

Pressure Reducing Valve with Low Flow By-Pass



- **Modulating Control**
- **Maintains Constant Outlet Pressure Over a Wide Range of Flows**
- **Durable Construction**
- **Convenient — Space Saver**

The Cla-Val Model 90-48/690-48 Pressure Reducing Valve with Low Flow By-Pass automatically reduces a higher inlet pressure to a steady lower downstream pressure regardless of changing flow rate. The low flow by-pass capability is achieved by using the Cla-Val Model CRD-40 Direct Acting Pressure Reducing Valve as an integral part of the main valve. By doing this, space is saved and installation and maintenance become much easier.

The pressure reducing valve is hydraulically operated and controlled by a Cla-Val CRD pilot control, which senses pressure at the main valve outlet. An increase in outlet pressure forces the CRD pilot control to close and a decrease in outlet pressure opens the control. This causes the main valve cover pressure to vary, modulating the main valve and thereby maintaining constant outlet pressure.

The Model CRD-40 low flow pressure reducing by-pass is preset to a higher pressure than the CRD pilot control. The CRD-40 responds to pressure changes at the main valve outlet. When the CRD closes, the Model CRD-40 remains open allowing low flow, to by-pass the main valve. The CRD-40 closes when the flow decreases and the downstream pressure reaches its set point.

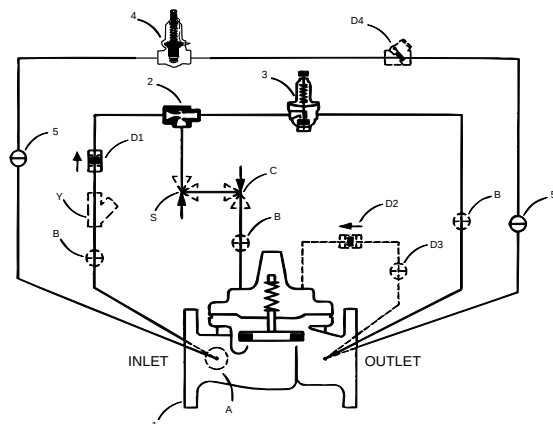
Schematic Diagram

Item	Description
1	Hytrol (Main Valve)
2	X47A Ejector
3	CRD Pressure Reducing Control
4	CRD-40 Pressure Reducing Valve
5	CK2 Cock (Isolation Valve)

Optional Features

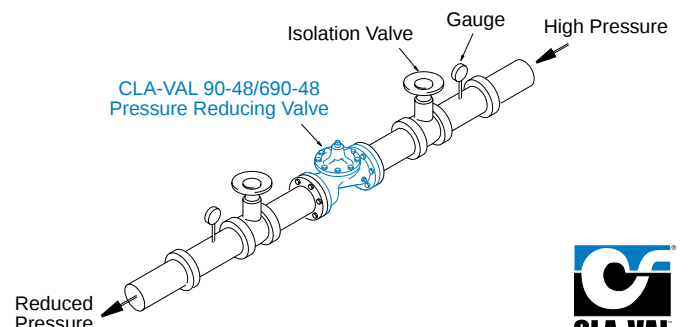
Item	Description
A	X46A Flow Clean Strainer
B	CK2 Cock (Isolation Valve)
C	CV Flow Control (Closing)*
D	Check Valves with Cock
S	CV Flow Control (Opening)*
Y	X43 "Y" Strainer

*The closing speed control (optional) on this valve should always be open at least three (3) turns off its seat.



Typical Applications

This valve has the flexibility to be installed in a distribution system where the demand varies over a wide range. This frequently occurs in industrial, residential, educational, high-rise buildings and other applications. Another important feature of the valve is its space efficient configuration, allowing easy installation and maintenance.



Model 90-48 (Uses Basic Valve Model 100-01)

Pressure Ratings (Recommended Maximum Pressure - psi)

Valve Body & Cover		Pressure Class			
		Flanged			Screwed
Grade	Material	ANSI Standards*	150 lb.	300 lb.	End** Details
ASTM A536	Ductile Iron	B16.42	250	400	400
ASTM A216-WCB	Cast Steel	B16.5	285	400	400
ASTM B62	Bronze	B16.24	225	400	400
ASTM A743	Stainless Steel	B16.5	285	400	400
356-T6	Aluminum	B16.1	275	—	—

Note: *ANSI standards are for flange dimensions only.
Flanged valves are available faced but not drilled.
** End Details machined to ANSI B2.1 specifications.

