CLA-VAL™

MODEL

90-01H
(Full Internal Port)
690-01H
Pressure Reducing Valve with H-Style Strainer

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

The Cla-Val Model 90-01H/690-01H 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.

The Cla-Val Model X43H H-Style Strainer offers an effective means of removing unwanted solid particles in pipeline flow. These strainers are ideal for preventing fouling, debris and particle buildup in Cla-Val Automatic Control Valves. The large flow area design, with a flat stainless steel strainer mesh perpendicular to flow, is optimized for low pressure drop applications. Maintenance is fast and easy with the compact H-pattern, requiring only top cover removal. The strainer may be installed in any position, however, installation with cover up is recommended.

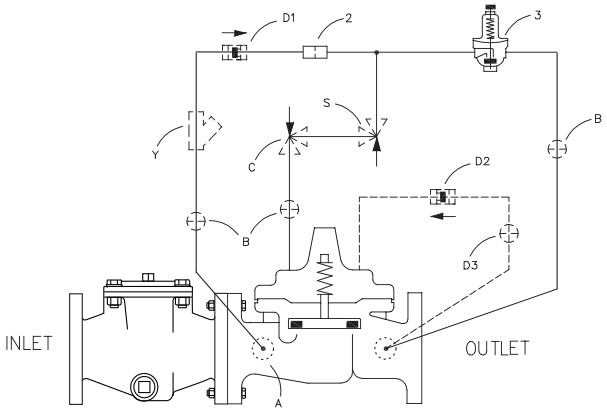
Schematic Diagram

Item	Description
1	(Main Valve) 100-01H Hytrol
	100-20H Hytrol
2	X58 Restriction Fitting
3	CRD Pressure Reducing Control

Optional Features

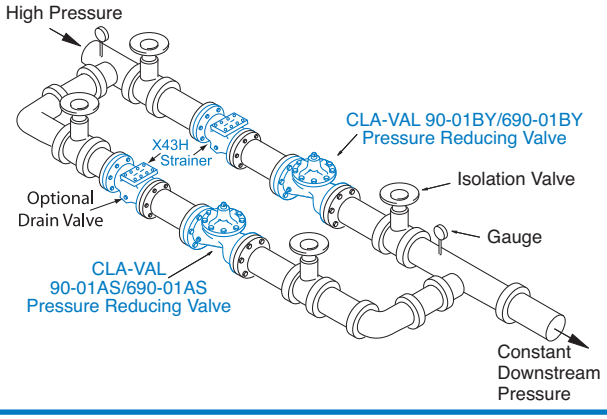
Item	Description
A	X46A Flow Clean Strainer
B	CK2 (Isolation Valve)
C	CV Flow Control (Closing)*
D	Check Valves with Isolation Valve
S	CV Flow Control (Opening)
Y	X43 "Y" Strainer

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



Typical Applications

Typical applications include pressure reducing valve station using Model 90-01HBY/690-01HBY and Model 90-01HAS/690-0HAS in parallel to handle wide range of flow rates. Larger Model 90-01HBY/690-01HBY valve meets requirements of peak loads and smaller Model 90-01HAS/690-01HAS handles low flows.



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

Pressure Ratings (Recommended Maximum Pressure - psi)

Valve Body & Cover		Pressure Class			
		Flanged			Threaded
Grade	Material	ANSI Standards*	150 Class	300† Class	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

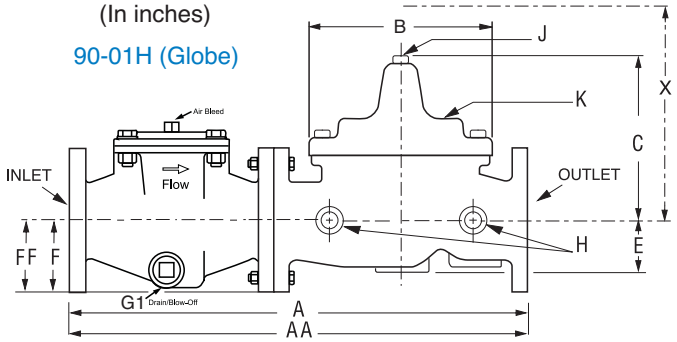
Note: * ANSI standards are for flange dimensions only. Flanged valves are available faced but not drilled.
‡ End Details machined to ANSI B2.1 specifications.
† Consult factory when Maximum Operating Pressure Differential (MOPD) is greater than 400 PSID
"Valves for higher pressure are available; consult factory for details"

