

Diaphragm Valves



diaphragm valves

DV1 Series

2-Way Diaphragm Valves

The DV1 Series Diaphragm Valves are totally free of springs, bellows, packing, o-rings and lubricants in the process wetted area. Metal-to-metal seals to atmosphere ensure that there is no transport of undesirable elements into the flow stream, and no escaping of process material into the atmosphere. Elgiloy® diaphragms ensure the utmost in corrosion resistance and extend overall valve life.



Typical Applications

- Analytical Instrumentation
- Petrochemical
- Pharmaceutical
- Chemical

Features & Benefits

- 2-way on/off control
- Metal-to-metal seals to atmosphere to prevent leakage
- Wide variety of materials for virtually all applications
- No dynamic O-rings, springs, or lubricant in wetted flow path to eliminate sample contamination
- Very low internal volume (0.16 cc)*
- Manual ¼-plus turn or pneumatic actuation
- Pressures from vacuum (50 torr) to 3600 psig (248 bar)**
- 40µ sintered stainless steel air inlet filter extends life of pneumatic actuator

* Internal volume in machined passages of the valve body between mounting surface and sealing diaphragm(s).

** Valves cleaned for oxygen service are limited to 3000 psig (207 bar).

GO Regulator

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www.goreg.com • sales@goreg.com

diaphragm valves

DV1 Series

Manual 1/4-plus Turn Valves



Technical Data

| | |
|-------------------------------|---|
| BODY | 316L stainless steel, Monel® and Hastelloy® C-276 |
| SEATS | PCTFE and PEEK™ |
| DIAPHRAGMS | Elgiloy® AMS 5876 |
| ORIFICE SIZE | 0.110" (2.8 mm) |
| FLOW CAPACITY | 0.17 Cv |
| VALVE INTERNAL VOLUME* | 0.16 cc |
| LEAKAGE | 1 × 10 ⁻⁹ cc/sec helium (inboard) |

* Internal volume in machined passages of the valve body between mounting surface and sealing diaphragm(s).

Operating Pressures

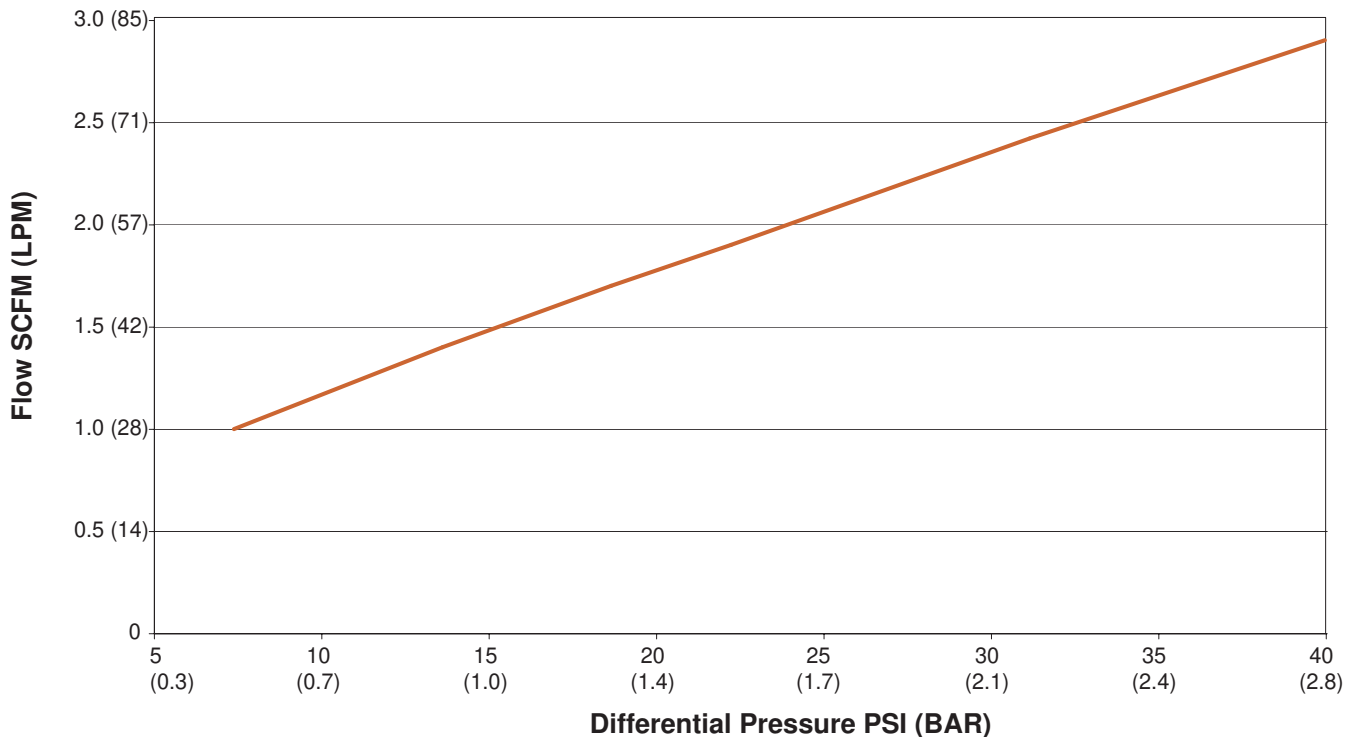
| | |
|----------------------------|---|
| OPERATING PRESSURE* | Vacuum (50 torr) to 3600 psig (248 bar) |
| PROOF PRESSURE | 7200 psig |
| BURST PRESSURE | 14,400 psig (497 barg) |

