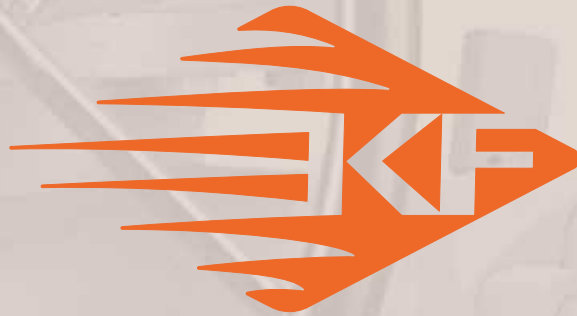


# KF Series P3 Ball Valves



**KF Industries**



Superior Fluid Control Products  
A Brand of **CIRCOR** Energy Products, Inc.

# KF Series P3 Trunnion Mounted Ball Valves

A large trunnion design ensures central positioning under the highest working pressure. Independent floating spring loaded seats provide a tight seal even at low differential pressures. Service and maintenance is simplified with a bolted body design incorporating

double O-rings or a combination of O-rings and gaskets, suitable for buried or above ground installation. See page 6 for complete product offering.

## General Design Features

- Three-piece body design
- Double block and bleed
- Trunnion supported design reduces operating torque
- Antistatic device for grounding of the ball, stem and body
- Two sets of O-rings plus firesafe stem packing prevents leakage
- Corrosion resistant low friction bearings
- Inconel seat springs
- Sealant injection fittings for emergency stem or seal sealing
- Direct mount topworks pad for actuator or gear operator
- API Spec Q1, 6D, 6FA and 607
- ASME Section III Div. 1-NCA 4000
- BS 5351, 5750 and 6755
- ISO 9001/9002
- CSA-Z245.15-01
- 6" & larger valves are equipped with lifting lugs
- Locking device (lock not included)
- NACE MR0175/ISO15156
- Anti-blowout trunnion stem design



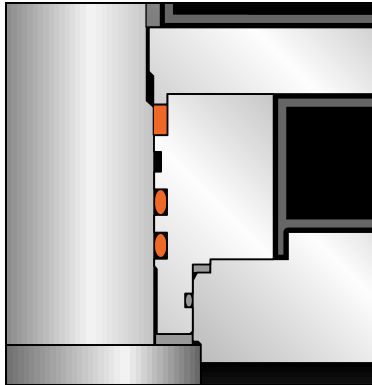
**NEW:** Class 2500 now available. See page 6 for details.

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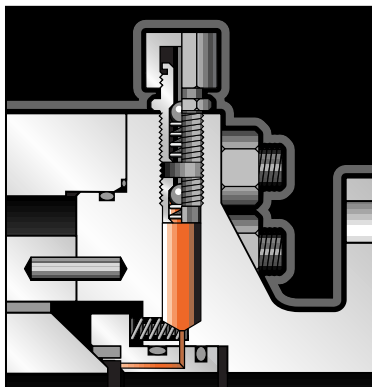


## Design Features



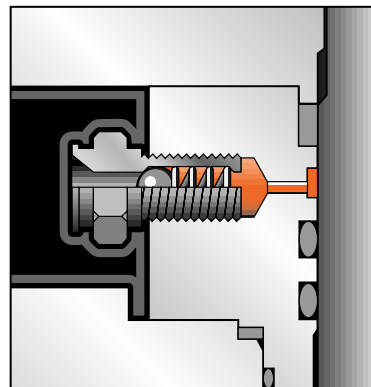
### Anti-Blowout Stem Design

Stem seal integrity is achieved by the use of three o-rings (or two o-rings and a graphite gasket). Upper o-ring (or graphite gasket) can be replaced with the valve in line and under pressure.



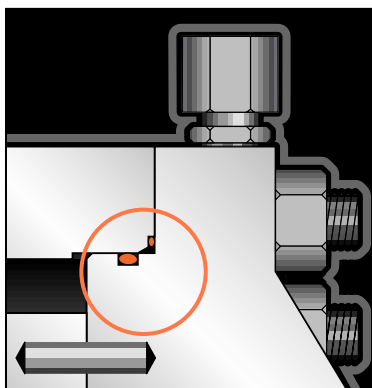
### Emergency Seat Seal

Special sealants may be injected thru fittings that are located on the adapter flanges to restore sealing integrity if seat sealing surface is damaged. A second internal check valve provides backup to the fitting.



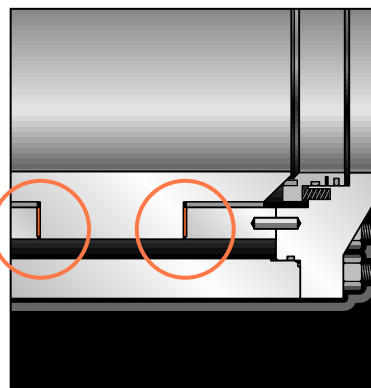
### Emergency Sealant Injection System

The Sealant Injection System located on the bonnet can be utilized in case of emergencies, o-ring damage, or if stem leakage occurs.



### Double Sealed Envelope Connections

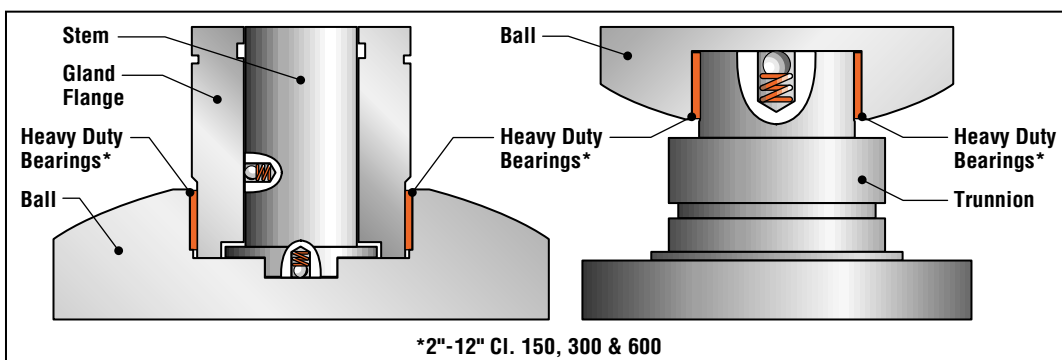
Double o-rings or a combination of an o-ring and firesafe gasket on body/adapter connections to ensure positive sealing. This makes the P3 suitable for above or below ground service.



### Heavy Duty Bearings

Trunnions are supported by heavy duty Teflon<sup>®</sup> coated Steel Bearings. Thrust load on the ball is supported by large trunnions mounted within captured trunnion blocks, resulting in low operating torque and seat wear.

6"-12" Cl. 900 & 1500  
14"-24" Cl. 150, 300 & 600



### Antistatic Device

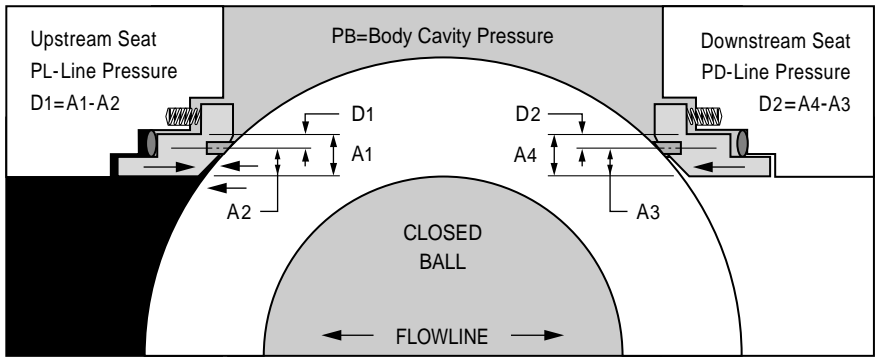
A spring between the trunnion and the ball or between the stem and the gland plate permits electrical continuity between all valve components.



# Technical Seating Features

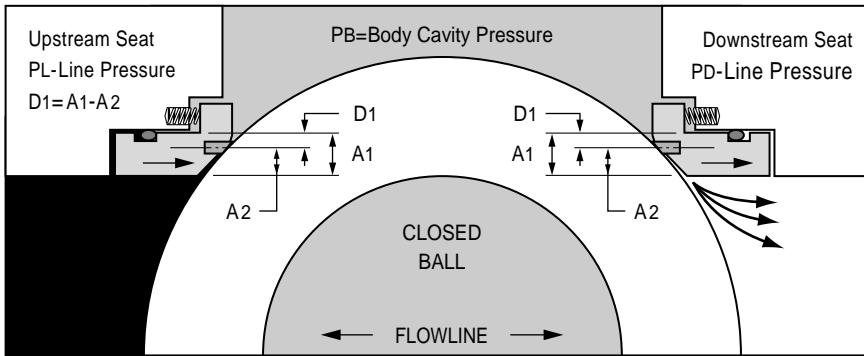
## Double Piston Seat Design

**Upstream Seat:** Line Pressure acting on the seat area (A1) does not equalize against the line pressure acting on the seat area (A2). The difference in the area (D1) times the line pressure creates a “piston effect” force which pushes the seat against the ball surface resulting in a tight effective seal.



**Downstream Seat:** When the body cavity pressure is greater than the downstream pressure, the body cavity pressure acts on the seal area (A4). The net pressure difference, acting over area (D2), pushes the downstream seat tightly against the ball creating a positive seal.

**THE ULTIMATE BENEFIT OF USING THE “DOUBLE PISTON SEAT” DESIGN:** In case of upstream seat leakage, the downstream seat maintains a pressure assisted tight shut off by sealing against the ball surface.



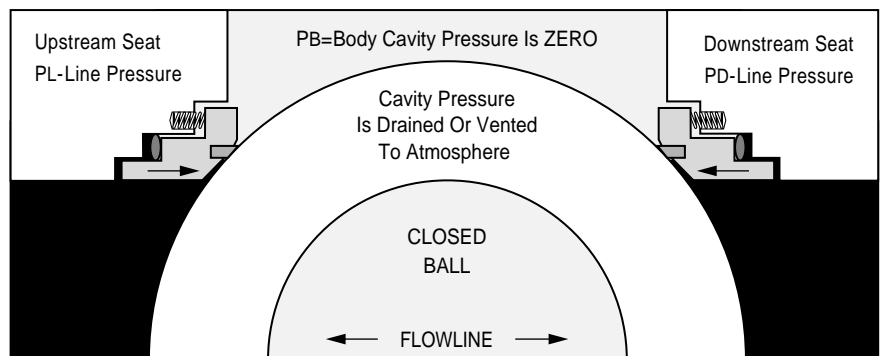
## Self Relieving Seat Design

**Upstream Seat:** The difference in the area (D1) times the line pressure creates a “piston effect” which forces the seat against the ball surface. Also the springs behind the seat adds the force to the seat which keeps the seat in contact with the ball surface by providing the tight seal.

**Downstream Seat:** When the body cavity pressure exceeds the spring pressure, automatic pressure relief will occur by relieving the body cavity pressure past the downstream seat. This eliminates the need for the body relief valve.

## Double Block and Bleed

The double block and bleed condition is available in all seat design configurations. When the ball is in the closed position the body cavity pressure may be drained down to ‘zero’ by opening the bleed valve and draining the fluid by removing the drain plug. Each seat works independently assuring tight shut off seal against ball on the upstream and downstream side.



## KF Series P3 Applicable Standards

The following list contains the most important applicable standards for ball valves. KF valves may be designed,

manufactured and tested in accordance with other international standards on request.

### API-American Petroleum Institute

- 6D** Specification for pipeline valves.
- RP6F** Recommended practice for fire testing of valves.
- 6FA** Specification for fire testing of valves.
- 598** Valve inspection and test.
- 605** Large diameter carbon steel flanges.
- 607** Fire test for soft seated quarter-turn valves.

### ASME/ANSI-American National Standard Institute

- B 16.5** Steel pipe flanges and flanged fittings.
- B 16.10** Face-to-face and end-to-end dimensions of ferrous valves.
- B 16.25** Butt welding ends.
- B 16.34** Steel valves- Flanged and butt welding ends.
- B 16.47** Steel Flanges.
- B 31.3** Chemical plant and petroleum refinery piping
- B 31.4** Liquid petroleum transportation piping systems.
- B 31.8** Gas transmission and distribution piping systems.
- B 46.1** Surface texture.

### ASTM-American Society for Testing Materials

Consult factory for details.

### ISO-International Organization for Standardization

- ISO 9001: 2000** Quality systems-Model for quality assurance in design/development, production, installation and servicing.
- ISO 5211** Topworks Mounting Dimensions
- ISO 15156** For use in H<sub>2</sub>S containing environments in oil and gas production.

### British Standard

- BS 1503** Specification for steel forgings for pressure purposes.
- BS 1504** Specification for steel castings for pressure purposes.
- BS 1560** Steel pipe flanges and flanged fittings.
- BS 2080** Face-to-face, center-to-face, end-to-end, and center-to-end dimensions of flanged and butt welding end steel valves for the petroleum, petrochemical and allied industries.
- BS 4504** Flanges and boltings for pipes, valves and fittings.
- BS 5146** Inspection and test of steel valves for the petroleum, petrochemical and allied industries.
- BS 5351** Steel ball valves for the petroleum, petrochemical and allied industries.
- BS 5750** Quality system.
- BS 6755** Testing of valves.

### MSS-Manufacturers Standardization Society

- SP 6** Standard finishes for contact faces of pipe flanges and connecting-end flanges of valves and fittings.
- SP 25** Standard marking system for valves, fittings, flanges and unions.
- SP 45** Bypass and drain connection standard.

### NACE-National Association of Corrosion Engineers

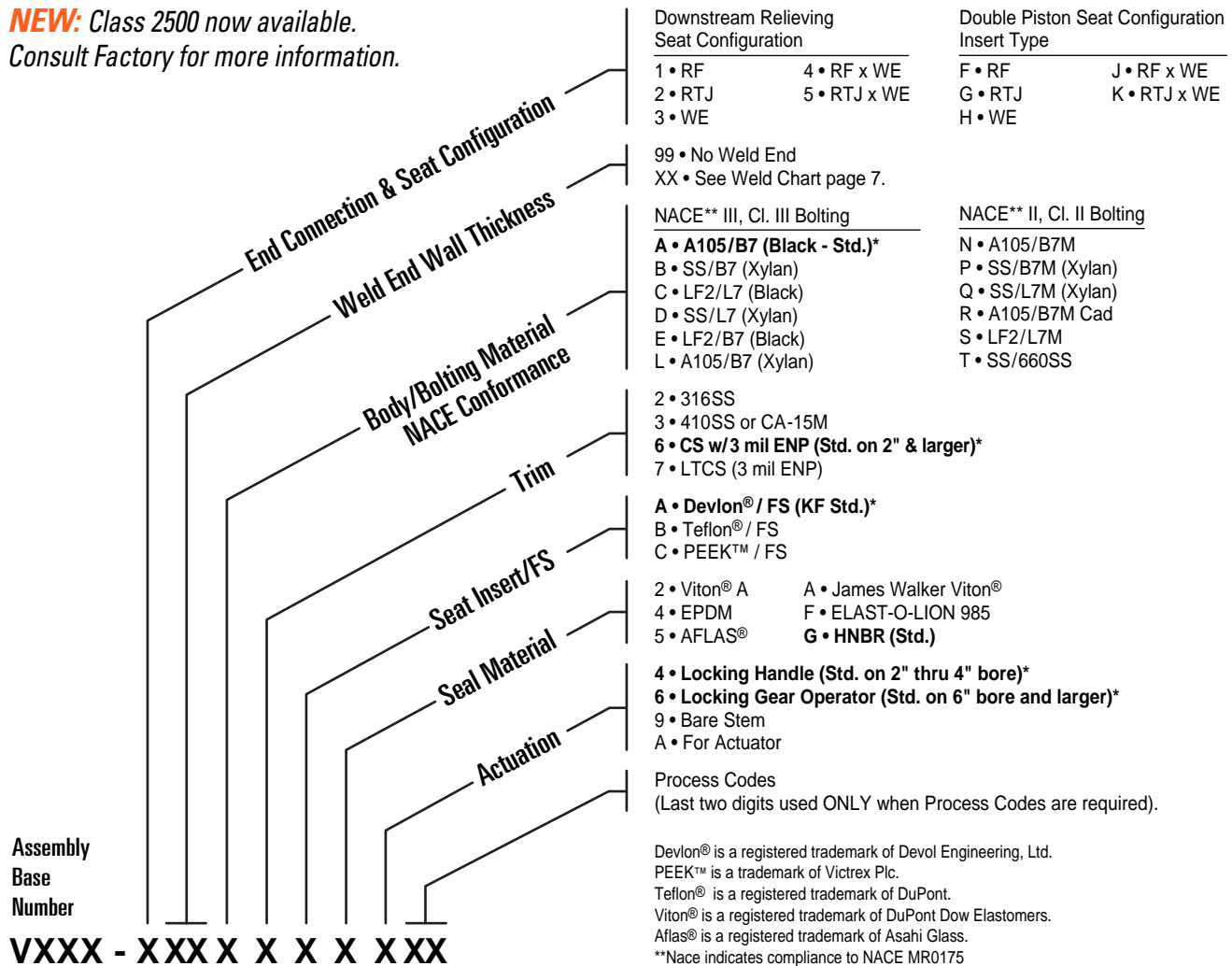
- MR0175** Sulfide stress cracking resistant metallic materials for oilfield equipment.



