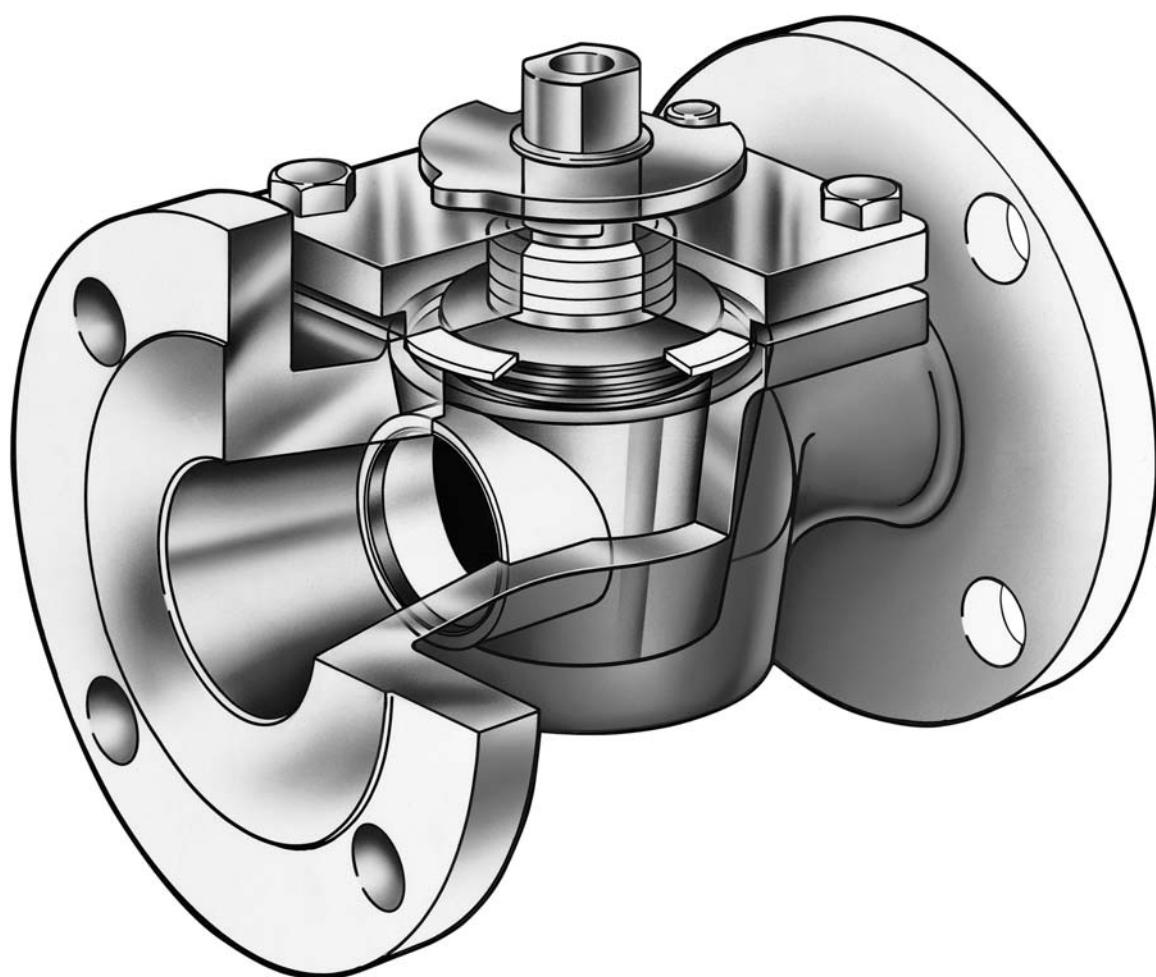
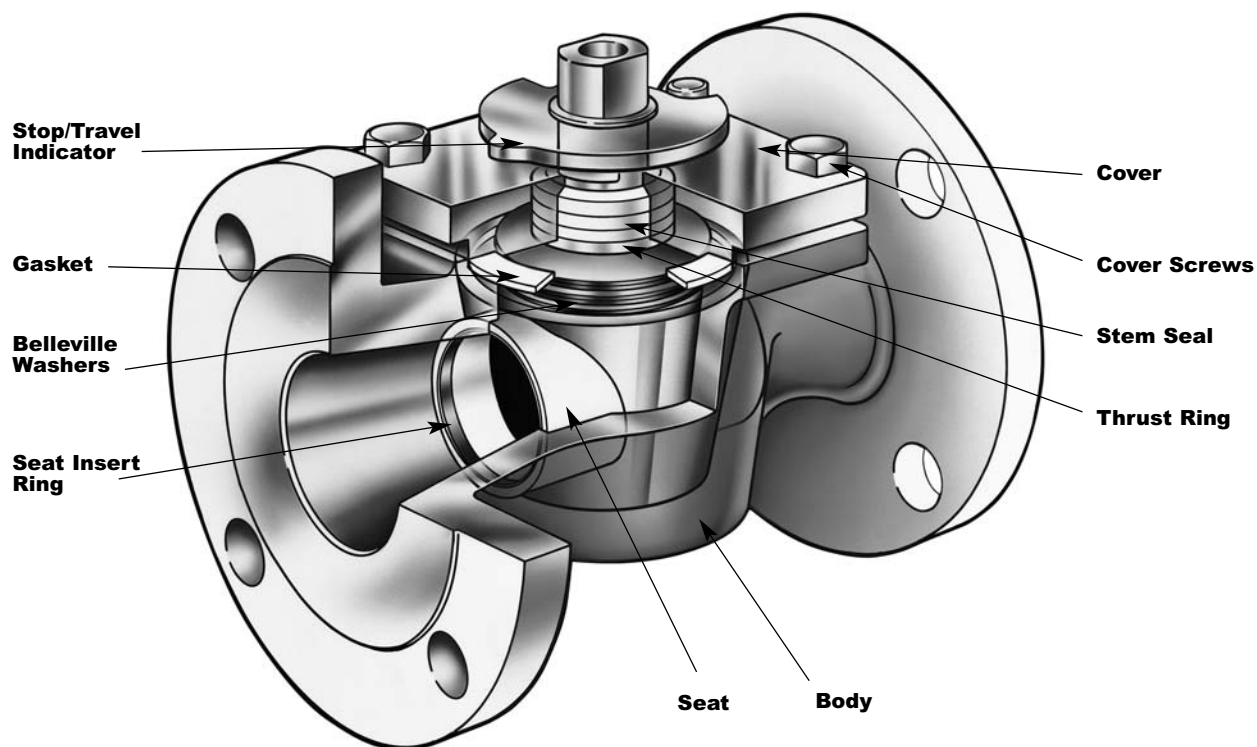


