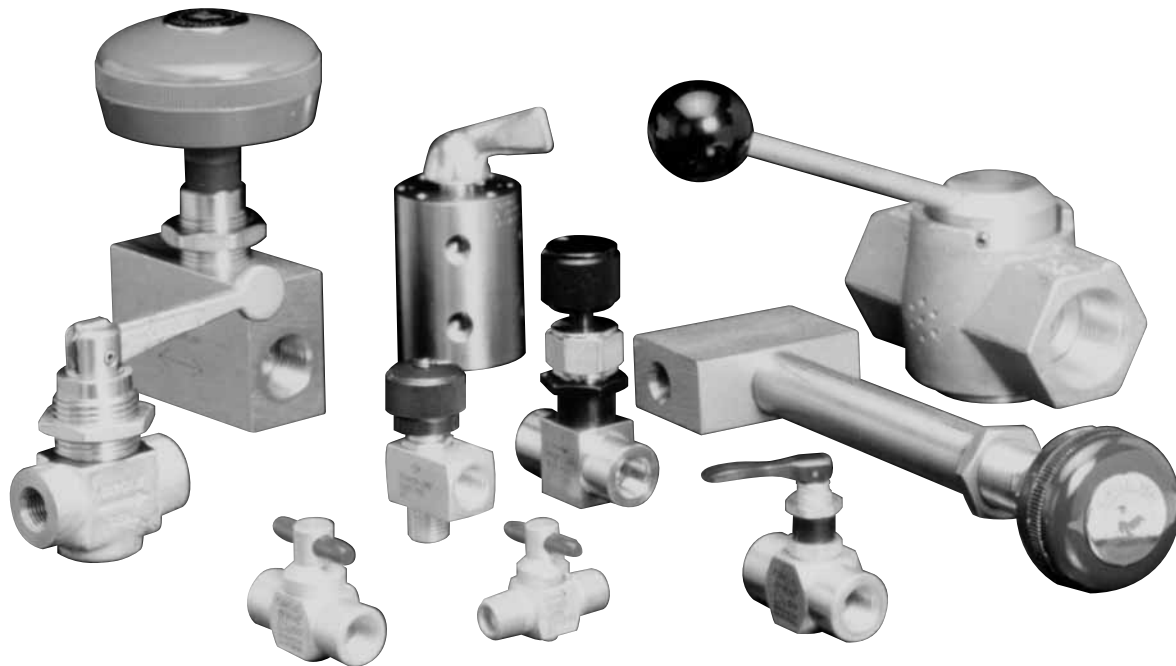




# Manual Shutoff Valves

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shutoff valves

### Circle Seal Controls

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## **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. When selecting products, the total system design must be considered to ensure safe, trouble-free performance. 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.

Contact your authorized Atkomatic sales and service representative for information about additional sizes and special alloys.

## **SAFETY WARNING:**

---

Circle Seal products are designed for installation only by professional suitably qualified licensed system installers experienced in the applications and environments for which the products are intended. These products are intended for integration into a system. Where these products are to be used with flammable or hazardous media, precautions must be taken by the system designer and installer to ensure the safety of persons and property. Flammable or hazardous media pose risks associated with fire or explosion, as well as burning, poisoning or other injury or death to persons and/or destruction of property. The system designer and installer must provide for the capture and control of such substances from any vents in the product(s). The system installer must not permit any leakage or uncontrolled escape of hazardous or flammable substances. The system operator must be trained to follow appropriate precautions and must inspect and maintain the system and its components including the product(s) and at regular intervals in accordance with timescales recommended by the supplier to prevent unacceptable wear or failure.

## 900 Series

0–6000 psig Manual Shutoff Valves



### Features

- Zero leakage
- Protected o-ring
- Full flow passages
- Freedom from wire drawing
- Panel mount standard
- Hand wheel or toggle handle

### Technical Data

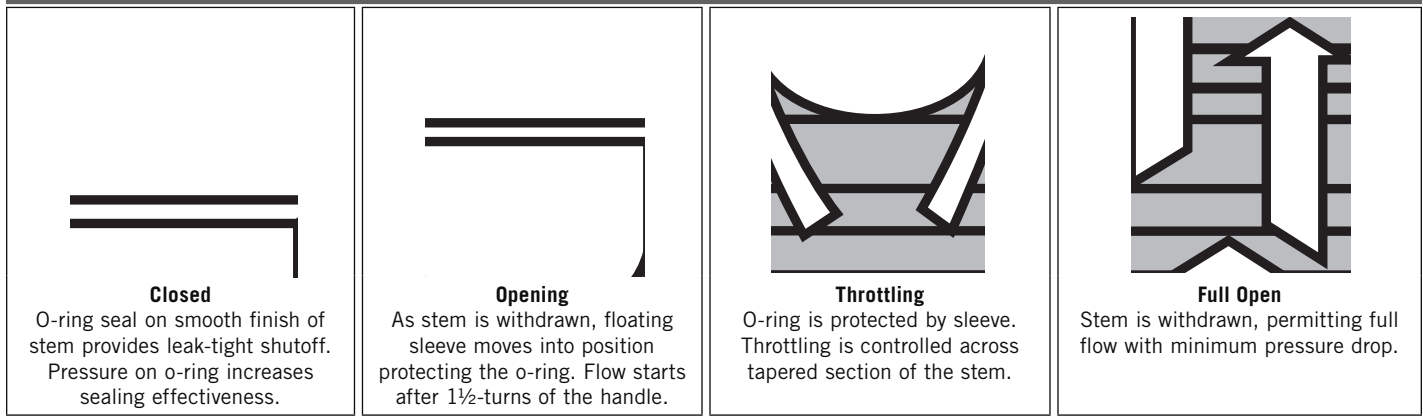
<b>Body Construction Material</b>	316 or 303 stainless steel
<b>Stem Materials</b>	316, 303 or 17-4 PH stainless steel
<b>Gland Nut Materials</b>	Brass or 17-4 PH stainless steel
<b>O-ring Materials</b>	Buna N, Neoprene or Viton®
<b>Spring Material</b>	302 stainless steel
<b>Handle Materials</b>	<ul style="list-style-type: none"> <li>• Handle wheel: die-cast zinc, color blue</li> <li>• Toggle: forged steel, cadmium-plated</li> </ul>
<b>Leakage</b>	<ul style="list-style-type: none"> <li>• Internal: zero</li> <li>• External: zero</li> </ul>
<b>Operating Pressure</b>	0–6000 psig (414 bar)
<b>Proof Pressure</b>	9000 psig (621 bar)
<b>Burst Pressure</b>	Over 24,000 psig (1,655 bar)
<b>Temperature Range</b>	–40° F to +350° F (–40° C to +177° C) <i>Based on o-ring material, see "How to Order".</i>
<b>Connection Sizes</b>	¼"–¾"
<b>Actuating Force</b>	<ul style="list-style-type: none"> <li>• 900 Series: 20in/lbs</li> <li>• T900 Series: 20 lbs</li> </ul>

*Note: Proper filtration is recommended to prevent damage to sealing surface.*

Shutoff valves

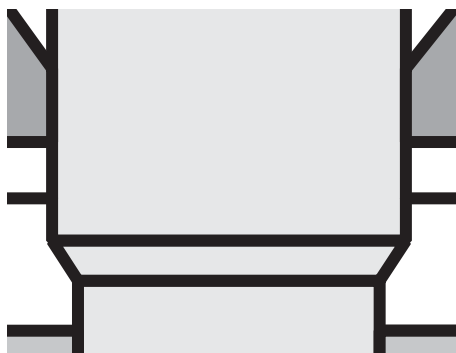
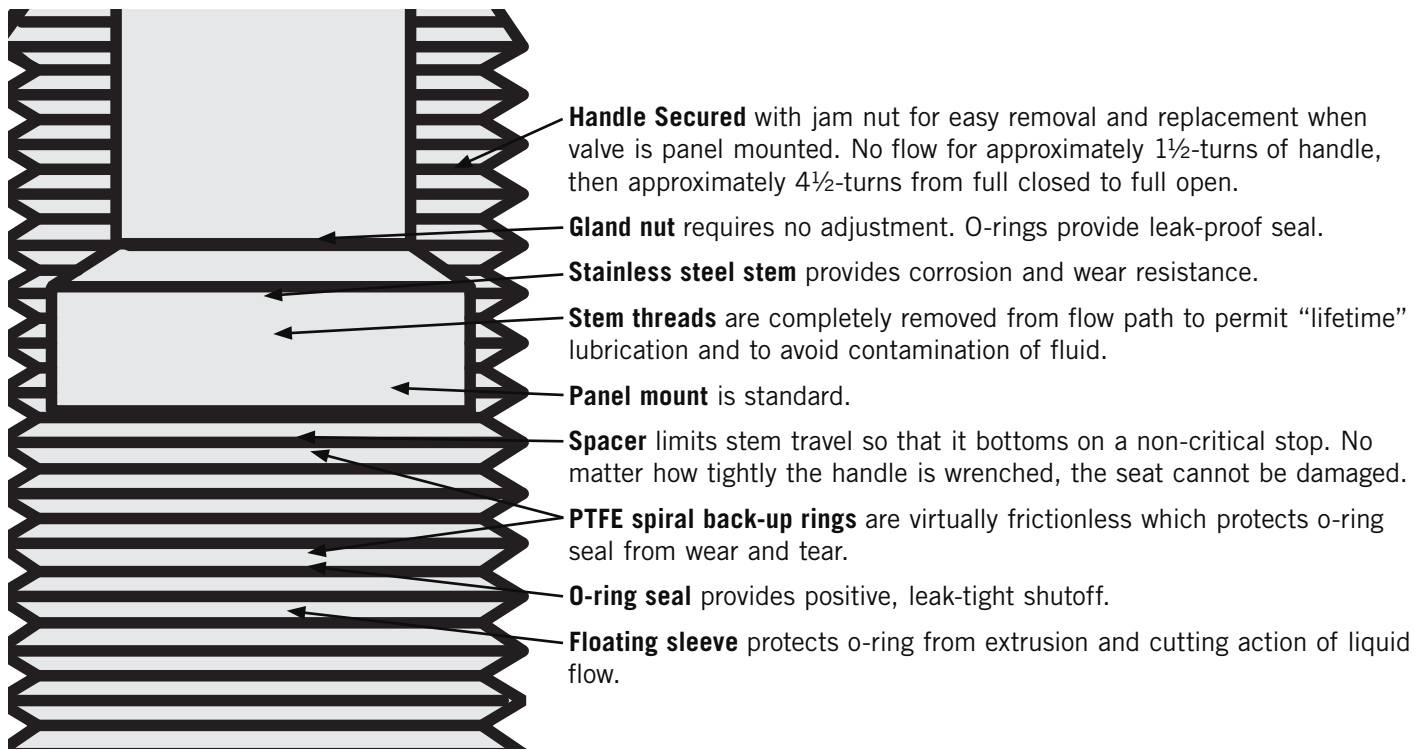
# 900 Series

## How it Works



## Engineering Features

### Standard Design



*PTFE or PTFE seat eliminates the need for o-ring seal and floating sleeve.*

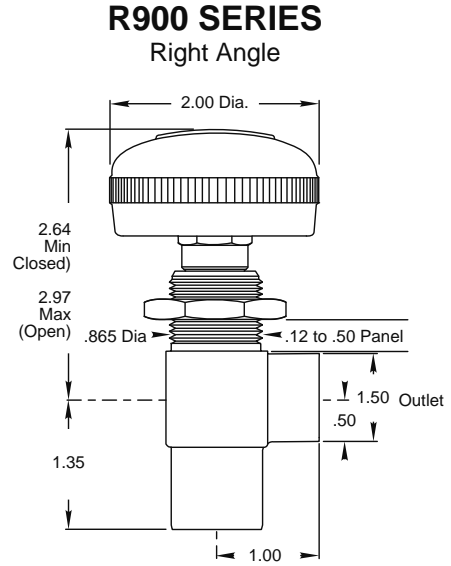
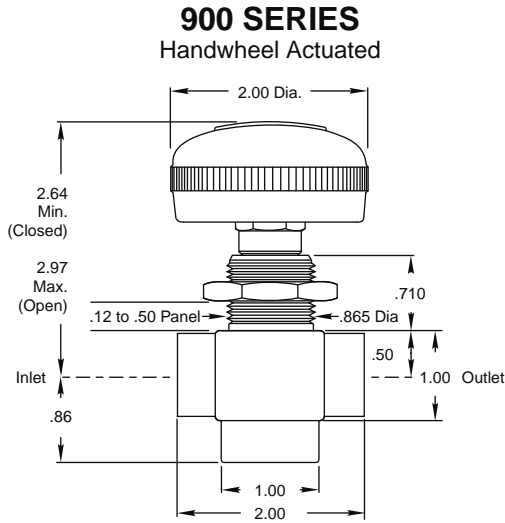
### N-, B-, A900 Series design detail

Stem, seat and seal combine to provide accurate metering, full flow in either direction, and zero leakage shutoff.

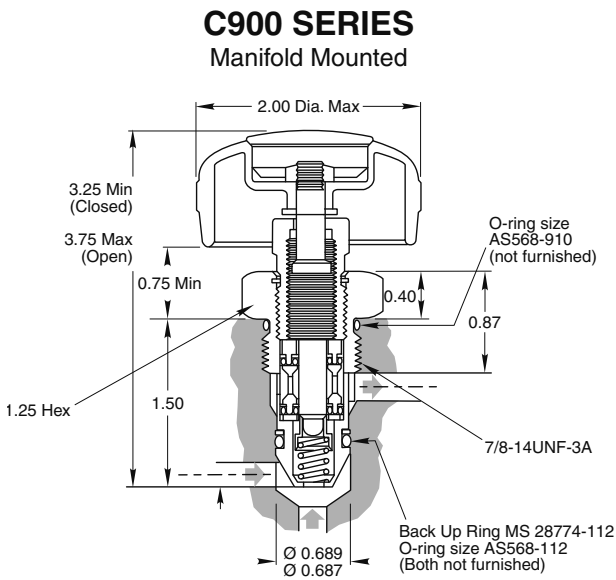
N900 (nylon seat) Series valves are for general use. B900 (PCTFE seat) or A900 (PTFE seat) Series valves should be used for fluids not compatible with nylon or for service over +250° F.

# 900 Series

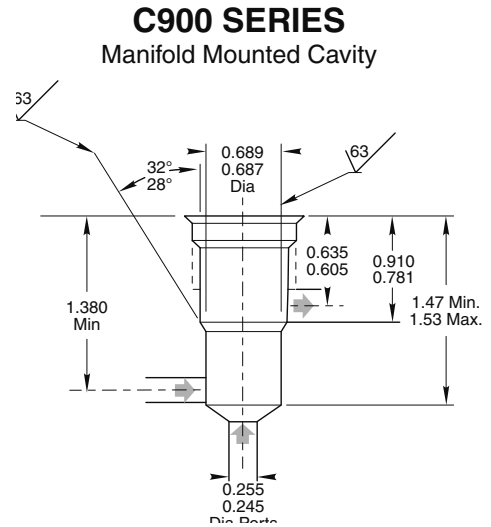
## Dimensions



Prefix part number for 900, R900, Y900 and Z900 Series with N, B, or A if bi-directional flow capability is required.



C900 Series—inlet size 0.203, outlet size 0.250. O-ring seals for manifold cavity are furnished by customer.



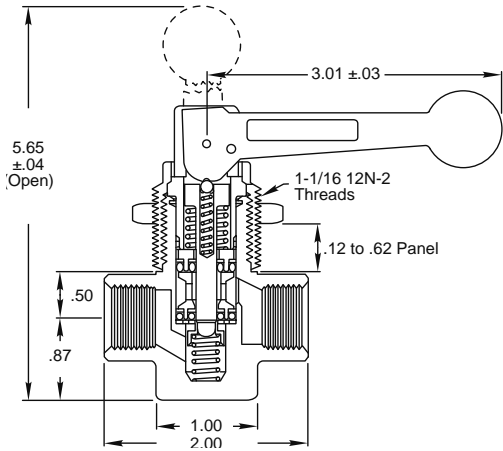
Cavity per AND10050-10 or SAE 5/8" straight thread connection (7/8-14UNF-3B) except as shown.

