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## SECTION 220523.14 - CHECK VALVES FOR PLUMBING PIPING

### **TIPS:**

To view non-printing **Editor's Notes** that provide guidance for editing, click on MasterWorks/Single-File Formatting/Toggle/Editor's Notes.

To read **detailed research, technical information about products and materials, and coordination checklists**, click on MasterWorks/Supporting Information.

## 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. Section Includes:
  - 1. Bronze lift check valves.
  - 2. Bronze swing check valves.
  - 3. Iron swing check valves.
  - 4. Iron swing check valves with closure control.
  - 5. Iron, grooved-end swing check valves.
  - 6. Iron, center-guided check valves.
  - 7. Iron, plate-type check valves.

### 1.3 DEFINITIONS

- A. CWP: Cold working pressure.
- B. EPDM: Ethylene propylene-diene terpolymer rubber.
- C. LF: Lead free.
- D. MSS: Manufacturer's Standardization Society.
- E. NBR: Acrylonitrile-butadiene, Buna-N, or nitrile rubber.
- F. NSF: National Sanitation Foundation.
- G. PTFE: Polytetrafluoroethylene.

### 1.4 ACTION SUBMITTALS

- A. Product Data: For each type of valve.
  - 1. Certification that products comply with [NSF 61] [and] [NSF 372].

### 1.5 DELIVERY, STORAGE, AND HANDLING

- A. Prepare valves for shipping as follows:
  - 1. Protect internal parts against rust and corrosion.
  - 2. Protect threads, flange faces, grooves, and weld ends.
  - 3. Set check valves in either closed or open position.
- B. Use the following precautions during storage:
  - 1. Maintain valve end protection.
  - 2. Store valves indoors and maintain at higher-than-ambient-dew-point temperature. If outdoor storage is necessary, store valves off the ground in watertight enclosures.
- C. Use sling to handle large valves; rig sling to avoid damage to exposed parts. Do not use handwheels or stems as lifting or rigging points.

### 1.6 WARRANTY

- A. Manufacturer's Special Warranty on Domestic Products: Conbraco Industries, Inc. warrants products to be free of defects in workmanship or material for a period of five years. This warranty applies to Apollo brand products with "Made in the USA" markings only. Conbraco will correct such defects by suitable repair or replacement at Conbraco's discretion.
- B. Manufacturer's Special Warranty on International Products: APOLLO INTERNATIONAL products will be free of defects in workmanship or material for a period of two years. Conbraco will correct such defects by suitable repair or replacement at Conbraco's discretion.

- C. Manufacturer's Special Warranty on Shurjoint Piping Products: The 10 Year Limited Warranty applies to manufacturing defects only and does not cover severe service/temperature applications or wear parts. Shurjoint will correct such defects by suitable repair or replacement at Shurjoint's discretion.

## PART 2 - PRODUCTS

### 2.1 GENERAL REQUIREMENTS FOR VALVES

- A. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.
- B. ASME Compliance:
1. ASME B1.20.1 for threads for threaded end valves.
  2. ASME B16.1 for flanges on iron valves.
  3. ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.
  4. ASME B16.18 for solder joint.
  5. ASME B31.9 for building services piping valves.
- C. AWWA Compliance: Comply with AWWA C606 for grooved-end connections.
- D. NSF Compliance: [NSF 61] [and] [NSF 372] for valves in potable-water service.
- E. Bronze valves shall be made with dezincification-resistant materials. Bronze valves made with copper alloy (brass) containing more than 15 percent zinc are not permitted.
- F. Valve Pressure-Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.
- G. Valve Sizes: Same as upstream piping unless otherwise indicated.
- H. Valve Bypass and Drain Connections: MSS SP-45.

### 2.2 BRONZE LIFT CHECK VALVES

- A. Bronze Lift Check Valves with Bronze Disc, Class 125:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Crane; Crane Energy Flow Solutions.
    - b. Jenkins Valves; Crane Energy Flow Solutions.
    - c. Stockham; Crane Energy Flow Solutions.
    - d. <Insert manufacturer's name>.
  2. Description:
    - a. Standard: MSS SP-80, Type 1.

