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**MILLCENTRIC® PLUG VALVE**

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The Milliken® criteria of quality, reliability, safety and value are embodied in the Millcentric® plug 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 rigorous Quality Control System

**BODY**

Conforming to AWWA C517 wall thickness, the Millcentric® plug valve body casting is in ASTM A126 CL B cast iron using high pressure molding techniques. Alternative flanged, grooved or mechanical joint ends are available.

Flange diameter, thickness and drilling conform to ANSI B16.1 Class 125 or 250.

Grooved ends meet AWWA C-606 for ductile or steel pipe. Mechanical joints to AWWA C111 (ANSI A21.11).

**SEAT**

The Millcentric® plug valve incorporates as standard, on 3” and larger, a 1/8” thick welded 99% nickel seat for corrosion and erosion resistance specifically profiled for low torque and extended seat life.

**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 316 grade 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 on 2-1/2” – 48” and Vulcanized on 54” and larger 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 port design (round on 2-1/2” – 12” and rectangular on 14” and larger) 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.

**INTERCHANGEABLE**

Because of the common face to face dimension with wedge gate valves (3” – 12”), fitting the tight shut-off rotary Millcentric® plug valve into existing systems is accomplished without pipeline modifications.

**TRAVEL STOPS**

Adjustable open and closed travel stops are fitted as standard on both wrench and gear operated Millcentric® plug valves.
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, it is recommended that the valve should be installed with the seat upstream and the valve stem horizontal with plug rotation to the top of the valve ensuring smooth operation.

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.

SUGGESTED SPECIFICATIONS

- 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

- Plug is out of flow path when fully open
- Round port reduces turbulence and erosion, lowers pumping costs and can be “pigged” to clean the pipeline

- Plug is out of flow path when fully open
- Round port reduces turbulence and erosion, lowers pumping costs and can be “pigged” to clean the pipeline

- Plug is out of flow path when fully open
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- Plug is out of flow path when fully open
- Round port reduces turbulence and erosion, lowers pumping costs and can be “pigged” to clean the pipeline
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, alkalis, 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 alkalis. 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.

DIMENSIONAL DATA

ORDERING INFORMATION

VALUES TYPES

<table>
<thead>
<tr>
<th>DESIGNATION</th>
<th>VALVE TYPES</th>
</tr>
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<tbody>
<tr>
<td>Mechanical Joint Cast Iron</td>
<td>600</td>
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<tr>
<td>ANSI 125 Flanged Cast Iron Flat Face</td>
<td>601</td>
</tr>
<tr>
<td>ANSI 125 Flanged Ductile Iron Flat Face</td>
<td>611</td>
</tr>
<tr>
<td>ANSI 250 Flanged Ductile Iron Raised Face</td>
<td>621</td>
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<tr>
<td>ANSI 125 Grooved for Ductile Pipe</td>
<td>606S</td>
</tr>
<tr>
<td>ANSI 125 Grooved for Steel Pipe</td>
<td>606D</td>
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<tr>
<td>ANSI 150 Flanged 316SS</td>
<td>601S</td>
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SEAT

| N | Nickel (3” & Larger) |
| N  | Epoxy (2-1/2” ONLY) |
| S  | 316SS (On Stainless Steel Valve ONLY) |
| G  | Rubberlined |
| E  | Gasket |

MANUAL OPERATORS

| AGHW | Above Ground Gear and Handwheel |
| AGNUT | Above Ground Gear with 2” Nut |
| Bg | Buried Gear with 2” Nut |
| IMGHW | Memory Stop Gear with Handwheel |
| TC | Lever / Wrench (8” & smaller) |
| TC | Direct Nut (8” & smaller) |

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

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.

