

# KEYSTONE

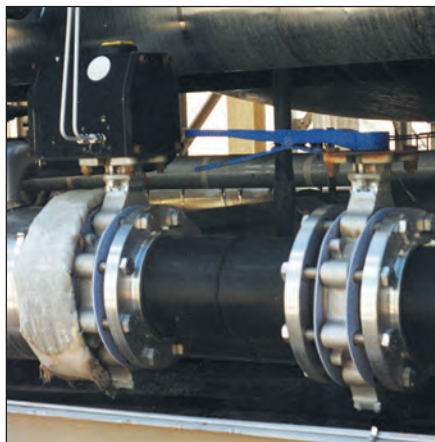
## ASME Class 150 and 300

### Features and Benefits

- Integrally cast mounting pad provides direct mounting of many actuators.
- Rocker-shaped gland bridge compensates for uneven adjustment of gland nuts.
- Extended neck allows for two inches of pipeline insulation.
- Flattened body bore at stem journal ports positions stem bearings near disc, providing maximum stem support.
- Disc taper pins are tangentially positioned half in disc and half in stem, placing them in compression rather than shear, which eliminates potential for failure.
- Integrally cast disc position stop perfectly locates the disc in seat, achieving maximum seat and seal life.
- K-LOK polymer, elastomer, and fire-safe seats provide bi-directional, drop-tight closure in vacuum and throughout all pressure ranges, as well as at full rated differential pressure. A variety of materials allows optimum seat life in all applications.

### General Applications

- Airport Refueling
- Hydrocarbon Processing
- HVAC
- Chemical Processing
- Purified Gas
- Steam and Vacuum Services
- Potable Water



### Technical Data

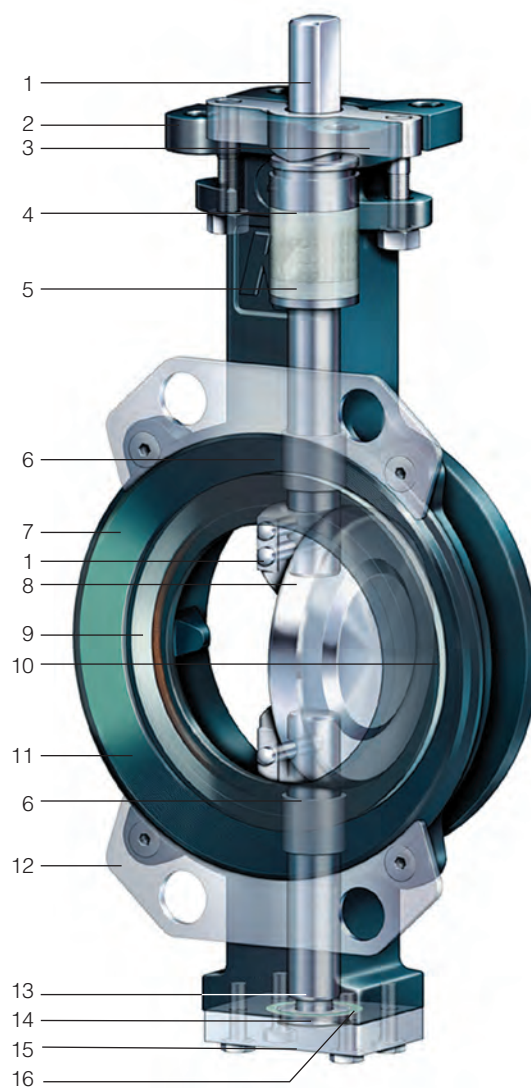
|                     |                        |
|---------------------|------------------------|
| Size Range:         | 2" to 36"              |
| Pressure Rating:    | ASME Class 150 and 300 |
| Temperature Rating: | -20°F to 1000°F        |
| Fire-Safe Option    |                        |

# Keystone High Performance Butterfly Valves

K-LOK® Figures 360/362 and 370/372

## Materials

| Part                      | Material                                                           | Material Standard                                                                                                                                |
|---------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 Stem and taper pins     | 17-4 PH<br>316B SS<br>NITRONIC 50®<br>K-Monel® 500<br>Inconel® 718 | ASTM A564 Condition H1075 or H1100<br>ASTM A276-316 Condition B (10" and smaller)<br>ASTM A276-XM19<br>QQ-N-286 UNS N005500 Class A age-hardened |
| 2 Body                    | Carbon steel<br>Stainless steel<br>Nickel aluminum bronze          | ASTM A216-WCB<br>ASTM A351-CF8M<br>MIL B24480 CDA C95800/ASTM B148                                                                               |
| 3 Gland bridge            | 17-4PH stainless steel<br>Carbon steel                             |                                                                                                                                                  |
| 4 Packing gland follower  | 316 stainless steel                                                |                                                                                                                                                  |
| 5 Stem packing            | PTFE<br>Graphite<br>Style 9000 EVSP simplified                     |                                                                                                                                                  |
| 6 Stem bearing            | 316 stainless steel/Nitride,<br>PTFE/Bronze,<br>PTFE/Composite     |                                                                                                                                                  |
| 7 Body gasket             | Non-asbestos fiber,<br>Graphite<br>PTFE                            |                                                                                                                                                  |
| 8 Disc                    | 316 stainless steel<br>316 stainless steel/ENP<br>Monel®           | ASTM A351-CF8M<br>ASTM A351-CF8M/electroless nickel plated<br>QQ-N-288 Composition A                                                             |
| 9 Seat                    | Polymer<br>Elastomer<br>Metal<br>Fire-safe                         | PTFE, RTFE, UHMWPE<br>NBR, EPDM, Fluoroelastomer (FKM)<br>316 stainless steel, Monel®<br>RTFE/316 stainless steel                                |
| 10 Seat backing ring      | Stainless steel                                                    |                                                                                                                                                  |
| 11 Seat retainer ring     | Carbon steel<br>316 Stainless steel<br>Nickel aluminum bronze      |                                                                                                                                                  |
| 12 Flange locator plate   | Stainless steel<br>Carbon steel/zinc plated                        |                                                                                                                                                  |
| 13 Disc locating shoulder | 316 stainless steel                                                |                                                                                                                                                  |
| 14 Bottom cover gasket    | Non-asbestos fiber or<br>Graphite                                  |                                                                                                                                                  |
| 15 Bottom cover plate     | 316 stainless steel                                                |                                                                                                                                                  |
| 16 Thrust washer          | Stainless steel/Nitride                                            |                                                                                                                                                  |



## Recommended Standards and Specifications

|                      |          |                                                                                            |
|----------------------|----------|--------------------------------------------------------------------------------------------|
| ASME                 | – B16.34 | Steel valves                                                                               |
|                      | B31.1    | Power piping (Sect 107)                                                                    |
|                      | B31.3    | Chemical plant and petroleum refinery piping                                               |
|                      | B16.5    | Steel pipe flanges and flange fittings                                                     |
| MSS                  | – SP-6   | Standard finishes for pipe flanges                                                         |
|                      | SP-25    | Standard marking systems for valves                                                        |
|                      | SP-55    | Quality standard for steel casting                                                         |
|                      | SP-61    | Pressure testing of steel valves                                                           |
|                      | SP-68    | High pressure offset disc butterfly valves                                                 |
| API                  | – 609    | Butterfly valves (most models)                                                             |
|                      | 607      | Fire test for soft seated quarter-turn valves                                              |
|                      | 598      | Valve inspection and test                                                                  |
| BS                   | – 5146   | Inspection and test of steel valves for the petroleum, petrochemical and allied industries |
|                      | 4504     | Flanges and bolting for pipes, valves and fittings                                         |
| JIS                  | – 2215   | Basic dimensions for steel pipe flanges                                                    |
| NSF/ANSI Standard 61 |          | Potable water                                                                              |

## Principles of Operation

### Double Offset Disc/stem

K-LOK®'s unique two-piece stem and double-offset disc/stem design allows for high cycling and creates a lower disc profile with increased capacity and a range of 33:1.

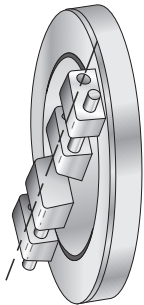
In addition to increasing the flow area across the disc, this design minimizes wear points between seat and disc.

The first offset is achieved by locating the stems downstream of the center-line of the seat. This allows for a totally unobstructed 360° sealing surface.

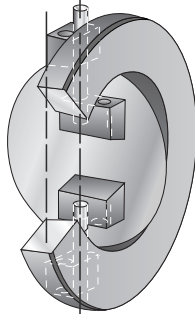
The second offset locates the stems off-center of the vertical axis of the seat.

The combination of these two offsets creates a camming effect as the disc swings into and out of the seat. The disc lifts quickly out of the seat in the first few degrees of travel and does not contact the seat again until it is nearly closed. There are no wear points between the seat and disc, while operating torques are reduced and seat life is extended.

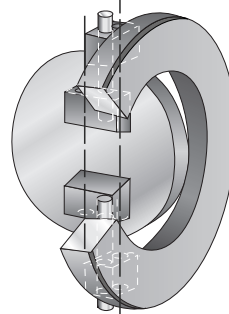
**Double Offset**



**First Offset**



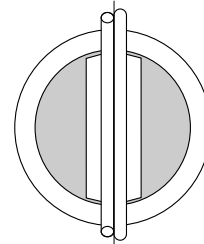
**Second Offset**



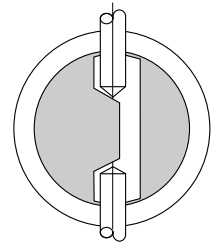
### Two-piece Stem vs. One-piece Stem

K-LOK®'s disc geometry maximizes flow capacity by increasing the available flow area through the valve. This increase in disc efficiency results in a higher valve  $C_v$ .

