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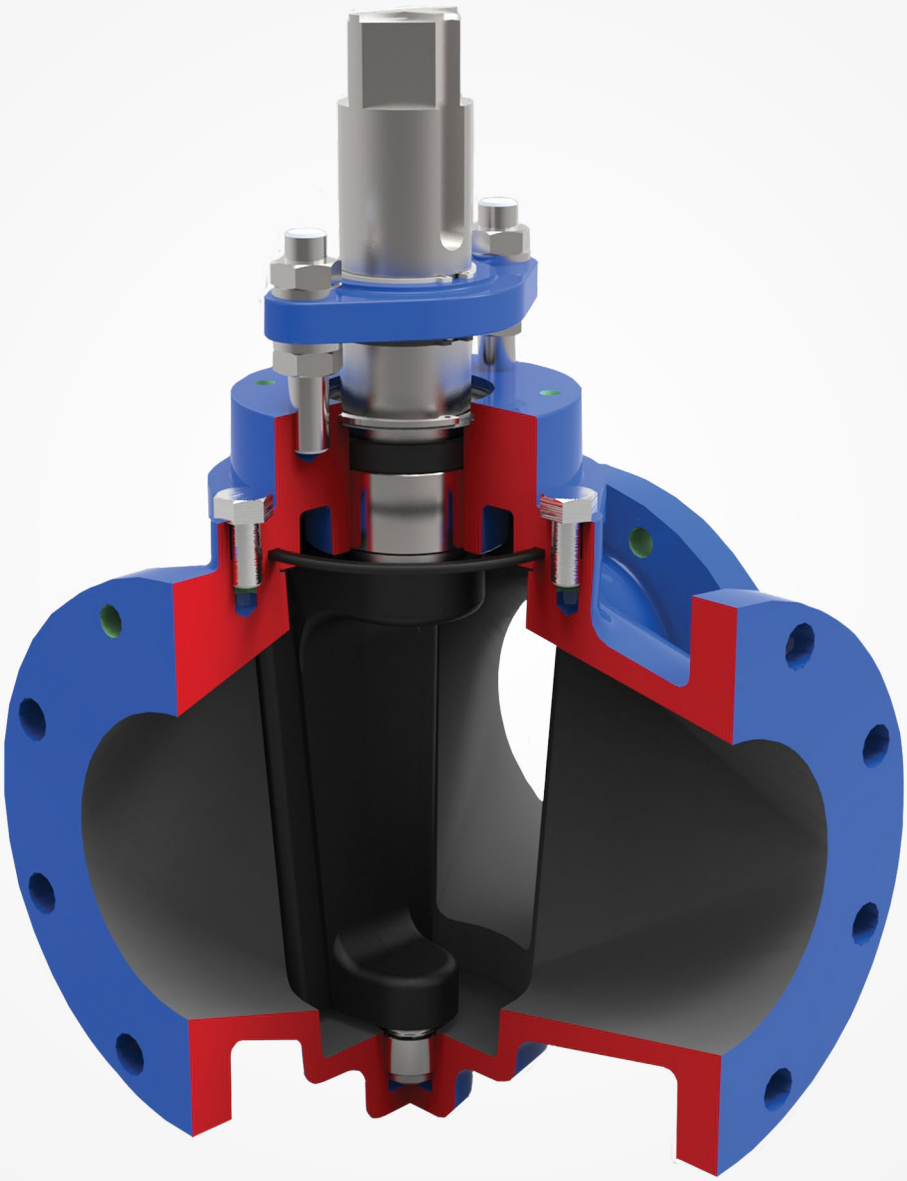
100% Port 3-Way Plug Valve



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MILLIKEN® MILLCENTRIC® 100% PORT 3-WAY PLUG VALVE

Quality, reliability, safety and value are the criteria embodied in the Millcentric 100% Port 3-Way plug valve.

High quality manufacturing processes from advanced CAD engineering to CNC machining ensure reliable operation with high flow capability.

The Millcentric 100% Port 3-Way plug valve is designed for regulation, diversion and isolation of water (clean or dirty) and sludge and slurries. The single tapered plug design can be arranged to provide a wide selection of flow configurations.

High flow and large solids passage is a key feature of the Millcentric 100% Port 3-Way valve; a 3″ round solid can pass through a 4″ valve without compression.

Although the regular usage of a Millcentric 3-Way valve is for flow diversion applications, the valve can provide tight shut-off, which is factory set when requested at order placement. (Not available with double-style plug or on 14″ and 16″ valves).

BODY & SEAT

The Millcentric 3-Way valve body is a high integrity casting in cast iron ASTM A126 Class B. The precision machined, internal tapered surface of the body is the valve seat which is provided with a corrosion and erosion resistant epoxy coating. Other materials are available.

END CONNECTIONS

The 3-flanges are to ASME / ANSI B16.1 Class 125 flat faced.

Certain sizes of valve require some tapped bolt holes because of limited access for nuts behind the flange, details are shown on page 5.

PLUG

The ductile iron plug is totally encapsulated (3″ thru 12″) with a molded and vulcanized elastomer providing sealing and tight shut-off. For tight shut-off applications, it is advisable that the flow is against the rear of the plug. Tight shut-off not available with double-style plug or on 14″ and 16″ valves.