# 900 Series

## Dimensions

### T900 SERIES

Toggle Actuated



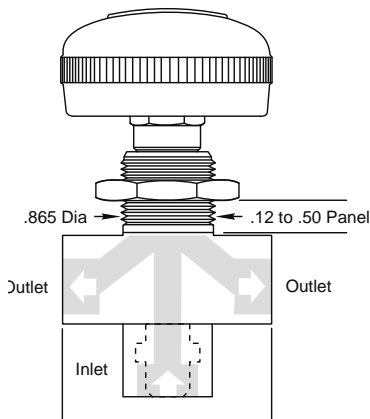
Spring and ball detent positively position handle open or closed. Holes are provided in toggle cam and clevis to permit locking valve closed against tampering.

Handle arc is 90°. Valve is open when handle is parallel with stem, closed when handle is in a plane parallel with body. Closed position of handle may be positioned (360°) as required by “cracking” gland nut, positioning handle and retightening gland nut.

Stem and seat design permit rapid actuation of the toggle handle with a minimum of opening and closing shock to the system.

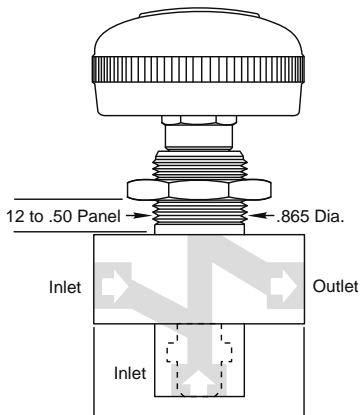
### Y900 SERIES

Triport



### Z900 SERIES

Triport

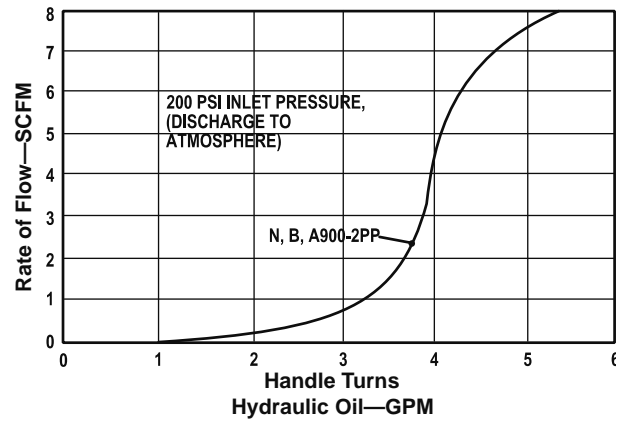
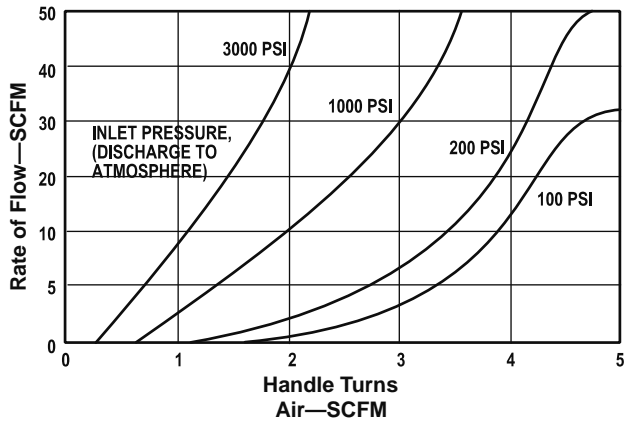
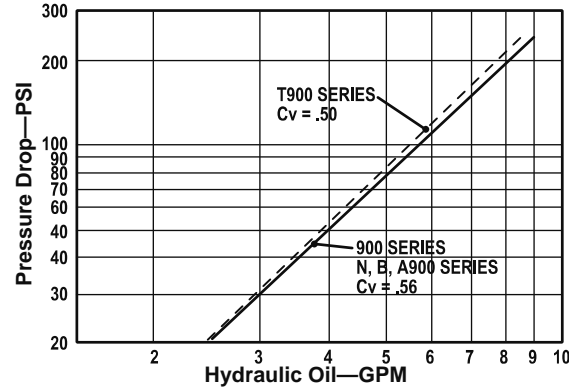
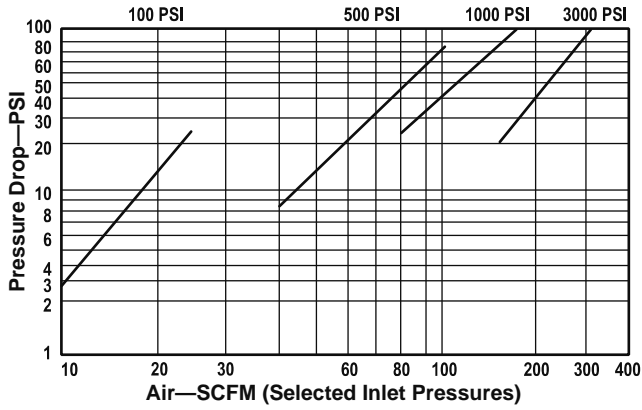


### Y900 & Z900 Series Part Numbers

Part Number	Inlet	Outlet
Y900-2PPP Z900-2PPP	1/4" female pipe	1/4" female pipe
Y900-4BBB Z900-4BBB	1/4" female tube	1/4" female tube
Y900-6BBB Z900-6BBB	3/8" female tube	3/8" female tube
Y900-4T6BB Z900-4T6BB	1/4" male tube	3/8" female tube
Y900-6TBB Z900-6TBB	3/8" male tube	3/8" female tube

# 900 Series

## Typical Flow Curves: 900 & T900 Series



# 900 Series

## How to Order

**N Y 9 49 T - 2 PP (T)**

### SEAT VARIATION & OPERATING PRESSURE

(Not available with T900 Series)

- N** Nylon (0–6000 psig)
- B** PCTFE (gas: 0–6000 psig; liquid: 0–3000 psig)
- A** PTFE (0–2000 psig)

### BODY VARIATION

- C** Manifold mounted
- R** Right angle
- T** Toggle actuated
- Y** Tri-port (1 inlet, 2 outlets)
- Z** Tri-port (2 inlets, 1 outlet)

### O-RING MATERIAL &

#### TEMPERATURE RANGE

- 49** Buna N (–65° F to +250° F)
- 33** Neoprene (–40° F to +300° F)
- 52** Viton® (–20° F to +400° F)

### SPECIAL CHARACTERISTIC

**(T)** 17-4 PH stainless steel gland nut  
(Not available with T900 Series)

### CONNECTIONS

- P** Female tube
- B** Female tube, AND10050  
(MS33649 available upon request)
- M** Male pipe

### PORT SIZE

- 2** 1/4" pipe
- 3** 3/8" pipe
- 4** 1/4" tube
- 6** 3/8" tube

### MATERIAL

**T** 303 stainless steel\*

\* 900, T900 body: forging  
R900 body: 316 stainless steel forging  
C900, Y900, Z900 body: bar stock

## Repair Kits

In normal service, the only part(s) which may require replacement is(are) the seal(s). A repair kit may be ordered by placing a "K/" in front of the complete part number (i.e. **K/949T-2PP**).



## 9200 Series

Vacuum to 150 psig Plug Shutoff Valves



### Features

- Leak proof in vacuum or pressure service
- No stem leakage
- Minimum pressure drop/straight through flow passage
- Convenient ball handle
- Very low turning torque
- Positive position indication

### Technical Data

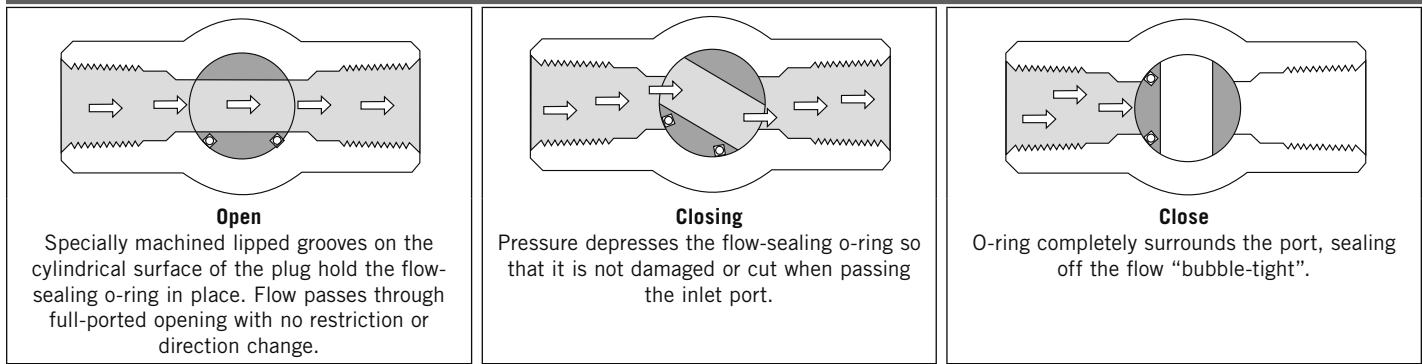
<b>Body Construction Materials</b>	Brass, 303 and 316 stainless steel
<b>O-ring Materials</b>	Buna N, Neoprene or Viton®
<b>Operating Pressures</b>	<ul style="list-style-type: none"> <li>• Vacuum to 150 psig (10 bar)</li> <li>• 20 psig (1.38 bar) max in reverse flow</li> </ul>
<b>Proof Pressure</b>	300 psig (21 bar)
<b>Burst Pressure (Minimum)</b>	Over 500 psig (34 bar)
<b>Temperature Range</b>	0° F to +400° F (-17.8° C to +204° C) <i>Based on o-ring material, see "How to Order".</i>
<b>Connection Sizes</b>	1/8"-1"
<b>Leakage</b>	Zero—internal and external

*Note: Proper filtration is recommended to prevent damage to sealing surface.*

Shutoff valves

# 9200 Series

## How it Works



## Dimensions (inches) & Specifications

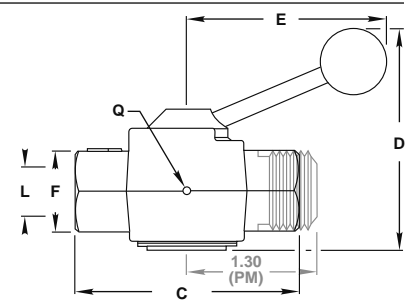
### Female Pipe, Male Pipe

Dash No.	Size	B	C	D	E	F Hex	Q Eq. Dia.	L Orifice	Weight (LBS)	Torque* (In-lbs)
-1PP	1/8"	0.75**	1.62	1.93	1.37	0.635*	0.040	0.187	0.23	2
-2PP, -2PM	1/4"	1.00	2.10	2.27	1.61	0.687	0.040	0.297	0.41	3
-3PP	3/8"	1.12**	2.38	2.83	2.13	0.937*	0.188	0.406	0.62	11
-4PP	1/2"	1.62	3.00	3.15	2.90	1.125	0.188	0.562	1.25	20
-6PP	3/4"	1.87	3.50	3.60	3.62	1.375	0.250	0.719	2.00	30
-8PP	1"	2.50	4.06	5.15	5.42	1.750	0.250	0.875	3.75	—

Note: Weights listed are for brass valves

\* Opening torque, typical, at 150 psi.

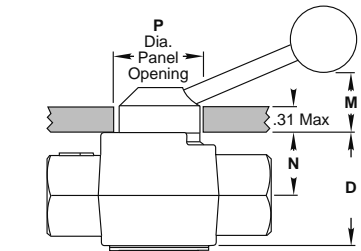
\*\* For 9200-1PP and -3PP, body will be made of square bar stock with ends turned to Dia. "F".



### Panel Mount

Dash No.	Size	D	Thread	A Radius	M	N	P	R sq.
-1PP	1/8"	0.87	6-32 NC-2	0.475	0.78	0.500	0.65	0.080
-2PP, -2PM	1/4"	0.87	6-32 NC-2	0.525	0.78	0.563	0.75	0.085
-3PP	3/8"	1.31	10-32 NF-2	0.687	0.93	0.750	0.92	0.109
-4PP	1/2"	1.50	10-32 NF-2	0.837	0.98	0.825	1.25	0.109
-6PP	3/4"	1.75	10-32 NF-2	1.000	1.05	1.000	1.50	0.140
-8PP	1"	2.25	1/4-20 NC-2	1.218	1.70	1.290	1.87	0.200

Valves are furnished complete with 4 panel mount screws.



Note: When panel-mounting

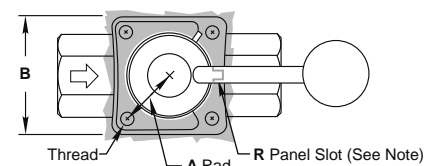
### Slot Dimensions

-1PP, -4BB	0.080 sq.	-6PP, -12BB	0.140 sq.
-2PP, -6BB, -6TT	0.085 sq.	-8PP, -16BB	0.200 sq.
-3PP, -4PP, -8BB, -10BB	0.109 sq.		

plug is removed and valve mounted from rear of panel, drill "P" diameter hole to

receive plug. Slot hole, as shown, to permit pin to pass through when re-inserting

plug in valve body after mounting has been completed.



# 9200 Series

## How to Order

**92 59 B - 2 PPQ (P)**

**O-RING MATERIAL & TEMPERATURE RANGE**

- 59** Buna N (0° F to +280° F)
- 33** Neoprene (0° F to +240° F)
- 32** Viton® (0° F to +350° F)

**BODY MATERIALS**

- B** Brass
- T** 303 stainless steel
- T1** 316 stainless steel

**OPTION**

- P** Panel mount

**END CONNECTIONS (INLET/OUTLET/VENT)**

- M** Male pipe
- F** Female pipe
- Q** Downstream port\*

**VALVE SIZE**

- 1** 1/8"
- 2** 1/4"
- 3** 3/8"
- 4** 1/2"
- 6** 3/4"
- 8** 1"

\* Downstream vent port is designed to bleed off downstream pressure to atmosphere when valve is closed. O-ring in plug isolates vent port when valve is open.

Operating instructions: Place valve in line so that flow arrow points in direction of flow.

For a nominal charge, 9200 Series valves can be helium leak tested and certified to be leakproof in high vacuum.

Please consult your Circle Seal Controls distributor or our factory for information on special connections, materials, larger sizes, o-rings, operating pressures, and temperature ranges.

### Repair Kits

In normal service, the only part(s) which may require replacement is(are) the seal(s). A repair kit may be ordered by placing a "K/" in front of the complete part number (i.e. **K/9259B-2PP**).

## 9300 Series

Vacuum to 150 psig Plug Valves 3-way Selector



### Features

- Leakproof in vacuum or pressure service
- No stem leakage
- Minimum pressure drop
- Very low turning torque
- Effortless, fingertip operation
- Can be used for throttling service
- Positive position indication

### Technical Data

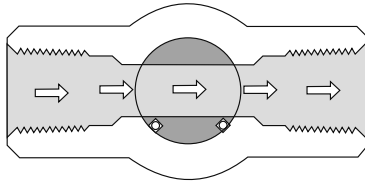
<b>Body Construction Materials</b>	Brass
<b>O-ring Materials</b>	Buna N, Neoprene or Viton®
<b>Operating Pressures</b>	Vacuum to 150 psig (10 bar)
<b>Proof Pressure</b>	300 psig (21 bar)
<b>Burst Pressure (Minimum)</b>	Over 500 psig (34 bar)
<b>Temperature Range</b>	0° F to +400° F (-17.8° C to +204° C) <i>Based on o-ring material, see "How to Order".</i>
<b>Connection Sizes</b>	¼", ½"
<b>Flow Passage</b>	0.275" diameter
<b>Leakage</b>	Zero—internal and external

*Note: Proper filtration is recommended to prevent damage to sealing surfaces.*

shutoff valves

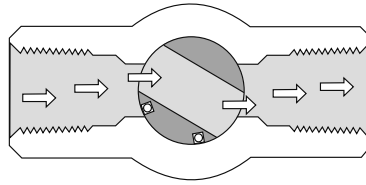
# 9300 Series

## How it Works



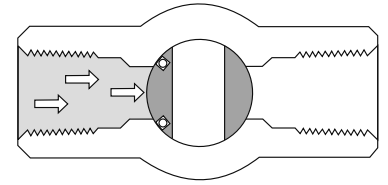
### Open

Specially machined lipped grooves on the cylindrical surface of the plug hold the flow-sealing o-ring in place. Flow passes through full ported opening with no restriction and minimum direction change.