**Competitor**  
one-piece stem



**K-LOK®**  
two-piece stem



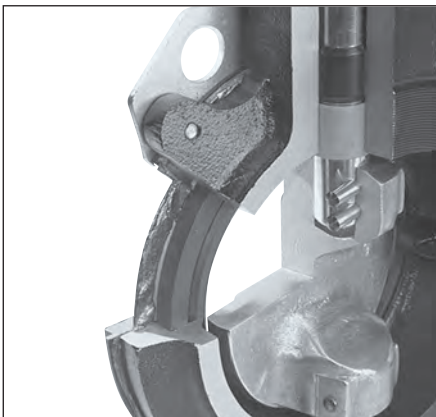
Aspect Ratio = Open Area ÷ Disc Area

### Fire-Safe Valve

#### API 607 4th Edition Approved by Third Party Witness

The K-LOK fire-safe design uses a stainless steel or alloy seat of convoluted shape that mates with an RTFE member. In the full-closed position, the K-LOK provides continuous two-plane contact between the disc and both metal and RTFE seats. The fire-safe seat utilizes wire windings to provide the circumferential stiffness necessary to maintain interference between disc and seat.

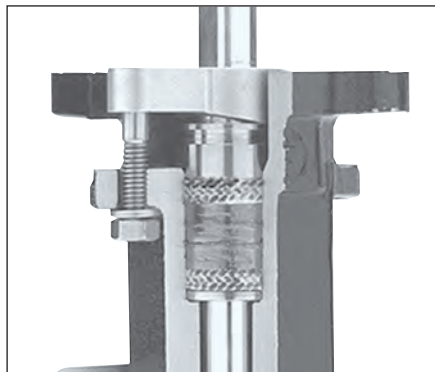
### Fire-Safe Seat



### Fire-Safe Packing

K-LOK fire-safe packing is composed of three rings of preformed graphite between one ring of woven graphite rope at the top and bottom.

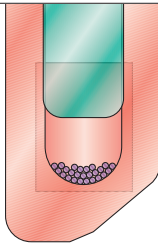
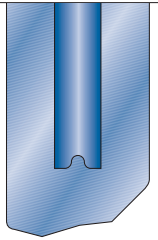
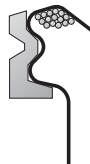
This arrangement creates a superior, high temperature seal against the outer wall of the packing box and around the rotating stem.



# Keystone High Performance Butterfly Valves

K-LOK® Figures 360/362 and 370/372

## Seat Materials

| Seat                      | Material                                                                                   | Typical Applications                                                                  |    |
|---------------------------|--------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| 1. RTFE                   | Reinforced Polytetrafluoroethylene                                                         | HVAC, steam, chlorine, ammonia, nitrogen, water, gasoline, vacuum                     |                                                                                       |
| 2. PTFE                   | Polytetrafluoroethylene                                                                    | Pharmaceuticals, air, potable water, dyes, white mediums                              |                                                                                       |
| 3. UHMWPE                 | Ultra high molecular weight polyethylene                                                   | Abrasives, suspended solids, scaling mediums                                          |                                                                                       |
| <b>For Seats 1 thru 3</b> |                                                                                            |                                                                                       |                                                                                       |
| Wire Wrap                 | Stainless steel braided wire                                                               |                                                                                       |                                                                                       |
| Seat Backing Ring         | Polyester or Phenolic<br>Stainless steel                                                   | General purpose services up to 200°F<br>Steam, ammonia, elevated temperature services |                                                                                       |
| Seat                      | Material                                                                                   | Typical Applications                                                                  |    |
| 4. EPDM                   | –                                                                                          | Water based mediums, slurry applications, abrasives                                   |                                                                                       |
| 5. NBR                    | –                                                                                          | Oil based mediums, slurry applications, abrasives                                     |                                                                                       |
| 6. Fluoroelastomer (FKM)  | –                                                                                          | Elevated temperatures, slurry applications, abrasives                                 |                                                                                       |
| <b>For Seats 4 thru 6</b> |                                                                                            |                                                                                       |                                                                                       |
| Metal Insert              | Carbon steel                                                                               |                                                                                       |                                                                                       |
| Seat                      | Material                                                                                   | Typical Applications                                                                  |  |
| 7. Metal                  | 316 stainless steel or alloy (flash chrome coated)                                         | High temperature, low temperature, abrasives, fly ash, slurries                       |                                                                                       |
| 8. Fire-safe              | Reinforced polytetrafluoroethylene combined with 316 Stainless Steel (flash chrome coated) | Fire-safe installations, abrasives, slurries, steam                                   |  |
| <b>For Seats 7 and 8</b>  |                                                                                            |                                                                                       |                                                                                       |
| Wire Wrap                 | Stainless steel braided wire                                                               |                                                                                       |                                                                                       |

## Seat Design

The K-LOK seat is a true interference seat design and does not rely on line pressure to assist in sealing. All seats seal drop-tight bi-directionally at low pressure as well as high pressure.

Polymer (PTFE, RTFE and UHMWPE) seats incorporate a stainless steel braided wire winding, enclosed in a U-shape envelope to provide seating energy and memory. This wire winding allows axial flexibility in both directions of flow. The winding also allows radial flexibility when the disc is not fully closed, reducing seat/disc interference, seat wear and stem torque. When the disc closes, it provides circumferential stiffness and assures the required disc/seat seals tight.

Elastomer seats are molded around a stack of V-shaped steel rings that provide the same stability, support and flexure as the wire windings in polymer seats.

Metal seats employ a stainless steel or alloy ring of convoluted shape, reinforced by stainless steel wire windings. The thin, convoluted shape allows for expansion and contraction from thermal cycling. Long life is assured by flash coating the seat with chrome.



**ANSI/FCI 70-2 Control Valve Seat Leakage, Tolerances, and Test Specifications**

| <b>ANSI<br/>B16.104-1976</b> | <b>Maximum<br/>Leakage</b>                                                             | <b>Test<br/>Medium</b>                               | <b>Pressure and<br/>Temperature</b>                                                             |
|------------------------------|----------------------------------------------------------------------------------------|------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| Class VI                     | Nominal Port Diameter (in.)<br>2<br>2½<br>3<br>4<br>6<br>8                             | Bubbles per Minute³<br>3<br>4<br>6<br>11<br>27<br>45 | ml. per Minute<br>0.45<br>0.60<br>0.90<br>1.70<br>4.00<br>6.75                                  |
|                              |                                                                                        | Air or Nitrogen                                      | Service ΔP or 50 psig [3.4 bar differential], whichever is lower, at 50° to 125°F [10° to 52°C] |
| Class V                      | 5 x 10-4 ml/min/psig/in. port dia.<br>[5 x 10-12 m³/sec/bar differential/mm port dia.] | Water                                                | Service ΔP at 50° to 125°F [10° to 52°C]                                                        |
| Class IV                     | 0.01% valve capacity at full travel                                                    | Air or Water                                         | Service ΔP or 50 psig [3.4 bar differential], whichever is lower, at 50° to 125°F [10° to 52°C] |

**Notes:**

1. K-LOK polymer, elastomer and fire-safe seats provide ANSI Class VI shut-off.
2. K-LOK metal seats and firesafe seats (post fire exposure) provide ANSI Class IV shut-off.
3. Using the ANSI/FCI specified calibrated measuring device.

Reference ANSI/FCI 70-2 for further information.

**C<sub>v</sub> Values vs. Travel Position**

| <b>Size (in.)</b> | <b>10°</b> | <b>20°</b> | <b>30°</b> | <b>Angle of Opening</b> |            |            |            |            | <b>CL 150<br/>90°</b> | <b>CL 300<br/>90°</b> |
|-------------------|------------|------------|------------|-------------------------|------------|------------|------------|------------|-----------------------|-----------------------|
|                   |            |            |            | <b>40°</b>              | <b>50°</b> | <b>60°</b> | <b>70°</b> | <b>80°</b> |                       |                       |
| 2                 | 6          | 10         | 19         | 34                      | 51         | 78         | 105        | 134        | 163                   | 160                   |
| 2½                | 6          | 10         | 19         | 34                      | 53         | 80         | 111        | 148        | 175                   | 170                   |
| 3                 | 8          | 12         | 24         | 43                      | 67         | 100        | 139        | 186        | 220                   | 215                   |
| 4                 | 16         | 23         | 44         | 80                      | 130        | 194        | 269        | 360        | 425                   | 413                   |
| 5                 | 30         | 44         | 83         | 149                     | 242        | 366        | 504        | 673        | 795                   | 785                   |
| 6                 | 50         | 70         | 130        | 230                     | 370        | 550        | 760        | 1,010      | 1,195                 | 1,140                 |
| 8                 | 83         | 117        | 251        | 437                     | 695        | 1,052      | 1,496      | 2,001      | 2,440                 | 2,300                 |
| 10                | 144        | 202        | 454        | 754                     | 1,185      | 1,821      | 2,611      | 3,541      | 4,540                 | 4,333                 |
| 12                | 208        | 304        | 678        | 1,051                   | 1,625      | 2,766      | 3,838      | 5,325      | 6,915                 | 6,600                 |
| 14                | 257        | 360        | 747        | 1,186                   | 1,909      | 3,121      | 4,416      | 6,225      | 8,300                 | 7,920                 |
| 16                | 308        | 432        | 803        | 1,422                   | 2,289      | 3,614      | 5,251      | 7,530      | 10,040                | 9,580                 |
| 18                | 373        | 548        | 1,121      | 1,869                   | 2,990      | 4,735      | 6,728      | 9,845      | 12,460                | 11,890                |
| 20                | 463        | 680        | 1,390      | 2,315                   | 4,010      | 6,175      | 8,795      | 12,655     | 15,430                | 14,720                |
| 24                | 650        | 991        | 2,076      | 3,803                   | 6,060      | 9,091      | 13,301     | 18,466     | 21,660                | 20,665                |
| 30                | 1,015      | 1,550      | 3,240      | 4,670                   | 9,460      | 14,200     | 21,400     | 29,800     | 36,000                | 35,500                |
| 36                | 1,460      | 2,300      | 4,640      | 5,950                   | 13,700     | 21,000     | 30,400     | 44,000     | 56,000                | 55,500                |

**Vacuum Rating**

The combination of interference fit seats and bi-directional packing makes the K-LOK especially well suited for vacuum service.

