FLOWSERVE

# *Durco Big Max BX2001 Valve*
## *Product Catalog*

ASME Class 150 and 300 Valves

*Experience In Motion*

# Durco BX2001

## Performance Plus Economy Equal Total Value

The Big Max BX2001 high-performance valve is a superior quality, ASME Class 150 and 300 valve available in standard PFA and optional UHMWPE, fire sealed, Apex™ and TriFlex® metal seated versions. Offered in 2 in (50 mm) through 36 in (900 mm) sizes and in both wafer and lug body designs, all are available with a wide variety of packing options to meet your routine or most rigid service requirements.

### Total Quality

The BX2001 effectively contains fugitive process media emissions regulated by the federal Clean Air Act, including chlorine, hydrofluoric acid and anhydrous HCl. Ideal choice for precise throttling control or on-off service with lighter weight piping systems and less expensive, energy-efficient actuators.

### Superior Features

- Primary stem seal plus two optional secondary seals provide triple leak protection.
- Retainer is locked in the valve body by a unique lock or fasteners, depending on size.
- Adjustable, live-loaded packing option is available.
- Self-adjusting, self-contained, constant preload stem seal option may be specified.
- Low-profile disc increases capacity and provides better flow control.
- Wide range of optional materials include D20, DMM, DC2, DC3, DNI and DINC.

### World-Class Valve Performance

- All castings meet rigid ASTM standards.
- All BX2001 valves comply with ASME B16.34, ASME B16.5, ASME B16.10, MSS SP68, MSS SP61, API 598, API 607, API 609 and ISO 5752.
- All PFA seated valves and optional UHMWPE seated valves are tested in accordance with ASME B16.34 and MSS SP61. No through or external leaks are allowed, thereby exceeding the shut-off requirements of ASME/FCI 70-2 for all classes.
- All Apex and TriFlex metal seated valves are tested to ASME/FCI 70-2 Class IV and VI leakage rates, respectively.
- All valves available in ASME Class 150 and 300; DIN PN 10, -16, -20, -25 and -40 drilling.

# BX2001 Valves

Blowout-proof stem design complies with API 609 criteria to guard against catastrophic leakage and stem blowout in the event of shaft failure.

Large diameter, one-piece high-strength shaft reduces deflection for positive, repeatable shut-off at higher ΔP than similar valves.

Flats or "double D" on shaft provide positive indication of valve position and simplified adaption to automatic actuation.

Independent packing set adjustment prevents stem seal emissions.

Positioning holes on wafer body allow easy installation and proper alignment between flanges.

Wide choice of packing materials including adjustable and self-adjusting live-loaded with leak-detection port or purge fittings for lethal, toxic or sub-zero services.

Full-coverage retainer ring allows complete compatibility with all gaskets and no interruption in the sealing surface.

Integral cast overtravel disc stop is designed into the casting, not welded in place as an afterthought.

Blind bottom shaft hole eliminates potential leak point.

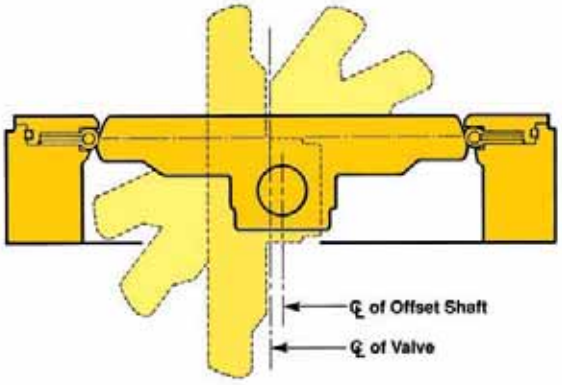
360° O-ring squarely and securely locks retainer ring into valve body.

Poly Lube® bearings or optional Severe Service bearings both offer low torque and high cycle life.

- Compact construction allows installation in tight spaces.
- Economical, simplified field repair due to minimum parts, interchangeable disc and shaft, and simple assembly procedures.
- All carbon steel bodies electrostatic epoxy coated for enhanced corrosion protection.

Unique, high-strength Gibb pin positively locks valve shaft to the disc. Gibb pin is used on 2 in (50 mm) through 12 in (300 mm) sizes.

PFA/Viton® A energized seat provides positive, bidirectional shut-off with long cycle life on low pressure and vacuum, and high ΔP services. (See page 6 for more information about seating.) Viton is a registered trademark of The DuPont Company.




The BX2001's double offset disc creates an eccentric seating action that eliminates seat wear, reduces torque and allows disc to "cam" into seat for tight shut-off.

### Severe Service Bearings

The special PTFE resin is pressure molded onto a perforated 316 SS sheet. The perforations lock the PTFE onto the 316 SS, making a unified bearing that exhibits high corrosion resistance with unparalleled cycle life. This process results in a PTFE/SS bearing where high radial and lateral loads will not deform the PTFE and strip it from its stainless steel backing. Particularly suited for environments detrimental to glass fibers or epoxies.

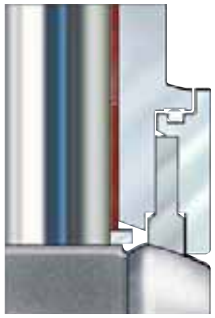
### Poly Lube® Bearings

A fiberglass weaving/winding process results in a seamless filament-wound fiberglass. Fluoropolymer superfilaments with tensile strengths 20 times greater than PTFE resins are integrated into the bearing and chemically bonded with a proprietary epoxy. A low friction coefficient and high load-carrying capacity are the natural benefits of this bearing. Flowserve tested to 400˚F (204˚C).

# BX2001 Seat Design Options

## ASME Class 150 and 300 Valves

Flowserve offers a wide variety of seat design options to most cost-effectively suit your service requirements.



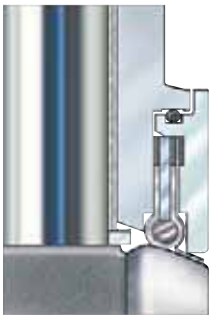
UHMWPE seat

### UHMWPE Seats

*For Abrasive Services*

BX valves with ultra-high molecular weight polyethylene (UHMWPE) seats provide long-lasting performance in erosive/abrasive services. UHMWPE seats are rated for services to 200°F (93°C).

**size range:**
**150# – 2-36"**
**300# – 2-20"**



Primary seat before fire

Metal seat after fire

### Fire-Sealed Valves

The fire-sealed version BX2001 meets API 607 Requirements. If a fire destroys the PFA/Viton O-ring energized primary seat, the Inconel® X750 metal backup seat activates to provide positive sealing.

**size range:**
**150# – 2-36"**
**300# – 2-18"**

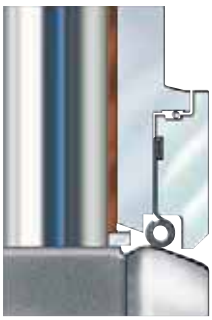
-20°F (-6°C) to 400°F (205°C)

400°F (205°C) to 600°F (315°C)

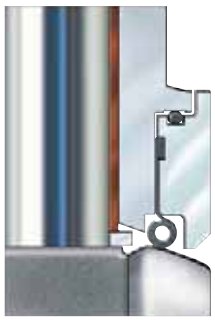
### Apex Metal-Seated Valves

Inconel seat assures Class IV shut-off and abrasion resistance. Grafoil® gaskets provide secondary sealing. Viton ring locks retainer ring into valve body on designs to 400°F (205°C); Inconel lock wire >400°F (>205°C) to 600°F (315°C).

**size range:**
**150# – 2-36"**
**300# – 2-18"**



-20°F (-6°C) to 400°F (205°C)



+ 400°F (205°C) high temperature

### TriFlex Metal-Seated Valves

TriFlex seat design utilizes the sleeve and coil action of three individual Inconel springs. The metal seat plus the energizing force of process fluid pressure provide outstanding shut-off service assuring Class VI compliance. These highly resilient springs also offer excellent corrosion and abrasion resistance for extended service life to 1000°F (538°C).

**size range:**
**150# – 2-30"**
**300# – 2-20"**

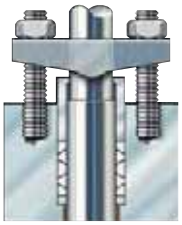


*Inconel is a registered trademark of the International Nickel Co., Inc. Grafoil is a registered trademark of Union Carbide Corporation.*

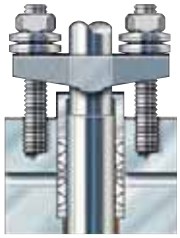
# BX2001 Stuffing Box Packing Options

## ASME Class 150 and 300 Valves

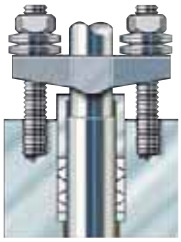
### Soft-Seated Valves



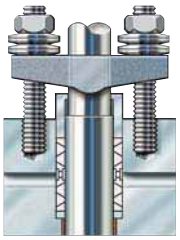
Standard, single PTFE cup and cone



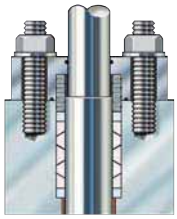
Double PTFE cup and cone with lantern ring



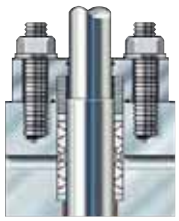
Live loaded, single PTFE cup and cone



Live loaded, double PTFE cup and cone with lantern ring (purge ports are an additional option)

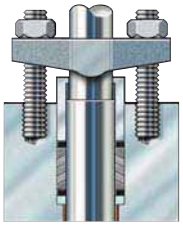


Triple seal, single PTFE cup and cone (self-adjusting/self-contained). 2 in (50 mm) – 12 in (300 mm) ASME Class150 only

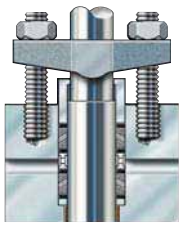


Triple seal, double PTFE cup and cone (self-adjusting/self-contained) with lantern ring. 2 in (50 mm) – 12 in (300 mm) ASME Class150 only (purge ports are an additional option)

### Fire-Sealed Valves



Standard, single Grafoil

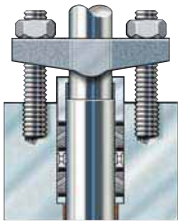


Optional double Grafoil with lantern ring (purge ports are an option)

Shaft packing and gaskets are made of Grafoil to prevent both through and external leakage. Shaft packing performance is enhanced by the Durco rocker arm adjuster.

**NOTES:** The use of lug body style is recommended for fire-sealed valves. The use of Belleville washers is not recommended with preformed pure graphite packing rings.

### TriFlex and Apex BX2 Metal Seat Valves



- To 400°F (205°C) standard, single PTFE cup and cone (adjustable). Optional live loading available
- To 400°F (205°C) double PTFE cup and cone with lantern ring (adjustable). Optional live loading available
- To 600°F (315°C) (TriFlex to 1000°F [538°C]) standard, single Grafoil packing set
- To 600°F (315°C) (TriFlex to 1000°F [538°C]) double Grafoil with lantern ring

**NOTE:** All lantern ring packings on this page are illustrated with two optional ⅛ in (3 mm) NPT purge connections. One ⅛ in (3 mm) bleed or injection port is also available.

# Durco BX2 Apex Metal-Seated Valves

## Provide Class IV Shut-Off To 600°F (315°C)

The Apex BX2 design to 600°F (315°C) features single Grafoil packing, hard chrome-plated 316 SS bearings and an Inconel lock wire on the retainer ring.

Durco's Apex metal seats are all about high-performance economy in abrasive, dirty and/or high-temperature applications. These HPBV Big Max valves bridge the performance gap between standard soft seated BX2 Pressure Class 150 and 300 and the critical service requirements of TriFlex metal seated valves with Class VI shut-off capability.

### Economy and performance

Apex Pressure Class 150 and 300 valves are offered in two models:

- To 400°F (205°C)
- To 600°F (315°C)

### Apex metal seated valves offer all the benefits of Big Max HPBVs plus more.

- Meets ASME/FCI 70-2 Class IV leakage rate criteria
- Bi-directional seating
- Blowout-proof stem to API 609
- Easy seat replacement
- Offered in 2 in (50 mm) through 36 in (900 mm) sizes
- Inherently fire-safe by design (>400°F [205°C])
- Exceptional cycling performance
- Reasonable seating/unseating torque

# Durco BX2 TriFlex Class VI* Metal-Seated Valves

## For High-Temperature Services To 1000°F (538°C)

The TriFlex BX2 design to 400°F (205°C) features single PTFE cup and cone packing, PTFE/fiberglass bearings and an Inconel lock ring.