### Closing

Pressure depresses the flow-sealing o-ring so that they are not damaged or cut when passing ports.

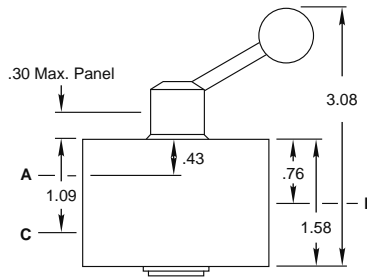
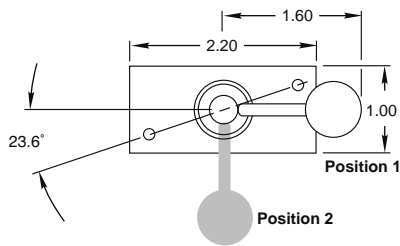


### Close

O-ring completely surrounds the port, sealing off the flow "bubble-tight". One outlet is open when the other is closed. O-rings on diameter of plug prevent interport and body leakage.

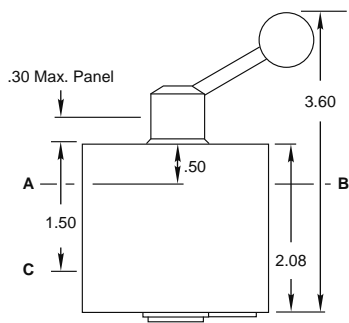
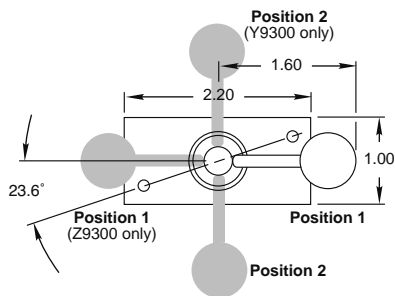
## Dimensions (Inches) & Specifications

### 9300-2PPQ Dimensions



### 9300-2PPP, Y9300-2PPP & Z9300-2PPP Dimensions

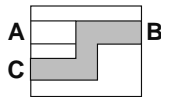
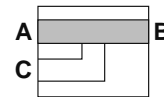
Note: Panel mount—2 panel mounting holes, 10-32 UNF-2B threads, .20" deep on 1.75" bolt circle.



## Types of Operation

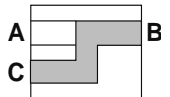
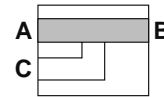
**Handle Position 1**      **Handle Position 2**  
9300-2PPQ & 9300-2PPP Configuration

**A Inlet B Outlet C Exhaust**



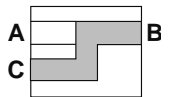
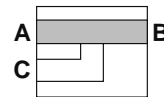
Y9300 Configuration

**A Outlet B Inlet C Outlet**



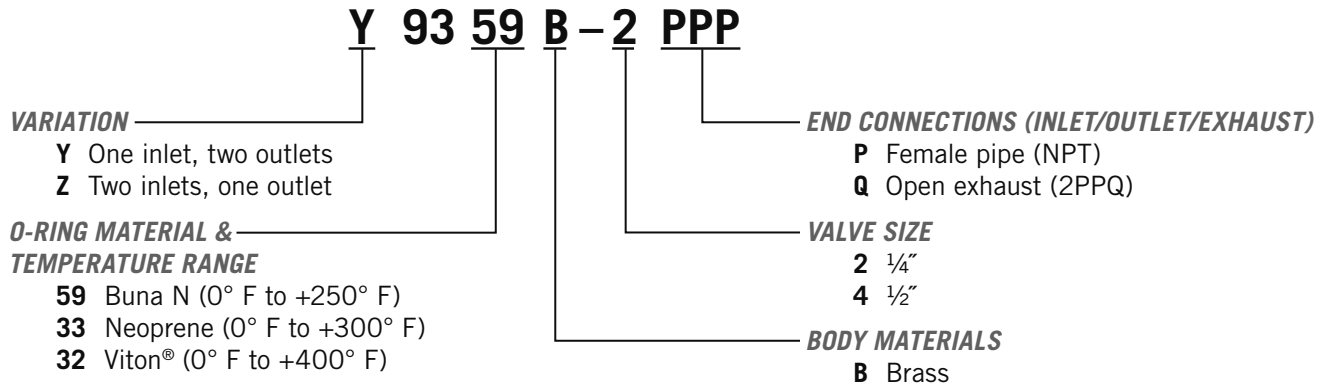
Z9300 Configuration

**A Inlet B Outlet C Inlet**



# 9300 Series

## How to Order



Please consult your Circle Seal Controls distributor or our factory for information on special connections, materials, larger sizes, o-rings, operating pressures, and temperature ranges.

### Repair Kits

In normal service, the only part(s) which may require replacement is(are) the seal(s). A repair kit may be ordered by placing a "K/" in front of the complete part number (i.e. **K/9359B-2PPP**).

Viton® is a registered trademark of DuPont Dow Elastomers.

## 9400 Series

0 to 3000 psig Miniature Shutoff Valves



### Features

- Leak-proof shutoff
- No stem leakage
- Minimum pressure drop
- Color-coded handles
- Effortless opening & closing
- Knob or toggle handle
- Panel mount
- Metering stem
- Compact size
- Pipe and instrument tube fittings

### Technical Data

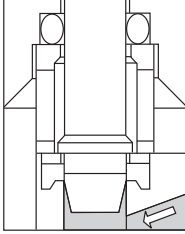
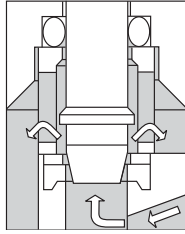
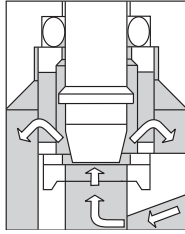
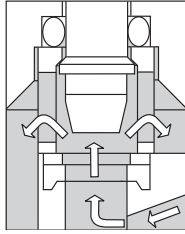
<b>Body Construction Materials</b>	Brass or 316 stainless steel
<b>Seat Materials</b>	Buna N, Neoprene, PTFE or Viton®
<b>Operating Pressure</b>	0 to 3000 psig (207 bar)
<b>Proof Pressure</b>	0 to 4500 psig (310 bar)
<b>Burst Pressure</b>	Over 12,000 psig (828 bar)
<b>Temperature Range</b>	-80° F to +350° F (-62° C to +177° C) <i>Based on o-ring material, see "How to Order".</i>
<b>Connection Sizes</b>	1/8"–3/8"

*Note: Proper filtration is recommended to prevent damage to sealing surfaces.*

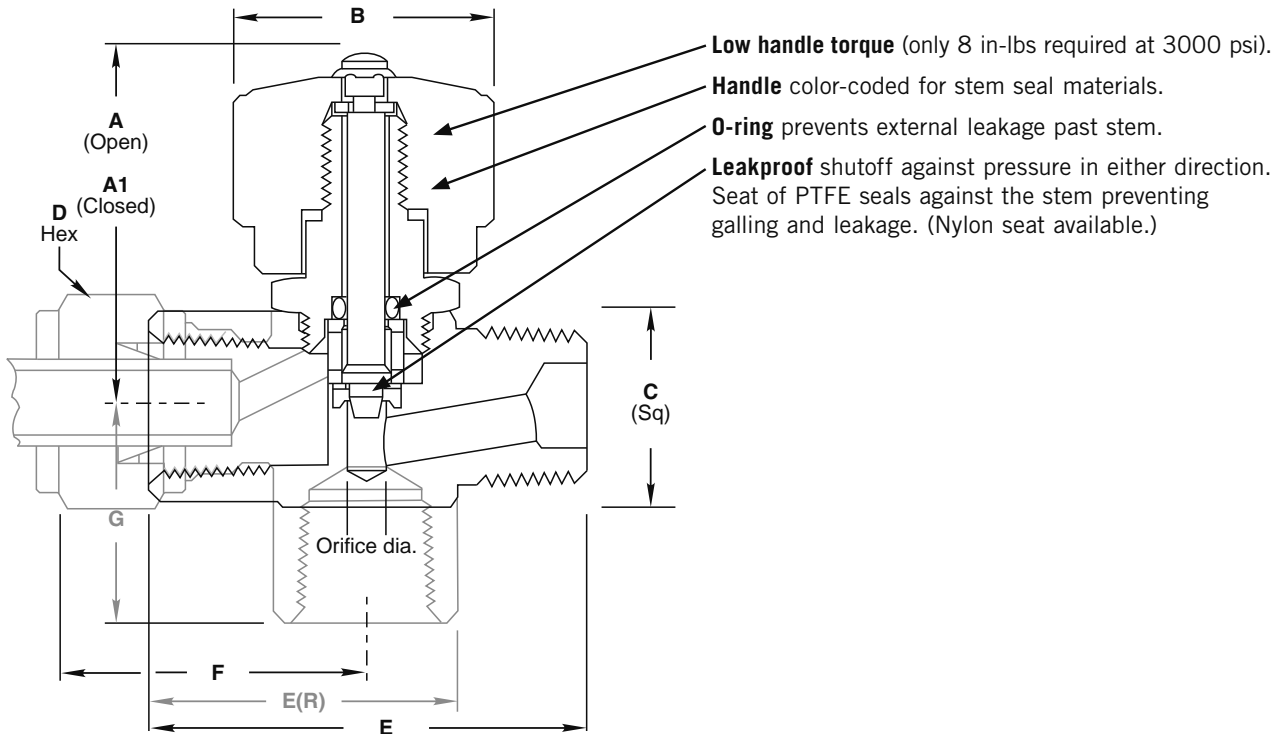
Shutoff valves

# 9400 Series

## How it Works

 <p><b>Closed</b></p> <p>Leakproof sealing is achieved by engaging a precision-machined stem into a captive nylon seat. The seat cannot be damaged by back pressure. The shoulder, on a stainless steel stem, seats on a metal washer, which in turn is forced against a resilient, non-galling nylon seat to affect a leak-tight seal against the stem.</p>	 <p><b>Fine Flow Control</b></p> <p>No flow occurs during the first fractional turn of the handle. Precise flow control begins as the stem is withdrawn and continues across the 2° tapered portion of the stem until the handle has been rotated approximately two turns in the opening direction.</p>	 <p><b>Non-critical Flow Control</b></p> <p>As the stem is withdrawn further, flow continues across the 10° taper of the stem until full opening is reached.</p>	 <p><b>Full Open</b></p> <p>Stem travel past full open position is prevented by a solid, positive metal stop. The handle cannot inadvertently be unscrewed. The o-ring surrounding the stem prevents external leakage. Stem threads are isolated from the flow path to permit lifetime lubrication and to avoid contamination of the fluid.</p>
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## 9400/R9400 Series Dimensions & Performance Data



### 9400/R9400 Series Dimensions (inches)

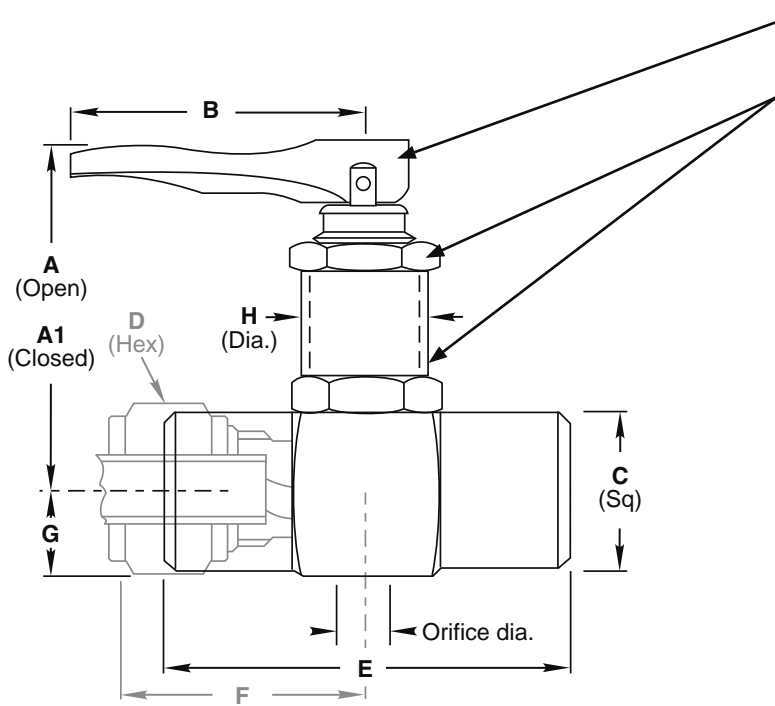
Dash No.	Size	Connections	Orifice Dia.	Cv	A	A1	B	C	E	E(R)	D	F	G
<b>9400 Series</b>													
2MM	¼"	Male pipe	.156	.32	1.610	1.400	1.00	.75	1.68	—	—	—	—
2MP	¼"	Male/Female pipe	.156	.32	1.675	1.465	1.00	.88	1.68	—	—	—	—
2PP	¼"	Female pipe	.156	.32	1.675	1.465	1.00	.88	1.86	—	—	—	—
2CC	⅜"	Tube fittings	.156	.32	1.613	1.303	1.00	.75	—	.437	1.010	—	—
4CC	¼"	Tube fittings	.156	.32	1.675	1.465	1.00	.88	—	.562	1.040	—	—
6CC	⅝"	Tube fittings	.156	.32	1.675	1.465	1.00	.88	—	.687	1.125	—	—
<b>R9400 Series</b>													
2MP	¼"	Male/Female pipe	.156	.32	1.590	1.380	1.00	.75	1.25	—	—	—	.88
2PP	¼"	Female pipe	.156	.32	1.590	1.380	1.00	.75	1.25	—	—	—	.88

<b>Operating pressure</b>	<ul style="list-style-type: none"> <li>9400, R9400 Series, PTFE seat: 0–2,200 psig (152 bar)</li> <li>N9400 Series, nylon seat: 0–3000 psig (207 bar)</li> </ul>
<b>Proof Pressure</b>	<ul style="list-style-type: none"> <li>9400, R9400 Series, PTFE seat: 3,300 psig (228 bar)</li> <li>N9400 Series, nylon seat: 4500 psig (310 bar)</li> </ul>
<b>Burst Pressure</b>	12,000 psig (828 bar) minimum
<b>Leakage</b>	Zero—internal and external



# 9400 Series

## T9400 Series Dimensions & Performance Data



**Toggle handle** for quick snap to open or close. Levers lift up approximately 90° to full open position.

**Panel mount nut** and removable collar protect panel mount threads.

**O-ring** prevents external leakage past stem.

**Leakproof** shutoff against pressure in either direction to 500 psi. Seat of PTFE seals against the stem to prevent galling and leakage.