# KF Series P3 • Part Number Codes

## 2" FP- 36" FP, Class 150, 300, 600, 900, 1500 & 2500

**NEW:** Class 2500 now available.  
Consult Factory for more information.



### \*STANDARD TRIM CONFIGURATION

### Series P3 Assembly Base Numbers, 2" FP - 36" FP

| Class           | Size (in.) |      |      |      |      |      |      |      |      |       |       |       |       |       |       |       |
|-----------------|------------|------|------|------|------|------|------|------|------|-------|-------|-------|-------|-------|-------|-------|
|                 | 2 FP       | 3 RP | 3 FP | 4 RP | 4 FP | 6 RP | 6 FP | 8 RP | 8 FP | 10 RP | 10 FP | 12 RP | 12 FP | 14 RP | 14 FP | 16 RP |
| 150             | V111       | V112 | V113 | V114 | V115 | V116 | V117 | V118 | V119 | V120  | V121  | V122  | V123  | V124  | V125  | V126  |
| 300             | V211       | V212 | V213 | V214 | V215 | V216 | V217 | V218 | V219 | V220  | V221  | V222  | V223  | V224  | V225  | V226  |
| 600             | V311       | V312 | V313 | V314 | V315 | V316 | V317 | V318 | V319 | V320  | V321  | V322  | V323  | V324  | V325  | V326  |
| 900             | V411       | V412 | V413 | V414 | V415 | V416 | V417 | V418 | V419 | V420  | V421  | V422  | V423  | V424  | V425  | V426  |
| 1500            | V511       | V512 | V513 | V514 | V515 | V516 | V517 | V518 | V519 | V520  | V521  | V522  | V523  | V524  | V525  | V526  |
| <b>NEW 2500</b> | V611       | V612 | V613 | V614 | V615 | V616 | V617 | V618 | V619 | V620  | V621  | V622  | V623  | —     | —     | —     |

| Class | Size (in.) |       |       |       |       |       |       |       |       |       |       |       |       |       |       |  |
|-------|------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|--|
|       | 16 FP      | 18 FP | 20 RP | 20 FP | 22 FP | 24 RP | 24 FP | 26 FP | 28 FP | 30 RP | 30 FP | 32 FP | 34 FP | 36 RP | 36 FP |  |
| 150   | V127       | V129  | V130  | V131  | V133  | V134  | V135  | V137  | V139  | V140  | V141  | V143  | V145  | V146  |       |  |
| 300   | V227       | V229  | V230  | V231  | V233  | V234  | V235  | V237  | V239  | V240  | V241  | V243  | V245  | V246  |       |  |
| 600   | V327       | V329  | V330  | V331  | V333  | V334  | V335  | V337  | V339  | V340  | V341  | V343  | V345  | V346  | V347  |  |
| 900   | V427       | V429  | V430  | V431  | —     | V434  | V435  | V437  | V439  | V440  | V441  | V443  | V445  | V446  | V447  |  |
| 1500  | V527       | V529  | V530  | V531  | —     | —     | V535  | —     | —     | —     | —     | —     | —     | —     | —     |  |

Note: Shaded items are not available at this time. (Consult factory for verification)



# KF Series P3 Butt Weld End Pipe Code

## Pipe Wall Thickness Codes for Assembly Part Number

| Pipe Description   | Nominal Pipe Size (in.)/KF Schedule Code |      |       |      |       |      |       |      |       |      |        |      |        |      |
|--------------------|--|------|-------|------|-------|------|-------|------|-------|------|--------|------|--------|------|
|                    | 2  | Code | 3     | Code | 4     | Code | 6     | Code | 8     | Code | 10     | Code | 12     | Code |
| Outside Dia. (in.) | 2.375                                    |      | 3.500 |      | 4.500 |      | 6.625 |      | 8.625 |      | 10.750 |      | 12.750 |      |
| (STD) Standard     | —  | —    | —     | —    | .237  | 17   | .280  | 22   | .322  | 28   | .365   | 32   | .375   | 33   |
| Schedule 40        | .154                                     | 08   | .216  | 14   | .237  | 17   | .280  | 22   | .322  | 28   | .365   | 32   | .406   | 35   |
| XS                 | .218                                     | 15   | .300  | 24   | .337  | 30   | .432  | 36   | .500  | 39   | .500   | 39   | .500   | 39   |
| Schedule 80        | .218                                     | 15   | .300  | 24   | .337  | 30   | .432  | 36   | .500  | 39   | .593   | 43   | .687   | 48   |
| Schedule 160       | .343                                     | 31   | .438  | 38   | .531  | 40   | .718  | 49   | .906  | 55   | 1.125  | 62   | 1.312  | 68   |
| XXS                | .436                                     | 37   | .600  | 44   | .674  | 47   | .864  | 53   | .875  | 54   | 1.000  | 58   | 1.000  | 58   |

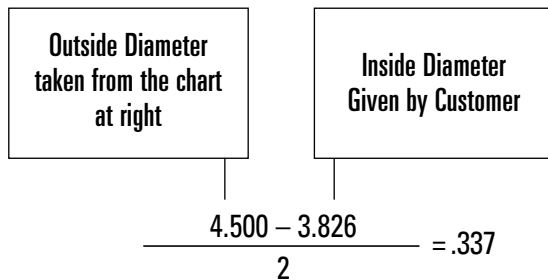
| Pipe Description   | Size (in.)/KF Schedule Code |      |        |      |        |      |        |      |        |      |        |      |
|--------------------|-----------------------------|------|--------|------|--------|------|--------|------|--------|------|--------|------|
|                    | 14                          | Code | 16     | Code | 18     | Code | 20     | Code | 22     | Code | 24     | Code |
| Outside Dia. (in.) | 14.000                      |      | 16.000 |      | 18.000 |      | 20.000 |      | 22.000 |      | 24.000 |      |
| (STD) Standard     | .375                        | 33   | .375   | 33   | .375   | 33   | .375   | 33   | .375   | 33   | .375   | 33   |
| Schedule 40        | .438                        | 38   | .500   | 39   | .562   | 42   | .593   | 43   | —      | —    | .687   | 47   |
| XS                 | .500                        | 39   | .500   | 39   | —      | —    | —      | —    | 0.500  | 39   | —      | —    |
| Schedule 80        | .750                        | 50   | .843   | 52   | .937   | 56   | 1.031  | 59   | 1.125  | 62   | 1.218  | 65   |
| Schedule 160       | 1.406                       | 70   | 1.593  | 75   | 1.781  | 78   | 1.968  | 82   | —      | —    | 2.343  | 85   |
| XXS                | —                           | —    | —      | —    | —      | —    | —      | —    | —      | —    | —      | —    |

Consult factory for other wall thicknesses.

### Calculating Pipe Wall Thickness

To find the “Pipe Wall Thickness” for butt weld valves, subtract the Inside Diameter from the “Pipe Outside Diameter” for the appropriate size, listed to the right. Then divide the outcome by two (2).

EXAMPLE: For a 4" valve with a 3.826 Inside Diameter:



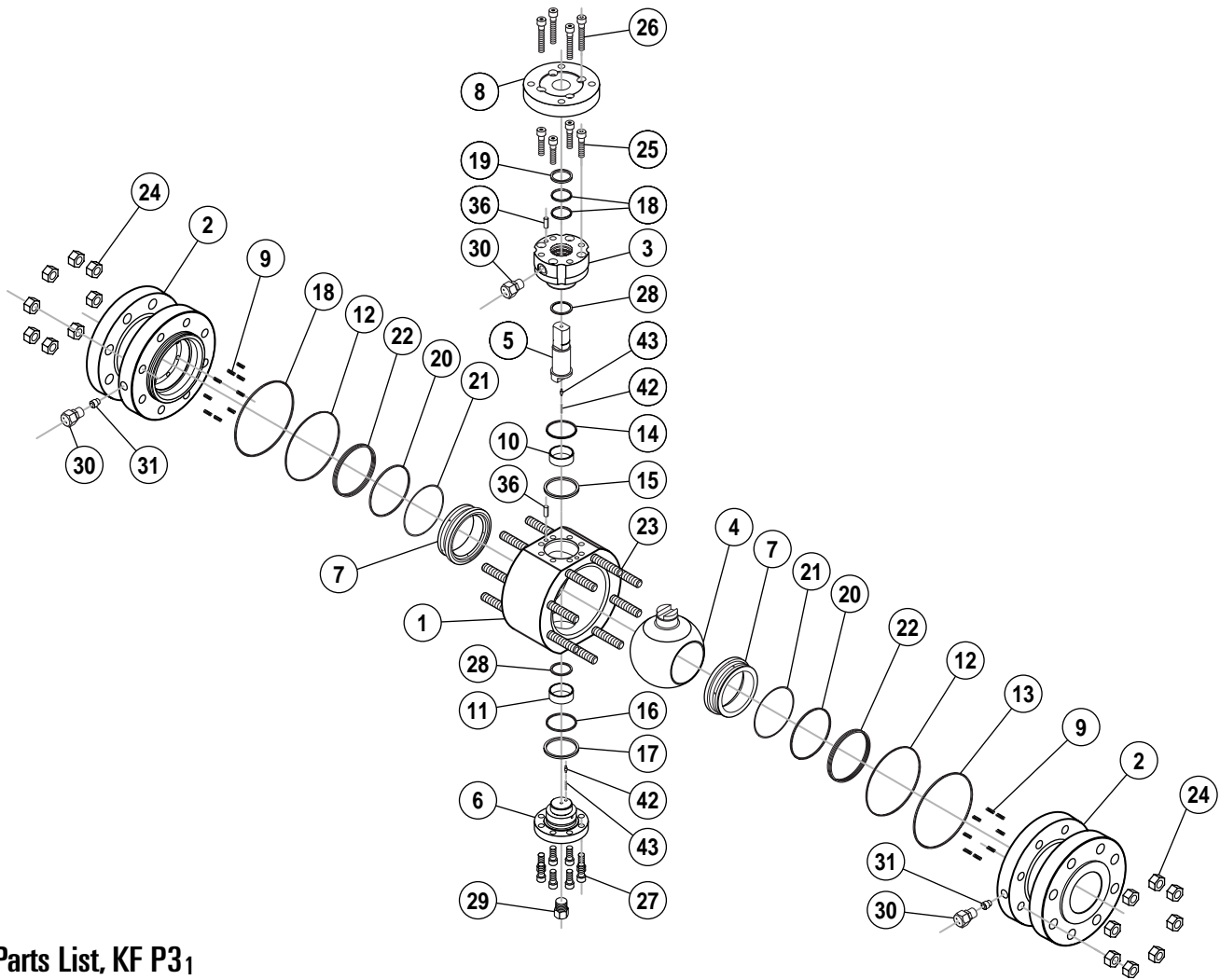
### Pipe Outside Dia. (O.D.)

| Size (in.) | in.    | mm     |
|------------|--------|--------|
| 2          | 2.375  | 60.33  |
| 3          | 3.500  | 88.90  |
| 4          | 4.500  | 114.30 |
| 6          | 6.625  | 168.28 |
| 8          | 8.625  | 219.08 |
| 10         | 10.750 | 273.05 |
| 12         | 12.750 | 323.85 |
| 14         | 14.000 | 355.60 |
| 16         | 16.000 | 406.40 |
| 18         | 18.000 | 457.20 |
| 20         | 20.000 | 508.00 |
| 24         | 24.000 | 609.60 |

Once you have determined the “Pipe Wall Thickness”, find that number in the chart above. The two-digit number to the left should then be used in the “Pipe Wall Thickness” digits of the valve Assembly Part Number. In this example that would be 30.



# KF Series P3<sub>1</sub> • Component Parts • 2", 3" & 4", Class 600, 900 & 1500



## Parts List, KF P3<sub>1</sub>

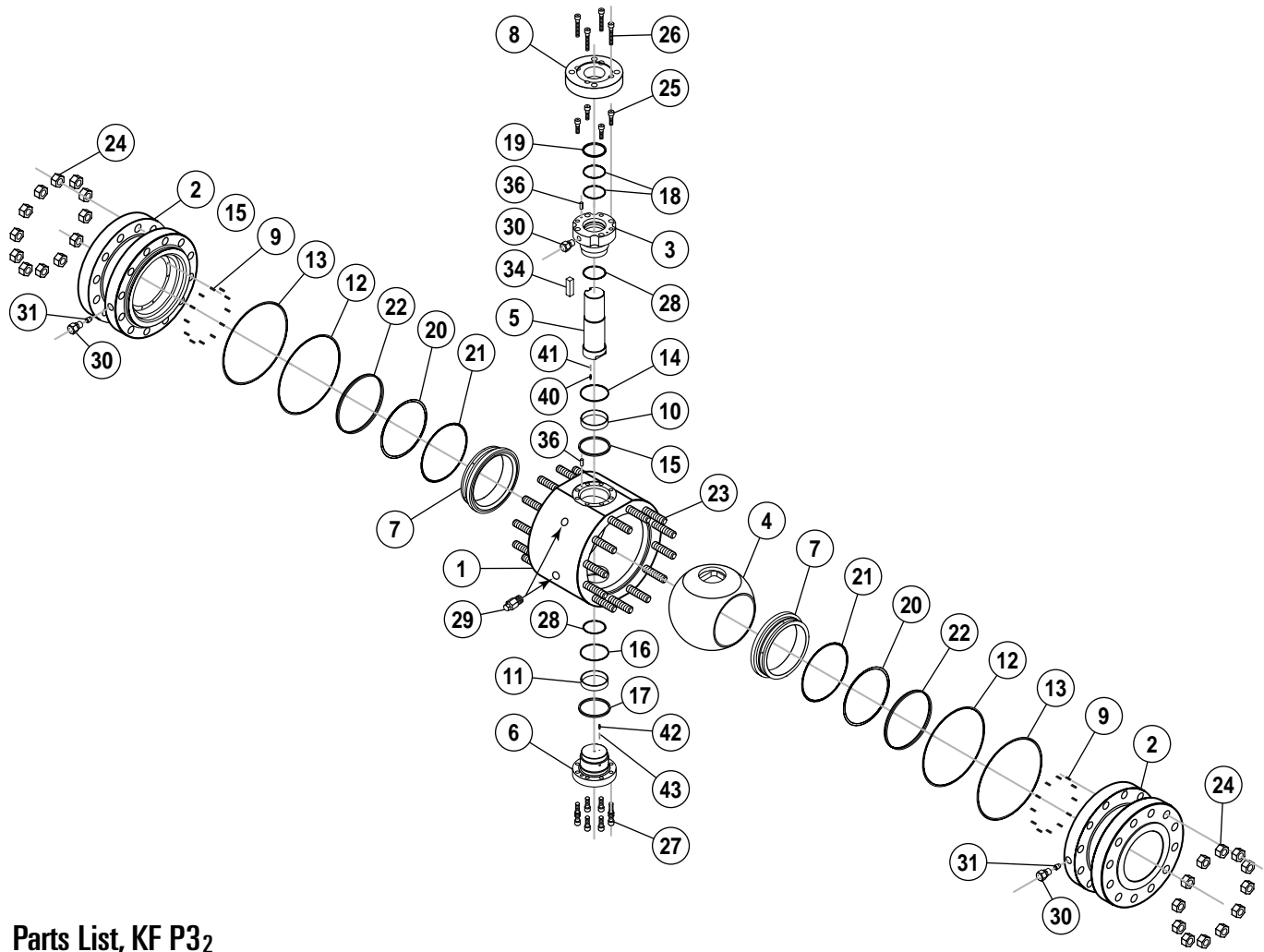
| Part No. | Description                 |
|----------|-----------------------------|
| 1        | Body                        |
| 2        | Adapter                     |
| 3        | Bonnet                      |
| 4        | Ball                        |
| 5        | Stem                        |
| 6        | Lower Trunnion              |
| 7        | Seat Assembly               |
| 8        | Top Cover                   |
| 9        | Seat Springs                |
| 10       | Stem Bearing                |
| 11       | Lower Trunnion Bearing      |
| 12       | Adapter Primary Seal        |
| 13       | Adapter Sub-Seal            |
| 14       | Bonnet Primary Seal         |
| 15       | Bonnet Sub-Seal             |
| 16       | Lower Trunnion Primary Seal |
| 17       | Lower Trunnion Sub-Seal     |
| 18       | Stem Seal                   |

