



# MODEL 81-01 Check Valve

- Simple Proven Design
- No-Slam Operation
- Drip-Tight Shut-Off
- No Packing Glands or Stuffing Boxes
- Easy to Install & Maintain



The Cla-Val Model 81-01 Check Valve is a hydraulically operated No-Slam Check Valve. This valve opens when the pressure at the inlet exceeds the discharge pressure. A gradual rate of opening prevents sudden opening surges. When a pressure reversal occurs the higher downstream pressure is applied to the cover chamber through the control tube lines, and the valve closes drip tight.

This valve is ideally suited for use where a positive shutoff is required. The rubber disc assures tight sealing even if the fluid contains grit or other small-size particles. The simple packless design insures reliable operation and freedom from leaks.

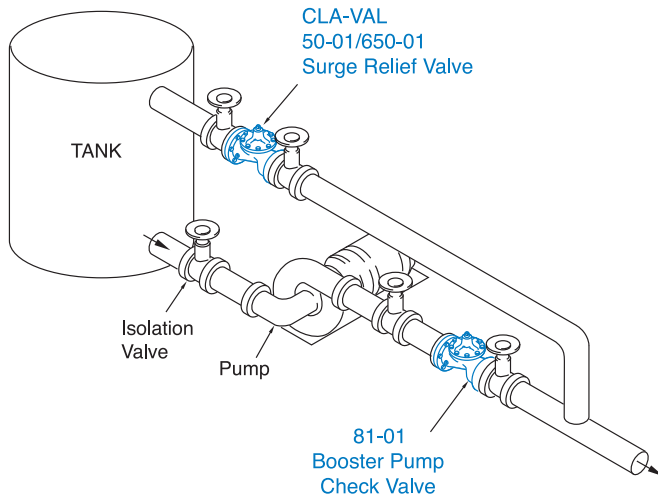
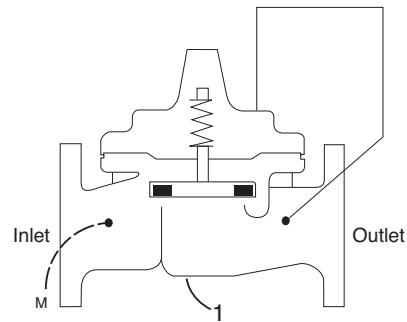
Note: The effectiveness of this valve is related to pipeline velocity. We recommend a maximum flow based on pipeline velocity of 6 feet per second. If pipeline velocities exceed 6 feet per second, consideration should be given to adding a Cla-Val Model 50-01 Pressure Relief Valve or a Cla-Val Model 52 Series Surge Control Valve to the system.

## Schematic Diagram

| Item | Description              |
|------|--------------------------|
| 1    | 100-10 Hytrol Main Valve |

## Optional Features

| Item | Description                   |
|------|-------------------------------|
| P    | X141 Pressure Gauge           |
| V    | X101 Valve Position Indicator |



## Typical Applications

Smaller sizes of this valve are used in pilot control systems in Cla-Val Automatic Control valves. This valve can also be used in any piping system where one-way flow is desired.

Install on the discharge of booster pumps to prevent return flow into tank when pump is off. Relief valve as shown is good practice to minimize surges when pump stops.

For valve sizes larger than 3", use Model 81-02.

## Model 81-01 (Uses 100-01 Hytrol Main Valve)

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

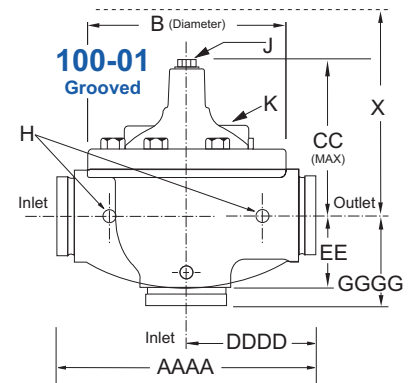
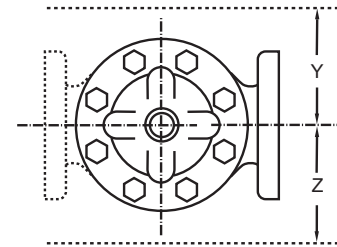
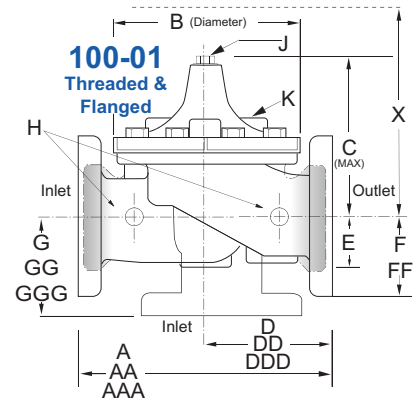
| Valve Body & Cover |              | Pressure Class  |           |           |           |              |
|--------------------|--------------|-----------------|-----------|-----------|-----------|--------------|
|                    |              | Flanged         |           | Grooved   | Threaded  |              |
| 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 (inches)               | 3/8" - 3"   | 3/8" - 3"  | 3/8" - 3"  |
| Available Sizes (mm)                   | 10 - 80 mm  | 10 - 80 mm | 10 - 80 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                                   |            |            |