PRESSURE RATING

<table>
<thead>
<tr>
<th>DIMENSIONAL DATA</th>
<th>PRESSURE RATING</th>
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<tbody>
<tr>
<td>12” and Smaller</td>
<td>ANSI 125</td>
</tr>
<tr>
<td>14” and Larger</td>
<td>ANSI 125</td>
</tr>
<tr>
<td>12” and Smaller</td>
<td>ANSI 150</td>
</tr>
<tr>
<td>20” and Smaller</td>
<td>ANSI 150</td>
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<td>14” and Larger</td>
<td>ANSI 250</td>
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<td>14” and Larger</td>
<td>ANSI 250</td>
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Body Hydrotest = 150% of Rated Pressure / Seat Test = 100% of Rated Pressure Testing per AWWA C517

ELASTOMER SELECTION CHART

<table>
<thead>
<tr>
<th>ELASTOMER</th>
<th>AVERAGE USEFUL TEMP. RANGE</th>
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<tbody>
<tr>
<td>Acetone</td>
<td>EPDM –35°F to 250°F</td>
</tr>
<tr>
<td>Alcohol AMYL</td>
<td>EPDM 0°F to 212°F</td>
</tr>
<tr>
<td>Alcohol Aromatic</td>
<td>Viton 10°F to 250°F</td>
</tr>
<tr>
<td>Alcohol Butyl</td>
<td>Neoprene –20°F to 225°F</td>
</tr>
<tr>
<td>Alcohol Ethyl</td>
<td>EPDM –20°F to 250°F</td>
</tr>
<tr>
<td>Alcohol Ethyl</td>
<td>EPDM –20°F to 250°F</td>
</tr>
<tr>
<td>Alcohol Glycol</td>
<td>Neoprene –20°F to 225°F</td>
</tr>
<tr>
<td>Alcohol Methyl</td>
<td>EPDM –20°F to 250°F</td>
</tr>
<tr>
<td>Ammonium Nitrate</td>
<td>EPDM –20°F to 250°F</td>
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<tr>
<td>Ammonia</td>
<td>EPDM –20°F to 250°F</td>
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<tr>
<td>Animal Fat</td>
<td>EPDM –20°F to 250°F</td>
</tr>
<tr>
<td>Black Liquor</td>
<td>EPDM –20°F to 250°F</td>
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<tr>
<td>Bunker Oil</td>
<td>EPDM –20°F to 250°F</td>
</tr>
<tr>
<td>Calcium Chloride</td>
<td>EPDM –20°F to 250°F</td>
</tr>
<tr>
<td>Carbon Dioxide</td>
<td>EPDM –20°F to 250°F</td>
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<tr>
<td>Carbon Monoxide (CO)</td>
<td>EPDM –20°F to 250°F</td>
</tr>
<tr>
<td>Carbon Monoxide (H2O)</td>
<td>EPDM 0°F to 212°F</td>
</tr>
<tr>
<td>Caustic Soda</td>
<td>EPDM –35°F to 250°F</td>
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</tbody>
</table>

Note: Above elastomer/temperature chart are guidelines only. Contact factory for specific applications.
<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>COMPONENT</th>
<th>MATERIAL</th>
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<tbody>
<tr>
<td>1</td>
<td>Body</td>
<td>Cast Iron A126 Class B</td>
</tr>
<tr>
<td>2</td>
<td>Plug</td>
<td>Rubber Coated Ductile Iron ASTM A536</td>
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<tr>
<td>3</td>
<td>Cap</td>
<td>Cast Iron A126 Class B</td>
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<tr>
<td>4</td>
<td>Torque Collar</td>
<td>Ductile Iron ASTM A536</td>
</tr>
<tr>
<td>5</td>
<td>Journal Bearing</td>
<td>Stainless Steel — ANSI 316</td>
</tr>
<tr>
<td>6</td>
<td>PTFE Washer (Grit Seal)</td>
<td>PTFE</td>
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<tr>
<td>7</td>
<td>O-Ring</td>
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<tr>
<td>8</td>
<td>U Cup Seal</td>
<td>Elas. as Spec.</td>
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<td>9</td>
<td>Washer</td>
<td>Brass — ASTM B-138-675</td>
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<td>10</td>
<td>Internal Snap Ring</td>
<td>Spring Steel</td>
</tr>
<tr>
<td>11</td>
<td>Setscrew</td>
<td>Steel (Zinc Plated)</td>
</tr>
<tr>
<td>12*</td>
<td>Closed Stop</td>
<td>Steel (Zinc Plated)</td>
</tr>
<tr>
<td>13*</td>
<td>Locking Washer</td>
<td>Steel</td>
</tr>
<tr>
<td>14*</td>
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<td>15*</td>
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<td>16*</td>
<td>Setscrew</td>
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<td>17*</td>
<td>Torque Bolt</td>
<td>Steel (Zinc Plated)</td>
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<td>18*</td>
<td>Travel Stop</td>
<td>Steel</td>
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<td>19*</td>
<td>Washer</td>
<td>Steel</td>
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</table>

