

# Fisher® D4 Control Valve Assembly

The Fisher D4 control valve is a compact, rugged globe valve designed primarily for high-pressure throttling applications using either pneumatic or electric control. This valve is ideal for use on pressure and flow control applications within the oil and gas production industry. The D4 is an excellent control valve for high-pressure separators, scrubbers, and other processing equipment. These valves are especially useful for either throttling or on/off control of liquids or gases which are gritty, sticky, or which have a tendency to build up on internal valve parts.

If the control valve requires maintenance, the trim and packing can be maintained by removing the deep-bore hammer nut and lifting the actuator/bonnet assembly off the valve without disassembling the actuator.

## Features

### Electric and Pneumatic

- **Safer Bonnet / Valve Body Connection**—Unique design provides additional protection if disassembly of bonnet/valve body connection is inadvertently started while there is still pressure in the valve body. Pins mounted in the valve bonnet help ensure the bonnet disengages from the valve body as the hammer nut is removed, while the threads are still engaged.
- **Heavy-Duty Guiding**—Massive guiding (figures 1 and 2) positively aligns the valve plug in the seat ring for reliable service. The screwed-in seat ring completely encloses the seat ring gasket.
- **Live-loaded Packing System**—The packing system provides an improved stem seal to help prevent the loss of valuable or hazardous process fluids or gases. It features Fisher ENVIRO-SEAL™ packing technology to provide reduced packing maintenance.



W9933-1

FISHER D4 CONTROL VALVE WITH easy-Drive™ ELECTRIC ACTUATOR (NPS 2 RF FLANGED END CONNECTION)



W8531

FISHER D4 CONTROL VALVE (NPS 2 NPT END CONNECTION)



## Features (continued)

### Electric and Pneumatic

- **NACE Constructions**—NACE compatible trim is available with the D4 control valve. These constructions meet the metallurgical requirements of NACE MR0175 / ISO 15156.
- **Quick-Change Valve Plug**—Removable groove pin allows quick, easy valve plug replacement.
- **Severe Service Capability with Tungsten Carbide Trim**—D4 valves are available with tungsten carbide trim for erosive service. This trim is designed specifically for severe service applications in the oil and gas industry. Durable tungsten carbide trim may benefit your application by wearing better and lasting longer.
- **Easy Installation**—Compact design allows installation where space is a premium. Screwed valve bodies feature compact face-to-face dimensions while flanged valve bodies conform to ISA-75 standards for maximum versatility.
- **Easy Maintenance**—Hammer nut bonnet/body joint allows repair or maintenance with a minimum of tools, without removing the valve body from the piping system. Seat ring can be removed with the same service tools used with a Fisher D valve.
- **Integral Bonnet Flange**—Bonnet has an integral flange that accepts hammer nut force when making the bonnet-to-body connection. There are no snap rings subject to possible failure in sour service or in atmospheric corrosion.
- **Standard Trim for Throttling or On-Off Service**—Micro-Form trim is standard for throttling or on-off service at no extra cost.
- **Application Flexibility**—Choices of port diameters up to 31.8 mm (1.25 inches), end connections, and

trim materials suit these valves to many applications, including sour service.

### Electric

- **Low Power Consumption**-- The Fisher easy-Drive electric actuator operates with 12 or 24VDC and less than 0.1 watt hours per operation, using Modbus, 4-20 mA, 1-5VDC, or dry contact control signals.
- **Low Temperature**-- The easy-Drive electric actuator design allow use in ambient temperatures as low as -20°C (-4°F) without use of a heater.
- **Easy Installation**--The compact design allows installation where space is a premium. Fisher easy-Drive calibrates by simply opening and closing the valve.
- **Remote Monitoring and Configuration**-- Loss of signal position is programmable over Modbus.

### Pneumatic

- **Low Temperature Materials**--Valve construction materials allow use in applications as low as -40°C (-40°F) for the pneumatic actuator.

## Installation

D4 control valves may be installed in any position, but normally the actuator is vertical and above the valve. Install the control valve so the flow direction arrow on the side of the valve body indicates the direction of the process flow.

Dimensions are shown in tables 12 and 13 and figures 1 and 2.

## Valve Specifications

### Available Actuation Configurations

Spring-To-Close Pneumatic  
Spring-To-Open Pneumatic  
Electric

### Valve Sizes and End Connection Styles<sup>(1)</sup>

See table 3

### Dimensions

See tables 12 and 13 and figures 1 and 2.

Face-to-face dimensions for flanged valves conform to ISA-75.03 (CL150-600) and ANSI/ISA-75.16 Short (CL900/1500)

### Maximum Inlet Pressures and Temperatures<sup>(1)</sup>

Flanged connections are consistent with the ASME B16.34 pressure-temperature class, subject to Material Temperature Capabilities for the Valve Body Assembly (see following specification). For NPT end connections, the valve body rating is 4250 psig.

### Maximum Pressure Drops<sup>(1)</sup>

See tables 7, 8, 9, 10, and 11

### Shutoff Classification per ANSI/FCI 70-2 and IEC 60534-4

Class IV

### Flow Characteristic

Equal percentage

### Flow Direction

Flow up only

### Flow Coefficients

See the section titled Coefficients in this bulletin or Fisher Catalog 12

### Port Diameters

See table 3

### Construction Materials

**Valve Body and Bonnet:** ASME SA 352 LCC

**Valve Plug and Seat:** See table 5.

**Valve Stem:** S20910

**Actuator O-Rings:** (HNBR) Hydrogenated Nitrile

**Bonnet O-Ring:**

*Standard:* HNBR

*Optional:* Fluoroelastomer

**Packing:** PTFE/Carbon PTFE

**Packing Springs:** N07718

**Packing Retainer:** S17400

**Actuator Diaphragm:** Chloroprene

**Actuator Spring:** Painted steel

**Seat Ring Gasket:** S31600 (316 SST)

**Spring Cover (Fail Up):** PVC

### Valve Plug Travel

19 mm (0.75 inch)

### Valve Plug Style

Micro-Form valve plug

### Material Temperature Capabilities

**Valve Body Assembly:**

*Standard Bonnet O-Ring:* -46 to 149°C  
(-50 to 300°F)

*Optional Bonnet Fluorocarbon O-Ring:*  
-23 to 204°C (-10 to 400°F)

1. The pressure or temperature limits in the referenced tables and any applicable ASME code limitations should not be exceeded.

