SECTION 230523.14 - CHECK VALVES FOR HVAC PIPING

Revise this Section by deleting and inserting text to meet Project-specific requirements.

Verify that Section titles referenced in this Section are correct for this Project's Specifications; Section titles may have changed.

1. GENERAL
   * + 1. RELATED DOCUMENTS

Retain or delete this article in all Sections of Project Manual.

* + - * 1. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.
      1. SUMMARY
         1. Section Includes:

Bronze lift check valves.

Bronze swing check valves.

Iron swing check valves.

Iron swing check valves with closure control.

Iron, grooved-end swing check valves.

Iron, center-guided check valves.

Iron, plate-type check valves.

* + - 1. DEFINITIONS

Retain terms that remain after this Section has been edited for a project.

* + - * 1. CWP: Cold working pressure.
        2. EPDM: Ethylene propylene copolymer rubber.
        3. NBR: Acrylonitrile-butadiene, Buna-N, or nitrile rubber.
        4. SWP: Steam working pressure.
      1. SUBMITTALS
         1. Submittals for this section are subject to the re-evaluation fee identified in Article 4 of the General Conditions.
         2. Manufacturer’s installation instructions shall be provided along with product data.
         3. Submittals shall be provided in the order in which they are specified and tabbed (for combined submittals).
         4. Product Data: For each type of valve.
         5. Valve Schedule: List type of valve, manufacturer’s model number, and size for each service application.
      2. DELIVERY, STORAGE, AND HANDLING

Information in this article is paraphrased from MSS.

* + - * 1. Prepare valves for shipping as follows:

Protect internal parts against rust and corrosion.

Protect threads, flange faces, grooves, and weld ends.

Block check valves in either closed or open position.

* + - * 1. Use the following precautions during storage:

Maintain valve end protection.

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.

* + - * 1. 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. PRODUCTS

See Editing Instruction No. 1 in the Evaluations for cautions about named manufacturers and products. For an explanation of options and Contractor's product selection procedures., see Section 016000 "Product Requirements."

* + - 1. GENERAL REQUIREMENTS FOR VALVES

HVAC valve applications specified in this Section are limited to NPS 24 (DN 600). Many valves specified are available in larger sizes.

* + - * 1. Source Limitations for Valves: Obtain each type of valve from single source from single manufacturer.
        2. ASME Compliance:

ASME B1.20.1 for threads for threaded-end valves.

ASME B16.1 for flanges on iron valves.

ASME B16.10 and ASME B16.34 for ferrous valve dimensions and design criteria.

Valve solder-joint connections are common in smaller sizes of plumbing piping. Soldering and brazing methods used to achieve required pressure and temperature ratings may damage internal valve parts. Special installation requirements for soldered valves may make threaded valves more cost-effective.

Caution: Use solder with melting point below 840 deg F (454 deg C).

ASME B16.18 for solder joint.

ASME B31.1 for power piping valves.

ASME B31.9 for building services piping valves.

* + - * 1. AWWA Compliance: Comply with AWWA C606 for grooved-end connections.
        2. 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.

Caution: Revise pressure ratings and insert temperature ratings in valve articles if valves with higher ratings are required. Valves larger than NPS 12 (DN 300) typically have a lower pressure rating than smaller valves. Verify pressure requirements for large valves.

* + - * 1. Valve Pressure-Temperature Ratings: Not less than indicated and as required for system pressures and temperatures.
        2. Valve Sizes: Same as upstream piping unless otherwise indicated.
        3. Valve Bypass and Drain Connections: MSS SP-45.
        4. Valves shall be first quality, free from all imperfections and defects, with body markings indicating manufacturer and rating.
        5. Valve parts of same manufacturer, size and type shall be interchangeable.
      1. BRONZE LIFT CHECK VALVES

Retain "Lift Check Valves with Bronze Disc, Class 125" or "Lift Check Valves with Nonmetallic Disc, Class 125" Paragraphparagraph below, or both, if bronze lift check valves are required. MSS SP-80 covers bronze lift check valves from NPS 1/4 to NPS 3 (DN 8 to DN 80).

* + - * 1. Bronze Lift Check Valves with Bronze Disc, Class 125:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9710) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Crane; a Crane brand](http://www.specagent.com/Lookup?uid=123457063668).

[Jenkins Valves; a Crane brand](http://www.specagent.com/Lookup?uid=123457063667).

[Stockham; a Crane brand](http://www.specagent.com/Lookup?uid=123457063669).

Approved equivalent.

Description:

Standard: MSS SP-80, Type 1.

CWP Rating: 200 psig (1380 kPa).

Body Design: Vertical flow.

Body Material: ASTM B61 or ASTM B62, bronze.

Ends: Threaded.

Disc: Bronze.

