

# MILLIKEN<sup>®</sup>

a **MUELLER** brand

## 1/2" - 2" MILLCENTRIC<sup>®</sup>

### Eccentric Plug Valve



**MUELLER**

## OVERVIEW OF VALVE DETAILS - 1/2" - 2"

The Milliken® criteria of quality, reliability, safety and value are embodied in the Millcentric® Eccentric valve, setting higher standards for dependable performance with excellent features achieved by the utilization of the very latest design and manufacturing techniques.

- Computer Aided Design
- High Integrity Casting
- CNC manufacturing delivers consistent sizes on all components

*All complemented by a rigorous Quality Control System*

### BODY

The Millcentric® valve body casting is ASTM A536 65-45-12 ductile iron using high pressure molding techniques. Threaded connection available on 1/2" - 2" sizes. Flanged connection available on 2" size.

Flange diameter, thickness and drilling conform to ANSI B16.1 Class 125.

### SEAT

The valve seat shall be furnished with an overlay of corrosion and abrasion resistant epoxy.

### STEM SEAL

High integrity sealing by combining the advantages of a resilient and abrasion resistant U-Cup seal. From vacuum to high pressure, the self-adjusting sealing system (per AWWA C504) gives positive, trouble-free service and is retained independently of the plug stem or external torque device, thereby eliminating periodic maintenance.

### BEARINGS

The plug rotates in permanently lubricated stainless steel bearings, located in the body and bonnet, along with upper and lower PTFE thrust washers which ensure consistently low operating torque.

### PLUG

Supported on integral trunnions, the plug is totally encapsulated with an elastomer that is molded to the casting providing tight shut off even under vacuum conditions. High integrity corrosion-free sealing is achieved by a variety of abrasion resistant elastomers which protect the plug right up to the trunnions. When assembled, the light compression of the elastomers onto PTFE thrust washers prevents entry of abrasive materials into the bearings.

### BONNET SEAL

Superior "O" ring sealing with metal / metal contact means lower bolting stresses compared with compression gaskets.

### FLOW

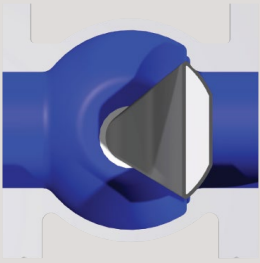
The full round port design with streamlined internal contours gives the highest industry capacity straight through flow in the full open position, reducing turbulence and pressure drop and the effect of erosive media. Handling of sludges and slurries is therefore enhanced.

### TRAVEL STOPS

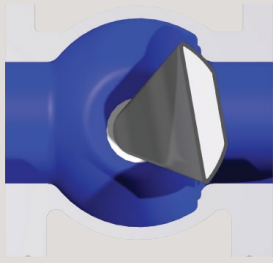
Adjustable open and closed travel stops are fitted as standard on both wrench and gear operated Millcentric® valves.

# 1/2" - 2" MILLCENTRIC®

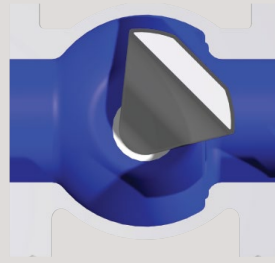
## Eccentric Plug Valve



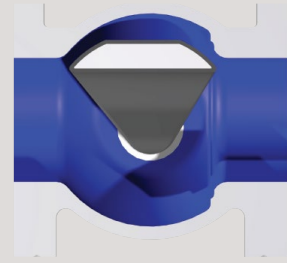
- Valve in closed position for bubble tight shut-off
- Normal flow direction gives pressure assisted sealing
- Torques are low even in reverse flow



- Plug rotates away from the seat for instant opening
- Seat wear and operating torque reduced
- No further seat contact until valve is closed again



- Design of Millcentric® plug valve allows modulating control over the full 90° travel
- Ideally suited for balancing service
- Standard rotary valve provides control and tight shut off in one valve



- Plug is out of flow path when fully open
- Straight through, uninterrupted smooth flow
- Round port reduces turbulence and erosion, lowers pumping costs and can be "pigged" to clean the pipeline

### INSTALLATION

The Millcentric® plug valve is suitable for flow and shut-off in either direction. Seat end downstream is the preferred orientation and any reverse flow requirement should be stated at the time of order. For use on fluids with suspended solids, installation with the seat upstream and the valve stem horizontal is recommended with plug rotation to the top of the valve.