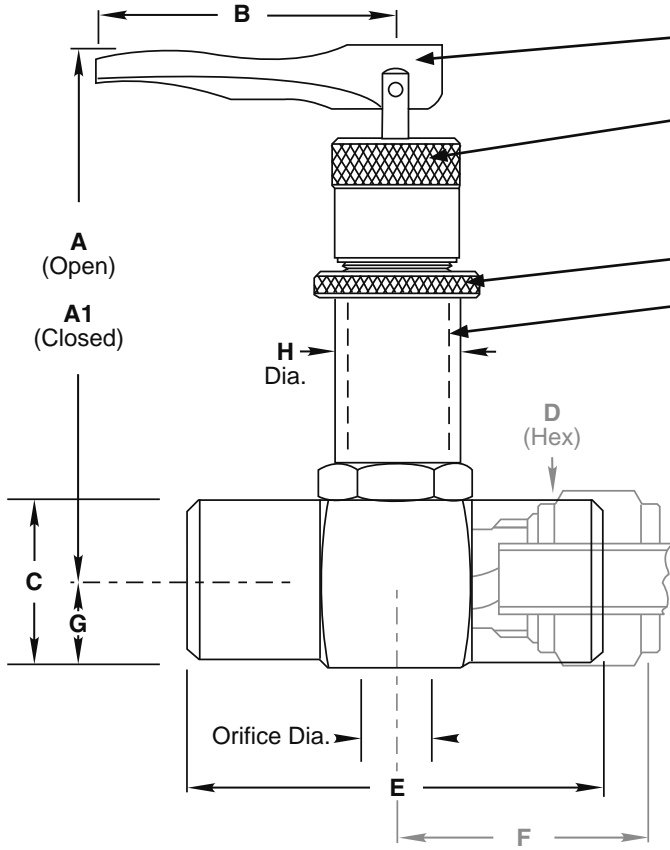
### T9400 Series Dimensions (inches)

Dash No.	Size	Connections	Orifice Dia.	Cv	A	A1	B	C	D	E	F	G	H
2MM	¼"	Male pipe	0.156	0.32	2.90	.62	1.39	.75	—	1.68	—	.375	.438
2PP	¼"	Female pipe	0.156	0.32	2.96	1.68	1.39	.88	—	1.86	—	.438	.438
2CC	⅛"	Tube fittings	0.156	0.32	2.84	1.62	1.39	.75	.437	—	1.010	.375	.438
4CC	¼"	Tube fittings	0.156	0.32	3.46	1.67	1.39	.88	.562	—	1.040	.438	.438
6CC	⅜"	Tube fittings	0.156	0.32	3.46	1.67	1.39	.88	.687	—	1.125	.438	.438

<b>Operating pressure</b>	0–500 psig (34 bar)
<b>Proof Pressure</b>	750 psig (52 bar)
<b>Burst Pressure</b>	2000 psig (138 bar) minimum
<b>Leakage</b>	Zero—internal and external
<b>Operating Temperature</b>	250° F maximum (plastic handle limitation)

# 9400 Series

## TM9400 Series Dimensions & Performance Data



**Toggle handle** for quick snap to open or close. Levers up approximately 90° to full open position.

**Adjustment nut** for metering desired flow. May be set and locked to limit valve opening to any point between closed and full open. Adjustable when valve is open or closed.

**Locked ring** locks adjustment nut in position.

**Panel mount** thread protector (removable).

**O-ring** prevents external leakage past stem.

**Nylon seat** provides leakproof shutoff without galling. (PTFE seat available.)

**Tapered stem** offers excellent metering characteristics. (See "Typical Flow Curves", next page.)

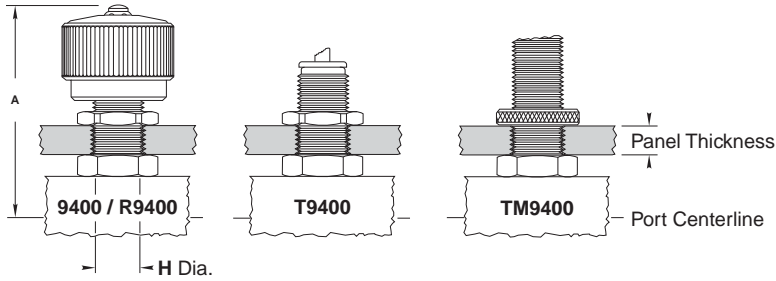
### TM9400 Series Dimensions (inches)

Dash No.	Size	Connections	Orifice Dia.	Cv	A	A1	B	C	D	E	F	G	H
2MM	¼"	Male pipe	0.156	0.32	4.00	2.67	1.39	.75	—	1.68	—	.375	.563
2PP	¼"	Female pipe	0.156	0.32	4.06	2.73	1.39	.88	—	1.86	—	.438	.563
2CC	⅛"	Tube fittings	0.156	0.32	3.45	2.61	1.39	.75	.437	—	1.035	.375	.563
4CC	¼"	Tube fittings	0.156	0.32	4.00	2.67	1.39	.88	.562	—	1.040	.438	.563
6CC	⅜"	Tube fittings	0.156	0.32	4.00	2.67	1.39	.88	.687	—	1.045	.438	.563

<b>Operating pressure</b>	<ul style="list-style-type: none"> <li>Nylon seal: vacuum to 3000 psig (207 bar)</li> <li>PTFE seal: vacuum to 1000 psig (69 bar)</li> </ul>
<b>Proof Pressure</b>	<ul style="list-style-type: none"> <li>Nylon seal: 4500 psig (310 bar)</li> <li>PTFE seal: 1500 psig (103 bar)</li> </ul>
<b>Burst Pressure</b>	<ul style="list-style-type: none"> <li>Nylon seal: 12,000 psig (828 bar) minimum</li> <li>PTFE seal: 4000 psig (276 bar) minimum</li> </ul>
<b>Leakage</b>	Zero—internal and external
<b>Operating Temperature</b>	250° F maximum (plastic handle limitation)

# 9400 Series

## 9400 Series Panel Mounted



### Panel thickness (inches)

9400, R9400 Series	0.060 to 0.340
9400-CC Series	0.100 to 0.340
T9400 Series	0.060 to 0.530
T9400-CC Series	0.060 to 0.440
TM9400 Series	0.060 to 0.810

### Dimensions (inches)

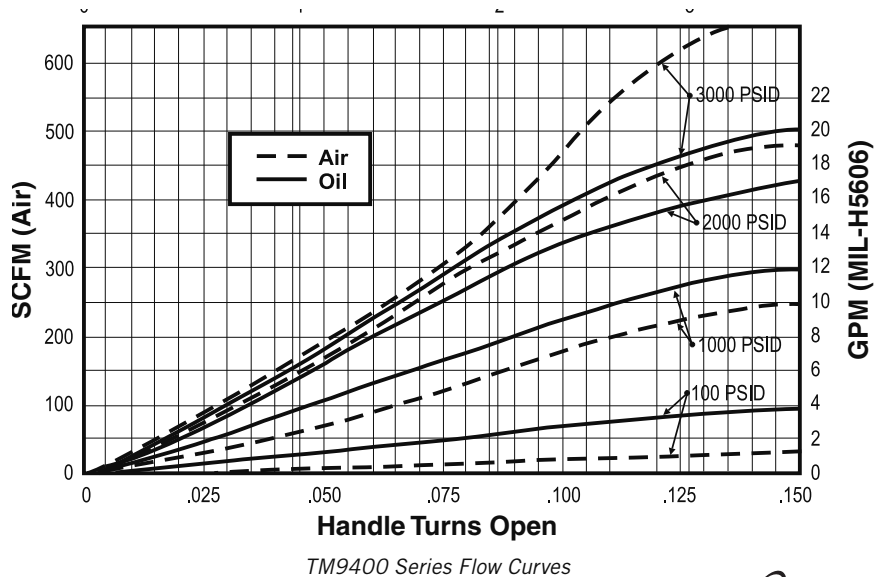
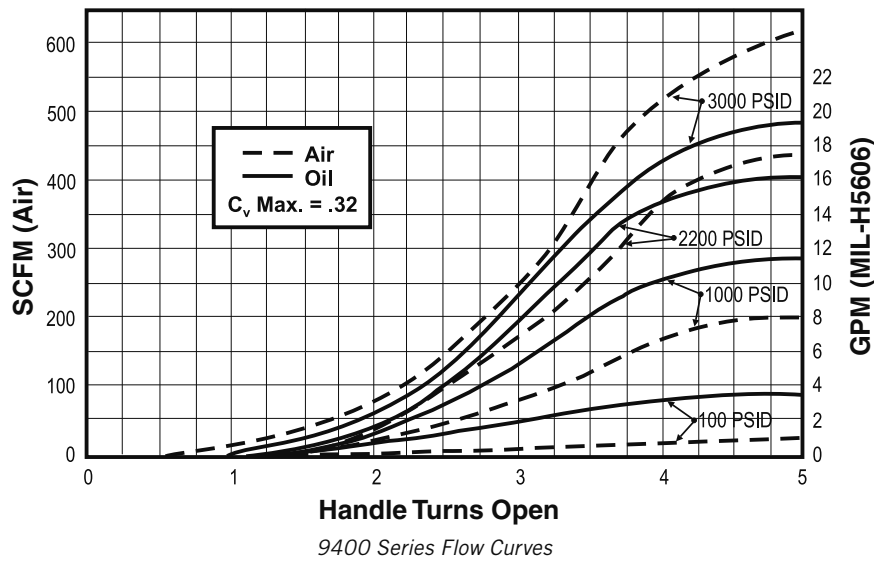
#### 9400 Series

Type	A		H
	Open	Closed	
2MM	2.07	1.86	.438
2PP	2.13	1.92	.438
2MP	2.13	1.92	.438
2CC	2.07	1.86	.438
4CC	2.13	1.92	.438
6CC	2.13	1.92	.438

#### R9400 Series

Type	A		H
	Open	Closed	
2MP	2.05	1.84	.438
2PP	2.05	1.84	.438

## Typical Flow Curves



# 9400 Series

## How to Order

**TM 94 59 B - 2 MM (P)**

### VARIATION

- N** Nylon seat (not available with T9400 Series)
- T** Toggle handle
- TM** Toggle, metering
- RT** Right angle toggle
- R** Right angle

### O-RING MATERIAL, TEMPERATURE & HANDLE COLOR

- 59** Buna N (-20° F to +250° F), blue handle
- 33** Neoprene (-20° F to +300° F), green handle
- 20** PTFE (-80° F to +400° F), black handle
- 32** Viton® (0° F to +400° F), red handle

### PANEL MOUNT

- P** Panel mount

### CONNECTIONS

- P** Female pipe
- M** Male pipe
- C** GYROLOK® tube fittings

### VALVE SIZE

- 2** ¼" pipe, ⅛" tube
- 4** ¼" tube
- 6** ⅜" tube

### BODY MATERIAL

- B** Brass
- T1** 316 stainless steel

Please consult your Circle Seal Controls distributor or our factory for information on special connections, materials, larger sizes, o-rings, operating pressures and temperature ranges.

### Repair Kits

In normal service, the only part(s) which may require replacement is(are) the seal(s). A repair kit may be ordered by placing a "K/" in front of the complete part number (i.e. **K/9459B-2MM**).

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## D9400 Series

0–3000 psig Miniature Pneumatically Actuated Valves



### Features

- Zero leakage
- Anodized aluminum “top works” is corrosion resistant
- Actuator (pilot) port rotates for easy installation and locks with jam nut
- Optional metering adjustment resets maximum flow
- Provides preset metering for normally closed valves
- Pipe and instrument tube fittings

### Technical Data

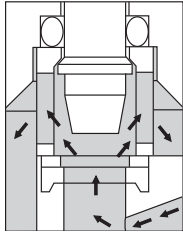
<b>Body Construction Materials</b>	Brass or 316 stainless steel
<b>Stem Material</b>	316 stainless steel
<b>Diaphragm housing</b>	Anodized aluminum, color blue
<b>Seal materials</b>	Buna N, Neoprene, PTFE or Viton®
<b>Diaphragm Materials</b>	Dacron®/Buna N
<b>Operating Pressure</b>	3000 psig (207 bar)
<b>Proof Pressure</b>	4500 psig (310 bar)
<b>Burst Pressure</b>	12,000 psig (828 bar)
<b>Actuator Pressure</b>	30 to 200 psig (2 to 14 bar)
<b>Temperature Range</b>	-100° F to +400° F (-73° C to +204° C) <i>Based on o-ring material, see “How to Order”.</i>
<b>Connection Sizes</b>	1/4"

*Note: Proper filtration is recommended to prevent damage to sealing surface.*

Shutoff valves

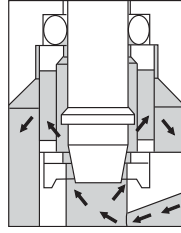
# D9400 Series

## How it Works



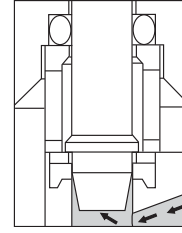
**Full Open**

Stem travel is stopped in the open position by metal-to-metal shoulders. O-ring surrounding the stem prevents external leakage. Actuator is completely removed from flow path to avoid contamination of the fluid or of the actuator



**Opening to Metering Stop**

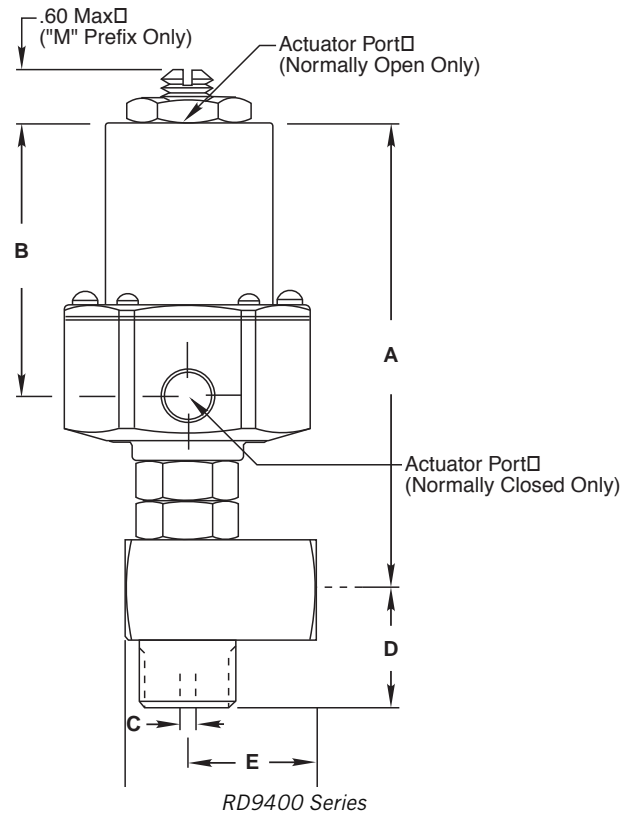
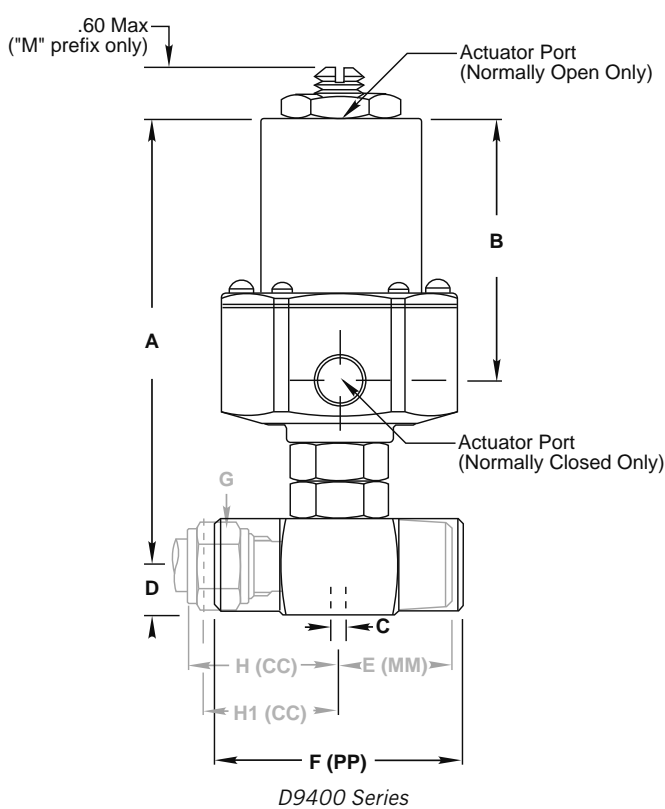
No flow occurs during first portion of stem travel. Precise metering positions can be preset with the optional metering adjustment, thus positioning stem for the desired rate of flow.



