



MODEL **90-01**
690-01

Pressure Reducing Valve



- Sensitive and Accurate Pressure Control
- Easy Adjustment and Maintenance
- Tamper Resistant
- Optional Check Feature
- Fully Supported Frictionless Diaphragm

The Cla-Val Model 90-01/690-01 Pressure Reducing Valve automatically reduces a higher inlet pressure to a steady lower downstream pressure regardless of changing flow rate and/or varying inlet pressure. This valve is an accurate, pilot-operated regulator capable of holding downstream pressure to a pre-determined limit. When downstream pressure exceeds the pressure setting of the control pilot, the main valve and pilot valve close drip tight.

If a check feature is added, and a pressure reversal occurs, the downstream pressure is admitted in the main valve cover chamber closing the valve to prevent return flow.

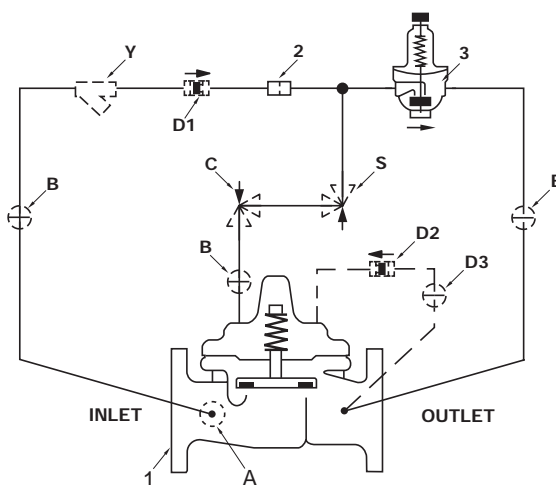
Schematic Diagram

Item	Description
1	Hytrol (Main Valve)
2	X58 Restriction Fitting
3	CRD Pressure Reducing Control

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

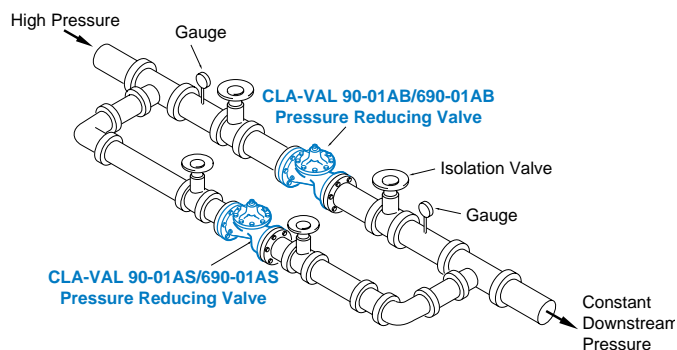
*The closing speed control (optional) on this valve should always be open at least three (3) turns off its seat.



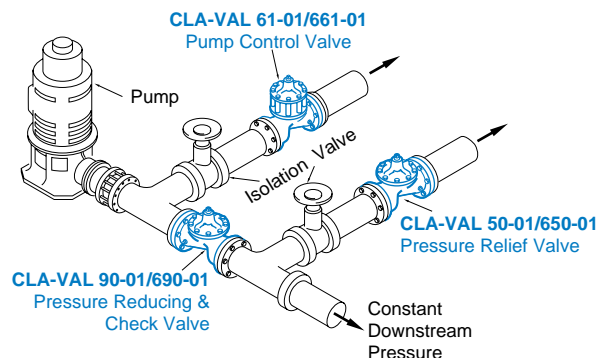
The "D" feature on a vertically installed 6" and larger valve must be horizontally oriented.

Typical Applications

Typical pressure reducing valve station using Model 90-01AB/690-01AB and Model 90-01AS/690-01AS in parallel to handle wide range of flow rates. Larger Model 90-01AB/690-01AB valve takes care of peak loads and smaller Model 90-01AS/690-01AS handles low flows.



The 90-01D/690-01D Combination Pressure Reducing and Check Valve is installed downstream of a pump where a constant system pressure is required. The check feature is to prevent reverse flow through the pump and to hold system pressure when the pump is off.



Model 90-01 (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 A-536	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
Type 304	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.