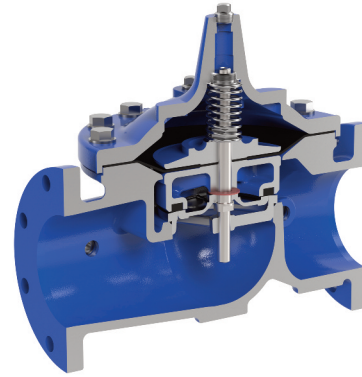
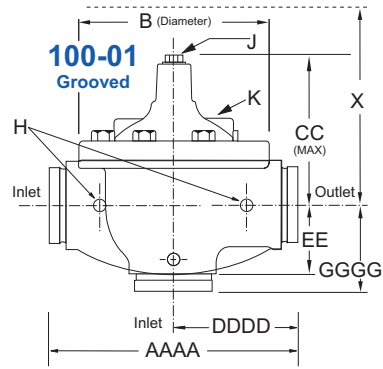
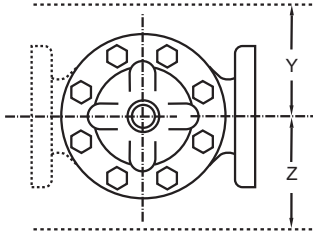
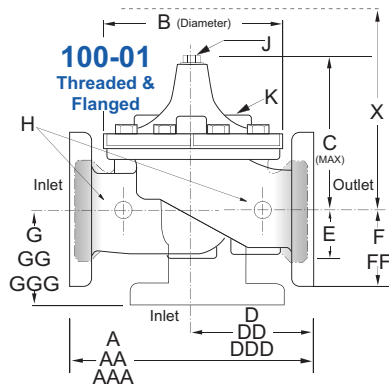
For material options not listed, consult factory.  
 Cla-Val manufactures valves in more than 50 different alloys.



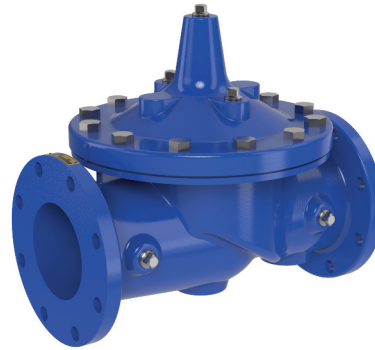
### Model 81-01 Dimensions (In Inches)

| Valve Size (Inches)       | 3/8*  | 1/2*  | 3/4*  | 1*   | 1     | 1 1/4 | 1 1/2 | 2     | 2 1/2 | 3     |
|---------------------------|-------|-------|-------|------|-------|-------|-------|-------|-------|-------|
| A Threaded                | 2.75  | 3.50  | 3.50  | 5.12 | 7.25  | 7.25  | 7.25  | 9.38  | 11.00 | 12.50 |
| AA 150 ANSI               | —     | —     | —     | —    | —     | —     | 8.50  | 9.38  | 11.00 | 12.00 |
| AAA 300 ANSI              | —     | —     | —     | —    | —     | —     | 9.00  | 10.00 | 11.62 | 13.25 |
| AAAA Grooved End          | —     | —     | —     | —    | —     | —     | 8.50  | 9.00  | 11.00 | 12.50 |
| B Diameter                | 2.50  | 3.12  | 3.12  | 4.38 | 5.62  | 5.62  | 5.62  | 6.62  | 8.00  | 9.12  |
| C Maximum                 | 2.33  | 5.88  | 5.88  | 6.25 | 5.50  | 5.50  | 5.50  | 6.50  | 7.56  | 8.19  |
| CC Maximum Grooved End    | —     | —     | —     | —    | —     | —     | 4.75  | 5.75  | 6.88  | 7.25  |
| 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  |
| DDD 300 ANSI              | —     | —     | —     | —    | —     | —     | 4.25  | 5.00  | 5.88  | 6.38  |
| DDDD Grooved End          | —     | —     | —     | —    | —     | —     | —     | 4.75  | —     | 6.00  |
| E                         | 1.25  | 0.88  | 0.88  | 1.63 | 1.12  | 1.12  | 1.12  | 1.50  | 1.69  | 2.06  |
| EE Grooved End            | —     | —     | —     | —    | —     | —     | 2.00  | 2.50  | 2.88  | 3.12  |
| F 150 ANSI                | —     | —     | —     | —    | —     | —     | 2.50  | 3.00  | 3.50  | 3.75  |
| FF 300 ANSI               | —     | —     | —     | —    | —     | —     | 3.06  | 3.25  | 3.75  | 4.13  |
| 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  |
| GGG 300 ANSI              | —     | —     | —     | —    | —     | —     | 4.25  | 3.50  | 4.31  | 4.38  |
| GGGG Grooved End          | —     | —     | —     | —    | —     | —     | —     | 3.25  | —     | 4.25  |
| H NPT Body Tapping        | —     | 0.125 | 0.125 | 0.25 | 0.375 | 0.375 | 0.375 | 0.375 | 0.50  | 0.50  |
| J NPT Cover Center Plug   | 0.125 | 0.125 | 0.125 | 0.25 | 0.25  | 0.25  | 0.25  | 0.50  | 0.50  | 0.50  |
| K NPT Cover Tapping       | —     | 0.125 | 0.125 | 0.25 | 0.375 | 0.375 | 0.375 | 0.375 | 0.50  | 0.50  |
| Stem Travel               | —     | —     | —     | —    | 0.40  | 0.40  | 0.40  | 0.60  | 0.70  | 0.80  |
| Approx. Ship Weight (lbs) | 3     | 3     | 8     | 8    | 15    | 15    | 15    | 35    | 50    | 70    |
| Approx. X Pilot System    | —     | —     | —     | —    | 11    | 11    | 11    | 13    | 14    | 15    |
| Approx. Y Pilot System    | —     | —     | —     | —    | 9     | 9     | 9     | 9     | 10    | 11    |
| Approx. Z Pilot System    | —     | —     | —     | —    | 9     | 9     | 9     | 9     | 10    | 11    |

