52	50	-	-	60	59	59	57	55	53	-	-
		250	**(118)**	**0.059**	**(14.8)**	**60**	**59**	**52**	**48**	**43**	**41**	-	-	**61**	**60**	**58**	**55**	**53**	**50**	-	-	**62**	**61**	**60**	**58**	**55**	**54**	-	-
		300	(142)	0.071	(17.6)	61	61	54	50	44	42	-	-	63	62	60	56	53	51	-	-	64	63	63	59	56	54	-	21
		400	**(189)**	**0.104**	**(25.8)**	**63**	**64**	**57**	**53**	**47**	**44**	-	**22**	**66**	**67**	**65**	**59**	**54**	**52**	**22**	**26**	**67**	**68**	**65**	**61**	**57**	**55**	**24**	**27**
		450	(212)	0.125	(31.0)	64	65	58	55	49	45	-	24	67	67	66	60	55	52	22	26	68	69	66	62	57	56	25	28
		500	**(236)**	**0.136**	**(33.9)**	**67**	**67**	**60**	**57**	**50**	**47**	**22**	**26**	**68**	**68**	**67**	**61**	**56**	**53**	**24**	**27**	**69**	**70**	**67**	**63**	**59**	**56**	**26**	**29**
		600	(283)	0.169	(42.1)	69	68	63	60	53	50	24	27	70	69	68	64	58	55	25	28	71	74	70	65	60	58	31	34
508 8 inch	0.25	**200**	**(94)**	**0.021**	**(5.3)**	**58**	**56**	**52**	**47**	**41**	**39**	-	-	**59**	**57**	**55**	**50**	**46**	**44**	-	-	**62**	**59**	**57**	**53**	**50**	**48**	-	-
		300	(142)	0.029	(7.2)	60	60	54	50	45	42	-	-	61	61	59	55	53	48	-	-	64	63	60	58	58	54	-	21
		500	**(236)**	**0.046**	**(11.4)**	**64**	**63**	**56**	**53**	**48**	**44**	-	**21**	**66**	**65**	**62**	**59**	**55**	**50**	-	**24**	**68**	**67**	**65**	**62**	**60**	**55**	**22**	**26**
		600	(283)	0.064	(15.9)	64	65	57	55	49	45	-	24	67	66	63	60	56	51	21	25	70	68	67	63	60	56	24	27
		700	**(330)**	**0.090**	**(22.4)**	**65**	**66**	**59**	**57**	**51**	**46**	**21**	**25**	**68**	**68**	**64**	**61**	**57**	**52**	**24**	**27**	**71**	**69**	**68**	**64**	**61**	**57**	**25**	**28**
		800	(378)	0.101	(25.2)	68	67	61	59	52	48	22	24	70	69	65	63	58	53	25	26	72	71	69	66	62	57	27	28
		900	**(425)**	**0.110**	**(27.4)**	**70**	**68**	**63**	**61**	**54**	**49**	**24**	**25**	**72**	**71**	**66**	**64**	**59**	**53**	**27**	**28**	**74**	**72**	**70**	**67**	**63**	**58**	**28**	**29**
		1000	(472)	0.128	(31.8)	71	69	64	63	55	51	25	26	73	72	68	66	60	54	28	29	75	74	71	68	63	59	31	32
		1100	**(519)**	**0.145**	**(36.0)**	**72**	**70**	**66**	**65**	**58**	**53**	**26**	**27**	**74**	**73**	**70**	**68**	**61**	**55**	**29**	**31**	**76**	**75**	**72**	**69**	**65**	**60**	**32**	**33**
510 10 inch	0.25	300	(142)	0.009	(2.2)	55	58	50	48	45	40	-	-	57	60	55	53	48	45	-	-	60	62	58	55	52	48	-	-
		400	**(189)**	**0.012**	**(2.9)**	**57**	**61**	**55**	**53**	**47**	**46**	-	-	**62**	**64**	**60**	**58**	**56**	**54**	-	**22**	**65**	**67**	**62**	**61**	**60**	**58**	**22**	**26**
		600	(283)	0.015	(3.8)	61	63	56	55	49	47	-	21	65	67	63	61	57	55	22	26	67	70	66	65	61	59	26	29
		800	**(378)**	**0.039**	**(9.6)**	**63**	**64**	**58**	**57**	**51**	**48**	-	-	**68**	**70**	**65**	**63**	**58**	**56**	**26**	**27**	**69**	**73**	**69**	**67**	**63**	**60**	**29**	**31**
		1000	(472)	0.046	(11.5)	64	65	59	59	52	49	-	21	70	72	67	65	59	56	28	29	71	75	71	68	63	61	32	33
		1200	**(566)**	**0.078**	**(19.4)**	**66**	**67**	**62**	**61**	**54**	**50**	**22**	**24**	**72**	**74**	**68**	**66**	**60**	**57**	**31**	**32**	**73**	**77**	**71**	**69**	**64**	**61**	**34**	**35**
		1400	(661)	0.109	(27.2)	69	70	64	63	56	52	26	27	73	75	69	67	61	58	32	33	75	79	72	70	65	62	37	38
		1600	**(755)**	**0.133**	**(33.1)**	**72**	**74**	**67**	**65**	**57**	**54**	**31**	**32**	**74**	**76**	**70**	**68**	**62**	**59**	**33**	**34**	**76**	**79**	**72**	**70**	**65**	**62**	**37**	**38**
		1700	(802)	0.151	(37.7)	73	75	70	69	62	58	32	33	76	77	71	70	64	60	34	35	78	80	73	72	67	63	38	39
512 12 inch	0.25	**350**	**(165)**	**0.005**	**(1.3)**	**59**	**54**	**52**	**47**	**39**	**35**	-	-	**63**	**59**	**56**	**54**	**49**	**44**	-	-	**65**	**60**	**58**	**56**	**53**	**48**	-	-
		430	(203)	0.008	(1.9)	60	56	55	49	40	38	-	-	64	61	59	57	50	47	-	-	66	62	61	59	55	51	-	-
		770	**(363)**	**0.025**	**(6.2)**	**62**	**64**	**59**	**53**	**44**	**41**	-	-	**66**	**69**	**65**	**62**	**57**	**52**	**25**	**26**	**67**	**70**	**66**	**65**	**62**	**57**	**26**	**27**
		960	(453)	0.039	(9.6)	63	65	61	54	46	43	-	21	67	71	68	64	58	54	27	28	68	72	70	68	63	58	28	29
		1150	**(543)**	**0.056**	**(13.8)**	**64**	**66**	**62**	**56**	**49**	**46**	**21**	**22**	**69**	**72**	**70**	**65**	**59**	**55**	**28**	**29**	**69**	**74**	**72**	**70**	**64**	**59**	**31**	**32**
		1400	(661)	0.083	(20.5)	65	67	63	58	52	49	22	24	70	73	71	66	61	57	29	31	71	75	74	71	65	61	32	33
		1630	**(769)**	**0.112**	**(27.9)**	**67**	**68**	**65**	**60**	**55**	**52**	**24**	**25**	**72**	**74**	**72**	**67**	**62**	**58**	**31**	**32**	**73**	**76**	**75**	**72**	**66**	**62**	**33**	**34**
		1870	(883)	0.148	(36.7)	68	70	66	62	58	55	26	27	73	75	72	68	63	60	32	33	75	77	76	73	67	63	34	35
		1965	**(927)**	**0.163**	**(40.6)**	**69**	**71**	**67**	**63**	**60**	**56**	**27**	**28**	**74**	**76**	**73**	**69**	**65**	**61**	**33**	**34**	**76**	**78**	**77**	**74**	**69**	**64**	**35**	**37**
514 14 inch	0.25	450	(212)	0.006	(1.5)	59	52	49	45	36	34	-	-	62	55	51	49	40	38	-	-	64	58	54	50	48	42	-	-
		850	**(401)**	**0.021**	**(5.3)**	**64**	**57**	**53**	**50**	**45**	**43**	-	-	**66**	**61**	**59**	**52**	**49**	**47**	-	-	**68**	**63**	**61**	**55**	**51**	**48**	-	-
		1200	(566)	0.043	(10.6)	69	68	62	58	56	53	24	25	71	73	68	63	59	58	29	31	73	75	70	66	62	60	32	33
		1465	**(691)**	**0.064**	**(15.8)**	**69**	**69**	**64**	**61**	**58**	**55**	**25**	**26**	**72**	**75**	**69**	**65**	**61**	**59**	**32**	**33**	**74**	**76**	**71**	**67**	**63**	**61**	**33**	**34**
		1740	(821)	0.090	(22.3)	70	69	66	63	60	56	25	26	72	76	70	66	62	60	33	34	74	77	72	68	64	62	34	35
		2015	**(951)**	**0.120**	**(29.9)**	**70**	**71**	**67**	**64**	**60**	**56**	**27**	**28**	**73**	**76**	**71**	**67**	**63**	**60**	**33**	**34**	**75**	**77**	**73**	**69**	**65**	**63**	**34**	**35**
		2380	(1123)	0.167	(41.7)	72	73	69	66	61	57	29	31	74	76	72	68	64	61	33	34	76	78	75	70	66	64	35	37
		2600	**(1227)**	**0.200**	**(49.7)**	**74**	**75**	**73**	**68**	**63**	**60**	**32**	**33**	**76**	**78**	**76**	**70**	**66**	**64**	**35**	**37**	**78**	**80**	**79**	**72**	**68**	**67**	**38**	**39**
516 16 inch	0.25	545	(257)	0.005	(1.2)	61	59	55	53	49	45	-	-	63	61	57	55	51	47	-	-	64	62	59	57	52	49	-	-
		945	**(446)**	**0.015**	**(3.6)**	**64**	**65**	**61**	**57**	**52**	**48**	-	**21**	**66**	**67**	**65**	**61**	**58**	**52**	**22**	**24**	**67**	**68**	**66**	**63**	**60**	**55**	**24**	**25**
		1285	(607)	0.027	(6.6)	68	70	67	61	54	49	26	27	70	74	70	70	64	58	31	32	70	75	73	72	69	63	32	33
		1545	**(729)**	**0.038**	**(9.5)**	**70**	**71**	**69**	**62**	**56**	**50**	**27**	**28**	**72**	**75**	**71**	**71**	**64**	**59**	**32**	**33**	**72**	**77**	**74**	**75**	**70**	**64**	**34**	**35**
		2060	(972)	0.068	(16.8)	72	73	69	63	58	53	29	31	75	76	73	71	65	60	33	34	77	78	75	76	70	65	35	37
		2745	**(1296)**	**0.119**	**(29.6)**	**74**	**74**	**70**	**64**	**60**	**56**	**31**	**32**	**76**	**77**	**74**	**71**	**66**	**62**	**34**	**35**	**79**	**79**	**76**	**76**	**71**	**65**	**37**	**38**
		3085	(1456)	0.150	(37.3)	74	74	71	65	61	57	31	32	77	78	75	72	67	63	35	37	79	80	78	76	72	66	38	39
		3150	**(1487)**	**0.156**	**(38.8)**	**74**	**76**	**72**	**66**	**62**	**58**	**33**	**34**	**77**	**80**	**76**	**73**	**68**	**64**	**38**	**39**	**80**	**81**	**79**	**77**	**73**	**67**	**39**	**40**

See Page TL-51 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.

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/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

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
	Airside 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
	Airside 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	-
	Airside 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	-
	Airside 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
	Airside 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
	Airside 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	-
	Airside 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	-
	Airside Ps (kPa)		**0.01**	**0.04**	**0.08**	**0.13**	**0.20**	**-**

Refer to Table-B on Page TL-58 for Metric Notes

TL-500 - Hot Water Coils MBH Selection Data

TL-508 Imperial Units

	GPM	Head Loss (Ft-hd)	CFM 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 TL-58 for Imperial Notes

TL-508 Metric Units

	L/s	Head Loss (kPa)	L/s 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	***1.77***	***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

TL-500 - Hot Water Coils MBH Selection Data

TL-510 Imperial Units

	GPM	Head Loss (Ft-hd)	CFM							
			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 TL-58 for Imperial Notes

TL-510 Metric Units

	L/s	Head Loss (kPa)	L/s							
			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**	**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	*0.27*	*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

TL-500 - Hot Water Coils MBH Selection Data

TL-512 Imperial Units

	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**	**0.35**
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	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**	**0.09**
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

TL-500 - Hot Water Coils MBH Selection Data

TL-514 Imperial Units									
	GPM	Head Loss (Ft-hd)	CFM						
			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	Head Loss (kPa)	L/s						
			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

TL-500 - Hot Water Coils MBH Selection Data

TL-516 Imperial Units									
	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	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

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 = $\frac{\textbf{927 x MBH}}{\textbf{CFM}}$

6. Water Temperature Drop = $\frac{\textbf{2.04 x MBH}}{\textbf{GPM}}$

7. For water valve sizing, contact your METALAIRE representative. For data values other than those listed, interpolate or use the METALAIRE Terminal Selection Program. Contact your METALAIRE 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 = $\frac{\textbf{kW x 579}}{\textbf{air flow in L/s}}$

6. Water Temperature Drop = $\frac{\textbf{kW x 0.17}}{\textbf{water flow in L/s}}$

7. For water valve sizing, contact your METALAIRE representative. For data values other than those listed, interpolate or use the Metal Industries computerized engineering program. Contact your METALAIRE representative for additional information.

8. All hot water coils are 10 Fins per inch (FPI).

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METAL INDUSTRIES, INC.

METAL*AIRE

TH/TL-500 - Control Sequences

BASIC AIR TERMINAL

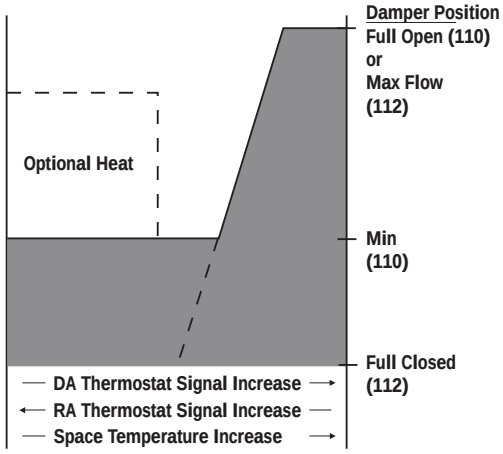
(100) Without Controls:
Specify when controls are to be field mounted and supplied by others.

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.



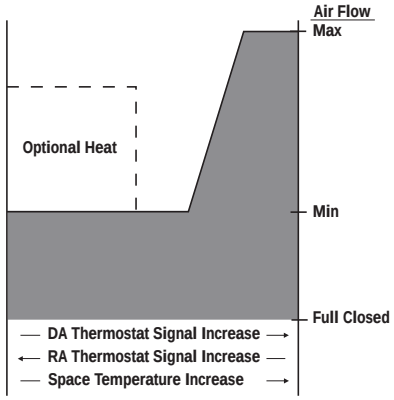
Pneumatic/Pressure Dependent

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.

TH/TL-500 - Pneumatic Control Sequences

Pneumatic
Pressure Independent
114 - DA/NC
115 - DA/NO
116 - RA/NC
117 - RA/NO



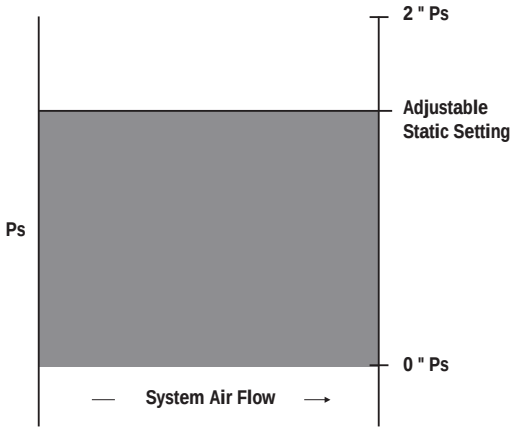
(114) Variable Volume. Normally closed. For use with direct acting thermostat. Optional heat is energized by the thermostat after air flow has reached a preset minimum.

(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 ")

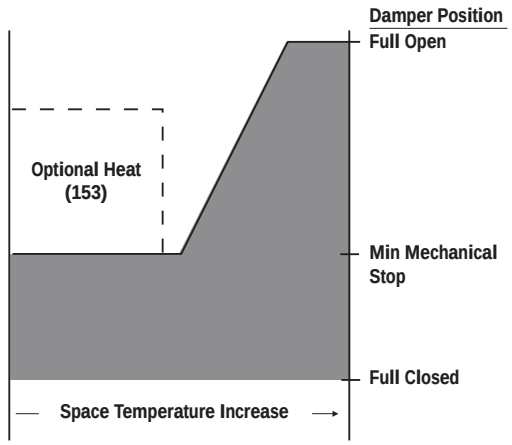


(140) Static Control. Normally open or normally closed. Local or remote pickup senses duct static and signals controller to maintain constant static at sensing point. It may be used for direct static control or as a by-pass flow method. 0" - 2" range.

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.



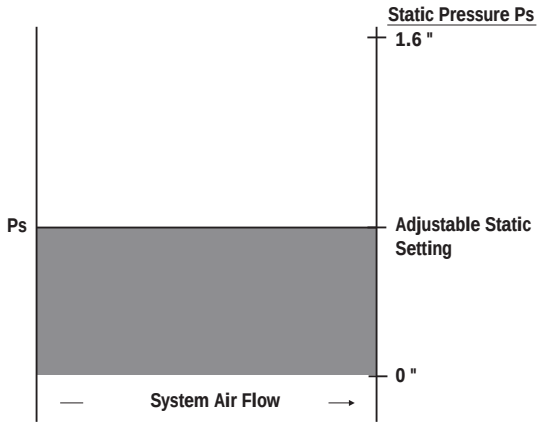
(152) Cooling Only. As room temperature rises, the thermostat signals the actuator to open the damper to its fully open position. As room temperature falls, the thermostat signals the actuator to close the damper to a mechanically determined minimum point.

(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.

TH/TL-500 - Electric Control Sequences

Electric

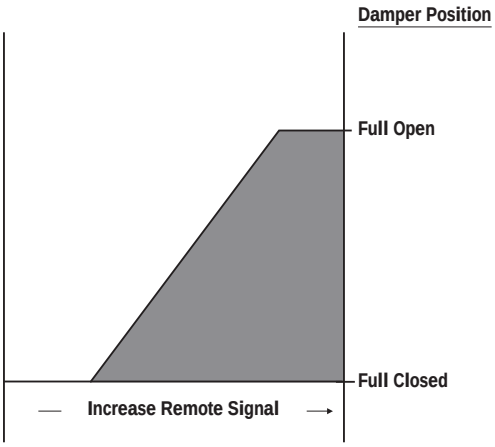
156 Static Control (0 " - 1.6 ")



(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

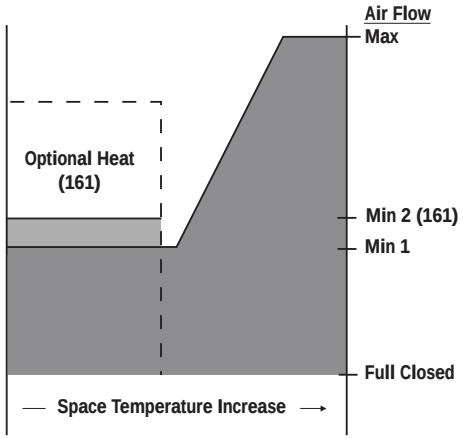
ANALOG ELECTRONICALLY CONTROLLED AIR TERMINALS

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

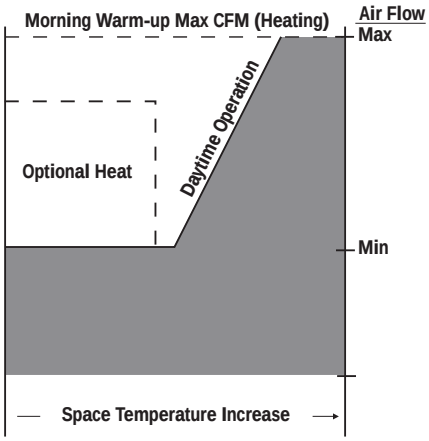


(160) Cooling Only. Electronic thermostat (analog models with integral, adjustable, maximum and minimum flow limits) signals electronic flow controller to regulate damper position. The damper is rotated to its maximum open position as room temperature rises and to its minimum open position as room temperature 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.

TH/TL-500 - Analog Electronic Control Sequences

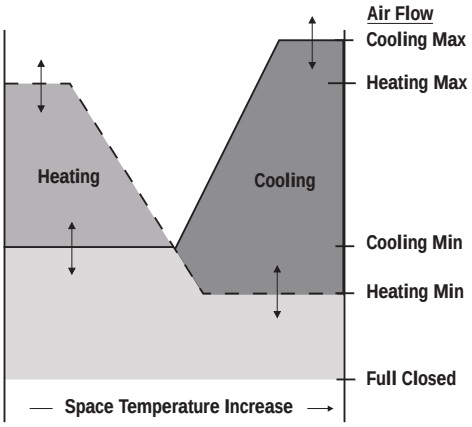
Electronic Control
Pressure Independent
164 Night Shutdown/Morning Warm-up



(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

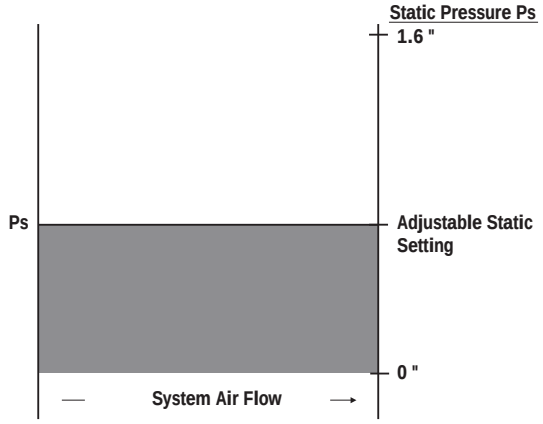


(165) Heating/Cooling Changeover: A duct thermostat switches a heat/cool relay to make the system operate in the appropriate heating or cooling mode.

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.

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.

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/ft^3 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

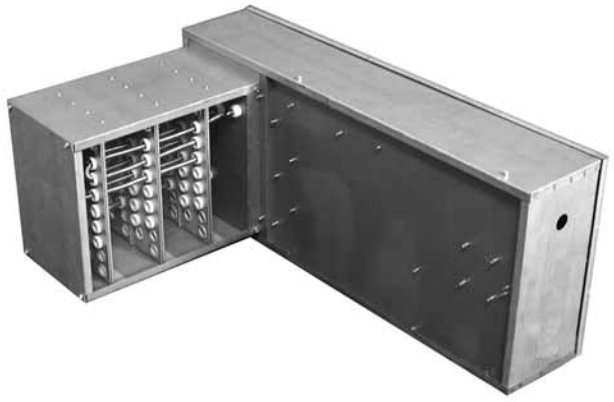
Notes:

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 METALAIRE 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 METALAIRE 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.

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 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.

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.

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**

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/ft^3 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/ft^3 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.

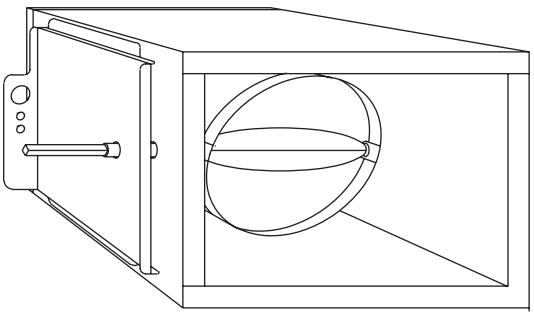
FOIL BACKED LINER 1/2" THICK, 1 1/2 LBS DENSITY, FOIL BACKED LINER 1" THICK, 4 LBS DENSITY

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/ft^3 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/ft^3 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/ft^3 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

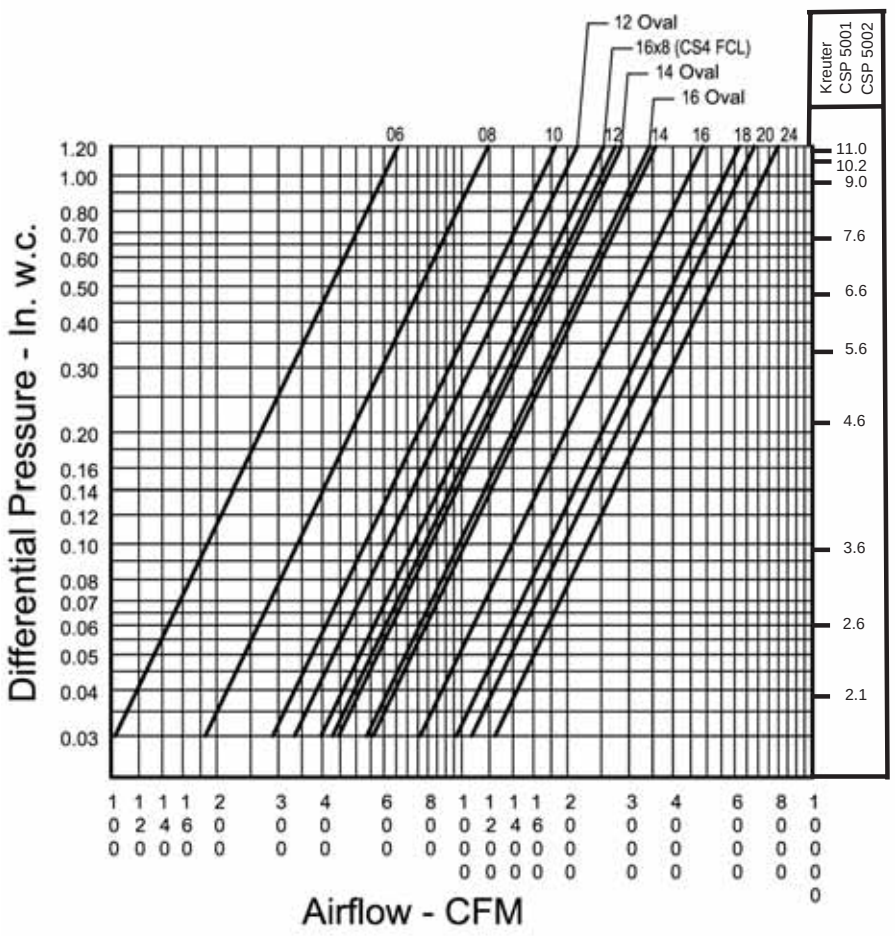
A special sheet metal liner that fits inside of the Series TH/TL-500 Air Terminal is thoroughly sealed to completely isolate the coated fibrous glass insulation material from the air stream. The liner provides a virtually nondestructible nonporous duct surface that cannot dry out, rip, tear or break 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.

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

$Cfm = \sqrt{\Delta p} \times$ 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

$CFM = \sqrt{\Delta p} * Cfm @ 1"$

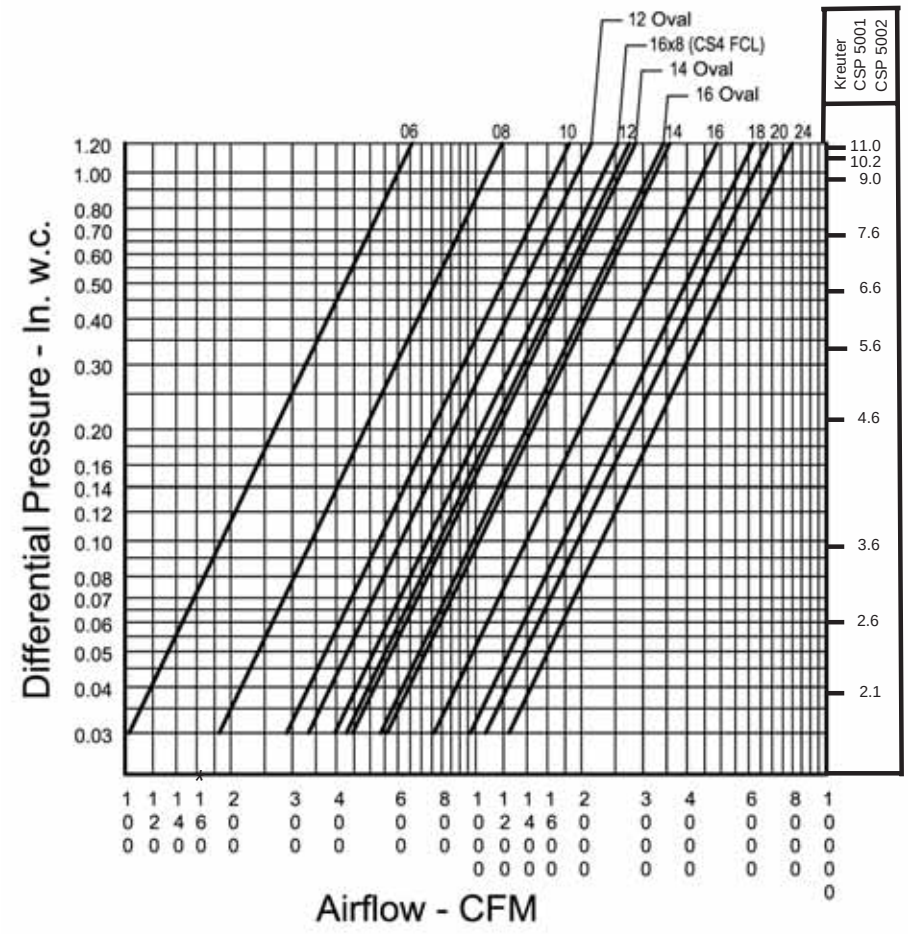
or

$CFM = \sqrt{\Delta p/K} * 4005 *$ 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.

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 = $\sqrt{\Delta p}$ x 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

$CFM = \sqrt{\Delta p} * Cfm @ 1"$

or

$CFM = \sqrt{\Delta p/K} * 4005 * Inlet\ Area$

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 METALAIRE Representative

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/ft^3 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/ft^3 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-Fee Liner 1/2" Thick
Air Terminal shall be internally insulated with 1/2" thick, 1.5 lbs./ft^3 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/ft^3 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.

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/ft^3 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/ft^3 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-Fee Liner 1/2" Thick
Air Terminal shall be internally insulated with 1/2" thick, 1.5 lbs/ft^3 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./ft^3 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.

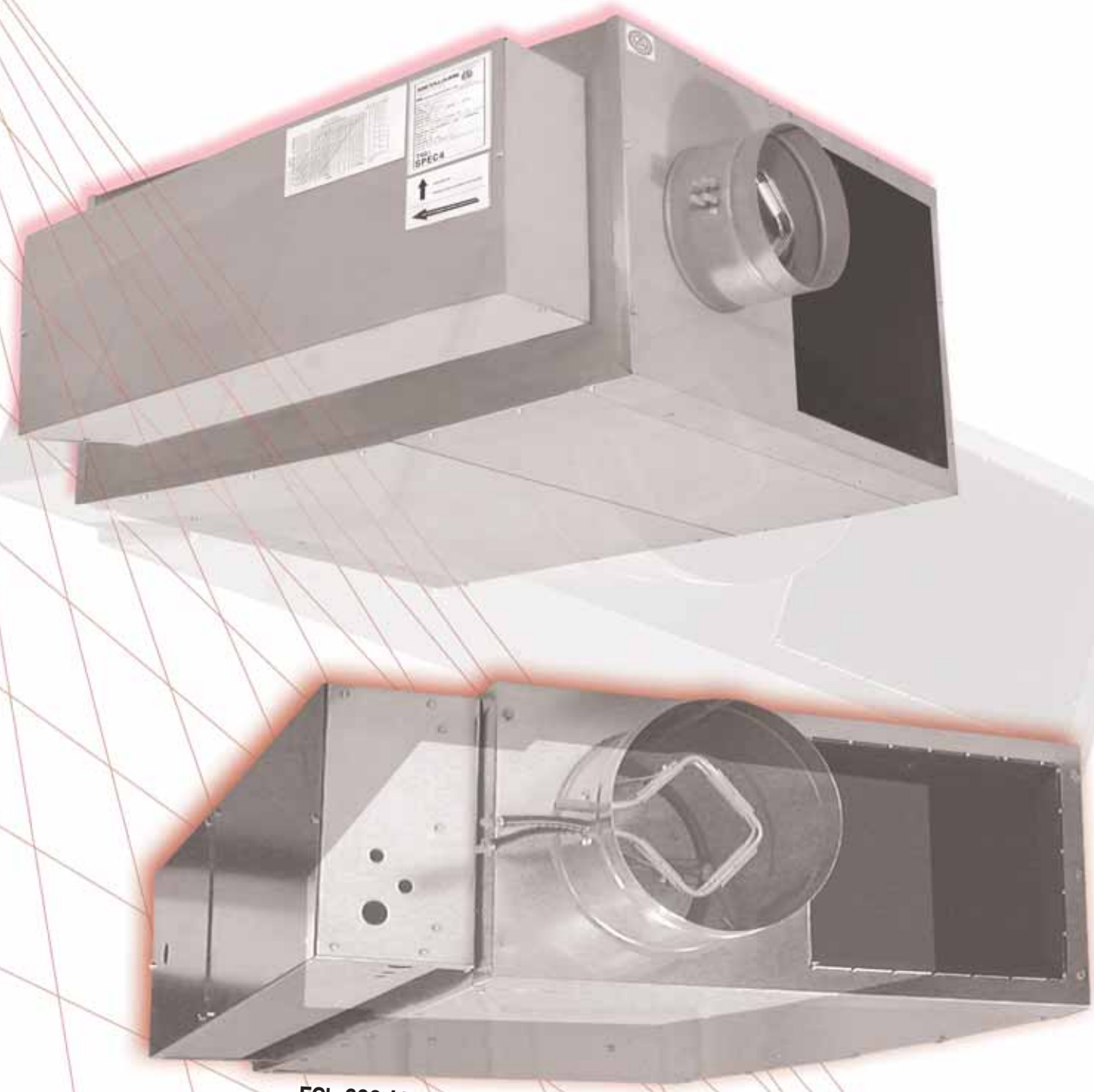
6. Metal Liner

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

FCI-600/FCL-600 - Table of Contents

ARI CERTIFIED AIR TERMINALS

METALAIRE 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 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.

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.

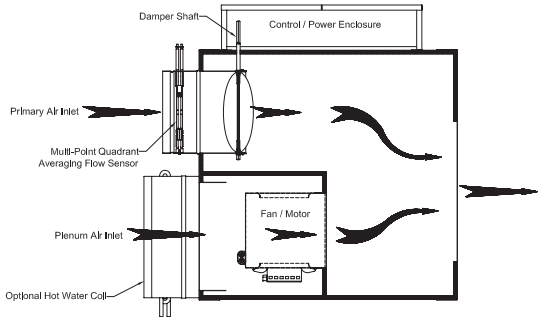
Both the FCI-600 and FCL-600 provide cooling through the primary air valve, which controls the volume of air that is discharged into the terminal unit. The cooled air is then delivered to the space through the terminal's fan. When heating is required, the air terminal initially provides plenum air that 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 avaiable in two casing sizes. Superior design and construction make the FCI-600 and FCL-600 easy to install and maintain.

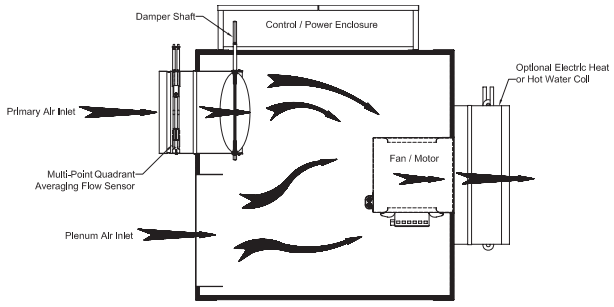
Types of Fan Powered Units

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

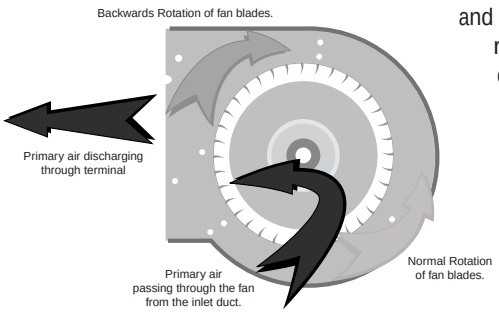
Air Terminals may be specified with a wide range of UL listed Electric Heaters. Units with electric heat are shipped with an integral sound attenuator as standard.

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 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.



Electronic Anti-Reverse Rotation Device

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/ft^3. 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. ThemoPure 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.

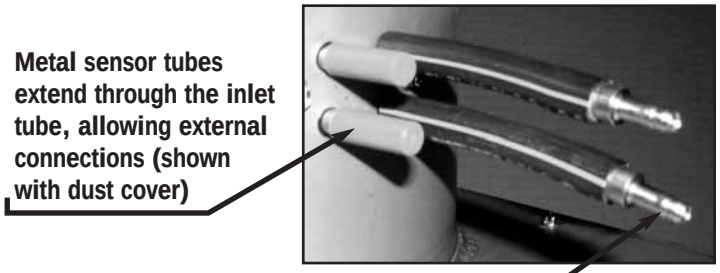
The primary air valve has a bead rolled into the tube, which strengthens the tube and serves as a stop and prevents field attached flex duct from slipping.

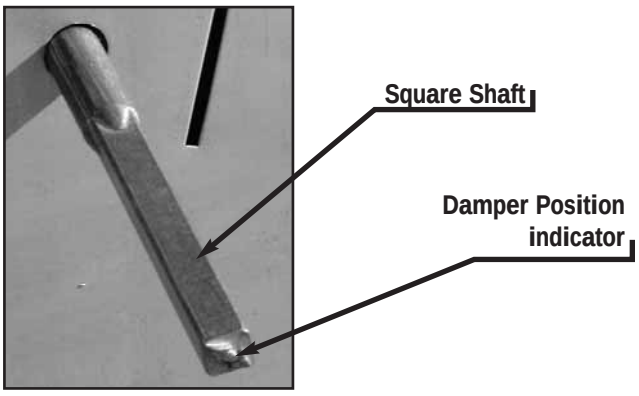
Flow Sensor

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".





Series Fan Powered Air Terminal Units

SERIES FCI-600

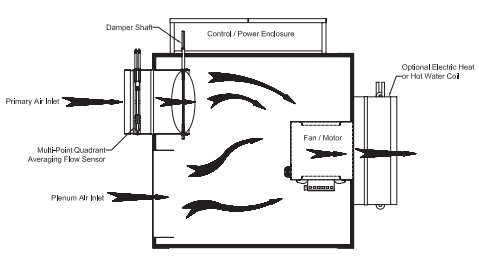
Constant Volume Air Terminal Units

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.

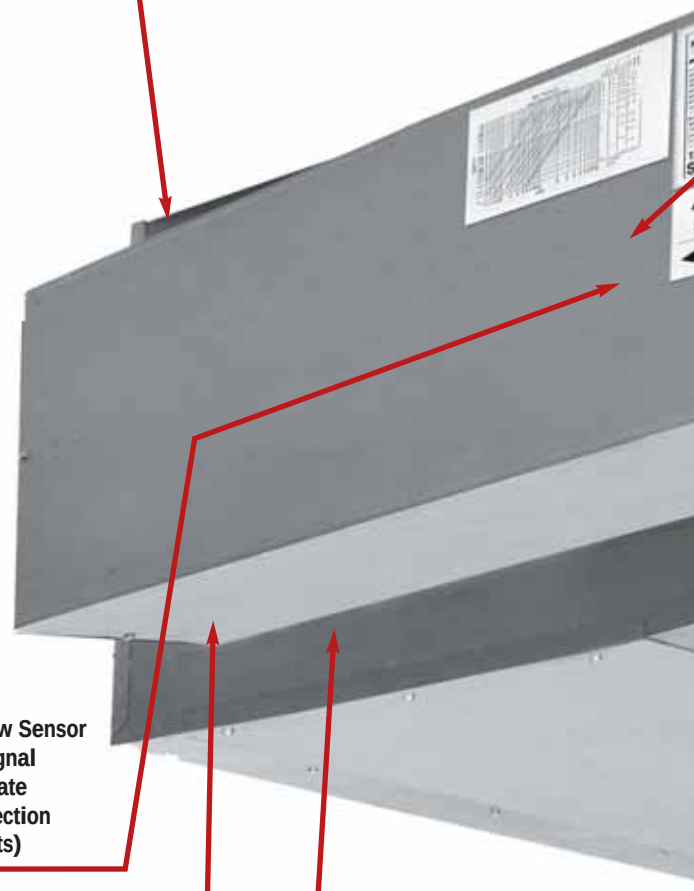
Series FCI-600 provides cooling through the primary air valve. The primary air valve controls the volume of air that is discharged into the terminal unit. The cooled air is delivered to the space through the terminal's fan. When heating is required, the **Series FCI-600** initially provides plenum air 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)

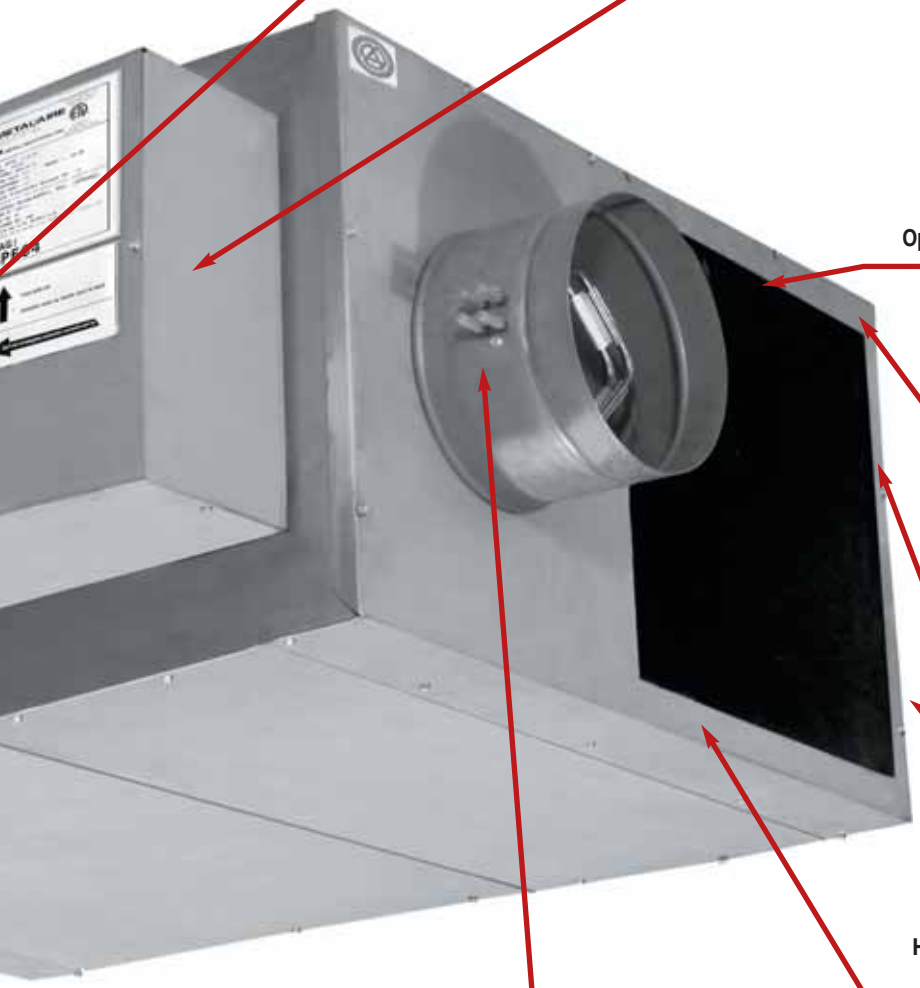
All electrical wiring is connected using quick-disconnect bulkhead fittings allowing easy servicing of electrical components

Control panel includes stand-offs to allow mounting of controls without penetrating the casing

Series Fan Powered Air Terminal Units

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

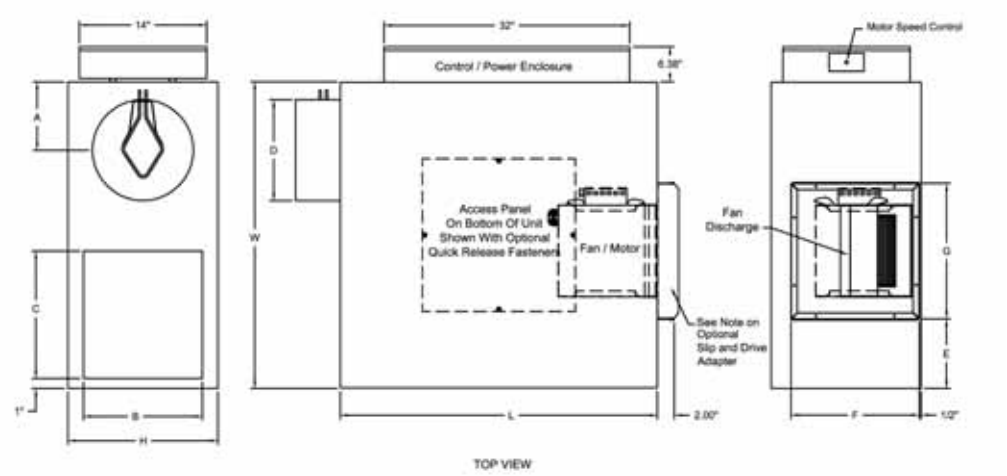
Series Fan Powered Air Terminal Units

FCI-600 - Air Terminal Dimensions

Dimensions are in inches

Series Fan Powered - Basic Unit

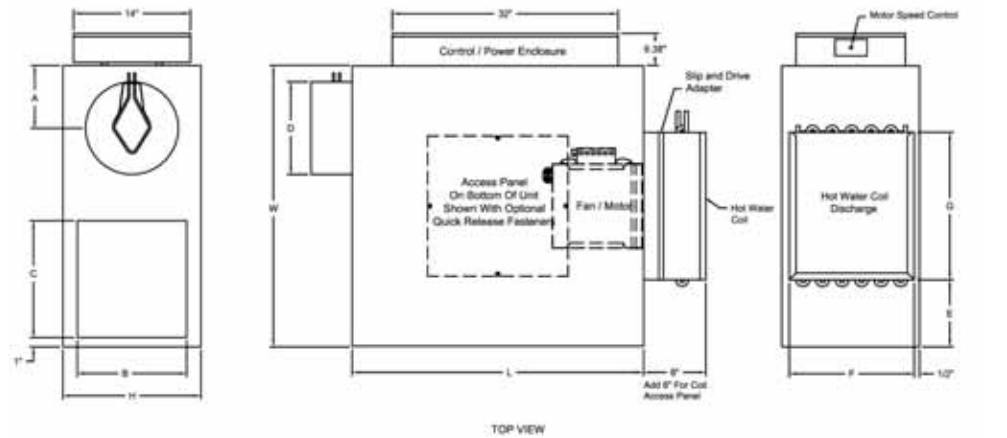
Case Size 2 - *8" Inlet*
Case Size 3 - *10" Inlet*
Case Size 4 - *12" Inlet*
Case Size 5 - *14" Inlet*
Case Size 6 - *16" Inlet*
Case Size 7 - *18" x 16" Inlet*



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 (952)

Series Fan Powered - With Hot Water Coil on Discharge Port

Case Size 2 - *8" Inlet*
Case Size 3 - *10" Inlet*
Case Size 4 - *12" Inlet*
Case Size 5 - *14" Inlet*
Case Size 6 - *16" Inlet*
Case Size 7 - *18" x 16" Inlet*



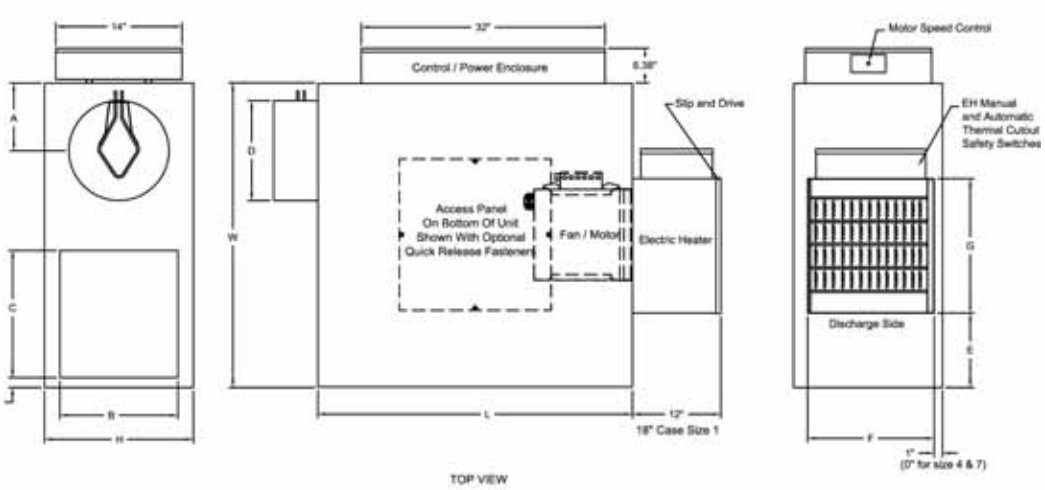
Casing Size	Inlet Diameter D		Horse Power	Unit Height H	Unit Width W	Unit Length L	Inlet Loc. A	Ind. Inlet Height B	Ind. Inlet Width C	Standard Hot Water Coil		
										Discharge Loc. E	Discharge Height F	Discharge Width G
	Standard	Optional										
2	8 (203)	6, 10, 12	1/2	17 1/2 (445)	30 (762)	36 (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 - Air Terminal Dimensions

Series Fan Powered - With Electric Heat

Case Size 2 - *8" Inlet*
Case Size 3 - *10" Inlet*
Case Size 4 - *12" Inlet*
Case Size 5 - *14" Inlet*
Case Size 6 - *16" Inlet*
Case Size 7 - *18" x 16" Inlet*



Casing Size	Inlet Diameter D Standard	Inlet Diameter D Optional	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
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)

Approximate Shipping Weight	
CASE	FCI
2	**124 LBS.**
3	165 LBS.
4	**165 LBS.**
5	198 LBS.
6	**220 LBS.**
7	260 LBS.

