HORIZONTAL INLINE SLEEVE VALVE

Suggested Specifications

GENERAL

Description

This section includes all materials, installations and testing of horizontal inline sleeve valves including associated appurtenances and accessories, complete and operable, in accordance with the contract documents. Sleeve valve shall be used for one or more of the following: pressure reduction, pressure retention, flow control, energy dissipation. Angle pattern or globe style valves shall not be acceptable.

Submittals

The following shop drawings shall be submitted in accordance with Section 01300:

A. Shop drawings shall include drawings of the sleeve valve and actuator assembly. Drawings shall show all relevant dimensions, materials for construction and associated standard specifications, total weight for complete valve assembly, and general installation notes

B. Certified test data from the manufacturer, demonstrating that valve design can meet the cavitation and flow requirements

C. Valve and Cv characteristic data curves

D. O&M manuals including storage, installation, start-up, spare parts, and maintenance instructions

E. Reference list of similar design

PRODUCTS

General

A. The sleeve valve shall essentially consist of the following. A valve body with a flanged inlet section. The flanged inlet section shall meet the requirements of the AWWA C-207 standard. The flange class shall be per design pressure. Pressure retaining components shall be made from ASTM A-516 GR 70 carbon steel while structural components shall be made from ASTM A-36. The body shall have two access ports so maintenance and seat replacement can be achieved without removing valve from line. There shall be an air vent on top of the valve to remove air trapped in the valve and a drain port for draining valve for maintenance. The water shall enter through the upstream inlet section and be diverted into the outer annular chamber by the internal fixed cylinder sleeve valve with a contoured upstream head.

B. The sleeve shall utilize tapered control nozzles in a multi-lead helical pattern having the larger end diameter on the outside diameter of the fixed sleeve and provide an efficiency of .94. The number, size, spacing, and valve stroke length for the nozzles shall be determined by the valve manufacturer. The sleeve shall be made from stainless steel ASTM A-240 Type 304, if rolled plate, or ASTM A-351 GR CF8 if cast. Flow shall be controlled by means of a cylindrical gate.

For more information about Pratt or to view our full line of water products, please visit www.prattvalve.com or call Pratt customer service at 1.800.423.1323.

F 13644 11/18

C. The sliding cylinder gate shall be used to control flow rate and pressure. The gate, in its fully closed position, shall provide shutoff with its upstream edge making contact on a resilient seat seal retained at the upstream end of the fixed sleeve. On the downstream side, the gate shall contain a synthetic rubber seal to protect against leakage. In the fully open position, the gate shall be completely retracted in the downstream direction to release the water through the valve's internal fixed sleeve nozzles. The gate tube shall be from stainless steel ASTM-240 Type 304 if rolled plate, or ASTM A-351 GR CF8 if cast. All components in contact with sleeve shall be made from ASTM A-240 S21800 (Nitronic 60) to ensure that gate and sleeve are free from galling. All other gate components shall be made from ASTM A-240 Type 304. The advancement and retraction of the gate shall be driven by an actuator coupled to an appropriate drive train system. The actuator and drive train system shall be designed such that the gate can be held at any intermediate position to provide superior flow control. The sleeve shall be bolted into an exit spool.

D. The drive train system shall utilize twin drive shafts located 180^0 apart and made from ASTM A-276 Type 304 or Bronze ASTM B-148-97 UNC95400 or similar materials. The drive shafts shall transmit the force necessary to advance and retract the gate. The drive shaft and mating advance coupling must be made of different materials to provide smooth operation and prevent galling. Both drive shafts shall be linked to a single motor actuator. The housing and gearing for the drive shafts shall be located on the outside of the valve and be bolted to the exit spool.

E. The valves exit spool shall be used to reconnect to the downstream piping. If the sleeve diameter is smaller than the downstream pipeline size, than a flanged concentric pipe increaser shall be bolted to the exit spool to mate with the downstream line size. The exit spool shall be made from carbon steel ASTM A-516 GR 70.

F. The upstream seat shall be of a synthetic rubber compound. The seat shall be retained by a seat retainer ring made from UHMW polyethylene. The seat retainer ring shall be held in place by retainers made from stainless steel ASTM A-240 Type 300. Where the line size permits, seats shall also be capable of being adjusted without removing the valve from the line. Manufacturer shall certify that the rubber seat is field adjustable and replaceable.

G. All internal fasteners or fasteners in contact with water shall be stainless steel ASME A-193 (304) for bolts and ASME A-194 (304) for nuts. All other fasteners shall be alloy steel SAE GR 8.

Operators

Operator shall be a modulating electric motor only to ensure proper valve flow control and throttling function. Refer to section 15180 for electric motor requirements. If specified operating time is in contradiction to section 15180, then this section shall prevail. Twin hydraulic or pneumatic cylinders shall not be acceptable.

Design Criteria

A. Line size (in):

B. Flow rate (gpm):

C. Maximum upstream pressure (psi):

D. Minimum upstream pressure (psi):

E. Maximum downstream pressure (psi):

F. Minimum downstream pressure (psi):

G. Flange Class AWWA C-207: (D-150 psi, E-275 psi)

H. Operating time (sec):

I. Motor Actuator Fail position: (fail close, fail open, fail last position)

J. Service: (raw water, potable water)

Valve Testing

A. Hydrostatic Test – Valve shall be hydrostatically tested for 15 minutes at 150 percent of the maximum operating pressure. No distortion or other defects of design or construction shall be evident during the test.

B. Leakage Test – Valve shall be tested for 15 minutes at maximum operating pressure and leakage shall not exceed 2 oz. per inch of nominal valve diameter per hour.

C. Functional Test – Fully assembled valve complete with operator shall be cycled a minimum of 3 times from open to closed to verify proper operation.

Lining and Coating

A. All internal and external carbon steel surfaces of each valve, except bearing surfaces and bolt/screw holes, shall be shop coating with one or more coats of PPG Amercoat 370 or equal epoxy paint.

Manufacture

Model 711 sleeve valves shall be manufactured by us or preapproved equal and comply with NSF 61 and Annex G certification.

EXECUTION

Installation

Valve installation shall be in strict accordance with the manufacturer's printed recommendations, and the contract documents.

Testing

After completion of installation, each control valve shall be completely field tested by the contractor with the assistance of the valve manufacturer's authorized representative over the indicated flow range. For each test condition, the flow shall be recorded along with the inlet and outlet head conditions. Full stroke time from open to close shall be recorded.