Standard K-LOK high performance valves are rated to an absolute pressure of 4 x 10<sup>-5</sup> inch Hg. Higher vacuum applications are available.

# Keystone High Performance Butterfly Valves

K-LOK® Figures 360/362 and 370/372

## Common Available Trims

| Figure Number | Valve Type               |
|---------------|--------------------------|
| F360          | ASME Class 150, Wafer    |
| F362          | ASME Class 150, Full-lug |
| F370          | ASME Class 300, Wafer    |
| F372          | ASME Class 300, Full-lug |

To order a K-LOK, specify the valve size, the valve figure number (listed above) and the specific application trim code. The most common codes, together with the materials of construction, are listed below. (Example: 10 inch F360-104)

## General Purpose Trims (up to 250°F)

| Trim Code | Body   | Disc       | Shaft     | Seat/Backing Ring |
|-----------|--------|------------|-----------|-------------------|
| 106       | Steel  | 316 SS/ENP | 17-4PH SS | UHMWPE/SS         |
| 107       | 316 SS | 316 SS/ENP | 17-4PH SS | UHMWPE/SS         |

## General Purpose Trims (up to 500°F)

| Trim Code | Body   | Disc       | Shaft     | Seat/Backing Ring |
|-----------|--------|------------|-----------|-------------------|
| 123       | Steel  | 316 SS/ENP | 17-4PH SS | RTFE/SS           |
| 124       | 316 SS | 316 SS/ENP | 17-4PH SS | RTFE/SS           |
| 158       | Steel  | 316 SS     | 17-4PH SS | RTFE/SS           |
| 159       | 316 SS | 316 SS     | 17-4PH SS | RTFE/SS           |

## Metal Seated – High Temperature Trims

| Trim Code | Body   | Disc       | Shaft     | Seat/Backing Ring    |
|-----------|--------|------------|-----------|----------------------|
| 113       | Steel  | 316 SS/ENP | 17-4PH SS | 316 SS chrome plated |
| 114       | 316 SS | 316 SS/ENP | 17-4PH SS | 316 SS chrome plated |

## Corrosion Resistant Trims

| Trim Code | Body   | Disc   | Shaft          | Seat/Backing Ring |
|-----------|--------|--------|----------------|-------------------|
| 133       | 316 SS | 316 SS | 316 SS Cond. B | RTFE/SS           |
| 134       | 316 SS | 316 SS | NITRONIC 50®   | RTFE/SS           |

## Fire-Safe Trims

| Trim Code | Body   | Disc       | Shaft     | Seat/Backing Ring             |
|-----------|--------|------------|-----------|-------------------------------|
| 115       | Steel  | 316 SS/ENP | 17-4PH SS | 316 SS chrome plated and RTFE |
| 116       | 316 SS | 316 SS/ENP | 17-4PH SS | 316 SS chrome plated and RTFE |

### Note:

Other trims are available; please contact your sales representative.

### Seating and Un-seating Torque

Seating and un-seating torques are a function of the size of the valve and the shut-off pressure of the system.

Specific torque ratings can be found in the Seating/Un-seating chart at the intersection of the 'size' row and the 'shut-off pressure' column.

Torques listed are for PTFE and RTFE seated valves. For different seat materials specific multipliers are to be used as stated.

All torques listed are for normal service conditions (i.e. operating frequency is a minimum of once per month; disc corrosion is expected to be mild or minor, the media is a clean gas, liquid or steam, and is non-abrasive) and chemical effects upon the seat are minor.

### PTFE and RTFE Bi-Directional Seating and Un-Seating Torque Values

| Valve<br>Size<br>(inch) | Shaft Mounting<br>Code (ASME) |     | Seating and Un-seating Torque (lbs. in.) |        |        |        |        |         |
|-------------------------|-------------------------------|-----|------------------------------------------|--------|--------|--------|--------|---------|
|                         |                               |     | System Shut-off Pressure (psig)          |        |        |        |        |         |
|                         | 150                           | 300 | 150                                      | 200    | 285    | 400    | 500    | 740     |
| 2                       | BAB                           | BAB | 220                                      | 280    | 380    | 460    | 520    | 580     |
| 2½                      | BAB                           | BAB | 220                                      | 280    | 380    | 460    | 520    | 580     |
| 3                       | BAC                           | BAC | 250                                      | 320    | 430    | 520    | 590    | 650     |
| 4                       | BAD                           | BAD | 475                                      | 600    | 820    | 995    | 1,120  | 1,235   |
| 5                       | BAD                           | BAD | 925                                      | 1,125  | 1,350  | 1,570  | 1,750  | 1,900   |
| 6                       | CAD/CAE*                      | CAE | 1,370                                    | 1,600  | 1,850  | 2,150  | 2,390  | 2,900   |
| 8                       | CAF                           | CAF | 2,060                                    | 2,330  | 3,200  | 4,020  | 4,870  | 6,720   |
| 10                      | CAF/CAG*                      | CAG | 3,340                                    | 3,650  | 4,700  | 6,250  | 7,450  | 9,850   |
| 12                      | DAG                           | DAG | 4,590                                    | 5,250  | 6,400  | 8,160  | 9,690  | 12,940  |
| 14                      | DAH                           | DAJ | 6,750                                    | 7,560  | 9,150  | 11,450 | 13,300 | 17,200  |
| 16                      | DAH                           | DAK | 9,350                                    | 10,450 | 12,600 | 15,000 | 17,500 | 22,200  |
| 18                      | DAJ                           | DBA | 11,900                                   | 13,300 | 15,800 | 19,500 | 21,900 | 28,500  |
| 20                      | DAK                           | LAX | 15,600                                   | 17,500 | 21,000 | 25,200 | 28,700 | 36,140  |
| 24                      | DAK                           | MAY | 21,700                                   | 25,340 | 30,600 | 36,900 | 42,100 | 54,000  |
| 30                      | MAZ                           | NAW | 29,200                                   | 35,000 | 43,500 | 54,500 | 62,500 | 80,000  |
| 36                      | MBE                           | EBD | 52,500                                   | 58,500 | 70,000 | 85,000 | 97,500 | 125,000 |

\*CAE and CAG mounting codes apply for shaft mounting of UHMWPE, metal and fire-safe seats.

#### Notes:

- Torques are applicable only to PTFE and RTFE seats in noncorrosive or non-abrasive services such as water. For fire-safe and metal seats, select only the torque for the valve at 285 psig and multiply by 2.0.
- For other seat materials, select the torque applicable for the maximum differential pressure and multiply by the following factor:  
 EPDM/NBR/Fluoroelastomer (FKM): x 1.4  
 UHMWPE (Clean Service): x 1.3
- For corrosive, abrasive or other services than water, multiply by the following factor:  
 High solids slurry: x 1.5  
 Dry gas: x 2.0  
 Dry powders: x 2.7  
 Liquids other than water: x 1.2  
 Lubricating fluids: x 0.8

For services that combine unfriendly conditions such as extreme temperatures and high solids, or corrosive with high temperatures, contact the factory.

# Keystone High Performance Butterfly Valves

K-LOK® Figures 360/362 and 370/372

## Extension Brackets For Various Temperatures

| Pipeline Fluid Temperature | Required Extension Lengths (inches) |      |                 |                       | Standard F777 |
|----------------------------|-------------------------------------|------|-----------------|-----------------------|---------------|
|                            | Handle                              | Gear | 200°F Std. F79U | 450°F High Temp. F79U |               |
| -100°F - 375°F             | —                                   | —    | —               | —                     | —             |
| 376°F - 460°F              | 4                                   | —    | —               | —                     | 4             |
| 461°F - 560°F              | 6                                   | 4    | 4               | —                     | 4             |
| 561°F - 650°F              | 6                                   | 4    | 4               | —                     | 4             |
| 651°F - 725°F              | 6                                   | 6    | 6               | 4                     | 6             |
| 726°F - 825°F              | 8                                   | 8    | 8               | 6                     | 8             |
| 826°F - 925°F              | 10                                  | 8    | 8               | 6                     | 8             |
| 926°F - 1,000°F            | 10                                  | 10   | 10              | 8                     | 10            |

### Notes:

1. Surrounding air temperature is assumed to be 70°F. For every degree over 100°F of the surrounding air, deduct 2 degrees from the temperature ranges shown above.  
(Example: 125°F external reduces maximum temperature values to 325, 410, 510, 600, etc.)
2. Valves may be insulated or uninsulated.
3. Brackets may be open rectangular tubes or the standard closed Keystone tubular stem extensions.
4. All actuators have a maximum service temperature (outside atmosphere). These temperature limitations apply regardless of K-LOK extension lengths.