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**

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)

Motors also available: 208-240V, 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
2	1/2	7.7	4.1
4	1/2	7.7	4.1
6	1	12.8	6.9

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

FCI-600 - Radiated Sound Power at Fan Only, .5", .75" Wg

Case	Inlet	Outlet Ps in. H20	CFM (L/s)		Min Ps in. H20 (Pa)		Fan Only Octave Band Sound Power, Lw, dB						NC1 ARI 885-90	NC2 ARI 885-98	sure, Ps = 0.5 inches of water Octave Band Sound Power, Lw, dB						NC1 ARI 885-90	NC2 ARI 885-98	sure, Ps = 0.75 inches of water 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	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, METALAIRE publishes the NC levels for both the 1990 standard and the 1998 current standard.

FCI-600 - Radiated Sound Power at 1", 1.5", 2" Wg

Case	Inlet	Outlet Ps in. H20	CFM (L/s)	Min Ps in. H20 (Pa)	sure, Ps = 1.0 inches of water Octave Band Sound Power, Lw, dB						NC1 ARI 885-	NC2 ARI 885-	sure, Ps = 1.5 inches of water Octave Band Sound Power, Lw, dB						NC1 ARI 885-	NC2 ARI 885-	sure, Ps = 2.0 inches of water 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
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	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

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 - Discharge Sound Power at Fan Only, .5", .75" Wg

Case	Inlet	Outlet Ps in. H20	CFM (L/s)		Min Ps in. H20 (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		
			200	(94)	0.010	(2.5)	51	49	43	33	24	20	-	-	54	51	44	36	28	23	-	-	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**	**-**	**21**
			500	(236)	0.051	(12.7)	54	52	46	38	30	26	-	-	57	53	46	41	34	29	-	21	58	54	48	44	37	35	-	22
2	**8**	**0.25**	**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**
			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
			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**
			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
			400	**(189)**	**0.008**	**(2.0)**	**50**	**49**	**43**	**34**	**28**	**23**	**-**	**-**	**51**	**49**	**46**	**35**	**30**	**24**	**-**	**-**	**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
4	**12**	**0.25**	**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**
			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
			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**
			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
			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**
			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
			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**
6	**16**	**0.25**	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
			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**
			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
			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**

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, METALAIRE publishes the NC levels for both the 1990 standard and the 1998 current standard.

FCI-600 - Discharge Sound Power at 1", 1.5", 2" Wg

Case	Inlet	Outlet Ps in. H20	CFM (L/s)	Min Ps in. H20 (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 885-90	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	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	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

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 - 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/ft^3 density)
2) Room size is 3000 ft^3.
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	
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 ft^3.
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 ft^3.
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/ft^3 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 ft^3.
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 ft^3.
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

FCI-600 - Hot Water Coil MBH Selection Data/Imperial Units

Unit Size	Rows	GPM	Head Loss ($Ft-H_2O$)	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 ($Ft-H_2O$)**	**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 ($Ft-H_2O$)**	**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 ($Ft-H_2O$)**	**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 ($Ft-H_2O$)**	**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 ($Ft-H_2O$)**	**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	-	-

For Performance Notes see page FCI-95 Table A

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 165	190	235	259.6	305	355	375
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 375	470	520	565	615	660	710
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 565	640	700	815	875	930	990
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 780	850	920	990	1130	1230	1320
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 710	945	1180	1415	1650	1890	2125
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	-	-

For Performance Notes see page FCI-95 Table B

FCI-600 - Hot Water Coils Notes

Table-A

IMPERIAL NOTES

1. Hot water coil data are for discharge mounted coils.

2. 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.

3. Tabulated values are in MBH (Thousands of BTU per hour).

4. Head Loss is in feet of water.

5. 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 = $\frac{927 \times MBH}{CFM}$

7. Water Temperature Drop = $\frac{2.04 \times MBH}{GPM}$

8. For water valve sizing, contact your METALAIRE representative. For data values other than those listed, interpolate or use the METALAIRE Terminal Selection Program. Contact your METALAIRE representative for additional information.

9. All hot water coils are 10 Fins per inch (FPI).

Table-B

METRIC NOTES

1. Hot water coil data are for discharge mounted coils.

2. 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.

3. Tabulated values are in kW (Thousands of watts).

4. Head loss is in kPa.

5. 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

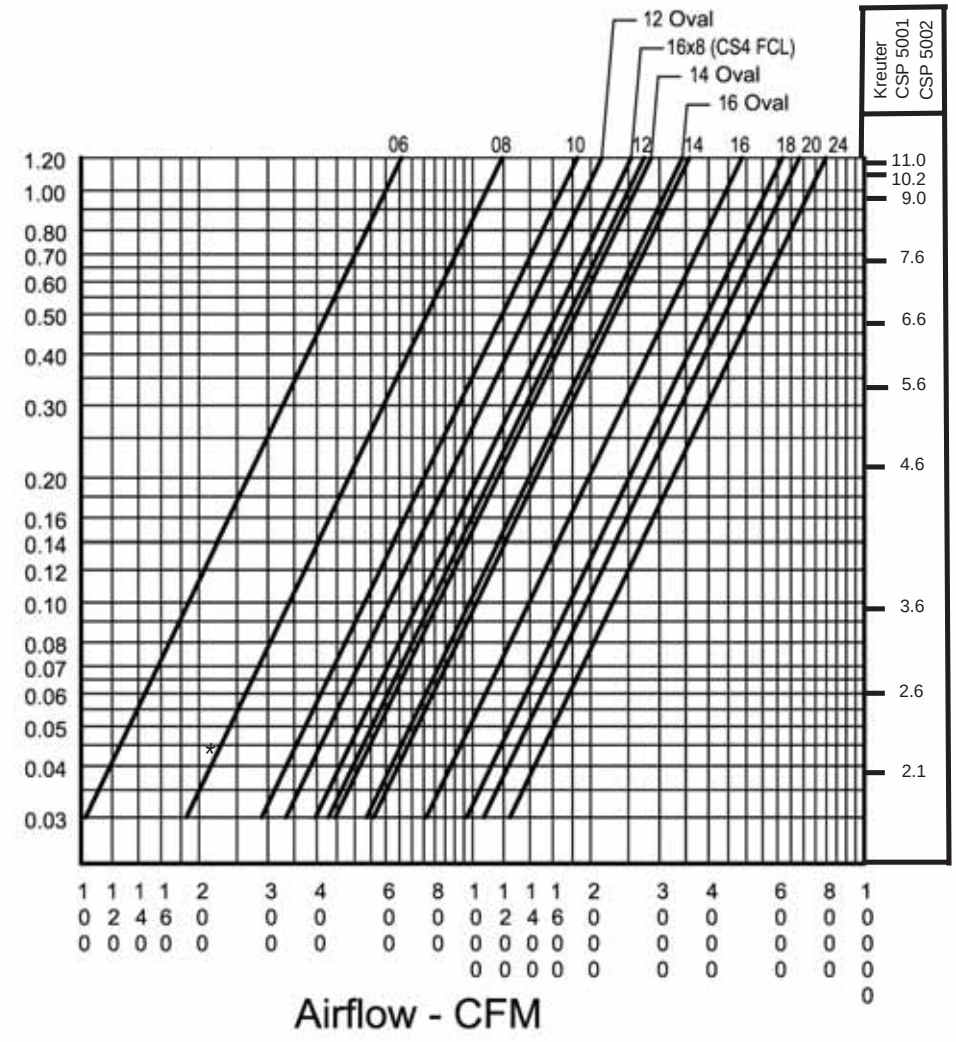
6. Air Temperature Rise = $\frac{kW \times 579}{\text{air flow in L/s}}$

7. Water Temperature Drop = $\frac{kW \times 0.17}{\text{water flow in L/s}}$

8. For water valve sizing, contact your METALAIRE representative. For data values other than those listed, interpolate or use the Metal Industries computerized engineering program. Contact your METALAIRE 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

$Cfm = \sqrt{\Delta p} \times$ Flow Coefficient

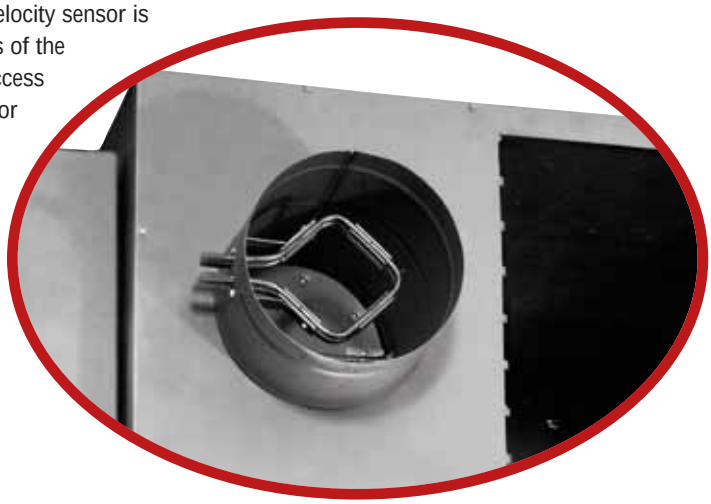
Data is with Sensor Mounted in Round Duct, except for Rectangular Sizes 18, 20 and 24 Widths x 16 Height and 16 x 8 (FCL Case 4)

*Some controllers do not operate consistently below 0.030 in. w.c.

PRIMARY AIR VALVE AND MULTI-POINT QUADRANT AVERAGING FLOW SENSOR

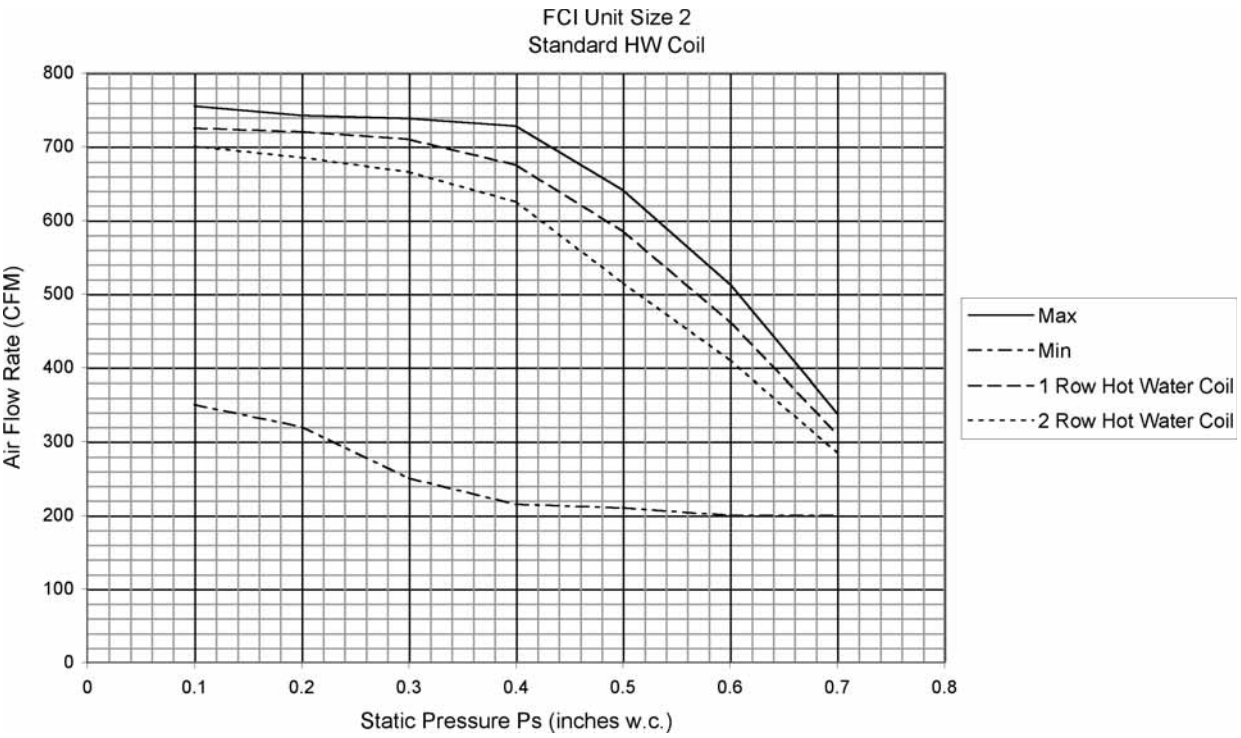
Primary air valve has a bead rolled into the tube, which strengthens the tube and serves as a stop to prevent field-attached flex duct from slipping. The primary valve velocity sensor is multi-ported and arranged to sense velocity in each of four quadrants of the inlet. Those port readings are then inherently averaged back to the access ports. The sensor has two control ports and two accessory ports. Piping connections are made externally.

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

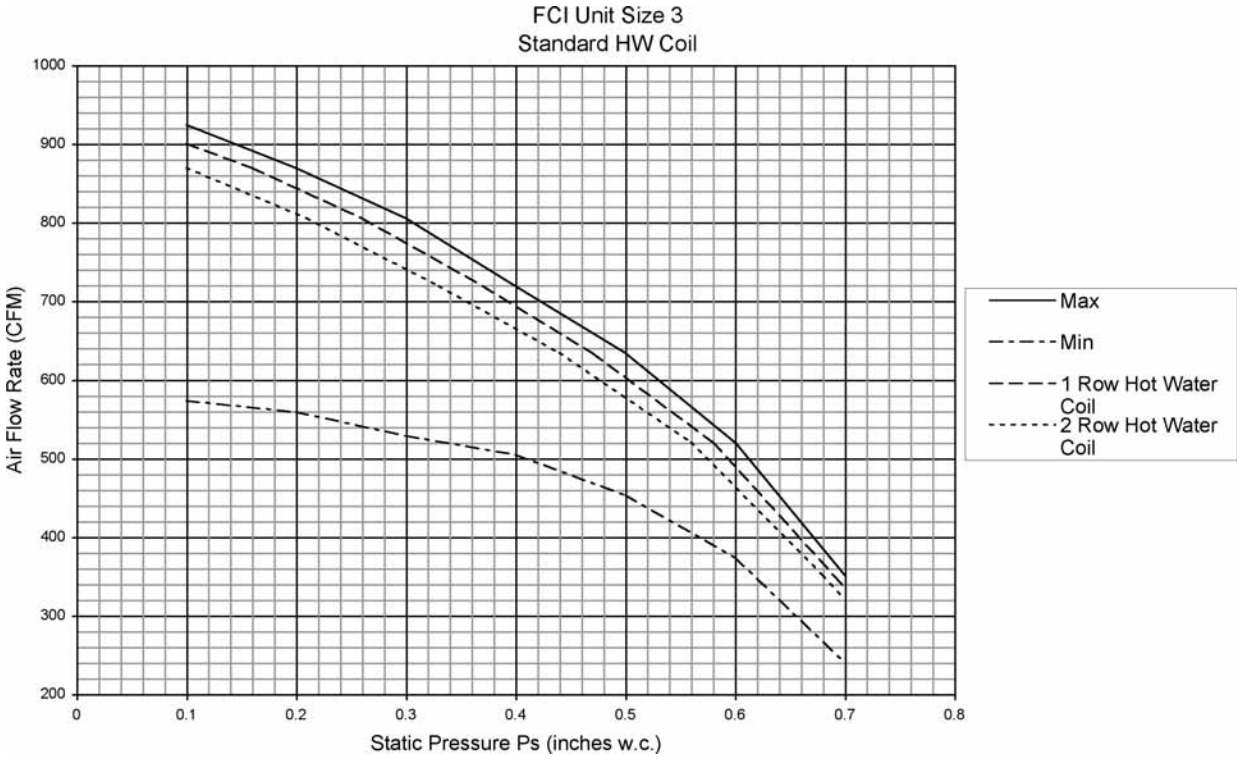


FCI-600 - Fan Performance Charts

FAN CURVES

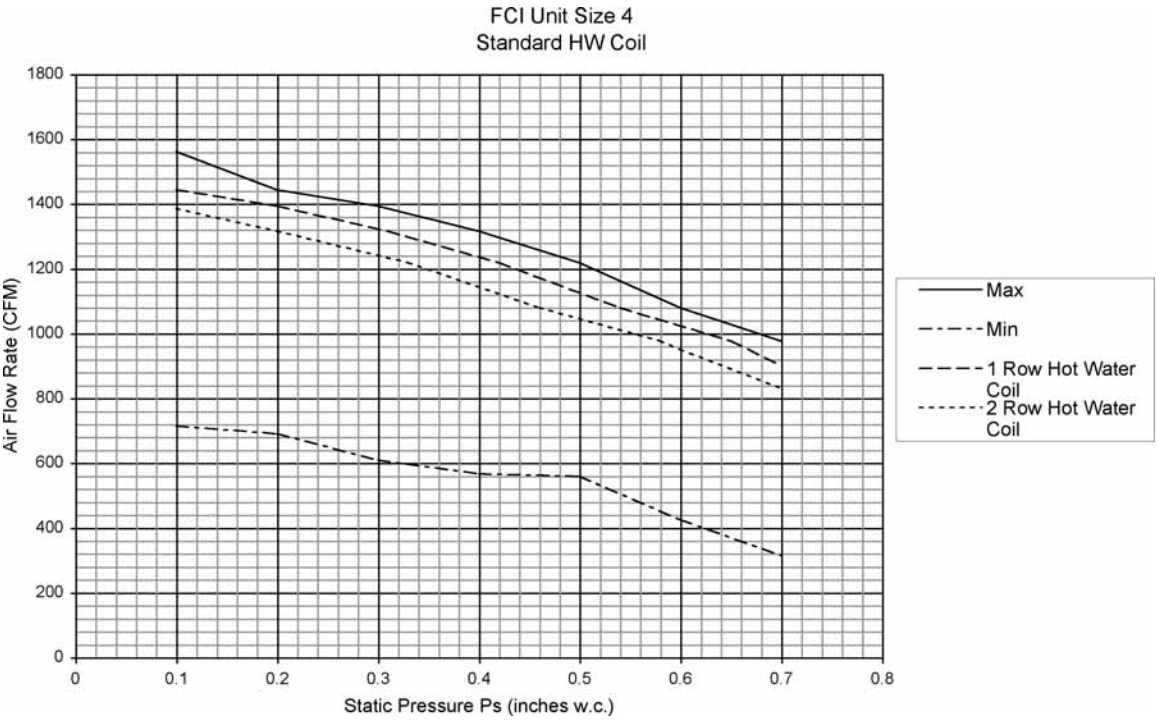


FAN CURVES

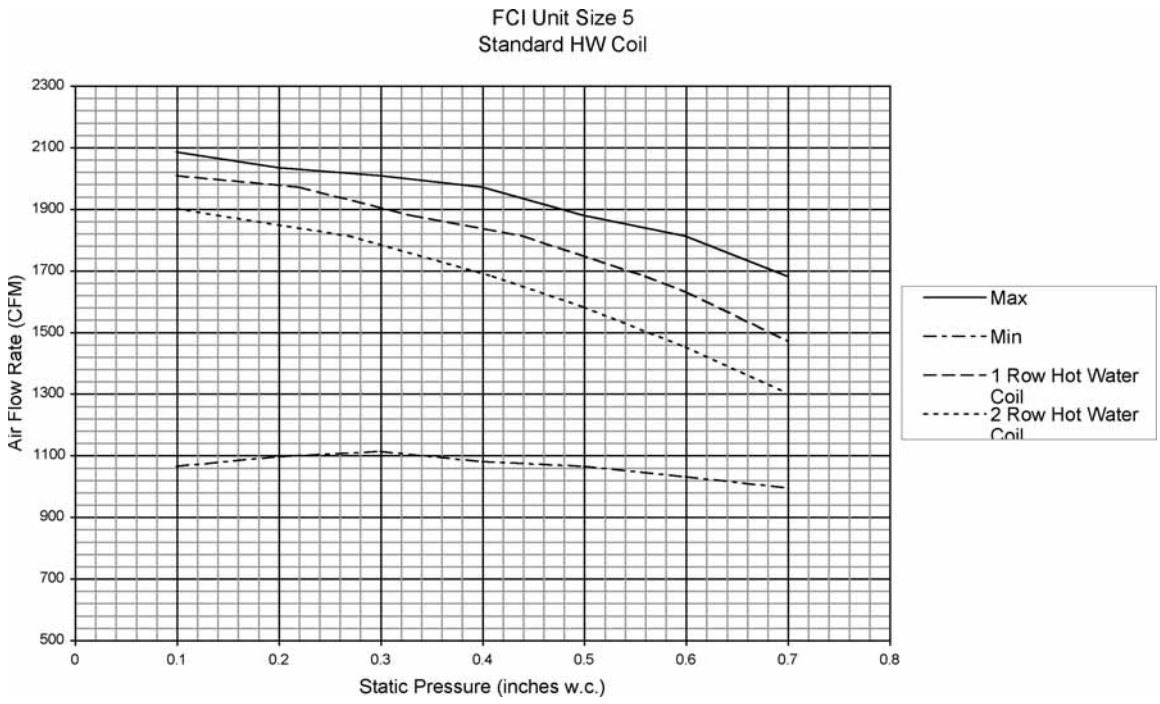


FCI-600 - Fan Performance Charts

FAN CURVES

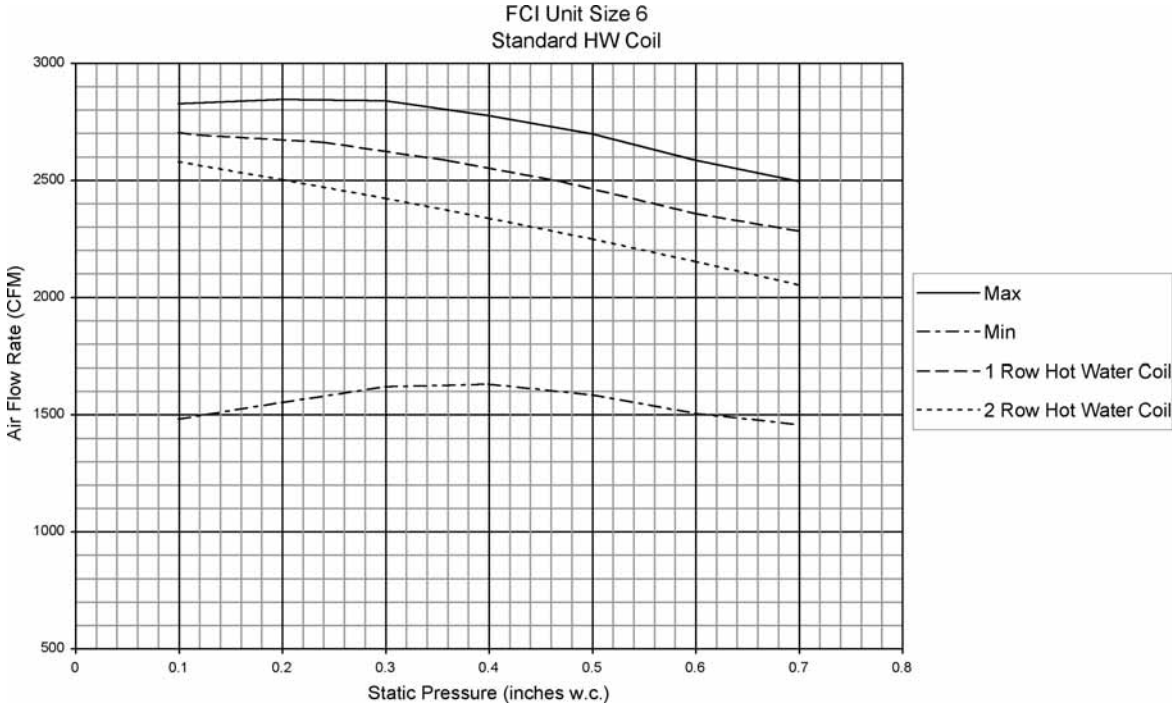


FAN CURVES

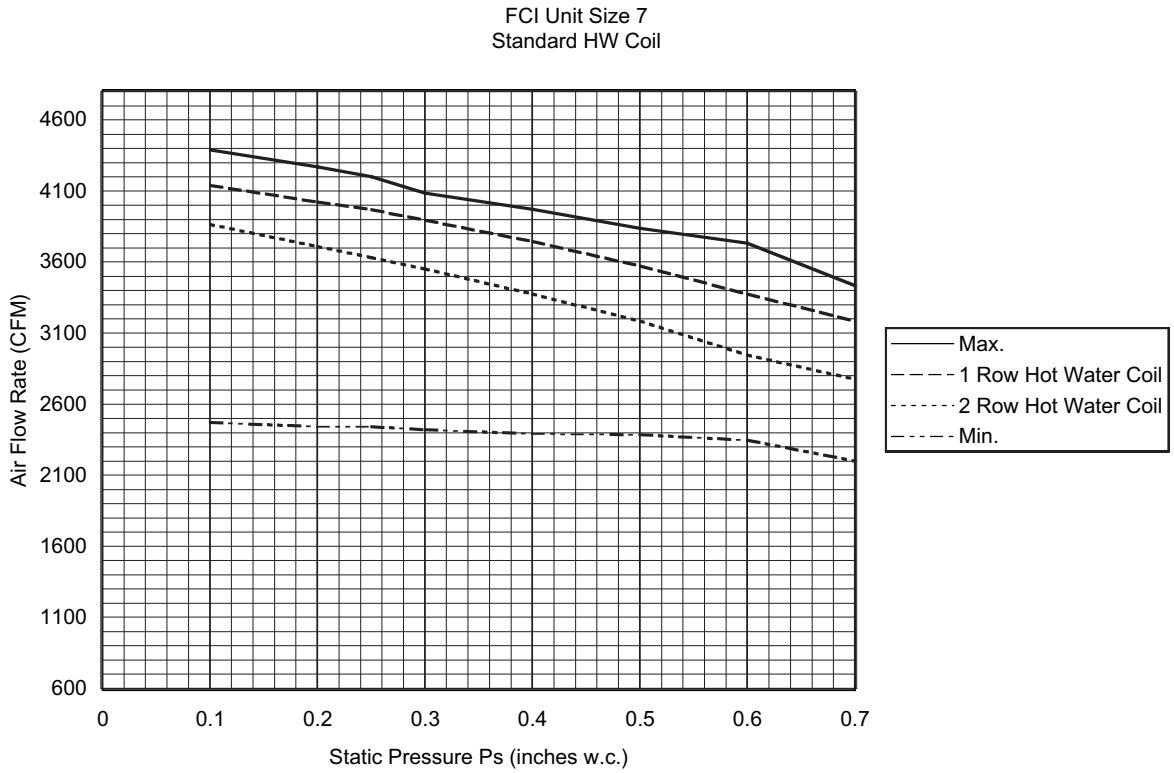


FCI-600 - Fan Performance Charts

FAN CURVES



FAN CURVES



Series Fan Powered Air Terminal Units

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.

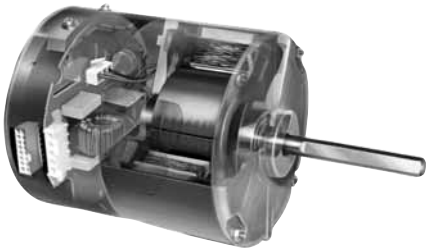
What is an ECM motor?
ECM stands for Electronically Commutated Motors This technology was developed by GE. The GE ECM™ is a brushless-DC motor with built in speed and torque controls.

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.



Optional ECM Motor is available with FVI-500 Series Fan Powered Terminal Units.

- **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

Metalaire 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.

ECM Controls

Model ECM-RPM - Remote Adjustment

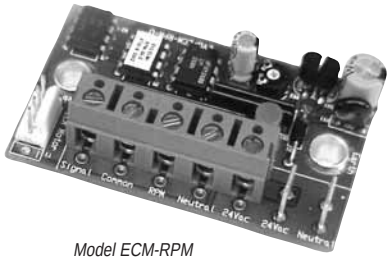
The ECM-RPM allows industry standard 2-10 Vdc controls to adjust and monitor General Electric's ECM Motor™. These are fractional horsepower air moving motors featuring an internal microprocessor. The design provides exceptional efficiency, performance and motor life. The motor may be factory configured 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

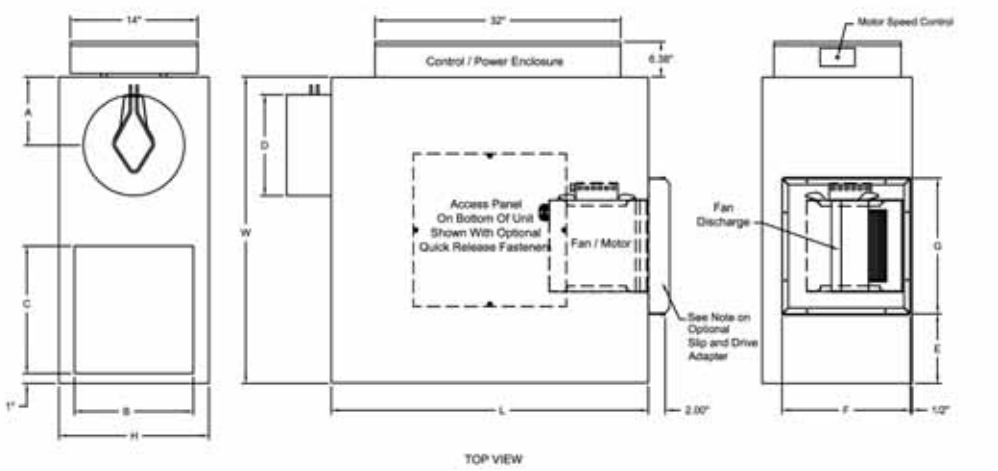
Model ECM-VCU

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*

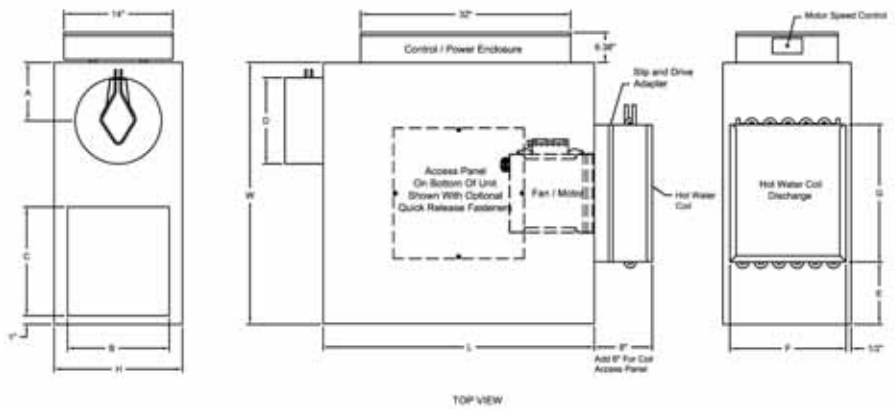


TOP VIEW

Casing Size	Inlet Diameter D Standard	Inlet Diameter D Optional	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
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 - ECM Motor - With Hot Water Coil

Case Size 2 - *8" Inlet*
Case Size 4 - *12" Inlet*
Case Size 6 - *16" Inlet*



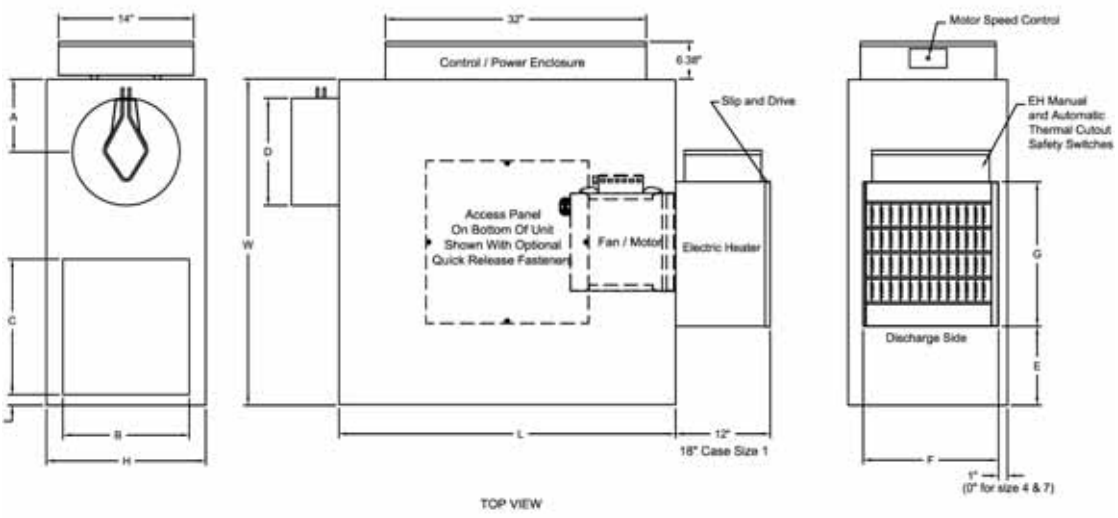
TOP VIEW

Casing Size	Inlet Diameter D Standard	Inlet Diameter D Optional	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 Discharge Loc. E	Standard Hot Water Coil Discharge Height F	Standard Hot Water Coil 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)

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)	18 (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

ECM FCI-600 - Radiated Sound Power Fan Only, .5", .75" Wg

Case	Inlet	Outlet Ps in. H20	CFM (L/s)		Min Ps in. H20 (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	8	0.25	200	(94)	0.038	(9.5)	54	50	44	36	34	32	-	-	55	52	46	40	39	36	-	-	56	53	48	42	41	38	-	22
			400	**(189)**	**0.104**	**(25.8)**	**58**	**54**	**48**	**40**	**38**	**36**	**-**	**22**	**59**	**56**	**50**	**43**	**42**	**39**	**21**	**25**	**59**	**58**	**51**	**45**	**44**	**41**	**24**	**27**
			500	(236)	0.136	(33.9)	60	56	50	42	40	38	21	25	61	58	51	45	44	41	24	27	61	59	52	47	46	43	25	28
			600	**(283)**	**0.169**	**(42.1)**	**62**	**58**	**52**	**44**	**42**	**40**	**24**	**27**	**63**	**60**	**53**	**47**	**46**	**43**	**26**	**29**	**63**	**61**	**54**	**49**	**48**	**45**	**27**	**31**
			700	(330)	0.188	(46.8)	64	60	54	46	44	42	26	29	65	62	55	49	48	45	28	32	65	63	56	51	50	47	29	33
			800	**(378)**	**0.218**	**(54.3)**	**66**	**62**	**56**	**48**	**46**	**44**	**28**	**32**	**67**	**64**	**57**	**51**	**50**	**47**	**31**	**34**	**67**	**65**	**58**	**53**	**52**	**49**	**32**	**35**
			900	(425)	0.248	(61.8)	68	64	58	50	48	46	31	34	69	66	59	52	51	49	33	37	69	67	60	54	53	51	34	38
4	12	0.25	**400**	**(189)**	**0.009**	**(2.2)**	**57**	**53**	**47**	**46**	**41**	**39**	**-**	**21**	**58**	**55**	**48**	**46**	**41**	**39**	**-**	**24**	**58**	**56**	**50**	**48**	**41**	**39**	**21**	**25**
			700	(330)	0.027	(6.7)	63	58	53	50	44	43	24	27	65	62	55	50	44	43	28	32	65	64	55	50	44	43	31	34
			1000	**(472)**	**0.052**	**(13.0)**	**66**	**61**	**56**	**53**	**47**	**46**	**27**	**31**	**67**	**63**	**58**	**54**	**49**	**47**	**30**	**33**	**68**	**64**	**60**	**55**	**50**	**48**	**32**	**35**
			1200	(566)	0.086	(21.4)	68	63	58	55	49	48	30	33	69	64	60	56	50	49	32	35	70	65	61	56	51	49	32	35
			1400	**(661)**	**0.109**	**(27.2)**	**70**	**65**	**60**	**57**	**51**	**50**	**32**	**35**	**71**	**66**	**61**	**57**	**52**	**50**	**33**	**37**	**71**	**67**	**62**	**58**	**52**	**51**	**34**	**37**
			1600	(755)	0.133	(33.1)	72	67	62	59	53	52	34	38	73	68	63	59	54	52	35	39	73	69	64	60	54	53	36	39
6	16	0.25	**800**	**(378)**	**0.009**	**(2.2)**	**61**	**58**	**52**	**49**	**48**	**44**	**24**	**27**	**62**	**59**	**54**	**50**	**49**	**45**	**25**	**29**	**63**	**60**	**55**	**51**	**49**	**46**	**26**	**30**
			1100	(519)	0.012	(3.1)	64	61	54	52	51	48	27	31	65	62	56	53	52	49	28	32	66	63	57	54	53	50	29	33
			1500	**(708)**	**0.036**	**(9.1)**	**68**	**65**	**57**	**56**	**54**	**52**	**32**	**35**	**69**	**66**	**58**	**57**	**55**	**53**	**33**	**37**	**69**	**67**	**59**	**58**	**56**	**54**	**34**	**38**
			1700	(802)	0.049	(12.1)	71	67	59	59	56	55	34	38	72	68	61	60	56	55	35	39	73	69	63	61	56	56	37	40
			1950	**(920)**	**0.064**	**(15.8)**	**73**	**69**	**61**	**61**	**59**	**58**	**37**	**40**	**74**	**70**	**63**	**62**	**59**	**58**	**38**	**41**	**75**	**71**	**65**	**63**	**59**	**58**	**39**	**42**
			2200	(1038)	0.079	(19.6)	75	71	63	63	61	60	39	42	76	73	65	64	62	60	41	45	77	74	66	65	62	60	42	46
			2400	**(1133)**	**0.090**	**(22.4)**	**78**	**73**	**65**	**65**	**63**	**62**	**41**	**45**	**79**	**74**	**67**	**66**	**63**	**62**	**43**	**46**	**79**	**75**	**68**	**67**	**64**	**62**	**44**	**47**

See Page FCI-92 For NC Calculations

ECM FCI-600 - Radiated Sound Power at 1", 1.5", 2" Wg

Case	Inlet	Outlet Ps in. H20	CFM (L/s)		Min Ps in. H20 (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 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	8	0.25	200	(94)	0.038	(9.5)	57	54	49	44	43	40	-	23	58	56	51	48	48	44	22	25	60	61	54	50	48	45	27	31
			400	**(189)**	**0.104**	**(25.8)**	**59**	**59**	**51**	**47**	**46**	**43**	**25**	**28**	**60**	**61**	**53**	**50**	**50**	**46**	**27**	**31**	**63**	**64**	**57**	**53**	**50**	**48**	**31**	**34**
			500	(236)	0.136	(33.9)	61	59	53	48	47	45	25	28	62	61	54	51	51	48	27	31	65	66	59	55	52	50	33	37
			600	**(283)**	**0.169**	**(42.1)**	**63**	**61**	**55**	**50**	**49**	**47**	**27**	**31**	**64**	**63**	**56**	**53**	**53**	**50**	**29**	**33**	**67**	**68**	**61**	**57**	**54**	**52**	**35**	**39**
			700	(330)	0.188	(46.8)	65	63	57	52	51	49	29	33	66	65	58	55	54	52	32	35	69	69	63	59	55	54	37	40
			800	**(378)**	**0.218**	**(54.3)**	**67**	**65**	**59**	**54**	**53**	**51**	**32**	**35**	**68**	**67**	**60**	**57**	**57**	**54**	**34**	**38**	**71**	**70**	**65**	**61**	**58**	**56**	**38**	**41**
			900	(425)	0.248	(61.8)	69	67	61	55	54	53	34	38	70	69	62	58	58	56	37	40	73	72	67	62	59	58	40	44
4	12	0.25	**400**	**(189)**	**0.009**	**(2.2)**	**59**	**56**	**51**	**48**	**43**	**39**	**22**	**25**	**60**	**56**	**53**	**48**	**44**	**40**	**24**	**27**	**63**	**58**	**56**	**50**	**47**	**43**	**27**	**31**
			700	(330)	0.027	(6.7)	66	64	56	50	44	43	31	34	68	64	58	50	45	44	31	34	73	66	62	57	51	49	35	39
			1000	**(472)**	**0.052**	**(13.0)**	**69**	**65**	**61**	**56**	**50**	**49**	**33**	**36**	**70**	**67**	**63**	**57**	**52**	**50**	**35**	**38**	**75**	**68**	**64**	**59**	**53**	**51**	**38**	**41**
			1200	(566)	0.086	(21.4)	71	66	61	56	51	49	33	37	72	67	63	57	52	50	35	38	76	69	65	60	54	52	39	43
			1400	**(661)**	**0.109**	**(27.2)**	**72**	**67**	**63**	**58**	**52**	**51**	**35**	**38**	**73**	**68**	**64**	**58**	**53**	**51**	**36**	**39**	**78**	**71**	**67**	**62**	**56**	**54**	**41**	**45**
			1600	(755)	0.133	(33.1)	74	69	65	60	54	53	37	41	75	70	66	60	55	53	38	42	80	73	69	64	58	56	44	48
6	16	0.25	**800**	**(378)**	**0.009**	**(2.2)**	**64**	**61**	**56**	**52**	**49**	**47**	**27**	**31**	**65**	**62**	**58**	**53**	**50**	**47**	**30**	**33**	**68**	**65**	**61**	**55**	**53**	**49**	**33**	**36**
			1100	(519)	0.012	(3.1)	67	64	58	55	53	51	31	34	68	65	61	56	54	51	33	36	71	68	64	59	58	53	36	39
			1500	**(708)**	**0.036**	**(9.1)**	**70**	**68**	**60**	**59**	**56**	**55**	**35**	**39**	**71**	**69**	**62**	**60**	**57**	**55**	**37**	**40**	**73**	**70**	**65**	**62**	**59**	**57**	**38**	**41**
			1700	(802)	0.049	(12.1)	74	70	64	62	56	56	38	41	75	71	66	63	57	56	39	42	79	75	68	66	62	58	44	47
			1950	**(920)**	**0.064**	**(15.8)**	**76**	**71**	**66**	**64**	**60**	**58**	**39**	**43**	**77**	**73**	**68**	**65**	**61**	**59**	**41**	**45**	**81**	**77**	**70**	**68**	**64**	**60**	**46**	**50**
			2200	(1038)	0.079	(19.6)	78	74	67	66	62	60	42	46	79	76	69	67	63	60	45	48	82	78	71	69	65	61	47	51
			2400	**(1133)**	**0.090**	**(22.4)**	**79**	**76**	**68**	**67**	**64**	**62**	**45**	**48**	**81**	**77**	**70**	**68**	**64**	**62**	**46**	**50**	**84**	**80**	**73**	**71**	**67**	**63**	**50**	**53**

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, METALAIRE publishes the NC levels for both the 1990 standard and the 1998 current standard.

