



90-48
(Full Internal Port)
MODEL
690-48
(Reduced Internal Port)

Pressure Reducing Valve with Low Flow By-Pass



Schematic Diagram

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

Optional Features

Item	Description
A	X46A Flow Clean Strainer
B	CK2 (Isolation Valve)
C	CV Flow Control (Closing)*
D	Check Valves with Isolation Valve
P	X141 Pressure Gauge
S	CV Speed Control (Opening)*
V	X101 Valve Position Indicator
Y	X43 "Y" Strainer

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

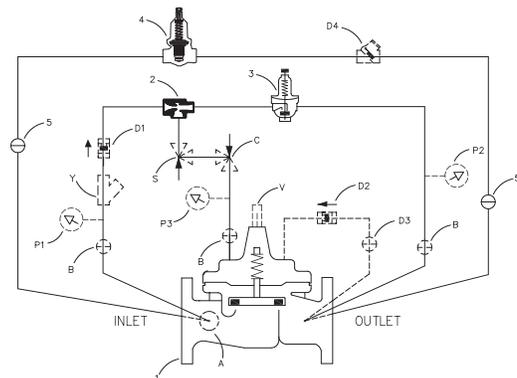
- **Modulating Control**
- **Maintains Constant Outlet Pressure Over a Wide Range of Flows**
- **Durable Construction**
- **Convenient and Space Saving**

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, thereby, maintaining constant outlet pressure.

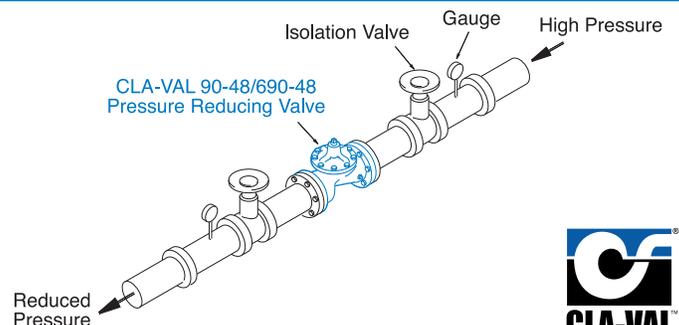
The Model CRD-40 low flow pressure reducing by-pass is preset to a higher pressure than the CRD pilot control. The CRD-40 responds to pressure changes at the main valve outlet. When the CRD closes, the Model CRD-40 remains open, allowing low flow to by-pass the main valve. The CRD-40 closes when the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

The Cla-Val Model 90-48/690-48 is not a substitute for a low flow bypass valve in all cases. This valve is commonly used in building where 1-15 gpm low flows are common in off peak usage. The bypass on this valve is limited to the body tapping size on the main valve.



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		Grooved	Threaded	
Grade	Material	ANSI Standards*	150 Class	300 Class	300 Class	End‡ Details
ASTM A536	Ductile Iron	B16.42	250	400	400	400
ASTM A216-WCB	Cast Steel	B16.5	285	400	400	400
ASTM B62	Bronze	B16.24	225	400	400	400

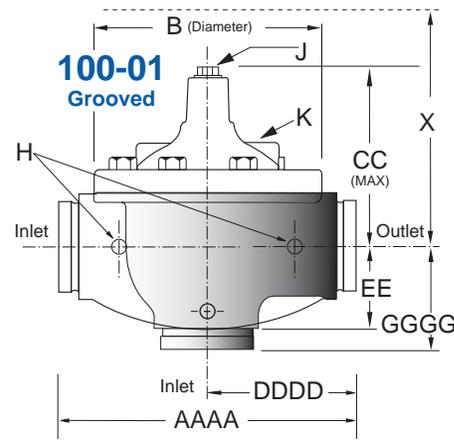
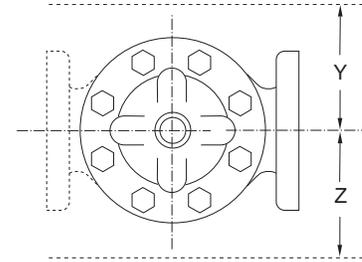
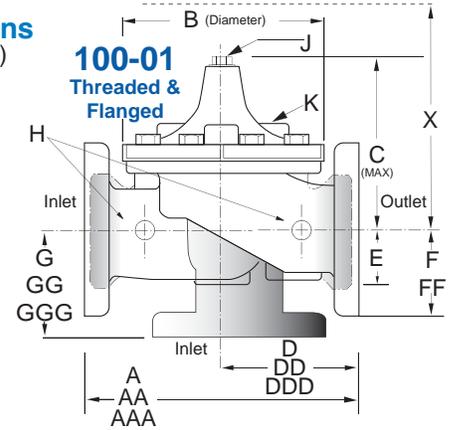
Note: * ANSI standards are for flange dimensions only.
 Flanged valves are available faced but not drilled.
 ‡ End Details machined to ANSI B2.1 specifications.
Valves for higher pressure are available; consult factory for details