PERMASEAL® PLUG VALVES TECHNICAL SPECIFICATIONS



Materials of Construction

| | | | | | |
|---------------------------------|--|--|--|---|---|
| Body & Cover | Carbon Steel (CS) ASTM A216, Grade WCB -20–800°F (-28–425°C) | 316L Stainless Steel (S2), ASTM A351, Grade CF3M -425–850°F (-253–455°C) | Alloy 20 (AA) ASTM A351 Grade CN7M -425–300°F (-253–150°C) | Monel (ML) ASTM A494, Grade M35-1 -425–850°F (-253–455°C) | Hastelloy C (HC) ASTM A494 CW2M -425–1000°F (-253– 540°C) |
| Plug | 316L Stainless Steel ASTM A351, Grade CF3M | 316L Stainless Steel ASTM A351, Grade CF3M | Alloy 20 ASTM A351, Grade CN7M | Monel ASTM A494, Grade M35-1 | Hastelloy C ASTM A494 CW2M |
| Cover Screws | Carbon Steel | 304 Strain Hardened Stainless Steel | 304 Strain Hardened Stainless Steel | 304 Strain Hardened Stainless Steel | 304 Strain Hardened Stainless Steel |
| Belleville Washers | 316L Stainless Steel | 316L Stainless Steel | Alloy 20 | Inconel X-750 | Hastelloy C |
| Seat Insert Ring | 316L Stainless Steel | 316L Stainless Steel | Alloy 20 | Monel | Hastelloy C |
| Stop/Travel Indicator | Zinc Plated Steel | Zinc Plated Steel | Zinc Plated Steel | Zinc Plated Steel | Zinc Plated Steel |
| Seat Options: | | | | | |
| PTFE and Reinforced PTFE Seats: | | | | | |
| Gasket | Reinforced PTFE | Reinforced PTFE | Reinforced PTFE | Reinforced PTFE | Reinforced PTFE |
| Stem Seal | PTFE | PTFE | PTFE | PTFE | PTFE |
| Thrust Ring | 316 Stainless Steel 6" (150mm) | 316 Stainless Steel 6" (150mm) | Alloy 20 6" (150mm) | Monel 6" (150mm) | Hastelloy C 6" (150mm) |
| UHMW Polyethylene Seat: | | | | | |
| Gasket | UHMW Polyethylene | UHMW Polyethylene | UHMW Polyethylene | UHMW Polyethylene | UHMW Polyethylene |
| Stem Seal | UHMW Polyethylene | UHMW Polyethylene | UHMW Polyethylene | UHMW Polyethylene | UHMW Polyethylene |
| Thrust Ring | 316 Stainless Steel 1-6" (25-150mm) | 316 Stainless Steel 1-6" (25-150mm) | 316 Stainless Steel 1-6" (25-150mm) | Monel 1-6" (25-150mm) | Hastelloy C 1-6" (25-150mm) |
| Carbon Graphite Seat: | | | | | |
| Gasket | Compressed Graphite Fiber | Compressed Graphite Fiber | Compressed Graphite Fiber | Compressed Graphite Fiber | Compressed Graphite Fiber |
| Stem Seal | Graphoil | Graphoil | Graphoil | Graphoil | Graphoil |
| Thrust Ring | 316 Stainless Steel 1-6" (25-150mm) | 316 Stainless Steel 1-6" (25-150mm) | Alloy 20 1-6" (25-150mm) | Monel 1-6" (25-150mm) | Hastelloy C 1-6" (25-150mm) |