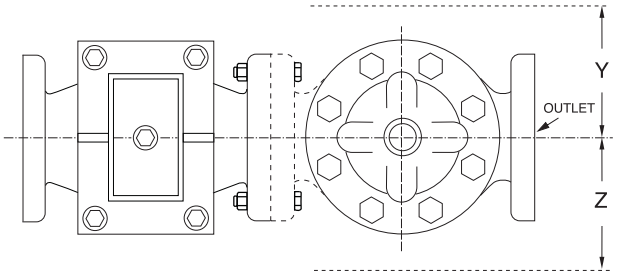
Materials

Component	Standard Material Combinations		
Body & Cover	Ductile Iron	Cast Steel	Bronze
Available Sizes	1¼" - 24"	1¼" - 16"	1¼" - 16"
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.			

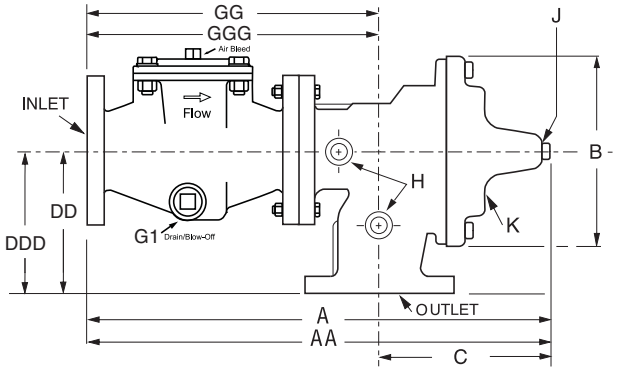
Dimensions
(In inches)

90-01H (Globe)





90-01H (Angle)



Model 90-01H Dimensions (In Inches)

Valve Size (Inches)	1½	2	2½	3	4	6	8	10	12	14	16	20	24
AA 150 ANSI	17.56	18.44	20.06	23.81	26.81	35.75	45.07	52.58	58.02	64.59	72.88	89.40	104.81
AAA 300 ANSI	18.13	19.13	20.75	25.14	27.51	36.83	46.14	54.03	59.59	66.17	75.07	91.10	106.63
B Dia.	5.62	6.62	8.00	9.12	11.50	15.75	20.00	23.62	28.00	32.75	35.50	45.00	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	39.06	43.93
DD Dia. 150 ANSI	4.00	4.75	5.50	6.00	7.50	10.00	12.75	14.88	17.00	19.50	20.81	—	—
DDD Dia. 300 ANSI	4.25	5.00	5.88	6.38	7.88	10.50	13.25	15.56	17.75	20.25	21.62	—	—
E	1.12	1.50	1.69	2.06	3.19	4.31	5.31	9.25	10.75	12.62	15.50	15.00	17.75
F 150 ANSI	3.26	3.26	3.66	4.06	4.33	5.63	6.69	8.86	8.88	10.24	12.20	19.09	19.09
FF 300 ANSI	3.26	3.26	3.66	4.06	4.33	5.63	6.69	8.86	9.56	10.94	12.20	19.09	19.09
GG 150 ANSI	13.06	13.81	14.56	17.81	19.31	25.75	32.38	37.71	41.02	45.09	52.31	—	—
GGG 300 ANSI	13.38	14.13	15.01	18.27	19.77	26.33	33.01	38.47	41.84	45.92	53.19	—	—
G1 Drain/ Blow-Off	1¼	1¼	1¼	1¼	1¼	1¼	1¼	1¼	2	2	2	2	3
H NPT Body Tapping	⅜	⅜	½	½	¾	¾	1	1	1	1	1	1	1
J NPT Cover Center Plug	¼	½	½	½	¾	¾	1	1	1¼	2	2	2	1½
K NPT Cover Tapping	⅜	⅜	½	½	¾	¾	1	1	1	1	1	1	1
Valve Stem Internal Thread UNF	10-32	10-32	¼-28	¼-28	¼-28	⅜-24	⅜-24	⅜-24	⅜-24	½-20	½-20	½-20	¾-16
Stem Travel	0.4	0.6	0.7	0.8	1.1	1.7	2.3	2.8	3.4	4.5	4.5	4.5	6.75
Approx. Ship Wt. Lbs.	48	71	89	129	213	428	712	1212	1791	2283	3235	5075	8162
X Pilot System	11.00	13.00	14.00	15.00	17.00	29.00	31.00	33.00	36.00	40.00	40.00	40.00	68.00
Y Pilot System	9.00	9.00	10.00	11.00	12.00	20.00	22.00	24.00	26.00	30.00	30.00	30.00	39.00
Z Pilot System	9.00	9.00	10.00	11.00	12.00	20.00	22.00	24.00	26.00	30.00	30.00	30.00	39.00