* Valves cleaned for oxygen service are limited to 3000 psig (207 bar).

Operating Temperatures

| SEAT MATERIAL | 1/4-PLUS TURN TEMPERATURE |
|---------------|---------------------------------------|
| PCTFE | -40° F to +212° F (-40° C to +100° C) |
| PEEK™ | -40° F to +400° F (-40° C to +204° C) |

Pressure vs. Flow Curve



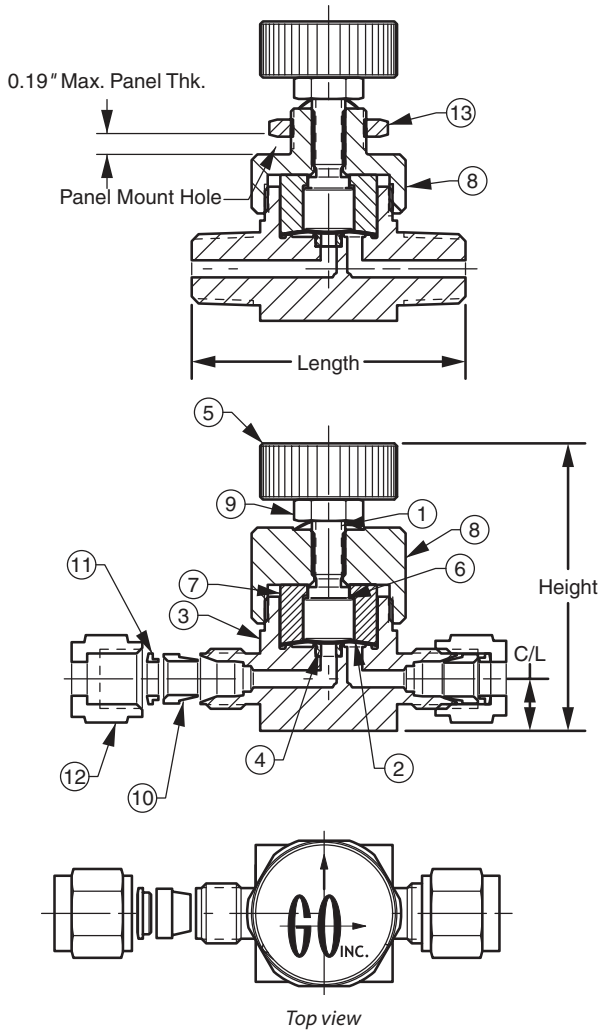
DV1 Series

Materials of Construction

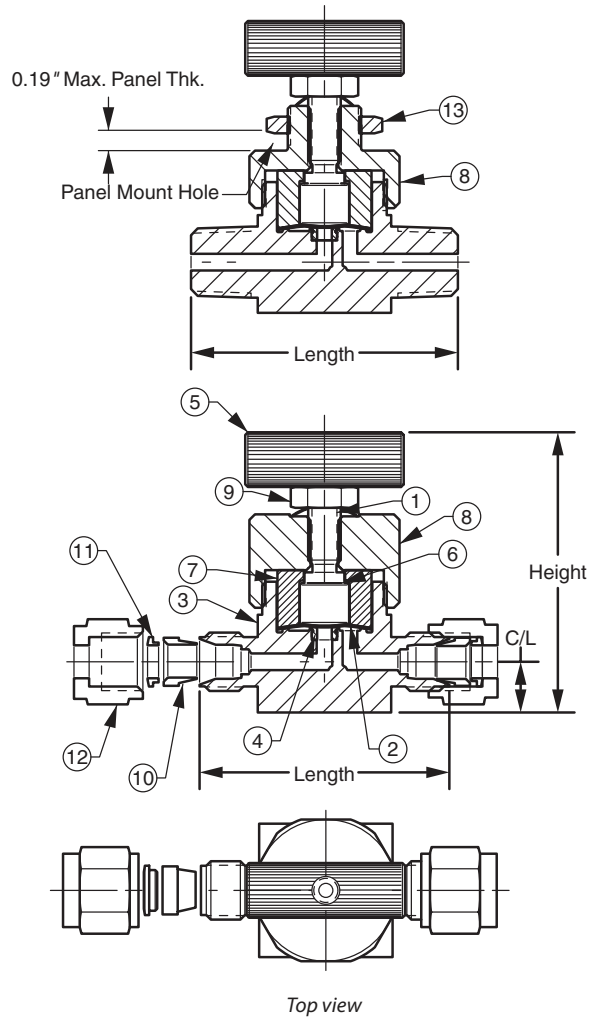
| # | PART | MATERIALS |
|----|--------------------|--|
| 1 | Stem | 17-4PH stainless steel, condition H900 |
| 2 | Diaphragm* | Elgiloy® AMS 5876 |
| 3 | Body* | 316L stainless steel, Monel®, Hastelloy® C-276 |
| 4 | Seat* | PCTFE, PEEK™ |
| 5 | Handle | 316 stainless steel |
| 6 | Thrust plug | Brass |
| 7 | Diaphragm retainer | 316 stainless steel |
| 8 | Bonnet | 316L stainless steel, Monel®, Hastelloy® C-276 |
| 9 | Handle nut | 18-8 stainless steel |
| 10 | Front ferrule* | 316L stainless steel, Monel®, Hastelloy® C-276 |
| 11 | Rear ferrule | 316L stainless steel, Monel®, Hastelloy® C-276 |
| 12 | Nut | 316L stainless steel, Monel®, Hastelloy® C-276 |
| 13 | Panel-mount nut | 316L stainless steel, Monel®, Hastelloy® C-276 |

