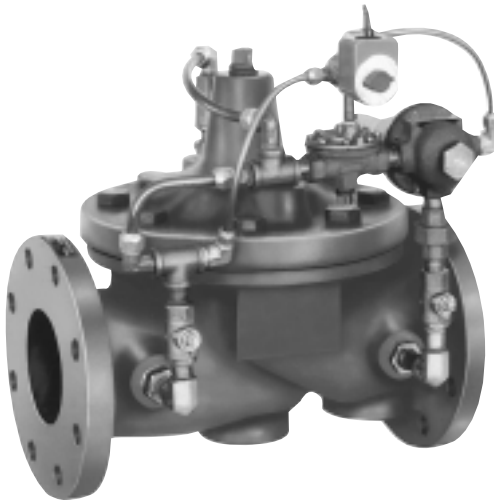




MODEL **93-01**
693-01 ✂

Pressure Reducing & Solenoid Shut-off Valve



- **Accurate Pressure Control**
- **Wide Adjustment Ranges**
- **Optional Check Feature Available**
- **Quick Acting Solenoid Shutoff**
- **Easy Installation and Maintenance**

The Cla-Val Model 93-01/693-01 Combination Pressure Reducing and Solenoid Shutoff Valve consists of a Cla-Val hytrol main valve, a reducing control and a solenoid control connected to the main valve. This valve automatically reduces higher inlet pressure to a steady lower downstream pressure regardless of changing flow rate and/or varying inlet pressure.

The 93-01/693-01 is an accurate, pilot-operated regulator capable of holding downstream pressure to a pre-determined delivery pressure. When downstream pressure exceeds the pressure setting of the control pilot, the pilot valve and main valve close drip-tight. A solenoid control is provided to intercept the operation of the pressure reducing control and close the main valve. This valve is furnished either normally open (de-energized to open), or normally closed (energized to open). Pressure setting adjustment is made with a single adjusting screw.

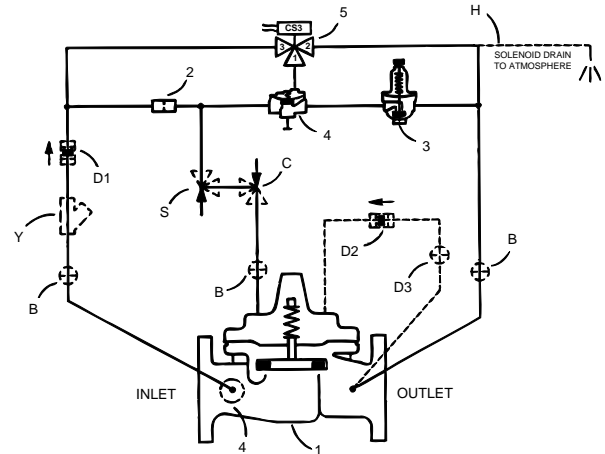
Schematic Diagram

Item	Description
1	Hytrol (Main Valve)
2	X58C Restriction Assembly
3	CRD Pressure Reducing Control
4	100-01 Hytrol (Reverse Flow)
5	CS3 Solenoid Control

Optional Features

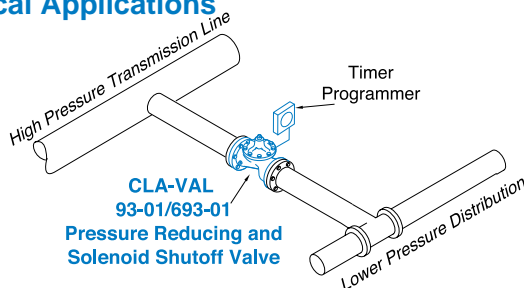
Item	Description
A	X46A Flow Clean Strainer
B	CK2 Cock (Isolation Valve)
C	CV Flow Control (Closing)*
D	Check Valves with Cock
H	Solenoid Drain To Atmosphere
S	CV Flow Control (Opening)
Y	X43 "Y" Strainer

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



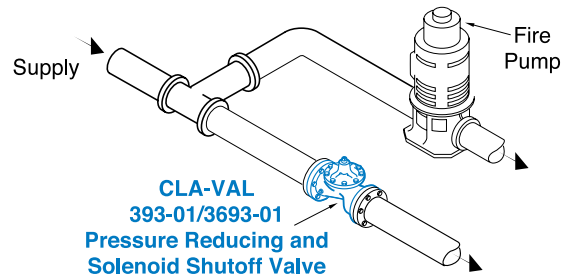
The "D" feature on a vertically installed 6" and larger valve must be horizontally installed.

Typical Applications



Electronic Control Service

An application for this valve is reducing high transmission line pressures to lower distribution system levels, while opening and closing on command. The solenoid control feature can be activated by an electrical signal from a timer or programmer.



Fire Service

The 93-01/693-01 can be installed in a distribution line where there is a need to close the valve on the starting of a fire pump. The solenoid control is activated on pump start-up and closes the valve.



Model 93-01 (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 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.