**Actuator Specifications**

**ELECTRIC ACTUATOR**

**Material Temperature Capabilities<sup>(1)</sup>**

**Electric Actuator Assembly:**  
-20 to 70°C (-4 to 158°F) ambient

**Available Electric Actuator Configurations**

easy-Drive Electric On/Off  
easy-Drive Electric Positioning

**Power Requirements**

12 or 24VDC, minimum 4 amp power supply required  
(fuse to 5 amps)

**Maximum Current Draw**

4 amps

**Conduit Connections**

Two 3/4 NPT connections

**Control Signals**

**On/Off:** Dry contact, Modbus RTU  
**Positioning:** 1-5VDC, 4-20 mA, Modbus RTU

**Electrical Classification**

**Hazardous Area:**

CSA (C/US) — Explosion proof  
FM — Explosion proof (pending)  
ATEX — Flameproof (pending)  
IECEX — Flameproof (pending)

Refer to table 1 for specific approval information

**Electrical Housing:**

CSA -- Type 4X  
FM -- NEMA 4X (pending)  
ATEX -- IP66 (pending)  
IECEX -- IP66 (pending)

**Electromagnetic Compatibility**

**Meets EN 61326-1 (First Edition)**

**Immunity:** Industrial locations per table 2 of EN 61326-1 Standard. Performance is shown in table 2 below

**Emmissions:** Class A

**ISM Equipment Rating:** Group 1, Class A

**PNEUMATIC ACTUATOR**

**Input Signal to Actuator**

See tables 7, 8, 9, and 10

**Material Temperature Capabilities<sup>(1)</sup>**

**Actuator Assembly:**

*Fail-Down, Spring-to-Close:* -40 to 93°C  
(-40 to 200°F)

*Fail-Up, Spring-to-Open:* -40 to 93°C  
(-40 to 200°F)

**Available Pneumatic Actuator Configurations**

Spring-to-Open  
Spring-to-Close

**Maximum Actuator Casing Pressure<sup>(1)</sup>**

3.4 bar (50 psig)

**Actuator Diaphragm Effective Area**

452 cm<sup>2</sup> (69 square inches)

**Actuator Pressure Connections**

1/4 NPT internal

1. The pressure or temperature limits in the referenced tables and any applicable ASME code limitations should not be exceeded.

**Table 1. Hazardous Area Classifications - CSA (Canada and United States)**

| CERTIFICATION BODY | CERTIFICATION OBTAINED         | ENTITY RATING | TEMPERATURE CODE | ENCLOSURE RATING      |
|--------------------|--------------------------------|---------------|------------------|-----------------------|
| CSA                | Class I, Division 1, GPC, D T6 | ---           | T6 (Tamb ≤ 70°C) | CSA Type 4X Enclosure |

**Table 2. EMC Summary Results - Immunity**

| PORT                | PHENOMENON                           | BASIC STANDARD | TEST LEVEL  | PERFORMANCE CRITERIA <sup>(1)</sup> |
|---------------------|--------------------------------------|----------------|---|-------------------------------------|
| Enclosure           | Electrostatic discharge (ESD)        | IEC 61000-4-2  | 4kV Contact<br>8kV Air  | A                                   |
|                     | Radiated EM field                    | IEC 61000-4-3  | 80 to 1000 MHz @ 10V/m 1kHz AM at 80%<br>1400 to 2000 MHz @ 3V/m 1kHz AM at 80%<br>2000 to 2700 MHz @ 1V/m 1kHz AM at 80% | A <sup>(2)</sup> / B                |
|                     | Rated power frequency magnetic field | IEC 61000-4-8  | 30 A/m @ 50 and 60 Hz   | A                                   |
| I/O signal/ control | Burst                                | IEC 61000-4-4  | 1kV   | A                                   |
|                     | Surge                                | IEC 61000-4-5  | 1kV cable shield, and line to ground  | A                                   |
|                     | Conducted RF                         | IEC 61000-4-6  | 3V 150 kHz to 80 MHz at 3 Vrms  | A                                   |

Performance criteria is +/- 5% stem position  
 1. A= No degradation during testing, B = Temporary degradation during testing, but is self recovering.  
 2. Criteria A with conduit on DC and I/O cables, Criteria B without conduit

## Ordering Information

When ordering, specify:

### Application Information

1. Type of application
  - a. Throttling or on-off
  - b. Reducing or relief (back pressure)
2. Controlled fluid
  - a. Type (include chemical analysis, if available)
  - b. Temperature (normal and maximum anticipated)
  - c. Specific gravity

3. Range of flowing inlet pressures
4. Pressure drops
  - a. Range of flowing pressure drops
  - b. Maximum drop at shutoff
5. Flow rates
  - a. Minimum controlled flow
  - b. Normal flow
  - c. Maximum flow
6. Input signal range to actuator

### Control Valve Assembly Information

Refer to the Specifications and review the information under each specification.

Table 3. Valve Sizes and Connection Styles

| VALVE SIZE, NPS | PORT DIAMETER, (INCHES)         | SCREWED  | RAISED FACE (RF) FLANGED |       |       |                | RING TYPE JOINT (RTJ) FLANGED |                |
|-----------------|---------------------------------|----------|--------------------------|-------|-------|----------------|-------------------------------|----------------|
|                 |                                 | 4250 psi | CL150                    | CL300 | CL600 | CL900 and 1500 | CL600                         | CL900 and 1500 |
| 1               | 0.25, 0.375, 0.5, 0.75          | X        | X                        | X     | X     | X              | X                             | X              |
| 2               | 0.25, 0.375, 0.5, 0.75, 1, 1.25 | X        | X                        | X     | X     | X              | X                             | X              |

X = Available construction.