## Flange Gaskets

The K-LOK high performance butterfly valve is designed to accommodate the use of standard, non-metallic gaskets for pipe flanges (such as compressed fiber, rubber, non-asbestos, flexible graphite, asbestos or equivalent gasket materials), meeting the dimensional requirements of ASME B16.21-1992. Metallic wound gaskets may also be used, however, please note that any valve with a bolted on retainer requires the wound gaskets material to be manufactured to the following dimensions (inches):

|                               | Outside Diameter                | Inside Diameter                |
|-------------------------------|---------------------------------|--------------------------------|
| 2                             | 3 <sup>3</sup> / <sub>8</sub>   | 2 <sup>3</sup> / <sub>4</sub>  |
| 2 <sup>1</sup> / <sub>2</sub> | 3 <sup>7</sup> / <sub>8</sub>   | 3 <sup>1</sup> / <sub>4</sub>  |
| 3                             | 4 <sup>3</sup> / <sub>4</sub>   | 4                              |
| 4                             | 5                               | 4 <sup>1</sup> / <sub>8</sub>  |
| 5                             | 6 <sup>1</sup> / <sub>8</sub>   | 5 <sup>1</sup> / <sub>4</sub>  |
| 6                             | 7 <sup>3</sup> / <sub>16</sub>  | 6 <sup>1</sup> / <sub>4</sub>  |
| 8                             | 9 <sup>3</sup> / <sub>16</sub>  | 8                              |
| 10                            | 11 <sup>5</sup> / <sub>16</sub> | 10 <sup>1</sup> / <sub>8</sub> |
| 12                            | 13                              | 11 <sup>1</sup> / <sub>2</sub> |
| 14                            | 14 <sup>1</sup> / <sub>2</sub>  | 13                             |
| 16                            | 16 <sup>1</sup> / <sub>2</sub>  | 14 <sup>3</sup> / <sub>4</sub> |
| 18                            | 18                              | 16                             |
| 20                            | 19 <sup>3</sup> / <sub>4</sub>  | 18                             |
| 24                            | 26 <sup>1</sup> / <sub>4</sub>  | 24                             |
| 30                            | 29 <sup>1</sup> / <sub>2</sub>  | 27 <sup>1</sup> / <sub>2</sub> |
| 36                            | 36 <sup>1</sup> / <sub>2</sub>  | 34 <sup>1</sup> / <sub>4</sub> |

## K-LOK Services

Many services have specific requirements. Tyco Flow Control can meet most of these needs. The K-LOK product line can be ordered for the following special services:

- Food processing
- Sour gas
- Military
- Vacuum
- Oxygen
- Pharmaceutical
- Ammonia
- Chlorine
- Reverse osmosis
- Category 'M' fluids
- Slurry
- Modulating control
- Steam

### Recommended Flange Bolt Lengths

**Lugged Body 150 Class - Fig. 362**

| Valve Size (in.) | Hex Head Machine Bolt Qty. | Size        | Length (in.) | All Thread Qty. | Size        | Length (in.) |
|------------------|----------------------------|-------------|--------------|-----------------|-------------|--------------|
| 2                | 4                          | 5/8 - 11UNC | x 1 3/4      | 4               | 5/8 - 11UNC | x 2 1/2      |
|                  | 4                          | 5/8 - 11UNC | x 2          | 4               | 5/8 - 11UNC | x 2 3/4      |
| 2 1/2            | 8                          | 5/8 - 11UNC | x 1 3/4      | 8               | 5/8 - 11UNC | x 2 1/2      |
| 3                | 4                          | 5/8 - 11UNC | x 2          | 4               | 5/8 - 11UNC | x 2 3/4      |
|                  | 4                          | 5/8 - 11UNC | x 1 1/2      | 4               | 5/8 - 11UNC | x 2 1/2      |
| 4                | 8                          | 5/8 - 11UNC | x 2          | 8               | 5/8 - 11UNC | x 2 3/4      |
|                  | 8                          | 5/8 - 11UNC | x 1 3/4      | 8               | 5/8 - 11UNC | x 2 1/2      |
| 5                | 16                         | 3/4 - 10UNC | x 2          | 16              | 3/4 - 10UNC | x 3          |
| 6                | 8                          | 3/4 - 10UNC | x 2 1/4      | 8               | 3/4 - 10UNC | x 3          |
|                  | 8                          | 3/4 - 10UNC | x 2          | 8               | 3/4 - 10UNC | x 3 1/4      |
| 8                | 8                          | 3/4 - 10UNC | x 2 1/2      | 8               | 3/4 - 10UNC | x 3 1/2      |
|                  | 8                          | 3/4 - 10UNC | x 2          | 8               | 3/4 - 10UNC | x 3          |
| 10               | 12                         | 7/8 - 9UNC  | x 2 3/4      | 12              | 7/8 - 9UNC  | x 4          |
|                  | 12                         | 7/8 - 9UNC  | x 2 1/4      | 12              | 7/8 - 9UNC  | x 3 1/4      |
| 12               | 12                         | 7/8 - 9UNC  | x 3          | 12              | 7/8 - 9UNC  | x 4          |
|                  | 12                         | 7/8 - 9UNC  | x 2 1/2      | 12              | 7/8 - 9UNC  | x 3 3/4      |
| 14               | 12                         | 1 - 8UN     | x 3 1/2      | 12              | 1 - 8UN     | x 4 3/4      |
|                  | 12                         | 1 - 8UN     | x 3          | 12              | 1 - 8UN     | x 4 1/4      |
| 16               | 32                         | 1 - 8UN     | x 3          | 32              | 1 - 8UN     | x 4          |
| 18               | 32                         | 1 1/8 - 8UN | x 3 3/4      | 32              | 1 1/8 - 8UN | x 5          |
| 20               | 32                         | 1 1/8 - 8UN | x 4          | 32              | 1 1/8 - 8UN | x 5 1/2      |
|                  | 8                          | 1 1/8 - 8UN | x 3          | 8               | 1 1/8 - 8UN | x 4 1/2      |
| 24               | 20                         | 1 1/4 - 8UN | x 5          | 20              | 1 1/4 - 8UN | x 6 1/2      |
|                  | 20                         | 1 1/4 - 8UN | x 4 1/2      | 20              | 1 1/4 - 8UN | x 6          |
| 30               | 48                         | 1 1/4 - 8UN | x 6          | 48              | 1 1/4 - 8UN | x 7 1/2      |
|                  | 8                          | 1 1/4 - 8UN | x 4 1/2      | 8               | 1 1/4 - 8UN | x 6          |
| 36               | 28                         | 1 1/2 - 8UN | x 7 1/2      | 28              | 1 1/2 - 8UN | x 9 1/2      |
|                  | 28                         | 1 1/2 - 8UN | x 7          | 28              | 1 1/2 - 8UN | x 9          |
|                  | 4                          | 1 1/2 - 8UN | x 5          | 4               | 2 - 8UN     | x 7          |
|                  | 4                          | 1 1/2 - 8UN | x 6          | 4               | 2 - 8UN     | x 8          |

**Lugged Body 300 Class - Fig. 372**

| Valve Size (in.) | Hex Head Machine Bolt Qty. | Size        | Length (in.) | All Thread Qty. | Size        | Length (in.) |
|------------------|----------------------------|-------------|--------------|-----------------|-------------|--------------|
| 2                | 16                         | 5/8 - 11UNC | x 2          | 16              | 5/8 - 11UNC | x 3          |
| 2 1/2            | 8                          | 3/4 - 10UNC | x 1 3/4      | 8               | 3/4 - 10UNC | x 2 3/4      |
|                  | 8                          | 3/4 - 10UNC | x 2          | 8               | 3/4 - 10UNC | x 2 3/4      |
| 3                | 8                          | 3/4 - 10UNC | x 2 1/4      | 8               | 3/4 - 10UNC | x 3 1/4      |
|                  | 8                          | 3/4 - 10UNC | x 1 3/4      | 8               | 3/4 - 10UNC | x 2 3/4      |
| 4                | 8                          | 3/4 - 10UNC | x 2 1/2      | 8               | 3/4 - 10UNC | x 3 1/4      |
|                  | 8                          | 3/4 - 10UNC | x 2          | 8               | 3/4 - 10UNC | x 3          |
| 5                | 8                          | 3/4 - 10UNC | x 2 1/2      | 16              | 3/4 - 10UNC | x 3 1/2      |
|                  | 8                          | 3/4 - 10UNC | x 2 1/4      |                 |             |              |
| 6                | 12                         | 3/4 - 10UNC | x 2 3/4      | 24              | 3/4 - 10UNC | x 3 1/2      |
|                  | 12                         | 3/4 - 10UNC | x 2 1/4      |                 |             |              |
| 8                | 12                         | 7/8 - 9UNC  | x 3 1/4      | 12              | 7/8 - 9UNC  | x 4 1/2      |
|                  | 12                         | 7/8 - 9UNC  | x 2 1/2      | 12              | 7/8 - 9UNC  | x 3 1/2      |
| 10               | 16                         | 1 - 8UN     | x 3 3/4      | 16              | 1 - 8UN     | x 5          |
|                  | 16                         | 1 - 8UN     | x 3          | 16              | 1 - 8UN     | x 4 1/4      |
| 12               | 16                         | 1 1/8 - 8UN | x 4          | 16              | 1 1/8 - 8UN | x 5 1/2      |
|                  | 16                         | 1 1/8 - 8UN | x 3 1/2      | 16              | 1 1/8 - 8UN | x 4 3/4      |
| 14               | 16                         | 1 1/8 - 8UN | x 4 1/2      | 16              | 1 1/8 - 8UN | x 6          |
|                  | 16                         | 1 1/8 - 8UN | x 4          | 16              | 1 1/8 - 8UN | x 5 1/2      |
|                  | 4                          | 1 1/8 - 8UN | x 3 1/4      | 4               | 1 1/8 - 8UN | x 4 3/4      |
|                  | 4                          | 1 1/8 - 8UN | x 3          | 4               | 1 1/8 - 8UN | x 4 1/2      |
| 16               | 16                         | 1 1/4 - 8UN | x 5          | 16              | 1 1/4 - 8UN | x 6 1/2      |
|                  | 16                         | 1 1/4 - 8UN | x 4 1/2      | 16              | 1 1/4 - 8UN | x 6          |
|                  | 8                          | 1 1/4 - 8UN | x 3 1/2      | 8               | 1 1/4 - 8UN | x 5          |
| 18               | 40                         | 1 1/4 - 8UN | x 5          | 40              | 1 1/4 - 8UN | x 6 1/2      |
|                  | 8                          | 1 1/4 - 8UN | x 3 1/2      | 8               | 1 1/4 - 8UN | x 5          |
| 20               | 40                         | 1 1/4 - 8UN | x 5 1/2      | 40              | 1 1/4 - 8UN | x 7          |
|                  | 4                          | 1 1/4 - 8UN | x 4          | 4               | 1 1/4 - 8UN | x 5 1/2      |
|                  | 4                          | 1 1/4 - 8UN | x 4 1/2      | 4               | 1 1/4 - 8UN | x 6          |
| 24               | 40                         | 1 1/2 - 8UN | x 6          | 40              | 1 1/2 - 8UN | x 8          |
|                  | 4                          | 1 1/2 - 8UN | x 5          | 4               | 1 1/2 - 8UN | x 7          |
|                  | 4                          | 1 1/2 - 8UN | x 4 1/2      | 4               | 1 1/2 - 8UN | x 6 1/2      |
| 30               | 48                         | 1 3/4 - 8UN | x 7          | 48              | 1 3/4 - 8UN | x 9          |
|                  | 8                          | 1 3/4 - 8UN | x 5 1/2      | 8               | 1 3/4 - 8UN | x 7 1/2      |

