



— MODEL — **50-01**
650-01

Pressure Relief, Pressure Sustaining Valve



- **Accurate Pressure Control**
- **Optional Check Feature**
- **Fast Opening – maintains line pressure**
- **Slow Closing – prevents surges**
- **Completely Automatic Operation**

The Cla-Val Model 50-01/650-01 Pressure Relief Valve is a hydraulically operated, pilot-controlled, modulating valve designed to maintain constant upstream pressure within close limits. This valve can be used for pressure relief, pressure sustaining, back pressure, or unloading functions in a by-pass system.

In operation, the valve is actuated by line pressure through a pilot control system, opening fast to maintain steady line pressure but closing gradually to prevent surges. Operation is completely automatic and pressure settings may be easily changed.

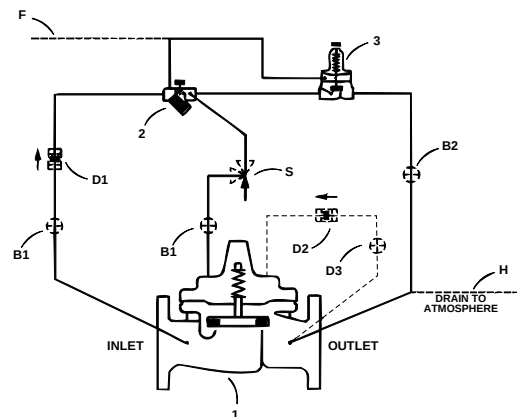
If the optional check feature “D” is added, and a pressure reversal occurs, the valve closes to prevent return flow.

Schematic Diagram

Item	Description
1	Hytrol (Main Valve)
2	X42N-2 Strainer & Needle Valve
3	CRL Pressure Relief Control

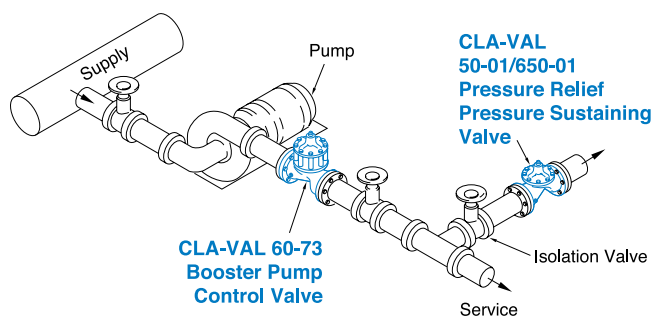
Optional Features

Item	Description
B	CK2 Cock (Isolation Valve)
D	Check Valves with Cock
F	Remote Pilot Sensing
H	Drain to Atmosphere
S	CV Speed Control (Opening)



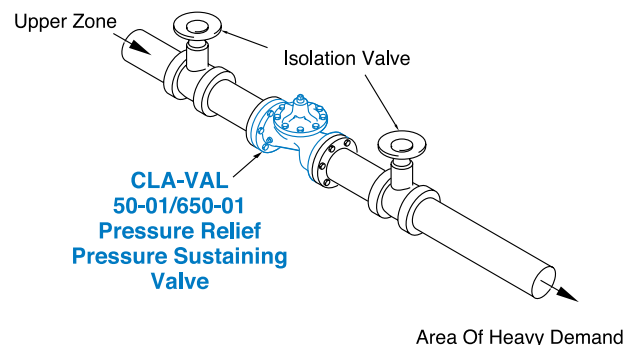
The “D” feature on a vertically installed 6” and larger valve must be horizontally oriented.

Typical Applications



Pressure Relief Service

To provide protection for the system against high pressure surges when pumps are shut down, this fast opening – slow closing relief valve dissipates the excess pressure.



Pressure Sustaining Service

When installed in a line between an upper zone and a lower area of heavy demand, the valve acts to maintain desired upstream pressure to prevent “robbing” of the upper zone. Water in excess of pressure setting flows to area of heavy demand; control is smooth, and pressure regulation is positive.



Model 50-01 (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.



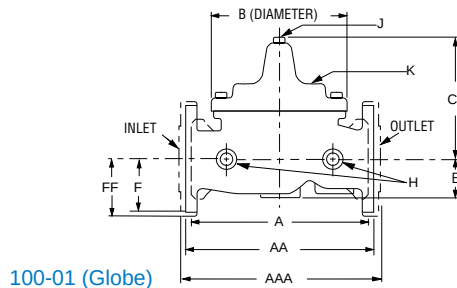
2" Globe, Screwed



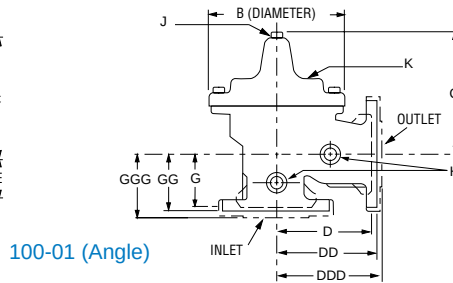
4" Globe, Flanged

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						



100-01 (Globe)



100-01 (Angle)



4" Angle, Flanged

Model 50-01 Dimensions (In inches)