A large-diameter stem and upper and lower trunnion are integral with the plug casting. The upper end of the stem has a 2″ square drive for wrench operation and also 2 keyways for maximum versatility when mounting gear operators. A cast marking on the end of the shaft indicates the plug face orientation.

The single style plug is standard in the Millcentric 3-Way valve to provide straight-through and 90° flow paths. A double-style plug is optionally available upon request (not tight shut-off).

BEARINGS

The plug rotates in permanently lubricated, corrosion resistant stainless steel bearings in the body and bonnet.

BONNET SEAL

The bolted bonnet is assembled in a precision location in the body and uses superior ‘O’-Ring sealing, with metal to metal contact, providing lower stress compared to traditional gaskets.

STEM SEAL

Multiple self-adjusting U-cup seals provide positive stem sealing with trouble-free service.

OPERATION

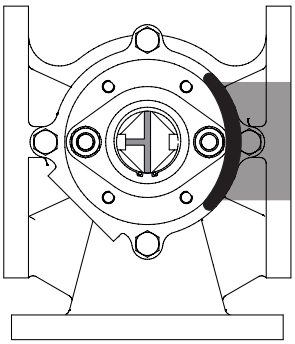
Manual operation by lever or gear available on all sizes. Chainwheel operation is also available.

Electric or pneumatic actuation is available on request.

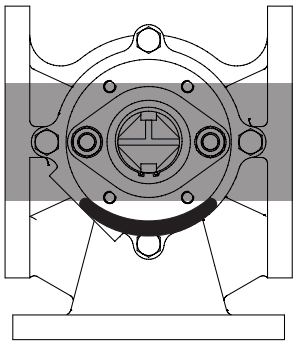
COATING

The valve interior and exterior surfaces are coated with 10-12 mils of 2-Part epoxy.

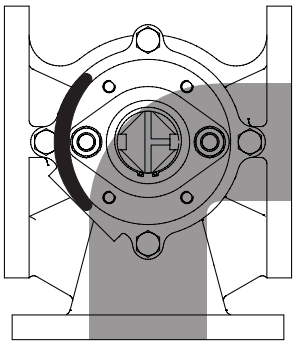
AVAILABLE FLOW PATHS



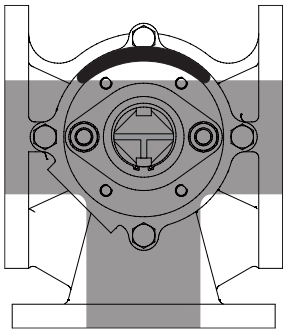
VALVE IN CLOSED POSITION*



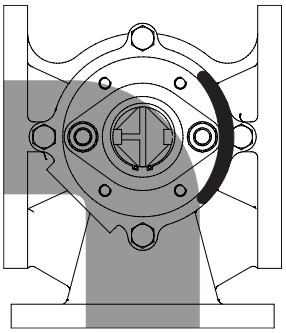
FLOW STRAIGHT THROUGH VALVE



FLOW THROUGH 90˚ TO SIDE PORT



ALL 3 PORTS CONNECTED AND OPEN



FLOW THROUGH 90˚ TO SIDE PORT

*It is advisable that the flow is against the rear side of the plug for tight shut-off applications. Not available with double-style plug.

PRESSURE / TEMPERATURE RATINGS

Flange rating to ASME / ANSI B16.1 Class 125, the maximum cold working pressure for all sizes is 175psi.

The operating temperature of the valve may depend on the elastomer used for the plug and seals. Refer to the elastomer selection guide on page 4.

INSTALLATION

The Millcentric® 3-Way valve can be installed in any orientation although it is advisable to have the valve stem vertical for ease of access.

