



MODEL 690-48

Reduced Port Pressure Reducing Valve with Low Flow By-Pass



- **Modulating Control**
- **Maintains Constant Outlet Pressure Over a Wide Range of Flows**
- **Durable Construction**
- **Convenient and Space Saving**

The Cla-Val Model 690-48 Reduced Port Pressure Reducing Valve with Low Flow By-Pass automatically reduces a higher inlet pressure to a steady lower downstream pressure, regardless of changing flow rate. The low flow by-pass capability is achieved by using the Cla-Val Model CRD-L Direct Acting Pressure Reducing Valve as an integral part of the main valve. By doing this, space is saved and installation and maintenance become much easier.

The pressure reducing valve is hydraulically operated and controlled by a Cla-Val CRD pilot control, which senses pressure at the main valve outlet. An increase in outlet pressure forces the CRD pilot control to close and a decrease in outlet pressure opens the control. This causes the main valve cover pressure to vary, modulating the main valve, thereby, maintaining constant outlet pressure.

The Model CRD-L low flow pressure reducing by-pass is set to a higher pressure than the CRD pilot control. The CRD-L responds to pressure changes at the main valve outlet. When the CRD closes, the Model CRD-L remains open, allowing low flow to by-pass the main valve. The CRD-L closes when the flow decreases and the downstream pressure reaches its set-point .

The bypass size on this valve is limited by the body tapping size on the main valve. Consequently, in applications where higher flows for the low flow bypass may be required, such as building applications for off peak flows, a larger, separate bypass may be required. Refer to Cla-Val Model 90-99 as an option.

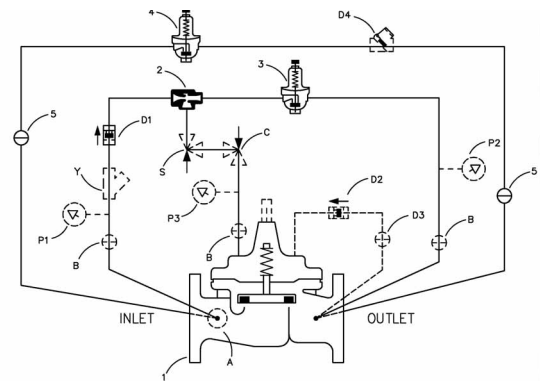
Schematic Diagram

| Item | Description |
|------|-------------------------------|
| 1 | 100-20 Hytrol Main Valve |
| 2 | X47A Ejector |
| 3 | CRD Pressure Reducing Control |
| 4 | CRD-L Pressure Reducing Valve |
| 5 | CK2 Isolation Valve |

Optional Features

| Item | Description |
|------|-----------------------------------|
| A | X46A Flow Clean Strainer |
| B | CK2 Isolation Valve |
| C | CV Flow Control (Closing)* |
| D | Check Valves with Isolation Valve |
| P | X141 Pressure Gauge |
| S | CV Speed Control (Opening)* |
| V | X101 Valve Position Indicator |
| Y | X43 "Y" Strainer |

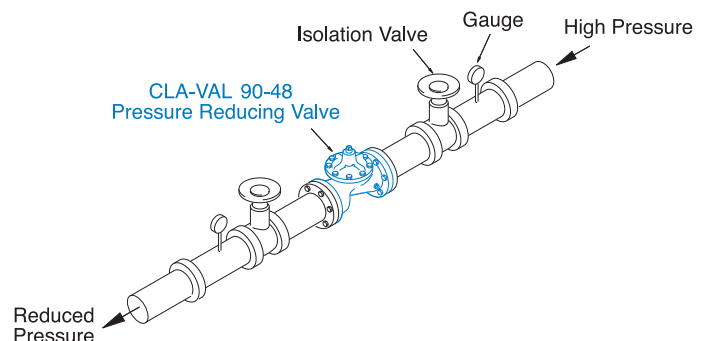
*The optional closing speed control on this valve should always be open at least three (3) turns off its seat.



