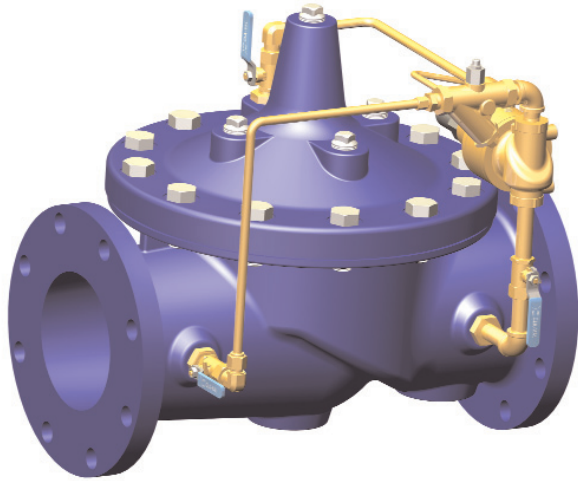




**MODEL** **50-01**  
(Full Internal Port)  
**650-01**  
(Reduced Internal Port)  
**Pressure Relief & Pressure Sustaining Valve**



- **Accurate Pressure Control**
- **Optional Check Feature**
- **Fast Opening to Maintain Line Pressure**
- **Slow Closing to 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.

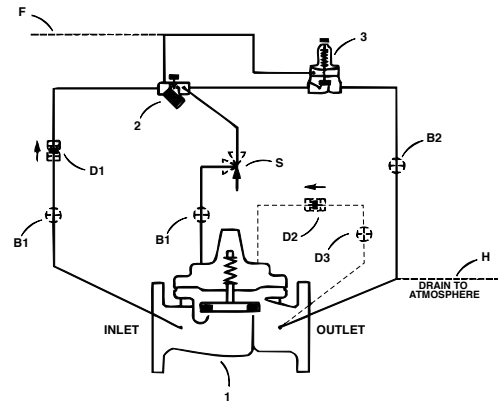
If a check feature is added, and a pressure reversal occurs, the downstream pressure is admitted into the main valve cover chamber, closing the valve to prevent return flow.

**Schematic Diagram**

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

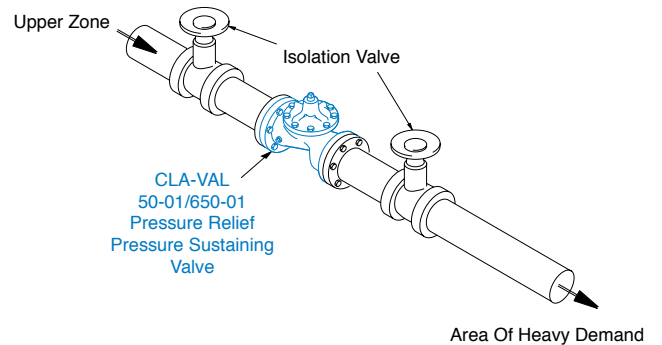
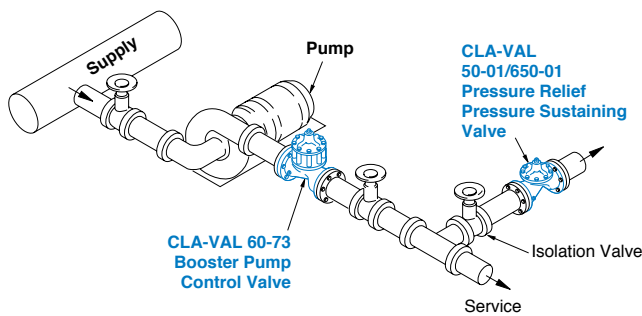
**Optional Features**

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



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

**Typical Applications**



**Pressure Relief Service**

This fast opening, slow closing relief valve provides system protection against high pressure surges on pump start up and pump shut down by dissipating the excess pressure to a safe location.

**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 is allowed to flow to an 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			Threaded
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

Note: \* ANSI standards are for flange dimensions only.  
 Flanged valves are available faced but not drilled.  
 \*\* End Details machined to ANSI B2.1 specifications.