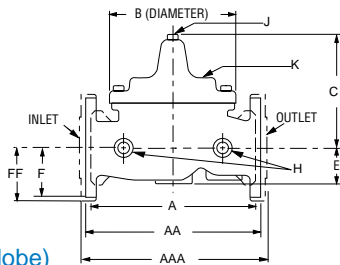
2" Globe, Screwed

Materials

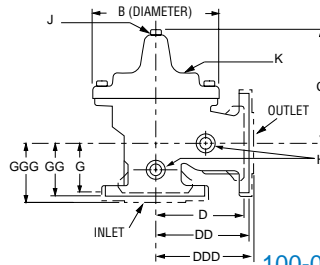
Component	Material Options						
Body & Cover	Ductile Iron	Cast Steel	Bronze	Stainless Steel	Aluminum		
Available Sizes	1¼" - 16", 24"	1¼" - 16", 24"	1¼" - 16"	1¼" - 16"	1¼" - 16"		
Disc Retainer & Diaphragm Washer	Cast Iron	Cast Steel	Bronze	Stainless Steel	Aluminum		
Trim: Disc Guide, Seat & Cover 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



100-01 (Globe)



100-01 (Angle)



4" Angle, Flanged

Model 93-01 Dimensions (In inches)

Valve Size (Inches)	1¼-1½	2	2 ½	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	63.24
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	4.00*	4.69	5.50	6.00	7.50	10.00	12.69	14.88	17.00	19.50	20.69	—
DDD 300 ANSI	4.25*	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	4.00*	3.25	4.00	4.00	5.00	6.00	8.00	8.62	13.75	14.88	15.69	—
GGG 300 ANSI	4.25*	3.50	4.31	4.38	5.31	6.50	8.50	9.31	14.50	15.62	16.50	—
H NPT Body Tapping	¾	¾	1½	1½	¾	¾	1	1	1	1	1	1 ½
J NPT Cover Center Plug	¼	½	½	½	¾	¾	1	1	1 ¼	1 ½	2	4-¼
K NPT Cover Tapping	¾	¾	1½	1½	¾	¾	1	1	1	1	1	1-½
Valve Stem Internal												
Thread UNF	10-32	10-32	10-32	¼-28	¼-28	¾-24	¾-24	¾-24	¾-24	¾-24	½-20	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

*1 ½" Size Only

Model 693-01 (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 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	—

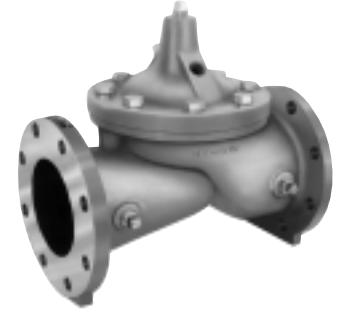
Note: *ANSI standards are for flange dimensions only.
Flanged valves are available faced but not drilled.



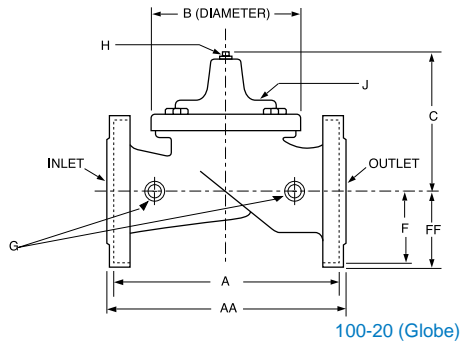
3" Globe, Flanged

Materials

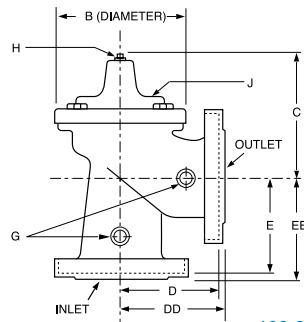
Component	Material Options						
Body & Cover	Ductile Iron	Cast Steel	Bronze	Stainless Steel	Aluminum		
Available Sizes	3"-30"	3"-30"	3"-16"	3"-16"	3"-16"		
Disc Retainer & Diaphragm Washer	Cast Iron	Cast Steel	Bronze	Stainless Steel	Aluminum		
Trim: Disc Guide, Seat & Cover Bearing	Bronze is standard. Stainless Steel is optional.			Stainless Steel is standard.			
Disc	Buna-N® Rubber						
Diaphragm	Nylon Reinforced Buna-N® Rubber						
Stem, Nut & Spring	Stainless Steel						



6" Globe, Flanged



100-20 (Globe)



100-20 (Angle)






























6" Angle, Flanged















Model 693-01 Dimensions (In inches)