*Note: Torque Collar Assembly on 8" and Smaller*
### Standard Materials of Construction, Fig. 601 / 600, 14" & Larger

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<td>2*</td>
<td>Plug</td>
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<td>Cap</td>
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<tr>
<td>4</td>
<td>Sleeve Bearing</td>
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<td>5</td>
<td>PTFE Washer (Grit Seal)</td>
<td>PTFE</td>
<td>2</td>
</tr>
<tr>
<td>6</td>
<td>Cap &quot;O&quot; Ring</td>
<td>Elas. as Spec.</td>
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</tr>
<tr>
<td>7</td>
<td>U Cup Seal</td>
<td>Elas. as Spec.</td>
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<tr>
<td>8*</td>
<td>Seal Retaining Ring</td>
<td>See Note 2</td>
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<td>9</td>
<td>Cap Screw</td>
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<td>Internal Snap Ring</td>
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<tr>
<td>12</td>
<td>External Snap Ring</td>
<td>Spring Seal</td>
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*Note 1: Plugs: Ductile Iron — ASTM A536 on 14" – 20"  
Cast Iron — A126 Class B on 24" and larger  

*Note 2: Seal Retaining Ring: Brass — ASTM B-138-675 on 14" – 20"  
Steel on 24" and larger
**FIG. 601 CAST IRON / 611 DUCTILE IRON – FLANGED END (175 PSI) / 621 DUCTILE IRON RAISED FACE (285 PSI) 2-1/2” – 12”**

![Valve Diagrams]

**FLANGED END — ANSI 125**

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<th>6</th>
<th>8</th>
<th>10*</th>
<th>12*</th>
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<td>7.50</td>
<td>9.00</td>
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<td>6.00</td>
<td>12.00</td>
<td>12.00</td>
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</table>

**WEIGHT (approx.)**

| 30 | 40 | 70 | 105 | 115 | 190 | 345** | 440** |

*10” & above have gear operators as standard
**Weight includes gear operator

**Note:** Drawings are for information purposes only; please request certified drawings before preparing piping diagrams.
FIG. 600 CAST IRON (175 PSI) / 620 DUCTILE IRON (285 PSI) – MECHANICAL JOINT 3” – 12”

MECHANICAL JOINT END

<table>
<thead>
<tr>
<th>SIZE</th>
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<tr>
<td>WEIGHT (approx.)</td>
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<td>80</td>
<td>125</td>
<td>200</td>
<td>360**</td>
<td>480**</td>
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*10* & above have gear operators as standard
**Weight includes gear operator
We recommend gears on all mechanical joint valves

Note: Drawings are for information purposes only; please request certified drawings before preparing piping diagrams
Flanged Valves Meet ANSI B16.1

Mechanical Joint Valves Meet ANSI 21.11 & AWWA C-111

Weight includes gear operator

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

**Note:** Dimensions on 60” and larger available upon request.
**FIG. 602 CLASS 250 RAISED FLANGED END**
2-1/2” – 12”, 400 PSI, 14” – 36”, 300 PSI

<table>
<thead>
<tr>
<th>SIZE</th>
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**WEIGHT (approx.)**

| SIZE | 70 | 80 | 120 | 162 | 170 | 275 | 398 | 590 | 980 | 1125 | 1830 | 2060 | 4160 | 5700 | 7670 |

All above have gear operators as standard
Weight includes gear operator

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

**Note:** Dimensions on 42” and larger available upon request
### FLANGED END — ANSI 125 RUBBER LINED

**3” – 12” Valves, 175 PSI, 14” & Larger, 150 PSI**

#### FLANGED END — ANSI 125 RUBBER LINED

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All above have gear operators as standard
Weight includes gear operator