* + - 1. BRONZE SWING CHECK VALVES

Retain one or more of four "Bronze Swing Check Valves" paragraphs in this article if bronze swing check valves are required. MSS SP-80 covers bronze swing check valves from NPS 1/4 to NPS 3 (DN 8 to DN 80).

* + - * 1. Bronze Swing Check Valves with Bronze Disc, Class 125:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9712) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Hammond Valve](http://www.specagent.com/Lookup?uid=123457063684).

[Milwaukee Valve Company](http://www.specagent.com/Lookup?uid=123457063687).

[NIBCO INC](http://www.specagent.com/Lookup?uid=123457063688).

Approved equivalent.

Description:

Standard: MSS SP-80, Type 3.

CWP Rating: 200 psig (1380 kPa).

Body Design: Horizontal flow.

Body Material: ASTM B62, bronze.

Ends: Threaded.

Disc: Bronze.

* + - * 1. Bronze Swing Check Valves with Bronze Disc, Class 150:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9714) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Crane; a Crane brand](http://www.specagent.com/Lookup?uid=123457063704).

[Milwaukee Valve Company](http://www.specagent.com/Lookup?uid=123457063709).

[NIBCO INC](http://www.specagent.com/Lookup?uid=123457063710).

Approved equivalent.

Description:

Standard: MSS SP-80, Type 3.

CWP Rating: 300 psig (2070 kPa).

Body Design: Horizontal flow.

Body Material: ASTM B62, bronze.

Ends: Threaded.

Disc: Bronze.

* + - 1. IRON SWING CHECK VALVES

Retain one or more of three "Iron Swing Check Valves" paragraphs in this article if iron swing check valves are required. MSS SP-71 covers iron swing check valves of NPS 2 to NPS 24 (DN 50 to DN 600).

* + - * 1. Iron Swing Check Valves with Metal Seats, Class 125:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9716) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Crane; a Crane brand](http://www.specagent.com/Lookup?uid=123457063721).

[Milwaukee Valve Company](http://www.specagent.com/Lookup?uid=123457063727).

[NIBCO INC](http://www.specagent.com/Lookup?uid=123457063728).

Approved equivalent.

Description:

Standard: MSS SP-71, Type I.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 200 psig (1380 kPa).

NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 150 psig (1035 kPa).

Body Design: Clear or full waterway.

Body Material: ASTM A126, gray iron with bolted bonnet.

Ends: Flanged.

Trim: Bronze.

Gasket: Asbestos free.

* + - * 1. Iron Swing Check Valves with Metal Seats, Class 250:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9718) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Crane; a Crane brand](http://www.specagent.com/Lookup?uid=123457063738).

[Milwaukee Valve Company](http://www.specagent.com/Lookup?uid=123457063741).

[NIBCO INC](http://www.specagent.com/Lookup?uid=123457063742).

Approved equivalent.

Description:

Standard: MSS SP-71, Type I.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 500 psig (3450 kPa).

NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 300 psig (2070 kPa).

Body Design: Clear or full waterway.

Body Material: ASTM A126, gray iron with bolted bonnet.

Ends: Flanged.

Trim: Bronze.

Gasket: Asbestos free.

* + - 1. IRON SWING CHECK VALVES WITH CLOSURE CONTROL

Retain "Iron Swing Check Valves with Lever- and Spring-Closure Control, Class 125" or "Iron Swing Check Valves with Lever and Weight-Closure Control, Class 125" Paragraphparagraph below, or both, if iron swing check valves are required. MSS SP-71 covers iron swing check valves from NPS 2 to NPS 24 (DN 50 to DN 600).

* + - * 1. Iron Swing Check Valves with Lever- and Spring-Closure Control, Class 125:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9719) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[NIBCO INC](http://www.specagent.com/Lookup?uid=123457063745).

Approved equivalent.

Description:

Standard: MSS SP-71, Type I.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 200 psig (1380 kPa).

NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 150 psig (1035 kPa).

Body Design: Clear or full waterway.

Body Material: ASTM A126, gray iron with bolted bonnet.

Ends: Flanged.

Trim: Bronze.

Gasket: Asbestos free.

Closure Control: Factory-installed, exterior lever and spring.

* + - * 1. Iron Swing Check Valves with Lever and Weight-Closure Control, Class 125:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9720) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Crane; a Crane brand](http://www.specagent.com/Lookup?uid=123457063747).

[Milwaukee Valve Company](http://www.specagent.com/Lookup?uid=123457063751).

[NIBCO INC](http://www.specagent.com/Lookup?uid=123457063752).

Approved equivalent.

Description:

Standard: MSS SP-71, Type I.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 200 psig (1380 kPa).

NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 150 psig (1035 kPa).

Body Design: Clear or full waterway.

Body Material: ASTM A126, gray iron with bolted bonnet.