Materials

Component	Standard Material Combinations		
Body & Cover	Ductile Iron	Cast Steel	Bronze
Available Sizes	1" - 8"	1" - 8"	1" - 8"
Disc Retainer & Diaphragm Washer	Cast Iron	Cast Steel	Bronze
Trim: Disc Guide, Seat & Cover Bearing	Bronze is Standard Stainless Steel is Optional		
Disc	Buna-N® Rubber		
Diaphragm	Nylon Reinforced Buna-N® Rubber		
Stem, Nut & Spring	Stainless Steel		

For material options not listed, consult factory.
 Cla-Val manufactures valves in more than 50 different alloys.

Dimensions
(In inches)



Model 90-48 Dimensions (In Inches) - For larger sizes, consult Factory

Valve Size (Inches)	1	1 1/4	1 1/2	2	2 1/2	3	4	6	8
A Threaded	7.25	7.25	7.25	9.38	11.00	12.50	—	—	—
AA 150 ANSI	—	—	8.50	9.38	11.00	12.00	15.00	20.00	25.38
AAA 300 ANSI	—	—	9.00	10.00	11.62	13.25	15.62	21.00	26.38
AAAA Grooved End	—	—	8.50	9.00	11.00	12.50	15.00	20.00	25.38
B Dia.	5.62	5.62	5.62	6.62	8.00	9.12	11.50	15.75	20.00
C Max.	5.50	5.50	5.50	6.50	7.56	8.19	10.62	13.38	16.00
CC Max. Grooved End	—	—	4.75	5.75	6.88	7.25	9.31	12.12	14.62
D Threaded	3.25	3.25	3.25	4.75	5.50	6.25	—	—	—
DD 150 ANSI	—	—	4.00	4.75	5.50	6.00	7.50	10.00	12.69
DDD 300 ANSI	—	—	4.25	5.00	5.88	6.38	7.88	10.50	13.25
DDDD Grooved End	—	—	—	4.75	—	6.00	7.50	—	—
E	1.12	1.12	1.12	1.50	1.69	2.06	3.19	4.31	5.31
EE Grooved End	—	—	2.00	2.50	2.88	3.12	4.25	6.00	7.56
F 150 ANSI	—	—	2.50	3.00	3.50	3.75	4.50	5.50	6.75
FF 300 ANSI	—	—	3.06	3.25	3.75	4.13	5.00	6.25	7.50
G Threaded	1.88	1.88	1.88	3.25	4.00	4.50	—	—	—
GG 150 ANSI	—	—	4.00	3.25	4.00	4.00	5.00	6.00	8.00
GGG 300 ANSI	—	—	4.25	3.50	4.31	4.38	5.31	6.50	8.50
GGGG Grooved End	—	—	—	3.25	—	4.25	5.00	—	—
H NPT Body Tapping	.375	.375	.375	.375	.50	.50	.75	.75	1
J NPT Cover Center Plug	.25	.25	.25	.50	.50	.50	.75	.75	1
K NPT Cover Tapping	.375	.375	.375	.375	.50	.50	.75	.75	1
Stem Travel	0.4	0.4	0.4	0.6	0.7	0.8	1.1	1.7	2.3
Approx. Ship Wt. Lbs.	15	15	15	35	50	70	140	285	500
X Pilot System	11	11	11	13	14	15	17	29	31
Y Pilot System	9	9	9	9	10	11	12	20	22
Z Pilot System	9	9	9	9	10	11	12	20	22

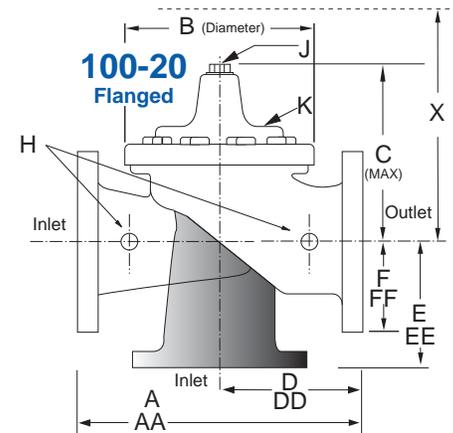
Model 690-48 (Uses Basic Valve Model 100-20)

Dimensions
(In inches)

Pressure Ratings (Recommended Maximum Pressure - psi)

Valve Body & Cover		Pressure Class		
		Flanged		
Grade	Material	ANSI Standards*	150 Class	300 Class
ASTM A536	Ductile Iron	B16.42	250	400
ASTM A216-WCB	Cast Steel	B16.5	285	400
ASTM B62	Bronze	B16.24	225	400