Series Fan Powered Air Terminal Units

ECM FCI-600 - Discharge Sound Power Fan Only, .5", .75" Wg

Case	Inlet	Outlet Ps in. H20	CFM (L/s)		Min Ps in. H20 (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	8	0.25	200	(94)	0.038	(9.5)	64	63	60	51	50	49	-	22	64	63	60	51	50	49	-	22	65	63	61	51	51	49	-	22
			400	**(189)**	**0.104**	**(25.8)**	**67**	**66**	**63**	**54**	**53**	**52**	**21**	**25**	**67**	**66**	**63**	**54**	**53**	**52**	**21**	**25**	**68**	**66**	**63**	**54**	**54**	**52**	**21**	**25**
			500	(236)	0.136	(33.9)	69	68	65	56	55	54	24	27	69	68	65	56	55	54	24	27	70	69	65	56	56	54	25	28
			600	**(283)**	**0.169**	**(42.1)**	**71**	**70**	**67**	**58**	**57**	**56**	**26**	**29**	**71**	**70**	**67**	**58**	**57**	**56**	**26**	**29**	**72**	**70**	**67**	**58**	**58**	**56**	**26**	**29**
			700	(330)	0.188	(46.8)	73	71	69	60	59	58	27	31	73	71	69	61	59	58	27	31	74	72	69	61	59	58	28	32
			800	**(378)**	**0.218**	**(54.3)**	**75**	**73**	**71**	**62**	**61**	**60**	**29**	**31**	**75**	**73**	**71**	**62**	**61**	**60**	**29**	**31**	**76**	**73**	**71**	**62**	**61**	**60**	**29**	**31**
			900	(425)	0.248	(61.8)	77	75	73	64	63	62	32	33	77	75	73	64	63	62	32	33	78	75	73	64	63	62	32	33
4	12	0.25	**400**	**(189)**	**0.009**	**(2.2)**	**68**	**63**	**62**	**56**	**55**	**54**	-	**21**	**68**	**63**	**62**	**57**	**56**	**55**	-	**21**	**69**	**64**	**62**	**58**	**56**	**55**	-	**22**
			700	(330)	0.027	(6.7)	70	66	63	59	58	57	21	25	71	66	64	60	58	58	21	25	71	67	64	60	59	58	22	26
			1000	**(472)**	**0.052**	**(13.0)**	**71**	**67**	**64**	**60**	**59**	**58**	**22**	**24**	**71**	**67**	**64**	**60**	**59**	**58**	**22**	**24**	**72**	**68**	**65**	**61**	**60**	**59**	**24**	**25**
			1200	(566)	0.086	(21.4)	73	69	66	62	61	60	25	26	73	69	66	62	61	60	25	26	74	70	67	63	62	61	26	27
			1400	**(661)**	**0.109**	**(27.2)**	**75**	**71**	**68**	**64**	**63**	**62**	**27**	**28**	**75**	**71**	**68**	**64**	**63**	**62**	**27**	**28**	**76**	**72**	**69**	**65**	**64**	**63**	**28**	**29**
			1600	(755)	0.133	(33.1)	77	73	70	66	65	64	29	31	78	73	71	67	66	65	29	31	78	74	71	67	66	65	31	32
6	16	0.25	**800**	**(378)**	**0.009**	**(2.2)**	**68**	**62**	**61**	**59**	**57**	**54**	-	-	**69**	**63**	**61**	**59**	**57**	**54**	-	-	**69**	**64**	**62**	**59**	**57**	**56**	-	-
			1100	(519)	0.012	(3.1)	70	64	63	61	59	57	-	-	70	64	64	61	59	57	-	-	71	65	64	62	59	59	-	21
			1500	**(708)**	**0.036**	**(9.1)**	**72**	**66**	**65**	**63**	**62**	**60**	**21**	**22**	**72**	**66**	**66**	**63**	**62**	**61**	**21**	**22**	**73**	**66**	**66**	**64**	**63**	**62**	**22**	**23**
			1700	(802)	0.049	(12.1)	73	67	66	64	63	62	22	24	74	68	67	65	63	63	24	25	74	68	67	65	64	63	24	25
			1950	**(920)**	**0.064**	**(15.8)**	**74**	**68**	**67**	**65**	**64**	**63**	**24**	**25**	**75**	**69**	**67**	**65**	**65**	**63**	**25**	**26**	**75**	**69**	**68**	**66**	**65**	**64**	**25**	**26**
			2200	(1038)	0.079	(19.6)	75	69	68	66	65	64	25	26	76	69	68	66	65	64	26	27	76	70	69	67	66	65	26	27
			2400	**(1133)**	**0.090**	**(22.4)**	**77**	**71**	**70**	**68**	**67**	**66**	**27**	**29**	**77**	**71**	**70**	**68**	**67**	**66**	**27**	**29**	**78**	**72**	**71**	**69**	**68**	**67**	**29**	**30**

See Page FCI-92 For NC Calculations

ECM FCI-600 - Discharge Sound Power at 1", 1.5", 2" Wg

Case	Inlet	Outlet Ps in. H20	CFM (L/s)		Min Ps in. H20 (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 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	8	0.25	200	(94)	0.038	(9.5)	65	64	61	52	51	50	-	24	65	64	61	52	51	50	-	24	66	65	61	52	51	50	-	25
			400	**(189)**	**0.104**	**(25.8)**	**68**	**67**	**64**	**55**	**54**	**53**	**22**	**26**	**68**	**67**	**64**	**55**	**54**	**53**	**22**	**26**	**68**	**67**	**64**	**55**	**55**	**53**	**22**	**26**
			500	(236)	0.136	(33.9)	70	69	66	57	56	55	25	28	71	69	66	57	56	55	25	28	71	69	66	57	56	55	25	28
			600	**(283)**	**0.169**	**(42.1)**	**72**	**71**	**68**	**59**	**58**	**57**	**27**	**31**	**72**	**71**	**68**	**59**	**58**	**57**	**27**	**31**	**72**	**72**	**68**	**60**	**58**	**57**	**28**	**32**
			700	(330)	0.188	(46.8)	74	73	70	61	60	59	29	33	74	73	70	61	60	59	29	33	74	73	71	62	61	59	29	33
			800	**(378)**	**0.218**	**(54.3)**	**76**	**74**	**72**	**62**	**61**	**60**	**31**	**32**	**76**	**74**	**72**	**62**	**61**	**60**	**31**	**32**	**76**	**74**	**72**	**63**	**62**	**60**	**31**	**32**
			900	(425)	0.248	(61.8)	78	75	73	64	63	62	32	33	78	75	73	64	63	62	32	33	78	75	73	64	63	62	32	33
4	12	0.25	**400**	**(189)**	**0.009**	**(2.2)**	**69**	**64**	**62**	**58**	**57**	**56**	-	**22**	**69**	**64**	**63**	**59**	**58**	**57**	-	**22**	**70**	**65**	**63**	**59**	**58**	**57**	-	**24**
			700	(330)	0.027	(6.7)	71	67	64	60	59	58	22	26	71	67	65	61	60	59	22	26	72	68	65	61	60	59	24	27
			1000	**(472)**	**0.052**	**(13.0)**	**72**	**69**	**65**	**61**	**60**	**59**	**25**	**26**	**73**	**69**	**65**	**62**	**61**	**60**	**25**	**26**	**73**	**70**	**66**	**62**	**61**	**60**	**26**	**27**
			1200	(566)	0.086	(21.4)	74	70	67	63	62	61	26	27	74	71	68	64	63	62	27	28	75	71	68	64	63	62	27	28
			1400	**(661)**	**0.109**	**(27.2)**	**76**	**72**	**69**	**65**	**64**	**63**	**28**	**29**	**77**	**72**	**70**	**66**	**65**	**64**	**28**	**29**	**77**	**73**	**70**	**66**	**65**	**64**	**29**	**31**
			1600	(755)	0.133	(33.1)	78	74	71	67	66	65	31	32	78	75	72	68	67	66	32	33	79	75	72	68	67	66	32	33
6	16	0.25	**800**	**(378)**	**0.009**	**(2.2)**	**69**	**64**	**62**	**60**	**58**	**56**	-	-	**70**	**64**	**63**	**61**	**59**	**57**	-	-	**71**	**65**	**63**	**62**	**60**	**57**	-	**21**
			1100	(519)	0.012	(3.1)	71	65	65	62	60	59	-	21	72	65	65	63	60	59	21	22	73	66	65	63	61	60	22	23
			1500	**(708)**	**0.036**	**(9.1)**	**73**	**67**	**66**	**65**	**63**	**62**	**22**	**24**	**74**	**67**	**67**	**65**	**64**	**63**	**23**	**25**	**74**	**68**	**67**	**66**	**65**	**64**	**24**	**25**
			1700	(802)	0.049	(12.1)	74	68	67	66	64	63	24	25	75	69	68	66	65	64	25	26	76	70	69	67	66	65	26	27
			1950	**(920)**	**0.064**	**(15.8)**	**75**	**69**	**69**	**66**	**65**	**64**	**25**	**26**	**76**	**70**	**69**	**67**	**66**	**65**	**26**	**27**	**77**	**71**	**70**	**68**	**67**	**66**	**27**	**29**
			2200	(1038)	0.079	(19.6)	76	70	69	67	66	65	26	27	77	71	70	68	67	66	27	29	78	72	71	69	68	67	29	30
			2400	**(1133)**	**0.090**	**(22.4)**	**78**	**72**	**71**	**69**	**68**	**67**	**29**	**30**	**79**	**73**	**72**	**70**	**69**	**68**	**30**	**31**	**80**	**74**	**73**	**71**	**70**	**69**	**31**	**32**

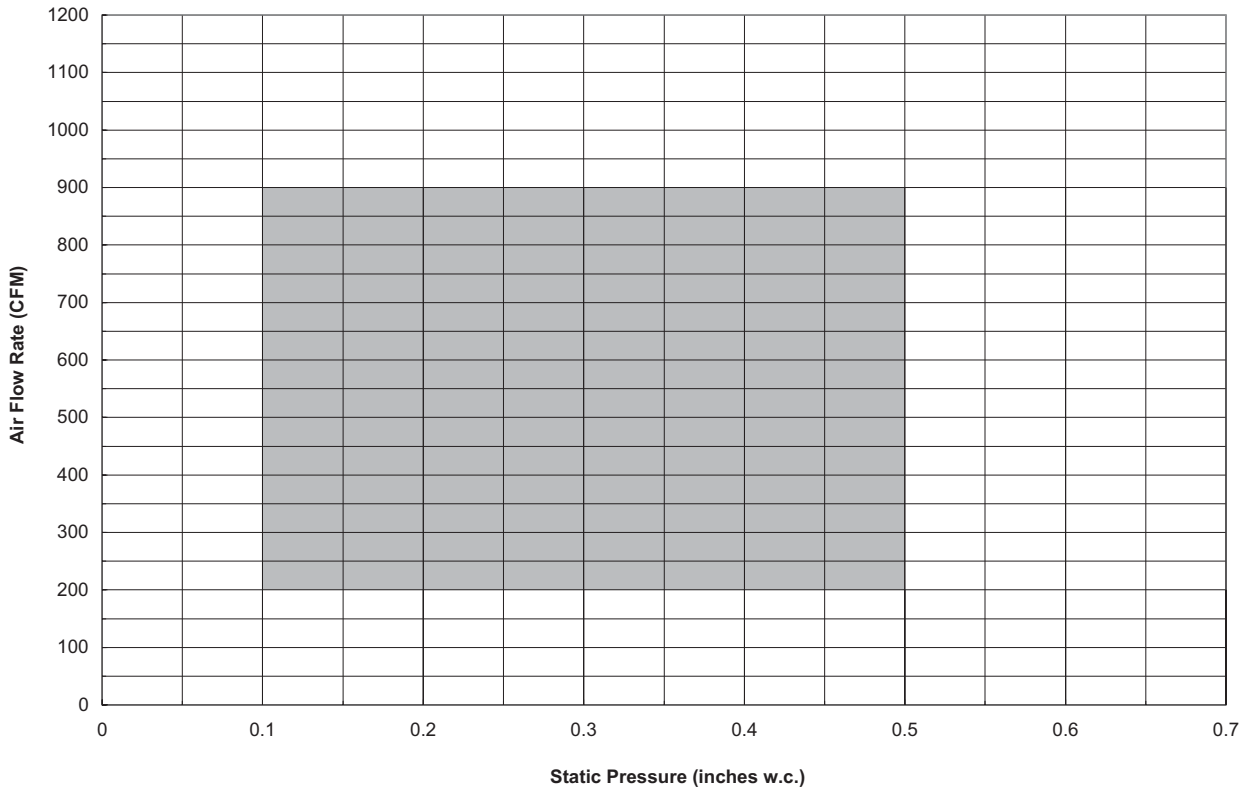
See Page FCI-92 For NC Calculations

NC CALCULATIONS

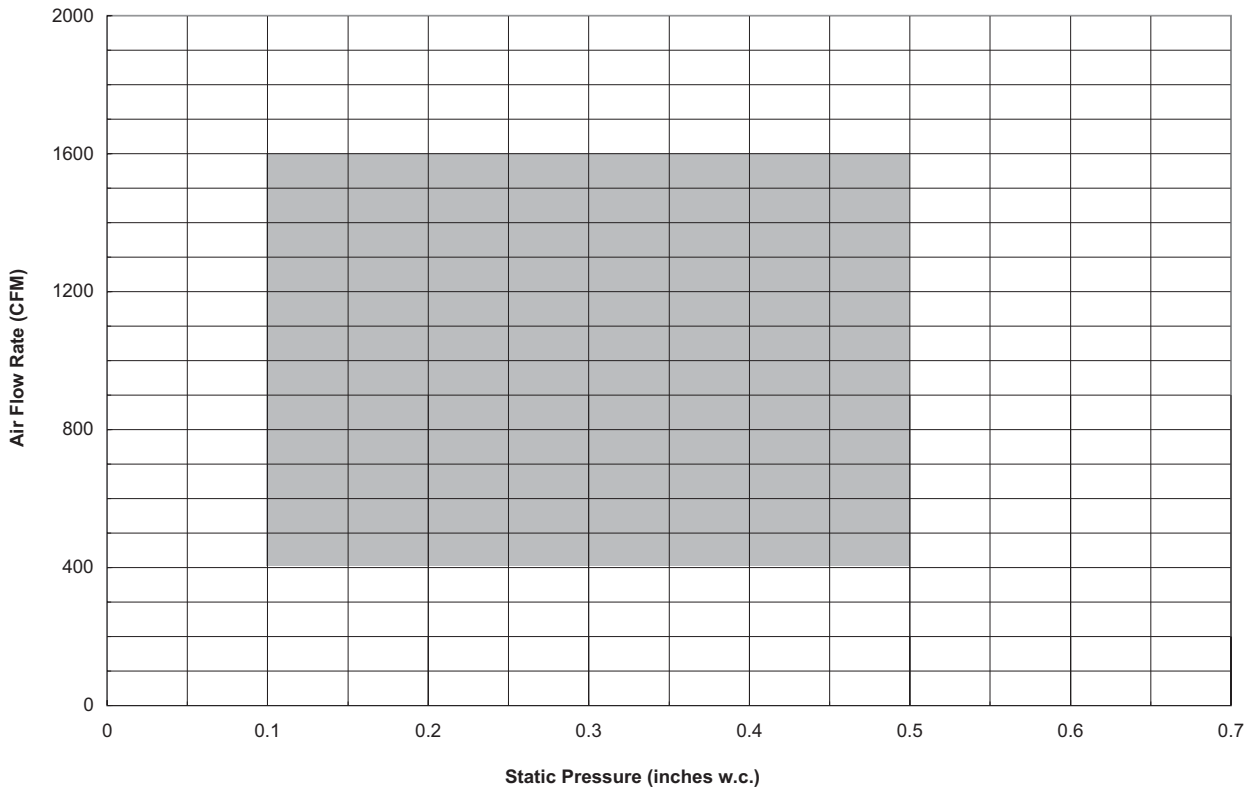
The current ARI Standard for NC calculations is ARI 885-98. Other terminal manufacturers may catalog performance based on ARI 885-90. Using this older, obsolete standard will provide lower NC levels compared to the 1998 standard. To allow for fair and accurate performance comparisons, METALAIRE publishes the NC levels for both the 1990 standard and the 1998 current standard.

ECM FCI-600 - Fan Performance Charts

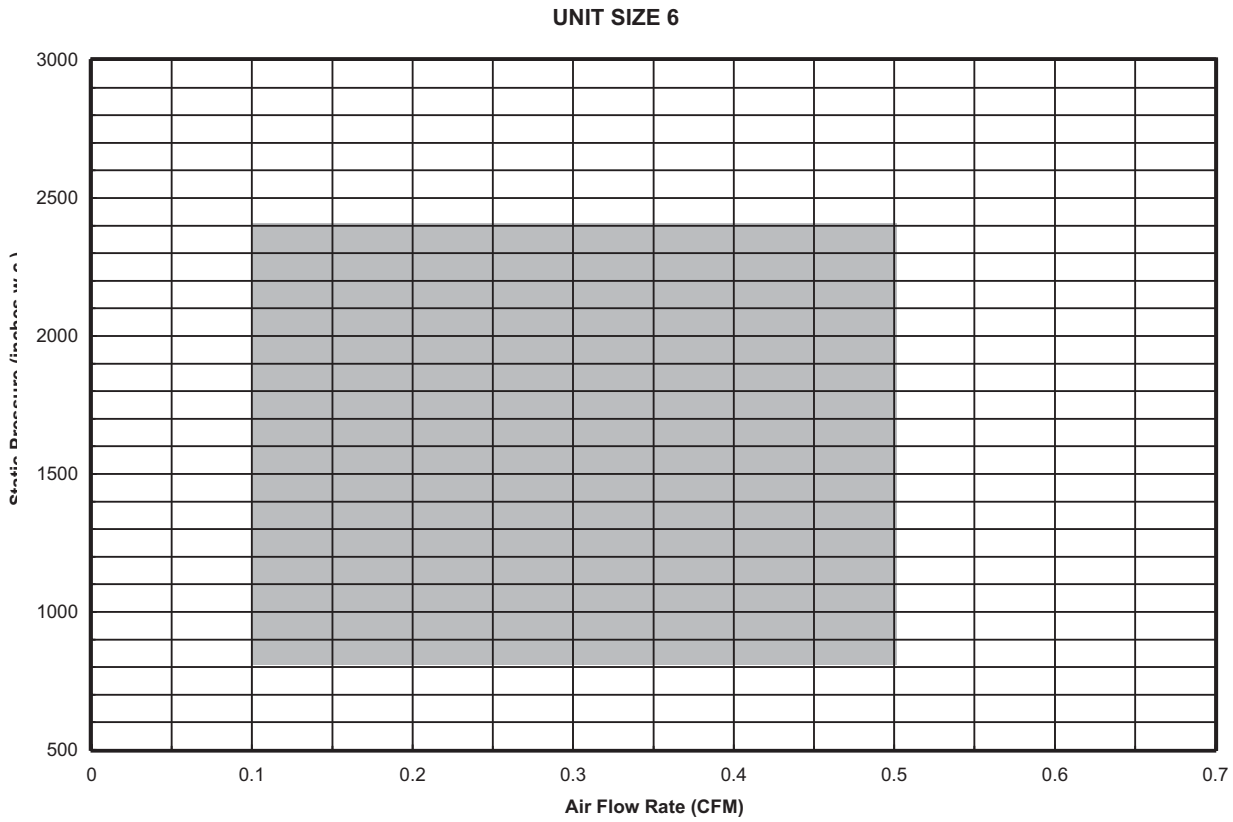
UNIT SIZE 2



UNIT SIZE 4



ECM FCI-600 - Fan Performance Charts



Shaded area represents operating range of fan performance

Series Fan Powered Air Terminal Units

6/2007

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.

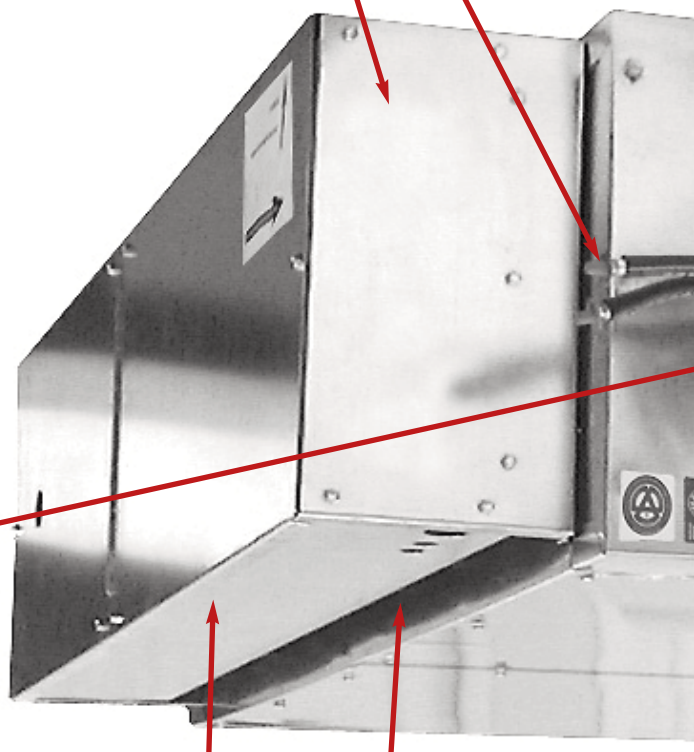
Series FCL-600 provides cooling through the primary air valve. The primary air valve controls the volume of air that is discharged into the terminal unit. The cooled air is delivered to the space through the terminal's fan. When heating is required, the Series FCL-600 initially provides plenum air that 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

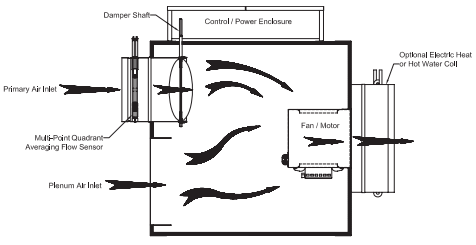
All units include an SCR solid state fan speed controller. Motors are designed to work in conjunction with the SCR controller



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

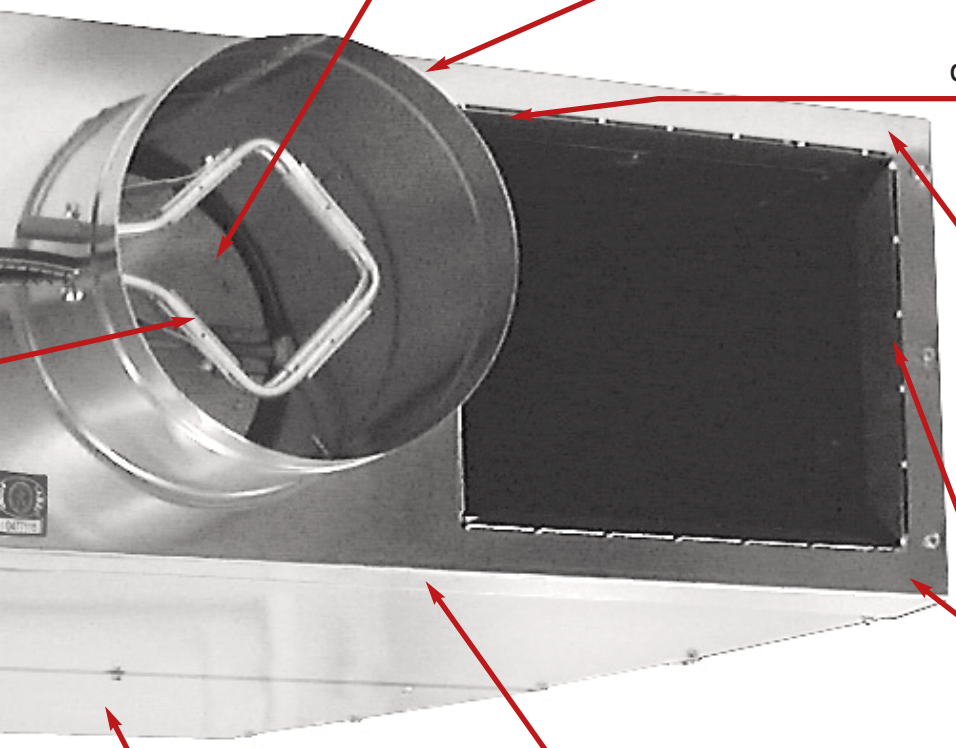
Control panel includes stand-offs to allow mounting of controls without penetrating the casing



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

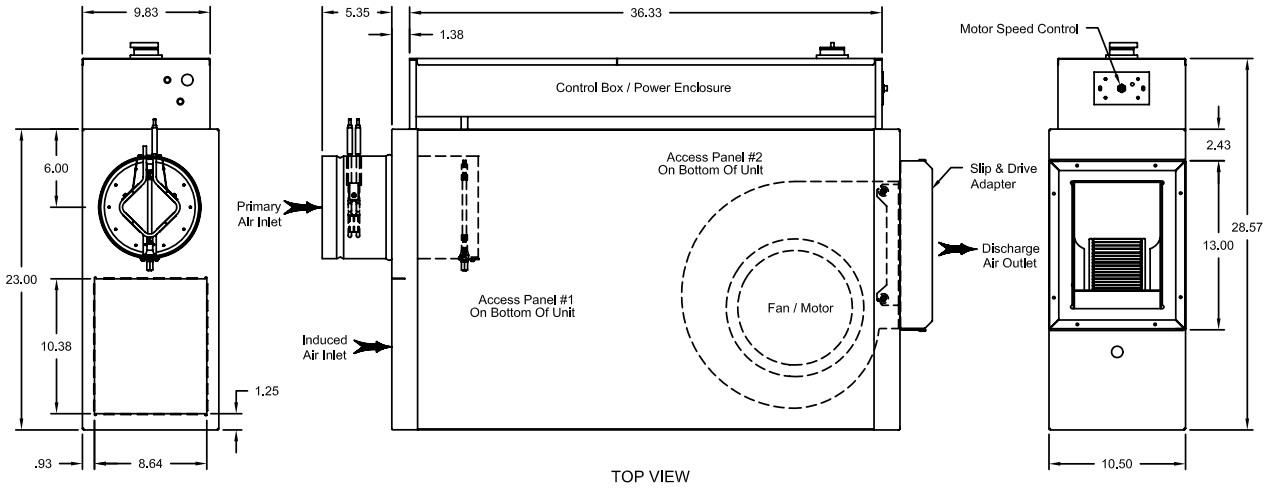
2" wide mounting lip provides easy installation and removal of access panel. Panels can be removed without disturbing trapeze-type hangers

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

FCL-600 - Air Terminal Dimensions

Dimensions are in inches

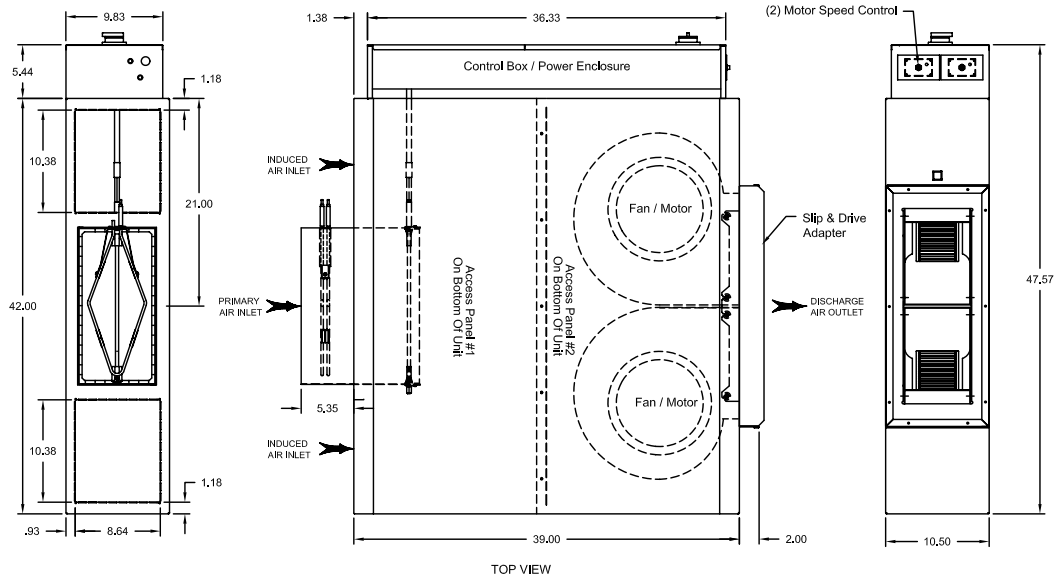
Series Low Profile Fan Powered - Basic Unit
Case Size 2 - *8" Inlet*



Unit Size	Inlet Diameter Standard	Unit Height	Unit Width	Unit Length	Inlet Loc.	Ind. Inlet Height	Ind. Inlet Width	Discharge Loc.	Discharge Height	Discharge Width	Shipping Weight
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*



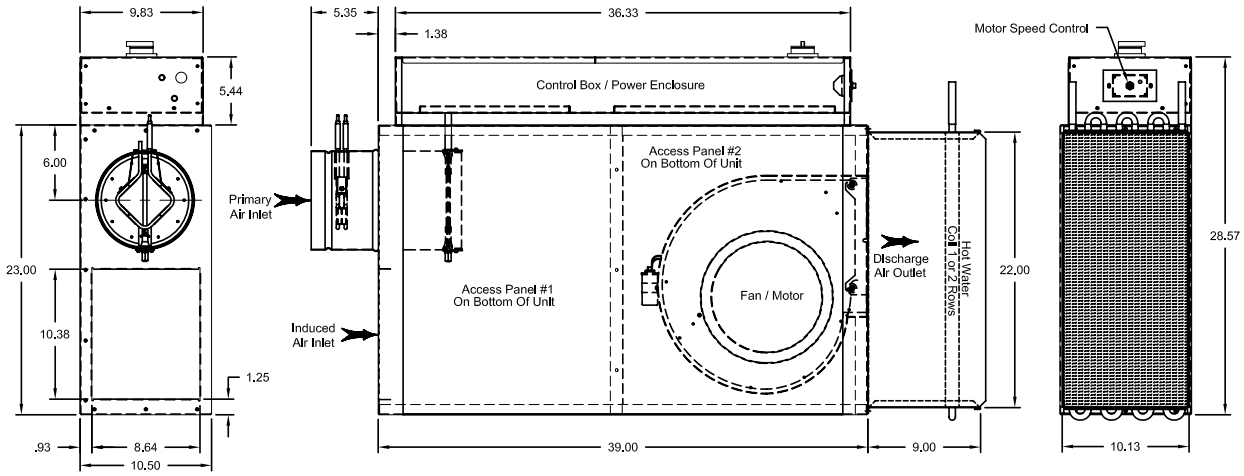
Unit Size	Inlet Diameter Standard	Unit Height	Unit Width	Unit Length	Inlet Loc.	Ind. Inlet Height	Ind. Inlet Width	Discharge Loc.	Discharge Height	Discharge Width	Shipping Weight
4	16 (406) x 8 (203)	10 1/2 (267)	42 (1067)	39 (991)	21 (533)	8.64 (219)	10.38 (264)	8.79 (223)	10 1/2 (267)	24.50 (622)	154 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.

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*

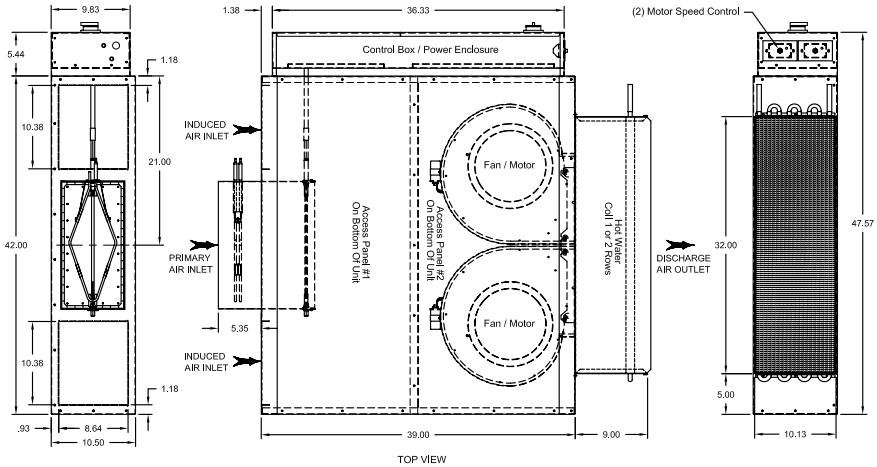


TOP VIEW

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*



TOP VIEW

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)

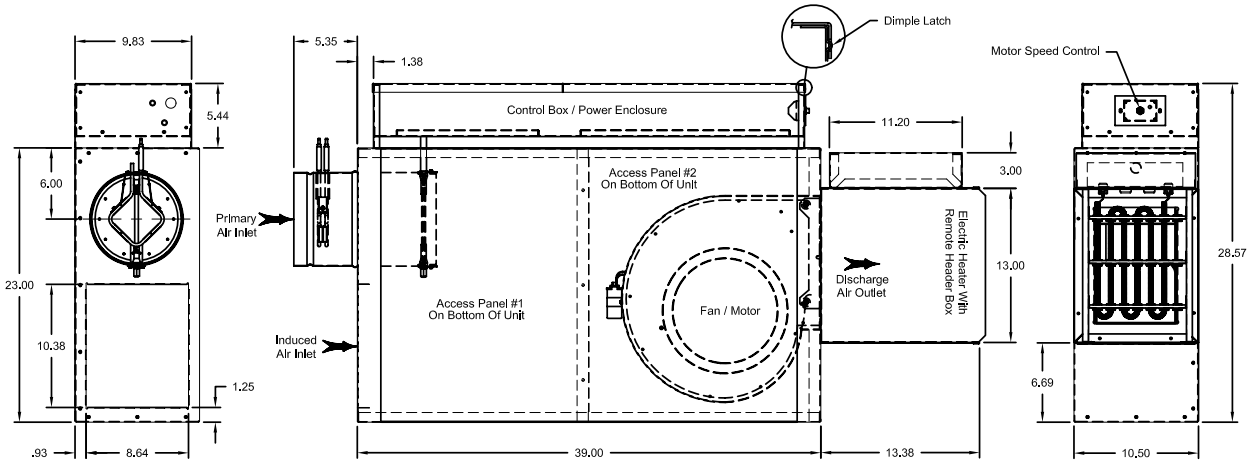
Dimensions are in inches (mm); Airflow CFM (L/s) and Product Information is Subject to be Change Without Notice
** For Fan CFM @ a specific ESP see catalog for Fan Curves.

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

FCL-600 - Air Terminal Dimensions

Series Fan Powered - With Electric Heat
Case Size 2 - *8" Inlet*

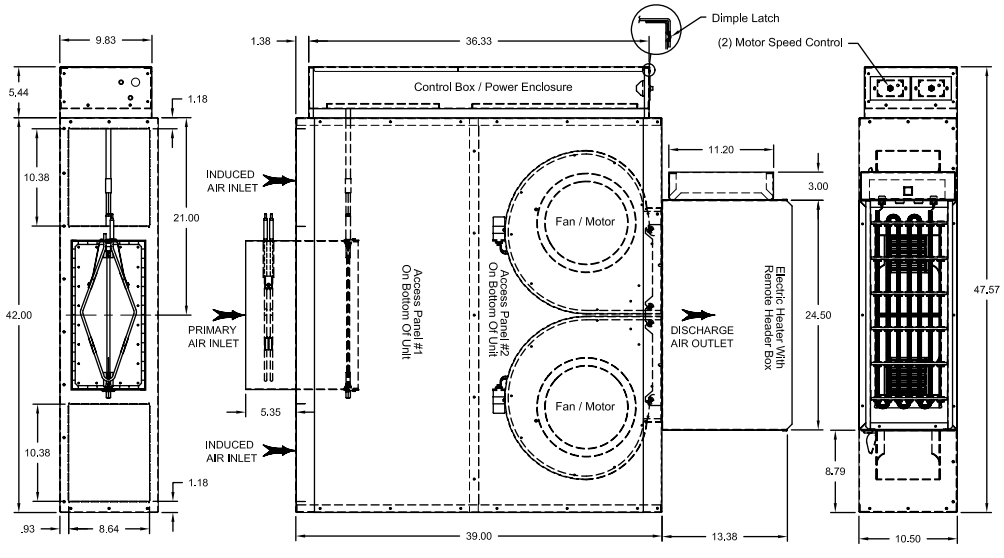


TOP VIEW

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: Discharge Loc.	Discharge Height	Discharge Width	Discharge Length	Shipping weight†
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*



TOP VIEW

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.

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

FCL-600 - Radiated Sound Power at Fan Only, .5", .75" Wg

Case	Inlet	Outlet Ps	CFM (L/s)	Min Ps in. H20 (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	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 (18)	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	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	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. H20 (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 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	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 (18)	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, METALAIRE publishes the NC levels for both the 1990 standard and the 1998 current standard.

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. H₂0 (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	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. H₂0 (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 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	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	39	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.

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/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

FCL-600 - Hot Water Coil MBH Selection Data/Imperial Units

Unit Size	Rows	GPM	Head Loss ($ft\text{-}H_2O$)	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 ($ft\text{-}H_2O$)	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

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	0.03	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

FCL-600 - Hot Water Coils Notes

Table-A

IMPERIAL NOTES

1. Hot water coil data for discharge mounted coils.

2. 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.

3. Tabulated values are in MBH (Thousands of BTU per hour).

4. Head Loss is in feet of water.

5. 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 = $\frac{\textbf{927 x MBH}}{\textbf{CFM}}$

7. Water Temperature Drop = $\frac{\textbf{2.04 x MBH}}{\textbf{GPM}}$

8. For water valve sizing, contact your METALAIRE representative. For data values other than those listed, interpolate or use the METALAIRE Terminal Selection Program. Contact your METALAIRE representative for additional information.

9. All hot water coils are 10 Fins per inch (FPI).

Table-B

METRIC NOTES

1. Hot water coil data for discharge mounted coils.

2. 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.

3. Tabulated values are in kW (Thousands of watts).

4. Head loss is in kPa.

5. 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

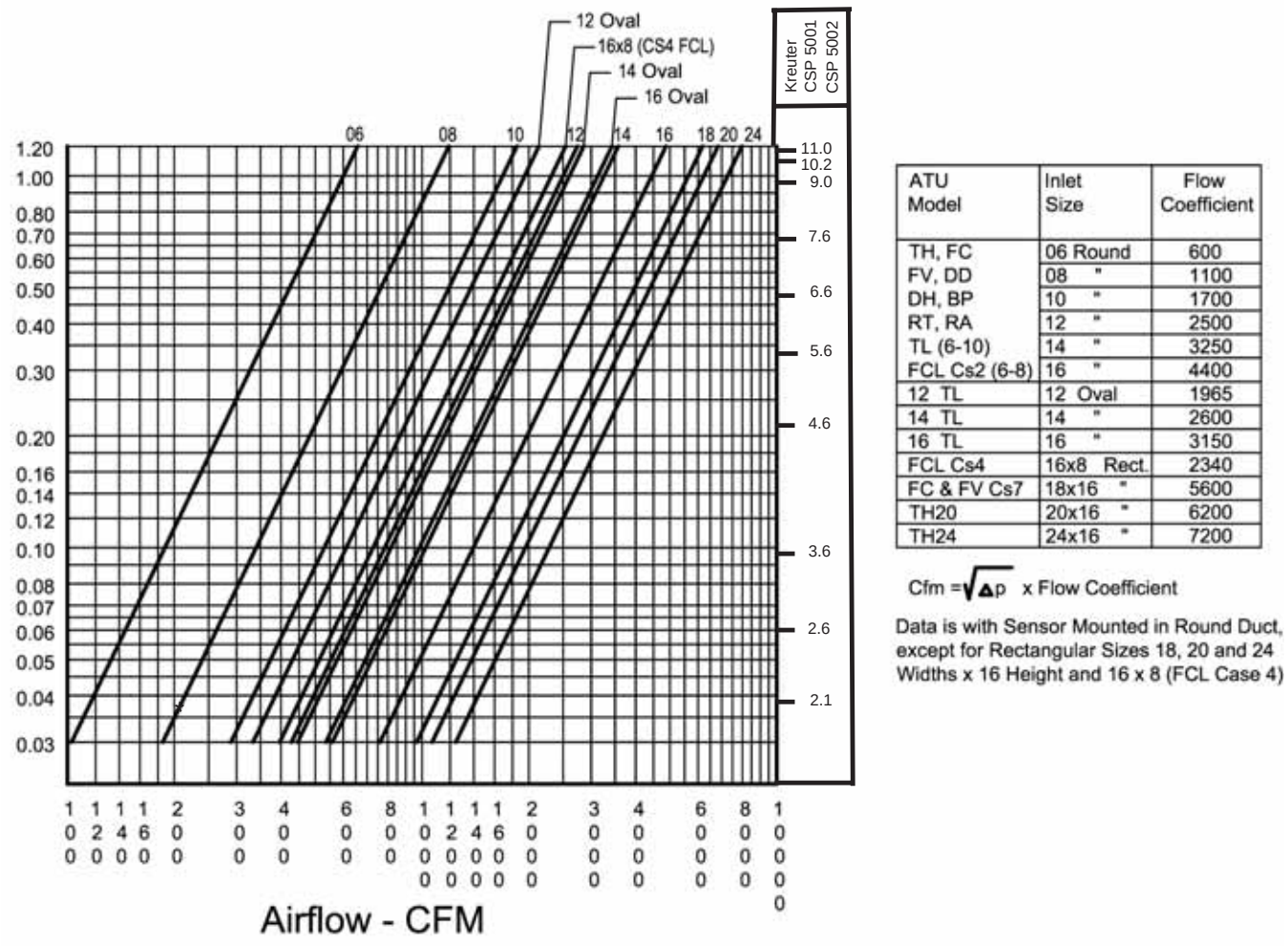
6. Air Temperature Rise = $\frac{\textbf{kW x 579}}{\textbf{air flow in L/s}}$

7. Water Temperature Drop = $\frac{\textbf{kW x 0.17}}{\textbf{water flow in L/s}}$

8. For water valve sizing, contact your METALAIRE representative. For data values other than those listed, interpolate or use the Metal Industries computerized engineering program. Contact your METALAIRE representative for additional information.

9. All hot water coils are 10 Fins per inch (FPI).

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

$Cfm = \sqrt{\Delta p} \times$ Flow Coefficient

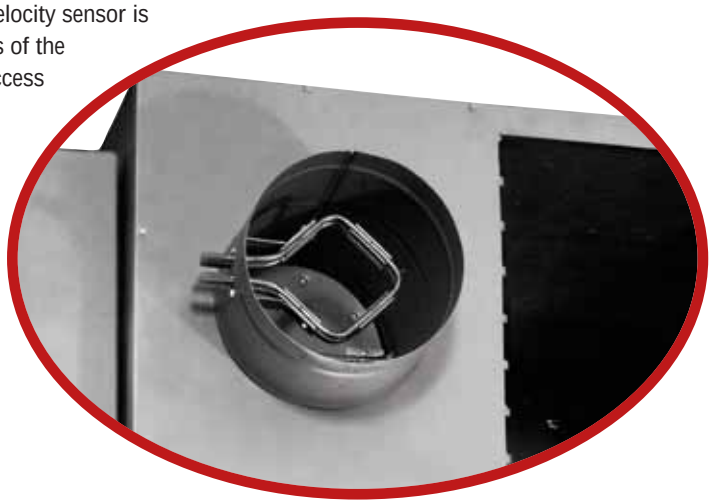
Data is with Sensor Mounted in Round Duct, except for Rectangular Sizes 18, 20 and 24 Widths x 16 Height and 16 x 8 (FCL Case 4)

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.

