

# Model 2000 Control Valves

## Technical Sales Bulletin



**Figure 1** Dyna-Flo Model DF2000 with DFC Actuator

The Model DF2000 Control Valves are heavy duty globe style control valves used in all kinds of demanding oil and gas applications, from well head to gas plant and beyond.

The Model DF2000 control valves are post guided, single port valves that can be used for either throttling or on-off control of either liquids or gasses.

The actuator for the Model DF2000 valve is typically a Dyna-Flo Model DFC or DFO linear actuators. These heavy duty actuators are spring return diaphragm style, and can be used with or without a valve positioner.

The Model DF2000 control valves are manufactured to a high level of quality specifications to ensure superior performance and customer satisfaction.

### Features

#### Configuration

Globe valve with screwed-on bonnet, unbalanced, post-guided valve plug, screwed-in metal seat ring construction, and push-down-to close valve plug action.

#### Low Temperature Construction Standard

Grade LCC low temperature steel, rated to  $-50^{\circ}\text{F}$  ( $-46^{\circ}\text{C}$ ), is standard for the valve body and bonnet.

#### Severe Service Capable

Constructions are available for service in very erosive applications using a valve plug with a tungsten carbide tip and a seat ring with a full-bore tungsten carbide insert.

#### Valve Sizes and Flange Ratings

The Model DF2000 is available in a 1" and 2" body size, with NPT, RF, or RTJ end connections, in ASME Class 150-2500.

#### Easy Maintenance

The screwed bonnet/body joint, and seat ring allow repair or maintenance with a minimum of tools.

#### Shut Off Capability

The standard shut off classification is ANSI/FCI 70.2 and IEC 60534-4 Class IV. Class V is a readily available option.

#### Superior Construction

The latest in CNC manufacturing and the heavy duty design positively align the valve plug in the seat ring for high pressure drop applications.

#### NACE Service Capability is Standard

The standard construction materials comply with the recommendations of the National Association of Corrosion Engineers (NACE) MR0175, 2002.



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### SPECIFICATIONS

#### Valve Size, Flange Ratings, and Connections

Size: 1" and 2" (Globe and Angle Body).  
Rating: ASME 150/300/600/900/1500/2500.  
Connections: RF / RTJ / NPT.

#### Rated Inlet Pressure and Temperature

Per ASME B16.34  
Also refer to Table 1.

#### Maximum Allowable Pressure Drops (Refer to Tables 9 & 10)

Flow-to-open: Capable of full rated pressure drops.  
Flow-to-close: For more information contact your Dyna-Flo Sales Office.

#### Material Temperature Capabilities

LCC body (standard): -50 to 450°F (-46 to 232°C).  
CF8M body: -50 to 700°F (-46 to 371°C).

#### Construction Materials

Refer to Figures 3 & 4 for valve diagram.  
Refer to Table 8 for construction materials.

#### Dimensions

Valve and Actuator assembly diagram - Refer to Figure 2.  
Valve and Actuator assembly dimensions - Refer to Tables 3 - 7.

#### Flow Direction

Typically up through seat ring and out past valve plug.

#### Flow Characteristic

Dyna-Form Equal Percent  
Dyna-Flute 1 Flute (Equal Percent)  
Dyna-Flute 3 Flute (Equal Percent)

#### Port, Yoke Boss Diameter, Stem Diameters, and Travel

Refer to Table 11.

#### Valve Sizing Coefficients

For standard coefficients at maximum travel, refer to Tables 12 & 13. For full list of coefficients refer to document P-CVSM.

#### Valve Body and Actuator

Approximate Weights - Refer to Table 2.

#### Options

- Trim in Tungsten Carbide.
- Anti-corrosion coating of internal body passage.
- Live loaded low emission packing.

For more information and other options contact your Dyna-Flo sales office.

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**Table 1**

| Rated Inlet Pressure and Temperature |           |                                     |             |     |                  |        |
|--------------------------------------|-----------|-------------------------------------|-------------|-----|------------------|--------|
| Valve Size                           | Body Type | Class <sup>o</sup>                  | Temperature |     | Maximum Pressure |        |
|                                      |           |                                     | °F          | °C  | Psi              | kPa    |
| 1 and 2 Inch                         | NPT       | 3750* (1500 ASME)                   | 100         | 38  | 3,750            | 25,855 |
|                                      |           |                                     | 450         | 232 | 3,425            | 23,615 |
|                                      |           | 6250* (2500 ASME)<br>(2" Body Only) | 100         | 38  | 6,250            | 43,092 |
|                                      |           |                                     | 450         | 232 | 5,710            | 39,369 |
|                                      | Flanged   | 150 ASME                            | 100         | 38  | 290              | 2,000  |
|                                      |           |                                     | 450         | 232 | 185              | 1,276  |
|                                      |           | 300 ASME                            | 100         | 38  | 750              | 5,171  |
|                                      |           |                                     | 450         | 232 | 685              | 4,723  |
|                                      |           | 600 ASME                            | 100         | 38  | 1,500            | 10,342 |
|                                      |           |                                     | 450         | 232 | 1,370            | 9,446  |
|                                      |           | 1500 ASME                           | 100         | 38  | 3,750            | 25,855 |
|                                      |           |                                     | 450         | 232 | 3,425            | 23,615 |
|                                      |           | 2500 ASME<br>(2" Body Only)         | 100         | 38  | 6,250            | 43,092 |
|                                      |           |                                     | 450         | 232 | 5,710            | 39,369 |

\* Indicates Working Class Pressure (Psig)      ♦ Indicates Class or Cold Working Pressure Limit

