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33 6014 Utility System Valves

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SECTION 33 60 14 Utility System Valves

PART 1 - GENERAL

1.1 SUMMARY

- A. This standard details the requirements for valves used on utility distribution piping systems.

1.2 RELATED SECTIONS FOUND ELSEWHERE

- A. See Chapter 5, Division 33, Section 336313 Underground Steam Condensate Distribution Piping
See Chapter 5, Division 23, Section 221113 - Facility Water Distribution Piping

1.3 NOTES TO DESIGNERS

- A. All valves used for utility systems shall meet the requirements detailed in this standard. This includes hot water, steam, steam condensate, and chilled water and dual temperature distribution systems. This requirement extends to the pair of isolation valves serving as the main point of each building.
- B. Note that this standard does not apply to building piping systems. Refer to Section 221113 for valve requirements for building distribution systems.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

- A. Zwick
- B. Quadax
- C. Or equal

2.2 Product Requirements

- A. General: The valve shall be a 93-degree clockwise-to-close, non-rubbing, metal-to-metal-seated, zero-leakage bi-directional design. The valve shall be designed to require torque seating in order to achieve zero leakage.

The valve shall be designed in accordance with current ANSI B16.34, B31.1 and B31.3 standards. The body, disc and shaft must be designed within the allowable stress levels defined by ASME Sections III and VII for the material used. The pressure rating of the



valve and the end connections shall be per ANSI B16.5. The face-to-face dimensions shall conform to either API 609/MSS SP-68.

The valve design shall be of all-metal construction, inherently firesafe and fire tested by a recognized independent agency.

The valve shall be Lug Type Series A1 body (API 609/MSS SP-68).

B. Valve Body and Seat

All valve bodies shall be one-piece cast or fabricated carbon steel. The valve seat shall be integral with the valve body. A carbon steel-bodied valve shall have a stainless-steel or Inconel 625 welded overlay for the body seat. Plated carbon steel seating surfaces are not allowed. The valve seat, whether integral or welded overlay, shall be machined together with the valve. The valve seat shall be of a slanted conical shape with a 25-degree inclined angle for non-rubbing, frictionless, non-jamming, zero-leakage, bi-directional shut-off capabilities.

C. Valve Disc and Seal Ring

The valve disc shall be of the same material specified for the valve body. No pinning of the disc to the shaft is allowed. Shaft bushings shall be located as close to the centerline of the valve as possible in order to provide maximum support of the shaft to eliminate all possible shaft deflection or bending. Disc designs that use a single hub are not allowed. The seal ring shall consist of stainless-steel lamination with a metallic reinforcement to avoid washing out / erosion of the graphite. The seal ring shall be machined in a method parallel to the laminates with the outside diameter machined to a conical 25-degree inclined plane. The seal ring cone angle shall match the cone angle of the body seat. The seal ring shall be sealed to the disc and clamp ring by means of a flat, graphite gasket. No spiral-wound gaskets are allowed.

D. Valve Shaft

The valve shaft shall be ASTM A276/479 Type 431 stainless steel. The shaft shall be a through shaft of one-piece construction and include an external blowout proof feature. No pinning of the shaft to the disc shall be allowed. Torque is delivered to the disc by means of machined keys. No adjustable thrust bearings are allowed. This design must be in compliance with API 609 requirements.

E. Bearings and Packing

Bearings shall be manufactured of hardened stainless steel and protected with inboard fiber wiper rings to prevent ingress of particulate between bearing and shaft. An adjustable packing gland shall be supplied. The packing shall consist of a minimum of two braided graphite anti-extrusion rings top and bottom and a minimum of three die-formed graphite rings in the middle.

F. Operator/Gearbox



High temperature gearbox rated to IP68 shall be used for valves installed in pits, tunnels, chases and other harsh environments. Ductile iron gearbox for wet, corrosive and elevated temperature service shall be supplied with Viton seals, SS fasteners, high temperature grease (rated to 392°F). visual position indicator and pre-adjusted travel stops, carbon steel hand wheel.

2.3 WARRANTY

Valves shall be warrantied for a period of 10-years. A warranty statement on factory letterhead indicating a 10-year warranty shall be included in the submittal documents.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install valves in accordance with manufacturer's instructions.
- B. Examine valve interior for cleanliness, freedom from foreign matter, and corrosion. Remove special packing materials, such as blocks, used to prevent disc movement during shipping and handling.
- C. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.
- D. Examine mating flange faces for conditions that might cause leakage. Check bolting for proper size, length, and material. Verify that gasket is of proper size, that its material composition is suitable for service, and that it is free from defects and damage.
- E. Install valves with stems upright or horizontal, not inverted.
- F. With the exception of valves which must be properly sized to ensure design flow rates and pressure drops (such as control valves), valves shall be line sized.
- G. For valves located more than 8 feet (2.4 m) above finished floor in equipment room areas, provide chain operated sheaves. Extend chains to 5 feet (1.5 m) above finished floor and hook to clips arranged to clear walking aisles.