

HORIZONTAL SLEEVE VALVES

PART 1 - GENERAL

1.1 THE REQUIREMENT

- A. The CONTRACTOR shall furnish and install horizontal in-line, sleeve-type valve assemblies complete and operable as shown and specified herein including electric motor or hydraulic operators, epoxy coating, and appurtenances and accessories, in accordance with the requirements of the Contract Documents.

1.2 RELATED WORK SPECIFIED ELSEWHERE

- A. Section Valves, General.
- B. Section Valve Operators.
- C. Section Painting

1.3 CONTRACTOR SUBMITTALS

- A. The CONTRACTOR shall submit layout drawings with complete information as outlined in Section "Valves, General."
- B. Layout drawings shall be drawings of the valve showing all envelope dimensions including material callout.
- C. Calculations showing valve thrust requirements and actuator torque shall be submitted. All calculations shall be stamped by a Professional Engineer designing the product.
- E. The contractor shall submit five installation references that have been in service for at least five years. The valve references shall match the submitted valve design.

1.4 SUBSTITUTION

- A. Where horizontal in-line sleeve valves are shown or specified, the contractor shall not substitute globe style valves that are not pre-approved.

1.5 QUALITY ASSURANCE

- A. The sleeve valves shall be shop tested prior to shipment per the following minimum standards:
 - 1) Hydrostatic test to 1.5 times valve pressure rating.
 - 2) Leakage rate must be less than 2.0 oz. per inch of valve diameter per hour tested at valve pressure rating.
 - 3) Functional test of five (5) complete cycles of operation with the valve actuator settings in place (limit switches, torque switches, pilot pressure settings, etc...).

- B. Certified shop test reports shall include appropriate information such as handwheel rotation direction, valve stroke length, stroke calibration data, pilot pressure settings, operating times and visual inspection notes.

PART 2 - PRODUCTS

2.1 OPERATING REQUIREMENTS

- A. Performance: The valve shall be designed and guaranteed for at least one year to operate throughout its range without cavitation damage, excessive noise or vibration, for the conditions stated below. Material stresses shall not exceed 1/5 of the ultimate or 1/3 of the yield strength of the material. Extra capacity, as determined by the valve manufacture based on water quality, shall be designed in to the drill pattern.

Valve ID	Flange (in)	Qmax	Pin @ Qmax	Pout @ Qmax	Qmin	Pin @ Qmin	Pout @ Qmin

*Include Units

- B. Valve Operation: In the closed position, the sliding sleeve gate shall be fully advanced in the upstream direction with a resilient sealing surface seated against the gate. In the fully open position the sliding sleeve gate shall be fully-extracted in the downstream direction to release water through the fixed sleeve. The advance and retract strokes shall be

activated through the operating mechanism by means of two (2) electrically actuated power screws threaded into delrin lift nuts that are mechanically restrained to the gate. The thread engagement of the power screw into the drive tube shall be internal to the valve body. The electric actuator shall operate per Section “Valve Operators”. The valve must be a minimum of 10% open under maximum head loss and minimum flow conditions.

2.2 EQUIPMENT REQUIREMENTS

- A. Valve Assembly Components: Each in-line sleeve valve assembly shall consist essentially of a flanged conical inlet section. A flanged cylindrical body/outlet section with an inner annular chamber shall be formed by the body shell. A perforated fixed cylindrical sleeve; which has tapered control nozzles having the larger diameter on the outside diameter of the sleeve, and a sliding cylindrical sleeve (or gate) to control the water flow through the nozzles from the outer annular chamber to the inner chamber of the sleeve, shall be provided for flow control. The nozzles shall be spaced and drilled in a helical pattern. A flanged cylindrical outlet section shall be fastened to the inlet body section. The outlet section shall match the pipeline or have a conical expansion to the downstream flange with no less than a 2:1 ratio on the expansion. No sudden enlargement shall be allowed on the downstream side of the valve. The sliding gate shall seat against a seal at its upstream end and shall have a polypak, or similar acceptable seal, at its downstream end. The upstream seat seal shall be attached to the inlet end of the fixed sleeve. The valve gate shall be Stellite hardfaced to provide a low sliding coefficient of friction and resistance to damage due to any debris. Two hinged inspection ports shall be provide to allow access to the seat retainer and seat seal. The seat shall be able to be replaced through the ports without removing the valve or sleeve from the pipeline.
- B. Actuation: The valve shall be actuated by the type specified in Section “Valve Operators”. The maximum design operating force shall be five (5) times the normal operating force required at maximum inlet head conditions.
- C. Valve manufacturer:
1. Inline Sleeve Valve Model B-10s as manufactured by Bailey Valve Inc.

2.3 MATERIAL REQUIREMENTS

- A. Assembly components shall be manufactured from the following materials:
1. Valve body - Carbon Steel
ASTM A516 Gr 70
ASTM A36
 2. Fixed sleeve - Type 304 stainless steel
ASTM A182 Gr 304L
ASTM A240 Type 304L
 3. Valve Gate - Type 304 stainless steel
ASTM A240 Type 304L
 4. Seat holder - Type 304 stainless steel
ASTM A240/A276 Type 304L
 5. Fasteners - All studs, bolts, washers, and nuts in contact with water shall be stainless steel.
- B. All materials of moving components in contact with each other shall be of dissimilar hardness to prevent galling. The valve shall be moved through an open-close-open cycle three (3) times after final assembly and prior to shipment to insure this requirement.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Valve installation shall be in strict accordance with the manufacturer's printed recommendations, and the Contract Documents.
- B. Operations and Maintenance Manuals are to be provided in PDF format. The manuals shall include installation instructions, maintenance procedures and operation parameters.

3.2 WORKMANSHIP

- A. Valves shall be free from manufacturing defects and shall be manufactured in a workman like manner. Welds shall conform to ASME Section VIII or IX standards for pressure vessels and be free from mill and scale.

- B. Painting shall be per the painting section of this specification.
- C. All carbon steel components shall be painted with Epoxy paint.

3.3 FIELD TESTING AND PERFORMANCE

- A. Valves shall be field leak tested to the specified operating pressure in the closed position and shall not leak more than 2 oz per inch of valve size per hour. Any additional field leakage shall be corrected by the manufacturer at the manufacturer expense.
- B. Field leakage test shall be certified by the engineer, manufacturer and contractor.
- D. Any excessive noise or vibration shall be resolved by the manufacturer including possible replacement of the valve at the manufacturer's expense.