**Model 81-01 Metric Dimensions** - (Uses 100-01 Hytrol Main Valve)



**100-01 Hytrol Main Valve**



| Valve Size (mm)           | 10*   | 15*   | 20*   | 25*  | 25    | 32    | 40    | 50    | 65   | 80   |
|---------------------------|-------|-------|-------|------|-------|-------|-------|-------|------|------|
| A Threaded                | 70    | 89    | 89    | 130  | 184   | 184   | 184   | 238   | 279  | 318  |
| AA 150 ANSI               | —     | —     | —     | —    | —     | —     | 216   | 238   | 279  | 305  |
| AAA 300 ANSI              | —     | —     | —     | —    | —     | —     | 229   | 254   | 295  | 337  |
| AAAA Grooved End          | —     | —     | —     | —    | —     | —     | 216   | 228   | 279  | 318  |
| B Diameter                | 64    | 80    | 80    | 111  | 143   | 143   | 143   | 168   | 203  | 232  |
| C Maximum                 | 59    | 149   | 149   | 159  | 140   | 140   | 140   | 165   | 192  | 208  |
| CC Maximum Grooved End    | —     | —     | —     | —    | —     | —     | 120   | 146   | 175  | 184  |
| D Threaded                | —     | —     | —     | —    | 83    | 83    | 83    | 121   | 140  | 159  |
| DD 150 ANSI               | —     | —     | —     | —    | —     | —     | 102   | 121   | 140  | 152  |
| DDD 300 ANSI              | —     | —     | —     | —    | —     | —     | 108   | 127   | 149  | 162  |
| DDDD Grooved End          | —     | —     | —     | —    | —     | —     | —     | 121   | —    | 152  |
| E                         | 32    | 23    | 23    | 42   | 29    | 29    | 29    | 38    | 43   | 52   |
| EE Grooved End            | —     | —     | —     | —    | —     | —     | 52    | 64    | 73   | 79   |
| F 150 ANSI                | —     | —     | —     | —    | —     | —     | 64    | 76    | 89   | 95   |
| FF 300 ANSI               | —     | —     | —     | —    | —     | —     | 78    | 83    | 95   | 105  |
| G Threaded                | —     | —     | —     | —    | 48    | 48    | 48    | 83    | 102  | 114  |
| GG 150 ANSI               | —     | —     | —     | —    | —     | —     | 102   | 83    | 102  | 102  |
| GGG 300 ANSI              | —     | —     | —     | —    | —     | —     | 102   | 89    | 110  | 111  |
| GGGG Grooved End          | —     | —     | —     | —    | —     | —     | —     | 83    | —    | 108  |
| H NPT Body Tapping        | —     | 0.125 | 0.125 | 0.25 | 0.375 | 0.375 | 0.375 | 0.375 | 0.50 | 0.50 |
| J NPT Cover Center Plug   | 0.125 | 0.125 | 0.125 | 0.25 | 0.25  | 0.25  | 0.25  | 0.50  | 0.50 | 0.50 |
| K NPT Cover Tapping       | —     | 0.125 | 0.125 | 0.25 | 0.375 | 0.375 | 0.375 | 0.375 | 0.50 | 0.50 |
| Stem Travel               | —     | —     | —     | —    | 10    | 10    | 10    | 15    | 18   | 20   |
| Approx. Ship Weight (kgs) | 1.4   | 1.4   | 1.4   | 6    | 7     | 7     | 7     | 16    | 23   | 32   |
| Approx. X Pilot System    | —     | —     | —     | —    | 280   | 280   | 280   | 331   | 356  | 381  |
| Approx. Y Pilot System    | —     | —     | —     | —    | 229   | 229   | 229   | 229   | 254  | 280  |
| Approx. Z Pilot System    | —     | —     | —     | —    | 229   | 229   | 229   | 229   | 254  | 280  |