### Four models offered

TriFlex Pressure Class 150 and 300 valves may be specified in a choice of four models:

- Standard to 400°F (205°C)
- Intermediate to 600°F (315°C)
- High temperature to 800°F (427°C)
- Modified with special materials to allow temperature to 1000°F (538°C)

### Exceptional service life

TriFlex provides extended service life because of carefully selected high-performance seat materials and the eccentric disc action of CF-8M (316 SS) hardened electro-nickel-coated discs. Abrasive wear is greatly reduced.

### Testing

Every valve is tested in accordance with ASME/FCI 70-2 specification to assure Class VI compliance.*

### Metal-to-metal sealing

TriFlex utilizes the sleeve and coil action of three individual springs plus the energizing force of process fluid pressure to provide outstanding Class VI shut-off service.* These highly resilient springs also offer excellent corrosion and abrasion resistance for extended service life.

### Additional design and materials notes

- TriFlex BX2 valves for services to 800°F (425°C)
  - Hard chrome-plated 316 SS bearings
  - Single Grafoil packing
  - Type XM-19 SS shaft, thrust bearing and washer
- TriFlex BX2 valves for services to 1000°F (538°C)
  - Special bill of materials. Consult factory

**BX2 TriFlex valves 2" – 12" are assembled and tested to meet FCI 70-2 Class VI leakage rates. Valves 2" – 12", specified by model code for temperature service above 400° F, will be assembled and tested to meet FCI 70-2 Class IV as built (ambient temperature) but designed to meet Class VI at service temperature. For BX2 valves 14" and larger, please consult factory.*

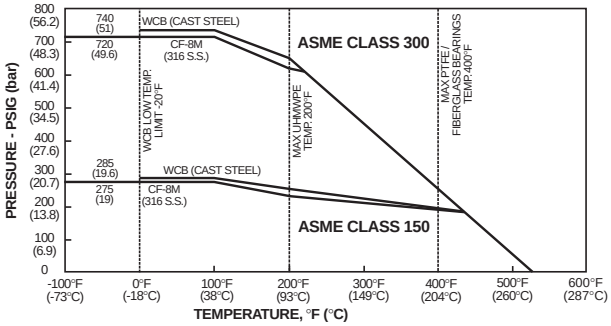
# BX2001 Technical Data

## ASME Class 150 and 300 Valves

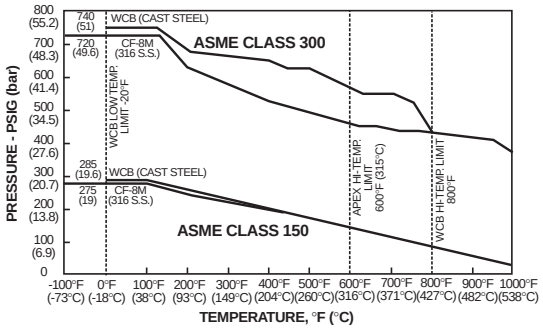
Standard Big Max valves with PTFE packing and PFA or UHMWPE seats are rated for Vacuum Service to .02 mm Hg absolute pressure or 20 microns at ambient temperature. For vacuum services beyond this, please consult your Flowserve Sales Representative.

## Pressure/Temperature Ratings†

### PFA, UHMWPE and Fire-Sealed Seats[1, 2]




### Apex and TriFlex[3] Metal Seats[2]




*† Values given are in accordance with ASME B16.34, 1998 Edition. For materials of construction or temperatures other than those listed, consult the factory as the pressure-temperature ratings may vary.*

***1*** *BX2L4 valves rated to 150 psi with retainer ring unsupported.*

***2*** *BX2L1/BX2L3 designs are not rated for end-of-line service unless retainer ring is supported by a mating flange. For services requiring end-of-line with retainer ring unsupported, specify BX2L4 design.*

***3*** *Must be installed with seat upstream.*

*Note: For applications using non-metallic, lap joint flanges or non-standard light weight (<Schedule 40) piping, consult Flowserve.*

## Seat Recommended Service Temperatures for Best Performance

| | |
|---|---|
| PFA/Viton | -10°F (-23°C)/400°F (204°C) |
| PFA/Silicone | -100°F (-73°C)/400°F (204°C) |
| PFA/Inconel | -100°F (-73°C)/400°F (204°C) |
| Inconel Apex | -100°F (-73°C)/600°F (315°C) |
| Inconel TriFlex | -100°F (-73°C)/1000°F (538°C) |

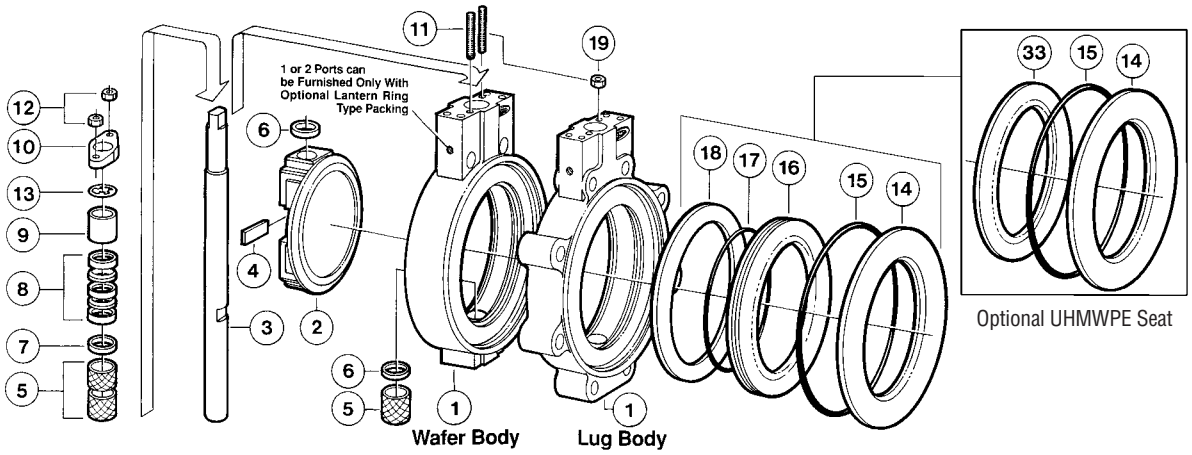
## Valve Standards* Applicable to the BX2001

| Specification | Title |
|---|---|
| ASME B16.10 | Valves – face-to-face dimensions |
| ASME B16.34 | Valves – flanged and butt-welding end |
| ASME B16.5 | Pipe flanges and flanged fittings |
| ASME/FCI 70-2 | American National standard for control valve seat leakage |
| MSS SP68 | High Pressure – offset seat butterfly valves |
| ISO 5752 | Metal valves for use in flanged pipe systems – face-to-face and center-to-face dimensions |
| API 609 | Butterfly valves, lug-type and wafer-type |
| MSS SP61 | Pressure Testing |
| API 607 | Fire Test procedures and leakage requirements |
| NACE MR-01-75 | Flowserve Corporation can furnish valves to this specification with modifications to our standard bill of materials. |
| United States Coast Guard | Flowserve Corporation is listed with The U.S. Department of Transportation, United States Coast Guard as an acceptable manufacturer of valves and has received an affidavit listing for valves. |
| P.E.D 97/23/EC<br>ISO 9001 Certified | European pressure equipment directive<br>The Cookeville valve operation is ISO 9001 |

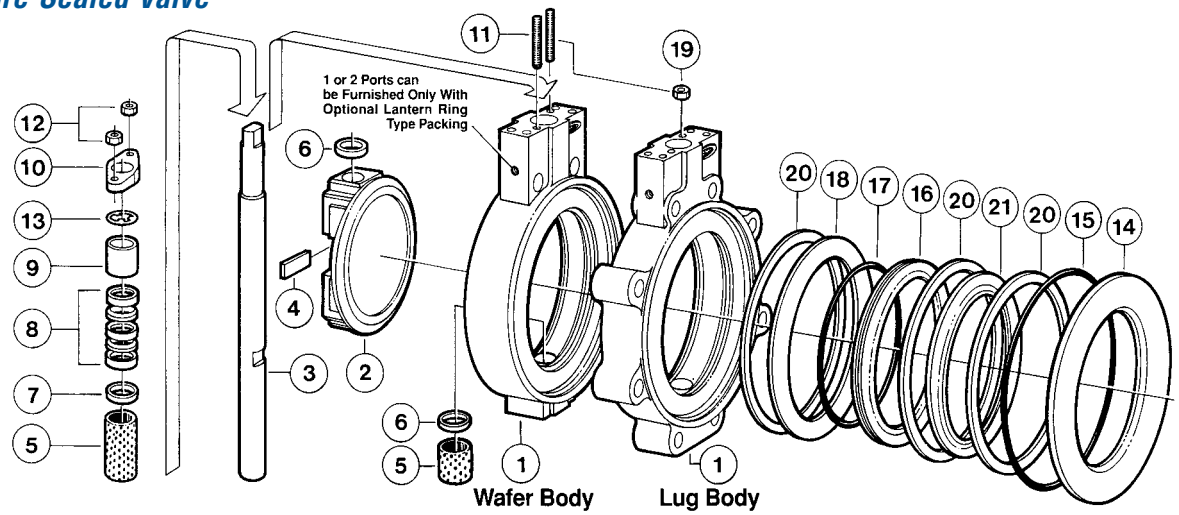
**Other specifications may apply and those listed may be only partially applicable. Each should be evaluated on a case-by-case basis. Contact Flowserve with your particular requirements.*

# 2 in (50 mm) through 12 in (300 mm)

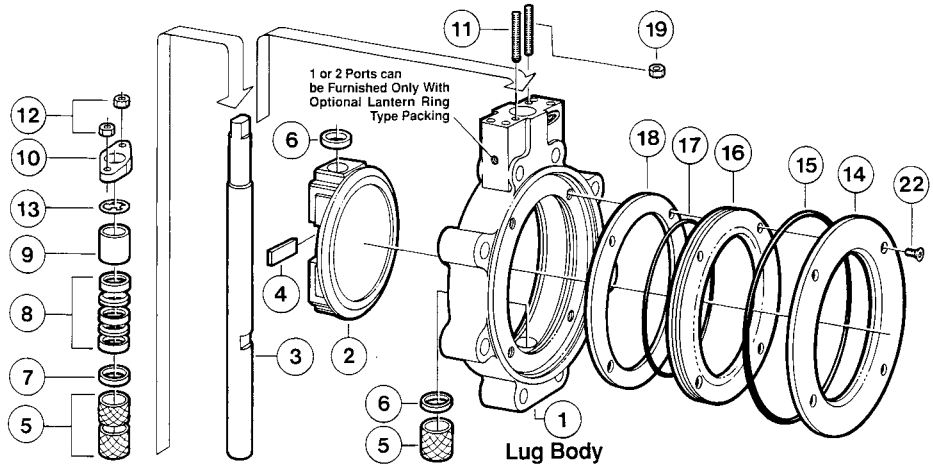
## Standard Valve




## Fire-Sealed Valve




## End-of-Line Lug Valve



# 2 in (50 mm) through 12 in (300 mm)

## Parts List – Standard, Fire-Sealed and End-of-Line Lug Valves

| Item No. | Description | Carbon Steel | Stainless Steel |
|---|---|---|---|
| 1 | Body | ASTM A216 Gr. WCB | ASTM A351 Gr. CF-8M |
| 2 | Disc | ASTM A351 Gr. CF-8M | ASTM A351 Gr. CF-8M |
| 3 | Shaft | ASTM A564 Type 630 17-4 SS | ASTM A564 Type 630 17-4 SS |
| 4 | Pin | ASTM A564 Type 630 17-4 SS | ASTM A564 Type 630 17-4 SS |
| 5 | Bearing | PTFE/Fiberglass (■ 316 SS Chrome Plated) | PTFE/Fiberglass (■ 316 SS Chrome Plated) |
| 6 | Thrust Bearing | ASTM A564 Type 630 17-4 SS | ASTM A564 Type 630 17-4 SS |
| 7 | Thrust Washer | 1018 Steel | 316 SS |
| • 8 | Packing Set | PTFE Cup and Cone (■ Grafoil) | PTFE Cup and Cone (■ Grafoil) |
| 9 | Gland | 303 SS | 303 SS |
| 10 | Adjuster | ASTM A351 Gr. CD4MCu | ASTM A351 Gr. CD4MCu |
| 11 | Stud-Adjuster | B8M3 (■ Gr. B-7) | B8M3 (■ Gr. B-7) |
| 12 | Nut-Adjuster | Gr. 8 (■ Gr. 2H) | Gr. 8 (■ Gr. 2H) |
| 13 | Ground Spring | 302 SS | 302 SS |
| 14 | Retainer Ring | ASTM A516 Gr. 70 Carbon Steel | ASTM A240 Type 316 SS |
| • 15 | Lock Ring | Viton A* | Viton A |
| • 16 | Seat | PFA | PFA |
| • 17 | Seat Energizer | Viton A* | Viton A |
| 18 | Seat Ring | 1020 Steel | ASTM A240 Type 316 SS |
| 19 | Jam Nut | 300 Series SS | 300 Series SS |
| • 20 | Gasket-Fire Seal | ■ Grafoil ** | ■ Grafoil |
| • 21 | Seat-Fire Seal | ■ Inconel X750 | ■ Inconel X750 |
| 22 | Capscrew | Chrome Steel | Chrome Steel |
| •33 | Seat | UHMWPE | UHMWPE |