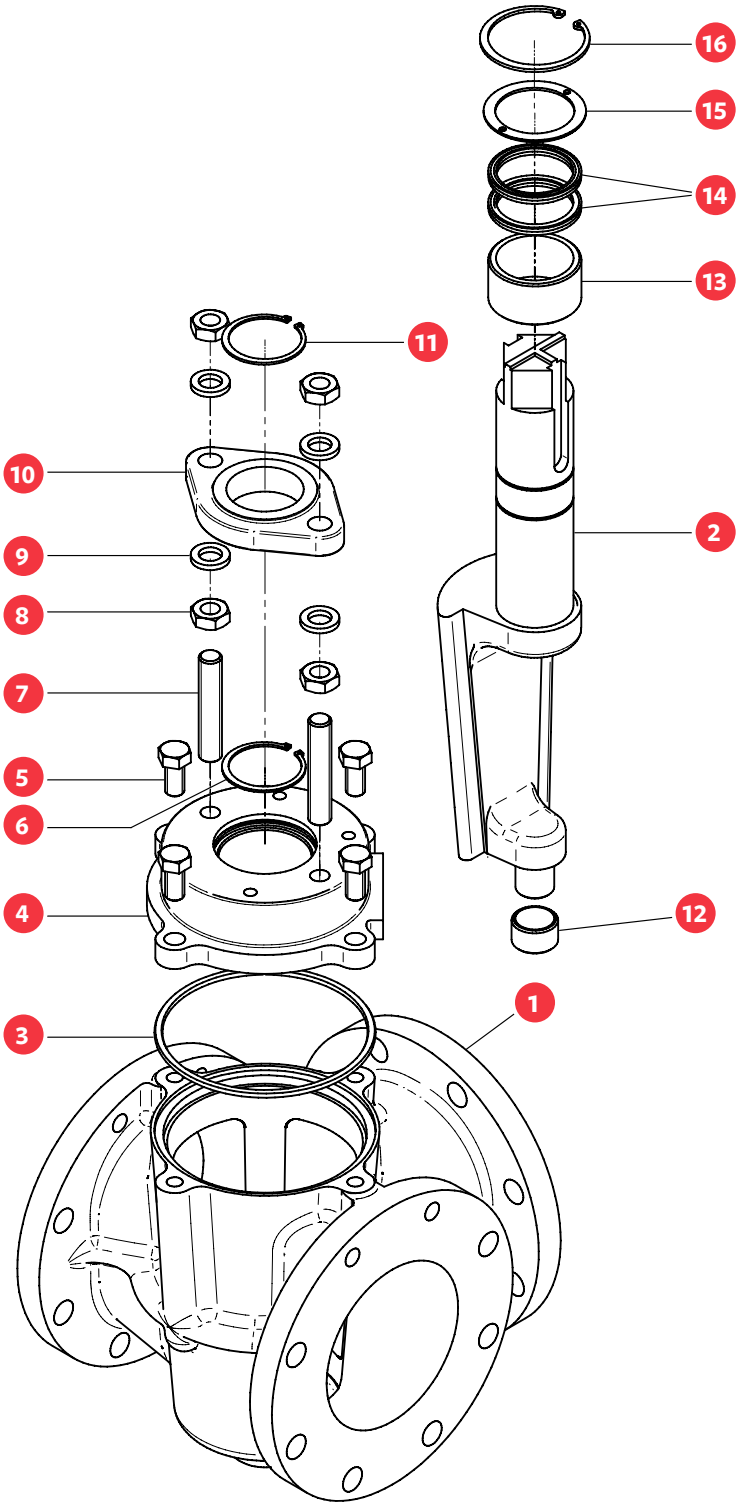
If the valve has been supplied for tight shut-off, the flow path and therefore the upstream pressure should be against the rear side of the plug.

IN-LINE MAINTENANCE

In the unlikely event of gland leakage, the stem seals can be replaced without removing the bonnet. Access to the inside of the body for inspection or cleaning does not require removal of the valve from the line.

If wear should occur between the plug face and the seat, the plug can be adjusted externally.

STANDARD MATERIALS OF CONSTRUCTION – 3" TO 16"



ITEM	COMPONENT	MATERIAL
1	Body	Cast Iron A126 Class B
2	Plug	Ductile Iron ASTM A536 Rubber Coated
3	Bonnet 'O'-Ring	Elastomer as Specified
4	Bonnet	Cast Iron A126 Class B
5	Setscrew	Steel - Zinc Plated
6	Snap Ring - External	Steel
7	Stud	Steel - Zinc Plated
8	Nut	Steel - Zinc Plated
9	Washer	Steel - Zinc Plated
10	Gland	Ductile Iron ASTM A536
11	Snap Ring - External	Steel
12	Journal Bearing	Stainless Steel
13	Journal Bearing	Stainless Steel
14	'U' Cup Seal	Elastomer as Specified
15	Seal Retaining Ring	Brass
16	Snap Ring - Internal	Steel

ELASTOMERS AVAILABLE

For Millcentric® 100% Port 3-Way Valves

NBR - NITRILE

A general purpose material sometimes referred to as BUNA N with a temperature range -20°F to 212°F. Used on sewage, water, air, hydrocarbon and mineral oils.

EPDM

An excellent polymer for use on chilled water through to LP steam applications, having a temperature range of -20°F to 250°F. Resistance to many acids, alkalies, detergents, phosphate esters, alcohols and glycols is an added benefit. Use on hydrocarbons **must** be avoided.

CR - NEOPRENE

This versatile material shows outstanding resistance to abrasion and ozone. Chemical resistance to a wide range of petroleum based products and dilute acids and alkalies. Temperature range -20˚F to 225˚F.

FKM - VITON®

Retention of mechanical properties at high temperature is an important feature of this elastomer: temperature range is -10°F to 300°F. It also has excellent resistance to oils, fuels, lubricants and most mineral acids and aromatic hydrocarbons. NOT suitable for water or steam applications.

PRESSURE RATING

Size	Drilling	Pressure
3″ to 16″	Class 125	175 psig

Body (Shell) Hydrotest = 1.5 x rated pressure

Seat Hydrotest = 1.0 x rated pressure

(for tight shut-off applications only)

ORDERING INFORMATION

Valve Types	Designation
Class 125 Flanged Cast Iron	604
Class 125 Flanged Ductile Iron	614
Class 125 Flanged 316 Stainless Steel	604S
Seat	
Epoxy (604 / 614)	E
Stainless Steel (604S)	S
Elastomer Trim	
EPDM	0
Nitrile (Buna)	1
Viton	2
Neoprene	3
Gear Operators	
Gearbox complete with handwheel	AGHW

Available in 90˚, 180˚, 270˚ and 360˚ configurations.

