

# CAMERON Fully Welded Ball Valves

Engineered for heavy duty, limited maintenance performance, with the strength of forged components and a lightweight, compact, spherical design

TECHNOLOGY





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## CAMERON Fully Welded Ball Valves



Ville Platte, La., USA

Cameron is a leading provider of valve, valve automation and measurement systems to the oil and gas industry. Our products are primarily used to control, direct and measure the flow of oil and gas as it is moved from individual wellheads through flowlines, gathering lines and transmission systems to refineries, petrochemical plants and industrial centers for processing.

Cameron provides a wide range of valves for use in natural gas, LNG, crude oil and refined products transmission lines. Cameron, looking to strengthen its single source capabilities for a wide scope of customer requirements, has acquired the traditional CAMERON® fully welded ball valve product line with the GROVE®, RING-O®, TOM WHEATLEY®, ENTECH™ and TK® product lines. Cameron also provides critical service valves for refinery, chemical and petrochemical processing businesses, and for associated storage terminal applications, particularly through the ORBIT® and GENERAL VALVE® product lines. These brands are complemented by WKM®, TBV™, and TEXSTEAM™ valve products and considerably expand the scope of our product offerings.

## FEATURES AND BENEFITS

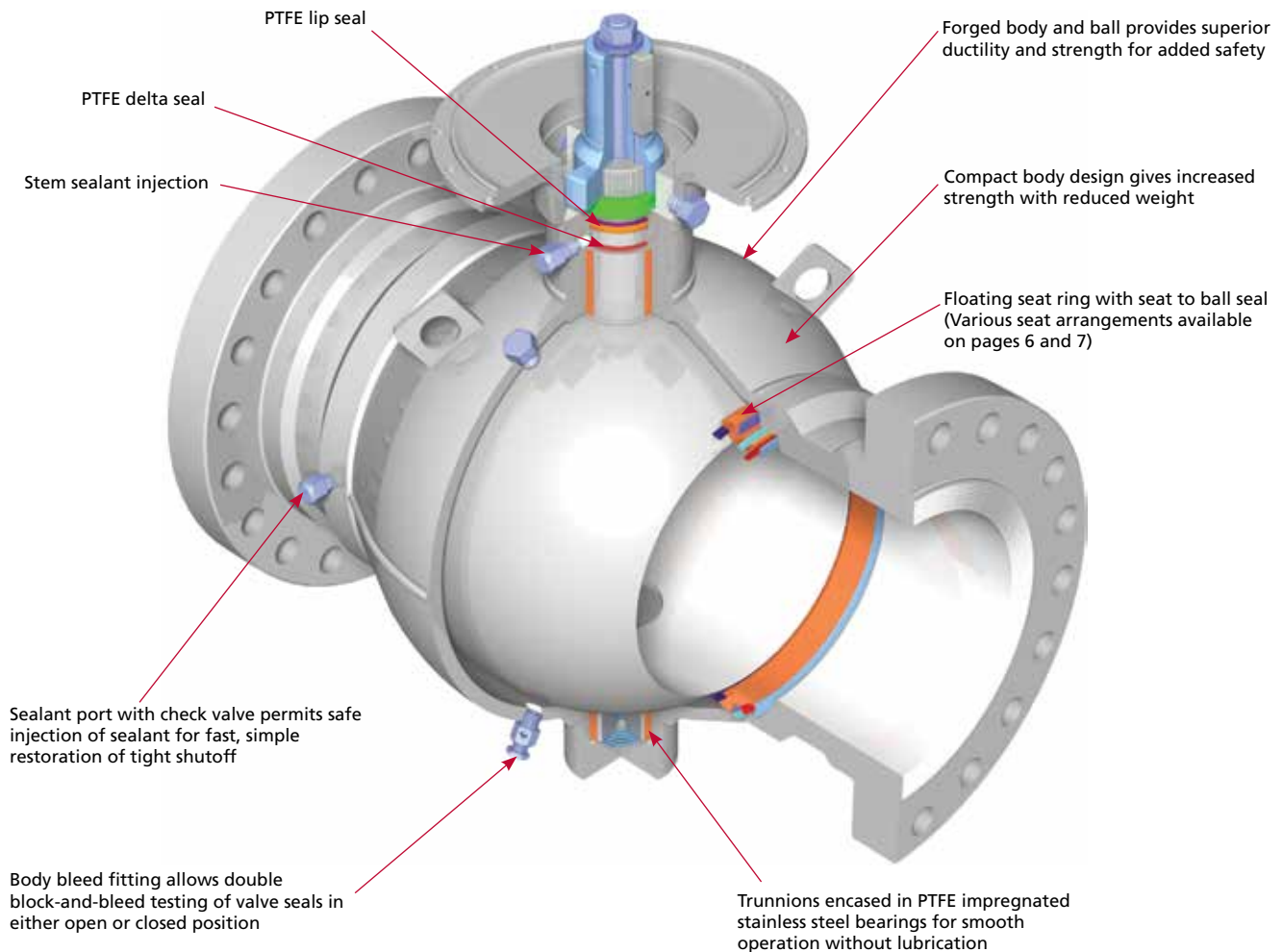
As one of the most trusted valves in the petroleum industry, the CAMERON fully welded ball valve combines the strength of forged components with a lightweight and compact spherical design.

CAMERON fully welded ball valves satisfy ASME/ANSI 150 to 2500 (PN 20 to PN 420) and API 2000 to 5000 standards. Made of forged steel to ensure uniform fine grain structure and toughness, they can be specified in sizes from 2" to 56" (50 mm to 1400 mm).

Engineered for heavy-duty, maintenance-free performance, the CAMERON fully welded ball valve is commonly selected for a number of applications, including:

- Gas transmission
- Product pipelines
- Measurement skids
- Dehydration systems
- Gas separation systems
- Natural gas storage
- Dryer service
- NGL plants
- NGL pipeline
- Compressor stations
- CO<sub>2</sub> services
- Offshore
- Subsea

The distinctive design of the CAMERON fully welded ball valve gives it strength at reduced weight, as well as resistance to both pipeline pressures and stresses. The compact, spherical design also eliminates body flanges, reducing overall size and potential leak paths.



## FEATURES AND BENEFITS (CONT.)

### Replace Stem Seal

In the unlikely event of a stem seal needing replacement, it can be accomplished safely with the valve in service. With the body cavity vented, all line pressure to the stem area also is vented. Please contact your sales representative to obtain maintenance procedures.

### Safeguard Downstream Work

With the valve closed and the vent fitting open, the possibility of the line media reaching a work area is reduced.

### Fire-Tested for Safety

CAMERON fully welded ball valves can be supplied to API 6FA, API 607 and ISO 10497 standards. If industry standards change or customer requirements vary from the above, please contact your sales representative.

## Standards and Specifications\*

### Sizes

- 2" to 56" (50 mm to 1400 mm) full, reduced and venturi bore

### Pressure Classes

- ASME/ANSI Class 150 to 2500 (PN 20 to PN 420), API 2000 to 5000 psi

### Operating Temperatures

- From -50° F to 375° F (-46° C to 190° C)

### End Connections

- Flanged, weld and weld-by-flange and more

### Body Styles

- Fully welded

### Standard Material

- Forged carbon steel

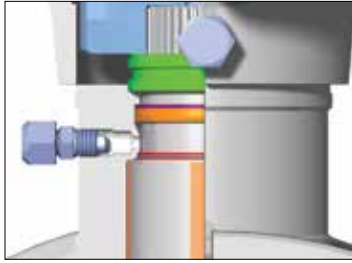
### Optional Materials

- Seat/seal trim options include: regular, corrosion-resistant and sour (NACE MR0175)

\* See page 10 for specification details.

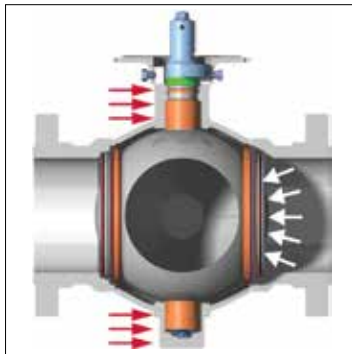






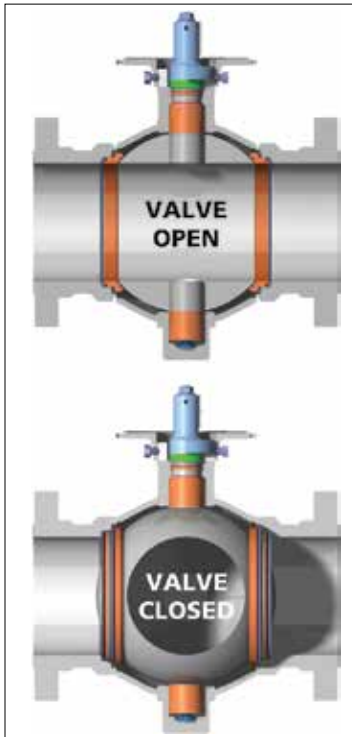
### Stem Seals

Delta seals and lip seals made of PTFE are incorporated in the upper stem area. PTFE is a low-friction, non-deteriorating material that is not subjected to rapid decompression explosion. Most valve sizes have a provision for the sealant injection to establish a secondary seal.



### Trunnion Mounted Ball Allows Low-Torque Operation

Regardless of size or pressure rating, every CAMERON fully welded ball valve is trunnion mounted. High-strength forged stems are located in PTFE impregnated stainless steel bearings for smooth, accurate operations. Trunnion mounted stems absorb the thrust from line pressure, preventing excess friction between the ball and seats, so even at full rated working pressure, operating torque stays low.



### Double Block-and-Bleed

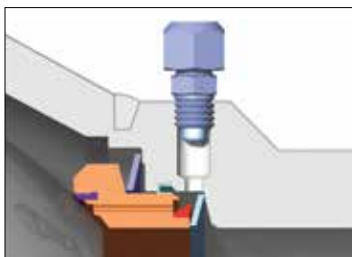
Whether in the fully open or fully closed position, pressure on each side of the ball is blocked from the body cavity by the seat ring. The body cavity can then be bled down or drained through the body port. When you block-and-bleed a CAMERON ball valve, the following can be accomplished:

#### Test Valve Integrity

When the valve body is vented, the seat seal's integrity is verified. This test can be performed with the valve open or closed. Valve performance can also be validated by verifying valve seat seal integrity.

#### Secondary Seat Seal

The sealant injection system provides a fast, simple way of restoring tight shutoff if any foreign object should damage the sealing surfaces. The injection system can also be used for routine flushing of the seat ring area in services where this may be required.



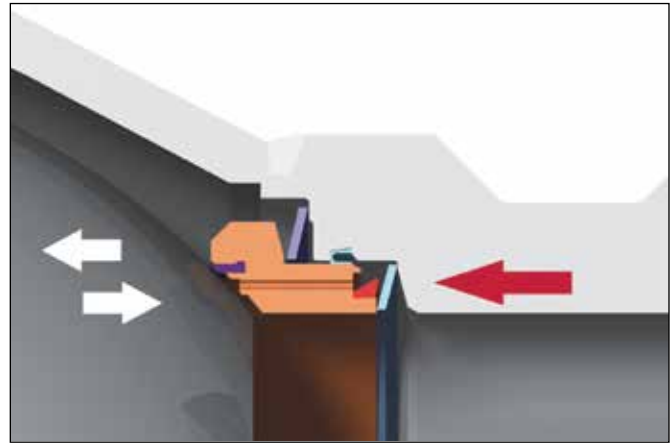
## STANDARD SEAT DESIGN

In service since the early 1960s, the standard seat arrangement has proven itself to be of sound design. This arrangement is available in all CAMERON fully welded ball valves and includes the features and benefits indicated on the preceding pages.

### Features and Benefits

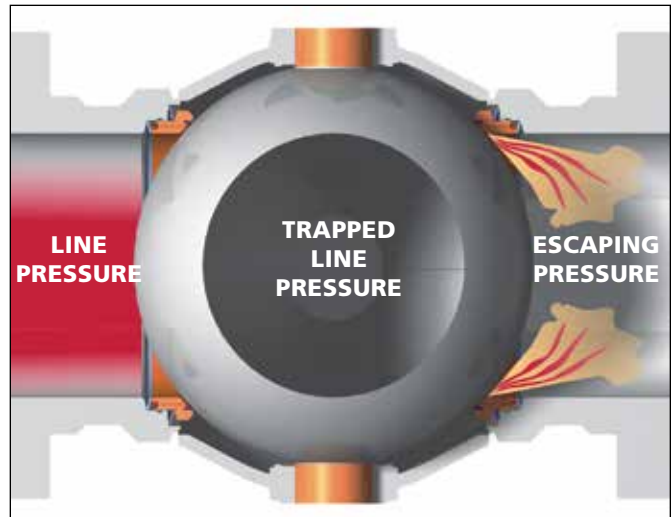
#### Upstream Sealing

At low pressure, seat-to-ball contact is maintained by Belleville springs. At higher pressures, seat contact is reinforced by line pressure.



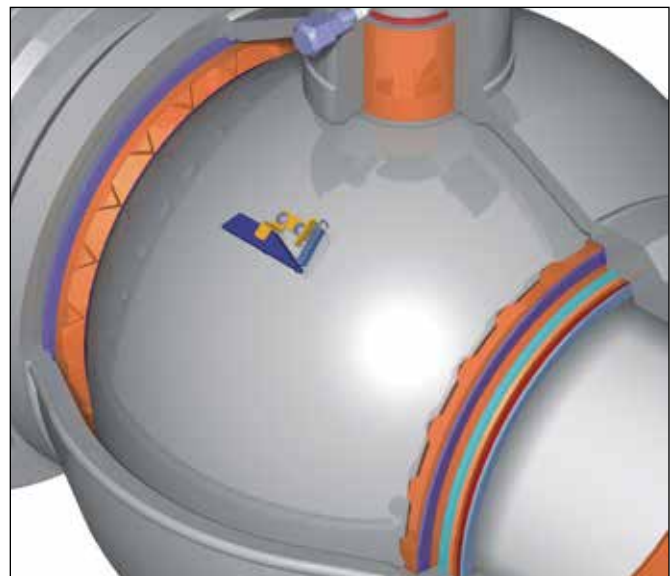
#### Automatic Internal Relief of Body Pressure

Relief of excess body cavity pressure is automatic, avoiding dangerous pressure buildup. Any pressure exceeding downstream line pressure by approximately 200 psi pushes the downstream seat away from the ball, allowing the pressure to relieve into the pipeline.



#### Rotating Seat Rings

The exclusive rotating seat feature is standard in the CAMERON fully welded ball valve size 14" (350 mm) and larger. Both seats rotate 15 degrees each time the valve is closed, exposing a new pinch point and evenly distributing seat wear.



#### Distributed Seat Wear

The pinch point is the area of the seat insert that experiences an increased velocity when the valve is seated closed and unseated open. This is where the seat seal experiences the most wear, and in most valves where a leak path begins. By rotating the seat ring, the pinch point wear is distributed throughout the seat seal providing a substantial increase in seat life.

#### Prevents Buildup

In some services, a valve can experience harmful sediment buildup around the seat ring. This can cause the seat to stick and not seal properly. The CAMERON fully welded ball valve, with exclusive rotating seat, can handle these harsher services. As the seat rotates, it will prevent any buildup or break up existing buildup.



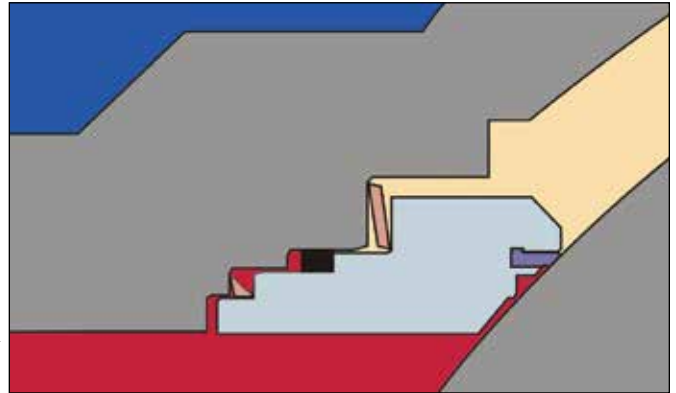
## ALTERNATE SEAT DESIGN

The valve is available with double-acting and metal-to-metal seats to accommodate a variety of applications and customer preferences.

### Double Acting

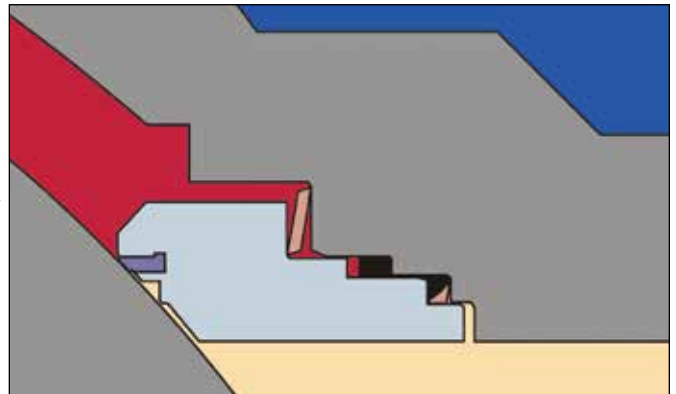
#### Conventional Upstream Sealing

With the upstream pressure, the bi-directional body-to-seat seal is pushed toward the front sealing face of its retaining pocket. This creates an unbalanced pressure annulus between the body seal and the ID of the seat insert, forcing the seat insert against the ball.



#### Downstream Sealing

With the downstream pressure, the bi-directional body-to-seat seal is pushed toward the back sealing face of its retaining pocket. This creates an unbalanced pressure annulus between the OD of the seat insert and the body seal diameter, also forcing the seat insert against the ball.



## Standards and Specifications

Double Acting – T32

### Sizes

- 8" to 48" (200 mm to 1200 mm)

### Pressure Classes

- ASME/ANSI Class 150 to 900 (PN 20 to PN 150)

### Operating Temperatures

- -50° F to 250° F (-46° C to 121° C)

## ACCESSORIES

Accessories are available to improve the CAMERON fully welded ball valve's adaptability in a variety of situations.

### High Head for Remote Operation

For situations in which the CAMERON fully welded ball valve must be underground, the CAMERON high head makes the controls accessible above ground. Designed and constructed to withstand harsh environments, it has proven itself in uses all over the world for many years.

### Subsea Design Offers Important Benefits

For the same reliable performance offshore and onshore, the CAMERON fully welded ball valve is available with a coating and actuation designed specifically for the demands of a subsea environment.

### Right Angle Improves Flexibility

CAMERON fully welded ball valves can be specified for tight spaces when fitted with a CAMERON right angle extension. The valve control is turned 90 degrees from its usual position, allowing more space at the top of the valve and better access by operators.



## HOW TO ORDER

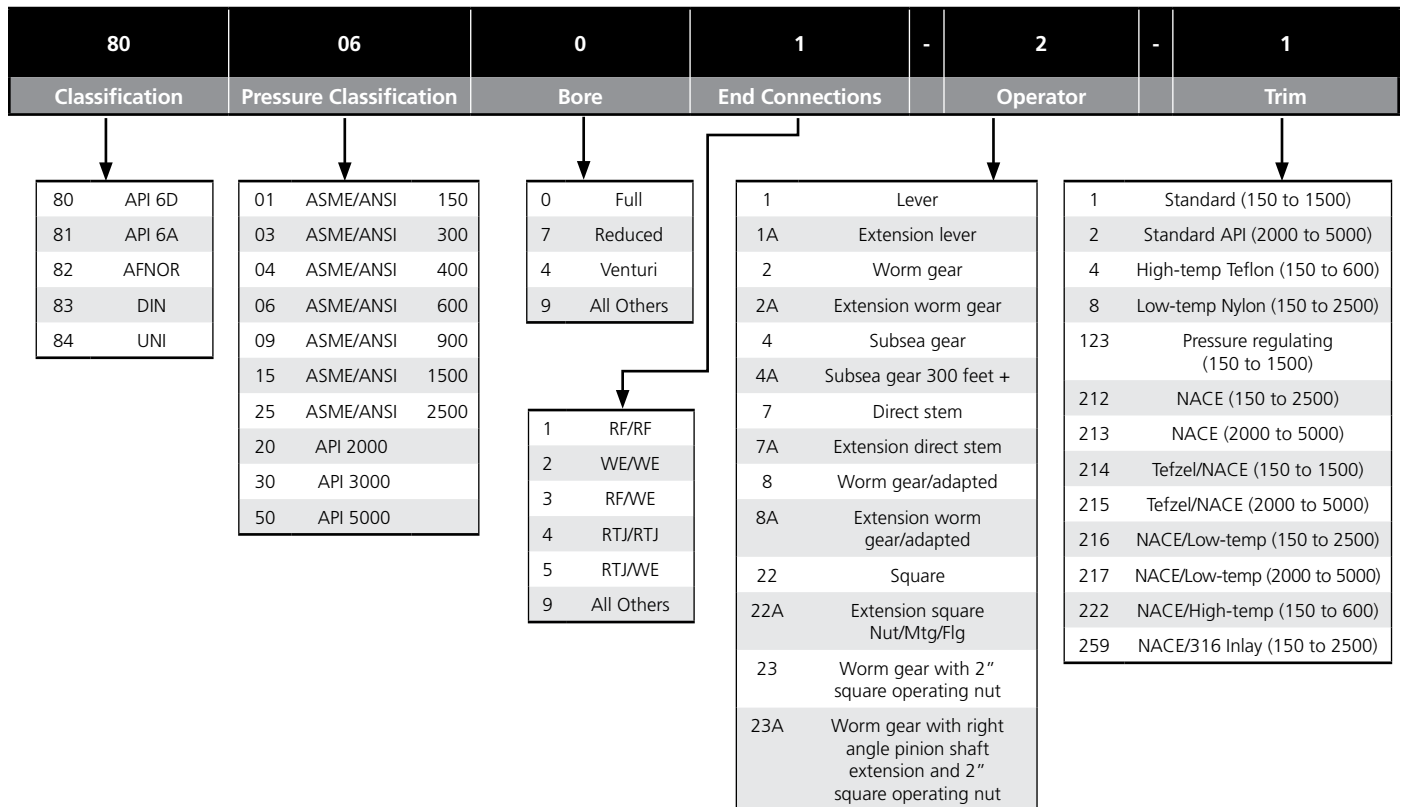
### Specify the following when ordering a CAMERON fully welded ball valve:

1. Valve figure number (see chart below)
2. Pressure classification (ASME/ANSI 600 lb, API 3000 psi)
3. End and bore sizes
4. Type of end connections (unequal ends can be furnished).  
For weld end valves, specify ID or OD, wall thickness and grade of pipe
5. Type of operator
6. Stem extension, if desired. Specify distance from valve centerline to center of handwheel, or top of power operator mounting flange
7. Type of trim or application

Note: Specify any desired accessories, if desired (lifting eyes, locking devices, and more). Handwheels are included with valves. Operating levers must be ordered separately. Information on special trims and API configurations are available upon request

### Specify the following when ordering another manufacturer's power operator to fit a CAMERON fully welded ball valve:

1. Valve size and pressure class and, if for field conversion, the present operator
2. Maximum differential pressure across valve during operation and any abnormal operating conditions
3. Speed of opening and closing, probable frequency of operation
4. Type operator desired (electric, hydraulic, pneumatic)
5. Information on operating medium. (If electric: voltage, frequency, single- or three-phase, open- or explosion-proof motor. If hydraulic or pneumatic: operating medium and pressure.)
6. Accessories and controls (limit switches, valving, instrumentation, tanks, pumps, etc)



## STANDARDS, SPECIFICATIONS AND MATERIALS

CAMERON fully welded ball valves conform to one or more of the following specifications for pressure, temperature ratings and dimensions: ASME/ANSI, ISO 14313/API 6D, ISO 10423/API 6A, ISO 14723/API 6DSS, DIN, AFNOR, British standards, ISO 9000 and API Q1.

