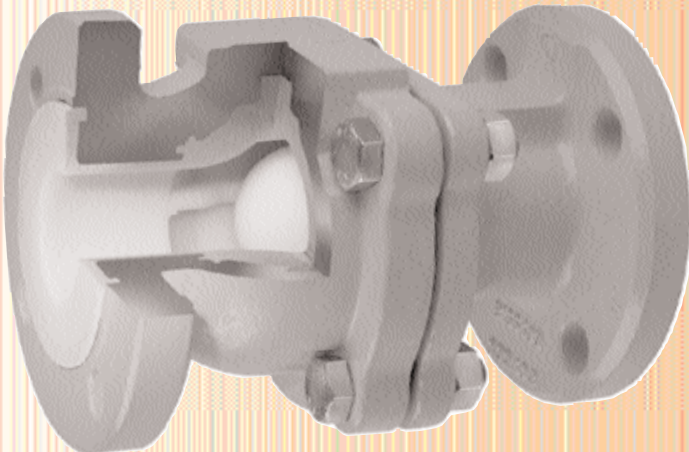
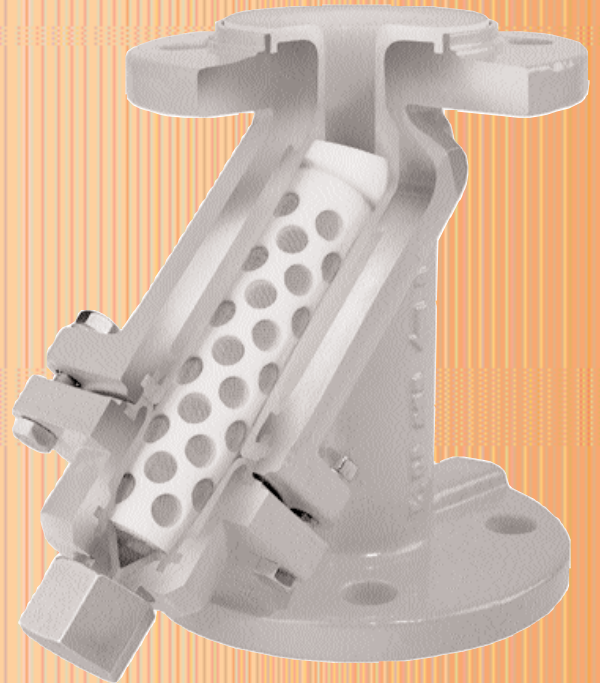
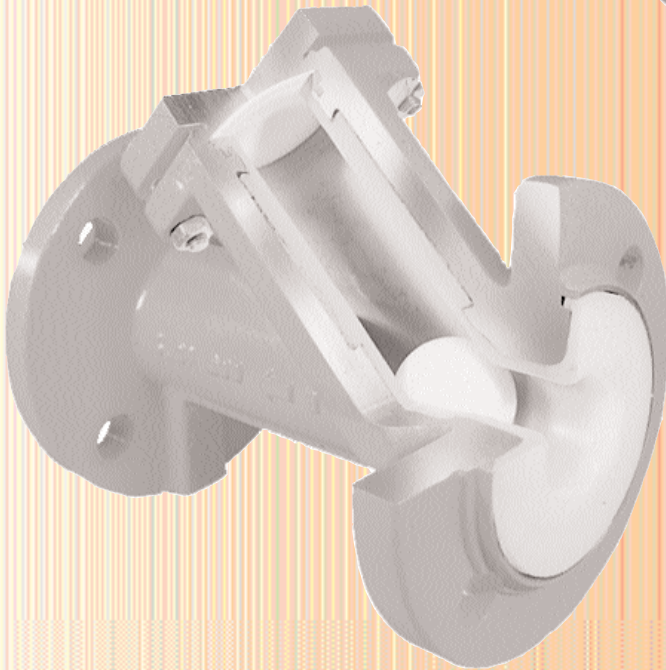
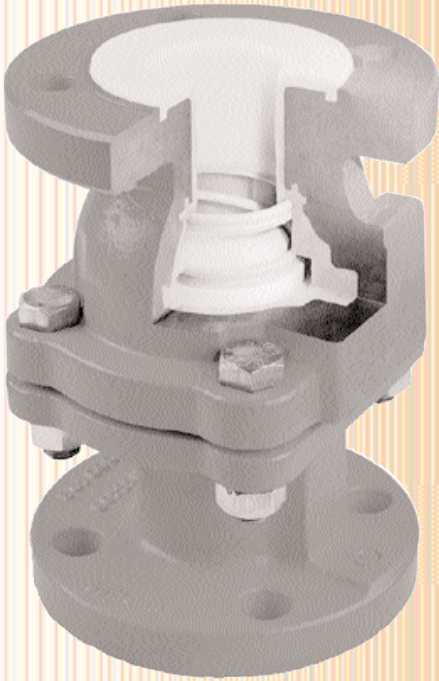


Tufline® Lined Accessories



For your most demanding applications . . .

Xomox worldwide capabilities pay off for you. With facilities in a dozen countries around the world, Xomox offers unique capabilities for global sourcing of the latest technologies, the best materials, and the most sophisticated manufacturing techniques. Your Xomox team turns these resources into problem solving valves for your most demanding applications.

Problem-solving and cost-cutting valves.

Xomox valves reduce downtime, cut maintenance costs, and provide longer service life. Your long-term cost of valve ownership is dramatically reduced.

More information.

For a listing of Xomox Regional Offices, and Authorized Distributors, visit our web site www.xomox.com.

Tuflin® Lined Accessories:

- Wafer Swing Check Valves
- 45° Ball Check Valves
- Ball Check Valves
- Piston Check Valves
- Poppet Check Valves
- Sight Flow Indicators
- Basket Filters
- Strainers
- Tank Bottom Valves
- PTFE Clamp Valves
- Short Face-To-Face Ball Valves

Lining materials and methods.

The choice of lining materials and the method of lining are critical.

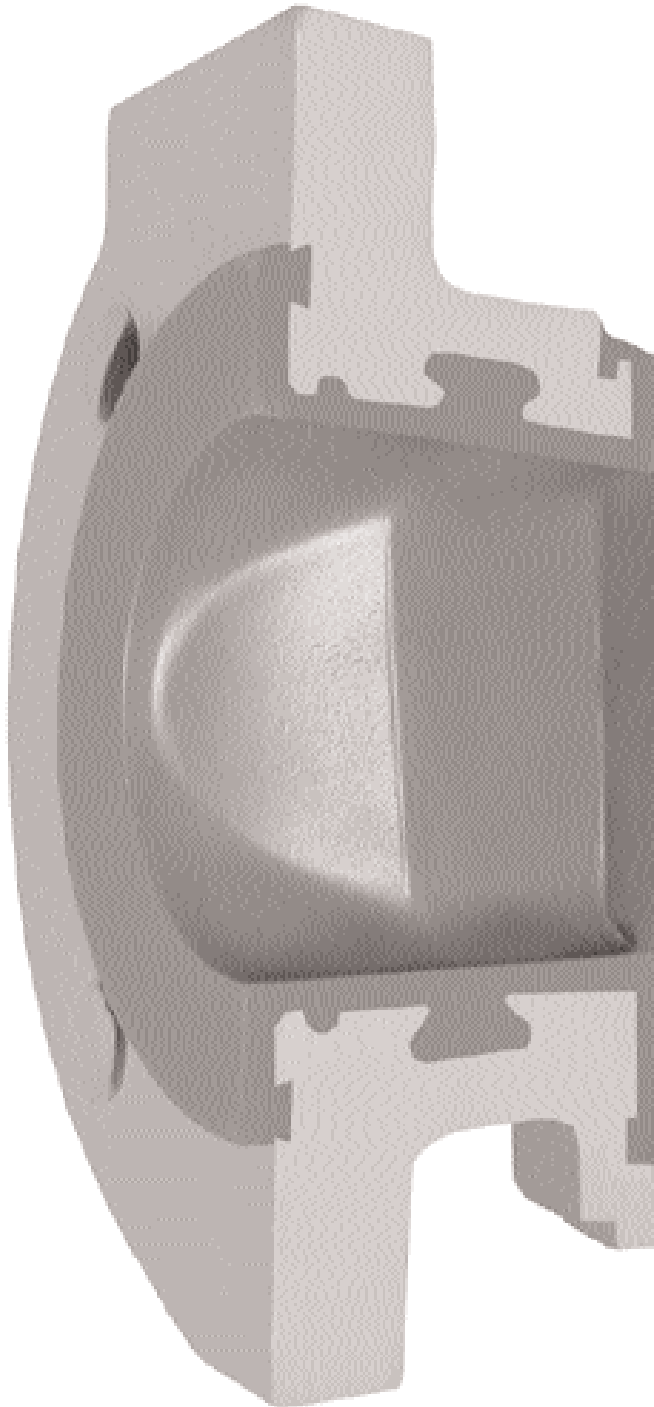


We begin with the purest fluorocarbon materials.

To assure lining integrity and maximum corrosion resistance, Xomox uses only PFA and FEP fluorocarbons.*



* Poppet Check Valves are available with polypropylene and PVDF liners in addition to PFA.



Locked-in linings.

Tuflin Lined Accessories have cast dovetail recesses and machined grooves that lock the lining to the body casting.

Blow-out or liner collapse are virtually impossible.

PFA

PFA is the standard lining material for all Tuflin Lined Accessories.

PFA is a fluoropolymer with extended temperature limits. It is a copolymer that combines the carbon-fluorine backbone of fluorocarbons with a perfluoroalkoxy side chain.

PFA offers a variety of attributes and benefits:

- Handles a wide range of fluids
- Chemically inert
- Heat resistant
- Weather resistant
- Stress-cracking resistant
- Negligible moisture absorption
- Better sealing and wear resistance between parts - because it is moldable and machinable to close tolerances.
- PFA is a true thermoplastic and is melt processible, so it can be locked to the valve components. Blow-out or liner collapse are virtually impossible.

Physical Properties

| Property | PFA Perfluoroalkoxy | |
|--|------------------------|--|
| | ASTM method | Value |
| Melting point | - | 575° - 590°F |
| Tensile strength @ 73°F | D638 | 3,800 psi |
| Elongation @ 73°F | D638 | 300% |
| Flexural modulus @ 73°F | D790 | 100,000 psi |
| Impact strength @ 73°F | D256 | No break |
| Coefficient of linear thermal expansion per °F | D696 | 6.7 x 10 ⁻⁵ (70° to 212°F) |
| Flammability | D635 | Nonflammable |
| Weather and chemical resistance | - | Excellent |

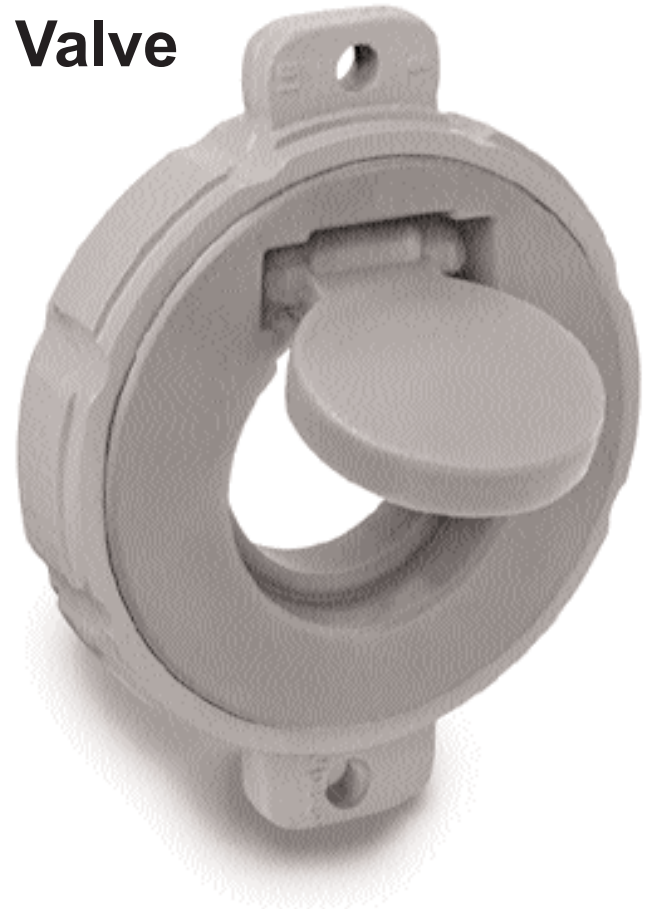
070 Wafer Swing Check Valve

Sizes 3 through 12 inch, ANSI Class 150

Consult factory for Class 300 applications.