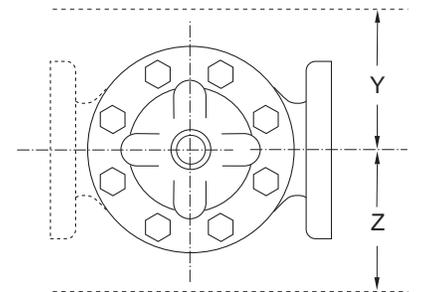
Note: * ANSI standards are for flange dimensions only.
Flanged valves are available faced but not drilled.
Valves for higher pressure are available; consult factory for details



Materials

Component	Standard Material Combinations		
Body & Cover	Ductile Iron	Cast Steel	Bronze
Available Sizes	3" - 10"	3" - 10"	3" - 10"
Disc Retainer & Diaphragm Washer	Cast Iron	Cast Steel	Bronze
Trim: Disc Guide, Seat & Cover Bearing	Bronze is Standard Stainless Steel is Optional		
Disc	Buna-N® Rubber		
Diaphragm	Nylon Reinforced Buna-N® Rubber		
Stem, Nut & Spring	Stainless Steel		

For material options not listed, consult factory.
Cla-Val manufactures valves in more than 50 different alloys.



Model 690-48 Dimensions (In Inches) - For larger sizes, consult Factory

Valve Size (Inches)	3	4	6	8	10
A 150 ANSI	10.25	13.88	17.75	21.38	26.00
AA 300 ANSI	11.00	14.50	18.62	22.38	27.38
B Dia.	6.62	9.12	11.50	15.75	20.00
C Max.	7.00	8.62	11.62	15.00	17.88
D 150 ANSI	—	6.94	8.88	10.69	CF*
DD 300 ANSI	—	7.25	9.38	11.19	CF*
E 150 ANSI	—	5.50	6.75	7.25	CF*
EE 300 ANSI	—	5.81	7.25	7.75	CF*
F 150 ANSI	3.75	4.50	5.50	6.75	8.00
FF 300 ANSI	4.12	5.00	6.25	7.50	8.75
H NPT Body Tapping	.375	.50	.75	.75	1
J NPT Cover Center Plug	.50	.50	.75	.75	1
K NPT Cover Tapping	.375	.50	.75	.75	1
Stem Travel	0.6	0.8	1.1	1.7	2.3
Approx. Ship Wt. Lbs.	45	85	195	330	625
X Pilot System	13	15	27	30	33
Y Pilot System	10	11	18	20	22
Z Pilot System	10	11	18	20	22

*Consult Factory

90-48 Valve Selection	Inches	1	1¼	1½	2	2½	3	4	6	8
	mm	25	32	40	50	65	80	100	150	200
Basic Valve 100-01	Pattern	G, A	G, A	G, A	G, A	G, A	G, A	G, A	G, A	G, A
	End Detail	T	T	T, F, Gr*	T, F, Gr	T, F, Gr*	T, F, Gr	F, Gr	F, Gr*	F, Gr*
Suggested Flow (gpm)	Maximum	55	93	125	210	300	460	800	1800	3100
	Maximum Intermittent	68	120	160	260	370	580	990	2250	3900
	Minimum	1	1	1	1	1	1	1	1	1
Suggested Flow (Liters/Sec)	Maximum	3.5	6	8	13	19	29	50	113	195
	Maximum Intermittent	4.3	7.6	10	16	23	37	62	142	246
	Minimum	.03	.03	.03	.06	.06	.06	.06	.06	0.95

100-01 Pattern: Globe (G), Angle (A), **End Connections:** Threaded (T), Grooved (GR), Flanged (F) Indicate Available Sizes

100-01 Series is the full internal port Hytrol.

For Lower Flows Consult Factory

*Globe Grooved Only

690-48 Valve Selection	100-20 Pattern: Globe (G), Angle (A), End Connections: Flanged (F) Indicate Available Sizes					
	Inches	3	4	6	8	10
	mm	80	100	150	200	250
Basic Valve 100-20	Pattern	G	G, A	G, A	G, A	G
	End Detail	F	F	F	F	F
Suggested Flow (gpm)	Maximum	260	580	1025	2300	4100
	Minimum	1	1	1	1	1
Suggested Flow (Liters/Sec)	Maximum	16	37	65	145	258
	Minimum	.06	.06	.06	.06	.95

100-20 Series is the reduced internal port size version of the 100-01 Series.

For Lower Flows Consult Factory

Pilot System Specifications

Adjustment Ranges

CRD

- 2 to 30 psi
- 15 to 75 psi
- 20 to 105 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.

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. Threaded or Flanged
6. Trim Material
7. Adjustment Range
8. Desired Options
9. When Vertically Installed
10. Product Enhancement



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