### IN-LINE MAINTENANCE

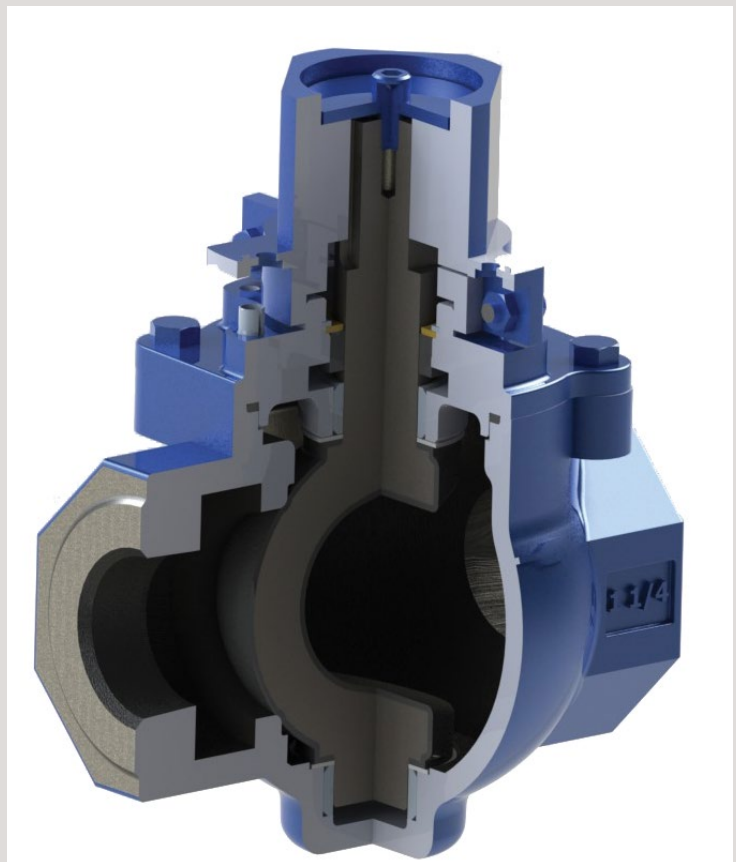
In the unlikely event of stem leakage, the stem seals can be easily replaced without removing the bonnet. Access to the body for cleaning or inspection does not require removal from the line.

### MODULAR CONSTRUCTION

Design of the bonnet and stem allows for on-site adaption of gear operators, power actuators, or extension devices on to standard valves. Conversion can be easily undertaken without removing the valve bonnet, thereby minimizing downtime.