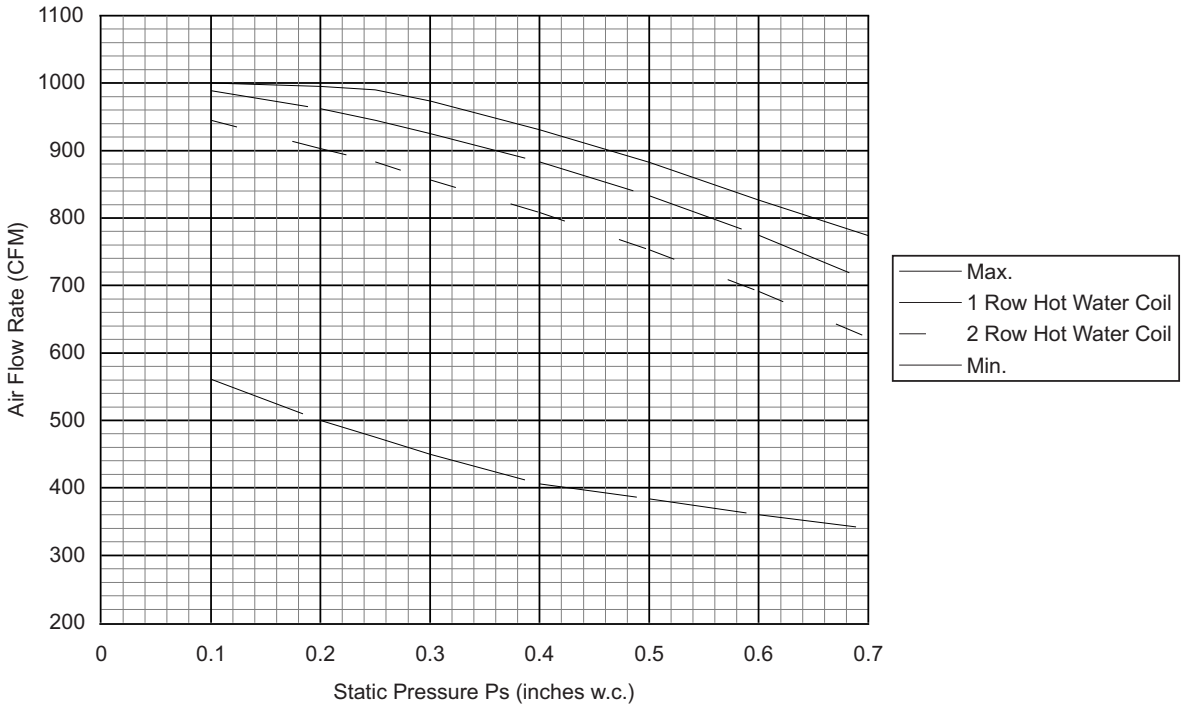
FCL-600 Fan Powered Unit - K Factors			
Inlet Size	Inlet Area	CFM @ 1"	K
6	0.20	600	1.72
8	0.35	1100	1.61
16 x 8	0.89	2340	2.31



FCL-600 - Fan Performance Charts

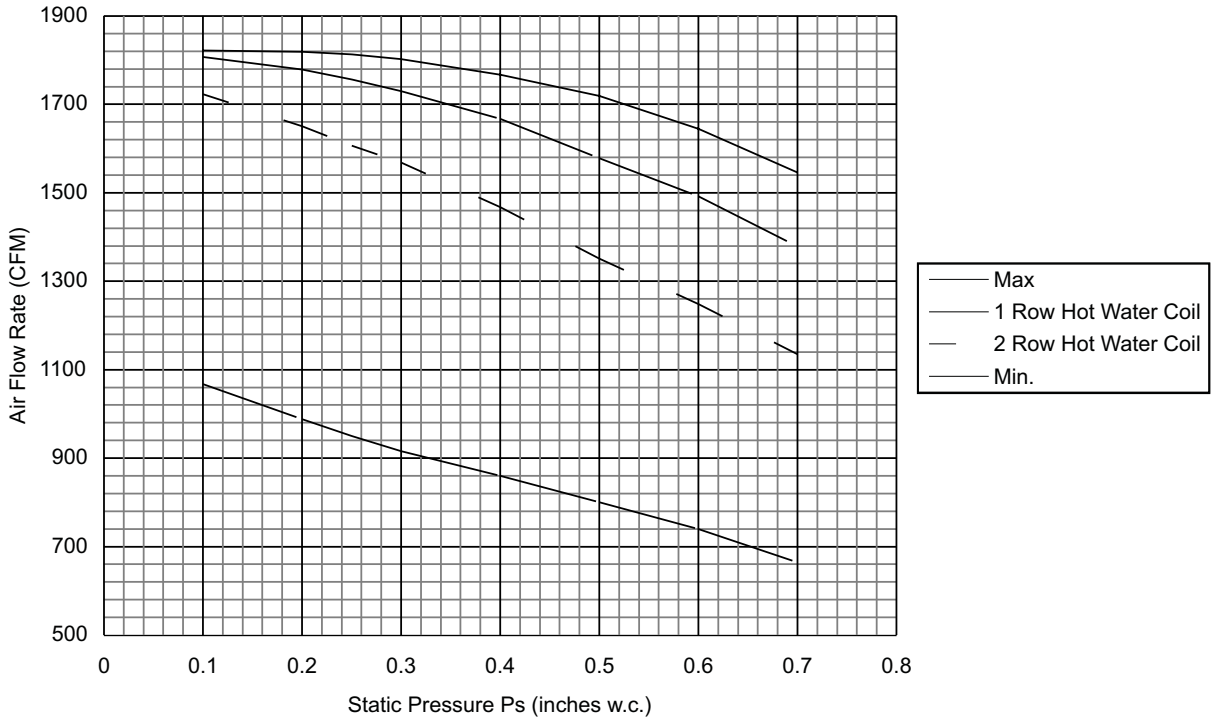
FAN CURVES

FCI Unit Size 2
Standard HW Coil



FAN CURVES

FCL Unit Size 4
Standard HW Coil



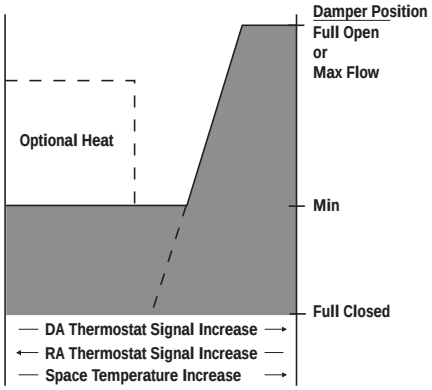
FCI/FCL-600 - Control Sequences

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.

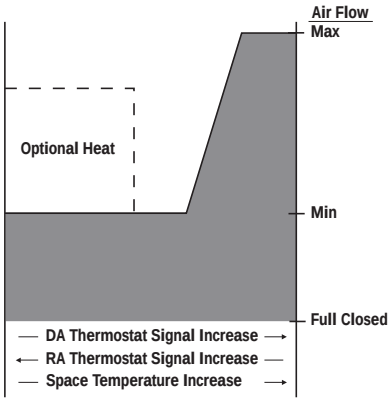
Standard pressure independent control sequences feature the multi-function VAV controller. Multi-function flow controllers can be field modified for use with a direct or reverse acting thermostat and the damper actuator can be switched to either normally opened or normally closed without adding control 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.

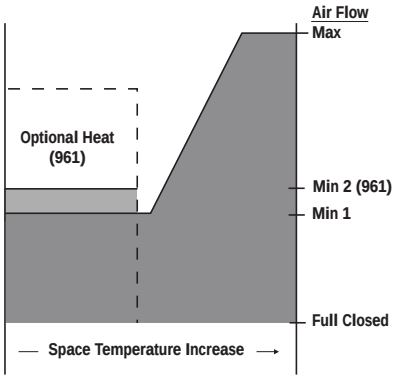
FCI/FCL-600 - Analog Electronic Control Sequences

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

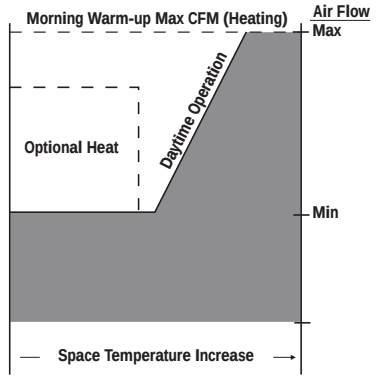
(960) Cooling Only.
Electronic thermostat (analog models with integral, adjustable, maximum and minimum flow limits) signals electronic flow controller to regulate damper position. The damper is rotated to its maximum open position as room temperature rises and to its minimum open position as room temperature falls.

With both 960 and 961 sequences, the constantly operating fan maintains constant airflow 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

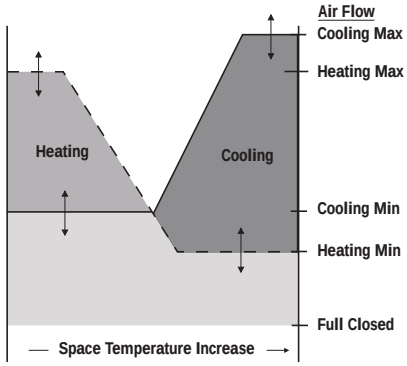


(964) Night Shutdown/Morning Warm-up.
Daytime Operation: Electronic thermostat (analog models with integral, adjustable, maximum and minimum flow limits) signals electronic flow controller to regulate damper position. The damper is rotated to its maximum open position as room temperature rises and to 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.

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.

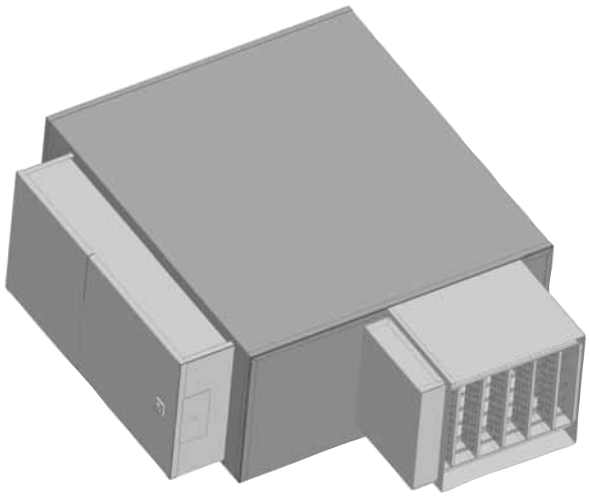
FCI/FCL-600 - Air Terminals Accessories and Components

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/ft^3 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.

FCI/FCL-600 Air Terminals Electric Heater Assembly Capacities

ELECTRIC HEATER ASSEMBLY CAPACITIES

FCI

Single Phase				
Size	Heater Voltage	Min kW/St	Max kW	Max Steps
2	120	.5	5	3
	208	.5	8.5	3
	240	.5	10	3
	277	.5	11.5	3
	480	.5	11.5	3
3	**120**	**.5**	**5**	**3**
	208	**.5**	**8.5**	**3**
	240	**.5**	**10**	**3**
	277	**.5**	**11.5**	**3**
	480	**.5**	**11.5**	**3**
4	120	.5	5	3
	208	.5	8.5	3
	240	.5	10	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**

Three Phase				
Size	Heater Voltage	Min kW/St	Max kW	Max Steps
2	208	.5	13	3
	240	.5	14.5	3
	480	1.5	17	3
3	**208**	**.5**	**13**	**3**
	240	**.5**	**14.5**	**3**
	480	**1.5**	**17**	**3**
4	208	.5	13	3
	240	1.5	15	3
	480	1.5	25	3
5	**208**	**.5**	**13**	**3**
	240	**1.5**	**15**	**3**
	480	**1.5**	**25**	**3**
6	208	.5	13	3
	240	1.5	15	3
	480	1.5	25	3
7	**208**	**.5**	**13**	**3**
	240	**1.5**	**15**	**3**
	480	**1.5**	**25**	**3**

FCL

Single Phase				
Size	Heater Voltage	Min kW/St	Max kW	Max Steps
2	120	0.5	5.0	3
	208	0.5	8.0	3
	240	0.5	8.0	3
	277	0.5	8.0	3
	480	0.5	8.0	3
4	**120**	**0.5**	**5.0**	**3**
	208	**0.5**	**8.5**	**3**
	240	**0.5**	**10.0**	**3**
	277	**0.5**	**11.0**	**3**
	480	**0.5**	**15.0**	**3**

Three Phase				
Size	Heater Voltage	Min kW/St	Max kW	Max Steps
2	208	0.5	8.0	3
	240	0.5	8.0	3
	480	0.5	8.0	3
4	**208**	**1.5**	**13.0**	**3**
	240	**1.5**	**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:

$$kW = \frac{BTU/hr}{3413} \qquad kW = \frac{CFM \times dT \times 1.085^*}{3413} \qquad dT = \frac{kW \times 3413}{CFM \times 1.085^*}$$

$$CFM = \frac{kW \times 3413}{dT \times 1.085^*} \qquad CFM = \frac{kW \times 3413}{dT \times 1.085^*}$$

* air density at sea level - reduce by 0.036 for each 1000 feet of altitude above sea level

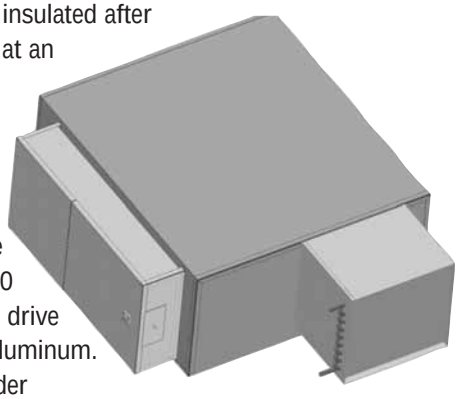
Where:

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.

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)

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)

Fin Per Inch	
Case Size	Standard HW Coil
	1 & 2 Row
2	10
3	10
4	10
5	10
6	10
7	10

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 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
	1and 2 Row
2	10
4	10

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.

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/ft^3 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/ft^3 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.)

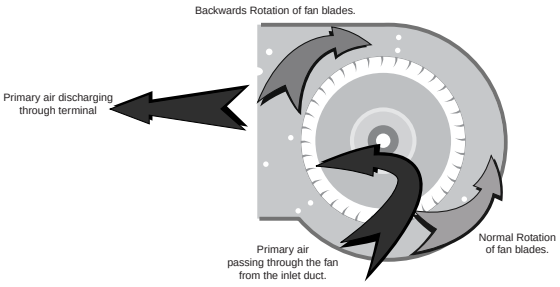
THERMOPURE

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/ft^3 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 fiel.)

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

Series Fan Powered Air Terminal Units

6/2007

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® (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 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/ft^3 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).

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/ft^3 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/ft^3 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.METALAIRE.COM, YOU PICK THE FORMAT FOR PRODUCT INFORMATION THAT BEST SUITS YOUR AIR DISTRIBUTION DESIGN NEEDS.

PRE-FLIGHT - Product Overview Catalog

The METALAIRE Pre-Flite 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 METALAIRE 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.metalaire.com.

INFOSOURCE CATALOG SUITE

- Complete Guide to Air Distribution Selection

The METALAIRE 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

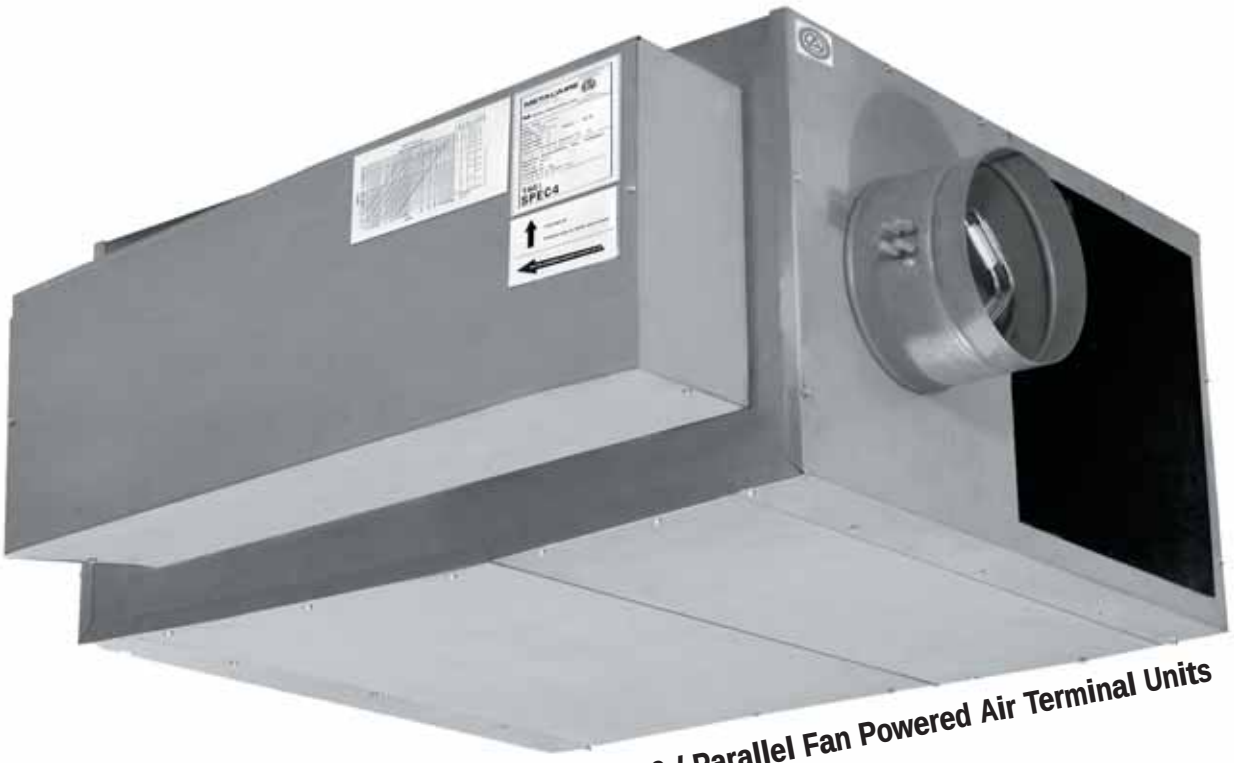
- *Ceiling Diffusers Catalog*
- *Air Terminal Unit Catalog*
- *Grilles & Registers Catalog*
- *Formations Catalog*

WEBSITE: WWW.METALAIRE.COM

METALAIRE 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.

METAL INDUSTRIES, INC.

METALAIRE



FVI-500 / Parallel Fan Powered Air Terminal Units

PARALLEL FAN POWERED AIR TERMINAL UNITS

FVI-500 - Table of Contents

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 - 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.

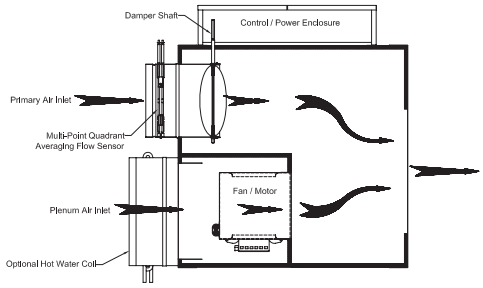
The FVI-500 is also engineered to address IAQ concerns with the capability to handle up to 20% of maximum primary air while operating in heating mode.

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.

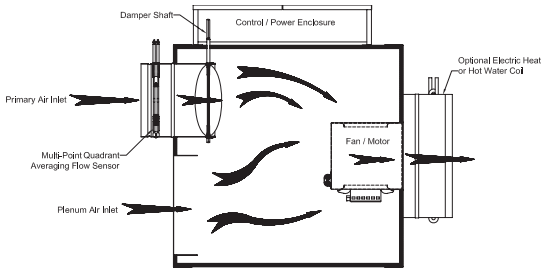
Types of Fan Powered Units

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 Insulation

ThermoPure is 100% Fiber Glass free, assuring no downstream brush off, and is provided at a density of 1.5 lbs/ft^3. 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. ThemoPure 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.

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.

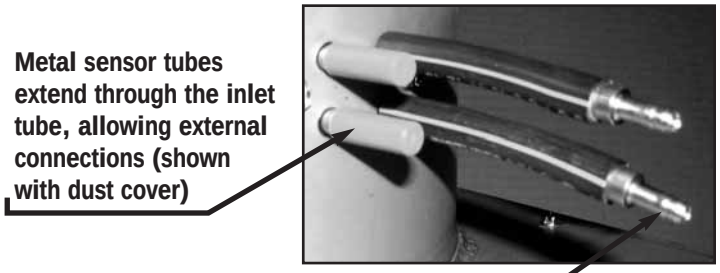
The primary air valve has a bead rolled into the tube, which strengthens the tube and serves as a stop and prevents field attached flex duct from slipping.

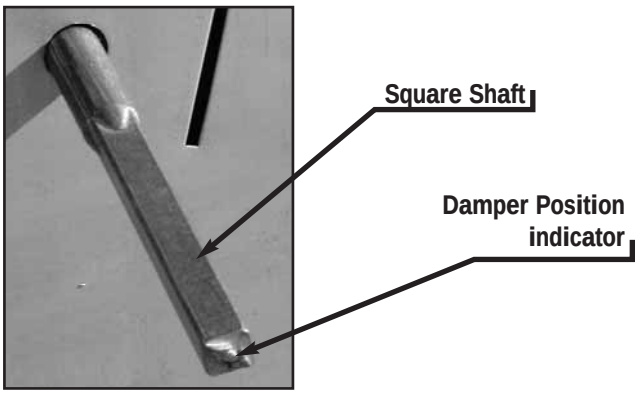
Flow Sensor

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".





Parallel Fan Powered Air Terminal Units

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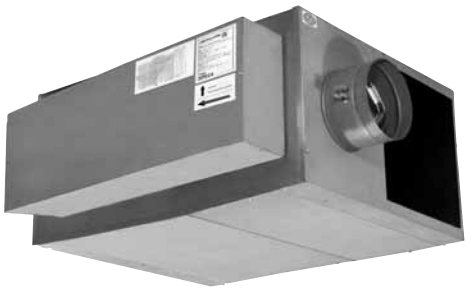


FVI-500

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.

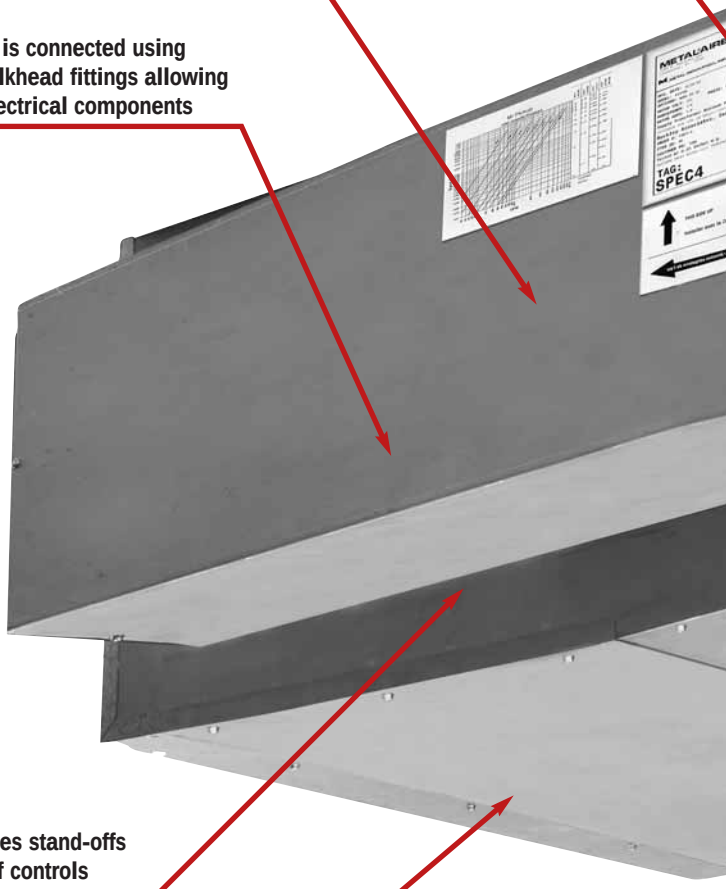
FVI-500 is available with a wide range of control options and accessories to meet your design requirements; whether they be for factory mounted direct digital controls, pneumatic, or analog applications.

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.

Multiquadrant Averaging Flow Sensor provides an accurate flow signal without requiring an immediate upstream straight duct connection (Shipped standard on all units)

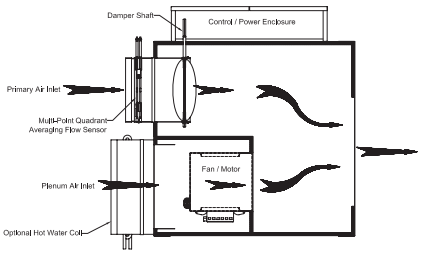
All units include an SCR solid state fan speed controller. Motors are designed to work in conjunction with the SCR controller

All electrical wiring is connected using quick-disconnect bulkhead fittings allowing easy servicing of electrical components

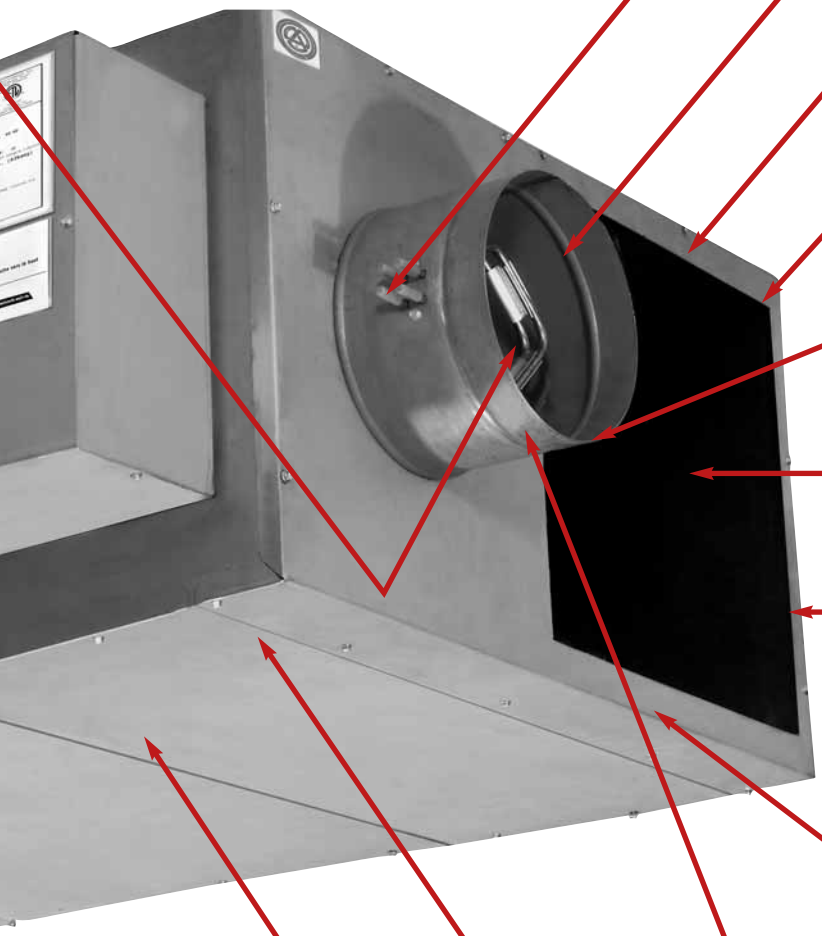


Control panel includes stand-offs to allow mounting of controls without penetrating the casing

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

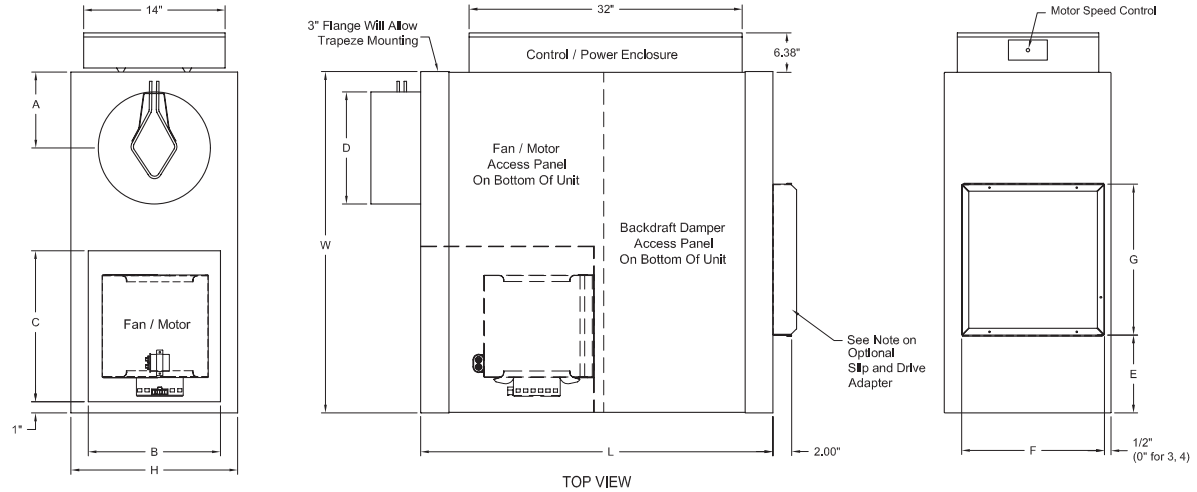
Units are shipped with balanced single speed energy saving motors manufactured specifically for the torque requirements of each terminal. Motors are of energy efficient design

FVI-500 - Air Terminal Dimensions

Dimensions are in inches

Parallel Fan Powered - Basic Unit

Case Size 1 - *6" Inlet*
Case Size 2 - *8" Inlet*
Case Size 3 - *10" Inlet*
Case Size 4 - *12" Inlet*
Case Size 5 - *14" Inlet*
Case Size 6 - *16" Inlet*
Case Size 7 - *18" x 16" Inlet*

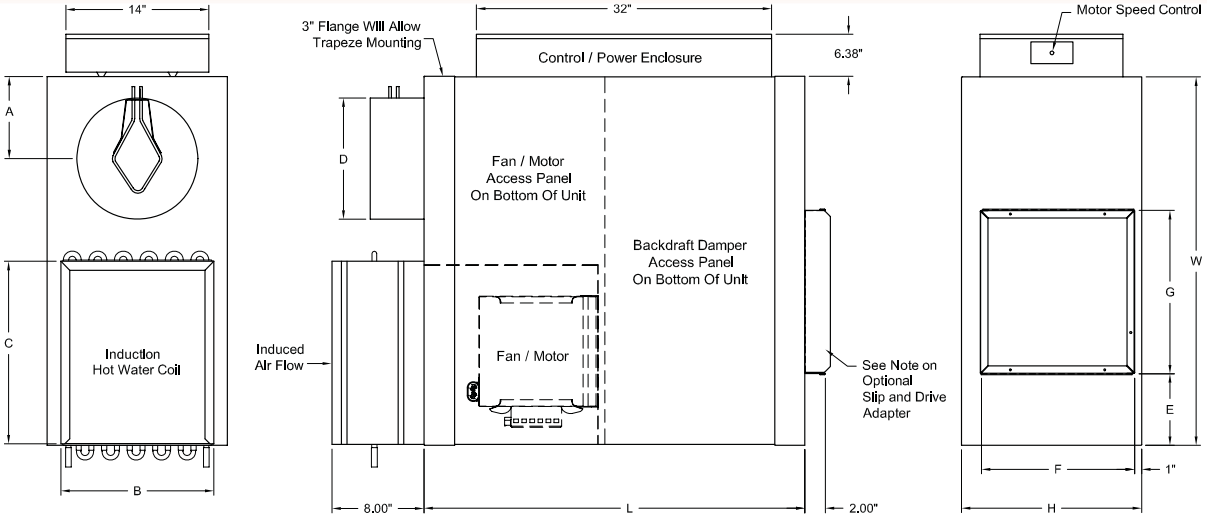


TOP VIEW

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, 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 2 - *8" Inlet*
Case Size 3 - *10" Inlet*
Case Size 4 - *12" Inlet*
Case Size 5 - *14" Inlet*
Case Size 6 - *16" Inlet*



TOP VIEW

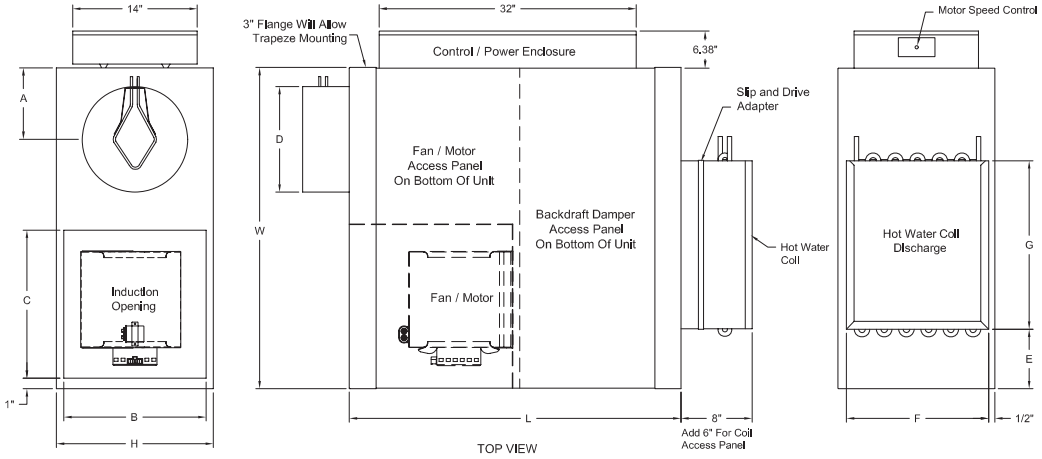
Casing Size	Inlet Diameter D		Horse Power	Unit Height H	Unit Width W	Unit Length L	Inlet Loc. A	Hot Water Coil		Discharge Loc. E	Discharge Height F	Discharge Width G
	Standard	Optional						Height B	Width C			
1	6 (152)	8, 10	1/8	17 1/2 (445)	30 (762)	36 (914)	6 (152)	15 (381)	16 (406)	7 (178)	15 (381)	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)

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 2 - *8" Inlet*
Case Size 3 - *10" Inlet*
Case Size 4 - *12" Inlet*
Case Size 5 - *14" Inlet*
Case Size 6 - *16" Inlet*
Case Size 7 - *18" x 16" Inlet*

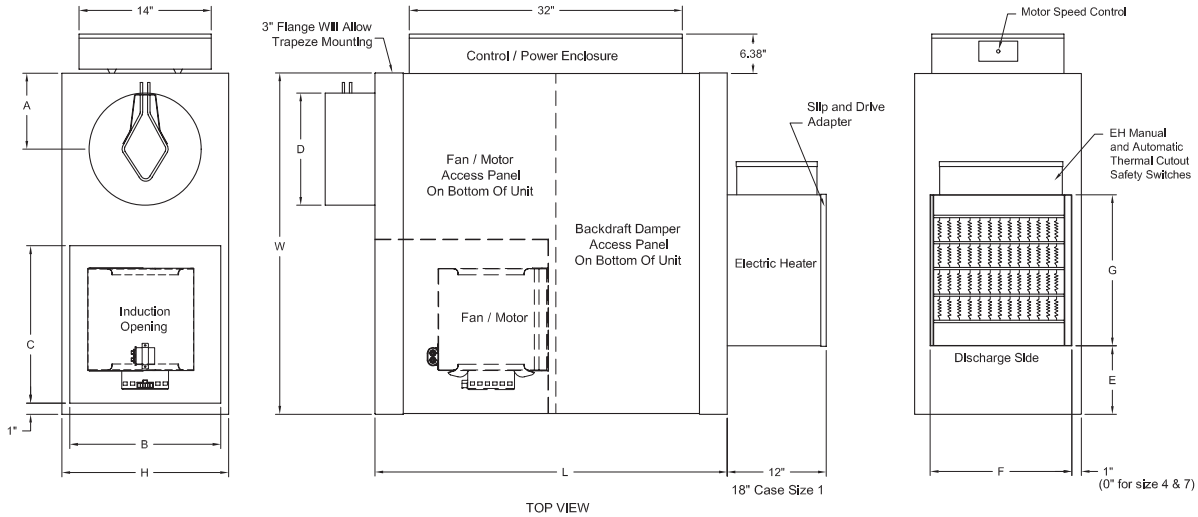


TOP VIEW

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 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)	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 2 - *8" Inlet*
Case Size 3 - *10" Inlet*
Case Size 4 - *12" Inlet*
Case Size 5 - *14" Inlet*
Case Size 6 - *16" Inlet*
Case Size 7 - *18" x 16" Inlet*



TOP VIEW

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)

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

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" 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

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.

FVI-500 - Radiated Sound Power at Fan Only

Case	Inlet	Outlet Ps in. H20	CFM (L/s)		Fan Only							
					Octave Band Sound Power, Lw, dB						NC1 ARI 885-90	NC2 ARI 885-98
					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**
			550	(260)	71	73	64	64	55	55	41	45
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
			775	**(366)**	**69**	**67**	**57**	**54**	**47**	**45**	**34**	**38**
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**
			1175	(555)	76	73	67	67	60	61	41	45
			1225	**(578)**	**77**	**73**	**68**	**67**	**61**	**62**	**41**	**45**
4	12	0.25	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**
			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
5	14	0.25	**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**
			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**
6	16	0.25	800	(378)	62	58	52	46	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
			1800	**(850)**	**76**	**73**	**67**	**63**	**57**	**56**	**41**	**45**
			2160	(1020)	78	75	68	65	59	58	44	47
7	18x16	0.25	**1875**	**(885)**	**72**	**67**	**61**	**56**	**47**	**46**	**34**	**38**
			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 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 - Radiated Sound Power at .5", .75", 1" WG

Case	Inlet	Outlet Ps in. H20	CFM (L/s)		Min Ps in. H20 (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 885-90	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		
			100	**(47)**	**0.080**	**(20.0)**	**50**	**37**	**33**	**30**	**25**	**23**	-	-	**51**	**38**	**33**	**31**	**26**	**24**	-	-	**51**	**39**	**34**	**32**	**27**	**24**	-	-
			200	(94)	0.100	(24.9)	52	40	36	34	28	25	-	-	52	41	37	35	29	26	-	-	53	42	37	36	29	27	-	-
			250	**(118)**	**0.110**	**(27.5)**	**54**	**42**	**38**	**36**	**29**	**27**	-	-	**54**	**44**	**40**	**37**	**32**	**31**	-	-	**55**	**45**	**43**	**38**	**35**	**34**	-	-
1	6	0.25	300	(142)	0.127	(31.6)	54	44	39	37	31	28	-	-	55	45	42	39	34	31	-	-	56	46	44	40	36	35	-	-
			400	**(189)**	**0.160**	**(39.7)**	**56**	**48**	**42**	**40**	**34**	**31**	-	-	**57**	**48**	**44**	**41**	**36**	**33**	-	-	**58**	**49**	**47**	**43**	**38**	**35**	-	**21**
			450	(212)	0.176	(43.8)	57	49	44	41	35	32	-	-	58	50	46	42	37	34	-	-	59	50	48	44	39	35	-	22
			500	**(236)**	**0.192**	**(47.9)**	**59**	**51**	**46**	**42**	**37**	**33**	-	**21**	**59**	**51**	**47**	**44**	**38**	**34**	-	**21**	**59**	**51**	**48**	**45**	**40**	**36**	-	**22**
			600	(283)	0.241	(60.1)	62	53	50	49	41	36	21	25	62	54	50	49	42	37	21	25	63	54	51	50	42	37	22	26
			200	**(94)**	**0.084**	**(20.9)**	**50**	**38**	**33**	**26**	**23**	**20**	-	-	**50**	**39**	**33**	**27**	**24**	**21**	-	-	**52**	**40**	**35**	**28**	**26**	**23**	-	-
			300	(142)	0.094	(23.5)	52	42	38	31	27	24	-	-	53	43	39	32	28	25	-	-	54	45	40	35	29	26	-	-
			400	**(189)**	**0.105**	**(26.2)**	**54**	**45**	**42**	**35**	**30**	**26**	-	-	**55**	**46**	**42**	**35**	**31**	**27**	-	-	**56**	**47**	**43**	**37**	**32**	**29**	-	-
			500	(236)	0.116	(28.8)	55	47	44	37	32	28	-	-	57	49	45	39	35	32	-	-	58	51	47	40	37	35	-	21
2	8	0.25	**650**	**(307)**	**0.138**	**(34.4)**	**56**	**51**	**50**	**42**	**36**	**30**	**21**	**24**	**58**	**52**	**50**	**43**	**37**	**33**	**21**	**24**	**60**	**53**	**50**	**43**	**39**	**36**	**21**	**24**
			800	(378)	0.161	(40.1)	58	54	54	47	40	33	25	29	60	55	54	47	41	35	25	29	62	56	54	47	42	37	25	29
			875	**(413)**	**0.175**	**(43.5)**	**59**	**56**	**57**	**49**	**42**	**35**	**27**	**31**	**61**	**57**	**57**	**49**	**42**	**37**	**29**	**32**	**63**	**57**	**57**	**50**	**43**	**38**	**29**	**32**
			950	(448)	0.188	(46.9)	60	57	58	52	44	37	30	33	61	58	59	52	44	38	31	34	62	59	59	52	45	40	31	34
			1100	**(519)**	**0.227**	**(56.6)**	**62**	**61**	**60**	**56**	**47**	**40**	**32**	**35**	**62**	**61**	**61**	**57**	**47**	**41**	**33**	**36**	**63**	**61**	**61**	**58**	**47**	**42**	**33**	**36**
			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**
3	10	0.25	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
			450	**(212)**	**0.076**	**(18.9)**	**48**	**40**	**36**	**33**	**25**	**20**	-	-	**49**	**40**	**37**	**34**	**27**	**23**	-	-	**51**	**42**	**39**	**36**	**30**	**29**	-	-
			650	(307)	0.084	(20.9)	51	43	38	37	28	25	-	-	52	44	39	38	29	27	-	-	54	46	42	39	35	32	-	-
			900	**(425)**	**0.094**	**(23.4)**	**54**	**47**	**41**	**40**	**29**	**27**	-	-	**56**	**49**	**43**	**42**	**32**	**31**	-	-	**61**	**53**	**45**	**42**	**41**	**36**	-	**23**
			1100	(519)	0.100	(25.0)	56	53	47	43	35	27	-	21	59	54	47	44	37	32	-	22	63	54	47	44	42	37	22	26
4	12	0.25	**1300**	**(614)**	**0.107**	**(26.6)**	**57**	**55**	**49**	**45**	**36**	**28**	-	**24**	**60**	**56**	**49**	**45**	**38**	**32**	**21**	**25**	**64**	**55**	**49**	**45**	**43**	**38**	**23**	**27**
			1500	(708)	0.118	(29.4)	64	56	50	45	39	35	23	27	64	56	50	46	43	39	23	27	65	56	51	47	44	40	25	29
			1800	**(850)**	**0.143**	**(35.5)**	**67**	**57**	**52**	**45**	**40**	**36**	**27**	**31**	**68**	**57**	**54**	**48**	**44**	**40**	**29**	**32**	**68**	**58**	**54**	**49**	**46**	**41**	**29**	**32**
			2200	(1038)	0.182	(45.3)	70	60	54	47	42	37	31	35	71	60	55	49	45	41	32	36	72	61	56	51	47	42	34	38
			2500	**(1180)**	**0.212**	**(52.7)**	**72**	**62**	**60**	**48**	**44**	**38**	**34**	**38**	**72**	**63**	**60**	**50**	**46**	**42**	**34**	**38**	**73**	**64**	**61**	**52**	**48**	**43**	**35**	**39**
			550	(260)	0.072	(18.0)	47	46	39	35	24	23	-	-	50	48	41	37	30	28	-	-	52	50	43	39	33	30	-	-
			775	**(366)**	**0.081**	**(20.1)**	**50**	**48**	**41**	**37**	**27**	**26**	-	-	**53**	**50**	**43**	**38**	**33**	**30**	-	-	**55**	**52**	**45**	**41**	**36**	**32**	-	-
			1000	(472)	0.090	(22.5)	54	50	43	39	30	28	-	-	56	52	46	41	35	33	-	-	58	54	48	45	39	36	-	22
			1500	**(708)**	**0.106**	**(26.5)**	**61**	**54**	**47**	**42**	**36**	**32**	-	**23**	**64**	**56**	**49**	**45**	**40**	**36**	**23**	**27**	**65**	**59**	**52**	**48**	**44**	**40**	**25**	**29**
5	14	0.25	1950	(920)	0.134	(33.3)	64	55	49	44	38	34	23	27	65	58	51	47	42	38	25	29	67	60	54	50	46	42	27	31
			2200	**(1038)**	**0.149**	**(37.0)**	**66**	**56**	**50**	**45**	**39**	**35**	**26**	**30**	**66**	**59**	**53**	**48**	**43**	**39**	**26**	**30**	**68**	**61**	**55**	**50**	**46**	**43**	**29**	**32**
			2675	(1263)	0.209	(52.0)	69	58	53	46	41	37	30	34	70	61	56	50	44	41	31	35	71	63	57	52	47	45	32	36
			3000	**(1416)**	**0.246**	**(61.2)**	**71**	**59**	**55**	**47**	**42**	**39**	**32**	**36**	**72**	**62**	**58**	**52**	**46**	**42**	**34**	**38**	**74**	**64**	**59**	**54**	**48**	**46**	**36**	**40**
			3250	(1534)	0.278	(69.3)	72	60	56	49	43	40	34	38	73	63	59	53	48	43	35	39	75	65	60	55	49	47	38	41
			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
6	16	0.25	**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**
			975	(460)	0.178	(44.4)	54	40	38	36	34	31	-	-	56	43	39	37	35	33	-	-	58	45	42	39	37	35	-	-
			1200	**(566)**	**0.021**	**(5.2)**	**56**	**43**	**41**	**39**	**37**	**32**	-	-	**58**	**46**	**44**	**42**	**39**	**35**	-	-	**60**	**48**	**46**	**44**	**41**	**37**	-	**22**
			1600	(755)	0.028	(6.9)	59	47	45	44	40	34	-	21	60	49	48	47	42	37	-	22	61	52	50	49	45	41	21	24
			2000	**(944)**	**0.036**	**(9.0)**	**62**	**52**	**50**	**51**	**43**	**37**	**23**	**25**	**64**	**56**	**53**	**53**	**46**	**41**	**25**	**27**	**66**	**60**	**57**	**55**	**50**	**46**	**29**	**32**
7	18 x 16	0.25	2500	(1180)	0.056	(14.0)	66	59	56	54	48	42	27	31	67	60	57	55	49	44	29	32	69	62	59	56	51	47	31	34
			3300	**(1558)**	**0.098**	**(24.4)**	**70**	**64**	**61**	**57**	**52**	**46**	**33**	**36**	**71**	**65**	**62**	**58**	**53**	**48**	**34**	**37**	**73**	**66**	**63**	**59**	**54**	**49**	**35**	**39**
			4200	(1982)	0.170	(42.4)	75	70	64	60	55	50	38	41	76	70	65	62	56	50	39	43	76	71	66	63	58	51	39	43
			5000	**(2360)**	**0.298**	**(74.2)**	**79**	**73**	**67**	**63**	**58**	**53**	**43**	**46**	**79**	**74**	**68**	**65**	**59**	**55**	**43**	**46**	**80**	**75**	**69**	**66**	**60**	**57**	**44**	**48**
			5600	(2643)	0.454	(113.0)	81	75	70	65	62	57	45	49	81	76	71	66	62	58	45	49	82	77	72	68	63	59	46	50

