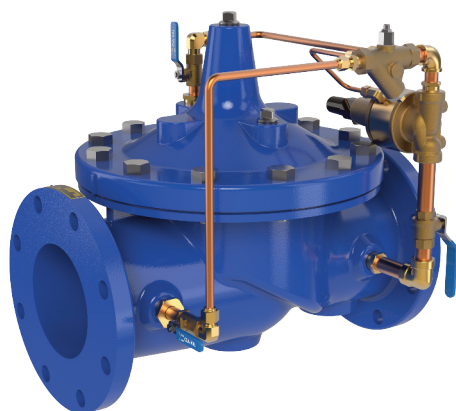




# MODEL 50-01

## Pressure Relief & Pressure Sustaining Valve



### Schematic Diagram

#### Item Description

- |   |                                |
|---|--------------------------------|
| 1 | 100-01 Hytrol Main Valve       |
| 2 | X42N-2 Strainer & Needle Valve |
| 3 | CRL-60 Pressure Relief Control |

### Optional Features

#### Item Description

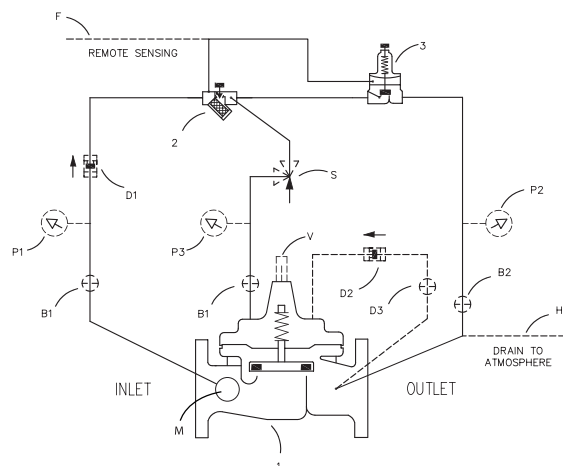
- |   |                                   |
|---|-----------------------------------|
| B | CK2 Isolation Valve               |
| D | Check Valves with Isolation Valve |
| F | Remote Pilot Sensing              |
| H | Drain to Atmosphere               |
| M | X144 e-FlowMeter                  |
| P | X141 Pressure Gauge               |
| S | CV Speed Control (Opening)        |
| V | X101 Valve Position Indicator     |



- 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 Pressure Relief 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. This valve can be used for pressure relief, pressure sustaining, back pressure, or unloading functions in a bypass system.

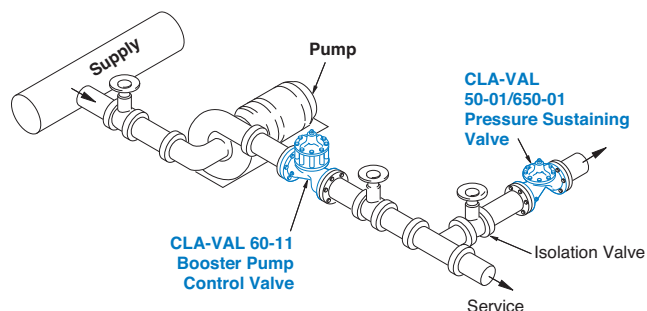
If a check feature is added, and a pressure reversal occurs, the downstream pressure is admitted into the main valve cover chamber, closing the valve to prevent return flow.



### Typical Applications

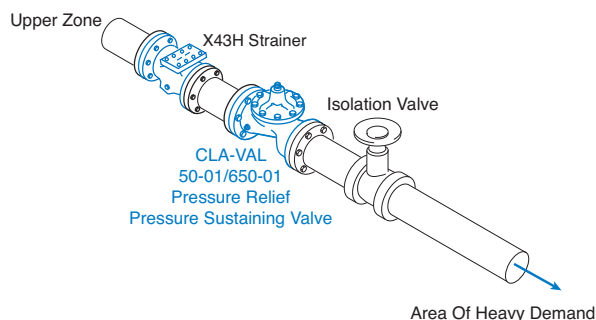
#### Pressure Relief Service

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 100-01 Hytrol Main Valve)