### POWER OPERATION

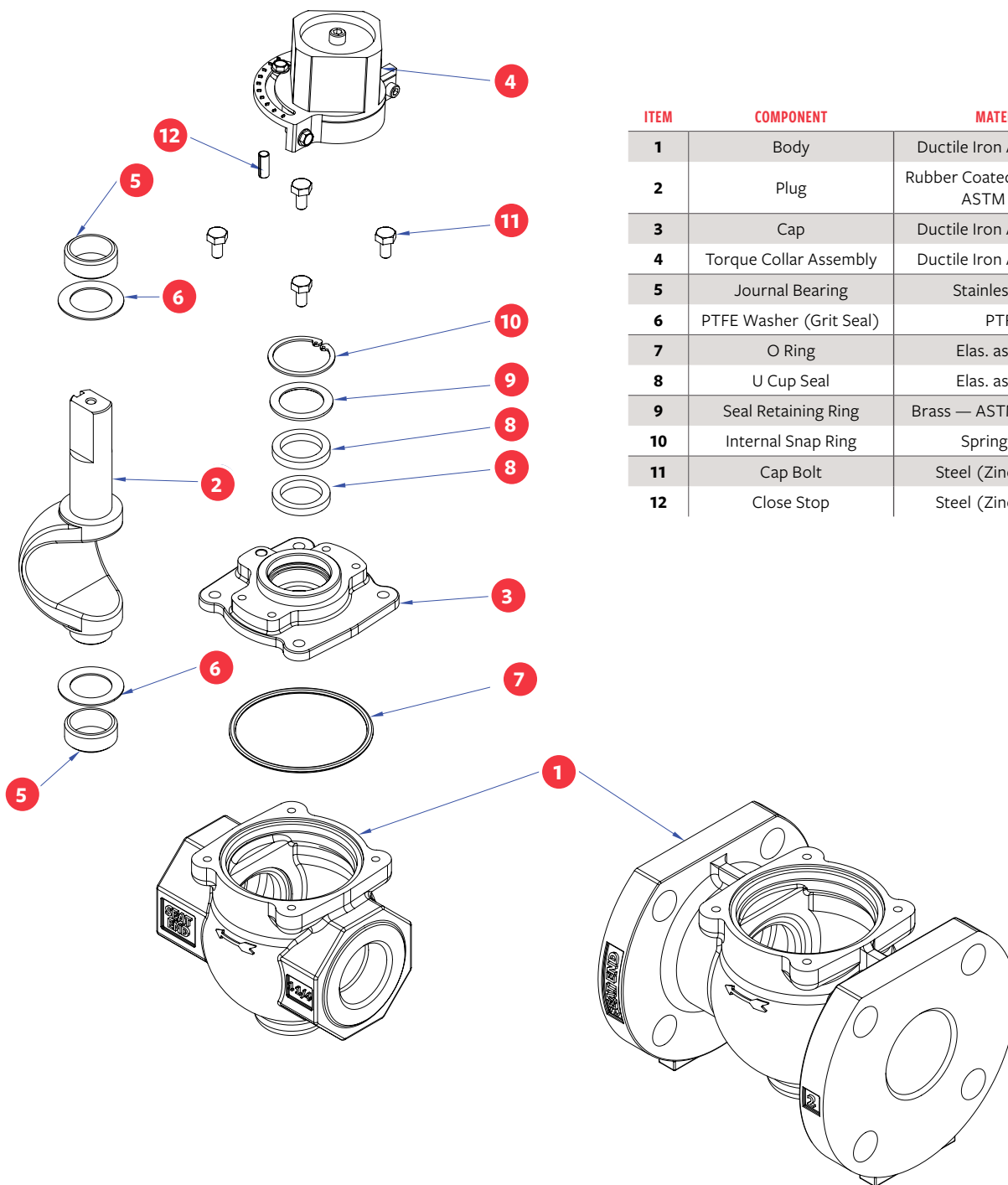
Pneumatic, electric or hydraulic operation is available, complete with accessories such as limit switches, solenoid valves and positioners when required.



# 1/2" - 2" MILLCENTRIC®

## Eccentric Plug Valve

### STANDARD MATERIALS OF CONSTRUCTION, FIG. 613A/611A, 1/2" - 2"



ITEM	COMPONENT	MATERIAL	QTY
1	Body	Ductile Iron ASTM A536	1
2	Plug	Rubber Coated Ductile Iron ASTM A536	1
3	Cap	Ductile Iron ASTM A536	1
4	Torque Collar Assembly	Ductile Iron ASTM A536	1
5	Journal Bearing	Stainless Steel	2
6	PTFE Washer (Grit Seal)	PTFE	2
7	O Ring	Elas. as Spec.	1
8	U Cup Seal	Elas. as Spec.	2
9	Seal Retaining Ring	Brass — ASTM B-138-675	1
10	Internal Snap Ring	Spring Steel	1
11	Cap Bolt	Steel (Zinc Plated)	AR
12	Close Stop	Steel (Zinc Plated)	1