| Part No. | Description               |
|----------|---------------------------|
| 19       | Stem Sub-Seal             |
| 20       | Seat Seal                 |
| 21       | Seat Seal Backup          |
| 22       | Seat Sub-Seal             |
| 23       | Stud, Body                |
| 24       | Nut, Body                 |
| 25       | Cap Screw, Bonnet         |
| 26       | Cap Screw, Top Cover      |
| 27       | Cap Screw, Lower Trunnion |
| 28       | Thrust Bearing            |
| 29       | Bleed/Drain Valve         |
| 30       | Injection Fitting         |
| 31       | Ball Check                |
| 32       | Drain Plug                |
| 34       | Key                       |
| 36       | Alignment Pin, Bonnet     |
| 42       | Antistatic Pin            |
| 43       | Antistatic Spring         |





# KF Series P3<sub>2</sub> • Component Parts • 6"-12", Class 600



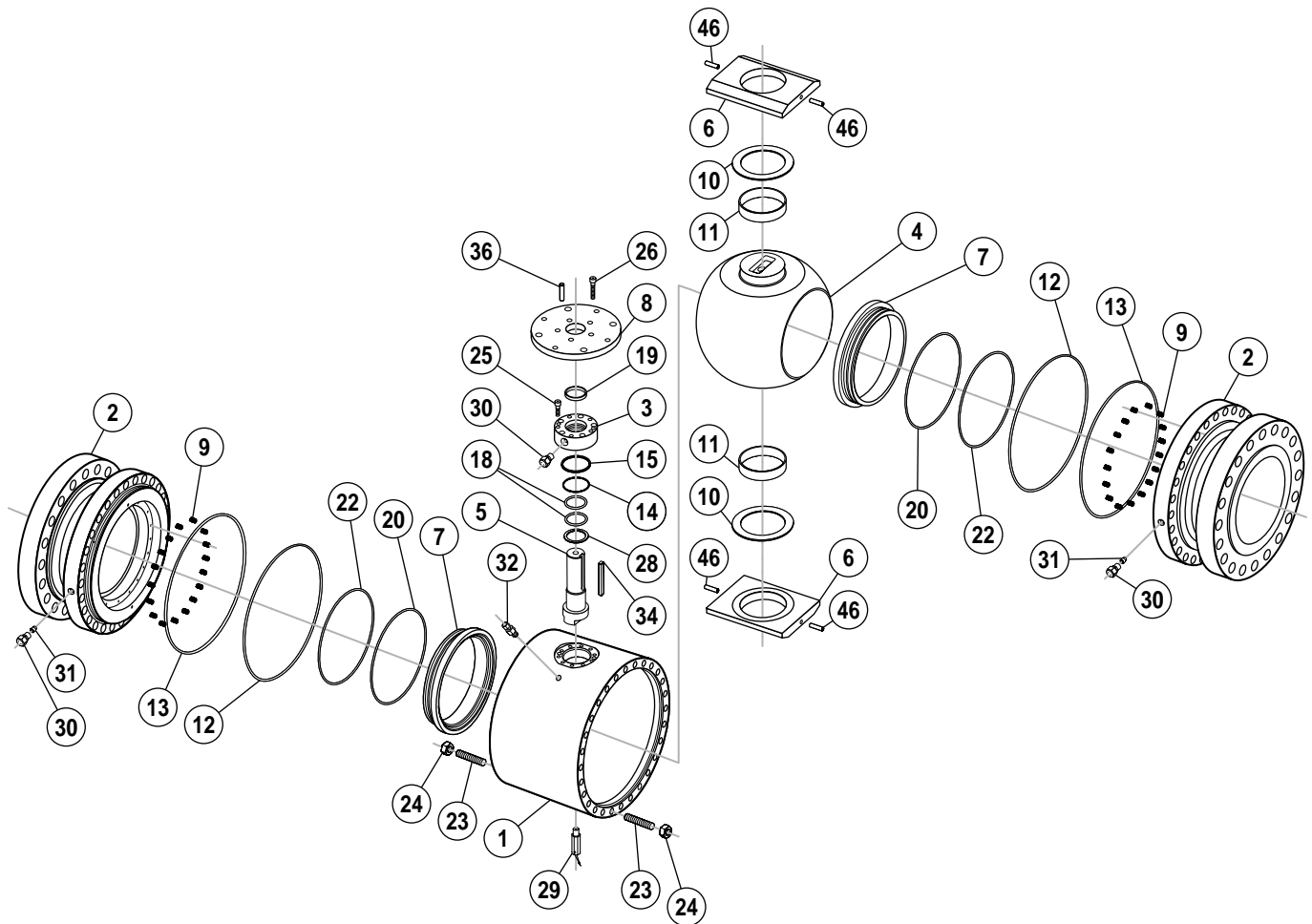
## Parts List, KF P3<sub>2</sub>

| Part No. | Description                 |
|----------|-----------------------------|
| 1        | Body                        |
| 2        | Adapter                     |
| 3        | Bonnet                      |
| 4        | Ball                        |
| 5        | Stem                        |
| 6        | Lower Trunnion              |
| 7        | Seat Assembly               |
| 8        | Top Cover                   |
| 9        | Seat Springs                |
| 10       | Stem Bearing                |
| 11       | Lower Trunnion Bearing      |
| 12       | Adapter Primary Seal        |
| 13       | Adapter Sub-Seal            |
| 14       | Bonnet Primary Seal         |
| 15       | Bonnet Sub-Seal             |
| 16       | Lower Trunnion Primary Seal |
| 17       | Lower Trunnion Sub-Seal     |
| 18       | Stem Seal                   |

| Part No. | Description               |
|----------|---------------------------|
| 19       | Stem Sub-Seal             |
| 20       | Seat Seal                 |
| 21       | Seat Seal Backup          |
| 22       | Seat Sub-Seal             |
| 23       | Stud, Body                |
| 24       | Nut, Body                 |
| 25       | Cap Screw, Bonnet         |
| 26       | Cap Screw, Top Cover      |
| 27       | Cap Screw, Lower Trunnion |
| 28       | Thrust Bearing            |
| 29       | Bleed/Drain Valve         |
| 30       | Injection Fitting         |
| 31       | Ball Check                |
| 32       | Drain Plug                |
| 34       | Key                       |
| 36       | Alignment Pin, Bonnet     |
| 42       | Antistatic Pin            |
| 43       | Antistatic Spring         |



# KF Series P3<sub>3</sub> • Component Parts • 6"-12", Class 900 & 1500 14" & Larger, All Classes



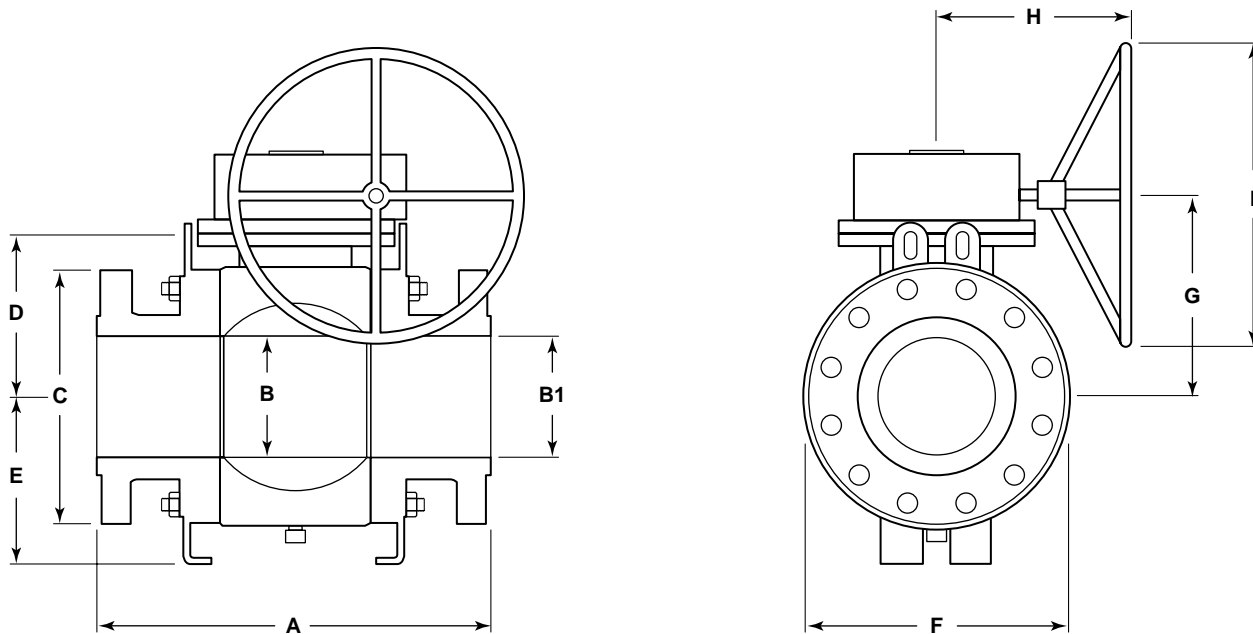
## Parts List, KF P3<sub>3</sub>

| Part No. | Description                 |
|----------|-----------------------------|
| 1        | Body                        |
| 2        | Adapter                     |
| 3        | Bonnet                      |
| 4        | Ball                        |
| 5        | Stem                        |
| 6        | Trunnion Block              |
| 7        | Seat Assembly               |
| 8        | Top Cover                   |
| 9        | Seat Springs                |
| 10       | Stem Bearing                |
| 11       | Lower Trunnion Bearing      |
| 12       | Adapter Primary Seal        |
| 13       | Adapter Sub-Seal            |
| 14       | Bonnet Primary Seal         |
| 15       | Bonnet Sub-Seal             |
| 16       | Lower Trunnion Primary Seal |
| 17       | Lower Trunnion Sub-Seal     |

| Part No. | Description           |
|----------|-----------------------|
| 18       | Stem Seal             |
| 19       | Stem Sub-Seal         |
| 20       | Seat Seal             |
| 21       | Seat Seal Backup      |
| 22       | Seat Sub-Seal         |
| 23       | Stud, Body            |
| 24       | Nut, Body             |
| 25       | Cap Screw, Bonnet     |
| 26       | Cap Screw, Top Cover  |
| 28       | Thrust Bearing        |
| 29       | Bleed/Drain Valve     |
| 30       | Injection Fitting     |
| 31       | Ball Check            |
| 32       | Drain Plug            |
| 34       | Key                   |
| 36       | Alignment Pin, Bonnet |
| 46       | Trunnion Block Pin    |



