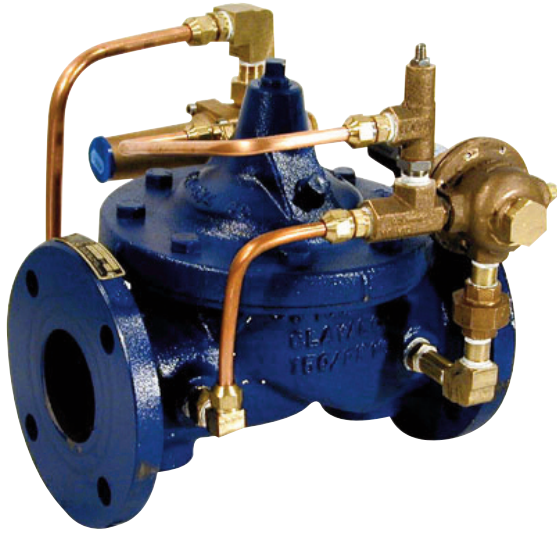




— MODEL — **90-72**

# 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 90-72 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 Cla-Val Model CRD-L in the low flow pressure reducing bypass is set to a higher pressure than the CRD pilot control. The 990 responds to pressure changes at the main valve outlet. When the CRD closes, the 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 Cla-Val Model 90-72 is not a substitute for a low flow bypass valve in all cases. This valve is commonly used in buildings where 1-15 gpm low flows are common in off peak usage. The bypass on this valve is limited to the body tapping size on the main valve.

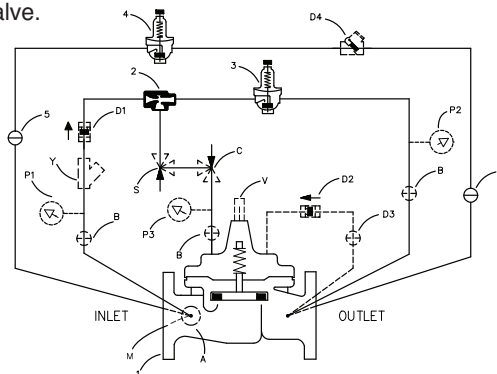
## Schematic Diagram

| Item | Description                   |
|------|-------------------------------|
| 1    | 100-01 Hytrol Main Valve      |
| 2    | X47A Ejector                  |
| 3    | CRD Pressure Reducing Control |
| 4    | CRD-L Pressure Reducing Valve |
| 5    | CK2 Isolation Valve           |

## Optional Features

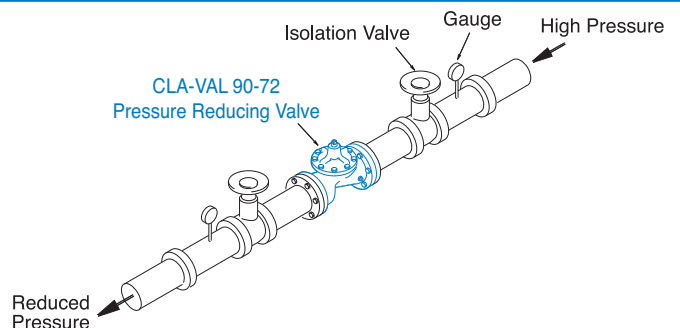
| Item | Description                       |
|------|-----------------------------------|
| A    | X46A Flow Clean Strainer          |
| B    | CK2 Isolation Valve               |
| C    | CV Flow Control (Closing)*        |
| D    | Check Valves with Isolation Valve |
| M    | X144 e-FlowMeter                  |
| 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.