- b. CWP Rating: 200 psig (1380 kPa).
- c. Body Design: Vertical flow.
- d. Body Material: ASTM B 61 or ASTM B 62, bronze.
- e. Ends: Threaded or soldered. See valve schedule articles.
- f. Disc: Bronze.

B. Bronze Lift Check Valves with Nonmetallic Disc, Class 125:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Flo Fab Inc.
  - b. Hammond Valve.
  - c. KITZ Corporation.
  - d. Milwaukee Valve Company.
  - e. Mueller Steam Specialty; A WATTS Brand.
  - f. NIBCO INC.
  - g. Red White Valve Corp.
  - h. WATTS.
  - i. **<Insert manufacturer's name>**.
2. Description:
  - a. Standard: MSS SP-80, Type 2.
  - b. CWP Rating: 200 psig (1380 kPa).
  - c. Body Design: Vertical flow.
  - d. Body Material: ASTM B 61 or ASTM B 62, bronze.
  - e. Ends: Threaded or soldered. See valve schedule articles.
  - f. Disc: NBR, PTFE.

### 2.3 BRONZE SWING CHECK VALVES

A. Bronze Swing Check Valves with Bronze Disc, Class 125:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Apollo, Conbraco Industries, Inc.; [161TLF] [161SLF] Series for potable water applications, and [161T] [161S] Series for applications other than potable water, or comparable products by one of the following:
  - a. Stockham; Crane Energy Flow Solutions.
  - b. WATTS.
  - c. **<Insert manufacturer's name>**.
2. Description:
  - a. Standard: MSS SP-80, Type 3, or MSS SP-139 lead free.
  - b. CWP Rating: 200 psig (1380 kPa).
  - c. Body Design: Horizontal flow.
  - d. Body Material: ASTM B 62, bronze.
  - e. Ends: Threaded or soldered

f. Disc: Bronze.

B. Bronze Swing Check Valves with Nonmetallic Disc, Class 125:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Apollo, Conbraco Industries, Inc.; [163TLF Series] [163SLF Series] [163TPRLF] for potable water applications, and [163T Series] [163S Series] [163TPR] for applications other than potable water, or comparable products by one of the following:
  - a. Stockham; Crane Energy Flow Solutions.
  - b. WATTS.
  - c. <Insert manufacturer's name>.
2. Description:
  - a. Standard: MSS SP-80, Type 4, or MSS SP-139 lead free.
  - b. CWP Rating: 200 psig (1380 kPa).
  - c. Body Design: Horizontal flow.
  - d. Body Material: ASTM B 62, bronze.
  - e. Ends: Threaded, soldered, and press as required by valve schedules below.
  - f. Disc: PTFE.

C. Bronze Swing Check Valves with Bronze Disc, Class 150:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Apollo, Conbraco Industries, Inc.; 164T Series, or a comparable product by one of the following:
  - a. Crane; Crane Energy Flow Solutions.
  - b. Milwaukee Valve Company.
  - c. NIBCO INC.
  - d. Stockham; Crane Energy Flow Solutions.
  - e. <Insert manufacturer's name>.
2. Description:
  - a. Standard: MSS SP-80, Type 3.
  - b. CWP Rating: 300 psig (2070 kPa).
  - c. Body Design: Horizontal flow.
  - d. Body Material: ASTM B 62, bronze.
  - e. Ends: Threaded or soldered. See valve schedule articles.
  - f. Disc: Bronze.

D. Bronze Swing Check Valves with Nonmetallic Disc, Class 150:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Crane; Crane Energy Flow Solutions.
  - b. FNW; Ferguson Enterprises, Inc.
  - c. Hammond Valve.
  - d. Jenkins Valves; Crane Energy Flow Solutions.