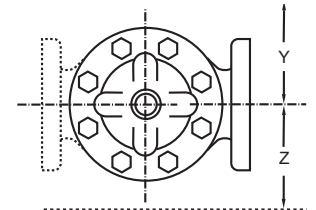
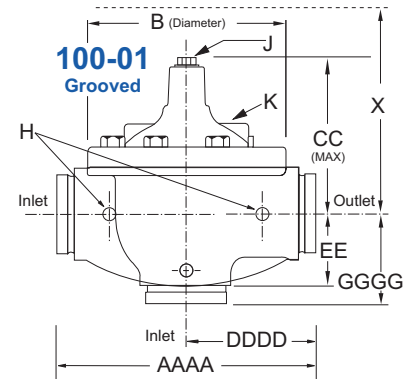
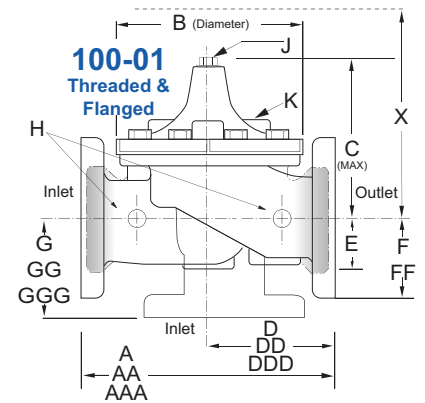
### Pressure Ratings (Recommended Maximum Pressure - psi)

| 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

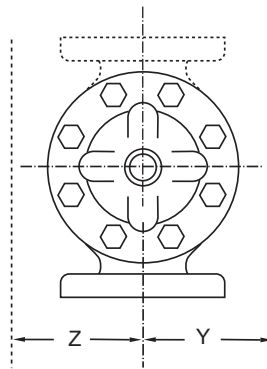
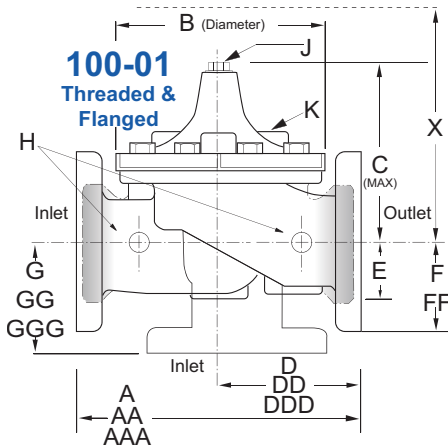
| Component                                                                                                          | Standard Material Combinations                    |                        |                        |
|--------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|------------------------|------------------------|
| Body & Cover                                                                                                       | Ductile Iron                                      | Cast Steel             | Bronze                 |
| Available Sizes                                                                                                    | 1" - 36"<br>25 - 900mm                            | 1" - 16"<br>25 - 400mm | 1" - 16"<br>25 - 400mm |
| 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.<br>Cla-Val manufactures valves in more than 50 different alloys. |                                                   |                        |                        |