**Table 2**

| Approximate Valve Body and Standard Actuator Assembly Weights - Pounds (Kilograms) |            |                        |                        |                        |                          |
|--|------------|------------------------|------------------------|------------------------|--------------------------|
| DF2000   | Valve Only | DFC [DFO] 1069         | DFC [DFO] 2069         | DFC [DFO] 2105         | DFC [DFO] 2156           |
| 1 Inch NPT   | 25 (11)    | 73 (33)<br>[65 (29)]   | N/A                    | N/A                    | N/A                      |
| 1 Inch 150 to 600  | 45 (20)    | 93 (42)<br>[85 (39)]   | N/A                    | N/A                    | N/A                      |
| 1 Inch 900/1500  | 75 (34)    | 123 (56)<br>[115 (52)] | N/A                    | N/A                    | N/A                      |
| 2 Inch NPT   | 75 (34)    | N/A                    | 125 (57)<br>[126 (57)] | 165 (75)<br>[157 (71)] | 196 (89)<br>[182 (83)]   |
| 2 Inch 150 to 600  | 95 (43)    | N/A                    | 145 (66)<br>[146 (66)] | 185 (84)<br>[177 (80)] | 216 (98)<br>[202 (92)]   |
| 2 Inch 900/1500  | 115 (52)   | N/A                    | 165 (75)<br>[166 (75)] | 205 (93)<br>[197 (89)] | 236 (107)<br>[222 (101)] |
| 2 Inch 2500  | 115 (52)   | N/A                    | 165 (75)<br>[166 (75)] | 205 (93)<br>[197 (89)] | 236 (107)<br>[222 (101)] |



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**Table 3**

**Model DF2000 Globe Body Dimensions - Inch (mm)**

| Valve Size      | End Connection     | A           | C         |
|-----------------|--------------------|-------------|-----------|
| 1 Inch          | NPT ASME 1500      | 6.62 (168)  | 1.81 (46) |
|                 | 150# RF            | 8.12 (206)  | 1.81 (46) |
|                 | 300# RF            | 8.62 (219)  | 1.81 (46) |
|                 | 300# RTJ           | 9.12 (232)  | 1.81 (46) |
|                 | 600# RF            | 9.12 (232)  | 1.81 (46) |
|                 | 600# RTJ           | 9.12 (232)  | 1.81 (46) |
|                 | 900# and 1500# RF  | 10.00 (254) | 1.81 (46) |
|                 | 900# and 1500# RTJ | 10.00 (254) | 1.81 (46) |
| 2 Inch          | NPT ASME 1500      | 9.00 (229)  | 1.81 (46) |
|                 | NPT ASME 2500      | 10.50 (267) | 3.25 (83) |
|                 | 150# RF            | 10.50 (267) | 2.75 (70) |
|                 | 300# RF            | 10.50 (267) | 2.75 (70) |
|                 | 600# RF            | 11.25 (286) | 2.75 (70) |
|                 | 600# RTJ           | 11.38 (289) | 2.75 (70) |
|                 | 900# and 1500# RF  | 12.12 (308) | 2.75 (70) |
|                 | 900# and 1500# RTJ | 12.25 (311) | 2.75 (70) |
|                 | 2500# RF           | 15.38 (391) | 3.25 (83) |
|                 | 2500# RTJ          | 15.50 (394) | 3.25 (83) |
| 3 Inch X 2 Inch | 150# RF            | 11.75 (299) | 2.75 (70) |
|                 | 150# RTJ           | 12.25 (311) | 2.75 (70) |
|                 | 300# RF            | 12.50 (318) | 2.75 (70) |
|                 | 300# RTJ           | 13.12 (333) | 2.75 (70) |
|                 | 600# RF            | 13.25 (337) | 2.75 (70) |
|                 | 600# RTJ           | 13.38 (340) | 2.75 (70) |
|                 | 900# RF            | 17.38 (441) | 2.75 (70) |
|                 | 900# RTJ           | 17.50 (445) | 2.75 (70) |
|                 | 1500# RF           | 18.13 (461) | 2.75 (70) |
|                 | 1500# RTJ          | 18.25 (464) | 2.75 (70) |
|                 | 2500# RF           | 19.62 (498) | 3.25 (83) |
|                 | 2500# RTJ          | 19.88 (505) | 3.25 (83) |

**Refer to Figure 3 Valve Actuator Schematic.**

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**Table 3 - Continued**

**Model DF2000 Globe Body Dimensions - Inch (mm)**

| Valve Size      | End Connection | A           | C         |
|-----------------|----------------|-------------|-----------|
| 4 Inch X 2 Inch | 150# RF        | 13.88 (353) | 2.75 (70) |
|                 | 150# RTJ       | 14.38 (365) | 2.75 (70) |
|                 | 300# RF        | 14.50 (368) | 2.75 (70) |
|                 | 300# RTJ       | 15.12 (384) | 2.75 (70) |
|                 | 600# RF        | 15.50 (394) | 2.75 (70) |
|                 | 600# RTJ       | 15.62 (397) | 2.75 (70) |
|                 | 900# RF        | 20.12 (511) | 2.75 (70) |
|                 | 900# RTJ       | 20.25 (514) | 2.75 (70) |
|                 | 1500# RF       | 20.88 (530) | 2.75 (70) |
|                 | 1500# RTJ      | 21.00 (533) | 2.75 (70) |
|                 | 2500# RF       | 22.62 (575) | 3.25 (83) |
|                 | 2500# RTJ      | 23.00 (584) | 3.25 (83) |

Refer to Figure 3 Valve Actuator Schematic.