Model 690-01H (Uses Basic Valve Model 100-20H)

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

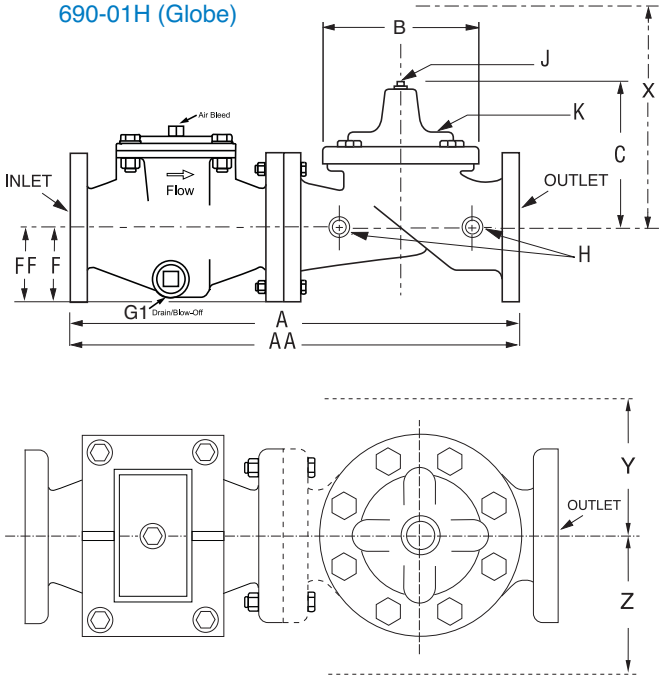
Note: * ANSI standards are for flange dimensions only. Flanged valves are available faced but not drilled.
† Consult factory when Maximum Operating Pressure Differential (MOPD) is greater than 400 PSID
"Valves for higher pressure are available; consult factory for details"

Materials

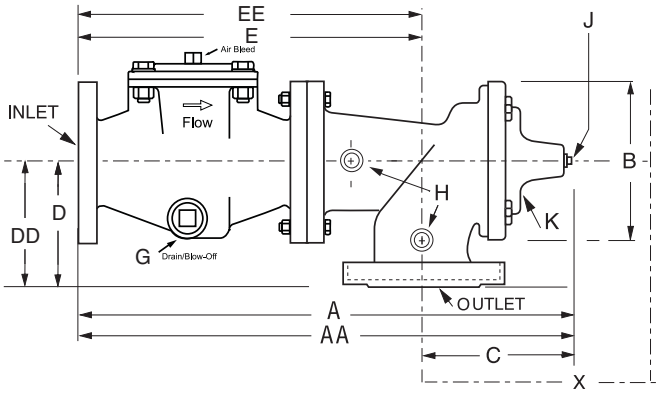
Component	Standard Material Combinations		
Body & Cover	Ductile Iron	Cast Steel	Bronze
Available Sizes	3" - 24"	3" - 16"	3" - 16"
Disc Retainer & Diaphragm Washer	Cast Iron	Cast Steel	Bronze
Trim: Disc Guide, Seat & Cover Bearing	Bronze is Standard Stainless Steel is Optional		
Disc	Buna-N® Rubber		
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)

690-01H (Globe)



690-01H (Angle)



Model 690-01H Dimensions (In Inches)