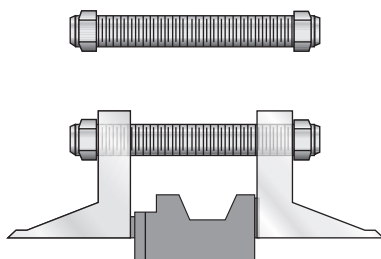
**Wafer Body 150 Class - Fig. 360**

| Valve Size (in.) | Hex Head Machine Bolt Qty. | Size        | Length (in.) | All Thread Qty. | Size        | Length (in.) |
|------------------|----------------------------|-------------|--------------|-----------------|-------------|--------------|
| 2                | 4                          | 5/8 - 11UNC | x 5          | 4               | 5/8 - 11UNC | x 5 1/2      |
| 2 1/2            | 4                          | 5/8 - 11UNC | x 4 1/2      | 4               | 5/8 - 11UNC | x 5          |
| 3                | 4                          | 5/8 - 11UNC | x 4 1/2      | 4               | 5/8 - 11UNC | x 5 1/4      |
| 4                | 8                          | 5/8 - 11UNC | x 4 3/4      | 8               | 5/8 - 11UNC | x 5 1/2      |
| 5                | 8                          | 3/4 - 10UNC | x 5          | 8               | 3/4 - 10UNC | x 6          |
| 6                | 8                          | 3/4 - 10UNC | x 5 1/4      | 8               | 3/4 - 10UNC | x 6          |
| 8                | 8                          | 3/4 - 10UNC | x 5 3/4      | 8               | 3/4 - 10UNC | x 6 1/2      |
| 10               | 12                         | 7/8 - 9UNC  | x 6 1/4      | 12              | 7/8 - 9UNC  | x 7          |
| 12               | 12                         | 7/8 - 9UNC  | x 7          | 12              | 7/8 - 9UNC  | x 7 1/2      |
| 14               | 12                         | 1 - 8UN     | x 7 1/2      | 12              | 1 - 8UN     | x 8 1/2      |
| 16               | 16                         | 1 - 8UN     | x 8          | 16              | 1 - 8UN     | x 9          |
| 18               | 16                         | 1 1/8 - 8UN | x 9 1/4      | 16              | 1 1/8 - 8UN | x 10 1/2     |
| 20               | 16                         | 1 1/8 - 8UN | x 10         | 16              | 1 1/8 - 8UN | x 11         |
|                  | 4                          | 1 1/8 - 8UN | x 3 1/2      | 4               | 1 1/8 - 8UN | x 5          |
|                  | 4                          | 1 1/8 - 8UN | x 3          | 4               | 1 1/8 - 8UN | x 4 1/2      |
| 24               | 20                         | 1 1/4 - 8UN | x 11 1/2     | 20              | 1 1/4 - 8UN | x 12 1/2     |
| 30               | 24                         | 1 1/4 - 8UN | x 13 1/4     | 24              | 1 1/4 - 8UN | x 16         |
|                  | 4                          | 1 1/4 - 8UN | x 3 1/2      | 4               | 1 1/4 - 8UN | x 5 1/4      |
|                  | 4                          | 1 1/4 - 8UN | x 3 1/4      | 4               | 1 1/4 - 8UN | x 4 3/4      |
| 36               | 28                         | 1 1/2 - 8UN | x 15         | 28              | 1 1/2 - 8UN | x 18 3/4     |
|                  | 4                          | 1 1/2 - 8UN | x 5          | 4               | 1 1/2 - 8UN | x 6 3/4      |
|                  | 4                          | 1 1/2 - 8UN | x 4          | 4               | 1 1/2 - 8UN | x 6          |

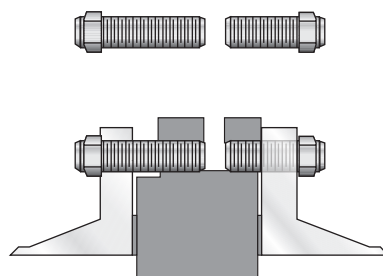
**Wafer Body 300 Class - Fig. 370**

| Valve Size (in.) | Hex Head Machine Bolt Qty. | Size        | Length (in.) | All Thread Qty. | Size        | Length (in.) |
|------------------|----------------------------|-------------|--------------|-----------------|-------------|--------------|
| 2                | 8                          | 5/8 - 11UNC | x 5 1/4      | 8               | 5/8 - 11UNC | x 5 3/4      |
| 2 1/2            | 8                          | 3/4 - 10UNC | x 4 3/4      | 8               | 3/4 - 10UNC | x 5 1/2      |
| 3                | 8                          | 3/4 - 10UNC | x 5          | 8               | 3/4 - 10UNC | x 5 3/4      |
| 4                | 8                          | 3/4 - 10UNC | x 5 1/2      | 8               | 3/4 - 10UNC | x 6 1/2      |
| 5                | 8                          | 3/4 - 10UNC | x 6          | 8               | 3/4 - 10UNC | x 7          |
| 6                | 12                         | 3/4 - 10UNC | x 6          | 12              | 3/4 - 10UNC | x 7          |
| 8                | 12                         | 7/8 - 10UNC | x 7 1/4      | 12              | 7/8 - 9UNC  | x 8          |
| 10               | 12                         | 1 - 8UN     | x 8 1/4      | 12              | 1 - 8UN     | x 9 1/2      |
|                  | 4                          | 1 - 8UN     | x 3 7/8      | 4               | 1 - 8UN     | x 4 7/8      |
|                  | 4                          | 1 - 8UN     | x 3 1/8      | 4               | 1 - 8UN     | x 4 1/8      |
| 12               | 16                         | 1 1/8 - 8UN | x 9          | 16              | 1 1/8 - 8UN | x 10         |
| 14               | 16                         | 1 1/8 - 8UN | x 10 1/4     | 16              | 1 1/8 - 8UN | x 11 1/2     |
|                  | 4                          | 1 1/8 - 8UN | x 3 1/4      | 4               | 1 1/8 - 8UN | x 4 3/4      |
|                  | 4                          | 1 1/8 - 8UN | x 3          | 4               | 1 1/8 - 8UN | x 4 1/2      |
| 16               | 16                         | 1 1/4 - 8UN | x 11 1/2     | 16              | 1 1/4 - 8UN | x 12 1/2     |
|                  | 4                          | 1 1/4 - 8UN | x 3 1/4      | 4               | 1 1/4 - 8UN | x 4 3/4      |
|                  | 4                          | 1 1/4 - 8UN | x 3          | 4               | 1 1/4 - 8UN | x 4 1/2      |
| 18               | 20                         | 1 1/4 - 8UN | x 12         | 20              | 1 1/4 - 8UN | x 13 1/2     |
|                  | 4                          | 1 1/4 - 8UN | x 3 1/2      | 4               | 1 1/4 - 8UN | x 5          |
|                  | 4                          | 1 1/4 - 8UN | x 3          | 4               | 1 1/4 - 8UN | x 4 3/4      |
| 20               | 20                         | 1 1/4 - 8UN | x 13         | 20              | 1 1/4 - 8UN | x 14         |
|                  | 8                          | 1 1/4 - 8UN | x 4          | 8               | 1 1/4 - 8UN | x 5 1/2      |
| 24               | 20                         | 1 1/2 - 8UN | x 14 1/2     | 20              | 1 1/2 - 8UN | x 16         |
|                  | 4                          | 1 1/2 - 8UN | x 4 3/4      | 4               | 1 1/2 - 8UN | x 6 1/2      |
|                  | 4                          | 1 1/2 - 8UN | x 4 1/4      | 4               | 1 1/2 - 8UN | x 6 1/4      |
| 30               | 24                         | 1 1/2 - 8UN | x 19         | 24              | 1 3/4 - 8UN | x 20 1/2     |
|                  | 8                          | 1 3/4 - 8UN | x 5 1/2      | 8               | 1 3/4 - 8UN | x 7 3/4      |

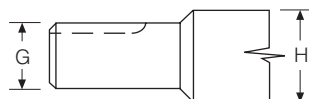
**Wafer Body**



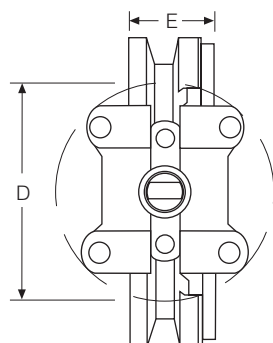
**Lugged Body**



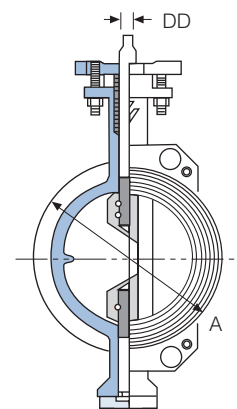
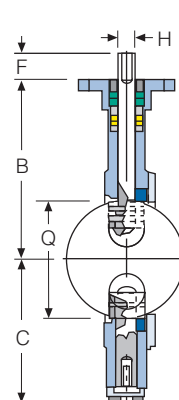
### Wafer Style



