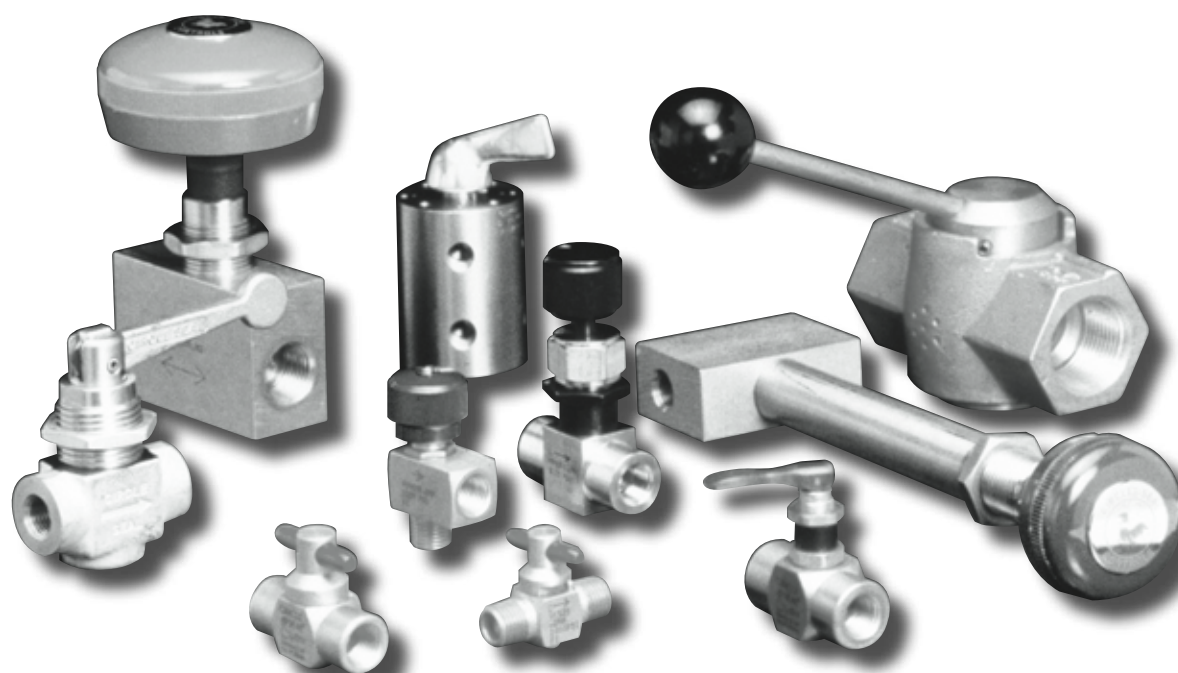


Manual Shutoff Valves

Index

900 Series	1
9200 Series	7
9300 Series	9
9400 Series	11
D9400 Series	17
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MV92 Series	23
MV/ES 12 & 60 Series	25
CMV/CES 12 & 60 Series	31



shutoff valves

900 Series

0–6000 psig Manual Shutoff Valves



Features

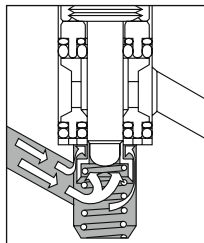
- Zero leakage
- Protected o-ring
- Full flow passages
- Freedom from wire drawing
- Panel mount standard
- Hand wheel or toggle handle

Technical Data

Body Construction Material	316 or 303 stainless steel
Stem Materials	316, 303 or 17-4 PH stainless steel
Gland Nut Materials	Brass or 17-4 PH stainless steel
O-ring Materials	Buna N, Neoprene or Viton®
Spring Material	302 stainless steel
Handle Materials	• Handle wheel: die-cast zinc, color blue • Toggle: forged steel, cadmium-plated
Leakage	• Internal: zero • External: zero
Operating Pressure	0–6000 psig (414 bar)
Proof Pressure	9000 psig (621 bar)
Burst Pressure	Over 24,000 psig (1,655 bar)
Temperature Range	–40° F to +350° F (–40° C to +177° C) Based on o-ring material, see "How to Order".
Connection Sizes	¼"–¾"
Actuating Force	• 900 Series: 20in/lbs • T900 Series: 20 lbs

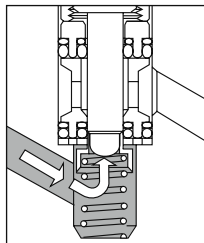
Note: Proper filtration is recommended to prevent damage to sealing surface.

How it Works



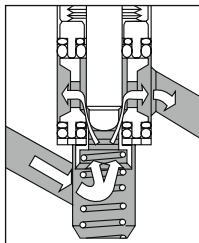
Closed

O-ring seal on smooth finish of stem provides leak-tight shut-off. Pressure on o-ring increases sealing effectiveness.



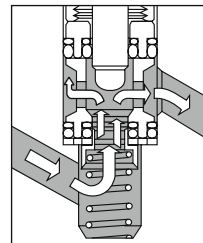
Opening

As stem is withdrawn, floating sleeve moves into position protecting the o-ring. Flow starts after 1½-turns of the handle.



Throttling

O-ring is protected by sleeve. Throttling is controlled across tapered section of the stem.



Full Open

Stem is withdrawn, permitting full flow with minimum pressure drop.

Circle Seal Controls

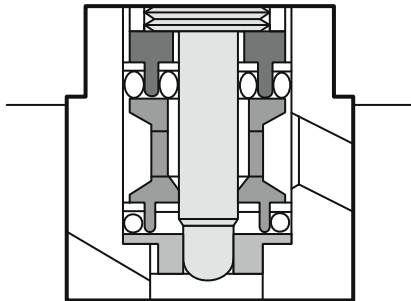
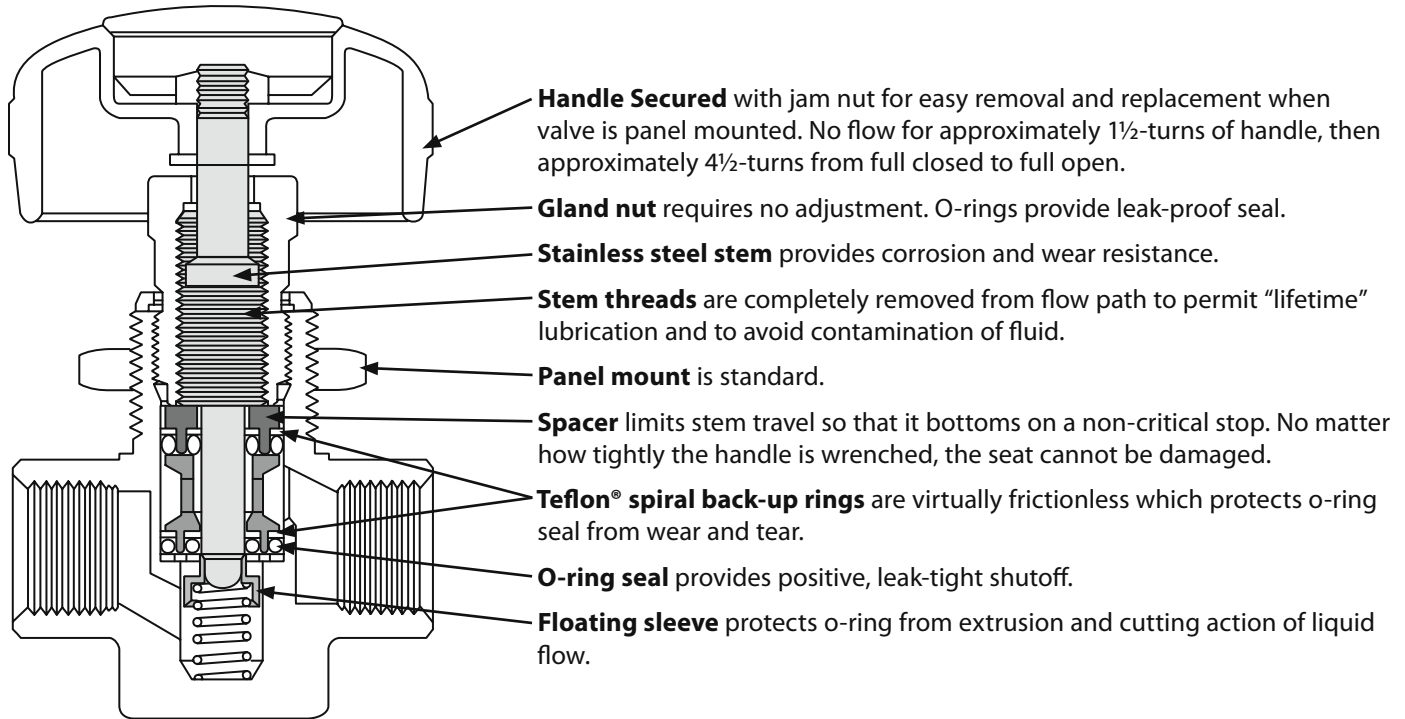
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Phone (951) 270-6200 • Fax (951) 270-6201
www.circle-seal.com

shutoff valves

900 Series

Engineering Features

Standard Design



PCTFE or Teflon® seat eliminates the need for o-ring seal and floating sleeve.

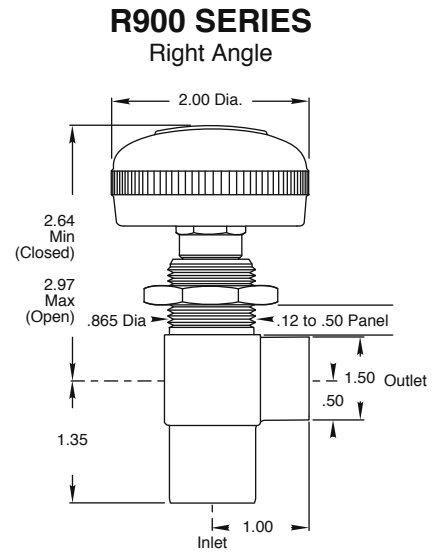
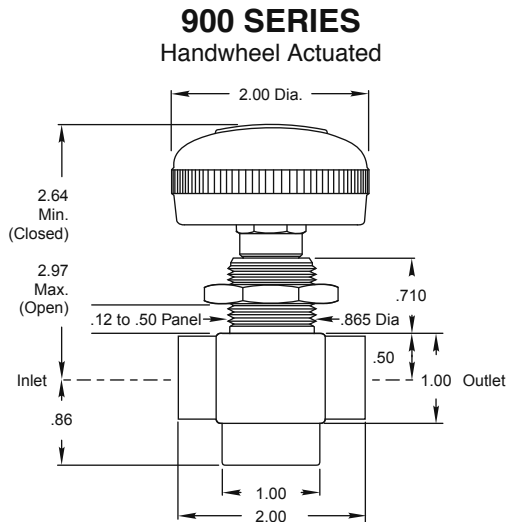
N-, B-, A900 Series design detail

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

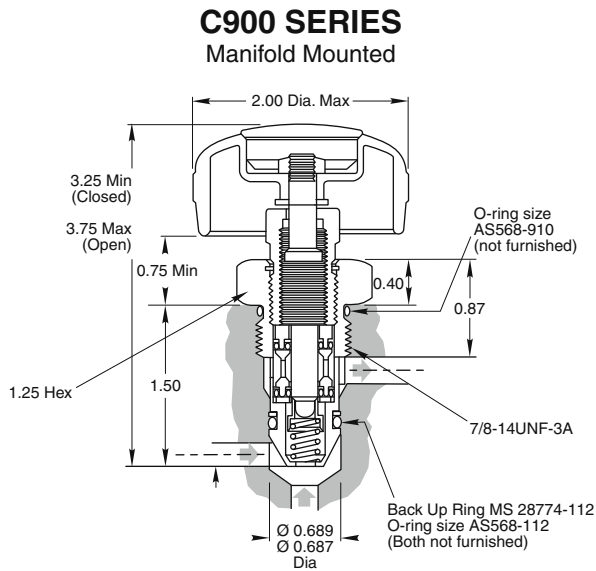
N900 (nylon seat) Series valves are for general use. B900 (PCTFE seat) or A900 (Teflon® seat) Series valves should be used for fluids not compatible with nylon or for service over +250° F.

900 Series

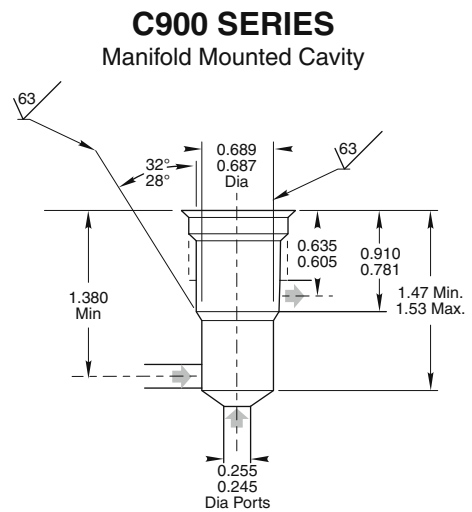
Dimensions



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.