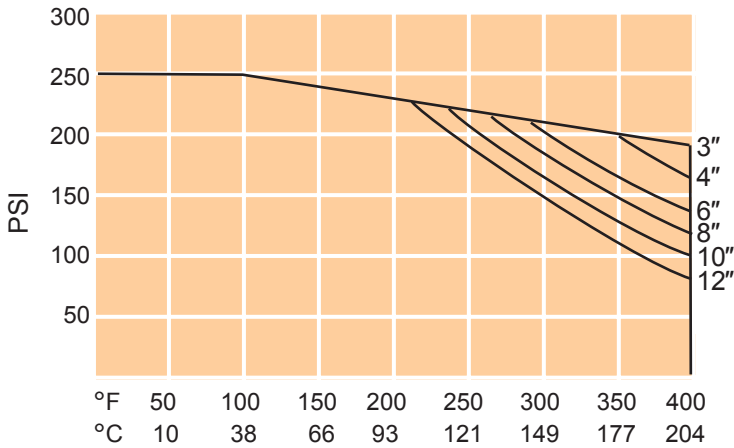
Fully lined wafer swing check valves are ideal for use in totally lined piping systems or to replace costly high alloy valves in corrosion applications. The valve can be mounted horizontally or vertically with upward flow.

Tufline wafer swing check valves are of two piece construction with only one moving part. Integral hinge pins fit into the valve body recess. There are no springs or pins to corrode or wear.



Pressure-Temperature Ratings

(Valves with PFA linings)



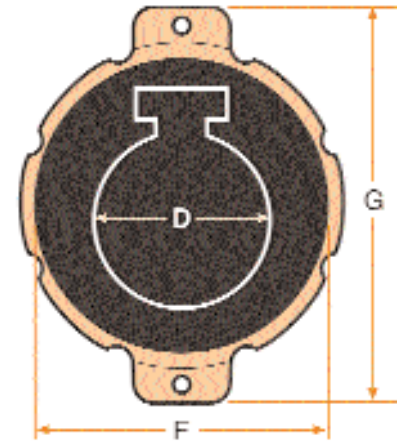
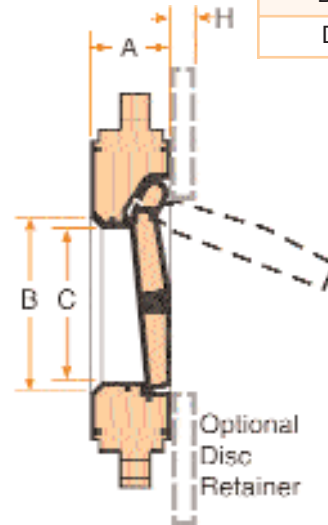
Materials Of Construction

| | |
|------|------------------------|
| Body | PFA lined ductile iron |
| Disc | PFA lined ductile iron |

Maximum allowable $\Delta P = 250$ psi.

Leak Rate

| ΔP (psi) | Leak Rate |
|------------------|----------------|
| 0 - 40 | 5 - 10 cc/min. |
| 41 - 74 | 3 - 5 cc/min. |
| 75 and over | 0 |



Dimensions (inches)

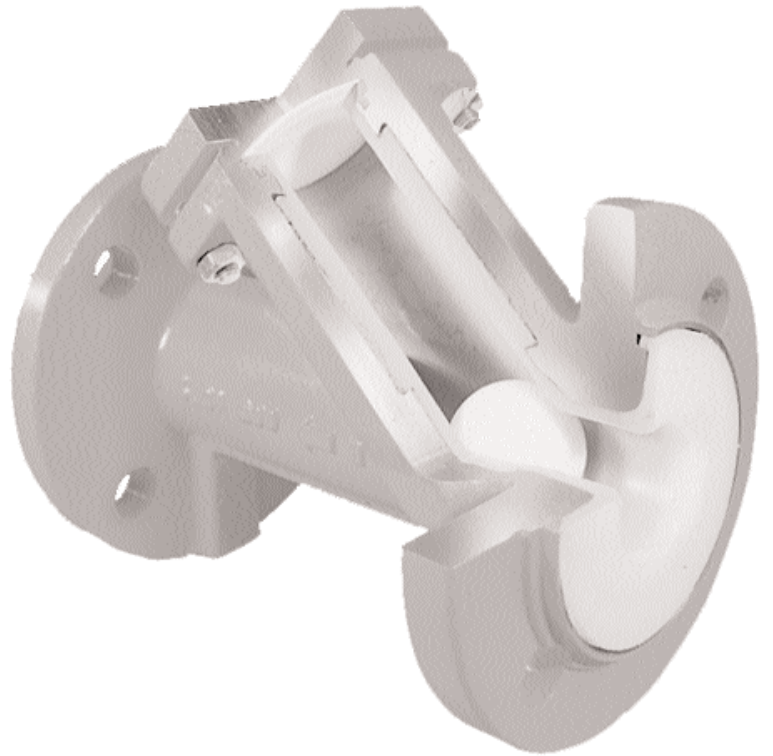
| Size | A | B | C | D | F | G | H | Wt.lbs. | Mating Pipe I.D.* | | Cv Factors |
|------|------|-------|------|-------|-------|-------|------|---------|-------------------|-------|------------|
| | | | | | | | | | Min. | Max. | |
| 3 | 1.81 | 2.28 | 1.65 | 2.20 | 5.04 | 7.00 | .375 | 7 | 2.88 | 3.23 | 100 |
| 4 | 1.81 | 3.31 | 2.56 | 3.20 | 6.38 | 8.88 | .375 | 13 | 3.74 | 4.17 | 234 |
| 6 | 2.25 | 5.02 | 4.37 | 4.90 | 8.35 | 11.00 | .375 | 28 | 5.71 | 6.22 | 667 |
| 8 | 2.63 | 6.91 | 5.24 | 6.77 | 10.51 | 13.50 | .375 | 50 | 7.56 | 7.87 | 1404 |
| 10 | 2.67 | 8.74 | 7.24 | 8.70 | 12.48 | 15.50 | .375 | 63 | 9.53 | 10.23 | 1955 |
| 12 | 3.07 | 10.71 | 9.13 | 10.50 | 14.45 | 17.40 | .375 | 93 | 11.50 | 12.20 | 3106 |

* Required to retain disc in valve body. If pipe I.D. exceeds maximum, use optional disc retainer.
Pressure to unseat (ΔP) in horizontal or vertical pipeline: less than 1 psi.

071 45° Ball Check Valve

Sizes 1 through 4 inch, ANSI Class 150

The unique construction of the Tufline 45° ball check valve permits unobstructed flow through the valve as the ball rides in a 45° guide, out of the path of the media. The valve provides a large Cv coefficient. A tight seal against backflow is assured. It can be mounted horizontally or vertically with upward flow.

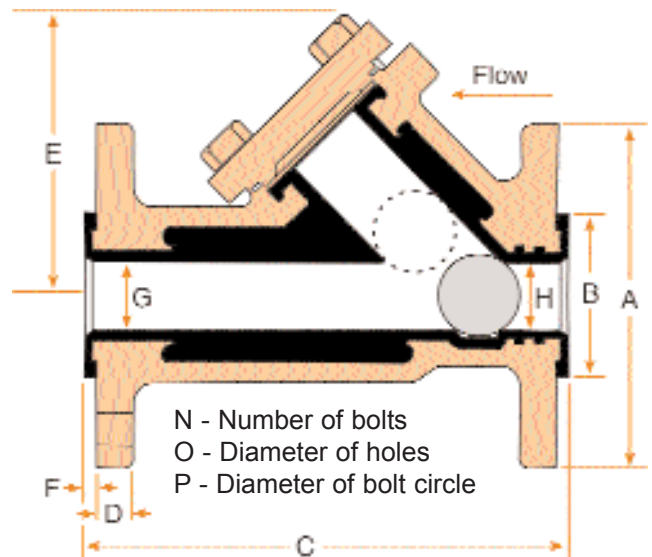
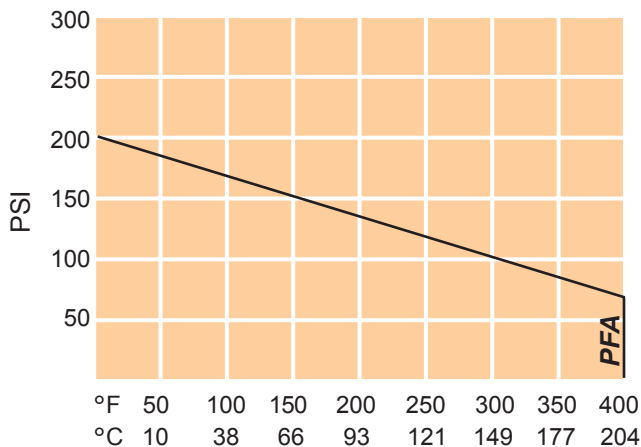


Materials Of Construction

| | |
|-------------|------------------------|
| Body | PFA lined ductile iron |
| Cover | Ductile iron |
| Diaphragm | PTFE |
| Ball | Glass-filled PTFE |
| Cover bolts | B7 Carbon steel |

Pressure-Temperature Ratings

(Valves with PFA linings)



Maximum allowable $\Delta P = 200$ psi.

Cv Factors

| Size | 1 | 1½ | 2 | 3 | 4 |
|------|----|----|----|-----|-----|
| | 23 | 54 | 87 | 222 | 525 |

Dimensions (inches)

| Size | A | B | C | D | E | F | G | H | N | O | P | Wt. lbs. | Approximate pressure (psi) to unseat (ΔP) | | Approximate pressure (psi) to seat (ΔP) | | Back pressure (psi) to seal (ΔP) | Allowable leakage rate @ 80 psi |
|------|------|------|-------|-----|------|-----|------|------|---|-----|------|----------|---|-----------------|---|------------|--|---------------------------------|
| | | | | | | | | | | | | | Horiz. pipe | Vert. pipe | Horiz. pipe | Vert. pipe | | |
| 1 | 4.25 | 2.00 | 6.00 | .44 | 3.50 | .13 | .88 | .78 | 4 | .63 | 3.13 | 8 | 0 | 0 | 10 | 0 | 50 | 30 bubbles/minute |
| 1½ | 5.00 | 2.88 | 7.00 | .56 | 4.00 | .13 | 1.25 | 1.13 | 4 | .63 | 3.88 | 13 | 0 | Less than 1 psi | 20 | 0 | 50 | 60 bubbles/minute |
| 2 | 6.00 | 3.63 | 8.69 | .63 | 5.25 | .13 | 1.63 | 1.63 | 4 | .75 | 4.75 | 23 | 0 | 0 | 30 | 0 | 50 | |
| 3 | 7.50 | 5.00 | 10.00 | .75 | 6.38 | .15 | 2.50 | 2.25 | 4 | .75 | 6.00 | 42 | 0 | 0 | 50 | 0 | 50 | |
| 4 | 9.00 | 6.18 | 13.78 | .75 | 8.86 | .27 | 3.74 | 3.70 | 8 | .75 | 9.00 | 52 | 0 | 0 | 55 | 0 | 50 | |

