



— MODEL — **50-48**

# Pressure Relief & Back Pressure Control Valve



- **Rapid Opening to relieve excess pressure**
- **Modulates to maintain constant back pressure**
- **Slow, adjustable closing speed prevents system surges**
- **Optional check feature to prevent reverse flow**

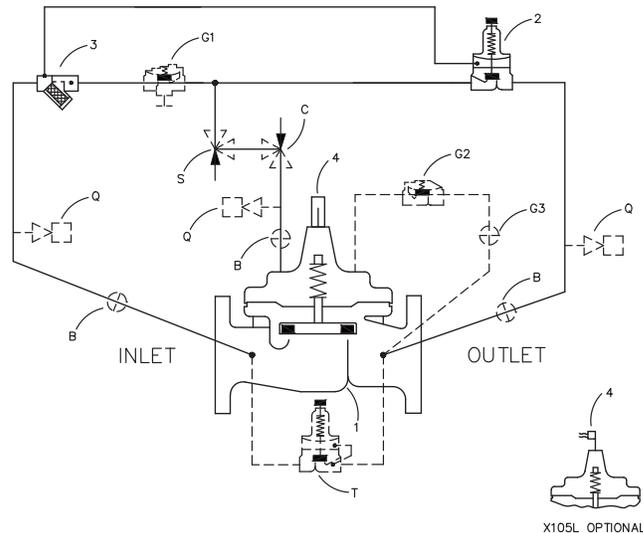
The Cla-Val Model 50-48 Pressure Relief & Back Pressure Valve is a hydraulically operated, pilot-controlled, modulating valve designed to maintain constant upstream pressure within close limits. This valve can be used for pressure relief, pressure sustaining, back pressure, or unloading functions in a by-pass system. In relief applications, the valve opens fast to prevent upstream pressure from exceeding the maximum pressure setting while closing gradually to prevent a surge in the system. In back pressure control applications, the valve modulates to maintain constant upstream pressure, regardless of changes in demand, preventing the upstream pressure from falling below the minimum pressure setting. Operation is completely automatic and pressure setting is easily adjusted. 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	100-34 Hytrol 100-37 Hytrol
2	CRL Pressure Relief Control
3	X44A Strainer & Orifice
4	X101 Valve Position Indicator X105L Switch Assembly

## Optional Features

Item	Description
B	CK2 Isolation Valve
C	CV Flow Control (Closing)
G	81-01 Check Valve With Cock
Q	Quick Connect Assembly
S	CV Flow Control (Opening)
T	55F Thermal Relief Control



X105L OPTIONAL

## Specifications

### Sizes

Globe: 1 1/2" - 16" flanged  
Angle: 2" - 16" flanged

### End Details

Flanged:  
Cast Aluminum, 150 ANSI B16.1  
Cast Bronze, 150 & 300 ANSI B16.24  
Ductile Iron, 150 & 300 ANSI B16.42  
Cast Steel, 150 & 300 ANSI B16.5

### Temperature Range

Light Petroleum Product -40° to +140°F

### Pressure Ratings

150 class 175-PSI Max.  
150 class 275-PSI Max.  
250 class 300-PSI Max.  
300 class 400-PSI Max.

### Material

Body & cover:  
Cast Aluminum 356-T6  
Cast Bronze ASTM B62  
Ductile Iron ASTM A-536  
Cast Stainless Steel 303  
Cast Steel ASTM A216-WCB

### Valve trim:

Bronze ASTM B61  
Stainless Steel 303

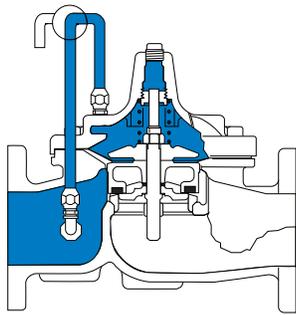
### Rubber parts:

Buna-N® Synthetic Rubber  
Viton

### Other Materials

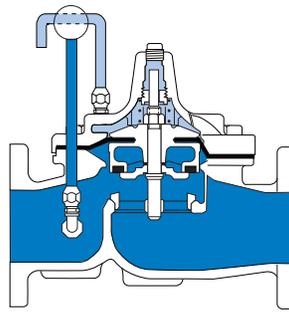
Available on Special Order

## Principle of Operation



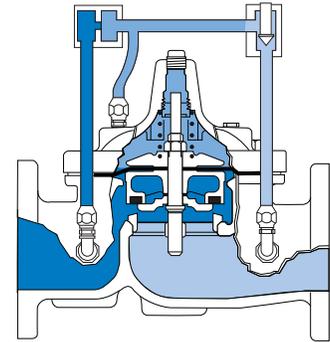
### Tight Closing Operation

When pressure from the valve inlet (or an equivalent independent operating pressure) is applied to the diaphragm chamber, the valve closes drip-tight.



### Full Open Operation

When pressure in the diaphragm chamber is relieved to zone of lower pressure under the valve, flow in either direction is permitted.