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 - Radiated Sound Power at 1.5", 2" WG

Case	Inlet	Outlet Ps in. H20	CFM (L/s)		Min Ps in. H20 (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 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		
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**	-	**22**	**61**	**53**	**49**	**47**	**40**	**42**	-	**23**
			300	(142)	0.127	(31.6)	60	52	45	45	39	37	-	22	61	53	50	49	41	42	21	24
			400	**(189)**	**0.160**	**(39.7)**	**61**	**54**	**48**	**46**	**42**	**39**	-	**23**	**62**	**54**	**51**	**50**	**42**	**43**	**22**	**25**
			450	(212)	0.176	(43.8)	62	55	52	51	43	40	23	26	63	56	53	52	43	43	24	26
			500	**(236)**	**0.192**	**(47.9)**	**63**	**56**	**53**	**53**	**44**	**40**	**25**	**27**	**64**	**57**	**54**	**53**	**44**	**43**	**25**	**29**
			600	(283)	0.241	(60.1)	64	57	54	53	45	41	25	29	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)	55	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	-	22	60	55	51	45	42	42	22	25
			650	**(307)**	**0.138**	**(34.4)**	**61**	**55**	**51**	**45**	**42**	**40**	**22**	**25**	**63**	**57**	**54**	**47**	**44**	**42**	**25**	**29**
			800	(378)	0.161	(40.1)	63	58	55	48	44	41	26	30	65	60	57	50	46	43	29	32
			875	**(413)**	**0.175**	**(43.5)**	**63**	**59**	**57**	**50**	**45**	**41**	**29**	**32**	**66**	**61**	**58**	**52**	**47**	**44**	**30**	**33**
			950	(448)	0.188	(46.9)	63	60	60	52	46	42	32	35	65	62	61	53	48	45	33	36
			1100	**(519)**	**0.227**	**(56.6)**	**64**	**62**	**61**	**59**	**48**	**42**	**33**	**36**	**66**	**63**	**62**	**60**	**49**	**46**	**34**	**37**
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	36	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
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**	**22**	**26**	**66**	**59**	**53**	**49**	**47**	**45**	**26**	**30**
			1100	(519)	0.100	(25.0)	65	57	50	47	44	42	25	29	68	61	54	50	48	46	29	32
			1300	**(614)**	**0.107**	**(26.6)**	**66**	**58**	**52**	**48**	**45**	**42**	**26**	**30**	**69**	**62**	**55**	**51**	**49**	**46**	**30**	**34**
			1500	(708)	0.118	(29.4)	67	59	53	49	46	43	27	31	71	63	56	52	49	47	32	36
			1800	**(850)**	**0.143**	**(35.5)**	**70**	**61**	**55**	**51**	**48**	**44**	**31**	**35**	**72**	**64**	**57**	**53**	**50**	**47**	**34**	**38**
			2200	(1038)	0.182	(45.3)	74	62	57	52	49	43	36	40	76	65	58	55	51	48	39	43
			2500	**(1180)**	**0.212**	**(52.7)**	**75**	**65**	**62**	**53**	**50**	**45**	**38**	**41**	**77**	**67**	**63**	**57**	**52**	**49**	**40**	**44**
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**	-	**22**	**60**	**59**	**52**	**47**	**42**	**38**	**25**	**28**
			1000	(472)	0.090	(22.5)	61	59	52	49	43	40	25	28	65	62	56	52	45	42	28	32
			1500	**(708)**	**0.106**	**(26.5)**	**68**	**63**	**56**	**52**	**48**	**45**	**29**	**33**	**71**	**65**	**59**	**55**	**51**	**49**	**32**	**36**
			1950	(920)	0.134	(33.3)	70	64	57	53	49	46	31	35	74	67	61	57	53	50	36	40
			2200	**(1038)**	**0.149**	**(37.0)**	**71**	**65**	**58**	**54**	**50**	**46**	**32**	**36**	**75**	**68**	**62**	**57**	**54**	**50**	**38**	**41**
			2675	(1263)	0.209	(52.0)	74	67	60	56	52	49	36	40	77	69	65	60	56	51	40	44
			3000	**(1416)**	**0.246**	**(61.2)**	**76**	**69**	**62**	**58**	**53**	**51**	**39**	**43**	**78**	**71**	**67**	**62**	**58**	**53**	**41**	**45**
			3250	(1534)	0.278	(69.3)	77	70	63	59	55	52	40	44	79	72	68	63	60	55	43	46
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**
7	18 x 16	0.25	975	(460)	0.178	(44.4)	60	48	45	42	40	39	-	22	61	52	48	46	43	41	-	23
			1200	**(566)**	**0.021**	**(5.2)**	**62**	**50**	**48**	**47**	**44**	**41**	**21**	**25**	**63**	**56**	**51**	**49**	**48**	**43**	**22**	**26**
			1600	(755)	0.028	(6.9)	63	57	53	52	48	45	24	27	65	61	56	55	52	48	27	31
			2000	**(944)**	**0.036**	**(9.0)**	**68**	**63**	**60**	**58**	**53**	**50**	**32**	**35**	**70**	**66**	**64**	**63**	**59**	**55**	**36**	**39**
			2500	(1180)	0.056	(14.0)	70	65	62	59	54	51	34	37	73	68	66	64	59	56	38	42
			3300	**(1558)**	**0.098**	**(24.4)**	**74**	**68**	**65**	**62**	**56**	**52**	**37**	**41**	**76**	**70**	**68**	**66**	**62**	**57**	**41**	**44**
			4200	(1982)	0.170	(42.4)	78	72	68	65	60	54	41	45	80	75	70	67	64	59	44	48
			5000	**(2360)**	**0.298**	**(74.2)**	**81**	**76**	**70**	**67**	**63**	**59**	**45**	**49**	**83**	**78**	**72**	**69**	**65**	**62**	**48**	**52**
			5600	(2643)	0.454	(113.0)	82	78	74	69	65	62	47	51	84	80	76	72	67	65	50	53

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. H20	CFM (L/s)		Fan Only							
					Octave Band Sound Power, Lw, dB						NC1 ARI 885-90	NC2 ARI 885-98
					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 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 - Discharge Sound Power .5", .75", 1" WG

Case	Inlet	Outlet Ps in. H2O	CFM (L/s)		Min Ps in. H2O (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 885-90	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		
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	-	21	71	63	59	54	53	52	-	21	71	64	60	55	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
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	-	21	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	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
7	18 x 16	0.25	975	(460)	0.178	(44.4)	59	55	48	42	34	31	-	-	60	56	48	43	36	32	-	-	60	56	49	44	36	33	-	-
			1200	(566)	0.021	(5.2)	64	62	54	52	47	46	-	-	65	62	55	53	48	47	-	-	65	62	56	54	49	48	-	-
			1600	(755)	0.028	(6.9)	67	63	56	55	51	50	-	-	68	64	57	56	53	51	-	-	69	65	58	57	54	51	-	21
			2000	(944)	0.036	(9.0)	71	66	58	57	54	53	21	22	72	67	59	58	56	54	22	24	73	68	59	59	57	55	24	25
			2500	(1180)	0.056	(14.0)	75	69	61	59	59	58	25	26	76	70	61	60	59	59	26	27	77	72	62	61	60	59	28	29
			3300	(1558)	0.098	(24.4)	76	74	65	65	63	62	31	32	77	75	66	66	64	62	32	33	78	76	66	67	65	63	33	34
			4200	(1982)	0.170	(42.4)	80	78	68	68	66	65	35	37	81	79	69	68	67	65	37	38	82	80	70	69	68	66	38	39
			5000	(2360)	0.298	(74.2)	82	79	73	71	70	68	37	38	83	81	75	72	70	69	39	40	84	82	76	72	71	69	40	41
			5600	(2643)	0.454	(113.0)	84	81	75	73	72	70	39	40	84	82	77	74	73	71	40	41	85	83	78	74	73	72	41	42

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 1.5", 2" WG

Case	Inlet	Outlet Ps in. H2O	CFM (L/s)		Min Ps in. H2O (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 885-90	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		
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**	**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	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**	**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**	**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

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

FVI-500 - Hot Water Coil MBH Selection Data/Imperial Units

Unit Size	Rows	GPM	Head Loss ($Ft-H_2O$)	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
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
Unit Size	**Rows**	**GPM**	**Head Loss ($Ft-H_2O$)**	**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	0.09
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
Unit Size	**Rows**	**GPM**	**Head Loss ($Ft-H_2O$)**	**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
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
Unit Size	**Rows**	**GPM**	**Head Loss ($Ft-H_2O$)**	**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
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
Unit Size	**Rows**	**GPM**	**Head Loss ($Ft-H_2O$)**	**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
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
Unit Size	**Rows**	**GPM**	**Head Loss ($Ft-H_2O$)**	**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	0.13
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
Unit Size	**Rows**	**GPM**	**Head Loss ($Ft-H_2O$)**	**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
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	-	-

For Performance Notes see page FVI-155 Table A

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	0.02	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	0.02	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	0.02	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	-	-

For Performance Notes see page FVI-155 Table B

FVI-500 - Hot Water Coils Notes

Table-A

IMPERIAL NOTES

1. Hot water coil data are correct for both discharge & induction mounted coils with exception to case 7.

2. 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.

3. Tabulated values are in MBH (Thousands of BTU per hour).

4. Head Loss is in feet of water.

5. 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 = $\frac{927 \times MBH}{CFM}$

7. Water Temperature Drop = $\frac{2.04 \times MBH}{GPM}$

8. For water valve sizing, contact your METALAIRE representative. For data values other than those listed, interpolate or use the METALAIRE Terminal Selection Program. Contact your METALAIRE representative for additional information.

9. All hot water coils are 10 Fins per inch (FPI).

Table-B

METRIC NOTES

1. Hot water coil data are correct for both discharge & induction mounted coils with exception to case 7.

2. 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.

3. Tabulated values are in kW (Thousands of watts).

4. Head loss is in kPa.

5. 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 = $\frac{kW \times 579}{\text{air flow in L/s}}$

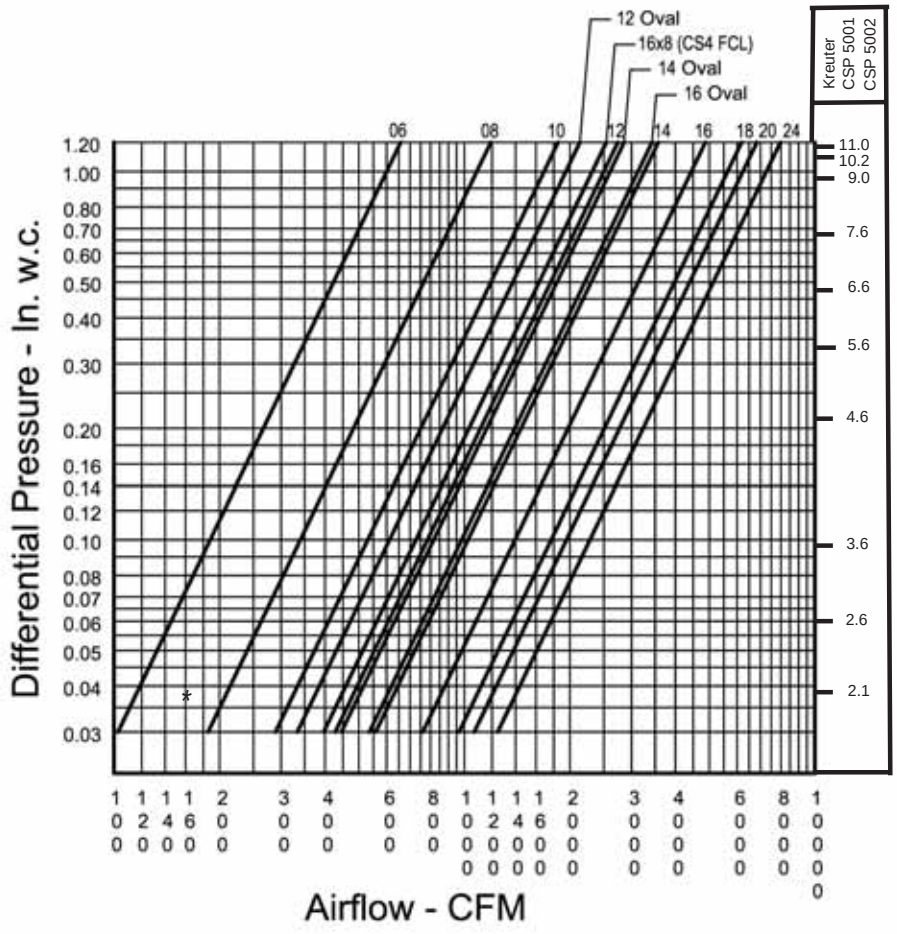
7. Water Temperature Drop = $\frac{kW \times 0.17}{\text{water flow in L/s}}$

8. For water valve sizing, contact your METALAIRE representative. For data values other than those listed, interpolate or use the METALAIRE Terminal Selection Program. Contact your METALAIRE 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)

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

$Cfm = \sqrt{\Delta p} \times$ Flow Coefficient

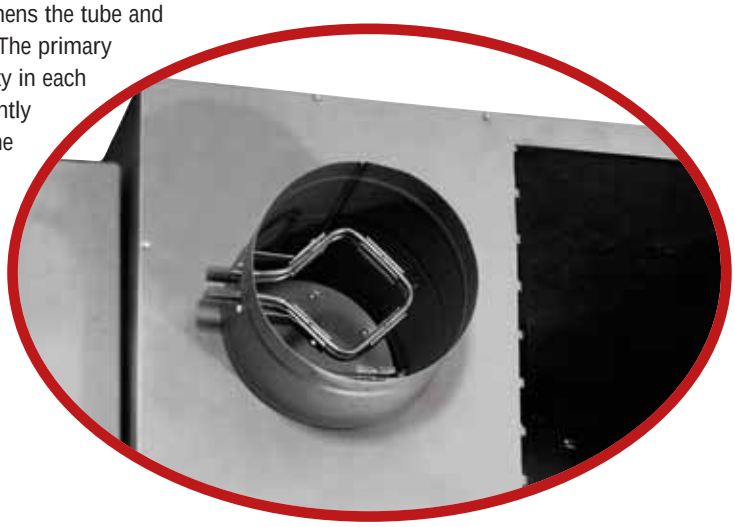
Data is with Sensor Mounted in Round Duct, except for Rectangular Sizes 18, 20 and 24 Widths x 16 Height and 16 x 8 (FCL Case 4)

** 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

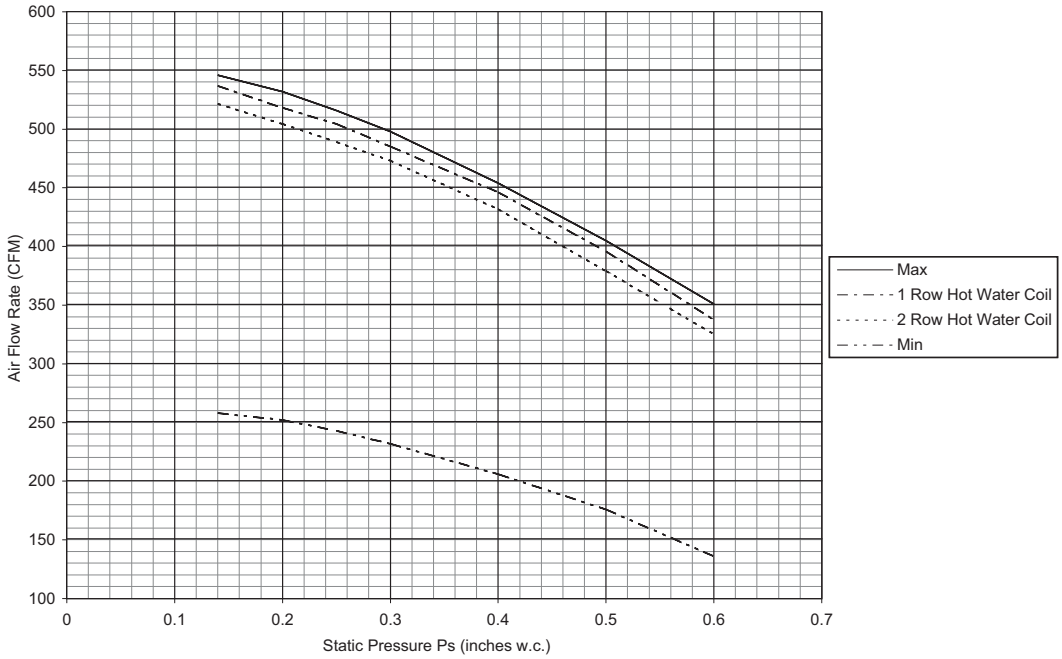


Parallel Fan Powered Air Terminal Units

FVI-500 - Fan Performance Charts

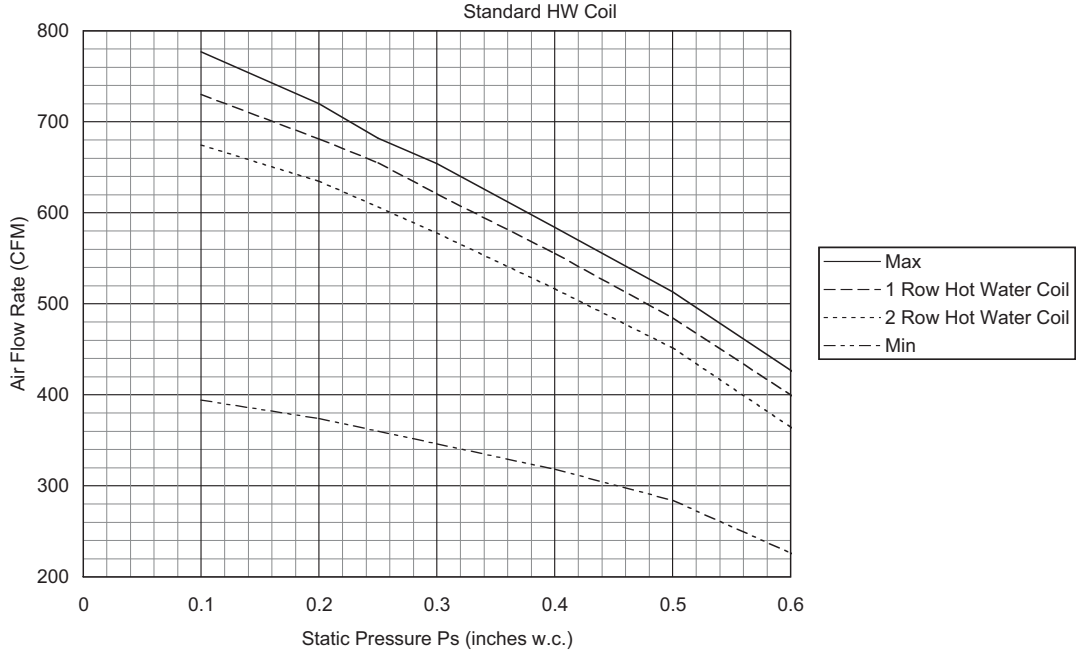
FAN CURVES

FVI Unit Size 1
Standard HW Coil



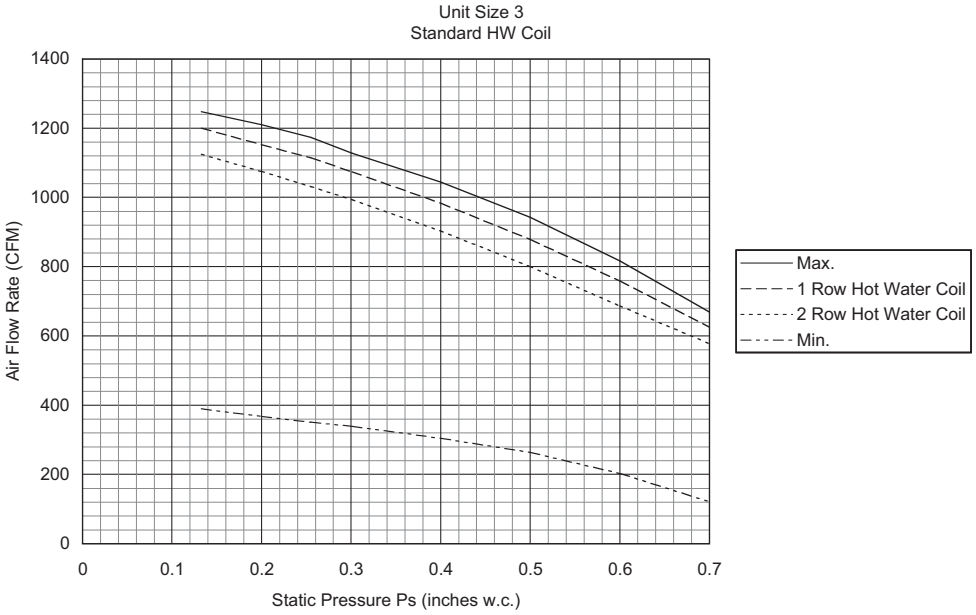
FAN CURVES

Unit Size 2
Standard HW Coil

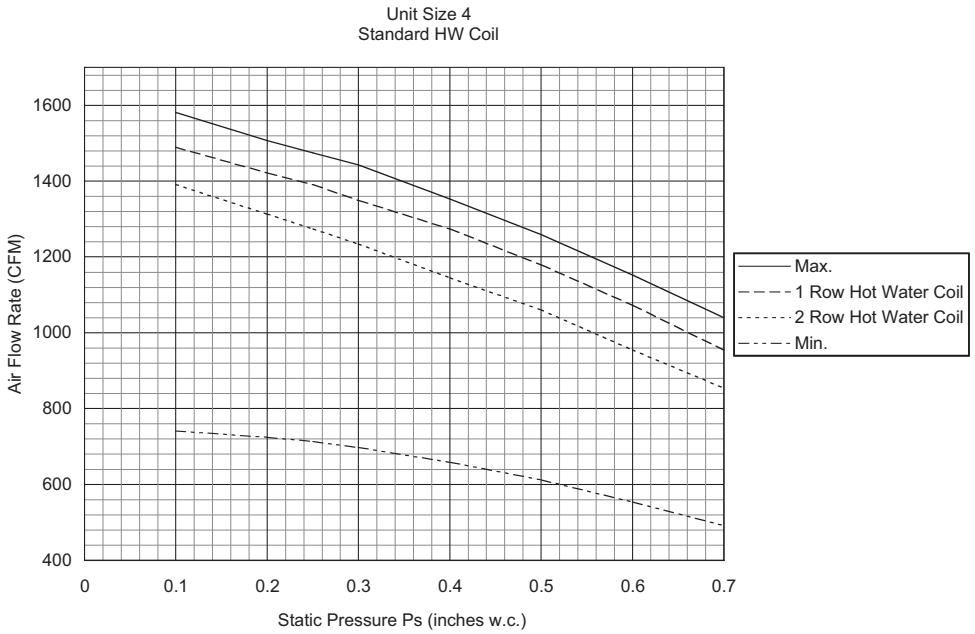


FVI-500 - Fan Performance Charts

FAN CURVES



FAN CURVES

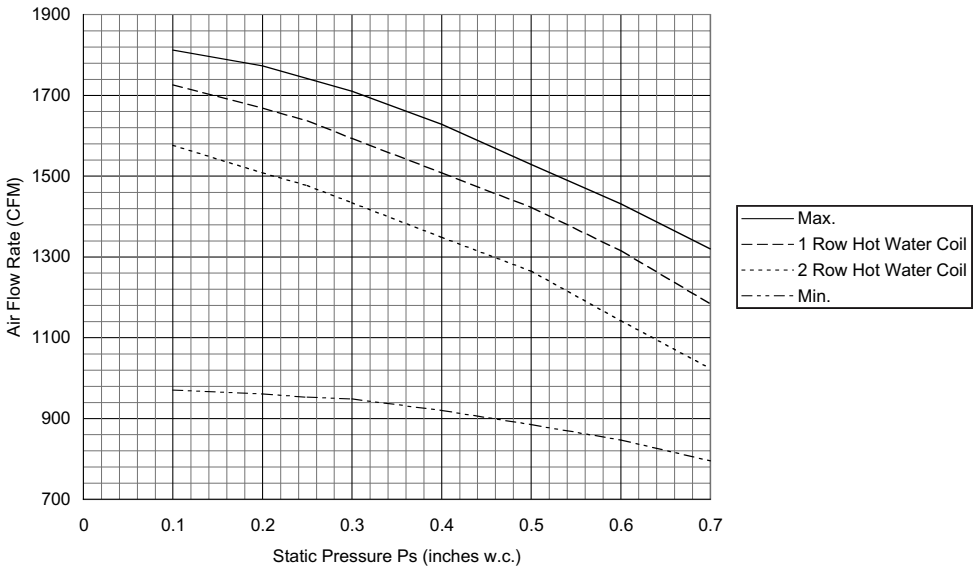


Parallel Fan Powered Air Terminal Units

FVI-500 - Fan Performance Charts

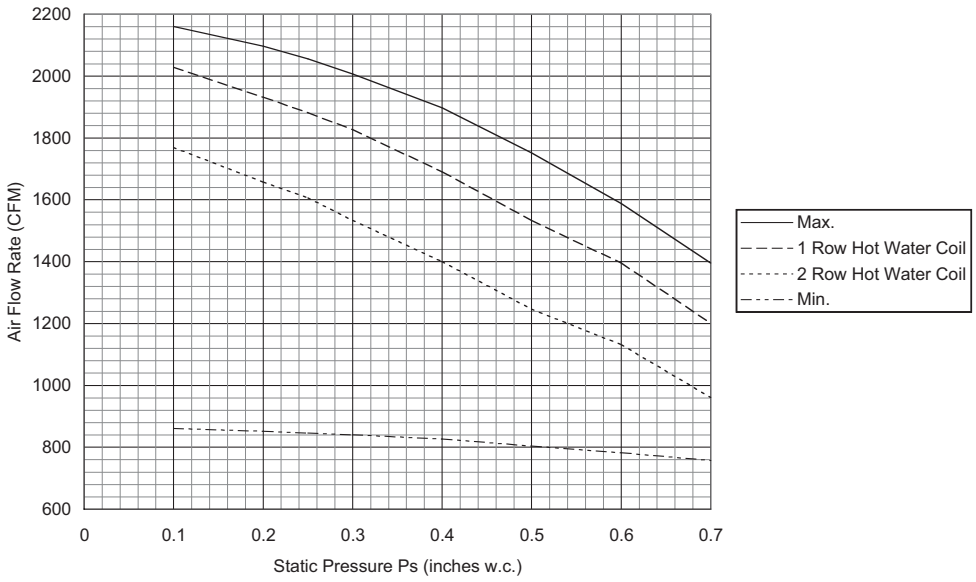
FAN CURVES

Unit Size 5
Standard HW Coil

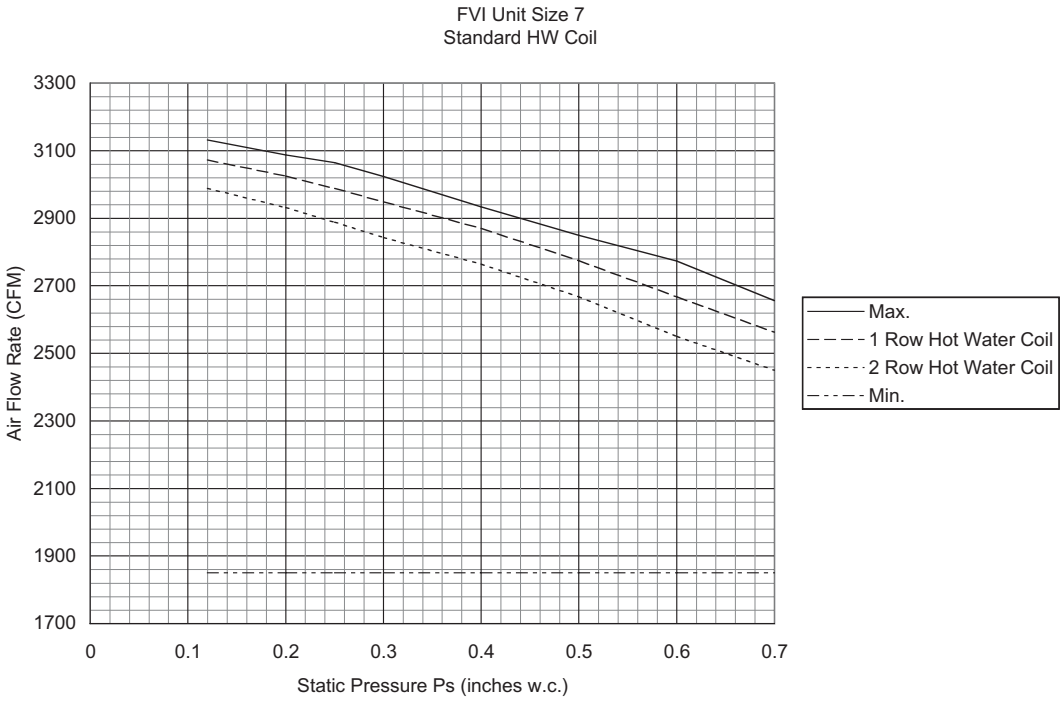


FAN CURVES

Unit Size 6
Standard HW Coil



FVI-500 - Fan Performance Charts



Parallel Fan Powered Air Terminal Units

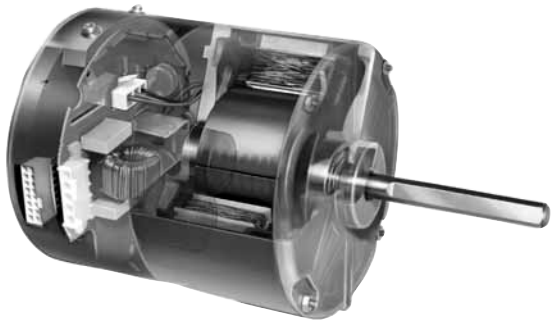
ECM Motor

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.



Optional ECM Motor is available with FVI-500 Series Fan Powered Terminal Units.

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

Metalaire 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.

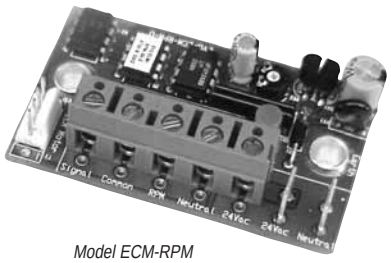
Both control interfaces provide a means to monitor fan RPM. This is an important value to record after air balance, and can be used to diagnose system problems.

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.



Model ECM-RPM

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-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

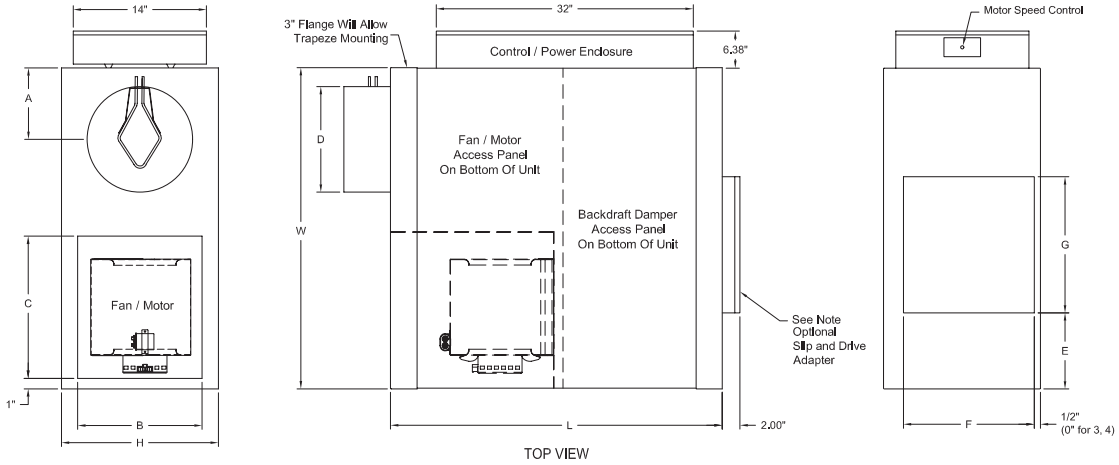
ECM FVI-500 - Air Terminal Dimensions

Dimensions are in inches

Parallel Fan Powered - ECM Motor - Basic Unit

Case Size 3 - *10" Inlet*

Case Size 6 - *16" Inlet*



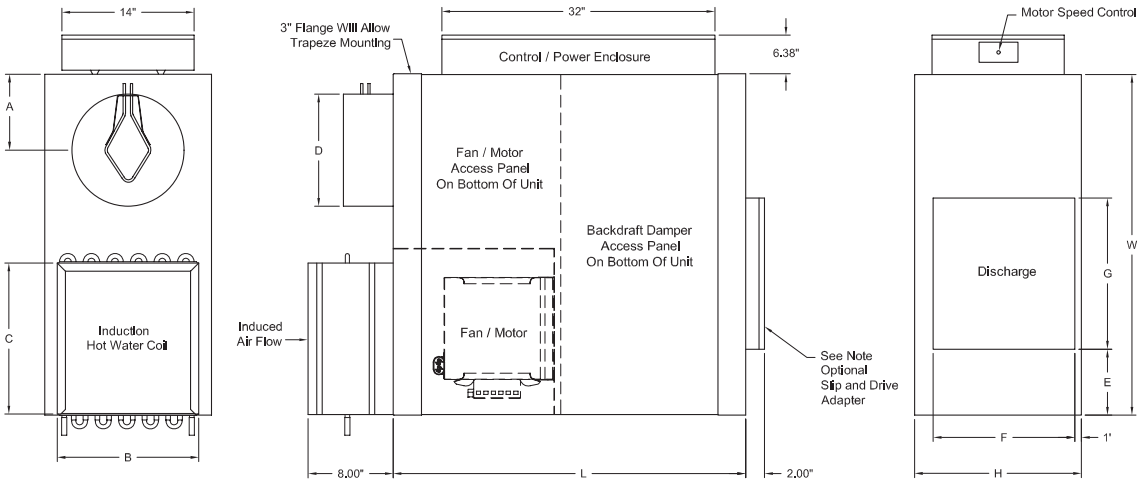
TOP VIEW

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*



TOP VIEW

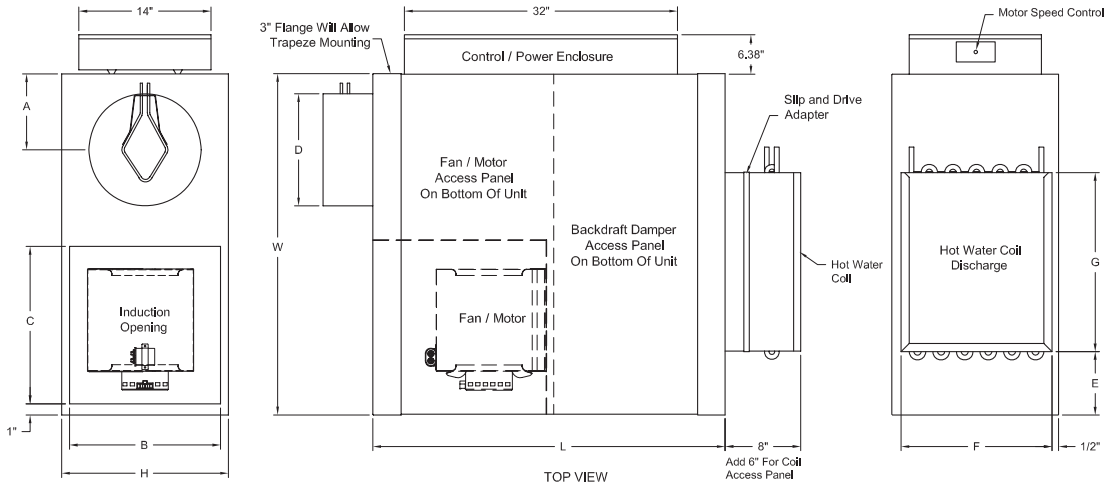
Casing Size	Inlet Diameter D		Horse Power	Unit Height H	Unit Width W	Unit Length L	Inlet Loc. A	Ind. Inlet Height B	Ind. Inlet Width C	Discharge Loc. E	Discharge Height F	Discharge Width G
	Standard	Optional										
3	10 (254)	6, 8, 12, 14	1/2	17 1/2 (445)	36 (914)	36 (914)	8 (203)	14 (356)	18 (457)	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)

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*

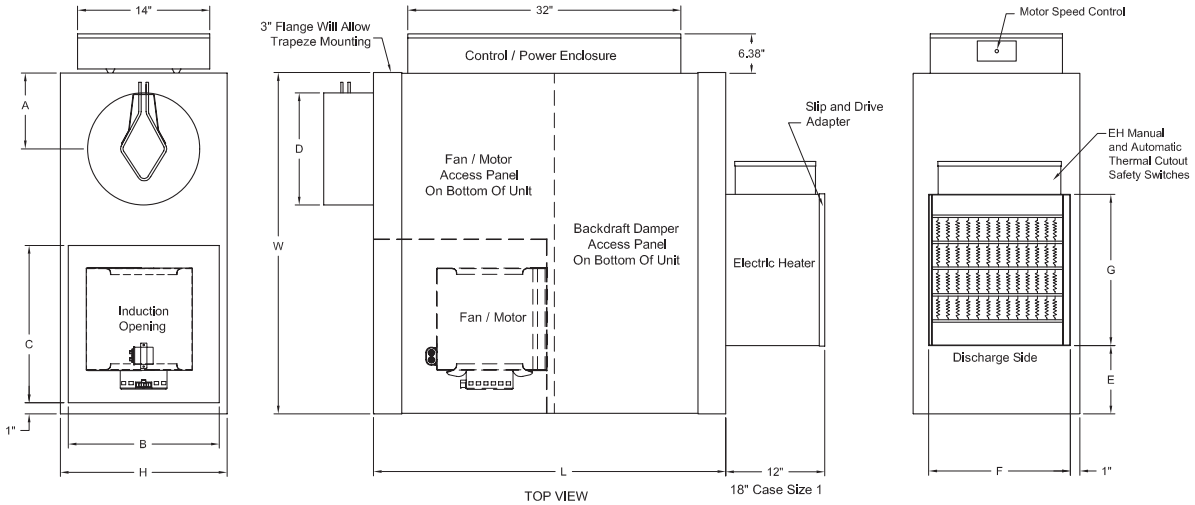


Casing Size	Inlet Diameter D Standard	Inlet Diameter D Optional	Horse Power	Max/Min Fan ** Airflow CFM @ external 0" to 0.7" w.c. (0.5" w.c. size 1 & 2)	Unit Height H	Unit Width W	Unit Length L	Inlet Loc. A	Ind. Inlet Height B	Ind. Inlet Width C	Standard Hot Water Coil Discharge Loc. E	Standard Hot Water Coil Discharge Height F	Standard Hot Water Coil 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 Standard	Inlet Diameter D Optional	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
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

ECM FVI-500 - Radiated Sound Power at Fan Only

Case	Inlet	Outlet Ps in. H2O	CFM (L/s)		Fan Only Octave Band Sound Power, Lw, dB 2	3	4	5	6	7	NC1 ARI 885-90	NC2 ARI 885-98
			375	(177)	50	49	42	37	36	35	-	-
			425	**(201)**	**54**	**51**	**45**	**39**	**37**	**36**	-	-
			500	(236)	57	54	48	44	41	40	-	-
3	10	0.25	**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
			625	**(295)**	**56**	**53**	**52**	**48**	**45**	**41**	-	-
			800	(378)	58	55	55	52	48	44	-	-
			1000	**(472)**	**61**	**58**	**57**	**56**	**51**	**48**	-	-
6	16	0.25	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. H2O	CFM (L/s)		Min Ps in. H2O (Pa)		Inlet Pressure, Ps = 0.5 inches of water (125 Pa) Octave Band Sound Power, Lw, dB 2	3	4	5	6	7	NC1 ARI 885-90	NC2 ARI 885-98	Inlet Pressure, Ps = 0.75 inches of water (187 Pa) Octave Band Sound Power, Lw, dB 2	3	4	5	6	7	NC1 ARI 885-90	NC2 ARI 885-98	Inlet Pressure, Ps = 1.0 inches of water (250 Pa) Octave Band Sound Power, Lw, dB 2	3	4	5	6	7	NC1 ARI 885-90	NC2 ARI 885-98
			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**
3	10	0.25	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
			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
6	16	0.25	**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. H2O	CFM (L/s)		Min Ps in. H2O (Pa)		Inlet Pressure, Ps = 1.5 inches of water (375 Pa) Octave Band Sound Power, Lw, dB 2	3	4	5	6	7	NC1 ARI 885-90	NC2 ARI 885-98	Inlet Pressure, Ps = 2.0 inches of water (700 Pa) Octave Band Sound Power, Lw, dB 2	3	4	5	6	7	NC1 ARI 885-90	NC2 ARI 885-98
			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**
3	10	0.25	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	36	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
			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
6	16	0.25	**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.