*Wetted components

Manual ¼-plus turn Valves



Optional T-handle Valves



Dimensions

Manual ¼-plus Turn Valves

| END CONNECTION | LENGTH | HEIGHT | HANDLE RADIUS | C/L CENTER LINE | PANEL MOUNT HOLE | PANEL MOUNT THICK |
|-----------------|--------|---------|---------------|-----------------|------------------|-------------------|
| ¼" MNPT | 2.00" | 2.44" | 0.90" | 0.38" | 0.57" | 0.19" |
| ¼" FNPT | 2.00" | 2.44" | 0.90" | 0.38" | 0.57" | 0.19" |
| ½" Gyrolok® | 1.71" | 2.44" | 0.90" | 0.38" | 0.57" | 0.19" |
| ¼" Gyrolok® | 1.87" | 2.44" | 0.90" | 0.38" | 0.57" | 0.19" |
| ¼" NPT extended | 3.15" | 2.44" | 0.90" | 0.38" | 0.57" | 0.19" |
| 6mm Gyrolok® | 47.5mm | 61.98mm | 22.86mm | 9.65mm | 14.48mm | 4.83mm |
| 8mm Gyrolok® | 47.5mm | 61.98mm | 22.86mm | 9.65mm | 14.48mm | 4.83mm |

DV1 Series

Pneumatic Actuated Valves



Technical Data

| | |
|-------------------------------|---|
| BODY | 316L stainless steel, Monel® and Hastelloy® C-276 |
| SEATS | PCTFE, PEEK™ |
| DIAPHRAGMS | Elgiloy® AMS 5876 |
| ORIFICE SIZE | 0.110" (2.8 mm) |
| FLOW CAPACITY | 0.17 Cv |
| VALVE INTERNAL VOLUME* | 0.16 cc |
| LEAKAGE | 1 × 10 ⁻⁹ cc/sec helium (inboard) |

* Internal volume in machined passages of the valve body between mounting surface and sealing diaphragm(s).

Operating Pressures Ratings

| | SMALL DIAMETER | MEDIUM DIAMETER | LARGE DIAMETER |
|--------------------------------|------------------------------|------------------------------|-------------------------------|
| VALVE WORKING PRESSURE* | Vacuum (50 torr) to 500 psig | Vacuum (50 torr) to 800 psig | Vacuum (50 torr) to 3600 psig |
| VALVE PROOF PRESSURE | 1000 psig | 1600 psig | 7200 psig |
| VALVE BURST PRESSURE | 2000 psig | 3600 psig | 14,400 psig |

* Valves cleaned for oxygen service are limited to 3000 psig (207 bar).

Operating Temperatures

| SEAT MATERIAL | ¼-PLUS TURN TEMPERATURE |
|---------------|---------------------------------------|
| PCTFE | -40° F to +212° F (-40° C to +100° C) |
| PEEK™ | -40° F to +400° F (-40° C to +204° C) |

Air Actuation Pressure Requirements

psig nominal

| PRESSURE | SMALL DIAMETER | MEDIUM DIAMETER | LARGE DIAMETER |
|------------------------------------|---|---|--|
| Valve Operating Pressure | Vacuum (50 torr) to 500 psig (Inlet) | Vacuum (50 torr) to 800 psig (Inlet) | Vacuum (50 torr) to 3600 psig (Inlet) |
| Actuation Pressure Normally Closed | 40 psig (3 bar) (0–250 psig process pressure) | 40 psig (3 bar) (0–250 psig process pressure) | 50 psig (0–3600 psig process pressure) |
| Actuation Pressure Normally Open | 40 psig (3 bar) (251–500 psig process pressure) | 40 psig (3 bar) (501–800 psig process pressure) | N/A |