**Table 4**

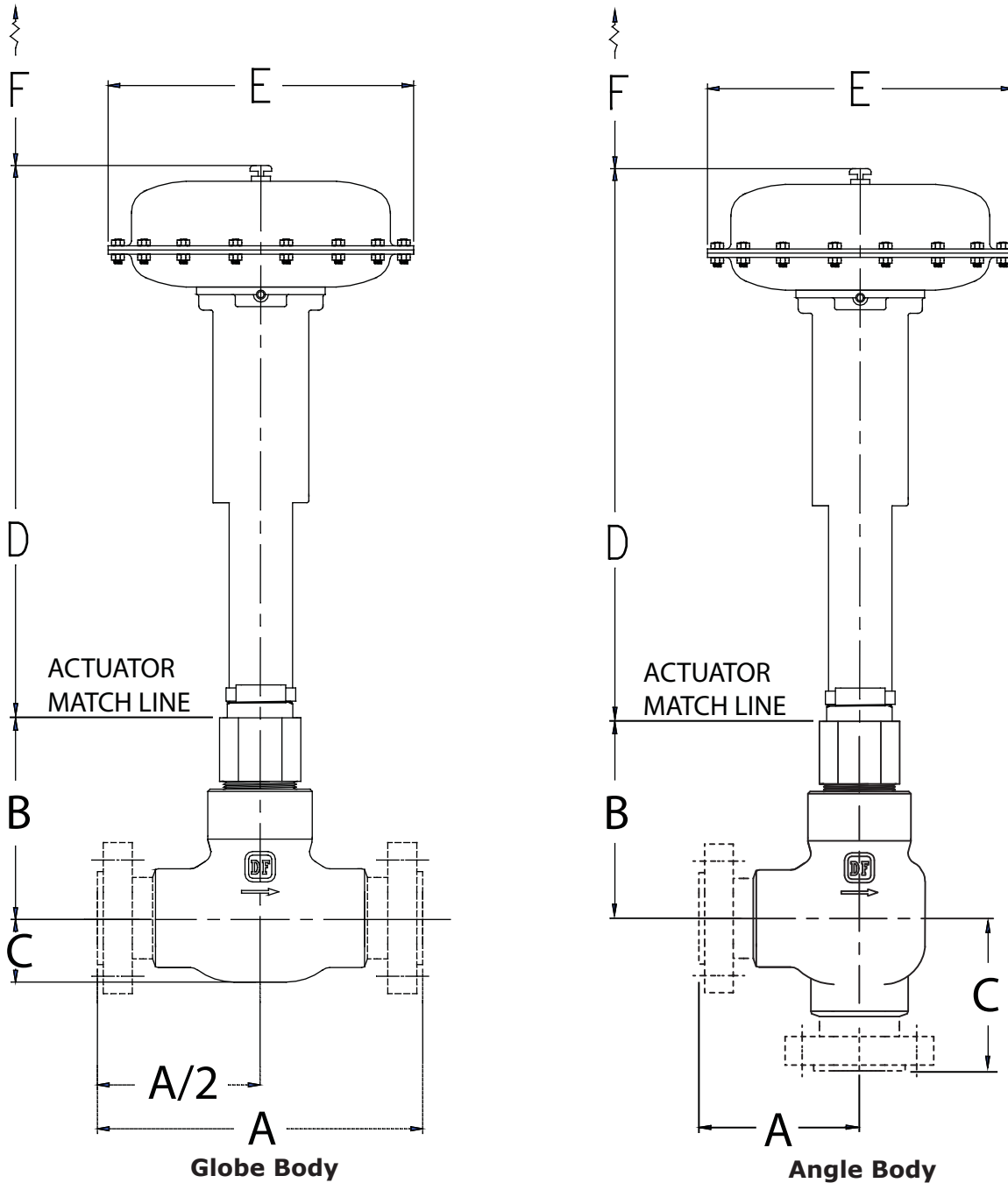
**Globe Body Valve Dimensions (Refer to Figure 3)**

| Valve       |                             | B                       |            |            |
|-------------|-----------------------------|-------------------------|------------|------------|
| Size (Inch) | End Connection (ASME Class) | Stem Diameter inch (mm) |            |            |
|             |                             | 3/8 (9.5)               | 1/2 (12.7) | 3/4 (19.1) |
| 1           | NPT (1500)                  | 6.80 (173)              | 7.19 (183) | ---        |
| 2           | NPT (1500 & 2500)           | ---                     | 8.53 (217) | 8.25 (210) |
| 1           | RF & RTJ (150-600)          | 6.80 (173)              | 7.19 (183) | ---        |
| 2           | RF & RTJ (150-600)          | ---                     | 8.53 (217) | 8.25 (210) |
| 1           | RF & RTJ (900-1500)         | 6.80 (172)              | 7.19 (183) | ---        |
| 2           | RF & RTJ (900-1500)         | ---                     | 8.53 (217) | 8.25 (210) |
| 2           | RF & RTJ (2500)             | ---                     | 8.53 (217) | 8.25 (210) |



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**Note:** Valve with or without flanges. Model DFC Actuator Shown

**Figure 2** Valve Actuator Schematic (Refer to Tables 13-17)

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**Table 5**

### Angle Body Dimensions - Inch (mm)

| Valve Size | End Connection     | A          | C          |
|------------|--------------------|------------|------------|
| 1 Inch     | NPT ASME 1500      | 3.00 (76)  | 3.50 (89)  |
|            | 300# RF            | 4.31 (109) | 4.31 (109) |
|            | 300# RTJ           | 4.56 (116) | 4.56 (116) |
|            | 600# RF            | 4.56 (116) | 4.56 (116) |
|            | 600# RTJ           | 4.56 (116) | 4.56 (116) |
|            | 900# and 1500# RF  | 5.00 (127) | 5.00 (127) |
|            | 900# and 1500# RTJ | 5.00 (127) | 5.00 (127) |
| 2 Inch     | NPT ASME 1500      | 4.00 (102) | 4.88 (124) |
|            | NPT ASME 2500      | 4.50 (114) | 5.12 (130) |
|            | 300# RF            | 6.12 (155) | 6.12 (155) |
|            | 300# RTJ           | 6.44 (164) | 6.44 (164) |
|            | 600# RF            | 6.50 (165) | 6.50 (165) |
|            | 600# RTJ           | 6.56 (167) | 6.56 (167) |
|            | 900# and 1500# RF  | 7.00 (178) | 7.00 (178) |
|            | 900# and 1500# RTJ | 7.06 (179) | 7.06 (179) |
|            | 2500# RF           | 7.69 (195) | 7.69 (195) |
|            | 2500# RTJ          | 7.75 (197) | 7.75 (197) |

Refer to Figure 3 Valve Actuator Schematic

**Table 6**

### Angle Body Valve Dimensions (Refer to Figure 3)

| Valve       |                             | B                       |            |            |
|-------------|-----------------------------|-------------------------|------------|------------|
| Size (inch) | End Connection (ASME Class) | Stem Diameter inch (mm) |            |            |
|             |                             | 3/8 (9.5)               | 1/2 (12.7) | 3/4 (19.1) |
| 1           | NPT (1500)                  | 5.25 (133)              | 6.00 (152) | 5.50 (140) |
| 2           | NPT (1500 & 2500)           | ---                     | 6.38 (162) | 6.19 (157) |
| 1           | RF & RTJ (150-600)          | 5.31 (135)              | 6.06 (154) | 5.56 (141) |
| 2           | RF & RTJ (150-600)          | ---                     | 6.44 (164) | 6.25 (159) |
| 1           | RF & RTJ (900-1500)         | 5.31 (135)              | 6.06 (154) | 5.56 (141) |
| 2           | RF & RTJ (900-1500)         | ---                     | 6.44 (164) | 6.25 (159) |
| 2           | RF & RTJ (2500)             | ---                     | 6.44 (164) | 6.25 (159) |