# KF Series P3 Class 150 • Dimensional Data (in., mm)

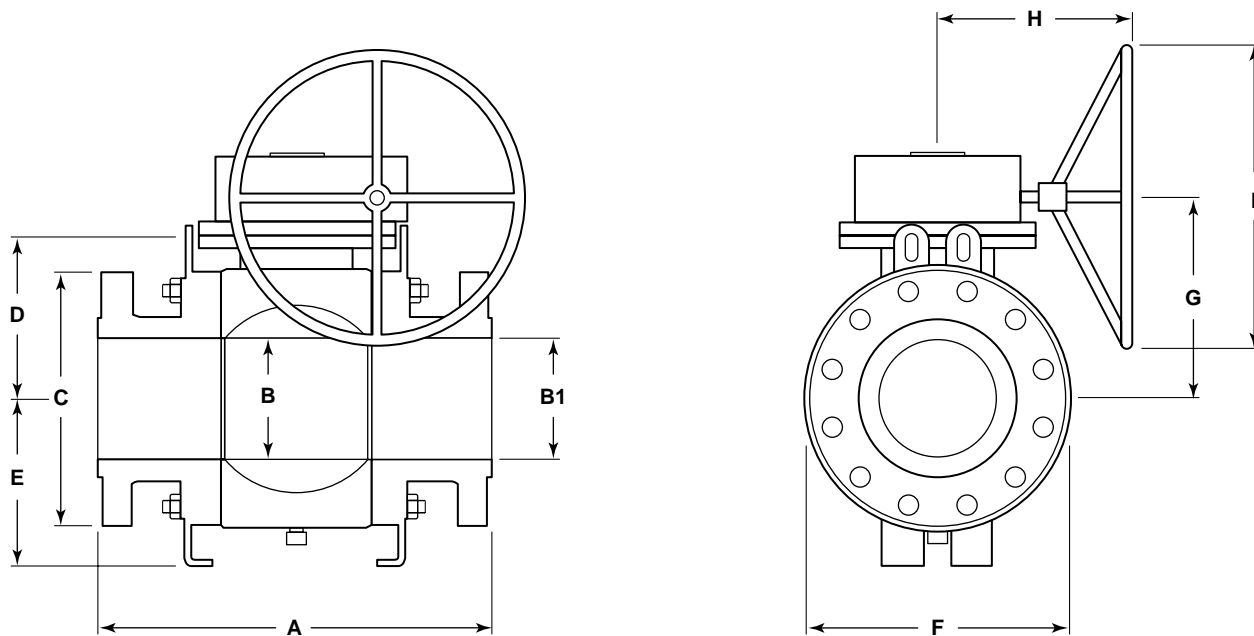


## Dimensional Data, 14"FP-24"FP, Class 150

| Size<br>(in.) | Dimension (in./mm) |      |      |       |      |      |      |       |      |        |      |       |      |       |      |       |      |      |      |       |      |     |      |     |
|---------------|--------------------|------|------|-------|------|------|------|-------|------|--------|------|-------|------|-------|------|-------|------|------|------|-------|------|-----|------|-----|
|               | A                  |      |      |       |      |      | B    |       | B1   |        | C    |       | D    |       | E    |       | F    |      | G    |       | H    |     | I    |     |
|               | RF                 |      | RTJ  |       | WE   |      | in.  | mm    | in.  | mm     | in.  | mm    | in.  | mm    | in.  | mm    | in.  | mm   | in.  | mm    | in.  | mm  | in.  | mm  |
| 14            | 27.0               | 686  | 27.5 | 698.5 | 30.0 | 762  | 13.3 | 337.0 | 13.3 | 337.0  | 21.0 | 533.4 | 15.7 | 400.0 | 15.3 | 388.0 | 25.1 | 638  | 18.5 | 470.0 | 20.4 | 518 | 23.6 | 600 |
| 16            | 30.0               | 762  | 30.5 | 775   | 33.0 | 838  | 15.3 | 387.4 | 15.3 | 387.35 | 23.5 | 596.9 | 16.7 | 423.0 | 17.7 | 450.0 | 28.0 | 710  | 19.4 | 493.0 | 18.7 | 475 | 27.6 | 700 |
| 20x16         | 36.0               | 914  | 36.5 | 927   | 39.0 | 991  | 15.3 | 387.4 | 19.3 | 489.0  | 27.5 | 698.5 | 16.7 | 423.0 | 17.7 | 450.0 | 28.0 | 710  | 19.4 | 493.0 | 18.7 | 475 | 27.6 | 700 |
| 18            | 34.0               | 864  | 34.5 | 876   | 36.0 | 914  | 17.2 | 438.0 | 17.2 | 438.0  | 25.0 | 635.0 | 19.1 | 485.0 | 19.5 | 495.0 | 31.9 | 810  | 22.3 | 566.0 | 22.6 | 575 | 27.6 | 700 |
| 20            | 36.0               | 914  | 36.5 | 927   | 39.0 | 991  | 19.3 | 489.0 | 19.3 | 489.0  | 27.5 | 698.5 | 21.1 | 537.0 | 21.4 | 542.5 | 34.1 | 865  | 24.3 | 618.0 | 22.6 | 575 | 27.6 | 700 |
| 24x20         | 42.0               | 1067 | 42.5 | 1080  | 45.0 | 1143 | 19.3 | 489.0 | 23.3 | 591.0  | 32.0 | 812.8 | 21.1 | 537.0 | 21.4 | 542.5 | 34.1 | 865  | 24.3 | 618.0 | 22.6 | 575 | 27.6 | 700 |
| 24            | 42.0               | 1067 | 42.5 | 1080  | 45.0 | 1143 | 23.3 | 591.0 | 23.3 | 591.0  | 32.0 | 813.0 | 24.3 | 616.0 | 23.2 | 590.5 | 40.4 | 1025 | 27.8 | 705.0 | 23.3 | 592 | 31.5 | 800 |



# KF Series P3 Class 300 • Dimensional Data (in., mm)

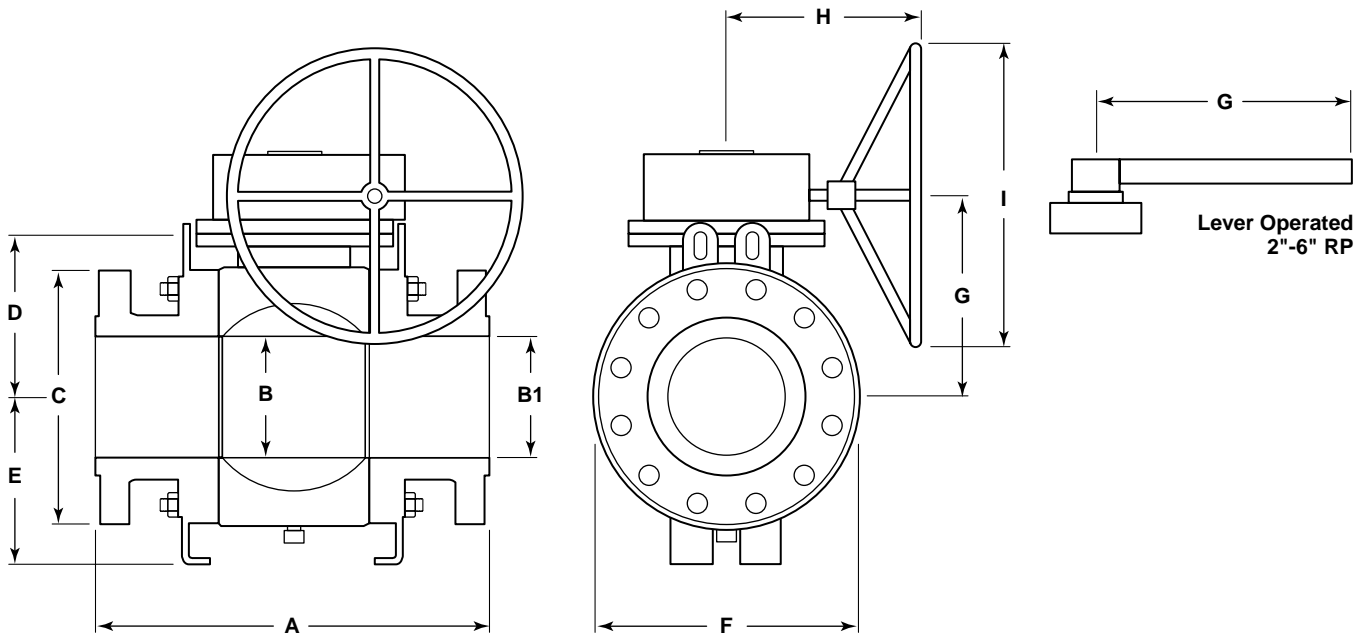


## Dimensional Data, 14"FP-24"FP, Class 300

| Size<br>(in.) | Dimension (in./mm) |      |      |      |      |      |      |       |      |       |      |       |      |       |      |       |      |      |      |       |      |     |      |     |
|---------------|--------------------|------|------|------|------|------|------|-------|------|-------|------|-------|------|-------|------|-------|------|------|------|-------|------|-----|------|-----|
|               | A                  |      |      |      |      |      | B    |       | B1   |       | C    |       | D    |       | E    |       | F    |      | G    |       | H    |     | I    |     |
|               | RF                 |      | RTJ  |      | WE   |      | in.  | mm    | in.  | mm    | in.  | mm    | in.  | mm    | in.  | mm    | in.  | mm   | in.  | mm    | in.  | mm  | in.  | mm  |
| 14            | 30.0               | 762  | 30.6 | 778  | 30.0 | 762  | 13.3 | 337.0 | 13.3 | 337.0 | 23.0 | 584.0 | 15.7 | 400.0 | 15.3 | 388.0 | 25.1 | 638  | 18.5 | 470.0 | 20.4 | 518 | 23.6 | 600 |
| 16            | 33.0               | 838  | 33.6 | 854  | 33.0 | 838  | 15.3 | 387.4 | 15.3 | 387.4 | 25.5 | 648.0 | 16.7 | 423.0 | 16.7 | 425.0 | 28.0 | 710  | 19.4 | 493.0 | 22.6 | 575 | 27.6 | 700 |
| 20x16         | 39.0               | 991  | 39.8 | 1010 | 39.0 | 991  | 15.3 | 387.4 | 19.3 | 489.0 | 30.5 | 775.0 | 16.7 | 423.0 | 16.7 | 425.0 | 28.0 | 710  | 19.4 | 493.0 | 22.6 | 575 | 27.6 | 700 |
| 18            | 36.0               | 914  | 36.6 | 930  | 36.0 | 914  | 17.2 | 438.0 | 17.2 | 438.0 | 28.0 | 711.0 | 19.2 | 488.0 | 19.6 | 498.0 | 32.3 | 820  | 22.4 | 569.0 | 22.6 | 575 | 27.6 | 700 |
| 20            | 39.0               | 991  | 39.8 | 1010 | 39.0 | 991  | 19.3 | 489.0 | 19.3 | 489.0 | 30.5 | 774.7 | 21.2 | 538.0 | 21.6 | 549.0 | 34.4 | 874  | 24.7 | 627.0 | 23.3 | 592 | 31.5 | 800 |
| 24x20         | 45.0               | 1143 | 45.9 | 1165 | 45.0 | 1143 | 19.3 | 489.0 | 23.3 | 591.0 | 36.0 | 914.0 | 21.2 | 538.0 | 21.6 | 549.0 | 34.4 | 874  | 24.7 | 627.0 | 23.3 | 592 | 31.5 | 800 |
| 24            | 45.0               | 1143 | 45.9 | 1165 | 45.0 | 1143 | 23.3 | 591.0 | 23.3 | 591.0 | 36.0 | 914.0 | 24.6 | 624.0 | 23.4 | 593.8 | 40.9 | 1040 | 29.3 | 744.0 | 27.3 | 693 | 35.4 | 900 |