*Note: 2 in (50 mm) through 8 in (200 mm) have 2 upper and 1 lower bearing, 10 in (250 mm) and 12 in (300 mm) have 3 upper and 2 lower bearings as standard. All Fire Sealed have 1 upper and 1 lower bearing.*

** Registered trademark of DuPont Company.*

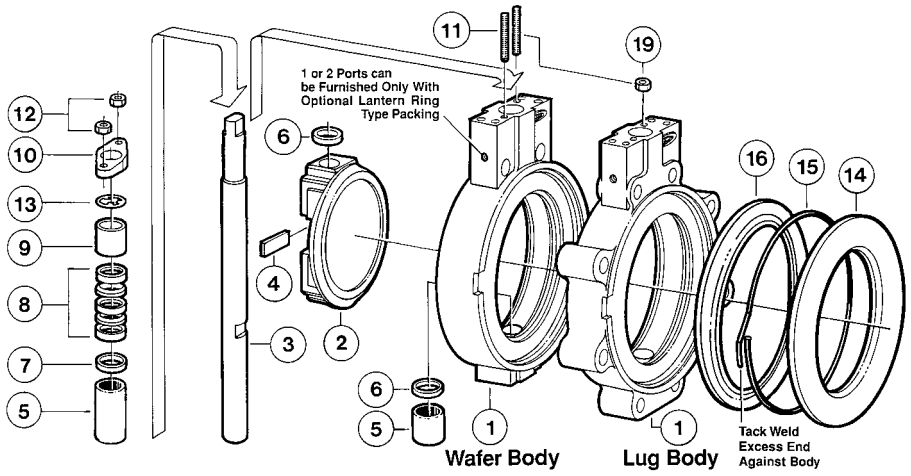
*** Registered trademark of Union Carbide.*

■ *Standard for Fire-Sealed*

• *Recommended spare parts.*

# BX2001 2 in (50 mm) through 12 in (300 mm)

## TriFlex Valve



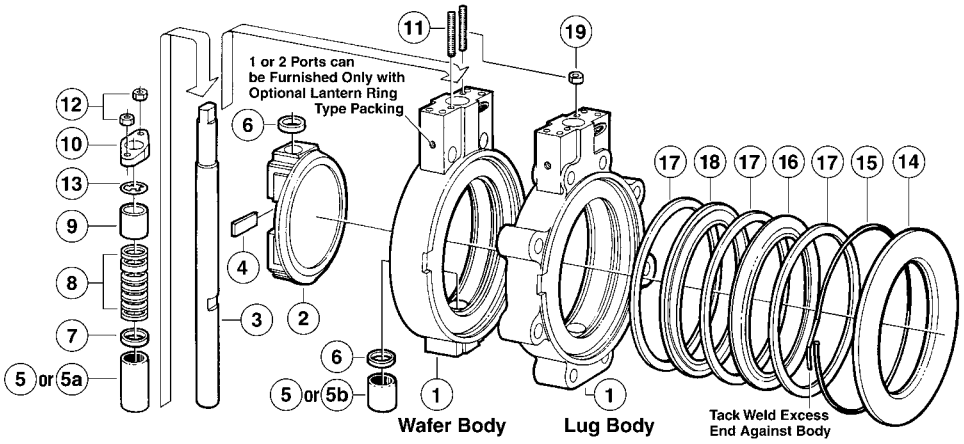

## Parts List – TriFlex Valve

| Item No. | Description | Carbon Steel | Stainless Steel |
|---|---|---|---|
| 1 | Body | ASTM A216 Gr. WCB | ASTM A351 Gr. CF-8M |
| 2 | Disc | ASTM A351 Gr. CF-8M (ENC) | ASTM A351 Gr. CF-8M (ENC) |
| 3 | Shaft | ASTM A564 Type 630 17-4 SS to 600˚F | ASTM A564 Type 630 17-4 SS to 600˚F |
| | | ASTM A479 Type XM19 SS - 601 to 1000˚F | ASTM A479 Type XM19 SS - 601 To 1000˚F |
| 4 | Pin | ASTM A564 Type 630 17-4 SS to 600˚F | ASTM A564 Type 630 17-4 SS to 600˚F |
| | | ASTM A479 Type XM19 SS - 601 to 1000˚F | ASTM A479 Type XM19 SS - 601 to 1000˚F |
| 5 | Bearing | PTFE/Fiberglass - to 400˚F | PTFE/Fiberglass - to 400˚F |
| | | 316 SS Chrome Plated - 400 to 1000˚F | 316 SS Chrome Plated - 400 to 1000˚F |
| 6 | Thrust Bearing | ASTM Type 630 17-4 SS to 600˚F | ASTM Type 630 17-4 SS to 600˚F |
| | | ASTM A479 Type XM19 SS - 601 to 1000˚F | ASTM A479 Type XM19 SS - 601 to 1000˚F |
| 7 | Thrust Washer | 1018 Steel to 600˚F | 316 SS to 600˚F |
| | | ASTM A479 Type XM19 SS - 601 to 1000˚F | ASTM A479 Type XM19 SS - 601 to 1000˚F |
| • 8 | Packing Set | PTFE Cup and Cone to 400˚F | PTFE Cup and Cone to 400˚F |
| | | Grafoil - 400 to 1000˚F | Grafoil - 400 to 1000˚F |
| 9 | Gland | 303 SS | 303 SS |
| 10 | Adjuster | ASTM A351 Gr. CD4MCu | ASTM A351 Gr. CD4MCu |
| 11 | Stud-Adjuster | Gr. B-7 | Gr. B-7 |
| 12 | Nut-Adjuster | Gr. 2H | Gr. 2H |
| 13 | Ground Spring | 302 SS | 302 SS |
| 14 | Retainer Ring | ASTM A516 Gr. 70 Carbon Steel | ASTM A240 Type 316 SS |
| • 15 | Lock Ring Retainer | Viton A to 400˚F<br>Inconel 400 to 1000˚F | Viton A to 400˚F<br>Inconel 400 to 1000˚F |
| • 16 | Seat | Inconel X750 Std. - Others as specified | Inconel X750 Std. - Others as specified |
| 19 | Jam Nut | 300 Series SS | 300 Series SS |
| 22 | Capscrew | Chrome Steel | Chrome Steel |

*• Recommended spare parts.*

# BX2001 2 in (50 mm) through 12 in (300 mm)

## Apex Valve




## Parts List – Apex Valve

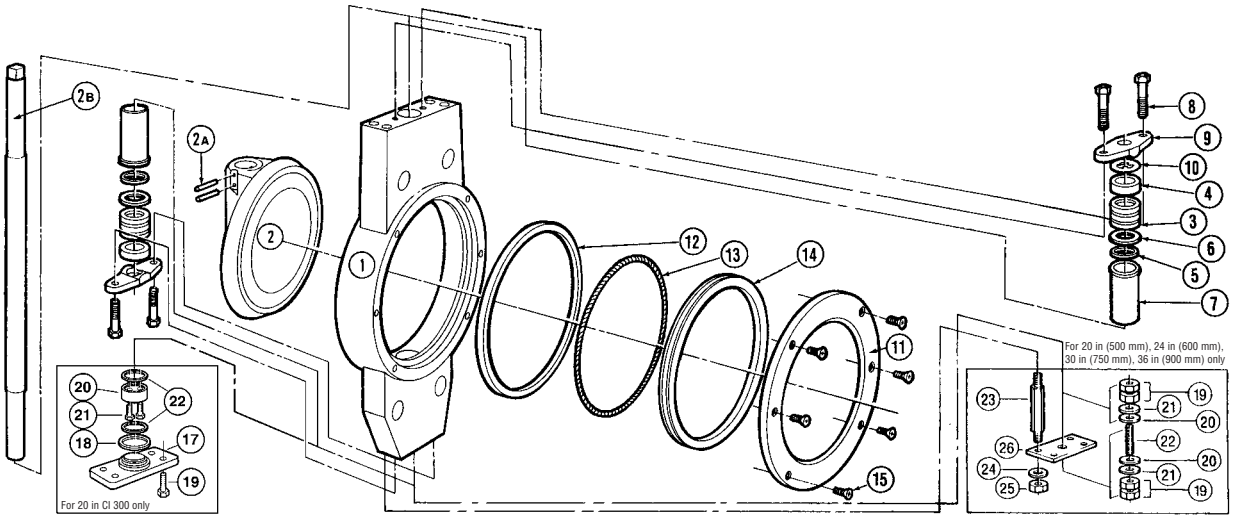
| Item No. | Description | Carbon Steel | Stainless Steel |
|---|---|---|---|
| 1 | Body | ASTM A216 Gr. WCB | ASTM A351 Gr. CF-8M |
| 2 | Disc | ASTM A351 Gr. CF-8M (ENC) | ASTM A351 Gr. CF-8M (ENC) |
| 3 | Shaft | ASTM A564 Type 630 17-4 SS | ASTM A564 Type 630 17-4 SS |
| 4 | Pin | ASTM A564 Type 630 17-4 SS | ASTM A564 Type 630 17-4 SS |
| 5 | Bearing | PTFE/Fiberglass to 400°F | PTFE/Fiberglass to 400°F |
| 5a | Bearing | 316 SS Chrome Plated 400 to 600˚F | 316 SS Chrome Plated 400 to 600˚F |
| 5b | Bearing | 316 SS Chrome Plated 400 to 600˚F | 316 SS Chrome Plated 400 to 600˚F |
| 6 | Thrust Bearing | ASTM Type 630 17-4 SS | ASTM Type 630 17-4 SS |
| 7 | Thrust Washer | 1018 Steel | 316 SS |
| • 8 | Packing Set | PTFE Cup and Cone to 400˚F | PTFE Cup and Cone to 400˚F |
| | | Grafoil - 400 to 600˚F | Grafoil - 400 to 600˚F |
| 9 | Gland | 303 SS | 303 SS |
| 10 | Adjuster | ASTM A351 Gr. CD4MCu | ASTM A351 Gr. CD4MCu |
| 11 | Stud-Adjuster | Gr. B-7 | Gr. B-7 |
| 12 | Nut-Adjuster | Gr. 2H | Gr. 2H |
| 13 | Ground Spring | 302 SS | 302 SS |
| 14 | Retainer Ring | ASTM A516 Gr. 70 Carbon Steel | ASTM A240 Type 316 SS |
| • 15 | Lock Ring | Viton A to 400˚F<br>Inconel 400 to 1000˚F | Viton A to 400˚F<br>Inconel 400 to 1000˚F |
| • 16 | Seat | Inconel X750 - Others as specified | Inconel X750 - Others as specified |
| • 17 | Gasket | Grafoil | Grafoil |
| • 18 | Seat Gasket | Grafoil | Grafoil |
| 19 | Jam Nut | 300 Series SS | 300 Series SS |

*Note: 2 in (50 mm) through 8 in (200 mm) have 2 upper and 1 lower bearing, 10 in (250 mm) and 12 in (300 mm) have 3 upper and 2 lower bearings as standard. All Fire Sealed have 1 upper and 1 lower bearing.*