Ends: Flanged.

Trim: Bronze.

Gasket: Asbestos free.

Closure Control: Factory-installed, exterior lever and weight.

* + - 1. IRON, GROOVED-END SWING CHECK VALVES

Retain this article if iron, grooved-end swing check valves are required. No standard for these valves was located. They are available in NPS 2 to NPS 12 (DN 50 to DN 300).

* + - * 1. Iron, Grooved-End Swing Check Valves, 300 CWP:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9721) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Grinnell G-Fire by Johnson Controls Company](http://www.specagent.com/Lookup?uid=123457064269).

[Shurjoint-Apollo Piping Products USA Inc](http://www.specagent.com/Lookup?uid=123457063756).

[Victaulic Company](http://www.specagent.com/Lookup?uid=123457063758).

Approved equivalent.

Description:

CWP Rating: 300 psig (2070 kPa).

Body Material: ASTM A536, ductile iron.

Seal: EPDM.

Disc: Spring operated, ductile iron or stainless steel.

* + - 1. IRON, CENTER-GUIDED CHECK VALVES

Retain one or more of 16 paragraphs in this article if iron, center-guided check valves are required. MSS SP-125 covers iron, center-guided check valves of NPS 2 to NPS 42 (DN 50 to DN 1050).

* + - * 1. Iron, Compact-Wafer, Center-Guided Check Valves with Metal Seat, Class 125:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9722) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Hammond Valve](http://www.specagent.com/Lookup?uid=123457063766).

[Milwaukee Valve Company](http://www.specagent.com/Lookup?uid=123457063768).

[NIBCO INC](http://www.specagent.com/Lookup?uid=123457063770).

Approved equivalent.

Description:

Standard: MSS SP-125.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 200 psig (1380 kPa).

NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 150 psig (1035 kPa).

Body Material: ASTM A126, gray iron.

Style: Compact wafer.

Seat: Bronze.

* + - * 1. Iron, Globe, Center-Guided Check Valves with Metal Seat, Class 125:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9723) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Hammond Valve](http://www.specagent.com/Lookup?uid=123457063780).

[Milwaukee Valve Company](http://www.specagent.com/Lookup?uid=123457063782).

[NIBCO INC](http://www.specagent.com/Lookup?uid=123457063784).

Approved equivalent.

Description:

Standard: MSS SP-125.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 200 psig (1380 kPa).

NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 150 psig (1035 kPa).

Body Material: ASTM A126, gray iron.

Style: Globe, spring loaded.

Ends: Flanged.

Seat: Bronze.

* + - * 1. Iron, Compact-Wafer, Center-Guided Check Valves with Metal Seat, Class 150:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9724) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[APCO Willamette Valve and Primer Corporation](http://www.specagent.com/Lookup?uid=123457063790).

[Crispin Valve](http://www.specagent.com/Lookup?uid=123457063791).

[Val-Matic Valve & Manufacturing Corp](http://www.specagent.com/Lookup?uid=123457063792).

Approved equivalent.

Description:

Standard: MSS SP-125.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 300 psig (2070 kPa).

NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 250 psig (1725 kPa).

Body Material: ASTM A395/A395M or ASTM A536, ductile iron.

Style: Compact wafer.

Seat: Bronze.

* + - * 1. Iron, Globe, Center-Guided Check Valves with Metal Seat, Class 150:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9725) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[APCO Willamette Valve and Primer Corporation](http://www.specagent.com/Lookup?uid=123457063794).

[Crispin Valve](http://www.specagent.com/Lookup?uid=123457063795).

[Val-Matic Valve & Manufacturing Corp](http://www.specagent.com/Lookup?uid=123457063796).

Approved equivalent.

Description:

Standard: MSS SP-125.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 300 psig (2070 kPa).

NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 250 psig (1725 kPa).

Body Material: ASTM A395/A395M or ASTM A536, ductile iron.

Style: Globe, spring loaded.

Ends: Flanged.

Seat: Bronze.

* + - * 1. Iron, Compact-Wafer, Center-Guided Check Valves with Metal Seat, Class 250:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9726) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[APCO Willamette Valve and Primer Corporation](http://www.specagent.com/Lookup?uid=123457063798).

[Crispin Valve](http://www.specagent.com/Lookup?uid=123457063799).

[Val-Matic Valve & Manufacturing Corp](http://www.specagent.com/Lookup?uid=123457063807).

Approved equivalent.

Description:

Standard: MSS SP-125.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 400 psig (2760 kPa).

NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 300 psig (2070 kPa).

Body Material: ASTM A126, gray iron.

Style: Compact wafer, spring loaded.

Seat: Bronze.

* + - * 1. Iron, Globe, Center-Guided Check Valves with Metal Seat, Class 250:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9727) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[APCO Willamette Valve and Primer Corporation](http://www.specagent.com/Lookup?uid=123457063809).