## Model 90-72 (Uses 100-01 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          | 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**

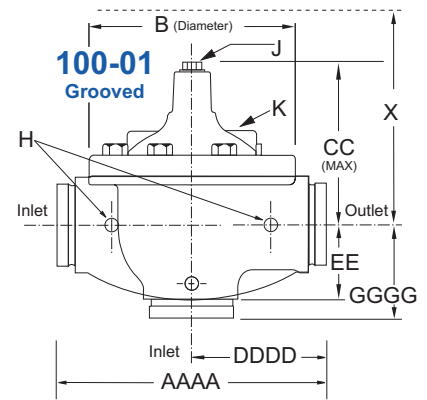
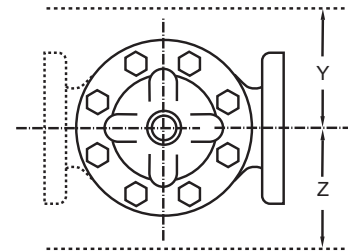
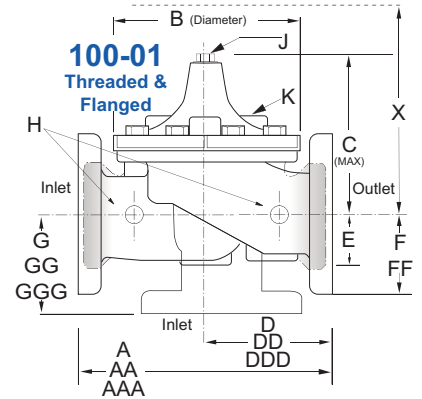
### Materials

| Component                              | Standard Material Combinations                    |             |             |
|--|---|-------------|-------------|
| Body & Cover                           | Ductile Iron                                      | Cast Steel  | Bronze      |
| Available Sizes (inches)               | 1" - 8"   | 1" - 8"     | 1" - 8"     |
| Available Sizes (mm)                   | 25 - 200 mm                                       | 25 - 200 mm | 25 - 200 mm |
| Disc Retainer & Diaphragm Washer       | Cast Iron   | Cast Steel  | Bronze      |
| Trim: Disc Guide, Seat & Cover Bearing | Bronze is Standard<br>Stainless Steel is Optional |             |             |
| Disc                                   | Buna-N® Rubber                                    |             |             |
| Diaphragm                              | Nylon Reinforced Buna-N® Rubber                   |             |             |
| Stem, Nut & Spring                     | Stainless Steel                                   |             |             |

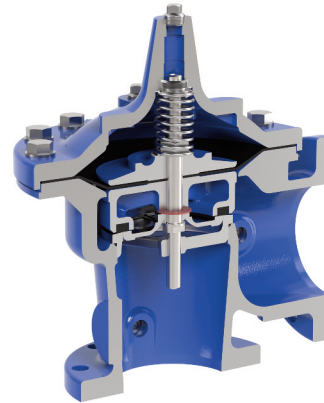
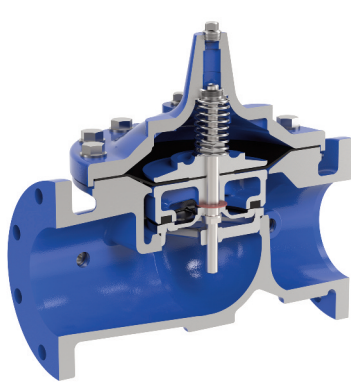
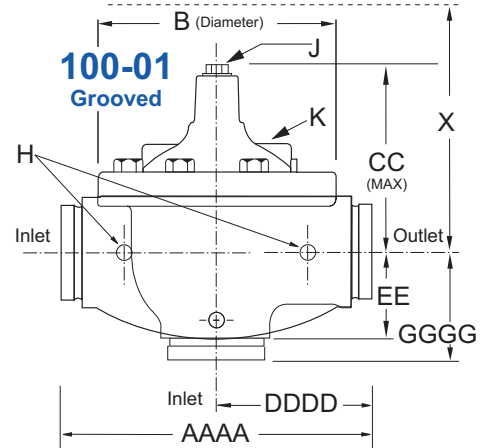
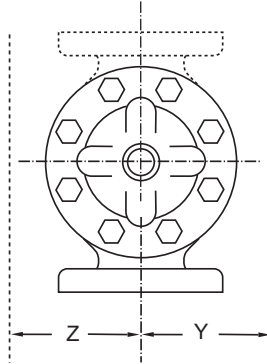
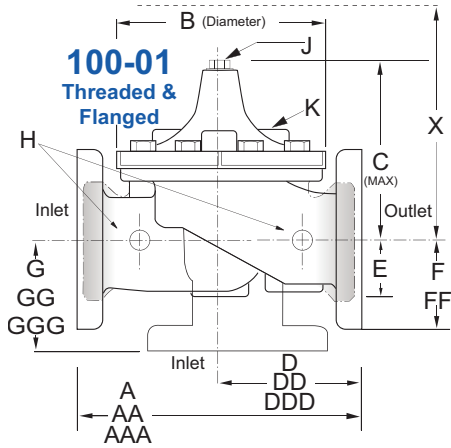
For material options not listed, consult factory.  
 Cla-Val manufactures valves in more than 50 different alloys.