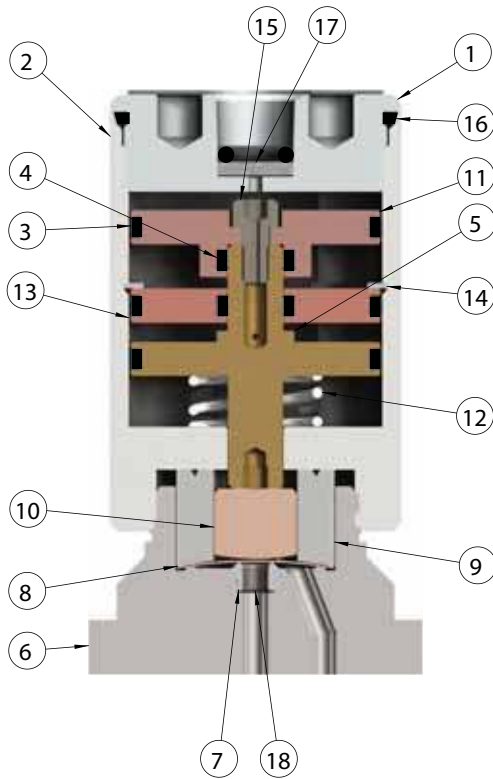
Note: Actuation/Pressure Curves available on the web at www.goreg.com

DV1 Series

Dimensions & Materials of Construction

Dimensions are in inches (millimeters) for reference only and are subject to change.

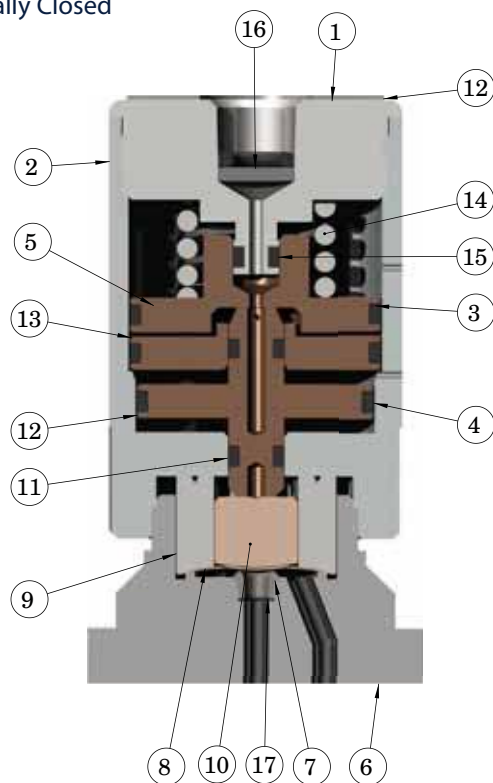
Normally Open



| # | PART | MATERIALS |
|----|--------------------|---|
| 1 | Actuator cap | Aluminum, 316L stainless steel, Monel® & Hastelloy® C-276 |
| 2 | Actuator | Aluminum, 316L stainless steel |
| 3 | O-ring | Viton® |
| 4 | O-ring | Viton® |
| 5 | Piston | Brass |
| 6 | Body* | 316L stainless steel, Monel® & Hastelloy® C-276 |
| 7 | Seat* | PCTFE or PEEK® |
| 8 | Diaphragm* | Elgiloy® AMS 5876 |
| 9 | Diaphragm retainer | 316 stainless steel |
| 10 | Thrust plug | Brass |
| 11 | Upper piston | Brass |
| 12 | Spring | 302 stainless steel |
| 13 | Chamber separator | Brass |
| 14 | Retaining ring | 302 stainless steel |
| 15 | Cap screw | Alloy steel |
| 16 | O-ring | Viton® |
| 17 | Sintered filter | 316 stainless steel, 40µ |

* Wetted components

Normally Closed



| # | PART | MATERIALS |
|----|--------------------|---|
| 1 | Actuator cap | Aluminum, 316L stainless steel, Monel® & Hastelloy® C-276 |
| 2 | Actuator | Aluminum, 316L stainless steel |
| 3 | O-rings | Viton® |
| 4 | O-rings | Viton® |
| 5 | Upper piston | Brass |
| 6 | Body* | 316L stainless steel, Monel® & Hastelloy® C-276 |
| 7 | Seat* | PCTFE (formerly Kel-F®) or PEEK™ |
| 8 | Diaphragm* | Elgiloy® AMS 5876 |
| 9 | Diaphragm retainer | 316 stainless steel |
| 10 | Thrust plug | Brass |
| 11 | O-ring | Viton® |
| 12 | Lower piston | Brass |
| 13 | Chamber separator | Brass |
| 14 | Spring | 302 stainless steel |
| 15 | O-ring | Viton® |
| 16 | Sintered filter | 316 stainless steel, 40µ |