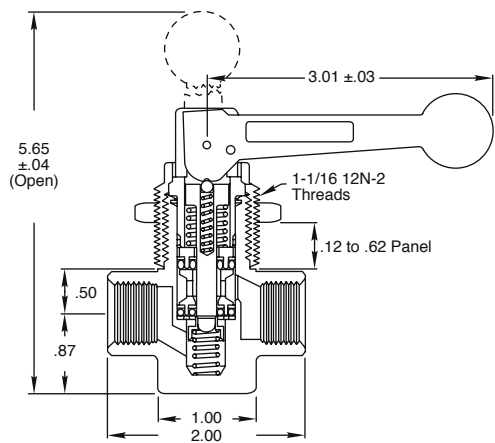


Cavity per AND10050-10 or SAE 3/8" straight thread connection (7/8-14UNF-3B) except as shown.

900 Series

Dimensions

T900 SERIES Toggle Actuated

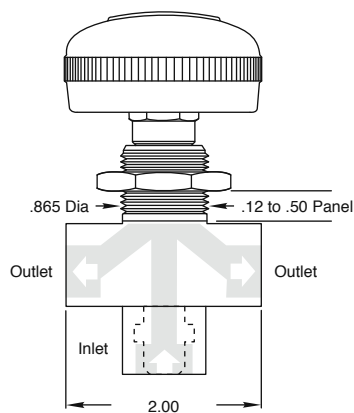


Spring and ball detent positively position handle open or closed. Holes are provided in toggle cam and clevis to permit locking valve closed against tampering.

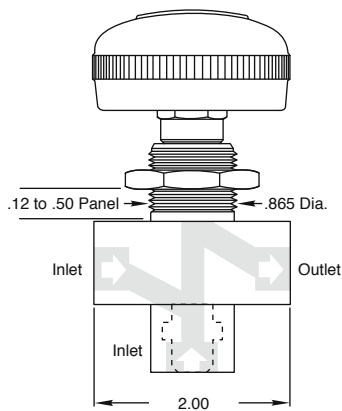
Handle arc is 90°. Valve is open when handle is parallel with stem, closed when handle is in a plane parallel with body. Closed position of handle may be positioned (360°) as required by “cracking” gland nut, positioning handle and retightening gland nut.

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

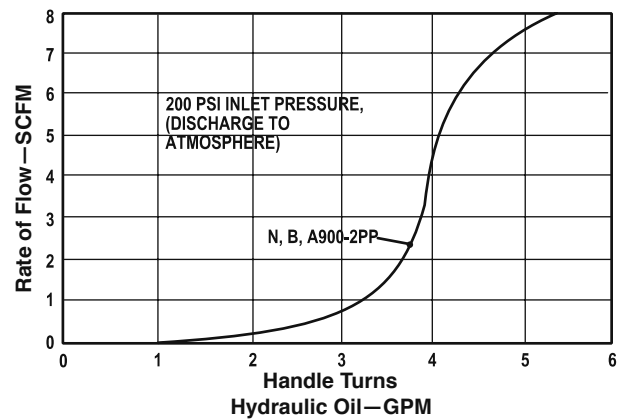
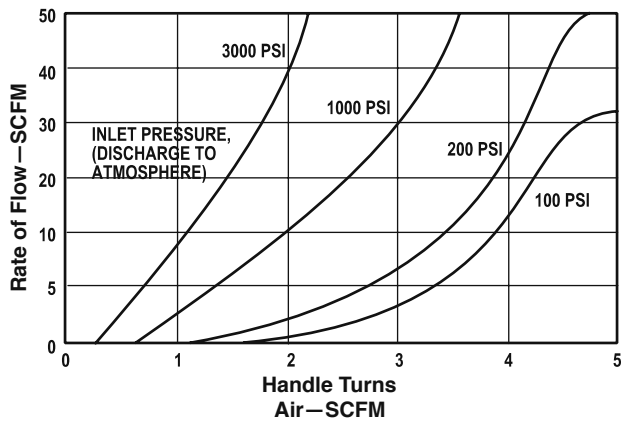
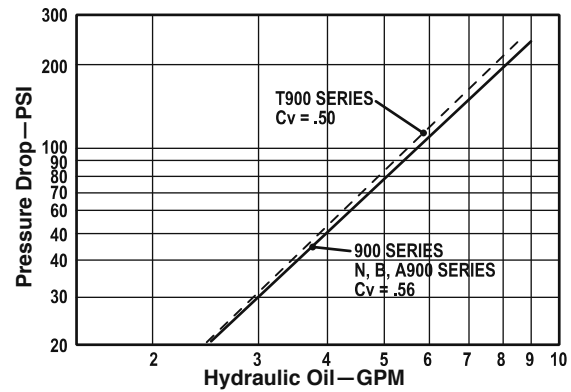
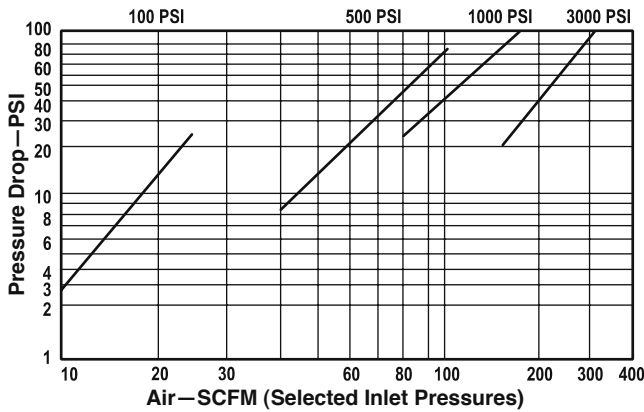


Y900 & Z900 Series Part Numbers

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

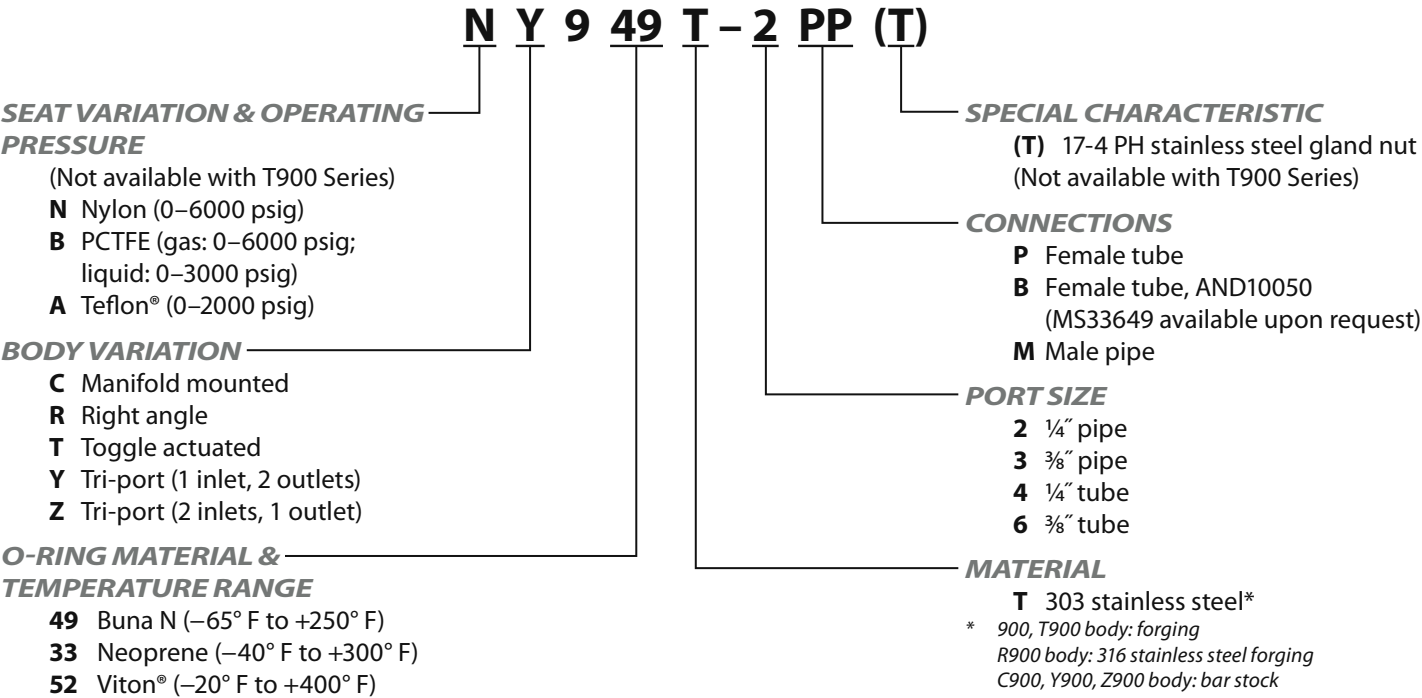
900 Series

Typical Flow Curves: 900 & T900 Series



900 Series

How to Order



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).

For Your Safety

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*Viton® is a registered trademark of DuPont Dow Elastomers.
Teflon® is a registered trademark of the DuPont Company.*

9200 Series

Vacuum to 150 psig Plug Shutoff Valves



Features

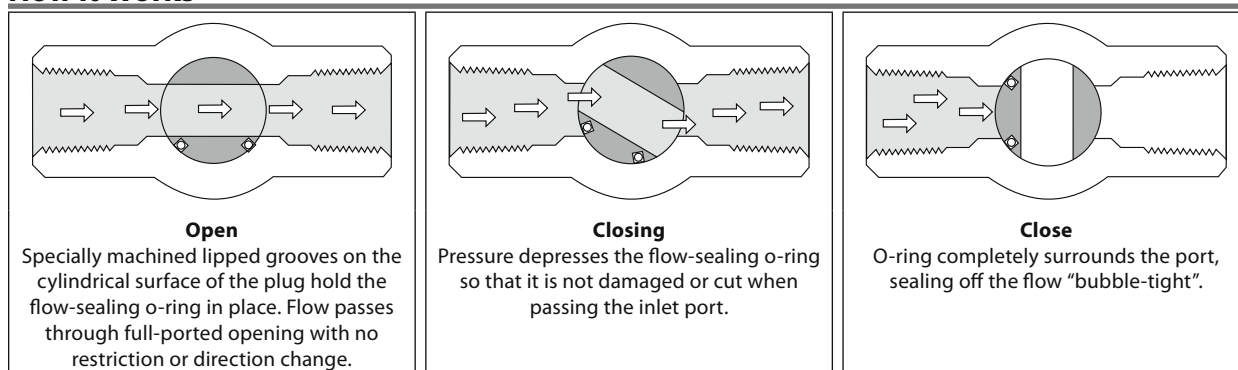
- Leak proof in vacuum or pressure service
- No stem leakage
- Minimum pressure drop/straight through flow passage
- Convenient ball handle
- Very low turning torque
- Positive position indication

Technical Data

Body Construction Materials	Brass, 303 and 316 stainless steel
O-ring Materials	Buna N, Neoprene or Viton®
Operating Pressures	• Vacuum to 150 psig (10 bar) • 20 psig (1.38 bar) max in reverse flow
Proof Pressure	300 psig (21 bar)
Burst Pressure (Minimum)	Over 500 psig (34 bar)
Temperature Range	0° F to +400° F (–17.8° C to +204° C) <i>Based on o-ring material, see "How to Order".</i>
Connection Sizes	1/8"–1"
Leakage	Zero—internal and external

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

How it Works



Circle Seal Controls

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Shutoff valves

9200 Series

Dimensions (inches) & Specifications

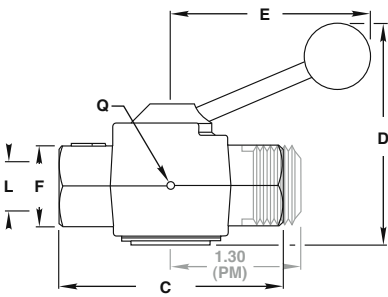
Female Pipe, Male Pipe

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.

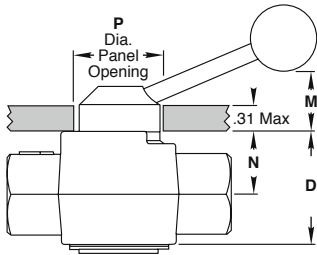
** For 9200-1PP and -3PP, body will be made of square bar stock with ends turned to Dia. "F".



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

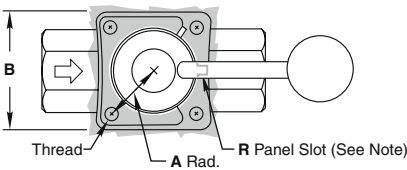
Valves are furnished complete with 4 panel mount screws.



Note: When panel-mounting 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.

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.		