2" Globe, Screwed

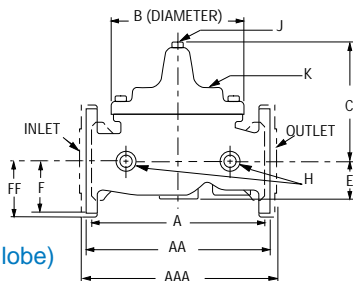
Materials

Component	Material Options				
Body & Cover	Ductile Iron	Cast Steel	Bronze	Stainless Steel	Aluminum
Available Sizes	1 1/4" - 16", 24"	1 1/4" - 16", 24"	1 1/4" - 16", 24"	1 1/4" - 16", 24"	1 1/4" - 16", 24"
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				

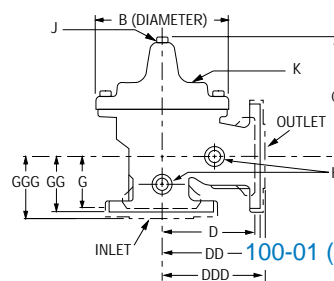


4" Globe, Flanged

Dimensions (In inches)



100-01 (Globe)



100-01 (Angle)



4" Angle, Flanged

Valve Size (Inches)	1 1/2	2	2 1/2	3	4	6	8	10	12	14	16	24
A Screwed	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	29.75	34.00	39.00	41.38	61.50
AAA 300 ANSI	9.00	10.00	11.62	13.25	15.62	21.00	26.38	31.12	35.50	40.50	43.50	—
B Dia.	5.62	6.62	8.00	9.12	11.50	15.75	20.00	23.62	28.00	32.75	35.50	53.16
C Max.	5.50	6.50	7.56	8.19	10.62	13.38	16.00	17.12	20.88	24.19	25.00	43.93
D Screwed	3.25	4.69	5.50	6.25	—	—	—	—	—	—	—	—
DD 150 ANSI	—	4.69	5.50	6.00	7.50	10.00	12.69	14.88	17.00	19.50	20.69	—
DDD 300 ANSI	—	5.00	5.81	6.63	7.81	10.50	13.19	15.56	17.75	20.25	21.75	—
E	1.12	1.50	1.69	2.06	3.19	4.31	5.31	9.25	10.75	12.62	15.50	17.75
F 150 ANSI	2.50	3.00	3.50	3.75	4.50	5.50	6.75	8.00	9.50	10.50	11.75	19.25
FF 300 ANSI	3.06	3.25	3.75	4.13	5.00	6.25	7.50	8.75	10.25	11.50	12.75	—
G Screwed	1.88	3.25	4.00	4.50	—	—	—	—	—	—	—	—
GG 150 ANSI	—	3.25	4.00	4.00	5.00	6.00	8.00	8.62	13.75	14.88	15.69	—
GGG 300 ANSI	—	3.50	4.31	4.38	5.31	6.50	8.50	9.31	14.50	15.62	16.50	—
H NPT Body Tapping	3/8	3/8	1/2	1/2	3/4	3/4	1	1	1	1	1	1 1/2
J NPT Cover Center Plug	1/4	1/2	1/2	1/2	3/4	3/4	1	1	1 1/4	1 1/2	2	4-1/4
K NPT Cover Tapping	3/8	3/8	1/2	1/2	3/4	3/4	1	1	1	1	1	1-1/2
Valve Stem Internal												
Thread UNF	10-32	10-32	10-32	1/4-28	1/4-28	3/8-24	3/8-24	3/8-24	3/8-24	3/8-24	1/2-20	3-12
Stem Travel	0.4	0.6	0.7	0.8	1.1	1.7	2.3	2.8	3.4	4.0	4.5	6.50
Approx. Ship Wt. Lbs.	15	35	50	70	140	285	500	780	1165	1500	2265	3000

Model 690-01 (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 A-536	Ductile Iron	B16.42	250	400
ASTM A216-WCB	Cast Steel	B16.5	285	400
ASTM B62	Bronze	B16.24	225	400
Type 304	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.



3" Globe, Flanged



6" Globe, Flanged

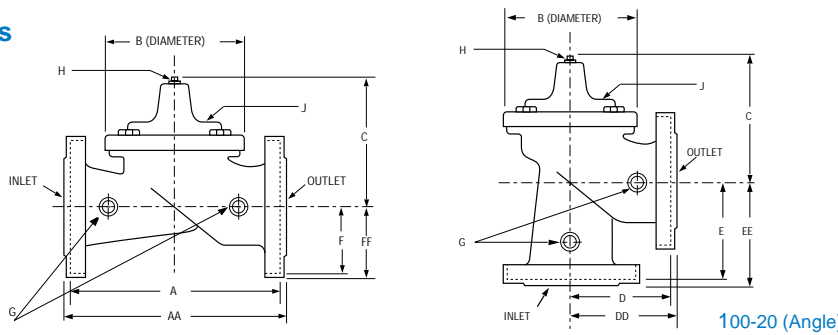


6" Angle, Flanged

Materials







































Component	Material Options				
Body & Cover	Ductile Iron	Cast Steel	Bronze	Stainless Steel	Aluminum
Available Sizes	3"-24"	3"-24"	3"-24"	3"-24"	3"-24"
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				

Dimensions (In inches)