### Trim Materials for Standard Valves

|                   |   |
|-------------------|---|
| Pressure range    | ASME/ANSI Class 150 to 2500 (PN 20 to PN 420) |
| Temperature range | -20° F to 250° F (-29° C to 121° C)           |
| Body              | ASTM A350 Gr. LF-2(M)                         |
| End connection    | ASTM A350 Gr. LF-2(M)                         |
| Ball              | ASTM A694 Gr. F50(M) Chrome plated or ENP     |
| Seat ring         | AISI 1040                                     |
| Seat load spring  | AISI 1040                                     |
| Stem seals        | PTFE  |
| Lip seals         | PTFE  |
| Seat ring insert  | Nylon   |

Other trims are available upon request.

### Materials

Materials used in ball valve construction are equivalent at all Cameron manufacturing plants. However, the availability of local supplies, the need to conform to national standards and to offer various trims may necessitate some variations. In corrosive applications, valve trims may be offered using various types of alloys and stainless steels. For more information on material specifications and properties, contact your sales representative.

### Torque Information

Contact your sales representative to obtain a copy of the engineering bulletin, which provides detailed torque information for power actuators sizing.

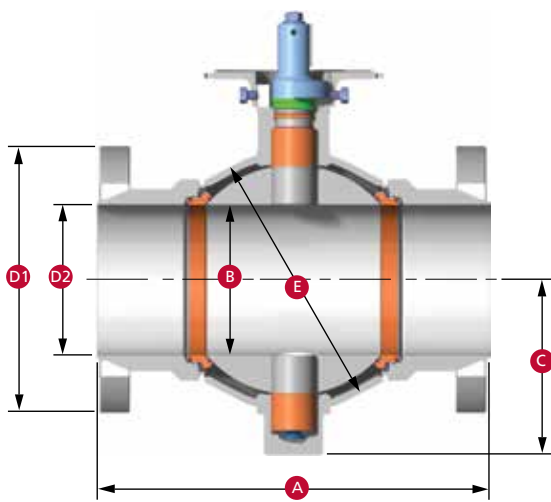
### Optional Trim Materials

| Trim                              | Pressure Rating             | Temperature Rating                  | TRIM NUMBERS |                                   |
|-----------------------------------|-----------------------------|-------------------------------------|--------------|-----------------------------------|
|                                   |                             |                                     | Regular      | Corrosion Resistant (NACE MR0175) |
| Standard                          | ASME/ANSI Class 150 to 2500 | -20° F to 250° F (-29° C to 121° C) | 1            | 212                               |
|                                   | API 2000 to 5000            | -20° F to 250° F (-29° C to 121° C) | 2            | 213                               |
| Low-temperature                   | ASME/ANSI Class 150 to 2500 | -50° F to 250° F (-46° C to 121° C) | 8            | 216                               |
|                                   | API 2000 to 5000            | -50° F to 250° F (-46° C to 121° C) | -            | 217                               |
| High-temperature                  | ASME/ANSI Class 150 to 600  | -20° F to 375° F (-29° C to 190° C) | 4            | 222                               |
| Tefzel<br>(Acidizing)             | ASME/ANSI Class 150 to 1500 | -20° F to 300° F (-29° C to 149° C) | 140          | 214                               |
|                                   | API 2000 to 5000            | -20° F to 300° F (-29° C to 149° C) | 108          | 215                               |
| Tefzel<br>Low-temperature         | ASME/ANSI Class 150 to 1500 | -50° F to 300° F (-46° C to 149° C) | 223          | -                                 |
|                                   | API 2000 to 5000            | -50° F to 300° F (-46° C to 149° C) | -            | -                                 |
| Duplex (Internal) stainless steel | ASME/ANSI Class 150 to 1500 | -20° F to 250° F (-29° C to 121° C) | -            | 276                               |
| Full duplex stainless steel       | ASME/ANSI Class 150 to 1500 | -50° F to 250° F (-46° C to 121° C) | -            | 504                               |

## Dimensional Codes for Flanged and Weld Ends (Full and Reduced Openings)

Code Identification:

- A End-to-end (length dimension)
- B Bore diameter
- C Centerline to bottom
- D1 Flange outside diameter
- D2 Flange inside dimension
- E Sphere dimension

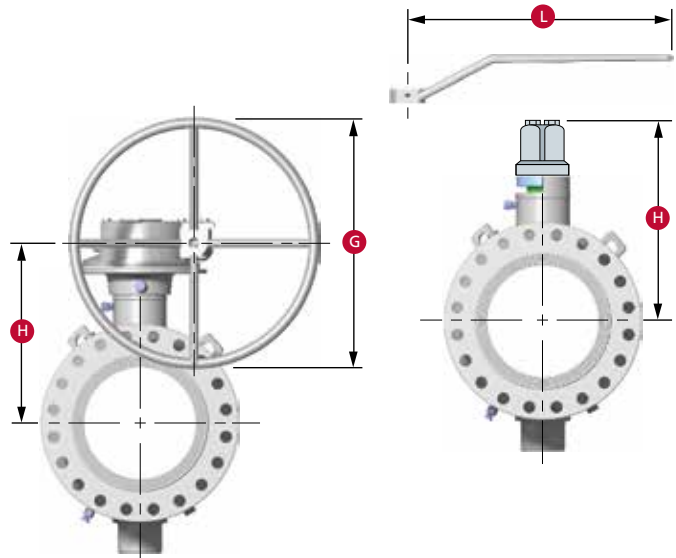


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## Dimensional Codes for Cameron Manual Operators

Code Identification:

- G Handwheel diameter
- H Center of bore to top of square nut for lever operated valves, center of bore to handwheel for gear operated valves
- L Center of bore to end of lever



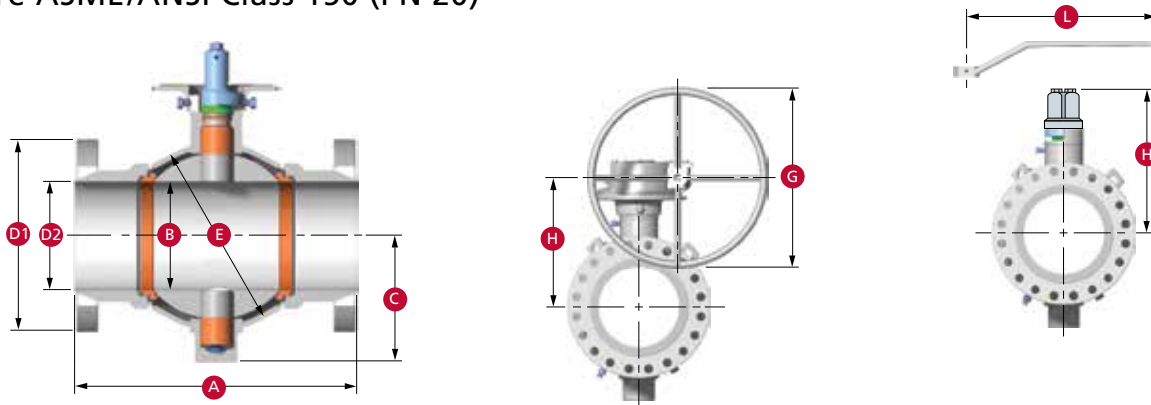
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SD-24029



## DIMENSIONS

### Full Bore ASME/ANSI Class 150 (PN 20)

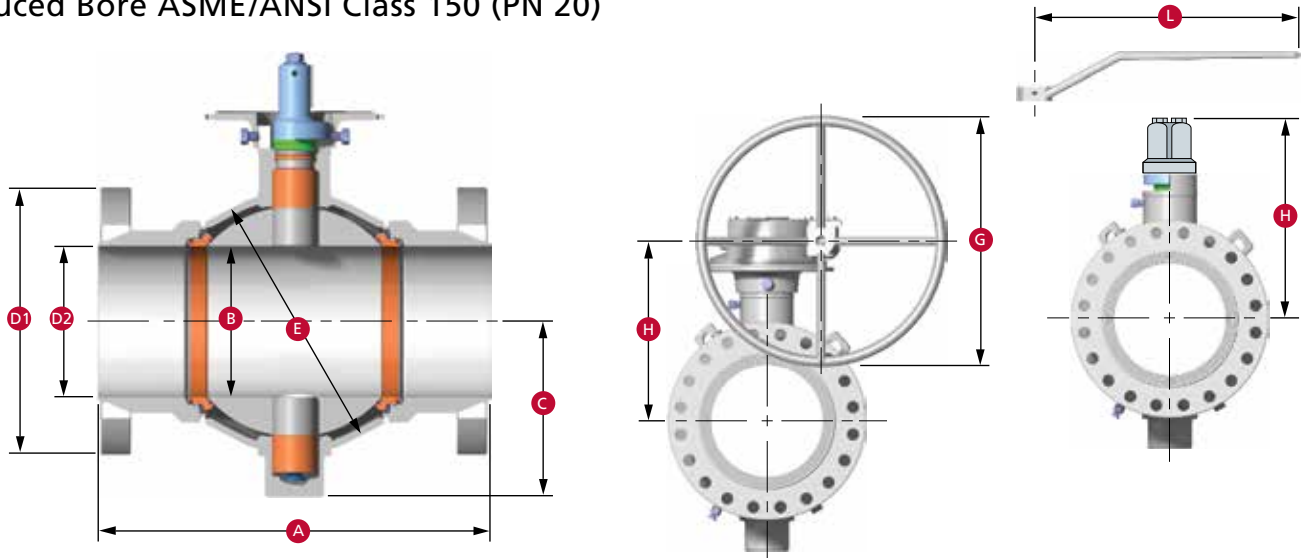


### Dimensions

| Size in. |             | Ball Bore B | Stem Size | Flanged End  |          |         | Weld End Length A | C.L. to Bottom C | Body Sphere E | Lever Length L | Diameter Handwheel for Gear G | C.L. to Handwheel C.L. H | Approximate Valve Weight lb |       |
|----------|-------------|-------------|-----------|--------------|----------|---------|-------------------|------------------|---------------|----------------|-------------------------------|--------------------------|-----------------------------|-------|
| Nom Dia. | RF Length A |             |           | RTJ Length A | Dia. D1* | Dia. D2 |                   |                  |               |                |                               |                          | Flange                      | Weld  |
| 2        | 2.06        | 1.0         | 7.0       | 7.5          | 6.00     | 2.06    | 11.0♦             | 3.94             | 5.00          | 24             | -                             | 6.34                     | 39                          | 45    |
| 3        | 3.13        | 1.0         | 8.0       | 8.5          | 7.50     | 3.13    | 12.5♦             | 5.12             | 6.75          | 24             | -                             | 7.44                     | 62                          | 75    |
| 4        | 4.06        | 1.5         | 9.0       | 9.5          | 9.00     | 4.06    | 14.0              | 5.94             | 8.50          | 36             | -                             | 8.43                     | 115                         | 100   |
| 6        | 6.00        | 1.5         | 15.5      | 16.0         | 11.00    | 6.00    | 18.0              | 7.91             | 11.25         | -              | 12                            | 10.43                    | 200                         | 225   |
| 8        | 8.00        | 2.0         | 18.0      | 18.5         | 13.50    | 8.00    | 21.5♦             | 10.00            | 15.50         | -              | 18                            | 12.55                    | 428                         | 450   |
| 10       | 10.00       | 2.0         | 21.0      | 21.5         | 16.00    | 10.00   | 23.5♦             | 12.12            | 18.50         | -              | 18                            | 14.54                    | 705                         | 650   |
| 12       | 12.00       | 3.0         | 24.0      | 24.5         | 19.00    | 12.00   | 26.5♦             | 14.50            | 22.36         | -              | 18                            | 20.14                    | 1210                        | 1100  |
| 14       | 13.25       | 3.0         | 27.0      | 27.5         | 21.00    | 13.25   | 28.5*             | 14.64            | 24.00         | -              | 18                            | 21.16                    | 1330                        | 1230  |
| 16       | 15.25       | 3.0         | 30.0      | 30.5         | 23.50    | 15.25   | 30.5*             | 16.01            | 26.32         | -              | 18                            | 22.52                    | 1650                        | 1550  |
| 18       | 17.25       | 4.0         | 34.0      | 34.5         | 25.00    | 17.25   | 33.5*             | 19.25            | 29.20         | -              | 24                            | 26.19                    | 2325                        | 2200  |
| 20       | 19.25       | 4.0         | 36.0      | 36.5         | 27.50    | 19.25   | 35.5*             | 20.81            | 32.27         | -              | 18                            | 27.75                    | 3310                        | 2760  |
| 22       | 21.25       | 4.0         | 40.0      | 40.5         | 29.50    | 21.25   | 38.5*             | 22.28            | 36.00         | -              | 18                            | 29.22                    | 3875                        | 3510  |
| 24       | 23.25       | 4.0         | 42.0      | 42.5         | 32.00    | 23.25   | 42.0*             | 23.69            | 38.76         | -              | 18                            | 30.63                    | 4620                        | 4260  |
| 26       | 25.00       | 5.0         | 45.0      | -            | 34.25    | 25.00   | 44.5*             | 26.49            | 41.75         | -              | 24                            | 34.34                    | 6400                        | 5600  |
| 28       | 27.00       | 5.0         | 49.0      | -            | 36.50    | 27.00   | 47.0*             | 27.88            | 44.86         | -              | 24                            | 35.72                    | 7200                        | 6500  |
| 30       | 29.00       | 5.0         | 51.0      | -            | 38.75    | 29.00   | 49.0*             | 29.51            | 47.90         | -              | 24                            | 37.37                    | 9500                        | 8800  |
| 34       | 32.75       | 5.0         | 58.0      | -            | 43.75    | 32.75   | 54.5*             | 32.16            | 53.64         | -              | 30                            | 40.01                    | 13500                       | 12000 |
| 36       | 34.50       | 5.0         | 60.0      | -            | 46.00    | 34.50   | 56.5*             | 33.76            | 56.83         | -              | 36                            | 41.60                    | 15150                       | 14500 |
| 40       | 38.50       | 7.5         | 69.0      | -            | 50.75    | 38.50   | 65.0*             | 40.14            | 65.00         | -              | 30                            | 50.25                    | -                           | -     |
| 42       | 41.25       | 7.5         | 72.0      | -            | 53.00    | 41.25   | 66.5*             | 41.78            | 68.60         | -              | 42                            | 51.89                    | -                           | -     |
| 48       | 46.50       | 7.5         | 80.0      | -            | 59.50    | 46.50   | 76.0*             | 45.90            | 77.00         | -              | -                             | -                        | -                           | -     |
| Size mm  |             |             |           |              |          |         |                   |                  |               |                |                               |                          | kg                          |       |
| 50       | 52          | 25          | 178       | 191          | 152      | 52      | 279♦              | 100              | 127           | 610            | -                             | 161                      | 18                          | 20    |
| 80       | 80          | 25          | 203       | 216          | 191      | 80      | 318♦              | 130              | 171           | 610            | -                             | 189                      | 28                          | 34    |
| 100      | 103         | 38          | 229       | 241          | 229      | 103     | 356               | 151              | 216           | 914            | -                             | 214                      | 52                          | 45    |
| 150      | 152         | 38          | 394       | 406          | 279      | 152     | 457               | 201              | 286           | -              | 305                           | 265                      | 91                          | 102   |
| 200      | 203         | 51          | 457       | 470          | 343      | 203     | 546♦              | 254              | 394           | -              | 457                           | 319                      | 194                         | 204   |
| 250      | 254         | 51          | 533       | 546          | 406      | 254     | 597♦              | 308              | 470           | -              | 457                           | 369                      | 320                         | 295   |
| 300      | 305         | 76          | 610       | 622          | 483      | 305     | 673♦              | 368              | 568           | -              | 457                           | 512                      | 549                         | 499   |
| 350      | 337         | 76          | 686       | 699          | 533      | 337     | 724*              | 372              | 610           | -              | 457                           | 537                      | 603                         | 558   |
| 400      | 387         | 76          | 762       | 775          | 597      | 387     | 775*              | 407              | 669           | -              | 457                           | 572                      | 748                         | 703   |
| 450      | 438         | 102         | 864       | 876          | 635      | 438     | 851               | 489              | 742           | -              | 610                           | 665                      | 1055                        | 998   |
| 500      | 489         | 102         | 914       | 927          | 699      | 489     | 902               | 529              | 820           | -              | 457                           | 705                      | 1501                        | 1252  |
| 550      | 540         | 102         | 1016      | 1029         | 749      | 540     | 978*              | 566              | 914           | -              | 457                           | 742                      | 1758                        | 1592  |
| 600      | 591         | 102         | 1067      | 1080         | 813      | 591     | 1067*             | 602              | 985           | -              | 457                           | 778                      | 2096                        | 1932  |
| 650      | 635         | 127         | 1143      | -            | 870      | 635     | 1130*             | 673              | 1060          | -              | 610                           | 872                      | 2903                        | 2540  |
| 700      | 686         | 127         | 1245      | -            | 927      | 686     | 1194*             | 708              | 1139          | -              | 610                           | 907                      | 3266                        | 2948  |
| 750      | 737         | 127         | 1295      | -            | 984      | 737     | 1245*             | 750              | 1217          | -              | 610                           | 949                      | 4309                        | 3992  |
| 850      | 832         | 127         | 1473      | -            | 1111     | 832     | 1384*             | 817              | 1362          | -              | 762                           | 1016                     | 6123                        | 5443  |
| 900      | 876         | 127         | 1524      | -            | 1168     | 876     | 1435*             | 858              | 1443          | -              | 914                           | 1057                     | 6872                        | 6577  |
| 1000     | 978         | 191         | 1753      | -            | 1289     | 978     | 1651*             | 1020             | 1651          | -              | 762                           | 1276                     | -                           | -     |
| 1050     | 1048        | 191         | 1829      | -            | 1346     | 1048    | 1689*             | 1061             | 1742          | -              | 1067                          | 1318                     | -                           | -     |
| 1200     | 1181        | 191         | 2032      | -            | 1511     | 1181    | 1930*             | 1166             | 1956          | -              | -                             | -                        | -                           | -     |

- Length (A) of a weld x flanged-end valve is one half the sum of length (A) of a weld end and a flange end of the same size and rating.
- \* Short pattern.
- ♦ Length exceeds specified dimensions in API 6D/ISO 14313.
- Dimensions of 22" (550 mm) flanges are per MSS-SP-44 and 26" (650 mm) to 42" (1050 mm) flanges are per ASME B16.47 series A.

## Reduced Bore ASME/ANSI Class 150 (PN 20)



### Dimensions

| Size in. |             | Flanged End ■ |             |              |          |         | Weld         | C.L. to  | Body     | Lever    | Diameter             | C.L. to          | Approximate |       |
|----------|-------------|---------------|-------------|--------------|----------|---------|--------------|----------|----------|----------|----------------------|------------------|-------------|-------|
| Nom Dia. | Ball Bore B | Stem Size     | RF Length A | RTJ Length A | Dia. D1* | Dia. D2 | End Length A | Bottom C | Sphere E | Length L | Handwheel for Gear G | Handwheel C.L. H | Flange      | Weld  |
| 3        | 2.06        | 1.0           | 8.0         | 8.5          | 7.50     | 3.13    | 11.0♦        | 3.94     | 5.00     | 24       | -                    | 6.34             | 55          | 50    |
| 4        | 3.13        | 1.0           | 9.0         | 9.5          | 9.00     | 4.06    | 12.5♦        | 5.12     | 6.75     | 24       | -                    | 7.44             | 100         | 87    |
| 6        | 4.06        | 1.5           | 15.5        | 16.0         | 11.00    | 6.00    | 14.0♦        | 5.94     | 8.50     | 36       | -                    | 8.43             | 170         | 150   |
| 8        | 6.00        | 1.5           | 18.0        | 18.5         | 13.50    | 8.00    | 18.0         | 7.91     | 11.25    | -        | 12                   | 10.43            | 345         | 290   |
| 10       | 8.00        | 2.0           | 21.0        | 21.5         | 16.00    | 10.00   | 21.5♦        | 10.00    | 15.50    | -        | 18                   | 12.55            | 620         | 525   |
| 12       | 10.00       | 2.0           | 24.0        | 24.5         | 19.00    | 12.00   | 23.5♦        | 12.12    | 18.50    | -        | 18                   | 14.54            | 950         | 840   |
| 14       | 12.00       | 3.0           | 27.0        | 27.5         | 21.00    | 13.25   | 26.5♦        | 14.50    | 22.36    | -        | 18                   | 20.14            | 1280        | 1160  |
| 16       | 13.25       | 3.0           | 30.0        | 30.5         | 23.50    | 15.25   | 28.5*        | 14.64    | 24.00    | -        | 18                   | 21.16            | 1450        | 1330  |
| 18       | 15.25       | 3.0           | 34.0        | 34.5         | 25.00    | 17.25   | 30.5*        | 16.01    | 26.32    | -        | 18                   | 22.52            | 1510        | 1700  |
| 20       | 17.25       | 4.0           | 36.0        | 36.5         | 27.50    | 19.25   | 33.5*        | 19.25    | 29.20    | -        | 24                   | 26.19            | 2410        | 2300  |
| 22       | 19.25       | 4.0           | 40.0        | 40.5         | 29.50    | 21.25   | 35.5*        | 20.81    | 32.27    | -        | 18                   | 27.75            | 3450        | 3050  |
| 24       | 21.25       | 4.0           | 42.0        | 42.5         | 32.00    | 23.25   | 38.5*        | 22.28    | 36.00    | -        | 18                   | 29.22            | 4300        | 3650  |
| 26       | 23.25       | 4.0           | 45.0        | -            | 34.25    | 25.00   | 42.0*        | 23.69    | 38.76    | -        | 18                   | 30.63            | 5400        | 5100  |
| 28       | 25.00       | 5.0           | 49.0        | -            | 36.50    | 27.00   | 44.5*        | 26.49    | 41.75    | -        | 24                   | 34.34            | 7040        | 6100  |
| 30       | 27.00       | 5.0           | 51.0        | -            | 38.75    | 29.00   | 47.0*        | 27.88    | 44.86    | -        | 24                   | 35.72            | 8900        | 7600  |
| 32       | 29.00       | 5.0           | 54.0        | -            | 41.75    | 32.75   | 49.0*        | 29.51    | 47.90    | -        | 24                   | 37.37            | 9600        | 8500  |
| 36       | 32.75       | 5.0           | 60.0        | -            | 46.00    | 34.50   | 54.5*        | 32.16    | 53.64    | -        | 30                   | 40.01            | 14000       | 12500 |
| 42       | 34.50       | 5.0           | 72.0        | -            | 53.00    | 41.25   | 56.5*        | 33.76    | 56.83    | -        | 36                   | 41.60            | -           | -     |
| Size mm  |             |               |             |              |          |         |              |          |          |          |                      |                  |             | kg    |
| 80       | 52          | 25            | 203         | 216          | 191      | 80      | 279♦         | 100      | 127      | 610      | -                    | 161              | 25          | 23    |
| 100      | 80          | 25            | 229         | 241          | 229      | 103     | 318♦         | 130      | 172      | 610      | -                    | 189              | 45          | 39    |
| 150      | 103         | 38            | 394         | 406          | 279      | 152     | 356♦         | 151      | 216      | 914      | -                    | 214              | 77          | 68    |
| 200      | 152         | 38            | 457         | 470          | 343      | 203     | 457          | 201      | 286      | -        | 305                  | 265              | 156         | 132   |
| 250      | 203         | 51            | 533         | 546          | 406      | 254     | 564♦         | 254      | 394      | -        | 457                  | 319              | 281         | 238   |
| 300      | 254         | 51            | 610         | 622          | 483      | 305     | 597♦         | 308      | 470      | -        | 457                  | 369              | 431         | 381   |
| 350      | 305         | 76            | 686         | 699          | 533      | 337     | 673♦         | 368      | 568      | -        | 457                  | 512              | 581         | 526   |
| 400      | 337         | 76            | 762         | 775          | 597      | 387     | 724*         | 372      | 610      | -        | 457                  | 537              | 658         | 603   |
| 450      | 387         | 76            | 864         | 876          | 635      | 438     | 774*         | 407      | 669      | -        | 457                  | 572              | 685         | 771   |
| 500      | 438         | 102           | 914         | 927          | 699      | 489     | 851*         | 489      | 741      | -        | 610                  | 665              | 1093        | 1043  |
| 550      | 489         | 102           | 1016        | 1029         | 749      | 540     | 902*         | 529      | 820      | -        | 457                  | 705              | 1565        | 1383  |
| 600      | 540         | 102           | 1067        | 1080         | 813      | 591     | 978*         | 566      | 914      | -        | 457                  | 742              | 1950        | 1656  |
| 650      | 591         | 102           | 1143        | -            | 870      | 635     | 1067*        | 602      | 985      | -        | 457                  | 778              | 2449        | 2313  |
| 700      | 635         | 127           | 1245        | -            | 927      | 686     | 1130*        | 673      | 1061     | -        | 610                  | 872              | 3193        | 2767  |
| 750      | 686         | 127           | 1295        | -            | 984      | 737     | 1194*        | 708      | 1139     | -        | 610                  | 907              | 4037        | 3447  |
| 800      | 737         | 127           | 1372        | -            | 1048     | 832     | 1245*        | 750      | 1217     | -        | 610                  | 949              | 4355        | 3856  |
| 900      | 832         | 127           | 1524        | -            | 1168     | 876     | 1384*        | 817      | 1363     | -        | 762                  | 1016             | 6350        | 5670  |
| 1050     | 876         | 127           | 1829        | -            | 1346     | 1048    | 1435*        | 858      | 1444     | -        | 914                  | 1057             | -           | -     |

■ Length (A) of a weld x flanged-end valve is one half the sum of length (A) of a weld end and a flange end of the same size and rating.