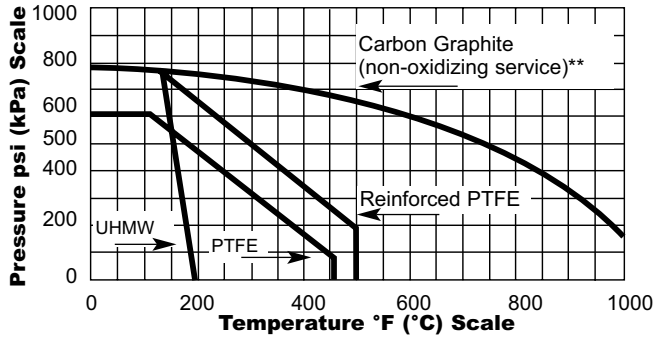


Valve Selection

Shutoff Capabilities

| | |
|---|----------|
| Carbon graphite seat | Class IV |
| PTFE, reinforced PTFE and UHMW polyethylene seats | Class VI |

Pressure vs. Temperature Capability .5–3" (15–80mm)



**For oxidizing service, contact factory.
For larger sizes, contact factory.

Maximum Pressure at Ambient Temperature (CWP)

| Body Material | ANSI 150 psi/kPa | ANSI 300 psi/kPa |
|-----------------|---------------------|---------------------|
| Carbon Steel | 285 1960 | 740 5100 |
| Stainless Steel | 275 1890 | 720 4960 |
| Alloy 20 | 230 1580 | 600 4130 |
| Monel | 230 1580 | 600 4130 |
| Hastelloy C | 285 1960 | 740 5100 |

Note: Consult ANSI standards for pressure/temperature limits of body. Use of carbon steel is permissible but not recommended for prolonged usage above 800°F (425°C). Temperature beyond 850°F (455°C) may reduce corrosion resistance of stainless steel. For Alloy 20 pressure vs. temperature capabilities, contact factory.

Cv/Kv Values

| Valve Size | 2-Way | 3-Way | | |
|--------------|-------|--------------|-------------------------|-------------------------|
| | | W Plug | | X, Y, Z* and T* Plugs |
| | | Ports A to B | Ports A to C and B to C | Ports A to C and B to C |
| .5" 15mm | 13 | 4.6 | 2.1 | 4.2 |
| | 11 | 4.0 | 1.8 | 3.6 |
| .75" 20mm | 13 | 4.6 | 2.1 | 4.2 |
| | 11 | 4.0 | 1.8 | 3.6 |
| 1" 25mm | 36 | 14.8 | 8.0 | 19 |
| | 31 | 12.8 | 6.9 | 16.4 |
| 1.5" 40mm | 90 | 28.2 | 12.0 | 34.0 |
| | 78 | 24.4 | 10.4 | 29.4 |
| 2" 50mm | 130 | 36.0 | 22.0 | 37 |
| | 112 | 31.1 | 19.0 | 32 |
| 2.5" 65mm | 180 | 63.0 | 35.0 | 75 |
| | 156 | 54.5 | 30.3 | 65 |
| 3" 80mm | 180 | 63.0 | 35.0 | 75 |
| | 156 | 54.5 | 30.3 | 65 |
| 4" 100mm | 260 | 92 | 52 | 125 |
| | 225 | 79.6 | 45 | 108.1 |
| 6" 150mm | 650 | 154.0 | 200 | 200 |
| | 562 | 133.2 | 173 | 173 |

* Cv/Kv values for the A to B ports on the Z3 and T2 plugs are the same as shown for 2-way plugs.

Cv = Flow in GPM of water at 1 psi pressure drop.

Kv = Flow in m³/hr. of water at 100 kPa pressure drop.

Seats

Standard

PTFE (polytetrafluoroethylene) possesses almost universal chemical inertness and is effected only by molten alkali metals, fluorine and chlorine trifluoride at elevated temperatures. Temperature range is -50–450°F (-45–232°C).

Options

UHMW (ultra high molecular weight polyethylene) has excellent resistance to radiation and abrasive applications. It is resistant to most chemicals except oxidizing acids and some hydrocarbon solvents. Temperature range is -50–175°F (-45–80°C).

Reinforced PTFE contains a filler to enhance the mechanical properties and allow higher pressure and temperature capabilities. Seat does not provide gas tight shutoff at ambient temperatures. Temperature range is -50–500°F (-45–260°C).

Carbon Graphite is a high temperature, corrosion resistant material. It does not provide drip-tight shutoff. Temperature range is -50–1000°F (-45–540°C). (Consult ANSI standards for pressure/temperature limits of body.)

Valve Weights

2-Way Basic Valve Does not include actuator

| Valve Size | Buttweld, Socket and Threaded lbs/kg | Flanged | |
|-------------------|--------------------------------------|------------|-----------|
| | | Class 150 | Class 300 |
| .5" 15mm | 2 1 | 3.5 1.5 | 4.5 2 |
| .75" 20mm | 2 1 | 5 2.5 | 6 3 |
| 1" 25mm | 6 3 | 10 4.5 | 14 6.5 |
| 1.5" 40mm | 8 4 | 14 6.5 | 18 8 |
| 2" 50mm | 12 5.5 | 18 8 | 24 11 |
| 2.5-3" 65-80mm | 19 9 | 34 15 | 49 22 |
| 4" 100mm | 30 14 | 54 24.5 | 73 33 |
| 6" 150mm | 88 40 | 122 55 | 168 76 |

Note: Weights are approximate and do not include crating.

