

ECCENTRIC PLUG VALVES

PART 1 -- GENERAL

1.01 GENERAL REQUIREMENTS

A. SCOPE:

1. This section specifies eccentric plug valves.

B. RELATED WORK:

1. The following specification sections are referenced herein:

Section 01300	SUBMITTALS
Section 01730	OPERATION AND MAINTENANCE INSTRUCTIONS
Section 15050	PIPING SYSTEMS
Section 15180	CONTROL VALVE SCHEDULE
Section 15185	VALVE OPERATORS AND VALVE APPURTENANCES

1.02 REFERENCES:

- A. The publications referred to hereinafter form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only. The latest edition of referenced publications in effect at the time of the bid shall govern. In case of conflict between the requirements of this section and the listed publications, the requirements of this section shall prevail.

ANSI B16.1	Cast Iron Pipe Flanges and Flanged Fittings
ASTM A126	Gray Iron Castings for Valves, Flanges, and Pipe Fittings
ASTM A536	Ductile Iron Castings
ASTM A743	Castings Iron-Chromium, Iron Chromium-Nickel Corrosion-Resistant, for General Application
AWWA C111	Rubber Gasket Joints for DI Pressure Pipe and Fittings
AWWA C517	Eccentric Plug Valves
AWWA C550	Protective Epoxy Interior Coatings for Valves & Hydrants

1.03 SUBMITTALS

- A. The following information shall be submitted for review in accordance with Section 01300:
 - 1. Manufacturer's information and catalog data showing compliance with this specification and a full description of the product.
 - 2. A copy of this specification, with addenda updates, and all referenced sections, with addenda updates, with each paragraph check marked to show specification compliance or marked to show deviations.
 - 3. Proof-of-design test results per AWWA C517.

1.04 OPERATION AND MAINTENANCE MANUALS

- A. Submit operation and maintenance (O&M) instructions in accordance with Section 01730 with a copy of Section 01730 with each paragraph check marked to show compliance. O&M instructions shall be submitted after all submittals specified in paragraph 1.03 above have been returned "NO EXCEPTIONS TAKEN" or "MAKE CORRECTIONS AS NOTED." O&M instructions shall reflect the approved materials and equipment.

PART 2 -- PRODUCTS

2.01 ECCENTRIC PLUG VALVES

A. GENERAL:

- 1. Eccentric plug valves, ANSI Class 125 or mechanical joint, unless specified differently or by the plans.
 - a. Valves 2½ to 12 inches shall be rated 175 psig for bi-directional bubbletight shutoff.
 - b. Valves 14 to 36 inches shall be rated 150 psig for bi-directional bubbletight shutoff.

B. BODY:

- 1. The body shall be constructed from ASTM A126, Class B cast iron and shall be rated ANSI Class 125. End connections:
 - a. Flanges shall be integrally cast with the body and shall conform to ANSI B16.1 Class D.
 - b. Mechanical joint shall be integrally cast with the body and shall conform to AWWA ANSI C111 standards.

C. PLUG:

1. The plug shall be constructed from ASTM A536, Grade 65-45-12 ductile iron or ASTM A126, Class B cast iron for all sizes through 72". The plug shall be one-piece construction, and shall be encapsulated with an elastomer. The elastomer shall be EPDM for temperatures greater than 225 degrees F, and Buna-N for all other services. The plug shall provide full bi-directional shutoff capability. The CLOSED position travel stop for the plug shall be externally adjustable.

D. SEAT:

1. The seat shall be 99 percent nickel alloy, welded into the body. The seat thickness shall be minimum 0.125 inch thick. Plated, screwed or sprayed seats are not acceptable.

E. STEM SEAL:

1. The stem seal shall be a self-adjusting elastomer U-cup design. The stem seal elastomer shall be same as the plug elastomer. O-ring seals and single piece packing arrangements are not acceptable.

F. BEARINGS:

1. The bearings on valves 20" and smaller shall be replaceable sleeve type, constructed from sintered, oil impregnated ASTM A743, Grade CF8M, type 316 stainless steel. Bearings shall be permanently lubricated. Bronze bearings are permissible on valves 24" and larger only.
2. Bottom sleeve bearings shall be accessible from the outside of the body through a bolt on bottom plate for valves 14" and larger.

G. GRIT SEAL:

1. A PTFE flat compression washer shall be provided at the top and bottom of the plug to prevent grit from entering the bearing area. O-ring style grit seals are not acceptable.

H. FLOW WAY:

1. As a minimum, flow coefficients for valves through 36" shall comply with the following table:

Valve Size	2½"	3"	4"	5"	6"	8"	10"	12"
Minimum C _v	420	680	1190	2000	2400	4600	5800	9100
Valve Size	14"	16"	18"	20"	24"	30"	36"	
Minimum C _v	8,505	9,365	11,196	16,131	21,343	36,445	47,871	

C_v values must be certified by a third party independent testing laboratory. Manufacturers that cannot comply with the C_v values and the independent testing requirements will not be acceptable, regardless of port design.

I. DIRECTION OF OPERATION:

1. Counter-clockwise to open.

J. PAINTING:

1. All surfaces of the valve interior shall be clean, dry and free from grease before painting. The valve surfaces except for seat edges, rubber seat and finished portions shall be evenly coated with an NSF 61 approved epoxy on the interior and exterior.

K. ACCEPTABLE PRODUCTS:

1. Pratt Ballcentric
2. Milliken Valve
3. Other manufacturers may be considered “or equal” with written pre-approval of the engineering authority, made prior to bid in addendum form only.

2.02 OPERATORS

A. Manual operators shall be as specified in Sections 15050 and 15185.

1. Manual operators shall be lever type for flanged valves 8” and smaller. Manual operators shall be direct nut type for mechanical joint valves 8” and smaller.
2. Manual operators shall be totally enclosed worm gears for valves 6” and larger. Above ground valves shall have a hand wheel and position indication. Buried valves shall have a 2” operating nut and be totally enclosed and sealed for buried service. Worm gear operators shall be sized for the maximum rated working pressure and flow conditions of the plug valve and must be capable of withstanding 300 foot pounds of torque at the stops without damage. Worm gears sized to the flow conditions of the piping system are not acceptable.

B. Powered operators shall be as specified in Sections 15180 and 15185.

2.03 PROOF OF DESIGN TESTS:

- A. Certified copies of a report from an independent testing laboratory certifying successful completion of proof-of-design testing conducted in accordance with AWWA C517 shall be furnished. In lieu of testing the valves at an independent testing laboratory, proof-of-design testing may be performed at the valve manufacturer’s laboratory, but must be witnessed by a representative of a qualified independent testing laboratory, and all test reports must be certified by the laboratory representative. C_v coefficients shall be factory certified if requested by the Engineer.

PART 3 -- EXECUTION

3.01 INSTALLATION

- A. Valves shall be installed in accordance with the manufacturer's recommendations.
- B. Valves shall be installed with the seat upstream.
- C. Operators and actuators shall be installed in accordance with Section 15185.
- D. Valves shall be shop lined and coated with 2-part epoxy, 6-8 mils DFT, in accordance with AWWA C550.

3.02 TESTING

- A. Valves shall be tested with the piping system test per Section 15050.

****END OF SECTION****