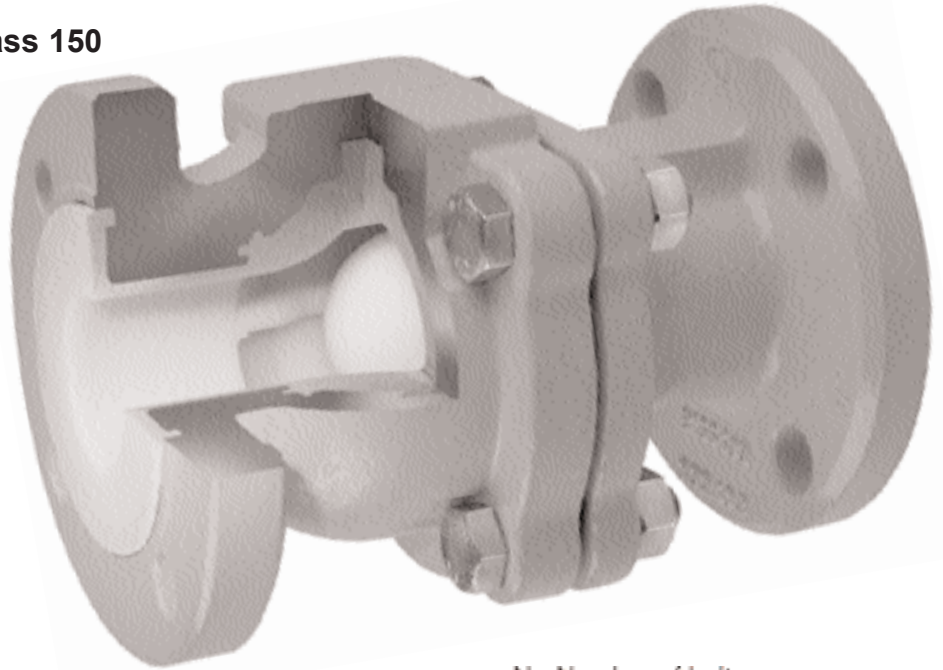
B202 Ball Check Valve

Formerly 072

Sizes 1/2 through 6 inch, ANSI Class 150

This valve can be installed in vertical pipe with upward flow. The patented ball seating design also provides for horizontal installation.*

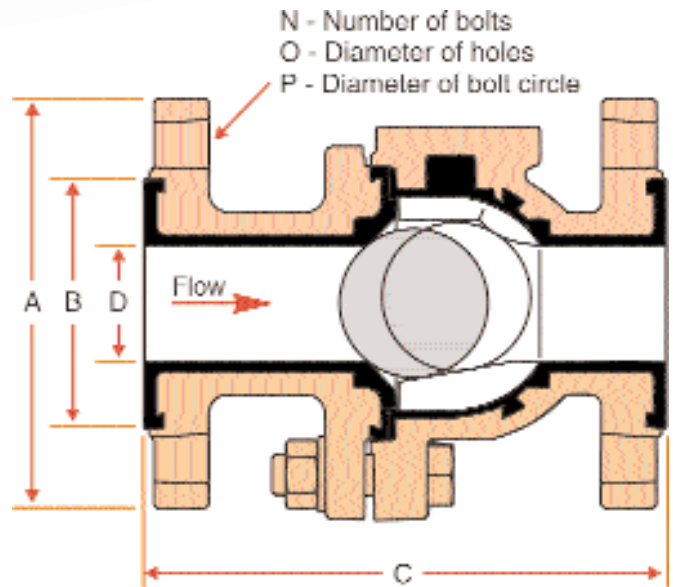
Refer to page 18 for pressure-temperature ratings.



Materials of construction

| | |
|---------|------------------------|
| Body | PFA lined ductile iron |
| Ball | Solid PTFE |
| Bolting | B7 carbon steel |

Other lining materials available upon request.



Dimensions (inches)

| Size | A | B | C | D | N | O | P | Wt.lbs. | Opening Pressure Vertical Installation PSI | Cv Values |
|-------|-------|------|-------|------|---|------|------|---------|--|-----------|
| 1/2 | 3.50 | 1.57 | 5.12 | 0.59 | 4 | 0.62 | 2.36 | 9 | 0.28 | 0.8 |
| 3/4 | 3.86 | 1.97 | 5.91 | 0.79 | 4 | 0.62 | 2.72 | 11 | 0.16 | 1.1 |
| 1 | 4.25 | 2.01 | 6.00 | 0.91 | 4 | 0.62 | 3.11 | 11 | 0.13 | 2.2 |
| 1 1/2 | 5.00 | 2.87 | 7.00 | 1.42 | 4 | 0.62 | 3.86 | 23 | 0.17 | 50 |
| 2 | 5.98 | 3.62 | 8.00 | 1.85 | 4 | 0.75 | 4.72 | 29 | 0.17 | 87 |
| 3 | 7.52 | 4.92 | 9.50 | 3.07 | 4 | 0.75 | 5.98 | 68 | 0.32 | 235 |
| 4 | 9.02 | 6.18 | 11.50 | 3.74 | 8 | 0.75 | 7.50 | 103 | 0.46 | 263 |
| 6 | 10.98 | 8.27 | 14.00 | 5.71 | 8 | 0.88 | 9.49 | 189 | 0.54 | 302 |

* U.S. Patent No. 5,971,015

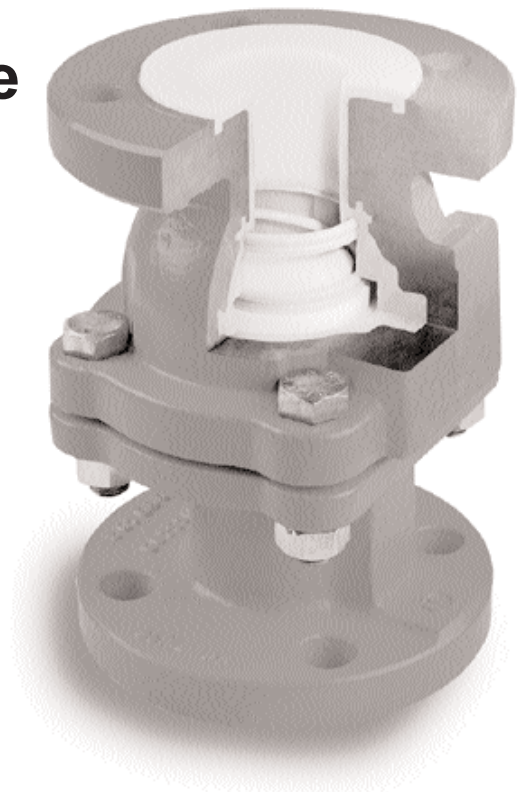
C202 Piston Check Valve

Formerly 073

Sizes 1/2 through 12 inches, ANSI Class 150

Tufline lined piston check valves feature a spring loaded plug to provide an automatic seal against backflow. It is especially well suited for low pressure applications and can be installed in any orientation.

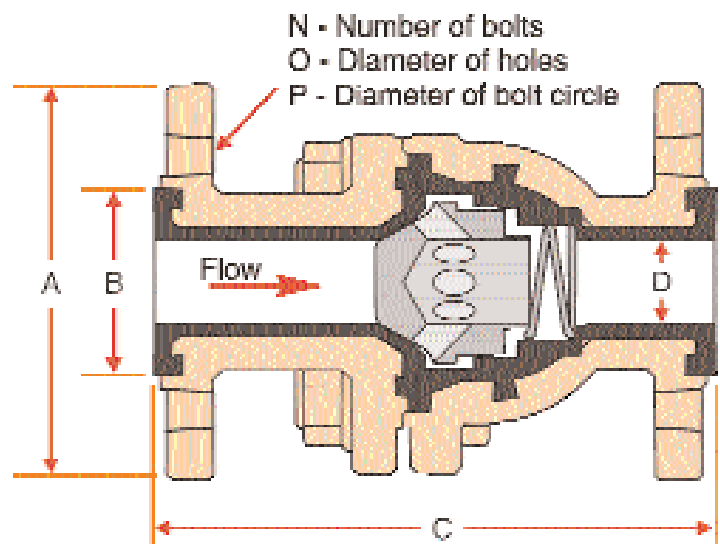
Refer to page 18 for pressure-temperature ratings.



Materials of construction

| | |
|---------------|----------------------------|
| Body | PFA lined ductile iron |
| Piston | PTFE |
| Piston holder | PTFE |
| Seat ring | PTFE |
| Spring | PTFE lined stainless steel |
| Bolting | B7 carbon steel plated |

Other lining materials available upon request.



Dimensions (inches)

| Size | A | B | C | D | N | O | P | Wt. lbs. | Opening Pressure Horizontal Position PSI | Opening Pressure Vertical Position PSI ↑ | Opening Pressure Vertical Position PSI ↓ | Cv Values |
|-------|-------|------|-------|------|---|------|------|----------|--|--|--|-----------|
| 1/2 | 3.50 | 1.57 | 5.12 | 0.59 | 4 | 0.62 | 2.36 | 9 | 0.54 | 0.58 | 0.16 | 6.20 |
| 3/4 | 3.86 | 1.97 | 5.91 | 0.79 | 4 | 0.62 | 2.72 | 11 | 0.54 | 0.58 | 0.16 | 8.66 |
| 1 | 4.25 | 2.01 | 6.00 | 0.91 | 4 | 0.62 | 3.11 | 11 | 0.54 | 0.58 | 0.16 | 17.55 |
| 1 1/2 | 5.00 | 2.87 | 7.00 | 1.42 | 4 | 0.62 | 3.86 | 23 | 0.70 | 0.74 | 0.65 | 29.84 |
| 2 | 5.98 | 3.62 | 8.00 | 1.85 | 4 | 0.75 | 4.72 | 29 | 0.61 | 0.67 | 0.55 | 44.46 |
| 3 | 7.52 | 4.92 | 9.50 | 3.07 | 4 | 0.75 | 5.98 | 68 | 0.80 | 1.04 | 0.55 | 101.21 |
| 4 | 9.02 | 6.18 | 11.50 | 3.74 | 8 | 0.75 | 7.50 | 103 | 0.80 | 1.00 | 0.61 | 139.46 |
| 6 | 10.98 | 8.27 | 14.00 | 5.71 | 8 | 0.88 | 9.49 | 189 | 0.58 | 0.81 | 0.35 | 161.46 |

074 & 075 Poppet Check Valves

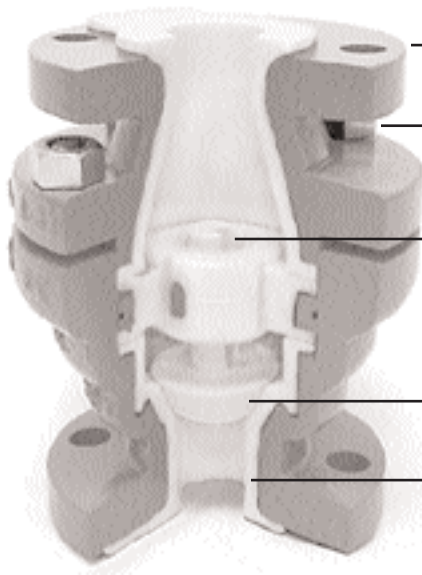


Figure 074

Ductile iron or cast steel bodies available.

B7 bolting resists chloride stress-cracking.

Keyway prevents poppet rotation.

Poppet covering matches body liner in 4" thru 8" sizes (solid PTFE poppet in 1" thru 3" sizes). Steel insert in 4" thru 8" valve poppet.

Choice of 3 liner materials (PP, PVDF, PFA) for handling a wide range of fluids.

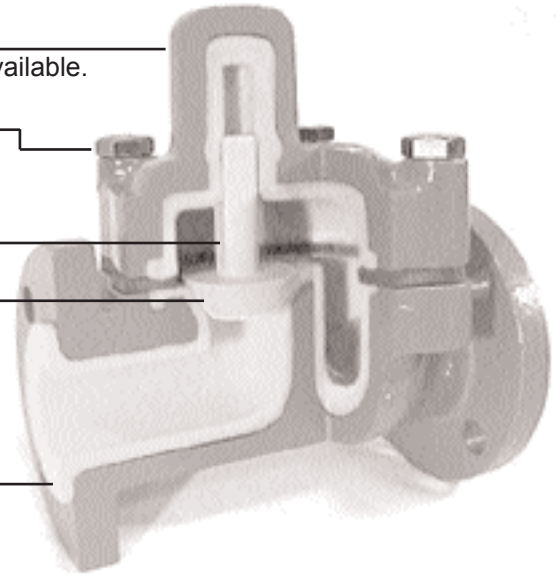


Figure 075

Tufline Plastic-Lined Poppet Check Valves handle various corrosive media at temperatures from -20°F to 300°F (-28°C to 149°C) by combining the best properties of two different materials of construction.