3-Way Basic Valve Does not include actuator

| Valve Size | Buttweld, Socket and Threaded lbs/kg | Flanged | |
|-------------------|--------------------------------------|-----------|------------|
| | | Class 150 | Class 300 |
| .5" 15mm | 3 1.5 | 4.5 2 | 5.5 2.5 |
| .75" 20mm | 3 1.5 | 6 3 | 7 3.2 |
| 1" 25mm | 7 3 | 12 5.5 | 18 8 |
| 1.5" 40mm | 9 4 | 20 10 | 24 11 |
| 2" 50mm | 13 6 | 25 11 | 32 15 |
| 2.5-3" 65-80mm | 20 10 | 44 20 | 64 29 |
| 4" 100mm | 32 15 | 66 30 | 96 44 |
| 6" 150mm | 92 42 | 139 63 | 208 94 |

Actuators

Lever (LV)

| | | |
|-------------------|---|----------------|
| .5-2" (15-50mm) | = | 1.5 lbs (1 kg) |
| 2.5-4" (65-100mm) | = | 2 lbs (1.9 kg) |

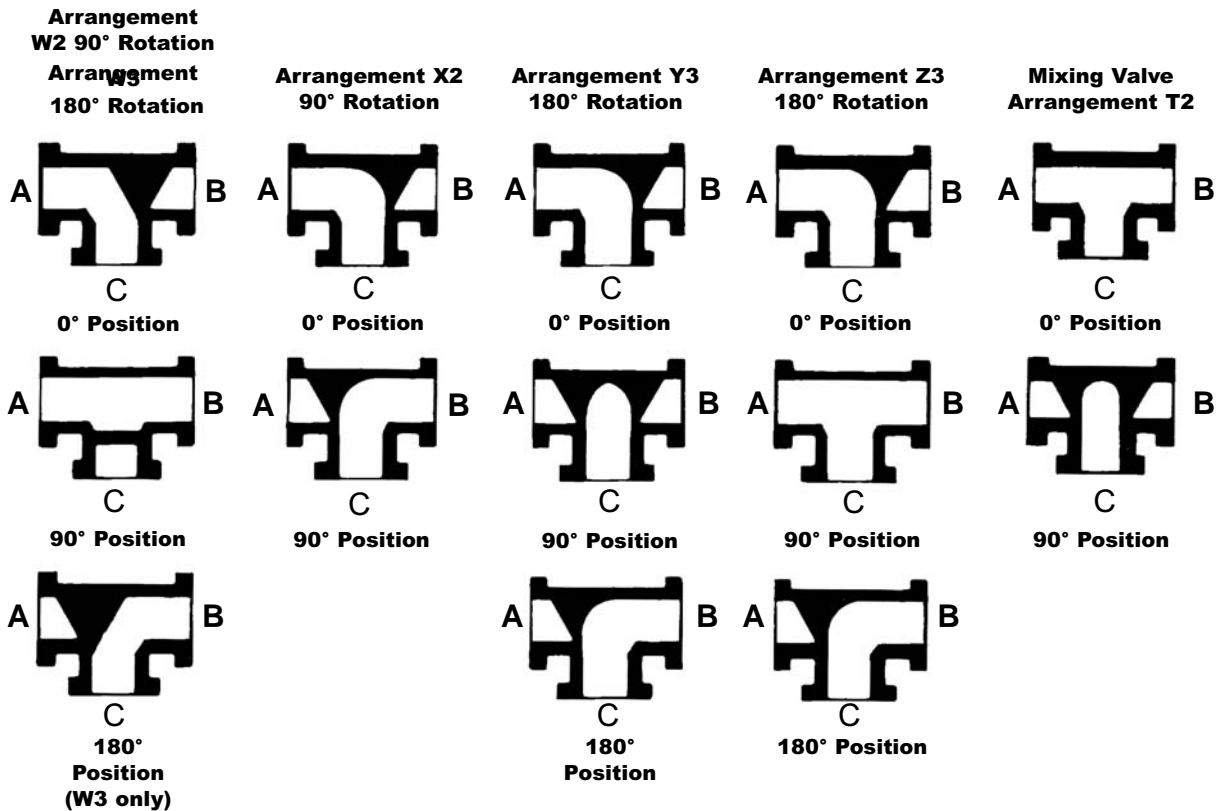
Refer to specific actuator bulletins for weights of handwheels and cylinder actuators.

Applicable Standards

Southern Manufacturing Group Permaseal Plug Valve has been designed and/or tested to meet the following standards:

| | |
|--------------------------|--|
| ANSI B1.20.1 | Conforms to pipe thread requirements. |
| ANSI B16.10 | Conforms to face-to-face dimension requirements. |
| ANSI B16.25 | Buttwelding Ends – Conforms to requirements of Schedule 40 pipe, without backing ring. |
| ANSI B16.34 | Valves, Flanged and Buttwelding Ends – Conforms to wall thickness requirements and pressure-temperature ratings. |
| ANSI B16.5 | Pipe Flanges and Flanged Fittings – Conforms to flange thickness and drilling requirements. |
| ANSI B16.42 | Ductile Iron Pipe Flanges and Flanged Fittings – Conforms to flange drilling requirements. |
| MSS-SP-84 | Steel Valves, Socket Welding and Threaded Ends – Conforms to socket weld end requirements. |
| MSS-SP-25 | Conforms to related marking requirements. |
| MSS-SP-61 | Conforms to production testing requirements. |
| U.S. Coast Guard | Approved for Category B service. |
| British Standard BS 4504 | Flanges are drilled to standard PN10, PN16, PN25 and PN40. |

3-Way Plug and Flow Arrangements



Note: Three-way plugs are recommended for diverting applications, with pressure at port C. Mixing applications with pressure at ports A and B may result in leakage.