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

**Note:** Dimensions on 48” and larger available upon request
FIG. 606 GROOVED END
2-1/2” – 12”, 175 PSI, 14” – 20”, 150 PSI

GROOVED END — AWWA 606

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*10” & above have gear operators as standard
**Weight includes gear operator

Note: Drawings are for information purposes only; please request certified drawings before preparing piping diagrams
Note: Larger sizes are available. Contact a factory for data.
A range of extended stems & floor mounted stands for remote operation, particularly in buried service, are available. Chainwheels & locking devices are readily incorporated onto the Millcentric® Plug Valve.
AWWA C-517 STANDARDS

Valves shall be of the non-lubricated eccentric type with an elastomer covering all seating surfaces. The elastomer shall be suitable for the service intended. Flanged valves shall be manufactured in accordance with ANSI B16.1 Class 125 / 150 including facing, drilling and flange thickness. Mechanical joint ends shall be in compliance with AWWA / ANSI C-111. Grooved ends shall be manufactured to the dimensions of ANSI / AWWA C606 for ductile or steel pipe as required. Ports shall be round on sizes 2-1/2”-12” and rectangular port design on valves 14” and larger. All valves shall be capable of being “pigg’d” with a soft pig when required. Valve bodies shall be of ASTM A-126 Class B cast iron and thickness in accordance with AWWA C-517 Section 4.4.1.4. Valves 3” and larger shall be furnished with a welded-in overlay seat of 1/8” thick of not less than 99% nickel in accordance with AWWA C-517, Section 4.3.3.4. Sprayed, plated or screwed-in seats are not acceptable.

Plugs shall be of ASTM A-536-Grade 65-45-12 for all sizes in compliance with AWWA C-517 Section 4.3.3.2. The plugs shall be of one piece solid construction with PTFE thrust bearings on the upper and lower bearing journals to reduce torque and prevent dirt and grit from entering the bearing and seal area.

Valves shall be furnished with replaceable sleeve type bearings conforming to AWWA C-517, Section 4.3.3.6. Bearings shall be of sintered, oil impregnated type stainless steel. Valve shaft seals shall be of the “U” cup type in accordance with AWWA C-517

Section 4.4.7. Seals shall be self adjusting and repackable without removing the bonnet from the valve.

Wrench operated valves 2-1/2”-8” shall be capable of being converted to worm gear or automated operation without removing the bonnet or plug from the valve. All wrench operated valves shall be equipped with a 2” square nut for use with removable levers or extended “T” handles.

Worm gear operators, where required, shall be of the heavy duty construction with the ductile iron quadrant supported on the top and bottom by oil impregnated bronze bearings. The worm gear and shaft shall be manufactured of hardened steel and run on high efficiency roller bearings.

Valves shall be designed and manufactured to shut off bubble tight at 175 psi for valves 2-1/2”-12” and 150 psi for valves 14” and larger. Each valve shall be given a hydrostatic and seat test with the test results being certified when required by the customer. Certified copies of Proof-of-Design test reports shall be furnished as outlined in AWWA C-517 Section 5.2.2 when requested.

Plug valves shall be Millcentric® Plug Valve Series 601 / 600.
A TECHNICAL SPECIFICATION

Millcentric® Series 602 ANSI Class 250 Raised Face Plug Valves

AWWA C-517 STANDARDS

Valves shall be of the non-lubricated eccentric type with an elastomer covering all seating surfaces. The elastomer shall be suitable for the service intended. Flanged valves shall be manufactured in accordance with ANSI B16.1 Class 250 including facing, drilling and flange thickness. Ports shall be round on sizes 2-1/2” through 12” to facilitate “pigging” when required. Valves 14” and larger shall be of a rectangular port design.

Valve bodies shall be of ASTM A-536 Grade 65-45-12 ductile iron and thickness in accordance with AWWA C-517 Section 4.4.1.4. Valves 3” and larger shall be furnished with a welded-in overlay seat of 1/8” thick of not less than 99% nickel in accordance with AWWA C-517 Section 4.3.3.4. Sprayed, plated or screwed-in seats are not acceptable.