# KF Series P3 Class 600 • Dimensional Data (in., mm)

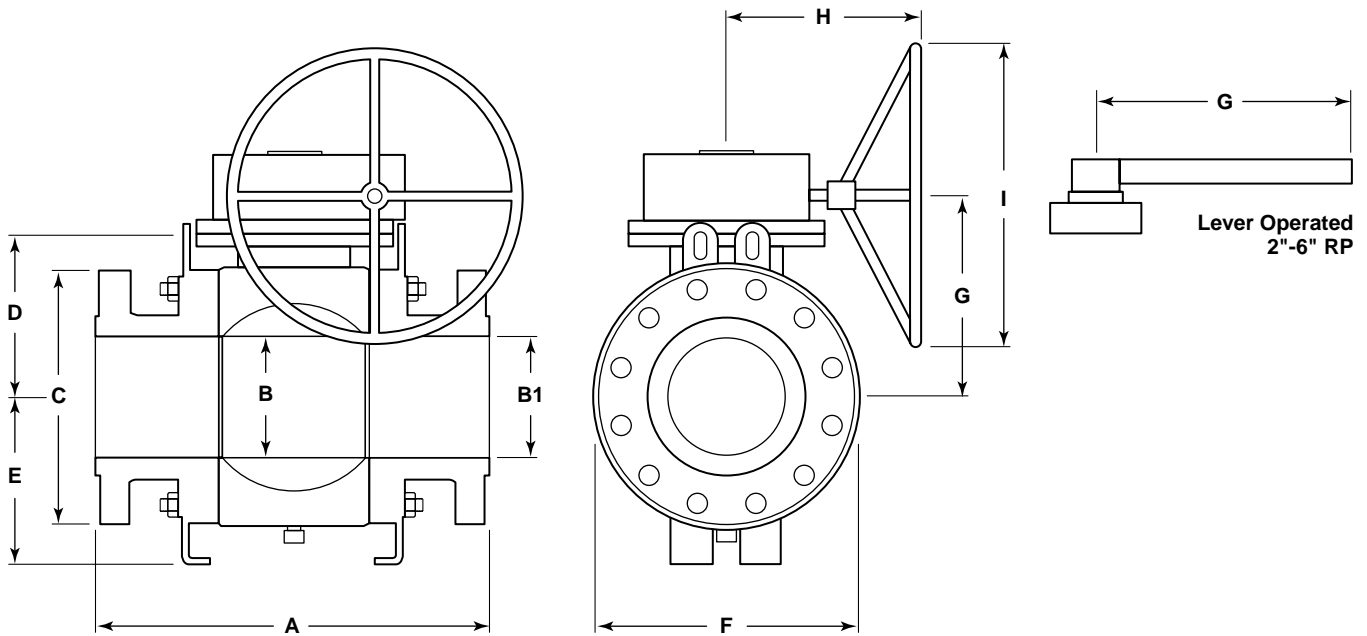


## Dimensional Data, 2"FP-36"FP, Class 600

| Size<br>(in.) | Dimension (in./mm) |      |      |      |      |      |      |       |      |       |      |       |      |       |      |       |      |      |      |       |      |     |      |     |
|---------------|--------------------|------|------|------|------|------|------|-------|------|-------|------|-------|------|-------|------|-------|------|------|------|-------|------|-----|------|-----|
|               | A                  |      | B    |      | B1   |      | C    |       | D    |       | E    |       | F    |       | G    |       | H    |      | I    |       |      |     |      |     |
|               | RF                 | RTJ  | WE   | in.  | mm   | in.  | mm   | in.   | mm   | in.   | mm   | in.   | mm   | in.   | mm   | in.   | mm   | in.  | mm   | in.   | mm   |     |      |     |
| 2             | 11.5               | 292  | 11.6 | 295  | 11.5 | 292  | 2.0  | 51.0  | 2.0  | 51.0  | 6.5  | 165.0 | 6.1  | 155.0 | 4.2  | 106.3 | 6.5  | 165  | 22.8 | 580.0 | —    | —   | —    | —   |
| 3x2           | 14.0               | 356  | 14.1 | 359  | 14.0 | 356  | 2.0  | 51.0  | 3.0  | 76.2  | 8.3  | 210.0 | 6.1  | 155.0 | 4.2  | 106.3 | 6.5  | 165  | 22.8 | 580.0 | —    | —   | —    | —   |
| 3             | 14.0               | 356  | 14.1 | 359  | 14.0 | 356  | 3.0  | 76.2  | 3.0  | 76.2  | 8.3  | 210.0 | 6.7  | 170.0 | 5.4  | 136.3 | 9.0  | 229  | 27.6 | 700.0 | —    | —   | —    | —   |
| 4x3           | 17.0               | 432  | 17.1 | 435  | 17.0 | 432  | 3.0  | 76.2  | 4.0  | 101.6 | 10.7 | 273.0 | 6.7  | 170.0 | 5.4  | 136.3 | 9.0  | 229  | 27.6 | 700.0 | —    | —   | —    | —   |
| 4             | 17.0               | 432  | 17.1 | 435  | 17.0 | 432  | 4.1  | 103.4 | 4.1  | 103.3 | 10.8 | 273.1 | 8.0  | 201.0 | 6.4  | 162.3 | 10.4 | 264  | 27.8 | 704.9 | —    | —   | —    | —   |
| 6x4           | 22.0               | 559  | 22.1 | 562  | 22.0 | 559  | 4.1  | 103.4 | 6.0  | 152.4 | 14.0 | 356.0 | 8.0  | 201.0 | 6.4  | 162.3 | 10.4 | 264  | 27.8 | 704.9 | —    | —   | —    | —   |
| 6             | 22.0               | 559  | 22.1 | 562  | 22.0 | 559  | 6.0  | 152.4 | 6.0  | 152.4 | 14.0 | 356.0 | 9.1  | 230.0 | 9.2  | 234.5 | 12.6 | 319  | 11.2 | 285.0 | 14.2 | 360 | 19.7 | 500 |
| 8x6           | 26.0               | 660  | 26.1 | 664  | 26.0 | 660  | 6.0  | 152.4 | 8.0  | 203.2 | 16.5 | 419.1 | 9.1  | 230.0 | 9.2  | 234.5 | 12.6 | 319  | 11.2 | 285.0 | 14.2 | 360 | 19.7 | 500 |
| 8             | 26.0               | 660  | 26.1 | 664  | 26.0 | 660  | 8.0  | 203.0 | 8.0  | 203.2 | 16.5 | 419.1 | 11.4 | 290.5 | 12.4 | 316.0 | 17.0 | 432  | 13.5 | 342.5 | 15.0 | 380 | 23.6 | 600 |
| 10x8          | 31.0               | 787  | 31.1 | 791  | 31.0 | 787  | 8.0  | 203.0 | 10.0 | 254.0 | 20.0 | 508.0 | 11.4 | 290.5 | 12.4 | 316.0 | 17.0 | 432  | 13.5 | 342.5 | 15.0 | 380 | 23.6 | 600 |
| 10            | 31.0               | 787  | 31.1 | 791  | 31.0 | 787  | 10.0 | 254.0 | 10.0 | 254.0 | 20.0 | 508.0 | 13.0 | 329.0 | 15.7 | 399.0 | 20.4 | 518  | 15.5 | 393.0 | 16.5 | 418 | 23.6 | 600 |
| 12x10         | 33.0               | 838  | 33.1 | 841  | 33.0 | 838  | 10.0 | 254.0 | 12.0 | 304.8 | 22.0 | 559.0 | 13.0 | 329.0 | 15.7 | 399.0 | 20.4 | 518  | 15.5 | 393.0 | 16.5 | 418 | 23.6 | 600 |
| 12            | 33.0               | 838  | 33.1 | 841  | 33.0 | 838  | 12.0 | 304.8 | 12.0 | 304.8 | 22.0 | 558.8 | 15.9 | 404.7 | 17.8 | 451.0 | 24.5 | 622  | 18.7 | 474.7 | 21.5 | 545 | 27.6 | 700 |
| 14x12         | 35.0               | 889  | 35.1 | 892  | 35.0 | 889  | 12.0 | 304.8 | 13.3 | 337.0 | 23.7 | 603.0 | 15.9 | 404.7 | 17.8 | 451.0 | 24.5 | 622  | 18.7 | 474.7 | 21.5 | 545 | 27.6 | 700 |
| 16x12         | 39.0               | 991  | 39.1 | 994  | 39.0 | 991  | 12.0 | 304.8 | 15.3 | 387.4 | 27.0 | 686.0 | 15.9 | 404.7 | 17.8 | 451.0 | 24.5 | 622  | 18.7 | 474.7 | 21.5 | 545 | 27.6 | 700 |
| 14            | 35.0               | 889  | 35.1 | 892  | 35.0 | 889  | 13.3 | 337.0 | 13.3 | 337.0 | 23.7 | 603.0 | 15.7 | 400.0 | 15.3 | 388.5 | 25.1 | 638  | 18.9 | 481.0 | 23.1 | 588 | 31.5 | 800 |
| 16            | 39.0               | 991  | 39.1 | 994  | 39.0 | 991  | 15.3 | 387.4 | 15.3 | 387.4 | 27.0 | 686.0 | 17.4 | 443.0 | 17.6 | 445.8 | 28.9 | 735  | 20.6 | 524.0 | 22.6 | 575 | 27.6 | 700 |
| 20x16         | 47.0               | 1194 | 47.2 | 1200 | 47.0 | 1194 | 15.3 | 387.4 | 19.3 | 489.0 | 32.1 | 815.0 | 17.4 | 443.0 | 17.6 | 445.8 | 28.9 | 735  | 20.6 | 524.0 | 22.6 | 575 | 27.6 | 700 |
| 18            | 43.0               | 1092 | 43.1 | 1095 | 43.0 | 1092 | 17.2 | 438.0 | 17.2 | 438.0 | 29.3 | 743.0 | 19.6 | 498.0 | 20.1 | 510.5 | 33.1 | 840  | 23.1 | 587.0 | 23.3 | 592 | 31.5 | 800 |
| 20            | 47.0               | 1194 | 47.2 | 1200 | 47.0 | 1194 | 19.3 | 489.0 | 19.3 | 489.0 | 32.0 | 812.8 | 22.2 | 565.0 | 21.3 | 542.0 | 36.2 | 920  | 27.0 | 685.0 | 27.3 | 693 | 35.4 | 900 |
| 24x20         | 55.0               | 1397 | 55.4 | 1407 | 55.0 | 1397 | 19.3 | 489.0 | 23.3 | 591.0 | 37.0 | 940.0 | 22.2 | 565.0 | 21.3 | 542.0 | 36.2 | 920  | 27.0 | 685.0 | 27.3 | 693 | 35.4 | 900 |
| 24            | 55.0               | 1397 | 55.4 | 1407 | 55.0 | 1397 | 23.3 | 591.0 | 23.3 | 591.0 | 37.0 | 940.0 | 24.6 | 624.5 | 23.5 | 596.0 | 41.1 | 1045 | 30.8 | 781.5 | 37.4 | 950 | 27.6 | 700 |
| 30            | Consult Factory    |      |      |      |      |      |      |       |      |       |      |       |      |       |      |       |      |      |      |       |      |     |      |     |
| 36            | Consult Factory    |      |      |      |      |      |      |       |      |       |      |       |      |       |      |       |      |      |      |       |      |     |      |     |



# KF Series P3 Class 900 • Dimensional Data (in., mm)

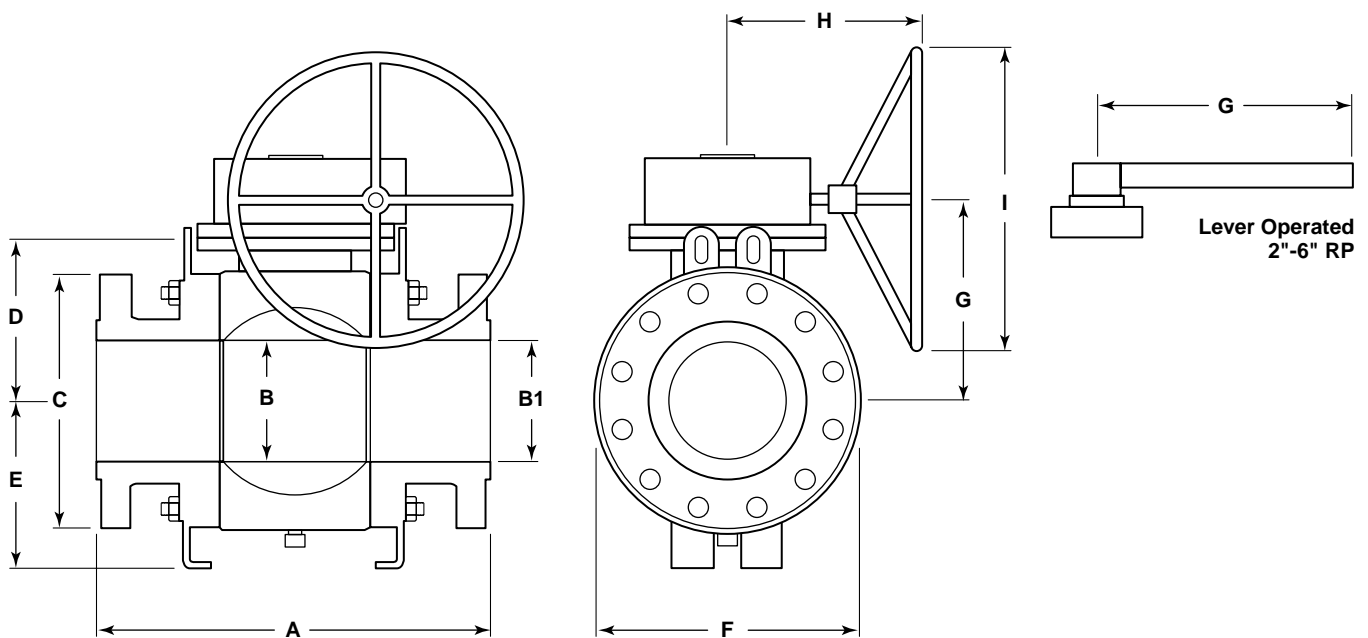


## Dimensional Data, 2"FP-24"FP, Class 900

| Size<br>(in.) | Dimension (in./mm) |      |      |      |      |      |      |       |      |        |      |       |      |       |      |       |      |     |      |       |      |     |      |     |
|---------------|--------------------|------|------|------|------|------|------|-------|------|--------|------|-------|------|-------|------|-------|------|-----|------|-------|------|-----|------|-----|
|               | A                  |      |      |      |      |      | B    |       | B1   |        | C    |       | D    |       | E    |       | F    |     | G    |       | H    |     | I    |     |
|               | RF                 |      | RTJ  |      | WE   |      | in.  | mm    | in.  | mm     | in.  | mm    | in.  | mm    | in.  | mm    | in.  | mm  | in.  | mm    | in.  | mm  | in.  | mm  |
| 2             | 14.5               | 368  | 14.6 | 371  | 14.5 | 368  | 2.0  | 50.8  | 2.0  | 50.8   | 8.5  | 215.9 | 5.8  | 148.5 | 4.6  | 116.8 | 7.3  | 185 | 22.8 | 580   | —    | —   | —    | —   |
| 3x2           | 15.0               | 381  | 15.1 | 384  | 15.0 | 381  | 2.0  | 50.8  | 3.0  | 76.2   | 9.5  | 241.3 | 5.8  | 148.5 | 4.6  | 116.8 | 7.3  | 185 | 22.8 | 580   | —    | —   | —    | —   |
| 3             | 15.0               | 381  | 15.1 | 384  | 15.0 | 381  | 3.0  | 76.2  | 3.0  | 76.2   | 9.5  | 241.0 | 7.0  | 179.0 | 5.7  | 144.3 | 9.3  | 237 | 27.6 | 700   | —    | —   | —    | —   |
| 4x3           | 18.0               | 457  | 18.1 | 460  | 18.0 | 457  | 3.0  | 76.2  | 4.0  | 101.6  | 11.5 | 292.1 | 7.0  | 179.0 | 5.7  | 144.3 | 9.3  | 237 | 27.6 | 700   | —    | —   | —    | —   |
| 4             | 18.0               | 457  | 18.1 | 460  | 18.0 | 457  | 4.1  | 103.3 | 4.1  | 103.3  | 11.5 | 292.0 | 8.5  | 216.2 | 6.9  | 176.3 | 11.3 | 288 | 33.7 | 856.2 | —    | —   | —    | —   |
| 6x4           | 24.0               | 610  | 24.1 | 613  | 24.0 | 610  | 4.1  | 103.3 | 6.0  | 152.4  | 15.0 | 381.0 | 8.5  | 216.2 | 6.9  | 176.3 | 11.3 | 288 | 33.7 | 856.2 | —    | —   | —    | —   |
| 6             | 24.0               | 610  | 24.1 | 613  | 24.0 | 610  | 6.0  | 152.4 | 6.0  | 152.4  | 15.0 | 381.0 | 10.0 | 255.0 | 10.0 | 255.0 | 14.2 | 360 | 12.1 | 307   | 14.8 | 377 | 23.6 | 600 |
| 8x6           | 29.0               | 737  | 29.1 | 740  | 29.0 | 737  | 6.0  | 152.4 | 8.0  | 203.2  | 18.5 | 470.0 | 10.0 | 255.0 | 10.0 | 255.0 | 14.2 | 360 | 12.1 | 307   | 14.8 | 377 | 23.6 | 600 |
| 8             | 29.0               | 737  | 29.1 | 740  | 29.0 | 737  | 8.0  | 203.2 | 8.0  | 203.2  | 18.5 | 469.9 | 11.7 | 296.0 | 12.6 | 320.0 | 17.3 | 440 | 14.2 | 360   | 21.5 | 545 | 27.6 | 700 |
| 10x8          | 33.0               | 838  | 33.1 | 841  | 33.0 | 838  | 8.0  | 203.2 | 10.0 | 254.0  | 21.5 | 546.0 | 11.7 | 296.0 | 12.6 | 320.0 | 17.3 | 440 | 14.2 | 360   | 21.5 | 545 | 27.6 | 700 |
| 10            | 33.0               | 838  | 33.1 | 841  | 33.0 | 838  | 10.0 | 254.0 | 10.0 | 254.0  | 21.5 | 546.0 | 13.5 | 342.0 | 16.0 | 406.0 | 20.9 | 532 | 16.2 | 412   | 20.4 | 518 | 23.6 | 600 |
| 12x10         | 38.0               | 965  | 38.1 | 968  | 38.0 | 965  | 10.0 | 254.0 | 12.0 | 304.8  | 24.0 | 610.0 | 13.5 | 342.0 | 16.0 | 406.0 | 20.9 | 532 | 16.2 | 412   | 20.4 | 518 | 23.6 | 600 |
| 12            | 38.0               | 965  | 38.1 | 968  | 38.0 | 965  | 12.0 | 304.8 | 12.0 | 304.8  | 24.0 | 609.6 | 16.4 | 416.0 | 18.2 | 462.5 | 25.4 | 645 | 19.6 | 497   | 23.1 | 588 | 31.5 | 800 |
| 14x12         | 40.5               | 1029 | 40.9 | 1038 | 40.5 | 1029 | 12.0 | 304.8 | 12.8 | 324.0  | 25.3 | 642.0 | 16.4 | 416.0 | 18.2 | 462.5 | 25.4 | 645 | 19.6 | 497   | 23.1 | 588 | 31.5 | 800 |
| 16x12         | 44.5               | 1130 | 44.9 | 1140 | 44.5 | 1130 | 12.0 | 304.8 | 14.8 | 374.7  | 27.8 | 705.0 | 16.4 | 416.0 | 18.2 | 462.5 | 25.4 | 645 | 19.6 | 497   | 23.1 | 588 | 31.5 | 800 |
| 14            | 40.5               | 1029 | 40.9 | 1038 | 40.5 | 1029 | 12.8 | 324.0 | 12.8 | 324.0  | 25.3 | 641.4 | 15.6 | 395.0 | 16.5 | 420.0 | 24.8 | 630 | 18.7 | 476   | 23.1 | 588 | 31.5 | 800 |
| 16            | 44.5               | 1130 | 44.9 | 1140 | 44.5 | 1130 | 14.8 | 374.7 | 14.8 | 374.65 | 27.8 | 705.5 | 18.3 | 465.5 | 19.4 | 491.9 | 29.3 | 745 | 21.8 | 554.5 | 23.3 | 592 | 31.5 | 800 |
| 18            | Consult Factory    |      |      |      |      |      |      |       |      |        |      |       |      |       |      |       |      |     |      |       |      |     |      |     |
| 20            |                    |      |      |      |      |      |      |       |      |        |      |       |      |       |      |       |      |     |      |       |      |     |      |     |
| 24            |                    |      |      |      |      |      |      |       |      |        |      |       |      |       |      |       |      |     |      |       |      |     |      |     |