| 81-01<br>Valve<br>Selection       | 100-01 Pattern: Globe (G), Angle (A), End Connections: Threaded (T), Grooved (GR), Flanged (F) Indicate Available Sizes |     |     |     |      |      |           |          |           |          |
|-----------------------------------|---|-----|-----|-----|------|------|-----------|----------|-----------|----------|
|                                   | Inches  | ¾   | ½   | ¼   | 1    | 1¼   | 1½        | 2        | 2½        | 3        |
|                                   | mm  | 10  | 15  | 20  | 25   | 32   | 40        | 50       | 65        | 80       |
| Main Valve<br>100-01              | Pattern   | G   | G   | G   | G, A | G, A | G, A      | G, A     | G, A      | G, A     |
|                                   | End Detail  | T   | T   | T   | T    | T    | T, F, Gr* | T, F, Gr | T, F, Gr* | T, F, Gr |
| Suggested<br>Flow<br>(gpm)        | Maximum   | 4   | 6   | 10  | 16   | 28   | 38        | 63       | 90        | 138      |
| Suggested<br>Flow<br>(Liters/Sec) | Maximum   | 0.3 | 0.4 | 0.6 | 1.0  | 1.8  | 2.4       | 4.0      | 5.7       | 8.7      |

**100-01 Series is the full internal port Hytrol.** \*Globe Grooved Only

Flowrates shown are for a velocity of 6 fps (1.8 m/s).

Velocities can be increased to 10 fps (3.05 m/s) if required, and the installation of a surge valve in the system is recommended in velocities above 6 ft/sec. (1.8 m/sec)

## Pilot System Specifications

### Temperature Rating

Water: to 180°F / 82°C Maximum

### Speed Controls

For valves with opening and closing speed controls order Model 81-02

### Materials

#### Standard Pilot System Materials

Fittings: Brass

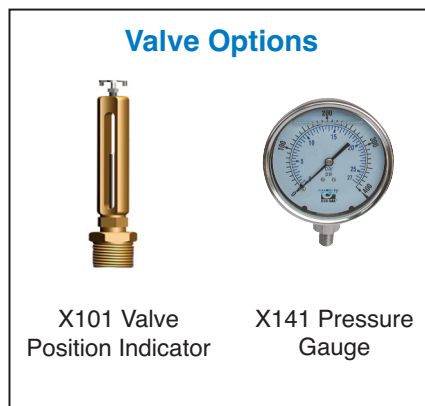
Tubing: Copper

#### Optional Pilot System Materials

Pilot Systems are available with optional stainless steel or Monel materials.

## When Ordering, Please Specify

1. Catalog No. 81-01
2. Valve Size
3. Pattern - Globe or Angle
4. Pressure Class
5. Threaded or Flanged
6. Desired Options
7. When Vertically Installed



## CLA-VAL

1701 Placentia Avenue • Costa Mesa, CA 92627

800-942-6326 • Fax: 949-548-5441 • [www.cla-val.com](http://www.cla-val.com) • [info@cla-val.com](mailto:info@cla-val.com)

#### CLA-VAL CANADA

4687 Christie Drive  
Beamsville, Ontario  
Canada L0R 1B4  
Phone: 905-563-4963  
Fax: 905-563-4040  
E-mail [sales@cla-val.ca](mailto:sales@cla-val.ca)

#### CLA-VAL EUROPE

Chemin des Mésanges 1  
CH-1032 Romanel/  
Lausanne, Switzerland  
Phone: 41-21-643-15-55  
E-mail: [cla-val@cla-val.ch](mailto:cla-val@cla-val.ch)

#### CLA-VAL UK

Dainton House, Goods Station Road  
Tunbridge Wells  
Kent TN11 2 DH England  
Phone: 44-1892-514-400  
E-mail: [info@cla-val.co.uk](mailto:info@cla-val.co.uk)

#### CLA-VAL FRANCE

Porte du Grand Lyon 1  
ZAC du Champ du Périer  
France - 01700 Neyron  
Phone: 33-4-72-25-92-93  
E-mail: [cla-val@cla-val.fr](mailto:cla-val@cla-val.fr)