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

| Valve Size (Inches)       | 1     | 1¼    | 1½    | 2     | 2½    | 3     | 4     | 6     | 8     | 10    | 12    | 14    | 16    | 18    | 20    | 24    | 30    | 36    |
|---------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| 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 | 29.75 | 34.00 | 39.00 | 41.38 | 46.00 | 52.00 | 61.50 | 63.00 | 72.75 |
| AAA 300 ANSI              | —     | —     | 9.00  | 10.00 | 11.62 | 13.25 | 15.62 | 21.00 | 26.38 | 31.12 | 35.50 | 40.50 | 43.50 | 47.64 | 53.62 | 63.24 | 64.50 | 74.75 |
| 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 | 23.62 | 28.00 | 32.75 | 35.50 | 41.50 | 45.00 | 53.16 | 56.00 | 66.00 |
| C Maximum                 | 5.50  | 5.50  | 5.50  | 6.50  | 7.56  | 8.19  | 10.62 | 13.38 | 16.00 | 17.12 | 20.88 | 24.19 | 25.00 | 39.06 | 41.90 | 43.93 | 54.60 | 59.00 |
| 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 | 14.88 | 17.00 | 19.50 | 20.81 | —     | —     | 30.75 | —     | —     |
| DDD 300 ANSI              | —     | —     | 4.25  | 5.00  | 5.88  | 6.38  | 7.88  | 10.50 | 13.25 | 15.56 | 17.75 | 20.25 | 21.62 | —     | —     | 31.62 | —     | —     |
| 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  | 9.25  | 10.75 | 12.62 | 15.50 | 12.95 | 15.00 | 17.75 | 21.31 | 24.56 |
| 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  | 8.00  | 9.50  | 10.50 | 11.75 | 15.00 | 16.50 | 19.25 | 22.50 | 28.50 |
| FF 300 ANSI               | —     | —     | 3.06  | 3.25  | 3.75  | 4.13  | 5.00  | 6.25  | 7.50  | 8.75  | 10.25 | 11.50 | 12.75 | 15.00 | 16.50 | 19.25 | 24.00 | 30.00 |
| 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  | 8.62  | 13.75 | 14.88 | 15.69 | —     | —     | 22.06 | —     | —     |
| GGG 300 ANSI              | —     | —     | 4.25  | 3.50  | 4.31  | 4.38  | 5.31  | 6.50  | 8.50  | 9.31  | 14.50 | 15.62 | 16.50 | —     | —     | 22.90 | —     | —     |
| 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  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 2.00  | 2.00  |
| J NPT Cover Center Plug   | 0.25  | 0.25  | 0.25  | 0.50  | 0.50  | 0.50  | 0.75  | 0.75  | 1.00  | 1.00  | 1.25  | 1.50  | 2.00  | 1.00  | 1.00  | 1.00  | 2.00  | 2.00  |
| K NPT Cover Tapping       | 0.375 | 0.375 | 0.375 | 0.375 | 0.50  | 0.50  | 0.75  | 0.75  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 1.00  | 2.00  | 2.00  |
| Stem Travel               | 0.40  | 0.40  | 0.40  | 0.60  | 0.70  | 0.80  | 1.10  | 1.70  | 2.30  | 2.80  | 3.40  | 4.00  | 4.50  | 5.10  | 5.63  | 6.75  | 7.50  | 8.50  |
| Approx. Ship Weight (lbs) | 15    | 15    | 15    | 35    | 50    | 70    | 140   | 285   | 500   | 780   | 1165  | 1600  | 2265  | 2982  | 3900  | 6200  | 7703  | 11720 |
| Approx. X Pilot System    | 11    | 11    | 11    | 13    | 14    | 15    | 17    | 29    | 31    | 33    | 36    | 40    | 40    | 43    | 47    | 68    | 79    | 85    |
| Approx. Y Pilot System    | 9     | 9     | 9     | 9     | 10    | 11    | 12    | 20    | 22    | 24    | 26    | 29    | 30    | 32    | 34    | 39    | 40    | 45    |
| Approx. Z Pilot System    | 9     | 9     | 9     | 9     | 10    | 11    | 12    | 20    | 22    | 24    | 26    | 29    | 30    | 32    | 34    | 39    | 42    | 47    |

## Model 50-01 Metric Dimensions (Uses 100-01 Hytrol Main Valve)

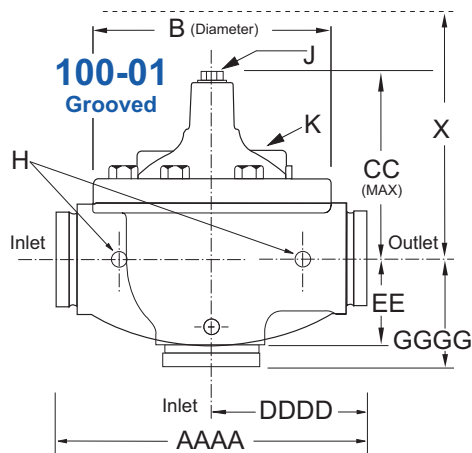


### Valve & Pilot Approvals

**NSF/ANSI 372: National Lead Free Mandate "Reduction of Lead in Drinking Water Act"**

**NSF International recognizes Cla-Val as complying with NSF/ANSI 61 and all applicable requirements.**

**Cla-Val fulfills the requirements described in the American Water Works Association's (AWWA) Standard for Pilot-Operated Control Valves: C530:12**



### Other 50 Series Products

- 50-01KO - Model 50-01 supplied with with KO Anti-Cavitation Trim
- 50-01H - Model 50-01 supplied with X43H Strainer
- 50-01KOH - Model 50-01 supplied with KO Trim & X43H Strainer
- 650-01 - Reduced Port Pressure Relief Valve
- 650-01KO - Reduced Port Pressure Relief Valve with KO Trim
- 650-01H - Reduced Port Pressure Relief Valve with X43H Strainer
- 650-01KO - Reduced Port Pressure Relief Valve with KO Trim and X43H Strainer