VALVE SIZE (Inches)	3	4	6	8	10	12	14	16	18	20	24	30
A 150 ANSI	10.25	13.88	17.75	21.38	26.00	30.00	34.25	35.00	42.12	48.00	48.00	63.25
AA 300 ANSI	11.00	14.50	18.62	22.38	27.38	31.50	—	36.62	43.63	49.62	49.75	—
B DIA.	6.62	9.12	11.50	15.75	20.00	23.62	28.00	28.00	35.44	35.44	35.44	53.19
C MAX.	7.00	8.62	11.62	15.00	17.88	21.00	20.88	25.75	25.00	31.00	31.00	43.94
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	11.00	11.75	15.88	14.56	17.00	19.88
FF 300 ANSI	4.12	5.00	6.25	7.50	8.75	10.25	—	12.75	15.88	16.06	19.00	—
G NPT Body Tapping	3/8	1/2	3/4	3/4	1	1	1	1	1	1	1	1
H NPT Cover Center Plug	1/2	1/2	3/4	3/4	1	1	1 1/4	1 1/4	2	2	2	2
J NPT Cover Tapping	3/8	1/2	3/4	3/4	1	1	1	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	3/8-24	1/2-20	1/2-20	1/2-20	3/4-16
Stem Travel	0.6	0.8	1.1	1.7	2.3	2.8	3.4	3.4	4.5	4.5	4.5	6.5
Approx Ship Wt. Lbs.	45	85	195	330	625	900	1250	1380	2733	2551	2733	6500

Valve Selection

These Symbols  and  Indicate Available Sizes

Valve Selection		Pressure Symbols:  = Flanged  = Welded End																
		Inches	1 1/4	1 1/2	2	2 1/2	3	4	6	8	10	12	14	16	18	20	24	30
		mm	32	40	50	65	80	100	150	200	250	300	350	400	450	500	600	750
		End Detail	Screwed	Screwed & Flanged					Flanged									
Model 93-01	Basic Valve 100-01	Globe																
		Angle																
	Suggested Flow (GPM)	Max. Continuous	93	125	210	300	460	800	1800	3100	4900	7000	8400	11000			25000	
		Max. Intermittent	120	160	260	370	580	990	2250	3900	6150	8720	10540	13700			31300	
		Min. Continuous	10	10	15	20	30	50	115	200	300	400	500	650			1750	
	Suggested Flow (Liters/sec)	Max. Continuous	6	8	13	19	29	50	113	195	309	441	529	693			1575	
		Max. Intermittent	7.6	10.1	16.4	23	37	62	142	246	387	549	664	863			1972	
		Min. Continuous	.6	.6	.9	1.3	1.9	3.2	7.2	13	19	25	32	41			110	

Model 693-01	Basic Valve 100-20	Globe																
		Angle																
	Suggested Flow (GPM)	Max.Continuous					260	580	1025	2300	4100	6400	9230	9230	16500	16500	16500	28000
		Min. Continuous					15	30	50	115	200	300	500	500	900	900	900	1850
	Suggested Flow (Liters/sec)	Max.Continuous					16	37	65	145	258	403	581	581	1040	1040	1040	1764
		Min. Continuous					.9	1.9	3.2	7.2	13	19	32	32	57	57	57	117

* 693-01 is the reduced internal port size version of the 93-01.

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. Maximum continuous flow through the valve seat for the 30" 100-20 is approx. 20 ft/sec (6.1 meters/sec).

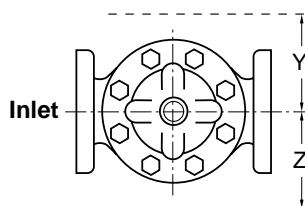
Many factors should be considered in sizing pressure reducing valves including inlet pressure, outlet pressure and flow rates. For sizing questions or cavitation analysis, consult Cla-Val with system details.

** Flanged End Detail Only

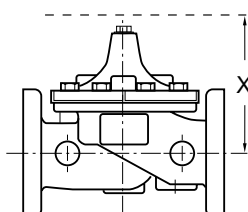
Pilot System Dimensions (In Inches)

We recommend providing adequate space around valve for maintenance work

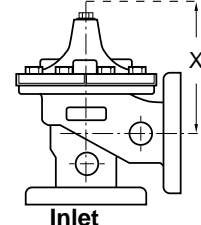
Valve Size	1 1/4" & 1 1/2"	2"	2 1/2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"
X Max.	12.50	13.50	13.75	14.00	14.50	16.00	17.25	20.25	21.75	25.00	27.25	27.25	31.00	50.00	50.00
Y Max.	4.00	4.00	4.50	5.00	6.00	8.00	10.25	12.00	14.25	16.75	18.00	18.00	18.00	30.00	30.00
Z Max.	7.50	7.50	8.00	9.00	10.00	10.50	12.50	13.50	15.75	17.50	18.00	18.00	18.00	30.00	30.00



GLOBE



ANGLE



Inlet

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.

Electrical Ratings

- 24,48,120,240,480 – 60 Hz VAC
- 6, 12, 24, 120, 240 VDC

This valve is furnished either normally open (de-energized to open), or normally closed (energized to open).

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, Monel or Cast Steel materials at extra cost.

Note: Available with remote sensing control.

When Ordering, Please Specify

1. Catalog No. 93-01 or No. 693-01
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. Normally Open or Normally Closed
10. Electrical Selection
11. When Vertically Installed



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