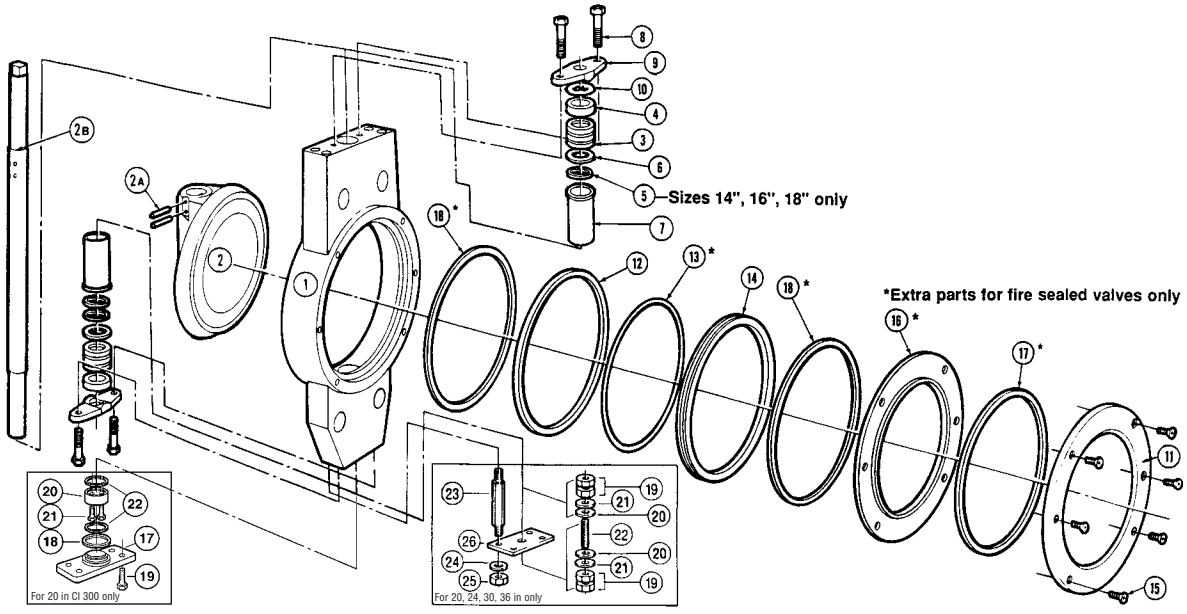
*• Recommended spare parts*

# 14 in (350 mm) through 36 in (900 mm)

## Standard Valve

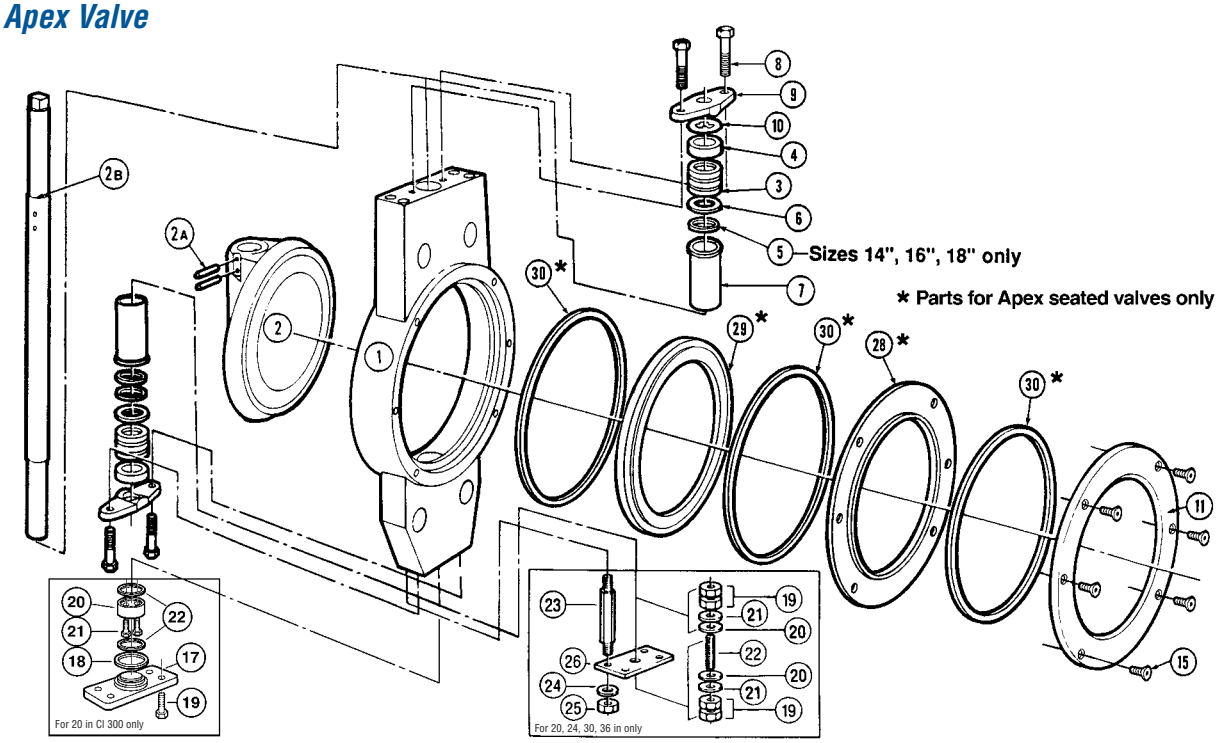



## Fire-Sealed Valve



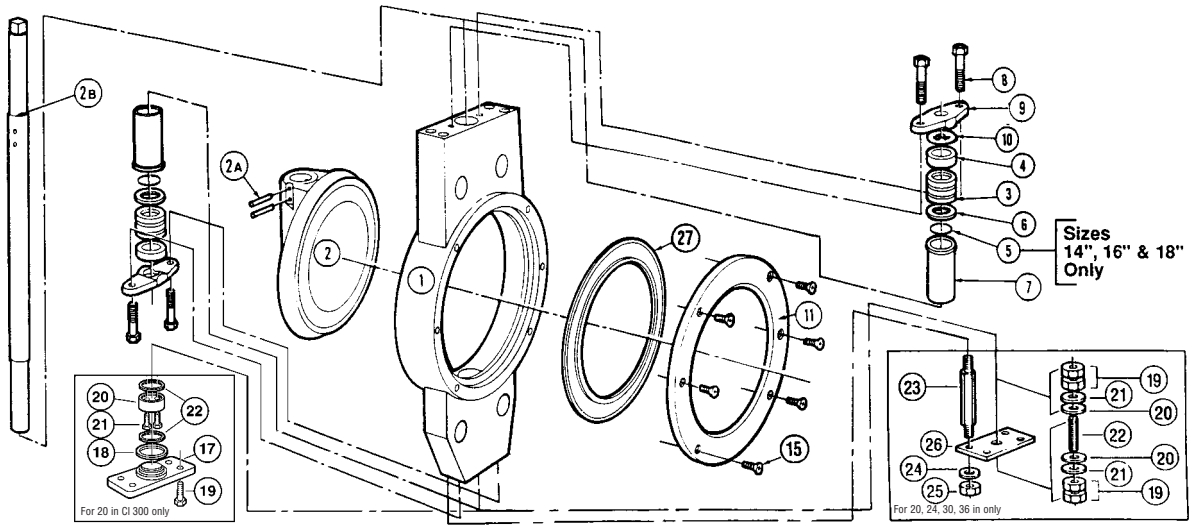
# 14 in (350 mm) through 36 in (900 mm)

## Apex Valve



# 14 in (350 mm) through 36 in (900 mm)

## TriFlex Valve




## Parts List – 20 in (500 mm) Class 300

| Item No. | Description | Material |
|---|---|---|
| 17 | Bottom Cap | ASTM A516 Gr. 70 or ASTM A240 UNS S31600 |
| 18 | Bottom Cap Gasket | TFM Fluoropolymer Gr. 1600 |
| 19 | Bottom Cap Fastener | ASTM A193 Gr. B8M2 or B8M3 |
| 20 | Bearing Cap | Type 316 SS |
| 21 | Bearing Cap Fastener | ASTM A193 Gr. B8M2 or B8M3 |
| 22 | Thrust Bearing | TFM Fluoropolymer Gr. 1600 |

# 14 in (350 mm) through 36 in (900 mm)

## Parts List – Standard Valve, Fire-Sealed Valve, TriFlex Valve, Apex-Seated Valve

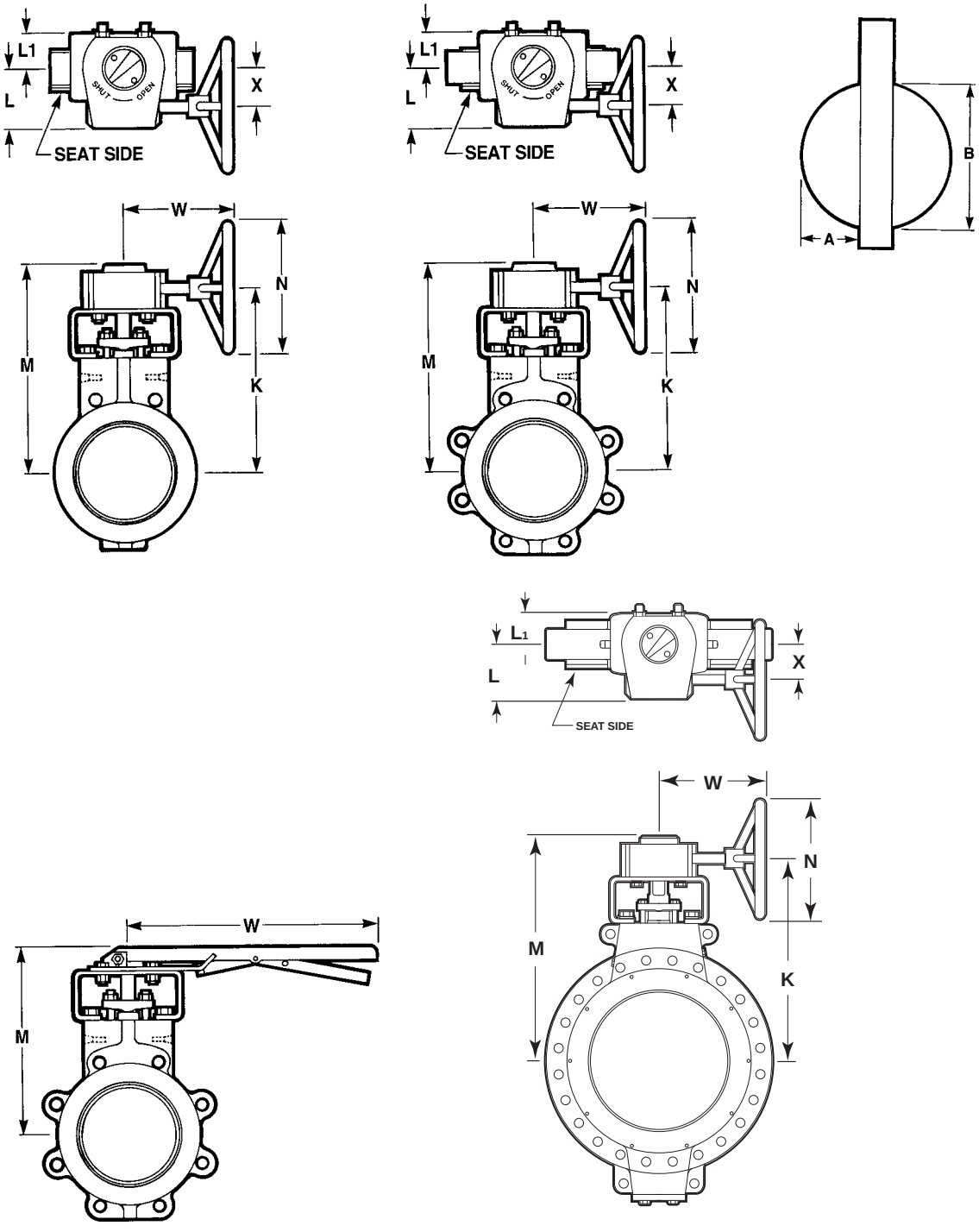
| Item No. | Description | Carbon Steel | Stainless Steel |
|---|---|---|---|
| 1 | Body | ASTM A216 Gr. WCB | ASTM A351 Gr. CF8M |
| 2 | Disc | ASTM A351 Gr. CF8M | ASTM A351 Gr. CF8M |
| 2A | Taper Pins | ASTM A276 Type 316 Condition B/S<br>◆ ASTM A276 Type 316 Condition B/S - To 600°F Monel K-500 - 600-800°F | |
| 2B | Shaft | ASTM A564 UNS S17400 Type 630<br>◆ For services above 600°F, shaft material will be ASTM A479 Type XM-19 | |
| • 3 | Packing Set | PTFE (■ Grafoil**)<br>◆ PTFE - To 400°F or Grafoil** - 400-1000˚F | |
| 4 | Packing Gland | 300 Series Stainless Steel | 300 Series Stainless Steel |
| 5 | Thrust Washer (14 in (350 mm), 16 in (400 mm), 18 in (450 mm) only) | PTFE<br>◆ PTFE - To 400°F or Grafoil** - 400-800˚F | |
| 6 | Packing Washer | Carbon Steel | 316 Stainless Steel |
| 7 | Bearing Assembly | PTFE/Fiberglass - To 400˚F or ■ 316 SS - Chrome Plated - 400-1000˚F | |
| 8 | Adjuster Fastener | ASTM A193 Gr. B8 (■ Gr. B7)<br>◆ ASTM A193 Gr. B8 - To 400˚F or ASTM A193 Gr. B7 - 400-1000˚F | |
| 9 | Packing Adjuster | ASTM A351 Gr. CD4M-Cu | ASTM A351 Gr. CD4M-Cu |
| 10 | Grounding Spring | 300 Series Stainless Steel | 300 Series Stainless Steel |
| 11 | Retainer Ring | ASTM A516 Gr. 70 | ASTM A240 UNS S31600 Type 316 |
| 12 | Seat Ring | Carbon Steel | ASTM A240 UNS S31600 Type 316 |
| • 13 | Seat Energizer | Viton A* | Viton A* |
| • 14 | Seat | PFA | PFA |
| • 15 | Retainer Fastener | 300 Series Stainless Steel | 300 Series Stainless Steel |
| • 16 | Fire-Sealed Seat | ■ Inconel X750 | ■ Inconel X750 |
| • 17 | Retainer Gasket | ■ Grafoil** | ■ Grafoil** |
| • 18 | Seat Gasket | ■ Grafoil** | ■ Grafoil** |
| 19 | Jamb Nut | 300 Series Stainless Steel | 300 Series Stainless Steel |
| 20 | Thrust Bearing | PTFE | PTFE |
| 21 | Thrust Washer | 300 Series Stainless Steel | 300 Series Stainless Steel |
| 22 | Adjustment Stud | Carbon Steel - Zinc Plated | 304 Stainless Steel |
| 23 | Support Stud | Carbon Steel - Zinc Plated | 304 Stainless Steel |
| 24 | Lock Washer | Carbon Steel | 300 Series Stainless Steel |
| 25 | Nut | Carbon Steel | ASTM A194 Gr. 8 |
| 26 | Thrust Plate | Carbon Steel - Zinc Plated | 304 Stainless Steel |
| • 27 | TriFlex Seat | ◆ Inconel X750 Std. – Others As specified | ◆ Inconel X750 Std. – Others As specified |
| • 28 | Apex Seat | ▲ Inconel X750 Std. – Others as specified | ▲ Inconel X750 Std. – Others as specified |
| 29 | Seat Ring | ▲ Carbon Steel | ▲ ASTM A240 UNS S31600 Type 316 |
| • 30 | Retainer/Seat Gaskets | ▲ Grafoil** | ▲ Grafoil** |