## Model 50-01 Dimensions (in mm)

| Valve Size (mm)           | 25    | 32    | 40    | 50    | 65   | 80   | 100  | 150  | 200  | 250  | 300  | 350  | 400  | 450  | 500  | 600  | 750  | 900  |
|---------------------------|-------|-------|-------|-------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
| A Threaded                | 184   | 184   | 184   | 238   | 279  | 318  | —    | —    | —    | —    | —    | —    | —    | —    | —    | —    | —    | —    |
| AA 150 ANSI               | —     | —     | 216   | 238   | 279  | 305  | 381  | 508  | 645  | 756  | 864  | 991  | 1051 | 1168 | 1321 | 1562 | 1600 | 1848 |
| AAA 300 ANSI              | —     | —     | 229   | 254   | 295  | 337  | 397  | 533  | 670  | 790  | 902  | 1029 | 1105 | 1210 | 1326 | 1606 | 1638 | 1899 |
| AAAA Grooved End          | —     | —     | 216   | 228   | 279  | 318  | 381  | 508  | 645  | —    | —    | —    | —    | —    | —    | —    | —    | —    |
| B Diameter                | 143   | 143   | 143   | 168   | 203  | 232  | 292  | 400  | 508  | 600  | 711  | 832  | 902  | 1054 | 1143 | 1350 | 1422 | 1676 |
| C Maximum                 | 140   | 140   | 140   | 165   | 192  | 208  | 270  | 340  | 406  | 435  | 530  | 614  | 635  | 992  | 1064 | 1116 | 1387 | 1499 |
| 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  | 378  | 432  | 495  | 528  | —    | —    | 781  | —    | —    |
| DDD 300 ANSI              | —     | —     | 108   | 127   | 149  | 162  | 200  | 267  | 337  | 395  | 451  | 514  | 549  | —    | —    | 803  | —    | —    |
| DDDD Grooved End          | —     | —     | —     | 121   | —    | 152  | 191  | —    | —    | —    | —    | —    | —    | —    | —    | —    | —    | —    |
| E                         | 29    | 29    | 29    | 38    | 43   | 52   | 81   | 110  | 135  | 235  | 273  | 321  | 394  | 329  | 381  | 451  | 541  | 624  |
| EE Grooved End            | —     | —     | 52    | 64    | 73   | 79   | 108  | 152  | 192  | —    | —    | —    | —    | —    | —    | —    | —    | —    |
| F 150 ANSI                | —     | —     | 64    | 76    | 89   | 95   | 114  | 140  | 171  | 203  | 241  | 267  | 298  | 381  | 419  | 489  | 572  | 724  |
| FF 300 ANSI               | —     | —     | 78    | 83    | 95   | 105  | 127  | 159  | 191  | 222  | 260  | 292  | 324  | 381  | 419  | 489  | 610  | 762  |
| G Threaded                | 48    | 48    | 48    | 83    | 102  | 114  | —    | —    | —    | —    | —    | —    | —    | —    | —    | —    | —    | —    |
| GG 150 ANSI               | —     | —     | 102   | 83    | 102  | 102  | 127  | 152  | 203  | 219  | 349  | 378  | 399  | —    | —    | 560  | —    | —    |
| GGG 300 ANSI              | —     | —     | 102   | 89    | 110  | 111  | 135  | 165  | 216  | 236  | 368  | 397  | 419  | —    | —    | 582  | —    | —    |
| 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 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 2.00 | 2.00 |
| J NPT Cover Center Plug   | 0.25  | 0.25  | 0.25  | 0.50  | 0.50 | 0.50 | 0.75 | 0.75 | 1.00 | 1.00 | 1.25 | 1.50 | 2.00 | 1.00 | 1.00 | 1.00 | 2.00 | 2.00 |
| K NPT Cover Tapping       | 0.375 | 0.375 | 0.375 | 0.375 | 0.50 | 0.50 | 0.75 | 0.75 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 1.00 | 2.00 | 2.00 |
| Stem Travel               | 10    | 10    | 10    | 15    | 18   | 20   | 28   | 43   | 58   | 71   | 86   | 102  | 114  | 130  | 143  | 171  | 190  | 216  |
| Approx. Ship Weight (kgs) | 7     | 7     | 7     | 16    | 23   | 32   | 64   | 129  | 227  | 354  | 528  | 726  | 1027 | 1353 | 1769 | 2812 | 3494 | 5316 |
| Approx. X Pilot System    | 280   | 280   | 280   | 331   | 356  | 381  | 432  | 737  | 788  | 839  | 915  | 1016 | 1016 | 1093 | 1194 | 1728 | 2007 | 2159 |
| Approx. Y Pilot System    | 229   | 229   | 229   | 229   | 254  | 280  | 305  | 508  | 559  | 610  | 661  | 737  | 762  | 813  | 864  | 991  | 1016 | 1143 |
| Approx. Z Pilot System    | 229   | 229   | 229   | 229   | 254  | 280  | 305  | 508  | 559  | 610  | 661  | 737  | 762  | 813  | 864  | 991  | 1067 | 1194 |