# TECHNICAL DATA

## ORDERING INFORMATION

VALVE TYPES	DESIGNATION
Mechanical Joint Cast Iron	600
Mechanical Joint Ductile Iron	620
ANSI 125 Flanged Cast Iron Flat Face	601
ANSI 125 Flanged Ductile Iron Flat Face	611
ANSI 150 Flanged Ductile Iron Raised Face	621
ANSI 250 Flanged Ductile Iron Raised Face	602
ANSI 125 Grooved for Steel Pipe	606S
ANSI 125 Grooved for Ductile Pipe	606D
ANSI 150 Flanged 316SS	601S
<b>SEAT</b>	
Nickel (3" & Larger)	N
Epoxy (2-1/2" ONLY)	E
316SS (On Stainless Steel Valve ONLY)	S
Rubberlined	RL
Glasslined	GL
<b>ELASTOMER TRIM</b>	
EPDM	0
Buna-Nitrile	1
Viton	2
Neoprene	3
Natural	4
<b>MANUAL OPERATORS</b>	
Above Ground Gear and Handwheel	AGHW
Above Ground Gear with 2" Nut	AGNUT
Buried Gear with 2" Nut	BG
Memory Stop Gear with Handwheel	MGHW
Lever / Wrench (8" & smaller)	L
Direct Nut (8" & smaller)	TC

**Example:** 4" 601N3AGHW = 4" ANSI 125 Flanged, Nickel Seat, Neoprene plug with Above Ground Gear and Handwheel.

Valves are only tested for bi-directional shut-off if specified at time of order. Contact factory for bi-directional ratings.

**Note:** We recommend mechanical joint or buried flanged valves to have gear operators.

**Note:** We recommend valves for bi-directional service to have gear operators.

**Note:** Gear operators must be used on valve sizes up to 10" for bi-directional service.

### PRESSURE RATING

12" and Smaller	ANSI 125	175 psi
14" and Larger	ANSI 125	150 psi
14" and Larger	ANSI 150	235 psi
20" and Smaller	ANSI 150	285 psi
12" and Smaller	ANSI 250	400 psi
14" and Larger	ANSI 250	300 psi

Body Hydrotest = 150% of Rated Pressure / Seat Test = 100% of Rated Pressure Testing per AWWA C517

## ELASTOMER SELECTION CHART

SERVICE	ELASTOMER	AVERAGE USEFUL TEMP. RANGE	SERVICE	ELASTOMER	AVERAGE USEFUL TEMP. RANGE	SERVICE	ELASTOMER	AVERAGE USEFUL TEMP. RANGE
Acetone	EPDM	-35°F to 250°F	Caustic Soda	EPDM	-35°F to 250°F	Oil Animal	Nitrile	-20°F to 212°F
Air	EPDM	-35°F to 250°F	Cement Slurry	EPDM	-35°F to 250°F	Oil Mobil Therm Light	Viton	10°F to 250°F
Air w/Oil	Nitrile	0°F to 212°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	-20°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, Isopropyl	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	-20°F to 250°F	Fertilizer Liquid (H <sub>2</sub> N <sub>2</sub> O <sub>2</sub> )	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	-20°F to 250°F	Gas Natural	Nitrile	-20°F to 212°F	Starch	EPDM	-35°F to 250°F
Ammonia, Water	EPDM	-20°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	-20°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	J4 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	-20°F to 250°F	Ketone	EPDM	-35°F to 250°F	Varnish	Viton	10°F to 300°F
Carbon Dioxide	EPDM	-20°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			

**Note:** Above elastomer / temperature chart are guidelines only.

## ELASTOMERS AVAILABLE FOR MILLCENTRIC® PLUG VALVE

Natural rubber is also available.

### NITRILE

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

### EPDM

An excellent polymer for use on chilled water through to LP steam applications having a temperature range of -35°F to 250°F. Resistance to many acids, alkalies, detergents, phosphate esters, alcohols and glycols is an added benefit.

### NEOPRENE

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

### 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.

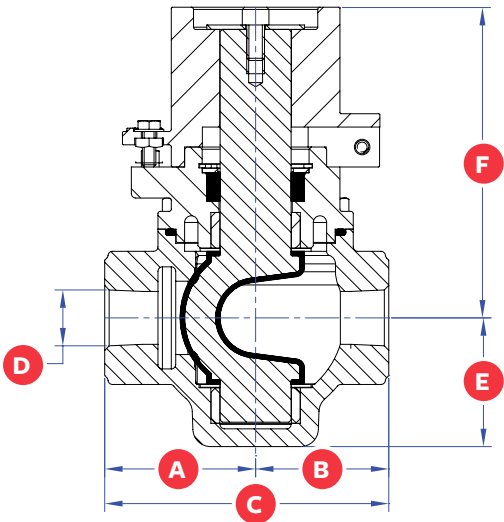
**Note:** Not for water or steam applications.