Table 4. Fisher D4 Control Valves Approximate Weights, Kg (Pounds)

| Valve Body Size, NPS | Pneumatic |          | Electric |          |
|----------------------|-----------|----------|----------|----------|
|                      | 1         | 2        | 1        | 2        |
| Screwed              | 32 (71)   | 39 (87)  | 22 (49)  | 29 (64)  |
| CL150                | 34 (74)   | 39 (86)  | 24 (52)  | 29 (63)  |
| CL300 and 600        | 37 (81)   | 48 (106) | 27 (59)  | 33 (73)  |
| CL900 and 1500       | 50 (110)  | 66 (146) | 40 (88)  | 51 (113) |

Table 5. Typical Combinations of Metal Trim Parts

| DESIGNATION      | VALVE PLUG  | SEAT RING   |
|------------------|---|---|
| Standard         | S41600 hardened to 38 HRC minimum                 | S17400  |
| Sour             | S17400 (NACE MR0175/ISO 15156)                    | S17400 (NACE MR0175/ISO 15156)                    |
| Tungsten Carbide | Tungsten carbide / S17400 (NACE MR0175/ISO 15156) | Tungsten carbide / S17400 (NACE MR0175/ISO 15156) |

Table 6. Fisher D4 Environmental Limits for NACE MR0175/ISO 15156 with Sour Trim

| MAXIMUM TEMPERATURE |     | MAXIMUM H <sub>2</sub> S PARTIAL PRESSURE |      | COMPATIBLE WITH ELEMENTAL SULFUR? |
|---------------------|-----|---|------|-----------------------------------|
| °C                  | °F  | MPa                                       | psia |                                   |
| 204                 | 400 | 1.4                                       | 200  | No                                |
| 199                 | 390 | 2.3                                       | 330  | No                                |
| 191                 | 375 | 2.5                                       | 360  | No                                |
| 149                 | 300 | 2.8                                       | 400  | No                                |
| 135                 | 275 | No Limit                                  |      | Yes                               |

Table 7. Maximum Shutoff Pressure Drops<sup>(1)</sup> for Fisher D4 Control Valves with Pneumatic Actuator (Spring-to-Close) When Used with Typical Control Instrumentation<sup>(2)</sup>

| INPUT SIGNAL TO ACTUATOR |        | 0 to 1.2 Bar (0 to 18 Psig) | 0 to 1.4 Bar (0 to 20 Psig) | 0 to 2.0 Bar (0 to 30 Psig) | 0 to 2.3 Bar (0 to 33 Psig) | 0 to 2.4 Bar (0 to 35 Psig) | 0 to 3.4 Bar (0 to 50 Psig) |
|--------------------------|--------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| SPRING                   |        | Light Rate                  |                             | Heavy Rate                  |                             |                             |                             |
| INITIAL SPRING SETTING   |        | 0.77 Bar (11.2 Psig)        | 0.77 Bar (11.2 Psig)        | 0.85 Bar (12.4 Psig)        | 1.05 Bar (15.3 Psig)        | 1.18 Bar (17.1 Psig)        | 1.18 Bar (17.1 Psig)        |
| PORT DIAMETER            |        | Maximum Pressure Drop       |                             |                             |                             |                             |                             |
| mm                       | Inches | Bar                         | Psi                         | Bar                         | Psi                         | Bar                         | Psi                         |
| 6.4                      | 0.25   | 293 <sup>(3)</sup>          | 4250 <sup>(3)</sup>         | 293 <sup>(3)</sup>          | 4250 <sup>(3)</sup>         | 293                         | 4250                        |
| 9.5                      | 0.375  | 293 <sup>(3)</sup>          | 4250 <sup>(3)</sup>         | 293 <sup>(3)</sup>          | 4250 <sup>(3)</sup>         | 293                         | 4250                        |
| 12.7                     | 0.5    | 191                         | 2765                        | 191                         | 2765                        | 219                         | 3180                        |
| 19.1                     | 0.75   | 80                          | 1160                        | 80                          | 1160                        | 92                          | 1340                        |
| 25.4                     | 1      | 42                          | 610                         | 42                          | 610                         | 49                          | 715                         |
| 31.8                     | 1.25   | 25                          | 365                         | 25                          | 365                         | 30                          | 430                         |

1. The pressure or temperature limits in the referenced tables and any applicable ASME code limitations should not be exceeded.  
 2. For example, use the column marked 0-1.4 bar (0-20 psig) for a 0.21-1.0 bar (3-15 psig) pneumatic controller with 1.4 bar (20 psig) supply pressure.  
 3. For applications with downstream pressure in excess of 196 bar (2845 psig), use 196 bar (2845 psig) for Maximum Shutoff Pressure.

**Table 8. Maximum Shutoff Pressure Drops<sup>(1)</sup> for Fisher D4 Control Valves with Pneumatic Actuator (Spring-to-Close) When Used with Instrumentation with Restricted Output Range<sup>(2)</sup>**

| INPUT SIGNAL TO ACTUATOR |        | 0.4 to 2.0 Bar<br>(6 to 30 Psig) |                     | 0.14 to 2.3 Bar<br>(2 to 33 Psig) |      |
|--------------------------|--------|----------------------------------|---------------------|-----------------------------------|------|
| SPRING                   |        | Heavy Rate                       |                     | Heavy Rate                        |      |
| INITIAL SPRING SETTING   |        | 0.97 Bar<br>(14.0 Psig)          |                     | 1.17 Bar<br>(17.0 Psig)           |      |
| PORT DIAMETER            |        | Maximum Pressure Drop            |                     |                                   |      |
| mm                       | Inches | Bar                              | Psi                 | Bar                               | Psi  |
| 6.4                      | 0.25   | 293 <sup>(3)</sup>               | 4250 <sup>(3)</sup> | 293                               | 4250 |
| 9.5                      | 0.375  | 210 <sup>(3)</sup>               | 3045 <sup>(3)</sup> | 293                               | 4250 |
| 12.7                     | 0.5    | 113                              | 1635                | 282                               | 4095 |
| 19.1                     | 0.75   | 45                               | 655                 | 120                               | 1750 |
| 25.4                     | 1      | 23                               | 330                 | 65                                | 945  |
| 31.8                     | 1.25   | 13                               | 185                 | 39                                | 580  |

1. The pressure or temperature limits in the referenced tables and any applicable ASME code limitations should not be exceeded.  
2. For example, an Electro-Pneumatic Transducer calibrated for 0.4-2.0 bar (6-30 psig) output pressure.  
3. For applications with downstream pressure in excess of 118 bar (1715 psig), use 118 bar (1715 psig) for Maximum Shutoff Pressure.

