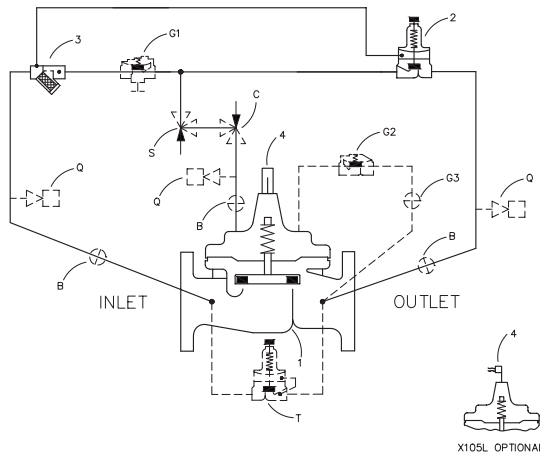




Model 50-48

PRESSURE RELIEF & BACK PRESSURE CONTROL VALVE

ENGINEERING DATA SHEET



- 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	X101D 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

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°F 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

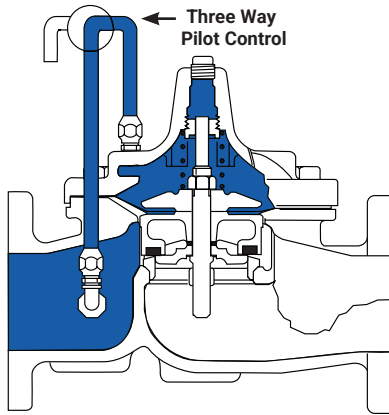
Other Materials

Available on Special Order

When Ordering, Please Specify

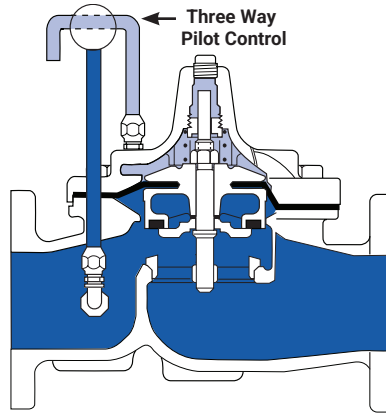
- Size
- Model 50-48 Globe or Angle
- Pressure Class
- Temperature and fluid to be handled
- Static and flowing line pressure
- Operating fluid and pressure (if other than line pressure)
- Body and trim materials
- End details

Principle of Operation



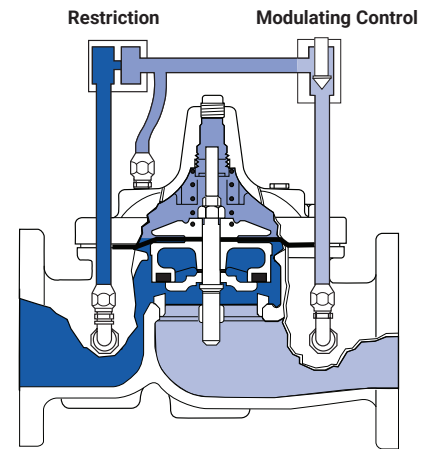
Tight Closing Operation

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 diaphragm chamber is relieved to a zone of lower pressure (usually atmosphere) the line pressure (5 psi Min.) at the valve inlet opens the valve.

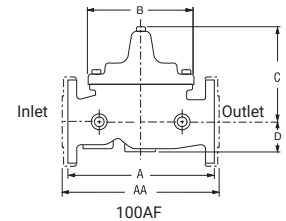


Modulating Action

Valve modulates when diaphragm pressure is held at an intermediate point between inlet and discharge pressure. With the use of a Cla-Val. "Modulating control," which reacts to line pressure changes, the pressure above the diaphragm is varied, allowing the valve to throttle and compensate for the change.

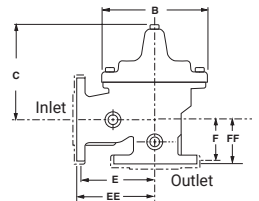
Dimensions

Valve Size (Inches)	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 (Inches)	1 1/2"	2"	2 1/2"	3"	4"	6"	8"	10"	12"	14"	16"
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 ensure 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.