[Crispin Valve](http://www.specagent.com/Lookup?uid=123457063810).

[Val-Matic Valve & Manufacturing Corp](http://www.specagent.com/Lookup?uid=123457063818).

Approved equivalent.

Description:

Standard: MSS SP-125.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 400 psig (2760 kPa).

NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 300 psig (2070 kPa).

Body Material: ASTM A126, gray iron.

Style: Globe, spring loaded.

Ends: Flanged.

Seat: Bronze.

* + - * 1. Iron, Compact-Wafer, Center-Guided Check Valves with Metal Seat, Class 300:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9728) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[APCO Willamette Valve and Primer Corporation](http://www.specagent.com/Lookup?uid=123457063820).

[Crispin Valve](http://www.specagent.com/Lookup?uid=123457063821).

[Val-Matic Valve & Manufacturing Corp](http://www.specagent.com/Lookup?uid=123457063822).

Approved equivalent.

Description:

Standard: MSS SP-125.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 500 psig (3450 kPa).

NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 400 psig (2760 kPa).

Body Material: ASTM A395/A395M or ASTM A536, ductile iron.

Style: Compact wafer, spring loaded.

Seat: Bronze.

* + - * 1. Iron, Globe, Center-Guided Check Valves with Metal Seat, Class 300:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9729) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[APCO Willamette Valve and Primer Corporation](http://www.specagent.com/Lookup?uid=123457063824).

[Crispin Valve](http://www.specagent.com/Lookup?uid=123457063825).

[Val-Matic Valve & Manufacturing Corp](http://www.specagent.com/Lookup?uid=123457063826).

Approved equivalent.

Description:

Standard: MSS SP-125.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 500 psig (3450 kPa).

NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 400 psig (2760 kPa).

Body Material: ASTM A395/A395M or ASTM A536, ductile iron.

Style: Globe, spring loaded.

Ends: Flanged.

Seat: Bronze.

* + - * 1. Iron, Compact-Wafer, Center-Guided Check Valves with Resilient Seat, Class 125:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9730) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[APCO Willamette Valve and Primer Corporation](http://www.specagent.com/Lookup?uid=123457063828).

[Crispin Valve](http://www.specagent.com/Lookup?uid=123457063829).

[Val-Matic Valve & Manufacturing Corp](http://www.specagent.com/Lookup?uid=123457063837).

Approved equivalent.

Description:

Standard: MSS SP-125.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 200 psig (1380 kPa).

NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 150 psig (1035 kPa).

Body Material: ASTM A126, gray iron.

Style: Compact wafer.

Seat: [**EPDM**] [**or**] [**NBR**] <**Insert material**>.

* + - * 1. Iron, Globe, Center-Guided Check Valves with Resilient Seat, Class 125:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9731) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[APCO Willamette Valve and Primer Corporation](http://www.specagent.com/Lookup?uid=123457063840).

[Crispin Valve](http://www.specagent.com/Lookup?uid=123457063841).

[Val-Matic Valve & Manufacturing Corp](http://www.specagent.com/Lookup?uid=123457063848).

Approved equivalent.

Description:

Standard: MSS SP-125.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 200 psig (1380 kPa).

NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 150 psig (1035 kPa).

Body Material: ASTM A126, gray iron.

Style: Globe, spring loaded.

Ends: Flanged.

Seat: [**EPDM**] [**or**] [**NBR**] <**Insert material**>.

* + - * 1. Iron, Compact-Wafer, Center-Guided Check Valves with Resilient Seat, Class 150:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9732) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[APCO Willamette Valve and Primer Corporation](http://www.specagent.com/Lookup?uid=123457063851).

[Crispin Valve](http://www.specagent.com/Lookup?uid=123457063852).

[Val-Matic Valve & Manufacturing Corp](http://www.specagent.com/Lookup?uid=123457063853).

Approved equivalent.

Description:

Standard: MSS SP-125.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 300 psig (2070 kPa).

NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 250 psig (1725 kPa).

Body Material: ASTM A395/A395M or ASTM A536, ductile iron.

Style: Compact wafer.

Seat: [**EPDM**] [**or**] [**NBR**] <**Insert material**>.

* + - * 1. Iron, Globe, Center-Guided Check Valves with Resilient Seat, Class 150:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9733) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[APCO Willamette Valve and Primer Corporation](http://www.specagent.com/Lookup?uid=123457063855).

[Crispin Valve](http://www.specagent.com/Lookup?uid=123457063856).

[Val-Matic Valve & Manufacturing Corp](http://www.specagent.com/Lookup?uid=123457063858).

Approved equivalent.

Description:

Standard: MSS SP-125.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 300 psig (2070 kPa).

NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 250 psig (1725 kPa).

Body Material: ASTM A395/A395M or ASTM A536, ductile iron.

Style: Globe, spring loaded.

Ends: Flanged.

Seat: [**EPDM**] [**or**] [**NBR**] <**Insert material**>.

* + - * 1. Iron, Compact-Wafer, Center-Guided Check Valves with Resilient Seat, Class 250:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9734) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[APCO Willamette Valve and Primer Corporation](http://www.specagent.com/Lookup?uid=123457063860).

[Crispin Valve](http://www.specagent.com/Lookup?uid=123457063861).

[Val-Matic Valve & Manufacturing Corp](http://www.specagent.com/Lookup?uid=123457063868).

Approved equivalent.

Description:

Standard: MSS SP-125.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 400 psig (2760 kPa).

NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 300 psig (2070 kPa).

Body Material: ASTM A126, gray iron.

Style: Compact wafer, spring loaded.

Seat: [**EPDM**] [**or**] [**NBR**] <**Insert material**>.

* + - * 1. Iron, Globe, Center-Guided Check Valves with Resilient Seat, Class 250:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9735) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[APCO Willamette Valve and Primer Corporation](http://www.specagent.com/Lookup?uid=123457063870).

[Crispin Valve](http://www.specagent.com/Lookup?uid=123457063871).

[Val-Matic Valve & Manufacturing Corp](http://www.specagent.com/Lookup?uid=123457063876).

Approved equivalent.

Description:

Standard: MSS SP-125.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 400 psig (2760 kPa).

NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 300 psig (2070 kPa).

Body Material: ASTM A126, gray iron.

Style: Globe, spring loaded.

Ends: Flanged.

Seat: [**EPDM**] [**or**] [**NBR**] <**Insert material**>.

* + - * 1. Iron, Compact-Wafer, Center-Guided Check Valves with Resilient Seat, Class 300:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9736) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[APCO Willamette Valve and Primer Corporation](http://www.specagent.com/Lookup?uid=123457063878).

[Crispin Valve](http://www.specagent.com/Lookup?uid=123457063879).

[Val-Matic Valve & Manufacturing Corp](http://www.specagent.com/Lookup?uid=123457063880).

Approved equivalent.

Description:

Standard: MSS SP-125.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 500 psig (3450 kPa).

NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 400 psig (2760 kPa).

Body Material: ASTM A395/A395M or ASTM A536, ductile iron.

Style: Compact wafer, spring loaded.

Seat: [**EPDM**] [**or**] [**NBR**] <**Insert material**>.

* + - * 1. Iron, Globe, Center-Guided Check Valves with Resilient Seat, Class 300:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9737) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[APCO Willamette Valve and Primer Corporation](http://www.specagent.com/Lookup?uid=123457063882).

[Crispin Valve](http://www.specagent.com/Lookup?uid=123457063883).

[Val-Matic Valve & Manufacturing Corp](http://www.specagent.com/Lookup?uid=123457063884).

Approved equivalent.

Description:

Standard: MSS SP-125.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 500 psig (3450 kPa).

NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 400 psig (2760 kPa).

Body Material: ASTM A395/A395M or ASTM A536, ductile iron.

Style: Globe, spring loaded.

Ends: Flanged.

Seat: [**EPDM**] [**or**] [**NBR**] <**Insert material**>.

* + - 1. IRON, PLATE-TYPE CHECK VALVES

Retain one or more of 10 paragraphs in this article if iron, plate-type check valves are required. API 594 covers iron, plate-type check valves of NPS 2 to NPS 60 (DN 50 to DN 1500).

* + - * 1. Iron, Dual-Plate Check Valves with Metal Seat, Class 125:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9738) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[APCO Willamette Valve and Primer Corporation](http://www.specagent.com/Lookup?uid=123457063886).

[Crane; a Crane brand](http://www.specagent.com/Lookup?uid=123457063887).

[Mueller Steam Specialty; A WATTS Brand](http://www.specagent.com/Lookup?uid=123457063889).

Approved equivalent.

Description:

Standard: API 594.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 200 psig (1380 kPa).

NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 150 psig (1035 kPa).

Body Design: Wafer, spring-loaded plates.

Body Material: ASTM A126, gray iron.

Seat: Bronze.

* + - * 1. Iron, Dual-Plate Check Valves with Metal Seat, Class 150:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9739) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[APCO Willamette Valve and Primer Corporation](http://www.specagent.com/Lookup?uid=123457063891).

[Crane; a Crane brand](http://www.specagent.com/Lookup?uid=123457063892).

[Mueller Steam Specialty; A WATTS Brand](http://www.specagent.com/Lookup?uid=123457063893).

Approved equivalent.

Description:

Standard: API 594.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 300 psig (2070 kPa).

NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 250 psig (1725 kPa).

Body Design: Wafer, spring-loaded plates.

Body Material: ASTM A395/A395M or ASTM A536, ductile iron.

Seat: Bronze.

* + - * 1. Iron, Dual-Plate Check Valves with Metal Seat, Class 250:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9740) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[APCO Willamette Valve and Primer Corporation](http://www.specagent.com/Lookup?uid=123457063896).

[Crane; a Crane brand](http://www.specagent.com/Lookup?uid=123457063897).

Approved equivalent.

Description:

Standard: API 594.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 400 psig (2760 kPa).

NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 300 psig (2070 kPa).

Body Design: Wafer, spring-loaded plates.

Body Material: ASTM A126, gray iron.

Seat: Bronze.

* + - * 1. Iron, Dual-Plate Check Valves with Metal Seat, Class 300:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9741) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[APCO Willamette Valve and Primer Corporation](http://www.specagent.com/Lookup?uid=123457063899).

[Crane; a Crane brand](http://www.specagent.com/Lookup?uid=123457063900).

[Mueller Steam Specialty; A WATTS Brand](http://www.specagent.com/Lookup?uid=123457063901).

Approved equivalent.

Description:

Standard: API 594.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 500 psig (3450 kPa).

NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 400 psig (2760 kPa).

Body Design: Wafer, spring-loaded plates.

Body Material: ASTM A395/A395M or ASTM A536, ductile iron.

Seat: Bronze.

* + - * 1. Iron, Single-Plate Check Valves with Resilient Seat, Class 125:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9742) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Flo Fab Inc](http://www.specagent.com/Lookup?uid=123457063904).

[Sure Flow Equipment Inc](http://www.specagent.com/Lookup?uid=123457063905).

Approved equivalent.

Description:

Standard: API 594.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 200 psig (1380 kPa).

NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 150 psig (1035 kPa).

Body Design: Wafer, spring-loaded plate.

Body Material: ASTM A126, gray iron.

Seat: [**EPDM**] [**or**] [**NBR**] <**Insert material**>.

* + - * 1. Iron, Dual-Plate Check Valves with Resilient Seat, Class 125:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9743) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[APCO Willamette Valve and Primer Corporation](http://www.specagent.com/Lookup?uid=123457063907).

[Crane; a Crane brand](http://www.specagent.com/Lookup?uid=123457063908).

[NIBCO INC](http://www.specagent.com/Lookup?uid=123457063910).

Approved equivalent.

Description:

Standard: API 594.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 200 psig (1380 kPa).

NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 150 psig (1035 kPa).

Body Design: Wafer, spring-loaded plates.

Body Material: ASTM A126, gray iron.

Seat: [**EPDM**] [**or**] [**NBR**] <**Insert material**>.

* + - * 1. Iron, Dual-Plate Check Valves with Resilient Seat, Class 150:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9744) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[APCO Willamette Valve and Primer Corporation](http://www.specagent.com/Lookup?uid=123457063916).

[Crane; a Crane brand](http://www.specagent.com/Lookup?uid=123457063918).

[Val-Matic Valve & Manufacturing Corp](http://www.specagent.com/Lookup?uid=123457063919).

Approved equivalent.

Description:

Standard: API 594.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 300 psig (2070 kPa).

NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 250 psig (1725 kPa).

Body Design: Wafer, spring-loaded plates.

Body Material: ASTM A395/A395M or ASTM A536, ductile iron.

Seat: [**EPDM**] [**or**] [**NBR**] <**Insert material**>.

* + - * 1. Iron, Wafer, Single-Plate Check Valves with Resilient Seat, Class 250:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9745) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[Sure Flow Equipment Inc](http://www.specagent.com/Lookup?uid=123457063921).

Approved equivalent.

Description:

Standard: API 594.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 400 psig (2760 kPa).

NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 300 psig (2070 kPa).

Body Design: Wafer, spring-loaded plate.

Body Material: ASTM A126, gray iron.

Seat: [**EPDM**] [**or**] [**NBR**] <**Insert material**>.

* + - * 1. Iron, Dual-Plate Check Valves with Resilient Seat, Class 250:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9746) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[APCO Willamette Valve and Primer Corporation](http://www.specagent.com/Lookup?uid=123457063923).

[Crane; a Crane brand](http://www.specagent.com/Lookup?uid=123457063924).

[Sure Flow Equipment Inc](http://www.specagent.com/Lookup?uid=123457063925).

Approved equivalent.

Description:

Standard: API 594.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 400 psig (2760 kPa).

NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 300 psig (2070 kPa).

Body Design: Wafer, spring-loaded plates.

Body Material: ASTM A126, gray iron.

Seat: [**EPDM**] [**or**] [**NBR**] <**Insert material**>.