# KF Series P3 Class 1500 • Dimensional Data (in., mm)

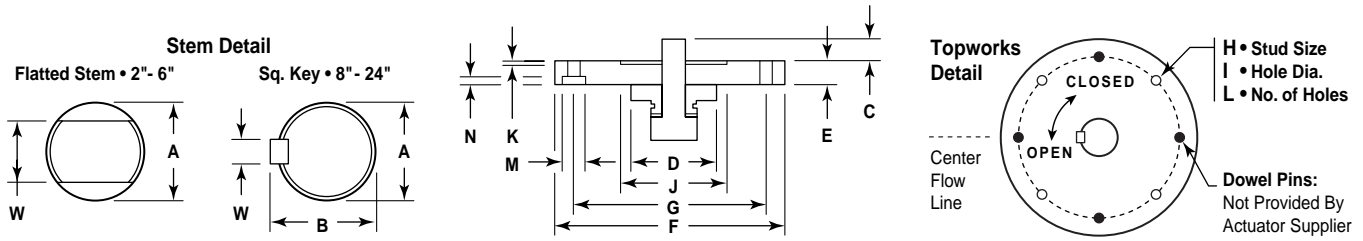


## Dimensional Data, 2"FP-16"FP, Class 1500

| Size<br>(in.) | Dimension (in./mm) |      |      |      |      |      |      |       |      |       |      |       |      |       |      |       |      |     |      |       |      |     |      |     |
|---------------|--------------------|------|------|------|------|------|------|-------|------|-------|------|-------|------|-------|------|-------|------|-----|------|-------|------|-----|------|-----|
|               | A                  |      |      |      |      |      | B    |       | B1   |       | C    |       | D    |       | E    |       | F    |     | G    |       | H    |     | I    |     |
|               | RF                 |      | RTJ  |      | WE   |      | in.  | mm    | in.  | mm    | in.  | mm    | in.  | mm    | in.  | mm    | in.  | mm  | in.  | mm    | in.  | mm  | in.  | mm  |
| 2             | 14.3               | 368  | 14.6 | 371  | 14.5 | 368  | 2.0  | 50.8  | 2.0  | 50.8  | 8.5  | 215.9 | 6.8  | 172.0 | 5.3  | 134.3 | 8.4  | 214 | 22.0 | 558.8 | —    | —   | —    | —   |
| 3x2           | 18.3               | 470  | 18.6 | 473  | 18.5 | 470  | 2.0  | 50.8  | 3.0  | 76.2  | 10.5 | 266.7 | 6.8  | 172.0 | 5.3  | 134.3 | 8.4  | 214 | 22.0 | 558.8 | —    | —   | —    | —   |
| 3             | 18.3               | 470  | 18.6 | 473  | 18.5 | 470  | 3.0  | 76.2  | 3.0  | 76.2  | 10.5 | 266.7 | 8.6  | 219.0 | 7.1  | 180.3 | 11.8 | 300 | 27.6 | 700   | —    | —   | —    | —   |
| 4x3           | 21.2               | 546  | 21.6 | 549  | 21.5 | 546  | 3.0  | 76.2  | 4.1  | 103.3 | 12.2 | 311.0 | 8.6  | 219.0 | 7.1  | 180.3 | 11.8 | 300 | 27.6 | 700   | —    | —   | —    | —   |
| 4             | 21.2               | 546  | 21.6 | 549  | 21.5 | 546  | 4.1  | 103.3 | 4.1  | 103.3 | 12.2 | 311.0 | 9.2  | 234.5 | 7.8  | 197.3 | 13.0 | 330 | 39.4 | 1000  | —    | —   | —    | —   |
| 6x4           | 27.4               | 705  | 28.0 | 711  | 27.8 | 705  | 4.1  | 103.3 | 5.7  | 146.0 | 15.5 | 394.0 | 9.2  | 234.5 | 7.8  | 197.3 | 13.0 | 330 | 39.4 | 1000  | —    | —   | —    | —   |
| 6             | 27.4               | 705  | 28.0 | 711  | 27.8 | 705  | 5.7  | 146   | 5.7  | 146.0 | 15.5 | 394.0 | 11.3 | 288.0 | 11.2 | 285.0 | 16.5 | 420 | 13.9 | 352   | 20.4 | 518 | 23.6 | 600 |
| 8x6           | 32.8               | 832  | 33.1 | 841  | 32.8 | 832  | 5.7  | 146   | 7.6  | 194.0 | 19.0 | 483.0 | 11.3 | 288.0 | 11.2 | 285.0 | 16.5 | 420 | 13.9 | 352   | 20.4 | 518 | 23.6 | 600 |
| 8             | 32.8               | 832  | 33.1 | 841  | 32.8 | 832  | 7.6  | 194   | 7.6  | 193.7 | 19.0 | 482.6 | 13.7 | 347.0 | 14.5 | 369.0 | 21.2 | 538 | 16.4 | 417   | 22.6 | 575 | 27.6 | 700 |
| 10x8          | 39.0               | 991  | 39.4 | 1000 | 39.0 | 991  | 7.6  | 194   | 9.5  | 241.0 | 23.0 | 585.0 | 13.7 | 347.0 | 14.5 | 369.0 | 21.2 | 538 | 16.4 | 417   | 22.6 | 575 | 27.6 | 700 |
| 10            | 39.0               | 991  | 39.4 | 1000 | 39.0 | 991  | 9.5  | 241   | 9.5  | 241.3 | 23.0 | 585.0 | 15.6 | 397.0 | 17.9 | 455.0 | 24.8 | 630 | 18.8 | 478   | 23.1 | 588 | 31.5 | 800 |
| 12x10         | 44.5               | 1130 | 45.1 | 1146 | 44.5 | 1130 | 9.5  | 241   | 11.4 | 289.0 | 26.5 | 673.0 | 15.6 | 397.0 | 17.9 | 455.0 | 24.8 | 630 | 18.8 | 478   | 23.1 | 588 | 31.5 | 800 |
| 12            | 44.5               | 1130 | 45.1 | 1146 | 44.5 | 1130 | 11.4 | 289   | 11.4 | 289.0 | 26.5 | 673.0 | 19.1 | 486.0 | 20.9 | 530.0 | 30.7 | 780 | 22.3 | 567   | 23.1 | 588 | 31.5 | 800 |
| 16            | Consult factory    |      |      |      |      |      |      |       |      |       |      |       |      |       |      |       |      |     |      |       |      |     |      |     |



# KF Series P3 Topworks (in.) & Stem Torque Data (in.-lbs.)



| Valve Size (in.) | ANSI Class | A               | B     | C     | D      | E     | F      | G      | H Stud Sz. UNC | I Hole Dia. | J      | K     | L No. Of Holes | M C. Line Bore | N Bore Depth | W      | Max Stem Sheer Torq. ft.-lbs. | Break Torq. in.-lbs. | Torq. Express. (1) For P<=2160 PSI in.-lbs. (2) (3) |
|------------------|------------|-----------------|-------|-------|--------|-------|--------|--------|----------------|-------------|--------|-------|----------------|----------------|--------------|--------|-------------------------------|----------------------|---|
| 2                | 600        | 0.871           | —     | 1.319 | 3.760  | 0.709 | 5.906  | 4.921  | 1/2-13         | 0.531       | —      | —     | 4              | 0.787          | 0.512        | *0.558 | 134                           | 1314                 | 0.409*P+<br>708.20                                  |
| 2                | 900        | 0.871           | —     | 1.345 | 3.858  | 0.709 | 5.906  | 4.921  | 1/2-13         | 0.531       | —      | —     | 4              | 0.787          | 0.512        | *0.558 | 135                           | 1616                 |   |
| 2                | 1500       | 1.103           | —     | 1.988 | 4.094  | 1.063 | 5.906  | 4.921  | 1/2-13         | 0.531       | —      | —     | 4              | 0.787          | 0.551        | *0.746 | 306                           | 2224                 |   |
| 3                | 600        | 1.378           | —     | 2.010 | 4.429  | 0.787 | 6.240  | 5.433  | 1/2-13         | 0.531       | —      | —     | 4              | —              | —            | *0.994 | 405                           | 4151                 | 1.758*P+<br>1548.75                                 |
| 3                | 900        | 1.378           | —     | 2.000 | 4.941  | 0.945 | 6.713  | 5.433  | 1/2-13         | 0.531       | —      | —     | 4              | 0.807          | 0.500        | *0.994 | 630                           | 5452                 |   |
| 3                | 1500       | 1.493           | —     | 1.973 | 4.921  | 1.181 | 6.693  | 5.512  | 5/8-11         | 0.657       | —      | —     | 4              | 1.024          | 0.650        | *0.993 | 726                           | 8062                 |   |
| 4                | 600        | 1.497           | —     | 1.687 | 5.020  | 1.220 | 6.890  | 5.512  | 5/8-11         | 0.657       | 3.939  | 0.118 | 4              | 0.984          | 0.630        | *0.996 | 725                           | 6043                 | 2.319*P+<br>2610.75                                 |
| 4                | 900        | 1.497           | —     | 1.687 | 5.020  | 1.220 | 6.890  | 5.512  | 5/8-11         | 0.657       | 3.939  | 0.118 | 4              | 0.984          | 0.630        | *0.996 | 728                           | 7759                 |   |
| 4                | 1500       | 1.774           | —     | 2.402 | 5.925  | 1.220 | 8.268  | 6.496  | 3/4-10         | 0.787       | 5.120  | 0.118 | 4              | 1.181          | 0.787        | *1.247 | 1337                          | 11,203               |   |
| 6                | 600        | 1.931           | —     | 2.179 | 4.921  | 1.299 | 6.909  | 5.512  | 5/8-11         | 0.657       | 3.939  | 0.118 | 4              | 1.000          | 0.669        | *1.247 | 1624                          | 14,580               | 7.446*P+<br>3559.47                                 |
| 6                | 900        | 1.992           | —     | 1.991 | 4.921  | 1.378 | 8.287  | 6.496  | 3/4-10         | 0.787       | 5.120  | 0.118 | 4              | 1.181          | 0.787        | *1.247 | 1695                          | 20,090               |   |
| 6                | 1500       | 2.493           | —     | 2.795 | 6.299  | 1.181 | 11.811 | 10.000 | 5/8-11         | 0.669       | 7.880  | 0.118 | 8              | —              | —            | *1.747 | 3722                          | 31,147               |   |
| 8                | 600        | 2.870           | 3.191 | 3.588 | 6.297  | 1.732 | 8.287  | 6.496  | 3/4-10         | 0.787       | 5.120  | 0.157 | 4              | 1.165          | 0.787        | 0.750  | 7460                          | 22,628               | 11.535*P+<br>5556.03                                |
| 8                | 900        | 2.870           | 3.191 | 3.780 | 6.496  | 1.575 | 11.811 | 10.000 | 5/8-11         | 0.669       | 7.877  | 0.157 | 8              | —              | —            | 0.750  | 7460                          | 31,164               |   |
| 8                | 1500       | 2.870           | 3.191 | 3.299 | 6.496  | 1.575 | 11.811 | 10.000 | 5/8-11         | 0.669       | 7.877  | 0.118 | 8              | —              | —            | 0.750  | 7460                          | 48,293               |   |
| 10               | 600        | 3.240           | 3.613 | 3.581 | 6.900  | 0.986 | 11.319 | 10.000 | 5/8-11         | 0.657       | 7.877  | 0.118 | 8              | —              | —            | 0.875  | 10,631                        | 29,042               | 14.402*P+<br>7726.94                                |
| 10               | 900        | 3.240           | 3.617 | 3.972 | 7.096  | 1.260 | 11.811 | 10.000 | 5/8-11         | 0.657       | 7.877  | 0.118 | 8              | —              | —            | 0.875  | 10,631                        | 39,699               |   |
| 10               | 1500       | 3.240           | 3.617 | 3.775 | 7.490  | 1.457 | 11.811 | 10.000 | 5/8-11         | 0.669       | 7.877  | 0.118 | 8              | —              | —            | 0.875  | 10,631                        | 61,086               |   |
| 12               | 600        | 3.994           | 4.426 | 4.244 | 8.500  | 1.319 | 12.000 | 10.000 | 5/8-11         | 0.657       | 7.877  | 0.118 | 8              | —              | —            | 1.000  | 20,315                        | 34,639               | 16.6*P+<br>10071.30                                 |
| 12               | 900        | 3.994           | 4.426 | 4.210 | 9.051  | 1.813 | 13.780 | 11.732 | 3/4-10         | 0.787       | 9.057  | 0.199 | 8              | —              | —            | 1.000  | 20,315                        | 46,923               |   |
| 12               | 1500       | 3.990           | 4.426 | 4.210 | 9.445  | 1.813 | 13.780 | 11.732 | 3/4-10         | 0.787       | 9.057  | 0.199 | 8              | —              | —            | 1.000  | 20,315                        | 71,574               |   |
| 14               | 150        | 3.240           | 3.613 | 3.603 | 8.071  | 1.299 | 11.811 | 10.000 | 5/8-11         | 0.657       | 7.875  | 0.118 | 8              | —              | —            | 0.875  | 7444                          | 25,000               | 28.32*P+<br>16929.17                                |
| 14               | 300        | 3.240           | 3.613 | 3.603 | 8.071  | 1.299 | 11.811 | 10.000 | 5/8-11         | 0.657       | 7.875  | 0.118 | 8              | —              | —            | 0.875  | 7444                          | 37,886               |   |
| 14               | 600        | 3.240           | 3.613 | 3.603 | 8.071  | 1.299 | 13.780 | 11.732 | 3/4-10         | 0.787       | 9.057  | 0.118 | 8              | —              | —            | 0.875  | 10,631                        | 58,843               |   |
| 14               | 900        | 3.240           | 3.613 | 3.287 | 7.874  | 1.457 | 13.780 | 11.732 | 3/4-10         | 0.827       | 9.057  | 0.118 | 8              | —              | —            | 0.875  | 10,631                        | 79,800               |   |
| 16               | 150        | 3.240           | 3.613 | 3.838 | 8.228  | 1.299 | 11.811 | 10.000 | 5/8-11         | 0.657       | 7.875  | 0.118 | 8              | —              | —            | 0.875  | 10,631                        | 33,602               | 37.48*P+<br>22919.73                                |
| 16               | 300        | 3.240           | 3.613 | 3.838 | 8.228  | 1.299 | 11.811 | 10.000 | 5/8-11         | 0.657       | 7.875  | 0.118 | 8              | —              | —            | 0.875  | 10,631                        | 50,655               |   |
| 16               | 600        | 4.333           | 4.749 | 4.114 | 8.898  | 1.299 | 13.228 | 11.732 | 3/4-10         | 0.787       | 9.057  | 0.118 | 8              | —              | —            | 1.000  | 26,103                        | 78,390               |   |
| 16               | 900        | 4.333           | 4.749 | 4.568 | 8.543  | 1.000 | 13.780 | 11.732 | 3/4-10         | 0.787       | 9.057  | 0.118 | 8              | —              | —            | 1.000  | 26,103                        | 106,125              |   |
| 16               | 1500       | Consult Factory |       |       |        |       |        |        |                |             |        |       |                |                |              |        |                               |                      |   |
| 18               | 150        | 4.333           | 4.749 | 3.996 | 9.055  | 1.299 | 13.228 | 11.732 | 3/4-10         | 0.787       | 9.057  | 0.118 | 8              | —              | —            | 1.000  | 26,103                        | 45,663               | 62.74*P+<br>27781.92                                |
| 18               | 300        | 4.333           | 4.749 | 3.996 | 9.055  | 1.299 | 13.228 | 11.732 | 3/4-10         | 0.787       | 9.057  | 0.118 | 8              | —              | —            | 1.000  | 26,103                        | 74,210               |   |
| 18               | 600        | 4.333           | 4.749 | 3.996 | 9.055  | 1.299 | 13.780 | 11.732 | 3/4-10         | 0.787       | 9.057  | 0.118 | 8              | —              | —            | 1.000  | 26,103                        | 120,637              |   |
| 18               | 900        | 4.742           | 5.284 | 3.267 | 11.807 | 1.000 | 18.701 | 15.984 | 1 1/2-8        | 1.575       | 11.819 | 0.315 | 8              | —              | —            | 1.250  | 60,984                        | 167,065              | 91.86*P+<br>31428.12                                |
| 20               | 150        | 4.333           | 4.749 | 4.528 | 9.248  | 1.000 | 13.386 | 11.732 | 3/4-10         | 0.787       | 9.057  | 0.118 | 8              | —              | —            | 1.000  | 26,103                        | 57,608               |   |
| 20               | 300        | 4.323           | 4.749 | 4.449 | 9.248  | 1.417 | 13.780 | 11.732 | 3/4-10         | 0.787       | 9.057  | 0.118 | 8              | —              | —            | 1.000  | 26,103                        | 99,405               |   |
| 20               | 600        | 4.333           | 4.749 | 4.382 | 9.839  | 1.000 | 13.780 | 11.732 | 3/4-10         | 0.787       | 9.057  | 0.118 | 8              | —              | —            | 1.000  | 26,103                        | 167,381              |   |
| 20               | 900        | 4.742           | 5.284 | 5.118 | 11.807 | 1.000 | 18.701 | 15.984 | 1 1/2-8        | 1.575       | 11.819 | 0.315 | 8              | —              | —            | 1.250  | 60,984                        | 235,357              | 141.23*P+<br>69976.95                               |
| 24               | 150        | 4.333           | 4.749 | 4.429 | 9.248  | 1.417 | 13.780 | 11.732 | 3/4-10         | 0.787       | 9.057  | 0.118 | 8              | —              | —            | 1.000  | 26,103                        | 110,228              |   |
| 24               | 300        | 4.333           | 4.749 | 4.429 | 9.248  | 1.417 | 13.780 | 11.732 | 3/4-10         | 0.787       | 9.057  | 0.118 | 8              | —              | —            | 1.000  | 26,103                        | 174,487              |   |
| 24               | 600        | 4.725           | 5.257 | 4.331 | 11.020 | 2.362 | 18.701 | 15.984 | 1 1/2-8        | 1.575       | 11.819 | 0.394 | 8              | —              | —            | 1.250  | 33,100                        | 278,997              |   |
| 24               | 900        | 5.741           | 6.391 | 6.259 | 12.386 | 1.181 | 18.701 | 15.984 | 1 1/2-8        | 1.575       | 11.817 | 0.118 | 8              | —              | —            | 1.500  | 108,306                       | 383,508              |   |
| 30               | 600        | Consult Factory |       |       |        |       |        |        |                |             |        |       |                |                |              |        |                               |                      |   |
| 36               | 600        | Consult Factory |       |       |        |       |        |        |                |             |        |       |                |                |              |        |                               |                      |   |