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

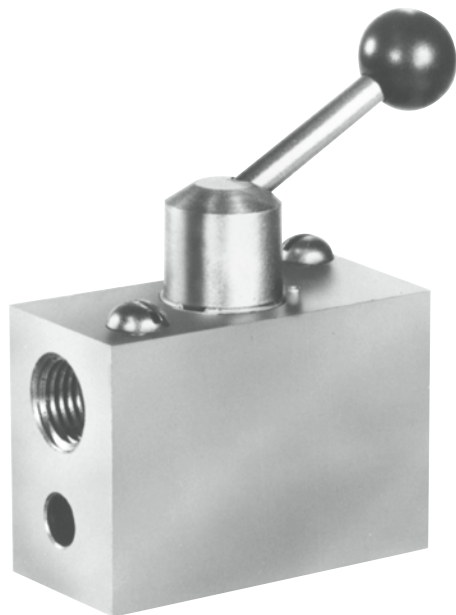
In normal service, the only part(s) which may require replacement is(are) the seal(s). A repair kit may be ordered by placing a "K/" in front of the complete part number (i.e. K/9259B-2PP).

For Your Safety

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9300 Series

Vacuum to 150 psig Plug Valves 3-way Selector



Features

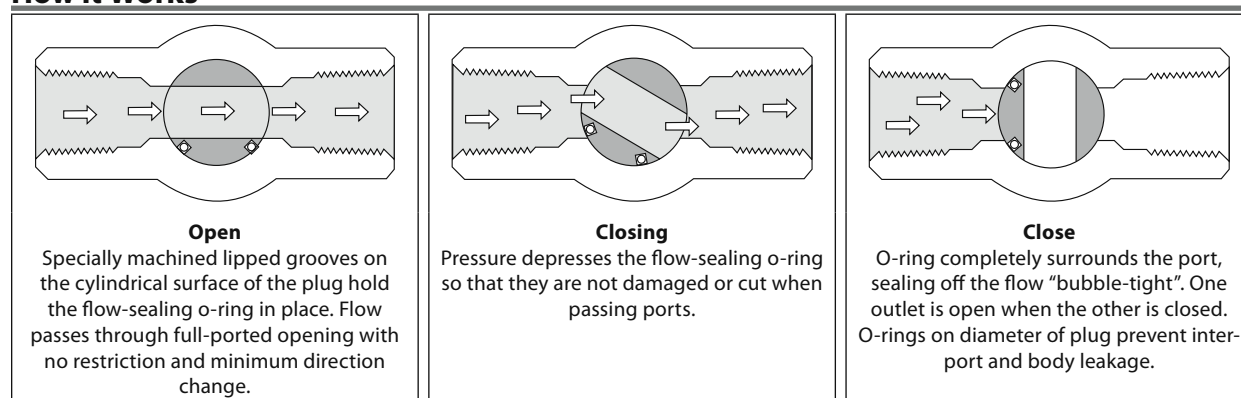
- Leakproof in vacuum or pressure service
- No stem leakage
- Minimum pressure drop
- Very low turning torque
- Effortless, fingertip operation
- Can be used for throttling service
- Positive position indication

Technical Data

Body Construction Materials	Brass
O-ring Materials	Buna N, Neoprene or Viton®
Operating Pressures	Vacuum to 150 psig (10 bar)
Proof Pressure	300 psig (21 bar)
Burst Pressure (Minimum)	Over 500 psig (34 bar)
Temperature Range	0° F to +400° F (-17.8° C to +204° C) <i>Based on o-ring material, see "How to Order".</i>
Connection Sizes	1/4", 1/2"
Flow Passage	0.275" diameter
Leakage	Zero—internal and external

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

How it Works



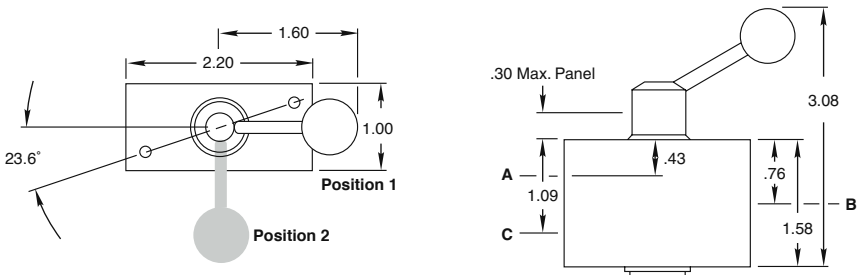
Circle Seal Controls

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 Phone (951) 270-6200 • Fax (951) 270-6201
www.circle-seal.com

9300 Series

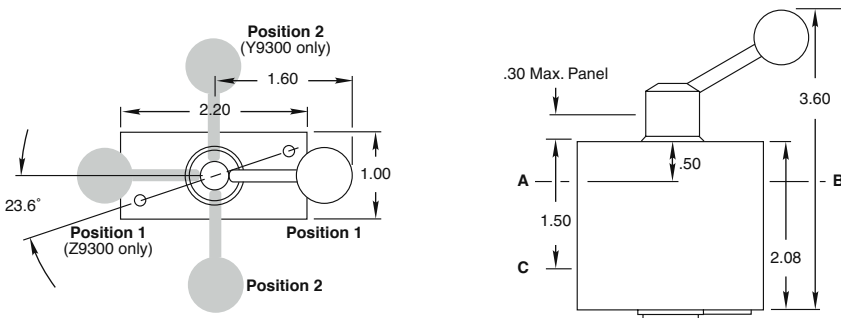
Dimensions (Inches) & Specifications

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



How to Order

Y 93 59 B - 2 PPP

VARIATION

- Y One inlet, two outlets
- Z Two inlets, one outlet

O-RING MATERIAL & TEMPERATURE RANGE

- 59 Buna N (0° F to +250° F)
- 33 Neoprene (0° F to +300° F)
- 32 Viton® (0° F to +400° F)

END CONNECTIONS (INLET/OUTLET/EXHAUST)

- P Female pipe (NPT)
- Q Open exhaust (2PPQ)

VALVE SIZE

- 2 1/4"
- 4 1/2"

BODY MATERIALS

- B Brass

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).

For Your Safety

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9400 Series

0 to 3000 psig Miniature Shutoff Valves



Features

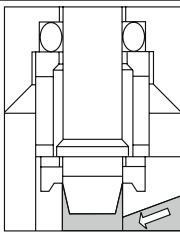
- Leak-proof shutoff
- No stem leakage
- Minimum pressure drop
- Color-coded handles
- Effortless opening & closing
- Knob or toggle handle
- Panel mount
- Metering stem
- Compact size
- Pipe and instrument tube fittings

Technical Data

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

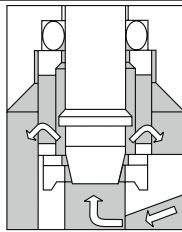
Note: Proper filtration is recommended to prevent damage to sealing surfaces.

How it Works



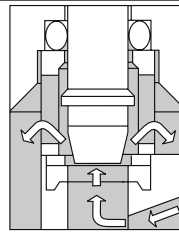
Closed

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.



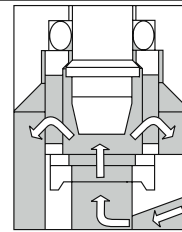
Fine Flow Control

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.



Non-critical Flow Control

As the stem is withdrawn further, flow continues across the 10° taper of the stem until full opening is reached.



Full Open

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.

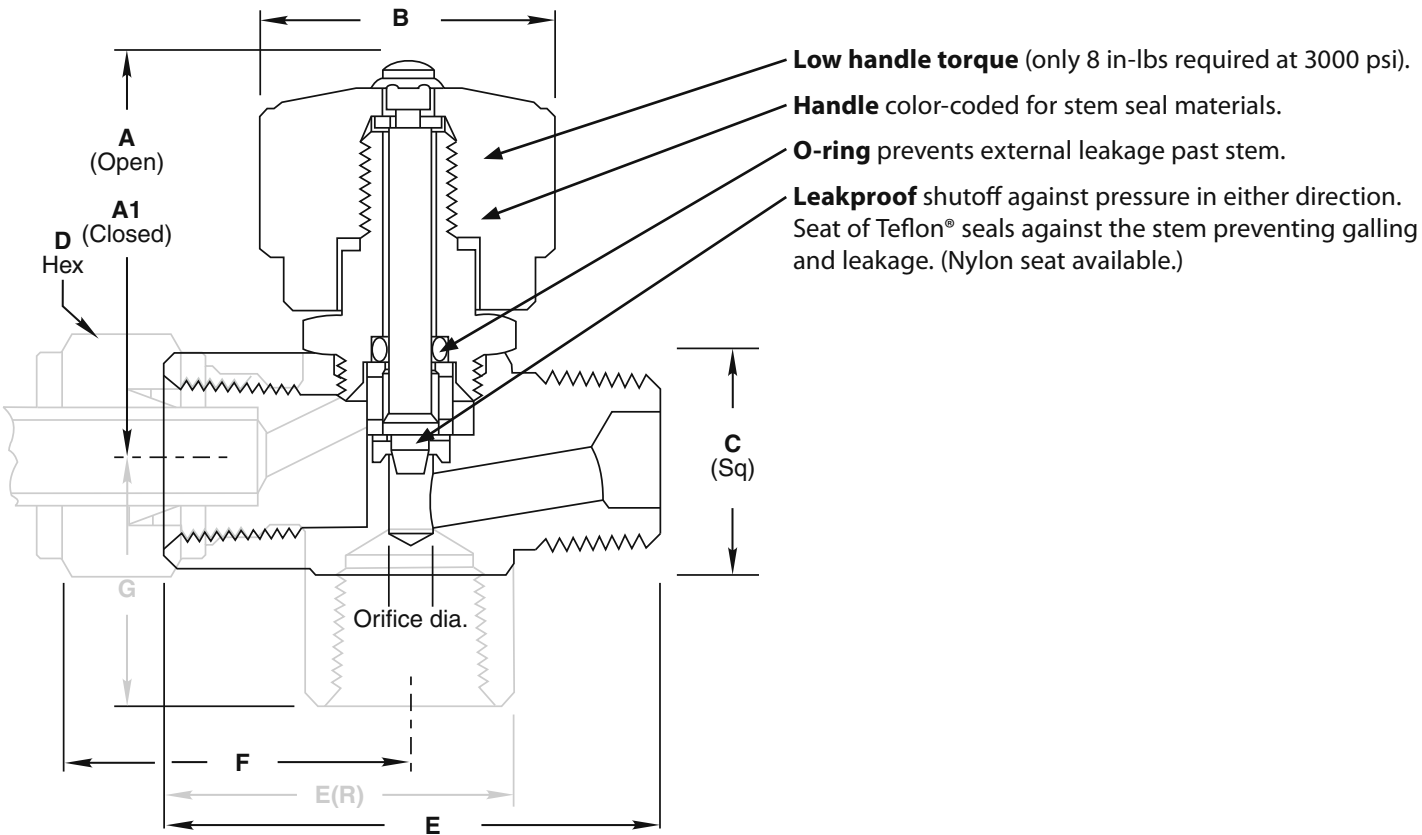
Circle Seal Controls

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Shutoff valves

9400 Series

9400/R9400 Series Dimensions & Performance Data



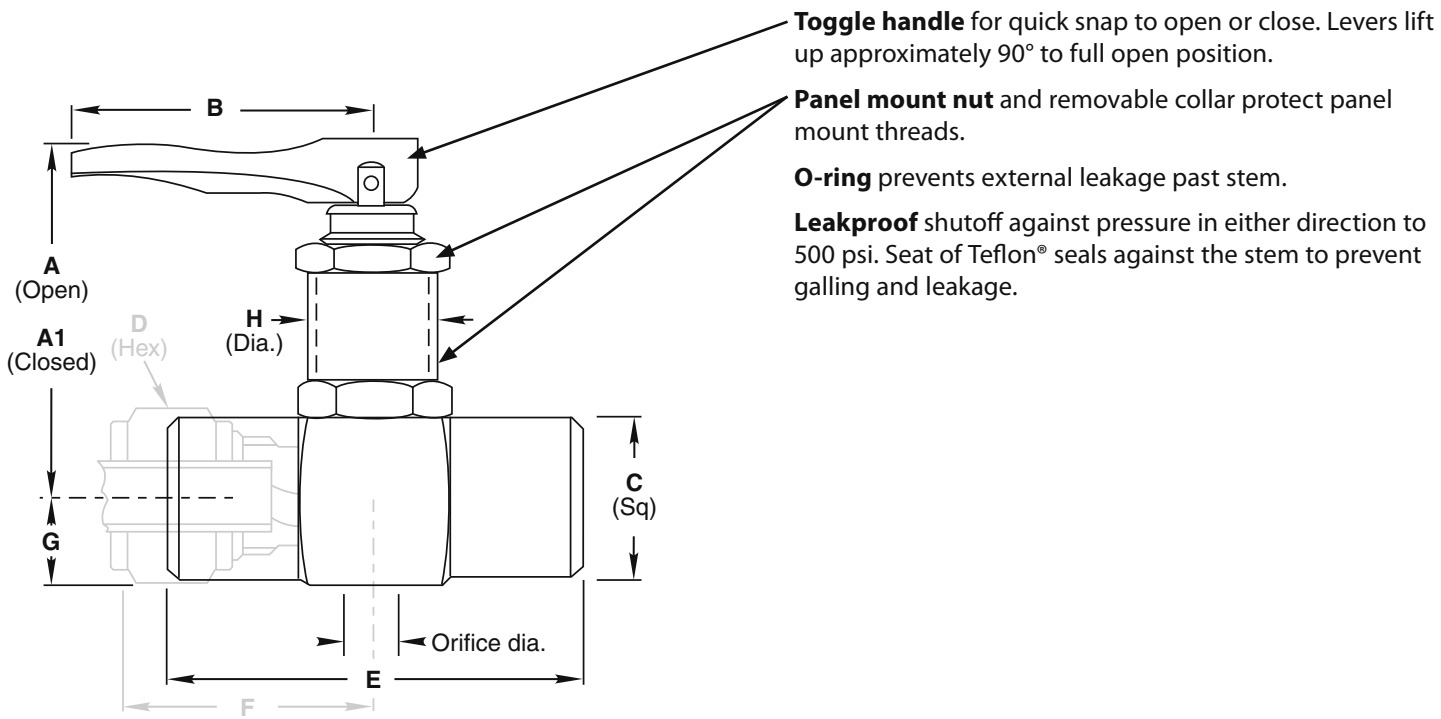
9400/R9400 Series Dimensions (inches)