Materials

Component	Material Options						
Body & Cover	Ductile Iron	Cast Steel	Bronze	Stainless Steel	Aluminum		
Available Sizes	2" - 6"	2" - 6"	2" - 6"	2" - 6"	2" - 6"		
Disc Retainer & Diaphragm Washer	Cast Iron	Cast Steel	Bronze	Stainless Steel	Aluminum		
Trim: Disc Guide, Seat & Cover Bearing	Bronze is standard. Stainless Steel is optional.			Stainless Steel is standard.			
Disc	Buna-N® Rubber						
Diaphragm	Nylon Reinforced Buna-N® Rubber						
Stem, Nut & Spring	Stainless Steel						



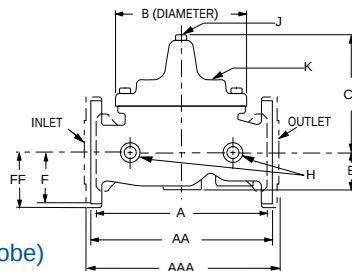
2" Globe, Screwed



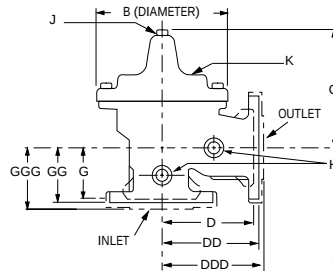
4" Globe, Flanged



4" Angle, Flanged



100-01 (Globe)



100-01 (Angle)

Model 90-48 Dimensions (In inches)

VALVE SIZE (Inches)	2	2 ½	3	4	6
A Screwed	9.38	11.00	12.50	—	—
AA 150 ANSI	9.38	11.00	12.00	15.00	20.00
AAA 300 ANSI	10.00	11.62	13.25	15.62	21.00
B DIA.	6.62	8.00	9.12	11.50	15.75
C MAX.	6.50	7.56	8.19	10.62	13.38
D Screwed	4.75	5.50	6.25	—	—
DD 150 ANSI	4.75	5.50	6.00	7.50	10.00
DDD 300 ANSI	5.00	5.81	6.63	7.81	10.50
E	1.50	1.69	2.56	3.19	4.31
F 150 ANSI	3.00	3.50	3.75	4.50	5.50
FF 300 ANSI	3.25	3.75	4.13	5.00	6.25
G Screwed	3.25	4.00	4.50	—	—
GG 150 ANSI	3.25	4.00	4.00	5.00	6.00
GGG 300 ANSI	3.50	4.31	4.38	5.31	6.50
H NPT Body Tapping	⅜	½	½	¾	¾
J NPT Cover Center Plug	½	½	½	¾	¾
K NPT Cover Tapping	⅜	½	¾	¾	—
Valve Stem Internal Thread UNF	10-32	10-32	¼-28	¼-28	⅝-24
Stem Travel	0.6	0.7	0.8	1.1	1.7
Approx.Ship Wt. Lbs.	35	50	70	140	285

Model 690-48 (Uses Basic Valve Model 100-20)

Pressure Ratings (Recommended Maximum Pressure - psi)

Valve Body & Cover		Pressure Class		
		Flanged		
Grade	Material	ANSI Standards*	150 lb.	300 lb.
ASTM A536	Ductile Iron	B16.42	250	400
ASTM A216-WCB	Cast Steel	B16.5	285	400
ASTM B62	Bronze	B16.24	225	400
ASTM A743	Stainless Steel	B16.5	285	400
356-T6	Aluminum	B16.1	275	—

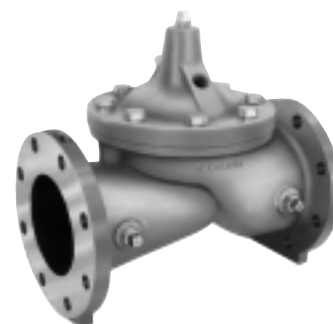
Note: *ANSI standards are for flange dimensions only.
Flanged valves are available faced but not drilled.

Materials

Component	Material Options						
Body & Cover	Ductile Iron	Cast Steel	Bronze	Stainless Steel	Aluminum		
Available Sizes	3"- 8"	3"- 8"	3"- 8"	3"- 8"	3"- 8"		
Disc Retainer & Diaphragm Washer	Cast Iron	Cast Steel	Bronze	Stainless Steel	Aluminum		
Trim: Disc Guide, Seat & Cover Bearing	Bronze is standard. Stainless Steel is optional.			Stainless Steel is standard.			
Disc	Buna-N® Rubber						
Diaphragm	Nylon Reinforced Buna-N® Rubber						
Stem, Nut & Spring	Stainless Steel						



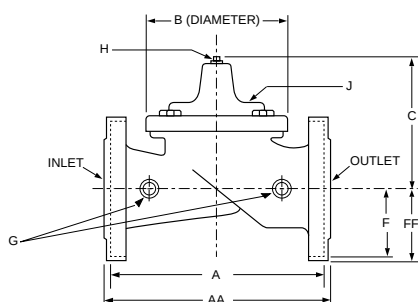
3" Globe, Flanged



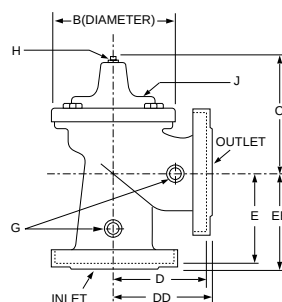
6" Globe, Flanged



6" Angle, Flanged



100-20 (Globe)