Style

Available port positions as shown on page 8.

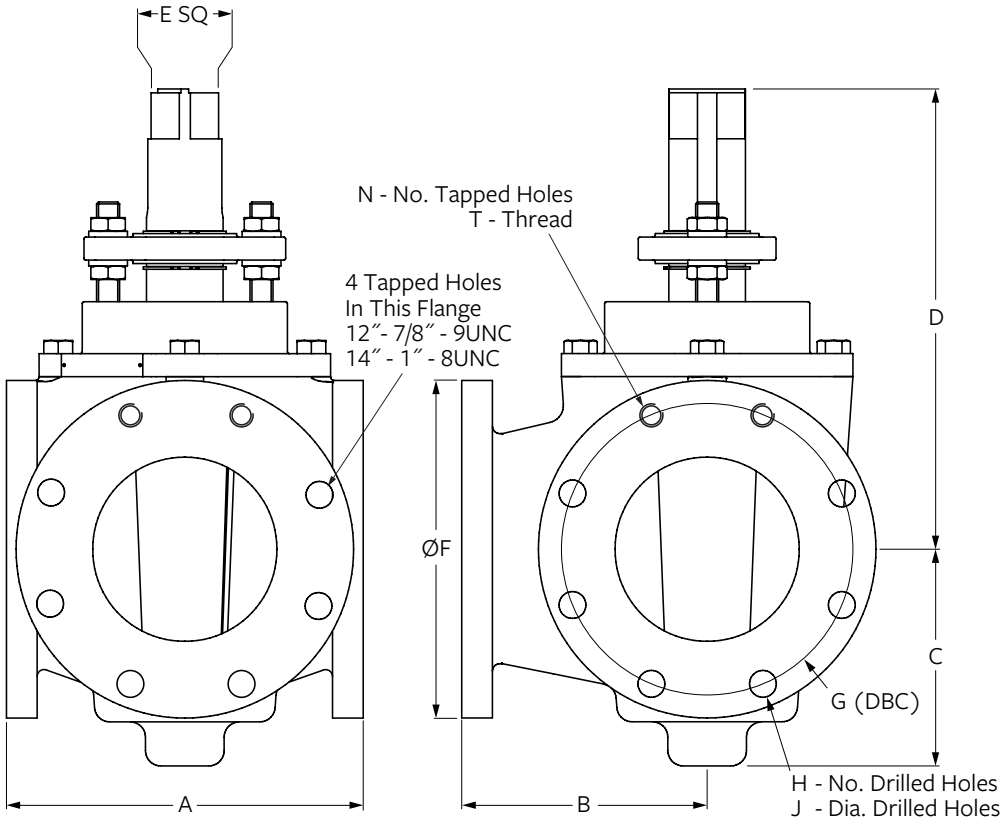
The style can be factory set and should be requested at time of order.