Upper Shaft/Keyway  
8" to 24"



Top Plate View



### ASME Class 150 Figure 360 Dimensions (inches)

| Size  | A       | B        | C        | D     | E       | F      | G     | H     | Q        | Top Plate Drilling  |             |           |           | Wt. Lbs. | Actuator Code |
|-------|---------|----------|----------|-------|---------|--------|-------|-------|----------|---------------------|-------------|-----------|-----------|----------|---------------|
|       |         |          |          |       |         |        |       |       |          | DD or Keyway        | Bolt Circle | No. Holes | Hole Dia. |          |               |
| 2     | 4 1/8   | 6        | 4 1/4    | 4     | 2 3/8   | 1 1/4  | N/A   | 9/16  | 1 7/8    | 3/8                 | 3 1/4       | 4         | 7/16      | 8        | BAB           |
| 2 1/2 | 4 1/8   | 6        | 4 1/4    | 4     | 1 7/8   | 1 1/4  | N/A   | 9/16  | 2 5/16   | 3/8                 | 3 1/4       | 4         | 7/16      | 9        | BAB           |
| 3     | 5       | 6 5/8    | 4 13/16  | 4     | 1 7/8   | 1 1/4  | N/A   | 5/8   | 2 3/4    | 7/16                | 3 1/4       | 4         | 7/16      | 12       | BAC           |
| 4     | 6 3/16  | 7 1/2    | 5 13/16  | 4     | 2 1/8   | 1 1/4  | N/A   | 3/4   | 3 11/16  | 1/2                 | 3 1/4       | 4         | 7/16      | 20       | BAD           |
| 5     | 7 1/4   | 7 9/16   | 5 13/16  | 4     | 2 1/4   | 1 1/4  | N/A   | 3/4   | 4 3/4    | 1/2                 | 3 1/4       | 4         | 7/16      | 25       | BAD           |
| 6     | 8 19/32 | 8 3/4    | 6 15/16  | 6     | 2 1/4   | 1 1/4  | 3/4   | 7/8   | 5 5/8    | 1/2                 | 5           | 4         | 9/16      | 32       | CAD           |
| 6*    | 8 19/32 | 8 3/4    | 6 15/16  | 6     | 2 1/4   | 1 1/4  | N/A   | 7/8   | 5 5/8    | 5/8                 | 5           | 4         | 9/16      | 33       | CAE           |
| 8     | 10 5/8  | 10 1/8   | 8 3/8    | 6     | 2 1/2   | 2      | N/A   | 1 1/8 | 7 7/16   | 1/4 X 1/4 X 1 5/8   | 5           | 4         | 9/16      | 50       | CAF           |
| 10    | 12 3/4  | 11 3/8   | 9 11/16  | 6     | 2 13/16 | 2      | 1 1/8 | 1 3/8 | 9 7/16   | 1/4 X 1/4 X 1 5/8   | 5           | 4         | 9/16      | 77       | CAF           |
| 10*   | 12 3/4  | 11 3/8   | 9 11/16  | 6     | 2 13/16 | 3      | N/A   | 1 3/8 | 9 7/16   | 5/16 X 5/16 X 2 5/8 | 5           | 4         | 9/16      | 78       | CAG           |
| 12    | 14 3/4  | 13       | 10 7/8   | 8     | 3 3/16  | 3      | 1 3/8 | 1 1/2 | 11 1/4   | 5/16 X 5/16 X 2 5/8 | 6 1/2       | 4         | 13/16     | 124      | DAG           |
| 14    | 16 1/4  | 13 1/4   | 11 7/8   | 8     | 3 5/8   | 3      | N/A   | 1 5/8 | 12 5/16  | 3/8 X 3/8 X 2 5/8   | 6 1/2       | 4         | 13/16     | 141      | DAH           |
| 16    | 18 1/2  | 14 1/2   | 12 7/8   | 8     | 4       | 3      | 1 5/8 | 1 3/4 | 14 1/8   | 3/8 X 3/8 X 2 5/8   | 6 1/2       | 4         | 13/16     | 230      | DAH           |
| 18    | 21      | 16       | 13 7/8   | 8     | 4 1/2   | 4 1/16 | N/A   | 1 7/8 | 15 15/16 | 1/2 X 3/8 X 4 1/16  | 6 1/2       | 4         | 13/16     | 305      | DAJ           |
| 20    | 23      | 17 7/16  | 15 7/16  | 8     | 5       | 4 5/16 | N/A   | 2 1/4 | 17 5/8   | 1/2 X 3/8 X 4       | 6 1/2       | 4         | 13/16     | 350      | DAK           |
| 24    | 27 1/2  | 19 11/16 | 17 13/16 | 8     | 6 1/16  | 4 1/4  | 2 1/4 | 2 1/2 | 21 1/16  | 1/2 X 3/8 X 4       | 6 1/2       | 4         | 13/16     | 620      | DAK           |
| 30    | 33 3/4  | 24 1/2   | 21 3/16  | 9 1/2 | 7 3/8   | 7      | N/A   | 3     | 26 7/8   | 3/4 X 3/4 X 6       | 9 3/4       | 4         | 1 1/16    | 1,020    | MAZ           |
| 36    | 40 1/4  | 28 3/8   | 24 11/16 | 9 1/2 | 8 1/2   | 8      | N/A   | 3 1/2 | 33 5/16  | 7/8 X 7/8 X 5 11/16 | 9 3/4       | 4         | 1 1/16    | 1,850    | MBE           |

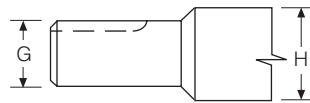
#### Note:

\* E.N.P. discs require larger upper stem connection diameters on 6 inch and 10 inch valve sizes for UHMWPE seat, metal seat and fire-safe seat trims.

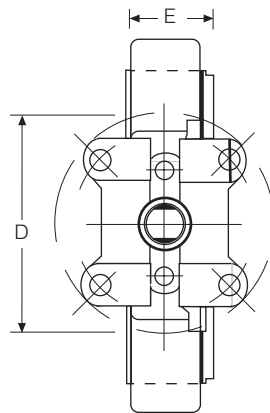
### ASME Class 300 Figure 370 Dimensions (inches)

| Size  | A       | B       | C        | D      | E      | F       | G     | H     | Q       | Top Plate Drilling  |             |           |           | Tapped Lug Data |             |           | Wt. Lbs. | Actuator Code |
|-------|---------|---------|----------|--------|--------|---------|-------|-------|---------|---------------------|-------------|-----------|-----------|-----------------|-------------|-----------|----------|---------------|
|       |         |         |          |        |        |         |       |       |         | DD or Keyway        | Bolt Circle | No. Holes | Hole Dia. | No. Holes       | Bolt Circle | Tap       |          |               |
| 2     | 4 1/8   | 6       | 4 1/4    | 4      | 2 3/8  | 1 1/4   | N/A   | 9/16  | 1 7/8   | 3/8                 | 3 1/4       | 4         | 7/16      | —               | —           | —         | 8        | BAB           |
| 2 1/2 | 4 1/8   | 6       | 4 1/4    | 4      | 1 7/8  | 1 1/4   | N/A   | 9/16  | 2 5/16  | 3/8                 | 3 1/4       | 4         | 7/16      | —               | —           | —         | 9        | BAB           |
| 3     | 5       | 6 5/8   | 4 13/16  | 4      | 1 7/8  | 1 1/4   | N/A   | 5/8   | 2 11/16 | 7/16                | 3 1/4       | 4         | 7/16      | —               | —           | —         | 12       | BAC           |
| 4     | 6 3/16  | 7 1/2   | 5 13/16  | 4      | 2 1/8  | 1 1/4   | N/A   | 3/4   | 3 11/16 | 1/2                 | 3 1/4       | 4         | 7/16      | —               | —           | —         | 20       | BAD           |
| 5     | 7 1/4   | 7 9/16  | 5 13/16  | 4      | 2 5/16 | 1 1/4   | N/A   | 3/4   | 4 3/4   | 1/2                 | 3 1/4       | 4         | 7/16      | —               | —           | —         | 25       | BAD           |
| 6     | 8 19/32 | 8 3/4   | 6 15/16  | 6      | 2 5/16 | 1 1/4   | N/A   | 7/8   | 5 5/8   | 5/8                 | 5           | 4         | 9/16      | —               | —           | —         | 32       | CAE           |
| 8     | 10 5/8  | 10 1/8  | 8 3/8    | 6      | 2 7/8  | 2       | N/A   | 1 1/8 | 7 7/16  | 1/4 X 1/4 X 1 5/8   | 5           | 4         | 9/16      | —               | —           | —         | 65       | CAF           |
| 10    | 12 3/4  | 11 3/8  | 9 11/16  | 6      | 3 1/4  | 3       | N/A   | 1 3/8 | 9 3/8   | 5/16 X 5/16 X 2 5/8 | 5           | 4         | 9/16      | 4               | 15 1/4      | 1-8UN     | 95       | CAG           |
| 12    | 14 3/4  | 13      | 10 7/8   | 8      | 3 3/8  | 3       | 1 3/8 | 1 1/2 | 11 1/4  | 5/16 X 5/16 X 2 5/8 | 6 1/2       | 4         | 13/16     | —               | —           | —         | 145      | DAG           |
| 14    | 16 1/4  | 14 3/8  | 12 5/8   | 8      | 4 5/8  | 4 1/4   | N/A   | 1 7/8 | 12      | 1/2 X 3/8 X 4 1/16  | 6 1/2       | 4         | 13/16     | 4               | 20 1/4      | 1 1/8-8UN | 270      | DAJ           |
| 16    | 18 1/2  | 16 1/16 | 13 3/4   | 8      | 5 1/4  | 4 1/8   | N/A   | 2 1/4 | 13 5/8  | 1/2 X 3/8 X 4       | 6 1/2       | 4         | 13/16     | 4               | 22 1/2      | 1 1/4-8UN | 305      | DAK           |
| 18    | 21      | 17      | 15 1/8   | 8      | 5 7/8  | 4 7/32  | N/A   | 2 1/2 | 15 7/16 | 5/8 X 5/8 X 4       | 6 1/2       | 4         | 13/16     | 4               | 24 3/4      | 1 1/4-8UN | 385      | DBA           |
| 20    | 23      | 20 3/16 | 16 3/4   | 7 1/2  | 6 1/4  | 6 1/2   | N/A   | 2 3/4 | 17 1/4  | 5/8 X 5/8 X 6 3/8   | 8           | 4         | 13/16     | 4               | 27          | 1 1/4-8UN | 450      | LAX           |
| 24    | 27 1/4  | 23 3/8  | 19 13/16 | 9 1/2  | 7 1/8  | 6 13/16 | N/A   | 3 1/2 | 20 3/4  | 7/8 X 7/8 X 5 11/16 | 9 3/4       | 4         | 1 1/8     | 4               | 32          | 1 1/2-8UN | 770      | MAY           |
| 30    | 33 3/4  | 26 3/8  | 24 9/16  | 10     | 9 1/2  | 7 7/8   | N/A   | 4 1/2 | 26      | 1 X 1 X 6 1/2       | 10          | 4         | 1 1/8     | 4               | 39 1/4      | 1 3/4-8UN | 1,100    | NAW           |
| 36    | 40 1/4  | 30 7/8  | 28 7/16  | 12 1/4 | 10 3/4 | 8       | N/A   | 5     | 32 7/16 | 1 1/4 X 1 1/4 X 7   | 12          | 4         | 1 1/8     | 4               | 46          | 2-8UN     | 1,590    | EBD           |