\* Short pattern.

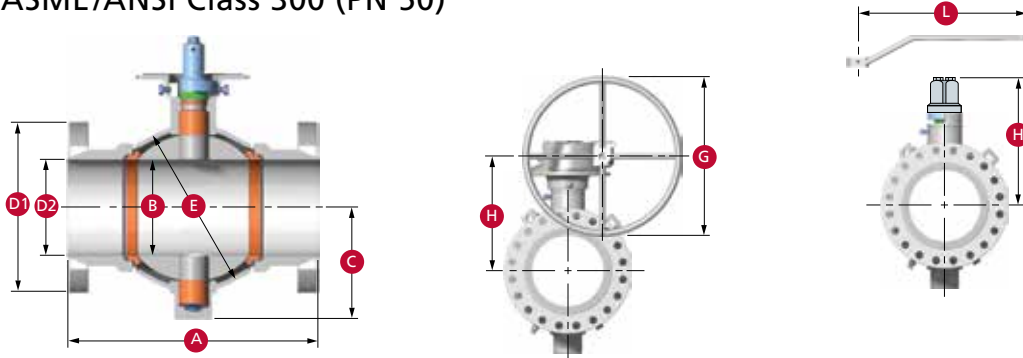
♦ Length exceeds specified dimensions in API 6D/ISO 14313.

• Dimensions of 22" (550 mm) flanges are per MSS-SP-44 and 26" (650 mm) to 42" (1050 mm) flanges are per ASME B16.47 series A.

Note: Venturi opening or other reduced-bore valves are available upon request.

## DIMENSIONS

### Full Bore ASME/ANSI Class 300 (PN 50)

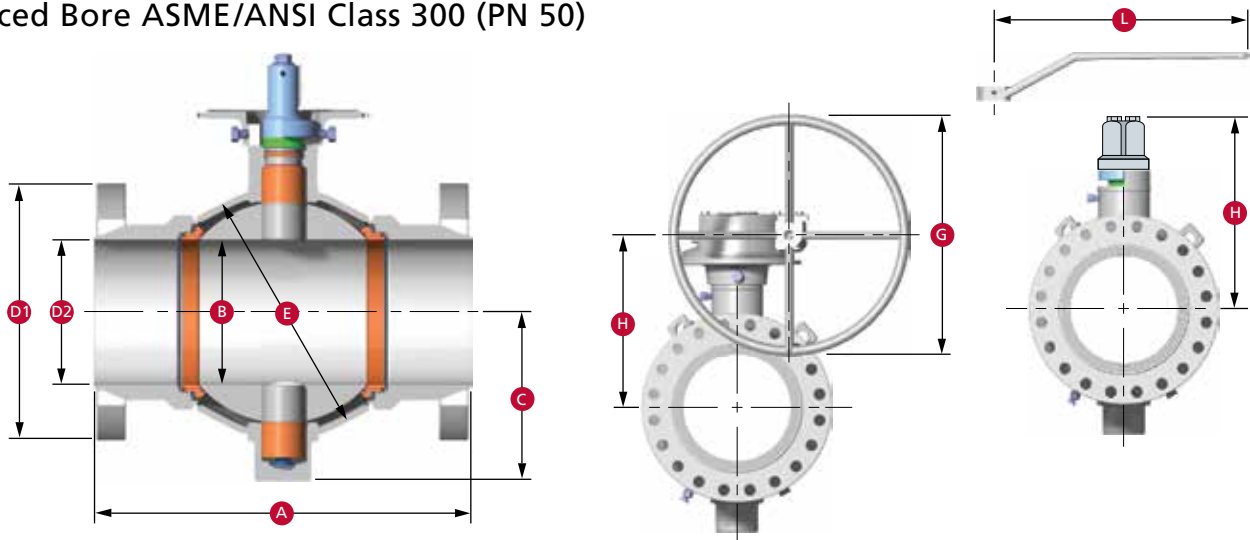


### Dimensions

| Size in. |             |           | Flanged End ■ |              |          |         | Weld End ■ | C.L. to Bottom | Body Sphere | Lever Length | Diameter Handwheel for Gear | C.L. to Handwheel C.L. | Approximate Valve Weight lb |       |
|----------|-------------|-----------|---------------|--------------|----------|---------|------------|----------------|-------------|--------------|-----------------------------|------------------------|-----------------------------|-------|
| Nom Dia. | Ball Bore B | Stem Size | RF Length A   | RTJ Length A | Dia. D1* | Dia. D2 | A          | C              | E           | L            | G                           | H                      | Flange                      | Weld  |
| 2        | 2.06        | 1.0       | 8.50          | 9.125        | 6.50     | 2.06    | 11.0♦      | 3.94           | 5.00        | 24           | -                           | 6.34                   | 50                          | 45    |
| 3        | 3.13        | 1.0       | 11.125        | 11.750       | 8.25     | 3.13    | 12.5♦      | 5.12           | 6.75        | 24           | -                           | 7.44                   | 80                          | 75    |
| 4        | 4.06        | 1.5       | 12.00         | 12.625       | 10.00    | 4.06    | 14.0♦      | 5.94           | 8.50        | 36           | -                           | 8.43                   | 125                         | 100   |
| 6        | 6.00        | 1.5       | 15.875        | 16.500       | 12.50    | 6.00    | 18.0       | 7.91           | 11.25       | -            | 12                          | 10.43                  | 250                         | 225   |
| 8        | 8.00        | 2.0       | 19.75**       | 20.375       | 15.00    | 8.00    | 21.5♦      | 10.00          | 15.50       | -            | 18                          | 12.55                  | 455                         | 450   |
| 10       | 10.00       | 2.0       | 22.375        | 23.000       | 17.50    | 10.00   | 23.5♦      | 12.12          | 18.50       | -            | 18                          | 14.54                  | 750                         | 650   |
| 12       | 12.00       | 3.0       | 25.50         | 26.125       | 20.50    | 12.00   | 26.5♦      | 14.50          | 22.36       | -            | 18                          | 20.14                  | 1275                        | 1100  |
| 14       | 13.25       | 3.0       | 30.00         | 30.625       | 23.00    | 13.25   | 28.5*      | 14.64          | 24.00       | -            | 24                          | 21.16                  | 1370                        | 1230  |
| 16       | 15.25       | 3.0       | 33.00         | 33.625       | 25.50    | 15.25   | 30.5*      | 16.01          | 26.32       | -            | 24                          | 22.52                  | 1725                        | 1550  |
| 18       | 17.25       | 4.0       | 36.00         | 36.625       | 28.00    | 17.25   | 33.5*      | 19.25          | 29.20       | -            | 24                          | 26.19                  | 2700                        | 2200  |
| 20       | 19.25       | 4.0       | 39.00         | 39.750       | 30.50    | 19.25   | 35.5*      | 20.81          | 32.27       | -            | 18                          | 27.75                  | 3400                        | 2760  |
| 22       | 21.25       | 4.0       | 43.00         | 43.875       | 33.00    | 21.25   | 38.5*      | 22.28          | 36.00       | -            | 24                          | 29.22                  | 4050                        | 3510  |
| 24       | 23.25       | 4.0       | 45.00         | 45.875       | 36.00    | 23.25   | 42.0*      | 23.69          | 38.76       | -            | 24                          | 30.63                  | 5390                        | 4260  |
| 26       | 25.00       | 5.0       | 49.00         | 50.000       | 38.25    | 25.00   | 44.5*      | 26.49          | 41.75       | -            | 24                          | 34.34                  | 6625                        | 5600  |
| 28       | 27.00       | 5.0       | 53.00         | 54.000       | 40.75    | 27.00   | 47.0*      | 27.88          | 44.86       | -            | 24                          | 35.72                  | 7725                        | 6500  |
| 30       | 29.00       | 5.0       | 55.00         | 56.000       | 43.00    | 29.00   | 49.0*      | 29.51          | 47.90       | -            | 30                          | 37.37                  | 10000                       | 8800  |
| 34       | 32.75       | 5.0       | 64.00         | 65.125       | 47.50    | 32.75   | 54.5*      | 32.16          | 53.64       | -            | 36                          | 40.01                  | 14700                       | 12000 |
| 36       | 34.50       | 7.5       | 68.00         | 69.125       | 50.00    | 34.50   | 56.5*      | 36.80          | 56.83       | -            | 24                          | 46.92                  | 16300                       | 15500 |
| 40       | 38.50       | 7.5       | 74.00         | -            | 48.75    | 38.50   | 65.0*      | 40.14          | 65.00       | -            | 36                          | 50.25                  | -                           | -     |
| 42       | 41.25       | 7.5       | 76.00         | -            | 50.75    | 41.25   | 66.5*      | 41.78          | 68.60       | -            | 42                          | 51.89                  | -                           | -     |
| 48       | 46.50       | 7.5       | 86.00         | -            | 57.75    | 46.50   | 76.0*      | 45.90          | 77.00       | -            | -                           | -                      | -                           | -     |
| Size mm  |             |           |               |              |          |         |            |                |             |              |                             |                        |                             | kg    |
| 50       | 52          | 25        | 216           | 232          | 165      | 52      | 279♦       | 100            | 127         | 610          | -                           | 161                    | 23                          | 20    |
| 80       | 80          | 25        | 283           | 298          | 210      | 80      | 318♦       | 130            | 172         | 610          | -                           | 189                    | 36                          | 34    |
| 100      | 103         | 38        | 305           | 321          | 254      | 103     | 356♦       | 151            | 216         | 914          | -                           | 214                    | 57                          | 45    |
| 150      | 152         | 38        | 403           | 419          | 318      | 152     | 457        | 201            | 286         | -            | 305                         | 265                    | 113                         | 102   |
| 200      | 203         | 51        | 502**         | 518          | 381      | 203     | 546♦       | 254            | 394         | -            | 457                         | 319                    | 206                         | 204   |
| 250      | 254         | 51        | 568           | 584          | 445      | 254     | 597♦       | 308            | 470         | -            | 610                         | 369                    | 340                         | 295   |
| 300      | 305         | 76        | 648           | 664          | 521      | 305     | 673♦       | 368            | 568         | -            | 457                         | 512                    | 578                         | 499   |
| 350      | 337         | 76        | 762           | 778          | 584      | 337     | 724*       | 372            | 610         | -            | 610                         | 537                    | 621                         | 558   |
| 400      | 387         | 76        | 838           | 854          | 648      | 387     | 775*       | 407            | 669         | -            | 610                         | 572                    | 782                         | 703   |
| 450      | 438         | 102       | 914           | 930          | 711      | 438     | 851*       | 489            | 742         | -            | 610                         | 665                    | 1225                        | 998   |
| 500      | 489         | 102       | 991           | 1010         | 775      | 489     | 902*       | 529            | 820         | -            | 457                         | 705                    | 1542                        | 1252  |
| 550      | 540         | 102       | 1092          | 1114         | 838      | 540     | 978*       | 566            | 914         | -            | 610                         | 742                    | 1837                        | 1592  |
| 600      | 591         | 102       | 1143          | 1165         | 914      | 591     | 1067*      | 602            | 985         | -            | 610                         | 778                    | 2445                        | 1932  |
| 650      | 635         | 127       | 1245          | 1270         | 972      | 635     | 1130*      | 673            | 1060        | -            | 610                         | 872                    | 3005                        | 2540  |
| 700      | 686         | 127       | 1346          | 1372         | 1035     | 686     | 1194*      | 708            | 1139        | -            | 610                         | 907                    | 3504                        | 2948  |
| 750      | 737         | 127       | 1397          | 1422         | 1092     | 737     | 1245*      | 750            | 1217        | -            | 762                         | 949                    | 4536                        | 3992  |
| 850      | 832         | 127       | 1626          | 1654         | 1207     | 832     | 1384*      | 817            | 1362        | -            | 914                         | 1016                   | 6668                        | 5443  |
| 900      | 876         | 191       | 1727          | 1756         | 1270     | 876     | 1435*      | 935            | 1443        | -            | 610                         | 1192                   | 7394                        | 7031  |
| 1000     | 978         | 191       | 1880          | -            | 1238     | 978     | 1651*      | 1020           | 1651        | -            | 914                         | 1276                   | -                           | -     |
| 1050     | 1048        | 191       | 1930          | -            | 1289     | 1048    | 1689*      | 1061           | 1742        | -            | 1067                        | 1318                   | -                           | -     |
| 1200     | 1181        | 191       | 2184          | -            | 1467     | 1181    | 1930*      | 1166           | 1956        | -            | -                           | -                      | -                           | -     |

- Length (A) of a weld x flanged-end valve is one half the sum of length (A) of a weld end and a flanged end of the same size and rating.
- \* Short pattern.
- ♦ Length exceeds specified dimensions in API 6D/ISO 14313.
- Dimensions of 22" (550 mm) flanges are per MSS-SP-44 and 26" (650 mm) through 42" (1050 mm) flanges are per ASME B16.47 series A.
- \*\* Prior to 1/1/98 – manufactured to 16.5" (419 mm) short pattern length.

## Reduced Bore ASME/ANSI Class 300 (PN 50)



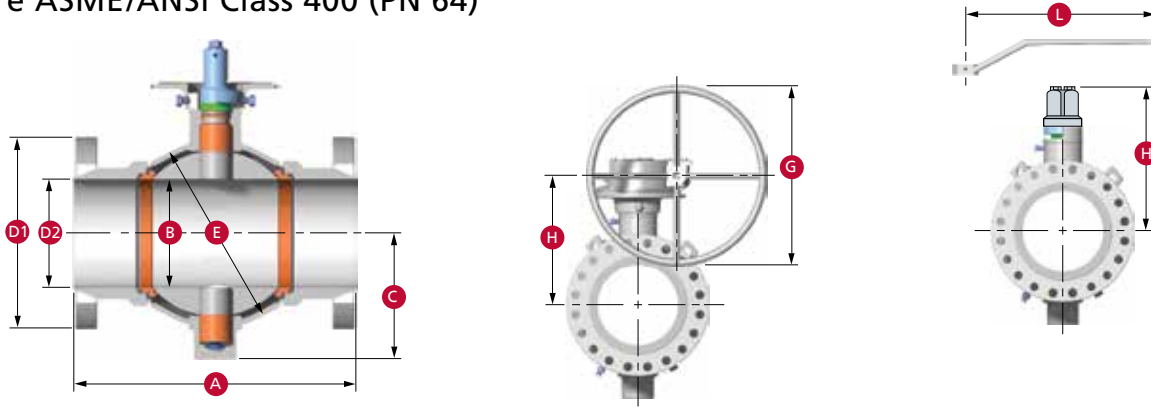
### Dimensions

| Size in. | Ball Bore B | Stem Size | RF Length A | Flanged End RTJ Length A | Dia. D1* | Dia. D2 | Weld End Length A | C.L. to Bottom C | Body Sphere E | Lever Length L | Diameter Handwheel for Gear G | C.L. to Handwheel C.L. H | Approximate Valve Weight lb |       |
|----------|-------------|-----------|-------------|--------------------------|----------|---------|-------------------|------------------|---------------|----------------|-------------------------------|--------------------------|-----------------------------|-------|
| Nom Dia. |             |           |             |                          |          |         |                   |                  |               |                |                               |                          | Flange                      | Weld  |
| 3        | 2.06        | 1.0       | 11.125      | 11.75                    | 8.25     | 3.13    | 11.0*             | 3.94             | 5.00          | 24             | -                             | 6.34                     | 64                          | 50    |
| 4        | 3.13        | 1.0       | 12.00       | 12.625                   | 10.00    | 4.06    | 12.5*             | 5.12             | 6.75          | 24             | -                             | 7.44                     | 95                          | 87    |
| 6        | 4.06        | 1.5       | 15.875      | 16.500                   | 12.50    | 6.00    | 14.0*             | 5.94             | 8.50          | 36             | -                             | 8.43                     | 180                         | 150   |
| 8        | 6.00        | 1.5       | 19.75**     | 20.375                   | 15.00    | 8.00    | 18.0*             | 7.91             | 11.25         | -              | 12                            | 10.43                    | 365                         | 290   |
| 10       | 8.00        | 2.0       | 22.375      | 23.000                   | 17.50    | 10.00   | 21.5*             | 10.00            | 15.50         | -              | 18                            | 12.55                    | 650                         | 525   |
| 12       | 10.00       | 2.0       | 25.50       | 26.125                   | 20.50    | 12.00   | 23.5*             | 12.12            | 18.50         | -              | 18                            | 14.54                    | 1050                        | 840   |
| 14       | 12.00       | 3.0       | 30.00       | 30.625                   | 23.00    | 13.25   | 26.5*             | 14.50            | 22.36         | -              | 18                            | 20.14                    | 1285                        | 1160  |
| 16       | 13.25       | 3.0       | 33.00       | 33.625                   | 25.50    | 15.25   | 28.5*             | 14.64            | 24.00         | -              | 24                            | 21.16                    | 1660                        | 1330  |
| 18       | 15.25       | 3.0       | 36.00       | 36.625                   | 28.00    | 17.25   | 30.5*             | 16.01            | 26.32         | -              | 24                            | 22.52                    | 1990                        | 1700  |
| 20       | 17.25       | 4.0       | 39.00       | 39.750                   | 30.50    | 19.25   | 33.5*             | 19.25            | 29.20         | -              | 24                            | 26.19                    | 3100                        | 2300  |
| 22       | 19.25       | 4.0       | 43.00       | 43.875                   | 33.00    | 21.25   | 33.5*             | 20.81            | 32.27         | -              | 18                            | 27.75                    | 3600                        | 3050  |
| 24       | 21.25       | 4.0       | 45.00       | 45.875                   | 36.00    | 23.25   | 38.5*             | 22.28            | 36.00         | -              | 24                            | 29.22                    | 4500                        | 3650  |
| 26       | 23.25       | 4.0       | 49.00       | 50.000                   | 38.25    | 25.00   | 42.0*             | 23.69            | 38.76         | -              | 24                            | 30.63                    | 5750                        | 5100  |
| 28       | 25.00       | 5.0       | 53.00       | 54.000                   | 40.75    | 27.00   | 44.5*             | 26.49            | 41.75         | -              | 24                            | 34.34                    | 7260                        | 6100  |
| 30       | 27.00       | 5.0       | 55.00       | 56.000                   | 43.00    | 29.00   | 47.0*             | 27.88            | 44.86         | -              | 24                            | 35.72                    | 9100                        | 7600  |
| 32       | 29.00       | 5.0       | 60.00       | 61.125                   | 45.25    | 32.75   | 49.0*             | 29.51            | 47.90         | -              | 30                            | 37.37                    | 10150                       | 8800  |
| 36       | 32.75       | 5.0       | 68.00       | 69.125                   | 50.00    | 34.50   | 54.5*             | 32.16            | 53.64         | -              | 36                            | 40.01                    | 15350                       | 13000 |
| 42       | 34.50       | 7.5       | 76.00       | -                        | 50.75    | 41.25   | 56.5*             | 36.80            | 56.83         | -              | 24                            | 49.92                    | -                           | -     |
| Size mm  |             |           |             |                          |          |         |                   |                  |               |                |                               |                          |                             | kg    |
| 80       | 52          | 25        | 283         | 298                      | 210      | 80      | 279*              | 100              | 127           | 610            | -                             | 161                      | 29                          | 23    |
| 100      | 80          | 25        | 305         | 321                      | 254      | 103     | 318*              | 130              | 171           | 610            | -                             | 189                      | 43                          | 39    |
| 150      | 103         | 38        | 403         | 419                      | 318      | 152     | 356*              | 151              | 216           | 914            | -                             | 214                      | 82                          | 68    |
| 200      | 152         | 38        | 502**       | 518                      | 381      | 203     | 457*              | 201              | 286           | -              | 305                           | 265                      | 166                         | 132   |
| 250      | 203         | 51        | 568         | 584                      | 445      | 254     | 546*              | 254              | 394           | -              | 457                           | 319                      | 295                         | 238   |
| 300      | 254         | 51        | 648         | 664                      | 521      | 305     | 597*              | 308              | 470           | -              | 457                           | 369                      | 476                         | 381   |
| 350      | 305         | 76        | 762         | 778                      | 584      | 337     | 673*              | 368              | 568           | -              | 457                           | 512                      | 583                         | 526   |
| 400      | 337         | 76        | 838         | 854                      | 648      | 387     | 724*              | 372              | 610           | -              | 610                           | 537                      | 753                         | 603   |
| 450      | 387         | 76        | 914         | 930                      | 711      | 438     | 775*              | 407              | 669           | -              | 610                           | 572                      | 903                         | 771   |
| 500      | 438         | 102       | 991         | 1010                     | 775      | 489     | 851*              | 489              | 742           | -              | 610                           | 665                      | 1406                        | 1043  |
| 550      | 489         | 102       | 1092        | 1114                     | 838      | 540     | 851*              | 529              | 820           | -              | 457                           | 705                      | 1633                        | 1383  |
| 600      | 540         | 102       | 1143        | 1165                     | 914      | 591     | 978*              | 566              | 914           | -              | 610                           | 742                      | 2041                        | 1656  |
| 650      | 591         | 102       | 1245        | 1270                     | 972      | 635     | 1067*             | 602              | 985           | -              | 610                           | 778                      | 2608                        | 2313  |
| 700      | 635         | 127       | 1346        | 1372                     | 1035     | 686     | 1130*             | 673              | 1060          | -              | 610                           | 872                      | 3293                        | 2767  |
| 750      | 686         | 127       | 1397        | 1422                     | 1092     | 737     | 1194*             | 708              | 1139          | -              | 610                           | 907                      | 4128                        | 3447  |
| 800      | 737         | 127       | 1524        | 1553                     | 1149     | 832     | 1245*             | 750              | 1217          | -              | 762                           | 949                      | 4604                        | 3992  |
| 900      | 832         | 127       | 1727        | 1756                     | 1270     | 867     | 1384*             | 817              | 1362          | -              | 914                           | 1016                     | 6963                        | 5897  |
| 1050     | 876         | 191       | 1930        | -                        | 1289     | 1048    | 1435*             | 935              | 1443          | -              | 610                           | 1192                     | -                           | -     |

- Length (A) of a weld x flanged-end valve is one half the sum of length (A) of a weld end and a flange end of the same size and rating.
  - \* Short pattern.
  - ◆ Length exceeds specified dimensions in API 6D/ISO 14313.
  - Dimensions of 22" (550 mm) flanges are per MSS-SP-44 and 26" (650 mm) through 42" (1050 mm) flanges are per ASME B16.47 series A.
  - \*\* Prior to 1/1/98 – manufactured to 16.5" (419 mm) short pattern length.
- Note: Venturi opening or other reduced-bore valves are available upon request.