Dash No.	Size	Connections	Orifice Dia.	Cv	A	A1	B	C	E E(R)	D	F	G
9400 Series												
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	⅛"	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	⅜"	Tube fittings	.156	.32	1.675	1.465	1.00	.88	—	.687	1.125	—
R9400 Series												
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

Operating pressure	• 9400, R9400 Series, Teflon® seat: 0–2,200 psig (152 bar) • N9400 Series, nylon seat: 0–3000 psig (207 bar)
Proof Pressure	• 9400, R9400 Series, Teflon® seat: 3,300 psig (228 bar) • N9400 Series, nylon seat: 4500 psig (310 bar)
Burst Pressure	12,000 psig (828 bar) minimum
Leakage	Zero—internal and external

9400 Series

T9400 Series Dimensions & Performance Data



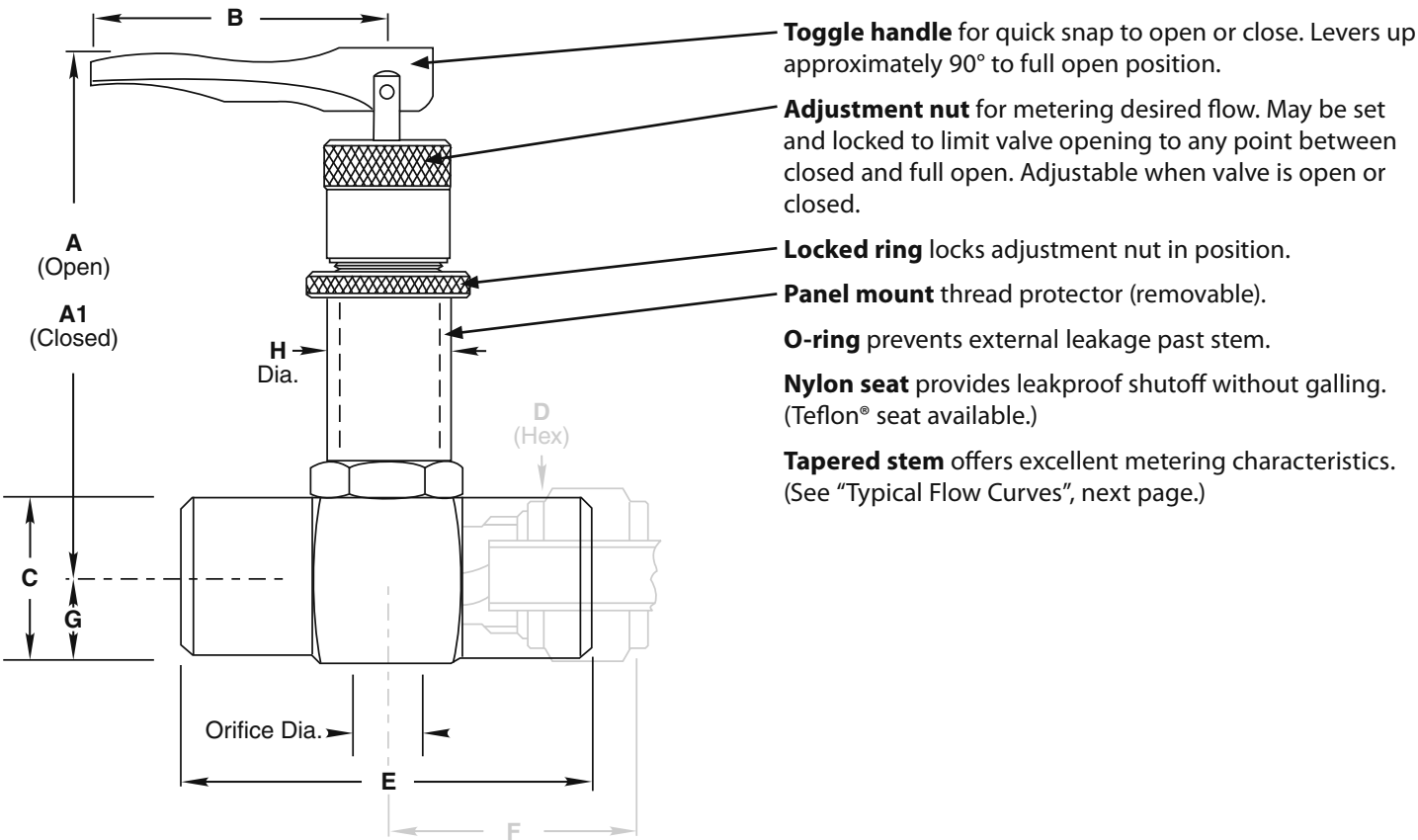
T9400 Series Dimensions (inches)

Dash No.	Size	Connections	Orifice Dia.	Cv	A	A1	B	C	D	E	F	G	H
2MM	1/4"	Male pipe	0.156	0.32	2.90	.62	1.39	.75	—	1.68	—	.375	.438
2PP	1/4"	Female pipe	0.156	0.32	2.96	1.68	1.39	.88	—	1.86	—	.438	.438
2CC	1/8"	Tube fittings	0.156	0.32	2.84	1.62	1.39	.75	.437	—	1.010	.375	.438
4CC	1/4"	Tube fittings	0.156	0.32	3.46	1.67	1.39	.88	.562	—	1.040	.438	.438
6CC	3/8"	Tube fittings	0.156	0.32	3.46	1.67	1.39	.88	.687	—	1.125	.438	.438

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

9400 Series

TM9400 Series Dimensions & Performance Data



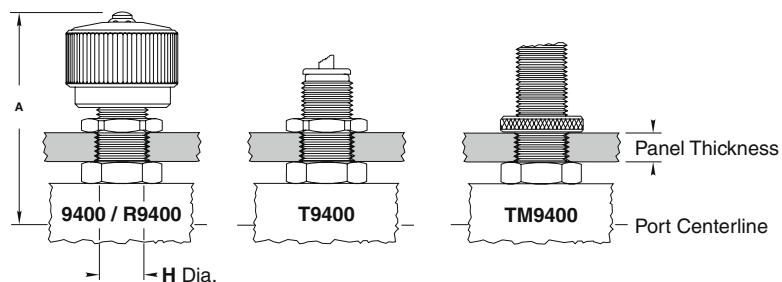
TM9400 Series Dimensions (inches)

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

Operating pressure	• Nylon seal: vacuum to 3000 psig (207 bar) • Teflon® seal: vacuum to 1000 psig (69 bar)
Proof Pressure	• Nylon seal: 4500 psig (310 bar) • Teflon® seal: 1500 psig (103 bar)
Burst Pressure	• Nylon seal: 12,000 psig (828 bar) minimum • Teflon® seal: 4000 psig (276 bar) minimum
Leakage	Zero—internal and external
Operating Temperature	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)

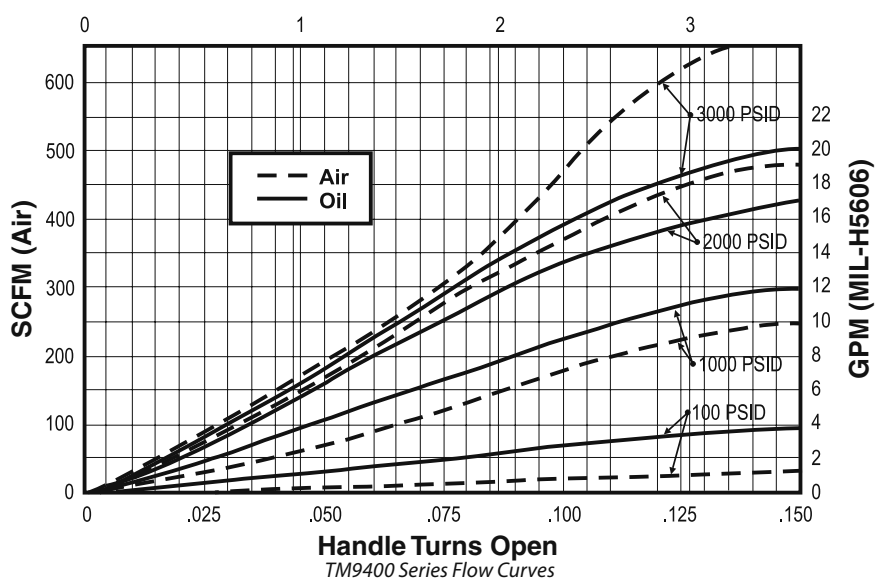
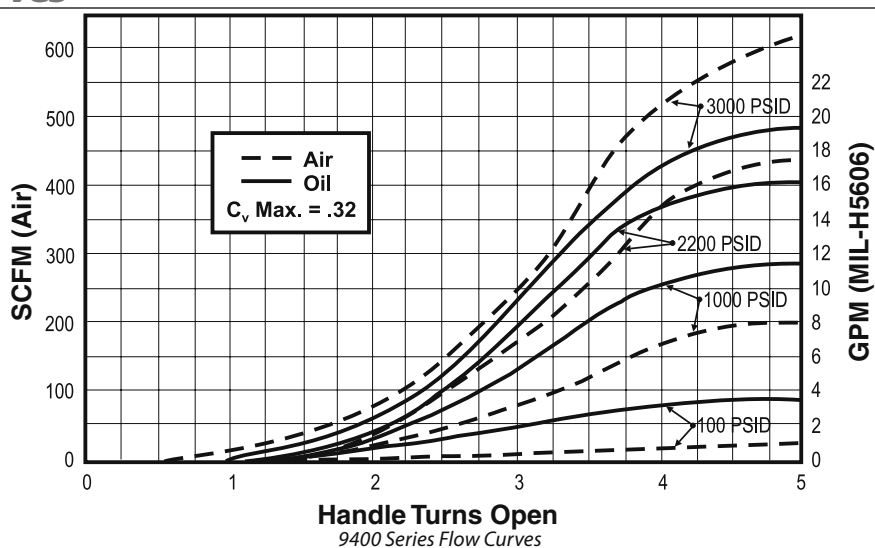
9400 Series

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

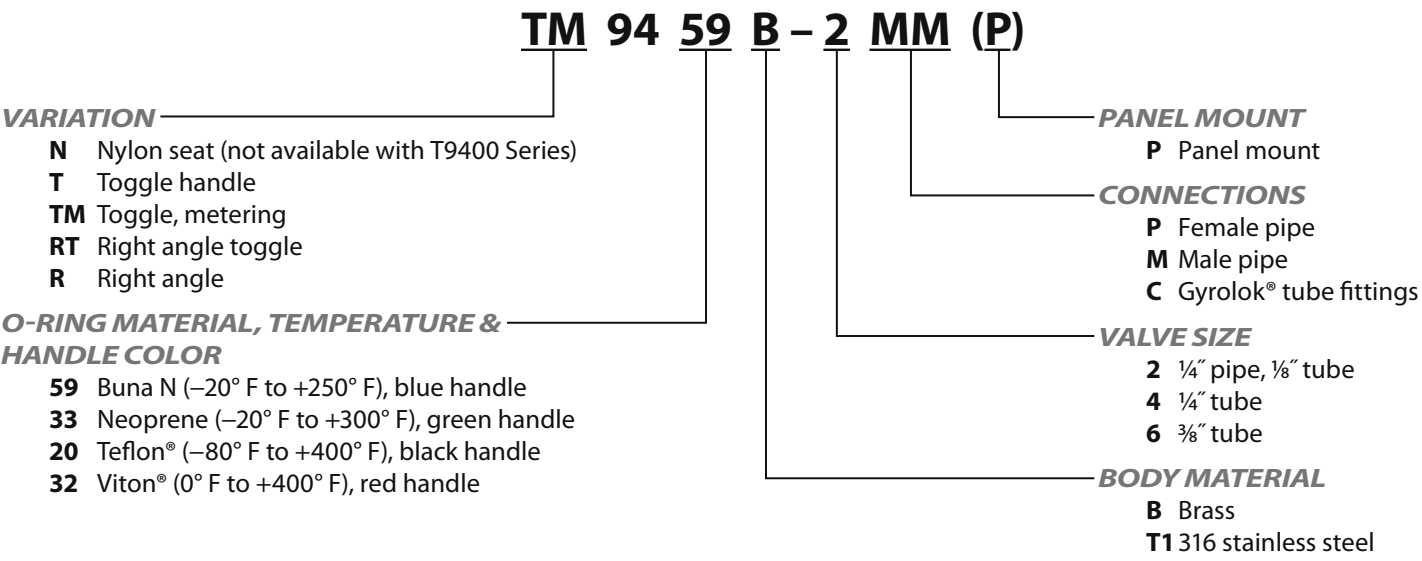
Type	A		H
	Open	Closed	
2MP	2.05	1.84	.438
2PP	2.05	1.84	.438

Typical Flow Curves



9400 Series

How to Order



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).