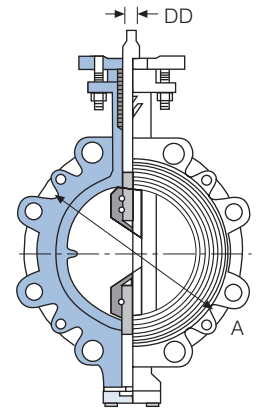
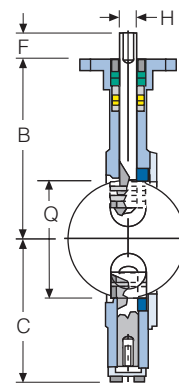
### Lug Style



Upper Shaft/Keyway  
8" to 24"



Top Plate View



### ASME Class 150 Figure 362 Dimensions (inches)

| Size  | A       | B        | C        | D     | E       | F      | G     | H     | Q        | Top Plate Drilling  |             |           |           | Tapped Lug Data |             |           | Wt. Lbs. | Actuator Code |
|-------|---------|----------|----------|-------|---------|--------|-------|-------|----------|---------------------|-------------|-----------|-----------|-----------------|-------------|-----------|----------|---------------|
|       |         |          |          |       |         |        |       |       |          | DD or Keyway        | Bolt Circle | No. Holes | Hole Dia. | No. Holes       | Bolt Circle | Tap       |          |               |
| 2     | 4 1/8   | 6        | 4 1/4    | 4     | 2 3/8   | 1 1/4  | N/A   | 9/16  | 1 7/8    | 3/8                 | 3 1/4       | 4         | 7/16      | 4               | 4 3/4       | 5/8-11UNC | 13       | BAB           |
| 2 1/2 | 4 1/8   | 6        | 4 1/4    | 4     | 1 7/8   | 1 1/4  | N/A   | 9/16  | 2 5/16   | 3/8                 | 3 1/4       | 4         | 7/16      | 4               | 5 1/2       | 5/8-11UNC | 14       | BAB           |
| 3     | 5       | 6 5/8    | 4 13/16  | 4     | 1 7/8   | 1 1/4  | N/A   | 5/8   | 2 3/4    | 7/16                | 3 1/4       | 4         | 7/16      | 4               | 6           | 5/8-11UNC | 15       | BAC           |
| 4     | 6 3/16  | 7 1/2    | 5 13/16  | 4     | 2 1/8   | 1 1/4  | N/A   | 3/4   | 3 11/16  | 1/2                 | 3 1/4       | 4         | 7/16      | 8               | 7 1/2       | 5/8-11UNC | 26       | BAD           |
| 5     | 7 1/4   | 7 9/16   | 5 13/16  | 4     | 2 1/4   | 1 1/4  | N/A   | 3/4   | 4 3/4    | 1/2                 | 3 1/4       | 4         | 7/16      | 8               | 8 1/2       | 3/4-10UNC | 31       | BAD           |
| 6     | 8 19/32 | 8 3/4    | 6 15/16  | 6     | 2 1/4   | 1 1/4  | 3/4   | 7/8   | 5 5/8    | 1/2                 | 5           | 4         | 9/16      | 8               | 9 1/2       | 3/4-10UNC | 40       | CAD           |
| 6*    | 8 19/32 | 8 3/4    | 6 15/16  | 6     | 2 1/4   | 1 1/4  | N/A   | 7/8   | 5 5/8    | 5/8                 | 5           | 4         | 9/16      | 8               | 9 1/2       | 3/4-10UNC | 41       | CAE           |
| 8     | 10 5/8  | 10 1/8   | 8 3/8    | 6     | 2 1/2   | 2      | N/A   | 1 1/8 | 7 7/16   | 1/4 x 1/4 x 1 5/8   | 5           | 4         | 9/16      | 8               | 11 3/4      | 3/4-10UNC | 63       | CAF           |
| 10    | 12 3/4  | 11 3/8   | 9 11/16  | 6     | 2 13/16 | 2      | 1 1/8 | 1 3/8 | 9 7/16   | 1/4 x 1/4 x 1 5/8   | 5           | 4         | 9/16      | 12              | 14 1/4      | 7/8-9UNC  | 106      | CAF           |
| 10*   | 12 3/4  | 11 3/8   | 9 11/16  | 6     | 2 13/16 | 3      | N/A   | 1 3/8 | 9 7/16   | 5/16 x 5/16 x 2 5/8 | 5           | 4         | 9/16      | 12              | 14 1/4      | 7/8-9UNC  | 107      | CAG           |
| 12    | 14 3/4  | 13       | 10 7/8   | 8     | 3 3/16  | 3      | 1 3/8 | 1 1/2 | 11 1/4   | 5/16 x 5/16 x 2 5/8 | 6 1/2       | 4         | 13/16     | 12              | 17          | 7/8-9UNC  | 160      | DAG           |
| 14    | 16 1/4  | 13 1/4   | 11 7/8   | 8     | 3 5/8   | 3      | N/A   | 1 5/8 | 12 5/16  | 3/8 x 3/8 x 2 5/8   | 6 1/2       | 4         | 13/16     | 12              | 18 3/4      | 1-8UN     | 265      | DAH           |
| 16    | 18 1/2  | 14 1/2   | 12 7/8   | 8     | 4       | 3      | 1 5/8 | 1 3/4 | 14 1/8   | 3/8 x 3/8 x 2 5/8   | 6 1/2       | 4         | 13/16     | 16              | 21 3/4      | 1-8UN     | 305      | DAH           |
| 18    | 21      | 16       | 13 7/8   | 8     | 4 1/2   | 4 1/16 | N/A   | 1 7/8 | 15 15/16 | 1/2 x 3/8 x 4 1/16  | 6 1/2       | 4         | 13/16     | 16              | 22 3/4      | 1 1/8-8UN | 415      | DAJ           |
| 20    | 23      | 17 7/16  | 15 7/16  | 8     | 5       | 4 5/16 | N/A   | 2 1/4 | 17 5/8   | 1/2 x 3/8 x 4       | 6 1/2       | 4         | 13/16     | 20              | 25          | 1 1/8-8UN | 500      | DAK           |
| 24    | 27 1/2  | 19 11/16 | 17 13/16 | 8     | 6 1/16  | 4 1/4  | 2 1/4 | 2 1/2 | 21 1/16  | 1/2 x 3/8 x 4       | 6 1/2       | 4         | 13/16     | 20              | 29 1/2      | 1 1/4-8UN | 750      | DAK           |
| 30    | 33 3/4  | 24 1/2   | 21 3/16  | 9 1/2 | 7 3/8   | 7      | N/A   | 3     | 26 7/8   | 3/4 x 3/4 x 6       | 9 3/4       | 4         | 1 1/16    | 28              | 36          | 1 1/4-8UN | 1,360    | MAZ           |
| 36    | 40 1/4  | 28 3/8   | 24 11/16 | 9 1/2 | 8 1/2   | 8      | N/A   | 3 1/2 | 33 5/16  | 7/8 x 7/8 x 5 11/16 | 9 3/4       | 4         | 1 1/16    | 32              | 42 3/4      | 1 1/2-8UN | 2,250    | MBE           |

#### Note:

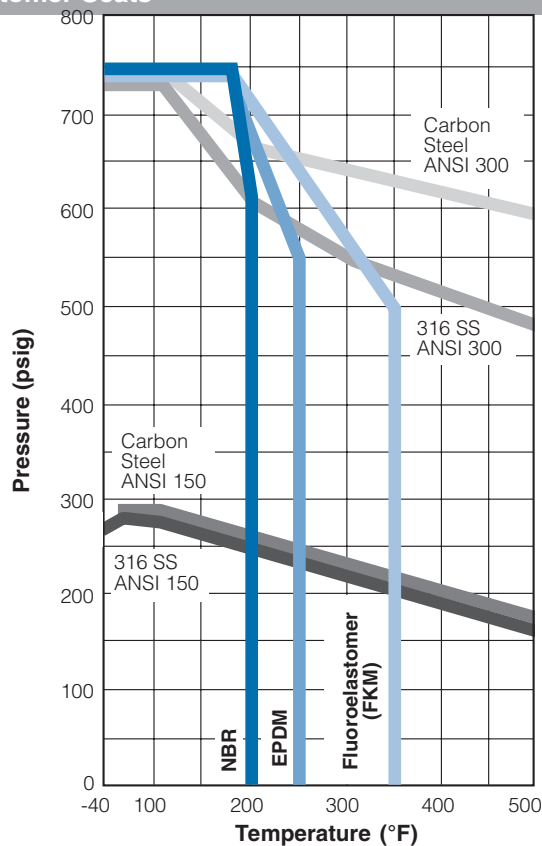
\* E.N.P. discs require larger upper stem connection diameters on 6 inch and 10 inch valve sizes for UHMWPE seat, metal seat and fire-safe seat trims.