Typical Applications

This valve has the flexibility to be installed in a distribution system where the demand varies over a wide range. This frequently occurs in industrial, residential, educational, high-rise buildings and other applications.

Another important feature of the valve is its space efficient configuration, allowing easy installation and maintenance. A downstream pressure relief valve is also recommended for this type of application.

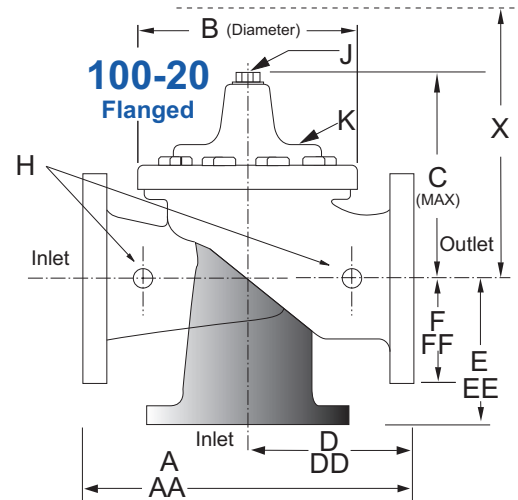


Model 690-48 (Uses 100-20 Hytrol Main Valve)

Pressure Ratings (Recommended Maximum Pressure - psi)

| Valve Body & Cover | | Pressure Class | | | | |
|--------------------|-----------------|-----------------|-----------|-----------|-----------|--------------|
| | | Flanged | | | Grooved | Threaded |
| Grade | Material | ANSI Standards* | 150 Class | 300 Class | 300 Class | End‡ Details |
| ASTM A536 | Ductile Iron | B16.42 | 250 | 400 | 400 | 400 |
| ASTM A216-WCB | Cast Steel | B16.5 | 285 | 400 | 400 | 400 |
| UNS 87850 | Low Lead Bronze | B16.24 | 225 | 400 | 400 | 400 |

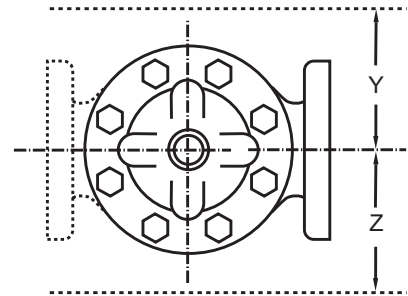
Note: * ANSI standards are for flange dimensions only.
 Flanged valves are available faced but not drilled.
 ‡ End Details machined to ANSI B2.1 specifications.
Valves for higher pressure are available; consult factory for details



Materials

| Component | Standard Material Combinations | | |
|--|---|------------------------|------------------------|
| Body & Cover | Ductile Iron | Cast Steel | Low Lead Bronze |
| Available Sizes | 3" -10" 80 - 250 mm | 3" -10" 80 - 250 mm | 3" -10" 80 - 250 mm |
| 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.

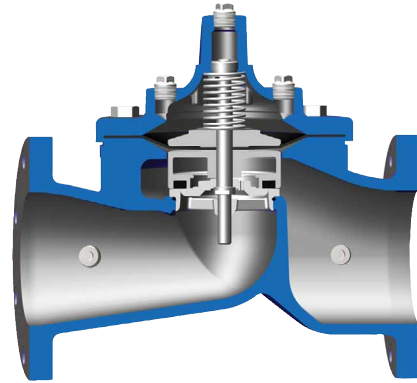
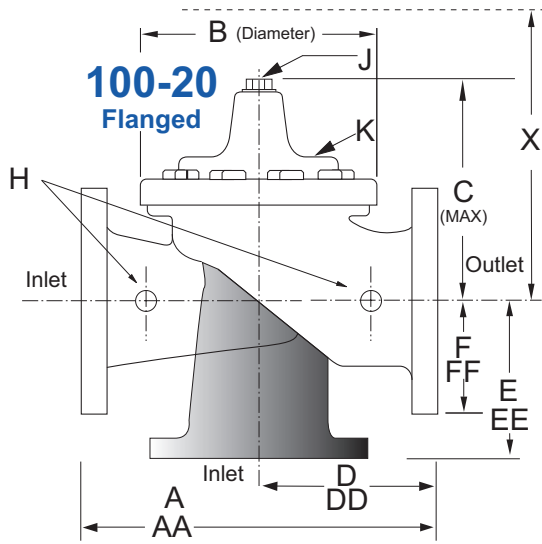