■ *Standard for Fire-Sealed* ◆ *Materials for TriFlex valves only* ▲ *Materials for Apex-Seated valves only*

• *Recommended spare parts* * *Registered trademark of DuPont Company* ** *Registered trademark of Union Carbide*

# BX2001 Dimensions for Valves with Actuators

The Durco Big Max BX2001 valve is designed for installation between ASME B16.5 Class 150 and 300 flanges as well as DIN, PN10, PN16, PN20, PN25 and PN40. All styles of metallic flanges* are permissible if clearance is provided for the swing of the disc. Install the valve with the disc in the closed position. Valve should be centered between flanges in order that the disc does not hit the flange/pipe when the valve is opened.




** Lap joint and light weight piping systems (<Schedule 40) consult Flowserve.*

# Dimensions for Valves with Actuators

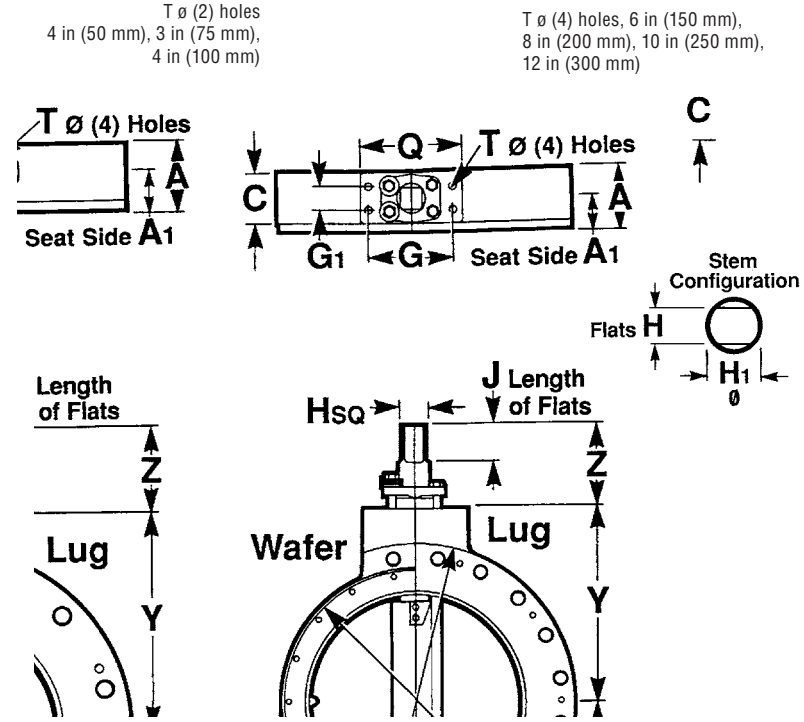
inches / mm

| Size | Disc Projection | | Gear | | | | | | | | Lever | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | A | B | K | L | L1 | M | N | W | X | Gear Type | M | W |
| 2 | 3/8 | 1 1/4 | 7 7/8 | 3 1/8 | 1 5/8 | 8 15/16 | 8 | 5 1/4 | 1 15/16 | HF-MX30 | 8 1/16 | 14 |
| 50 | 10 | 32 | 200 | 79 | 41 | 227 | 203 | 133 | 49 | | 205 | 355 |
| 2 | 3/8 | 1 1/4 | 7 7/8 | 3 1/8 | 1 5/8 | 8 15/16 | 8 | 5 1/4 | 1 15/16 | HF-MX30 | 8 1/16 | 14 |
| 50 | 10 | 32 | 200 | 79 | 41 | 227 | 203 | 133 | 49 | | 205 | 355 |
| 3 | 1 1/16 | 2 7/16 | 8 5/8 | 3 1/8 | 1 5/8 | 9 11/16 | 8 | 5 1/4 | 1 15/16 | HF-MX30 | 8 13/16 | 14 |
| 80 | 17 | 62 | 219 | 79 | 41 | 246 | 203 | 133 | 49 | | 224 | 355 |
| 3 | 1 1/16 | 2 7/16 | 8 5/8 | 3 1/8 | 1 5/8 | 9 11/16 | 8 | 5 1/4 | 1 15/16 | HF-MX30 | 8 13/16 | 14 |
| 80 | 17 | 62 | 219 | 79 | 41 | 246 | 203 | 133 | 49 | | 224 | 355 |
| 4 | 1 1/8 | 3 5/8 | 9 1/8 | 3 1/8 | 1 5/8 | 10 3/16 | 8 | 5 1/4 | 1 15/16 | HF-MX30 | 9 5/16 | 14 |
| 100 | 29 | 92 | 232 | 79 | 41 | 259 | 203 | 133 | 49 | | 236 | 355 |
| 4 | 1 1/8 | 3 5/8 | 9 1/8 | 3 1/8 | 1 5/8 | 10 3/16 | 8 | 5 1/4 | 1 15/16 | HF-MX30 | 9 5/16 | 14 |
| 100 | 29 | 92 | 232 | 79 | 41 | 259 | 203 | 133 | 49 | | 236 | 355 |
| 5 | 1 1/2 | 4 1/2 | 10 3/4 | 3 5/8 | 2 1/2 | 12 1/4 | 8 | 6 3/4 | 2 3/8 | HF-MZ30 | 11 7/16 | 14 |
| 125 | 38 | 114 | 273 | 92 | 64 | 311 | 203 | 171 | 60 | | 290 | 355 |
| 6 | 2 1/16 | 5 9/16 | 11 1/4 | 3 5/8 | 2 1/2 | 12 3/4 | 8 | 6 3/4 | 2 3/8 | HF-MZ30 | 11 7/16 | 14 |
| 150 | 52 | 141 | 286 | 92 | 64 | 324 | 203 | 171 | 60 | | 290 | 355 |
| 6 | 2 1/16 | 5 9/16 | 11 1/4 | 3 5/8 | 2 1/2 | 12 3/4 | 8 | 6 3/4 | 2 3/8 | HF-MZ30 | 11 7/16 | 14 |
| 150 | 52 | 141 | 286 | 92 | 64 | 324 | 203 | 171 | 60 | | 290 | 355 |
| 8 | 2 5/8 | 7 | 12 7/8 | 4 3/8 | 2 1/2 | 14 3/4 | 12 | 8 1/4 | 2 5/8 | HF-MV | 13 1/8 | 13 3/4 |
| 200 | 67 | 178 | 327 | 111 | 64 | 375 | 305 | 210 | 67 | | 333 | 349 |
| 8 | 2 5/8 | 7 | 13 3/8 | 4 3/8 | 2 1/2 | 15 1/4 | 12 | 8 1/4 | 2 5/8 | HF-MV | Not Available | |
| 200 | 67 | 178 | 340 | 111 | 64 | 387 | 305 | 210 | 67 | | | |
| 10 | 3 5/8 | 9 5/16 | 14 5/8 | 4 3/8 | 2 1/2 | 16 1/2 | 12 | 8 1/4 | 2 5/8 | HF-MV | Not Available | |
| 250 | 92 | 237 | 371 | 111 | 64 | 419 | 305 | 210 | 67 | | | |
| 10 | 3 5/8 | 9 5/16 | 15 1/2 | 4 3/8 | 2 1/2 | 17 3/8 | 12 | 8 1/4 | 2 5/8 | HF-MV | Not Available | |
| 250 | 92 | 237 | 394 | 111 | 64 | 441 | 305 | 210 | 67 | | | |
| 12 | 4 1/2 | 11 3/8 | 16 1/16 | 5 | 2 1/2 | 18 1/8 | 12 | 9 3/4 | 3 1/32 | HF-MY40 | Not Available | |
| 300 | 114 | 289 | 408 | 127 | 64 | 460 | 305 | 248 | 77 | | | |
| 12 | 4 1/2 | 10 3/4 | 16 7/8 | 5 | 2 1/2 | 19 | 12 | 9 3/4 | 3 1/32 | HF-MY40 | Not Available | |
| 300 | 114 | 273 | 429 | 127 | 64 | 483 | 305 | 248 | 77 | | | |
| 14 | 5 | 12 45/64 | 17 5/8 | 6 5/8 | 3 1/2 | 19 3/4 | 18 | 10 3/16 | 4 3/8 | MB-60 | Not Available | |
| 350 | 127 | 323 | 448 | 168 | 89 | 502 | 457 | 259 | 111 | | | |
| 14 | 4 1/8 | 12 7/32 | 22 11/16 | 6 5/8 | 3 1/8 | 26 1/16 | 18 | 13 15/16 | 1 5/16 | HSMBF/S3 | Not Available | |
| 350 | 105 | 310 | 576 | 168 | 89 | 662 | 457 | 354 | 33 | | | |
| 16 | 5 25/32 | 14 45/64 | 19 13/16 | 7 5/8 | 3 1/2 | 22 1/16 | 18 | 12 3/16 | 5 3/8 | MC-60 | Not Available | |
| 400 | 147 | 373 | 503 | 194 | 89 | 560 | 457 | 310 | 137 | | | |
| 16 | 4 51/64 | 14 3/32 | 24 7/8 | 7 5/8 | 3 1/2 | 28 1/4 | 18 | 15 9/16 | 2 1/16 | HFMBF/S3 | Not Available | |
| 400 | 122 | 358 | 632 | 194 | 89 | 718 | 457 | 395 | 52 | | | |
| 18 | 6 3/8 | 16 9/16 | 21 15/32 | 7 5/8 | 3 1/2 | 23 3/4 | 18 | 12 3/16 | 5 3/8 | MC-60 | Not Available | |
| 450 | 162 | 420 | 545 | 194 | 89 | 603 | 457 | 310 | 137 | | | |
| 18 | 5 1/32 | 15 27/32 | 28 | 7 1/16 | 4 3/8 | 30 7/16 | 24 | 17 3/16 | 5 27/64 | MD/55 | Not Available | |
| 450 | 136 | 402 | 711 | 195 | 111 | 773 | 610 | 437 | 138 | | | |
| 20 | 7 3/32 | 18 15/32 | 22 7/8 | 7 5/8 | 3 1/2 | 25 5/64 | 18 | 12 3/16 | 5 3/8 | MC-60 | Not Available | |
| 500 | 180 | 469 | 581 | 194 | 89 | 649 | 457 | 310 | 137 | | | |
| 20 | 6 1/4 | 17 1/4 | 24 3/8 | 9 1/8 | 4 3/8 | 28 1/8 | 18 | 15 3/4 | 2 3/8 | MDF/S3 | Not Available | |
| 500 | 159 | 438 | 626 | 232 | 111 | 714 | 457 | 400 | 60 | | | |
| 24 | 8 5/16 | 22 3/32 | 26 1/16 | 9 1/8 | 4 3/8 | 29 7/16 | 18 | 15 3/4 | 2 3/8 | MDF/S3 | Not Available | |
| 600 | 211 | 561 | 662 | 232 | 111 | 748 | 457 | 400 | 60 | | | |
| 30 | 11 | 28 3/8 | 31 1/4 | 9 1/16 | 4 3/4 | 34 5/8 | 18 | 16 15/32 | 2 11/16 | MGF/S3 | Not Available | |
| 750 | 279 | 721 | 794 | 240 | 121 | 879 | 457 | 418 | 68 | | | |
| 36 | 13 41/64 | 34 3/8 | 40 1/4 | 9 7/16 | 4 3/4 | 43 3/8 | 24 | 17 23/32 | 2 11/16 | HFMGF/S5 FOR 195 PSIG ΔP | Not Available | |
| 900 | 346 | 873 | 1022 | 240 | 121 | 1108 | 610 | 450 | 68 | | | |
| 36 | 13 41/64 | 34 3/8 | 40 1/4 | 9 11/16 | 4 3/4 | 47 3/4 | 24 | 20 11/32 | 6 | HFMGF/S5 FOR 285 PSIG ΔP | Not Available | |
| 900 | 346 | 873 | 1022 | 240 | 121 | 1108 | 610 | 450 | 68 | | | |