**Close**

Absolutely leakproof sealing is achieved by engaging precision machined stem into a captive seat. Seat cannot be damaged by back pressure. Shoulder on stainless steel stem seats on metal washer, which in turn is forced against resilient, non-galling seat to affect a dead-tight seal against the stem.

## Dimensions



### D9400 Series Dimensions (inches)

Dash No.	C Dia.	Cv	A	B	D	E (MM)	F (PP)	G Hex	H* (CC)	H1 (CC)	Actuator Port
4CC	.156	.32	3.504	1.891	.44	—	—	.562	1.04	.78	1/8" NPTF
2MM	.156	.32	3.462	1.891	.38	.84	—	—	—	—	1/8" NPTF
2PP	.156	.32	3.532	1.891	.44	—	1.86	—	—	—	1/8" NPTF

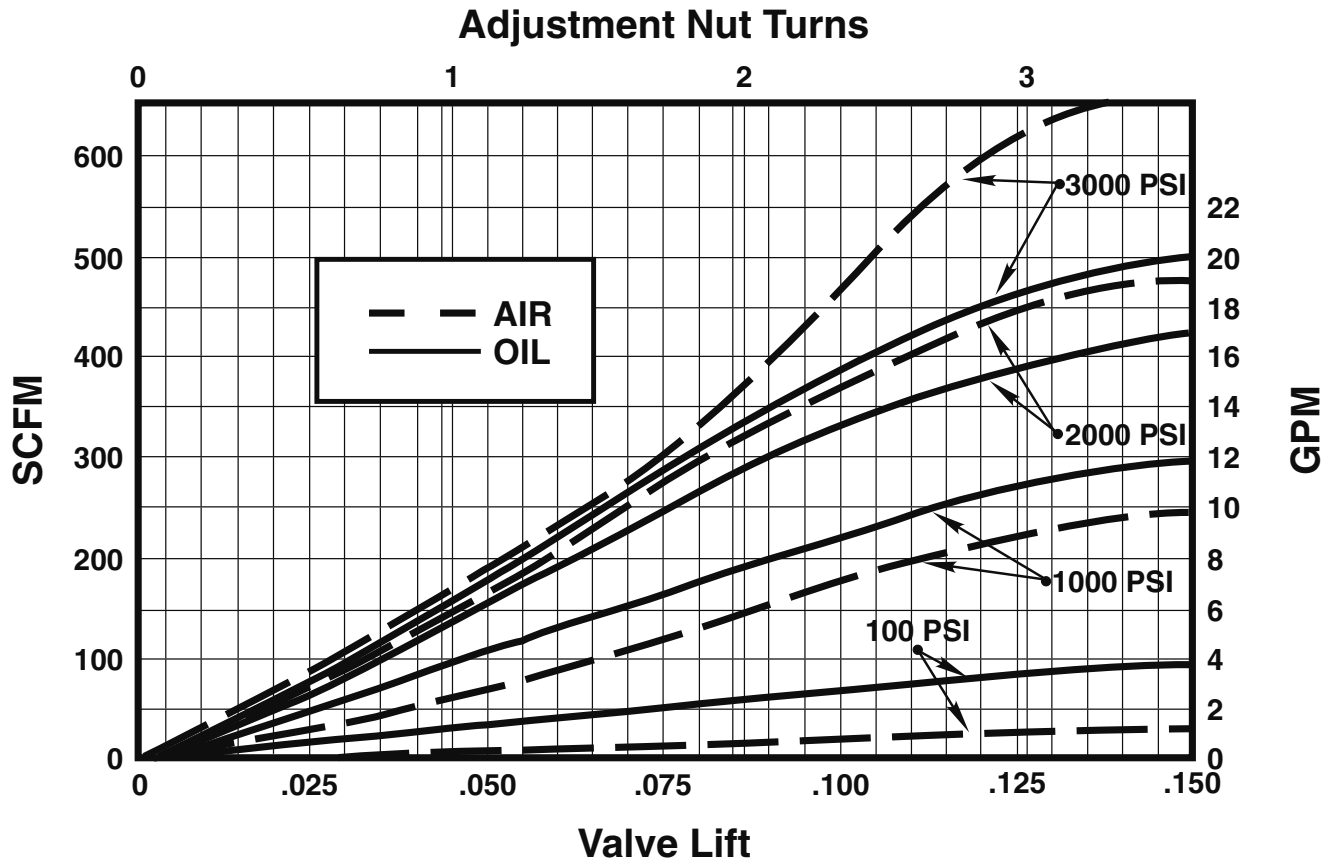
Body dimension (without nut and ferrule)

### RD9400 Series Dimensions (inches)

Dash No.	C Dia.	Cv	A	B	D	E	F	Actuator Port
2MP	.156	.32	3.442	1.891	.875	.875	1.250	1/8" NPTF

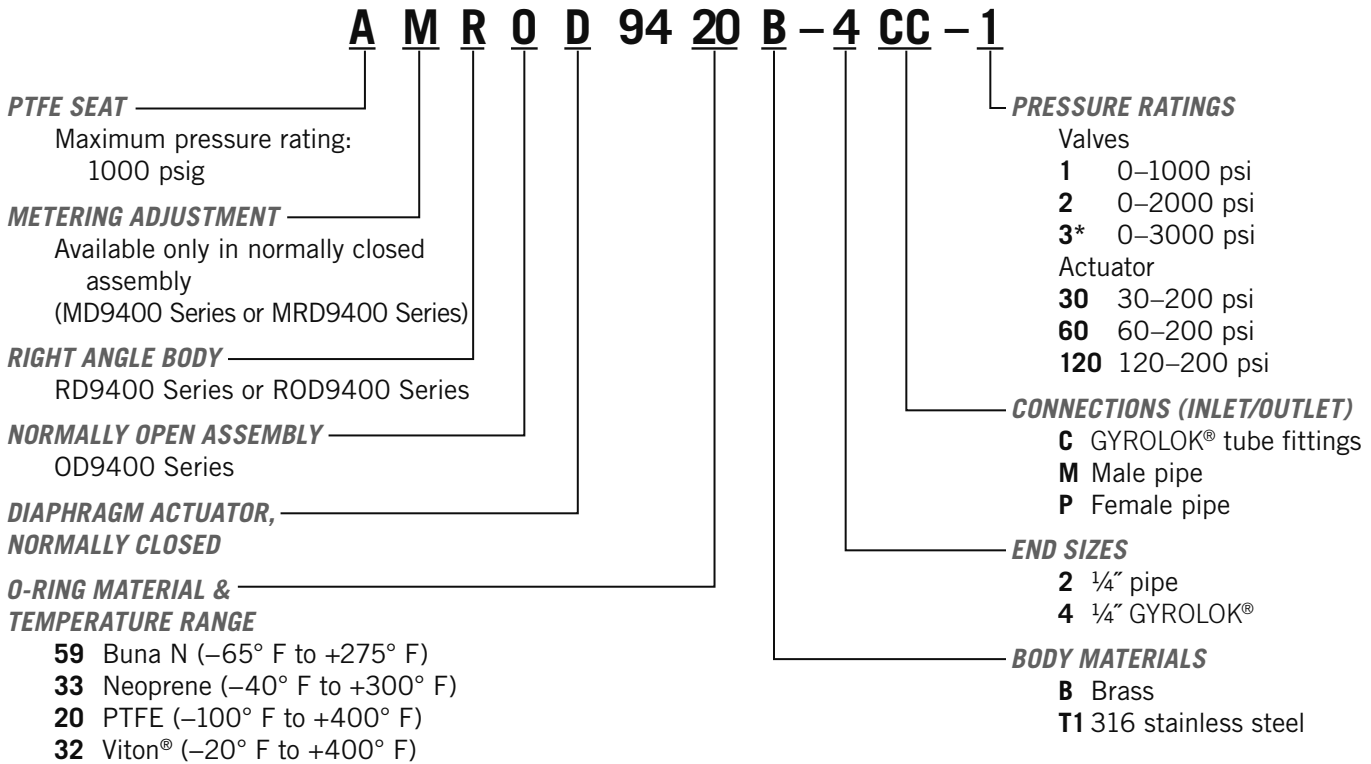
# D9400 Series

## Flow Curve (Flow vs Lift)



# D9400 Series

## How to Order



\* Minimum operating temperature drop for the normally open –3 valve is 1000 psig.

### Standard Seat Materials

Normally closed	0–1000 psi (PTFE)
	0–3000 psi (Fluorogold®)
Normally open	0–1000 psi (PTFE)
	0–3000 psi (Fluorogold®)

Please consult your Circle Seal Controls distributor or our factory for information on special connections, materials, larger sizes, o-rings, operating pressures and temperature ranges.

### Repair Kits

In normal service, the only part(s) which may require replacement is(are) the seal(s). A repair kit may be ordered by placing a "K/" in front of the complete part number (i.e. **K/D9420B-4CC-1**).

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Viton® is a registered trademark of DuPont Dow Elastomers.

Fluorogold® is a registered trademark of Fluorocarbon Company.



## 9500 Series

0–3000 psig Shutoff Valves



### Features

- Compact size, fast-acting
- Leakproof in vacuum or pressure service
- Positive position indication & handle stop
- Bleed hole in the plug vents the trapped fluids downstream
- No packing to adjust, o-ring seal to atmosphere
- Color-coded handles

### Technical Data

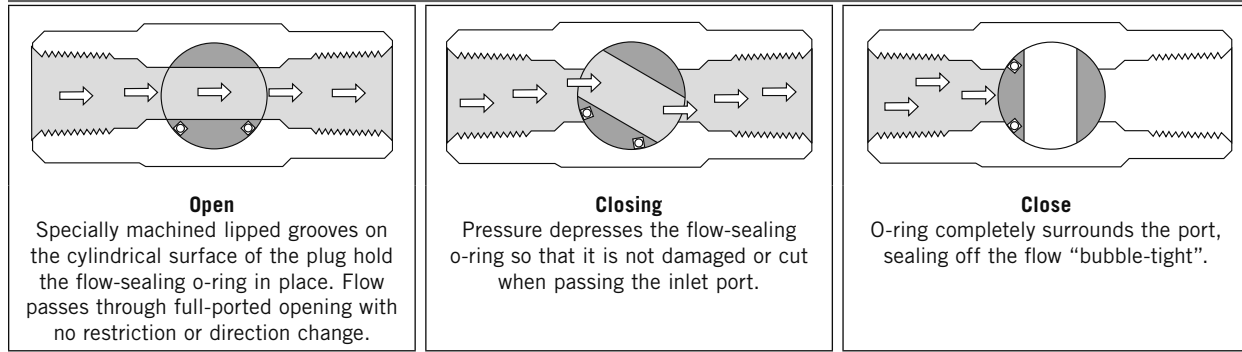
<b>Body Construction Materials</b>	Brass, 316 stainless steel
<b>O-ring Materials</b>	Buna N, Neoprene or Viton®
<b>Operating Pressures</b>	3000 psig (207 bar)
<b>Proof Pressure</b>	4500 psig (310 bar)
<b>Burst Pressure</b>	6000 psig (414 bar)
<b>Maximum Reverse Pressure</b>	200 psig (14 bar)
<b>Leakage</b>	Zero—internal and external

*Note: Proper filtration is recommended to prevent damage to sealing surface.*

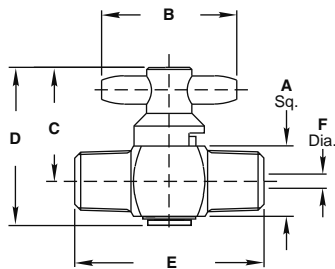
Shutoff valves

# 9500 Series

## How it Works

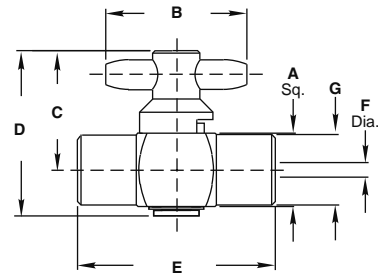


## Dimensions (inches)



### Male Pipe Dimensions

Dash #	Size	A	B	C	D	E	F
1MM	1/8"	.62	1.20	1.04	1.41	1.44	.125
2MM	1/4"	.62	1.20	1.04	1.41	1.68	.125

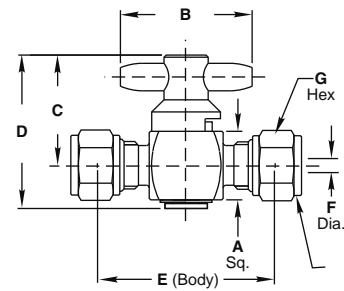


### Female Pipe Dimensions

Dash #	Size	A	B	C	D	E	F	G
1PP	1/8"	.62	1.20	1.05	1.41	1.68	.125	0.60
2PP	1/4"	.75	1.40	1.20	1.61	1.87	.187	0.73

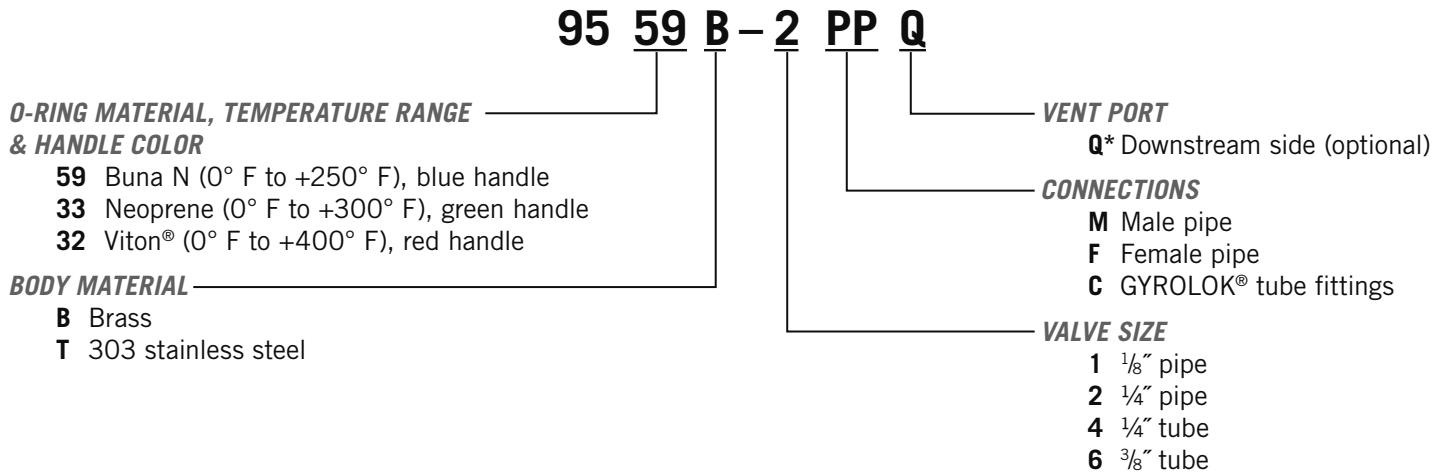
### Tube Fittings Dimensions

Dash #	Size	A	B	C	D	E	F	G
4CC	1/4"	.62	1.20	1.04	1.41	1.50	.125	0.56
6CC	3/8"	.62	1.20	1.04	1.41	1.62	.125	0.68



# 9500 Series

## How to Order



- \* A 0.040 diameter vent hole in the plug and body allows downstream pressure to vent to atmosphere when the valve is in the closed position. If another vent hole size is required, specify the hole size desired in parenthesis after the "Q" in the part number (example: "Q(118)" equals a 0.118 diameter hole). The o-ring blocks the bleed port when the valve is open. The maximum operating pressure with a bleed port is 200 psig.
- \*\* Operating torque at 500 psig: 10 in-lbs maximum for -1PP, -1MM, -2MM and -6CC; 20 in-lbs maximum for -2PP

Place the valve in line so that the flow arrow points in the direction of flow.

