

SECTION 23 05 40 – GENERAL DUTY VALVES FOR HVAC PIPING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. This section includes various types of general duty valves used in HVAC systems.

1.3 SUBMITTALS

- A. Product Data: For each type of valve indicated.

1.4 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type of valve from the same manufacturer.
- B. ASME Compliance:
  - 1. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
  - 2. ASME B31.9 for building services piping valves.

1.5 DELIVERY, STORAGE, AND HANDLING

- A. Prepare valves for shipping per the manufacturer's recommendations and to prevent damage during shipping.
- B. Store valves per the manufacturer's recommendations.

PART 2 - PRODUCTS

2.1 GENERAL REQUIREMENTS FOR VALVES

- A. Refer to Part 3 for HVAC valve schedule and applications of valves.
- B. Valve Pressure and Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.
- C. Valve Sizes: Same as upstream piping unless otherwise indicated.

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2.2 BRONZE BALL VALVES

A. Two-Piece, Full-Port, Bronze Ball Valves:

1. Manufacturers: Subject to compliance with requirements provide products by one of the following:
  - a. Conbraco Industries, Inc.
  - b. Crane Co.; Crane Valve Group.
  - c. Hammond Valve.
  - d. Milwaukee Valve Company.
  - e. NIBCO INC.
2. Description:
  - a. Manufactured to comply with standard MSS SP-110.
  - b. Rated for 150 psig SWP and 600 psig CWP.
  - c. Two-piece cast bronze body.
  - d. Seats: TFE.
  - e. Anti-blowout stem and chrome plated bronze ball.
3. Where valves are to be installed in insulated piping, provide extended handles with memory stop, and made of a non-thermal conductive material. Provide a protective sleeve to allow operation of the valve without damaging the insulation.

2.3 BUTTERFLY VALVES

A. Cast-iron body butterfly Valves:

1. Manufacturers: Subject to compliance with requirements provide products by one of the following:
  - a. Conbraco Industries, Inc.
  - b. Crane Co.; Crane Valve Group.
  - c. Hammond Valve.
  - d. Milwaukee Valve Company.
  - e. NIBCO INC.
  - f. Watts Regulator Co, Inc.
2. Description:
  - a. Manufactured to comply with MSS SP-67.
  - b. 200 PSI CWP Rating.
  - c. Body Design: Lug type; suitable for bidirectional dead-end service at rated pressure without use of downstream flange.
  - d. Body Material: ASTM A 126, cast iron.
  - e. Seat: EPDM.
  - f. Stem: 400 series stainless steel.
  - g. Disc: Aluminum bronze.
  - h. Operation: 6" and smaller, 10 position lever operator; 8" and larger gear operator.
3. Where valves are to be installed in insulated piping, provide extended neck.

## 2.4 HIGH PERFORMANCE BUTTERFLY VALVES

### A. Class 150 Butterfly valve.

1. Manufacturers: Subject to compliance with requirements provide products by one of the following:
  - a. NIBCO model LCS 6822 or equal.
  - b. Victaulic model Vic 300 Master Seal with Grade E EPDM high temperature seat.
2. Description:
  - a. Manufactured to comply with MSS SP-68.
  - b. Class 150.
  - c. 250-degree rating at 200 PSI
  - d. Carbon steel body with stainless steel disc and stem.
  - e. PTFE seats.
  - f. Permanently lubricated 316 stainless steel bearings.
  - g. Operation: 6" and smaller, lever (locking) operator; 8" and larger gear operator.
3. Where valves are to be installed in insulated piping, provide extended neck.

## 2.5 BRONZE SWING CHECK VALVES

### A. Class 150, Bronze Swing Check Valves with Bronze Disc:

1. Manufacturers: Subject to compliance with requirements provide products by one of the following:
  - a. Crane Co.
  - b. Milwaukee Valve Company.
  - c. NIBCO INC.
2. Description:
  - a. Manufactured to comply with MSS SP-67.
  - b. CWP Rating: 300 psig.
  - c. Body Design: Horizontal flow.
  - d. Body Material: bronze.
  - e. Disc: bronze.

## 2.6 IRON SWING CHECK VALVES

### A. Class 125, Iron Swing Check Valves with Metal Seats:

1. Manufacturers: Subject to compliance with requirements provide products by one of the following:
  - a. Crane Co.; Crane Valve Group; Crane Valves.
  - b. Milwaukee Valve Company.
  - c. NIBCO INC.
2. Description:
  - a. Standard: MSS SP-71, Type I.
  - b. NPS 2-1/2 to NPS 12, CWP Rating: 200 psig.

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- c. Body Design: Clear or full waterway.
- d. Body Material: ASTM A 126, gray iron with bolted bonnet.
- e. Ends: Flanged.
- f. Trim: Bronze.

2.7 IRON, GROOVED-END SWING CHECK VALVES

A. 300 CWP, Iron, Grooved-End Swing Check Valves:

- 1. Manufacturers: Subject to compliance with requirements provide products by one of the following:
  - a. Anvil International, Inc.
  - b. Victaulic Company.
- 2. Description:
  - a. CWP Rating: 300 psig.
  - b. Body Material: ASTM A 536, ductile iron.
  - c. Seal: EPDM.
  - d. Disc: Spring operated, ductile iron or stainless steel.

2.8 LUBRICATED PLUG VALVES

A. Class 125, Regular-Gland, Lubricated Plug Valves with Threaded Ends:

- 1. Description:
  - a. Standard: MSS SP-78, Type II.
  - b. NPS 2-1/2 to NPS 12, CWP Rating: 200 psig.
  - c. Body Material: ASTM A 48/A 48M or ASTM A 126, cast iron with lubrication-sealing system.
  - d. Plug: Cast iron or bronze with sealant groove.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. 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.
- B. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.
- C. Examine threads on valve and mating pipe for form and cleanliness.
- 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. Do not attempt to repair defective valves; replace with new valves.

3.2 VALVE INSTALLATION

- A. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.
- B. Locate valves for easy access and provide separate support where necessary.
- C. Install valves in horizontal piping with stem at or above center of pipe.
- D. Install valves in position to allow full stem movement.
- E. Install chain wheels on operators for ball and butterfly valves NPS 4 (DN 100) and larger and more than 96 inches (2400 mm) above floor. Extend chains to 60 inches (1520 mm) above finished floor.

3.3 ADJUSTING

- A. Adjust or replace valve packing after piping systems have been tested and put into service but before final adjusting and balancing. Replace valves if persistent leaking occurs.

3.4 GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

- A. If valve applications are not indicated, use the following:
  - 1. Shutoff Service: Ball or butterfly valves.
  - 2. Throttling Service except Steam: Ball, or butterfly valves.
  - 3. Pump-Discharge Check Valves:
    - a. NPS 2 and Smaller: Bronze swing check valves with bronze disc.
    - b. NPS 2-1/2 and Larger: Iron swing check valves with lever and weight or with spring or iron, center-guided, resilient-seat check valves.
- B. High Performance Valve locations are noted on the contract drawings.
- C. If valves with specified SWP classes or CWP ratings are not available, the same types of valves with higher SWP classes or CWP ratings may be substituted.

END OF SECTION 23 05 40