*ASME Class 150* ☐ *ASME Class 300*

*All dimensions are approximate and for illustration purposes only. For exact dimensions request certified dimensional prints.*

# Dimensions for Wafer and Lug Valves




*2 in (50 mm) – 12 in (300 mm)*

*14 in (350 mm) – 18 in (450 mm)*

*20 in (500 mm) – 24 in (600 mm)*

*20 in (500 mm) Class 300*

*30 in (750 mm) – 36 in (900 mm)*

# Dimensions Common to BX2 Wafer and Lug Valves

inches / mm

| Size | A | A1 | B | C | D | D1 | G | G1 | H | H1 | J | Q | T | Y | Z | Shaft Ø |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 2 | 1¾ | 1 1/16 | 3⅞ | 1⅜ | 2½ | 2½ | 3⅝ | ⅝ | .440<br>.438 | .589<br>.587 | 1 1/16 | 4½ | ½-13 | 4¾ | 2 11/16 | ⅝ |
| 50 | 44 | 27 | 98 | 35 | 64 | 64 | 920 | 16 | 11.17<br>11.13 | 14.96<br>14.83 | 17 | 114 | ⅝ DP | 121 | 68 | 16 |
| 2 | 1¾ | 1 1/16 | 3⅞ | 1⅜ | 2 21/32 | 2 15/16 | 3⅝ | ⅝ | .440<br>.438 | .589<br>.587 | 1 1/16 | 4½ | ½-13 | 4¾ | 2 11/16 | ⅝ |
| 50 | 44 | 27 | 98 | 35 | 67 | 75 | 920 | 16 | 11.17<br>11.13 | 14.96<br>14.83 | 17 | 114 | ⅝ DP | 121 | 68 | 16 |
| 3 | 1⅞ | 11/8 | 5 | 1 7/16 | 3⅛ | 3⅛ | 3⅝ | ⅝ | .440<br>.438 | .589<br>.587 | 1 1/16 | 4½ | ½-13 | 5½ | 2 11/16 | ⅝ |
| 80 | 48 | 29 | 127 | 36 | 79 | 79 | 92 | 16 | 11.17<br>11.13 | 14.96<br>14.83 | 17 | 114 | ⅝ DP | 140 | 68 | 16 |
| 3 | 1 15/16 | 1⅛ | 5 | 1 7/16 | 3⅜ | 3 13/16 | 3⅝ | ⅝ | .440<br>.438 | .589<br>.587 | 1 3/16 | 4½ | ½-13 | 5½ | 2 11/16 | ⅝ |
| 80 | 49 | 29 | 127 | 36 | 86 | 97 | 92 | 16 | 11.18<br>11.13 | 14.96<br>14.83 | 21 | 114 | ⅝ DP | 140 | 68 | 16 |
| 4 | 2⅛ | 1¼ | 6 5/16 | 1½ | 3⅝ | 4 7/32 | 3⅝ | ⅝ | .440<br>.438 | .589<br>.587 | 1 1/16 | 4½ | ½-13 | 6 | 2 11/16 | ⅝ |
| 100 | 54 | 32 | 157 | 38 | 92 | 107 | 92 | 16 | 11.17<br>11.13 | 14.96<br>14.83 | 17 | 114 | ⅝ DP | 152 | 68 | 16 |
| 4 | 2 3/16 | 1¼ | 6 5/16 | 1½ | 3⅞ | 4 25/64 | 3⅝ | ⅝ | .440<br>.438 | .589<br>.587 | 1 3/16 | 4½ | ½-13 | 6 | 2 11/16 | ⅝ |
| 100 | 57 | 32 | 157 | 38 | 86 | 112 | 92 | 16 | 11.17<br>11.13 | 14.96<br>14.83 | 21 | 114 | ⅝ DP | 152 | 68 | 16 |
| 5 | 2¼ | 1 5/16 | 7 5/16 | 2 15/16 | 4 3/16 | 4 3/16 | 4¼ | 1⅛ | .623<br>.621 | .812<br>.807 | 1 1/16 | 5¼ | ½-13 | 6½ | 3 13/16 | ⅞ |
| 125 | 57 | 33 | 186 | 75 | 106 | 106 | 108 | 29 | 15.82<br>15.77 | 20.62<br>20.50 | 17 | 133 | ⅝ DP | 165 | 97 | 22 |
| 6 | 2¼ | 1 5/16 | 8½ | 1⅛ | 4 1/16 | 5 5/32 | 4¼ | 1⅛ | .623<br>.621 | .812<br>.807 | 1 1/16 | 5¼ | ½-13 | 7 | 3 13/16 | ⅞ |
| 150 | 57 | 33 | 216 | 47 | 119 | 131 | 108 | 29 | 15.82<br>15.77 | 20.62<br>20.50 | 17 | 133 | ⅝ DP | 178 | 97 | 22 |
| 6 | 2⅜ | 1 5/16 | 8½ | 1⅛ | 5⅜ | 5⅞ | 4¼ | 1⅛ | .623<br>.621 | .812<br>.807 | 1 3/16 | 5¼ | ½-13 | 7 | 3 13/16 | ⅞ |
| 150 | 60 | 33 | 216 | 47 | 137 | 149 | 108 | 29 | 15.82<br>15.77 | 20.62<br>20.50 | 21 | 133 | ⅝ DP | 178 | 97 | 22 |
| 8 | 2 7/16 | 1⅜ | 10⅝ | 2 | 6 | 6 5/16 | 4¼ | 1⅛ | .748<br>.746 | 1.057<br>1.052 | 1⅛ | 6 | ½-13 | 8¼ | 4¼ | 1 3/32 |
| 200 | 62 | 35 | 270 | 51 | 152 | 160 | 108 | 29 | 19.00<br>18.95 | 26.85<br>26.72 | 29 | 152 | ⅝ DP | 210 | 108 | 28 |
| 8 | 2 29/32 | 1⅜ | 10⅝ | 2 | 6 49/64 | 7 5/32 | 4¼ | 1⅛ | .748<br>.746 | 1.057<br>1.052 | 1⅛ | 6 | ½-13 | 8¾ | 4½ | 1 3/32 |
| 200 | 74 | 35 | 270 | 51 | 172 | 182 | 108 | 29 | 19.00<br>18.95 | 26.85<br>26.72 | 29 | 152 | ⅝ DP | 222 | 108 | 28 |
| 10 | 2 15/16 | 1 11/16 | 12¾ | 2⅜ | 7¾ | 7¾ | 5¼ | 1¼ | .873<br>.871 | 1.339<br>1.334 | 1⅛ | 6½ | ⅝-11 | 10 | 4¼ | 1⅜ |
| 250 | 75 | 43 | 324 | 60 | 197 | 197 | 133 | 32 | 22.17<br>22.12 | 34.01<br>33.88 | 29 | 165 | ¾ DP | 254 | 108 | 35 |
| 10 | 3 1/32 | 1¾ | 12¾ | 2½ | 8½ | 8½ | 5¼ | 1¼ | .873<br>.871 | 1.339<br>1.334 | 1⅛ | 6½ | ⅝-11 | 10⅞ | 4¼ | 1½ |
| 250 | 85 | 45 | 324 | 64 | 216 | 216 | 133 | 32 | 22.17<br>22.12 | 34.01<br>33.88 | 29 | 165 | ¾ DP | 276 | 108 | 38 |
| 12 | 3 5/16 | 1 15/16 | 15 | 2⅜ | 9 | 9¼ | 5¼ | 1¼ | .997<br>.995 | 1.500<br>1.495 | 1½ | 7 | ⅝-11 | 11½ | 4¾ | 15/8 |
| 300 | 84 | 49 | 381 | 60 | 229 | 235 | 133 | 32 | 25.32<br>25.27 | 38.10<br>37.97 | 38 | 178 | ¾ DP | 292 | 121 | 41 |
| 12 | 3 1/16 | 2 1/64 | 15 | 2¾ | 10 | 10 | 6 | 1½ | .997<br>.995 | 1.500<br>1.495 | 1½ | 7½ | ⅝-11 | 12¼ | 4¾ | 1¾ |
| 300 | 94 | 51 | 381 | 70 | 254 | 254 | 152 | 38 | 25.32<br>25.27 | 38.10<br>37.97 | 38 | 191 | ¾ DP | 311 | 121 | 45 |
| 14 | 3¾ | 2 9/32 | 16¼ | 2¾ | | 14 | 6⅝ | 1½ | 1.124<br>1.122 | | 1½ | 8 | ½-13 | 12½ | 4⅛ | 1¾ |
| 350 | 95 | 58 | 413 | 70 | | 356 | 168 | 38 | 28.549<br>28.498 | | 38 | 203 | ¾ DP | 317 | 124 | 44 |
| 14 | 4¾ | 2 23/64 | 17⅝ | 4⅜ | | 19⅛ | 7 | 2½ | 1.421<br>1.416 | | 1¾ | 8½ | ⅝-11 | 15⅜ | 7½ | 21/8 |
| 350 | 121 | 60 | 448 | 111 | | 486 | 178 | 64 | 36.093<br>35.966 | | 44 | 216 | 1⅛ DP | 391 | 191 | 54 |
| 16 | 4⅛ | 2 13/32 | 18½ | 3 3/16 | | 15⅞ | 7 | 1½ | 1.248<br>1.246 | | 2⅛ | 9 | ½-13 | 14 5/16 | 6 | 2 |
| 400 | 105 | 61 | 470 | 81 | | 403 | 178 | 38 | 31.699<br>31.648 | | 54 | 228 | ¾ DP | 360 | 152 | 51 |
| 16 | 5⅜ | 2 21/32 | 19⅞ | 5 | | 20¾ | 7 | 2½ | 1.686<br>1.684 | | 2 5/16 | 8¾ | ⅝-11 | 17⅜ | 8⅜ | 2½ |
| 400 | 137 | 67 | 505 | 127 | | 527 | 178 | 64 | 42.824<br>42.774 | | 59 | 222 | 1⅛ DP | 441 | 213 | 64 |
| 18 | 4⅝ | 2 17/32 | 21 | 3 1/16 | | 17⅞ | 7 | 1½ | 1.248<br>1.246 | | 2⅜ | 9 | ½-13 | 15 15/16 | 6⅛ | 2¼ |
| 450 | 118 | 64 | 533 | 78 | | 454 | 178 | 38 | 31.699<br>31.648 | | 60 | 228 | ¾ DP | 404 | 155 | 57 |
| 18 | 6 | 3 | 22⅜ | 55/8 | | 23 19/32 | 7 | 2½ | 1.874<br>1.872 | | 2⅞ | 85/8 | ⅝-11 | 20 | 8⅝ | 2¾ |
| 450 | 152 | 76 | 568 | 143 | | 599 | 178 | 64 | 47.599<br>47.548 | | 73 | 219 | 1⅛ DP | 508 | 219 | 70 |
| 20 | 5⅛ | 2 25/32 | 23 | 4⅜ | | 24 5/16 | 7½ | 2 | 1.874<br>1.872 | | 2¾ | 9 | ¾-10 | 16¾ | 7⅛ | 2½ |
| 500 | 130 | 71 | 584 | 111 | | 617 | 191 | 51 | 47.599<br>47.548 | | 70 | 228 | 1 DP | 425 | 181 | 64 |
| 20 | 6⅜ | 3 1/32 | 27 | 6⅝ | | 19 | 8 13/16 | 2 | 2.250<br>2.248 | | 3⅛ | 107/8 | ¾-10 | 18⅜ | 7 1/16 | 3 |
| 500 | 162 | 82 | 686 | 168 | | 483 | 224 | 51 | 57.150<br>57.099 | | 78 | 276 | 1 DP | 467 | 189 | 76 |
| 24 | 6 3/16 | 3 5/32 | 27¼ | 5⅛ | | 27½ | 8 13/16 | 2 | 2.250<br>2.248 | | 3⅛ | 107/8 | ¾-10 | 19¾ | 7 1/16 | 3 |
| 600 | 157 | 80 | 692 | 130 | | 698 | 224 | 51 | 57.150<br>57.099 | | 79 | 276 | 1 DP | 501 | 189 | 76 |
| 30 | 7½ | 4 | 33¾ | 5½ | | 32¼ | 8 13/16 | 2 | 2.624<br>2.622 | | 3 | 11¼ | ¾-10 | 24¼ | 7¾ | 3½ |
| 750 | 191 | 102 | 857 | 139 | | 819 | 224 | 51 | 66.649<br>66.598 | | 76 | 285 | 1 DP | 616 | 197 | 89 |
| 36 | 8 1/16 | 4 1/32 | 40¼ | 6¼ | | 41½ | 9½ | 4 | 2.906<br>2.904 | | 5 | 11½ | ¾-10 | 30¼ | 12¼ | 4 |
| 900 | 205 | 107 | 1022 | 158 | | 1054 | 241 | 102 | 73.812<br>73.762 | | 127 | 292 | 1 DP | 768 | 311 | 102 |