* + - * 1. Iron, Dual-Plate Check Valves with Resilient Seat, Class 300:

[Manufacturers:](http://www.specagent.com/Lookup?ulid=9747) Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to the following:

[APCO Willamette Valve and Primer Corporation](http://www.specagent.com/Lookup?uid=123457063927).

[Val-Matic Valve & Manufacturing Corp](http://www.specagent.com/Lookup?uid=123457063928).

Approved equivalent.

Description:

Standard: API 594.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300), CWP Rating: 500 psig (3450 kPa).

NPS 14 to NPS 24 (DN 350 to DN 600), CWP Rating: 400 psig (2760 kPa).

Body Design: Wafer, spring-loaded plates.

Body Material: ASTM A395/A395M or ASTM A536, ductile iron.

Seat: [**EPDM**] [**or**] [**NBR**] <**Insert material**>.

1. EXECUTION
   * + 1. EXAMINATION
          1. 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.
          2. Operate valves in positions from fully open to fully closed. Examine guides and seats made accessible by such operations.
          3. Examine threads on valve and mating pipe for form and cleanliness.
          4. 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.
          5. Do not attempt to repair defective valves; replace with new valves.
       2. VALVE INSTALLATION
          1. Install valves with unions or flanges at each piece of equipment arranged to allow service, maintenance, and equipment removal without system shutdown.
          2. Locate valves for easy access and provide separate support where necessary.
          3. Install valves in horizontal piping with stem at or above center of pipe.
          4. Install valves in position to allow full stem movement.
          5. Install check valves for proper direction of flow and as follows:

Revise check valve installation requirements to suit Project; delete those not required.

Swing Check Valves: In horizontal position with hinge pin level.

[**Center-Guided**] [**and**] [**Plate-Type**] Check Valves: In horizontal or vertical position, between flanges.

Lift Check Valves: With stem upright and plumb.

* + - * 1. Install valve tags. Comply with requirements for valve tags and schedules in Section 230553 "Identification for HVAC Piping and Equipment."
      1. ADJUSTING
         1. 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.
      2. GENERAL REQUIREMENTS FOR VALVE APPLICATIONS

The Section Text is arranged to provide bronze or brass valves in NPS 2 (DN 50) and smaller and iron valves in NPS 2-1/2 to NPS 24 (DN 65 to DN 600).

Caution: Verify that valve classes and pressure and temperature ratings are adequate for system fluid. Repeat each category listing if necessary and insert required pressure range for each listing. Indicate location of each different pressure system on Drawings.

Retain and revise valve applications in paragraphs and schedules below. Coordinate with valves specified in Part 2.

* + - * 1. If valve applications are not indicated, use the following:

Pump-Discharge Check Valves:

NPS 2 (DN 50) and Smaller: Bronze swing check valves with [**bronze**] [**or**] [**nonmetallic**] disc.

NPS 2-1/2 (DN 65) and Larger: Iron swing check valves with lever and weight or with spring or iron, center-guided, [**metal**] [**or**] [**resilient**]-seat check valves.

* + - * 1. If valves with specified SWP classes or CWP ratings are unavailable, the same types of valves with higher SWP classes or CWP ratings may be substituted.
        2. Select valves, except wafer types, with the following end connections:

For Copper Tubing, NPS 2 (DN 50) and Smaller: Threaded ends except where solder-joint valve-end option is indicated in valve schedules.

For Copper Tubing, NPS 2-1/2 to NPS 4 (DN 65 to DN 100): Flanged ends except where threaded valve-end option is indicated in valve schedules.

For Copper Tubing, NPS 5 (DN 125) and Larger: Flanged ends.

For Steel Piping, NPS 2 (DN 50) and Smaller: Threaded ends.

For Steel Piping, NPS 2-1/2 to NPS 4 (DN 65 to DN 100): Flanged ends except where threaded valve-end option is indicated in valve schedules.

For Steel Piping, NPS 5 (DN 125) and Larger: Flanged ends.

For Grooved-End [**Copper Tubing**] [**and**] [**Steel Piping**] except Steam and Steam Condensate Piping: Valve ends may be grooved.

* + - 1. CHILLED-WATER VALVE SCHEDULE
         1. Pipe NPS 2 (DN 50) and Smaller:

Retain "Bronze Valves" Subparagraphsubparagraph below if solder-joint valve ends are permitted for this application.

Bronze Valves: May be provided with solder-joint ends instead of threaded ends.

Bronze swing check valves with [**bronze**] [**nonmetallic**] disc, [**Class 125**] [**Class 150**].

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

Retain first subparagraph below if threaded valve ends are permitted for this application.

NPS 2-1/2 to NPS 4 (DN 65 to DN 100): Iron valves may be provided with threaded ends instead of flanged ends.