* Wetted components

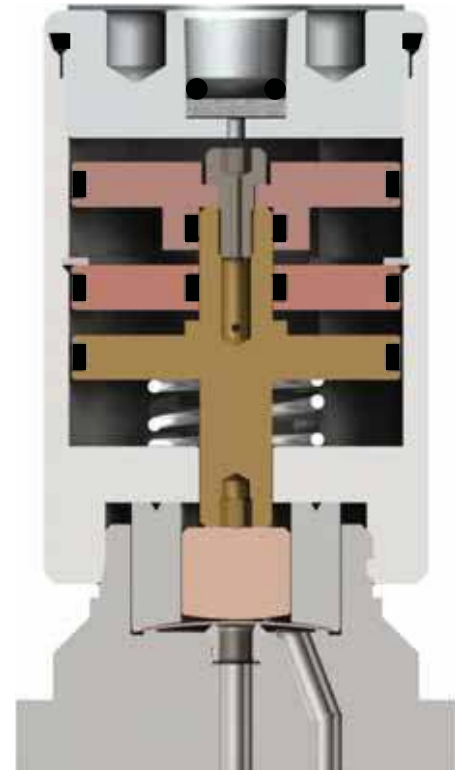
DV1 Series

Dimensions

Pneumatic Small Diameter Actuator

| END CONNECTION | LENGTH | HEIGHT | ACTUATOR DIAMETER | C/L CENTER LINE |
|-----------------|----------------|----------------|-------------------|-----------------|
| ¼" MNPT | 2.00" (5.1 cm) | 2.75" (7.0 cm) | 1.31" (3.3 cm) | 0.38" (1.0 cm) |
| ¼" FNPT | 2.00" (5.1 cm) | 2.75" (7.0 cm) | 1.31" (3.3 cm) | 0.38" (1.0 cm) |
| ⅝" Gyrolok® | 1.71" (4.3 cm) | 2.75" (7.0 cm) | 1.31" (3.3 cm) | 0.38" (1.0 cm) |
| ¼" Gyrolok® | 1.87" (4.8 cm) | 2.75" (7.0 cm) | 1.31" (3.3 cm) | 0.38" (1.0 cm) |
| ¼" NPT extended | 3.15" (8.0 cm) | 2.75" (7.0 cm) | 1.31" (3.3 cm) | 0.38" (1.0 cm) |
| 6mm Gyrolok® | 47.5mm | 69.85mm | 33.27mm | 9.65mm |
| 8mm Gyrolok® | 47.5mm | 69.85mm | 33.27mm | 9.65mm |