- e. Milwaukee Valve Company.
- f. NIBCO INC.
- g. WATTS.
- h. **<Insert manufacturer's name>**.

2. Description:

- a. Standard: MSS SP-80, Type 4.
- b. CWP Rating: **300 psig (2070 kPa)**.
- c. Body Design: Horizontal flow.
- d. Body Material: ASTM B 62, bronze.
- e. Ends: Threaded or soldered. See valve schedule articles.
- f. Disc: PTFE.

## 2.4 IRON SWING CHECK VALVES

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

1. Basis-of-Design Product: Subject to compliance with requirements, provide Apollo, Conbraco Industries, Inc.; 910F-LF Series for potable water applications, and 910F Series for HVAC and applications other than potable water, or comparable products by one of the following:

- a. Stockham; Crane Energy Flow Solutions.
- b. WATTS.
- c. **<Insert manufacturer's name>**.

2. Description:

- a. Standard: MSS SP-71, Type I.
- b. CWP Rating: **200 psig (1380 kPa)**.
- c. Body Design: Clear or full waterway.
- d. Body Material: ASTM A 126, gray iron with bolted bonnet.
- e. Ends: Flanged or threaded. See valve schedule articles.
- f. Trim: Bronze.
- g. Gasket: Asbestos free.

### B. Iron Swing Check Valves with Nonmetallic-to-Metal Seats, Class 125:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. Crane; Crane Energy Flow Solutions.
- b. Stockham; Crane Energy Flow Solutions.
- c. **<Insert manufacturer's name>**.

2. Description:

- a. Standard: MSS SP-71, Type I.
- b. CWP Rating: **200 psig (1380 kPa)**.

- c. Body Design: Clear or full waterway.
- d. Body Material: ASTM A 126, gray iron with bolted bonnet.
- e. Ends: Flanged or threaded. See valve schedule articles.
- f. Trim: Composition.
- g. Seat Ring: Bronze.
- h. Disc Holder: Bronze.
- i. Disc: PTFE.
- j. Gasket: Asbestos free.

C. Iron Swing Check Valves with Metal Seats, Class 250:

- 1. Basis-of-Design Product: Subject to compliance with requirements, provide Apollo, Conbraco Industries, Inc.; 920F-LF Series for potable water applications, and 920F Series for HVAC and applications other than potable water, or comparable products by one of the following:
  - a. Stockham; Crane Energy Flow Solutions.
  - b. WATTS.
  - c. **<Insert manufacturer's name>**.
- 2. Description:
  - a. Standard: MSS SP-71, Type I.
  - b. CWP Rating: **500 psig (3450 kPa)**.
  - c. Body Design: Clear or full waterway.
  - d. Body Material: ASTM A 126, gray iron with bolted bonnet.
  - e. Ends: Flanged or threaded. See valve schedule articles.
  - f. Trim: Bronze.
  - g. Gasket: Asbestos free.

## 2.5 IRON SWING CHECK VALVES WITH CLOSURE CONTROL

A. Iron Swing Check Valves with Lever- and Spring-Closure Control, Class 125:

- 1. Basis-of-Design Product: Subject to compliance with requirements, provide Apollo, Conbraco Industries, Inc.; 910FLW-LF Series for potable water applications, and 910FLW Series for HVAC and applications other than potable water, or comparable products by one of the following:
  - a. Stockham; Crane Energy Flow Solutions.
  - b. WATTS.
  - c. **<Insert manufacturer's name>**.
- 2. Description:
  - a. Standard: MSS SP-71, Type I.
  - b. CWP Rating: **200 psig (1380 kPa)**.
  - c. Body Design: Clear or full waterway.
  - d. Body Material: ASTM A 126, gray iron with bolted bonnet.
  - e. Ends: Flanged or threaded. See valve schedule articles.

- f. Trim: Bronze.
- g. Gasket: Asbestos free.
- h. Closure Control: Factory-installed exterior lever and weight.