*ASME Class 150* ☐ *ASME Class 300*

*All dimensions are approximate and for illustration purposes only. For exact dimensions request certified dimensional prints.*

# BX2001 Flange Drilling Specifications Fastener Thread Sizes

Due to the hydrodynamic torque encountered with butterfly valves, safe operating practices dictate that manual gear operators, pneumatic actuators or electric actuators be used when these differential pressures are exceeded.

| Wafer Style – Class 150 and 300 Drilling | | | | Lug Style – Class 150 and 300 Drilling | | | |
|---|---|---|---|---|---|---|---|
| Size in (mm) | No. of Holes | Hole Size Inch | B.C. in (mm) | No. of Fasteners | Thread Size Inch | B.C. in (mm) | B1 in (mm) |
| 2 (50) | 4 | ¾ | 4¾ (121) | 4 | ⅝-11 | 4¾ (121) | 6 (152) |
| 2 (50) | 2 | ¾ | 5 (127) | 8 | ⅝-11 | 5 (127) | 6¼ (154) |
| 3 (80) | 2 | ¾ | 6 (152) | 4 | ⅝-11 | 6 (152) | 7½ (191) |
| 3 (80) | 2 | ⅞ | 6⅝ (168) | 8 | ¾-10 | 6⅝ (168) | 8⅛ (206) |
| 4 (100) | 2 | ¾ | 7½ (191) | 8 | ⅝-11 | 7½ (191) | 9 (229) |
| 4 (100) | 2 | ⅞ | 7⅞ (200) | 8 | ¾-10 | 7⅞ (200) | 9⅜ (238) |
| 6 (150) | 2 | ⅞ | 9½ (241) | 8 | ¾-10 | 9½ (241) | 11 (279) |
| 6 (150) | 2 | ⅞ | 10⅝ (270) | 12 | ¾-10 | 10⅝ (270) | 12⅛ (308) |
| 8 (200) | 2 | ⅞ | 11¾ (298) | 8 | ¾-10 | 11¾ (298) | 13½ (343) |
| 8 (200) | 2 | 1 | 13 (330) | 12 | ⅞-9 | 13 (330) | 14¾ (315) |
| 10 (250) | 2 | 1 | 14¼ (362) | 12 | ⅞-9 | 14¼ (362) | 16 (406) |
| 10 (250) | 4*** | 1-8 | 15¼ (387) | 16 | 1-8 | 15¼ (387) | 17¼ (438) |
| 12 (300) | 2 | 1 | 17 (432) | 12 | ⅞-9 | 17 (432) | 19 (483) |
| 12 (300) | 4*** | 1⅛-8 | 17¾ (451) | 16 | 1⅛-8 | 17¾ (451) | 20¼ (514) |
| 14 (350) | 4 | 1 1⁄16 | 18¾ (476) | 12 | 1-8 | 18¾ (476) | 21 (533) |
| 14 (350) | 8* | 1⅛-8 | 20¼ (514) | 20* | 1⅛-8 | 20¼ (514) | 23 (584) |
| 16 (400) | 4 | 1 1⁄16 | 21¼ (540) | 16 | 1-8 | 21¼ (540) | 23½ (597) |
| 16 (400) | 8* | 1¼-8 | 22½ (572) | 20* | 1¼-8 | 22½ (572) | 25½ (648) |
| 18 (450) | 4 | 1 3⁄16 | 22¾ (578) | 16 | 1⅛-8 | 22¾ (578) | 25 (635) |
| 18 (450) | 8* | 1¼-8 | 24¾ (628) | 24* | 1¼-8 | 24¾ (628) | 28 (711) |
| 20 (500) | 8* | 1⅛-8 | 25 (635) | 20* | 1⅛-8 | 25 (635) | 27½ (699) |
| 20 (500) | 10* | 1¼-8 | 27 (686) | 24* | 1¼-8 | 27 (686) | 30 (762) |
| 24 (600) | 8* | 1¼-8 | 29½ (749) | 20* | 1¼-8 | 29½ (749) | 32 (813) |
| 30 (750) | 16* | 1¼-8 | 36 (914) | 28** | 1¼-8 | 36 (914) | 38¾ (984) |
| 36 (900) | 16** | 1½-8 | 42¾ (1086) | 32** | 1½-8 | 42¾ (1086) | 46 (1168) |

■ *ASME Class 150* ☐ *ASME Class 300*

*All dimensions are approximate and for illustration purposes only. For exact dimensions request certified dimensional prints.*

** The two fastener holes on either side of the shaft, top and bottom, are tapped blind holes (both sides).*

*** Four fastener holes, two on either side of the shaft top and bottom, are tapped blind holes, both sides.*

**** The two fastener holes on either side of the shaft, top and bottom, are tapped through.*

## Maximum Differential Pressures

| Valve Size in (mm) | Max ΔP – Valve 90° open† |
|---|---|
| 3 (80) | 34 PSIG (2.3 bar) |
| 4 (100) | 16 PSIG (1.1 bar) |
| 6 (150) | 7 PSIG (.5 bar) |
| 8 (200) | 5 PSIG (.3 bar) |

*† Based on a 120-pound maximum force on wrench. See MSS SP91 for further clarification.*

Big Max high-performance butterfly valves meet the following flange specifications:

ASME B16.5: 2 in (50 mm) – 24 in (600 mm)

MSS SP44: 30 in (750 mm) and 36 in (900 mm)

ASME B16.47 (Series A): 30 in (750 mm) and 36 in (900 mm)

# BX2001 Valve and Operator Weights

## BX Manual Operator Weights

| Valve Size in (mm) | Locking Lever | Gear |
|---|---|---|
| 2 (50) | 6 lbs (2.7 kg) | 11 lbs (5 kg) |
| 2 (50) | 6 lbs (2.7 kg) | 11 lbs (5 kg) |
| 3 (80) | 6 lbs (2.7 kg) | 11 lbs (5 kg) |
| 3 (80) | 6 lbs (2.7 kg) | 11 lbs (5 kg) |
| 4 (100) | 6 lbs (2.7 kg) | 11 lbs (5 kg) |
| 4 (100) | 6 lbs (2.7 kg) | 11 lbs (5 kg) |
| 6 (150) | 6 lbs (2.7 kg) | 11 lbs (5 kg) |
| 6 (150) | 6 lbs (2.7 kg) | 11 lbs (5 kg) |
| 8 (200) | 20 lbs (9.1 kg) | 28 lbs (12.7 kg) |
| 8 (200) | 20 lbs (9.1 kg) | 28 lbs (12.7 kg) |
| 10 (250) | N/A | 28 lbs (12.7 kg) |
| 10 (250) | N/A | 28 lbs (12.7 kg) |
| 12 (300) | N/A | 31 lbs (14 kg) |
| 12 (300) | N/A | 31 lbs (14 kg) |
| 14 (350) | N/A | 64 lbs (29.0 kg) |
| 14 (350) | N/A | 94 lbs (42.6 kg) |
| 16 (400) | N/A | 76 lbs (34.5 kg) |
| 16 (400) | N/A | 108 lbs (49.0 kg) |
| 18 (450) | N/A | 76 lbs (34.5 kg) |
| 18 (450) | N/A | 125 lbs (56.7 kg) |
| 20 (500) | N/A | 76 lbs (34.5 kg) |
| 20 (500) | N/A | 101 lbs (45.8 kg) |
| 24 (600) | N/A | 101 lbs (45.8 kg) |
| 30 (750) | N/A | 156 lbs (70.8 kg) |
| 36 (900) | N/A | HFM GF/S5<br>156 lbs (70.8 kg) |
| | | HFM GF/D9<br>224 lbs (101.6 kg) |

## BX Valve Weights*

| Valve Size in (mm) | BX2W | BX2L |
|---|---|---|
| 2 (50) | 12 lbs (5.4 kg) | 12 lbs (5.4 kg) |
| 2 (50) | 10 lbs (4.5 kg) | 14 lbs (6.4 kg) |
| 3 (80) | 16 lbs (7.3 kg) | 18 lbs (8.2 kg) |
| 3 (80) | 15 lbs (6.8 kg) | 21 lbs (9.5 kg) |
| 4 (100) | 20 lbs (9.1 kg) | 26 lbs (11.8 kg) |
| 4 (100) | 20 lbs (9.1 kg) | 27 lbs (12.2 kg) |
| 5 (125) | 30 lbs (13.5 kg) | 35 lbs (15.8 kg) |
| 6 (150) | 35 lbs (15.9 kg) | 40 lbs (18.1 kg) |
| 6 (150) | 36 lbs (16.3 kg) | 52 lbs (23.6 kg) |
| 8 (200) | 58 lbs (26.3 kg) | 68 lbs (30.8 kg) |
| 8 (200) | 63 lbs (28.6 kg) | 90 lbs (40.8 kg) |
| 10 (250) | 86 lbs (39 kg) | 104 lbs (47.1 kg) |
| 10 (250) | 106 lbs (48 kg) | 146 lbs (66 kg) |
| 12 (300) | 125 lbs (56.7 kg) | 160 lbs (72.6 kg) |
| 12 (300) | 161 lbs (73 kg) | 230 lbs (104 kg) |
| 14 (350) | 250 lbs (113.4 kg) | 300 lbs (136 kg) |
| 14 (350) | 345 lbs (157 kg) | 636 lbs (289 kg) |
| 16 (400) | 325 lbs (147.4 kg) | 400 lbs (181.4 kg) |
| 16 (400) | 480 lbs (218 kg) | 900 lbs (408 kg) |
| 18 (450) | 400 lbs (181.4 kg) | 500 lbs (226.8 kg) |
| 18 (450) | 685 lbs (311 kg) | 1170 lbs (530.7 kg) |
| 20 (500) | 467 lbs (211.8 kg) | 624 lbs (283 kg) |
| 20 (500) | 650 lbs (295 kg) | 950 lbs (432 kg) |
| 24 (600) | 665 lbs (301.6 kg) | 880 lbs (399 kg) |
| 30 (750) | 1050 lbs (476.3 kg) | 1425 lbs (646.4 kg) |
| 36 (900) | 2162 lbs (980.7 kg) | 2748 lbs (1246.5 kg) |

*ASME Class 150* ☐ *ASME Class 300*

*All dimensions are approximate and for illustration purposes only. For exact dimensions request certified dimensional prints.*

# Automax® Actuators, Controls and Accessories


BX2001 lug-style valve with Automax SuperNova rack and pinion actuator and UltraSwitch

For precise throttling control or simple on-off operation of Big Max valves, the best choice is Automax actuators, controls and accessories.

## SuperNova™ Pneumatic Rack & Pinion Actuators

Material choices include hard anodized aluminum, epoxy filled composite and stainless steel. Available in torque ranges from 25 in-lb (3 Nm) to 58,000 in-lb (6554 Nm).

## Heavy-Duty Rotary Actuators

Scotch-Yoke type provide torques from 3,000 in-lb (339 Nm) to 500,000 in-lb (56,500 Nm). Designed for maximum performance and cycle life.

## Centura® Electric Rotary Actuators

Precise on-off and modulating control, they are available in metallic and non-metallic housings with torque ranges from 225 in-lb (25 Nm) to 3,500 in-lb (396 Nm). Hazardous and non-hazardous applications.

## XL90™ High-Performance Positioner

Analog positioner with two-stage relay for fast, sensitive response characteristics. Pneumatic or electrical control signals. Optional position feedback limit switches, 4-20mA position feedback transmitter, and UltraDome visual position indicator.

## Logix™ Digital Positioner

Combines fast 16-bit microprocessor and two-stage electronic relay with HART™ protocol for compatibility with smart instrument systems. Quick-Cal™ function for automatic, push-button calibration. Proprietary software for positioner communication via computer provides a variety of configurations, diagnostics, custom characterizations and other functions.