On the outside, a metal body provides strength, shock resistance, ease of installation, and a high pressure handling capability.

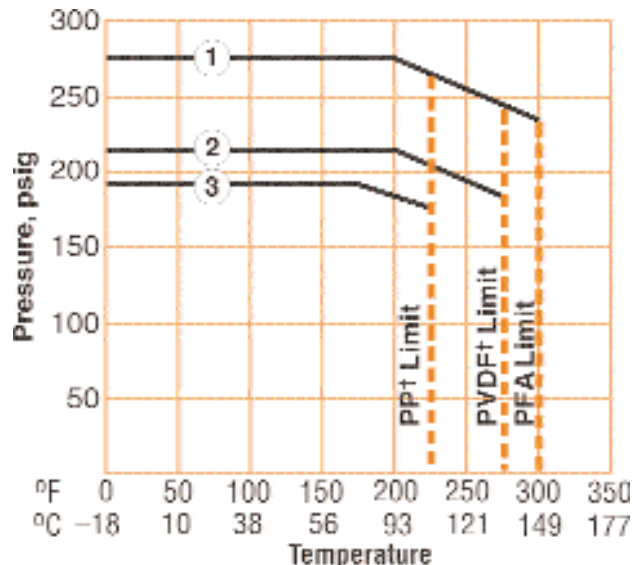
On the inside, a plastic lining offers corrosion resistance that stainless steel and high alloy metal valves can't match. The thick plastic lining also prevents contamination of high purity fluids.

Poppet-type check valves.

Horizontal and vertical check valves are plastic lined for handling corrosives and high-purity fluids. They are extremely effective in preventing back-pressure or backflow, featuring a low 0.5 psi (0.03 bar) cracking pressure differential, and are capable of handling pressures to 275 psi (19 bar).

Since Tufline Check Valves have only one moving part, they are less likely to need maintenance. Because every surface in contact with the fluid is made of, or covered with, a thick layer of plastic, corrosion and contamination are virtually eliminated. They also have full pipe diameter ports and provide minimal obstruction in the flow path. The poppet-type design eliminates problems that occur in some check valves with pockets that can trap fluid.

Pressure / temperature ratings



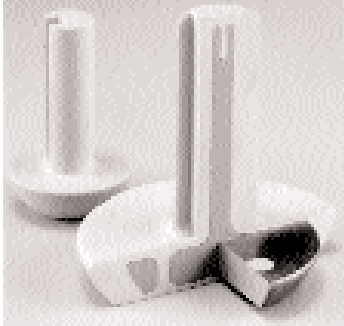
- ① Class 150 Cast Steel 1" - 4" Valves
- ② Class 150 Cast Steel 6" & 8" Valves
- ③ Class 150 Ductile Iron

† Maximum allowable temperature of liner/gasket may be lower based on the aggressiveness of the fluid being handled. Contact Xomox for further details.

Available size, body material, and lining combinations for both 074 and 075 valves

| Size (in.) | 1 | | 1½ | | 2 | | 2½ | | 3 | | 4 | | 6 | | 8 | |
|---------------|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|----|
| Body Material | DI | CS | DI | CS | DI | CS | DI | CS | DI | CS | DI | CS | DI | CS | DI | CS |
| PP | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● | ● |
| PVDF | | ● | | ● | | ● | | | | ● | | ● | | ● | | * |
| PFA | | ● | | ● | | ● | | | | ● | | ● | | | | |

*Vertical Check Valve (074) only



Poppets.

Valves 1" through 3" sizes feature a solid PTFE poppet. Larger sizes use a steel reinforced poppet molded of the same material as the valve liner.

Cv Factors

| Size | Horizontal | Vertical |
|------|------------|----------|
| 1 | 5 | 8 |
| 1½ | 22 | 60 |
| 2 | 30 | 130 |
| 2½ | N/A | N/A |
| 3 | 80 | 320 |
| 4 | 150 | 500 |
| 6 | 450 | 1100 |
| 8 | 800 | 1500 |

Body bolting torques.

To ensure optimum performance in the presence of thermal cycling, it is essential that the body nuts be torqued to the values shown in the table below.

Torquing should only be done on the system in the ambient, cooled state, never at elevated temperature. Otherwise, excessive force could be applied to the plastic faces. Xomox recommends retorquing body bolts immediately before installation of the valve.

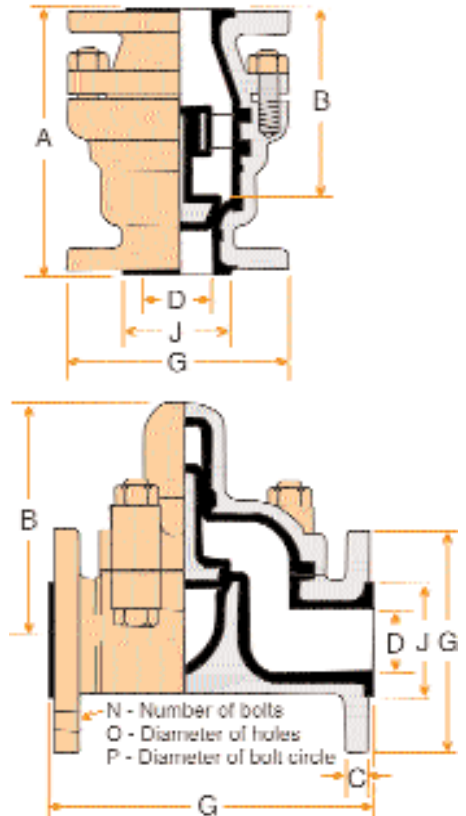
Body bolt torque values (ft-lbs)

| Size | Horizontal | | Vertical |
|------|----------------------|--------------|----------|
| | Elastometric gaskets | PTFE gaskets | |
| 1 | 30 | 30 | 35 |
| 1½ | 30 | 30 | 35 |
| 2 | 30 | 40 | 45 |
| 2½ | 30 | N/A | 60 |
| 3 | 55 | 120 | 60 |
| 4 | 40 | 60 | 50 |
| 6 | 65 | 110 | 75 |
| 8 | 80 | 125 | 120 |

Check valve dimensions & weights (All dimensions in inches)

| | | 1 | 1½ | 2 | 2½ | 3 | 4 | 6 | 8 |
|----------|---------------------------------|------|------|------|------|-------|-------|-------|-------|
| A | Horizontal Face To Face | 7.00 | 7.63 | 8.63 | 8.88 | 10.75 | 14.50 | 18.50 | 23.13 |
| A | Vertical Face To Face | 6.38 | 7.13 | 8.13 | 8.50 | 9.75 | 12.00 | 14.50 | 17.13 |
| B | Horizontal Center To Top | 4.38 | 5.38 | 6.50 | 7.38 | 8.63 | 11.00 | 15.25 | 18.44 |
| B | Vertical Center To Top | 5.38 | 5.63 | 6.75 | 7.00 | 8.38 | 9.75 | 12.75 | 16.20 |
| C | Flange Thickness | .44 | .56 | .63 | .663 | .75 | .94 | 1.00 | 1.13 |
| D | Plastic ID (PP, PVDF) | .69 | 1.25 | 1.63 | 2.09 | 2.69 | 3.50 | 5.56 | 7.25 |
| D | Plastic ID (PFA) | .69 | 1.31 | 1.75 | N/A | 2.81 | 3.69 | N/A | N/A |
| N | No. Of Bolt Holes | 4 | 4 | 4 | 4 | 4 | 8 | 8 | 8 |
| O | Size Of Bolt Holes | .63 | .63 | .75 | .75 | .75 | .75 | .88 | .88 |
| P | Bolt Circle Diameter | 3.20 | 3.88 | 4.75 | 5.50 | 6.00 | 7.50 | 9.50 | 11.75 |
| G | Flange Diameter | 4.20 | 5.00 | 6.00 | 7.00 | 7.50 | 9.00 | 11.00 | 13.50 |
| J | Face Diameter | 1.88 | 2.69 | 3.44 | 3.94 | 4.63 | 5.94 | 8.00 | 10.06 |
| K | Horizontal Approx. Weight, lbs. | 15 | 19 | 31 | 37 | 56 | 92 | 200 | 330 |
| K | Vertical Approx. Weight, lbs. | 16 | 19 | 31 | 38 | 52 | 88 | 142 | 225 |

NA=Not Available

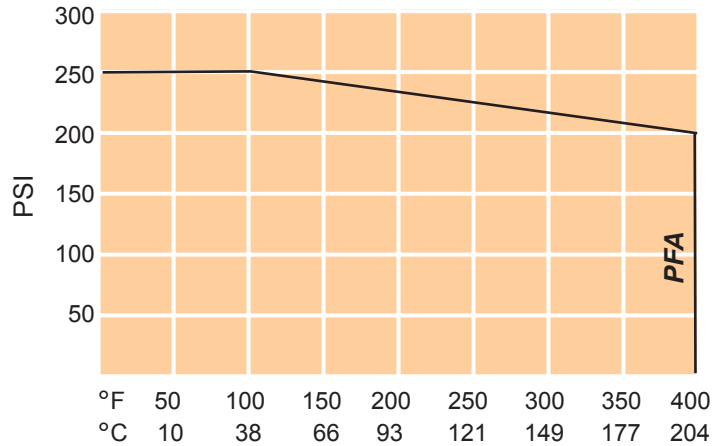


081 Sight Flow Indicator

Sizes 1 through 6 inch, ANSI Class 150

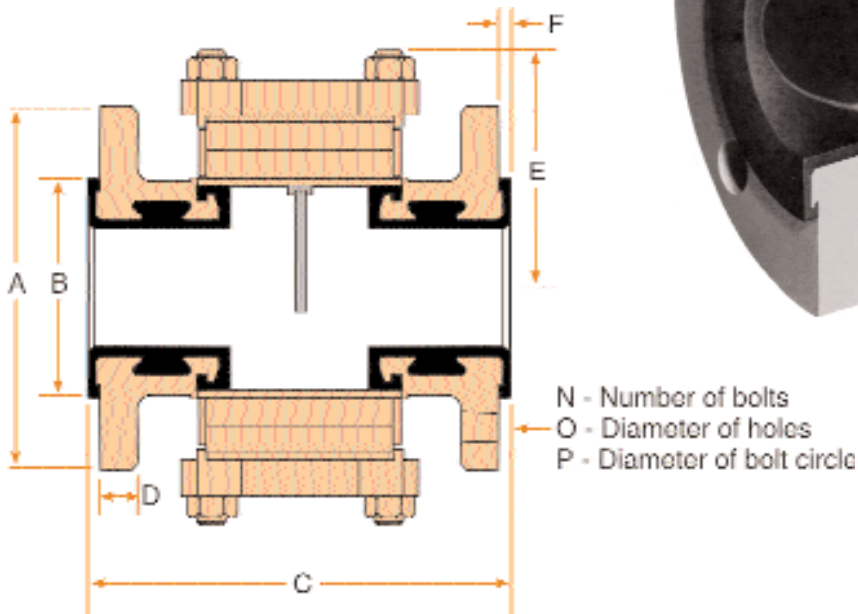
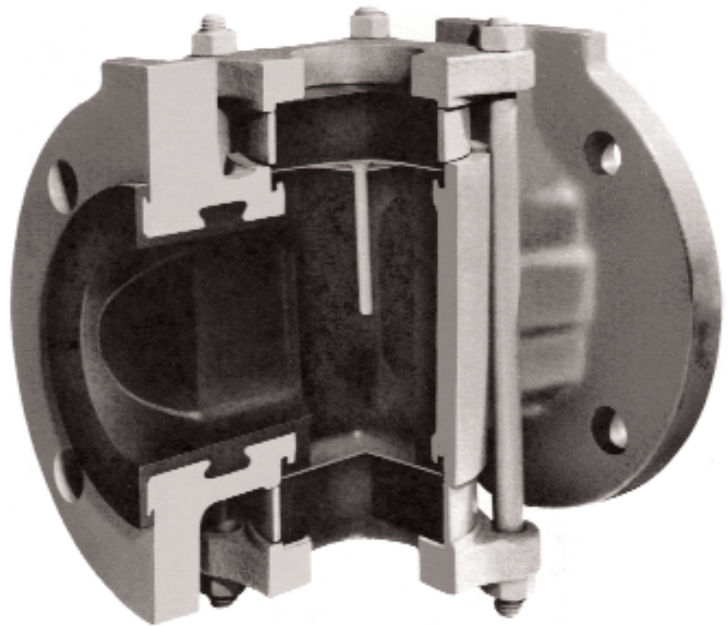
Tuflin sight flow indicators provide reliable indication of flow on any corrosive service. Safe and shatter-proof, each window consists of two tempered lime glasses cemented together by a proprietary adhesive. The glasses are encased with a steel circumferential band. Fluid flow can be viewed from either top or bottom. Drip-lip feature is incorporated into the liner for immediate flow indication on low-pressure applications.