## DIMENSIONS

### Full Bore ASME/ANSI Class 400 (PN 64)



### Dimensions

| Size in. | Ball Bore B | Flanged End ■                           |             |              |          |         | Weld End ■ Length A | C.L. to Bottom C | Body Sphere E | Lever Length L | Diameter Handwheel for Gear G | C.L. to Handwheel C.L. H | Approximate Valve Weight lb |       |  |
|----------|-------------|---|-------------|--------------|----------|---------|---------------------|------------------|---------------|----------------|-------------------------------|--------------------------|-----------------------------|-------|--|
|          |             | Stem Size A                             | RF Length A | RTJ Length A | Dia. D1* | Dia. D2 |                     |                  |               |                |                               |                          | Flange                      | Weld  |  |
| 2        | 2.06        | Use ASME/ANSI Class 600 Valves (PN 100) |             |              |          |         |                     |                  |               |                |                               |                          |                             |       |  |
| 3        | 3.13        | Use ASME/ANSI Class 600 Valves (PN 100) |             |              |          |         |                     |                  |               |                |                               |                          |                             |       |  |
| 4        | 4.06        | 1.5                                     | 16.0        | 16.125       | 10.00    | 4.06    | 14.0*               | 5.94             | 8.50          | 48             | -                             | 8.43                     | 150                         | 100   |  |
| 6        | 6.00        | 1.5                                     | 19.5        | 19.625       | 12.50    | 6.00    | 18.0*               | 7.91             | 11.25         | -              | 12                            | 10.43                    | 300                         | 225   |  |
| 8        | 8.00        | 2.0                                     | 23.5        | 23.625       | 15.00    | 8.00    | 21.5*               | 10.00            | 15.50         | -              | 18                            | 12.55                    | 550                         | 450   |  |
| 10       | 10.00       | 2.0                                     | 26.5        | 26.625       | 17.50    | 10.00   | 23.5*               | 12.12            | 18.50         | -              | 24                            | 14.54                    | 850                         | 650   |  |
| 12       | 12.00       | 3.0                                     | 30.0        | 30.125       | 20.50    | 12.00   | 26.5*               | 14.50            | 22.36         | -              | 18                            | 20.14                    | 1400                        | 1100  |  |
| 14       | 13.25       | 3.0                                     | 32.5        | 32.625       | 23.00    | 13.25   | 28.5*               | 14.64            | 24.00         | -              | 24                            | 21.16                    | 1650                        | 1230  |  |
| 16       | 15.25       | 4.0                                     | 35.5        | 35.625       | 25.50    | 15.25   | 30.5*               | 17.84            | 26.32         | -              | 18                            | 24.78                    | 2225                        | 1770  |  |
| 18       | 17.25       | 4.0                                     | 38.5        | 38.625       | 28.00    | 17.25   | 33.5*               | 19.25            | 29.20         | -              | 24                            | 26.19                    | 2850                        | 2200  |  |
| 20       | 19.25       | 5.0                                     | 41.5        | 41.750       | 30.50    | 19.25   | 35.5*               | 22.11            | 32.27         | -              | 24                            | 30.00                    | 3750                        | 3000  |  |
| 22       | 21.25       | 5.0                                     | 45.0        | 45.375       | 33.00    | 21.25   | 38.5*               | 23.63            | 36.00         | -              | 24                            | 31.53                    | 4750                        | 3950  |  |
| 24       | 23.25       | 5.0                                     | 48.5        | 48.875       | 36.00    | 23.25   | 42.0*               | 25.05            | 38.76         | -              | 24                            | 32.95                    | 5600                        | 4750  |  |
| 26       | 25.00       | 5.0                                     | 51.5        | 52.000       | 38.25    | 25.00   | 44.5*               | 26.49            | 41.75         | -              | 24                            | 34.34                    | 7100                        | 5600  |  |
| 28       | 27.00       | 5.0                                     | 55.0        | 55.500       | 40.75    | 27.00   | 47.0*               | 27.88            | 44.86         | -              | 30                            | 35.72                    | 8560                        | 6500  |  |
| 30       | 29.00       | 5.0                                     | 60.0        | 60.500       | 43.00    | 29.00   | 49.0*               | 29.51            | 47.90         | -              | 36                            | 37.37                    | 10600                       | 8800  |  |
| 34       | 32.75       | 7.5                                     | 70.0        | 70.625       | 47.50    | 32.75   | 54.5*               | 35.19            | 53.64         | -              | 30                            | 45.31                    | 15400                       | 12300 |  |
| 36       | 34.50       | 7.5                                     | 74.0        | 74.625       | 50.00    | 34.50   | 56.5*               | 36.80            | 56.83         | -              | 30                            | 46.92                    | 18000                       | 15500 |  |
| 40       | 38.50       | 7.5                                     | 78.0        | -            | 50.00    | 38.50   | 65.0*               | 40.14            | 65.00         | -              | 42                            | 50.25                    | 25500                       | 22250 |  |
| 42       | 41.25       | 7.5                                     | 81.0        | -            | 52.00    | 41.25   | 66.5*               | 41.78            | 68.60         | -              | 42                            | 51.89                    | 28750                       | 24750 |  |
| 48       | 46.50       | 9.0                                     | 91.0        | -            | 59.50    | 46.50   | 76.0*               | 47.98            | 77.00         | -              | -                             | -                        | -                           | -     |  |
| Size mm  |             |   |             |              |          |         |                     |                  |               |                |                               |                          | kg                          |       |  |
| 50       | 52          | Use ASME/ANSI Class 600 Valves (PN 100) |             |              |          |         |                     |                  |               |                |                               |                          |                             |       |  |
| 80       | 80          | Use ASME/ANSI Class 600 Valves (PN 100) |             |              |          |         |                     |                  |               |                |                               |                          |                             |       |  |
| 100      | 103         | 38                                      | 406         | 410          | 254      | 103     | 356*                | 151              | 216           | 1219           | -                             | 214                      | 68                          | 45    |  |
| 150      | 152         | 38                                      | 495         | 498          | 318      | 152     | 457*                | 201              | 286           | -              | 305                           | 265                      | 136                         | 102   |  |
| 200      | 203         | 51                                      | 597         | 600          | 381      | 203     | 546*                | 254              | 394           | -              | 457                           | 319                      | 249                         | 204   |  |
| 250      | 254         | 51                                      | 673         | 676          | 445      | 254     | 597*                | 308              | 470           | -              | 610                           | 369                      | 386                         | 295   |  |
| 300      | 305         | 76                                      | 762         | 765          | 521      | 305     | 673*                | 368              | 568           | -              | 457                           | 512                      | 635                         | 499   |  |
| 350      | 337         | 76                                      | 826         | 829          | 584      | 337     | 724*                | 372              | 610           | -              | 610                           | 537                      | 748                         | 558   |  |
| 400      | 387         | 102                                     | 902         | 905          | 648      | 387     | 775*                | 453              | 669           | -              | 457                           | 629                      | 1009                        | 803   |  |
| 450      | 438         | 102                                     | 978         | 981          | 711      | 438     | 851*                | 489              | 742           | -              | 610                           | 665                      | 1293                        | 998   |  |
| 500      | 489         | 127                                     | 1054        | 1060         | 775      | 489     | 902*                | 562              | 820           | -              | 610                           | 762                      | 1701                        | 1361  |  |
| 550      | 540         | 127                                     | 1143        | 1153         | 838      | 540     | 978*                | 600              | 914           | -              | 610                           | 801                      | 2155                        | 1792  |  |
| 600      | 591         | 127                                     | 1232        | 1241         | 914      | 591     | 1067*               | 636              | 985           | -              | 610                           | 837                      | 2540                        | 2155  |  |
| 650      | 635         | 127                                     | 1308        | 1321         | 971.2    | 635     | 1130*               | 673              | 1060          | -              | 610                           | 872                      | 3221                        | 2540  |  |
| 700      | 686         | 127                                     | 1397        | 1410         | 1035     | 686     | 1194*               | 708              | 1139          | -              | 762                           | 907                      | 3883                        | 2948  |  |
| 750      | 737         | 127                                     | 1524        | 1537         | 1092     | 737     | 1245*               | 750              | 1217          | -              | 914                           | 949                      | 4808                        | 3992  |  |
| 850      | 832         | 191                                     | 1778        | 1794         | 1207     | 832     | 1384*               | 894              | 1362          | -              | 762                           | 1151                     | 6985                        | 5579  |  |
| 900      | 876         | 191                                     | 1880        | 1895         | 1270     | 876     | 1435*               | 935              | 1443          | -              | 762                           | 1192                     | 8165                        | 7031  |  |
| 1000     | 978         | 191                                     | 1981        | -            | 1270     | 978     | 1651*               | 1020             | 1651          | -              | 1067                          | 1276                     | 11567                       | 10092 |  |
| 1050     | 1048        | 191                                     | 2057        | -            | 1321     | 1048    | 1689*               | 1061             | 1742          | -              | 1067                          | 1318                     | 13041                       | 11226 |  |
| 1200     | 1181        | 229                                     | 2311        | -            | 1511     | 1181    | 1930*               | 1219             | 1956          | -              | -                             | -                        | -                           | -     |  |

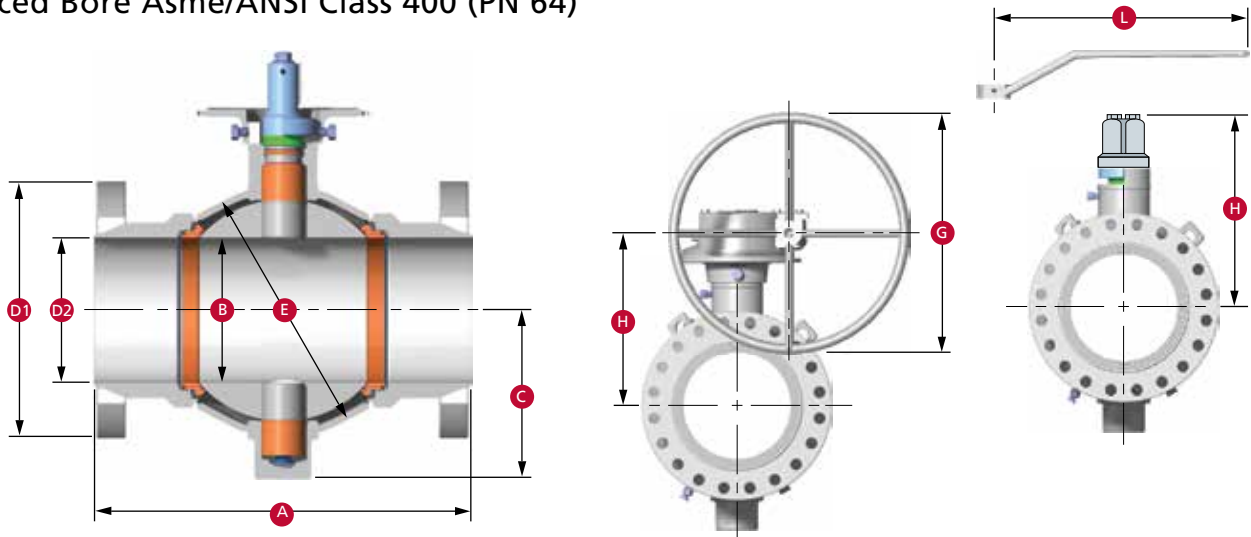
■ Length (A) of a weld x flanged-end valve is one half the sum of length (A) of a weld end and a flange end of the same size and rating.

\* Short pattern.

• Dimensions of 22" (550 mm) flanges are per MSS-SP-44 and 26" (650 mm) through 42" (1050 mm) flanges are per ASME B16.47 series A.



## Reduced Bore Asme/ANSI Class 400 (PN 64)



### Dimensions

| Size in. | Ball Bore B | Stem Size                               | RF Length A | Flanged End RTJ Length A | Dia. D1* | Dia. D2 | Weld End Length A | C.L. to Bottom C | Body Sphere E | Lever Length L | Diameter Handwheel for Gear G | C.L. to Handwheel C.L. H | Approximate Valve Weight lb | Flange | Weld |
|----------|-------------|---|-------------|--------------------------|----------|---------|-------------------|------------------|---------------|----------------|-------------------------------|--------------------------|-----------------------------|--------|------|
| 3        | 2.06        | Use ASME/ANSI Class 600 Valves (PN 100) |             |                          |          |         |                   |                  |               |                |                               |                          |                             |        |      |
| 4        | 3.13        | 1.0                                     | 16.0        | 16.125                   | 10.00    | 4.06    | 12.5*             | 5.12             | 6.75          | 24             | -                             | 7.44                     | 125                         | 87     |      |
| 6        | 4.06        | 1.5                                     | 19.5        | 19.625                   | 12.50    | 6.00    | 14.0*             | 5.94             | 8.50          | 48             | -                             | 8.43                     | 189                         | 150    |      |
| 8        | 6.00        | 1.5                                     | 23.5        | 23.625                   | 15.00    | 8.00    | 18.0*             | 7.91             | 11.25         | -              | 12                            | 10.43                    | 424                         | 290    |      |
| 10       | 8.00        | 2.0                                     | 26.5        | 26.625                   | 17.50    | 10.00   | 21.5*             | 10.00            | 15.50         | -              | 18                            | 12.55                    | 608                         | 525    |      |
| 12       | 10.00       | 2.0                                     | 30.0        | 30.125                   | 20.50    | 12.00   | 23.5*             | 12.12            | 18.50         | -              | 24                            | 14.54                    | 1020                        | 840    |      |
| 14       | 12.00       | 3.0                                     | 32.5        | 32.625                   | 23.00    | 13.25   | 26.5*             | 14.50            | 22.36         | -              | 18                            | 20.14                    | 1490                        | 1160   |      |
| 16       | 13.25       | 3.0                                     | 35.5        | 35.625                   | 25.25    | 15.25   | 28.5*             | 14.64            | 24.00         | -              | 24                            | 21.16                    | 1910                        | 1330   |      |
| 18       | 15.25       | 4.0                                     | 38.5        | 38.625                   | 28.00    | 17.25   | 30.5*             | 17.84            | 36.32         | -              | 18                            | 24.78                    | 2400                        | 1920   |      |
| 20       | 17.25       | 4.0                                     | 41.5        | 41.750                   | 30.50    | 19.25   | 33.5*             | 19.25            | 29.20         | -              | 24                            | 26.19                    | 3200                        | 2650   |      |
| 22       | 19.25       | 5.0                                     | 45.0        | 45.375                   | 33.00    | 21.25   | 35.5*             | 22.11            | 32.27         | -              | 24                            | 30.00                    | 4250                        | 3300   |      |
| 24       | 21.25       | 5.0                                     | 48.5        | 48.875                   | 36.00    | 23.25   | 38.5*             | 23.63            | 36.00         | -              | 24                            | 31.53                    | 5050                        | 4300   |      |
| 26       | 23.25       | 5.0                                     | 51.5        | 52.000                   | 38.25    | 25.00   | 42.0*             | 25.05            | 38.76         | -              | 24                            | 32.95                    | 6250                        | 5100   |      |
| 28       | 25.00       | 5.0                                     | 55.0        | 55.500                   | 40.75    | 27.00   | 44.5*             | 26.49            | 41.75         | -              | 24                            | 34.34                    | 7750                        | 6100   |      |
| 30       | 27.00       | 5.0                                     | 60.0        | 60.500                   | 43.00    | 29.00   | 47.0*             | 27.88            | 44.86         | -              | 30                            | 35.72                    | 9500                        | 7600   |      |
| 32       | 29.00       | 5.0                                     | 65.0        | 65.625                   | 45.25    | 32.75   | 49.0*             | 29.51            | 47.90         | -              | 36                            | 37.37                    | 11500                       | 9350   |      |
| 36       | 32.75       | 7.5                                     | 74.0        | 74.625                   | 50.00    | 34.50   | 54.5*             | 35.19            | 53.64         | -              | 30                            | 45.31                    | 16000                       | 13000  |      |
| 42       | 34.50       | 7.5                                     | 81.0        | -                        | 52.00    | 41.25   | 56.5*             | 36.80            | 56.83         | -              | 30                            | 46.92                    | -                           | -      |      |
| Size mm  |             |   |             |                          |          |         |                   |                  |               |                |                               |                          | kg                          |        |      |
| 80       | 52          | Use ASME/ANSI Class 600 Valves (PN 100) |             |                          |          |         |                   |                  |               |                |                               |                          |                             |        |      |
| 100      | 80          | 25                                      | 406         | 410                      | 254      | 103     | 318*              | 130              | 171           | 610            | -                             | 189                      | 57                          | 39     |      |
| 150      | 103         | 38                                      | 495         | 498                      | 318      | 152     | 356*              | 151              | 216           | 1219           | -                             | 214                      | 86                          | 68     |      |
| 200      | 152         | 38                                      | 597         | 600                      | 381      | 203     | 457*              | 201              | 286           | -              | 305                           | 265                      | 192                         | 132    |      |
| 250      | 203         | 51                                      | 673         | 676                      | 445      | 254     | 546*              | 254              | 394           | -              | 457                           | 319                      | 276                         | 238    |      |
| 300      | 254         | 51                                      | 762         | 765                      | 521      | 305     | 597*              | 308              | 470           | -              | 610                           | 369                      | 463                         | 381    |      |
| 350      | 305         | 76                                      | 826         | 829                      | 584      | 337     | 673*              | 368              | 568           | -              | 457                           | 512                      | 676                         | 526    |      |
| 400      | 337         | 76                                      | 902         | 905                      | 641      | 387     | 724*              | 372              | 610           | -              | 610                           | 537                      | 866                         | 603    |      |
| 450      | 387         | 102                                     | 978         | 981                      | 711      | 438     | 775*              | 453              | 923           | -              | 457                           | 629                      | 1089                        | 871    |      |
| 500      | 438         | 102                                     | 1054        | 1060                     | 775      | 489     | 851*              | 489              | 742           | -              | 610                           | 665                      | 1451                        | 1202   |      |
| 550      | 489         | 127                                     | 1143        | 1153                     | 838      | 540     | 902*              | 562              | 820           | -              | 610                           | 762                      | 1928                        | 1497   |      |
| 600      | 540         | 127                                     | 1232        | 1241                     | 914      | 591     | 978*              | 600              | 914           | -              | 610                           | 801                      | 2291                        | 1950   |      |
| 650      | 591         | 127                                     | 1308        | 1321                     | 972      | 635     | 1067*             | 636              | 985           | -              | 610                           | 837                      | 2835                        | 2313   |      |
| 700      | 635         | 127                                     | 1397        | 1410                     | 1035     | 686     | 1130*             | 673              | 1060          | -              | 610                           | 872                      | 3515                        | 2767   |      |
| 750      | 686         | 127                                     | 1524        | 1537                     | 1092     | 737     | 1194*             | 708              | 1139          | -              | 762                           | 907                      | 4309                        | 3447   |      |
| 800      | 737         | 127                                     | 1651        | 1667                     | 1149     | 832     | 1245*             | 750              | 1217          | -              | 914                           | 949                      | 5216                        | 4241   |      |
| 900      | 832         | 191                                     | 1880        | 1895                     | 1270     | 876     | 1384*             | 894              | 1362          | -              | 762                           | 1151                     | 7257                        | 5897   |      |
| 1050     | 876         | 191                                     | 2057        | -                        | 1321     | 1048    | 1435*             | 935              | 1443          | -              | 762                           | 1192                     | -                           | -      |      |

■ Length (A) of a weld x flanged-end valve is one half the sum of length (A) of a weld end and a flange end of the same size and rating.

\* Short pattern.

● Dimensions of 2" (50 mm) flanges are per MSS-SP-44 and 26" (650 mm) through 42" (1050 mm) flanges are per ASME B16.47 series A.

Note: Venturi opening or other reduced-bore valves are available upon request.

## DIMENSIONS

### Full Bore ASME/ANSI Class 600 (PN 100)

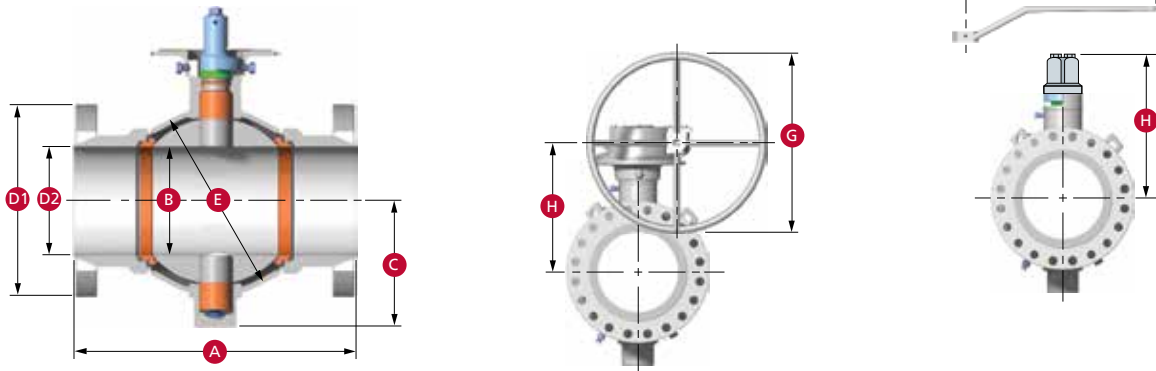
Please use illustrations from next page as a reference.