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**Table 7**

**Model DFC and DFO Outline Dimensions - Inch (mm)**

| Actuator Size | D           |             | E           | F          |
|---------------|-------------|-------------|-------------|------------|
|               | DFC         | DFO         |             |            |
| 1069          | 22.68 (576) | 19.25 (489) | 13.12 (333) | 5.00 (127) |
| 2069          | 23.38 (594) | 21.20 (538) | 13.12 (333) | 6.88 (175) |
| 2105          | 30.25 (768) | 25.72 (653) | 16.00 (406) | 6.88 (175) |
| 2156          | 30.25 (768) | 25.72 (653) | 18.62 (473) | 6.88 (175) |
| 3105          | 30.91 (785) | 28.10 (714) | 16.00 (406) | 9.12 (232) |
| 3156          | 30.91 (785) | 28.10 (714) | 18.62 (473) | 9.12 (232) |
| 3220          | 36.48 (927) | 32.69 (830) | 21.10 (536) | 9.12 (232) |

**Table 8**

**Model DF2000 Standard Construction Materials**

| Description               | Material                    |                      |
|---------------------------|-----------------------------|----------------------|
|                           | LCC                         | CF8M (Optional)      |
| Body                      | LCC                         | CF8M (Optional)      |
| Flanges                   | A350-LF2                    | A182-F316 (Optional) |
| Bonnet & Bushing Assembly | LCC (A350-LF2*)             |                      |
|                           | A182-F316                   |                      |
| Bushing                   | S17400 DH1150               |                      |
| Bonnet Gasket             | S30400                      |                      |
| Lower Wiper               | PTFE                        |                      |
| Packing Box Ring          | S31600**                    |                      |
| Packing Set (2 Required)  | PTFE                        |                      |
| Packing Spacer            | S31600**                    |                      |
| Packing Follower          | S31600**                    |                      |
| Packing Flange            | Plated Steel                |                      |
| Stem Wiper                | Felt                        |                      |
| Packing Nut (2 Required)  | 2H                          |                      |
| Packing Stud (2 Required) | B7                          |                      |
| Yoke Nut                  | Zinc Plated Steel           |                      |
| Seat Ring Gasket          | S30400                      |                      |
| Seat Ring*                | S31600** / Alloy 6          |                      |
| Plug & Stem Assembly*     | S31600** / Alloy 6 & S20910 |                      |

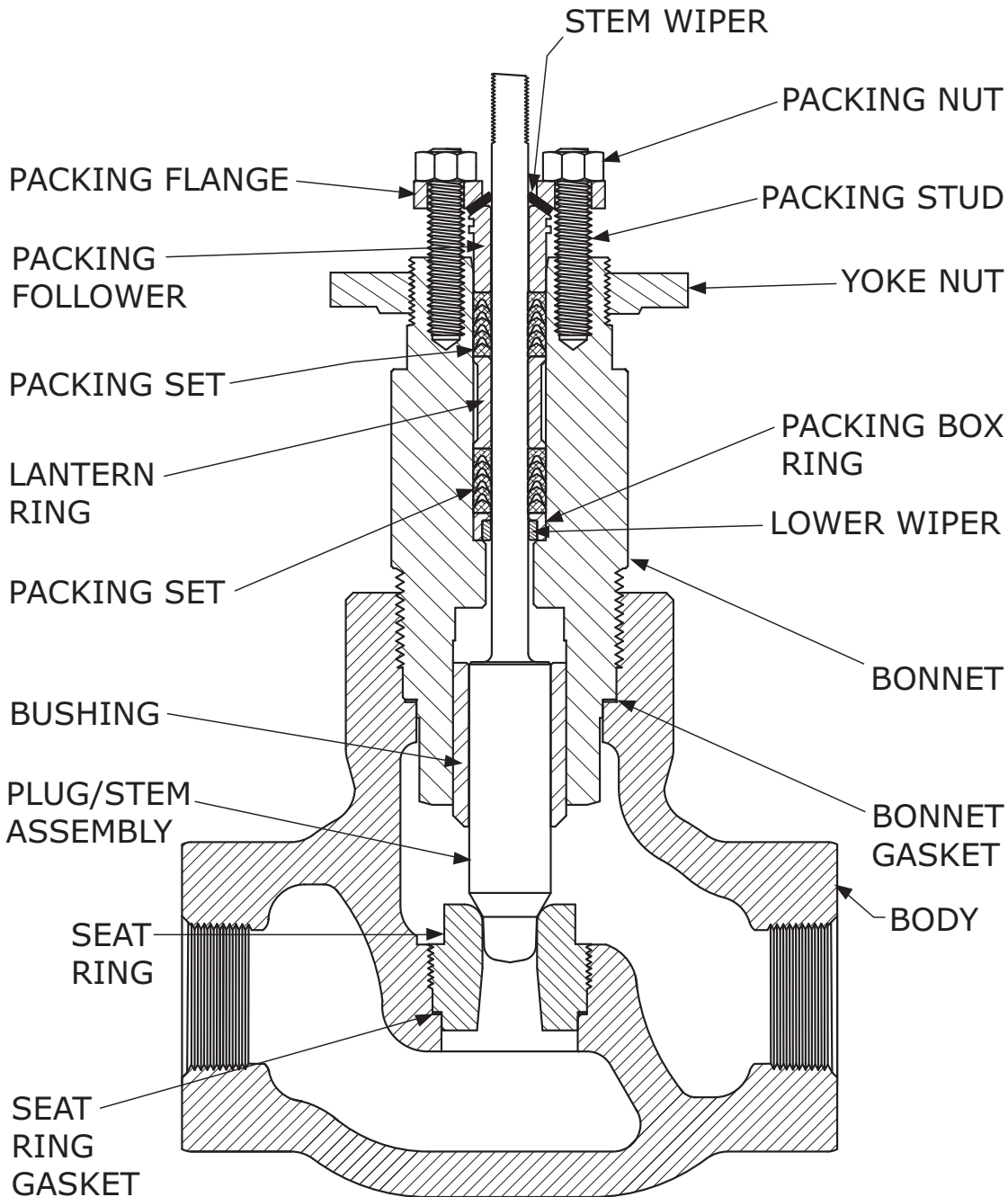
\*Dyna-Flo reserves the right to substitute a cast material with the forged bar equivalent in the event a casting is not available.