Pressure-Temperature Ratings



Materials of construction

| | |
|-------------------------------|------------------------|
| Body | PFA lined ductile iron |
| Top and bottom covers | Ductile iron |
| Top and bottom seal discs | PFA |
| Top and bottom glass cushions | PTFE |
| Cover bolts and nuts | B7 carbon steel |
| Indicator rod support | PTFE |
| Indicator rod | PTFE |
| Top and bottom lens assembly | Tempered glass |



Dimensions (inches)

| Size | A | B | C | D | E | F | N | O | P | Wt. lbs. | Cv Factors |
|------|-------|------|-------|------|------|-----|---|-----|------|----------|------------|
| 1 | 4.25 | 2.88 | 5.00 | .44 | 2.88 | .13 | 4 | .63 | 3.13 | 8 | 39 |
| 1½ | 5.00 | 3.25 | 6.50 | .56 | 3.25 | .13 | 4 | .63 | 3.88 | 13 | 80 |
| 2 | 6.00 | 4.00 | 7.00 | .63 | 4.00 | .15 | 4 | .75 | 4.75 | 20 | 155 |
| 3 | 7.50 | 4.50 | 8.00 | .75 | 4.50 | .15 | 4 | .75 | 6.00 | 30 | 265 |
| 4 | 9.00 | 5.25 | 9.00 | .94 | 5.25 | .15 | 8 | .75 | 7.50 | 50 | 493 |
| 6 | 11.00 | 5.69 | 10.50 | 1.00 | 5.69 | .15 | 8 | .88 | 9.50 | 84 | 967 |

F202 Basket Filter

Formerly 083

Sizes 1/2 through 6 inch, ANSI Class 150

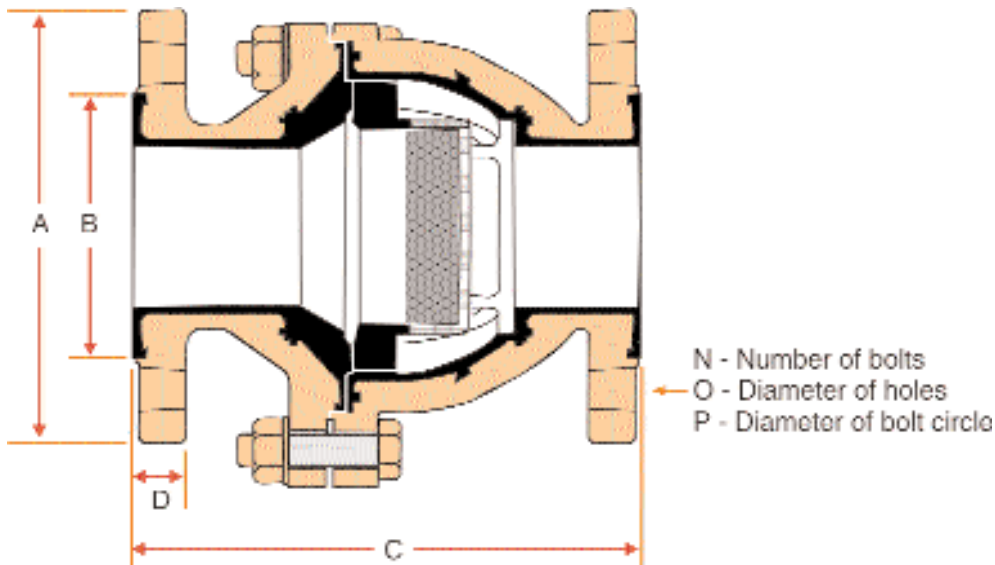
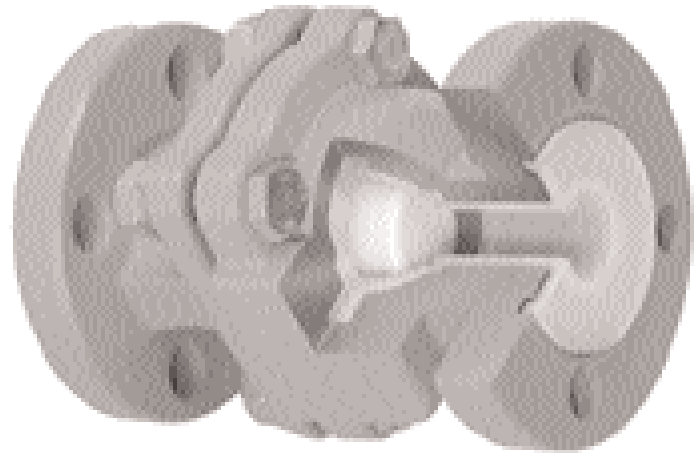
Tufline fully lined basket filters are used in a variety of corrosive services for the removal of debris from the pipeline or solid particles from the media.

Refer to page 18 for pressure-temperature ratings.

Materials of construction

| | |
|---------|------------------------|
| Body | PFA lined ductile iron |
| Filter | PTFE |
| Bolting | B7 Carbon steel |

Other lining materials available upon request.



Dimensions (inches)

| Size | A | B | C | D | N | O | P | Wt. lbs. | Opening Pressure Vertical Installation PSI |
|-------|-------|------|-------|------|---|------|------|----------|--|
| 1/2 | 3.50 | 1.57 | 5.12 | 0.59 | 4 | 0.62 | 2.36 | 9 | 0.28 |
| 3/4 | 3.86 | 1.97 | 5.91 | 0.79 | 4 | 0.62 | 2.72 | 11 | 0.16 |
| 1 | 4.25 | 2.01 | 6.00 | 0.91 | 4 | 0.62 | 3.11 | 11 | 0.13 |
| 1 1/2 | 5.00 | 2.87 | 7.00 | 1.42 | 4 | 0.62 | 3.86 | 23 | 0.17 |
| 2 | 5.98 | 3.62 | 8.00 | 1.85 | 4 | 0.75 | 4.72 | 29 | 0.17 |
| 3 | 7.52 | 4.92 | 9.50 | 3.07 | 8 | 0.75 | 5.98 | 68 | 0.32 |
| 4 | 9.02 | 6.18 | 11.50 | 3.74 | 8 | 0.75 | 7.50 | 103 | 0.46 |
| 6 | 10.92 | 8.27 | 14.00 | 5.71 | 8 | 0.88 | 9.49 | 189 | 0.54 |

Y102 Y Strainer

Formerly **084**

Sizes 1/2 through 4 inches*, ANSI Class 150

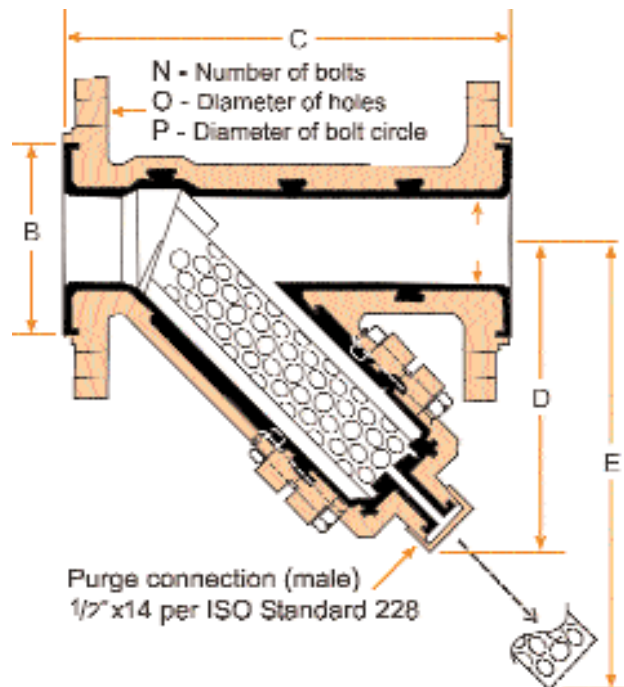
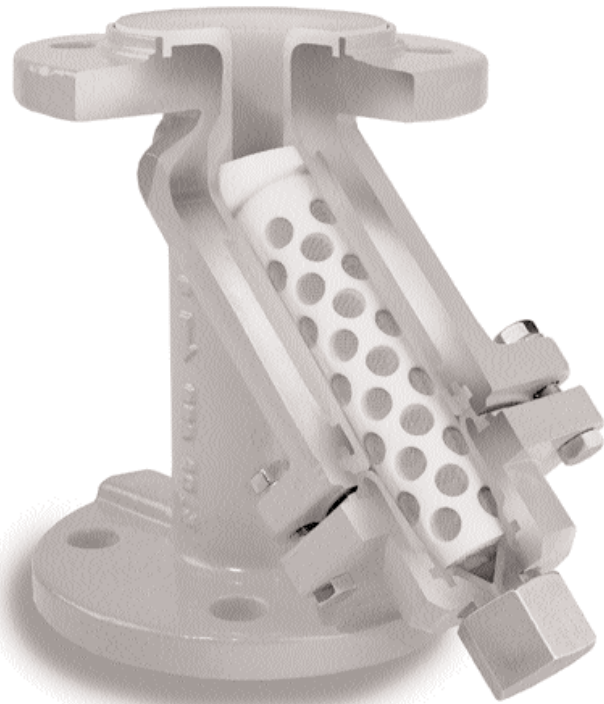
Tufline Y strainers are used in a variety of corrosive services for the removal of debris from the pipeline or solid particles from the media. The unique design allows the strainer to be easily removed for cleaning or replacement.

Refer to page 18 for pressure-temperature ratings.

Materials of construction

| | |
|--------------|------------------------|
| Body | PFA lined ductile iron |
| Filter | PTFE |
| Flange cover | PFA lined steel |
| Cap | PTFE lined steel |

Other lining materials available upon request.



Dimensions (inches)

| Size | B | C | D | E | N | O | P | Wt. lbs. | Cv Factors |
|-------|------|-------|-------|------|---|------|------|----------|------------|
| 1/2 | 1.57 | 5.91 | 3.94 | 5.2 | 4 | 0.62 | 2.36 | 8.14 | 0.23 |
| 3/4 | 2.24 | 5.91 | 3.94 | 5.2 | 4 | 0.62 | 2.72 | 8.14 | 0.25 |
| 1 | 2.60 | 6.30 | 4.09 | 5.5 | 4 | 0.62 | 3.11 | 9.46 | 6.13 |
| 1 1/2 | 3.43 | 7.87 | 5.63 | 7.1 | 4 | 0.62 | 3.86 | 17.38 | 13.87 |
| 2 | 3.94 | 9.06 | 6.34 | 9.5 | 4 | 0.75 | 4.72 | 22.00 | 23.81 |
| 3 | 5.35 | 12.20 | 10.08 | 13.4 | 8 | 0.75 | 5.98 | 43.56 | 49.48 |
| 4 | 6.18 | 13.78 | 11.18 | 16.5 | 8 | 0.75 | 7.50 | 58.30 | 93.17 |

*Other sizes on request.

085 PTFE Clamp Valve

Tufline Plastic-Lined

Clamp Valves handle varieties of corrosives at temperatures from -20°F to 400°F (-28°C to 204°C) by combining the best properties of two different materials of construction.