Retain one or more of subparagraphs below and indicate location of each type on Drawings.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300): Iron swing check valves with lever and [**spring**] [**weight**] closure control, Class 125.

NPS 3 to NPS 12 (DN 80 to DN 300): Iron, grooved-end swing check valves, 300 CWP.

* + - 1. CONDENSER-WATER VALVE SCHEDULE
         1. Pipe NPS 2 (DN 50) and Smaller:

Retain "Bronze Valves" Subparagraphsubparagraph below if solder-joint valve ends are permitted for this application.

Bronze Valves: May be provided with solder-joint ends instead of threaded ends.

Bronze swing check valves with [**bronze**] [**nonmetallic**] disc, [**Class 125**] [**Class 150**].

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

Retain first subparagraph below if threaded valve ends are permitted for this application.

NPS 2-1/2 to NPS 4 (DN 65 to DN 100): Iron valves may be provided with threaded ends instead of flanged ends.

Retain one or more of seven subparagraphs below and indicate location of each type on Drawings.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300): Iron swing check valves with lever and [**spring**] [**weight**]-closure control, Class 125.

NPS 3 to NPS 12 (DN 80 to DN 300): Iron, grooved-end swing check valves, 300 CWP.

NPS 2-1/2 to NPS 24 (DN 65 to DN 600): Iron, [**compact-wafer**] [**globe**], center-guided check valves with [**metal**] [**resilient**] seat, [**Class 125**] [**Class 150**] [**Class 250**] [**Class 300**].

* + - 1. HEATING-WATER VALVE SCHEDULE
         1. Pipe NPS 2 (DN 50) and Smaller:

Retain "Bronze Valves" Subparagraphsubparagraph below if solder-joint valve ends are permitted for this application.

Bronze Valves: May be provided with solder-joint ends instead of threaded ends.

Bronze swing check valves with [**bronze**] [**nonmetallic**] disc, [**Class 125**] [**Class 150**].

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

Retain first subparagraph below if threaded valve ends are permitted for this application.

NPS 2-1/2 to NPS 4 (DN 65 to DN 100): Iron valves may be provided with threaded ends instead of flanged ends.

Retain one or more of seven subparagraphs below and indicate location of each type on Drawings.

NPS 2-1/2 to NPS 12 (DN 65 to DN 300): Iron swing check valves with lever and [**spring**] [**weight**]**-c**losure control, Class 125.

NPS 3 to NPS 12 (DN 80 to DN 300): Iron, grooved-end check valves, 300 CWP.

* + - 1. LOW-PRESSURE STEAM VALVE SCHEDULE (15 PSIG (104 kPa) OR LESS)
         1. Pipe NPS 2 (DN 50) and Smaller:

Bronze swing check valves with [**bronze**] [**nonmetallic**] disc, [**Class 125**] [**Class 150**].

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

Retain first subparagraph below if threaded valve ends are permitted for this application.

NPS 2-1/2 to NPS 4 (DN 65 to DN 100): Iron valves may be provided with threaded ends instead of flanged ends.

Retain one or both subparagraphs below and indicate location of each type on Drawings.

Iron swing check valves with [**metal**] [**nonmetallic-to-metal**] seats: [**Class 125**] [**Class 250**].

NPS 2-1/2 to NPS 12 (DN 65 to DN 300): Iron swing check valves with lever and [**spring**] [**weight**]-closure control, Class 125.

* + - 1. HIGH-PRESSURE STEAM VALVE SCHEDULE (MORE THAN 15 PSIG) (104 kPa)
         1. Pipe NPS 2 (DN 50) and Smaller:

Bronze swing check valves with [**bronze**] [**nonmetallic**] disc, [**Class 125**] [**Class 150**][**Class 250**].

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

Retain first subparagraph below if threaded valve ends are permitted for this application.

Iron Valves, NPS 2-1/2 to NPS 4 (DN 65 to DN 100): May be provided with threaded ends instead of flanged ends.

Retain one or both subparagraphs below and indicate location of each type on Drawings.

Iron swing check valves with [**metal**] [**nonmetallic-to-metal**] seats, [**Class 125**] [**Class 250**].

NPS 2-1/2 to NPS 12 (DN 65 to DN 300):Iron swing check valves with lever and [**spring**] [**weight**]-closure control, Class 125.

* + - 1. STEAM-CONDENSATE VALVE SCHEDULE
         1. Pipe NPS 2 (DN 50) and Smaller:

Bronze swing check valves with [**bronze**] [**nonmetallic**] disc, [**Class 125**] [**Class 150**].

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

Retain first subparagraph below if threaded valve ends are permitted for this application.

NPS 2-1/2 to NPS 4 (DN 65 to DN 100): Iron valves may be provided with threaded ends instead of flanged ends.

END OF SECTION 230523.14