\*\* All S31600 barstock is dual grade S31600/S31603 (316/316L).

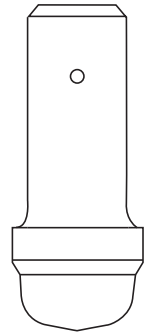


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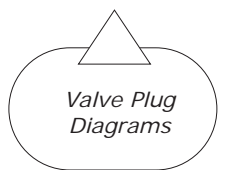
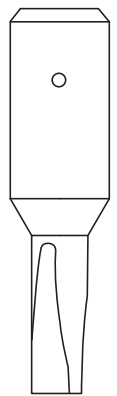
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EQUAL PERCENTAGE



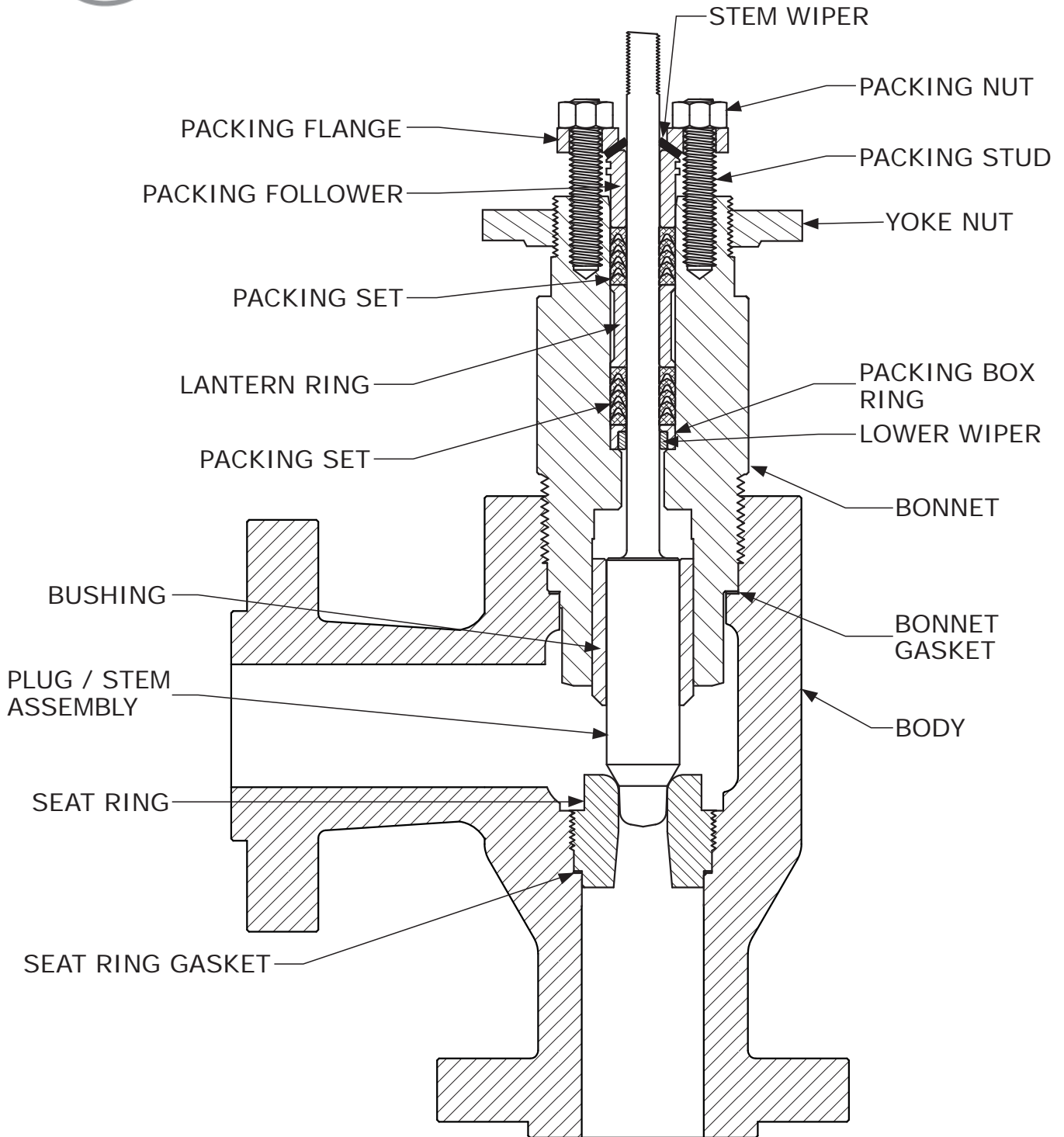
DYNA-FLUTE



**Figure 3** Typical DF2000 Globe Body Assembly with NPT Connections

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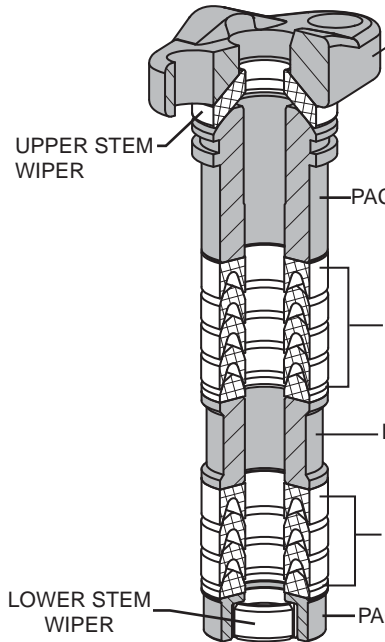
**Figure 4** Typical DF2000 Angle Body Assembly with Flanged Connections