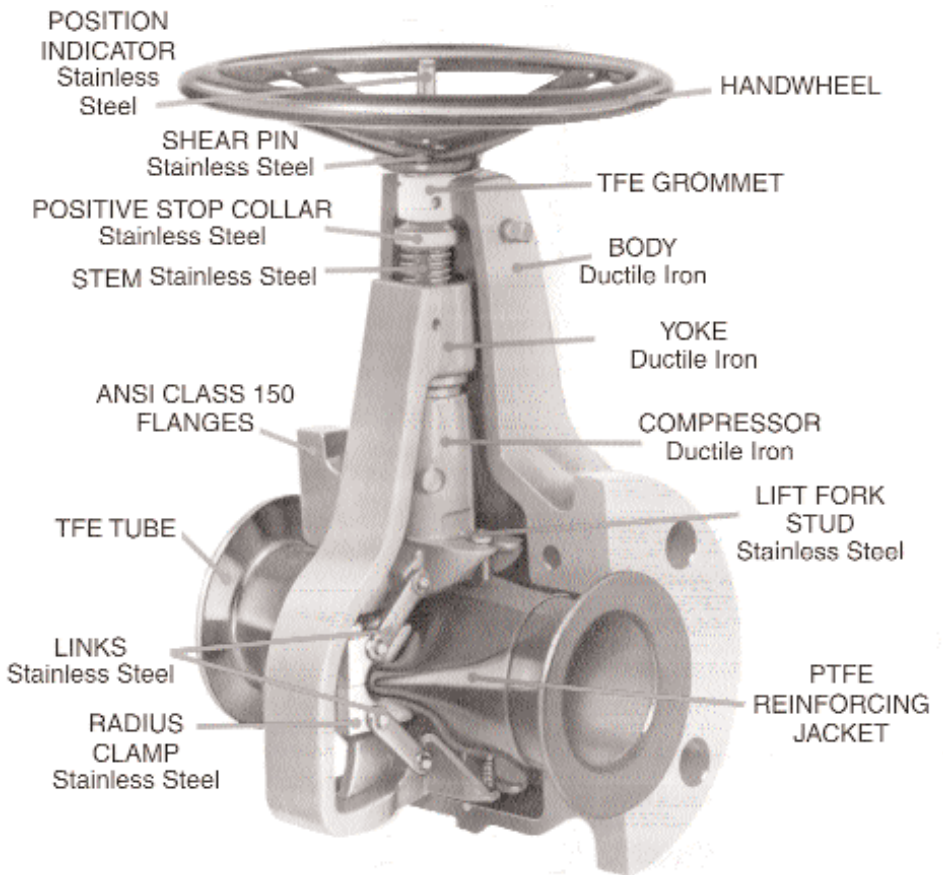
On the outside, a metal body provides strength, shock resistance, ease of installation, and a high pressure handling capability.

On the inside, the PTFE tube offers corrosion resistance that stainless steel and high alloy metal valves can't match.

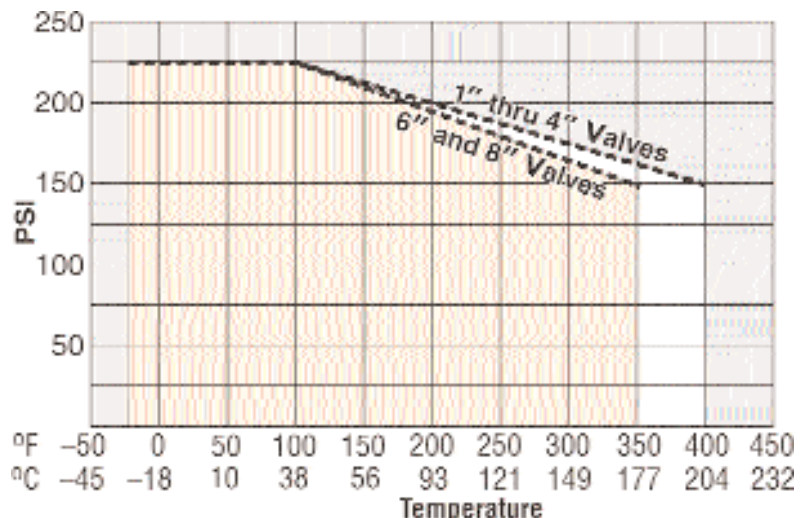
The Teflon® PTFE Clamp Valve with its full-flow, straight-through packless design, is capable of bubble-tight shutoff and fine throttling. These features coupled with minimum maintenance and unexcelled corrosion resistance, makes the PTFE clamp valve the most economical valve available for tough CPI applications.

The clamp valve consists of a flexible PTFE tube and a clamp. Unlike pinch valves, the tubing is never kinked, creased or pinched. PTFE Clamp Valves are available in sizes 1" through 8" in various configurations and with a number of optional accessories.

Because all wetted surfaces are PTFE, the clamp valves offer unsurpassed chemical resistance at temperatures up to 400°F (350°C) for 6" and 8" valves. The minimum burst pressure for sizes 1" through 8" at 70°F is 900 psi and at 400°F is 600 psi.

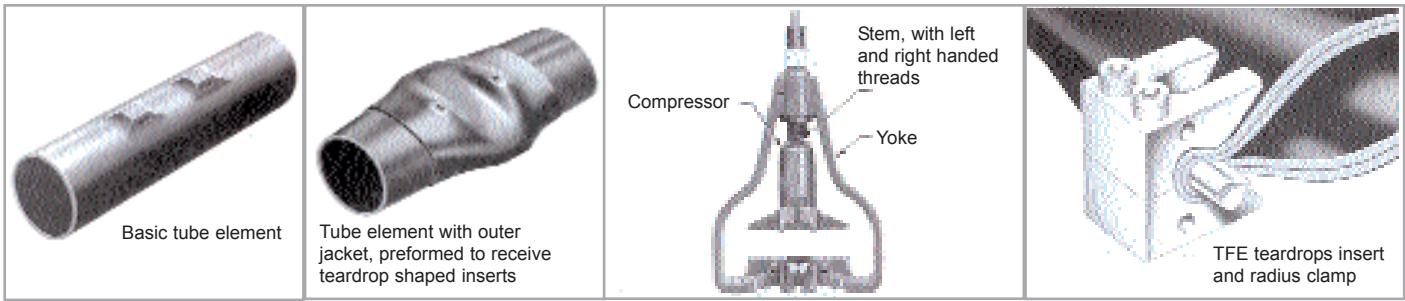


Pressure / temperature ratings



Note: Contact Xomox for applications beyond maximum nominal pressure and temperature ratings.

*Teflon® is a registered trademark of DuPont.

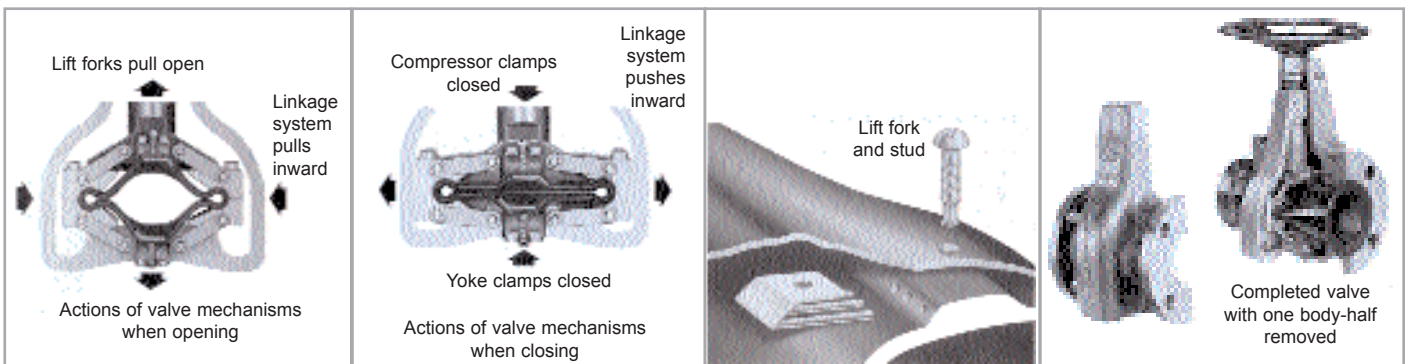


The Clamp valve is a flexible tube and a clamp. The tubing is made from Teflon PTFE.

A Teflon PTFE reinforcing jacket heat shrunk over the tube element increases strength without sacrificing flexibility.

The clamping mechanism consists of a compressor which travels down a stem with rotation of the hand-wheel or power operator, and a yoke which travels up the stem at the same time. Together these components clamp off flow bubble-tight.

Teflon inserts - teardrop shaped in cross section - on each side of the Teflon tube prevent the tube element from being overstressed. All flexing takes place on the center line of the valve between the teardrops, insuring long life for the valve.

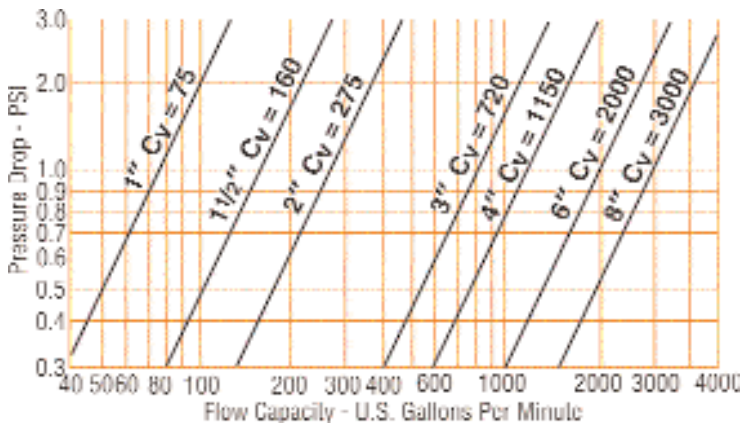


The radius clamps are connected to the yoke and to the compressor by means of links and link pins. These components, working together, provide a scissor-jack action which pushes the tube element inward during the opening cycle and pulls it outward during closing.

Four lift forks imbedded top and bottom in the tube element on each side of the clamp act as powerful fingers which work with the links and link pins to pull the sealing surfaces apart even under full vacuum conditions.

Operating parts are encased in a ductile iron body with Standard ANSI Class 150 flanges. Because the valve is symmetrical and completely bi-directional, either end can be placed upstream.

Pressure drop vs. flow at full open position for rotary operated valves.



C_v is a coefficient which relates the rate of fluid flow through a valve to the pressure drop across the valve. Valves with higher values of C_v will provide higher rates of flow for a given pressure drop. C_v values for PTFE Clamp Valves are dependent upon inlet pressure. C_v values shown above were determined with inlet pressure of 65 psi or higher.

Valve sizing coefficient, C_v and liquid pressure recovery factor, F_L for linear valves.

| Valve Size | C_v | F_L |
|------------|-------|-------|
| 1" | 35 | 0.610 |
| 1 1/2" | 112 | 0.420 |
| 2" | 163 | 0.439 |
| 3" | 396 | 0.330 |
| 4" | 527 | 0.514 |

F_L is a coefficient which permits calculation of valve flow capacity at low inlet pressures.