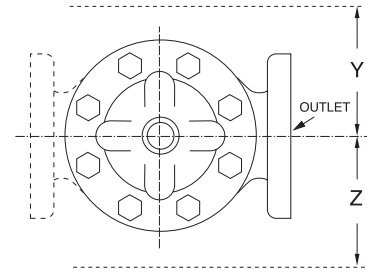
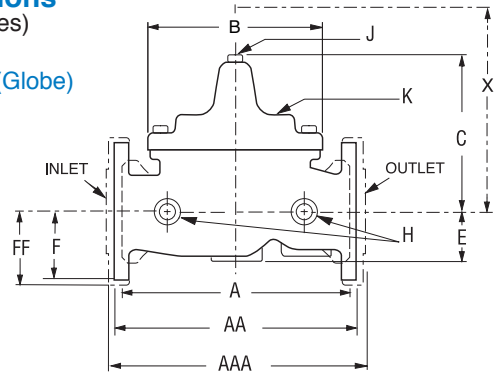
### Materials

Component	Standard Material Combinations		
Body & Cover	Ductile Iron	Cast Steel	Bronze
Available Sizes	1¼" - 36"	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		

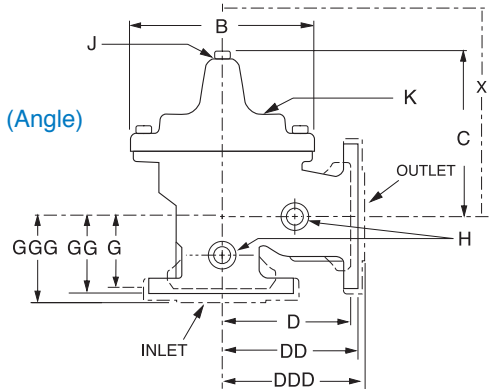
For material options not listed, consult factory.  
 Cla-Val manufactures valves in more than 50 different alloys.

### Dimensions (In inches)

#### 100-01 (Globe)



#### 100-01 (Angle)



### Model 50-01 Dimensions (In Inches)

Valve Size (Inches)	1¼-1½	2	2 ½	3	4	6	8	10	12	14	16	24	36
<b>A</b> Threaded	7.25	9.38	11.00	12.50	—	—	—	—	—	—	—	—	—
<b>AA</b> 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	76.00
<b>AAA</b> 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	78.00
<b>B</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	66.00
<b>C</b> 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	61.50
<b>D</b> Threaded	3.25	4.75	5.50	6.25	—	—	—	—	—	—	—	—	—
<b>DD</b> 150 ANSI	4.00*	4.75	5.50	6.00	7.50	10.00	12.75	14.88	17.00	19.50	20.81	—	—
<b>DDD</b> 300 ANSI	4.25*	5.00	5.88	6.38	7.88	10.50	13.25	15.56	17.75	20.25	21.62	—	—
<b>E</b>	1.12	1.50	1.69	2.56	3.19	4.31	5.31	9.25	10.75	12.62	15.50	17.75	24.56
<b>F</b> 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	28.00
<b>FF</b> 300 ANSI	3.06	3.25	3.75	4.13	5.00	6.25	7.50	8.75	10.25	11.50	12.75	—	—
<b>G</b> Threaded	1.88	3.25	4.00	4.50	—	—	—	—	—	—	—	—	—
<b>GG</b> 150 ANSI	4.00*	3.25	4.00	4.00	5.00	6.00	8.00	8.62	13.75	14.88	15.69	—	—
<b>GGG</b> 300 ANSI	4.25*	3.50	4.31	4.38	5.31	6.50	8.50	9.31	14.50	15.62	16.50	—	—
<b>H</b> NPT Body Tapping	¾	¾	½	½	¾	¾	1	1	1	1	1	1	2
<b>J</b> NPT Cover Center Plug	¼	½	½	½	¾	¾	1	1	1¼	1½	2	1½	2
<b>K</b> NPT Cover Tapping	¾	¾	½	½	¾	¾	1	1	1	1	1	1	2
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	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	6.75	10.12
Approx. Ship Wt. Lbs.	15	35	50	70	140	285	500	780	1165	1600	2265	6200	11470
<b>X</b> Pilot System	11.00	13.00	14.00	15.00	17.00	29.00	31.00	33.00	36.00	40.00	40.00	68.00	86.00
<b>Y</b> Pilot System	9.00	9.00	10.00	11.00	12.00	20.00	22.00	24.00	26.00	29.00	30.00	39.00	45.00
<b>Z</b> Pilot System	9.00	9.00	10.00	11.00	12.00	20.00	22.00	24.00	26.00	29.00	30.00	39.00	45.00