| 50-01<br>Valve<br>Selection                     | 100-01 Pattern: Globe (G), Angle (A), End Connections: Threaded (T), Grooved (GR), Flanged (F) Indicate Available Sizes |      |      |              |             |              |             |          |           |           |       |       |       |       |       |       |       |       |                     |
|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|------|------|--------------|-------------|--------------|-------------|----------|-----------|-----------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------|
|                                                 | Inches                                                                                                                  | 1    | 1½   | 1½           | 2           | 2½           | 3           | 4        | 6         | 8         | 10    | 12    | 14    | 16    | 18    | 20    | 24    | 30    | 36                  |
|                                                 | mm                                                                                                                      | 25   | 32   | 40           | 50          | 65           | 80          | 100      | 150       | 200       | 250   | 300   | 350   | 400   | 450   | 500   | 600   | 750   | 900                 |
| Basic Valve<br>100-01                           | Pattern                                                                                                                 | G, A | G, A | G, A         | G, A        | G, A         | G, A        | G, A     | G, A      | G, A      | G, A  | G, A  | G, A  | G, A  | G     | G     | G, A  | G     | G                   |
|                                                 | 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* | F     | F     | F     | F     | F     | F     | F     | F     | F                   |
| Suggested<br>Flow<br>(gpm)                      | Maximum                                                                                                                 | 55   | 93   | 125          | 210         | 300          | 460         | 800      | 1800      | 3100      | 4500  | 7000  | 8400  | 11000 | 14000 | 17000 | 25000 | 42000 | 50000               |
|                                                 | Maximum<br>Surge                                                                                                        | 120  | 210  | 280          | 470         | 670          | 1000        | 1800     | 4000      | 7000      | 11000 | 16000 | 15000 | 25000 | 31000 | 35000 | 56500 | 63000 | 85000               |
| Suggested<br>Flow<br>(Liters/Sec)               | Maximum                                                                                                                 | 3.5  | 6    | 8            | 13          | 19           | 29          | 50       | 113       | 195       | 309   | 442   | 530   | 694   | 883   | 1073  | 1577  | 2650  | 3150                |
|                                                 | Maximum<br>Surge                                                                                                        | 7.6  | 13   | 18           | 30          | 42           | 63          | 113      | 252       | 441       | 693   | 1008  | 1197  | 1577  | 1956  | 2461  | 3560  | 3975  | 5360                |
| 100-01 Series is the full internal port Hytrol. |                                                                                                                         |      |      |              |             |              |             |          |           |           |       |       |       |       |       |       |       |       | *Globe Grooved Only |

#### Notes:

- For sizes 18 through 36-inches / 450mm through 900 mm, use 50-66 E-Sheet
- Many factors should be considered in sizing pressure relief valves including inlet pressure, outlet pressure and flow rates.
- For sizing questions or cavitation analysis, consult Cla-Val with system details.

## Pilot System Specifications



#### Adjustment Ranges

- 0 to 75 psi Max.
- 20 to 105 psi
- 20 to 200 psi \*
- 100 to 300 psi

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

**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 Aluminum, Stainless Steel or Monel materials.

## Pilot Approvals



**NSF/ANSI 372: National Lead Free Mandate**  
"Reduction of Lead in Drinking Water Act"

#### When Ordering, Specify:

1. Catalog No. 50-01
2. Valve Size
3. Pattern - Globe or Angle
4. Pressure Class
5. Threaded, Flanged, Grooved
6. Trim Material
7. Adjustment Range
8. Desired Options
9. When Vertically Installed

#### Main Valve Options

##### EPDM Rubber Parts

Optional diaphragm, disc and o-ring fabricated with EPDM synthetic rubber

##### Viton® Rubber Parts - suffix KB

Optional diaphragm, disc and o-ring fabricated with Viton® synthetic rubber

##### Epoxy Coating - suffix KC

NSF 61 Listed and FDA approved, fusion bonded epoxy coating

##### Dura-Kleen® Stem - suffix KD

Fluted design prevents dissolved minerals build-up on the stem

##### LFS Trim

Designed to regulate precisely and smoothly at typical flow rates as well as lower than the industry standard of 1 fps, without decreasing the valve's capacity

#### Valve Options

X141 Pressure Gauge



X101AR Valve Position Indicator with Air Release



X101 Valve Position Indicator



X144 e-FlowMeter



X43H Strainer



Stainless Steel Pilot