**Table 9. Maximum Shutoff Pressure Drops<sup>(1)</sup> for Fisher D4 Control Valves with Pneumatic Actuator (Spring-to-Open) When Used with Typical Control Instrumentation<sup>(2)</sup>**

| INPUT SIGNAL TO ACTUATOR | 0 to 1.2 Bar<br>(0 to 18 Psig) |                    | 0 to 1.4 Bar<br>(0 to 20 Psig) |                    | 0 to 2.0 Bar<br>(0 to 30 Psig) |     | 0 to 2.3 Bar<br>(0 to 33 Psig) |     | 0 to 2.4 Bar<br>(0 to 35 Psig) |     | 0 to 3.4 Bar<br>(0 to 50 Psig) |     |      |
|--------------------------|--------------------------------|--------------------|--------------------------------|--------------------|--------------------------------|-----|--------------------------------|-----|--------------------------------|-----|--------------------------------|-----|------|
| SPRING                   | Light Rate                     |                    |                                |                    | Heavy Rate                     |     |                                |     |                                |     |                                |     |      |
| INITIAL SPRING SETTING   | 0.23 Bar<br>(3.4 Psig)         |                    | 0.23 Bar<br>(3.4 Psig)         |                    | 0.28 Bar<br>(4.0 Psig)         |     | 0.28 Bar<br>(4.0 Psig)         |     | 0.28 Bar<br>(4.0 Psig)         |     | 0.28 Bar<br>(4.0 Psig)         |     |      |
| PORT DIAMETER            | Maximum Pressure Drop          |                    |                                |                    |                                |     |                                |     |                                |     |                                |     |      |
| mm                       | Inches                         | Bar                | Psi                            | Bar                | Psi                            | Bar | Psi                            | Bar | Psi                            | Bar | Psi                            | Bar | Psi  |
| 6.4                      | 0.25                           | 293 <sup>(3)</sup> | 4250 <sup>(3)</sup>            | 293 <sup>(3)</sup> | 4250 <sup>(3)</sup>            | 293 | 4250                           | 293 | 4250                           | 293 | 4250                           | 293 | 4250 |
| 9.5                      | 0.375                          | 293 <sup>(3)</sup> | 4250 <sup>(3)</sup>            | 293                | 4250 <sup>(3)</sup>            | 293 | 4250                           | 293 | 4250                           | 293 | 4250                           | 293 | 4250 |
| 12.7                     | 0.5                            | 187                | 2715                           | 233                | 3380                           | 293 | 4250                           | 293 | 4250                           | 293 | 4250                           | 293 | 4250 |
| 19.1                     | 0.75                           | 78                 | 1135                           | 99                 | 1430                           | 147 | 2130                           | 178 | 2575                           | 198 | 2875                           | 293 | 4250 |
| 25.4                     | 1                              | 41                 | 600                            | 53                 | 765                            | 80  | 1160                           | 97  | 1410                           | 109 | 1575                           | 195 | 2830 |
| 31.8                     | 1.25                           | 24                 | 355                            | 32                 | 465                            | 49  | 715                            | 60  | 875                            | 68  | 985                            | 123 | 1785 |

1. The pressure or temperature limits in the referenced tables and any applicable ASME code limitations should not be exceeded.  
2. For example, use the column marked 0-1.4 bar (0-20 psig) for a 0.21-1.0 bar (3-15 psig) pneumatic controller with 1.4 bar (20 psig) supply pressure.  
3. For applications with downstream pressure in excess of 190 bar (2760 psig), use 190 bar (2760 psig) for Maximum Shutoff Pressure.

**Table 10. Maximum Shutoff Pressure Drops<sup>(1)</sup> for Fisher D4 Control Valves with Pneumatic Actuator (Spring-to-Open) When Used with Instrumentation with Restricted Output Range<sup>(2)</sup>**

| INPUT SIGNAL TO ACTUATOR |        | 0.4 to 2.0 Bar<br>(6 to 30 Psig) |                     | 0.14 to 2.3 Bar<br>(2 to 33 Psig) |      |
|--------------------------|--------|----------------------------------|---------------------|-----------------------------------|------|
| SPRING                   |        | Heavy Rate                       |                     | Heavy Rate                        |      |
| INITIAL SPRING SETTING   |        | 0.69 Bar<br>(10.0 Psig)          |                     | 0.42 Bar<br>(6.1 Psig)            |      |
| PORT DIAMETER            |        | Maximum Pressure Drop            |                     |                                   |      |
| mm                       | Inches | Bar                              | Psi                 | Bar                               | Psi  |
| 6.4                      | 0.25   | 293 <sup>(3)</sup>               | 4250 <sup>(3)</sup> | 293                               | 4250 |
| 9.5                      | 0.375  | 293 <sup>(3)</sup>               | 4250 <sup>(3)</sup> | 293                               | 4250 |
| 12.7                     | 0.5    | 196                              | 2845                | 293                               | 4250 |
| 19.1                     | 0.75   | 82                               | 1195                | 156                               | 2265 |
| 25.4                     | 1      | 43                               | 630                 | 85                                | 1235 |
| 31.8                     | 1.25   | 26                               | 380                 | 52                                | 765  |

1. The pressure or temperature limits in the referenced tables and any applicable ASME code limitations should not be exceeded.  
2. For example, an Electro-Pneumatic Transducer calibrated for 0.4-2.0 bar (6-30 psig) output pressure.  
3. For applications with downstream pressure in excess of 202 bar (2925 psig), use 202 bar (2925 psig) for Maximum Shutoff Pressure.