### ASME Class 300 Figure 372 Dimensions (inches)

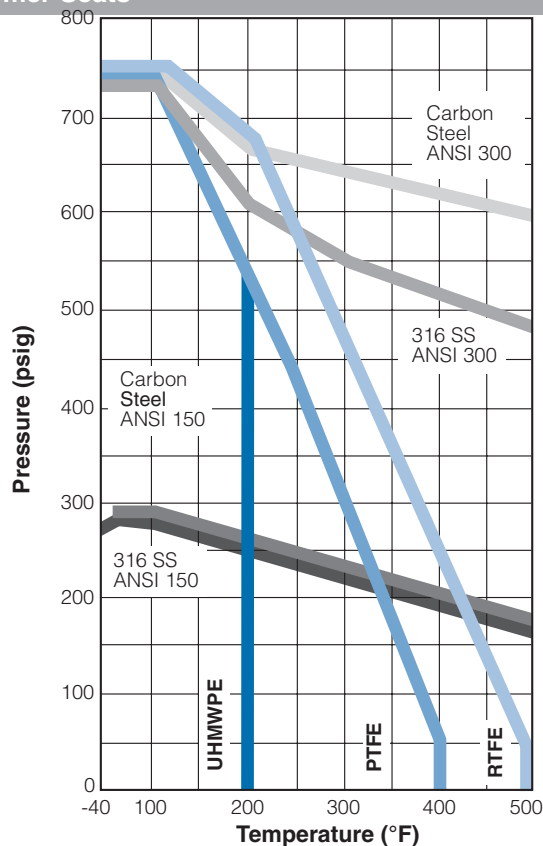
| Size  | A       | B       | C        | D      | E      | F       | G     | H     | Q       | Top Plate Drilling  |             |           | Tapped Lug Data |           |             | Wt. Lbs.  | Actuator Code |     |
|-------|---------|---------|----------|--------|--------|---------|-------|-------|---------|---------------------|-------------|-----------|-----------------|-----------|-------------|-----------|---------------|-----|
|       |         |         |          |        |        |         |       |       |         | DD or Keyway        | Bolt Circle | No. Holes | Hole Dia.       | No. Holes | Bolt Circle |           |               | Tap |
| 2     | 4 1/8   | 6       | 4 1/4    | 4      | 2 3/8  | 1 1/4   | N/A   | 9/16  | 1 7/8   | 3/8                 | 3 1/4       | 4         | 7/16            | 8         | 5           | 3/4-10UNC | 17            | BAB |
| 2 1/2 | 4 1/8   | 6       | 4 1/4    | 4      | 1 7/8  | 1 1/4   | N/A   | 9/16  | 2 5/16  | 3/8                 | 3 1/4       | 4         | 7/16            | 8         | 5 7/8       | 3/4-10UNC | 18            | BAB |
| 3     | 5       | 6 5/8   | 4 13/16  | 4      | 1 7/8  | 1 1/4   | N/A   | 5/8   | 2 11/16 | 7/16                | 3 1/4       | 4         | 7/16            | 8         | 6 5/8       | 3/4-10UNC | 20            | BAC |
| 4     | 6 3/16  | 7 1/2   | 5 13/16  | 4      | 2 1/8  | 1 1/4   | N/A   | 3/4   | 3 11/16 | 1/2                 | 3 1/4       | 4         | 7/16            | 8         | 7 7/8       | 3/4-10UNC | 26            | BAD |
| 5     | 7 1/4   | 7 9/16  | 5 13/16  | 4      | 2 5/16 | 1 1/4   | N/A   | 3/4   | 4 3/4   | 1/2                 | 3 1/4       | 4         | 7/16            | 8         | 9 1/4       | 3/4-10UNC | 31            | BAD |
| 6     | 8 19/32 | 8 3/4   | 6 15/16  | 6      | 2 5/16 | 1 1/4   | N/A   | 7/8   | 5 5/8   | 5/8                 | 5           | 4         | 9/16            | 12        | 10 5/8      | 3/4-10UNC | 55            | CAE |
| 8     | 10 5/8  | 10 1/8  | 8 3/8    | 6      | 2 7/8  | 2       | N/A   | 1 1/8 | 7 7/16  | 1/4 x 1/4 x 1 5/8   | 5           | 4         | 9/16            | 12        | 13          | 7/8-9UNC  | 80            | CAF |
| 10    | 12 3/4  | 11 3/8  | 9 11/16  | 6      | 3 1/4  | 3       | N/A   | 1 3/8 | 9 3/8   | 5/16 x 5/16 x 2 5/8 | 5           | 4         | 9/16            | 16        | 15 1/4      | 1-8UN     | 137           | CAG |
| 12    | 14 3/4  | 13      | 10 7/8   | 8      | 3 5/8  | 3       | 1 3/8 | 1 1/2 | 11 1/4  | 5/16 x 5/16 x 2 5/8 | 6 1/2       | 4         | 1 3/16          | 16        | 17 3/4      | 1 1/8-8UN | 185           | DAG |
| 14    | 16 1/4  | 14 3/8  | 12 5/8   | 8      | 4 5/8  | 4 1/4   | N/A   | 1 7/8 | 12      | 1/2 x 3/8 x 4 1/8   | 6 1/2       | 4         | 1 3/16          | 20        | 20 1/4      | 1 1/8-8UN | 340           | DAJ |
| 16    | 18 1/2  | 16 1/16 | 13 3/4   | 8      | 5 1/4  | 4 1/8   | N/A   | 2 1/4 | 13 5/8  | 1/2 x 3/8 x 4       | 6 1/2       | 4         | 1 3/16          | 20        | 22 1/2      | 1 1/4-8UN | 432           | DAK |
| 18    | 21      | 17      | 15 1/8   | 8      | 5 7/8  | 4 7/32  | N/A   | 2 1/2 | 15 7/16 | 5/8 x 5/8 x 4       | 6 1/2       | 4         | 1 3/16          | 24        | 24 3/4      | 1 1/4-8UN | 550           | DBA |
| 20    | 23      | 20 3/16 | 16 3/4   | 7 1/2  | 6 1/4  | 6 1/2   | N/A   | 2 3/4 | 17 1/4  | 5/8 x 5/8 x 6 3/8   | 8           | 4         | 1 3/16          | 24        | 27          | 1 1/4-8UN | 850           | LAX |
| 24    | 27 1/4  | 23 3/8  | 19 13/16 | 9 1/2  | 7 1/8  | 6 13/16 | N/A   | 3 1/2 | 20 3/4  | 7/8 x 7/8 x 5 11/16 | 9 3/4       | 4         | 1 1/16          | 24        | 32          | 1 1/2-8UN | 1,278         | MAY |
| 30    | 33 3/4  | 26 5/8  | 24 9/16  | 10     | 9 1/2  | 7 7/8   | N/A   | 4 1/2 | 26      | 1 x 1 x 6 1/2       | 10          | 4         | 1 1/8           | 28        | 39 1/4      | 1 3/4-8UN | 2,450         | NAW |
| 36    | 40 1/4  | 30 7/8  | 28 7/16  | 12 1/4 | 10 3/4 | 8       | N/A   | 5     | 32 7/16 | 1 1/4 x 1 1/4 x 7   | 12          | 4         | 1 1/8           | 32        | 46          | 2-8UN     | 2,850         | EBD |

### Pressure/Temperature Ratings for Seat Materials

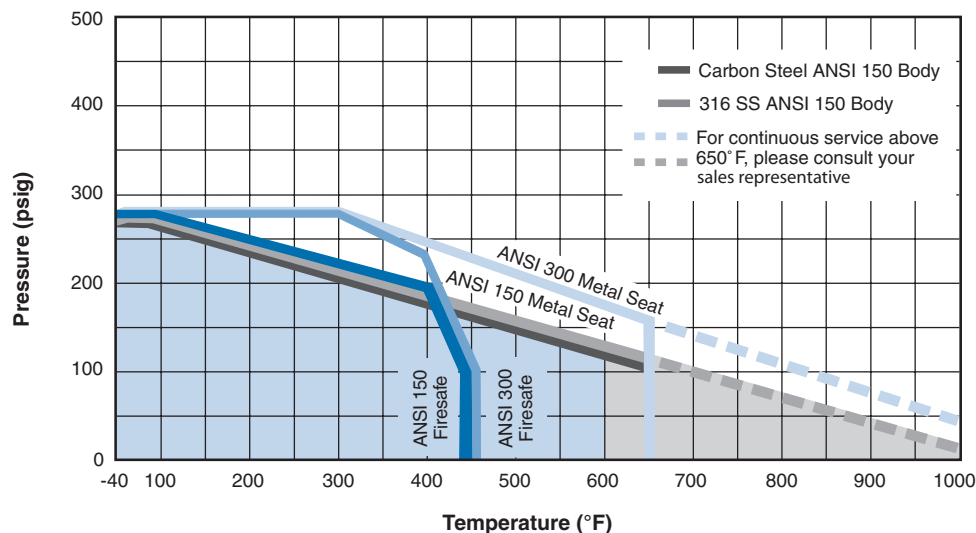
#### Elastomer Seats



#### Polymer Seats



#### Fire-Safe and Metal Seats



[www.keystonevalves.com](http://www.keystonevalves.com)

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