The above valve plug configurations will mix A and B equally into C. The amount of mixing can be controlled by the position of the plug.

Actuators

Lever Actuators

Valve sizes .5–4" (15–100mm) are available with lever actuators. They are carbon steel on .5" (15mm) and .75" (20mm) valves and cast iron on 1–4" (25–100mm). To order, add LV to basic valve identification.

Ordering Example:

PPS,3,F1,CS,2W,T*LV

Handwheel Actuators

For information on manual actuators, refer to bulletin 72.00-1 and 72.00-2.

Compak Cylinder Actuators

Compak actuators are a versatile rack-and-pinion design and are available as double-acting or spring-return units. The compact, modular design allows the actuator to be mounted for a low profile assembly. Compak actuators are matched to each valve's torque requirements to ensure that the most economical valve and actuator package is specified. For information on Compak actuators, refer to bulletin 71.00-1 and 71.00-2.

Electric Motors

Electric motors offer reliable and economical valve operation. When ordering electric motor actuators, specify: electrical characteristics, flowing media, pressure drop, speed of operation and actuator accessories or controls required. Contact Southern Manufacturing Group for additional information.

Ordering

To order, simply complete the valve order code from information shown. An ordering example is shown for your reference.

| | |
|--|------------------------|
| Valve Style | |
| Give valve style code as follows: | |
| PPS | = Permaseal Plug Valve |

| | | | |
|---|---------------|-----|---------------|
| Valve Size | | | |
| Give valve size code as follows: | | | |
| .5 | = .5" (15mm) | 2.5 | = 2.5" (65mm) |
| .75 | = .75" (20mm) | 3 | = 3" (80mm) |
| 1 | = 1" (25mm) | 4 | = 4" (100mm) |
| 1.5 | = 1.5" (40mm) | 6 | = 6" (150mm) |
| 2 | = 2" (50mm) | | |

| | |
|--|---|
| End Connection | |
| Give end connection code as follows: | |
| Class 150 | |
| F1 | = Flanged, ANSI Class 150 |
| F110 | = Flanged, Class 150 DIN 10 or BS4504/10 |
| F116 | = Flanged, Class 150 DIN 16 or BS4504/16 |
| T1 | = Threaded, ANSI Class 150 .5-2" (15-50mm) |
| BW11 | = Butt Weld, Class 150 (Schedule 10 Pipe) |
| BW14 | = Butt Weld, Class 150 (Schedule 40 Pipe) |
| SW1 | = Socket Weld, Class 150 .5-2" (15-50mm) |
| Class 300 | |
| F2 | = Flanged, ANSI Class 300 |
| F225 | = Flanged, Class 300, DIN 25 or BS4504/25 |
| F240 | = Flanged, ANSI Class 300 DIN 40 or BS4504/40 |
| T2 | = Threaded, Class .5-2" (15-50mm) |
| BW24 | = But Weld, Class 300 (Schedule 40 Pipe) |
| BW28 | = Butt Weld, Class 300 (Schedule 80 Pipe) |
| SW2 | = Socket Weld, Class 300 .5-2" (15-50mm) |
| JIS end connections and butt weld for other pipe schedules are available on application. | |

| | |
|--|--|
| Body Material | |
| Give body material code as follows: | |
| CS | = Carbon Steel, 316 Stainless Steel Plug |
| S2 | = 316L Stainless Steel, 316 Stainless Steel Plug |
| AA | = Alloy 20, Alloy 20 Plug |
| HC | = Hastelloy "C", Hastelloy "C" Plug |
| ML | = Monel, Monel Plug |

| | |
|---|-----------------------|
| Body and Plug Combination | |
| Give combination code as follows: | |
| 2W | = 2-Way |
| W2 | = 3-Way, W2 Position |
| X2 | = 3-Way, X2 Position |
| T2 | = 3-Way, T2 Position |
| W3 | = 3-Way, W3 Position* |
| Y3 | = 3-Way, Y3 Position* |
| Z3 | = 3-Way, Z3 Position* |
| *Note: 3 Position Plug combinations are available with lever and special actuators only. | |

| | |
|--|-------------------------|
| Seat Seal Material | |
| Give seat seal material code as follows: | |
| T | = PTFE (1) |
| TF | = Reinforced PTFE (1) |
| UHMW | = UHMW Polyethylene (2) |
| G1 | = Carbon Graphite (3) |
| Note: 1. Not available on 6" (150mm) ANSI Class 300 valves. 2. UHMW includes UHMW packing and gaskets. 3. .5" and .75" (15 and 20mm) not available with G1 seats. | |

| | |
|---|---|
| Optional Construction | |
| Give option code as follows: | |
| FJ | = Full Jacket 2-Way Flanged .75-2" (20-50mm) and 3-6" (80-150mm) |
| PJ | = Partial Jacket 2-Way Flanged |
| Note: Bolt-on jackets must be ordered as a separate item. Enter ACC*BJ2W followed by the flanged end style code (F1 or F2) then a dash and the appropriate valve size. | |