**Table 11. Fisher D4 easy-Drive Maximum Pressure Drop**

| PORT DIAMETER |       | MAXIMUM PRESSURE DROP <sup>(1)</sup> |      |
|---------------|-------|--------------------------------------|------|
| mm            | Inch  | Bar                                  | psi  |
| 6.4           | 0.25  | 293                                  | 4250 |
| 9.5           | 0.375 | 293                                  | 4250 |
| 12.7          | 0.5   | 247                                  | 3576 |
| 19.1          | 0.75  | 105                                  | 1518 |
| 25.4          | 1     | 56                                   | 814  |
| 31.8          | 1.25  | 34                                   | 495  |

1. Downstream pressure, P2, is limited to 2250 psig.

**Table 12. Dimensions - Pneumatic Actuator<sup>(1)</sup>**

| END CONNECTION STYLE | NPS 1 VALVE BODY |        |     |        |    |        | NPS 2 VALVE BODY |        |     |        |    |        |
|----------------------|------------------|--------|-----|--------|----|--------|------------------|--------|-----|--------|----|--------|
|                      | A                |        | D   |        | G  |        | A                |        | D   |        | G  |        |
|                      | mm               | Inches | mm  | Inches | mm | Inches | mm               | Inches | mm  | Inches | mm | Inches |
| Screwed              | 155              | 6.12   | 209 | 8.24   | 46 | 1.81   | 230              | 9.00   | 215 | 8.47   | 70 | 2.75   |
| CL150 RF Flg         | 184              | 7.25   | 209 | 8.24   | 46 | 1.81   | 254              | 10.00  | 215 | 8.47   | 70 | 2.75   |
| CL300 RF Flg         | 197              | 7.75   | 209 | 8.24   | 46 | 1.81   | 267              | 10.50  | 215 | 8.47   | 70 | 2.75   |
| CL600 RF Flg         | 210              | 8.25   | 209 | 8.24   | 46 | 1.81   | 286              | 11.25  | 215 | 8.47   | 70 | 2.75   |
| CL600 RTJ Flg        | 210              | 8.25   | 209 | 8.24   | 46 | 1.81   | 289              | 11.38  | 215 | 8.47   | 70 | 2.75   |
| CL900/1500 RF Flg    | 273              | 10.75  | 209 | 8.24   | 46 | 1.81   | 340              | 13.38  | 215 | 8.47   | 70 | 2.75   |
| CL900/1500 RTJ Flg   | 273              | 10.75  | 209 | 8.24   | 46 | 1.81   | 343              | 13.50  | 215 | 8.47   | 70 | 2.75   |

1. Also see figures 1 and 2.

**Table 13. Dimensions - Pneumatic Actuator<sup>(1)</sup>**

| FAIL ACTION                | C   |        | E   |        | F   |        |
|----------------------------|-----|--------|-----|--------|-----|--------|
|                            | mm  | Inches | mm  | Inches | mm  | Inches |
| Fail Down, Spring-To-Close | 333 | 13.12  | 312 | 12.30  | 241 | 9.47   |
| Fail Up, Spring-To-Open    | 333 | 13.12  | 324 | 12.74  | --- | ---    |

1. Also see figures 1 and 2.

**Table 14. Dimensions - Electric Actuator<sup>(1)</sup>**

| END CONNECTION STYLE | NPS 1 VALVE BODY |        |    |        |     |        | NPS 2 VALVE BODY |        |    |        |     |        | NPS 1 AND 2 VALVE BODY |        |
|----------------------|------------------|--------|----|--------|-----|--------|------------------|--------|----|--------|-----|--------|------------------------|--------|
|                      | A                |        | B  |        | C   |        | A                |        | B  |        | C   |        | D                      |        |
|                      | mm               | Inches | mm | Inches | mm  | Inches | mm               | Inches | mm | Inches | mm  | Inches | mm                     | Inches |
| Screwed              | 155              | 6.12   | 46 | 1.81   | 414 | 16.29  | 230              | 9.00   | 70 | 2.75   | 438 | 17.24  | 275                    | 10.83  |
| CL150 RF Flg         | 184              | 7.25   | 46 | 1.81   | 414 | 16.29  | 254              | 10.00  | 70 | 2.75   | 438 | 17.24  | 275                    | 10.83  |
| CL300 RF Flg         | 197              | 7.75   | 46 | 1.81   | 414 | 16.29  | 267              | 10.50  | 70 | 2.75   | 438 | 17.24  | 275                    | 10.83  |
| CL600 RF Flg         | 210              | 8.25   | 46 | 1.81   | 414 | 16.29  | 286              | 11.25  | 70 | 2.75   | 438 | 17.24  | 275                    | 10.83  |
| CL600 RTJ Flg        | 210              | 8.25   | 46 | 1.81   | 414 | 16.29  | 289              | 11.38  | 70 | 2.75   | 438 | 17.24  | 275                    | 10.83  |
| CL900/1500 RF Flg    | 273              | 10.75  | 46 | 1.81   | 414 | 16.29  | 340              | 13.38  | 70 | 2.75   | 438 | 17.24  | 275                    | 10.83  |
| CL900/1500 RTJ Flg   | 273              | 10.75  | 46 | 1.81   | 414 | 16.29  | 343              | 13.50  | 70 | 2.75   | 438 | 17.24  | 275                    | 10.83  |

1. Also see figure 3.



Figure 1. Fisher D4 Valve Dimensions, Spring-To-Close (also see tables 12 and 13)