Plugs shall be of ASTM A-536-Grade 65-45-12 in compliance with AWWA C-517 Section 4.3.3.2. The plugs shall be of one piece solid construction with PTFE thrust bearings on the upper and lower bearing journals to reduce torque and prevent dirt and grit form entering the bearing and seal area. Valves shall be furnished with replaceable sleeve type bearings conforming to AWWA C-517 Section 4.3.3.6. Bearings shall be of sintered, oil impregnated type stainless steel. Valve shaft seals shall be of the “U” cup type in accordance with AWWA C-517 Section 4.4.7. Seals shall be self adjusting and repackable without removing the bonnet from the valve.

Worm gear operators shall be of the heavy duty construction with the ductile iron quadrant supported on the top and bottom by oil impregnated bronze bearings. The worm gear and shaft shall be manufactured of hardened steel and run on high efficiency roller bearings. All worm gear operators shall be sized for bi-directional shutoff at the valves design pressure rating.

Valves shall be designed and manufactured to shut off bubble tight at 400 psi for valves 2-1/2”-12” and 300 psi for valves 14”-36” with pressure behind the plug.

Each valve shall be given a hydrostatic and seat test with the test results being certified when required by the customer. Certified copies of Proof-of-Design test reports shall be furnished as outlined in AWWA C-517 Section 5.2.2 when requested.

Plug valves shall be Millcentric® Plug Valve Series 602.
TECHNICAL SPECIFICATION
Millcentric® Rubberlined Plug Valves

AWWA C-517 STANDARDS

Valves shall be of the non-lubricated eccentric type with an elastomer covering all seating surfaces. The elastomer shall be suitable for the service intended. Flanged valves shall be manufactured in accordance with ANSI B16.1 Class 125 / 150 including facing, drilling and flange thickness. Mechanical joint ends shall be in compliance with AWWA / ANSI C-111-92. Grooved ends shall be manufactured to the dimensions of ANSI / AWWA C606 for ductile or steel pipe as required. Ports shall be round on sizes 2-1/2”-12” and rectangular port design on valves 14” and larger. All valves shall be capable of being “pigged” with a soft pig when required.

Valve bodies shall be of ASTM A-126 Class B cast iron and thickness in accordance with AWWA C-517 Section 4.4.1.4. The interior of the valve bodies shall be covered with a suitable elastomer with a minimum thickness of 1/8”. The elastomer shall extend through the valve flow way and onto the flanges to ensure a positive seal.

Plugs shall be of ASTM A-536-Grade 65-45-12 for all sizes in compliance with AWWA C-517 Section 4.3.3.2. The plugs shall be of one piece solid construction with PTFE thrust bearings on the upper and lower bearing journals to reduce torque and prevent dirt and grit from entering the bearing and seal area.

Valves shall be furnished with replaceable sleeve type bearings conforming to AWWA C-517, Section 4.3.3.6. Bearings shall be of sintered, oil impregnated type stainless steel. Valve shaft seals shall be of the “U” cup type in accordance with AWWA C-517 Section 4.4.7. Seals shall be self adjusting and repackable without removing the bonnet from the valve.

Worm gear operators shall be of the heavy duty construction with the ductile iron quadrant supported on the top and bottom by oil impregnated bronze bearings. The worm gear and shaft shall be manufactured of hardened steel and run on high efficiency roller bearings. All worm gear operators shall be sized for bi-directional shutoff at the valves design pressure rating.

Valves shall be designed and manufactured to shut off bubble tight at 175 psi for valves 2-1/2”-12” and 150 psi for valves 14” and larger. Each valve shall be given a hydrostatic and seat test with the test results being certified when required by the customer. Certified copies of Proof-of-Design test reports shall be furnished as outlined in AWWA C-517 Section 5.2.2 when requested. Plug valves shall be Millcentric® Plug Valve.
Valves shall be of the non-lubricated eccentric type with an elastomer covering all seating surfaces. The elastomer shall be suitable for the service intended. Flanged valves shall be manufactured in accordance with ANSI B16.1 Class 125 including facing, drilling and flange thickness. Ports shall be round on sizes 2-1/2”-12” and rectangular port design on valves 14” and larger. All valves shall be capable of being “pigged” with a soft pig when required.