#### Dimensions

| Size in.<br>Nom<br>Dia. | Ball<br>Bore<br>B | Stem<br>Size | Flanged End ■     |                    |             |            | Weld<br>End ■<br>Length<br>A | C.L.<br>to<br>Bottom<br>C | Body<br>Sphere<br>E | Lever<br>Length<br>L | Diameter<br>Handwheel<br>for Gear<br>G | C.L. to<br>Handwheel<br>C.L.<br>H | Approximate<br>Valve Weight<br>lb |       |
|-------------------------|-------------------|--------------|-------------------|--------------------|-------------|------------|------------------------------|---------------------------|---------------------|----------------------|--|-----------------------------------|-----------------------------------|-------|
|                         |                   |              | RF<br>Length<br>A | RTJ<br>Length<br>A | Dia.<br>D1* | Dia.<br>D2 |                              |                           |                     |                      |  |                                   | Flange                            | Weld  |
| 2                       | 2.06              | 1            | 11.5              | 11.625             | 6.5         | 2.06       | 11.0*                        | 3.94                      | 5                   | 24                   | -                                      | 6.34                              | 60                                | 45    |
| 3                       | 3.13              | 1            | 14                | 14.125             | 8.25        | 3.13       | 12.5*                        | 5.12                      | 6.75                | 36                   | -                                      | 7.44                              | 85                                | 75    |
| 4                       | 4.06              | 1.5          | 17                | 17.125             | 10.75       | 4.06       | 14.0*                        | 5.94                      | 8.5                 | 48                   | -                                      | 8.43                              | 165                               | 100   |
| 6                       | 6.00              | 1.5          | 22                | 22.125             | 14          | 6          | 18.0*                        | 7.91                      | 11.25               | -                    | 12                                     | 10.43                             | 360                               | 225   |
| 8                       | 8.00              | 2            | 26                | 26.125             | 16.5        | 8          | 21.5*                        | 10                        | 15.5                | -                    | 18                                     | 12.55                             | 650                               | 450   |
| 10                      | 10.00             | 2            | 31                | 31.125             | 20          | 10         | 23.5*                        | 12.12                     | 18.5                | -                    | 24                                     | 14.54                             | 1000                              | 650   |
| 12                      | 12.00             | 3            | 33                | 33.125             | 22          | 12         | 26.5*                        | 14.5                      | 22.36               | -                    | 18                                     | 20.14                             | 1510                              | 1100  |
| 14                      | 13.25             | 3            | 35                | 35.125             | 23.75       | 13.25      | 28.5*                        | 14.64                     | 24                  | -                    | 24                                     | 21.16                             | 1910                              | 1230  |
| 16                      | 15.25             | 4            | 39                | 39.125             | 27          | 15.25      | 30.5*                        | 17.84                     | 26.32               | -                    | 18                                     | 24.78                             | 2400                              | 1770  |
| 18                      | 17.25             | 4            | 43                | 43.125             | 29.25       | 17.25      | 33.5*                        | 19.25                     | 29.2                | -                    | 24                                     | 26.19                             | 2955                              | 2200  |
| 20                      | 19.25             | 5            | 47                | 47.25              | 32          | 19.25      | 35.5*                        | 22.11                     | 32.27               | -                    | 24                                     | 30                                | 4100                              | 3000  |
| 22                      | 21.25             | 5            | 51                | 51.375             | 34.25       | 21.25      | 38.5*                        | 23.63                     | 36                  | -                    | 24                                     | 31.53                             | 5400                              | 3950  |
| 24                      | 23.25             | 5            | 55                | 55.375             | 37          | 23.25      | 42.0*                        | 25.05                     | 38.76               | -                    | 30                                     | 32.95                             | 6550                              | 4750  |
| 26                      | 25.00             | 5            | 57                | 57.5               | 40          | 25         | 44.5*                        | 26.49                     | 41.75               | -                    | 36                                     | 34.34                             | 7800                              | 5600  |
| 28                      | 27.00             | 7.5          | 61                | 61.5               | 42.25       | 27         | 47.0*                        | 30.87                     | 44.86               | -                    | 30                                     | 40.99                             | 9500                              | 6700  |
| 30                      | 29.00             | 7.5          | 65                | 65.5               | 44.5        | 29         | 49.0*                        | 32.53                     | 47.9                | -                    | 30                                     | 42.65                             | 12000                             | 9120  |
| 32                      | 30.75             | 7.5          | 70                | 70.630             | 47.00       | 30.75      | 52.0*                        | 34.25                     | 52.25               | -                    | 42                                     | 44.50                             | 13999                             | 10494 |
| 34                      | 32.75             | 7.5          | 76                | 76.625             | 49          | 32.75      | 54.5*                        | 35.19                     | 53.64               | -                    | 42                                     | 45.31                             | 16025                             | 12300 |
| 36                      | 34.5              | 7.5          | 82                | 82.625             | 51.75       | 34.5       | 56.5*                        | 36.8                      | 56.83               | -                    | 42                                     | 46.92                             | 19100                             | 15500 |
| 40                      | 38.5              | 9            | 80                | -                  | 52          | 38.5       | 65.0*                        | 42.02                     | 65                  | -                    | 42                                     | 55.425                            | 26770                             | 23000 |
| 42                      | 41.25             | 9            | 83                | -                  | 55.25       | 41.25      | 66.5*                        | 43.66                     | 68.6                | -                    | 42                                     | 57.06                             | 30500                             | 25500 |
| 44                      | 42.75             | 11           | -                 | -                  | -           | 42.75      | 70.5*                        | 46.95                     | 71.00               | -                    | -                                      | -                                 | -                                 | -     |
| 48                      | 46.50             | 11           | 94                | -                  | 62.75       | 46.5       | 76.0*                        | 51.18                     | 77.33               | -                    | -                                      | -                                 | -                                 | -     |
| 56                      | 55.12             | 13           | -                 | -                  | -           | 55.12      | 93.7*                        | 59.10                     | 91.70               | -                    | -                                      | -                                 | -                                 | -     |
| SIZE mm                 |                   |              |                   |                    |             |            |                              |                           |                     |                      |  |                                   | kg                                |       |
| 50                      | 52                | 25           | 292               | 295                | 165         | 52         | 279*                         | 100                       | 127                 | 610                  | -                                      | 161                               | 27                                | 20    |
| 80                      | 80                | 25           | 356               | 359                | 210         | 80         | 318*                         | 130                       | 171                 | 914                  | -                                      | 189                               | 39                                | 34    |
| 100                     | 103               | 38           | 432               | 435                | 273         | 103        | 356*                         | 151                       | 216                 | 1219                 | -                                      | 214                               | 75                                | 45    |
| 150                     | 152               | 38           | 559               | 562                | 356         | 152        | 457*                         | 201                       | 286                 | -                    | 305                                    | 265                               | 163                               | 102   |
| 200                     | 203               | 51           | 660               | 664                | 419         | 203        | 546*                         | 254                       | 394                 | -                    | 457                                    | 319                               | 295                               | 204   |
| 250                     | 254               | 51           | 787               | 791                | 508         | 254        | 597*                         | 308                       | 470                 | -                    | 610                                    | 369                               | 454                               | 295   |
| 300                     | 305               | 76           | 838               | 841                | 559         | 304        | 673*                         | 368                       | 568                 | -                    | 457                                    | 512                               | 685                               | 499   |
| 350                     | 337               | 76           | 889               | 892                | 603         | 337        | 724*                         | 372                       | 610                 | -                    | 610                                    | 537                               | 866                               | 558   |
| 400                     | 387               | 102          | 991               | 994                | 686         | 387        | 775*                         | 453                       | 669                 | -                    | 457                                    | 629                               | 1089                              | 803   |
| 450                     | 438               | 102          | 1092              | 1095               | 743         | 438        | 851*                         | 489                       | 742                 | -                    | 610                                    | 665                               | 1340                              | 998   |
| 500                     | 489               | 127          | 1194              | 1200               | 813         | 489        | 902*                         | 562                       | 820                 | -                    | 610                                    | 762                               | 1860                              | 1361  |
| 550                     | 540               | 127          | 1295              | 1305               | 870         | 540        | 978*                         | 600                       | 914                 | -                    | 610                                    | 801                               | 2449                              | 1792  |
| 600                     | 591               | 127          | 1397              | 1407               | 940         | 591        | 1067*                        | 636                       | 985                 | -                    | 762                                    | 837                               | 2971                              | 2155  |
| 650                     | 635               | 127          | 1448              | 1461               | 1016        | 635        | 1130*                        | 673                       | 1060                | -                    | 914                                    | 872                               | 3538                              | 2540  |
| 700                     | 686               | 191          | 1549              | 1562               | 1073        | 686        | 1194*                        | 784                       | 1139                | -                    | 762                                    | 1041                              | 4309                              | 3039  |
| 750                     | 737               | 191          | 1651              | 1664               | 1130        | 737        | 1245*                        | 826                       | 1217                | -                    | 762                                    | 1083                              | 5443                              | 4137  |
| 800                     | 781               | 191          | 1778              | 1794               | 1193.8      | 781        | 1321*                        | 870                       | 1327                | -                    | 1067                                   | 1130                              | 6350                              | 4760  |
| 850                     | 832               | 191          | 1930              | 1946               | 1245        | 832        | 1384*                        | 894                       | 1362                | -                    | 1067                                   | 1151                              | 7269                              | 5579  |
| 900                     | 876               | 191          | 2083              | 2099               | 1314        | 876        | 1435*                        | 935                       | 1443                | -                    | 1067                                   | 1192                              | 8664                              | 7031  |
| 1000                    | 978               | 229          | 2032              | -                  | 1321        | 978        | 1651*                        | 1067                      | 1651                | -                    | 1067                                   | 1408                              | 12143                             | 10433 |
| 1050                    | 1048              | 229          | 2108              | -                  | 1403        | 1048       | 1689*                        | 1109                      | 1742                | -                    | 1067                                   | 1449                              | 13835                             | 11567 |
| 1100                    | 1086              | 279          | -                 | -                  | -           | 1086       | 1791*                        | 1192                      | 1803                | -                    | -                                      | -                                 | -                                 | -     |
| 1200                    | 1181              | 279          | 2388              | -                  | 1594        | 1181       | 1930*                        | 1300                      | 1964                | -                    | -                                      | -                                 | -                                 | -     |
| 1400                    | 1400              | 330          | -                 | -                  | -           | 1400       | 2381*                        | 1501                      | 2328                | -                    | -                                      | -                                 | -                                 | -     |

- Length (A) of a weld x flanged-end valve is one half the sum of length (A) of a weld end and a flange end of the same size and rating.
- \* Short pattern.
- Dimensions of 22" (550 mm) flanges are per MSS-SP-44 and 26" (650 mm) through 42" (1050 mm) flanges are per ASME B16.47 series A.

## Reduced Bore ASME/ANSI Class 600 (PN 100)



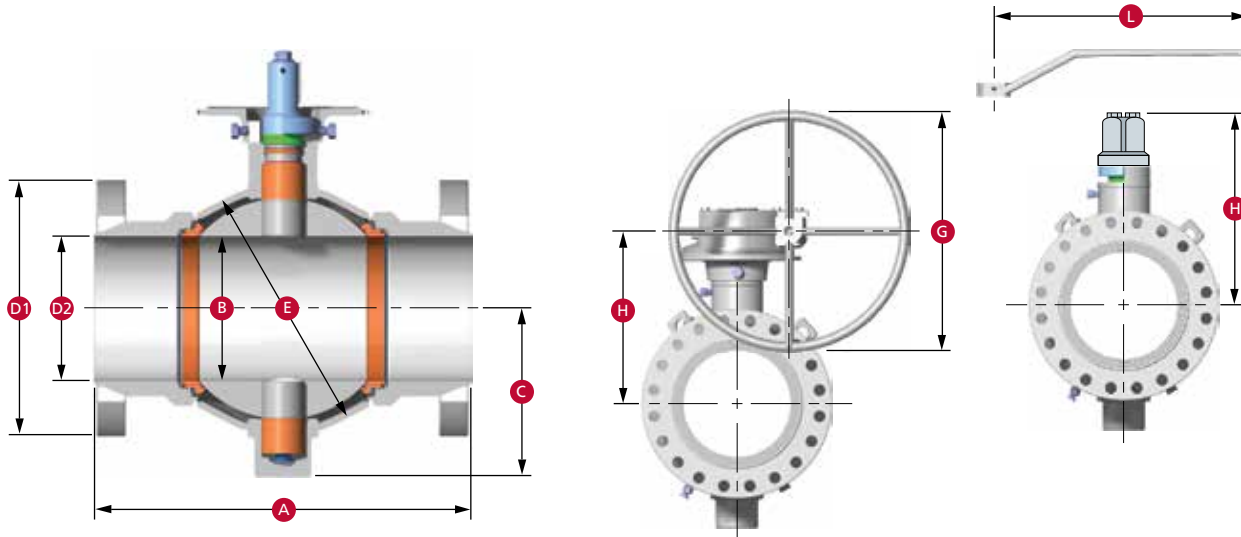
### Dimensions

| Size in. | Ball Bore B | Stem Size | RF Length A | RTJ Length A | Dia. D11* | Dia. D2 | Weld End Length A | C.L. to Bottom C | Body Sphere E | Lever Length L | Diameter Handwheel for Gear G | C.L. to Handwheel C.L. H | Approximate Valve Weight lb |       |
|----------|-------------|-----------|-------------|--------------|-----------|---------|-------------------|------------------|---------------|----------------|-------------------------------|--------------------------|-----------------------------|-------|
| Nom Dia. |             |           |             |              |           |         |                   |                  |               |                |                               | Flange                   | Weld                        |       |
| 3        | 2.06        | 1         | 14          | 14.125       | 8.25      | 3.13    | 11.0*             | 3.94             | 5             | 24             | -                             | 6.34                     | 80                          | 50    |
| 4        | 3.13        | 1         | 17          | 17.125       | 10.75     | 4.06    | 12.5*             | 5.12             | 6.75          | 36             | -                             | 7.44                     | 150                         | 87    |
| 6        | 4.06        | 1.5       | 22          | 22.125       | 14        | 6       | 14.0*             | 5.94             | 8.5           | 48             | -                             | 8.43                     | 250                         | 150   |
| 8        | 6.00        | 1.5       | 26          | 26.125       | 16.5      | 8       | 18.0*             | 7.91             | 11.25         | -              | 12                            | 10.43                    | 470                         | 290   |
| 10       | 8.00        | 2         | 31          | 31.125       | 20        | 10      | 21.5*             | 10               | 15.5          | -              | 18                            | 12.55                    | 850                         | 525   |
| 12       | 10.00       | 2         | 33          | 33.125       | 22        | 12      | 23.5*             | 12.12            | 18.5          | -              | 24                            | 14.54                    | 1150                        | 840   |
| 14       | 12.00       | 3         | 35          | 35.125       | 23.75     | 13.25   | 26.5*             | 14.5             | 22.36         | -              | 18                            | 20.14                    | 1640                        | 1160  |
| 16       | 13.25       | 3         | 39          | 39.125       | 27        | 15.25   | 28.5*             | 14.64            | 24            | -              | 24                            | 21.16                    | 2225                        | 1330  |
| 18       | 15.25       | 4         | 43          | 43.125       | 29.25     | 17.25   | 30.5*             | 17.84            | 26.32         | -              | 18                            | 24.78                    | 2600                        | 1920  |
| 20       | 17.25       | 4         | 47          | 47.25        | 32        | 19.25   | 33.5*             | 19.25            | 29.2          | -              | 24                            | 26.19                    | 3500                        | 2650  |
| 22       | 19.25       | 5         | 51          | 51.375       | 34.25     | 21.25   | 35.5*             | 22.11            | 32.27         | -              | 24                            | 30                       | 4450                        | 3300  |
| 24       | 21.25       | 5         | 55          | 55.375       | 37        | 23.25   | 38.5*             | 23.63            | 36            | -              | 24                            | 31.53                    | 5750                        | 4300  |
| 26       | 23.25       | 5         | 57          | 57.5         | 40        | 25      | 42.0*             | 25.05            | 38.76         | -              | 30                            | 32.95                    | 7000                        | 5100  |
| 28       | 25.00       | 5         | 61          | 61.5         | 42.25     | 27      | 44.5*             | 26.49            | 41.75         | -              | 36                            | 34.34                    | 8600                        | 6300  |
| 30       | 27.00       | 7.5       | 65          | 65.5         | 44.5      | 29      | 47.0*             | 30.87            | 44.86         | -              | 30                            | 40.99                    | 10100                       | 7800  |
| 32       | 29.00       | 7.5       | 70.00       | 70.630       | 47.00     | 30.75   | 49.0*             | 32.53            | 47.90         | -              | 30                            | 42.65                    | 12800                       | 9350  |
| 34       | 29.00       | 7.5       | 76.00       | 76.625       | 49.00     | 32.75   | 49.0*             | 32.53            | 47.90         | -              | 30                            | 42.65                    | 15200                       | 11200 |
| 36       | 32.75       | 7.5       | 82          | 82.625       | 51.75     | 34.5    | 54.5*             | 35.19            | 53.64         | -              | 42                            | 45.31                    | 17600                       | 13000 |
| 42       | 34.50       | 7.5       | 83          | -            | 55.25     | 41.25   | 56.5*             | 36.8             | 56.83         | -              | 42                            | 46.92                    | -                           | -     |
| 44       | 38.50       | 9         | -           | -            | -         | 42.75   | 65.0*             | 42.02            | 65.00         | -              | -                             | -                        | -                           | -     |
| 56       | 46.50       | 11        | -           | -            | -         | 55.10   | 76.0*             | 51.18            | 77.32         | -              | -                             | -                        | -                           | -     |
| Size mm  |             |           |             |              |           |         |                   |                  |               |                |                               |                          |                             | kg    |
| 80       | 52          | 25        | 356         | 359          | 210       | 80      | 279*              | 100              | 127           | 610            | -                             | 161                      | 36                          | 23    |
| 100      | 80          | 25        | 432         | 435          | 273       | 103     | 318*              | 130              | 171           | 914            | -                             | 189                      | 68                          | 39    |
| 150      | 103         | 38        | 559         | 562          | 356       | 152     | 356*              | 151              | 216           | 1219           | -                             | 214                      | 113                         | 68    |
| 200      | 152         | 38        | 660         | 664          | 419       | 203     | 457*              | 201              | 286           | -              | 305                           | 265                      | 213                         | 132   |
| 250      | 203         | 51        | 787         | 791          | 508       | 254     | 546*              | 254              | 394           | -              | 457                           | 319                      | 386                         | 238   |
| 300      | 254         | 51        | 838         | 841          | 559       | 305     | 597*              | 308              | 470           | -              | 610                           | 369                      | 522                         | 381   |
| 350      | 305         | 76        | 889         | 892          | 603       | 337     | 673*              | 368              | 568           | -              | 457                           | 512                      | 744                         | 526   |
| 400      | 337         | 76        | 991         | 994          | 686       | 387     | 724*              | 372              | 610           | -              | 610                           | 537                      | 1009                        | 603   |
| 450      | 387         | 102       | 1092        | 1095         | 743       | 438     | 775*              | 453              | 669           | -              | 457                           | 629                      | 1179                        | 871   |
| 500      | 438         | 102       | 1194        | 1200         | 813       | 489     | 851*              | 489              | 742           | -              | 610                           | 665                      | 1588                        | 1202  |
| 550      | 489         | 127       | 1295        | 1305         | 870       | 540     | 902*              | 562              | 820           | -              | 610                           | 762                      | 2018                        | 1497  |
| 600      | 540         | 127       | 1397        | 1407         | 940       | 591     | 978*              | 600              | 914           | -              | 610                           | 801                      | 2608                        | 1950  |
| 650      | 591         | 127       | 1448        | 1461         | 1016      | 635     | 1067*             | 636              | 985           | -              | 762                           | 837                      | 3175                        | 2313  |
| 700      | 635         | 127       | 1549        | 1562         | 1073      | 686     | 1130*             | 673              | 1060          | -              | 914                           | 872                      | 3901                        | 2858  |
| 750      | 686         | 191       | 1651        | 1664         | 1130      | 737     | 1194*             | 784              | 1139          | -              | 762                           | 1041                     | 4581                        | 3538  |
| 800      | 737         | 191       | 1778        | 1794         | 1194      | 781     | 1245*             | 826              | 1217          | -              | 762                           | 1083                     | 5800                        | 4250  |
| 850      | 737         | 191       | 1930        | 1946         | 1245      | 832     | 1245*             | 826              | 1217          | -              | 762                           | 1083                     | 6900                        | 5100  |
| 900      | 832         | 191       | 2083        | 2099         | 1314      | 876     | 1384*             | 894              | 1362          | -              | 1067                          | 1151                     | 7983                        | 5897  |
| 1100     | 978         | 229       | -           | -            | -         | 1086    | 1651*             | 1067             | 1651          | -              | -                             | -                        | -                           | -     |
| 1400     | 1181        | 279       | -           | -            | -         | 1400    | 1930*             | 1300             | 1964          | -              | -                             | -                        | -                           | -     |

- Length (A) of a weld x flanged-end valve is one half the sum of length (A) of a weld end and a flange end of the same size and rating.
  - \* Short pattern.
  - Dimensions of 22" (550 mm) flanges are per MSS-SP-44 and 26" (650 mm) through 42" (1050 mm) flanges are per ASME B16.47 series A.
- Note: Venturi opening or other reduced-bore valves are available upon request.