B. Iron Swing Check Valves with Lever and Weight-Closure Control, Class 125:

1. Basis-of-Design Product: Subject to compliance with requirements, provide Apollo, Conbraco Industries, Inc.; 910FLW-LF Series for potable water applications, and 910FLW Series for HVAC and applications other than potable water, or comparable products by one of the following:
  - a. Stockham; Crane Energy Flow Solutions.
  - b. WATTS.
  - c. <Insert manufacturer's name>.
2. Description:
  - a. Standard: MSS SP-71, Type I.
  - b. CWP Rating: 200 psig (1380 kPa).
  - c. Body Design: Clear or full waterway.
  - d. Body Material: ASTM A 126, gray iron with bolted bonnet.
  - e. Ends: Flanged or threaded. See valve schedule articles.
  - f. Trim: Bronze.
  - g. Gasket: Asbestos free.
  - h. Closure Control: Factory-installed exterior lever and weight.

## 2.6 IRON, GROOVED-END SWING CHECK VALVES

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

1. Basis-of-Design Product: Subject to compliance with requirements, provide Shurjoint Piping Products USA Inc.; SJ-900 or a comparable product by one of the following:
  - a. Anvil International.
  - b. Victaulic Company.
  - c. <Insert manufacturer's name>.
2. Description:
  - a. CWP Rating: 300 psig (2070 kPa).
  - b. Body Material: ASTM A 536, ductile iron.
  - c. Seal: EPDM.
  - d. Disc: Spring operated, ductile iron or stainless steel.

## 2.7 IRON, CENTER-GUIDED, SPRING-LOADED CHECK VALVES

A. Iron, Compact-Wafer, Center-Guided Check Valves with Metal Seat, Class 125:



1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. Anvil International.
  - b. APCO Willamette Valve and Primer Corporation.
  - c. Crispin Valve.
  - d. DFT Inc.
  - e. Flo Fab Inc.
  - f. FNW; Ferguson Enterprises, Inc.
  - g. GA Industries, Inc.
  - h. Hammond Valve.
  - i. Metraflex Company (The).
  - j. Milwaukee Valve Company.
  - k. Mueller Steam Specialty; A WATTS Brand.
  - l. NIBCO INC.
  - m. Spence Strainers International.
  - n. Sure Flow Equipment Inc.
  - o. Val-Matic Valve & Manufacturing Corp.
  - p. WATTS.
  - q. **<Insert manufacturer's name>**.
  
2. Description:
  - a. Standard: MSS SP-125.
  - b. CWP Rating: **200 psig (1380 kPa)**.
  - c. Body Material: ASTM A 126, gray iron.
  - d. Style: Compact wafer, spring loaded.
  - e. Seat: Bronze.

B. Iron Globe, Center-Guided Check Valves with Metal Seat, Class 125:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
  - a. APCO Willamette Valve and Primer Corporation.
  - b. Crispin Valve.
  - c. DFT Inc.
  - d. Flomatic Corporation.
  - e. Hammond Valve.
  - f. Metraflex Company (The).
  - g. Milwaukee Valve Company.
  - h. Mueller Steam Specialty; A WATTS Brand.
  - i. NIBCO INC.
  - j. Spence Strainers International.
  - k. Sure Flow Equipment Inc.
  - l. Val-Matic Valve & Manufacturing Corp.
  - m. WATTS.
  - n. **<Insert manufacturer's name>**.
  