# 1/2" - 2" MILLCENTRIC®

## Eccentric Plug Valve

### THREADED END:

FIG. 613A DUCTILE IRON / 603AS STAINLESS STEEL 1/2" - 2"

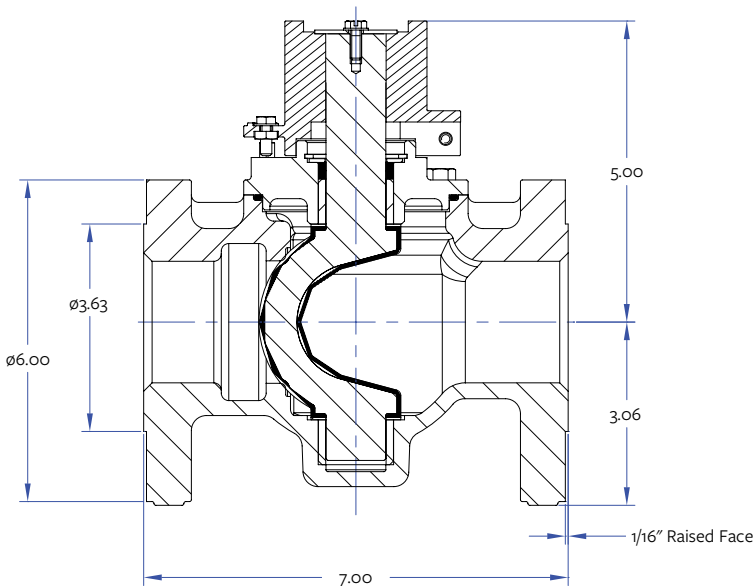


### THREADED ENDS

SIZE	1/2	3/4	1	1-1/4	1-1/2	2
A	2.13	2.13	2.13	3.00	2.13	3.00
B	1.88	1.88	1.88	2.50	2.50	2.50
C	4.00	4.00	4.00	5.50	5.50	5.50
D	1/2" NPT	3/4" NPT	1" NPT	1-1/4" NPT	1-1/2" NPT	2" NPT
E	1.81	1.81	1.81	2.50	2.50	2.50
F	4.38	4.38	4.38	5.00	5.00	5.00
Weight (approx.)	7.50	7.25	7.00	13.00	11.75	10.00

### FLANGED END:

FIG. 611A DUCTILE IRON / 601S STAINLESS STEEL 2"

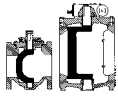


FLANGED ENDS	
Size	2
Weight (approx.)	18.00

**Note:** Raised face is only on the 2" Fig. 601AS Stainless Steel.

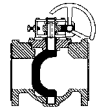
## NOTES

## MILLIKEN® Product Guide



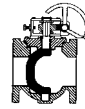
**SERIES 600/601**  
**Eccentric**  
**Plug Valve**  
Flanged and MJ

- 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



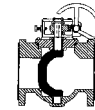
**SERIES 601SS**  
**Eccentric**  
**Plug Valve**

- 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"



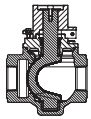
**SERIES 601RL**  
**Eccentric**  
**Plug Valve**  
Rubber Lined

- 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



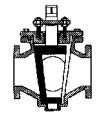
**SERIES 602**  
**Eccentric**  
**Plug Valve**  
High Pressure

- 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"



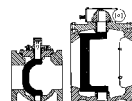
**SERIES 611/610**  
**Eccentric**  
**Plug Valve**  
Flanged and MJ

- 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



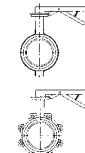
**MODEL 625**  
**Eccentric**  
**Plug Valve**

- 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"



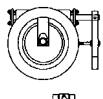
**SERIES 9000**  
**AWWA**  
**Swing Check**

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



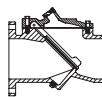
**SERIES 720A**  
**Wafer**  
**Check Valve**

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



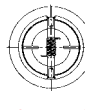
**SERIES 700**  
**Wafer**  
**Check Valve**

- 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"

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