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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Viton® is a registered trademark of DuPont Dow Elastomers.
Teflon® is a registered trademark of the DuPont Company.

D9400 Series

0–3000 psig Miniature Pneumatically Actuated Valves



Features

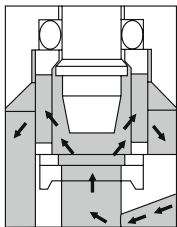
- Zero leakage
- Anodized aluminum “top works” is corrosion resistant
- Actuator (pilot) port rotates for easy installation and locks with jam nut
- Optional metering adjustment resets maximum flow
- Provides preset metering for normally closed valves
- Pipe and instrument tube fittings

Technical Data

Body Construction Materials	Brass or 316 stainless steel
Stem Material	316 stainless steel
Diaphragm housing	Anodized aluminum, color blue
Seal materials	Buna N, Neoprene, Teflon® or Viton®
Diaphragm Materials	Dacron®/Buna N
Operating Pressure	3000 psig (207 bar)
Proof Pressure	4500 psig (310 bar)
Burst Pressure	12,000 psig (828 bar)
Actuator Pressure	30 to 200 psig (2 to 14 bar)
Temperature Range	–100° F to +400° F (–73° C to +204° C) <i>Based on o-ring material, see “How to Order”.</i>
Connection Sizes	¼"

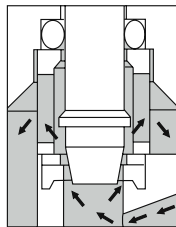
Note: Proper filtration is recommended to prevent damage to sealing surface.

How it Works



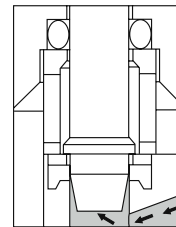
Full Open

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.

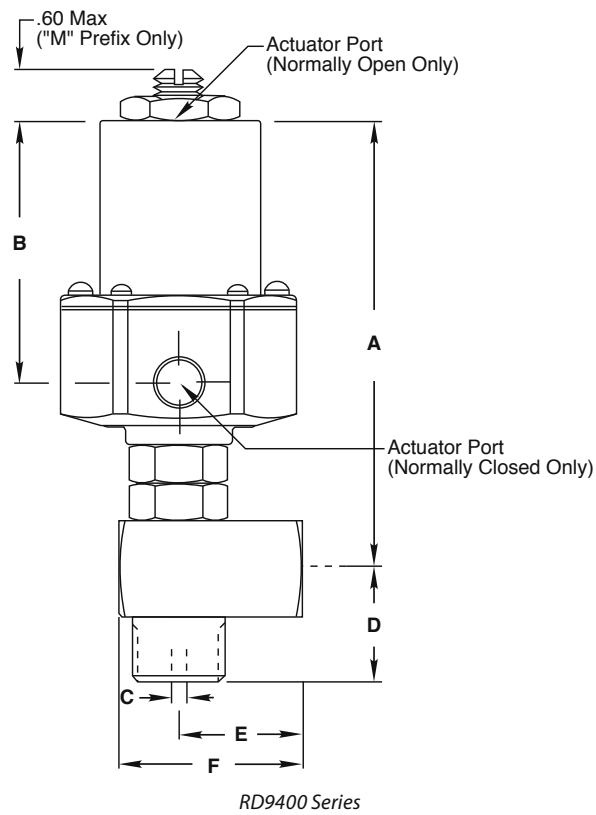
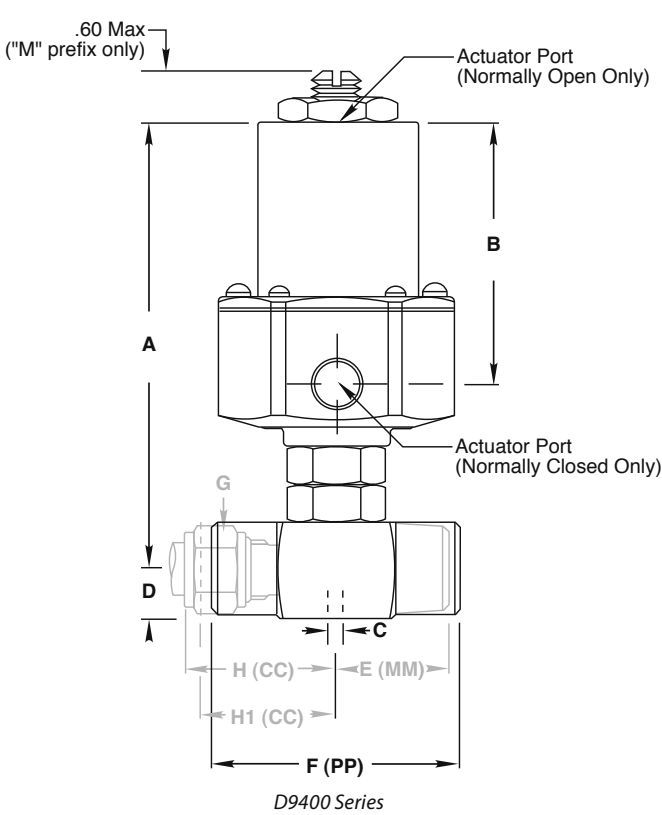
Circle Seal Controls

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Phone (951) 270-6200 Fax (951) 270-6201
www.circle-seal.com

shutoff valves

D9400 Series

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

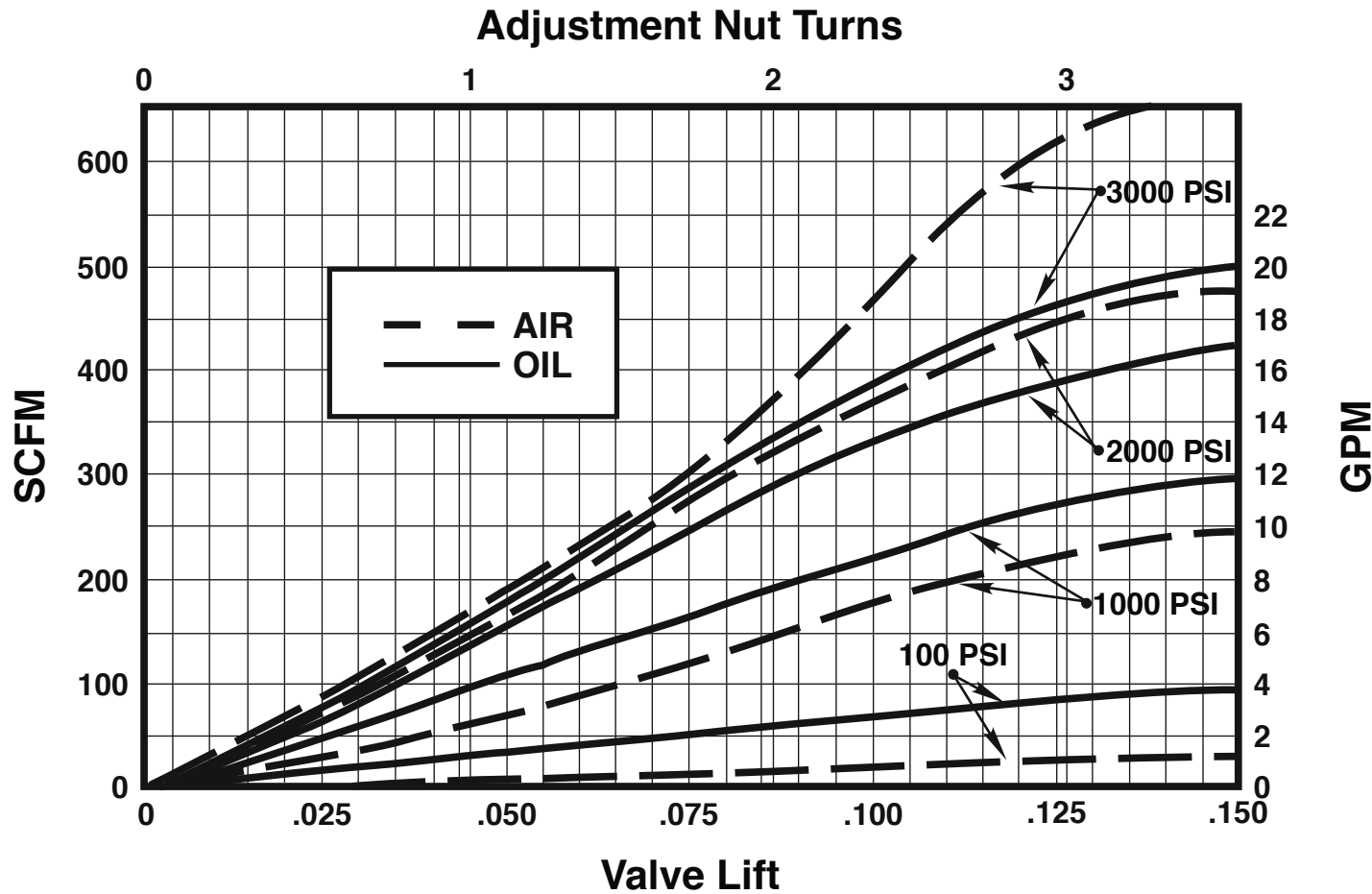
Body dimension (without nut and ferrule)

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

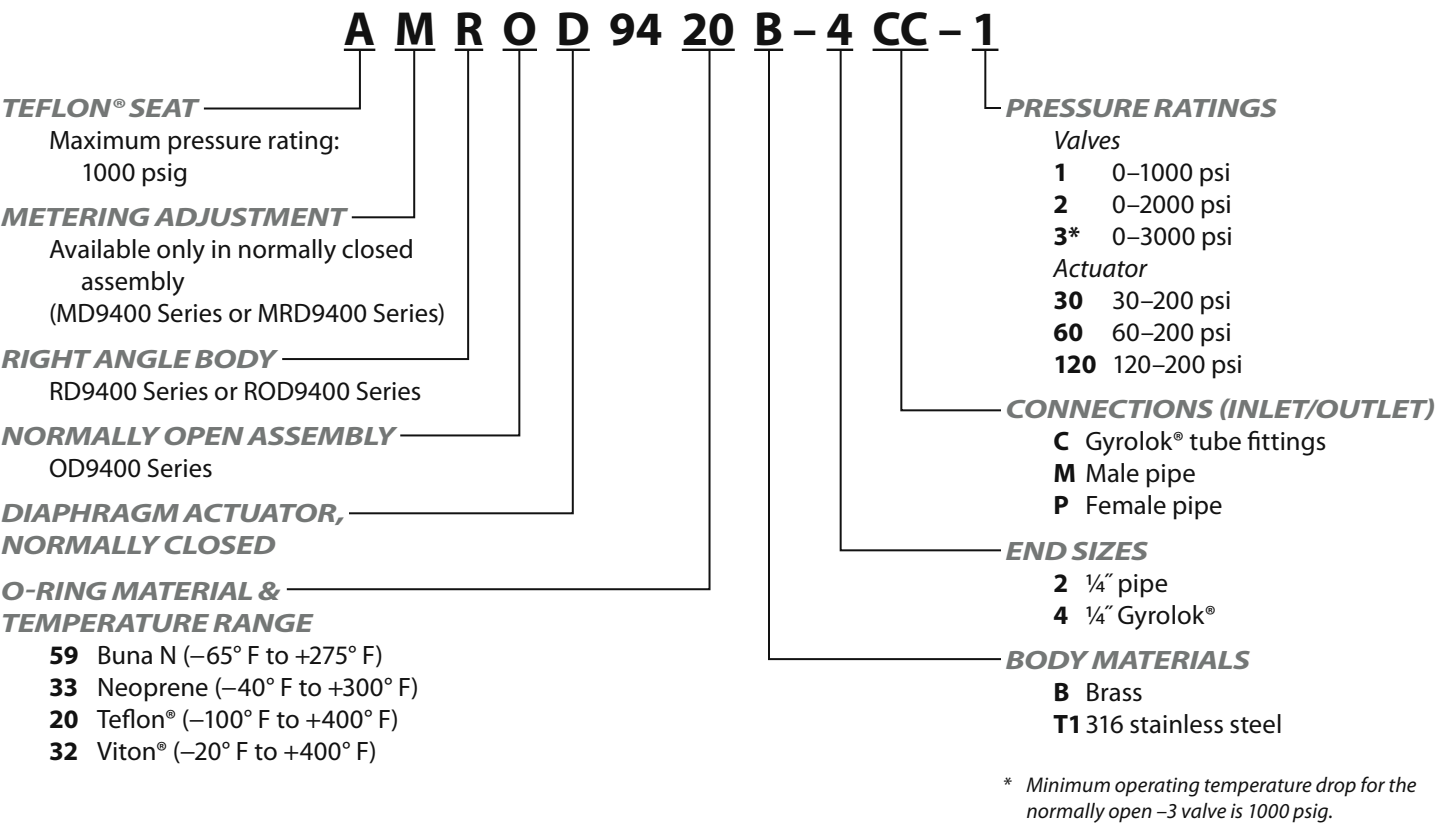
D9400 Series

Flow Curve (Flow vs Lift)



D9400 Series

How to Order



Standard Seat Materials

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

For Your Safety

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Viton® is a registered trademark of DuPont Dow Elastomers.
Teflon® is a registered trademark of the DuPont Company.
Fluorogold® is a registered trademark of Fluorocarbon Company.