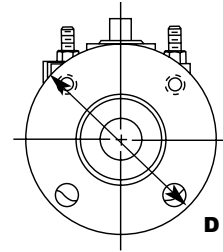
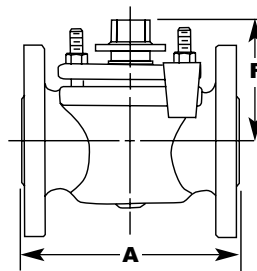
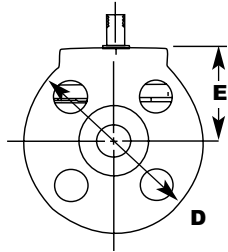
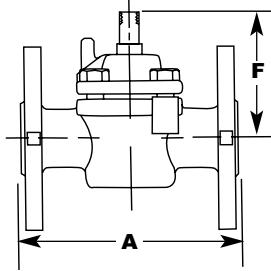
Ordering Example:
PPS,2,F1,S2,2W,T*actuator

Dimensions Basic Valve, 2-Way

Flanged

.5 and .75" (15 and 20mm)

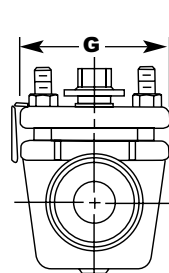
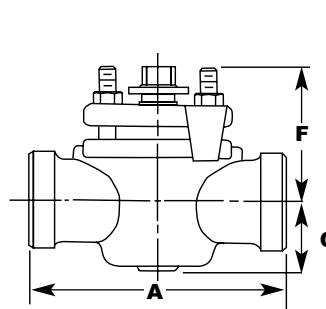
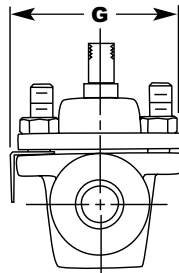
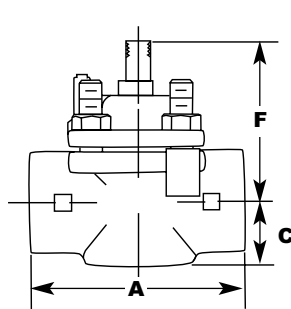
1-6" (25-150mm)



Butt Weld, Socket Weld, Threaded

.5 and .75" (15 and 20mm)

1-6" (25-150mm)



2-Way Valves

| Valve Size | Dimensions | | | | | | | | | |
|--------------|----------------------------------|--------------|--------------|----------------------------------|--------------|--------------|------------|------------|--------------------------------|----------------------------------|
| | A | | | C | D | | E | | F | G |
| | Butt Weld, Socket Weld, Threaded | Flanged | | Butt Weld, Socket Weld, Threaded | Flanged | | Flanged | | Flanged, Socket Weld, Threaded | Butt Weld, Socket Weld, Threaded |
| | ANSI 150 and 300 | ANSI 150 | ANSI 300 | ANSI 150 and 300 | ANSI 150 | ANSI 300 | ANSI 150 | ANSI 300 | ANSI 150 and 300 | ANSI 150 and 300 |
| .5" 15mm | 3.25 83 | 4.25 108 | 5.50 140 | .94 24 | 3.50 89 | 3.75 95 | 1.75 44 | 2.00 51 | 2.41 61 | 2.50 64 |
| .75" 20mm | 3.25 83 | 4.62 118 | 6.00 152 | .94 24 | 3.88 98 | 4.62 118 | 1.94 49 | 2.78 71 | 2.41 61 | 2.50 64 |
| 1" 25mm | 5.50 140 | 5.50 140 | 6.50 165 | 1.62 41 | 4.25 108 | 4.88 124 | - | - | 3.16 80 | 3.50 89 |
| 1.5" 40mm | 6.50 165 | 6.50 165 | 7.50 191 | 1.75 44 | 5.00 127 | 6.12 155 | - | - | 3.03 77 | 3.62 92 |
| 2" 50mm | 7.00 178 | 7.00 178 | 8.50 216 | 2.00 51 | 6.00 152 | 6.50 165 | - | - | 3.41 87 | 4.00 102 |
| 2.5" 65mm | - | 8.00 203 | 9.50 241 | - | 7.00 178 | 7.50 191 | - | - | 3.62 92 | - |
| 3" 80mm | 8.00 203 | 8.00 203 | 11.12 282 | 2.31 59 | 7.50 191 | 8.25 210 | - | - | 3.62" 92 | 4.94 126 |
| 4" 100mm | 9.00 229 | 9.00 229 | 12.00 305 | 2.60 67 | 9.00 229 | 10.00 254 | - | - | 3.88" 99 | 5.75 146 |
| 6" 150mm | 10.50 267 | 10.50 267 | 15.88 403 | 3.91 99 | 11.00 279 | 12.50 318 | - | - | 5.38" 137 | 8.12 206 |

Inches
Millimeters

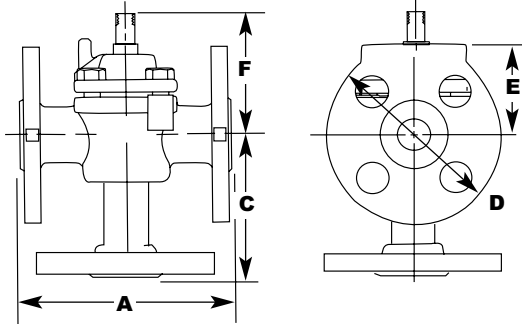
**Butt Weld and Flanged only.

Note: Dimensions are subject to change without notice. Request certified drawings.