ECM FVI-500 - Discharge Sound Power at Fan Only

Case	Inlet	Outlet Ps in. H20	CFM (L/s)	Fan Only							
				Octave Band Sound Power, Lw, dB						NC1 ARI 885-90	NC2 ARI 885-98
				2	3	4	5	6	7		
3	10	0.25	375 (177)	55	51	49	44	41	34	-	23
			425 (201)	**58**	**54**	**53**	**46**	**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	46	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. H20	CFM (L/s)	Min Ps in. H20 (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 885-90	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		
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	-	21	71	63	59	54	53	52	-	21	71	64	60	55	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
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	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. H20	CFM (L/s)	Min Ps in. H20 (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 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		
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
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**	**35**	**36**	**85**	**82**	**74**	**69**	**68**	**66**	**40**	**41**

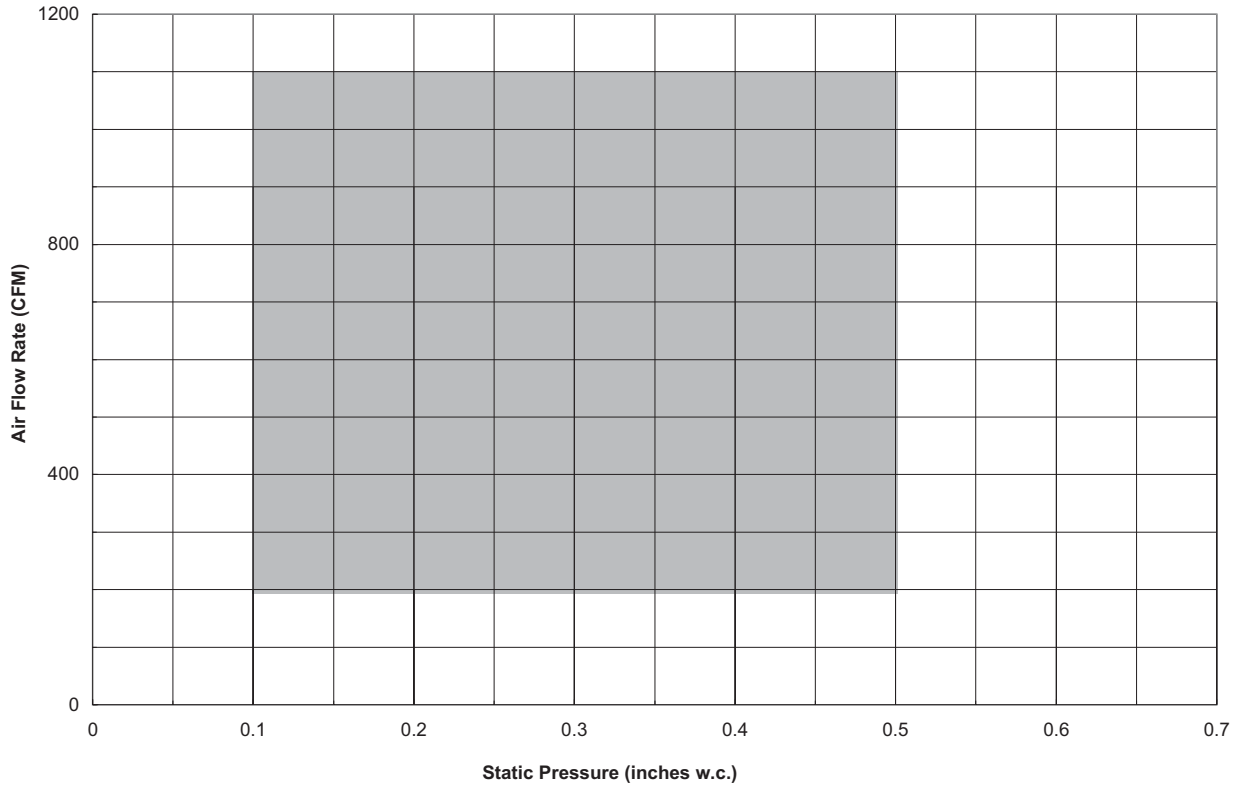
See Page FVI-152 For NC Calculations

NC CALCULATIONS

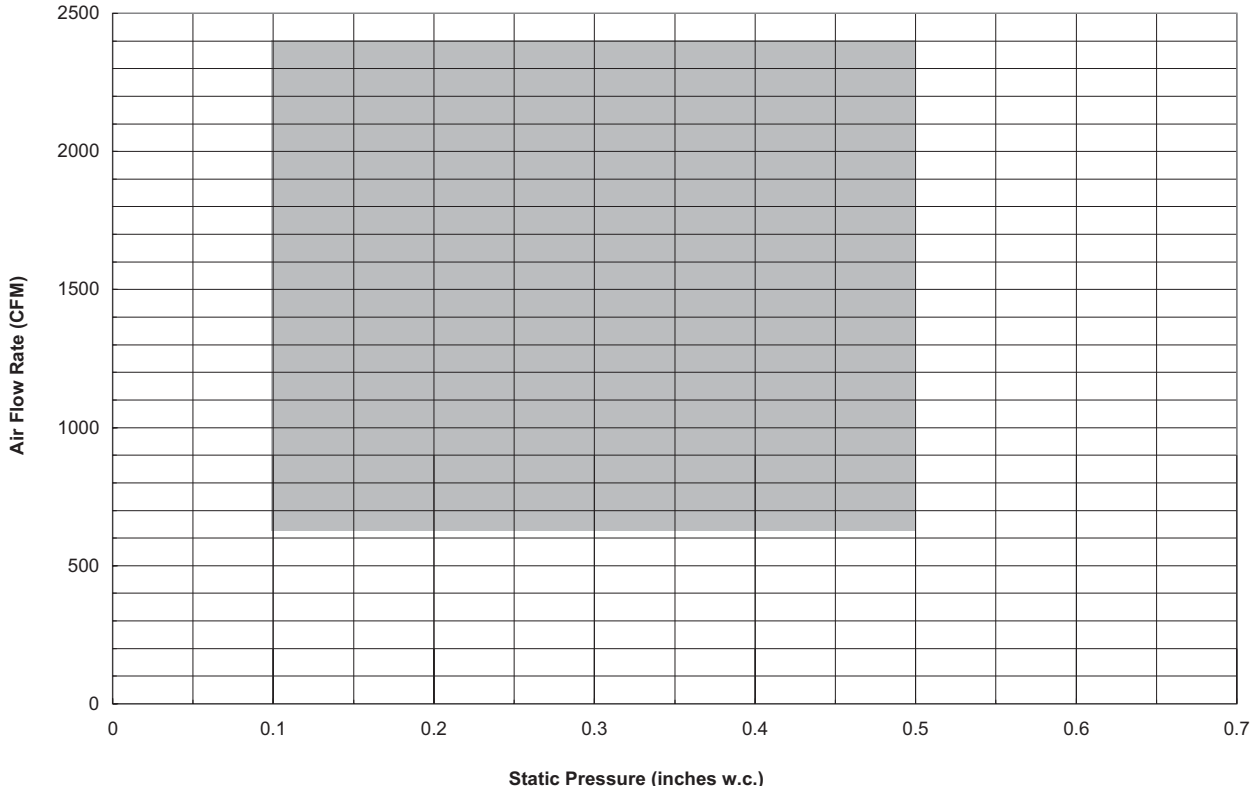
The current ARI Standard for NC calculations is ARI 885-98. Other terminal manufacturers may catalog performance based on ARI 885-90. Using this older, obsolete standard will provide lower NC levels compared to the 1998 standard. To allow for fair and accurate performance comparisons, METALAIRE publishes the NC levels for both the 1990 standard and the 1998 current standard.

ECM FVI-500 - Fan Performance Charts

UNIT SIZE 3



UNIT SIZE 6



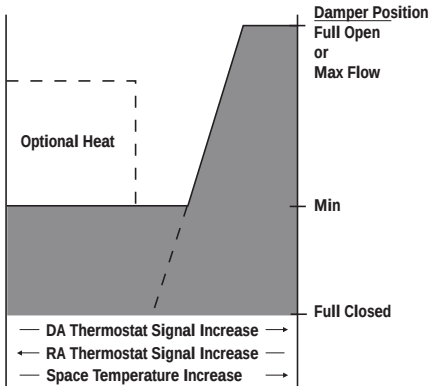
FVI-500 - Control Sequences

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.

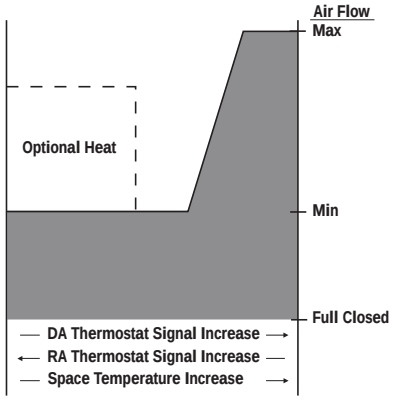
Standard pressure independent control sequences feature our multi-function VAV controller. Multi-function flow controllers can be field modified for use with a direct or reverse acting thermostat and the damper actuator can be switched to either normally opened or normally closed without adding control 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.

FVI-500 - Analog Electronic Control Sequences

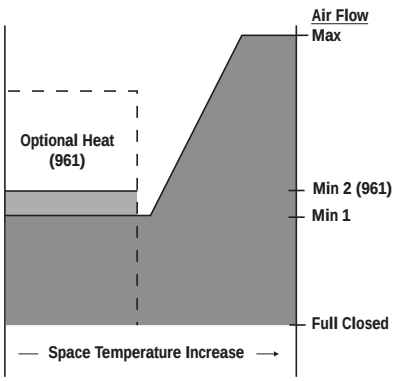
ANALOG ELECTRONICALLY CONTROLLED FAN INDUCTION AIR TERMINALS

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



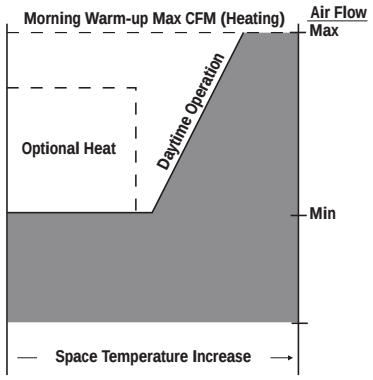
(860) Cooling Only.
The electronic thermostat (analog models with integral, adjustable, maximum and minimum flow limits) signals the electronic flow controller to regulate the dampers position. The damper is rotated to its maximum open position as room temperature rises and to its minimum open position 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 airflow 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

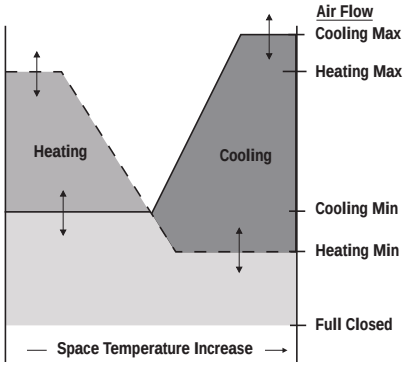
Analog Electronic Control
Pressure Independent
864 Morning Warm-up



(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.

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.

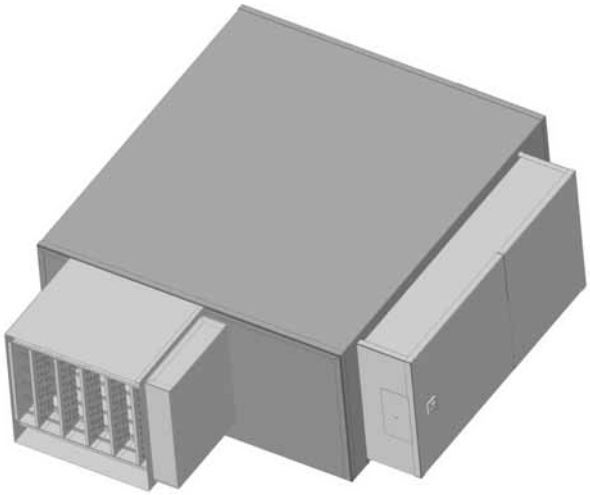
METALAIRE offers a unique service for today's fast-paced, technology-hungry HVAC markets with high performance air terminals that are compatible with all direct digital control packages. This approach is highly encouraged by control manufacturers and HVAC design engineers alike. METALAIRE is committed 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/ft^3 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.

Parallel Fan Powered Air Terminal Units

FVI-500 - Air Terminals Electric Heater Assembly Capacities

Single Phase				
Case Size	Heater Voltage	Minimum kW/St	Maximum kW	Maximum Steps
1	120	.5	5	2
	208	.5	8.5	2
	240	.5	10	2
	277	.5	11.5	2
	480	.5	11.5	2
2	**120**	**.5**	**5**	**3**
	208	**.5**	**8.5**	**3**
	240	**.5**	**10**	**3**
	277	**.5**	**11.5**	**3**
	480	**.5**	**11.5**	**3**
3	120	.5	5	3
	208	.5	8.5	3
	240	.5	10	3
	277	.5	11.5	3
	480	.5	11.5	3
4	**120**	**.5**	**5**	**3**
	208	**.5**	**8.5**	**3**
	240	**.5**	**10**	**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

Three Phase				
Case Size	Heater Voltage	Minimum kW/St	Maximum kW	Maximum Steps
1	208	.5	13	3
	240	.5	14.5	3
	480	1.5	17	3
2	**208**	**.5**	**13**	**3**
	240	**.5**	**14.5**	**3**
	480	**1.5**	**17**	**3**
3	208	.5	13	3
	240	.5	14.5	3
	480	1.5	17	3
4	**208**	**.5**	**13**	**3**
	240	**1.5**	**15**	**3**
	480	**1.5**	**25**	**3**
5	208	.5	13	3
	240	1.5	15	3
	480	1.5	25	3
6	**208**	**.5**	**13**	**3**
	240	**1.5**	**15**	**3**
	480	**1.5**	**25**	**3**
7	208	.5	13	3
	240	1.5	15	3
	480	1.5	25	3

NOTES:

1. 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
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 operating 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 prolong heater life.
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:

$$kW = \frac{BTU/hr}{3413} \qquad kW = \frac{CFM \times dT \times 1.085^*}{3413} \qquad dT = \frac{kW \times 3413}{CFM \times 1.085^*}$$

$$CFM = \frac{kW \times 3413}{dT \times 1.085^*} \qquad CFM = \frac{kW \times 3413}{dT \times 1.085^*}$$

* 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.

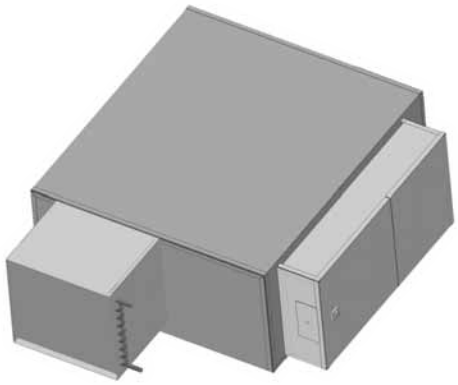
FVI-500 - Accessories and Components - Hot Water Coils

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)		
	Standard HW Coil inches (mm)	
Case Size	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		
	Standard HW Coil inches (mm) 1, 2, 3, 4 Row	
Case Size	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)

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/ft^3 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/ft^3 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/ft^3 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).

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.

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.METALAIRE.COM, YOU PICK THE FORMAT FOR PRODUCT INFORMATION THAT BEST SUITS YOUR AIR DISTRIBUTION DESIGN NEEDS.

PRE-FLIGHT - Product Overview Catalog

The METALAIRE Pre-Flite 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 METALAIRE 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.metalaire.com.

INFOSOURCE CATALOG SUITE

- Complete Guide to Air Distribution Selection

The METALAIRE 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*
- *Air Terminal Unit Catalog*
- *Grilles & Registers Catalog*
- *Formations Catalog*

WEBSITE: WWW.METALAIRE.COM

METALAIRE 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.

METAL INDUSTRIES, INC.

METAL*AIRE

DH-500 / High Performance Dual Duct Air Terminal Unit

DD-500 / Dual Duct Air Terminal Unit

DUAL DUCT AIR TERMINAL UNITS

Dual Duct Air Terminal Units

DD/DH-500 - Table of Contents

ARI Certified Air Terminals

METALAIRE 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 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.

DH/DD-500 - Introducton

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/ft^3. 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. ThemoPure 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.

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.

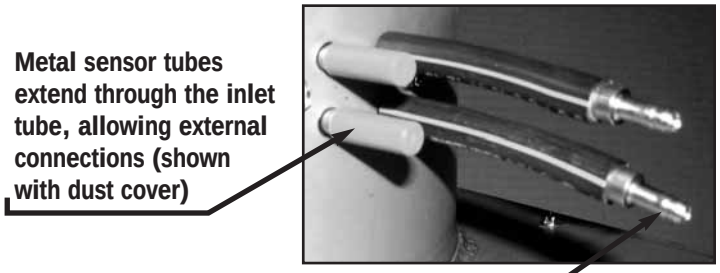
The primary air valve has a bead rolled into the tube, which strengthens the tube and serves as a stop and prevents field attached flex duct from slipping.

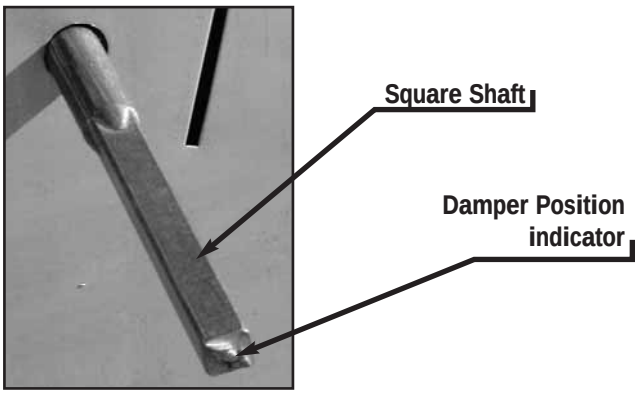
Flow Sensor

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".





Dual Duct Air Terminal Units

6/2007

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

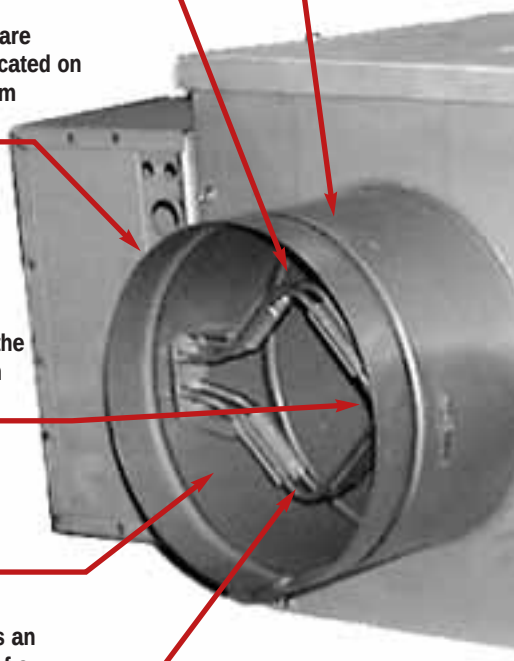
**Mixing ratio is the ratio between a 1°F temperature difference in the discharge air stream and the difference between the hot deck and cold deck temperature*

#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

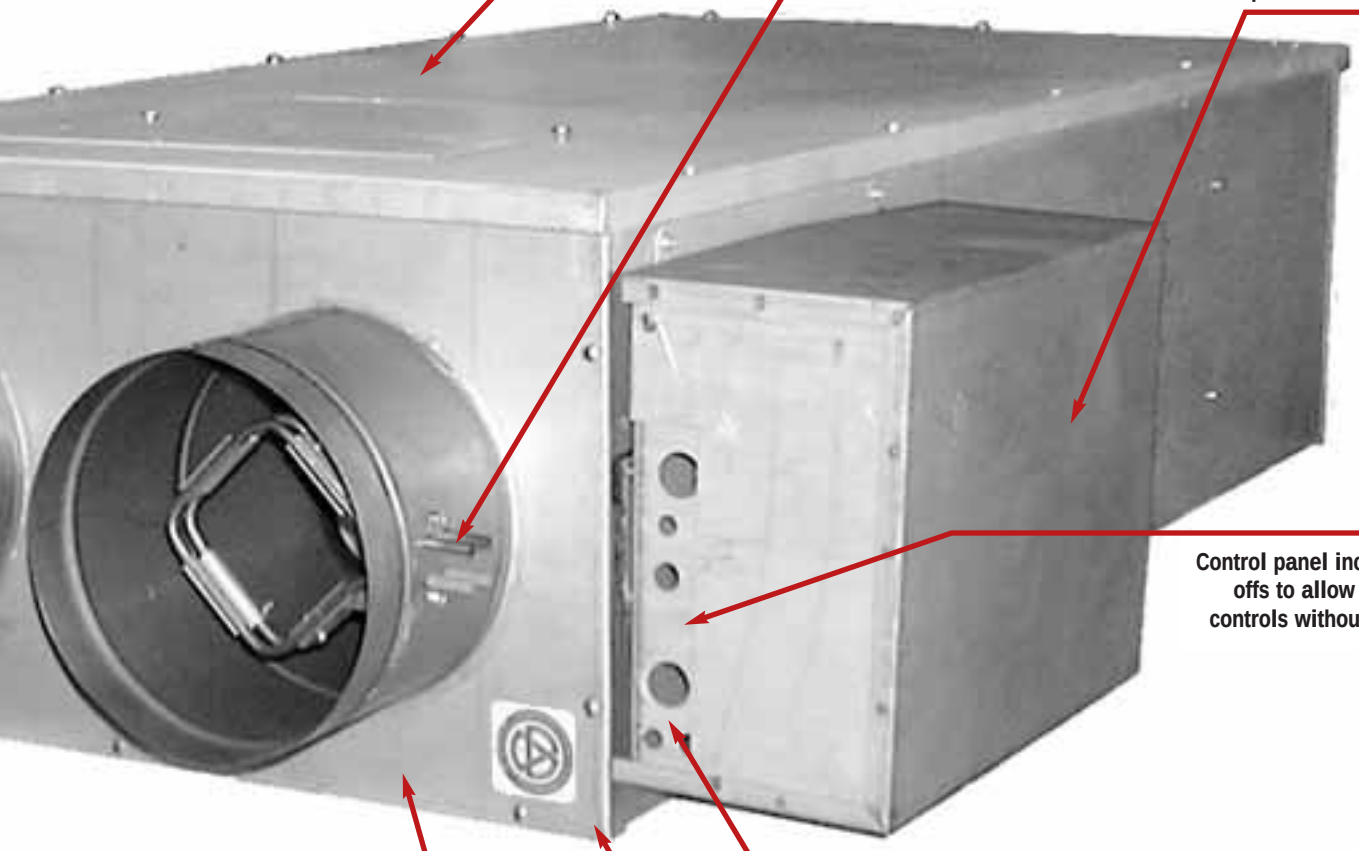
Multiquadrant Averaging Flow Sensor provides an accurate flow signal without the requirement of a straight duct connection immediately upstream (Shipped standard on all units).

Dual Duct Air Terminal Units

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

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

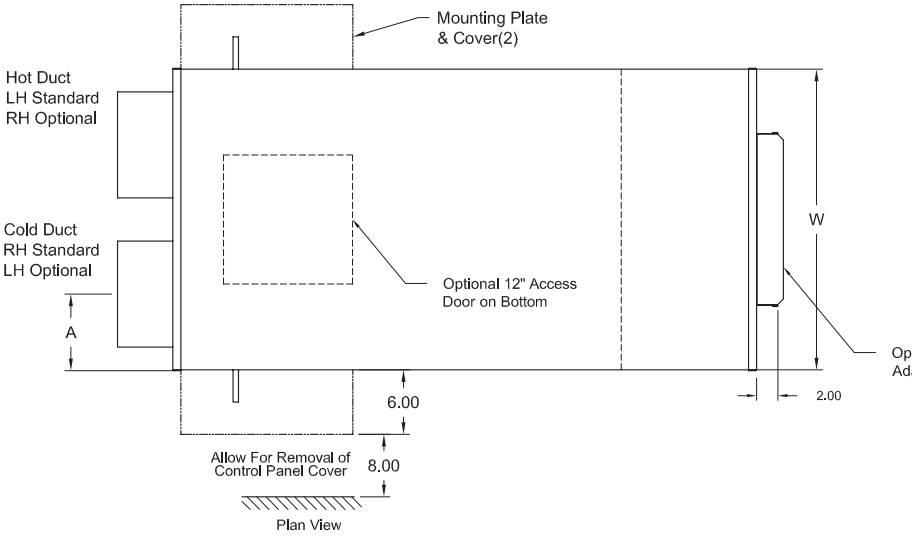
All DH-500 terminal units are ARI certified and shipped with the ARI seal

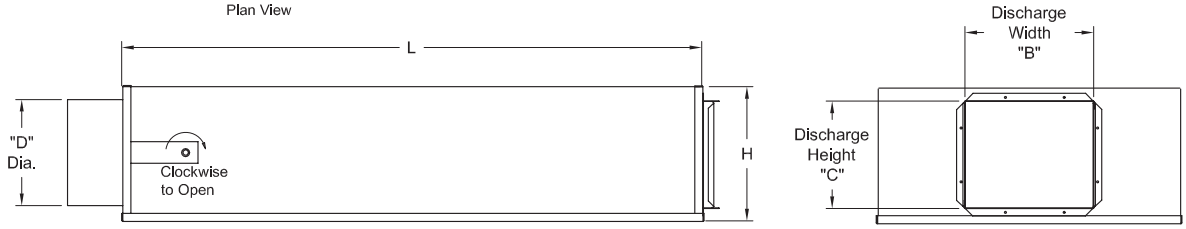
Standard insulation is dual density glass fiber. Optional liners are available including Thermopure (closed cell foam), foil face, and metal liner

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.

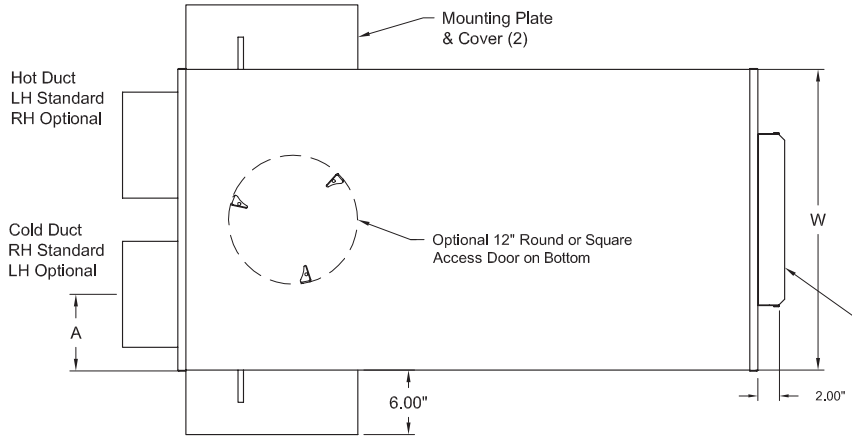
Inlet Diameter D		Unit Height H	Unit Width W	Unit Length L	Inlet Duct Location A	Discharge Width B	Discharge Height C	Shipping weight lb
Standard Both Ducts	Optional Hot Duct							
6 (152)	-	10 (254)	20 (508)	40 (1016)	5 (127)	8 (203)	6 (152)	55
8 (203)	6	12 1/2 (318)	24 (610)	48 (1219)	6 (152)	10 (254)	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").

DH-500 UT - Air Terminal Dimensions

DH-500 UT

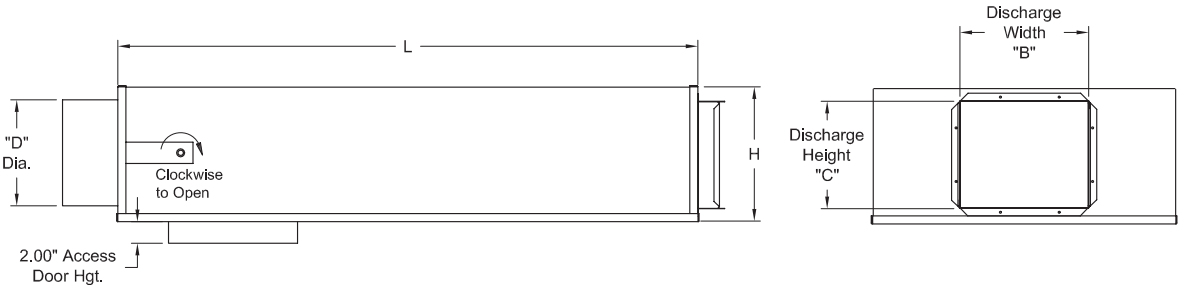
Dimensions are in inches



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)
12 (305)	6, 8,10	15 (381)	32 (813)	72 (1829)	8 (203)	14 (356)	12 (305)
14 (356)	6, 8, 10, 12	17 1/2 (445)	36 (914)	72 (1829)	9 (229)	17 (432)	14 (356)
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 - 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

DH-500 - Radiated Sound Power at Min., 1", 2" Wg

Unit Size	Outlet Ps in. H20	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 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 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**	**54**	**32**	**34**	**84**	**75**	**67**	**60**	**60**	**59**	**36**	**38**

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.

Dual Duct Air Terminal Units

DH-500 - Discharge Sound Power at Min., 1", 2" Wg

Unit Size	Outlet Ps in. H20	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 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		
		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**	-	-
506	**0.25**	300	(142)	0.186	(46.4)	57	43	39	34	31	26	-	-	64	50	41	36	33	28	-	-	67	54	45	41	34	34	-	-
6 inch		**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
		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**	-	-
508		600	(283)	0.306	(76.2)	61	47	36	33	29	24	-	-	65	51	40	37	33	28	-	-	68	55	44	42	34	34	-	-
8 inch	**0.25**	**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**
		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	-	-
510		**900**	**(425)**	**0.244**	**(60.8)**	**59**	**47**	**35**	**32**	**30**	**25**	-	-	**66**	**54**	**42**	**39**	**37**	**32**	-	-	**69**	**58**	**46**	**44**	**38**	**38**	-	-
10 inch	**0.25**	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
		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**	-	-
512		1200	(566)	0.276	(68.7)	60	48	43	34	39	33	-	-	64	52	47	38	43	37	-	-	67	56	51	43	44	43	-	-
12 inch	**0.25**	**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**
		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**	-	-
514		**1600**	**(755)**	**0.262**	**(65.3)**	**61**	**49**	**44**	**44**	**45**	**39**	-	-	**65**	**53**	**48**	**48**	**49**	**43**	-	-	68	57	52	53	50	49	-	-
14 inch	**0.25**	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
		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
516		**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**
16 inch	**0.25**	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 - 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

Dual Duct Air Terminal Units

6/2007

SERIES DD-500

Dual Duct Air Terminal Units

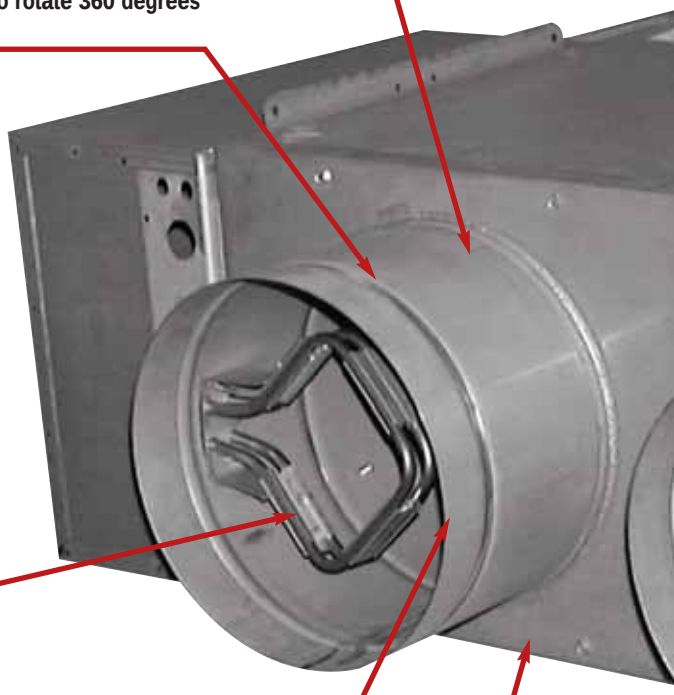
Series DD-500 Dual Duct air terminals are designed to regulate the flow of conditioned air in dual duct air distribution systems. In a dual duct system, both heated and cooled air are provided to the air terminal and mixed in plenum provided by others to provide the desired discharge temperature. The 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

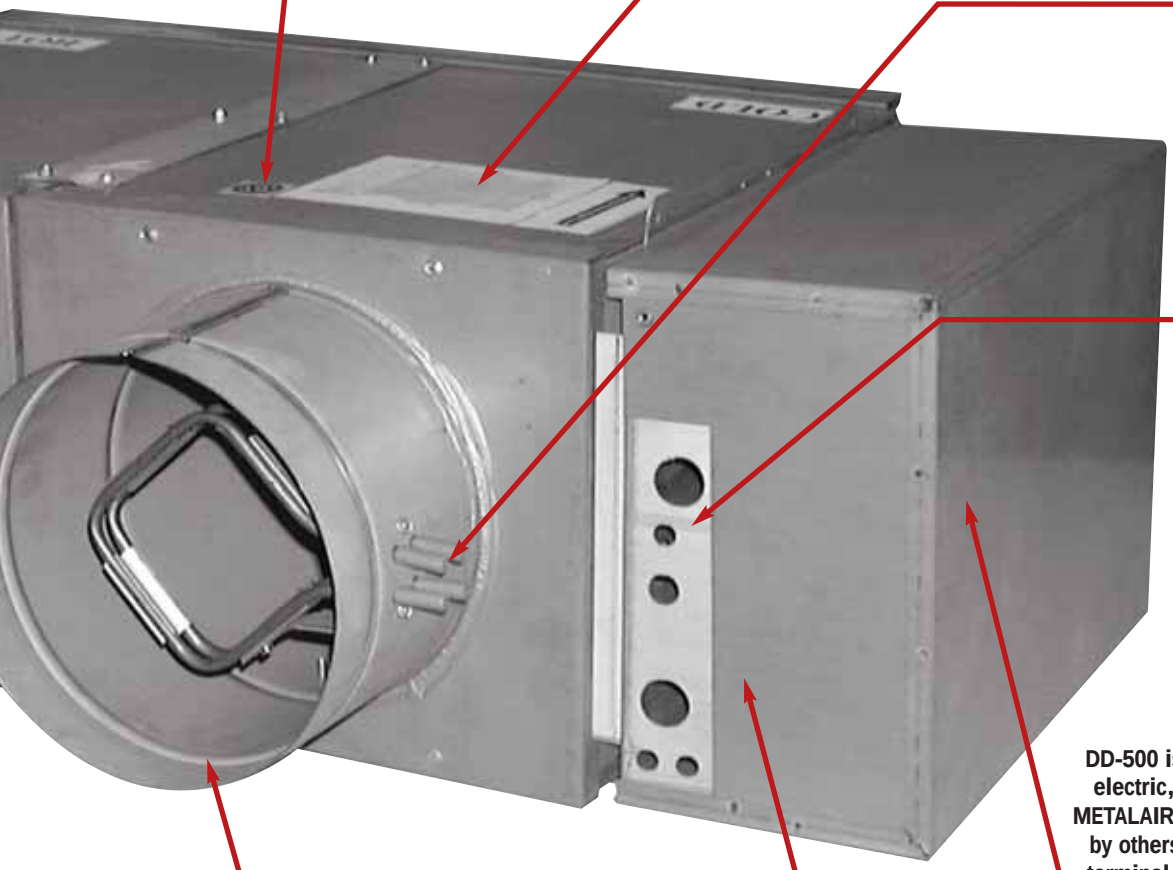
Standard insulation is dual density glass fiber. Optional liners are available including Thermopure (closed cell foam), foil face, and metal liner

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

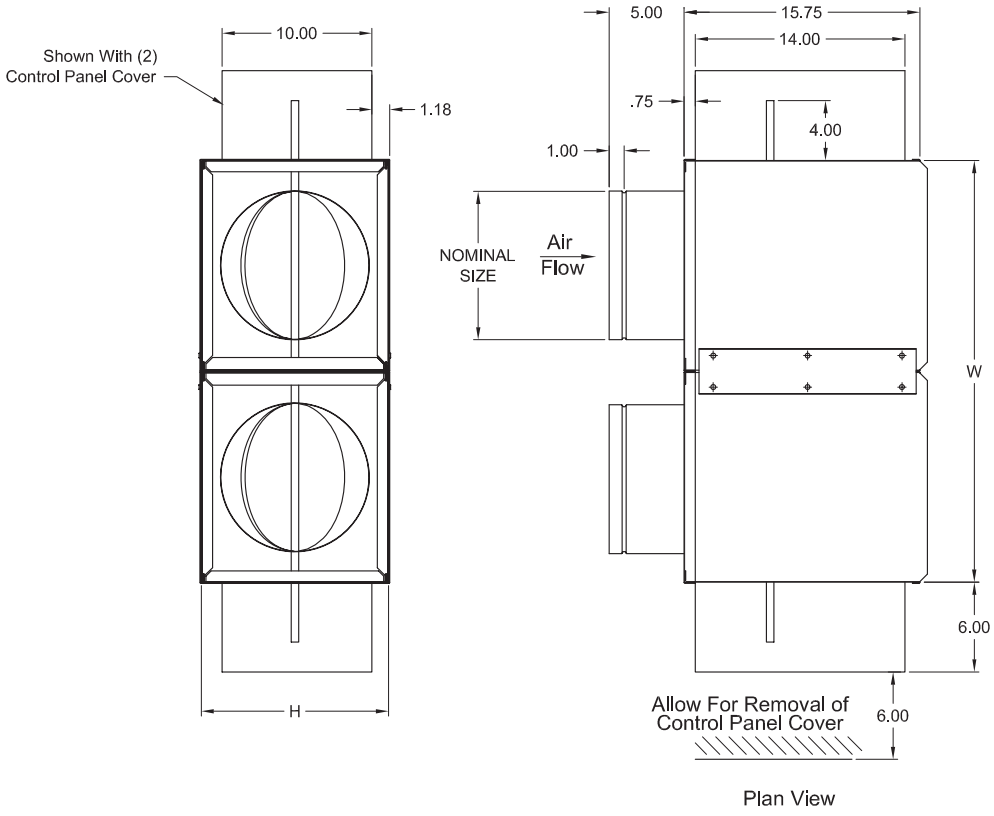
For long life and continuous operation, the damper rotates in a self-lubricating Kepital® (acetal resin) bearing. Control mounting plate is shipped standard on all units. Control cover is provided as standard

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

DD-500 - Air Terminal Dimensions

DD-500

Dimensions are in inches



MODEL NUMBER	NOMINAL SIZE In (mm)	H (Height) In (mm)	W (Width) 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)

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" ¦ Ps	0.50" ¦ Ps	1.00" ¦ Ps	1.50" ¦ 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" ¦ Ps	3.0" ¦ Ps	6.0" ¦ 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

DD-500 - Radiated Sound Power at Min., .5", .75" Wg

Unit Size	Outlet Ps in. H20	CFM (L/s)		Min Ps in. H20 (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 885-90	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 6 inch	0.25	**100**	**(47)**	**0.015**	**(3.8)**	**43**	**35**	**20**	**17**	**15**	**13**	**< 15**	**< 15**	**44**	**35**	**25**	**23**	**19**	**13**	**< 15**	**< 15**	**46**	**37**	**27**	**25**	**21**	**16**	**< 15**	**< 15**
		200	(94)	0.038	(9.5)	45	38	26	23	22	15	< 15	< 15	51	41	33	28	23	19	< 15	< 15	53	43	37	31	27	23	< 15	< 15
		250	**(118)**	**0.059**	**(14.8)**	**46**	**39**	**29**	**26**	**25**	**18**	**< 15**	**< 15**	**53**	**43**	**35**	**30**	**26**	**21**	**< 15**	**< 15**	**55**	**45**	**39**	**33**	**28**	**25**	**< 15**	**16**
		300	(142)	0.071	(17.6)	48	41	32	29	28	22	< 15	< 15	55	44	38	32	28	23	< 15	16	57	48	43	35	32	27	< 15	18
		400	**(189)**	**0.104**	**(25.8)**	**54**	**44**	**37**	**34**	**34**	**25**	**< 15**	**< 15**	**57**	**48**	**42**	**36**	**34**	**26**	**< 15**	**18**	**59**	**51**	**46**	**39**	**36**	**30**	**17**	**21**
		450	(212)	0.125	(31.0)	54	46	39	37	36	27	< 15	< 15	57	50	43	39	38	28	< 15	18	59	53	47	41	38	31	18	21
		500	**(236)**	**0.136**	**(33.9)**	**55**	**48**	**42**	**39**	**39**	**29**	**< 15**	**16**	**58**	**51**	**45**	**40**	**39**	**30**	**16**	**20**	**60**	**54**	**48**	**42**	**40**	**33**	**19**	**22**
		600	(283)	0.169	(42.1)	55	52	47	44	44	34	18	21	58	54	48	44	45	35	19	22	61	57	50	45	45	36	22	26
508 8 inch	0.25	**200**	**(94)**	**0.021**	**(5.3)**	**45**	**36**	**23**	**19**	**18**	**18**	**< 15**	**< 15**	**51**	**39**	**28**	**23**	**20**	**19**	**< 15**	**< 15**	**53**	**42**	**33**	**29**	**23**	**22**	**< 15**	**< 15**
		300	(142)	0.029	(7.2)	48	39	25	21	21	21	< 15	< 15	54	43	36	28	23	22	< 15	< 15	56	46	40	34	27	24	< 15	17
		500	**(236)**	**0.046**	**(11.4)**	**50**	**42**	**29**	**27**	**22**	**21**	**< 15**	**< 15**	**56**	**46**	**39**	**33**	**26**	**22**	**< 15**	**17**	**58**	**49**	**42**	**36**	**29**	**25**	**16**	**20**
		600	(283)	0.064	(15.9)	51	44	32	30	24	21	< 15	< 15	57	47	40	36	28	23	< 15	18	60	51	43	38	31	26	18	22
		700	**(330)**	**0.090**	**(22.4)**	**53**	**46**	**36**	**34**	**26**	**23**	**< 15**	**< 15**	**59**	**49**	**43**	**38**	**30**	**24**	**17**	**21**	**61**	**53**	**45**	**40**	**33**	**28**	**20**	**23**
		800	(378)	0.101	(25.2)	56	48	40	39	29	24	< 15	17	60	51	45	40	32	26	18	22	63	54	47	42	35	30	22	26
		900	**(425)**	**0.110**	**(27.4)**	**58**	**51**	**44**	**43**	**32**	**26**	**16**	**20**	**62**	**53**	**47**	**43**	**35**	**28**	**21**	**25**	**64**	**56**	**49**	**44**	**37**	**31**	**23**	**27**
		1000	(472)	0.128	(31.8)	58	53	48	45	35	29	19	22	63	55	49	45	37	30	22	26	65	57	51	47	39	33	25	29
		1100	**(519)**	**0.145**	**(36.0)**	**59**	**54**	**50**	**46**	**38**	**32**	**21**	**24**	**64**	**56**	**51**	**47**	**40**	**33**	**23**	**27**	**66**	**58**	**53**	**48**	**41**	**35**	**26**	**30**
510 10 inch	0.25	300	(142)	0.009	(2.2)	51	37	23	19	18	16	< 15	< 15	52	39	26	22	20	18	< 15	< 15	54	42	35	28	24	22	< 15	< 15
		400	**(189)**	**0.012**	**(2.9)**	**54**	**39**	**28**	**25**	**22**	**22**	**< 15**	**< 15**	**55**	**45**	**37**	**31**	**27**	**22**	**< 15**	**16**	**57**	**48**	**40**	**35**	**30**	**24**	**< 15**	**18**
		600	(283)	0.015	(3.8)	55	40	30	27	22	22	< 15	16	57	47	40	34	29	22	< 15	18	59	51	44	38	33	25	17	21
		800	**(378)**	**0.039**	**(9.6)**	**56**	**42**	**33**	**30**	**23**	**22**	**< 15**	**17**	**58**	**49**	**42**	**38**	**32**	**23**	**16**	**20**	**60**	**53**	**46**	**41**	**35**	**26**	**18**	**22**
		1000	(472)	0.046	(11.5)	56	43	36	34	26	22	< 15	17	60	52	45	41	34	25	18	22	61	54	48	43	37	28	20	23
		1200	**(566)**	**0.078**	**(19.4)**	**58**	**48**	**40**	**37**	**30**	**24**	**16**	**20**	**62**	**54**	**48**	**44**	**37**	**27**	**21**	**25**	**63**	**56**	**49**	**45**	**39**	**30**	**22**	**26**
		1400	(661)	0.109	(27.2)	58	51	45	42	34	26	16	20	65	57	51	47	40	31	25	29	67	58	51	48	41	33	27	31
		1600	**(755)**	**0.133**	**(33.1)**	**62**	**54**	**50**	**47**	**38**	**30**	**21**	**25**	**66**	**59**	**54**	**50**	**43**	**35**	**26**	**30**	**68**	**60**	**54**	**50**	**43**	**36**	**29**	**32**
		1700	(802)	0.151	(37.7)	64	56	52	49	40	33	23	27	68	61	56	53	45	36	29	32	69	62	57	54	46	38	30	34
512 12 inch	0.25	**450**	**(212)**	**0.022**	**(5.5)**	**54**	**38**	**25**	**22**	**18**	**16**	**< 15**	**< 15**	**56**	**44**	**33**	**25**	**22**	**19**	**< 15**	**17**	**57**	**46**	**36**	**29**	**23**	**22**	**< 15**	**18**
		800	(378)	0.031	(7.7)	57	42	32	27	22	21	< 15	18	59	49	41	34	30	24	17	21	60	52	45	37	32	27	18	22
		1000	**(472)**	**0.037**	**(9.3)**	**58**	**44**	**35**	**29**	**23**	**21**	**16**	**20**	**59**	**51**	**43**	**36**	**32**	**26**	**17**	**21**	**61**	**53**	**47**	**39**	**34**	**28**	**20**	**23**
		1200	(566)	0.044	(10.9)	59	47	38	31	25	22	17	21	60	52	45	38	34	27	18	22	61	54	48	41	36	30	20	23
		1450	**(684)**	**0.054**	**(13.5)**	**59**	**49**	**41**	**34**	**28**	**23**	**17**	**21**	**61**	**53**	**47**	**41**	**37**	**30**	**20**	**23**	**62**	**55**	**50**	**43**	**39**	**32**	**21**	**25**
		1700	(802)	0.074	(18.5)	60	51	45	37	31	25	18	22	62	54	50	43	40	32	21	25	64	56	52	45	41	34	23	27
		1950	**(920)**	**0.095**	**(23.6)**	**61**	**54**	**49**	**40**	**35**	**28**	**20**	**23**	**64**	**56**	**53**	**46**	**42**	**35**	**24**	**27**	**65**	**58**	**54**	**47**	**43**	**37**	**25**	**29**
		2200	(1038)	0.115	(28.7)	62	55	52	44	39	31	23	26	66	58	56	48	44	37	27	31	67	60	57	49	46	39	29	32
		2500	**(1180)**	**0.172**	**(42.8)**	**63**	**57**	**54**	**48**	**41**	**33**	**25**	**29**	**67**	**60**	**58**	**50**	**46**	**39**	**30**	**33**	**68**	**62**	**59**	**51**	**48**	**41**	**31**	**34**
514 14 inch	0.25	550	(260)	0.002	(0.5)	53	36	29	22	18	17	< 15	< 15	57	38	31	25	22	20	< 15	18	57	40	33	29	25	23	< 15	18
		925	**(437)**	**0.004**	**(1.0)**	**54**	**39**	**32**	**25**	**21**	**19**	**< 15**	**< 15**	**59**	**43**	**38**	**33**	**28**	**24**	**17**	**21**	**60**	**45**	**41**	**35**	**31**	**26**	**18**	**22**
		1300	(614)	0.024	(6.1)	57	43	34	29	25	22	< 15	18	62	52	47	41	39	37	21	25	62	54	48	41	40	37	21	25
		1600	**(755)**	**0.042**	**(10.6)**	**57**	**46**	**37**	**31**	**28**	**23**	**< 15**	**18**	**63**	**53**	**47**	**43**	**40**	**37**	**22**	**26**	**64**	**56**	**48**	**44**	**41**	**37**	**23**	**27**
		1900	(897)	0.061	(15.1)	58	49	42	35	31	25	16	20	64	55	48	44	41	38	23	27	65	56	49	44	41	39	25	29
		2200	**(1038)**	**0.079**	**(19.6)**	**58**	**52**	**47**	**39**	**34**	**27**	**18**	**21**	**65**	**56**	**49**	**44**	**42**	**38**	**25**	**29**	**65**	**57**	**50**	**44**	**43**	**39**	**25**	**29**
		2600	(1227)	0.103	(25.6)	60	55	49	43	38	31	20	24	65	58	50	46	44	39	25	29	65	59	50	46	44	39	25	29
		3000	**(1416)**	**0.127**	**(31.5)**	**62**	**58**	**52**	**47**	**41**	**35**	**24**	**27**	**66**	**61**	**53**	**48**	**46**	**41**	**27**	**31**	**67**	**62**	**53**	**49**	**46**	**41**	**28**	**32**
		3250	(1534)	0.138	(34.4)	63	60	56	49	43	37	27	31	67	63	57	51	47	42	29	33	68	63	58	52	48	43	30	33
516 16 inch	0.25	**750**	**(354)**	**0.004**	**(0.9)**	**54**	**39**	**30**	**25**	**19**	**16**	**< 15**	**< 15**	**57**	**42**	**33**	**27**	**22**	**20**	**< 15**	**18**	**57**	**44**	**36**	**31**	**24**	**22**	**< 15**	**18**
		1100	(519)	0.015	(3.8)	56	43	34	28	23	20	< 15	17	59	48	39	32	27	23	17	21	59	50	42	35	29	25	17	21
		1500	**(708)**	**0.026**	**(6.5)**	**58**	**48**	**38**	**31**	**27**	**24**	**16**	**20**	**61**	**54**	**44**	**38**	**34**	**29**	**20**	**23**	**61**	**56**	**47**	**41**	**36**	**31**	**21**	**25**
		1800	(850)	0.035	(8.7)	59	49	40	34	30	26	17	21	62	55	45	39	36	32	21	25	62	57	48	42	38	33	22	26
		2400	**(1133)**	**0.058**	**(14.4)**	**60**	**51**	**44**	**39**	**36**	**32**	**18**	**22**	**63**	**56**	**47**	**43**	**40**	**36**	**22**	**26**	**63**	**58**	**50**	**45**	**41**	**37**	**24**	**27**
		3200	(1510)	0.094	(23.5)	62	56	51	45	42	39	22	25	64	58	52	47	43	40	24	27	65	60	54	49	44	41	26	29
		3600	**(1699)**	**0.113**	**(28.1)**	**63**	**58**	**55**	**48**	**44**	**41**	**26**	**30**	**65**	**60**	**55**	**49**	**45**	**42**	**26**	**30**	**66**	**62**	**56**	**51**	**46**	**43**	**28**	**32**
		4000	(1888)	0.131	(32.7)	64	60	57	50	46	43	29	32	67	62	57	52	48	45	29	32	68	63	58	53	49	45	30	33
		4400	**(2077)**	**0.153**	**(38.0)**	**65**	**62**	**59**	**51**	**47**	**44**	**31**	**34**	**68**	**64**	**60**	**53**	**49**	**46**	**32**	**35**	**69**	**65**	**61**	**54**	**50**	**47**	**33**	**36**

See Page DH-200 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.