## DIMENSIONS

### Full Bore ASME/ANSI Class 900 (PN 150)



### Dimensions

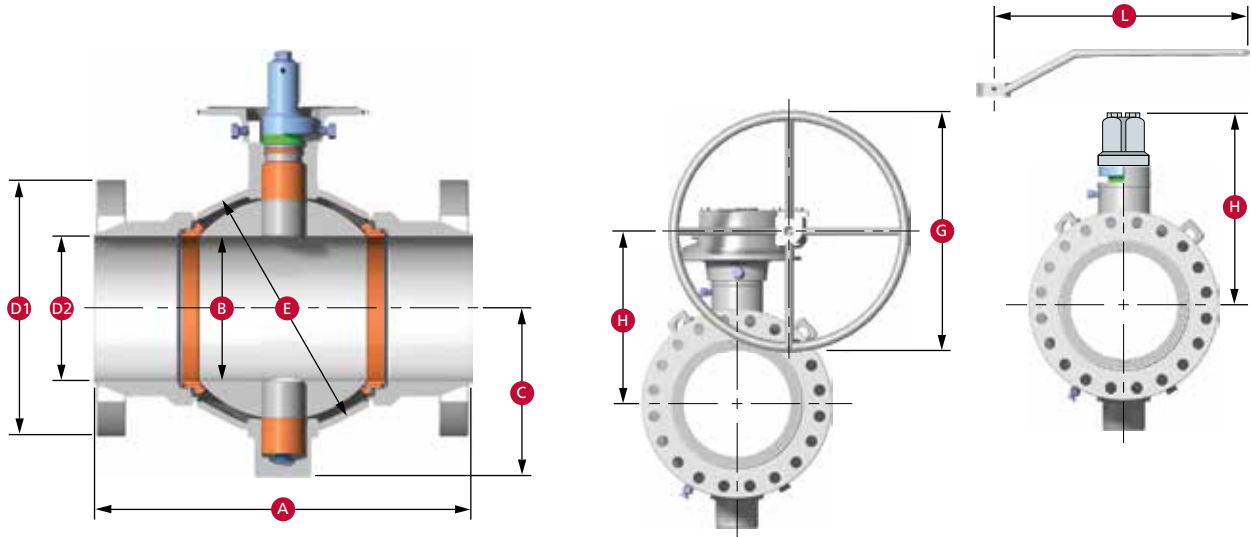
| Size in. |             | Flanged End ■ |                                |              |          |         | Weld End ■ | C.L. to Bottom | Body Sphere | Lever Length | Diameter Handwheel for Gear | C.L. to Handwheel C.L. | Approximate Valve Weight lb |       |    |
|----------|-------------|---------------|--------------------------------|--------------|----------|---------|------------|----------------|-------------|--------------|-----------------------------|------------------------|-----------------------------|-------|----|
| Nom Dia. | Ball Bore B | Stem Size     | RF Length A                    | RTJ Length A | Dia. D1* | Dia. D2 | A          | C              | E           | L            | G                           | H                      | Flange                      | Weld  |    |
| 2        | 2.06        |               | Use 1500 Class Valves (PN 250) |              |          |         |            |                |             |              |                             |                        |                             |       |    |
| 3        | 3.13        | 1.5           | 15.0                           | 15.125       | 9.50     | 3.13    | 13.5*      | 4.88           | 7.00        | 36           | -                           | 7.44                   | 140                         | 120   |    |
| 4        | 4.06        | 2.0           | 18.0                           | 18.125       | 11.50    | 4.06    | 15.0*      | 6.77           | 9.25        | -            | 12                          | 9.76                   | 250                         | 190   |    |
| 6        | 6.00        | 2.0           | 24.0                           | 24.125       | 15.00    | 6.00    | 20.0*      | 8.39           | 12.50       | -            | 18                          | 10.86                  | 525                         | 410   |    |
| 8        | 8.00        | 2.0           | 29.0                           | 29.125       | 18.50    | 8.00    | 23.5*      | 10.00          | 15.50       | -            | 24                          | 12.55                  | 1210                        | 590   |    |
| 10       | 10.00       | 3.0           | 33.0                           | 33.125       | 21.50    | 10.00   | 25.5*      | 12.88          | 18.50       | -            | 18                          | 18.49                  | 1325                        | 1010  |    |
| 12       | 12.00       | 3.0           | 38.0                           | 38.125       | 24.00    | 12.00   | 29.5*      | 14.50          | 22.36       | -            | 24                          | 20.14                  | 2250                        | 1350  |    |
| 14       | 12.75       | 5.0           | 40.5                           | 40.875       | 25.25    | 12.75   | 31.5*      | 17.40          | 24.50       | -            | 24                          | 25.30                  | 3250                        | 2155  |    |
| 16       | 14.75       | 5.0           | 44.5                           | 44.875       | 27.75    | 14.75   | 33.5*      | 19.02          | 27.25       | -            | 24                          | 26.92                  | 4000                        | 2450  |    |
| 18       | 16.75       | 5.0           | 48.0                           | 48.500       | 31.00    | 16.75   | 36.5*      | 20.62          | 30.07       | -            | 24                          | 28.51                  | 5300                        | 3950  |    |
| 20       | 18.625      | 7.5           | 52.0                           | 52.500       | 33.75    | 18.625  | 38.5*      | 24.22          | 33.88       | -            | 24                          | 35.23                  | 7100                        | 5250  |    |
| 24       | 22.50       | 7.5           | 61.0                           | 61.750       | 41.00    | 22.50   | 45.0*      | 28.07          | 39.95       | -            | 30                          | 38.18                  | 10500                       | 6450  |    |
| 30       | 29.00       | 7.5           | 75.0                           | 75.875       | 48.50    | 29.00   | 52.0*      | 32.53          | 49.88       | -            | 42                          | 42.65                  | 17500                       | 11500 |    |
| 36       | 34.50       | 9.0           | 90.0                           | 91.125       | 57.50    | 34.50   | 59.5*      | 38.64          | 58.25       | -            | -                           | 52.03                  | 25600                       | 17500 |    |
| Size mm  |             |               |                                |              |          |         |            |                |             |              |                             |                        |                             |       | kg |
| 50       | 52          |               | Use 1500 Class Valves (PN 250) |              |          |         |            |                |             |              |                             |                        |                             |       |    |
| 30       | 80          | 38            | 381                            | 384          | 241      | 80      | 343*       | 124            | 178         | 914          | -                           | 189                    | 64                          | 54    |    |
| 100      | 103         | 51            | 457                            | 460          | 292      | 103     | 381*       | 172            | 235         | -            | 305                         | 248                    | 113                         | 86    |    |
| 150      | 152         | 51            | 610                            | 613          | 381      | 152     | 508*       | 213            | 318         | -            | 457                         | 276                    | 238                         | 186   |    |
| 200      | 203         | 51            | 737                            | 740          | 410      | 203     | 597*       | 254            | 394         | -            | 610                         | 319                    | 549                         | 268   |    |
| 250      | 254         | 76            | 838                            | 841          | 546      | 254     | 648*       | 327            | 470         | -            | 457                         | 470                    | 601                         | 458   |    |
| 300      | 305         | 76            | 965                            | 968          | 610      | 305     | 749*       | 368            | 568         | -            | 610                         | 512                    | 1021                        | 612   |    |
| 350      | 324         | 127           | 1029                           | 1038         | 641      | 324     | 800*       | 442            | 622         | -            | 610                         | 643                    | 1474                        | 977   |    |
| 400      | 375         | 127           | 1130                           | 1140         | 705      | 375     | 851*       | 483            | 692         | -            | 610                         | 684                    | 1814                        | 1111  |    |
| 450      | 425         | 127           | 1219                           | 1232         | 787      | 425     | 927*       | 524            | 764         | -            | 610                         | 724                    | 2404                        | 1792  |    |
| 500      | 473         | 191           | 1321                           | 1334         | 857      | 473     | 978*       | 615            | 861         | -            | 610                         | 895                    | 3221                        | 2381  |    |
| 600      | 572         | 191           | 1549                           | 1568         | 1041     | 572     | 1143*      | 713            | 1015        | -            | 762                         | 970                    | 4763                        | 2926  |    |
| 750      | 737         | 191           | 1905                           | 1927         | 1232     | 737     | 1321*      | 826            | 1267        | -            | 1067                        | 1083                   | 7938                        | 5216  |    |
| 900      | 876         | 229           | 2286                           | 2315         | 1461     | 876     | 1511*      | 981            | 1480        | -            | -                           | 1322                   | 11612                       | 7938  |    |

■ Length (A) of a weld x flanged-end valve is one half the sum of length (A) of a weld end and a flange end of the same size and rating.

\* Short pattern.

• Dimensions of 22" (550 mm) flanges are per MSS-SP-44 and 26" (650 mm) through 42" (1050 mm) flanges are per ASME B16.47 series A.

## Reduced Bore ASME/ANSI Class 900 (PN 150)



### Dimensions

| Size in.<br>Nom<br>Dia. | Ball<br>Bore<br>B | Stem<br>Size | Flanged End ■     |                    | Dia.<br>D1* | Dia.<br>D2 | Weld<br>End ■<br>Length<br>A | C.L.<br>to<br>Bottom<br>C | Body<br>Sphere<br>E | Lever<br>Length<br>L | Diameter<br>Handwheel<br>for Gear<br>G | C.L. to<br>Handwheel<br>C.L.<br>H | Approximate<br>Valve Weight<br>lb |      |
|-------------------------|-------------------|--------------|-------------------|--------------------|-------------|------------|------------------------------|---------------------------|---------------------|----------------------|--|-----------------------------------|-----------------------------------|------|
|                         |                   |              | RF<br>Length<br>A | RTJ<br>Length<br>A |             |            |                              |                           |                     |                      |  |                                   | Flange                            | Weld |
| 3                       | 2.06              | 1.0          | 15.0              | 15.125             | 9.50        | 3.13       | 11.0*                        | 3.94                      | 5.00                | 24                   | -                                      | 6.34                              | 120                               | 70   |
| 4                       | 3.13              | 1.5          | 18.0              | 18.125             | 11.50       | 4.06       | 13.5*                        | 4.88                      | 7.00                | 36                   | -                                      | 7.44                              | 190                               | 150  |
| 6                       | 4.06              | 2.0          | 24.0              | 24.125             | 15.00       | 6.00       | 15.0*                        | 6.77                      | 9.25                | -                    | 12                                     | 9.76                              | 400                               | 260  |
| 8                       | 6.00              | 2.0          | 29.0              | 29.125             | 18.50       | 8.00       | 20.0*                        | 8.39                      | 12.50               | -                    | 18                                     | 10.86                             | 850                               | 650  |
| 10                      | 8.00              | 2.0          | 33.0              | 33.125             | 21.50       | 10.00      | 23.5*                        | 10.00                     | 15.50               | -                    | 24                                     | 12.55                             | 1290                              | 725  |
| 12                      | 10.00             | 3.0          | 38.0              | 38.125             | 24.00       | 12.00      | 25.5*                        | 12.88                     | 18.50               | -                    | 18                                     | 18.49                             | 1700                              | 1110 |
| 14                      | 12.00             | 3.0          | 40.5              | 40.875             | 25.25       | 12.75      | 29.5*                        | 14.50                     | 22.36               | -                    | 24                                     | 20.14                             | 2750                              | 1680 |
| 16                      | 12.75             | 5.0          | 44.5              | 44.875             | 27.75       | 14.75      | 31.5*                        | 17.40                     | 24.50               | -                    | 24                                     | 25.30                             | 3650                              | 2300 |
| Size mm                 |                   |              |                   |                    |             |            |                              |                           |                     |                      |  |                                   | kg                                |      |
| 80                      | 52                | 25           | 381               | 384                | 241         | 80         | 279*                         | 100                       | 127                 | 610                  | -                                      | 161                               | 54                                | 32   |
| 100                     | 80                | 38           | 457               | 460                | 292         | 103        | 343*                         | 124                       | 178                 | 914                  | -                                      | 189                               | 86                                | 68   |
| 150                     | 103               | 51           | 610               | 613                | 381         | 152        | 381*                         | 172                       | 235                 | -                    | 305                                    | 248                               | 181                               | 118  |
| 200                     | 152               | 51           | 737               | 740                | 470         | 203        | 508*                         | 213                       | 318                 | -                    | 457                                    | 276                               | 386                               | 295  |
| 250                     | 203               | 51           | 838               | 841                | 546         | 254        | 597*                         | 254                       | 394                 | -                    | 610                                    | 319                               | 585                               | 329  |
| 300                     | 254               | 76           | 965               | 968                | 610         | 305        | 648*                         | 327                       | 470                 | -                    | 457                                    | 470                               | 771                               | 503  |
| 350                     | 305               | 76           | 1029              | 1038               | 641         | 324        | 749*                         | 368                       | 568                 | -                    | 610                                    | 512                               | 1247                              | 762  |
| 400                     | 324               | 127          | 1130              | 1140               | 705         | 375        | 800*                         | 442                       | 622                 | -                    | 610                                    | 643                               | 1656                              | 1043 |

■ Length (A) of a weld x flanged-end valve is one half the sum of length (A) of a weld end and a flange end of the same size and rating.

\* Short pattern.

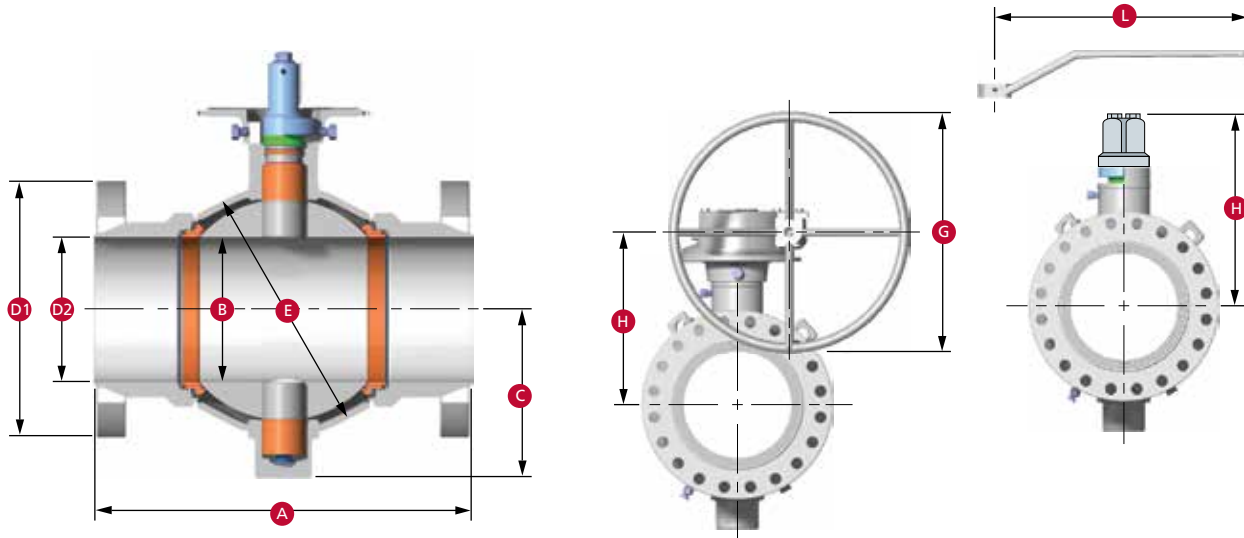
● Dimensions of 22" (550 mm) flanges are per MSS-SP-44 and 26" (650 mm) through 42" (1050 mm) flanges are per ASME B16.47 series A.

Note: Venturi opening or other reduced-bore valves are available upon request.



## DIMENSIONS

### Full Bore ASME/ANSI Class 1500 (PN 250)

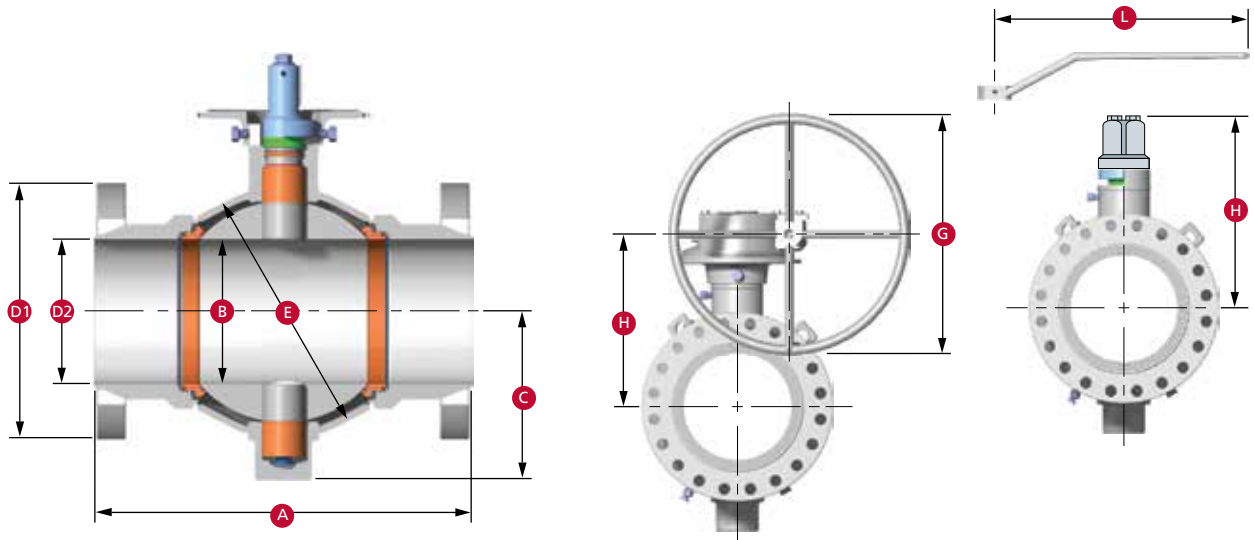


### Dimensions

| Size in. |             | Flanged End ■ |             |              |         |         | Weld End ■ | C.L. to Bottom | Body Sphere | Lever Length | Diameter Handwheel for Gear | C.L. to Handwheel C.L. | Approximate Valve Weight lb |      |    |
|----------|-------------|---------------|-------------|--------------|---------|---------|------------|----------------|-------------|--------------|-----------------------------|------------------------|-----------------------------|------|----|
| Nom Dia. | Ball Bore B | Stem Size     | RF Length A | RTJ Length A | Dia. D1 | Dia. D2 | A          | C              | E           | L            | G                           | H                      | Flange                      | Weld |    |
| 2        | 2.06        | 1.0           | 14.50       | 14.625       | 8.50    | 2.06    | 11.0*      | 3.94           | 5.00        | 36           | -                           | 6.34                   | 100                         | 45   |    |
| 3        | 3.13        | 1.5           | 18.50       | 18.625       | 10.50   | 3.13    | 13.5*      | 4.88           | 7.00        | -            | 12                          | 7.44                   | 180                         | 120  |    |
| 4        | 4.06        | 2.0           | 21.50       | 21.625       | 12.25   | 4.06    | 15.0*      | 6.77           | 9.25        | -            | 12                          | 9.76                   | 300                         | 190  |    |
| 6        | 6.00        | 2.0           | 27.75       | 28.000       | 15.50   | 6.00    | 20.0*      | 8.39           | 12.50       | -            | 18                          | 10.86                  | 715                         | 410  |    |
| 8        | 8.00        | 3.0           | 32.75       | 33.125       | 19.00   | 8.00    | 23.5*      | 10.95          | 16.38       | -            | 18                          | 16.89                  | 1550                        | 1075 |    |
| 10       | 10.00       | 4.0           | 39.00       | 39.375       | 23.00   | 10.00   | 25.5*      | 15.15          | 19.50       | -            | 18                          | 19.96                  | 2000                        | 1575 |    |
| 12       | 12.00       | 4.0           | 44.50       | 45.125       | 26.50   | 12.00   | 29.5*      | 17.31          | 23.38       | -            | 24                          | 21.80                  | 3250                        | 1825 |    |
| 14       | 12.75       | 5.0           | 49.50       | 50.250       | 29.50   | 12.75   | 31.5*      | 17.40          | 26.00       | -            | 24                          | 25.30                  | 4200                        | 2550 |    |
| 16       | 14.75       | 5.0           | 54.50       | 55.375       | 32.50   | 14.75   | 33.5*      | 19.02          | 29.25       | -            | 30                          | 26.92                  | 5400                        | 2950 |    |
| 18       | 16.75       | 7.5           | 60.50       | 61.375       | 36.00   | 16.75   | 36.5*      | 22.69          | 31.57       | -            | 30                          | 33.71                  | 6350                        | 5125 |    |
| 20       | 18.625      | 7.5           | 65.50       | 66.375       | 38.75   | 18.625  | 38.5*      | 24.22          | 34.72       | -            | 30                          | 35.23                  | 9260                        | 6025 |    |
| 24       | 22.50       | 7.5           | 76.50       | 77.625       | 46.00   | 22.50   | 45.0*      | 28.07          | 42.16       | -            | 48                          | 38.18                  | 16250                       | 9400 |    |
| Size mm  |             |               |             |              |         |         |            |                |             |              |                             |                        |                             |      | kg |
| 50       | 52          | 25            | 368         | 371          | 216     | 52      | 279*       | 100            | 127         | 914          | -                           | 161                    | 45                          | 20   |    |
| 80       | 80          | 38            | 470         | 473          | 267     | 80      | 343*       | 124            | 178         | -            | 305                         | 189                    | 82                          | 54   |    |
| 100      | 103         | 51            | 546         | 549          | 311     | 103     | 381*       | 172            | 235         | -            | 305                         | 248                    | 136                         | 86   |    |
| 150      | 152         | 51            | 705         | 711          | 394     | 152     | 508*       | 213            | 318         | -            | 457                         | 276                    | 324                         | 186  |    |
| 200      | 203         | 76            | 832         | 841          | 483     | 203     | 597*       | 278            | 416         | -            | 457                         | 429                    | 703                         | 488  |    |
| 250      | 254         | 102           | 991         | 1000         | 584     | 254     | 648*       | 385            | 495         | -            | 457                         | 507                    | 907                         | 714  |    |
| 300      | 305         | 102           | 1130        | 1146         | 673     | 305     | 749*       | 440            | 594         | -            | 610                         | 554                    | 1474                        | 828  |    |
| 350      | 324         | 127           | 1257        | 1276         | 749     | 324     | 800*       | 442            | 660         | -            | 610                         | 643                    | 1905                        | 1157 |    |
| 400      | 375         | 127           | 1384        | 1407         | 826     | 375     | 851*       | 483            | 743         | -            | 762                         | 684                    | 2449                        | 1338 |    |
| 450      | 425         | 191           | 1537        | 1559         | 914     | 425     | 927*       | 576            | 802         | -            | 762                         | 856                    | 2880                        | 2325 |    |
| 500      | 473         | 191           | 1664        | 1686         | 984     | 473     | 978*       | 615            | 882         | -            | 762                         | 895                    | 4200                        | 2733 |    |
| 600      | 572         | 191           | 1943        | 1972         | 1168    | 572     | 1143*      | 713            | 1071        | -            | 1219                        | 970                    | 7371                        | 4264 |    |

- Length (A) of a weld x flanged-end valve is one half the sum of length (A) of a weld end and a flange end of the same size and rating.
- \* Short pattern.

## Reduced Bore ASME/ANSI Class 1500 (PN 250)



### Dimensions

| Size in. |       |      | Flanged End ■ |        |       |       | Weld   | C.L.   | Body   | Lever  | Diameter  | C.L. to   | Approximate |      |
|----------|-------|------|---------------|--------|-------|-------|--------|--------|--------|--------|-----------|-----------|-------------|------|
| Nom      | Ball  | Stem | RF            | RTJ    | Dia.  | Dia.  | End ■  | to     | Sphere | Length | Handwheel | Handwheel | Flange      | Weld |
| Dia.     | Bore  | Size | Length        | Length | D1    | D2    | Length | Bottom | E      | L      | G         | H         |             |      |
| 3        | 2.06  | 1.0  | 18.50         | 18.625 | 10.50 | 3.13  | 11.0*  | 3.94   | 5.00   | 36     | -         | 6.34      | 150         | 70   |
| 4        | 3.13  | 1.5  | 21.50         | 21.625 | 12.25 | 4.06  | 13.5*  | 4.88   | 7.00   | -      | 12        | 7.44      | 240         | 150  |
| 6        | 4.06  | 2.0  | 27.75         | 28.000 | 15.50 | 6.00  | 15.0*  | 6.77   | 9.25   | -      | 12        | 9.76      | 550         | 260  |
| 8        | 6.00  | 2.0  | 32.75         | 33.125 | 19.00 | 8.00  | 20.0*  | 8.39   | 12.50  | -      | 18        | 10.86     | 1025        | 650  |
| 10       | 8.00  | 3.0  | 39.00         | 39.375 | 23.00 | 10.00 | 23.5*  | 10.95  | 16.38  | -      | 18        | 16.89     | 1725        | 1200 |
| 12       | 10.00 | 4.0  | 44.50         | 45.125 | 26.50 | 12.00 | 25.5*  | 15.15  | 19.50  | -      | 18        | 19.96     | 2810        | 1650 |
| 14       | 12.00 | 4.0  | 49.50         | 50.250 | 29.50 | 12.75 | 29.5*  | 17.31  | 23.38  | -      | 24        | 21.80     | 3750        | 2100 |
| 16       | 12.75 | 5.0  | 54.50         | 55.375 | 32.50 | 14.75 | 31.5*  | 17.40  | 26.00  | -      | 24        | 25.30     | 5150        | 2725 |
| Size mm  |       |      |               |        |       |       |        |        |        |        |           |           |             | kg   |
| 80       | 52    | 25   | 470           | 473    | 267   | 80    | 279*   | 100    | 127    | 914    | -         | 161       | 68          | 32   |
| 100      | 90    | 38   | 546           | 549    | 311   | 103   | 343*   | 124    | 178    | -      | 305       | 189       | 109         | 68   |
| 150      | 103   | 51   | 705           | 711    | 394   | 152   | 381*   | 172    | 235    | -      | 305       | 248       | 249         | 118  |
| 200      | 152   | 51   | 832           | 841    | 483   | 203   | 508*   | 213    | 318    | -      | 457       | 276       | 465         | 295  |
| 250      | 203   | 76   | 991           | 1000   | 584   | 254   | 597*   | 278    | 416    | -      | 457       | 429       | 782         | 544  |
| 300      | 254   | 102  | 1130          | 1146   | 673   | 305   | 648*   | 385    | 495    | -      | 457       | 507       | 1275        | 748  |
| 350      | 305   | 102  | 1257          | 1276   | 749   | 324   | 749*   | 440    | 594    | -      | 610       | 554       | 1701        | 953  |
| 400      | 324   | 127  | 1384          | 1407   | 826   | 375   | 800*   | 442    | 660    | -      | 610       | 643       | 2336        | 1236 |

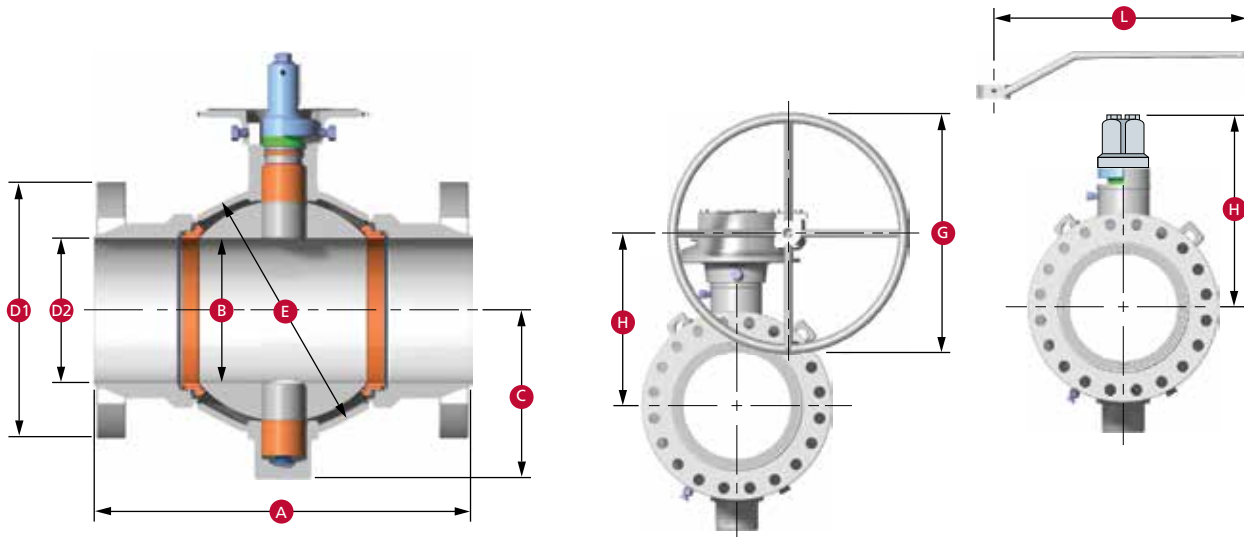
■ Length (A) of a weld x flanged-end valve is one half the sum of length (A) of a weld end and a flange end of the same size and rating.

