

SECTION 15106 - SWING CHECK VALVES

PART 1 – GENERAL

1.1 DESCRIPTION

This section includes materials, testing, and installation of swing check valves as shown in the Drawings and specified herein, in accordance with the requirements of the Contract Documents.

1.2 RELATED SECTIONS

- A. The Work of the following Sections applies to the Work of this Section. Work of other Sections of the Specification, not referenced below, shall also apply to the extent required for proper performance of this Work.
1. Section 01010, Summary of Work.
 2. Section 01300, Submittals.
 3. Section 09800, Painting and Coating
 4. Section 15000, General Piping Requirements
 5. Section 15040, Testing and Flushing

1.3 REFERENCE SPECIFICATIONS, CODES AND STANDARDS

- A. Except as otherwise indicated, the current editions of the following standards apply to the Work of this section:

ANSI B16.42 Ductile Iron Pipe Flanges and Flanged Fittings, Class 150 only

ASTM A193 Standard Specification for Alloy-Steel and Stainless Steel Bolting Materials for High Temperature or High Pressure

ASTM A194 Standard Specification for Carbon and Alloy Steel Nuts for Bolts for High Pressure or High Temperature Service, or Both

ASTM A536 Standard Specification for Ductile Iron Castings

ASTM B16 Standard Specification for Free-Cutting Brass Rod, Bar and Shapes for Use in Screw Machines

ASTM B62 Standard Specification for Composition Bronze or Ounce Metal Castings

ASTM B148 Standard Specification for Aluminum-Bronze Sand Castings

ASTM B584 Standard specification for Copper Alloy Sand Castings for General Applications

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1.4 SUBMITTALS

- A. The following shall be submitted in accordance with the standard specifications:
1. Submit Shop Drawings, manufacturer's catalog data and detail construction sheets showing all valve parts and describing material of construction by material and specification (such as AISI, ASTM, SAE, or CDA). Submittal shall include valve dimensions including laying lengths and dimensions and orientation of valve operators. Submittals shall also indicate valve linings and coatings with manufacturer's and paint numbers listed. Contractor shall indicate the size, quantity and pressure rating of valves, including the class and drilling pattern of the flanges where applicable.
 2. Manufacturer's certification that products comply with the requirements set forth in the Contract Documents.
 3. Manufacturer's certification that all linings and coatings have been factory tested and comply with the indicated requirements.
 4. For valves requiring certified tests, submit certified test results.
 5. Operation and maintenance data shall be submitted in accordance with the requirements set forth in the standard specifications, and shall include, but not be limited to, the following information:
 - a. Manufacturer's installation and operating instructions.
 - b. Manufacturer's maintenance procedures.
 - c. List of special tools.
 - d. Spare Parts List: A spare parts list shall be provided with information for each valve assembly.
 - e. Factory Test Data: Where indicated, signed, dated, and certified factory test data for each valve requiring certification shall be submitted before shipment of the valve. The data shall also include certification of quality and test results for factory-applied coatings.

PART 2 – MATERIALS

2.1 GENERAL

- A. Check valves shall be new and of current manufacture. Valves shall be furnished, tested, and installed by the Contractor with the type of ends, the location, and size as shown on the approved plans and as specified herein.
- B. Swing check valves shall have a working pressure of 150 psi. All valves shall be certified to meet the test pressure as specified and shall have a rated working pressure that exceeds the full working pressure specified.

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- C. All bolts, nuts, and flat washers shall be Type 316 Stainless Steel in accordance with the Water Utilities Manual.

2.2 LINING AND COATING

- A. The interior of valves shall be lined with 12 mils of Tnemec Series 141 Pota-Pox 80 (Blue) epoxy with surface preparation per SSPC-SP10. The exterior of exposed valves shall be coated with 12 mils of Tnemec Series 141 Pota-Pox 80 (color to be determined by AGENCY) with surface preparation SSPC-10.
- B. All linings and coatings shall be tested and certified for Total Dry Film Thickness and be holiday free.