2. Description:

- a. Standard: MSS SP-125.
  - b. CWP Rating: 200 psig (1380 kPa).
  - c. Body Material: ASTM A 126, gray iron.
  - d. Style: Globe, spring loaded.
  - e. Ends: Flanged.
  - f. Seat: Bronze.
- C. Iron, Compact-Wafer, Center-Guided Check Valves with Metal Seat, Class 150:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. APCO Willamette Valve and Primer Corporation.
    - b. Crispin Valve.
    - c. Val-Matic Valve & Manufacturing Corp.
    - d. <Insert manufacturer's name>.
  2. Description:
    - a. Standard: MSS SP-125.
    - b. CWP Rating: 300 psig (2070 kPa).
    - c. Body Material: ASTM A 395/A 395M or ASTM A 536, ductile iron.
    - d. Style: Compact wafer, spring loaded.
    - e. Seat: Bronze.
- D. Iron Globe, Center-Guided Check Valves with Metal Seat, Class 150:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. APCO Willamette Valve and Primer Corporation.
    - b. Crispin Valve.
    - c. Val-Matic Valve & Manufacturing Corp.
    - d. <Insert manufacturer's name>.
  2. Description:
    - a. Standard: MSS SP-125.
    - b. CWP Rating: 300 psig (2070 kPa).
    - c. Body Material: ASTM A 395/A 395M or ASTM A 536, ductile iron.
    - d. Style: Globe, spring loaded.
    - e. Ends: Flanged.
    - f. Seat: Bronze.
- E. Iron, Compact-Wafer, Center-Guided Check Valves with Metal Seat, Class 250:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. APCO Willamette Valve and Primer Corporation.
    - b. Crispin Valve.

- c. DFT Inc.
- d. Flo Fab Inc.
- e. Hammond Valve.
- f. Metraflex Company (The).
- g. Milwaukee Valve Company.
- h. NIBCO INC.
- i. Sure Flow Equipment Inc.
- j. Val-Matic Valve & Manufacturing Corp.
- k. <Insert manufacturer's name>.

2. Description:

- a. Standard: MSS SP-125.
- b. CWP Rating: 400 psig (2760 kPa).
- c. Body Material: ASTM A 126, gray iron.
- d. Style: Compact wafer, spring loaded.
- e. Seat: Bronze.

F. Iron Globe, Center-Guided Check Valves with Metal Seat, Class 250:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. APCO Willamette Valve and Primer Corporation.
- b. Crispin Valve.
- c. DFT Inc.
- d. Flomatic Corporation.
- e. Hammond Valve.
- f. Metraflex Company (The).
- g. Milwaukee Valve Company.
- h. Mueller Steam Specialty; A WATTS Brand.
- i. NIBCO INC.
- j. Val-Matic Valve & Manufacturing Corp.
- k. <Insert manufacturer's name>.

2. Description:

- a. Standard: MSS SP-125.
- b. CWP Rating: 400 psig (2760 kPa).
- c. Body Material: ASTM A 126, gray iron.
- d. Style: Globe, spring loaded.
- e. Ends: Flanged.
- f. Seat: Bronze.

G. Iron, Compact-Wafer, Center-Guided Check Valves with Metal Seat, Class 300:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:

- a. APCO Willamette Valve and Primer Corporation.
- b. Crispin Valve.