ELASTOMER SELECTION CHART

SERVICE	ELASTOMER	AVERAGE USEFUL TEMPERATURE RANGE	SERVICE	ELASTOMER	AVERAGE USEFUL TEMPERATURE RANGE	SERVICE	ELASTOMER	AVERAGE USEFUL TEMPERATURE RANGE
Acetone	EPDM	-35˚F to 250˚F	Copper Sulphate	EPDM	-35˚F to 250˚F	Oil Mobil Therm 600	Viton	10˚F to 250˚F
Alcohol, Amyl	EPDM	0˚F to 212˚F	Creosote (Coal)	Nitrile	-20˚F to 212˚F	Oil Mobil Therm 603	Nitrile	-20˚F to 212˚F
Alcohol, Aromatic	Viton	10˚F to 250˚F	Coal Slurry	Nitrile	-20˚F to 212˚F	Oil Lubricating	Nitrile	-20˚F to 212˚F
Alcohol, Butyl	Neoprene	-20˚F to 225˚F	Diesel Fuel No. 3	Nitrile	-20˚F to 212˚F	Oil Vegetable	Nitrile	-20˚F to 212˚F
Alcohol, Denatured	Nitrile	-20˚F to 212˚F	Diethylene Glycol	EPDM	-35˚F to 250˚F	Paint Latex	Nitrile	-20˚F to 212˚F
Alcohol, Ethyl	EPDM	-35˚F to 250˚F	Ethylene Glycol	EPDM	-35˚F to 250˚F	Phosphate Ester	EPDM	-35˚F to 250˚F
Alcohol, Grain	Nitrile	-20˚F to 212˚F	Fatty Acid	Nitrile	-20˚F to 212˚F	Propane	Nitrile	-20˚F to 212˚F
Alcohol, Isospropyl	Neoprene	-20˚F to 225˚F	Fuel Oil No. 2	Nitrile	-20˚F to 212˚F	Rape Seed Oil	EPDM	-35˚F to 250˚F
Alcohol, Methyl	EPDM	-35˚F to 250˚F	Fertilizer Liquid ($H_4N_2O_2$)	EPDM	-35˚F to 250˚F	Sewage with Oil	Nitrile	-20˚F to 212˚F
Ammonia, Anhydrous	Neoprene	-20˚F to 225˚F	Gasoline Keg	Nitrile	-20˚F to 212˚F	Sodium Hydroxide 20%	EPDM	-35˚F to 250˚F
Ammonia, Nitrate	EPDM	-35˚F to 250˚F	Gas Natural	Nitrile	-20˚F to 212˚F	Starch	EPDM	-35˚F to 250˚F
Ammonia, Water	EPDM	-35˚F to 250˚F	Glue Animal	Nitrile	-20˚F to 212˚F	Steam 250˚F	EPDM	-35˚F to 250˚F
Animal Fats	Nitrile	-20˚F to 212˚F	Green Liquor	EPDM	-20˚F to 212˚F	Stoffard Solvent	Nitrile	-20˚F to 80˚F
Black Liquor	EPDM	-35˚F to 250˚F	Hydraulic Oil	Nitrile	-20˚F to 212˚F	Sulphuric Acid 10% 50%	Neoprene	-20˚F to 158˚F
Blast Furnace Gas	Neoprene	-20˚F to 225˚F	Hydrogen	Nitrile	-20˚F to 212˚F	Sulphuric Acid 100%	Viton	10˚F to 300˚F
Butane	Nitrile	-20˚F to 212˚F	JP4 JP5	Viton	-20˚F to 212˚F	Trichlorethylene Dry	Viton	10˚F to 300˚F
Bunker Oil “C”	Nitrile	-20˚F to 212˚F	Kerosene	Nitrile	0˚F to 212˚F	Triethanol Amine	EPDM	-35˚F to 250˚F
Calcium Chloride	EPDM	-35˚F to 250˚F	Ketone	EPDM	-35˚F to 250˚F	Varnish	Viton	10˚F to 300˚F
Carbon Dioxide	EPDM	-35˚F to 250˚F	Lime Slurry	EPDM	-35˚F to 250˚F	Water, Fresh	EPDM	-35˚F to 250˚F
Carbon Monoxide (Cold)	Neoprene	-20˚F to 150˚F	Methane	Nitrile	-20˚F to 212˚F	Water, Salt	EPDM	-35˚F to 250˚F
Carbon Monoxide (Hot)	Viton	10˚F to 300˚F	Methyl Ethyl Ketone	EPDM	-35˚F to 250˚F	Xylene	Viton	10˚F to 300˚F
Carbon Tetrachloride	Viton	10˚F to 300˚F	Naptha (Berzin)	Nitrile	-20˚F to 212˚F			
Caustic Soda	EPDM	-35˚F to 250˚F	Oil Animal	Nitrile	-20˚F to 212˚F			
Cement Slurry	EPDM	-35˚F to 250˚F	Oil Mobil Therm Light	Viton	10˚F to 250˚F			

Note: Above elastomer / temperature chart are guidelines only. Contact factory for specific applications.