Model 690-48 Dimensions (In Inches) - For larger sizes, consult Factory

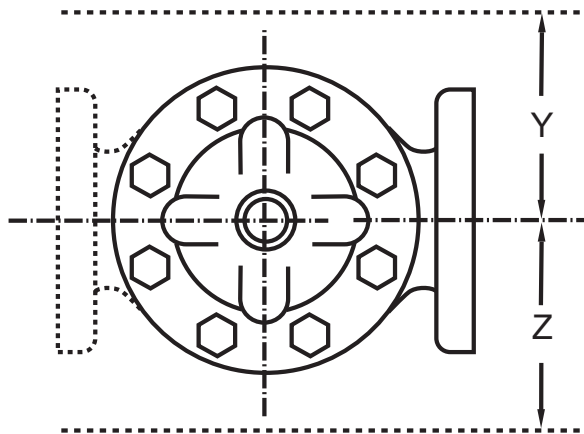
| Valve Size (Inches) | 3 | 4 | 6 | 8 | 10 |
|---------------------------|-------|-------|-------|-------|-------|
| A 150 ANSI | 10.25 | 13.88 | 17.75 | 21.38 | 26.00 |
| AA 300 ANSI | 11.00 | 14.50 | 18.62 | 22.38 | 27.38 |
| B Diameter | 6.62 | 9.12 | 11.50 | 15.75 | 20.00 |
| C Maximum | 7.00 | 8.62 | 11.62 | 15.00 | 17.88 |
| D 150 ANSI | — | 6.94 | 8.88 | 10.69 | 12.75 |
| DD 300 ANSI | — | 7.25 | 9.38 | 11.19 | — |
| E 150 ANSI | — | 5.50 | 6.75 | 7.25 | 8.06 |
| EE 300 ANSI | — | 5.81 | 7.25 | 7.75 | — |
| F 150 ANSI | 3.75 | 4.50 | 5.50 | 6.75 | 8.00 |
| FF 300 ANSI | 4.12 | 5.00 | 6.25 | 7.50 | 8.75 |
| H NPT Body Tapping | 0.375 | 0.50 | 0.75 | 0.75 | 1.00 |
| J NPT Cover Center Plug | 0.50 | 0.50 | 0.75 | 0.75 | 1.00 |
| K NPT Cover Tapping | 0.375 | 0.50 | 0.75 | 0.75 | 1.00 |
| Stem Travel | 0.60 | 0.80 | 1.10 | 1.70 | 2.30 |
| Approx. Ship Weight (lbs) | 45 | 85 | 195 | 330 | 625 |
| Approx. X Pilot System | 13 | 15 | 27 | 30 | 33 |
| Approx. Y Pilot System | 10 | 11 | 18 | 20 | 22 |
| Approx. Z Pilot System | 10 | 11 | 18 | 20 | 22 |

See Cla-Val Model # 90-48 for applications requiring a full port valve.