Please consult your Circle Seal Controls distributor or our factory for information on special connections, materials, larger sizes, o-rings, operating pressures and temperature ranges.

### Repair Kits

In normal service, the only part(s) which may require replacement is(are) the seal(s). A repair kit may be ordered by placing a "K/" in front of the complete part number (i.e. **K/9559B-2PP**).

## MV92 Series

0–3000 psig Micro-metering Fingertip Valves



### Features

- Precision tapered needle/0.020 orifice provides ultimate in fine metering sensitivity.
- Unique “spline” device prevents stem withdrawal from body until gland nut is loosened.
- Packing below threads prevents system contamination.
- Permanent lubrication assures trouble-free operation.

### Technical Data

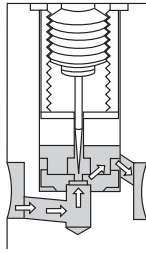
<b>Body Construction Material</b>	316 stainless steel
<b>Gland Nut Material</b>	316 stainless steel
<b>Stem Seals Material</b>	PTFE
<b>Operating Pressures</b>	0 to 3000 psig (207 bar)
<b>Temperature Range</b>	-20° F to +400° F (-29° C to +204° C)
<b>Connection Sizes</b>	$\frac{1}{8}$ "– $\frac{3}{8}$ "

*Note: Proper filtration is recommended to prevent damage to sealing surface.*

shutoff valves

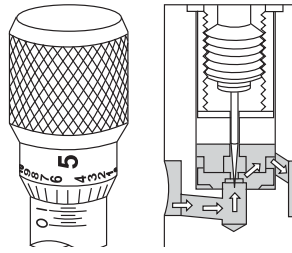
# MV92 Series

## How it Works



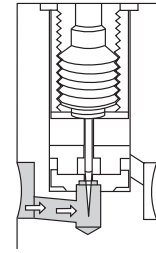
**Full Open**

At approximately 10 handle turns, the valve is full open. As the needle is returned to the seat, the needle guide maintains pin-point concentricity of the needle with the seat to maintain absolute uniformity of flow control



**Micro-metering**

The body is graduated in handle turns. The handle has 25 graduations per turn for precise, repeatable flow calibration. The handle setscrew allows zero flow/shutoff point to be reset in the field.



**Closed**

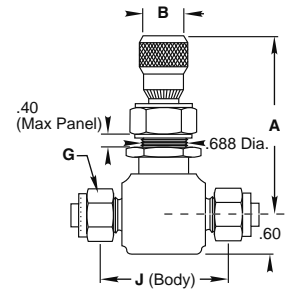
The stainless steel needle seals on the precision machined, stainless steel seat. The spring-loaded stem prevents damage to the needle by providing a full, ineffective handle turn before bottoming.

## Dimensions (inches) & Specifications

### Tube Fittings

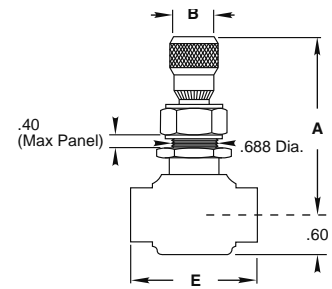
Dash No.	Size	Orifice Dia.	Cv*	A		B Dia.	G Hex	J
				Open	Closed			
2CC	1/8"	0.020	0.0096	3.00	2.76	0.75	0.44	1.90
4CC	1/4"	0.020	0.0096	3.00	2.76	0.75	0.56	2.03
5CC	5/16"	0.020	0.0096	3.00	2.76	0.75	0.62	2.15
6CC	3/8"	0.020	0.0096	3.00	2.76	0.75	0.68	2.15

\* At maximum opening.



### Female Pipe

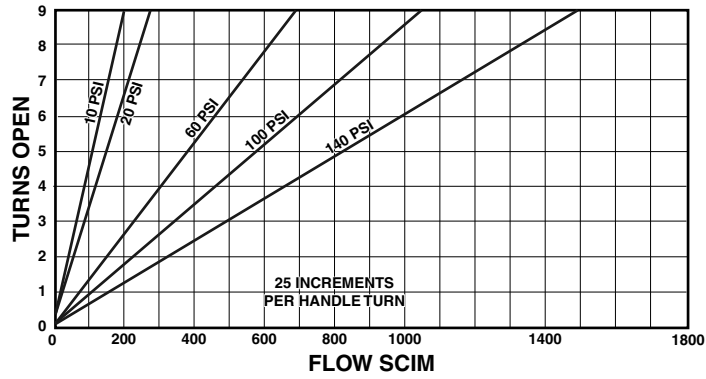
Dash No.	Size	Orifice Dia.	Cv	A		B Dia.	E
				Open	Closed		
1PP	1/8"	0.020	0.0096	3.00	2.76	0.75	2.00
2PP	1/4"	0.020	0.0096	3.00	2.76	0.75	2.14



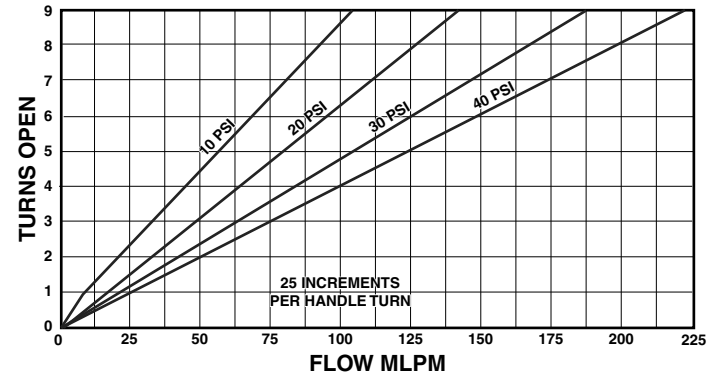
# MV92 Series

## Flow Curves

Air



Water



## How to Order

**MV92 T1 -4 C**

**BODY MATERIALS**

**T1** 316 stainless steel

**VALVE SIZE**

- 1** 1/8" pipe
- 2** 1/4" pipe; 1/8" tube
- 4** 1/4" tube

**CONNECTIONS (INLET/OUTLET)**

- P** Female pipe
- C** GYROLOK® tube fittings

Please consult your Circle Seal Controls distributor or our factory for information on special connections, materials, larger sizes, o-rings, operating pressures and temperature ranges.

### Repair Kits

In normal service, the only part(s) which may require replacement is(are) the seal(s). A repair kit may be ordered by placing a "K/" in front of the complete part number (i.e. **K/MV92T1-4CC**).

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## MV/ES 12 & 60 Series

0–12,000 psig & 0–6000 psig DYNAFLOW® Globe & Angle Shutoff Valve



### Features

- Zero leakage
- Throttling control without wire drawing
- Spindle threads external to packing
- Positive spindle retention
- Metal-to-metal bonnet seal
- Extended stem for extreme temperatures\
- Bi-directional
- Field tested at  $1 \times 10^{-7}$  torr to 12,000 psi with zero leakage

### Technical Data

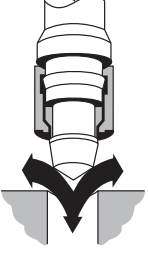
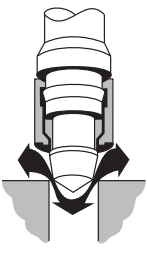
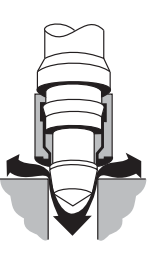
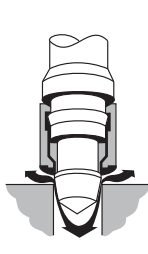
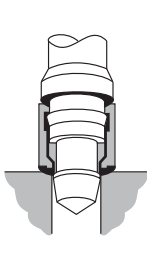
<b>Body Construction Materials</b>	303 or 316 stainless steel
<b>Seat &amp; Packing Material</b>	PTFE
<b>Operating Pressures</b>	<ul style="list-style-type: none"> <li>• MV12 &amp; ES12: 0 to 12,000 psi (827 bar)</li> <li>• MV60 &amp; ES60: 0 to 6000 psi (414 bar)</li> </ul>
<b>Proof Pressures</b>	<ul style="list-style-type: none"> <li>• MV12 &amp; ES12: 18,000 psi (1,241 bar)</li> <li>• MV60 &amp; ES60: 9000 psi (621 bar)</li> </ul>
<b>Burst Pressures</b>	<ul style="list-style-type: none"> <li>• MV12 &amp; ES12: 48,000 psi (3,310 bar) minimum</li> <li>• MV60 &amp; ES60: 24,000 psi (1,655 bar) minimum</li> </ul>
<b>Operating Temperatures</b>	<ul style="list-style-type: none"> <li>• MV12 &amp; MV60: -65° F to +250° F (-54° C to +121° C)</li> <li>• ES12 &amp; ES60: -452° F to +450° F (-269° C to +232° C)</li> </ul>
<b>Connection Sizes</b>	1/8"–1"
<b>Leakage</b>	All series and actuators: bubble-tight

*Note: Proper filtration is recommended to prevent damage to sealing surface.*

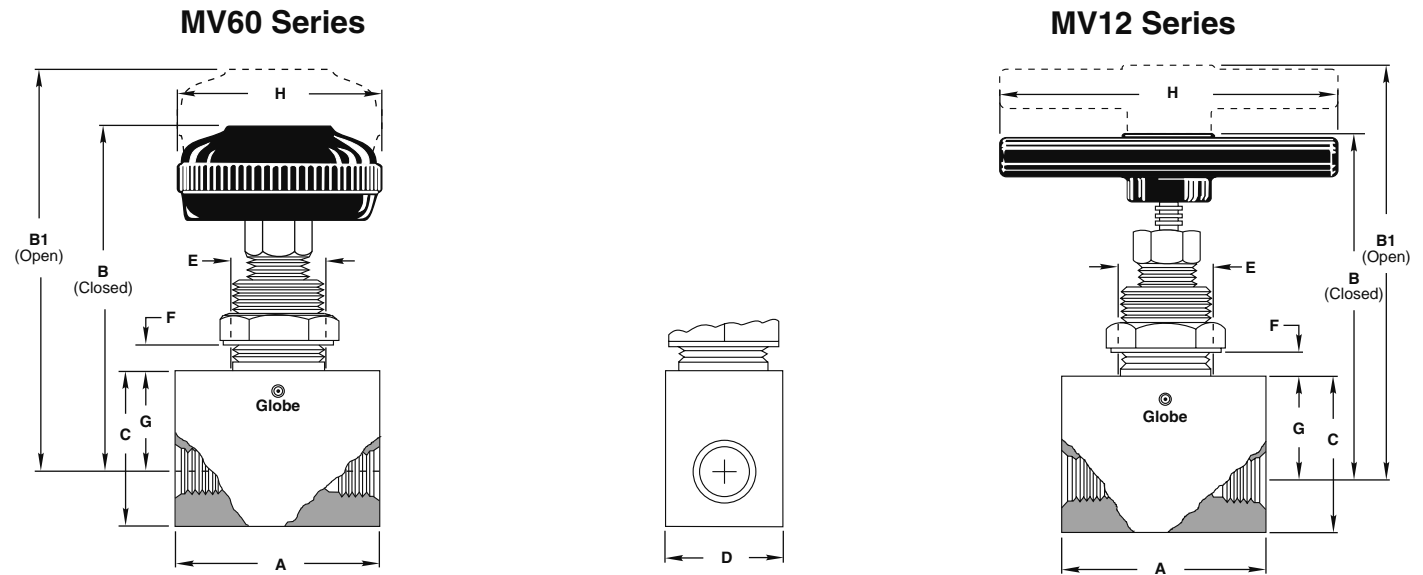
Shutoff valves

# MV/ES 12 & 60 Series

## How it Works

 <p><b>Full Open</b> The relaxed PTFE is fully contained. With no obstructions, the stem develops full hole diameter for high Cv. The body can be in-line welded without being disassembled or requiring weld-neck extensions.</p>	 <p><b>Throttling</b> By advancing the stem inward, the valve takes a configuration identical to a needle or tapered plug-type valve and offers comparable control. Soft seat valves are not usually capable of enduring high pressure drop in this mode of operation as their seat faces wire-draw, erodes, or reverse pressure drop blows the seal out. DYNAFLOW® valves give you trouble-free throttling.</p>	 <p><b>Metering</b> By advancing the throttling configuration inwardly, the valve now offers a type of metering not common to either hard or soft seat valves. Precision fitted internal diameters give you this excellent metering control. The seat is fully contained and is protected from the effects of erosion, washout, nibbling or surge.</p>	 <p><b>Ultra-fine Metering</b> As the inward motion continues, the clearance between the tapered end of the spindle and the body seat is further reduced; the space between the seat housing and the flat body seat may be infinitely restricted to provide ultra-fine metering.</p>	 <p><b>Final Absolute Shutoff</b> During final closing, the PTFE seat is mechanically compressed by relative motion between the spindle and the seal housing. The seat becomes elastic and conforms to the sealing area regardless of the line pressure. Since the seat is pressurized independent of line pressure, it remains absolute under all conditions. The process is reversible, since the seat is elastic under pressure and returns into its encapsulated state as mechanical compression is relaxed.</p>
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## MV Series DYNAFLOW® Valves : Globe Pattern



### Globe Dimensions (inches): MV60 & MV12 Series

Port	B		B1		C		D		E Dia.	F Max.	G		H		Cv**	
	MV60	MV12	MV60	MV12	MV60	MV12	MV60	MV12			MV60	MV12				
1/8"	2.50	3.41	3.41	3.75	3.75	1.75	1.75	1.00	1.25	0.88	0.25	1.05	1.05	2.00	2.00	0.22
1/4"	2.50	3.41	3.41	3.75	3.75	1.75	1.75	1.00	1.25	0.88	0.25	1.05	1.05	2.00	2.00	0.34
3/8"	3.00	4.50	4.24	4.80	4.54	2.00	2.25	1.25	1.75	1.00	0.38	1.20	1.20	3.00	4.20	1.7
1/2"	3.00	4.50	4.24	4.80	4.54	2.00	2.25	1.25	1.75	1.00	0.38	1.20	1.20	3.00	4.20	1.7
9/16"	4.00	5.67	5.35	6.12	5.75	2.75	3.00	1.75	2.75	1.25	1.00	1.65	1.65	3.00	4.20	1.7
3/4"	4.00	5.58	5.20	6.03	5.66	2.75	3.00	1.75	2.75	1.25	1.00	1.50	1.50	3.00	4.20	5.6
1"	4.00	5.58	5.20	6.03	5.66	2.75	3.00	1.75	2.75	1.25	1.00	1.50	1.50	3.00	4.20	5.6

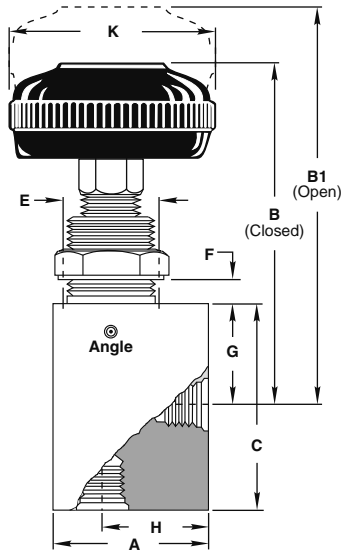
\* In Aminco™ end fittings only  
\*\* Cv based on female pipe ends