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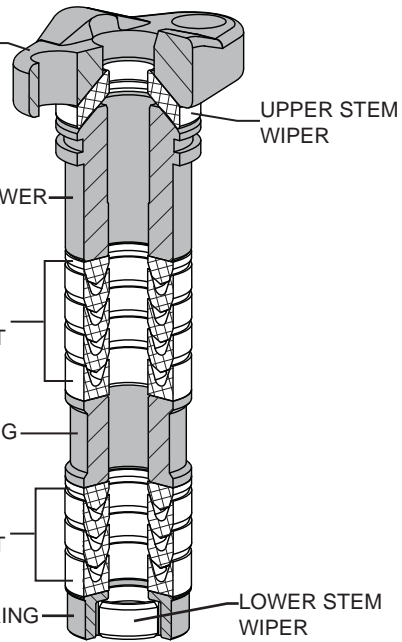
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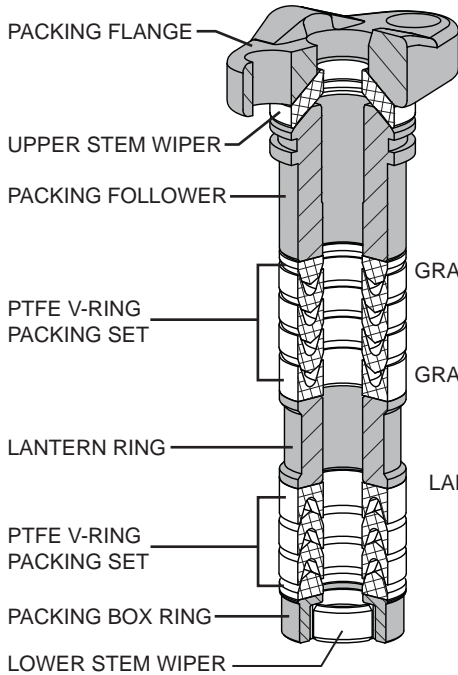
### DOUBLE PTFE V-RING V-RING PACKING



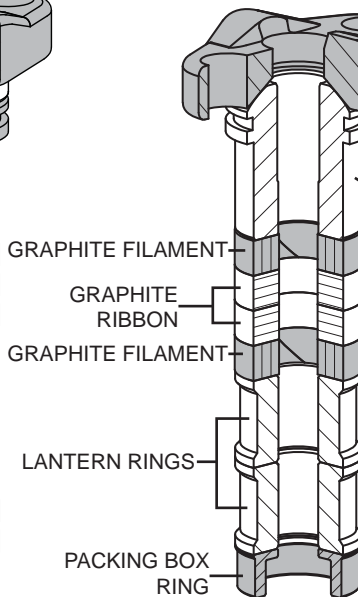
### DOUBLE PTFE V-RING VACUUM PACKING



### DOUBLE PTFE V-RING PRESSURE / VACUUM PACKING



### GRAPHITE PACKING



### LIVE LOADED PTFE PACKING

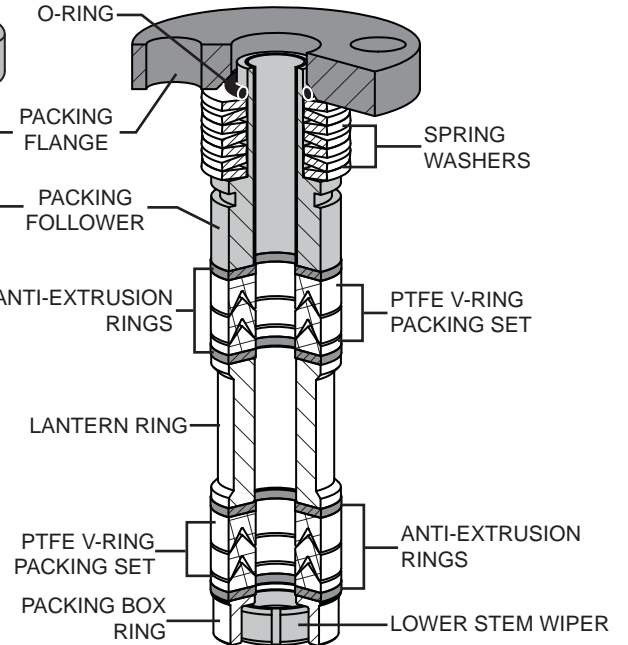


Figure 5 Typical Packing Arrangements



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Table 9

### Fail Closed Actuator Maximum Shut-off Capabilities with 6 to 30 psig Signal, 35 Psig Supply

#### 1 Inch Valve

| Port Size<br>Inch (mm) | DFC Size 1069<br>Psig (kPa) |
|------------------------|-----------------------------|
| 1/4 (6.4)              | 3,750 (25,855) <sup>1</sup> |
| 3/8 (9.5)              | 3,750 (25,855) <sup>1</sup> |
| 1/2 (12.7)             | 3,750 (25,855) <sup>2</sup> |
| 3/4 (19.1)             | 2,450 (16,892) <sup>4</sup> |

#### 2 Inch Valve

| Port Size<br>Inch (mm) | DFC Size 2069<br>Psig (kPa) | DFC Size 2105<br>Psig (kPa) | DFC Size 2156<br>Psig (kPa) | DFC Size 3220<br>Psig (kPa) |
|------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| 1/4 (6.4)              | 6,250 (43,092) <sup>2</sup> | 6,250 (43,092) <sup>1</sup> | 6,250 (43,092) <sup>1</sup> | -                           |
| 3/8 (9.5)              | 6,250 (43,092) <sup>2</sup> | 6,250 (43,092) <sup>1</sup> | 6,250 (43,092) <sup>1</sup> | -                           |
| 1/2 (12.7)             | 5,750 (39,645) <sup>4</sup> | 6,250 (43,092) <sup>3</sup> | 6,250 (43,092) <sup>3</sup> | -                           |
| 3/4 (19.1)             | 2,400 (16,547) <sup>4</sup> | 4,100 (28,269) <sup>5</sup> | 6,250 (43,092) <sup>6</sup> | -                           |
| 1 (25.4)               | 1,325 (9,136) <sup>4</sup>  | 2,685 (18,512) <sup>7</sup> | 3,900 (26,890) <sup>6</sup> | 5,850 (40,334) <sup>7</sup> |
| 1-1/4 (31.8)           | 820 (5,654) <sup>4</sup>    | 1,689 (11,645) <sup>7</sup> | 2,474 (17,058) <sup>6</sup> | 3,655 (25,200) <sup>7</sup> |

**NOTE** - All the above actuator fail closed shut-off capabilities are Class IV. A higher shut-off may be achieved by using a higher bench set, contact your Dyna-Flo sales office for additional information.

| Bench Set | Psi (kPa)           |
|-----------|---------------------|
| 1         | 10 - 30 (69 - 207)  |
| 2         | 14 - 30 (97 - 207)  |
| 3         | 17 - 30 (117 - 207) |
| 4         | 18 - 30 (124 - 207) |
| 5         | 19 - 30 (131 - 207) |
| 6         | 21 - 30 (145 - 207) |
| 7         | 22 - 30 (152 - 207) |