- c. Val-Matic Valve & Manufacturing Corp.
    - d. **<Insert manufacturer's name>**.
  2. Description:
    - a. Standard: MSS SP-125.
    - b. CWP Rating: **500 psig (3450 kPa)**.
    - c. Body Material: ASTM A 395/A 395M or ASTM A 536, ductile iron.
    - d. Style: Compact wafer, spring loaded.
    - e. Seat: Bronze.
- H. Iron Globe, Center-Guided Check Valves with Metal Seat, Class 300:
  1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. APCO Willamette Valve and Primer Corporation.
    - b. Crispin Valve.
    - c. Val-Matic Valve & Manufacturing Corp.
    - d. **<Insert manufacturer's name>**.
  2. Description:
    - a. Standard: MSS SP-125.
    - b. CWP Rating: **500 psig (3450 kPa)**.
    - c. Body Material: ASTM A 395/A 395M or ASTM A 536, ductile iron.
    - d. Style: Globe, spring loaded.
    - e. Ends: Flanged.
    - f. Seat: Bronze.
- I. Iron, Compact-Wafer, Center-Guided Check Valves with Resilient Seat, Class 125:
  1. Basis-of-Design Product: Subject to compliance with requirements, provide Apollo, Conbraco Industries, Inc.; **[910WB-LF]** **[910WE-LF]** Series for potable water applications, and **[910WB]** **[910WE]** Series for applications other than potable water, or comparable products by one of the following:
    - a. NIBCO INC.
    - b. **<Insert manufacturer's name>**.
  2. Description:
    - a. Standard: MSS SP-125.
    - b. CWP Rating: **200 psig (1380 kPa)**.
    - c. Body Material: ASTM A 126, gray iron.
    - d. Style: Compact wafer, spring loaded.
    - e. Seat: **[EPDM]** **[or]** **[NBR]** **<Insert material>**.
- J. Iron Globe, Center-Guided Check Valves with Resilient Seat, Class 125:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. Anvil International.
    - b. APCO Willamette Valve and Primer Corporation.
    - c. Apollo Flow Controls; Conbraco Industries, Inc.
    - d. Crispin Valve.
    - e. DFT Inc.
    - f. GA Industries, Inc.
    - g. Hammond Valve.
    - h. Milwaukee Valve Company.
    - i. NIBCO INC.
    - j. Sure Flow Equipment Inc.
    - k. Val-Matic Valve & Manufacturing Corp.
    - l. Zurn Industries, LLC.
    - m. **<Insert manufacturer's name>**.
  
  2. Description:
    - a. Standard: MSS SP-125.
    - b. CWP Rating: **200 psig (1380 kPa)**.
    - c. Body Material: ASTM A 126, gray iron.
    - d. Style: Globe, spring loaded.
    - e. Ends: Flanged.
    - f. Seat: **[EPDM] [or] [NBR] <Insert material>**.
- K. Iron, Compact-Wafer, Center-Guided Check Valves with Resilient Seat, Class 150:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. APCO Willamette Valve and Primer Corporation.
    - b. Crispin Valve.
    - c. Val-Matic Valve & Manufacturing Corp.
    - d. **<Insert manufacturer's name>**.
  
  2. Description:
    - a. Standard: MSS SP-125.
    - b. CWP Rating: **300 psig (2070 kPa)**.
    - c. Body Material: ASTM A 395/A 395M or ASTM A 536, ductile iron.
    - d. Style: Compact wafer, spring loaded.
    - e. Seat: **[EPDM] [or] [NBR] <Insert material>**.
- L. Iron, Globe, Center-Guided Check Valves with Resilient Seat, Class 150:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. APCO Willamette Valve and Primer Corporation.
    - b. Crispin Valve.

- c. DFT Inc.
  - d. Val-Matic Valve & Manufacturing Corp.
  - e. <Insert manufacturer's name>.
2. Description:
- a. Standard: MSS SP-125.
  - b. CWP Rating: 300 psig (2070 kPa).
  - c. Body Material: ASTM A 395/A 395M or ASTM A 536, ductile iron.
  - d. Style: Globe, spring loaded.
  - e. Ends: Flanged.
  - f. Seat: [EPDM] [or] [NBR] <Insert material>.
- M. Iron, Compact-Wafer, Center-Guided Check Valves with Resilient Seat, Class 250:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. APCO Willamette Valve and Primer Corporation.
    - b. Crispin Valve.
    - c. DFT Inc.
    - d. Flo Fab Inc.
    - e. Hammond Valve.
    - f. Milwaukee Valve Company.
    - g. NIBCO INC.
    - h. Sure Flow Equipment Inc.
    - i. Val-Matic Valve & Manufacturing Corp.
    - j. <Insert manufacturer's name>.
  2. Description:
    - a. Standard: MSS SP-125.
    - b. CWP Rating: 400 psig (2760 kPa).
    - c. Body Material: ASTM A 126, gray iron.
    - d. Style: Compact wafer, spring loaded.
    - e. Seat: [EPDM] [or] [NBR] <Insert material>.
- N. Iron Globe, Center-Guided Check Valves with Resilient Seat, Class 250:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. APCO Willamette Valve and Primer Corporation.
    - b. Crispin Valve.
    - c. DFT Inc.
    - d. Hammond Valve.
    - e. Milwaukee Valve Company.
    - f. NIBCO INC.
    - g. Val-Matic Valve & Manufacturing Corp.
    - h. <Insert manufacturer's name>.