## Accessories

- Auto Brakits™ mounting kits
- Flow controls, NAMUR accessories, lockouts, gear overrides
- SureGrip™ valve couplings


BX2001 wafer-style valve with Automax SuperNova rack and pinion actuator and Apex 5000 modular positioning system

## *UltraSwitch® GL / XL / PL Series Rotary Position Indicators*

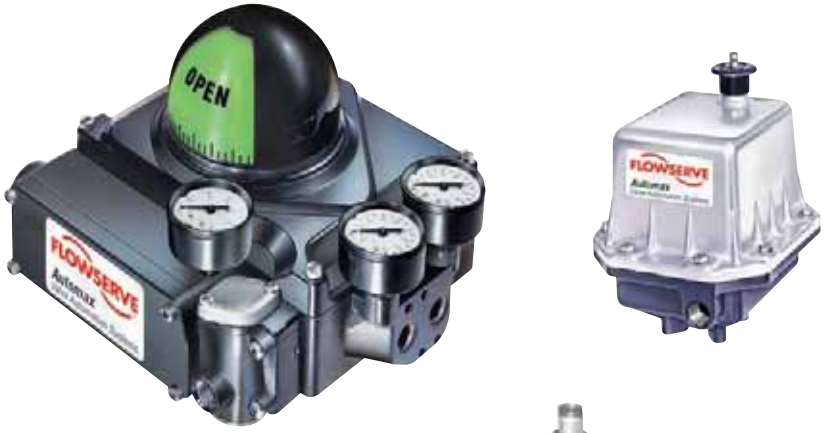
Compact and economical packages for both visual and remote electrical indication of valve position. Die-cast aluminum or non-metallic versions with UL and CSA ratings. Housings suitable for NEMA 4, 4X, 7 and 9 applications.


## *Aviator™ Rotary Position Indicator*

Internal pilot solenoid coil provides a truly integrated package for both visual and electrical position indication as well as air supply control.

## *APEX™ Modular Positioner*

Precise valve positioning with advanced features. Die-cast aluminum and non-metallic versions. Modular manifold base for pneumatic or electrical control signals. UL, C-UL, CENELEC and SAA.




## *BUSwitch™ Valve Control and Monitoring System*

Digital rotary position indicator. Control and monitoring of automated on-off quarter-turn valves. FOUNDATION® Fieldbus and Profibus-DP protocols.

# Index



# Selection, Installation, Operation and Maintenance

Although Flowserve can, and often does, provide general guidelines, it is obviously not possible to provide application-specific data and warnings for all conceivable applications. The purchaser/end user must therefore assume the ultimate responsibility for the proper selection, installation, operation and maintenance of the products. Read the appropriate IOM available from Cookeville, TN 38501 before installing, operating or repairing any valve. The purchaser/end user should train its employees and/or contractors in the safe use of the Flowserve products in connection with the purchaser's manufacturing processes.

# Design Changes

In order to follow Flowserve's commitment to continuous improvement, we reserve the right to change product and performance specifications without notice.


BX2001 lug-style valve with Automax SuperNova® rack and pinion actuator and Logix® digital positioner.

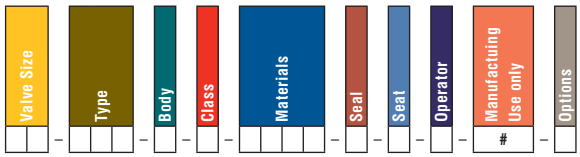
## Materials Selection Chart

| | |
|---|---|
| DS | ASTM A216 Gr. WCB (CAST STEEL) |
| D2 | ASTM A351 Gr. CF8 (304 S.S.) |
| D4 | ASTM A351 Gr. CF8M (316 S.S.) |
| D4L | ASTM A351 Gr. CF3M (316L S.S.) |
| D20 | ASTM A351 Gr. CN-7M (DURIMET 20) |
| CK3M | ASTM A351 Gr. CK-3MCuN (254 SMO)* |
| DINC | ASTM A494 Gr. CY-40 (INCONEL 600)** |
| DMM | ASTM A494 Gr. M35-1 (MONEL 400)** |
| DNI | ASTM A494 Gr. CZ-100 (NICKEL 200) |
| DC2 | ASTM A494 Gr. N-7M (CHLORIMET 2) |
| DC3 | ASTM A494 Gr. CW-6M (CHLORIMET 3) |
| Ti | ASTM B367 Gr. C-3 (TITANIUM) |
| CD | ASTM A351 Gr.CD4MCu (DURCOMET 100) |

** Registered trademark of Avesta AB*

***Registered trademark of International Nickel Co. Inc.*

# How to Specify BX2001 Valves




**Example: 6-BX2-L-1-811A-1-V-0-#-S**

*(6" Valve, Durco, Big Max 2001, Lug, ASME 150 Bidirectional, DS Body, D4 Disc, 17-4SS Shaft, PTFE/Fiberglass Bearing, Single PTFE Cup & Cone Shaft Seal, PFA/Viton Energizer, Locking Lever Operator, #, Silicone Free)*

## VALVE SIZE

| | | | |
|---|---|---|---|
| 2 in (50 mm) | 2 | 14 in (350 mm) | 14 |
| 3 in (80 mm) | 3 | 16 in (400 mm) | 16 |
| 4 in (100 mm) | 4 | 18 in (450 mm) | 18 |
| 5 in (125 mm) | 5 | 20 in (500 mm) | 20 |
| 6 in (150 mm) | 6 | 24 in (600 mm) | 24 |
| 8 in (200 mm) | 8 | 30 in (750 mm) | 30 |
| 10 in (250 mm) | 10 | 36 in (900 mm) | 36 |
| 12 in (300 mm) | 12 | | |

## TYPE

| | |
|---|---|
| Big Max 2001 | BX2 |

## BODY

| | |
|---|---|
| Lug | L |
| Wafer | W |

## CLASS

| | |
|---|---|
| ASME 150 Bidirectional | 1 |
| DIN PN10 | 2 |
| ASME 150 End of Line Lug | 4 |
| DIN PN16 | 5 |
| DIN PN20 | 7 |
| ASME 300 Bidirectional | 3 |
| DIN PN25 | 0 |
| DIN PN40 | 8 |

## BODY MATERIAL

| | | | |
|---|---|---|---|
| D4* ∎ | 1 | DC3 | 6 |
| DS* ∎ | 8 | Ti | 7 |
| D4L | L | D2 | 9 |
| D20 | 2 | DINC | N |
| DMM | 3 | CK3M | K |
| DNI | 4 | CD4MCu | 0 |
| DC2 | 5 | | |

## DISC MATERIAL

| | | | |
|---|---|---|---|
| D4* ∎ | 1 | DC3 | 6 |
| D4L | L | Ti | 7 |
| D20 | 2 | D2 | 9 |
| DMM | 3 | DINC | N |
| DNI | 4 | CK3M | K |
| DC2 | 5 | CD4MCu | 0 |

## SHAFT MATERIAL

| | | | |
|---|---|---|---|
| 17-4SS* | 1 | Ti | 7 |
| 316SS | S | N50A | R |
| C20H | 2 | ▲ N50 TriFlex +601°F | T |
| K Monel 500 | 3 | Ferralium 255 | F |
| Nickel | 4 | 254 SMO | K |
| Hastelloy B | 5 | Inconel 625 | N |
| Hastelloy C276 | 6 | | |

## BEARING MATERIAL

| | | | |
|---|---|---|---|
| PTFE/Fiberglass | A | TriFlex +600°F (I725) | R |
| C276NI | D | 316SS/PTFE | S |
| Tantalum | E | TriFlex/APEX +400°F (316HP) | T |
| Hastelloy C/PTFE | H | I718 | 2 |
| Inconel X750, (APEX or TriFlex +400°F) | I | Hastelloy C276 Borofused | 6 |
| TIF5NR | K | | |

## OPTIONS

| | |
|---|---|
| I625 Retainer Ring | A |
| Single ⅛" NPTBleed/Inj. Port | B |
| CL2 Cleaned | C |
| Steam Traced Disc | D |
| 16[.4] -32[.8] Finish - Body & Disc | E |
| Lug-Drill through holes | F |
| PTFE (2nd gasket) | G |
| Triflex/APEX (401°F - 600°F) | H |
| Inconel 718 Bellevilles (Live Loaded) ▼ | I |
| Steam Jacket | J |
| C276 Fasteners | K |
| Bearing Lube (⅛" NPT Ports) | L |
| Phosgene Cleaned | M |
| NACE Trim | N |
| O2 Cleaned ★ | O |
| Two ⅛" NPT Purge Ports | P |
| Triflex (601°F - 800°F) | R |
| Silicone Free | S |
| Triflex/APEX to 400°F | T |
| Undercut Disc | U |
| Wooden Flange Covers | V |
| Triflex (801°F - 1000°F) | Y |
| None | Z |
| Stellite Overlay (21) | 1 |
| I718 Fasteners | 2 |
| Anodized | 3 |
| Borofused | 4 |
| Nitrided≤ 800°F | 5 |
| Reactive (Nitrided Oxidized) | 6 |
| Fasteners | 7 |
| Quality Plan | Q |

## OPERATOR

| | |
|---|---|
| Locking Lever 2-8 in | 0 |
| Enclosed Gear | 1 |
| Pad Lockable Gear | 2 |
| Bare Stem | 9 |

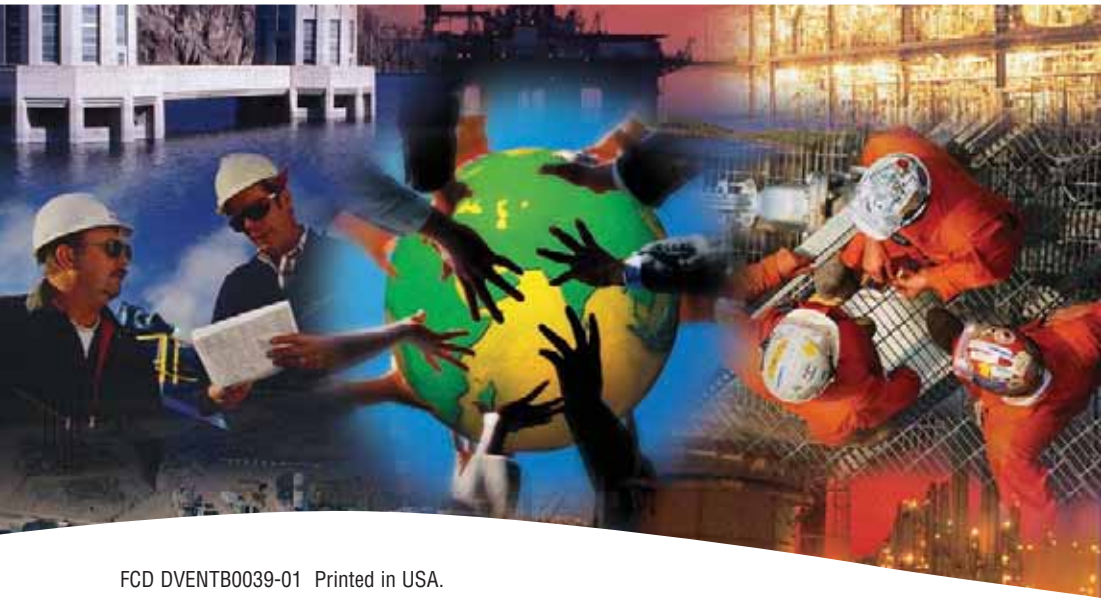
## SEAT

| | |
|---|---|
| PFA/Viton Energizer* | V |
| PFA/Silicone Energizer | R |
| PFA/Inconel Energizer | M |
| Fire Seal PFA/Inconel | Z |
| Inconel TriFlex ◆ | N |
| 316/Inconel TriFlex | S |
| Inconel APEX Class IV | A |
| Copper/Inconel TriFlex | C |
| Monel TriFlex | K |
| UHMWPE (2" - 12") | U |
| Nickel/Inconel TriFlex | 4 |

## SHAFT SEAL

| | |
|---|---|
| Single PTFE Cup & Cone* | 1 |
| Double PTFE Cup & Cone | 2 |
| Live Loaded Single Cup & Cone** | 3 |
| Live Loaded Double Cup & Cone** | 4 |
| Triple Seal Single PTFE Cup & Cone (Self-Adjusting) | 7 |
| Triple Seal Double PTFE Cup & Cone (Self-Adjusting) | 8 |
| Single Grafoil ∎▼ | 9 |
| Double Grafoil ▼ | 0 |

* Part for standard valve. All other materials considered optional.
** 17-7 S.S. Belleville Washers included.
★ Customer specification must be given.
● For use with Shaft Seals 3 and 4 only (17-7 Bellevilles Standard).
∎ Standard Fire-Sealed.
◆ Standard TriFlex Seat. All other materials considered optional.
▼ If Grafoil packing is to be live-loaded Belleville washers of Inconel 718 must be used
▲ ASTM A479 Xm19 Standard Triflex +601°F (315°C)
[1] Per Packing Gland

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Quality System Certificate