\* Short pattern.

Note: Venturi opening or other reduced-bore valves are available upon request.

## DIMENSIONS

### Full and Reduced Bore ASME/ANSI Class 2500 (PN 420)



#### Dimensions

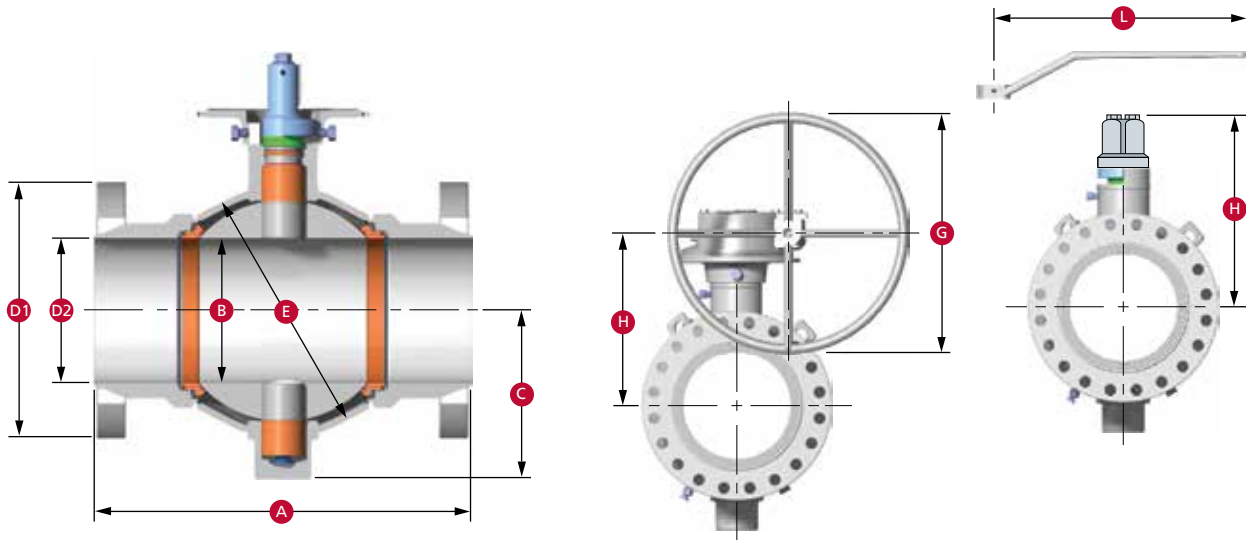
| Size in.               |             | Ball Bore B | Stem Size | Flanged End ■ |         | Weld End ■ | C.L. to Bottom C | Body Sphere E | Lever Length L | Diameter Handwheel for Gear G | C.L. to Handwheel C.L. H | Approximate Valve Weight lb |      |      |
|------------------------|-------------|-------------|-----------|---------------|---------|------------|------------------|---------------|----------------|-------------------------------|--------------------------|-----------------------------|------|------|
| Nom Dia.               | RF Length A |             |           | RTJ Length A  | Dia. D1 |            |                  |               |                |                               |                          | Dia. D2                     | A    | C    |
| <b>Full Opening</b>    |             |             |           |               |         |            |                  |               |                |                               |                          |                             |      |      |
| 2                      | 2.06        | 1.0         | 17.75     | 17.875        | 9.25    | 2.06       | 15*              | 4.53          | 5.43           | 48                            | -                        | 7.25                        | 114  | 94   |
| 3                      | 3.13        | 1.5         | 22.75     | 23.000        | 12.00   | 3.13       | 18*              | 5.67          | 7.50           | -                             | 12                       | 8.94                        | 236  | 187  |
| 4                      | 4.06        | 2.0         | 26.50     | 26.875        | 14.00   | 4.06       | 20*              | 7.24          | 9.75           | -                             | 18                       | 11.70                       | 471  | 382  |
| 6                      | 6.00        | 3.0         | 36.00     | 36.500        | 19.00   | 6.00       | 24*              | 9.76          | 13.50          | -                             | 24                       | 13.13                       | 943  | 737  |
| 8                      | 7.125       | 4.0         | 40.50     | 40.875        | 21.75   | 7.125      | 28*              | 12.84         | 18.11          | -                             | 24                       | 17.88                       | 2094 | 1676 |
| 10                     | 8.875       | 4.0         | 50.00     | 50.875        | 26.50   | 8.875      | 33*              | 14.84         | 20.87          | -                             | 24                       | 20.00                       | 2922 | 2166 |
| 12                     | 10.50       | 5.0         | 56.00     | 56.875        | 30.00   | 10.50      | 36*              | 16.65         | 24.50          | -                             | 30                       | 24.75                       | 4506 | 3258 |
| <b>Reduced Opening</b> |             |             |           |               |         |            |                  |               |                |                               |                          |                             |      |      |
| 3                      | 2.06        | 1.0         | 22.75     | 23.000        | 12.00   | 3.13       | 15*              | 4.53          | 5.43           | 48                            | -                        | 7.25                        | 156  | 129  |
| 4                      | 3.13        | 1.5         | 26.50     | 26.875        | 14.00   | 4.06       | 18*              | 5.67          | 7.50           | -                             | 12                       | 8.94                        | 286  | 247  |
| 6                      | 4.06        | 2.0         | 36.00     | 36.500        | 19.00   | 6.00       | 20*              | 7.24          | 9.75           | -                             | 18                       | 11.70                       | 638  | 513  |
| 8                      | 6.00        | 3.0         | 40.50     | 40.875        | 21.75   | 7.125      | 24*              | 9.76          | 13.50          | -                             | 24                       | 13.13                       | 1297 | 1017 |
| 10                     | 7.13        | 4.0         | 50.00     | 50.875        | 26.50   | 8.875      | 28*              | 12.84         | 18.11          | -                             | 24                       | 17.88                       | 2518 | 1916 |
| 12                     | 8.875       | 4.0         | 56.00     | 56.875        | 30.00   | 10.50      | 33*              | 14.875        | 20.87          | -                             | 24                       | 20.00                       | 3566 | 2657 |
| <b>Size mm</b>         |             |             |           |               |         |            |                  |               |                |                               |                          |                             |      |      |
| <b>Full Opening</b>    |             |             |           |               |         |            |                  |               |                |                               |                          |                             |      |      |
| 50                     | 52          | 25          | 451       | 454           | 235     | 52         | 381*             | 115           | 138            | 1219                          | -                        | 184                         | 52   | 43   |
| 80                     | 80          | 38          | 578       | 584           | 305     | 80         | 457*             | 144           | 191            | -                             | 305                      | 227                         | 107  | 85   |
| 100                    | 103         | 51          | 673       | 683           | 356     | 103        | 508*             | 184           | 248            | -                             | 457                      | 297                         | 214  | 173  |
| 150                    | 152         | 76          | 914       | 927           | 483     | 152        | 610*             | 248           | 343            | -                             | 610                      | 334                         | 428  | 334  |
| 200                    | 181         | 102         | 1029      | 1038          | 552.5   | 181        | 711*             | 326           | 460            | -                             | 610                      | 454                         | 950  | 760  |
| 250                    | 225         | 102         | 1270      | 1292          | 673     | 225        | 838*             | 378           | 530            | -                             | 610                      | 508                         | 1325 | 983  |
| 300                    | 267         | 127         | 1422      | 1445          | 762     | 267        | 914*             | 423           | 622            | -                             | 762                      | 629                         | 2044 | 1478 |
| <b>Reduced Opening</b> |             |             |           |               |         |            |                  |               |                |                               |                          |                             |      |      |
| 80                     | 42          | 25          | 578       | 584           | 305     | 80         | 381*             | 115           | 138            | 1219                          | -                        | 184                         | 71   | 59   |
| 100                    | 80          | 38          | 673       | 683           | 356     | 103        | 457*             | 144           | 191            | -                             | 305                      | 227                         | 130  | 98   |
| 150                    | 103         | 51          | 914       | 927           | 483     | 152        | 508*             | 184           | 248            | -                             | 457                      | 297                         | 289  | 233  |
| 200                    | 152         | 76          | 1029      | 1038          | 553     | 181        | 610*             | 248           | 343            | -                             | 610                      | 334                         | 588  | 461  |
| 250                    | 181         | 102         | 1270      | 1292          | 673     | 225        | 711*             | 326           | 460            | -                             | 610                      | 454                         | 1142 | 869  |
| 300                    | 225         | 102         | 1422      | 1445          | 762     | 267        | 838*             | 377           | 530            | -                             | 610                      | 508                         | 1618 | 1205 |

■ Length (A) of a weld x flanged-end valve is one half the sum of length (A) of a weld end and a flange end of the same size and rating.

\* Short pattern.

Note: Venturi opening or other reduced-bore valves are available upon request.

## Full Bore API Flanged 2000, 3000 and 5000 psi WP

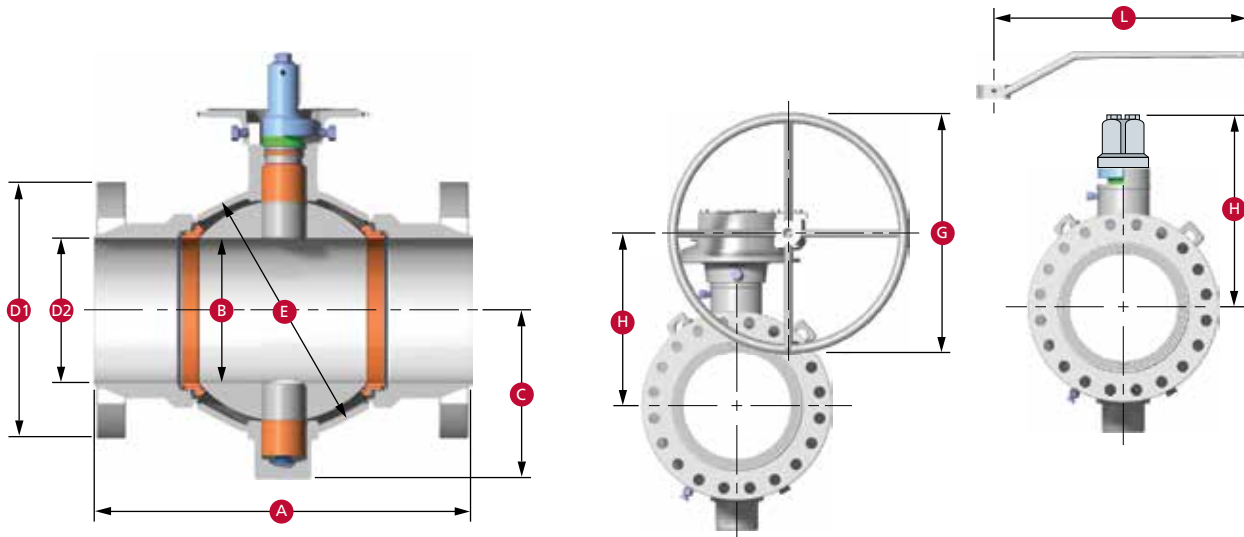


### Dimensions

| Size in.   | Ball Bore B | Stem Size | Flanged End RTJ |           |         | C.L. to Bottom C | Body Sphere E | Lever Length L | Diameter Handwheel for Gear G | Data for Valve with Operator Normally Furnished |                   |
|--|-------------|-----------|-----------------|-----------|---------|------------------|---------------|----------------|-------------------------------|---|-------------------|
|  |             |           | Length A        | Length D1 | Dia. D2 |                  |               |                |                               | H   | Approx. Weight lb |
| <b>2000 psi W.P. 4000 psi Test</b>                               |             |           |                 |           |         |                  |               |                |                               |   |                   |
| 2  | 2.06        | 1.0       | 11.625          | 6.50      | 2.06    | 3.94             | 5.00          | 36             | -                             | 6.34  | 44                |
| 3  | 3.13        | 1.0       | 14.124          | 8.25      | 3.13    | 5.12             | 6.75          | 36             | -                             | 7.44  | 85                |
| 4  | 4.06        | 1.5       | 17.125          | 10.75     | 4.06    | 5.94             | 8.50          | 36             | -                             | 8.43  | 165               |
| 7  | 6.00        | 2.0       | 22.125          | 14.00     | 6.00    | 7.91             | 11.50         | -              | 24                            | 10.29   | 445               |
| <b>3000 psi W.P. 6000 psi Test</b>                               |             |           |                 |           |         |                  |               |                |                               |   |                   |
| 2  | 2.06        | 1.0       | 14.625          | 8.50      | 2.06    | 3.94             | 5.00          | 36             | -                             | 6.34  | 90                |
| 3  | 3.13        | 1.5       | 15.125          | 9.50      | 3.13    | 4.88             | 7.00          | 36             | -                             | 7.44  | 130               |
| 4  | 4.06        | 2.0       | 18.125          | 11.50     | 4.06    | 6.77             | 9.25          | 36             | -                             | 9.76  | 255               |
| 7  | 6.00        | 2.0       | 24.125          | 15.00     | 6.00    | 8.39             | 12.50         | -              | 30                            | 10.92   | 675               |
| <b>5000 psi W.P. 10000 psi Test</b>                              |             |           |                 |           |         |                  |               |                |                               |   |                   |
| 2  | 2.06        | 2.0       | 14.625          | 8.50      | 2.06    | 3.94             | 5.00          | 36             | -                             | 6.34  | 95                |
| 3  | 3.13        | 1.5       | 18.625          | 10.50     | 3.13    | 4.88             | 7.00          | 36             | -                             | 7.44  | 189               |
| 4  | 4.06        | 2.0       | 21.625          | 12.25     | 4.06    | 6.77             | 9.25          | -              | 24                            | 9.30  | 361               |
| 7  | 6.00        | 3.0       | 28.000          | 15.50     | 6.00    | 8.39             | 13.50         | -              | 24                            | 13.13   | 805               |
| <b>Size mm</b>   |             |           |                 |           |         |                  |               |                |                               |   | <b>kg</b>         |
| <b>140.6 kg/cm<sup>2</sup> W.P. 281.2 kg/cm<sup>2</sup> Test</b> |             |           |                 |           |         |                  |               |                |                               |   |                   |
| 50   | 52.3        | 25.4      | 295             | 165       | 52      | 100              | 127           | 914            | -                             | 161   | 20                |
| 80   | 79.5        | 25.4      | 359             | 210       | 80      | 130              | 171           | 914            | -                             | 189   | 39                |
| 100  | 103.1       | 38.1      | 435             | 274       | 103     | 151              | 216           | 914            | -                             | 214   | 75                |
| 180  | 152.4       | 50.8      | 562             | 356       | 152     | 201              | 292           | -              | 610                           | 261   | 202               |
| <b>210.9 kg/cm<sup>2</sup> W.P. 421.8 kg/cm<sup>2</sup> Test</b> |             |           |                 |           |         |                  |               |                |                               |   |                   |
| 50   | 52.3        | 25.4      | 371             | 216       | 52      | 100              | 127           | 914            | -                             | 161   | 41                |
| 80   | 79.5        | 38.1      | 384             | 241       | 80      | 124              | 178           | 914            | -                             | 189   | 59                |
| 100  | 103.1       | 50.8      | 460             | 292       | 103     | 172              | 235           | 914            | -                             | 248   | 116               |
| 180  | 152.4       | 50.8      | 613             | 381       | 152     | 213              | 318           | -              | 762                           | 277   | 306               |
| <b>351.5 kg/cm<sup>2</sup> W.P. 703.0 kg/cm<sup>2</sup> Test</b> |             |           |                 |           |         |                  |               |                |                               |   |                   |
| 50   | 52.3        | 25.4      | 371             | 216       | 52      | 100              | 127           | 914            | -                             | 161   | 43                |
| 80   | 79.5        | 38.1      | 473             | 267       | 80      | 124              | 178           | 914            | -                             | 189   | 86                |
| 100  | 103.1       | 50.8      | 549             | 311       | 103     | 172              | 235           | 914            | -                             | 236   | 164               |
| 180  | 152.4       | 76.2      | 711             | 394       | 152     | 213              | 343           | -              | 610                           | 334   | 365               |

## DIMENSIONS

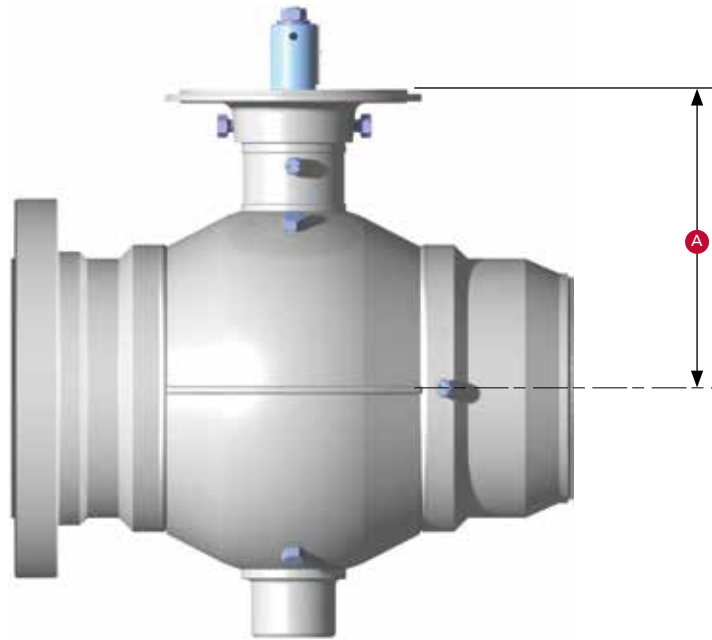
### Reduced Bore API Flanged 2000, 3000 and 5000 psi WP



#### Dimensions

| Size in.   |       | Ball Bore B | Stem Size | Flanged End RTJ |           | C.L. to Bottom C | Body Sphere E | Lever Length L | Diameter Handwheel for Gear G | Data for Valve with Operator Normally Furnished |           |                   |
|--|-------|-------------|-----------|-----------------|-----------|------------------|---------------|----------------|-------------------------------|---|-----------|-------------------|
| Nom Dia.   |       |             |           | Length A        | Length D1 |                  |               |                |                               | Dia. D2   | H         | Approx. Weight lb |
| <b>2000 psi W.P. 4000 psi Test</b>                               |       |             |           |                 |           |                  |               |                |                               |   |           |                   |
| 3.13   | 2.06  | 1.0         | 14.125    | 8.25            | 3.13      | 3.94             | 5.00          | 36             | -                             | 6.34  | 80        |                   |
| 4.06   | 3.13  | 1.0         | 17.125    | 10.75           | 4.06      | 5.12             | 6.75          | 36             | -                             | 7.44  | 140       |                   |
| 7.06   | 4.06  | 1.5         | 22.125    | 14.00           | 6.00      | 5.94             | 8.50          | 36             | -                             | 8.43  | 230       |                   |
| <b>3000 psi W.P. 6000 psi Test</b>                               |       |             |           |                 |           |                  |               |                |                               |   |           |                   |
| 3.13   | 2.06  | 1.0         | 15.125    | 9.50            | 3.13      | 3.94             | 5.00          | 36             | -                             | 6.34  | 105       |                   |
| 4.06   | 3.13  | 1.5         | 18.125    | 11.50           | 4.06      | 4.88             | 7.00          | 36             | -                             | 7.44  | 197       |                   |
| 7.06   | 4.06  | 2.0         | 24.125    | 15.00           | 6.00      | 6.77             | 9.25          | 36             | -                             | 9.76  | 345       |                   |
| <b>5000 psi W.P. 10000 psi Test</b>                              |       |             |           |                 |           |                  |               |                |                               |   |           |                   |
| 3.13   | 2.06  | 1.0         | 18.625    | 10.50           | 3.13      | 3.94             | 5.00          | 36             | -                             | 6.34  | 130       |                   |
| 4.06   | 3.13  | 1.5         | 21.625    | 12.25           | 4.06      | 4.88             | 7.00          | 36             | -                             | 7.44  | 230       |                   |
| 7.06   | 4.06  | 2.0         | 28.000    | 15.50           | 6.00      | 6.77             | 9.25          | -              | 24                            | 9.30  | 490       |                   |
| <b>Size mm</b>   |       |             |           |                 |           |                  |               |                |                               |   | <b>kg</b> |                   |
| <b>140.6 kg/cm<sup>2</sup> W.P. 281.2 kg/cm<sup>2</sup> Test</b> |       |             |           |                 |           |                  |               |                |                               |   |           |                   |
| 79.5   | 52.3  | 25.4        | 359       | 210             | 80        | 100              | 127           | 914            | -                             | 161   | 36        |                   |
| 103.1  | 79.5  | 25.4        | 435       | 273             | 103       | 130              | 171           | 914            | -                             | 189   | 64        |                   |
| 179.3  | 103.1 | 38.1        | 562       | 356             | 152       | 151              | 216           | 914            | -                             | 214   | 104       |                   |
| <b>210.9 kg/cm<sup>2</sup> W.P. 421.8 kg/cm<sup>2</sup> Test</b> |       |             |           |                 |           |                  |               |                |                               |   |           |                   |
| 79.5   | 52.3  | 25.4        | 384       | 241             | 80        | 100              | 127           | 914            | -                             | 161   | 48        |                   |
| 103.1  | 79.5  | 38.1        | 460       | 292             | 103       | 124              | 178           | 914            | -                             | 189   | 89        |                   |
| 179.4  | 103.1 | 50.8        | 613       | 381             | 152       | 172              | 235           | 914            | -                             | 248   | 156       |                   |
| <b>351.5 kg/cm<sup>2</sup> W.P. 703.0 kg/cm<sup>2</sup> Test</b> |       |             |           |                 |           |                  |               |                |                               |   |           |                   |
| 79.5   | 52.3  | 25.4        | 473       | 267             | 80        | 100              | 127           | 914            | -                             | 161   | 59        |                   |
| 103.1  | 79.5  | 38.1        | 549       | 311             | 103       | 124              | 178           | 914            | -                             | 189   | 104       |                   |
| 179.3  | 103.1 | 50.8        | 711       | 394             | 152       | 172              | 235           | -              | 610                           | 236   | 222       |                   |