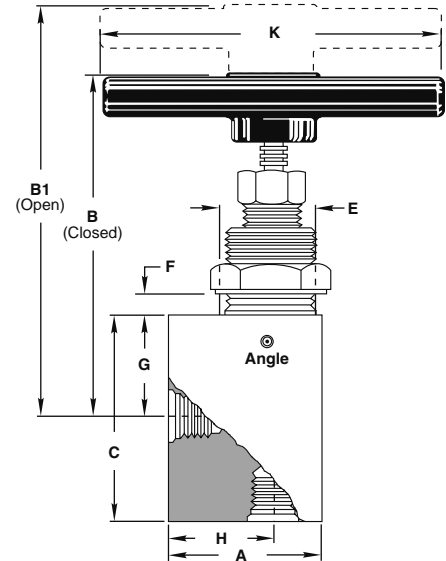
# MV/ES 12 & 60 Series

## MV Series DYNAFLOW® Valves : Angle Pattern

### RMV60 Series



### RMV12 Series



### Angle Dimensions (inches): RMV60 & RMV12 Series

Port	A		B		B1		C	D		E Dia.	F Max.	G	H	K		Cv**
	RMV60	RMV12	RMV60	RMV12	RMV60	RMV12		RMV60	RMV12					RMV60	RMV12	
1/8"	1.75	1.75	3.41	3.41	3.75	3.75	2.50	1.00	1.25	0.88	0.25	1.05	1.21	2.00	2.00	0.22
1/4"	1.75	1.75	3.41	3.41	3.75	3.75	2.50	1.00	1.25	0.88	0.25	1.05	1.21	2.00	2.00	0.34
3/8"	2.00	2.25	4.50	4.54	4.80	4.54	3.00	1.25	1.75	1.00	0.38	1.20	1.50	3.00	4.20	1.7
1/2"	2.00	2.25	4.50	4.54	4.80	4.54	3.00	1.25	1.75	1.00	0.38	1.20	1.50	3.00	4.20	1.7
9/16**	2.75	3.00	5.12	4.80	5.57	5.20	4.00	1.75	2.75	1.25	1.00	1.10	1.87	3.00	4.20	1.7
3/4"	2.75	3.00	5.52	5.20	5.97	5.60	4.00	1.75	2.75	1.25	1.00	1.50	1.87	3.00	4.20	5.6
1"	2.75	3.00	5.52	5.20	5.97	5.60	4.00	1.75	2.75	1.25	1.00	1.50	1.87	3.00	4.20	5.6

\* In Aminco™ end fittings only

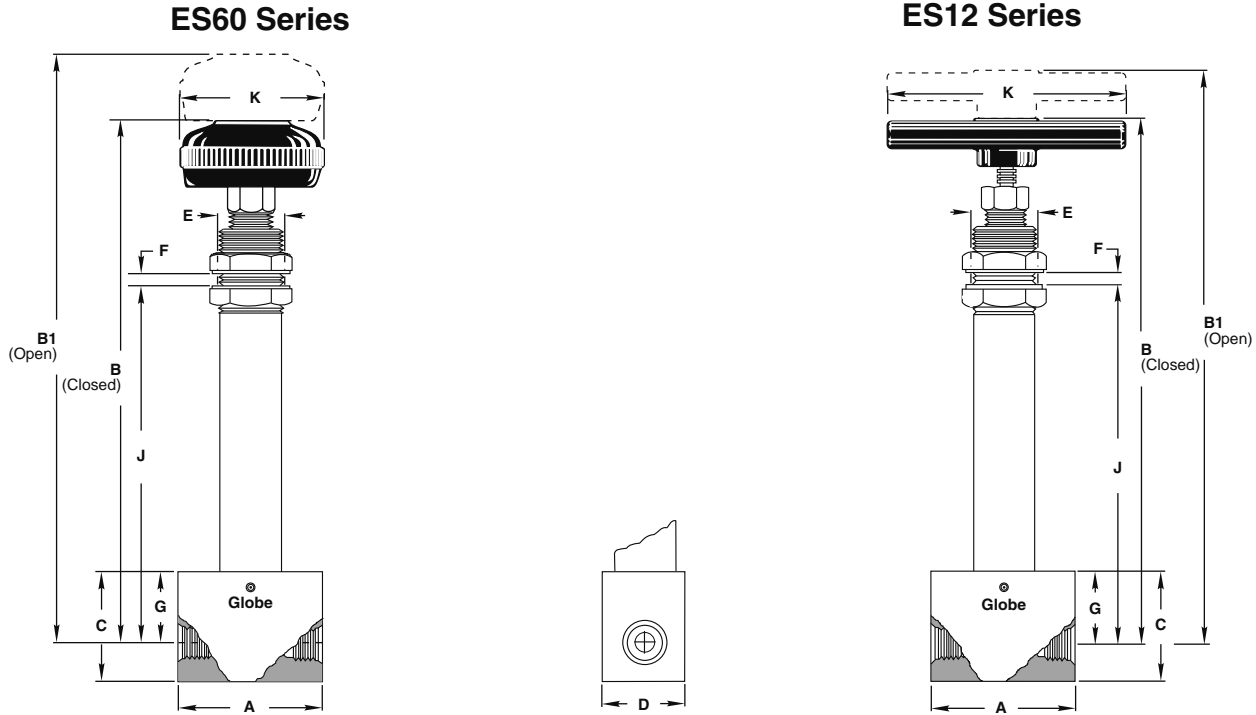
\*\* Cv based on female pipe ends

# MV/ES 12 & 60 Series

## ES Series DYNAFLOW® Valves : Globe Pattern

**Extended Stem for Extreme Service: -452° F to +450° F (-269° C to +232° C)**

The basic valve body, seating configuration, stem packing and body parts are identical to the MV Series. However, the ES Series utilizes a long cylindrical barrel and stem to insulate the handle and the stem packing area from the line fluid. The extended barrel and stem provide ample heat dispersion so the valve can be operated even though the fluid passing through the main portion of the valve may be at extreme temperatures.



**Globe Dimensions (inches): ES60 & ES12 Series**

Port	A	B		B1		C		D		E Dia.	F Max.	G		H		Cv**
		ES60	ES12	ES60	ES12	ES60	ES12	ES60	ES12			ES60	ES12			
1/8"	2.50	9.05	9.05	9.35	9.35	1.75	1.75	1.00	1.25	0.88	0.38	1.05	6.48	2.00	2.00	0.22
1/4"	2.50	9.05	9.05	9.35	9.35	1.75	1.75	1.00	1.25	0.88	0.38	1.05	6.48	2.00	2.00	0.34
3/8"	3.00	10.28	9.95	10.64	10.31	2.00	2.25	1.25	1.75	1.00	0.38	1.20	7.05	3.00	4.20	1.7
1/2"	3.00	10.28	9.95	10.64	10.31	2.00	2.25	1.25	1.75	1.00	0.38	1.20	7.05	3.00	4.20	1.7
9/16"	4.00	10.76	10.49	11.26	10.99	2.75	3.00	1.75	2.75	1.25	0.75	1.65	7.30	3.00	4.20	1.7
3/4"	4.00	10.67	10.40	11.17	10.90	2.75	3.00	1.75	2.75	1.25	0.75	1.56	7.21	3.00	4.20	5.6
1"	4.00	10.67	10.40	11.17	10.90	2.75	3.00	1.75	2.75	1.25	0.75	1.56	7.21	3.00	4.20	5.6

\* In Aminco™ end fittings only

\*\* Cv based on female pipe ends

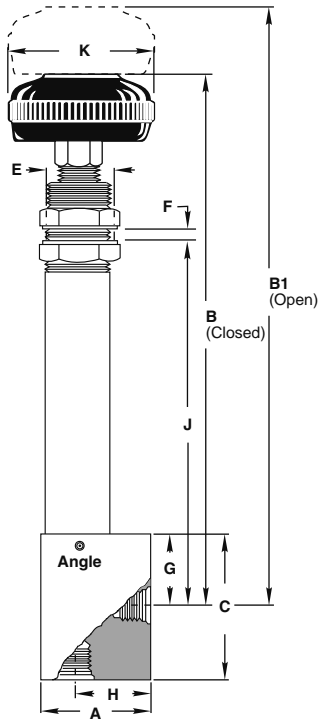
# MV/ES 12 & 60 Series

## ES Series DYNAFLOW® Valves : Angle Pattern

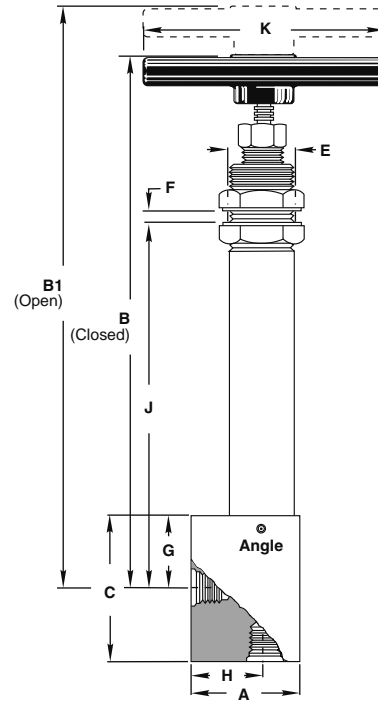
Extended Stem for Extreme Service:  $-452^{\circ}\text{F}$  to  $+450^{\circ}\text{F}$  ( $-269^{\circ}\text{C}$  to  $+232^{\circ}\text{C}$ )

The basic valve body, seating configuration, stem packing and body parts are identical to the MV Series. However, the ES Series utilizes a long cylindrical barrel and stem to insulate the handle and the stem packing area from the line fluid. The extended barrel and stem provide ample heat dispersion so the valve can be operated even though the fluid passing through the main portion of the valve may be at extreme temperatures.

**RES60 Series**



**RES12 Series**



**Angle Dimensions (inches): RES60 & RES12 Series**

Port	A		B		B1		C	D		E Dia.	F Max.	G	H	J	K		Cv**
	RES60	RES12	RES60	RES12	RES60	RES12		RES60	RES12						RES60	RES12	
1/8"	1.75	1.75	9.05	9.05	9.35	9.35	2.50	1.00	1.25	0.88	0.38	1.05	1.21	6.48	2.00	2.00	0.22
1/4"	1.75	1.75	9.05	9.05	9.35	9.35	2.50	1.00	1.25	0.88	0.38	1.05	1.21	6.48	2.00	2.00	0.34
3/8"	2.00	2.25	10.28	9.95	10.64	10.31	3.00	1.25	1.75	1.00	0.38	1.20	1.43	7.05	3.00	4.20	1.7
1/2"	2.00	2.25	10.28	9.95	10.64	10.31	3.00	1.25	1.75	1.00	0.38	1.20	1.43	7.05	3.00	4.20	1.7
5/16"*	2.75	3.00	10.21	9.94	10.71	10.44	4.00	1.75	2.75	1.25	0.75	1.10	1.87	6.75	3.00	4.20	1.7
3/4"	2.75	3.00	10.61	10.34	11.11	10.84	4.00	1.75	2.75	1.25	0.75	1.50	1.87	7.15	3.00	4.20	5.6
1"	2.75	3.00	10.61	10.34	11.11	10.84	4.00	1.75	2.75	1.25	0.75	1.50	1.87	7.15	3.00	4.20	5.6

\* In Aminco™ end fittings only

\*\* Cv based on female pipe ends

# MV/ES 12 & 60 Series

**R MV 60 T1 - 04 B**

**OPTION**

**R** Angle body

**BASIC SERIES NUMBER**

**MV** Manual valve

**ES** Extended stem

**OPERATING PRESSURE**

**60** 0–6000 psi

**12** 0–12,000 psi

**BODY MATERIALS**

**T** 303 stainless steel

**T1** 316 stainless steel

**CONNECTIONS, FEMALE**

**B** Tube (MS33649)

**P** Pipe

**W** Socket weld tube\*

**PW** Socket weld pipe\*

**G** Aminco™

**CONNECTION SIZE**

**02** 1/8"

**04** 1/4"

**06** 3/8"

**08** 1/2"

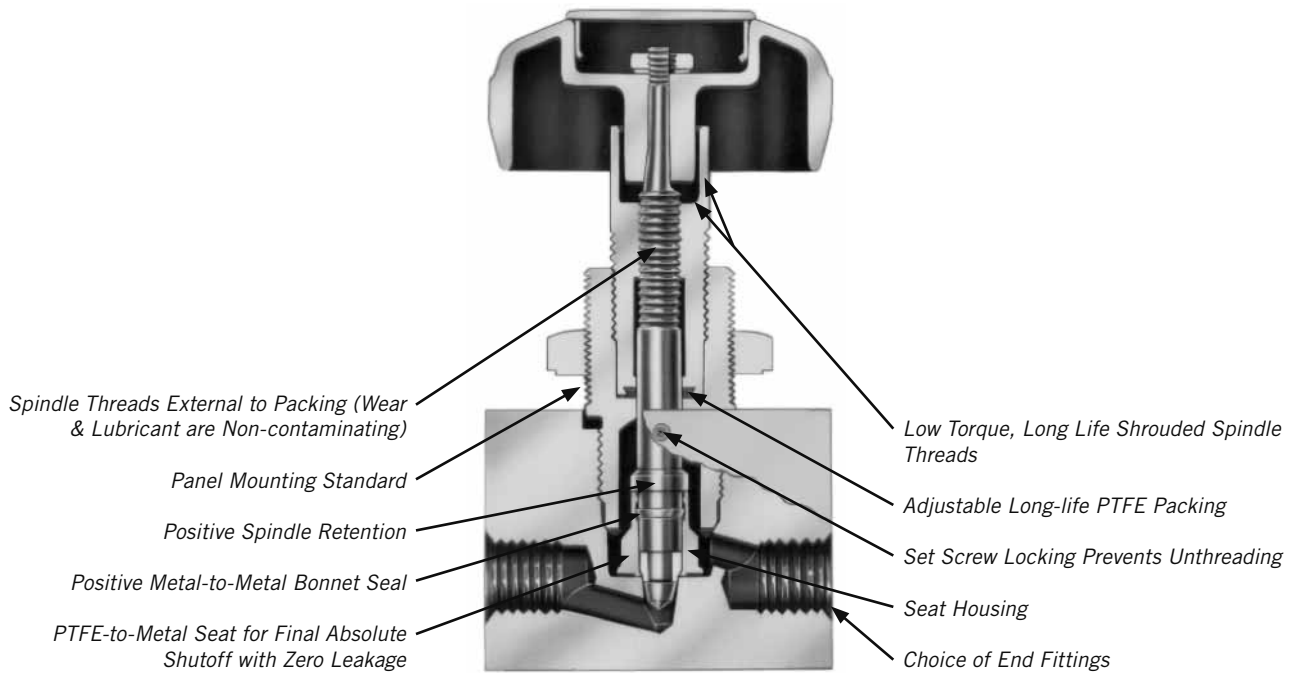
**09** 9/16" (Aminco™ only)

**12** 3/4"

**16** 1"

\* Socket weld not available in 1/8" and 1/4".

Please consult your Circle Seal Controls representative or our factory for information on special connections, operating pressures and temperature ranges.



DYNAFLOW® is a registered trademark of Circle Seal Controls.  
Aminco™ is a trademark of American Instrument Company.