\* Stem with Double 'D' Flat Style

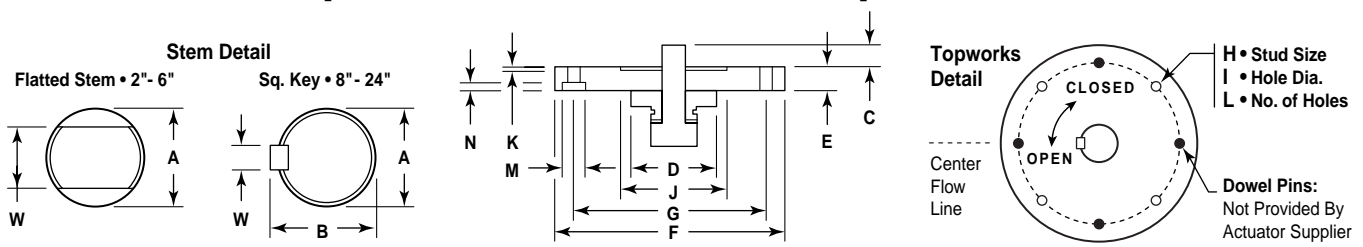
Note: (1) Torque at maximum differential pressure are tabulated  
 (2) Torques expressions are suggested for other differential pressure  
 (3) Differential pressure "P" in torque expressions is in PSI

Pressure ratings are according to API 6D / ASME 16.34  
 Class 150 P = 285      Class 900 P = 2220  
 Class 300 P = 740      Class 1500 P = 3705  
 Class 600 P = 1480





# KF Series P3 Topworks (mm) & Stem Torque Data (Nm)



| Valve Size (in.) | ANSI Class | A               | B     | C     | D     | E    | F     | G   | H Stud Sz. UNC | I Hole Dia. | J     | K    | L No. Of Holes | M C. Line Bore | N Bore Depth | W      | Max Stem Sheer Torq. Nm | Break Torq. Nm | Torq. Express. (1) For P ≤ 10.21 MPa-Nm (2) (3) |
|------------------|------------|-----------------|-------|-------|-------|------|-------|-----|----------------|-------------|-------|------|----------------|----------------|--------------|--------|-------------------------|----------------|---|
| 2                | 600        | 22.1            | —     | 33.5  | 95.5  | 18.0 | 150.0 | 125 | 1/2-13         | 13.5        | —     | —    | 4              | 20.0           | 13.0         | *14.17 | 181.7                   | 148.45         | 6.702*P+<br>80.022                              |
| 2                | 900        | 22.1            | —     | 34.2  | 98.0  | 18.0 | 150.0 | 125 | 1/2-13         | 13.5        | —     | —    | 4              | 20.0           | 13.0         | *14.17 | 183.0                   | 182.70         |   |
| 2                | 1500       | 28.0            | —     | 50.5  | 104.0 | 27.0 | 150.0 | 125 | 1/2-13         | 13.5        | —     | —    | 4              | 20.0           | 14.0         | *18.95 | 414.9                   | 251.12         |   |
| 3                | 600        | 35.0            | —     | 51.1  | 112.5 | 20.0 | 158.5 | 138 | 1/2-13         | 13.5        | —     | —    | 4              | —              | —            | *25.25 | 549.1                   | 469.13         | 28.808*P+<br>175                                |
| 3                | 900        | 35.0            | —     | 50.8  | 125.5 | 24.0 | 170.5 | 138 | 1/2-13         | 13.5        | —     | —    | 4              | 20.5           | 12.7         | *25.25 | 854.2                   | 616.34         |   |
| 3                | 1500       | 37.9            | —     | 50.1  | 125.0 | 30.0 | 170.0 | 140 | 5/8-11         | 16.7        | —     | —    | 4              | 26.0           | 16.5         | *25.22 | 984.3                   | 910.47         |   |
| 4                | 600        | 38.0            | —     | 42.9  | 127.5 | 31.0 | 175.0 | 140 | 5/8-11         | 16.7        | 100.1 | 3.0  | 4              | 25.0           | 16.0         | *25.30 | 983.0                   | 682.99         | 38.001*P+<br>295                                |
| 4                | 900        | 38.0            | —     | 42.9  | 127.5 | 31.0 | 175.0 | 140 | 5/8-11         | 16.7        | 100.1 | 3.0  | 4              | 25.0           | 16.0         | *25.30 | 987.0                   | 877.18         |   |
| 4                | 1500       | 45.1            | —     | 61.0  | 150.5 | 31.0 | 210.0 | 165 | 3/4-10         | 20.0        | 130.0 | 3.0  | 4              | 30.0           | 20.0         | *31.67 | 1812.7                  | 1265.17        |   |
| 6                | 600        | 49.0            | —     | 55.3  | 125.0 | 33.0 | 175.5 | 140 | 5/8-11         | 16.7        | 100.1 | 3.0  | 4              | 25.4           | 17.0         | *31.67 | 2201.8                  | 1648.00        | 122.018*P+<br>402.2                             |
| 6                | 900        | 50.6            | —     | 50.6  | 125.0 | 35.0 | 210.5 | 165 | 3/4-10         | 20.0        | 130.0 | 3.0  | 4              | 30.0           | 20.0         | *31.67 | 2298.1                  | 2271.52        |   |
| 6                | 1500       | 63.3            | —     | 71.0  | 160.0 | 30.0 | 300.0 | 254 | 5/8-11         | 17.0        | 200.2 | 3.0  | 8              | —              | —            | *44.37 | 5046.4                  | 3517.32        |   |
| 8                | 600        | 72.9            | 81.1  | 91.1  | 159.9 | 44.0 | 210.5 | 165 | 3/4-10         | 20.0        | 130.0 | 4.0  | 4              | 29.6           | 20.0         | 19.05  | 10,114.4                | 2557.74        | 189.024*P+<br>627.8                             |
| 8                | 900        | 72.9            | 81.1  | 96.0  | 165.0 | 40.0 | 300.0 | 254 | 5/8-11         | 17.0        | 200.1 | 4.0  | 8              | —              | —            | 19.05  | 10,114.4                | 3523.65        |   |
| 8                | 1500       | 72.9            | 81.1  | 83.8  | 165.0 | 40.0 | 300.0 | 254 | 5/8-11         | 17.0        | 200.1 | 3.0  | 8              | —              | —            | 19.05  | 10,114.4                | 5453.58        |   |
| 10               | 600        | 82.3            | 91.8  | 91.0  | 175.3 | 25.0 | 287.5 | 254 | 5/8-11         | 16.7        | 200.1 | 3.0  | 8              | —              | —            | 22.23  | 14,413.7                | 3282.72        | 236.006*P+<br>873.101                           |
| 10               | 900        | 82.3            | 91.9  | 100.9 | 180.2 | 32.0 | 300.0 | 254 | 5/8-11         | 16.7        | 200.1 | 3.0  | 8              | —              | —            | 22.23  | 14,413.7                | 4488.71        |   |
| 10               | 1500       | 82.3            | 91.9  | 95.9  | 190.2 | 37.0 | 300.0 | 254 | 5/8-11         | 17.0        | 200.1 | 3.0  | 8              | —              | —            | 22.23  | 14,413.7                | 6898.33        |   |
| 12               | 600        | 101.4           | 112.4 | 107.8 | 215.9 | 33.5 | 304.8 | 254 | 5/8-11         | 16.7        | 200.1 | 3.0  | 8              | —              | —            | 25.40  | 27,543.4                | 3915.37        | 272.024*P+<br>1138                              |
| 12               | 900        | 101.4           | 112.4 | 106.9 | 229.9 | 46.1 | 350.0 | 298 | 3/4-10         | 20.0        | 230.0 | 5.0  | 8              | —              | —            | 25.40  | 27,543.4                | 5305.41        |   |
| 12               | 1500       | 101.3           | 112.4 | 106.9 | 239.9 | 46.1 | 350.0 | 298 | 3/4-10         | 20.0        | 230.0 | 5.0  | 8              | —              | —            | 25.40  | 27,543.4                | 8082.77        |   |
| 14               | 150        | 82.3            | 91.8  | 91.5  | 205.0 | 33.0 | 300.0 | 254 | 5/8-11         | 16.7        | 200.0 | 3.0  | 8              | —              | —            | 22.23  | 10,092.7                | 2822.50        | 464.080*P+<br>1912.901                          |
| 14               | 300        | 82.3            | 91.8  | 91.5  | 205.0 | 33.0 | 300.0 | 254 | 5/8-11         | 16.7        | 200.0 | 3.0  | 8              | —              | —            | 22.23  | 10,092.7                | 4284.35        |   |
| 14               | 600        | 82.3            | 91.8  | 91.5  | 205.0 | 33.0 | 350.0 | 298 | 3/4-10         | 20.0        | 230.0 | 3.0  | 8              | —              | —            | 22.23  | 14,413.7                | 6651.16        |   |
| 14               | 900        | 82.3            | 91.8  | 83.5  | 200.0 | 37.0 | 350.0 | 298 | 3/4-10         | 21.0        | 230.0 | 3.0  | 8              | —              | —            | 22.23  | 14,413.7                | 9022.61        |   |
| 16               | 150        | 82.3            | 91.8  | 97.5  | 209.0 | 33.0 | 300.0 | 254 | 5/8-11         | 16.7        | 200.0 | 3.0  | 8              | —              | —            | 22.23  | 14,413.7                | 3793.60        | 614.185*P+<br>2589.8                            |
| 16               | 300        | 82.3            | 91.8  | 97.5  | 209.0 | 33.0 | 300.0 | 254 | 5/8-11         | 16.7        | 200.0 | 3.0  | 8              | —              | —            | 22.23  | 14,413.7                | 5728.29        |   |
| 16               | 600        | 110.1           | 120.6 | 104.5 | 226.0 | 33.0 | 336.0 | 298 | 3/4-10         | 20.0        | 230.0 | 3.0  | 8              | —              | —            | 25.40  | 35,390.9                | 8860.63        |   |
| 16               | 900        | 110.1           | 120.6 | 116.0 | 217.0 | 25.4 | 350.0 | 298 | 3/4-10         | 20.0        | 230.0 | 3.0  | 8              | —              | —            | 25.40  | 35,390.9                | 11,999.11      |   |
| 16               | 1500       | Consult Factory |       |       |       |      |       |     |                |             |       |      |                |                |              |        |                         |                |   |
| 18               | 150        | 110.1           | 120.6 | 101.5 | 230.0 | 33.0 | 336.0 | 298 | 3/4-10         | 20.0        | 230.0 | 3.0  | 8              | —              | —            | 25.40  | 35,390.9                | 5154.32        | 1028.12*P+<br>3139.2                            |
| 18               | 300        | 110.1           | 120.6 | 101.5 | 230.0 | 33.0 | 336.0 | 298 | 3/4-10         | 20.0        | 230.0 | 3.0  | 8              | —              | —            | 25.40  | 35,390.9                | 8392.89        |   |
| 18               | 600        | 110.1           | 120.6 | 101.5 | 230.0 | 33.0 | 350.0 | 298 | 3/4-10         | 20.0        | 230.0 | 3.0  | 8              | —              | —            | 25.40  | 35,390.9                | 13,636.31      |   |
| 18               | 900        | 120.4           | 134.2 | 83.0  | 299.9 | 25.4 | 475.0 | 406 | 1 1/2-8        | 40.0        | 300.2 | 8.0  | 8              | —              | —            | 31.75  | 82,683.2                | 18,890.00      |   |
| 20               | 150        | 110.1           | 120.6 | 115.0 | 234.9 | 25.4 | 340.0 | 298 | 3/4-10         | 20.0        | 230.0 | 3.0  | 8              | —              | —            | 25.40  | 35,390.9                | 6501.61        | 1505.31*P+<br>3551.2                            |
| 20               | 300        | 109.8           | 120.6 | 113.0 | 234.9 | 36.0 | 350.0 | 298 | 3/4-10         | 20.0        | 230.0 | 3.0  | 8              | —              | —            | 25.40  | 35,390.9                | 11,243.33      |   |
| 20               | 600        | 110.1           | 120.6 | 111.3 | 249.9 | 25.4 | 350.0 | 298 | 3/4-10         | 20.0        | 230.0 | 3.0  | 8              | —              | —            | 25.40  | 35,390.9                | 18,920.42      |   |
| 20               | 900        | 120.4           | 134.2 | 130.0 | 299.9 | 25.4 | 475.0 | 406 | 1 1/2-8        | 40.0        | 300.2 | 8.0  | 8              | —              | —            | 31.75  | 82,683.2                | 26,612.55      |   |
| 24               | 150        | 110.1           | 120.6 | 112.5 | 234.9 | 36.0 | 350.0 | 298 | 3/4-10         | 20.0        | 230.0 | 3.0  | 8              | —              | —            | 25.40  | 35,390.9                | 12,443.10      | 2314.336*P+<br>7907                             |
| 24               | 300        | 110.1           | 120.6 | 112.5 | 234.9 | 36.0 | 350.0 | 298 | 3/4-10         | 20.0        | 230.0 | 3.0  | 8              | —              | —            | 25.40  | 35,390.9                | 19,733.26      |   |
| 24               | 600        | 120.0           | 133.5 | 110.0 | 279.9 | 60.0 | 475.0 | 406 | 1 1/2-8        | 40.0        | 300.2 | 10.0 | 8              | —              | —            | 31.75  | 44,877.6                | 31,536.37      |   |
| 24               | 900        | 145.8           | 162.3 | 159.0 | 314.6 | 30.0 | 475.0 | 406 | 1 1/2-8        | 40.0        | 300.2 | 3.0  | 8              | —              | —            | 38.10  | 146,843.2               | 43,362.63      |   |
| 30               | 600        | Consult Factory |       |       |       |      |       |     |                |             |       |      |                |                |              |        |                         |                |   |
| 36               | 600        | Consult Factory |       |       |       |      |       |     |                |             |       |      |                |                |              |        |                         |                |   |

Note: (1) Torque at maximum differential pressure are tabulated  
 (2) Torques expressions are suggested for other differential pressure  
 (3) Differential pressure "P" in torque expressions is in MPa

Pressure ratings are according to API 6D/ASME 16.34  
 Class 150 P = 1.96      Class 900 P = 15.32  
 Class 300 P = 5.11      Class 1500 P = 25.53  
 Class 600 P = 10.21

\* Stem with Double 'D' Flat Style



# KF Series P3 Engineering Data

## Flow Coefficient (C<sub>v</sub>)

| Size (in.) | C <sub>v</sub> Value |         |          |          |          |
|------------|----------------------|---------|----------|----------|----------|
|            | 285 psi              | 740 psi | 1480 psi | 2220 psi | 3705 psi |
| 2          | —                    | —       | 350      | 320      | 330      |
| 3 x 2      | —                    | —       | 190      | 185      | 187      |
| 3          | —                    | —       | 1000     | 910      | 830      |
| 4 x 3      | —                    | —       | 560      | 505      | 510      |
| 4          | —                    | —       | 1850     | 1760     | 1660     |
| 6 x 4      | —                    | —       | 800      | 730      | 742      |
| 6          | —                    | —       | 4400     | 4300     | 4167     |
| 8 x 6      | —                    | —       | 2150     | 2010     | 2033     |
| 8          | —                    | —       | 8450     | 8400     | 8013     |
| 10 x 8     | —                    | —       | 4500     | 4160     | 4051     |
| 10         | —                    | —       | 14,250   | 14,160   | 13,309   |
| 12 x 10    | —                    | —       | 8000     | 7300     | 7117     |
| 12         | —                    | —       | 22,790   | 21,230   | 17,073   |
| 14 x 12    | —                    | —       | 13,990   | —        | —        |
| 16 x 12    | —                    | —       | —        | —        | —        |
| 14         | 32,600               | 30,900  | 28,600   | 26,600   | 24,276   |
| 16 x 14    | 14,780               | 14,750  | 14,720   | 14,690   | 14,247   |
| 16         | 44,700               | 42,600  | 39,250   | 36,600   | 33,215   |
| 20 x 16    | 14,870               | 14,860  | 14,850   | 14,830   | 14,795   |
| 18         | 57,825               | 56,225  | 57,410   | 48,665   | 43,402   |
| 20         | 74,775               | 71,800  | 65,463   | 62,239   | 55,931   |
| 24 x 20    | 26,768               | 26,755  | 25,698   | 26,659   | —        |
| 22         | 91,789               | 88,537  | 81,305   | —        | —        |
| 24         | 113,284              | 109,414 | 98,963   | 93,993   | 83,926   |

Note: Consult factory for sizes not shown.