Valve bodies shall be of CF8M (316 stainless steel). Valves shall be furnished with 316 stainless steel seat in accordance with AWWA C-517 Section 4.3.3.4.

Plugs shall be of CF8M (316 stainless steel). The plugs shall be of one piece solid construction with PTFE thrust bearings on the upper and lower bearing journals to reduce torque and prevent dirt and grit from entering the bearing and seal area.

Valves shall be furnished with replaceable sleeve type bearings conforming to AWWA C-517 Section 4.3.3.6. Bearings shall be of sintered, oil impregnated type stainless steel. Valve shaft seals shall be of the “U” cup type in accordance with AWWA C-517 Section 4.4.7. Seals shall be self adjusting and repackable without removing the bonnet from the valve.

Wrench operated valves 2-1/2”-8” shall be capable of being converted to worm gear or automated operation without removing the bonnet or plug from the valve. All wrench operated valves shall be equipped with a 2” square nut for use with removable levers or extended “T” handles.

Worm gear operators, where required, shall be of the heavy duty construction with the ductile iron quadrant supported on the top and bottom by oil impregnated bronze bearings. The worm gear and shaft shall be manufactured of hardened steel and run on high efficiency roller bearings. All worm gear operators shall be sized for bi-directional shutoff at the valves design pressure rating.

Valves shall be designed and manufactured to shut off bubble tight at 275 psi. Each valve shall be given a hydrostatic and seat test with the test results being certified when required by the customer. Certified copies of Proof-of-Design test reports shall be furnished as outlined in AWWA C-517 Section 5.2.2 when requested.

Plug valves shall be Millcentric® Plug Valve Series 601S.
AWWA C-517 STANDARDS

Valves shall be of the non-lubricated eccentric type with an elastomer covering all seating surfaces. The elastomer shall be suitable for the service intended. Flanged valves shall be manufactured in accordance with ANSI B16.1 Class 125 / 150 including facing, drilling and flange thickness. Mechanical joint ends shall be in compliance with AWWA / ANSI C-111-92. Grooved ends shall be manufactured to the dimensions of ANSI / AWWA C606 for ductile or steel pipe as required. Ports shall be round on sizes 2-1/2”-12” and rectangular port design on valves 14” and larger. All valves shall be capable of being “pigged” with a soft pig when required.

Valve bodies shall be of ASTM A-536 Grade 65-45-12 and thickness in accordance with AWWA C-517 Section 4.4.1.4. Valves 3” and larger shall be furnished with a welded-in overlay seat of 1/8” thick of not less than 99% nickel in accordance with AWWA C-517, Section 4.3.3.4. Sprayed, plated or screwed-in seats are not acceptable.

Plugs shall be of ASTM A-536-Grade 65-45-12 for all sizes in accordance with AWWA C-517 Section 4.3.3.2. The plugs shall be of one piece solid construction with PTFE thrust bearings on the upper and lower bearing journals to reduce torque and prevent dirt and grit from entering the bearing and seal area.

Valves shall be furnished with replaceable sleeve type bearings conforming to AWWA C-517, Section 4.3.3.6. Bearings shall be of sintered, oil impregnated type stainless steel. Valve shaft seals shall be of the “U” cup type in accordance with AWWA C-517 Section 4.4.7. Seals shall be self adjusting and repackable without removing the bonnet from the valve.

Wrench operated valves 2-1/2”-8” shall be capable of being converted to worm gear or automated operation without removing the bonnet or plug from the valve. All wrench operated valves shall be equipped with a 2” square nut for use with removable levers or extended “T” handles.

Worm gear operators, where required, shall be of the heavy duty construction with the ductile iron quadrant supported on the top and bottom by oil impregnated bronze bearings. The worm gear and shaft shall be manufactured of hardened steel and run on high efficiency roller bearings. All worm gear operators shall be sized for bidirectional shutoff at the valves design pressure rating.