100-20 (Angle)

Model 690-48 Dimensions (In inches)

VALVE SIZE (Inches)	3	4	6	8
A 150 ANSI	10.25	13.88	17.75	21.38
AA 300 ANSI	11.00	14.50	18.62	22.38
B DIA.	6.62	9.12	11.50	15.75
C MAX.	7.00	8.62	11.62	15.00
D 150 ANSI	—	6.94	8.88	10.69
DD 300 ANSI	—	7.25	9.38	11.19
E 150 ANSI	—	5.50	6.75	7.25
EE 300 ANSI	—	5.81	7.25	7.75
F 150 ANSI	3.75	4.50	5.50	6.75
FF 300 ANSI	4.12	5.00	6.25	7.50
G NPT Body Tapping	3/8	1/2	3/4	3/4
H NPT Cover Center Plug	1/2	1/2	3/4	3/4
J NPT Cover Tapping	3/8	1/2	3/4	3/4
Valve Stem Internal Thread UNF	10-32	1/4-28	1/4-28	3/8-24
Stem Travel	0.6	0.8	1.1	1.7
Approx Ship Wt. Lbs.	45	85	195	330

Valve Selection

		These Symbols  and  Indicate Available Sizes					
Inches		2	2 1/2	3	4	6	8
mm		50	65	80	100	150	200
End Detail		Screwed & Flanged			Flanged		
Model 90-48	Basic Valve 100-01	Globe					
		Angle					
	Suggested Flow (GPM)	Max. Continuous	210	300	460	800	1800
		Max. Intermittent	260	370	580	990	2250
		Min. Continuous	5	5	5	10	50
	Suggested Flow (Liters/sec)	Max. Continuous	19	19	29	50	113
		Max. Intermittent	23	23	37	62	142
		Min. Continuous	.32	.32	.32	.63	3.2
Model 690-48	Basic Valve 100-20	Globe			 **		
		Angle					
	Suggested Flow (GPM)	Max. Continuous			260	580	1025
		Min. Continuous			5	5	10
	Suggested Flow (Liters/sec)	Max. Continuous			16	37	65
		Min. Continuous			.32	.32	.63

* 690-48 is the reduced internal port size version of the 90-48.

For 100-01 basic valves suggested flow calculations were based on flow through Schedule 40 Pipe. Maximum continuous flow is approx. 20 ft/sec (6.1 meters/sec) & maximum intermittent is approx. 25 ft/sec (7.6 meters/sec) and minimum continuous flow is approx. 1 ft/sec (.3 meters/sec). For 100-20 basic valves suggested flow calculations were based on flow through the valve seat. Approx. 26 ft/sec (7.9 meters/sec) was used for maximum continuous flow & 1 ft/sec (.3 meters/sec) is used for minimum continuous flow.

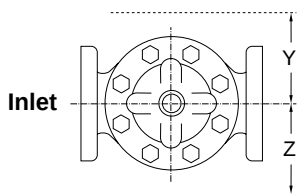
Many factors should be considered in sizing pressure reducing valves, including inlet pressure, outlet pressure and flow rates. For sizing questions or cavitation analysis, consult Cla-Val with system details.

** Flanged End Detail Only

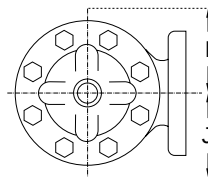
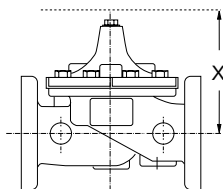
Pilot System Dimensions (In Inches)

We recommend providing adequate space around valve for maintenance work

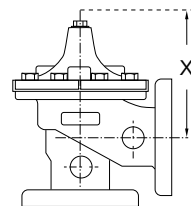
Valve Size	2"	2½"	3"	4"	6"	8"
X Max.	12.25	12.25	13.00	13.25	15.75	17.25
Y Max.	7.00	7.00	8.00	6.00	9.50	11.50
Z Max.	8.00	8.00	9.00	10.00	11.50	13.75



GLOBE



ANGLE



Inlet

Pilot System Specifications

Adjustment Ranges

CRD

2 to 30 psi
15 to 75 psi
30 to 300 psi*

Model CRD-40 (Bypass)

15 to 150 psi

*Supplied unless otherwise specified Other ranges available, please consult factory.

Temperature Range

Water: to 180°

Materials

Standard Pilot System Materials

Pilot Control: Bronze ASTM B62
Trim: Stainless Steel Type 303
Rubber: Buna-N® Synthetic Rubber

Optional Pilot System Materials

Pilot Systems are available with optional Aluminum, Stainless Steel or Monel materials at extra cost.

Note: Available with remote sensing control

When Ordering, Please Specify

1. Catalog No. 90-48 or No. 690-48
2. Valve Size
3. Pattern - Globe or Angle
4. Pressure Class
5. Screwed or Flanged
6. Trim Material
7. Adjustment Range
8. Desired Options
9. When Vertically Installed



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