### Modulating Action

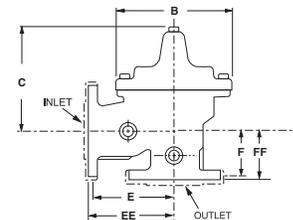
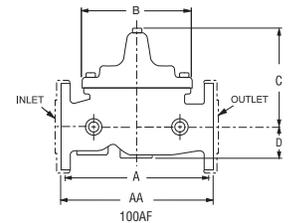
The valve modulates when diaphragm chamber pressure is held at an intermediate point between inlet and discharge pressure changes, the pressure above the diaphragm is varied allowing the valve to modulate and compensate for the changes.

SIZE	1 1/2	2	2 1/2	3	4	6	8	10	12	14	16
A 125 & 150 ANSI	8.50	9.38	11.00	12.00	15.00	20.00	25.38	29.75	34.00	39.00	41.38
AA 250 & 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 DIAMETER	5.62	6.62	8.00	9.12	11.50	15.75	20.00	23.62	28.00	32.75	35.50
C MAX.	5.50	6.50	7.56	8.19	10.62	13.38	16.00	17.12	20.88	24.19	25.00
D	1.12	1.50	1.69	2.06	3.19	4.31	5.31	9.25	10.75	12.62	15.50
E 125 & 150 ANSI		4.75	5.00	6.00	7.50	10.00	12.75	14.88	17.00	19.50	20.81
EE 250 & 150 ANSI		5.00	5.88	6.38	7.88	10.50	13.25	15.56	17.75	20.25	21.62
F 125 & 150 ANSI		3.25	4.00	4.00	5.00	6.00	8.00	8.62	13.75	14.88	15.69
FF 250 & 300 ANSI		3.50	4.31	4.38	5.31	6.50	8.50	9.31	14.50	15.62	16.50

### Cv Factor

VALVE SIZE	1 1/2	2	2 1/2	3	4	6	8	10	12
100-34 GLOBE PATTERN	26	49	80	107	200	440	771	1151	1600
100-34 ANGLE PATTERN	30	62	100	137					

Cv factor is defined as the number of gallons per minute of water at 60°F that will flow with a 1 psi pressure differential across the valve.



## Purchase Specifications

### Pilot Control System

The 50-48 Pressure Relief & Back Pressure Control Valve shall maintain constant upstream pressure by by-passing or relieving excess pressure and shall maintain close pressure limits without causing surges. The pilot system shall consist of a direct-acting, adjustable, spring-loaded, diaphragm valve designed to permit flow when controlling pressure exceeds the adjustable spring setting. The pilot control is normally held closed by the force of the compression on the spring above the diaphragm and it opens when the pressure acting on the underside of the diaphragm exceeds the spring setting. Pilot control sensing shall be upstream of the pilot system strainer so accurate control may be maintained if the strainer is partially blocked. Optional pilot system features shall include (A) Flow Clean Strainer, (B) CK2 Isolation Ball Valves, (C) CV Closing Speed Control, (G) Check Feature, (Q) Quick Connect Assembly, (S) CV Opening Speed Control, (T) 55F Thermal Pressure Relief Control, (Y) X43 "Y" Strainer.

### Main Valve

The valve shall be hydraulically operated, single diaphragm-actuated, globe or angle pattern. It shall contain a resilient, synthetic disc with a rectangular cross-section contained on three and one-half sides by a disc retainer and forming a tight seal against a single removable seat insert. The diaphragm assembly shall be the only moving part and shall form a sealed chamber in the upper portion of the valve, separating operating pressure from line pressure. The diaphragm consists of nylon fabric bonded with synthetic rubber and shall not be used as the seating surface. The valve stem shall be fully guided at both ends by a bearing in the valve cover and an integral bearing in the valve seat. To insure proper alignment of the valve stem, the valve body and cover shall be machined with a locating lip. No "pinned" covers to the valve body shall be permitted. Packing glands and/or stuffing boxes are not permitted and there shall be no pistons operating the main valve or pilot controls. All necessary repairs and/or modifications other than replacement of the main valve body shall be possible without removing the valve from the pipeline. The valve manufacturer shall warrant the valve to be free of defects in material and workmanship for a period of three years from date of shipment, provided the valve is installed and used in accordance with all applicable instructions.



E-50-48 (R-01/2019)

## CLA-VAL

1701 Placentia Ave. Costa Mesa, CA 92627  
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 des Mesanges 1  
CH-1032 Romanel/  
Lausanne, Switzerland  
Phone: 41-21-643-15-55  
Fax: 41-21-643-15-50

©COPYRIGHT CLA-VAL 2019 Printed in USA  
Specifications subject to change without notice.

www.cla-val.com

## Specify When Ordering

1. Size
2. Model 50-48 Globe or Angle
3. Pressure Class
4. Temperature and fluid to be handled
5. Static and flowing line pressure
6. Operating fluid and pressure (if other than line pressure)
7. Body and trim materials
8. End details