### Model 90-72 Dimensions (In Inches) - For larger sizes, consult Factory

| Valve Size (Inches)       | 1     | 1 ¼   | 1 ½   | 2     | 2 ½   | 3     | 4     | 6     | 8     |
|---------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| A Threaded                | 7.25  | 7.25  | 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 |
| AAA 300 ANSI              | —     | —     | 9.00  | 10.00 | 11.62 | 13.25 | 15.62 | 21.00 | 26.38 |
| AAAA Grooved End          | —     | —     | 8.50  | 9.00  | 11.00 | 12.50 | 15.00 | 20.00 | 25.38 |
| B Diameter                | 5.62  | 5.62  | 5.62  | 6.62  | 8.00  | 9.12  | 11.50 | 15.75 | 20.00 |
| C Maximum                 | 5.50  | 5.50  | 5.50  | 6.50  | 7.56  | 8.19  | 10.62 | 13.38 | 16.00 |
| CC Maximum Grooved End    | —     | —     | 4.75  | 5.75  | 6.88  | 7.25  | 9.31  | 12.12 | 14.62 |
| D Threaded                | 3.25  | 3.25  | 3.25  | 4.75  | 5.50  | 6.25  | —     | —     | —     |
| DD 150 ANSI               | —     | —     | 4.00  | 4.75  | 5.50  | 6.00  | 7.50  | 10.00 | 12.69 |
| DDD 300 ANSI              | —     | —     | 4.25  | 5.00  | 5.88  | 6.38  | 7.88  | 10.50 | 13.25 |
| DDDD Grooved End          | —     | —     | —     | 4.75  | —     | 6.00  | 7.50  | —     | —     |
| E                         | 1.12  | 1.12  | 1.12  | 1.50  | 1.69  | 2.06  | 3.19  | 4.31  | 5.31  |
| EE Grooved End            | —     | —     | 2.00  | 2.50  | 2.88  | 3.12  | 4.25  | 6.00  | 7.56  |
| F 150 ANSI                | —     | —     | 2.50  | 3.00  | 3.50  | 3.75  | 4.50  | 5.50  | 6.75  |
| FF 300 ANSI               | —     | —     | 3.06  | 3.25  | 3.75  | 4.13  | 5.00  | 6.25  | 7.50  |
| G Threaded                | 1.88  | 1.88  | 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  |
| GGG 300 ANSI              | —     | —     | 4.25  | 3.50  | 4.31  | 4.38  | 5.31  | 6.50  | 8.50  |
| GGGG Grooved End          | —     | —     | —     | 3.25  | —     | 4.25  | 5.00  | —     | —     |
| H NPT Body Tapping        | 0.375 | 0.375 | 0.375 | 0.375 | 0.50  | 0.50  | 0.75  | 0.75  | 1.00  |
| J NPT Cover Center Plug   | 0.25  | 0.25  | 0.25  | 0.50  | 0.50  | 0.50  | 0.75  | 0.75  | 1.00  |
| K NPT Cover Tapping       | 0.375 | 0.375 | 0.375 | 0.375 | 0.50  | 0.50  | 0.75  | 0.75  | 1.00  |
| Stem Travel               | 0.40  | 0.40  | 0.40  | 0.60  | 0.70  | 0.80  | 1.10  | 1.70  | 2.30  |
| Approx. Ship Weight (lbs) | 15    | 15    | 15    | 35    | 50    | 70    | 140   | 285   | 500   |
| Approx. X Pilot System    | 11    | 11    | 11    | 13    | 14    | 15    | 17    | 29    | 31    |
| Approx. Y Pilot System    | 9     | 9     | 9     | 9     | 10    | 11    | 12    | 20    | 22    |
| Approx. Z Pilot System    | 9     | 9     | 9     | 9     | 10    | 11    | 12    | 20    | 22    |