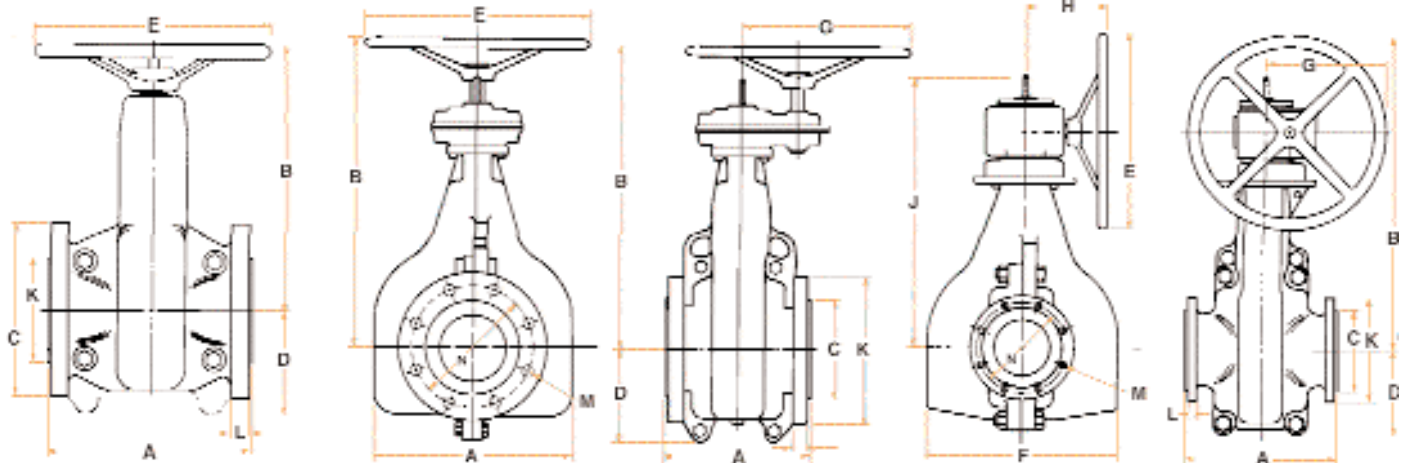
$$F_L = \frac{q_{max.}}{C_v \sqrt{P_1 - r_c P_v}}$$

$$C_v = \frac{q}{\sqrt{\Delta P/G}}$$

C_v = Valve sizing coefficient
 q = Flow rate, gal/min
 ΔP = Pressure drop, psi.
 G = Specific gravity of fluid

F_L = Liquid pressure recovery factor
 $q_{max.}$ = Maximum flow rate
 C_v = Valve sizing coefficient
 P_1 = Valve inlet pressure, psi.
 P_v = Vapor pressure of fluid
 r_c = Critical pressure ratio

085 PTFE Clamp Valve Dimensions



1" through 4"
Handwheel Operated

3" and 4"
Gear Operated

6" and 8" Valves

| Valve Size | Face To Face | To Top Of Hand-Wheel | Flare Dia. | To Bottom Of Valve | Hand-Wheel Dia. | Width Of Body | To Extreme Edge Of Hand-Wheel | To Outside Face Of Hand-Wheel | To Top Of Position Indicator | Nominal Torque To Seat Ft. Lbs. | Wt. Lbs. | Flange Dimensions, 150 lb., ANSI | | | | |
|------------|--------------|----------------------|------------|--------------------|-----------------|---------------|-------------------------------|-------------------------------|------------------------------|---------------------------------|----------|----------------------------------|-------------------|-------------------|----------------|------------------|
| | | | | | | | | | | | | Flange Dia. | Flange Thick-ness | No. Of Bolt Holes | Bolt Hole Dia. | Bolt Circle Dia. |
| | A | B | C | D | E | F | G | H | J** | | | K | L | | M | N |
| 1 | 5.00 | 6.63 | 2.00 | 2.50 | 4.25 | 5.06 | - | - | - | 20 | 15 | 4.25 | .44 | 4 | .63 | 3.13 |
| 1½ | 6.50 | 8.06 | 2.88 | - | 7.00 | 6.69 | - | - | - | 30 | 27 | 5.00 | .56 | 4 | .63 | 3.88 |
| 2 | 7.00 | 9.19 | 3.63 | - | 8.00 | 7.38 | - | - | - | 35 | 35 | 6.00 | .63 | 4 | .75 | 4.75 |
| 3 | 8.00 | 14.88 | 5.00 | 4.50 | 14.00 | 10.88 | - | - | - | 65 | 75 | 7.50 | .75 | 4 | .75 | 6.00 |
| 3* | 8.00 | 17.81 | 5.00 | 4.50 | 14.00 | 10.88 | 6.44 | - | - | 35 | 78 | 7.50 | .75 | 4 | .75 | 6.00 |
| 4 | 9.00 | 15.50 | 6.19 | 5.63 | 14.00 | 12.13 | - | - | - | 70 | 107 | 9.00 | .94 | 8 | .75 | 7.50 |
| 4* | 9.00 | 18.44 | 6.19 | 5.63 | 14.00 | 12.13 | 10.44 | - | - | 50 | 113 | 9.00 | .94 | 8 | .75 | 7.50 |
| 6† | 16.00 | 35.75 | 8.50 | 9.00 | 24.00 | 20.25 | 15.00 | 9.31 | 29.75 | 90 | 400 | 11.00 | 1.00 | 8 | .88 | 9.50 |
| 6‡ | 16.00 | 35.75 | 8.50 | 9.00 | 24.00 | 20.25 | 15.00 | 9.31 | 29.75 | 125 | 400 | 11.00 | 1.00 | 8 | .88 | 9.50 |
| 8† | 19.00 | 35.75 | 10.63 | 9.00 | 24.00 | 20.25 | 15.00 | 9.31 | 29.75 | 100 | 430 | 13.50 | 1.13 | 8 | .88 | 11.75 |
| 8‡ | 19.00 | 35.75 | 10.63 | 9.00 | 24.00 | 20.25 | 15.00 | 9.31 | 29.75 | 130 | 430 | 13.50 | 1.20 | 8 | .88 | 11.75 |

Notes:

All flange bolt holes straddle the center lines.

All valve flange dimensions conform to ANSI B16.42. The face-to-face dimensions in valve sizes through 4" conform to ANSI B163.10, Class 150.

* Recommended in 3" size for line pressure over 150 psi and in 4" size for line pressure over 75 psi. An enclosed gear box is included.

** J is less than B on handwheel operated valves.

† Recommended for use with line pressure up to 75 psi, these models are furnished with 3-to-1 gear reducers.

‡ Recommended for use with line pressure over 75 psi, these models are furnished with 5-to-1 gear reducers.

K202 Tank Bottom Valve

Formerly 092

Sizes 1 through 6 inch, ANSI Class 150

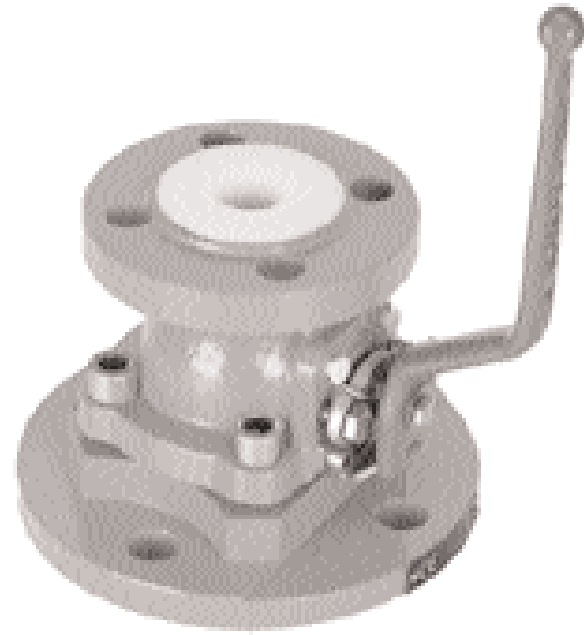
Tufline lined tank bottom valves allow efficient discharge of corrosive fluids from bulk liquid tanks.

Refer to page 18 for pressure-temperature ratings.

Tank Connection Flange

The tank connection flange can be supplied in various sizes per the table below:

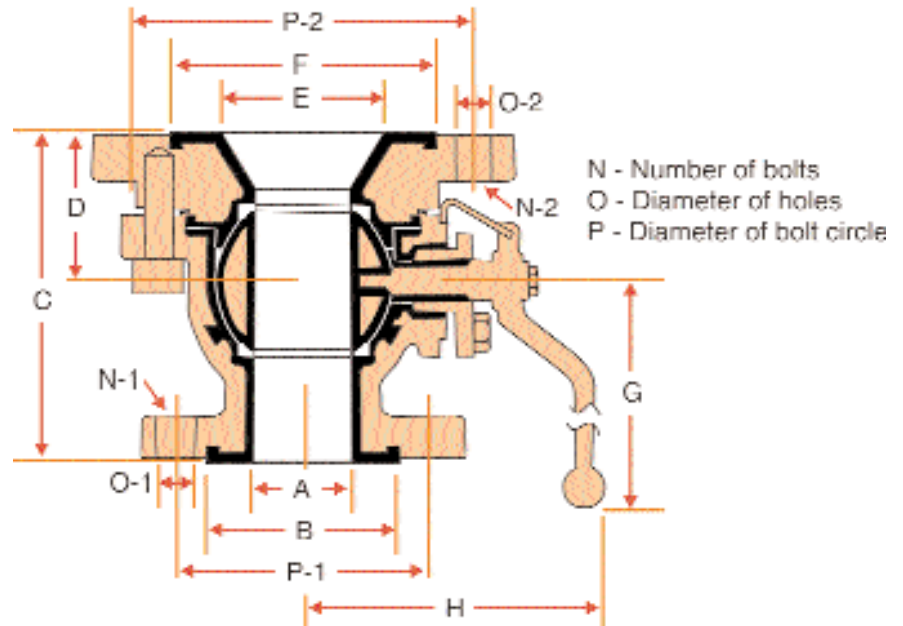
| Output Size | Connection Size (inches) |
|-------------|--------------------------|
| 1 | 1½ or 2 |
| 1½ | 2 |
| 2 | 3 or 4 |
| 3 | 4 |
| 4 | 6 |
| 6 | 8 |



Materials of construction

| | |
|--------------|---------------------------|
| Body | PFA lined ductile iron |
| Ball | PFA lined ductile iron |
| Stem | PFA lined stainless steel |
| Gland | Stainless steel |
| Handle | Cast ductile iron |
| Flange | PFA lined ductile iron |
| Bolting | B7 carbon steel |
| Stem packing | PTFE |
| Seat | PTFE |

Other lining materials available upon request.



| Size | A | B | C | D | E | F | G | H | N-1 | O-1 | P-1 | N-2 | O-2 | P-2 |
|------|------|------|-------|------|------|-------|-------|-------|-----|------|------|-----|------|-------|
| 1 | 1 | 2.01 | 4.80 | 2.44 | 1.50 | 2.87 | 6.61 | 4.53 | 4 | 0.75 | 3.13 | 4 | 0.63 | 3.87 |
| 1 | 1 | 2.01 | 4.80 | 2.44 | 2 | 3.78 | 6.61 | 4.53 | 4 | 0.75 | 3.13 | 4 | 0.74 | 4.74 |
| 1½ | 1.50 | 2.87 | 6.50 | 2.52 | 2 | 3.78 | 6.61 | 5.31 | 4 | 0.75 | 3.87 | 4 | 0.74 | 4.74 |
| 2 | 2 | 3.62 | 7.48 | 4.06 | 3 | 4.92 | 7.87 | 5.71 | 4 | 0.75 | 4.75 | 4 | 0.74 | 6.00 |
| 2 | 2 | 3.62 | 6.22 | 2.79 | 4 | 6.18 | 7.87 | 5.71 | 4 | 0.75 | 4.75 | 8 | 0.74 | 7.50 |
| 3 | 3 | 4.92 | 9.49 | 4.84 | 4 | 6.18 | 11.50 | 7.72 | 4 | 0.75 | 6.10 | 8 | 0.74 | 7.50 |
| 4 | 4 | 6.18 | 10.20 | 4.88 | 6 | 8.27 | 19.69 | 8.86 | 8 | 0.75 | 7.50 | 8 | 0.91 | 9.45 |
| 6 | 6 | 8.27 | 12.20 | 5.51 | 8 | 11.31 | 19.69 | 10.04 | 8 | 0.87 | 9.49 | 8 | 0.91 | 11.42 |

R40XL Short Face To Face Ball Valve

Formerly 093

Sizes 1½ through 3 inch, ANSI Class 150

Tuflin fully lined short face-to-face valves provide efficient, reliable service in corrosive applications where space is an important consideration.