DD-500 - Radiated Sound Power at 1", 2", 3" Wg

Unit Size	Outlet Ps in. H20	CFM (L/s)		Min Ps in. H20 (Pa)		Inlet Pressure, Ps=1 inch of water (250 Pa)								Inlet Pressure, Ps=2 inches of water (500 Pa)								Inlet Pressure, Ps=3 inches of water (750 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 6 inch	0.25	**100**	**(47)**	**0.015**	**(3.8)**	**48**	**39**	**28**	**27**	**24**	**18**	**< 15**	**< 15**	**50**	**40**	**37**	**34**	**34**	**31**	**< 15**	**< 15**	**51**	**41**	**39**	**41**	**43**	**41**	**< 15**	**< 15**
		200	(94)	0.038	(9.5)	54	46	42	34	31	27	< 15	15	56	46	44	41	40	38	< 15	18	57	47	44	44	45	44	16	18
		250	**(118)**	**0.059**	**(14.8)**	**56**	**48**	**44**	**35**	**33**	**29**	**< 15**	**18**	**58**	**50**	**46**	**42**	**41**	**40**	**17**	**20**	**59**	**51**	**47**	**46**	**46**	**45**	**18**	**21**
		300	(142)	0.071	(17.6)	58	51	48	38	35	31	19	22	59	51	49	44	43	41	20	23	60	52	49	47	47	46	20	23
		400	**(189)**	**0.104**	**(25.8)**	**59**	**55**	**49**	**41**	**39**	**33**	**20**	**24**	**61**	**57**	**52**	**46**	**44**	**42**	**23**	**26**	**62**	**58**	**53**	**49**	**48**	**47**	**24**	**27**
		450	(212)	0.125	(31.0)	60	56	49	43	40	34	21	25	62	58	53	47	45	42	24	27	63	59	55	50	49	47	26	30
		500	**(236)**	**0.136**	**(33.9)**	**62**	**58**	**50**	**44**	**42**	**35**	**24**	**27**	**63**	**60**	**55**	**48**	**46**	**42**	**26**	**30**	**64**	**61**	**57**	**51**	**49**	**48**	**29**	**32**
		600	(283)	0.169	(42.1)	63	60	51	46	46	37	26	29	66	64	57	50	47	43	31	34	67	65	60	52	50	49	32	35
508 8 inch	0.25	**200**	**(94)**	**0.021**	**(5.3)**	**54**	**44**	**38**	**33**	**26**	**23**	**< 15**	**< 15**	**55**	**46**	**41**	**38**	**32**	**26**	**< 15**	**16**	**56**	**48**	**42**	**39**	**35**	**30**	**< 15**	**17**
		300	(142)	0.029	(7.2)	58	49	45	39	31	27	16	20	58	49	46	43	38	36	17	20	59	50	48	45	43	41	19	22
		500	**(236)**	**0.046**	**(11.4)**	**60**	**53**	**45**	**40**	**33**	**28**	**18**	**22**	**62**	**57**	**52**	**47**	**41**	**38**	**23**	**26**	**62**	**58**	**54**	**50**	**45**	**43**	**25**	**29**
		600	(283)	0.064	(15.9)	62	55	46	41	34	30	21	25	64	60	54	48	42	39	26	29	64	62	57	52	46	44	29	32
		700	**(330)**	**0.090**	**(22.4)**	**64**	**56**	**48**	**43**	**36**	**31**	**23**	**27**	**66**	**63**	**56**	**50**	**43**	**40**	**29**	**33**	**67**	**64**	**59**	**54**	**47**	**44**	**31**	**34**
		800	(378)	0.101	(25.2)	65	57	49	44	38	33	25	29	68	64	57	51	44	40	31	34	70	67	61	55	48	45	34	38
		900	**(425)**	**0.110**	**(27.4)**	**67**	**58**	**51**	**46**	**40**	**35**	**27**	**31**	**69**	**65**	**58**	**52**	**46**	**41**	**32**	**35**	**72**	**68**	**62**	**56**	**49**	**45**	**35**	**39**
		1000	(472)	0.128	(31.8)	68	60	53	48	42	36	29	32	71	66	59	53	47	42	33	37	73	69	63	57	50	45	37	40
		1100	**(519)**	**0.145**	**(36.0)**	**69**	**61**	**54**	**50**	**43**	**38**	**30**	**34**	**72**	**67**	**60**	**55**	**48**	**43**	**34**	**38**	**74**	**70**	**64**	**59**	**52**	**47**	**38**	**41**
510 10 inch	0.25	300	(142)	0.009	(2.2)	55	44	38	31	26	23	< 15	16	57	48	43	35	29	25	< 15	18	59	50	45	38	32	29	17	21
		400	**(189)**	**0.012**	**(2.9)**	**58**	**51**	**44**	**38**	**34**	**26**	**16**	**20**	**60**	**52**	**46**	**43**	**40**	**35**	**18**	**22**	**61**	**52**	**47**	**45**	**43**	**42**	**20**	**23**
		600	(283)	0.015	(3.8)	60	53	48	41	36	28	19	22	62	58	52	46	42	38	24	27	63	59	53	48	45	43	25	28
		800	**(378)**	**0.039**	**(9.6)**	**61**	**55**	**49**	**44**	**38**	**29**	**20**	**24**	**64**	**63**	**56**	**49**	**45**	**41**	**29**	**33**	**66**	**65**	**59**	**52**	**48**	**45**	**32**	**35**
		1000	(472)	0.046	(11.5)	62	56	50	45	39	31	21	25	65	66	59	52	47	43	33	37	67	70	63	55	50	48	38	41
		1200	**(566)**	**0.078**	**(19.4)**	**64**	**57**	**51**	**46**	**40**	**32**	**23**	**27**	**66**	**68**	**60**	**54**	**49**	**45**	**35**	**39**	**68**	**72**	**65**	**57**	**52**	**52**	**40**	**44**
		1400	(661)	0.109	(27.2)	68	60	52	48	42	34	29	32	73	69	61	55	50	47	37	40	74	73	66	59	53	52	41	45
		1600	**(755)**	**0.133**	**(33.1)**	**70**	**61**	**54**	**50**	**44**	**37**	**31**	**35**	**74**	**69**	**62**	**56**	**52**	**49**	**37**	**40**	**75**	**74**	**66**	**59**	**54**	**53**	**42**	**46**
		1700	(802)	0.151	(37.7)	71	63	57	55	47	39	32	36	75	70	63	58	53	51	38	41	76	75	67	61	56	54	44	47
512 12 inch	0.25	**450**	**(212)**	**0.022**	**(5.5)**	**58**	**49**	**43**	**34**	**28**	**23**	**16**	**20**	**61**	**53**	**45**	**39**	**33**	**28**	**20**	**23**	**62**	**53**	**48**	**43**	**38**	**33**	**21**	**25**
		800	(378)	0.031	(7.7)	62	55	49	40	34	29	21	25	64	60	57	50	44	41	29	32	64	62	60	55	50	47	32	35
		1000	**(472)**	**0.037**	**(9.3)**	**62**	**56**	**51**	**42**	**35**	**30**	**22**	**25**	**65**	**63**	**60**	**52**	**46**	**41**	**32**	**35**	**66**	**65**	**63**	**58**	**52**	**47**	**35**	**38**
		1200	(566)	0.044	(10.9)	63	57	52	43	37	32	23	26	67	65	61	53	47	42	33	36	68	68	66	59	52	48	38	42
		1450	**(684)**	**0.054**	**(13.5)**	**64**	**57**	**53**	**45**	**40**	**34**	**24**	**27**	**68**	**66**	**62**	**54**	**48**	**43**	**34**	**37**	**69**	**70**	**67**	**60**	**53**	**48**	**39**	**43**
		1700	(802)	0.074	(18.5)	65	59	55	47	43	37	26	30	69	67	63	55	49	44	35	38	71	72	68	60	54	48	41	44
		1950	**(920)**	**0.095**	**(23.6)**	**66**	**60**	**56**	**49**	**45**	**39**	**27**	**31**	**70**	**68**	**64**	**56**	**51**	**45**	**36**	**39**	**72**	**73**	**68**	**61**	**54**	**49**	**41**	**45**
		2200	(1038)	0.115	(28.7)	68	62	58	51	47	41	30	33	72	69	65	58	53	47	37	41	74	73	69	62	56	50	42	45
		2500	**(1180)**	**0.172**	**(42.8)**	**69**	**64**	**60**	**53**	**50**	**43**	**32**	**35**	**73**	**71**	**67**	**60**	**55**	**49**	**39**	**43**	**75**	**74**	**71**	**65**	**58**	**51**	**44**	**47**
514 14 inch	0.25	550	(260)	0.002	(0.5)	58	42	35	31	27	25	16	20	61	46	40	35	31	27	20	23	63	49	44	40	33	29	22	26
		925	**(437)**	**0.004**	**(1.0)**	**60**	**46**	**43**	**36**	**33**	**28**	**18**	**22**	**63**	**52**	**48**	**42**	**37**	**32**	**22**	**26**	**65**	**56**	**51**	**45**	**41**	**34**	**25**	**29**
		1300	(614)	0.024	(6.1)	63	55	48	42	40	38	22	26	66	63	55	49	45	43	29	33	68	68	60	53	48	48	35	39
		1600	**(755)**	**0.042**	**(10.6)**	**64**	**56**	**48**	**44**	**41**	**38**	**23**	**27**	**67**	**65**	**56**	**50**	**47**	**44**	**32**	**35**	**69**	**70**	**61**	**54**	**50**	**48**	**38**	**41**
		1900	(897)	0.061	(15.1)	65	57	49	44	42	39	25	29	68	66	57	51	48	45	33	37	71	71	62	55	52	49	39	42
		2200	**(1038)**	**0.079**	**(19.6)**	**65**	**59**	**50**	**45**	**44**	**40**	**25**	**29**	**69**	**67**	**58**	**52**	**50**	**46**	**34**	**38**	**72**	**72**	**63**	**57**	**53**	**50**	**40**	**44**
		2600	(1227)	0.103	(25.6)	66	60	51	46	44	41	26	30	71	68	60	54	51	48	35	39	73	73	65	58	55	51	41	45
		3000	**(1416)**	**0.127**	**(31.5)**	**68**	**63**	**53**	**49**	**46**	**42**	**29**	**33**	**72**	**69**	**61**	**55**	**52**	**48**	**37**	**40**	**74**	**73**	**66**	**58**	**56**	**52**	**41**	**45**
		3250	(1534)	0.138	(34.4)	69	64	58	53	48	44	31	34	73	70	63	57	53	49	38	41	76	74	67	60	58	53	42	46
516 16 inch	0.25	**750**	**(354)**	**0.004**	**(0.9)**	**58**	**46**	**38**	**33**	**27**	**23**	**16**	**20**	**60**	**50**	**45**	**39**	**34**	**29**	**18**	**22**	**62**	**54**	**50**	**43**	**39**	**33**	**21**	**25**
		1100	(519)	0.015	(3.8)	60	52	44	37	32	27	18	22	62	56	52	47	41	35	23	26	64	59	54	52	43	38	25	29
		1500	**(708)**	**0.026**	**(6.5)**	**62**	**58**	**49**	**43**	**39**	**33**	**24**	**27**	**64**	**62**	**58**	**53**	**48**	**45**	**30**	**33**	**66**	**64**	**60**	**56**	**52**	**50**	**32**	**35**
		1800	(850)	0.035	(8.7)	63	59	50	44	40	35	25	28	66	64	60	55	50	47	32	35	68	67	63	59	55	52	35	38
		2400	**(1133)**	**0.058**	**(14.4)**	**63**	**60**	**52**	**46**	**43**	**38**	**26**	**29**	**68**	**68**	**63**	**57**	**54**	**51**	**35**	**39**	**71**	**70**	**67**	**63**	**61**	**59**	**39**	**43**
		3200	(1510)	0.094	(23.5)	66	62	56	50	46	42	28	32	71	69	65	60	58	55	37	41	73	73	69	66	66	65	42	45
		3600	**(1699)**	**0.113**	**(28.1)**	**67**	**63**	**58**	**52**	**47**	**44**	**30**	**33**	**72**	**70**	**66**	**61**	**59**	**56**	**38**	**42**	**74**	**73**	**70**	**67**	**66**	**65**	**43**	**46**
		4000	(1888)	0.131	(32.7)	69	64	58	53	50	46	31	34	73	71	66	62	60	57	39	42	75	74	70	68	67	66	43	46
		4400	**(2077)**	**0.153**	**(38.0)**	**70**	**66**	**61**	**55**	**51**	**48**	**33**	**37**	**74**	**72**	**68**	**63**	**62**	**59**	**41**	**44**	**76**	**75**	**72**	**69**	**68**	**67**	**45**	**48**

See Page DH-200 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.

Dual Duct Air Terminal Units

DD-500 - Discharge Sound Power at Min., .5", .75" Wg

Unit Size	Outlet Ps in. H20	CFM (L/s)		Min Ps in. H20 (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 885-90	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 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**	**16**	**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
		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**
		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
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	(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
		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**
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**	**19**
		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**	**34**
		3200	(1510)	0.094	(23.5)	75	73	68	64	59	57	32	32	76	76	72	66	61	58	35	35	77	76	72	67	62	58	35	35
		3600	**(1699)**	**0.113**	**(28.1)**	**76**	**74**	**70**	**65**	**60**	**57**	**33**	**33**	**76**	**76**	**73**	**67**	**62**	**59**	**35**	**35**	**77**	**76**	**74**	**68**	**63**	**59**	**35**	**35**
		4000	(1888)	0.131	(32.7)	77	76	75	68	61	58	35	35	77	76	75	68	62	59	35	35	77	77	76	69	64	60	37	37
		4400	**(2077)**	**0.153**	**(38.0)**	**78**	**77**	**76**	**70**	**63**	**60**	**37**	**37**	**79**	**78**	**77**	**71**	**65**	**62**	**38**	**38**	**79**	**78**	**78**	**72**	**66**	**63**	**38**	**38**

See Page DH-200 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.

DD-500 - Discharge Sound Power at 1", 2", 3" Wg

Unit Size	Outlet Ps in. H20	CFM (L/s)		Min Ps in. H20 (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 885-90	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 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	16	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
		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
		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
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	(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
		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
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	19
		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	34
		3200	(1510)	0.094	(23.5)	75	73	68	64	59	57	32	32	76	76	72	66	61	58	35	35	77	76	72	67	62	58	35	35
		3600	(1699)	0.113	(28.1)	76	74	70	65	60	57	33	33	76	76	73	67	62	59	35	35	77	76	74	68	63	59	35	35
		4000	(1888)	0.131	(32.7)	77	76	75	68	61	58	35	35	77	76	75	68	62	59	35	35	77	77	76	69	64	60	37	37
		4400	(2077)	0.153	(38.0)	78	77	76	70	63	60	37	37	79	78	77	71	65	62	38	38	79	78	78	72	66	63	38	38

See Page DH-200 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.

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/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

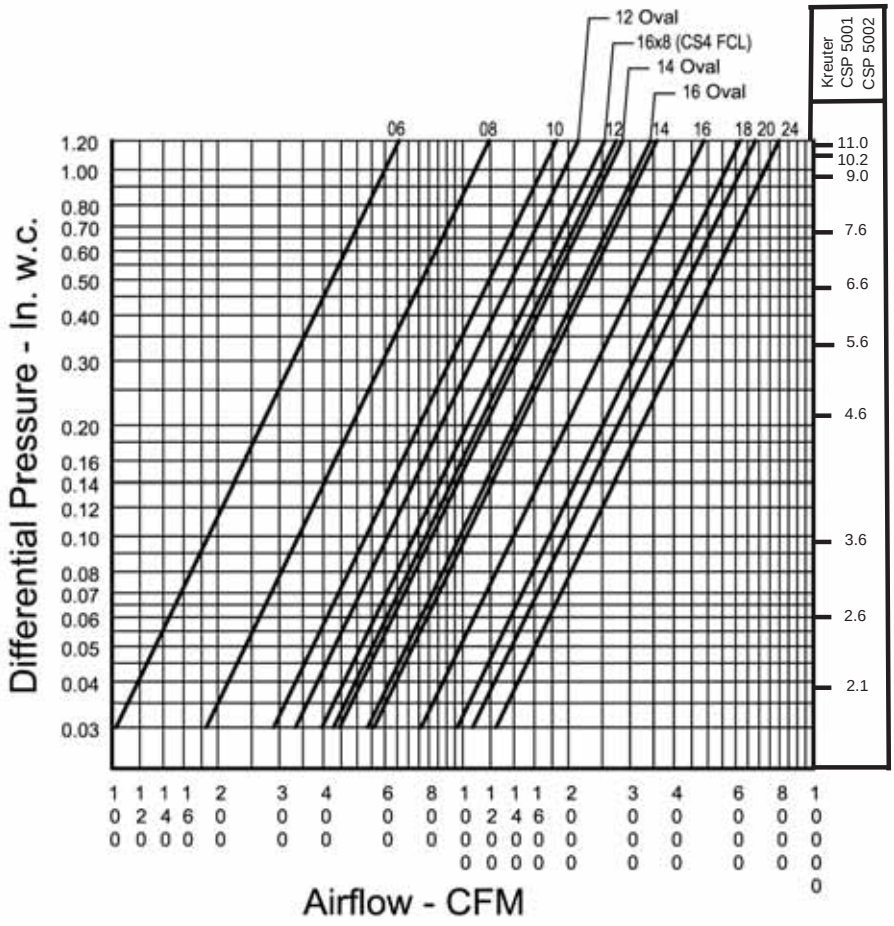
ARI 885-98, APPE defined "Large" application 700 CFM & greater

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

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

$Cfm = \sqrt{\Delta p} \times$ 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.*

$CFM = \sqrt{\Delta p} * Cfm @ 1"$

or

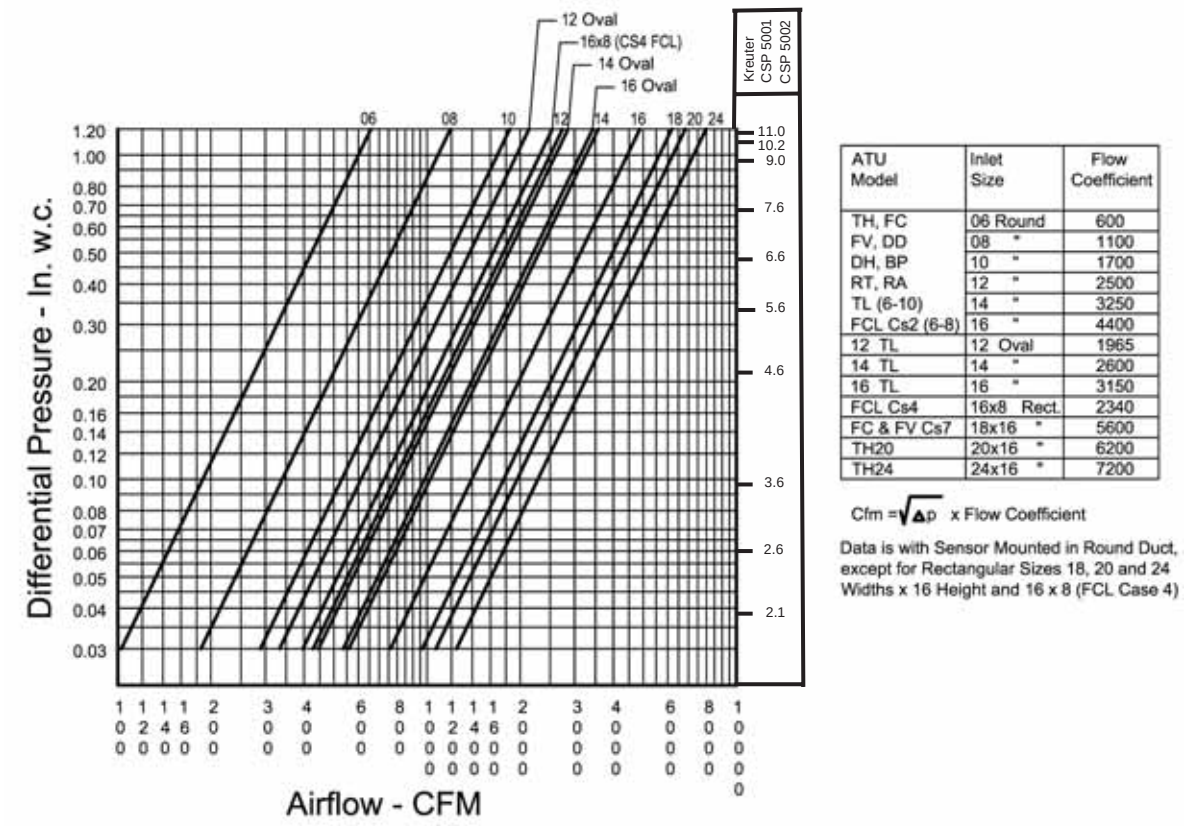
$CFM = \sqrt{\Delta p/K} * 4005 *$ Inlet Area

Selection Recommendations for DD-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 senor velocity pressure of 1.0 in W.C.

DH-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 = $\sqrt{\Delta p}$ x Flow Coefficient

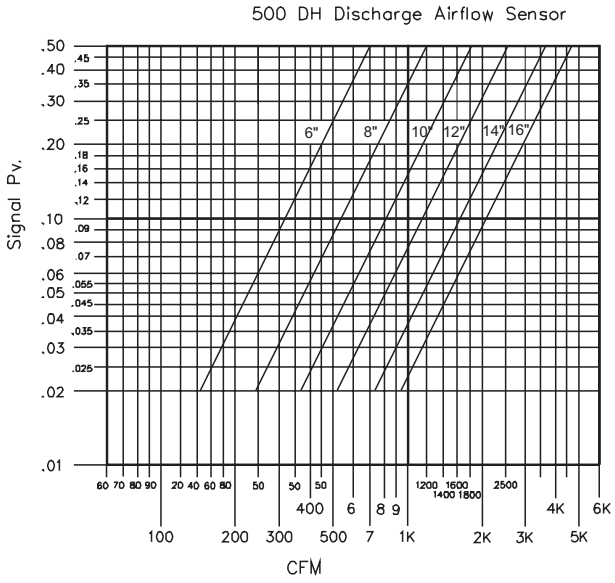
Data is with Sensor Mounted in Round Duct, except for Rectangular Sizes 18, 20 and 24 Widths x 16 Height and 16 x 8 (FCL Case 4)

* *Some controllers do not operate consistently below 0.030 in. w.c.*

$$cfm = C * \sqrt{\Delta Pv}$$

or

$$fpm = F * \sqrt{\Delta Pv}$$



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 senor velocity pressure of 1.0 in W.C.

Control Sequences

BASIC AIR TERMINAL

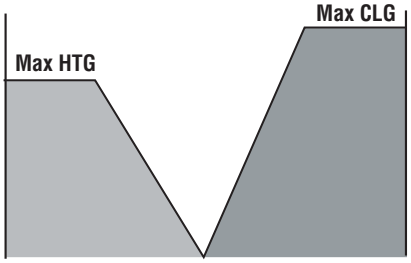
(200B) Without Controls:
Specify when controls are to be field mounted and supplied by others.

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.

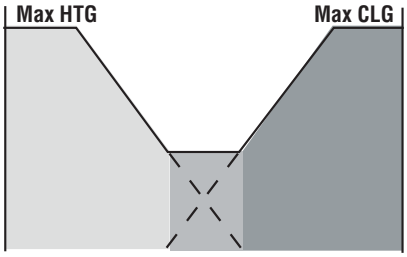


Pneumatic
Pressure Independent
Variable Volume with Dual Flow controllers and Zero Minimum Sensors located in Hot Duct and Cold Duct Inlets

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.

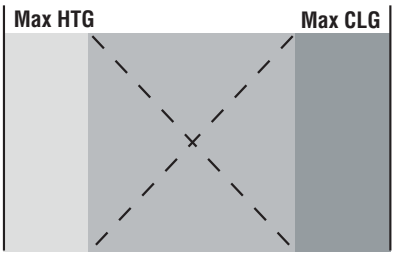
Pneumatic Control Sequences



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

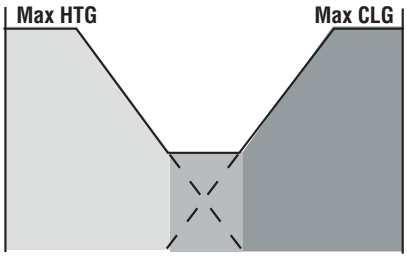
ANALOG ELECTRONICALLY CONTROLLED AIR TERMINALS

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 Componenets

DD-500 STANDARD LINER
Standard units are shipped with 1/2" thick, 1.5 lbs/ft^3 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/ft^3 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
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, 1.5 LBS./FT^3 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./ft^3 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./FT^3 DENSITY
Another foil option is the heavy duty, 1" thick, 4 lbs/ft^3 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./ft^3 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/ft^3 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-Fee Liner 1/2" Thick

Air Terminal shall be internally insulated with 1/2" thick, 1.5 lbs./ft^3 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/ft^3 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.

Dual Duct Air Terminal Units

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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 opposites 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/ft^3 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-Fee Liner 1/2" Thick

Air Terminal shall be internally insulated with 1/2" thick, 1.5 lbs./ft^3 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/ft^3 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.

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.METALAIRE.COM, YOU PICK THE FORMAT FOR PRODUCT INFORMATION THAT BEST SUITS YOUR AIR DISTRIBUTION DESIGN NEEDS.

PRE-FLIGHT - Product Overview Catalog

The METALAIRE Pre-Flite 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 METALAIRE 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.metalaire.com.

INFOSOURCE CATALOG SUITE

- Complete Guide to Air Distribution Selection

The METALAIRE 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

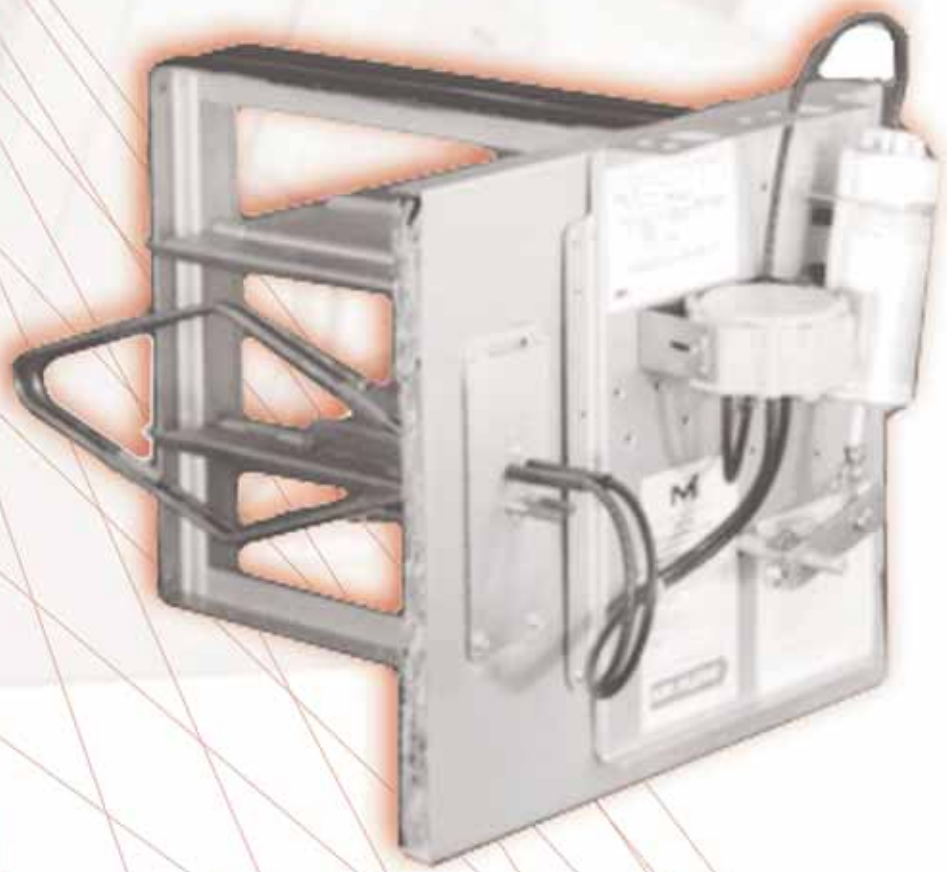
- *Ceiling Diffusers Catalog*
- *Air Terminal Unit Catalog*
- *Grilles & Registers Catalog*
- *Formations Catalog*

WEBSITE: WWW.METALAIRE.COM

METALAIRE 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.

METAL INDUSTRIES, INC.

METAL*AIRE



Square Retrofit Air Terminal Units

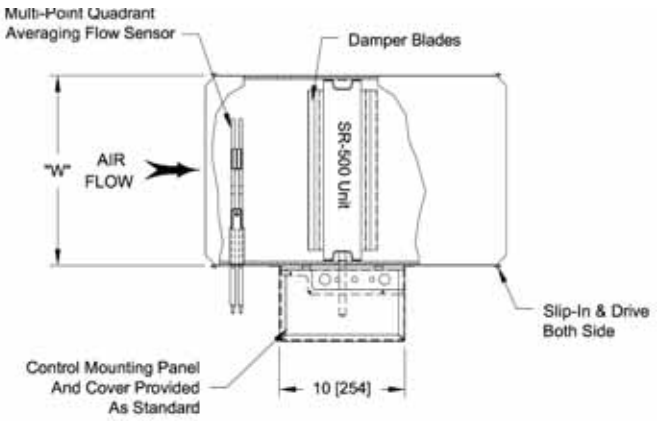
Square Retrofit Air Terminal Units

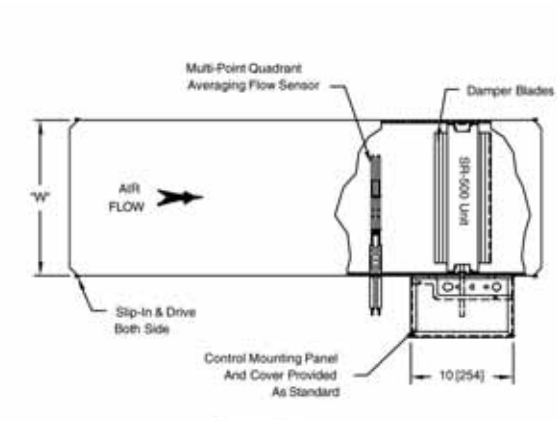
6/2007

SR-500 - Table of Contents

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***

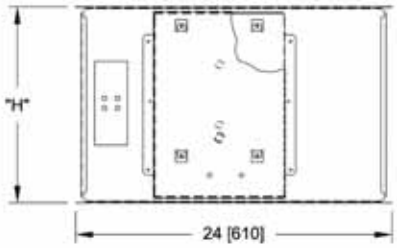




SIDE VIEW ***502D*** ***502EX***

SR-502D&EX Dimensional Data

The 500 is availiable in 3 teminal versions: as a slip unit for existing duct-work, Model 502B: in 24" duct setion for a basic VAV terminal, Model 502D: or as a 46" exhaust unit with inlet sound attentuation and flow sensor. As the Series 502EX Exhaust Air Terminal.



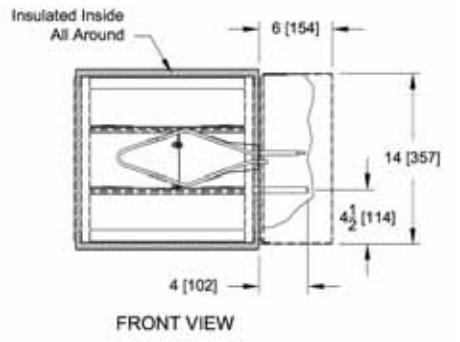
SIDE VIEW

Duct Height "H"	Duct Width "W"
6 [152] - 24 [610]	10 [254] - 36 [914]

SIDE VIEW

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 - 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.

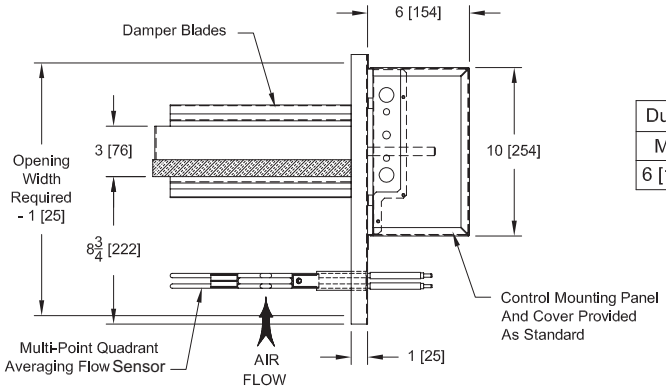
Series SR-500 Retrofit
with pneumatic controls. Shown with optional pickup and controls

Model 502B Shown

SR-500 - Dimensional Data

PLAN VIEW

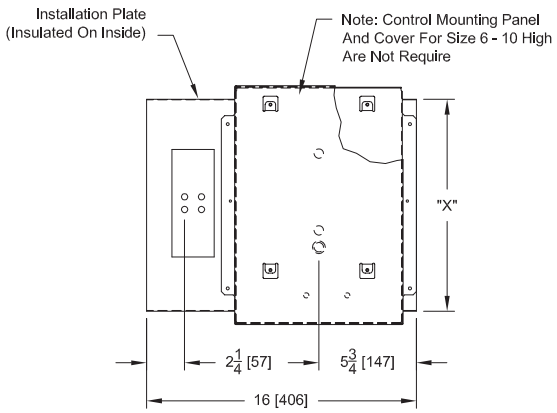
Dimensions are in inches



PLAN VIEW

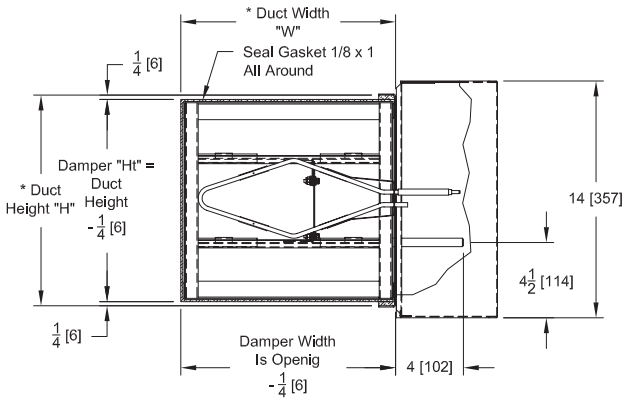
Duct Height "H"		Duct Width "W"	
Min.	Max.	Min.	Max.
6 [152]	24 [610]	10 [254]	36 [914]

SIDE VIEW



SIDE VIEW

FRONT VIEW



FRONT VIEW

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 Ps 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 Ps 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 Ps is 0.25" water gauge.

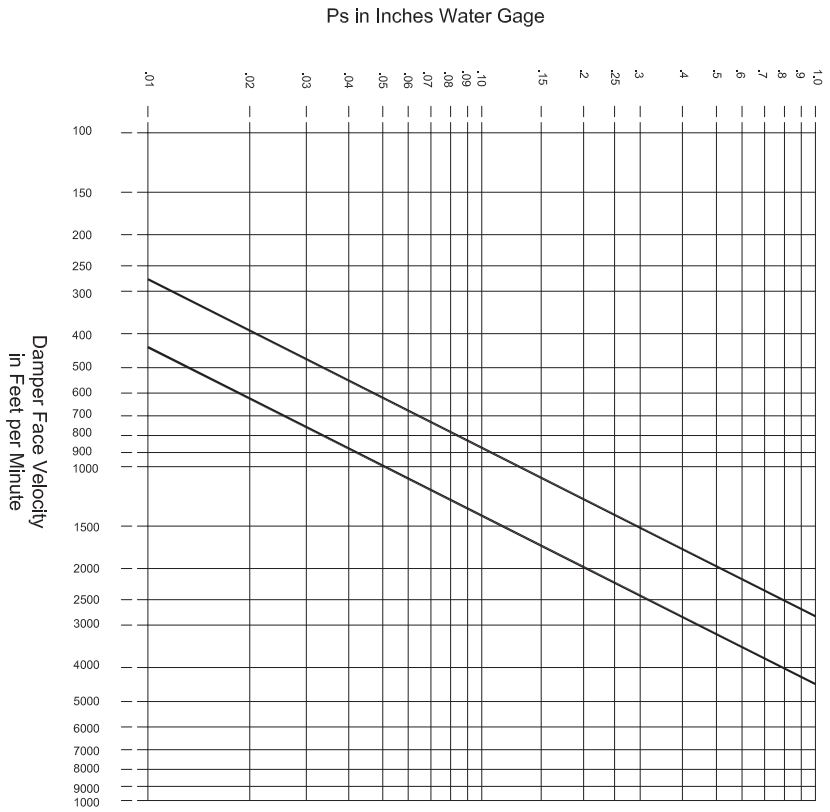
In formula form:

$$Ps = \left(\frac{Velocity}{4200}\right)^2$$

$$Pv = \left(\frac{Velocity}{2800}\right)^2$$

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 Pv 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 line.



Series SR Flow Curve

Flow Sensor is an amplifying design and its signal is stronger than the standard pitot tube signal

SR-500 - Suggested Specifications

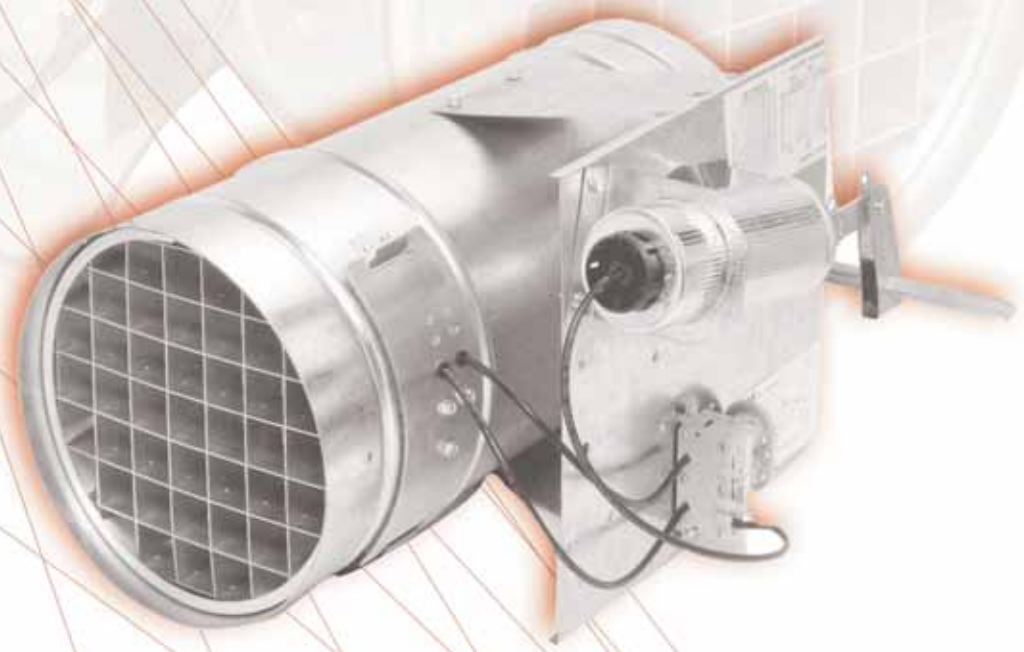
Provide METALAIRE Series RT-500 Retrofit Air Terminals or Series RT-500 Retrofit Assemblies, constructed of zinc coated steel, with a single blade, round damper operating within a round chamber. Damper seal shall be provided by a flexible gasket mounted in the damper blade without adhesives. Damper shall 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

RT-500 - Table of Contents

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 - 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.

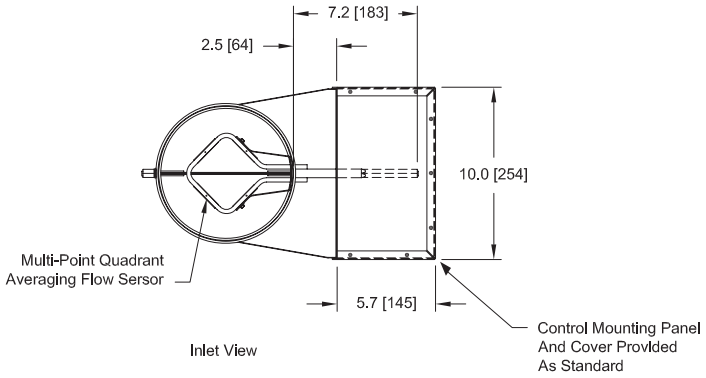
Series RT-500 Retrofit with Pressure Dependent Pneumatic Controls

Series RT-500 Retrofit with Pressure Dependent Electric Controls

RT-500 - Dimensional Data

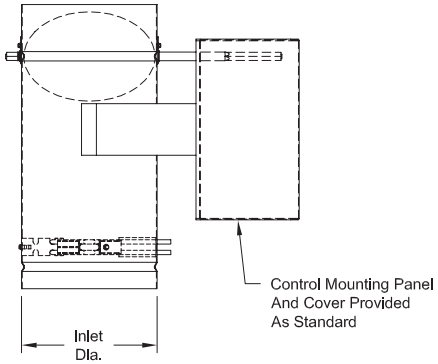
Basic Air Terminal

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.