9500 Series

0–3000 psig Shutoff Valves



Features

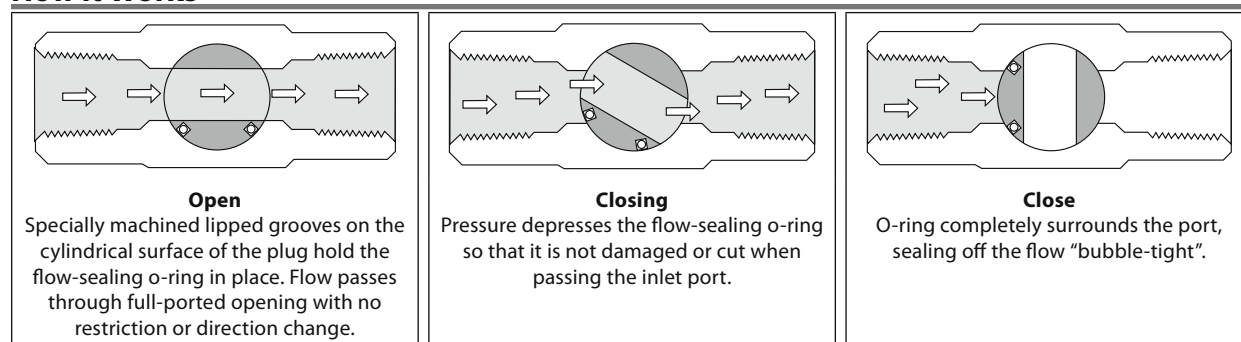
- Compact size, fast-acting
- Leakproof in vacuum or pressure service
- Positive position indication & handle stop
- Bleed hole in the plug vents the trapped fluids downstream
- No packing to adjust, o-ring seal to atmosphere
- Color-coded handles

Technical Data

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

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

How it Works



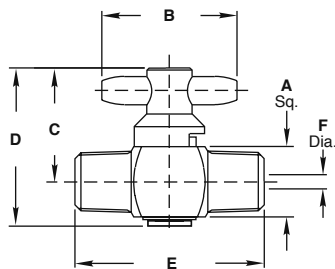
Circle Seal Controls

2301 Wardlow Circle • Corona, CA 92880
 Phone (951) 270-6200 • Fax (951) 270-6201
www.circle-seal.com

Shutoff valves

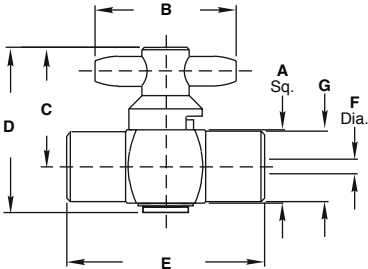
9500 Series

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

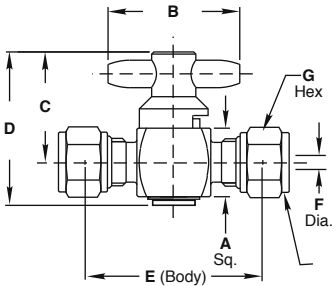


Female Pipe Dimensions

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



How to Order

95 59 B - 2 PP Q

O-RING MATERIAL, TEMPERATURE RANGE & HANDLE COLOR

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

BODY MATERIAL

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

VENT PORT

Q*Downstream side (optional)

CONNECTIONS

- M** Male pipe
- F** Female pipe
- C** Gyrolok® tube fittings

VALVE SIZE

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

* 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).

For Your Safety

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MV92 Series

0–3000 psig Micro-metering Fingertip Valves



Features

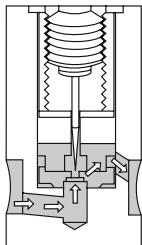
- Precision tapered needle/0.020 orifice provides ultimate in fine metering sensitivity.
- Unique “spline” device prevents stem withdrawal from body until gland nut is loosened.
- Packing below threads prevents system contamination.
- Permanent lubrication assures trouble-free operation.

Technical Data

Body Construction Material	316 stainless steel
Gland Nut Material	316 stainless steel
Stem Seals Material	Teflon®
Operating Pressures	0 to 3000 psig (207 bar)
Temperature Range	–20° F to +400° F (–29° C to +204° C)
Connection Sizes	1/8"–3/8"

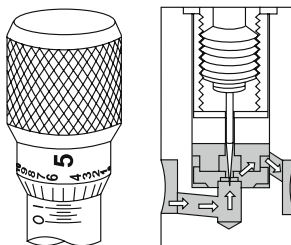
Note: Proper filtration is recommended to prevent damage to sealing surface.

How it Works



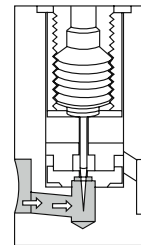
Full Open

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.

Shutoff valves

Circle Seal Controls

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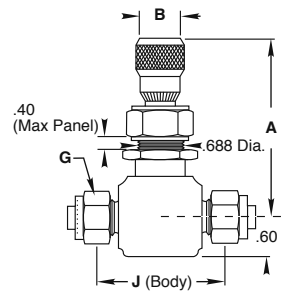
MV92 Series

Dimensions (inches) & Specifications

Tube Fittings

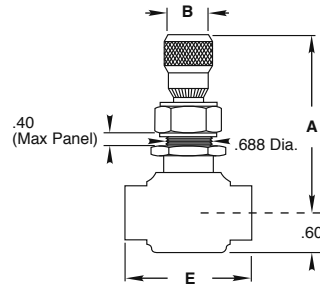
Dash No.	Size	Orifice Dia.	Cv*	A		B Dia.	G Hex	J
				Open	Closed			
2CC	1/8"	0.020	0.0096	3.00	2.76	0.75	0.44	1.90
4CC	1/4"	0.020	0.0096	3.00	2.76	0.75	0.56	2.03
5CC	5/16"	0.020	0.0096	3.00	2.76	0.75	0.62	2.15
6CC	3/8"	0.020	0.0096	3.00	2.76	0.75	0.68	2.15

* At maximum opening.



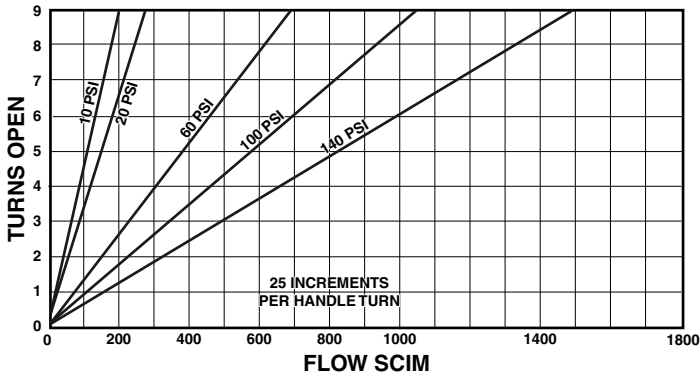
Female Pipe

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

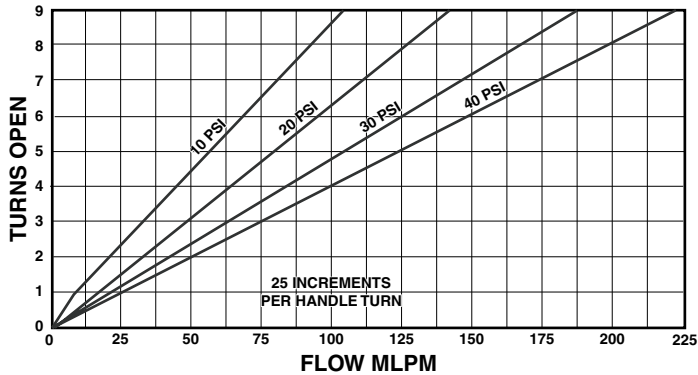


Flow Curves

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).

For Your Safety

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MV/ES 12 & 60 Series

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



Features

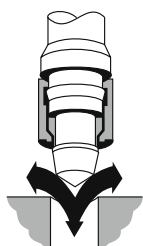
- Zero leakage
- Throttling control without wire drawing
- Spindle threads external to packing
- Positive spindle retention
- Metal-to-metal bonnet seal
- Extended stem for extreme temperatures\
- Bi-directional
- Field tested at 1×10^{-7} torr to 12,000 psi with zero leakage

Technical Data

Body Construction Materials	303 or 316 stainless steel
Seat & Packing Material	Teflon®
Operating Pressures	• MV12 & ES12: 0 to 12,000 psi (827 bar) • MV60 & ES60: 0 to 6000 psi (414 bar)
Proof Pressures	• MV12 & ES12: 18,000 psi (1,241 bar) • MV60 & ES60: 9000 psi (621 bar)
Burst Pressures	• MV12 & ES12: 48,000 psi (3,310 bar) minimum • MV60 & ES60: 24,000 psi (1,655 bar) minimum
Operating Temperatures	• MV12 & MV60: –65° F to +250° F (–54° C to +121° C) • ES12 & ES60: –452° F to +450° F (–269° C to +232° C)
Connection Sizes	½"–1"
Leakage	All series and actuators: bubble-tight

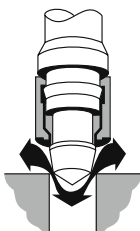
Note: Proper filtration is recommended to prevent damage to sealing surface.

How it Works



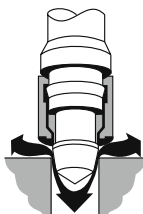
Full Open

The relaxed Teflon® 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.



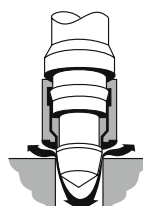
Throttling

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.



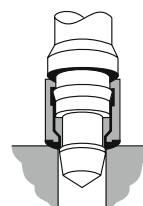
Metering

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.



Ultra-fine Metering

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.



Final Absolute Shutoff

During final closing, the Teflon® 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.

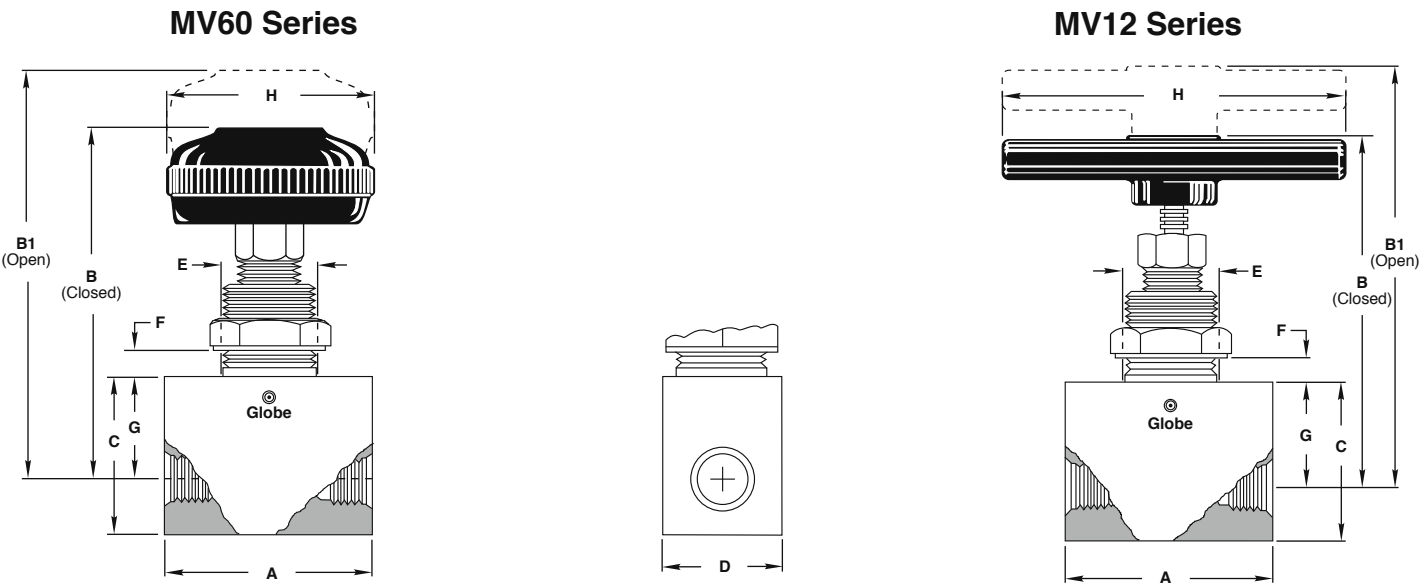
Circle Seal Controls

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Shutoff valves

MV/ES 12 & 60 Series

MV Series DYNAFLOW® Valves : Globe Pattern



Globe Dimensions (inches): MV60 & MV12 Series

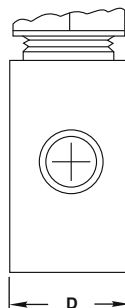
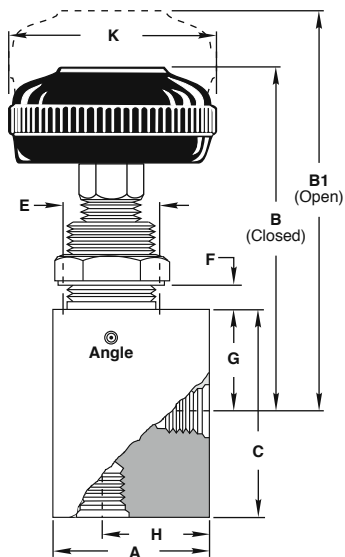
Port	A	B		B1		C		D		E Dia.	F Max.	G		H		Cv**
		MV60	MV12	MV60	MV12	MV60	MV12	MV60	MV12			MV60	MV12	MV60	MV12	
1/8"	2.50	3.41	3.41	3.75	3.75	1.75	1.75	1.00	1.25	0.88	0.25	1.05	1.05	2.00	2.00	0.22
1/4"	2.50	3.41	3.41	3.75	3.75	1.75	1.75	1.00	1.25	0.88	0.25	1.05	1.05	2.00	2.00	0.34
3/8"	3.00	4.50	4.24	4.80	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