2.3 SWING CHECK VALVE REQUIREMENTS

- A. Swing Check Valves 4 Inches and Larger, Class 150: Swing check valves, 4 inches and larger, shall have a ductile iron body and cover.
- B. Body ends shall be flanged, Class 125/150, ANSI/AWWA C110/A21.10 with ANSI B16.1 Class 125 drilling and shall have a drain plug located on the bottom of the valve.
- C. Oil cylinder shall be secured to the pivot shaft adjacent to the weighted lever throughout the entire stroke. Designs where the weighted lever is not attached to the oil cylinder are not allowed. The cylinder shall have steel top and bottom heads with a heavy steel barrel.
- D. The Oil Cushion to have three-stage closing control and be capable of control throughout the entire closing range. Each stage shall be independently adjustable.
 - 1. First Stage: Timing valve permits rapid closure from full open and is adjustable to set the position where the second stage begins.
 - 2. Second Stage: Closure speed is controlled by a color-coded micrometer type control valve with a locking set screw.
 - 3. Third Stage: Cushioned cylinder head with speed adjustment for slower control of the last few degrees of travel.
- E. Oil Reservoir shall be 316 stainless steel per ASTM A240. Hydraulic hoses are to be S.A.E. certified.
- F. Body Seat shall be 316 stainless steel per ASTM A276 with an O-ring seal and locked into place with stainless steel screws.
- G. Disc and Disc Arm shall be ASTM A536 ductile iron. The disc shall be attached to the disc arm with a double clevis hinge to assure self-leveling and even load distribution upon closure, minimizing seat wear. Disc shall have an independent adjustable full open disc stop. The disc arm, valve body, or cover is not to be

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used as the disc stop. Disc seat shall be nitrile butadiene (NBR) and field replaceable without the use of special tools.

- H. Pivot Shaft shall be heavy duty one-piece ASTM 564 type 630, 17-4PH stainless steel protruding through both sides of the body with a lever & weight. The pivot shaft shall have an integral retainer to prevent axial shaft movement. The pivot shaft shall have O-rings seals on both sides of the shaft.
- I. Valve is to be tested by the manufacturer as a complete assembly per AWWA C508.
- J. Swing Check valves with Side Mounted Oil Control shall be DeZurik APCO CVS-6000-OC (Series 6100) as manufactured by DeZurik, Inc., or pre-approved equal by the AGENCY.
- K. Valves shall be manufactured by APCO, or AGENCY approved equal.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. Flanges shall be cleaned by wire brushing before installing flanged valves. Nuts shall be tightened uniformly and progressively.
- B. Flat washers shall be installed under both the nut and bolt head.
- C. If flanges leak under pressure testing, nuts and bolts shall be loosened or removed, the gasket reseated or replaced, the bolts and nuts reinstalled or retightened, and joints retested. Joints shall be watertight.
- D. Threaded joints shall be cleaned by wire brushing or swabbing. Teflon joint compound or Teflon tape shall be applied to pipe threads before installing threaded valves. Joints shall be watertight.
- E. Manufacturer's authorized representative shall be available for customer service during installation and start-up, and to train personnel in the operation, maintenance and troubleshooting of the valve.
- F. Manufacturer shall also make customer service available directly from the factory in addition to authorized representatives for assistance during installation and start-up, and to train personnel in the operation, maintenance and troubleshooting of the valve.
- G. Caution: If field painting is required, special care should be taken to the exposed area of the buffer rod. It should be fully masked to prevent even a small amount of paint to get on the buffer rod, which could damage the cylinder rod seal and cause the cylinder to leak.

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3.2 PRESSURE TESTING

All swing check valves shall be pressure tested at the same time that the connecting pipelines are pressure tested. See the standard specifications for pressure testing requirements.

****END OF SECTION****