Inlet View

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



Plan View

* 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.

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.

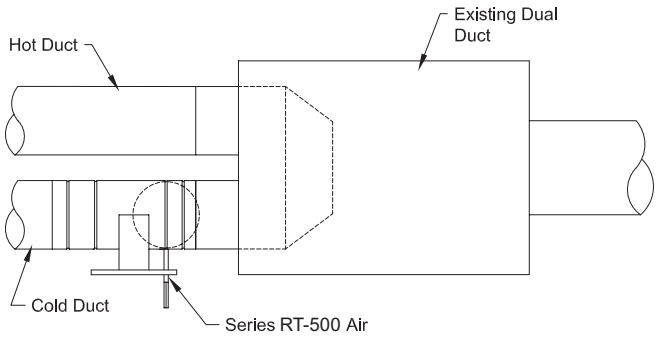
RT-500 - Application Data

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.

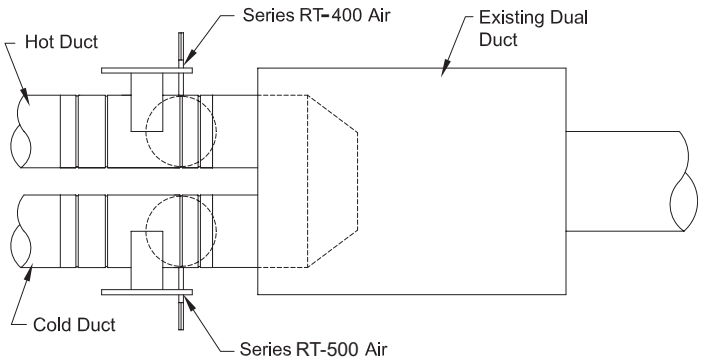
Approach One

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

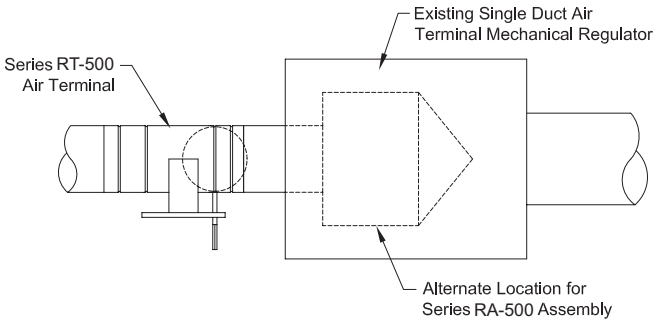
The second approach is used in exterior zones where heating capability must be retained. It involves installing a Series RT-500 Air Terminal in each supply duct feeding the existing dual duct air terminal. The existing dual duct dampers may be removed, locked into a completely open position, or integrated 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

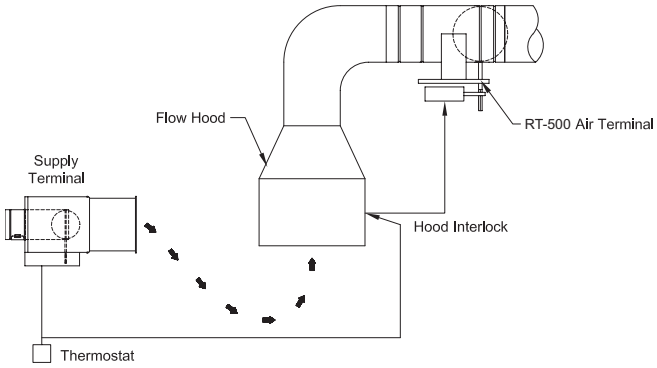
Single Duct Retrofit

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.



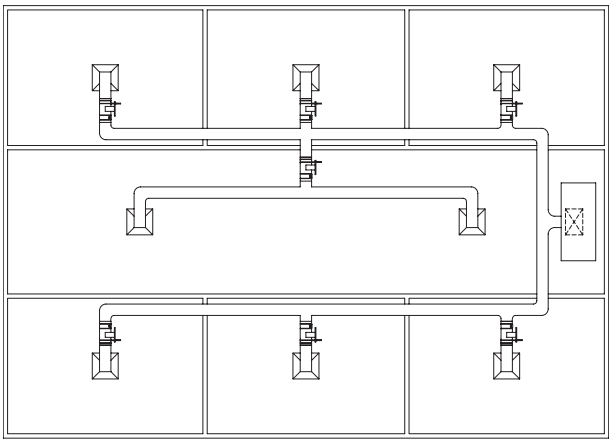
Laboratory Flow Hood Applications

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

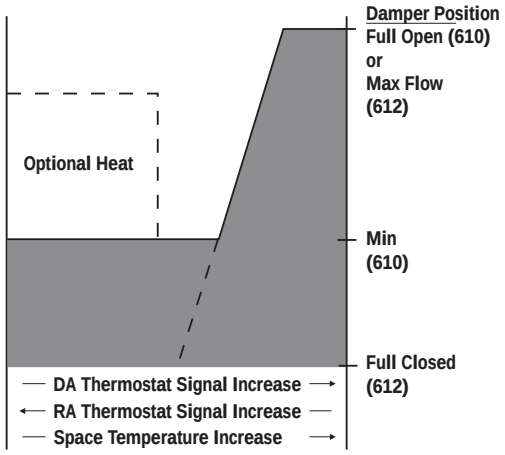
(600B) Without Controls:
Specify when controls are to be field mounted and supplied by others.

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.



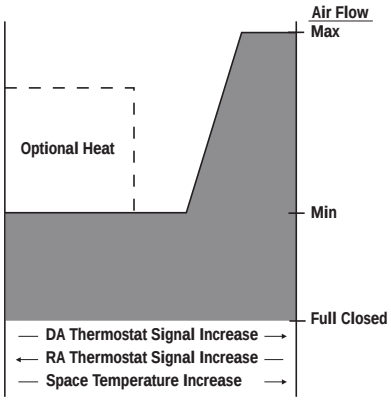
Pneumatic/Pressure Dependent

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



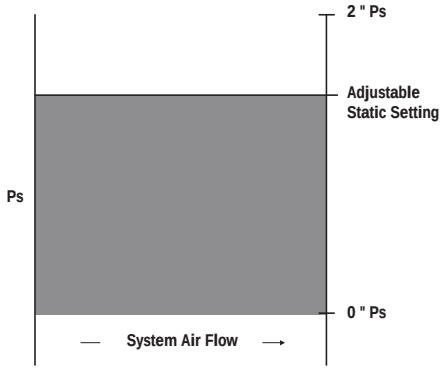
(614) Variable Volume. Normally closed. For use with direct acting thermostat. Optional heat is energized by the thermostat after air flow has reached a preset minimum.

(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 ")

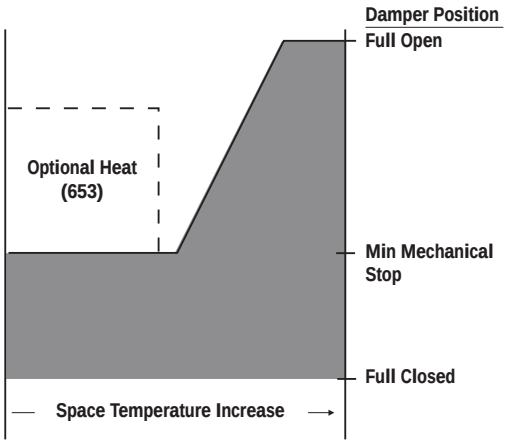


(640) Static Control. Normally open or normally closed. Local or remote pickup senses duct static and signals controller to maintain constant static at sensing point. It may be used for direct static control or as a by-pass flow method. 0" - 2" range.

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.



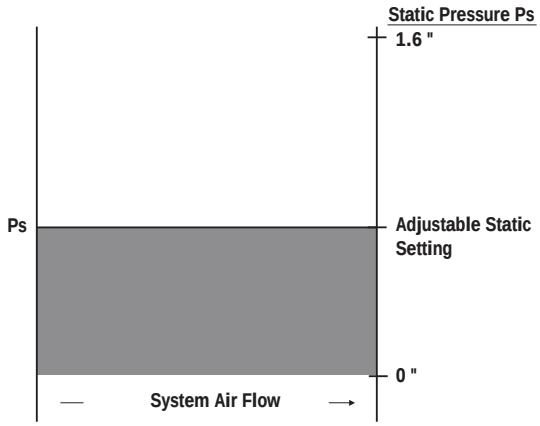
(652) Cooling Only. As room temperature rises, the thermostat signals the actuator to open the damper to its fully open position. As room temperature falls, the thermostat signals the actuator to close the damper to a mechanically determined minimum point.

(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.

RT-500 - Electric Control Sequences

Electric

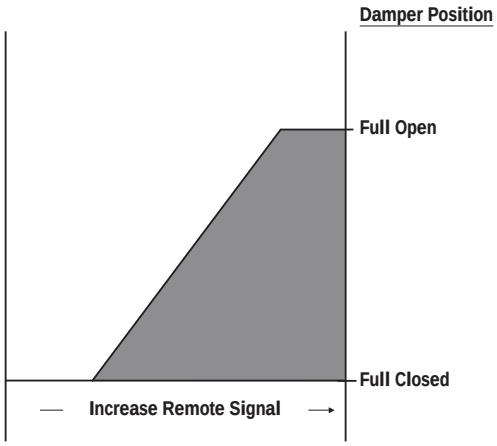
656 Static Control (0 " - 1.6 ")



(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).

RT-500 - Analog Control Sequences

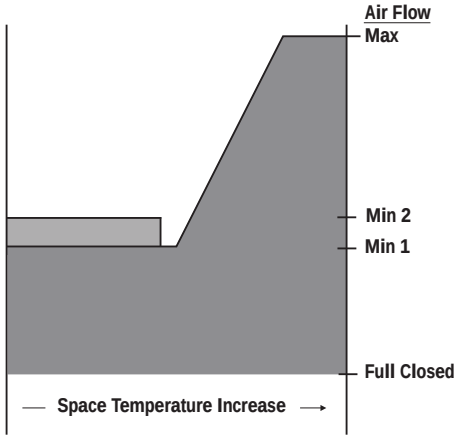
ANALOG ELECTRONICALLY CONTROLLED AIR TERMINALS

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.

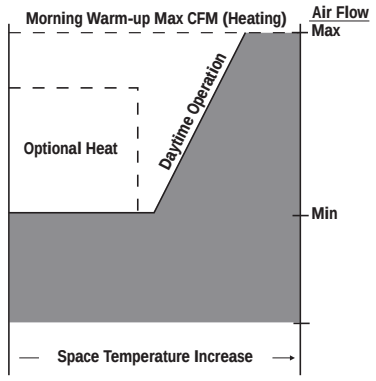
Electronic Control
Pressure Independent
660 Cooling Only



(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

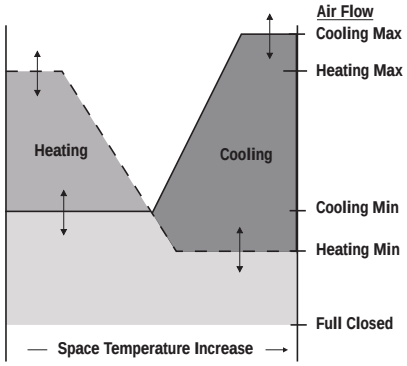
Electronic Control
Pressure Independent
664 Night Shutdown/Morning Warm-up



(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

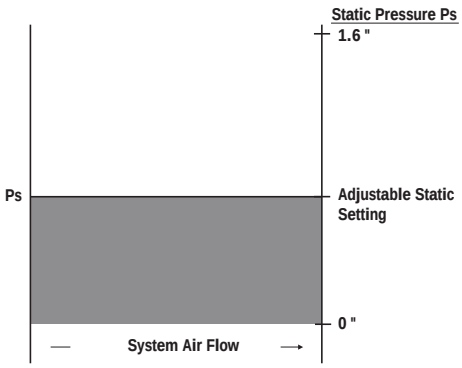


(665) Heating/Cooling Changeover: A duct thermostat switches a heat/cool relay to make the system operate in the appropriate heating or cooling mode.

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.

RT-500 - DDC Electronic Control Capability

DDC ELECTRONIC CONTROL CAPABILITY

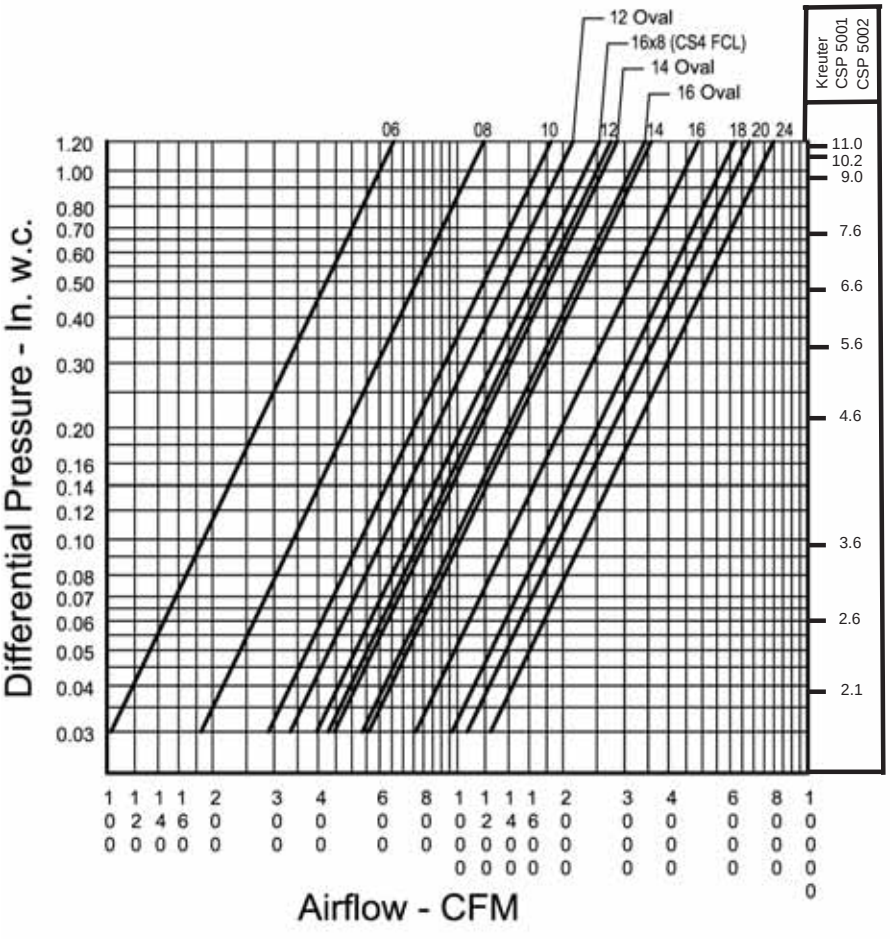
The majority of controls installed in HVAC systems today are direct digital controls (DDC). METALAIRE can mount and wire any manufacturer's control product that fits on our standard control panel regardless of the brand (one controller/actuator). Mounting of other manufactures control enclosures or transformer 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 = $\sqrt{\Delta p}$ x 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)

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.METALAIRE.COM, YOU PICK THE FORMAT FOR PRODUCT INFORMATION THAT BEST SUITS YOUR AIR DISTRIBUTION DESIGN NEEDS.

PRE-FLIGHT - Product Overview Catalog

The METALAIRE Pre-Flite 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 METALAIRE 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.metalaire.com.

INFOSOURCE CATALOG SUITE

- Complete Guide to Air Distribution Selection

The METALAIRE 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

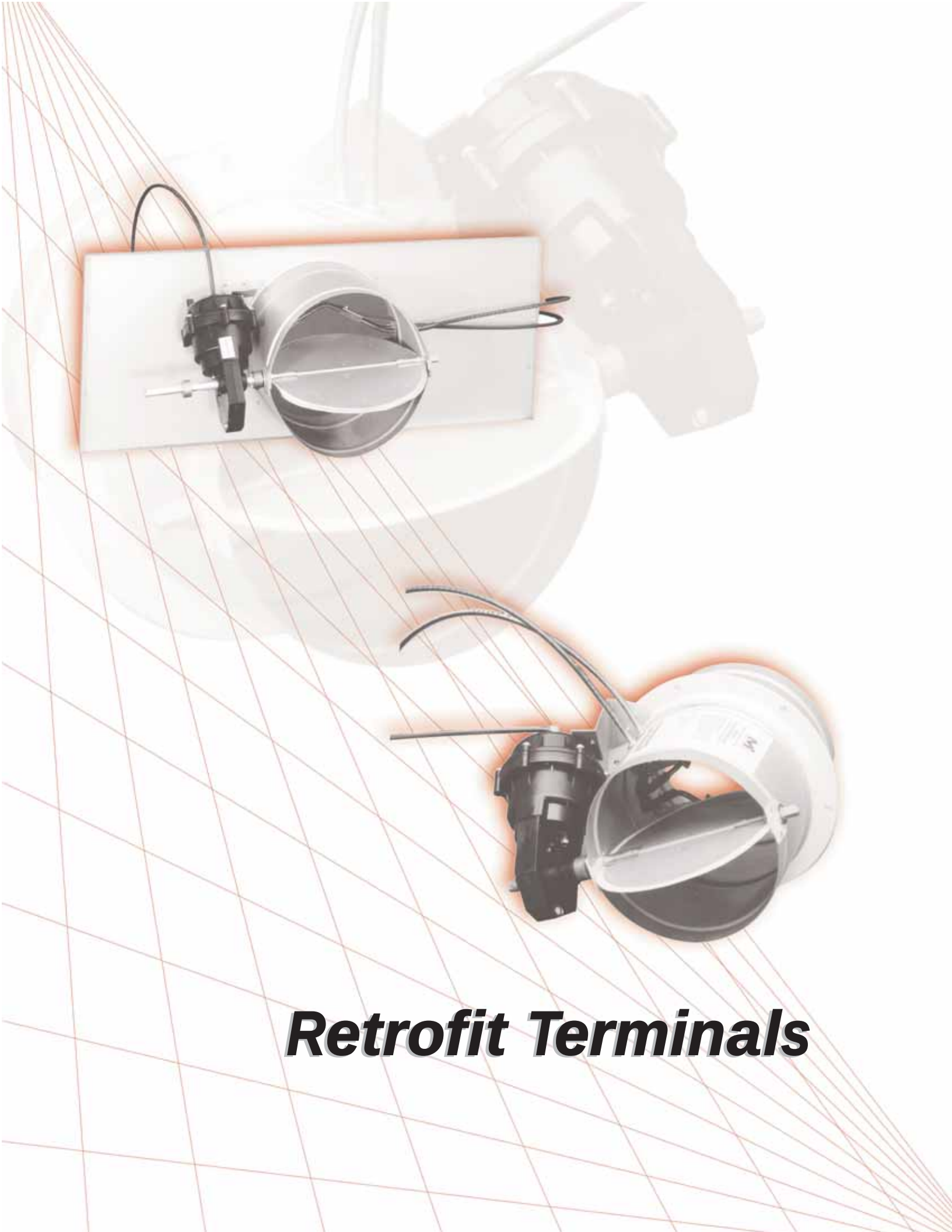
- *Ceiling Diffusers Catalog*
- *Air Terminal Unit Catalog*
- *Grilles & Registers Catalog*
- *Formations Catalog*

WEBSITE: WWW.METALAIRE.COM

METALAIRE 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.

METAL INDUSTRIES, INC.

METAL*AIRE



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.

RA-500 - General Information

Description
METALAIRE 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 METALAIRE mounted on seperate 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. METALAIRE 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 METALAIRE 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.

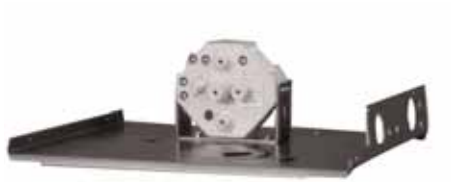
**Custom Retrofit Assemblies will be designed for any mechanically regulated air terminal not already shown if sample units or dimensional documentation can be made available to METALAIRE's Engineering Department.*

Contact your local METALAIRE representative for further information on custom retrofit assemblies.

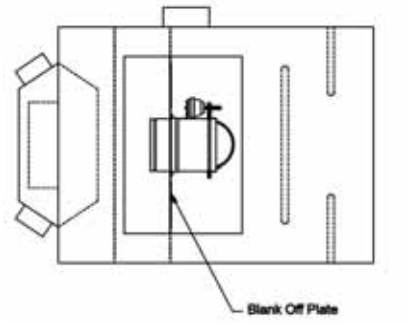
Series RA-500 Multivalve Unit with Flow Sensor

Series RA-500 Panel Mounted

Series RA-500 Control Panels



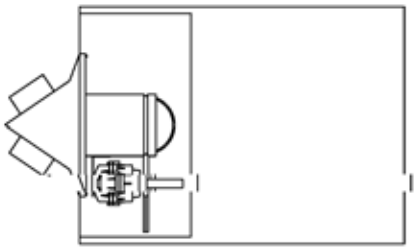
RA-500 - Technical Data



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.

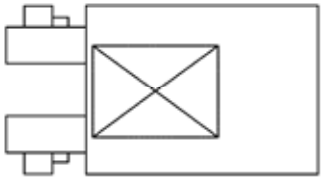


Tuttle & Bailey MVC Series
Replace mechanical regulator(s) with panel mounted single round retrofit valve through bottom access panel. A divider panel, if present, must be cut to provide clearance for the new valve. One actuator per valve, field or factory mounted on valve body. Flow Controller panel mounted on MVC air terminal casing in the field.

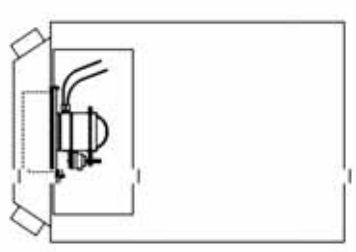
Tuttle & Bailey®

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 disgard internal regulator.

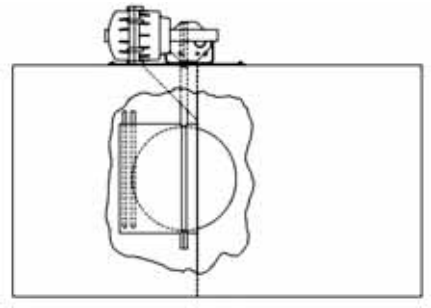


Anemostat® HV–C Series
Replace mechanical regulator(s) with panel mounted single or dual round retrofit valves. Retrofit is achieved through a bottom access panel. One actuator per valve or pair of valves, field or factory mounted on valve body. Flow Controller panel mounted on HVC air terminal casing in the field.

Anemostat®

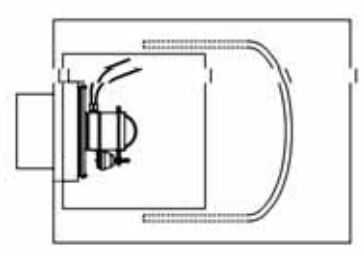
Anemostat® Series HV–C mechanical air terminals may require 1, 2, 4, 5, 7 or 8 METALAIRE RA retrofit valves mounted on 1 or 4 panels. Each valve is equipped with a multi-point air flow sensor. Anemostat® HV–C air terminals were originally manufactured in a variety of sizes to deliver from 150 to 5400 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



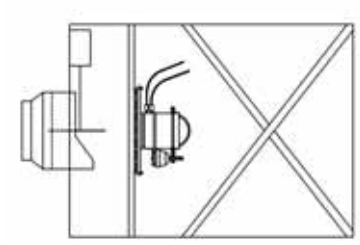
Barber-Colman HS and HD Series
Replace mechanical regulator(s) with panel mounted single or dual round or oval retrofit valves. Retrofit is achieved through a side access panel. One actuator and flow controller are mounted on outside of the HS or HD side access panel in the field.

Barber-Colman®
Barber-Colman HS, and HD mechanical air terminals require 1 or 2 METALAIRE 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 METALAIRE 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.



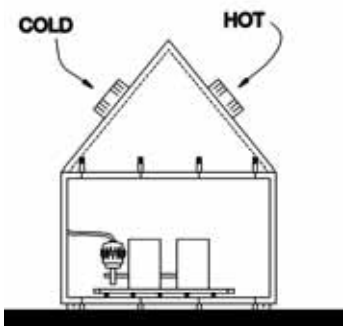
Krueger CVM Series
Replace mechanical regulator(s) with 1 or 2 panels, each supporting 1 or 2 round retrofit valves. One actuator per panel, field or factory mounted on 1 valve body. Flow Controller panel mounted on CVM air terminal casing in the field.

Krueger®
Krueger Model CVM mechanical air terminals require 1 or 2 METALAIRE 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.

Retrofit Terminal Units

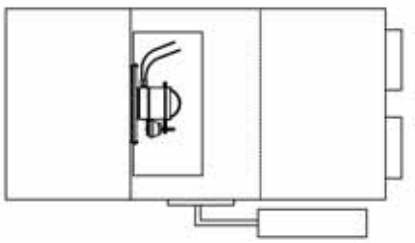
RA-500 - Technical Data



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.

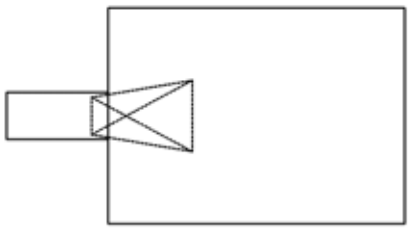


Carnes Series
Replace mechanical regulator(s) with 1 or 2 panels, each supporting 1 or 2 round retrofit valves. One actuator per panel, field or factory mounted on 1 valve body. Flow Controller panel mounted on air terminal casing in the field.

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.

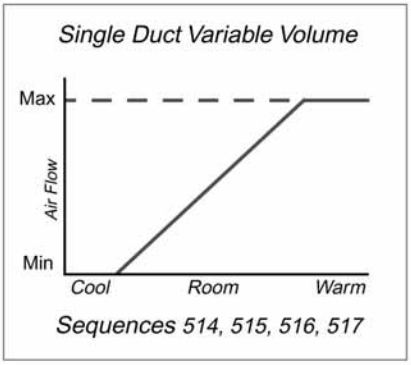
Retrofitting requires removing the original inlet mechanical regulator and replacing it with a retrofit unit. Trane retrofit can be shipped with controls mounted and wired.

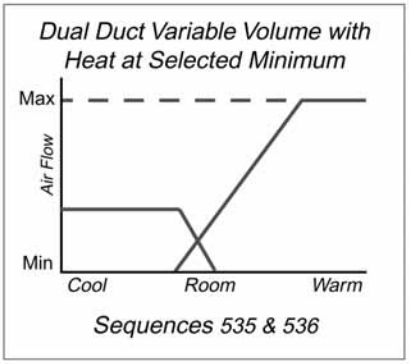
RA-500 - Control Sequences

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 manufacturered.

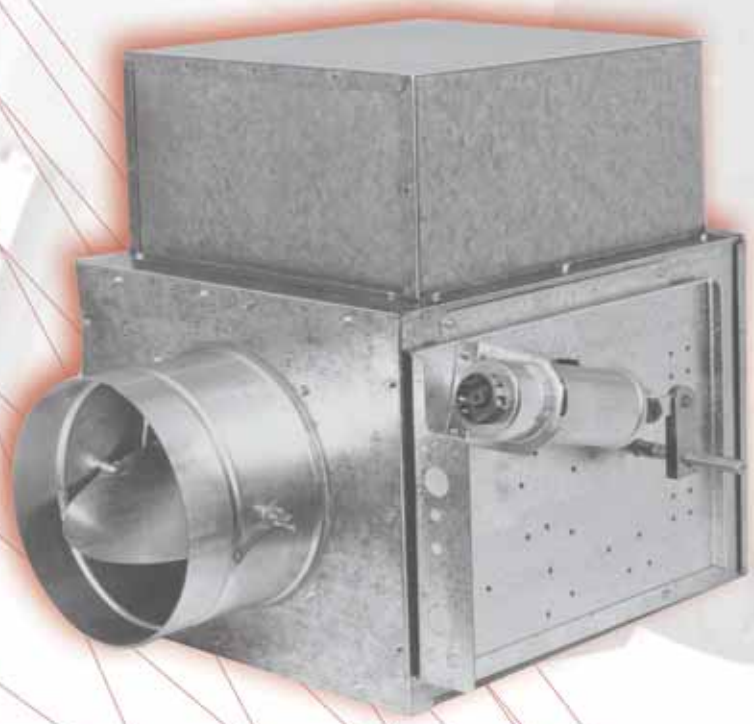
EXAMPLE:
Anemostat HVE-14 terminal, originally 3500 CFM; retrofitted capacity 4800 CFM. To approximately match original CFM, drop one of the 592D or E assemblies (1200 CFM, leaving 3600 CFM new capacity) and blank off that regulator position.

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 x12″	1500–2500	2	595C	4–6″	2400
	1614	16 1/2 x16″	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 x16/24x16	550–2640	3	590A	8″	4000
	J	24 x16	650–3120	4	590A	8″	4000
Tuttle & Bailey MPM–MVC (see alternate mathods 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
	F	12″	700–2600	1	591F	14″ Oval	3000
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 manufacturered.



Bypass Terminals

BP-500 - Table of Contents

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.

BP-500 - Introduction

Series BP-500 with Downstream Sound Attenuator

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./ft^3 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.

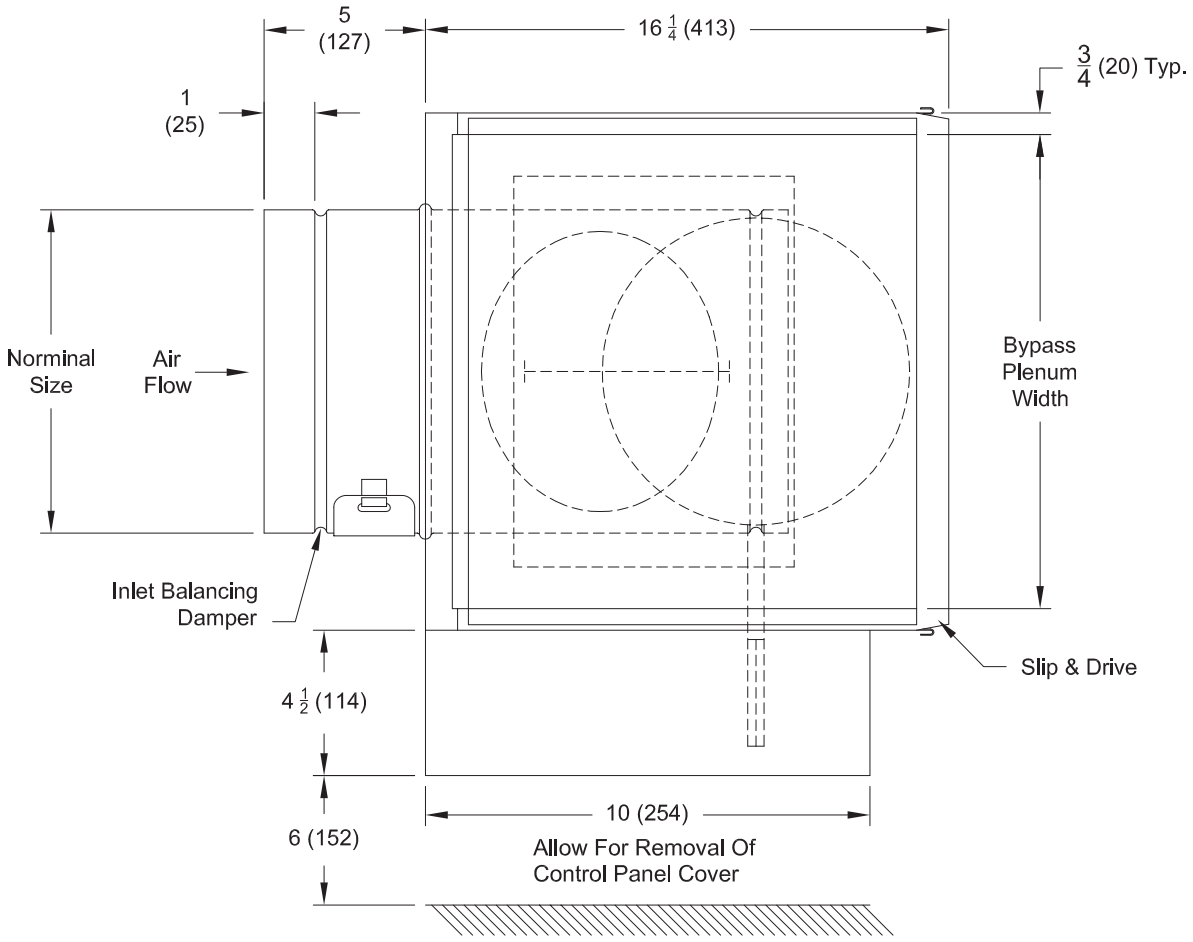
Controls

Series BP-500 Air Terminals can be specified with pneumatic, electric or electronic controls. Standard control sequences, covering virtually every design application.

BP-500 - Dimension Data

BASIC AIR TERMINAL

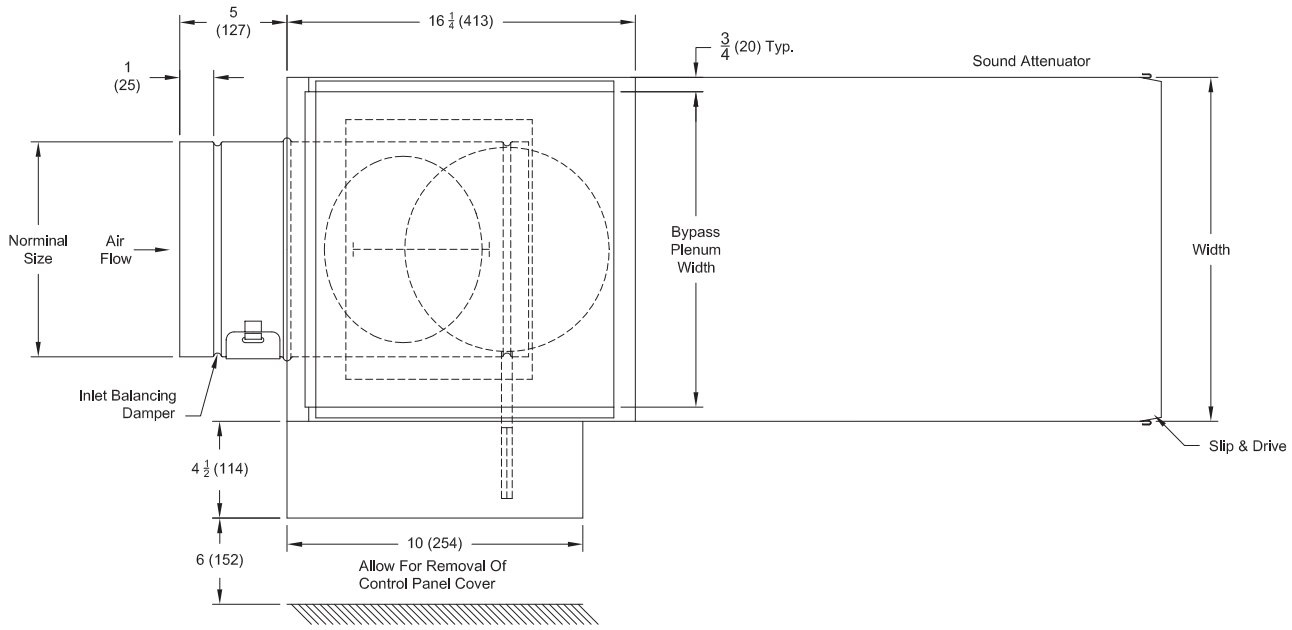
Dimensions are in inches



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"**

BP-500 - Dimension Data

AIR TERMINAL WITH SOUND ATTENUATOR



BP-500 - Performance Data

Size	CFM	Minimum Ps	NC Lp @ (derived from Sound Power Data, pages 4 & 5)					
			Minimum Ps		1″ Ps		1½″ 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:

1. All data are calculated in accordance with International Standard ISO 3741 comparison method and Industry Standard 880.
2. NC Lp = Lw - 10 dB room absorption.
3. 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.
4. NC levels for discharge do not include attenuation of electric heat section. To include these, reduc listed NC values by one-half of the values listed on page 18 for lined sheet metal duct.
5. Air Terminals are not intended for continuous operation in ambients over 95˚F. Do not store in ambients over 115˚F.

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:

1. All data are calculated in accordance with International Standard ISO 3741 comparison method and ARI Industry Standard 880.
2. 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.
3. 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 absorbtion. The 40-44 STC is a typical 5/8" thick rigid type.

BP-500 - Control Sequences

BASIC AIR TERMINAL

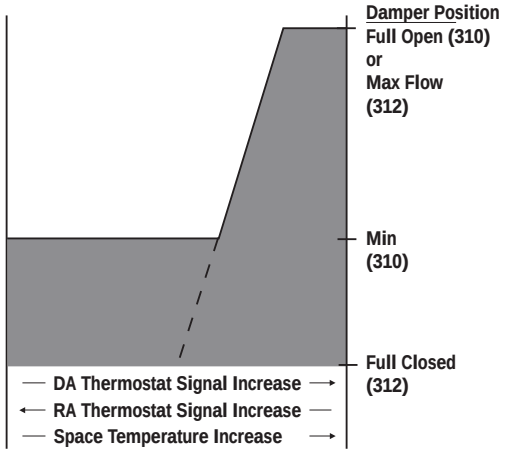
(300B) Without Controls:
Specify when controls are to be field mounted and supplied by others.

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.



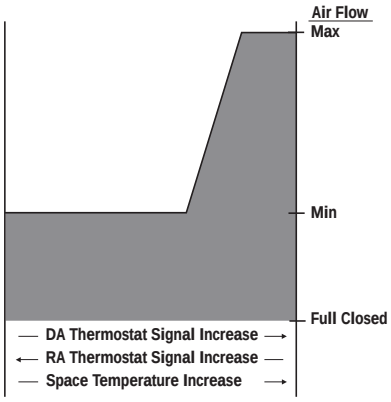
Pneumatic/Pressure Dependent

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



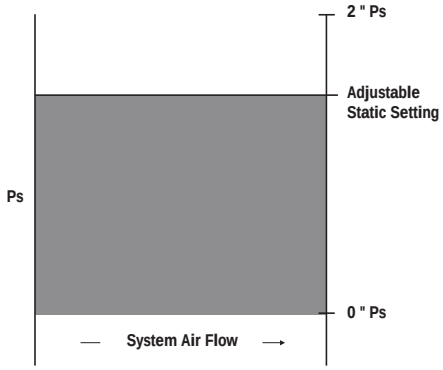
(314) Variable Volume. Normally closed. For use with direct acting thermostat.

(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 ")

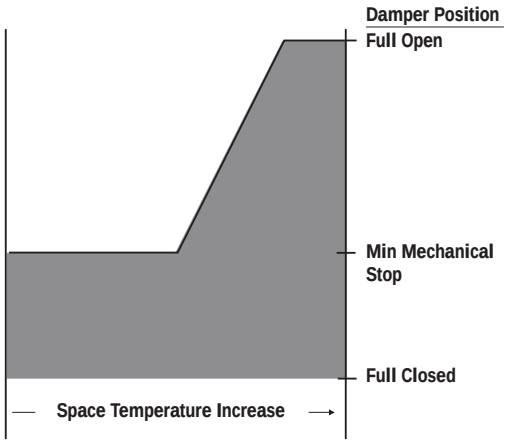


(340) Static Control. Normally open or normally closed. Local or remote pickup senses duct static and signals controller to maintain constant static at sensing point. It may be used for direct static control or as a by-pass flow method. 0" - 2" range.

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.

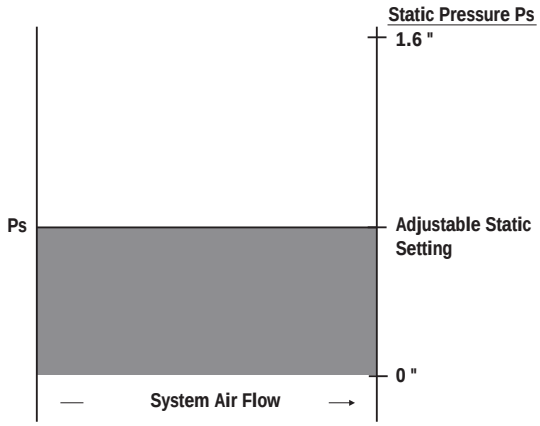


(352) Cooling Only. As room temperature rises, the thermostat signals the actuator to open the damper to its fully open position. As room temperature falls, the thermostat signals the actuator to close the damper to a mechanically determined minimum point.

BP-500 - Electric Control Sequences

Electric

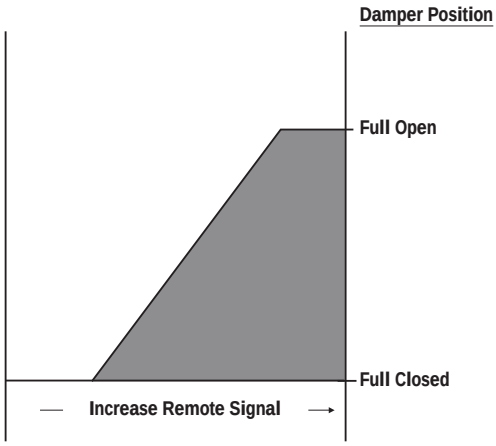
373 Static Control (0 " - 1.6 ")



(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).

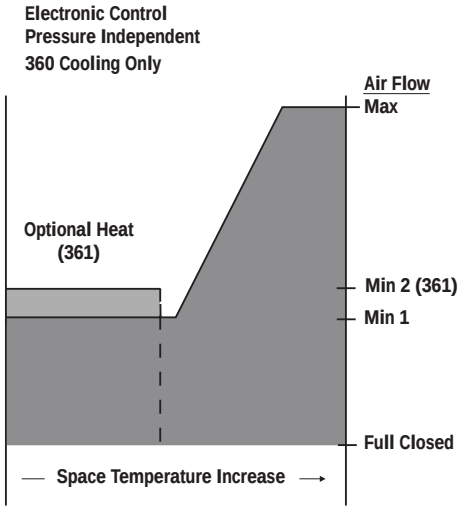
BP-500 - Analog Control Sequences

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.

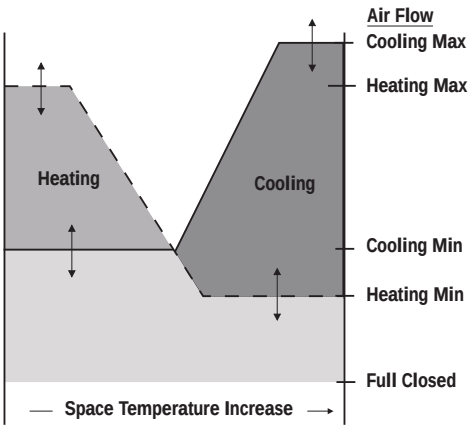
All electric and electronic components used in these sequences use low voltage (24 volt) controls and are readily enclosed with a standard control panel cover. A standard 50 VA transformer that reduces 120, 240, or 277 line voltage to 24 control voltage is wired into the control sequence as a standard 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

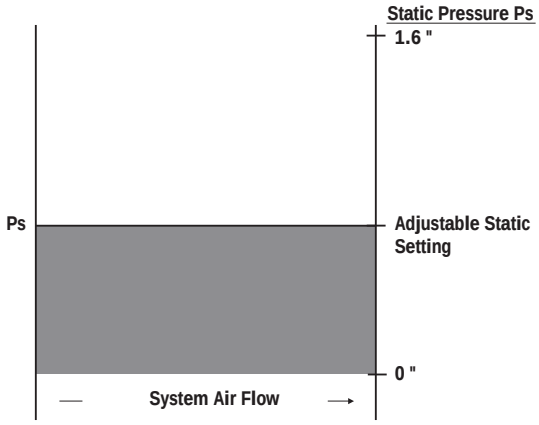


(365) Heating/Cooling Changeover: A duct thermostat switches a heat/cool relay to make the system operate in the appropriate heating or cooling mode.

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.

Equations, Conversions & Factors

Formulas

VP	=	$(fpm / 4{,}005)^2$
CFM	=	Cubic feet per minute
TP	=	Total Pressure
SP	=	Static Pressure
VP	=	Velocity Pressure
fpm	=	feet per minute
ΔP	=	Differential Pressure
ΔPs	=	Static Differential Pressure
ΔPT	=	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	=	$(CFM / K)^2$
fpm	=	CFM / Area Factor
K	=	$CFM / \sqrt{(\Delta P)}$

Water Coils

MBH	=	1,000s of Btus per Hour
Btu	=	British Thermal Unit
gpm	=	Gallons per Minute
ΔT	=	(EWT - LWT)
Air ΔT	=	927 x MBH / cfm
$H_20\Delta T$	=	2.04 x MBH / 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	=	(LWT - EWT)
kW	=	cfm x ΔT / 3,160
ΔT	=	kW x 3160 / 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 x A)
A	=	746 x HP / (V x E x PF)
E	=	746 x HP / (V x A x PF)
kW	=	V x A x E x PF / 1,000
hp	=	V x A x E x PF / 746

Power AC Circuits (3 Phase)

PF	=	W / (V x A x 1.732)
A	=	746 x HP / (1.732 x V x E x PF)
E	=	746 x HP / (V x A x PF x 1.732)
kW	=	V x A x PF x 1.732 / 1000
hp	=	V x A x 1.732 x E x 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:

BTUH (coil) = 1.085* (LAT - EAT_c)* 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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