## Model 90-72 Metric Dimensions (Uses Main Valve Model 100-01)



## Model 90-72 Dimensions (In mm)

| Valve Size (mm)           | 25    | 32    | 40    | 50    | 65   | 80   | 100  | 150  | 200  |
|---------------------------|-------|-------|-------|-------|------|------|------|------|------|
| A Threaded                | 184   | 184   | 184   | 238   | 279  | 318  | —    | —    | —    |
| AA 150 ANSI               | —     | —     | 216   | 238   | 279  | 305  | 381  | 508  | 645  |
| AAA 300 ANSI              | —     | —     | 229   | 254   | 295  | 337  | 397  | 533  | 670  |
| AAAA Grooved End          | —     | —     | 216   | 228   | 279  | 318  | 381  | 508  | 645  |
| B Diameter                | 143   | 143   | 143   | 168   | 203  | 232  | 292  | 400  | 508  |
| C Maximum                 | 140   | 140   | 140   | 165   | 192  | 208  | 270  | 340  | 406  |
| CC Maximum Grooved End    | —     | —     | 120   | 146   | 175  | 184  | 236  | 308  | 371  |
| D Threaded                | 83    | 83    | 83    | 121   | 140  | 159  | —    | —    | —    |
| DD 150 ANSI               | —     | —     | 102   | 121   | 140  | 152  | 191  | 254  | 322  |
| DDD 300 ANSI              | —     | —     | 108   | 127   | 149  | 162  | 200  | 267  | 337  |
| DDDD Grooved End          | —     | —     | —     | 121   | —    | 152  | 191  | —    | —    |
| E                         | 29    | 29    | 29    | 38    | 43   | 52   | 81   | 110  | 135  |
| EE Grooved End            | —     | —     | 52    | 64    | 73   | 79   | 108  | 152  | 192  |
| F 150 ANSI                | —     | —     | 64    | 76    | 89   | 95   | 114  | 140  | 171  |
| FF 300 ANSI               | —     | —     | 78    | 83    | 95   | 105  | 127  | 159  | 191  |
| G Threaded                | 48    | 48    | 48    | 83    | 102  | 114  | —    | —    | —    |
| GG 150 ANSI               | —     | —     | 102   | 83    | 102  | 102  | 127  | 152  | 203  |
| GGG 300 ANSI              | —     | —     | 102   | 89    | 110  | 111  | 135  | 165  | 216  |
| GGGG Grooved End          | —     | —     | —     | 83    | —    | 108  | 127  | —    | —    |
| H NPT Body Tapping        | 0.375 | 0.375 | 0.375 | 0.375 | 0.50 | 0.50 | 0.75 | 0.75 | 1.00 |
| J NPT Cover Center Plug   | 0.25  | 0.25  | 0.25  | 0.50  | 0.50 | 0.50 | 0.75 | 0.75 | 1.00 |
| K NPT Cover Tapping       | 0.375 | 0.375 | 0.375 | 0.375 | 0.50 | 0.50 | 0.75 | 0.75 | 1.00 |
| Stem Travel               | 10    | 10    | 10    | 15    | 18   | 20   | 28   | 43   | 58   |
| Approx. Ship Weight (kgs) | 7     | 7     | 7     | 16    | 23   | 32   | 64   | 129  | 227  |
| Approx. X Pilot System    | 280   | 280   | 280   | 331   | 356  | 381  | 432  | 737  | 788  |
| Approx. Y Pilot System    | 229   | 229   | 229   | 229   | 254  | 280  | 305  | 508  | 559  |
| Approx. Z Pilot System    | 229   | 229   | 229   | 229   | 254  | 280  | 305  | 508  | 559  |