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Table 10

### Fail Open Actuator Maximum Shut-off Capabilities with 6 to 30 psig Signal, 35 Psig Supply

#### 1 Inch Valve

| Port Size<br>Inch (mm) | DFO Size 1069<br>Psig (kPa) |
|------------------------|-----------------------------|
| 1/4 (6.4)              | 3,750 (25,855) <sup>1</sup> |
| 3/8 (9.5)              | 3,750 (25,855) <sup>2</sup> |
| 1/2 (12.7)             | 3,750 (25,855) <sup>4</sup> |
| 3/4 (19.1)             | 2,625 (18,099) <sup>6</sup> |

#### 2 Inch Valve

| Port Size<br>Inch (mm) | DFO Size 2069<br>Psig (kPa) | DFO Size 2105<br>Psig (kPa) | DFO Size 2156<br>Psig (kPa) | DFO Size 3220<br>Psig (kPa) |
|------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| 1/4 (6.4)              | 6,250 (43,092) <sup>2</sup> | 6,250 (43,092) <sup>2</sup> | 6,250 (43,092) <sup>3</sup> | —                           |
| 3/8 (9.5)              | 6,250 (43,092) <sup>4</sup> | 6,250 (43,092) <sup>3</sup> | 6,250 (43,092) <sup>3</sup> | —                           |
| 1/2 (12.7)             | 3,750 (25,855) <sup>4</sup> | 6,250 (43,092) <sup>3</sup> | 6,250 (43,092) <sup>3</sup> | —                           |
| 3/4 (19.1)             | 1,950 (13,445) <sup>4</sup> | 4,100 (28,269) <sup>6</sup> | 5,700 (39,300) <sup>5</sup> | 6,250 (43,092) <sup>6</sup> |
| 1 (25.4)               | 1,050 (7,240) <sup>4</sup>  | 2,285 (15,755) <sup>6</sup> | 3,300 (22,753) <sup>5</sup> | 5,020 (34,612) <sup>6</sup> |
| 1-1/4 (31.8)           | 650 (4,482) <sup>4</sup>    | 1,425 (9,825) <sup>6</sup>  | 2,090 (14,410) <sup>5</sup> | 3,175 (21,891) <sup>6</sup> |

**NOTE** - All the above actuator fail open shut-off capabilities are Class IV. A higher shut-off may be achieved by using a higher bench set, contact your Dyna-Flo sales office for additional information.

| Bench Set | Psi (kPa)         |
|-----------|-------------------|
| 1         | 6 - 26 (41 - 179) |
| 2         | 6 - 22 (41 - 152) |
| 3         | 6 - 19 (41 - 131) |
| 4         | 6 - 18 (41 - 124) |
| 5         | 6 - 15 (41 - 103) |
| 6         | 6 - 14 (41 - 97)  |



# Model 2000 Control Valves

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**Table 11**

**Port Size, Yoke Boss Diameter, Stem Diameters, and Rated Travel - Inch (mm)**

| Valve Size | Port Diameter<br>Inch (mm) | Standard Inch (mm)    |                  |                 | Optional Inch (mm)     |                  |                 |
|------------|----------------------------|-----------------------|------------------|-----------------|------------------------|------------------|-----------------|
|            |                            | Yoke Boss<br>Diameter | Stem<br>Diameter | Rated<br>Travel | Yoke Boss<br>Diameters | Stem<br>Diameter | Rated<br>Travel |
| 1 Inch     | 1/4 (6.4)                  | 2-1/8 (54)            | 3/8 (9.5)        | 3/4 (19)        | 2-13/16 (71)           | 1/2 (12.7)       | 3/4 (19.1)      |
|            | 3/8 (9.5)                  |                       |                  |                 |                        |                  |                 |
|            | 1/2 (12.7)                 |                       |                  |                 |                        |                  |                 |
|            | 3/4 (19.1)                 |                       |                  |                 |                        |                  |                 |
| 2 Inch     | 1/4 (6.4)                  | 2-13/16 (71)          | 1/2 (12.7)       | 3/4 (19)        | 3-9/16 (90)            | 3/4 (19)         | 3/4 (19.1)      |
|            | 3/8 (9.5)                  |                       |                  |                 |                        |                  |                 |
|            | 1/2 (12.7)                 |                       |                  |                 |                        |                  |                 |
|            | 3/4 (19.1)                 |                       |                  |                 |                        |                  |                 |
|            | 1 (25.4)                   |                       |                  |                 |                        |                  |                 |
|            | 1-1/4 (31.8)               |                       |                  |                 |                        |                  |                 |

**Table 12**

**MAXIMUM SIZING COEFFICIENTS**

**FULL PORT  
EQUAL PERCENTAGE CHARACTERISTIC  
GLOBE BODY VALVE  
FLOW UP**

| Valve Size<br>Inches | Port<br>Inches (mm) | Coefficient    | Percentage of Valve Travel |  |
|----------------------|---------------------|----------------|----------------------------|--|
|                      |                     |                | 100%                       |  |
| 1                    | 1/4 (6.4)           | C <sub>v</sub> | 1.64                       |  |
|                      | 3/8 (9.5)           | C <sub>v</sub> | 4.03                       |  |
|                      | 1/2 (12.7)          | C <sub>v</sub> | 6.50                       |  |
|                      | 3/4 (19.1)          | C <sub>v</sub> | 12.2                       |  |
| 2                    | 1/4 (6.4)           | C <sub>v</sub> | 1.64                       |  |
|                      | 3/8 (9.5)           | C <sub>v</sub> | 4.03                       |  |
|                      | 1/2 (12.7)          | C <sub>v</sub> | 6.82                       |  |
|                      | 3/4 (19.1)          | C <sub>v</sub> | 14.0                       |  |
|                      | 1 (25.4)            | C <sub>v</sub> | 23.7                       |  |
|                      | 1-1/4 (31.8)        | C <sub>v</sub> | 34.5                       |  |