2. Description:
    - a. Standard: MSS SP-125.
    - b. CWP Rating: 400 psig (2760 kPa).
    - c. Body Material: ASTM A 126, gray iron.
    - d. Style: Globe, spring loaded.
    - e. Ends: Flanged.
    - f. Seat: [EPDM] [or] [NBR] <Insert material>.
- O. Iron, Compact-Wafer, Center-Guided Check Valves with Resilient Seat, Class 300:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. APCO Willamette Valve and Primer Corporation.
    - b. Crispin Valve.
    - c. Val-Matic Valve & Manufacturing Corp.
    - d. <Insert manufacturer's name>.
  2. Description:
    - a. Standard: MSS SP-125.
    - b. CWP Rating: 500 psig (3450 kPa).
    - c. Body Material: ASTM A 395/A 395M or ASTM A 536, ductile iron.
    - d. Style: Compact wafer, spring loaded.
    - e. Seat: [EPDM] [or] [NBR] <Insert material>.
- P. Iron Globe, Center-Guided Check Valves with Resilient Seat, Class 300:
1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
    - a. APCO Willamette Valve and Primer Corporation.
    - b. Crispin Valve.
    - c. Val-Matic Valve & Manufacturing Corp.
    - d. <Insert manufacturer's name>.
  2. Description:
    - a. Standard: MSS SP-125.
    - b. CWP Rating: 500 psig (3450 kPa).
    - c. Body Material: ASTM A 395/A 395M or ASTM A 536, ductile iron.
    - d. Style: Globe, spring loaded.
    - e. Ends: Flanged.
    - f. Seat: [EPDM] [or] [NBR] <Insert material>.

## 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 check valves for proper direction of flow and as follows:
  - 1. Swing Check Valves: In horizontal position with hinge pin level.
  - 2. **[Center-Guided]** **[and]** **[Plate-Type]** Check Valves: In horizontal or vertical position, between flanges.
  - 3. Lift Check Valves: With stem upright and plumb.
- F. Install valve tags. Comply with requirements in Section 220553 "Identification for Plumbing Piping and Equipment" for valve tags and schedules.

### 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. Pump-Discharge Check Valves:
  - a. **NPS 2 (DN 50)** and Smaller: Bronze swing check valves with [**bronze**] [**or**] [**nonmetallic**] disc.
  - b. **NPS 2-1/2 (DN 65)** and Larger for Domestic Water: Iron swing check valves with lever and weight or spring; or iron, center-guided, [**metal-seat**] [**or**] [**resilient-seat**] check valves.
  - c. **NPS 2-1/2 (DN 65)** and Larger for Sanitary Waste and Storm Drainage: Iron swing check valves with lever and weight or spring.
  
- B. If valves with specified CWP ratings are unavailable, the same types of valves with higher CWP ratings may be substituted.
  
- C. End Connections:
  1. For Copper Tubing, **NPS 2 (DN 50)** and Smaller: Threaded, soldered, or press.
  2. For Copper Tubing, **NPS 2-1/2 to NPS 4 (DN 65 to DN 100)**: Flanged, threaded, or press.
  3. For Copper Tubing, **NPS 5 (DN 125)** and Larger: Flanged.
  4. For Steel Piping, **NPS 2 (DN 50)** and Smaller: Threaded.
  5. For Steel Piping, **NPS 2-1/2 to NPS 4 (DN 65 to DN 100)**: Flanged or threaded.
  6. For Steel Piping, **NPS 5 (DN 125)** and Larger: Flanged.
  7. For Grooved-End [**Copper Tubing**] [**and**] [**Steel Piping**]: Grooved.
  