Valves shall be designed and manufactured to shut off bubble tight at 175 psi for valves 2-1/2”-12” and 150 psi for valves 14” and larger. Each valve shall be given a hydrostatic and seat test with the test results being certified when required by the customer. Certified copies of Proof-of-Design test reports shall be furnished as outlined in AWWA C-517 Section 5.2.2 when requested.

Plug valves shall be Millcentric® Plug Valve Series 611.
Valves shall be of the non-lubricated eccentric type with an elastomer covering all seating surfaces. The elastomer shall be suitable for the service intended. Flanged valves shall be manufactured in accordance with ANSI B16.1 Class 125 / 150 including facing, drilling and flange thickness. Mechanical joint ends shall be in compliance with AWWA / ANSI C-111-92. Grooved ends shall be manufactured to the dimensions of ANSI / AWWA C606 for ductile or steel pipe as required. Ports shall be round on sizes 3’’-12’’ and rectangular port design on valves 14’’ and larger. All valves shall be capable of being “pigged” with a soft pig when required.

Valve bodies shall be of ASTM A-126 Class B cast iron and thickness in accordance with AWWA C-517 Section 4.4.1.4. Interior of valves shall be glass lined at .008-.012 mils thickness, covering the entire interior of valve bodies and stopping at the flange faces.

Plugs shall be of ASTM A-536-Grade 65-45-12 for all sizes in compliance with AWWA C-517 Section 4.3.3.2. The plugs shall be of one piece solid construction with PTFE thrust bearings on the upper and lower bearing journals to reduce torque and prevent dirt and grit from entering the bearing and seal area.

Valves shall be furnished with replaceable sleeve type bearings conforming to AWWA C-517, Section 4.3.3.6. Bearings shall be of sintered, oil impregnated type stainless steel. Valve shaft seals shall be of the “U” cup type in accordance with AWWA C-517 Section 4.4.7. Seals shall be self adjusting and repackable without removing the bonnet from the valve.

Wrench operated valves 2-1/2’’-8’’ shall be capable of being converted to worm gear or automated operation without removing the bonnet or plug from the valve. All wrench operated valves shall be equipped with a 2” square nut for use with removeable levers or extended “T” handles.

Worm gear operators, where required, shall be of the heavy duty construction with the ductile iron quadrant supported on the top and bottom by oil impregnated bronze bearings. The worm gear and shaft shall be manufactured of hardened steel and run on high efficiency roller bearings. All worm gear operators shall be sized for bi-directional shutoff at the valves design pressure rating.

Valves shall be designed and manufactured to shut off bubble tight at 175 psi for valves 2-1/2’’-12’’ and 150 psi for valves 14’’ and larger. Each valve shall be given a hydrostatic and seat test with the test results being certified when required by the customer. Certified copies of Proof-of-Design test reports shall be furnished as outlined in AWWA C-517 Section 5.2.2 when requested.

Plug valves shall be Millcentric® Glass Lined Plug Valve Series.
**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
- Size: 2" - 72" FL
- Sizes: 3" - 48" MJ

**SERIES 601SS**

**Eccentric Plug Valve**

- Integral Stainless Seat
- Stainless Steel 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" FL
- UL / CGA Listed

**SERIES 600F / 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
- Size: 2" - 48" Size Range

**FIGURE 50A / 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
- Sizes: 3" - 72"

**SERIES 8500**

**AWWA Swing Check**

- Available in Flanged and MJ Ends
- Rated for 175 psi
- Sizes: 3" - 12"
- UL / CGA Listed

**SERIES 8000**

**AWWA Swing Check**

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

**SERIES 9000**

**AWWA Swing Check**

- Clear Waterway
- Weight or Spring
- Air or Oil Cushion
- Backflush
- SS Body Seat Ring
- Solid Stainless Plug
- AWWA C-606 Grooved
- Disc Insert
- Size: 2" - 36" Upon Request

**FIGURE 70A**

**Wafer Check Valve**

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

**FIGURE 701**

**Wafer Check Valve**

- Available in Flanged and MJ Ends
- Rated for 250 psi
- Sizes: 3" - 24"

**FIGURE 80**

**Wafer Check Valve**

- Center Guided
- Check Valve
- Rated for 250 psi
- SS Disc / EPDM Seat
- Sizes: 2" - 24"

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