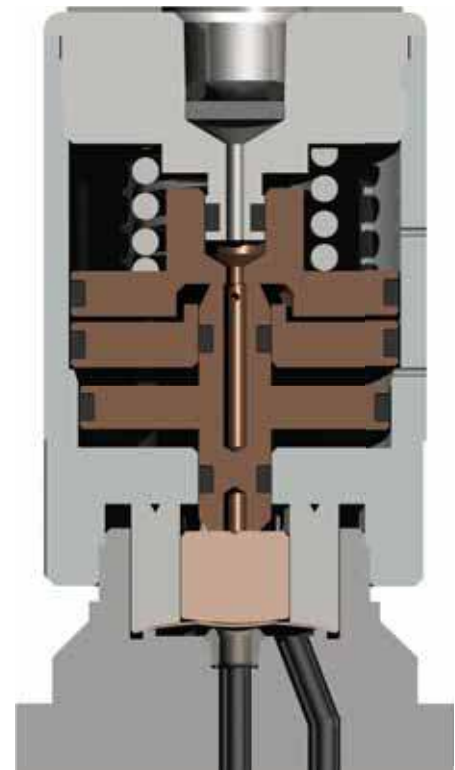
Normally Open



Pneumatic Medium Diameter Actuator

| END CONNECTION | LENGTH | HEIGHT | ACTUATOR DIAMETER | C/L CENTER LINE |
|-----------------|----------------|----------------|-------------------|-----------------|
| ¼" MNPT | 2.00" (5.1 cm) | 2.75" (7.0 cm) | 1.56" (4.0 cm) | 0.38" (1.0 cm) |
| ¼" FNPT | 2.00" (5.1 cm) | 2.75" (7.0 cm) | 1.56" (4.0 cm) | 0.38" (1.0 cm) |
| ⅝" Gyrolok® | 1.71" (4.3 cm) | 2.75" (7.0 cm) | 1.56" (4.0 cm) | 0.38" (1.0 cm) |
| ¼" Gyrolok® | 1.87" (4.8 cm) | 2.75" (7.0 cm) | 1.56" (4.0 cm) | 0.38" (1.0 cm) |
| ¼" NPT extended | 3.15" (8.0 cm) | 2.75" (7.0 cm) | 1.56" (4.0 cm) | 0.38" (1.0 cm) |
| 6mm Gyrolok® | 47.5mm | 69.85mm | 39.62mm | 9.65mm |
| 8mm Gyrolok® | 47.5mm | 69.85mm | 39.62mm | 9.65mm |

Normally Closed



Pneumatic Large Diameter Actuator

| END CONNECTION | LENGTH | HEIGHT | ACTUATOR DIAMETER | C/L CENTER LINE |
|-----------------|----------------|----------------|-------------------|-----------------|
| ¼" MNPT | 2.00" (5.1 cm) | 3.25" (8.3 cm) | 2.36" (6.0 cm) | 0.38" (1.0 cm) |
| ¼" FNPT | 2.00" (5.1 cm) | 3.25" (8.3 cm) | 2.36" (6.0 cm) | 0.38" (1.0 cm) |
| ⅝" Gyrolok® | 1.71" (4.3 cm) | 3.25" (8.3 cm) | 2.36" (6.0 cm) | 0.38" (1.0 cm) |
| ¼" Gyrolok® | 1.87" (4.8 cm) | 3.25" (8.3 cm) | 2.36" (6.0 cm) | 0.38" (1.0 cm) |
| ¼" NPT extended | 3.15" (8.0 cm) | 3.25" (8.3 cm) | 2.36" (6.0 cm) | 0.38" (1.0 cm) |
| 6mm Gyrolok® | 47.5mm | 82.55mm | 59.94mm | 9.65mm |
| 8mm Gyrolok® | 47.5mm | 82.55mm | 59.94mm | 9.65mm |

DV1 Series

How to Order

Standard items in bold

DV1 - 1 C 2 5 C F4 F4 H 0

BODY MATERIAL

- 1 316L stainless steel**
- 4 Monel®**
- 6 Hastelloy® C-276**

ACTUATION METHOD

- C** Air actuated—normally closed
- M** Manual ¼-plus turn round handle
- O** Air actuated—normally open
- T** Manual ¼-plus turn T-handle

ACTUATOR SIZE

- X** Manually operated
- 1** Air actuated—small (500 psig max.)
- 2** Air actuated—medium (800 psig max.)
- 3** Air actuated—large (3,600 psig max.)