**NOTE:** For the complete list of sizing coefficients refer to catalogue P-CVSM.

# Model 2000 Control Valves

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Table 13

**MAXIMUM SIZING COEFFICIENTS**  
**FULL PORT**  
**EQUAL PERCENTAGE CHARACTERISTIC**  
**ANGLE BODY VALVE**  
**FLOW UP**

| Valve Size<br>Inches | Port<br>Inches (mm) | Coefficient    | Percentage of Valve Travel |
|----------------------|---------------------|----------------|----------------------------|
|                      |                     |                | 100%                       |
| 1                    | 1/4 (6.4)           | C <sub>v</sub> | 1.65                       |
|                      | 3/8 (9.5)           | C <sub>v</sub> | 4.04                       |
|                      | 1/2 (12.7)          | C <sub>v</sub> | 6.50                       |
|                      | 3/4 (19.1)          | C <sub>v</sub> | 12.4                       |
| 2                    | 1/4 (6.4)           | C <sub>v</sub> | 1.65                       |
|                      | 3/8 (9.5)           | C <sub>v</sub> | 4.05                       |
|                      | 1/2 (12.7)          | C <sub>v</sub> | 6.80                       |
|                      | 3/4 (19.1)          | C <sub>v</sub> | 14.1                       |
|                      | 1 (25.4)            | C <sub>v</sub> | 23.5                       |
|                      | 1-1/4 (31.8)        | C <sub>v</sub> | 34.5                       |

**NOTE:** For the complete list of sizing coefficients refer to catalogue P-CVSM.

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# Model 2000 Control Valves

## MODEL NUMBERING SYSTEM

**SAMPLE PART NUMBER: DF2000-2AFL-S2J2-E4**

|                       |   |   |                           |   |                                 |               |
|-----------------------|---|---|---------------------------|---|---------------------------------|---------------|
| <b>BODY STYLE</b>     |   |   |                           |   | <b>-</b>                        |               |
| -                     | GLOBE   | A | ANGLE                     |   |                                 |               |
| <b>VALVE SIZE</b>     |   |   |                           |   | <b>2</b>                        |               |
| 1                     | 1 INCH  | 2 | 2 INCH                    |   |                                 |               |
| <b>ASME RATING</b>    |   |   |                           |   | <b>A</b>                        |               |
| A                     | 150   | B | 300                       | C |                                 | 600           |
| D                     | 900 / 1,500   |   |                           |   |                                 |               |
| F                     | 2,500   | K | 3" X 2" 150               | H |                                 | 3" X 2" 300   |
| I                     | 3" X 2" 600   |   |                           |   |                                 |               |
| J                     | 3" X 2" 900   | G | 3" X 2" 1,500             | M |                                 | 3" X 2" 2,500 |
| Q                     | 4" X 2" 150   |   |                           |   |                                 |               |
| P                     | 4" X 2" 300   | L | 4" X 2" 600               | R | 4" X 2" 900                     |               |
| S                     | 4" X 2" 1,500   |   |                           |   |                                 |               |
| T                     | 4" X 2" 2,500   | E | 3,750 PSI CWP (NPT)       | N | 6,250 PSI CWP (NPT)             |               |
| <b>END CONNECTION</b> |   |   |                           |   | <b>F</b>                        |               |
| F                     | RF  | J | RTJ                       | N | NPT                             |               |
| <b>BODY MATERIAL</b>  |   |   |                           |   | <b>L</b>                        |               |
| L                     | LCC   | M | CF8M                      |   |                                 |               |
| <b>TRIM</b>           |   |   |                           |   | <b>S</b>                        |               |
| S                     | S31600 / ALLOY 6  | T | S31600 / TUNGSTEN CARBIDE |   |                                 |               |
| <b>PORT SIZE</b>      |   |   |                           |   | <b>2</b>                        |               |
| 2                     | 1/4"  | 3 | 3/8"                      | 4 | 1/2"                            |               |
| 6                     | 3/4"  |   |                           |   |                                 |               |
| 8                     | 1"  | 1 | 1-1/4"                    |   |                                 |               |
| <b>PACKING STYLE</b>  |   |   |                           |   | <b>J</b>                        |               |
| J                     | DOUBLE PTFE V-RING (PRESSURE)                                     |   | L                         |   | LIVE LOADED PTFE (PRESSURE)     |               |
| V                     | DOUBLE PTFE V-RING (VACUUM)                                       |   | T                         |   | LIVE LOADED GRAPHITE (PRESSURE) |               |
| R                     | DOUBLE PTFE V-RING (VACUUM / PRESSURE)                            |   | G                         |   | SINGLE GRAPHITE (PRESSURE)      |               |
| <b>YOKE BOSS SIZE</b> |   |   |                           |   | <b>2</b>                        |               |
| 1                     | 2-1/8" (3/8" STEM)  | 2 | 2-13/16" (1/2" STEM)      | 3 | 3-9/16" (3/4" STEM)             |               |
| <b>PAINT</b>          |   |   |                           |   | <b>-</b>                        |               |
| -                     | DFPS-01 (STANDARD)  |   | 2                         |   | DFPS-02 (SEVERE SERVICE)        |               |
| 3                     | DFPS-03 (HIGH TEMPERATURE)  |   |                           |   |                                 |               |
| <b>CHARACTERISTIC</b> |   |   |                           |   | <b>E</b>                        |               |
| E                     | DYNA-FORM (EQUAL PERCENT) - FLOW UP                               |   |                           |   |                                 |               |
| F                     | DYNA-FLUTE 1 FLUTE (EQUAL PERCENT) - FLOW UP                      |   |                           |   |                                 |               |
| T                     | DYNA-FLUTE 3 FLUTE (EQUAL PERCENT) - FLOW UP                      |   |                           |   |                                 |               |
| D                     | DYNA-FORM (EQUAL PERCENT) - FLOW DOWN (ANGLE VALVE ONLY)          |   |                           |   |                                 |               |
| 1                     | DYNA-FLUTE 1 FLUTE (EQUAL PERCENT) - FLOW DOWN (ANGLE VALVE ONLY) |   |                           |   |                                 |               |
| 3                     | DYNA-FLUTE 3 FLUTE (EQUAL PERCENT) - FLOW DOWN (ANGLE VALVE ONLY) |   |                           |   |                                 |               |
| <b>SHUT-OFF CLASS</b> |   |   |                           |   | <b>4</b>                        |               |
| 4                     | CLASS IV  | 5 | CLASS V                   |   |                                 |               |

**DF2000**