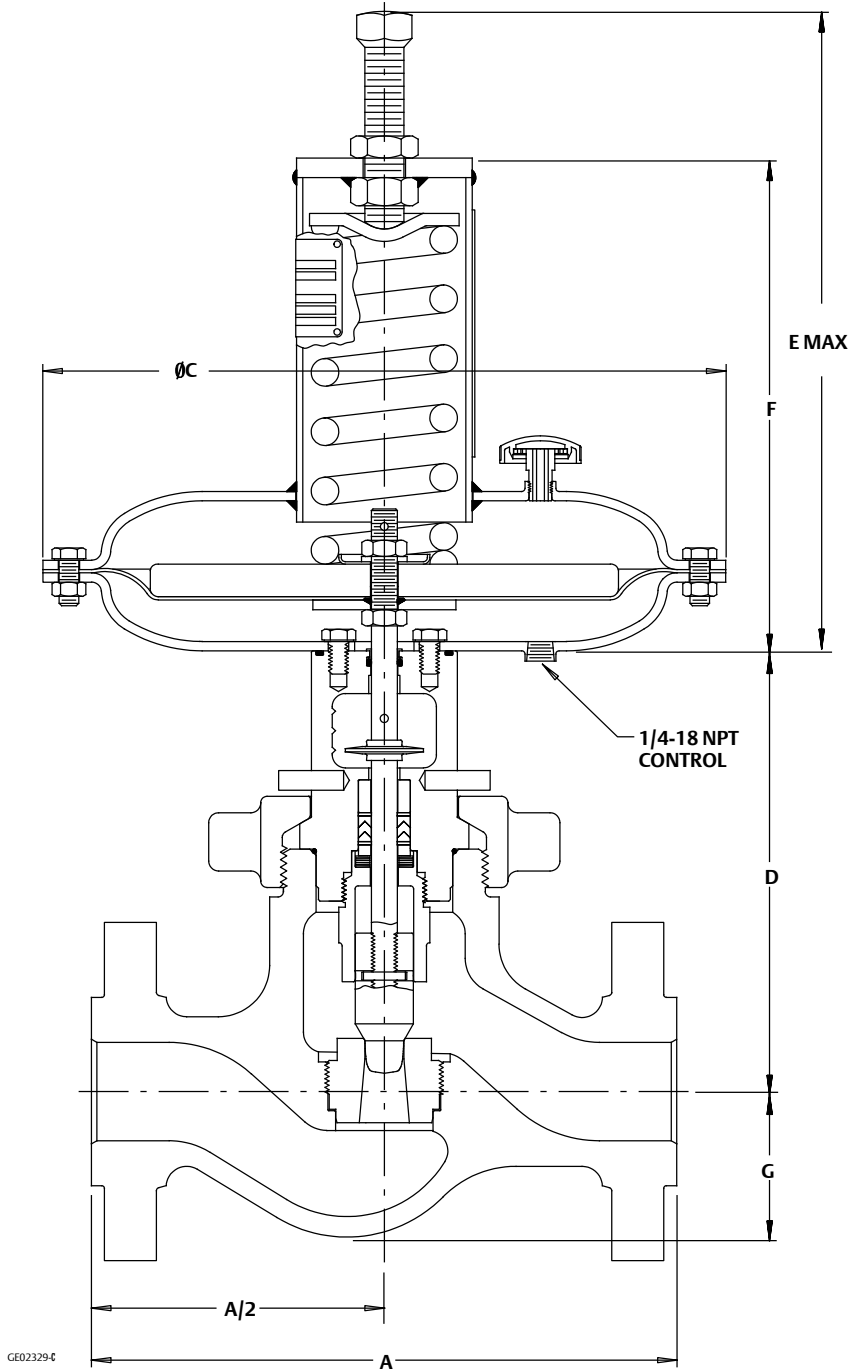
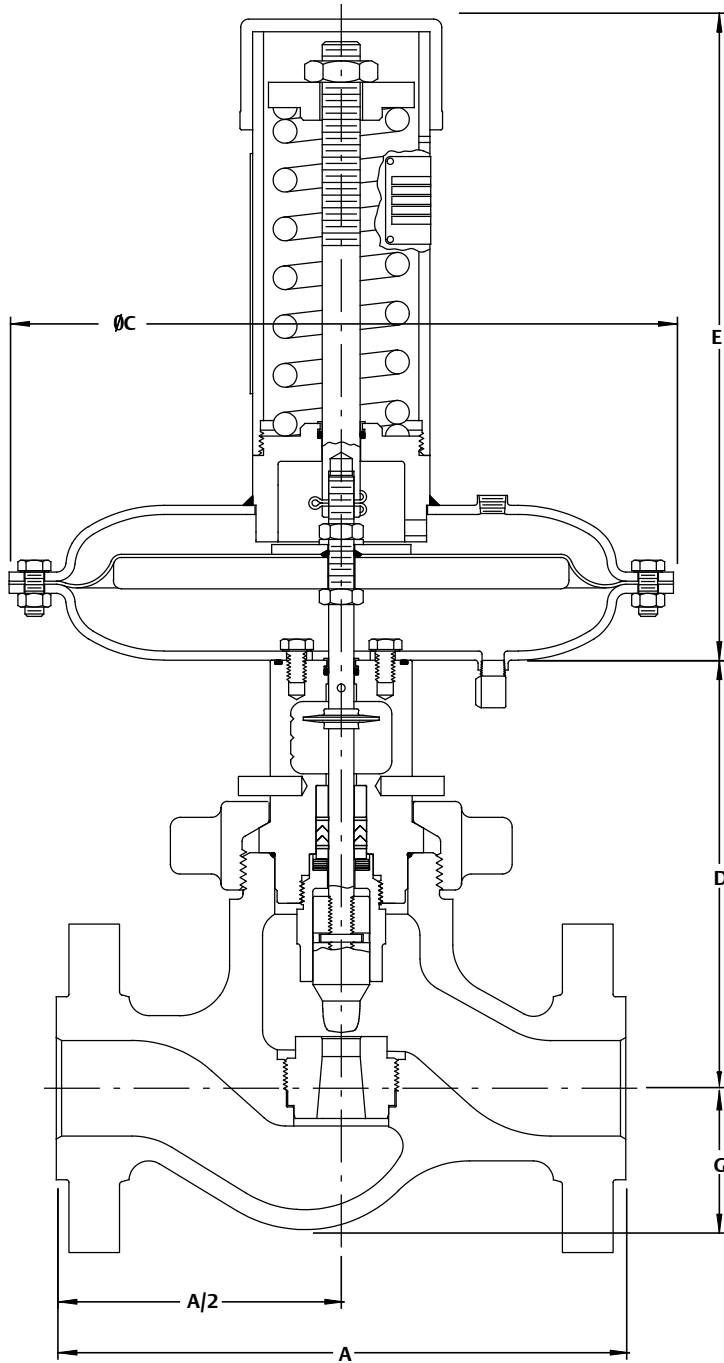