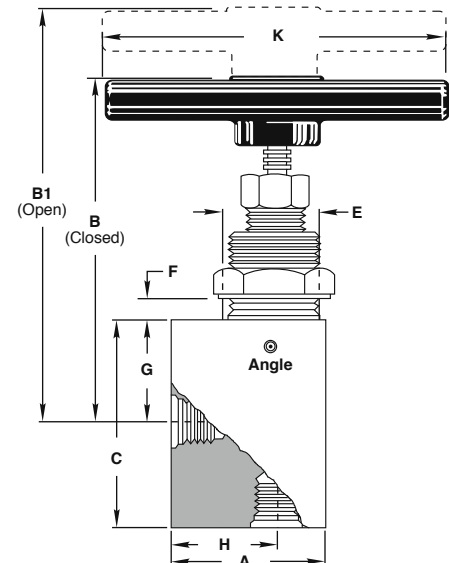
MV/ES 12 & 60 Series

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

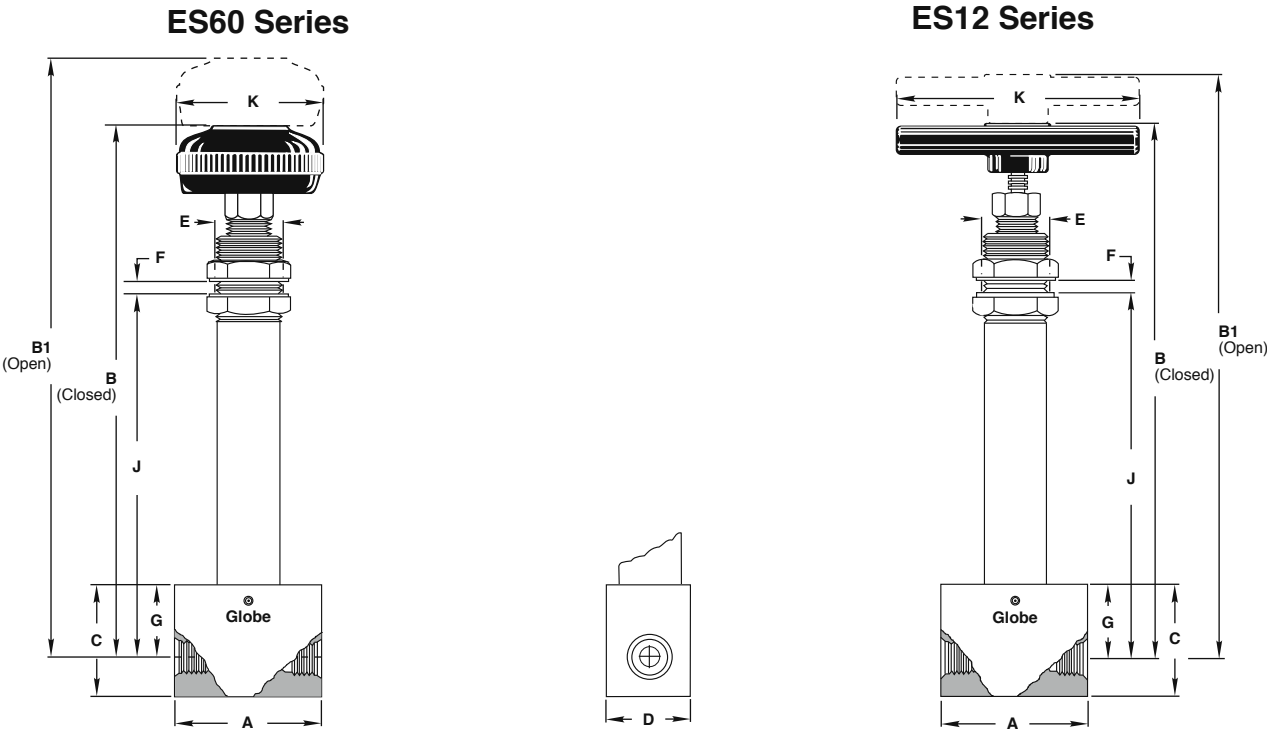
** Cv based on female pipe ends

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	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

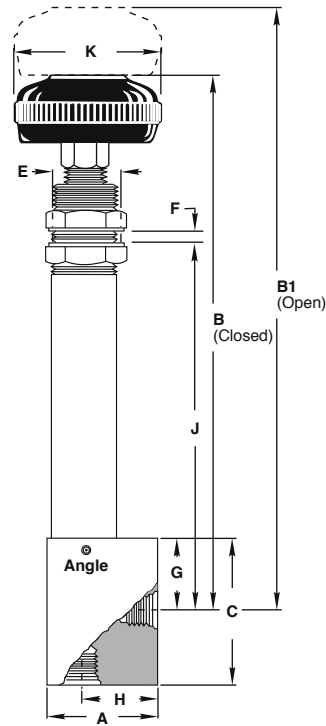
MV/ES 12 & 60 Series

ES Series DYNAFLOW® Valves : Angle Pattern

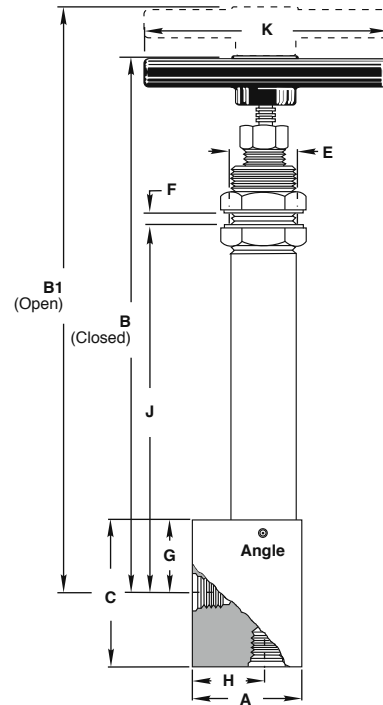
Extended Stem for Extreme Service: –452° F to +450° F (–269° C to +232° C)

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.

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

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

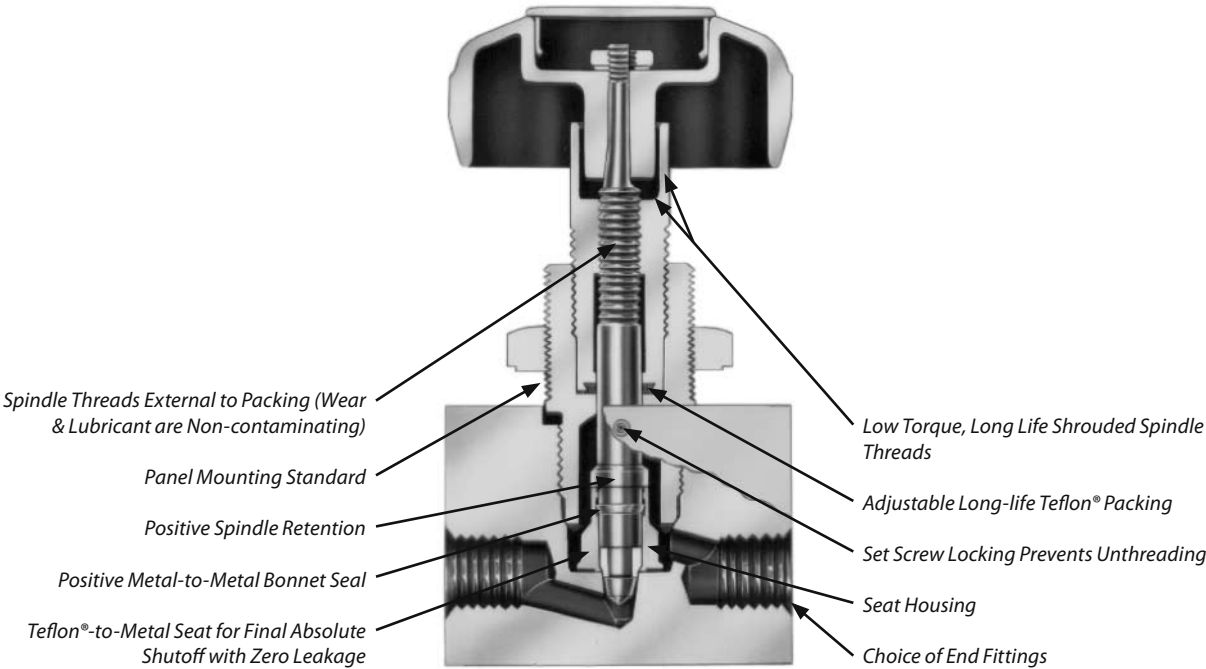
B Tube (MS33649)
P Pipe
W Socket weld tube*
PW Socket weld pipe*
G Aminco™

CONNECTION SIZE

02 1/8"
04 1/4"
06 3/8"
08 1/2"
09 5/16" (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.



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.

DYNAFLOW® is a registered trademark of Circle Seal Controls.
Teflon® is a registered trademark of the DuPont Company.
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

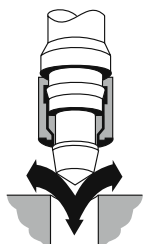
- Zero leakage
- Three operating modes
- Bi-directional
- Positive spindle retention
- Extended stem for extreme temperatures
- Field tested at 1×10^{-7} torr to 12,000 psi with zero leakage

Technical Data

Body Construction Materials	• Valve body: 303 or 316 stainless steel • Actuator body: aluminum
Seat & Packing Material	Teflon®
Operating Pressures	• CMV12 & CES12: 0 to 12,000 psi (828 bar) • CMV60 & CES60: 0 to 6000 psi (414 bar)
Proof Pressures	• CMV12 & CES12: 18,000 psi (1,241 bar) • CMV60 & CES60: 9000 psi (621 bar)
Burst Pressures	• CMV12 & CES12: 48,000 psi (3,310 bar) minimum • CMV60 & CES60: 24,000 psi (1,655 bar) minimum
Operating Temperatures	• CMV12 & CMV60: –65° F to +250° F (–54° C to +121° C) • CES12 & CES60: –452° F to +450° F (–269° C to +232° C)
Connection Sizes	$\frac{3}{8}$ "–1"
Cylinder Air Service:	• Operating pressure: 50 to 150 psig (3 to 10 bar) • Proof pressure: 225 psig (16 bar) • Burst pressure: 600 psig (41 bar)
Leakage	All series and actuators: bubble-tight

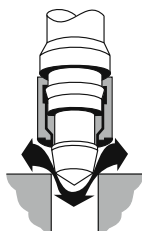
Note: Proper filtration is recommended to prevent damage to sealing surface.

How it Works



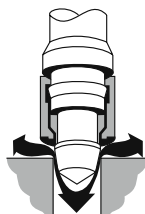
Full Open

The relaxed Teflon® 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.



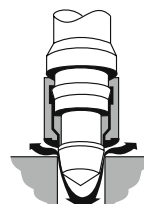
Throttling

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.



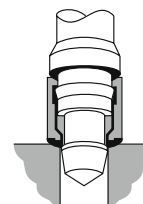
Metering

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.



Ultra-fine Metering

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.



Final Absolute Shutoff

During final closing, the Teflon® 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.

