

SUBMERGED DISCHARGE SLEEVE VALVE

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 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. With the layout drawings, the contractor shall submit:
 - 1) Layout drawings shall be drawings of the valve showing all envelope dimensions including material callout.

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 into the drill pattern.

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

*Include Units

- B. Valve Operation: Each inline sleeve valve assembly shall consist of a vertical fabricated steel body with a 90-degree elbow and horizontal flanges inlet. The valve body shall be connected to the vertical section and contain a helical sweep of tapered nozzles with internal gate. The sliding gate shall expose nozzles when raised. The flow of fluid shall be axial from the inside of the valve to outside. The movable gate shall be operated by an electric motor operator or hydraulic cylinder mounted on an extension tube above the body. The actuator shall be sized to provide a minimum of five (5) times the normal operating force required to operate the valve at maximum operating conditions. The valve shall be mounted within a stilling basin, pressure vessel or partial structure to control discharge.

2.2 EQUIPMENT REQUIREMENTS

A. Valve Assembly Components: All interior surfaces which come in contact with water shall be fabricated of stainless steel, bronze, stellite, epoxy coated ductile iron or epoxy coated carbon steel. The assembly shall consist of a sleeve valve body, sleeve gate, extension section, inlet elbow and operating shaft(s). The valve design shall allow for service without disassembly of the entire valve.

1. The inlet elbow shall be XXX inches in diameter and shall be flanged for connection to the supply pipeline. The discharge end of the elbow shall have a welded transition section with a flange for connection to the extension section. An extended yoke and pedestal shall be welded to the elbow and shall be designed to mount the operating mechanism. The yoke shall be capable of sealing the stem through the use of a packing gland.

2. The extension section(s) shall be provided with flanges on both ends for mounting to the inlet elbow and the sleeve body. There shall not be any disrupt in flow that can cause local cavitation.

3. The valve body shall be flanged for connection to the extension section. The sleeve shall be stainless steel and shall contain control nozzles arranged in a helical sweep pattern. Each nozzle shall be tapered with sharp exit edge and be designed for a coefficient of discharge no less than 0.94. The number, diameter and spacing of the nozzles shall be determined by the sleeve valve manufacturer and shall meet the performance criteria as indicated in the specification. A removable stainless steel seat holder shall be provided at the bottom of the valve body to retain the rubber or nylon seal. The body shall be attached to an anchor base via removable clamp.

4. The gate shall be located inside the sleeve body. The gate shall be stainless steel and shall be provided with a stem connection. The bottom end of the gate shall have a stellite hardfacing to eliminate galling and shear off debris that has lodged within a nozzle. The upper end of the gate shall slide inside a bronze bearing that is retained between the valve body and extension stem. A polypack seal shall provide a seal between the gate and bronze bearing to prevent leakage in the bearing. The gate shall be retained from rotational movement during operation.

5. The anchor base shall consist of a flange bolted to a foundation plate that is anchored into the concrete at the bottom of the valve vault. The

plate shall be drilled to receive the flange bolts of the anchor base. A short pipe section shall be welded to the flange and machined on the outside diameter to fit a split clamp sleeve to secure the valve.

6. A packing box section shall be located at the upper end of the inlet elbow. The packing shall prevent leakage around the operating stem and shall be field adjustable. The packing box shall be designed as an upper stem shaft guide bearing. The packing shall be replaceable without disassembly of the valve or operating mechanism.

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-11 as manufactured by Bailey Valve Inc.

2.3 MATERIAL REQUIREMENTS

A. Assembly components shall be manufactured from the following materials:

1. Inlet Elbow - Carbon Steel or Ductile Iron
ASTM A53, Type E, Gr B
ASTM A285 Gr C
2. Sleeve - Type 304 stainless steel
ASTM A182 Gr 304L
ASTM A240 Type 304L
3. Power Screw Shaft - Type 304 stainless steel
ASTM A240 Type 304L
4. Seat holder - Type 304 stainless steel
ASTM A240/A276 Type 304L
5. Valve Gate - Type 304 stainless steel
ASTM A240 Type 304L
ASTM A358

6. Fasteners - All studs, bolts, washers, and nuts in contact with water shall be Type 304 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. Four (4) copies of Operations and Maintenance Manuals are to be provided. 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.

3.2 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 manufacturers expense.