SERIES 604 MILLCENTRIC® 100% PORT 3-WAY PLUG VALVE



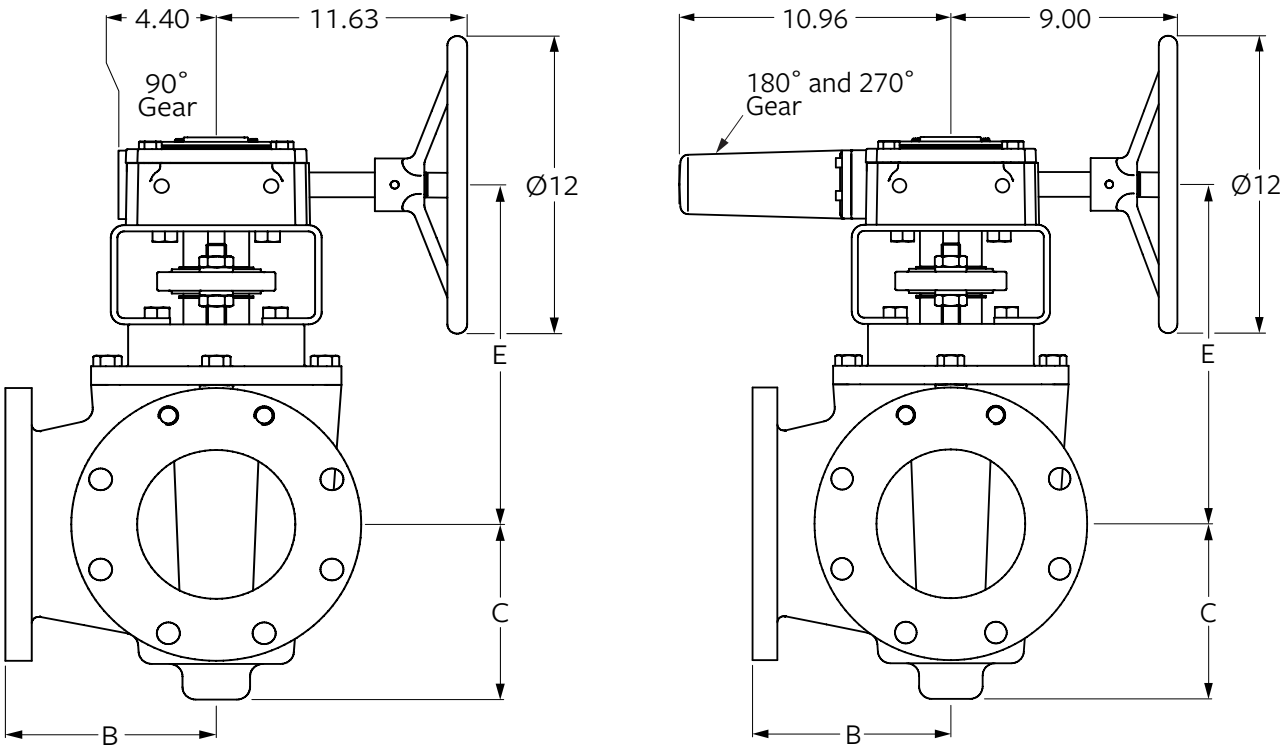
FLANGED END - FIG. 604 - CLASS 125

	NOMINAL VALVE SIZE							
DIMENSIONS IN	3″	4″	6″	8″	10″	12″	14″	16″
A	8	9.88	11.63	13.88	16.75	19	21	23.75
B	5.5	6.5	8	9	11	11.56	12.5	15.13
C	4.81	5.94	7.06	10.94	10.94	12.88	14.19	14.75
D	9.04	13.36	15.04	18.69	18.69	21.20	21.10	22.00
E	1*	2	2	2	2	2	2	2
F	7.50	9.00	11.00	13.50	16.00	19.00	21.00	23.50
G	6.00	7.50	9.50	11.75	14.25	17.00	18.75	21.25
H	4	6	6	4	12	12	10	16
J	0.75	0.75	0.88	0.88	1	1	1.13	1.13
N	-	2	2	4	-	-	2	-
T	-	5/8″ - 11 UNC	3/4″ - 10 UNC	3/4″ - 10 UNC	-	-	1″ - 8 UNC	-
Weight - lb	65	120	170	325	380	475	850	970

Note: Drawings are for information purposes only; please request certified drawings before preparing piping drawings.

* Adapter available to convert to 2″ Nut.

SERIES 604AGHW MILLCENTRIC® 100% PORT 3-WAY PLUG VALVE



FLANGED END - FIG. 604AGHW - CLASS 125

	NOMINAL VALVE SIZE						
DIMENSIONS IN	4"	6"	8"	10"	12"	14"	16"
A*	9.88	11.63	13.88	16.75	19	21	23.75
B	6.50	8	9	11	11.56	12.50	15.13
C	5.94	7.06	10.94	10.94	12.88	14.19	14.75
E	12.94	14.06	17.75	17.75	19.50	20.38	21.06
Weight - lb	200	250	405	460	555	937	1053

Note: 3" gear operated valve details upon request.

Drawings are for information purposes only; please request certified drawings before preparing piping drawings.

* Face to face dimension and flange drilling see page 5.

ACCESSORIES

WRENCH

Wrench operators are available for all sizes (for tight shut-off, we recommend the use of a gear operator).

POWER OPERATION

Pneumatic, electric and hydraulic operation is available, complete with limit switches and solenoid valves when required.

STYLING RING (FOR WRENCH OPERATED VALVES)

The valve may be ordered with the plug positions pre-set at the factory to suit the port flow requirements. This is achieved by fitting a styling ring to the valve stem.

GEAR OPERATORS

Gear operators are available for all sizes. They can be provided with 90˚, 180˚ or 270˚ travel and are fitted with travel stops. 360˚ travel is also available.

LOCKING DEVICE

Factory fitted locking devices are available for wrench operated and gear operated valves.

DOUBLE-STYLE PLUG

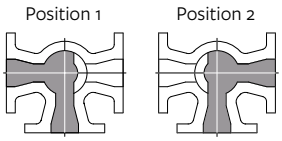
To provide 90º flow paths only, a double-style plug is available which operates through 90º travel and isolates either straight-through port (Style A90 only).