VALVE SIZE (Inches)	3	4	6	8	10	12	16	20	24
A 150 ANSI	10.25	13.88	17.75	21.38	26.00	30.00	35.00	48.00	48.00
AA 300 ANSI	11.00	14.50	18.62	22.38	27.38	31.50	36.62	49.62	49.75
B DIA.	6.62	9.12	11.50	15.75	20.00	23.62	28.00	35.44	35.44
C MAX.	7.00	8.62	11.62	15.00	17.88	21.00	25.75	31.00	31.00
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	8.00	9.50	11.75	14.56	17.00
FF 300 ANSI	4.12	5.00	6.25	7.50	8.75	10.25	12.75	16.06	19.00
G NPT Body Tapping	3/8	1/2	3/4	3/4	1	1	1	1	1
H NPT Cover Center Plug	1/2	1/2	3/4	3/4	1	1	1 1/4	2	2
J NPT Cover Tapping	3/8	1/2	3/4	3/4	1	1	1	1	1
Valve Stem Internal Thread UNF	10-32	1/4-28	1/4-28	3/8-24	3/8-24	3/8-24	3/8-24	1/2-20	1/2-20
Stem Travel	0.6	0.8	1.1	1.7	2.3	2.8	3.4	4.5	4.5
Approximate Shipping Weight Lbs.	45	85	195	330	625	900	1380	2551	2733

Valve Selection

		These Symbols  and  Indicate Available Sizes														
		Size	1¼"	1½"	2"	2½"	3"	4"	6"	8"	10"	12"	14"	16"	20"	24"
		End Details	Screwed	Screwed or Flanged						Flanged						
Model 90-01	Basic Valve 100-01	Globe														
		Angle		 *	 *	 *	 *	 *	 *	 *	 *	 *	 *	 *		
	Suggested Flow GPM	Max. Continuous	93	125	208	300	460	800	1800	3100	4900	7000	8500	11000		28000
		Max. Intermittent	120	160	260	370	580	990	2250	3900	6150	8720	10340	13700		35000
Min. Continuous		15	15	15	20	30	50	115	200	300	400	500	650		3000	
Model 690-01	Basic Valve 100-20	Globe					 **									
		Angle														
	Suggested Flow-GPM	Max. Continuous					260	580	1025	2300	4100	6400		9230	16500	16500
		Min. Continuous					15	30	50	115	200	300		500	850	1000

* 690-01 is the reduced internal port size version of the 90-01.
 Refer to the 100-01 or the 100-20 Technical Data Sheet basic valve options.
 Max. Continuous Flow based on 20 fps (100-01), 25 fps (100-20)
 Max. Intermittent Flow based on 25 fps (100-01)
 Min. Continuous Flow based on appx. 1 fps (100-01) and (100-20)

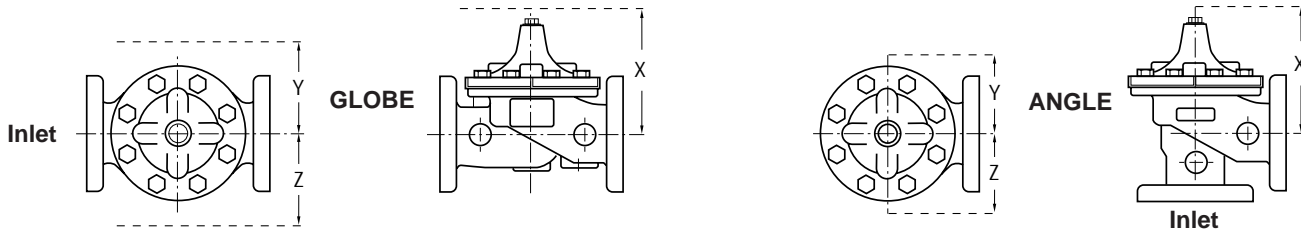
Many factors should be considered in sizing pressure reducing valves including inlet pressure, outlet pressure and flow rates. For sizing questions or cavitation analysis, consult Cla-Val with system details.

*Screwed End Detail Only **Flanged End Detail Only

Pilot System Dimensions (In Inches)

We recommend providing adequate space around valve for maintenance work

VALVE SIZE		1¼" & 1½"	2	2½"	3"	4"	6"	8"	10"	12"	14"	16"	20"	24"
X	Max.	11.00	12.00	12.25	13.00	13.25	15.75	17.25	20.25	21.75	25.00	27.25	31.00	31.00
Y	Max.	4.00	4.00	4.50	5.00	6.00	8.00	10.25	12.00	14.25	16.75	18.00	18.00	27.00
Z	Max.	6.50	6.50	7.00	8.00	9.00	9.50	11.50	12.50	14.75	16.75	18.00	18.00	27.00



Pilot System Specifications

Adjustment Ranges

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

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

Temperature Range

Water: to 180°F

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. 90-01 or No. 690-01
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



E-90-01/690-01 (R-5/97)

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