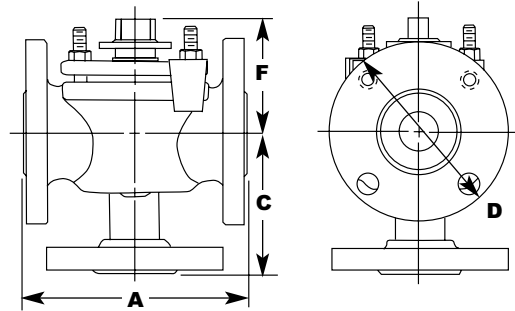
Basic Valve, 3-Way

Flanged

.5 and .75" (15 and 20mm)

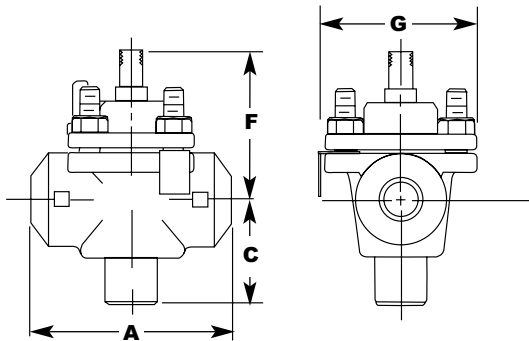


1-6" (25-150mm)

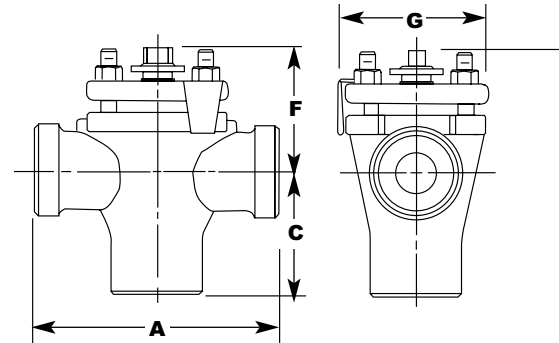


Butt Weld, Socket Weld, Threaded

.5 and .75" (15 and 20mm)



1-6" (25-150mm)



3-Way Valves

| Valve Size | Dimensions | | | | | | | | | | | | |
|--------------|----------------------------------|------------------|--------------|----------------------------------|---------------|------------------|--------------|--------------|------------|------------|--------------------------------|----------------------------------|----------|
| | A | | | C | | | | D | | E | | F | G |
| | Butt Weld, Socket Weld, Threaded | Flanged | | Butt Weld, Socket Weld, Threaded | Flanged | | Flanged | | Flanged | | Flanged, Socket Weld, Threaded | Butt Weld, Socket Weld, Threaded | |
| | | ANSI 150 and 300 | ANSI 150 | | ANSI 300 | ANSI 150 and 300 | ANSI 150 | ANSI 300 | ANSI 150 | ANSI 300 | | | ANSI 150 |
| .5" 15mm | 3.25 83 | 4.25 108 | 5.50 140 | 1.69 43 | 2.75 69.8 | 2.88 73.2 | 3.50 89 | 3.75 95 | 1.75 44 | 2.00 51 | 2.41 61 | 2.50 64 | |
| .75" 20mm | 3.25 83 | 4.62 118 | 6.00 152 | 1.75 44 | 2.94 74.6 | 3.00 76.2 | 3.88 98 | 4.62 118 | 1.94 49 | 2.78 71 | 2.41 61 | 2.50 64 | |
| 1" 25mm | 5.50 140 | 5.50 140 | 6.50 165 | 2.62 67 | 3.50 88.9 | 3.75 95.2 | 4.25 108 | 4.88 124 | - | - | 3.16 80 | 3.50 89 | |
| 1.5" 40mm | 6.50 165 | 6.50 165 | 7.50 191 | 3.06 78 | 4.12 104.6 | 4.38 111.3 | 5.00 127 | 6.12 155 | - | - | 3.03 77 | 3.62 92 | |
| 2" 50mm | 7.00 178 | 7.00 178 | 8.50 216 | 3.38 86 | 4.50 114.3 | 4.75 120.6 | 6.00 152 | 6.50 165 | - | - | 3.41 87 | 4.00 102 | |
| 2.5" 65mm | - | 8.00 203 | 9.50 241 | - | 5.12 130.0 | 5.56 141.2 | 7.00 178 | 7.50 191 | - | - | 3.62 92 | - | |
| 3" 80mm | 8.00 203 | 8.00 203 | 11.12 282 | 4.00 102 | 5.12 130.0 | 5.56 141.2 | 7.50 191 | 8.25 210 | - | - | 3.62** 92 | 4.94 126 | |
| 4" 100mm | 9.00 229 | 9.00 229 | 12.00 305 | 4.50 114 | 6.0 152.4 | 6.75 171.4 | 9.00 229 | 10.00 254 | - | - | 3.88** 99 | 5.75 146 | |
| 6" 150mm | 10.50 267 | 10.50 267 | 15.88 403 | 6.26 160 | 7.50 190.5 | 8.50 215.9 | 11.00 279 | 12.50 318 | - | - | 5.38** 137 | 8.12 206 | |