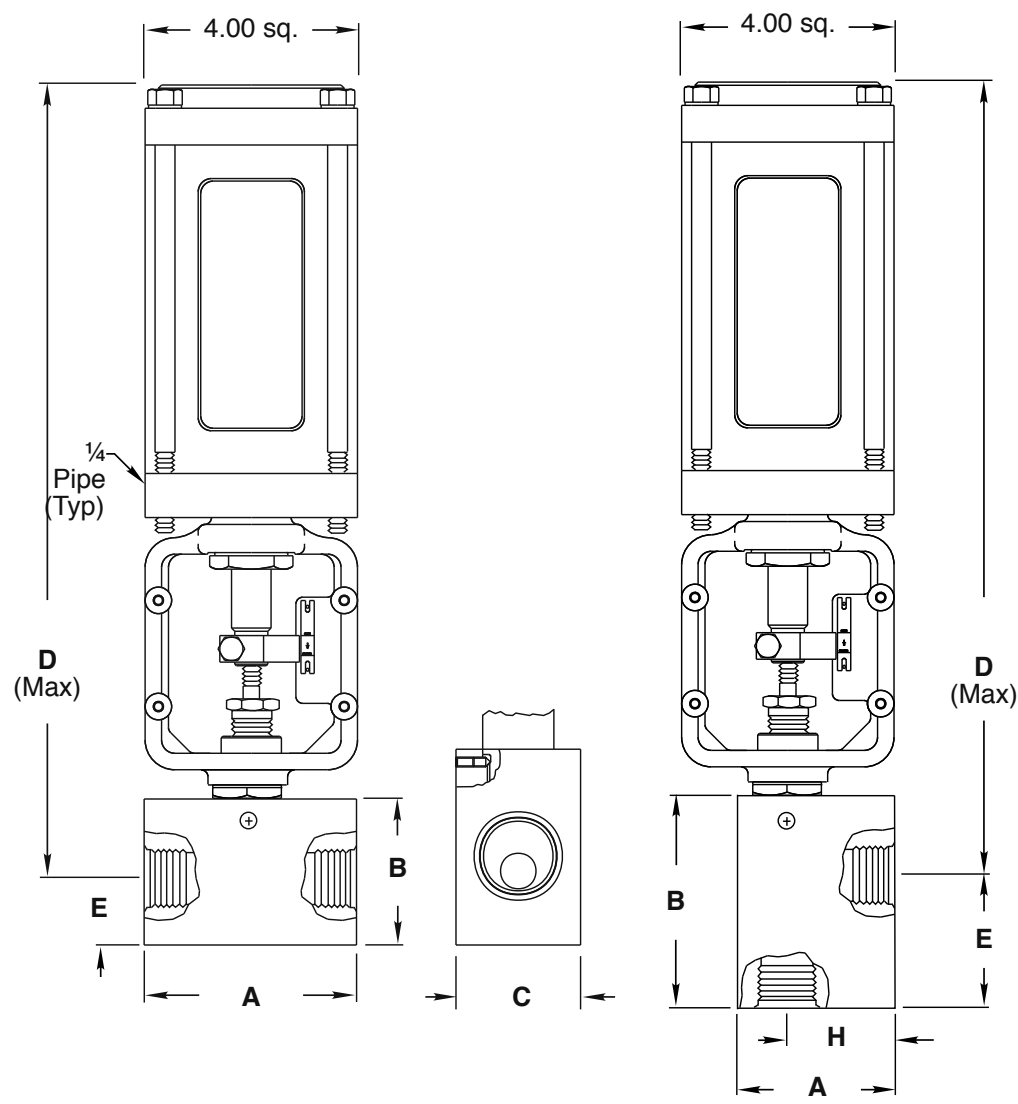
Shutoff valves

Circle Seal Controls

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www.circle-seal.com

CMV/CES 12 & 60 Series

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
9/16"*	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	14.90	1.80	1.98	1.43	1.7
1/2"	2.00	2.25	3.00	1.25	1.75	14.90	1.80	1.98	1.43	1.7
9/16"*	2.75	3.00	4.00	1.75	2.75	15.50	2.90	2.90	1.87	1.7
3/4"	2.75	3.00	4.00	1.75	2.75	15.50	2.50	2.50	1.87	5.6
1"	2.75	3.00	4.00	1.75	2.75	15.50	2.50	2.50	1.87	5.6

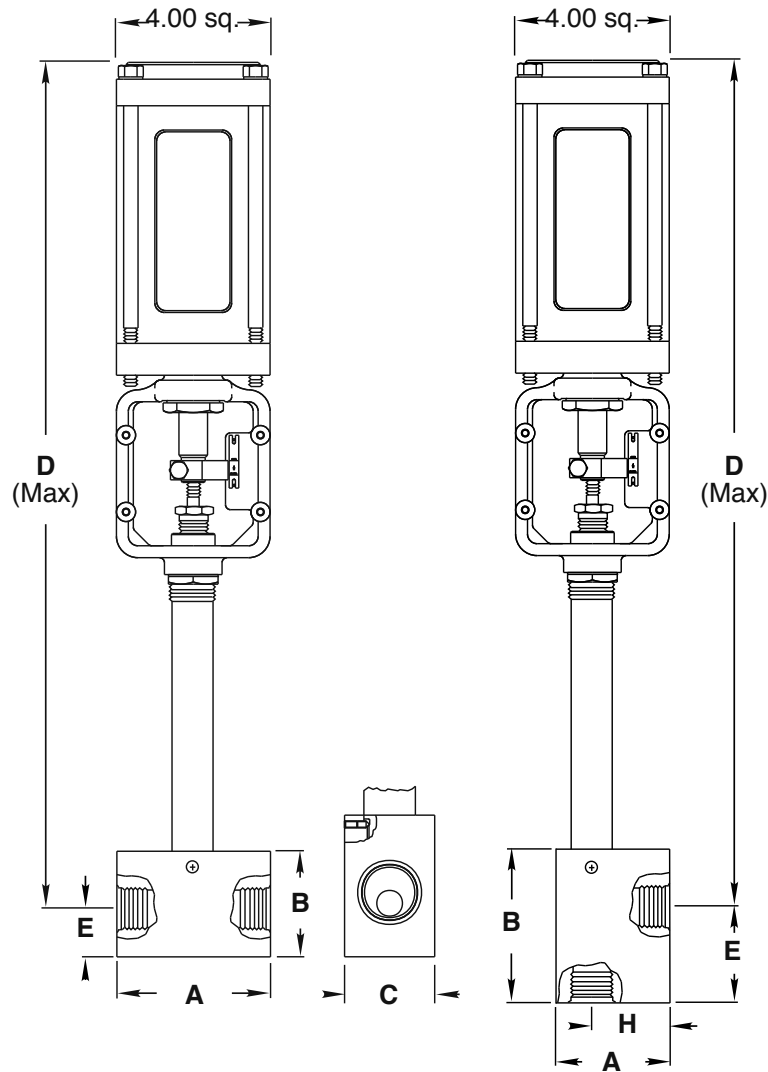
* In Aminco™ end fittings only.
** Cv based on female pipe ends.

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	B			C		D	E		Cv**
	A	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

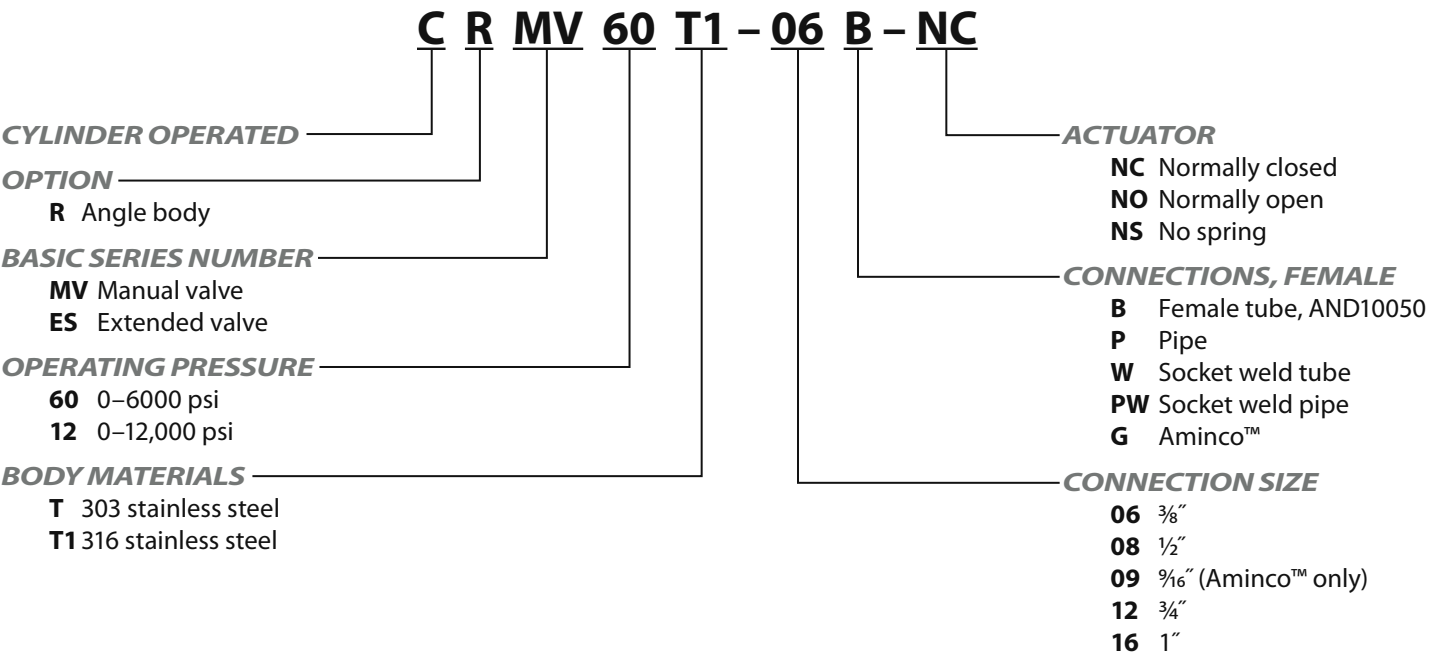
Port	A		B	C		D	E		H	Cv**
	CRES60	CRES12		CRES60	CRES12		CRES60	CRES12		
3/8"	2.00	2.25	3.00	1.25	1.75	20.65	1.80	1.98	1.43	1.7
1/2"	2.00	2.25	3.00	1.25	1.75	20.65	1.80	1.98	1.43	1.7
9/16"*	2.75	3.00	4.00	1.75	2.75	21.05	2.50	2.90	1.87	1.7
3/4"	2.75	3.00	4.00	1.75	2.75	21.05	2.50	2.50	1.87	5.6
1"	2.75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

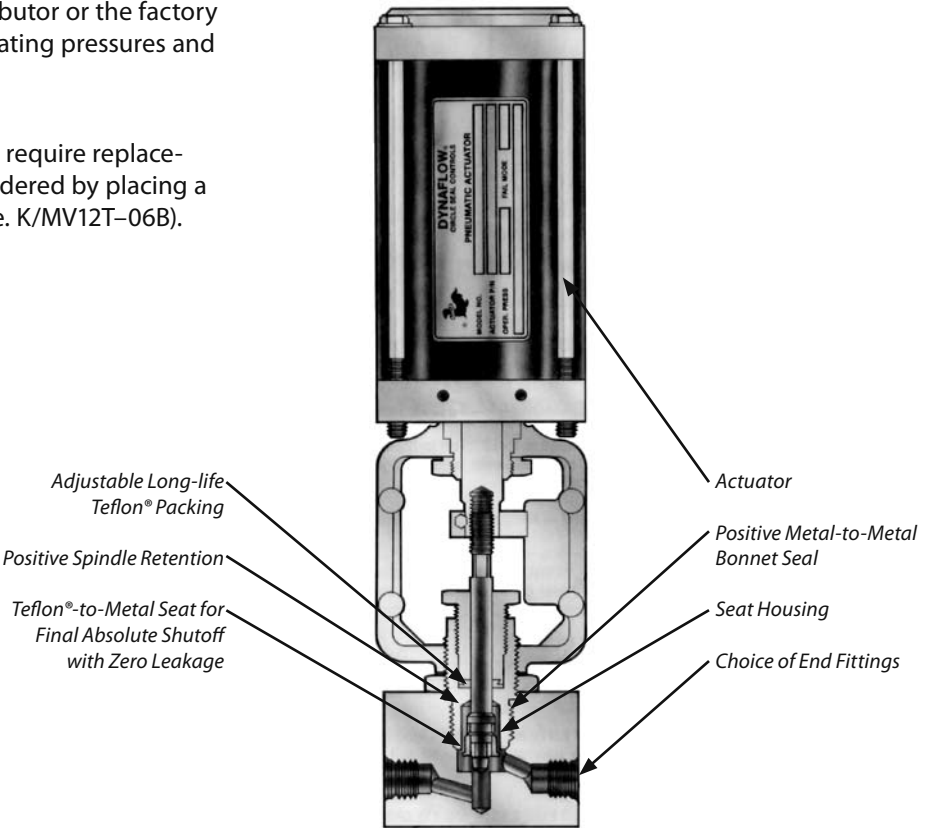
How to Order



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).



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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