\*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

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

**Materials**

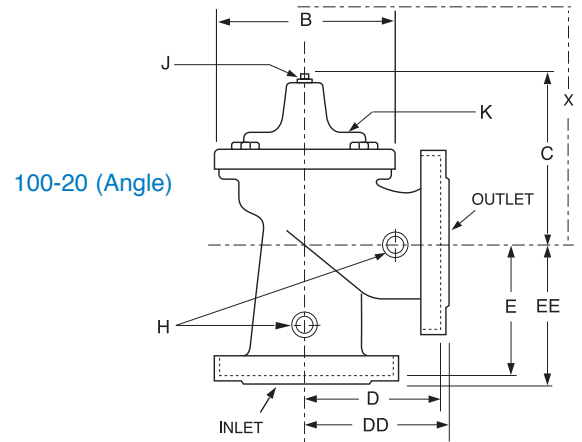
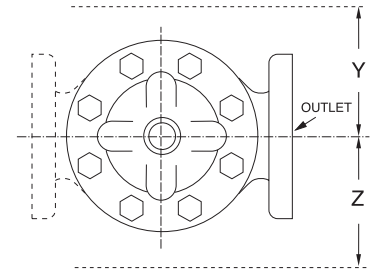
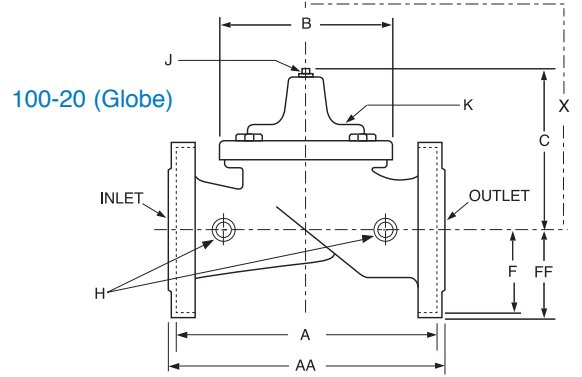
Component	Standard Material Combinations		
Body & Cover	Ductile Iron	Cast Steel	Bronze
Available Sizes	3" - 48"	3" - 16"	3" - 16"
Disc Retainer & Diaphragm Washer	Cast Iron	Cast Steel	Bronze
Trim: Disc Guide, Seat & Cover Bearing	Bronze is Standard Stainless Steel is Optional		
Disc	Buna-N® Rubber		
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.

**Model 650-01 Dimensions** (In Inches)

Valve Size (Inches)	3	4	6	8	10	12	14	16	18	20	24	30
<b>A</b> 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
<b>AA</b> 300 ANSI	11.00	14.50	18.62	22.38	27.38	31.50	—	36.62	43.63	49.62	49.75	—
<b>B</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
<b>C</b> 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
<b>D</b> 150 ANSI	—	6.94	8.88	10.69	—	—	—	—	—	—	—	—
<b>DD</b> 300 ANSI	—	7.25	9.38	11.19	—	—	—	—	—	—	—	—
<b>E</b> 150 ANSI	—	5.50	6.75	7.25	—	—	—	—	—	—	—	—
<b>EE</b> 300 ANSI	—	5.81	7.25	7.75	—	—	—	—	—	—	—	—
<b>F</b> 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
<b>FF</b> 300 ANSI	4.12	5.00	6.25	7.50	8.75	10.25	—	12.75	15.88	16.06	19.00	—
<b>H</b> NPT Body Tapping	3/8	1/2	3/4	3/4	1	1	1	1	1	1	1	1
<b>J</b> NPT Cover Center Plug	1/2	1/2	3/4	3/4	1	1	1 1/4	1 1/4	2	2	2	2
<b>K</b> 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	3.4	4.5	4.5	6.5
Approx. Ship Wt. Lbs.	45	85	195	330	625	900	1250	1380	1500	2551	2733	6500
<b>X</b> Pilot System	13.00	15.00	27.00	30.00	33.00	36.00	36.00	41.00	40.00	46.00	55.00	68.00
<b>Y</b> Pilot System	10.00	11.00	18.00	20.00	22.00	24.00	26.00	26.00	30.00	30.00	30.00	39.00
<b>Z</b> Pilot System	10.00	11.00	18.00	20.00	22.00	24.00	26.00	26.00	30.00	30.00	30.00	39.00

**Dimensions**  
(In inches)



Valve Selection		These Symbols  and  Indicate Available Sizes																						
		Inches	1 ¼	1 ½	2	2 ½	3	4	6	8	10	12	14	16	18	20	24	30	36					
		mm	32	40	50	65	80	100	150	200	250	300	350	400	450	500	600	750	900					
		End Detail	Threaded					Threaded & 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		50000				
		Max. Surge	120	280	470	670	1000	1800	4000	7000	11000	16000	19000	25000				56500		120000				
	Suggested Flow (Liters/Sec)	Max. Continuous	6	8	13	19	29	50	113	195	309	441	529	693				1575		3150				
		Max. Surge	13	18	30	42	63	113	252	441	693	1008	1197	1575				3560		7570				
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).

\*\*Flanged End Detail Only

**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 additional 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. Threaded or Flanged
6. Trim Material
7. Adjustment Range
8. Desired Options
9. When Vertically Installed



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