STYLING RING

GEAR OPERATOR
SHOWN WITH 180˚ / 270˚ GEAR

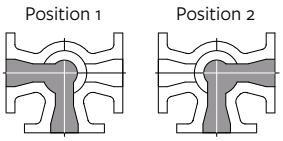
3-WAY VALVE PORT POSITIONS

Port Positions Viewed from Above



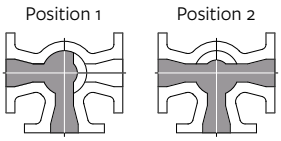
3 way, 3 port, 180° turn

STYLE A180



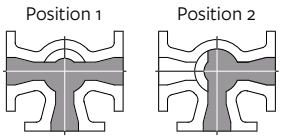
3 way, 2 port, 90° turn

STYLE A90*



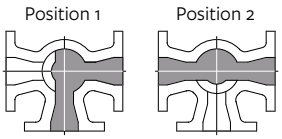
3 way, 3 port, 90° turn

STYLE C



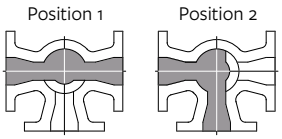
3 way, 3 port, 90° turn

STYLE D



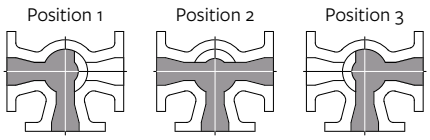
3 way, 3 port, 90° turn

STYLE E



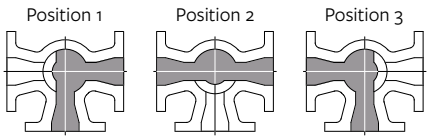
3 way, 3 port, 90° turn

STYLE F



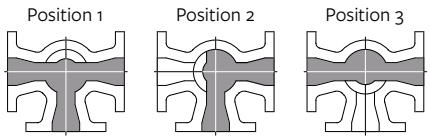
3 way, 3 port, 180° turn

STYLE G



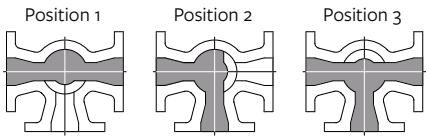
3 way, 3 port, 180° turn

STYLE H



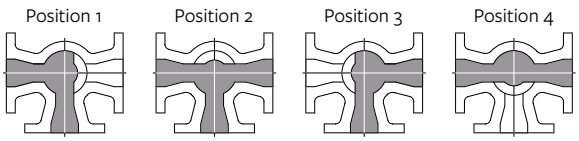
3 way, 3 port, 180° turn

STYLE I



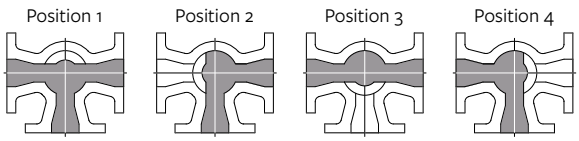
3 way, 3 port, 180° turn

STYLE J



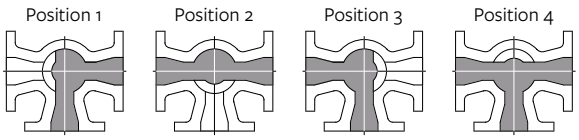
3 way, 3 port, 270° turn

STYLE K



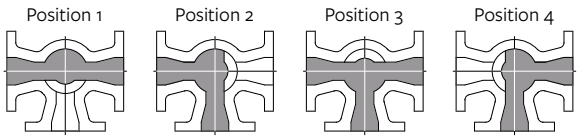
3 way, 3 port, 270° turn

STYLE L



3 way, 3 port, 270° turn

STYLE M



3 way, 3 port, 270° turn

STYLE N

*Requires Double-Style Plug. Not tight shut-off. Consult factory for special pricing and availability.

HOW TO ORDER

When ordering 3-Way Valves, specify style letter of the port position required.

TECHNICAL SPECIFICATION

Millcentric® 100% Port 3-Way Plug Valves

Valves shall be of the 100% Port 3-Way non-lubricated concentric type with a totally encapsulated plug. The elastomer shall be suitable for the service intended.

Valve flanges shall comply with ASME / ANSI B16.1 Class 125, including facing, drilling and thickness. Valves shall be designed for a maximum working pressure of 175 CWP.

The valve body and bonnet shall be in cast iron to ASTM A126 Class B and the plug shall be ductile iron to ASTM A536 Grade 65-45-12. The axial position of the plug shall be held by the adjustable gland, and the valve shall operate without the need to lift the plug prior to turning.

Replaceable sleeve-type bearings, manufactured in oil-impregnated stainless steel shall be fitted in the body and bonnet. Stem seals shall be self-adjusting U-cup type and be replaceable without removing the bonnet from the valve.

The valve stem shall be provided with a 2″ square nut for use with removable levers or extended T-handles. Wrench operated valves shall be capable of being converted to gear or automated operation without removing the bonnet from the valve.

Where required, gear operators shall be of heavy duty construction with a ductile iron quadrant supported by upper and lower oil-impregnated bronze bearings. The worm gear and shaft shall be manufactured in hardened steel and run in high efficiency roller bearings. Gear operators shall require single handwheel operation only.

100% Port 3-Way plug valves shall be Millcentric Series 604.

NOTES

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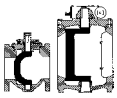
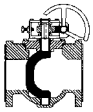
MILLIKEN®
Product Guide



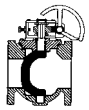
SERIES 600/601
Eccentric Plug Valve
Flanged and MJ

- Welded Nickel Seat
- Stainless Steel Bearings
- ANSI-B16.1 Flanges
- Solid Ductile Iron Plug
- Low Pressure Drop
- Flanged & MJ Ends
- Sizes 2″ - 72″ FL
- Sizes 3″ - 48″ MJ



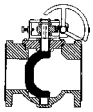
SERIES 601SS
Eccentric Plug Valve

- Integral Stainless Seat
- Stainless Bearings
- Stainless Steel Body
- ANSI B16.5 Class 150 Flanges
- Solid Stainless Steel Plug
- Low Pressure Drop
- Size: 1/2″ - 24″



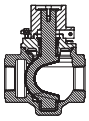
SERIES 601RL
Eccentric Plug Valve
Rubber Lined

- Soft or Hard Rubber Lining
- Stainless Steel Bearings
- ANSI B16.1 Flanges
- Solid Ductile Iron Plug
- Low Pressure Drop
- Sizes 3″ - 54″
- Metal Plugs Available – *Consult Factory*