## CMV/CES 12 & 60 Series

0–12,000 psi & 0–6000 psi DYNAFLOW® Pneumatically Operated Patented Shutoff Valves



### Features

- Zero leakage
- Three operating modes
- Bi-directional
- Positive spindle retention
- Extended stem for extreme temperatures
- Field tested at  $1 \times 10^{-7}$  torr to 12,000 psi with zero leakage

### Technical Data

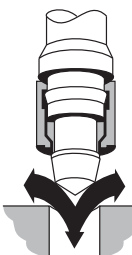

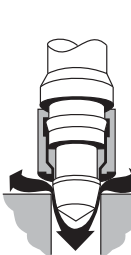
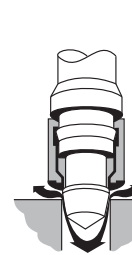
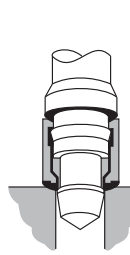
<b>Body Construction Materials</b>	<ul style="list-style-type: none"> <li>• Valve body: 303 or 316 stainless steel</li> <li>• Actuator body: aluminum</li> </ul>
<b>Seat &amp; Packing Material</b>	PTFE
<b>Operating Pressures</b>	<ul style="list-style-type: none"> <li>• CMV12 &amp; CES12: 0 to 12,000 psi (828 bar)</li> <li>• CMV60 &amp; CES60: 0 to 6000 psi (414 bar)</li> </ul>
<b>Proof Pressures</b>	<ul style="list-style-type: none"> <li>• CMV12 &amp; CES12: 18,000 psi (1,241 bar)</li> <li>• CMV60 &amp; CES60: 9000 psi (621 bar)</li> </ul>
<b>Burst Pressures</b>	<ul style="list-style-type: none"> <li>• CMV12 &amp; CES12: 48,000 psi (3,310 bar) minimum</li> <li>• CMV60 &amp; CES60: 24,000 psi (1,655 bar) minimum</li> </ul>
<b>Operating Temperatures</b>	<ul style="list-style-type: none"> <li>• CMV12 &amp; CMV60: -65° F to +250° F (-54° C to +121° C)</li> <li>• CES12 &amp; CES60: -452° F to +450° F (-269° C to +232° C)</li> </ul>
<b>Connection Sizes</b>	$\frac{3}{8}$ "–1"
<b>Cylinder Air Service:</b>	<ul style="list-style-type: none"> <li>• Operating pressure: 50 to 150 psig (3 to 10 bar)</li> <li>• Proof pressure: 225 psig (16 bar)</li> <li>• Burst pressure: 600 psig (41 bar)</li> </ul>
<b>Leakage</b>	All series and actuators: bubble-tight

*Note: Proper filtration is recommended to prevent damage to sealing surface.*

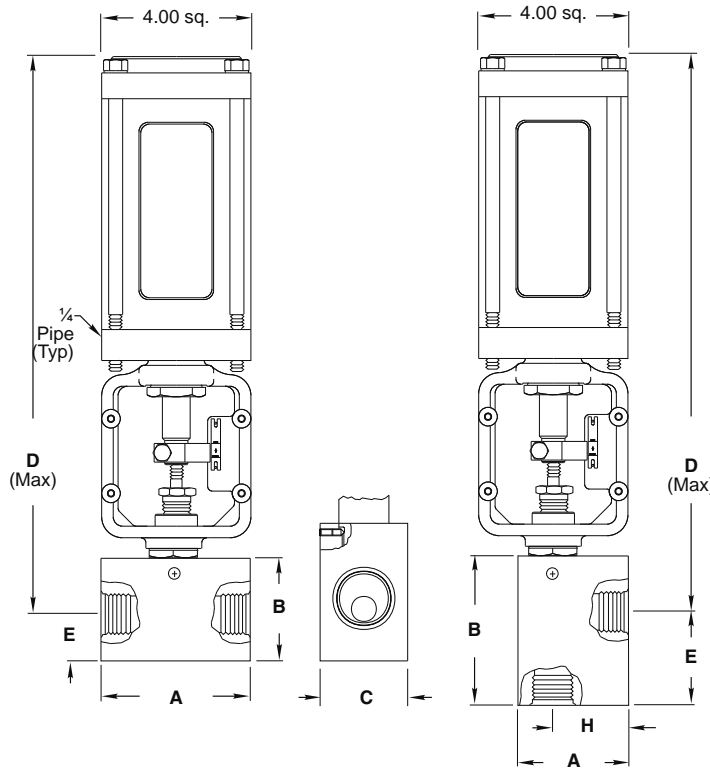
# Shutoff valves

# CMV/CES 12 & 60 Series

## How it Works

 <p><b>Full Open</b> The relaxed PTFE is fully contained. With no obstructions, the stem develops full hole diameter for high Cv. The body can be in-line welded without being disassembled or requiring weld-neck extensions.</p>	 <p><b>Throttling</b> By advancing the stem inward, the valve takes a configuration identical to a needle or tapered plug-type valve and offers comparable control. Soft seat valves are not usually capable of enduring high pressure drop in this mode of operation as their seat faces wire-draw, erodes, or reverse pressure drop blows the seal out. DYNAFLOW® valves give you trouble-free throttling.</p>	 <p><b>Metering</b> By advancing the throttling configuration inwardly, the valve now offers a type of metering not common to either hard or soft seat valves. Precision fitted internal diameters give you this excellent metering control. The seat is fully contained and is protected from the effects of erosion, washout, nibbling or surge.</p>	 <p><b>Ultra-fine Metering</b> As the inward motion continues, the clearance between the tapered end of the spindle and the body seat is further reduced; the space between the seat housing and the flat body seat may be infinitely restricted to provide ultra-fine metering.</p>	 <p><b>Final Absolute Shutoff</b> During final closing, the PTFE seat is mechanically compressed by relative motion between the spindle and the seat housing. The seat becomes elastic and conforms to the sealing area regardless of the line pressure. Since the seat is pressurized independent of line pressure, it remains absolute under all conditions. The process is reversible, since the seat is elastic under pressure and returns into its encapsulated state as mechanical compression is relaxed.</p>
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## Dimensions—CMV Series DYNAFLOW® Valves



### Globe Dimensions (inches): CMV60 & CMV12 Series

Port	B		C		D	E		Cv**	
	A	CMV60	CMV12	CMV60		CMV12	CMV60		CMV12
3/8"	3.00	2.00	2.25	1.25	1.75	14.90	0.80	1.05	1.7
1/2"	3.00	2.00	2.25	1.25	1.75	14.90	0.80	1.05	1.7
5/16" **	4.00	2.75	3.00	1.75	2.75	15.70	1.10	1.35	1.7
3/4"	4.00	2.75	3.00	1.75	2.75	15.70	1.19	1.44	5.6
1"	4.00	2.75	3.00	1.75	2.75	15.70	1.19	1.44	5.6

### Angle Dimensions (inches): CRMV60 & CRMV12 Series

Port	A		B	C		D	E		H	Cv**
	CRMV60	CRMV12		CRMV60	CRMV12		CRMV60	CRMV12		
3/8"	2.00	2.25	3.00	1.25	1.75	1.75	1.80	1.98	1.43	1.7
1/2"	2.00	2.25	3.00	1.25	1.75	1.75	1.80	1.98	1.43	1.7
5/16" **	2.75	3.00	4.00	1.75	2.75	1.75	2.90	2.90	1.87	1.7
3/4"	2.75	3.00	4.00	1.75	2.75	1.75	2.50	2.50	1.87	5.6
1"	2.75	3.00	4.00	1.75	2.75	1.75	2.50	2.50	1.87	5.6

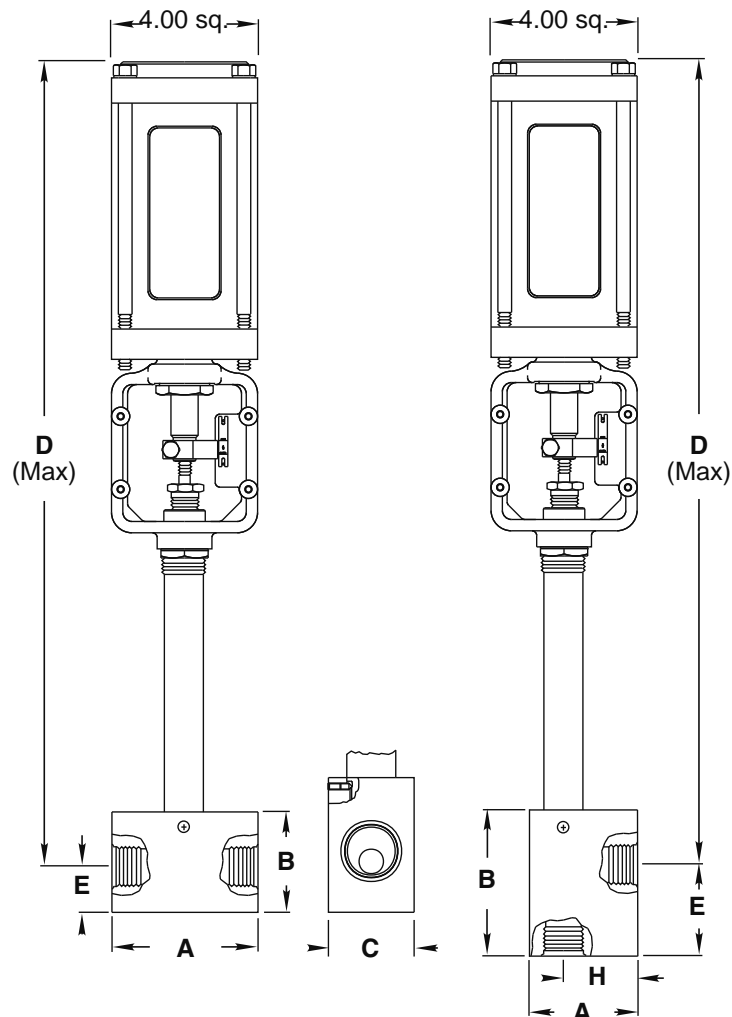
\* In Aminco™ end fittings only.  
\*\* Cv based on female pipe ends.

# CMV/CES 12 & 60 Series

## Dimensions—CES Series DYNAFLOW® Valves

**Extended Stem for Extreme Service: -452° F to +450° F (-269° C to +232° C)**

The basic valve body, seating configuration, stem packing and body parts are identical to the CMV Series. However, the CES Series utilizes a long cylindrical barrel and stem to insulate the stem packing area from the line fluid. The extended barrel and stem provide ample heat dispersion so the valve can be operated even though the fluid passing through the main portion of the valve may be at extreme temperatures.



### Globe Dimensions (inches): CES60 & CES12 Series

Port	A	B		C		D	E		Cv**
		CES60	CES12	CES60	CES12		CES60	CES12	
3/8"	3.00	2.00	2.25	1.25	1.75	20.87	0.80	1.05	1.7
1/2"	3.00	2.00	2.25	1.25	1.75	20.87	0.80	1.05	1.7
9/16"*	4.00	2.75	3.00	1.75	2.75	21.20	1.19	1.35	1.7
3/4"	4.00	2.75	3.00	1.75	2.75	21.20	1.19	1.44	5.6
1"	4.00	2.75	3.00	1.75	2.75	21.20	1.19	1.44	5.6

### Angle Dimensions (inches): CRES60 & CRES12 Series

Port	A		B	C		D	E		H	Cv**
	CRES60	CRES12		CRES60	CRES12		CRES60	CRES12		
3/8"	2.00	2.25	3.00	1.25	1.75	20.65	1.80	1.98	1.43	1.7
1/2"	2.00	2.25	3.00	1.25	1.75	20.65	1.80	1.98	1.43	1.7
9/16"*	2.75	3.00	4.00	1.75	2.75	21.05	2.50	2.90	1.87	1.7
3/4"	2.75	3.00	4.00	1.75	2.75	21.05	2.50	2.50	1.87	5.6
1"	2.75	3.00	4.00	1.75	2.75	21.05	2.50	2.50	1.87	5.6

\* In Aminco™ end fittings only.

\*\* Cv based on female pipe ends.

# CMV/CES 12 & 60 Series

## How to Order

**C R MV 60 T1 - 06 B - NC**

**CYLINDER OPERATED**

**OPTION**

**R** Angle body

**BASIC SERIES NUMBER**

**MV** Manual valve

**ES** Extended valve

**OPERATING PRESSURE**

**60** 0-6000 psi

**12** 0-12,000 psi

**BODY MATERIALS**

**T** 303 stainless steel

**T1** 316 stainless steel

**ACTUATOR**

**NC** Normally closed

**NO** Normally open

**NS** No spring

**CONNECTIONS, FEMALE**

**B** Female tube, AND10050

**P** Pipe

**W** Socket weld tube

**PW** Socket weld pipe

**G** Aminco™

**CONNECTION SIZE**

**06** 3/8"

**08** 1/2"

**09** 9/16" (Aminco™ only)

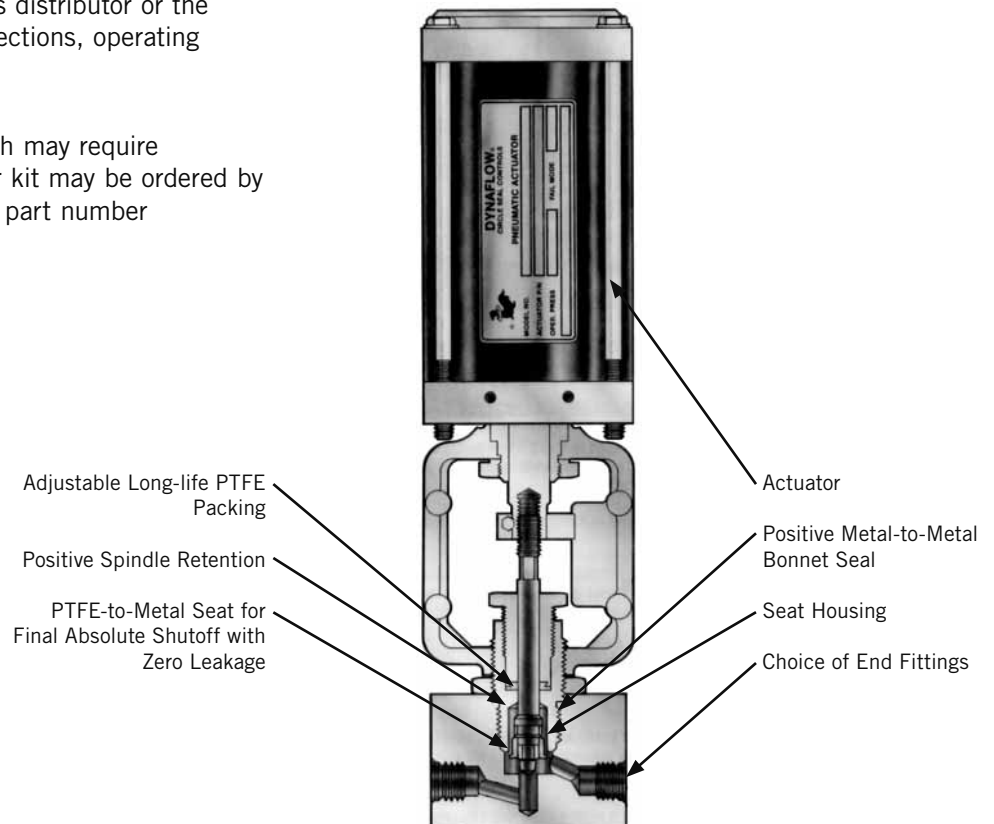
**12** 3/4"

**16** 1"

Please consult your Circle Seal Controls distributor or the factory for information on special connections, operating pressures and temperature ranges.

### Repair Kits

In normal service, the only part(s) which may require replacement is(are) the seal(s). A repair kit may be ordered by placing a "K/" in front of the complete part number (i.e. **K/MV12T-06B**).



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# Circle Seal Controls

The Small Bore Instrumentation Specialists



The Circle Seal Controls Brand is just one product offering manufactured and supplied by CIRCOR International (NYSE:CIR).

CIRCOR is a global manufacturer that specializes in developing highly engineered, technically superior small bore instrumentation solutions that consistently deliver benchmark performance, quality & safety for general-to-severe service liquid & gas flow applications.

We specialize in small bore instrumentation products up to 2" that deliver benchmark performance quality & safety; provide the broadest array of superior alloy offerings in the market; decades of proven success in a wide range of industries; a roster of "who's who" customers & projects globally; original "Best Solution" engineering & designs; and are focused on continuous improvement in all aspects of our business.

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