## Body & Trim Materials

| Part         | Material                |
|--------------|-------------------------|
| Body/Adapter | A105, LF2, F316SS       |
| Ball/Stem    | F316SS or CS+3 mil ENP  |
| Seat         | Devlon®, Teflon®, PEEK™ |

## Pressure Rating (psig)

| Material  | ANSI Cl. 150 | ANSI Cl. 300 | ANSI Cl. 600 | ANSI Cl. 900 | ANSI Cl. 1500 |
|-----------|--------------|--------------|--------------|--------------|---------------|
| A105, LF2 | 285          | 740          | 1480         | 2220         | 3705          |
| F316      | 275          | 720          | 1440         | 2160         | 3600          |

## Low Temperature Limits

| Body Material | °F  | °C  |
|---------------|-----|-----|
| A105          | -20 | -29 |
| LF2           | -50 | -46 |
| F316          | -50 | -46 |

| Seat Material | °F  | °C  |
|---------------|-----|-----|
| Devlon V      | -50 | -46 |
| PEEK™         | -50 | -46 |
| Teflon®       | -50 | -46 |

| Seat Material | °F  | °C  |
|---------------|-----|-----|
| Viton®        | -20 | -29 |
| HNBR          | -40 | -40 |

## Method of Calculating Flow

The Flow Coefficient “C<sub>v</sub>” of a valve is the flow rate of water (gallons/minute) through a fully opened valve, with a pressure drop of 1 psi across the valve. To find the flow of liquid through valve from the C<sub>v</sub>, use the following formulas:

### Liquid Flow

QL = flow rate of liquid (gal./min.)

ΔP = differential pressure across the valve (psi)

G = specific gravity of liquid (for water, G=1)

$$Q_L = C_v \sqrt{\frac{\Delta P}{G}}$$

### Gas Flow

Qg = flow rate of gas (CFH at STP)

P2 = outlet pressure (psia)

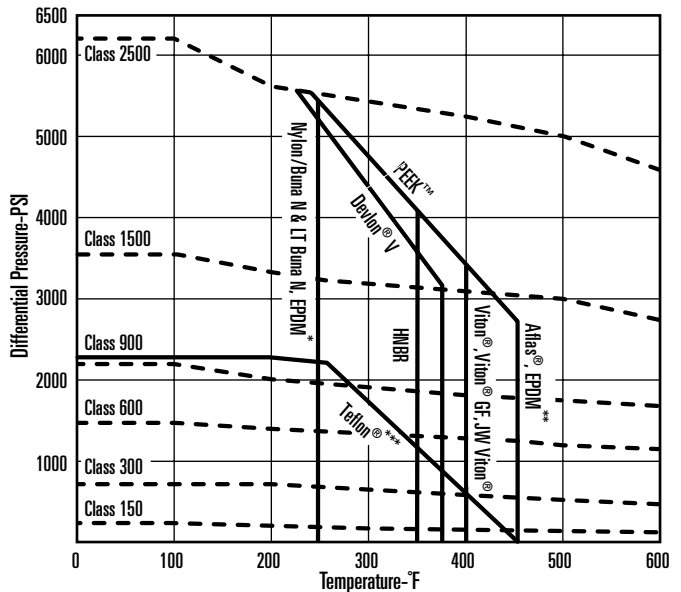
g = Specific gravity of gas (for air, g=1.000)

$$Q_g = 61 C_v \sqrt{\frac{P_2 \Delta P}{g}}$$

For non-critical flow

$$\left\{ \frac{\Delta P}{P_2} < 1.0 \right\}$$

## Pressure Temperature Chart (Carbon Steel)



\* Chemical Service

\*\* Water & Steam service only

\*\*\* Teflon® not offered for Class 1500.



# KF Series P3 Weights

| Valve Size (in.) | Port  | ANSI Class | Weight (lbs.)   |             |         |          | Weight (kg)     |             |         |          |
|------------------|-------|------------|-----------------|-------------|---------|----------|-----------------|-------------|---------|----------|
|                  |       |            | Valve Only      | With Handle | GOP Wt. | With GOP | Valve Only      | With Handle | GOP Wt. | With GOP |
| 2                | FP    | 600        | 81              | 86          | 38      | 119      | 37              | 39          | 18      | 55       |
| 2                | FP    | 900        | 114             | 118         | 54      | 168      | 52              | 54          | 25      | 77       |
| 2                | FP    | 1500       | 169             | 173         | 54      | 223      | 77              | 79          | 25      | 101      |
| 2                | FP    | 2500       | Consult Factory |             |         |          | Consult Factory |             |         |          |
| 3                | RP    | 600        | 96              | 101         | 38      | 134      | 44              | 46          | 18      | 62       |
| 3                | FP    | 600        | 160             | 168         | 54      | 214      | 73              | 76          | 25      | 98       |
| 3                | RP    | 900        | 147             | 152         | 54      | 201      | 67              | 69          | 25      | 92       |
| 3                | FP    | 900        | 216             | 223         | 54      | 270      | 98              | 101         | 25      | 123      |
| 3                | RP    | 1500       | 210             | 214         | 54      | 264      | 95              | 97          | 25      | 120      |
| 3                | FP    | 1500       | 386             | 390         | 45      | 431      | 175             | 179         | 21      | 196      |
| 3                | RP/FP | 2500       | Consult Factory |             |         |          | Consult Factory |             |         |          |
| 4                | RP    | 600        | 216             | 223         | 54      | 270      | 98              | 101         | 25      | 123      |
| 4                | FP    | 600        | 286             | 295         | 45      | 331      | 130             | 134         | 21      | 151      |
| 4                | RP    | 900        | 288             | 296         | 54      | 342      | 131             | 134         | 25      | 156      |
| 4                | FP    | 900        | 385             | 395         | 45      | 430      | 175             | 179         | 21      | 196      |
| 4                | RP    | 1500       | 485             | 494         | 45      | 530      | 220             | 224         | 21      | 241      |
| 4                | FP    | 1500       | 617             | —           | 81      | 698      | 280             | —           | 37      | 317      |
| 4                | RP/FP | 2500       | Consult Factory |             |         |          | Consult Factory |             |         |          |
| 6                | RP    | 600        | 368             | 377         | 45      | 413      | 167             | 171         | 21      | 188      |
| 6                | FP    | 600        | 498             | —           | 84      | 582      | 226             | —           | 38      | 264      |
| 6                | RP    | 900        | 529             | 538         | 45      | 574      | 240             | 244         | 21      | 261      |
| 6                | FP    | 900        | 762             | —           | 92      | 854      | 346             | —           | 42      | 388      |
| 6                | RP    | 1500       | 816             | —           | 81      | 897      | 370             | —           | 37      | 407      |
| 6                | FP    | 1500       | 1157            | —           | 115     | 1272     | 525             | —           | 53      | 577      |
| 6                | RP/FP | 2500       | Consult Factory |             |         |          | Consult Factory |             |         |          |
| 8                | RP    | 600        | 604             | —           | 84      | 688      | 274             | —           | 38      | 312      |
| 8                | FP    | 600        | 992             | —           | 90      | 1082     | 450             | —           | 41      | 491      |
| 8                | RP    | 900        | 912             | —           | 92      | 1004     | 414             | —           | 42      | 456      |
| 8                | FP    | 900        | 1344            | —           | 112     | 1456     | 610             | —           | 51      | 661      |
| 8                | RP    | 1500       | 1356            | —           | 115     | 1471     | 615             | —           | 53      | 668      |
| 8                | FP    | 1500       | 2149            | —           | 196     | 2345     | 975             | —           | 89      | 1064     |
| 8                | RP/FP | 2500       | Consult Factory |             |         |          | Consult Factory |             |         |          |
| 10               | RP    | 600        | 1256            | —           | 90      | 1346     | 570             | —           | 41      | 611      |
| 10               | FP    | 600        | 1653            | —           | 115     | 1768     | 750             | —           | 53      | 803      |
| 10               | RP    | 900        | 1499            | —           | 112     | 1611     | 680             | —           | 51      | 731      |
| 10               | FP    | 900        | 2010            | —           | 198     | 2208     | 912             | —           | 90      | 1002     |
| 10               | RP    | 1500       | 2628            | —           | 196     | 2824     | 1192            | —           | 89      | 1281     |
| 10               | FP    | 1500       | 3440            | —           | 300     | 3740     | 1560            | —           | 136     | 136      |
| 10               | RP/FP | 2500       | Consult Factory |             |         |          | Consult Factory |             |         |          |
| 12               | RP    | 600        | 1834            | —           | 115     | 1949     | 832             | —           | 53      | 885      |
| 12               | FP    | 600        | 2535            | —           | 288     | 2823     | 1150            | —           | 131     | 1281     |
| 12               | RP    | 900        | 2226            | —           | 198     | 2424     | 1010            | —           | 90      | 1100     |
| 12               | FP    | 900        | 2865            | —           | 299     | 3164     | 1300            | —           | 136     | 1436     |
| 12               | RP    | 1500       | 4156            | —           | 300     | 4456     | 1885            | —           | 136     | 2021     |
| 12               | FP    | 1500       | 4012            | —           | 300     | 4312     | 1820            | —           | 136     | 1956     |
| 12               | RP/FP | 2500       | Consult Factory |             |         |          | Consult Factory |             |         |          |

Note: Consult factory for sizes not shown.

| Valve Size (in.) | Port | ANSI Class | Weight (lbs.) |             |         |          | Weight (kg) |             |         |          |
|------------------|------|------------|---------------|-------------|---------|----------|-------------|-------------|---------|----------|
|                  |      |            | Valve Only    | With Handle | GOP Wt. | With GOP | Valve Only  | With Handle | GOP Wt. | With GOP |
| 14               | FP   | 150        | 1781          | —           | 198     | 1979     | 808         | —           | 90      | 898      |
| 14               | FP   | 300        | 2380          | —           | 198     | 2578     | 1080        | —           | 90      | 1170     |
| 14               | RP   | 600        | 2491          | —           | 288     | 2779     | 1130        | —           | 131     | 1261     |
| 14               | FP   | 600        | 3020          | —           | 288     | 3308     | 1370        | —           | 131     | 1501     |
| 14               | FP   | 900        | 3339          | —           | 198     | 3537     | 1515        | —           | 90      | 1605     |
| 16               | RP   | 150        | 1610          | —           | 198     | 1808     | 730         | —           | 90      | 820      |
| 16               | FP   | 150        | 2799          | —           | 198     | 2997     | 1270        | —           | 90      | 1360     |
| 16               | RP   | 300        | 2332          | —           | 198     | 2530     | 1058        | —           | 90      | 1148     |
| 16               | FP   | 300        | 2870          | —           | 194     | 3064     | 1302        | —           | 88      | 1390     |
| 16               | RP   | 600        | 3042          | —           | 288     | 3330     | 1380        | —           | 131     | 1511     |
| 16               | FP   | 600        | 3791          | —           | 293     | 4084     | 1720        | —           | 133     | 1853     |
| 16               | RP   | 900        | 3947          | —           | 198     | 4145     | 1790        | —           | 90      | 1880     |
| 16               | FP   | 900        | 4596          | —           | 476     | 5072     | 2085        | —           | 216     | 2301     |
| 16               | FP   | 1500       | 9393          | —           | 842     | 10,235   | 4261        | —           | 382     | 4643     |
| 18               | FP   | 150        | 2921          | —           | 293     | 3214     | 1325        | —           | 133     | 1458     |
| 18               | FP   | 300        | 4634          | —           | 293     | 4927     | 2102        | —           | 133     | 2235     |
| 18               | FP   | 600        | 5742          | —           | 476     | 6218     | 2605        | —           | 216     | 2821     |
| 18               | FP   | 900        | 6614          | —           | 842     | 7456     | 3001        | —           | 382     | 3383     |
| 20               | RP   | 150        | 2667          | —           | 198     | 2865     | 1210        | —           | 90      | 1300     |
| 20               | FP   | 150        | 4805          | —           | 289     | 5094     | 2180        | —           | 131     | 2311     |
| 20               | RP   | 300        | 4909          | —           | 293     | 5202     | 2227        | —           | 133     | 2360     |
| 20               | FP   | 300        | 5608          | —           | 476     | 6084     | 2544        | —           | 216     | 2760     |
| 20               | RP   | 600        | 4785          | —           | 646     | 5431     | 2170        | —           | 293     | 2464     |
| 20               | FP   | 600        | 6130          | —           | 842     | 6972     | 2781        | —           | 382     | 3163     |
| 20               | RP   | 900        | 6549          | —           | 842     | 7391     | 2971        | —           | 382     | 3353     |
| 20               | FP   | 900        | 9614          | —           | 842     | 10,456   | 4361        | —           | 382     | 4743     |
| 24               | RP   | 150        | 5343          | —           | 289     | 5632     | 2424        | —           | 131     | 2555     |
| 24               | FP   | 150        | 7680          | —           | 476     | 8156     | 3484        | —           | 216     | 3700     |
| 24               | RP   | 300        | 6063          | —           | 289     | 6352     | 2751        | —           | 131     | 2882     |
| 24               | FP   | 300        | 7960          | —           | 842     | 8802     | 3611        | —           | 382     | 3993     |
| 24               | RP   | 600        | 7475          | —           | 842     | 8317     | 3391        | —           | 382     | 3773     |
| 24               | FP   | 600        | 12,125        | —           | 870     | 12,995   | 5500        | —           | 395     | 5895     |
| 24               | RP   | 900        | 12,303        | —           | 842     | 13,145   | 5581        | —           | 382     | 5963     |
| 24               | FP   | 900        | 15,500        | —           | 870     | 16,370   | 7031        | —           | 395     | 7426     |

Note: All weights listed are estimated. Consult factory for sizes not shown.



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