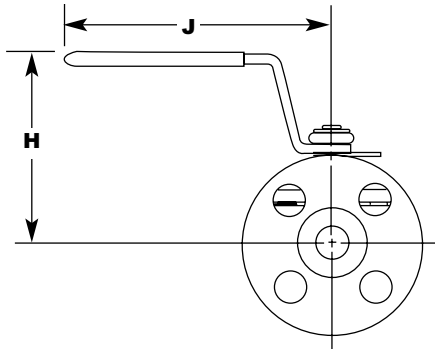
Inches
Millimeters

**Butt Weld and Flanged only.

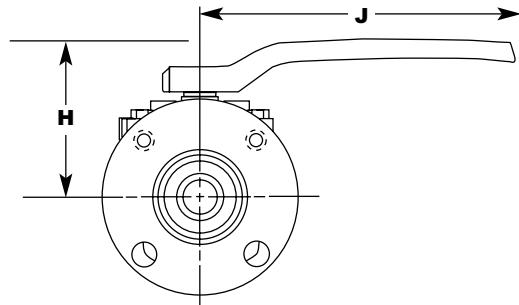
Lever

Flanged

.5 and .75" (15 and 20mm)

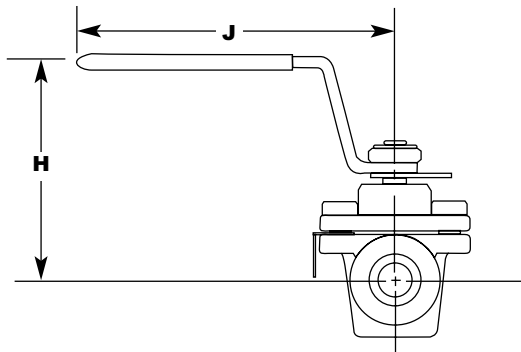


1-4" (25-100mm)

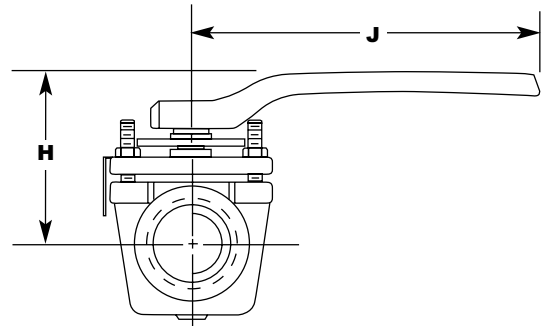


Butt Weld, Socket Weld, Threaded

.5 and .75" (15 and 20mm)



1-4" (25-100mm)



Lever

| Valve Size | Dimensions | |
|--------------|---|----------------|
| | Butt Weld, Socket Weld, Threaded and Flanged ANSI 150 and 300 | |
| | H | J |
| .5" 15mm | 3.69 94 | 5.12 130 |
| .75" 20mm | 3.69 94 | 5.12 130 |
| 1" 25mm | 4.25 108 | 9.00 229 |
| 1.5" 40mm | 4.56 116 | 9.00 229 |
| 2" 50mm | 4.62 117 | 9.00 229 |
| 2.5" 65mm | 5.50* 140 | 12.19* 310 |
| 3" 80mm | 5.50** 140 | 12.19** 310 |
| 4" 100mm | 5.75** 146 | 12.19* 310 |

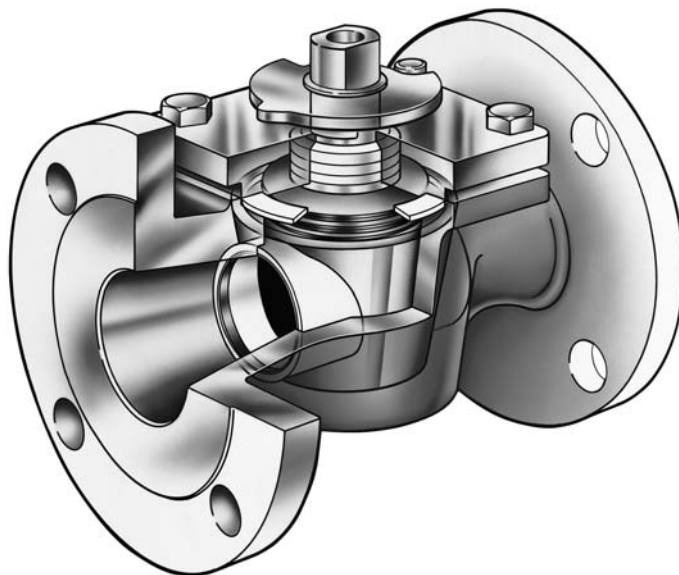
**Butt weld and flanged only.

*Flanged only.

Sales and Service

SOUTHERN MANUFACTURING GROUP representatives are located in major cities throughout the United States.
For the name of the representative nearest you, contact:

Web Site: www.smg-global.com E-Mail: smginc@BLomand.Net



Southern Manufacturing Group

Permaseal® Plug Valves

7693 Manchester Hwy.
Morrison, TN 37357
Phone: (931) 668-5377
Fax: (931) 668-5378
Email: smginc@blomand.net
Web: www.smg-global.com
A Unit of SMG

| | |
|------------|---|
| SMG | Southern Manufacturing Group, Inc. |
|------------|---|

SOUTHERN MANUFACTURING GROUP, INC. reserves the right to incorporate our latest design and material changes without notice or obligation. Design features, materials of construction and dimensional data, as described in this bulletin, are provided for your information only and should not be relied upon unless confirmed in writing by SOUTHERN MANUFACTURING GROUP, INC. Certified drawings are available upon request.