- 3.5 LOW-PRESSURE, COMPRESSED-AIR VALVE SCHEDULE (**150 PSIG (1035 kPa)** OR LESS)
  - A. Pipe **NPS 2 (DN 50)** and Smaller:
    1. Vertical, Upflow Applications Only: Bronze lift check valves with [**bronze**] [**nonmetallic**] disc, Class 125, with [**soldered**] [**or**] [**threaded**] end connections.
    2. Horizontal and Vertical Applications: Bronze swing check valves with [**bronze**] [**nonmetallic**] disc, [**Class 125**] [**Class 150**], with [**soldered**], [**threaded**] [**or**] [**press**] end connections.
  
  - B. Pipe **NPS 2-1/2 (DN 65)** and Larger:
    1. Iron swing check valves with [**metal**] [**nonmetallic-to-metal**] seats, [**Class 125**] [**Class 250**], with [**threaded**] [**or**] [**flanged**] end connections.
    2. Iron, grooved-end swing check valves, 300 CWP.
    3. Iron, dual-plate check valves with [**metal**] [**resilient**] seat, [**Class 125**] [**Class 150**] [**Class 250**] [**Class 300**], with [**threaded**] [**or**] [**flanged**] end connections.
    4. Iron, single-plate check valves with resilient seat, [**Class 125**] [**Class 250**], with [**threaded**] [**or**] [**flanged**] end connections.
  
- 3.6 HIGH-PRESSURE, COMPRESSED-AIR VALVE SCHEDULE (**150 TO 200 PSIG (1035 TO 1380 kPa)**)
  - A. Pipe **NPS 2 (DN 50)** and Smaller:

1. Vertical, Upflow Applications Only: Bronze lift check valves with [bronze] [nonmetallic] disc, Class 125, with [soldered] [or] [threaded] end connections.
2. Horizontal and Vertical Applications: Bronze swing check valves with [bronze] [nonmetallic] disc, [Class 125] [Class 150], with [soldered], [threaded] [or] [press] end connections.

B. Pipe NPS 2-1/2 (DN 65) and Larger:

1. Iron swing check valves with [metal] [nonmetallic-to-metal] seats, [Class 125] [Class 250], with [threaded] [or] [flanged] end connections.
2. Iron, grooved-end swing check valves, 300 CWP with [threaded] [or] [flanged] end connections.
3. Iron, dual-plate check valves with [metal] [resilient] seat, [Class 125] [Class 150] [Class 250] [Class 300], with [threaded] [or] [flanged] end connections.
4. Iron, single-plate check valves with resilient seat, [Class 125] [Class 250], with [threaded] [or] [flanged] end connections.

### 3.7 DOMESTIC HOT- AND COLD-WATER VALVE SCHEDULE

A. Pipe NPS 2 (DN 50) and Smaller: Bronze swing check valves with [bronze] [nonmetallic] disc, [Class 125] [Class 150], with [soldered], [threaded] [or] [press] end connections.

B. Pipe NPS 2-1/2 (DN 65) and Larger:

1. Iron swing check valves with [metal] [nonmetallic-to-metal] seats, [Class 125] [Class 250], with [threaded] [or] [flanged] end connections.
2. Iron swing check valves with closure control lever and [spring] [weight], Class 125, with [threaded] [or] [flanged] end connections.
3. Iron, grooved-end swing check valves, 300 CWP.
4. Iron, center-guided check valves with compact wafer, [Class 125] [Class 150] [Class 250] [Class 300].
5. Iron, center-guided check valves with [globe], [metal] [resilient] seat, [Class 125] [Class 150] [Class 250] [Class 300], with [threaded] [or] [flanged] end connections.
6. Iron, dual-plate check valves with [metal] [resilient] seat, [Class 125] [Class 150] [Class 250] [Class 300], with [threaded] [or] [flanged] end connections.
7. Iron, single-plate check valves with resilient seat, [Class 125] [Class 250], with [threaded] [or] [flanged] end connections.

END OF SECTION 220523.14