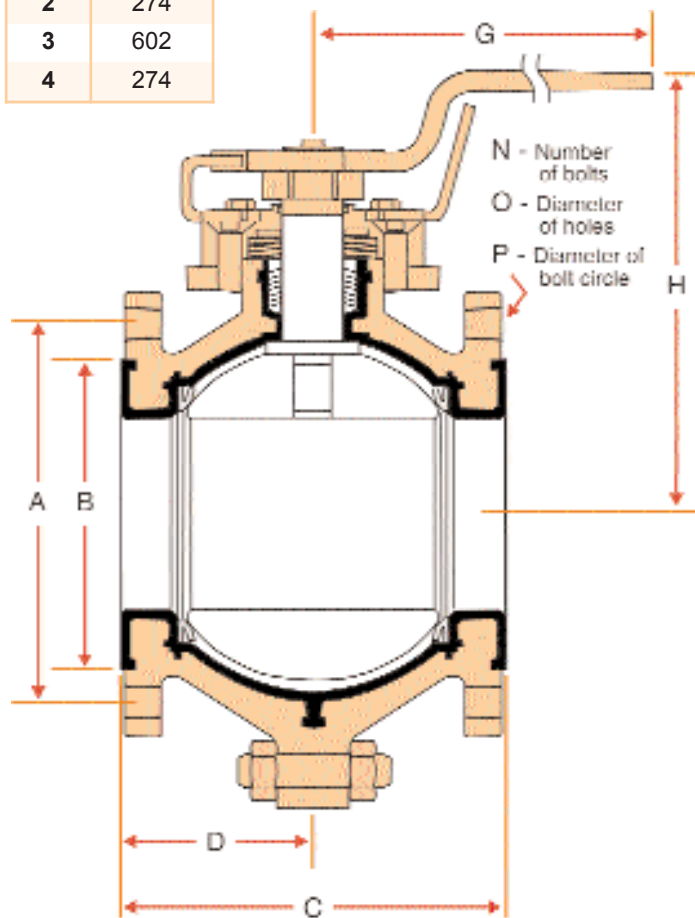
Refer to page 18 for pressure-temperature ratings.



Actuation Torques

(Max. breakaway, inch-pounds)

| Size | in/lb |
|------|-------|
| 1½ | 137 |
| 2 | 274 |
| 3 | 602 |
| 4 | 274 |



Materials of construction

| | |
|--------------|------------------------------------|
| Body | PFA lined stainless steel |
| Ball | PFA lined stainless steel |
| Stem | PFA lined stainless steel (CD4MCu) |
| Handle | Stainless steel |
| Fasteners | Stainless steel |
| Stem packing | PTFE |
| Seats | PTFE |

Other lining materials available upon request.

| Size | A | B | C | D | G | H | N | O | P | Wt. lbs. | Cv Values |
|------|------|------|------|------|-------|------|---|------|------|----------|-----------|
| 1½ | 4.33 | 3.54 | 3.94 | 1.97 | 7.85 | 5.26 | 4 | 0.62 | 3.86 | 15 | 213 |
| 2 | 4.92 | 4.02 | 4.33 | 2.17 | 7.85 | 5.73 | 4 | 0.75 | 4.72 | 22 | 295 |
| 3 | 6.30 | 5.43 | 5.91 | 2.95 | 11.42 | 7.52 | 8 | 0.75 | 5.98 | 47 | 629 |
| 4 | 7.09 | 6.30 | 7.48 | 3.74 | 15.75 | 8.66 | 8 | 0.75 | 7.50 | 86 | 1395 |

How To Order

| Specify to following: | Size, | Figure Number, | Material |
|-----------------------|-------|------------------|-----------|
| Example | 2", | 071 Check Valve, | PFA Lined |

Vacuum service

Tufline fully lined products perform well in vacuum service.

Oxygen and chlorine valves.

Valves designated for oxygen or chlorine service are thoroughly cleaned, tested, and dried per internal Xomox oxygen and chlorine standards. The flanges are then sealed and valves are packaged in plastic containers.

Quality assurance.

Tufline lined valves are used successfully in numerous applications throughout the chemical process industries. Xomox quality control procedures assure lining integrity, seat leak tightness, and absence of external leaks. Liners are dielectrically spark tested at 20,000 volts in accordance with ASTM D5162 specifications. Valves are available specifically tested and tagged to indicate conformity to ANSI B16.34 or B16.42 shell tests and MSS SP-61 seat test requirements.

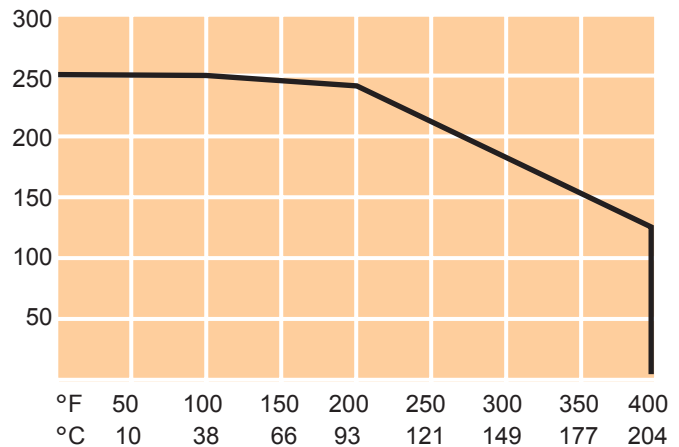
Deviations from standard.

Certain products and components in this catalog may be obtained upon application in additional sizes and other than standard materials.

Products may also be supplied in special sizes and configurations from the Xomox Special Products Group. This group offers design, engineering, and manufacturing services for custom products.

Pressure-Temperature Ratings

(Valves with PFA linings)

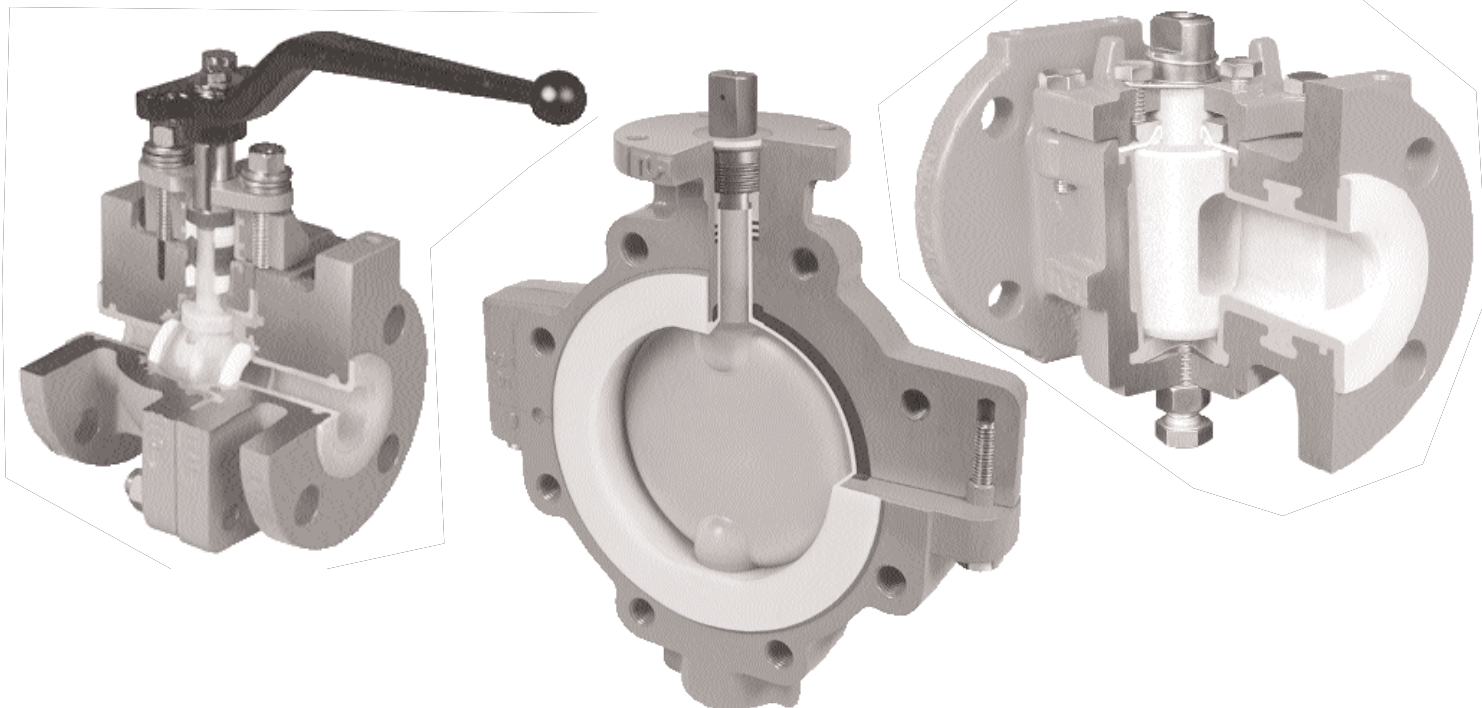


Xomox offers a broad range of lined valves.

For superior assured sealing, the metal-to-metal body joint of the Tufline Lined Ball Valve controls compression of the liner.

Tufline Lined Butterfly Valves have a continuous disc/shaft lining and a body lining that extends well beyond the secondary seal area.

Tufline Lined Plug Valves are an economical alternative to high alloy valves.

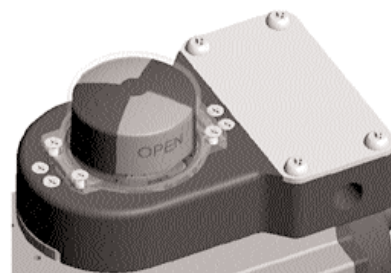
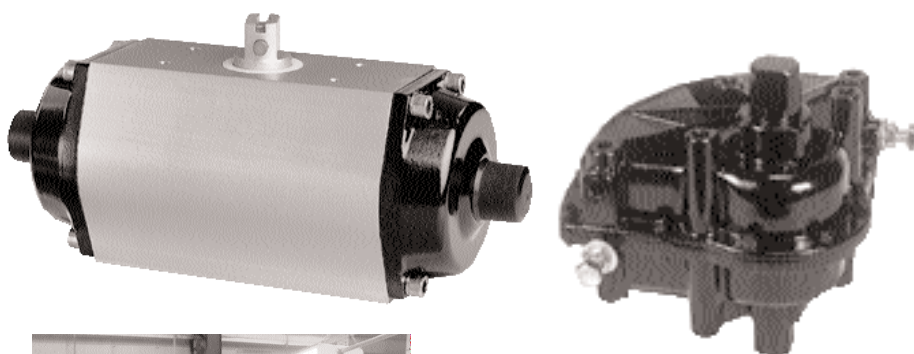


Single source responsibility for actuation and control.

Valves are available with Xomox XRP™ Actuators and Matryx® Vane Actuators.

Xomox switches and other control accessories are also available.

Let your regional Xomox Automation & Service Center take full responsibility for automation of your complete valve package.



Global Capabilities For Global Customers



Worldwide capabilities.

No matter where in the world you are, Xomox technical support and services are available from:

- 16 Manufacturing Facilities
- 18 Service Centers
- 50 Sales Offices
- More than 200 Xomox Authorized Distributors

Product selection.

Xomox offers the broadest line of process valves, actuators, accessories, and related services including:

- Tufline® Process Valves
- Saunders® Diaphragm Valves
- Matryx® Rack & Pinion, Vane Actuators
- Xomox® XRP™ Actuators

Product responsibility.

Xomox's concern for product performance extends to the product's period of service. We feel it is important for users to also be aware of their responsibilities. Our products are manufactured and used in numerous applications with a wide variety of service conditions. While general guidelines are often furnished, it obviously is not possible to provide complete and specific performance data for every conceivable service condition.

Global locator.

For a listing of Xomox Manufacturing Facilities, Service Centers, Regional Offices, and Authorized Distributors, visit our web site www.xomox.com.

Xomox literature.

All Xomox catalogs and technical data are available as PDF files at www.xomox.com.

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Phone: 513-745-6000
Fax: 513-745-6093

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Xomox Corporation

World Headquarters
4444 Cooper Road
Cincinnati, Ohio 45242

XOMOX
Process Valves & Actuators

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