

**SECTION 22 1119
DOMESTIC WATER PIPING SPECIALTIES**

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Backflow preventers.
- B. Vacuum breakers.
- C. Water pressure reducing valves.
- D. Mixing valves.
- E. Strainers.
- F. Outlet boxes.
- G. Hydrants.
- H. Drain valves.
- I. Water-hammer arrestors.
- J. Trap primers.

1.02 ABBREVIATIONS AND ACRONYMS

- A. DZR: Dezincification resistant.

1.03 REFERENCE STANDARDS

- A. ASSE 1001 - Performance Requirements for Atmospheric Type Vacuum Breakers; 2021.
- B. ASSE 1003 - Water Pressure Reducing Valves for Potable Water Distribution Systems; 2023.
- C. ASSE 1010 - Performance Requirements for Water Hammer Arresters; 2025.
- D. ASSE 1011 - Performance Requirements for Hose Connection Vacuum Breakers; 2023.
- E. ASSE 1013 - Performance Requirements for Reduced Pressure Principle Backflow Prevention Assemblies; 2021.
- F. ASSE 1016 - Performance Requirements for Automatic Compensating Valves for Individual Showers and Tub/Shower Combinations; 2017 (Reaffirmed 2021).
- G. ASSE 1018 - Performance Requirements for Trap Seal Primer Valves - Potable Water Supplied; 2023.
- H. ASSE 1019 - Performance Requirements for Wall Hydrant with Backflow Protection and Freeze Resistance; 2023.
- I. ASSE 1020 - Performance Requirements for Pressure Vacuum Breaker Assemblies; 2020 (Reaffirmed 2025).
- J. ASSE 1052 - Performance Requirements for Hose Connection Backflow Preventers; 2023.
- K. ASSE 1053 - Performance Requirements for Dual Check Backflow Preventer Wall Hydrants - Freeze Resistant Type; 2019 (Reaffirmed 2023).
- L. ASSE 1070 - Performance Requirements for Water Temperature Limiting Devices; 2020.
- M. AWWA C511 - Reduced-Pressure Principle Backflow Prevention Assembly; 2017 (Reaffirmed 2021).
- N. NSF 61 - Drinking Water System Components - Health Effects; 2025, with Addendum
- O. NSF 372 - Drinking Water System Components - Lead Content; 2024.
- P. PDI-WH 201 - Water Hammer Arresters; 2017.

1.04 SUBMITTALS

- A. See Section 01 3000 - Administrative Requirements for submittal procedures.

- B. Product Data: Provide manufacturer's literature and data sheets for each product. Include information on materials of fabrication, assembly of components, dimensions, ratings, finishes, rough-in requirements, and installed accessories.
- C. Maintenance Materials: Furnish the following for Owner's use in project maintenance:
 - 1. See Section 01 6000 - Product Requirements for additional provisions.
 - 2. Extra Loose Keys for Hydrants: Two.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. See Section 01 7419 - Construction Waste Management and Disposal for packaging waste requirements.
- B. Receive, inspect, handle, and store products in accordance with manufacturer's instructions.
- C. Keep products in original manufacturer's packaging and protect from damage until ready for installation.
- D. Store products under cover and protected from weather and dirt. Elevate above grade.
- E. Protect end connections, flanges, threads, and grooves from dirt and damage.
- F. Protect product interiors against rust and corrosion.
- G. Do not use operating handles or stems as lifting or rigging points.

PART 2 PRODUCTS

2.01 GENERAL REQUIREMENTS

- A. Specialties in Potable Water Supply Systems: Provide products complying with NSF 61 and NSF 372.
- B. Source Limitations: Furnish domestic water piping specialties of same kind by same manufacturer.
- C. Provide brass-bodied domestic water piping specialties in DZR brass.

2.02 BACKFLOW PREVENTERS

- A. Reduced-Pressure-Principle Backflow Preventers:
 - 1. Manufacturers:
 - a. Watts: www.watts.com/#sle.
 - b. Wilkins by Zurn Water, LLC: www.zurn.com/#sle.
 - c. Or approved equal.
 - 2. NPS 2 (DN 50) and Smaller:
 - a. Assembly: ASSE 1013 and AWWA C511.
 - b. Backflow Valve: Manufactured from bronze, copper silicon alloy, or stainless steel.
 - c. Isolation Valves: Ball valves on inlet and outlet.
 - d. Maximum Working Pressure: 175 psi (12.1 bar).
 - e. Working Temperature Range: 33 to 180 degrees F (0.5 to 82 degrees C).
 - f. Accessories:
 - 1) Air gap fitting.
 - 2) Inlet strainer.