Model 690-48 Metric Dimensions (Uses 100-20 Hytrol Main Valve)



Model 100-20 Reduced Port Hytrol Main Valve



Model 690-48 Metric Dimensions (in mm) - For larger sizes, consult Factory

| Valve Size (mm) | 80 | 100 | 150 | 200 | 250 |
|---------------------------|-------|------|------|------|------|
| A 150 ANSI | 260 | 353 | 451 | 543 | 660 |
| AA 300 ANSI | 279 | 368 | 473 | 568 | 695 |
| B Diameter | 168 | 232 | 292 | 400 | 508 |
| C Maximum | 178 | 219 | 295 | 381 | 454 |
| D 150 ANSI | — | 176 | 226 | 272 | 324 |
| DD 300 ANSI | — | 184 | 238 | 284 | — |
| E 150 ANSI | — | 140 | 171 | 184 | 205 |
| EE 300 ANSI | — | 148 | 184 | 197 | — |
| F 150 ANSI | 95 | 114 | 140 | 171 | 203 |
| FF 300 ANSI | 105 | 127 | 159 | 191 | 222 |
| H NPT Body Tapping | 0.375 | 0.50 | 0.75 | 0.75 | 1.00 |
| J NPT Cover Center Plug | 0.50 | 0.50 | 0.75 | 0.75 | 1.00 |
| K NPT Cover Tapping | 0.375 | 0.50 | 0.75 | 0.75 | 1.00 |
| Stem Travel | 15 | 20 | 28 | 43 | 58 |
| Approx. Ship Weight (kgs) | 20 | 39 | 89 | 150 | 284 |
| Approx. X Pilot System | 331 | 381 | 686 | 762 | 839 |
| Approx. Y Pilot System | 254 | 280 | 458 | 508 | 559 |
| Approx. Z Pilot System | 254 | 280 | 458 | 508 | 559 |

Valve Selection Guide

| 690-48 Valve Selection | 100-20 Pattern: Globe (G), Angle (A), End Connections: Flanged (F) Indicate Available Sizes | | | | | |
|-----------------------------------|---|-----|------|------|------|------|
| | Inches | 3 | 4 | 6 | 8 | 10 |
| | mm | 80 | 100 | 150 | 200 | 250 |
| Main Valve 100-20 | Pattern | G | G, A | G, A | G, A | G |
| | End Detail | F | F | F | F | F |
| Suggested Flow (gpm) | Maximum | 260 | 580 | 1025 | 2300 | 4100 |
| | Minimum | 1 | 1 | 1 | 1 | 1 |
| Suggested Flow (Liters/Sec) | Maximum | 16 | 37 | 65 | 145 | 258 |
| | Minimum | .06 | .06 | .06 | .06 | .06 |

100-20 Series is the reduced internal port size version of the 100-01 Series. For Lower Flows Consult Factory

100-20 Pattern: Globe (G), Angle (A), **End Connections:** Threaded (T), Grooved (GR), Flanged (F) Indicate Available Sizes
100-20 Series is the reduced internal port Hytrol. For Lower Flows Consult Factory

*Globe Grooved Only

Pilot System Specifications



Adjustment Ranges CRD

2 to 30 psi
 15 to 75 psi
 20 to 105 psi
 30 to 300 psi*

CRD-L (Bypass)

15 to 65 psi
 25 to 100 psi
 80 to 150 psi

*Supplied unless otherwise specified
 Other ranges available, please consult factory.

Temperature Range

Water: to 180° F/ 82° C

Consult factory for hot water applications.

Materials

Standard Pilot System Materials

Pilot Control: Low Lead Bronze
 Trim: Stainless Steel Type 303
 Rubber: Buna-N® Synthetic Rubber

Optional Pilot System Materials

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

See Cla-Val Model # 690-48 for applications requiring a reduced port valve.

When Ordering, Specify:

1. Catalog No. 690-48
2. Valve Size
3. Pattern - Globe or Angle
4. Pressure Class
5. Threaded, Flanged or Grooved
6. Trim Material
7. Adjustment Range
8. Desired Options
9. When Vertically Installed

Valve Options

X141 Pressure Gauge



X101AR Valve Position Indicator with Air Release



X101 Valve Position Indicator



X144 e-FlowMeter



X43H Strainer



Stainless Steel Pilot