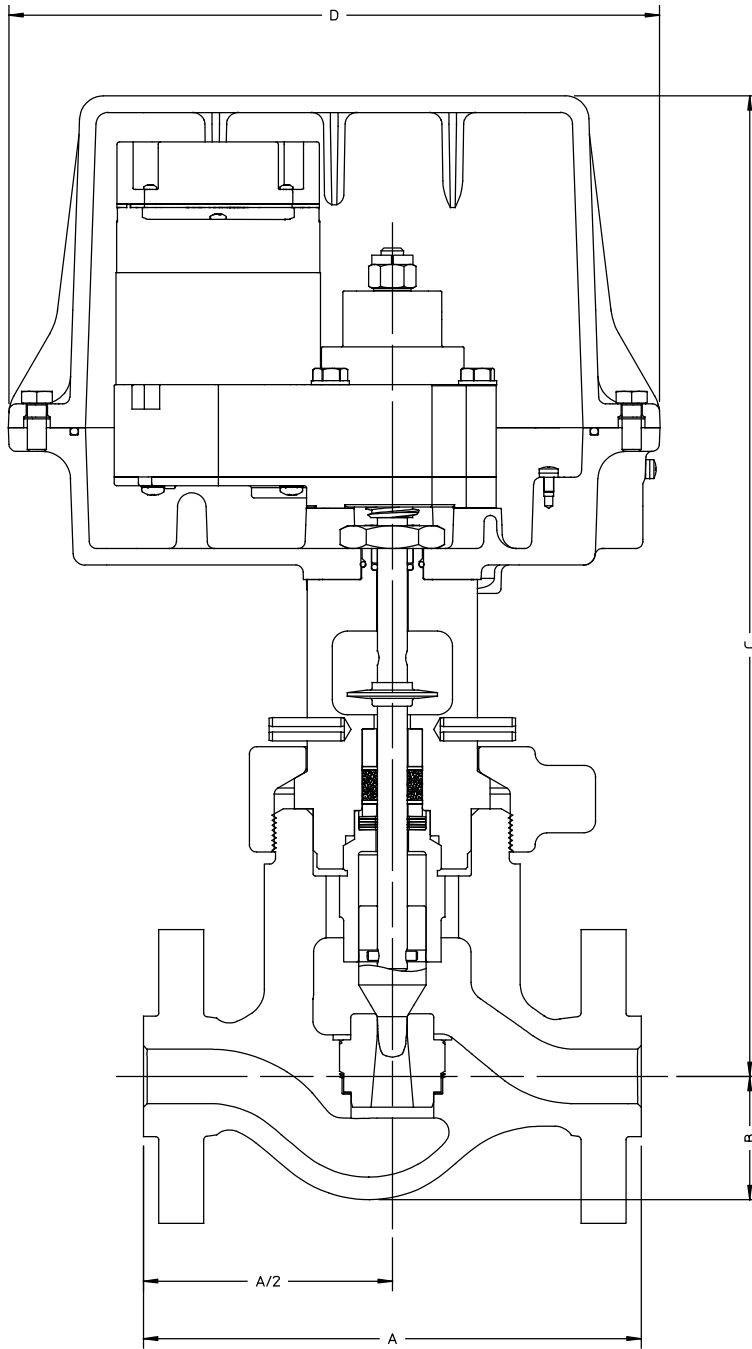