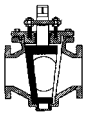
SERIES 602
Eccentric Plug Valve
High Pressure

- Ductile Iron Body
- ANSI B16.1 Flanges
- MJ AWWA C111
- Welded Nickel Seat
- Solid Ductile Iron Plug
- Low Pressure Drop
- Sizes 2″ - 72″ FL
- Sizes 3″ - 48″ MJ



SERIES 613A
Eccentric Plug Valve
Threaded End

- Ductile Iron Construction
- Round Port
- Stainless Steel Bearings
- Low Pressure Drop
- Memory Stop
- NPT End Connections
- Sizes 1/2″ - 2″

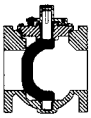


SERIES 604E
Eccentric Plug Valve
Three Way Valve

- Epoxy Seat
- Solid Ductile Iron Plug
- Stainless Steel Bearings
- Low Pressure Drop
- Lift & Turn NOT Required
- High Solids & Flow Capacity
- Sizes 3″ - 16″

SERIES 606
Eccentric Plug Valve
Grooved End

- Welded Nickel Seat
- Stainless Steel Bearings
- AWWA C-606 Grooved
- Solid Ductile Iron Plug
- Low Pressure Drop
- Ductile or Steel Pipe
- Sizes 3″ - 24″

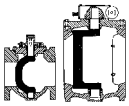


SERIES 611/610
Eccentric Plug Valve
Flanged and MJ

- Ductile Iron Body
- ANSI B16.1 Flanges
- MJ AWWA C111
- Welded Nickel Seat
- Solid Ductile Iron Plug
- Low Pressure Drop
- Sizes 2″ - 72″ FL
- Sizes 3″ - 48″ MJ

MODEL 625
Eccentric Plug Valve

- Available in Threaded and Flanged Ends
- Rated for 175 psi
- Sizes 1/2″ - 4″
- UL / CGA Listed



SERIES 600FP/601FP
Eccentric Plug Valve

- Full / 100% PORT
- Welded Nickel Seat
- Stainless Steel Bearings
- ANSI-B16.1 Flanges
- Solid Ductile Iron Plug
- Low Pressure Drop
- Flanged & MJ Ends
- Sizes 2″ - 48″ FL
- Sizes 3″ - 48″ MJ

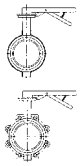


FIGURE 396/397
General Service Butterfly Valve

- Meets MSS SP 67
- Ductile Iron Body
- DI-NP Disc
- Other Materials Upon Request
- Wrench or Gear Operated Available
- 2″ - 48″ Size Range

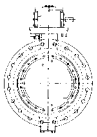


FIGURE 510A/511A
AWWA Butterfly Valve

- Complies with AWWA C-504
- Class 150B Flanged or MJ
- Cast Iron Body and Disc
- Seat in Body
- Flow Through Disc on 24″ and Larger
- Epoxy Paint on All Sizes Standard
- 3″ - 72″

SERIES 8500
AWWA Swing Check

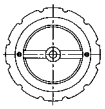
- Full Waterway
- Ductile Iron Construction
- Weight or Spring
- Air Cushion
- SS Body Seat Ring
- Buna Disc Insert
- Sizes 3″ - 24″

SERIES 8000
AWWA Swing Check

- Full Waterway
- Weight or Spring
- Bronze / SS Body Seat Ring
- Bronze / Buna / EPDM Disc Insert
- Sizes 2″ - 36″

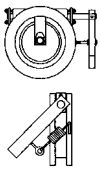
SERIES 9000
AWWA Swing Check

- Clear Waterway
- Weight or Spring
- Air or Oil Cushion
- Bronze / SS Body Seat Ring
- Bronze / Buna / EPDM Disc Insert
- Sizes 3″ - 72″



SERIES 720A
Wafer Check Valve

- Center Guided
- Check Valve
- Rated for 250 psi
- SS Disc / EPDM Seat
- Sizes 2″ - 12″



SERIES 700
Wafer Check Valve

- ANSI Class 125 / 150
- High Flow Capacity
- Narrow Face-to-Face
- Sizes 3″ - 12″
- 316 SS Internals
- Disc Position Indicator

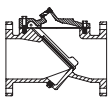


FIGURE 851
Flex Check

- Million Cycle Certification
- Complete Ductile Iron Construction
- 250 psi Pressure Rating
- Fully Epoxy Lined Interior
- No Internal Shafts, Bearings or Bushings
- No External Levers, Weights or Springs
- Mechanical Indicator (3″ - 16″)
- 2″ - 24″ Size Range
- Backflush Devices
- Proximity Switches

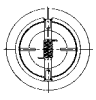


FIGURE 740A
Double Disc Check Valve

- Wafer Pattern Check Valve Rated for 250 psi
- Available in Sizes 2″ - 36″ With a SS Disc / EPDM Seat

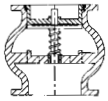


FIGURE 821A
Global Style Check Valve

- Center Guided Check Valve
- SS Disc / EPDM Seat and is Available in Sizes 2″ - 24″

For more information about us or to view our full line of water products, please visit www.millikenvalve.com or call Milliken customer service at 1.800.423.1323.

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