ACTUATOR MATERIAL

- X** Manually operated
- 1** 316L stainless steel
- 5** **Aluminum**

MAXIMUM PROCESS PRESSURE

- A** 250 psig
- B** 500 psig
- C** 800 psig
- D** 3,600 psig (surface mount only)
- E** 2,000 psig

INLET CONNECTION TYPE*

- C1** Male Gyrolok® ⅙"
- G1** Gyrolok® ⅙"
- G2** Gyrolok® ⅙"
- G4** Gyrolok® ¼"
- T6** Gyrolok® 6mm
- T8** Gyrolok® 8mm
- F4** **Female NPT ¼"**
- M4** Male NPT ¼"
- B4** Female BSP/ISO 7/1 ¼"
- D4** Male BSP/ISO 7/1 ¼"
- X4** Extended, ¼" male NPT
- SM** Surface mount (ANSI/ISA SP76 compliant)
- V4** ¼" VCR®-compatible swivel female
- R4** ¼" VCR®-compatible fixed male
- W4** ¼" Tube stub
- S4** ¼" Tube socket weld

OPTION

- 0** None
- 1** Cleaned for oxygen service**
- 4** Panel mount (manual valves only)
- 6** Panel mount & cleaned for oxygen service (manual valves only)**

SEAT MATERIAL

- H** **PCTFE**
- Q** **PEEK™**

OUTLET CONNECTION TYPE*

- C1** Male Gyrolok® ⅙"
- G1** Gyrolok® ⅙"
- G2** Gyrolok® ⅙"
- G4** Gyrolok® ¼"
- T6** Gyrolok® 6mm
- T8** Gyrolok® 8mm
- F4** **Female NPT ¼"**
- M4** Male NPT ¼"
- B4** Female BSP/ISO 7/1 ¼"
- D4** Male BSP/ISO 7/1 ¼"
- X4** Extended, ¼" male NPT
- SM** Surface mount (ANSI/ISA SP76 compliant)
- V4** ¼" VCR®-compatible swivel female
- R4** ¼" VCR®-compatible fixed male
- W4** ¼" Tube stub
- S4** ¼" Tube socket weld

* Note with the exception of male NPT and female NPT, inlet and outlet connections must be of the same type.

** Valves cleaned for oxygen service are limited to 3000 psig (207 bar). Body will be marked "cleaned for oxygen".

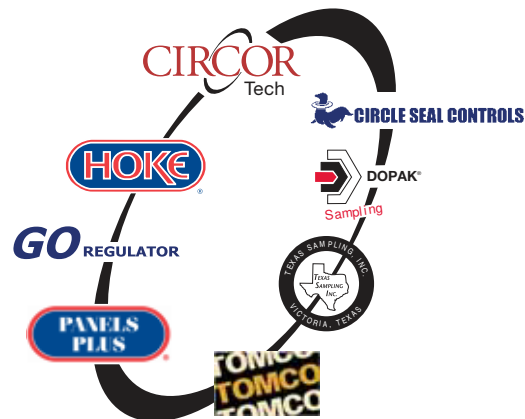
NOTE: The choices above represent an abbreviated list of the more commonly ordered options. For a complete listing of all available options, please see the Selection Wizard on the GO website at www.goreg.com or contact the factory.

For Your Safety

It is solely the responsibility of the system designer and user to select products suitable for their specific application requirements and to ensure proper installation, operation, and maintenance of these products. Material compatibility, product ratings and application details should be considered in the selection. Improper selection or use of products described herein can cause personal injury or property damage.

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CIRCOR Instrumentation Technologies

CIRCOR Instrumentation Technologies (CIT) is a product group of CIRCOR International (NYSE: CIR), specializing in fluid process control solutions with orifice sizes typically up to 1". Our main product lines include ball, needle, packless, diaphragm, solenoid, and metering valves, pressure regulators, quick couplers, Gyrolok® compression tube fittings, and fully integrated sampling systems.

CIT markets primarily to the petrochemical, refining, power generation, food and beverage, semiconductor, and pharmaceutical industries, and to OEM's. CIT separates itself from the competition by offering highly engineered components manufactured to exacting standards and a variety of custom options.