## DIMENSIONAL DATA



Dimensions Centerline to Mounting Flanged

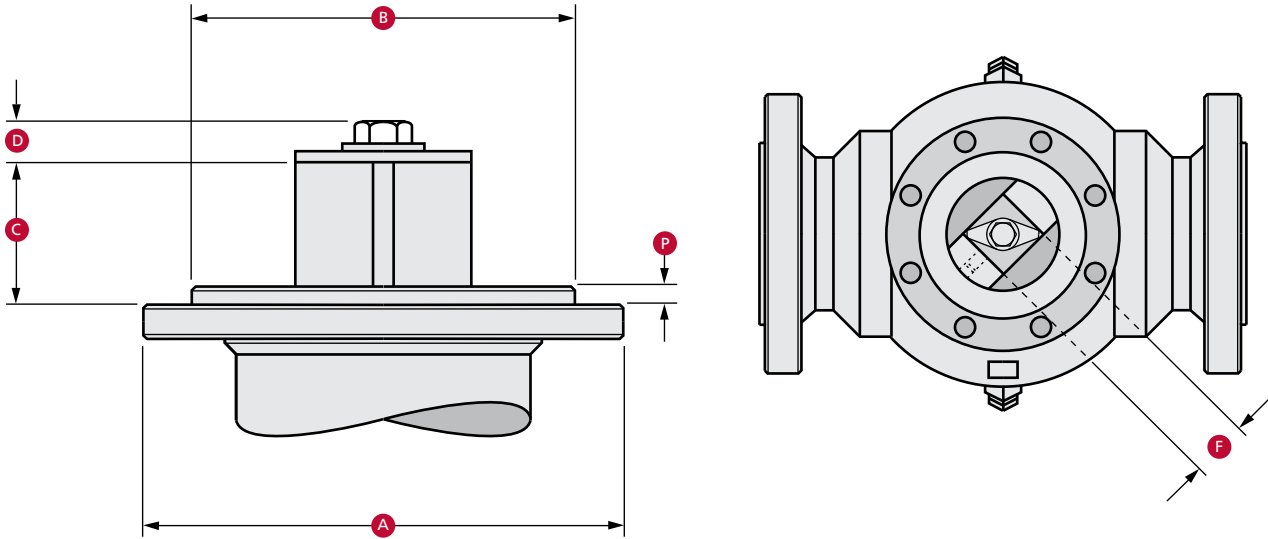
| Bore Size<br>in. | Bore Size<br>(mm) | Dimension A<br>ASME/ANSI Pressure Class |                |                |                 |                 |                  |                  |
|------------------|-------------------|---|----------------|----------------|-----------------|-----------------|------------------|------------------|
|                  |                   | 150<br>(PN 20)                          | 300<br>(PN 50) | 400<br>(PN 64) | 600<br>(PN 100) | 900<br>(PN 150) | 1500<br>(PN 250) | 2500<br>(PN 420) |
| 2                | (50)              | 4.06 (103)                              | 4.06 (103)     | 4.06 (103)     | 4.06 (103)      | 4.06 (103)      | 4.06 (103)       | 4.68 (119)       |
| 3                | (80)              | 5.08 (129)                              | 5.08 (129)     | 5.08 (129)     | 5.08 (129)      | 4.76 (121)      | 4.76 (121)       | 5.71 (145)       |
| 4                | (100)             | 5.79 (147)                              | 5.79 (147)     | 5.79 (147)     | 5.79 (147)      | 6.61 (168)      | 6.61 (168)       | 6.89 (175)       |
| 6                | (150)             | 7.64 (194)                              | 7.64 (194)     | 7.64 (194)     | 7.64 (194)      | 8.23 (209)      | 8.23 (209)       | 12.52 (318)      |
| 8                | (200)             | 9.92 (252)                              | 9.92 (252)     | 9.92 (252)     | 9.92 (252)      | 9.92 (252)      | 13.45 (342)      | 15.39 (391)      |
| 10               | (250)             | 11.91 (303)                             | 11.91 (303)    | 11.91 (303)    | 11.91 (303)     | 15.05 (382)     | 15.96 (405)      | 18.07 (459)      |
| 12               | (300)             | 16.70 (424)                             | 16.70 (424)    | 16.70 (424)    | 16.70 (424)     | 16.70 (424)     | 17.80 (452)      | 19.61 (498)      |
| 14               | (350)             | 17.72 (450)                             | 17.72 (450)    | 17.72 (450)    | 17.72 (450)     | 20.55 (522)     | 20.55 (522)      | -                |
| 16               | (400)             | 19.08 (485)                             | 19.08 (485)    | 20.78 (528)    | 20.78 (528)     | 22.17 (563)     | 22.17 (563)      | -                |
| 18               | (450)             | 22.19 (564)                             | 22.19 (564)    | 22.19 (564)    | 22.19 (564)     | 23.76 (604)     | 27.71 (704)      | -                |
| 20               | (500)             | 23.75 (603)                             | 23.75 (603)    | 25.25 (641)    | 25.25 (641)     | 29.23 (742)     | 29.23 (742)      | -                |
| 22               | (550)             | 25.22 (641)                             | 25.22 (641)    | 26.78 (680)    | 26.78 (680)     | -               | -                | -                |
| 24               | (600)             | 26.63 (676)                             | 26.63 (676)    | 28.20 (716)    | 28.20 (716)     | 32.18 (817)     | 32.18 (817)      | -                |
| 26               | (650)             | 29.59 (752)                             | 29.59 (752)    | 29.59 (752)    | 29.59 (752)     | -               | -                | -                |
| 28               | (700)             | 30.97 (787)                             | 30.97 (787)    | 30.97 (787)    | 34.99 (889)     | -               | -                | -                |
| 30               | (750)             | 32.62 (829)                             | 32.62 (829)    | 32.62 (829)    | 36.65 (931)     | 36.65 (931)     | -                | -                |
| 34               | (850)             | 35.26 (896)                             | 35.26 (896)    | 39.31 (998)    | 39.31 (998)     | -               | -                | -                |
| 36               | (900)             | 36.85 (936)                             | 40.92 (1039)   | 40.92 (1039)   | 40.92 (1039)    | 44.65 (1134)    | -                | -                |
| 40               | (1000)            | 44.25 (1124)                            | 44.25 (1124)   | 44.25 (1124)   | 48.05 (1220)    | -               | -                | -                |
| 42               | (1050)            | 45.89 (1166)                            | 45.89 (1166)   | 45.89 (1166)   | 49.69 (1262)    | -               | -                | -                |
| 48               | (1200)            | 50.04 (1271)                            | 50.04 (1271)   | 54.02 (1372)   | 56.50 (1435)    | -               | -                | -                |

The dimensions on this page, combined with the top works dimensions on the following two pages, provide the information required for determining the overall dimensions of a CAMERON fully welded ball valve when an actuator is installed. For additional dimensional information on CAMERON fully welded ball valves, contact your sales representative.



## TOP WORKS DIMENSIONS

### Square Nut and Adapter Flange (BX-1220)

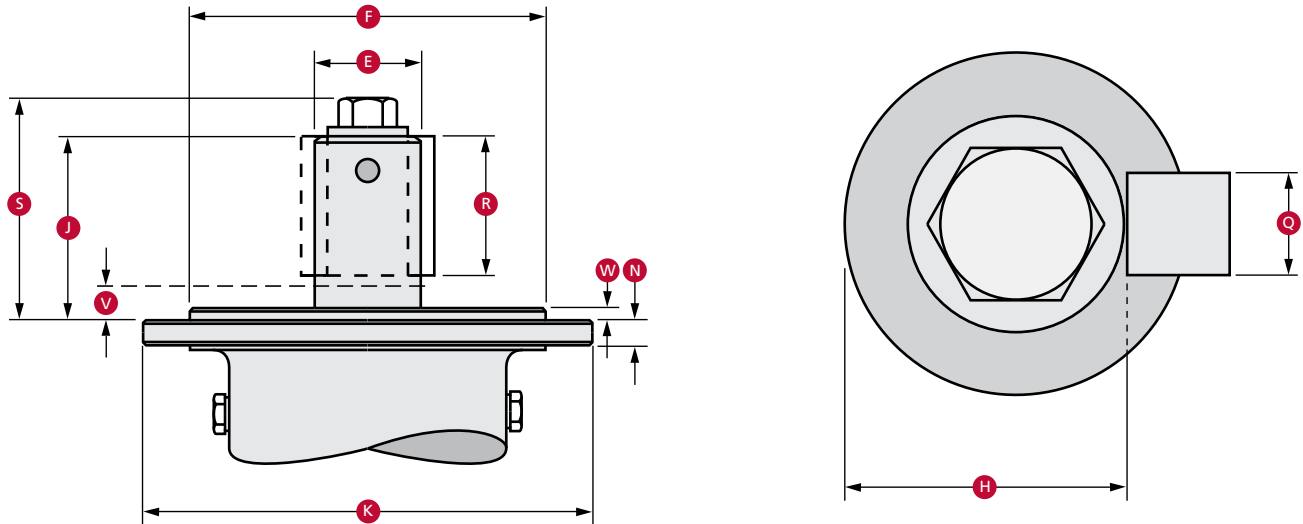


### Mounting Dimensions

| Dash Number         |                      | -1             | -2             | -3             |
|---------------------|----------------------|----------------|----------------|----------------|
| Valve Stem Size in. |                      | 1.00           | 1.50           | 2.00           |
| A                   | Flange Diameter      | 6.50           | 6.50           | 8.75           |
| B                   | Boss Diameter        | 4.747          | 4.747          | 6.997          |
| C                   | Height of Nut        | 1.94           | 2.12           | 2.62           |
| D                   | Bolt Size            | 0.44           | 0.54           | 0.66           |
| F                   | Width of Nut         | 1.50           | 2.00           | 2.50           |
| H                   | Number of Holes      | 8              | 8              | 16             |
| J                   | Diameter Bolt Circle | 5.75           | 5.75           | 8.00           |
| P                   | Boss Height          | 0.328          | 0.328          | 0.328          |
| Flange Bolt Size    |                      | 3/8-16 NC-2    | 3/8-16 NC-2    | 3/8-16 NC-2    |
| Bolt Torque (ft-lb) |                      | 30             | 30             | 30             |
| Dash Number         |                      | -1             | -2             | -3             |
| Valve Stem Size mm  |                      | 25.40          | 38.10          | 50.80          |
| A                   | Flange Diameter      | 165.10         | 165.10         | 222.25         |
| B                   | Boss Diameter        | 120.57         | 120.57         | 177.72         |
| C                   | Height of Nut        | 49.28          | 53.85          | 66.55          |
| D                   | Bolt Size            | 11.18          | 13.72          | 16.76          |
| F                   | Width of Nut         | 38.10          | 50.8           | 63.50          |
| H                   | Number of Holes      | 8              | 8              | 16             |
| J                   | Diameter Bolt Circle | 146.05         | 146.05         | 203.20         |
| P                   | Boss Height          | 8.33           | 8.33           | 8.33           |
| Flange Bolt Size    |                      | 3/8 to 16 NC-2 | 3/8 to 16 NC-2 | 3/8 to 16 NC-2 |
| Bolt Torque (N·m)   |                      | 40.68          | 40.68          | 40.68          |

Notes: -1 and -2 bolt holes straddle centerline.  
 -3 bolt holes are on centerline.

## Keyed Shaft and Adapter Flange (BX-1221)

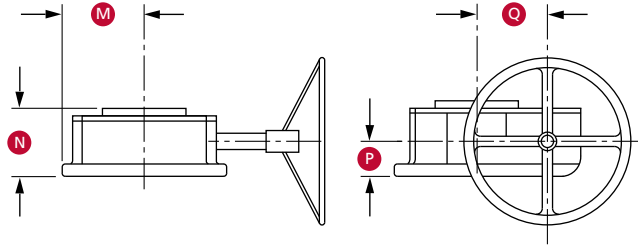


### Mounting Dimensions

| Dash Number         | -4                              | -5             | -6             | -7            | -8            | -9              | -10             | -11             |
|---------------------|---------------------------------|----------------|----------------|---------------|---------------|-----------------|-----------------|-----------------|
| Valve Stem Size in. | 3.00                            | 4.00           | 5.00           | 7.50          | 9.00          | 11.00           | 13.00           | 15.00           |
| A                   | Number of Holes                 | 16             | 16             | 24            | 24            | 24              | 28              | 32              |
| C                   | Diameter Bolt Circle            | 10.375         | 17.25          | 18.375        | 24.00         | 31.00           | 27.50           | 36.00           |
| E                   | Max Shaft Diameter              | 2.745          | 3.245          | 4.495         | 5.495         | 6.245           | 8.995           | -               |
| F                   | Boss Diameter                   | 9.122          | 16.246         | 17.121        | 21.746        | 28.308          | 25.496          | 33.496          |
| H                   | Key Seat                        | 2.402          | 2.831          | 3.786         | 4.803         | 5.409           | 7.887           | 6.774           |
| J                   | Height of Nut                   | 4.75           | 5.310          | 6.25          | 8.50          | 9.13            | 13.31           | 19.25           |
| K                   | Flange Diameter                 | 11.50          | 18.25          | 19.380        | 25.75         | 32.75           | 30.00           | 39.00           |
| N                   | Flange Thickness                | 0.63           | 0.63           | 0.63          | 1.00          | 1.00            | 1.25            | 1.50            |
| Q                   | Key Width                       | 0.625          | 0.75           | 1.25          | 1.25          | 1.50            | 2.00            | 2.25            |
| R                   | Key Length                      | 3.75           | 4.310          | 5.250         | 7.50          | 8.13            | 12.00           | 17.50           |
| S                   | Overall Height                  | 6.120          | 7.00           | 8.120         | 11.00         | 11.75           | 16.12           | 21.50           |
| V                   | Adapter Flange Thickness (Max.) | 1.00           | 1.00           | 1.00          | 1.00          | 1.00            | 1.25            | 1.50            |
| W                   | Boss Height                     | 0.328          | 0.328          | 0.328         | 0.328         | 0.328           | 0.328           | 0.328           |
| Flange Bolt Size    | 1/2-13 NC-2                     | 1/2-13 NC-2    | 1/2-13 NC-2    | 7/8-9 NC-2    | 7/8-9 NC-2    | 1 1/4-8 NC-2    | 1 1/4-8 NC-2    | 1 1/4-8 NC-2    |
| Bolt Torque (ft-lb) | 60                              | 60             | 63             | 330           | 330           | 1000            | 1000            | 1600            |
| Dash Number         | -4                              | -5             | -6             | -7            | -8            | -9              | -10             | -11             |
| Valve Stem Size mm  | 76.20                           | 101.60         | 127.00         | 190.50        | 228.60        | 279.40          | 330.20          | 381.00          |
| A                   | Number of Holes                 | 16             | 16             | 24            | 24            | 24              | 28              | 32              |
| C                   | Diameter Bolt Circle            | 263.53         | 438.15         | 466.73        | 609.60        | 787.40          | 698.50          | 914.40          |
| E                   | Max Shaft Diameter              | 69.73          | 82.43          | 114.18        | 139.58        | 158.63          | 228.48          | -               |
| F                   | Boss Diameter                   | 231.69         | 412.64         | 434.87        | 552.34        | 719.02          | 647.59          | 850.79          |
| H                   | Key Seat                        | 61.01          | 71.91          | 96.16         | 122.00        | 137.38          | 200.32          | 172.05          |
| J                   | Height of Nut                   | 120.65         | 134.88         | 158.75        | 215.90        | 231.91          | 338.03          | 488.95          |
| K                   | Flange Diameter                 | 292.10         | 463.55         | 492.26        | 654.05        | 831.85          | 762.00          | 990.60          |
| N                   | Flange Thickness                | 16.00          | 16.00          | 16.00         | 25.40         | 25.40           | 31.75           | 38.10           |
| Q                   | Key Width                       | 15.88          | 19.05          | 31.75         | 31.75         | 38.10           | 50.80           | 57.15           |
| R                   | Key Length                      | 95.25          | 109.48         | 133.35        | 190.50        | 206.51          | 304.80          | 444.50          |
| S                   | Overall Height                  | 155.45         | 177.80         | 206.25        | 279.40        | 298.45          | 409.45          | 546.10          |
| V                   | Adapter Flange Thickness (Max.) | 25.40          | 25.40          | 25.40         | 25.40         | 25.40           | 31.75           | 38.10           |
| W                   | Boss Height                     | 8.33           | 8.33           | 8.33          | 8.33          | 8.33            | 8.33            | 8.33            |
| Flange Bolt Size    | 1/2 to 13 NC-2                  | 1/2 to 13 NC-2 | 1/2 to 13 NC-2 | 7/8 to 9 NC-2 | 7/8 to 9 NC-2 | 1-1/4 to 8 NC-2 | 1-1/4 to 8 NC-2 | 1-1/4 to 8 NC-2 |
| Bolt Torque (N·m)   | 81                              | 81             | 85             | 447           | 447           | 1356            | 1356            | 2169            |

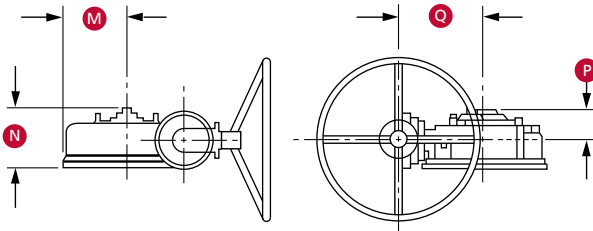
Notes: -7 through -11 bolt holes straddle centerline.  
-4 through -6 holes are on centerline.

## TOP WORKS DIMENSIONS – MANUAL GEAR DIMENSIONS DYNATORQUE™

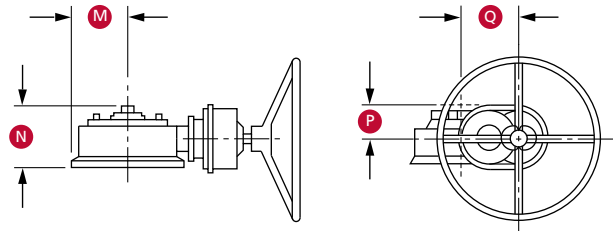


| Stem Size |        | Model | Effective Ratio | Number of Turns Per 90 Degrees | M          | N          | P          | Q          | Weight |      |
|-----------|--------|-------|-----------------|--------------------------------|------------|------------|------------|------------|--------|------|
| in.       | (mm)   |       |                 |                                |            |            |            |            | lb     | (kg) |
| 1.0       | (25.4) | DT21  | 22.5:1          | 15                             | 3.56 (90)  | 3.54 (90)  | 1.63 (41)  | 3.63 (92)  | 36     | (16) |
| 1.5       | (38.1) | DT21  | 22.5:1          | 15                             | 3.56 (90)  | 3.54 (90)  | 1.63 (41)  | 3.63 (92)  | 36     | (16) |
| 2.0       | (50.8) | DT40  | 27.6:1          | 19.75                          | 5.68 (144) | 4.83 (123) | 2.25 (57)  | 4.63 (118) | 75     | (34) |
| 3.0       | (76.2) | DT54  | 91.2:1          | 79.5                           | 5.66 (144) | 6.83 (173) | 4.94 (125) | 4.30 (109) | 108    | (49) |

## CAMERON



Cameron Gear Box  
Stem Size: 3" and 4" (80 mm and 100 mm)



Cameron Gear Box  
Stem Size: 5", 7.5" and 9" (125 mm, 190 mm and 230 mm)

| Stem Size |         | Model   | Effective Ratio | Number of Turns Per 90 Degrees | M           | N           | P          | Q           | Weight |       |
|-----------|---------|---------|-----------------|--------------------------------|-------------|-------------|------------|-------------|--------|-------|
| in.       | (mm)    |         |                 |                                |             |             |            |             | lb     | (kg)  |
| 3.0       | (76.2)  | WG1/B6  | 55:1            | 60                             | 5.75 (146)  | 7.56 (192)  | 4.11 (104) | 12.64 (321) | 127    | (58)  |
| 4.0       | (101.6) | WG1/B6  | 110:1           | 112.5                          | 9.13 (232)  | 8.69 (221)  | 4.69 (119) | 12.64 (321) | 211    | (96)  |
| 5.0       | (127.0) | WG1/S12 | 153:1           | 190                            | 9.69 (246)  | 10.25 (260) | 5.50 (140) | 9.50 (241)  | 364    | (165) |
| 7.5       | (190.5) | WG1/S12 | 297:1           | 297                            | 12.88 (327) | 12.63 (321) | 6.63 (168) | 14.00 (356) | 581    | (264) |
| 9.0       | (228.6) | WG1/S12 | 432:1           | 428                            | 16.37 (416) | 14.77 (375) | 7.39 (188) | 19.50 (495) | 793    | (360) |

## Services for Valves and Actuation

WE BUILD IT. WE BACK IT.

### Global Network and Local Support

Cameron is well-positioned to deliver total valve support, quickly and efficiently, with unmatched OEM expertise. Our highly skilled engineers and technicians are available around the clock, seven days a week to respond to customer queries, troubleshoot problems, and offer reliable solutions.

### Easily Accessible Parts and Spare Valves

- OEM spare valves, actuators, and parts (including non-Cameron brands)
- Handling, storage, packaging, and delivery
- Dedicated stocking program

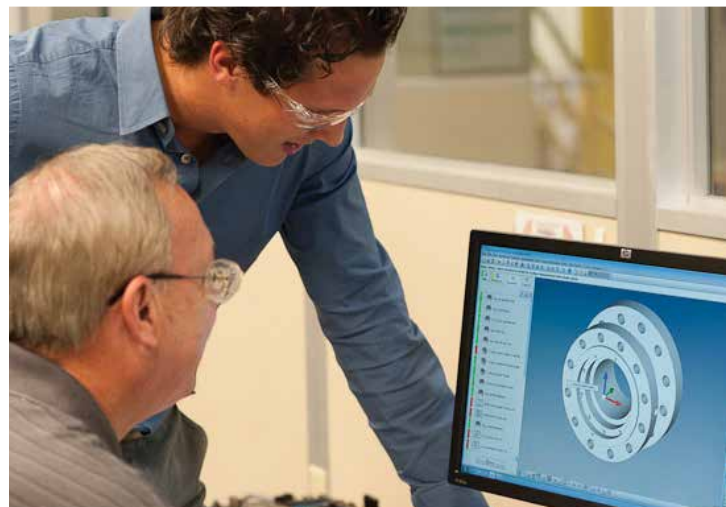
### Comprehensive Services Portfolio

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- Repair
- Field services
- Preventative maintenance
- Equipment testing and diagnostics
- Remanufacturing
- Asset preservation
- Customer property management
- Training and recertification services
- Warranty

### Customized Total Valve Care<sup>SM</sup> (TVC) Programs

Customized asset management plans that optimize uptime, availability, and dedicated services.

- Engineering consultancy
- Site management
- Flange management
- Startup and commissioning
- Spare parts and asset management
- Operational support



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Houston, TX 77042

USA

Tel 1 281 499 8511

For more information on CAMERON ball valves:

[www.c-a-m.com/valves](http://www.c-a-m.com/valves)

[valves@c-a-m.com](mailto:valves@c-a-m.com)



#### **HSE Policy Statement**

At Cameron, we are committed ethically, financially and personally to a working environment where no one gets hurt and nothing gets harmed.