|                                 |                      |      |      |              |             |              |             |          |           |           |
|---------------------------------|----------------------|------|------|--------------|-------------|--------------|-------------|----------|-----------|-----------|
| <b>90-72</b><br>Valve Selection | Inches               | 1    | 1¼   | 1½           | 2           | 2½           | 3           | 4        | 6         | 8         |
|                                 | mm                   | 25   | 32   | 40           | 50          | 65           | 80          | 100      | 150       | 200       |
| Main Valve<br>100-01            | Pattern              | G, A | G, A | G, A         | G, A        | G, A         | G, A        | G, A     | G, A      | G, A      |
|                                 | End Detail           | T    | T    | T, F,<br>Gr* | T, F,<br>Gr | T, F,<br>Gr* | T, F,<br>Gr | F,<br>Gr | F,<br>Gr* | F,<br>Gr* |
| Suggested Flow<br>(gpm)         | Maximum              | 55   | 93   | 125          | 210         | 300          | 460         | 800      | 1800      | 3100      |
|                                 | Maximum Intermittent | 68   | 120  | 160          | 260         | 370          | 580         | 990      | 2250      | 3900      |
|                                 | Minimum              | 1    | 1    | 1            | 1           | 1            | 1           | 1        | 1         | 1         |
| Suggested Flow<br>(Liters/Sec)  | Maximum              | 3.5  | 6    | 8            | 13          | 19           | 29          | 50       | 113       | 195       |
|                                 | Maximum Intermittent | 4.3  | 7.6  | 10           | 16          | 23           | 37          | 62       | 142       | 246       |
|                                 | Minimum              | .03  | .03  | .03          | .06         | .06          | .06         | .06      | .06       | 0.95      |

**100-01 Pattern:** Globe (G), Angle (A), **End Connections:** Threaded (T), Grooved (GR), Flanged (F) Indicate Available Sizes

100-01 Series is the full internal port Hytrol.

**For Lower Flows Consult Factory**

\*Globe Grooved Only

## CRD Pilot System Specifications



### Adjustment Ranges

2 to 30 psi  
15 to 75 psi  
20 to 105 psi  
30 to 300 psi\*  
150 to 600 psi (CRD-18)

\*Supplied unless otherwise specified

**Temperature Range**  
Water: to 180°F

### 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 Stainless Steel or Monel materials.

Note: Available with remote sensing control.

## CRD-L Valve Size and Spring Adjustment Range and Specifications



| 1/2", 3/4" and 1" | 1-1/4" and 1-1/2" | 2"     | 2-1/2" |
|-------------------|-------------------|--------|--------|
| 15-65             | 5-60              | 18-50  | 18-70  |
| 25-100            | 25-100            | 30-95  | 50-95  |
| 80-150            | 75-160            | 75-200 | 75-200 |
| 125-250           | --                | --     | --     |

### When Ordering, Please Specify

1. Catalog No. 90-72
2. Valve Size
3. Pattern - Globe or Angle
4. Pressure Class
5. Threaded or Flanged
6. Trim Material
7. Adjustment Ranges
8. Desired Options
9. When Vertically Installed
10. Product Enhancements

### Temperature Range

Water: to 140°F (70°C) Max

**Diaphragm:** Buna-N®

**Disc:** EPDM

**Strainer:** Inline Mesh

### Materials

Body and Cover: Low Lead Bronze CuZn21Si3P

### Pressure Ratings

Max. Inlet Pressure: 400 psi (25 Bar)

Max. Differential Pressure: 150 psi (10 Bar)

Min. Differential Pressure: 14.5 psi



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