

SECTION 21 05 23
GENERAL-DUTY VALVES FOR WATER-BASED FIRE-SUPPRESSION PIPING

PART 1 GENERAL

1.01 RELATED REQUIREMENTS

- A. Section 21 05 53 - Identification for Fire Suppression Piping and EQUIPMENT.
- B. Section 21 13 00 - Fire-Suppression Sprinkler Systems.

1.02 REFERENCE STANDARDS

- A. ASME B1.20.1 - PIPE THREADS, GENERAL PURPOSE (INCH); 2013.
- B. ASME B16.1 - Gray Iron Pipe Flanges and Flanged Fittings: Classes 25, 125, and 250; 2015.
- C. FM (AG)- FM Approval Guide; current edition.
- D. NFPA 13 - Standard for the Installation of Sprinkler Systems; 2015, with Errata (2017).
- E. NFPA 13R - Standard for the Installation of Sprinkler Systems in Low-Rise Residential Occupancies; 2016.
- F. UL (DIR)- Online Certifications Directory; current listings at database.ul.com.
- G. UL 262 - Gate Valves for Fire-Protection Service; Current Edition, Including All Revisions.
- H. UL 312 - Check Valves for Fire-Protection Service; Current Edition, Including All Revisions.

1.03 SUBMITTALS

- A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data on valves including manufacturers catalog information. Submit performance ratings, rough-in details, weights, support requirements, and piping connections.
- C. WARRANTY: SUBMIT MANUFACTURER WARRANTY AND ENSURE THAT FORMS HAVE BEEN COMPLETED IN OWNER'S NAME AND REGISTERED WITH MANUFACTURER.
- D. Operation and Maintenance Data: Include manufacturer's descriptive literature, operating instructions, maintenance and repair data, and parts listings.

1.04 QUALITY ASSURANCE

- A. Manufacturer Qualifications:
 - 1. Obtain valves for each valve type from single manufacturer.
 - 2. Company must specialize in manufacturing products specified in this section, with not less than three years of documented experience.
- B. Where listed products are specified, provide products listed, classified, and labeled by FM (AG), UL (DIR), or testing firm acceptable to authorities having jurisdiction as suitable for the purpose indicated.
- C. Installer and Maintenance Contractor Qualifications:
 - Company specializing in performing the work of this section with minimum five years documented experience.
 - Trained and approved by manufacturer to design, install, test and maintain the equipment specified herein.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Prepare valves for shipping as follows:
 - 1. Protect internal parts against rust and corrosion.
 - Protect threads and flange faces.
 - Set valves open to minimize exposure of functional surfaces.

- B. Use the following precautions during storage:
 - 1. Maintain valve end protection and protect flanges and specialties from dirt.
 - a. Provide temporary inlet and outlet caps.
 - b. Maintain caps in place until installation.
 - 2. Store valves in shipping containers and maintain in place until installation.
 - a. Store valves indoors and maintain at higher than ambient dew point temperature.
 - b. If outdoor storage is unavoidable, store valves off the ground in watertight enclosures.
- C. Use the following precautions for handling:
 - Do not use operating handles or stems as lifting or rigging points.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. UL Listed: Provide valves listed in UL (DIR) under following headings and bearing UL mark:
Main Level: VDGT - Sprinkler System & Water Spray System Devices.
 - a. Level 1: VQGU - Valves, Trim, and Drain.
- B. FM Global Approved: Provide valves listed in FM (AG) Approval Guide under the following headings:
Automated Sprinkler Systems:
Indicator posts.
- C. Comply with NFPA 13, NFPA 13R.
- D. Valve Pressure Ratings: Not less than minimum pressure rating indicated or higher as required.
- E. Valve Sizes: Same as upstream piping unless otherwise indicated.

2.02 CHECK VALVES

- A. Manufacturers:
Substitutions: See Section 01 6000 - Product Requirements.
- B. UL 312 and FM (AG) standard listing for check valves, Class Number 1045.
- C. Minimum Pressure Rating: 175 psig.
- D. Type: Center guided check valve.
- E. Body Material: Cast iron, ductile iron.

2.03 CENTER GUIDED CHECK WITH ELASTOMERIC SEAL.

- A. Hinge Spring: Stainless steel.
- B. End Connections: Flanged, grooved, or threaded.

2.04 IRON OS&Y GATE VALVES

- A. Manufacturers:
Substitutions: See Section 01 6000 - Product Requirements.
- B. UL 262 and FM (AG) standard listing for fire-service water control valves (OS&Y and NRS-type gate valves).
- C. Minimum Pressure Rating: 175 psig.
- D. Body and Bonnet Material: Cast or ductile iron.
- E. Wedge: Cast or ductile iron, or bronze with elastomeric coating.
- F. Wedge Seat: Cast or ductile iron, or bronze with elastomeric coating.

- G. Stem: Brass or bronze.
- H. Packing: Non-asbestos PTFE.
- I. Supervisory Switch: External.
- J. End Connections: Flanged.

2.05 TRIM AND DRAIN VALVES

2.06 BALL VALVES:

Manufacturers:

Substitutions: See Section 01 6000 - Product Requirements.

- 1. Description:
 - a. Pressure Rating: 175 psig.
 - b. Body Design: Two piece.
 - c. Body Material: Forged brass or bronze.
 - d. Port Size: Full or standard.
 - e. Seat: PTFE.
 - f. Stem: Bronze or stainless steel.
 - g. Ball: Chrome-plated brass.
 - h. Actuator: Hand-lever.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Confirm valve interior to be free of foreign matter and corrosion.
- B. Remove packing materials.
- C. Examine guides and seats by operating valves from the fully open position to the fully closed position.
- D. Examine valve threads and mating pipe for form and cleanliness.

3.02 INSTALLATION

- A. Comply with specific valve installation requirements and application in the following Sections:
Section 21 13 00 for application of valves in wet and dry pipe, fire-suppression sprinkler systems.
- B. Install listed fire protection shutoff valves supervised-open, located to control sources of water supply except from fire department connections.
- C. Install check valve in water supply connections and backflow preventer at potable water supply connections.
- D. Valves with threaded connections to have unions at equipment arranged for easy access, service, maintenance, and equipment removal without system shutdown.
- E. Valves in horizontal piping installed with stem at or above the pipe center.
- F. Position valves to allow full stem movement.
- G. Install valve tags. Comply with Section 21 05 53 requirements for valve tags, schedules, and signs on surfaces concealing valves; and the appropriate NFPA standard applying to the piping system in which valves are installed.

END OF SECTION 21 05 53