Valve Size (Inches)	**3**	**4**	**6**	**8**	**10**	**12**	**14**	**16**	**20**	**24**
A 150 ANSI	22.06	25.69	33.50	41.07	48.83	54.02	59.84	66.50	85.40	91.31
AA 300 ANSI	22.89	26.39	34.45	42.14	50.29	55.59	61.42	68.19	87.10	93.14
B Dia.	6.62	9.12	11.50	15.75	20.00	23.62	27.47	28.00	35.44	35.44
C Max.	7.00	8.62	11.62	15.00	17.88	21.00	20.88	25.75	31.50	31.50
D 150 ANSI	—	6.94	8.88	10.69	—	—	—	—	—	—
DD 300 ANSI	—	7.25	9.38	11.19	—	—	—	—	—	—
E 150 ANSI	—	17.31	22.50	26.94	—	—	—	—	—	—
EE 300 ANSI	—	17.70	23.08	27.51	—	—	—	—	—	—
F 150 ANSI	4.06	4.33	5.63	6.69	8.86	8.88	10.24	12.20	19.09	19.09
FF 300 ANSI	4.06	4.33	5.63	6.69	8.86	9.56	10.94	12.20	19.09	19.09
G Drain/ Blow-Off	1¼	1¼	1¼	1¼	1¼	2	2	2	2	3
H NPT Body Tapping	⅜	½	¾	¾	1	1	1	1	1	1
J NPT Cover Center Plug	½	½	¾	¾	1	1	1 ¼	1 ¼	2	2
K NPT Cover Tapping	⅜	½	¾	¾	1	1	1	1	1	1
Valve Stem Internal Thread UNF	10-32	¼-28	¼-28	⅜-24	⅜-24	⅜-24	⅜-20	⅜-20	⅜-20	½-20
Stem Travel	0.6	0.8	1.1	1.7	2.3	2.8	3.4	3.4	4.5	4.5
Approx. Ship Wt. Lbs.	104	158	338	542	1057	1526	1933	2350	3726	4695
X Pilot System	13.00	15.00	27.00	30.00	33.00	36.00	36.00	41.00	46.00	55.00
Y Pilot System	10.00	11.00	18.00	20.00	22.00	24.00	26.00	26.00	30.00	30.00
Z Pilot System	10.00	11.00	18.00	20.00	22.00	24.00	26.00	26.00	30.00	30.00

Valve Selection

			These Symbols and Indicate Available Sizes										
		Inches	1½	2	2½	3	4	6	8	10	12	16	24
		mm	40	50	65	80	100	150	200	250	300	400	600
		End Detail	Threaded & Flanged				Flanged						
Model 90-01H	Basic Valve 100-01H	Globe											
		Angle											
	Suggested Flow (gpm)	Max. Continuous	125	210	300	460	800	1800	3100	4900	7000	11000	25000
		Max. Intermittent	160	260	370	580	990	2250	3900	6150	8720	13700	31300
		Min. Continuous	10	15	20	30	50	115	200	300	400	650	1750
	Suggested Flow (Liters/Sec)	Max. Continuous	8	13	19	29	50	113	195	309	441	693	1575
		Max. Intermittent	10	16	23	37	62	142	246	387	549	863	1972
		Min. Continuous	.6	.9	1.3	1.9	3.2	7.2	13	19	25	41	110
Model 690-01H	Basic Valve 100-20H	Globe				**							
		Angle											
	Suggested Flow (gpm)	Max. Continuous				260	580	1025	2300	4100	6400	9230	16500
		Min. Continuous				15	30	50	115	200	300	500	900
	Suggested Flow (Liters/Sec)	Max. Continuous				16	37	65	145	258	403	581	1040
		Min. Continuous				.9	1.9	3.2	7.2	13	19	32	57

690-01H is the reduced internal port size version of the 90-01H.

**Flanged End Detail Only

For 100-01H 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 100-20H 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.

Pilot System Specifications

Adjustment Ranges

2 to 30 psi
15 to 75 psi
20 to 105 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 additional cost.

Note: Available with remote sensing control.

When Ordering, Please Specify

1. Catalog No. 90-01H or No. 690-01H
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

CLA-VAL®
PO Box 1325 Newport Beach CA 92659-0325
Phone: 949-722-4800 • Fax: 949-548-5441

CLA-VAL CANADA
4687 Christie Drive
Beamsville, Ontario
Canada L0R 1B4
Phone: 905-563-4963
Fax: 905-563-4040

CLA-VAL EUROPE
Chemin dés Mesanges 1
CH-1032 Romanel/
Lausanne, Switzerland
Phone: 41-21-643-15-55
Fax: 41-21-643-15-50

www.cla-val.com

Represented By:

E-90-01H/690-01H (R-05/2012)