Figure 2. Fisher D4 Valve Dimensions, Spring-To-Open (also see tables 12 and 13)



GE02330E

Figure 3. Fisher D4 Control Valve with easy-Drive Electric Actuator and NPS 2 Flanged Valve Body



# Coefficients

Table 15. Fisher D4, Micro-Form Valve Plugs

| Micro-Form - Flow Up |               |        |              |        |                  |                                       |        |       |       |       |       |       |       |       |       | Equal Percentage Characteristic |      |
|----------------------|---------------|--------|--------------|--------|------------------|---------------------------------------|--------|-------|-------|-------|-------|-------|-------|-------|-------|---------------------------------|------|
| Valve Size, NPS      | Port Diameter |        | Total Travel |        | Flow Coefficient | Valve Opening—Percent of Total Travel |        |       |       |       |       |       |       |       |       | F <sub>L</sub> (1)              |      |
|                      | mm            | Inches | mm           | Inches |                  | 5                                     | 10     | 20    | 30    | 40    | 50    | 60    | 70    | 80    | 90    |                                 | 100  |
| 1                    | 6.4           | 0.25   | 19           | 0.75   | C <sub>v</sub>   | 0.0679                                | 0.0858 | 0.122 | 0.167 | 0.231 | 0.325 | 0.458 | 0.646 | 0.905 | 1.25  | 1.76                            | 0.96 |
|                      |               |        |              |        | K <sub>v</sub>   | 0.0587                                | 0.0742 | 0.106 | 0.144 | 0.200 | 0.281 | 0.396 | 0.559 | 0.783 | 1.08  | 1.52                            | ---  |
|                      |               |        |              |        | X <sub>T</sub>   | 0.705                                 | 0.623  | 0.620 | 0.631 | 0.585 | 0.565 | 0.578 | 0.569 | 0.555 | 0.588 | 0.569                           | ---  |
|                      | 9.5           | 0.375  | 19           | 0.75   | C <sub>v</sub>   | 0.114                                 | 0.132  | 0.205 | 0.298 | 0.426 | 0.590 | 0.834 | 1.21  | 1.75  | 2.45  | 3.53                            | 0.95 |
|                      |               |        |              |        | K <sub>v</sub>   | 0.099                                 | 0.114  | 0.177 | 0.258 | 0.368 | 0.510 | 0.721 | 1.05  | 1.51  | 2.12  | 3.05                            | ---  |
|                      |               |        |              |        | X <sub>T</sub>   | 0.776                                 | 0.848  | 0.656 | 0.673 | 0.626 | 0.608 | 0.589 | 0.582 | 0.575 | 0.588 | 0.691                           | ---  |
|                      | 12.7          | 0.5    | 19           | 0.75   | C <sub>v</sub>   | 0.185                                 | 0.235  | 0.357 | 0.523 | 0.752 | 1.07  | 1.50  | 2.13  | 3.05  | 4.30  | 5.87                            | 0.96 |
|                      |               |        |              |        | K <sub>v</sub>   | 0.160                                 | 0.203  | 0.309 | 0.452 | 0.650 | 0.926 | 1.30  | 1.84  | 2.64  | 3.72  | 5.08                            | ---  |
|                      |               |        |              |        | X <sub>T</sub>   | 0.718                                 | 0.674  | 0.640 | 0.596 | 0.575 | 0.592 | 0.593 | 0.568 | 0.569 | 0.599 | 0.755                           | ---  |
|                      | 19.1          | 0.75   | 19           | 0.75   | C <sub>v</sub>   | 0.324                                 | 0.358  | 0.571 | 0.900 | 1.30  | 1.91  | 3.04  | 5.08  | 7.75  | 9.56  | 11.2                            | 0.94 |
|                      |               |        |              |        | K <sub>v</sub>   | 0.280                                 | 0.310  | 0.494 | 0.779 | 1.13  | 1.65  | 2.63  | 4.39  | 6.70  | 8.27  | 9.69                            | ---  |
|                      |               |        |              |        | X <sub>T</sub>   | 0.561                                 | 0.684  | 0.645 | 0.594 | 0.605 | 0.614 | 0.592 | 0.594 | 0.613 | 0.696 | 0.783                           | ---  |
| 2                    | 6.4           | 0.25   | 19           | 0.75   | C <sub>v</sub>   | 0.0679                                | 0.0858 | 0.122 | 0.167 | 0.231 | 0.325 | 0.458 | 0.646 | 0.905 | 1.25  | 1.76                            | 0.96 |
|                      |               |        |              |        | K <sub>v</sub>   | 0.0587                                | 0.0742 | 0.106 | 0.144 | 0.200 | 0.281 | 0.396 | 0.559 | 0.783 | 1.08  | 1.52                            | ---  |
|                      |               |        |              |        | X <sub>T</sub>   | 0.705                                 | 0.623  | 0.620 | 0.631 | 0.585 | 0.565 | 0.578 | 0.569 | 0.555 | 0.588 | 0.569                           | ---  |
|                      | 9.5           | 0.375  | 19           | 0.75   | C <sub>v</sub>   | 0.114                                 | 0.132  | 0.205 | 0.298 | 0.426 | 0.590 | 0.834 | 1.21  | 1.75  | 2.45  | 3.53                            | 0.95 |
|                      |               |        |              |        | K <sub>v</sub>   | 0.099                                 | 0.114  | 0.177 | 0.258 | 0.368 | 0.510 | 0.721 | 1.05  | 1.51  | 2.12  | 3.05                            | ---  |
|                      |               |        |              |        | X <sub>T</sub>   | 0.776                                 | 0.848  | 0.656 | 0.673 | 0.626 | 0.608 | 0.589 | 0.582 | 0.575 | 0.588 | 0.691                           | ---  |
|                      | 12.7          | 0.5    | 19           | 0.75   | C <sub>v</sub>   | 0.186                                 | 0.244  | 0.359 | 0.540 | 0.784 | 1.09  | 1.52  | 2.25  | 3.20  | 4.49  | 6.27                            | 0.95 |
|                      |               |        |              |        | K <sub>v</sub>   | 0.161                                 | 0.211  | 0.311 | 0.467 | 0.678 | 0.943 | 1.32  | 1.95  | 2.77  | 3.88  | 5.42                            | ---  |
|                      |               |        |              |        | X <sub>T</sub>   | 0.814                                 | 0.699  | 0.799 | 0.685 | 0.593 | 0.560 | 0.573 | 0.531 | 0.536 | 0.547 | 0.612                           | ---  |
|                      | 19.1          | 0.75   | 19           | 0.75   | C <sub>v</sub>   | 0.305                                 | 0.367  | 0.583 | 0.892 | 1.31  | 2.02  | 3.14  | 5.18  | 8.01  | 10.6  | 13.4                            | 0.92 |
|                      |               |        |              |        | K <sub>v</sub>   | 0.264                                 | 0.317  | 0.504 | 0.772 | 1.13  | 1.75  | 2.72  | 4.48  | 6.93  | 9.17  | 11.6                            | ---  |
|                      |               |        |              |        | X <sub>T</sub>   | 0.697                                 | 0.513  | 0.477 | 0.481 | 0.478 | 0.447 | 0.400 | 0.432 | 0.465 | 0.512 | 0.640                           | ---  |
|                      | 25.4          | 1      | 19           | 0.75   | C <sub>v</sub>   | 0.734                                 | 0.922  | 1.35  | 1.79  | 2.38  | 3.65  | 5.50  | 9.04  | 13.6  | 17.3  | 21.6                            | 0.95 |
|                      |               |        |              |        | K <sub>v</sub>   | 0.635                                 | 0.798  | 1.17  | 1.55  | 2.06  | 3.16  | 4.76  | 7.82  | 11.8  | 15.0  | 18.7                            | ---  |
|                      |               |        |              |        | X <sub>T</sub>   | 0.501                                 | 0.684  | 0.658 | 0.548 | 0.648 | 0.548 | 0.577 | 0.525 | 0.513 | 0.632 | 0.745                           | ---  |
|                      | 31.8          | 1.25   | 19           | 0.75   | C <sub>v</sub>   | 1.08                                  | 1.22   | 1.65  | 2.26  | 3.24  | 5.14  | 8.90  | 15.2  | 22.6  | 26.9  | 33.2                            | 0.94 |
|                      |               |        |              |        | K <sub>v</sub>   | 0.934                                 | 1.06   | 1.43  | 1.96  | 2.80  | 4.45  | 7.70  | 13.1  | 19.5  | 23.3  | 28.7                            | ---  |
|                      |               |        |              |        | X <sub>T</sub>   | 0.587                                 | 0.686  | 0.636 | 0.638 | 0.649 | 0.520 | 0.706 | 0.687 | 0.680 | 0.767 | 0.761                           | ---  |

1. At 100% travel.

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