Valve Size (Inches)	1½-1½	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	4.75	5.50	6.25	—	—	—	—	—	—	—	—
DD 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 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	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	½	½	¾	¾	1	1	1	1	1	1
J NPT Cover Center Plug	¼	½	½	½	¾	¾	1	1	1 ¼	1 ½	2	1 ½
K NPT Cover Tapping	¾	¾	½	½	¾	¾	1	1	1	1	1	1
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	¾-16
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	1600	2265	6200

*1½" Size Only

Model 650-01 (Uses Basic Valve Model 100-20)

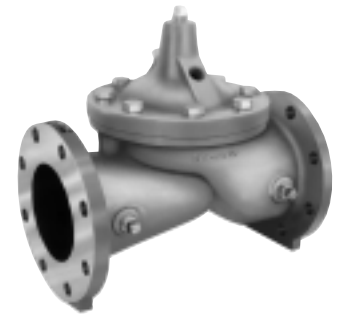
Pressure Ratings (Recommended Maximum Pressure - psi)

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.



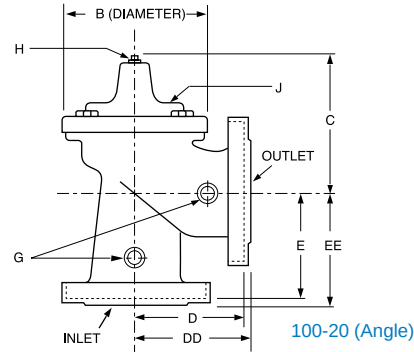
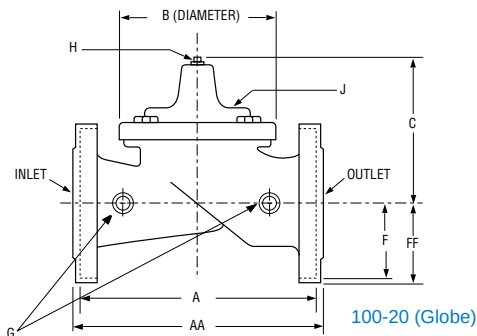
3" Globe, Flanged



6" 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" Angle, Flanged

Model 650-01 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

Valve Selection		These Symbols  and  Indicate Available Sizes																	
		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 50-01	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. Surge	120	280	470	670	1000	1800	4000	7000	11000	16000	19000	25000			56500		
	Suggested Flow (Liters/sec)	Max. Continuous	6	8	13	19	29	50	113	195	309	441	529	693			1575		
		Max. Surge	13	18	30	42	63	113	252	441	693	1008	1197	1575			3560		
Model 650-01	Basic Valve 100-20	Globe																	
		Angle																	
	Suggested Flow (GPM)	Max. Continuous						260	580	1025	2300	4100	6400	9230	9230	16500	16500	16500	31300
		Max. Surge						440	990	1760	3970	7050	11000	15900	15900	28200	28200	28200	56500
	Suggested Flow (Liters/sec)	Max. Continuous						16	37	65	145	258	403	581	581	1040	1040	1040	1972
		Max. Surge						28	62	111	250	444	693	1002	1002	1777	1777	1777	3560

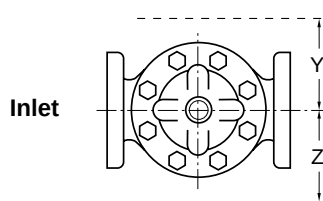
* 650-01 is the reduced internal port size version of the 50-01.

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 surge is approx. 45 ft/sec (13.7 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) is used for continuous flow & 45 ft/sec (13.7 meters/sec) is used for surge flow. Maximum continuous flow through the valve seat for the 30" 100-20 is approx. 22 ft/sec (6.7 meters/sec).

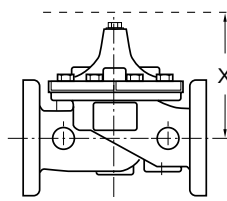
Pilot System Dimensions (In Inches)

We recommend providing adequate space around valve for maintenance work

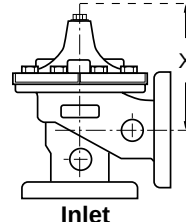
Valve Size	1 1/2"	2"	2 1/2"	3"	4"	6"	8"	10"	12"	14"	16"	18"	20"	24"	30"
X Max.	11.50	12.50	12.75	13.00	13.25	15.75	17.25	20.25	21.75	25.00	27.25	27.25	27.25	50.00	50.00
Y Max.	4.00	4.00	4.50	5.00	6.00	8.00	10.25	12.00	14.25	16.75	18.00	18.00	18.00	30.00	30.00
Z Max.	6.00	6.00	6.50	8.00	8.50	9.00	11.25	13.00	15.50	17.00	19.00	19.00	19.00	30.00	30.00



GLOBE



ANGLE



Inlet

Pilot System Specifications

Adjustment Ranges

0 to 75 psi Max.
20 to 200 psi*
100 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
Tubing & Fitting: Copper and Bronze

Optional Pilot System Materials

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

When Ordering, Please Specify

1. Catalog No. 50-01 or No. 650-01
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-50-01/650-01 (R-11/01)

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