2.03 VACUUM BREAKERS

- A. Atmospheric Vacuum Breakers:
 - 1. Valve: ASSE 1001, brass, bronze, or copper silicon alloy.
 - 2. Maximum Working Pressure: 125 psi (8.6 bar).
 - 3. Working Temperature Range: 33 to 180 degrees F (0.5 to 82 degrees C).
- B. Hose-Connection Vacuum Breakers:
 - 1. Valve: ASSE 1011, brass, nonremovable, drainable, with hose-thread end connections.
 - 2. Maximum Working Pressure: 125 psi (8.6 bar).
 - 3. Working Temperature Range: 33 to 180 degrees F (0.5 to 82 degrees C).

- C. Pressure Vacuum Breakers:
 - 1. Valve: ASSE 1020, bronze or copper silicon alloy.
 - 2. Maximum Working Pressure: 150 psi (10.3 bar).
 - 3. Working Temperature Range: 33 to 140 degrees F (0.5 to 60 degrees C).

2.04 WATER PRESSURE REDUCING VALVES

- A. Direct-Acting Pressure Reducing Valves:
 - 1. Manufacturers:
 - a. Cash Acme, a brand of Reliance Worldwide Corporation: www.cashacme.com/#sle.
 - b. Wilkins by Zurn Water, LLC: www.zurn.com/#sle.
 - c. Or approved equal.
 - 2. Valve: ASSE 1003, bronze or copper silicon alloy body, with spring-loaded diaphragm; field-adjustable outlet pressure, and integral inlet screen strainer.
 - a. Diaphragm: EPDM or buna-nitrile.
 - b. Spring: Stainless steel.
 - 3. Maximum Working Pressure: 300 psi (20.7 bar).
 - 4. Outlet Pressure Range: 15 to 75 psi (100 to 515 kPa).
 - 5. Working Temperature Range: 33 to 140 degrees F (0.5 to 60 degrees C).

2.05 MIXING VALVES

- A. Water Temperature Limiting Valves:
 - 1. Manufacturers:
 - a. Cash Acme, a brand of Reliance Worldwide Corporation: www.cashacme.com/#sle.
 - b. Watts: www.watts.com/#sle.
 - c. Or approved equal.
 - 2. Valve: ASSE 1070, bronze body; thermostatic element; corrosion- and lime-resistant internal components; integral locking temperature adjustment with high-temperature limit stop; integral check valves with strainer screens on inlets.
- B. Automatic Compensating Valves for Individual Showers and Combination Tub-Showers:
 - 1. Valve: ASSE 1016, pressure balancing, brass or bronze body with inlet checkstops; integral volume and temperature control with adjustable high-temperature limit stop.
 - 2. Valve Trim: Escutcheon with ADA-compliant lever handle.

2.06 STRAINERS

- A. NPS 2 (DN 50) and Smaller:
 - 1. Body: Wye-pattern in bronze.
 - 2. Screen: Stainless steel mesh.
 - 3. Pressure Rating: 200 psi (13.8 bar).

2.07 OUTLET BOXES

- A. Washing Machine Outlet Boxes:
 - 1. Manufacturers:
 - a. Guy Gray: www.ipsplumbingproducts.com/brands/guy-gray/#sle.
 - b. HoldRite, a brand of Reliance Worldwide Corporation: www.holdrite.com/#sle.
 - c. Or approved equal.
 - 2. Description: Galvanized rough-in box with brass quarter-turn ball valves, socket for 2-inch (50 mm) waste, and slip-in finishing cover.
 - 3. Provide fire-rated outlet-box assembly for installation in 1- and 2-hour rated walls.
 - 4. Accessories:
 - a. Water-hammer arrestors.
 - b. Support brackets for installation between framing studs.
- B. Ice Maker Outlet Boxes:
 - 1. Manufacturers:
 - a. Guy Gray: www.ipsplumbingproducts.com/brands/guy-gray/#sle.

- b. HoldRite, a brand of Reliance Worldwide Corporation: www.holdrite.com/#sle.
 - c. Or approved equal.
- 2. Description: Metal powder coated square rough-in box with quarter-turn ball valve and slip-in finishing cover.
- 3. Provide fire-rated outlet-box assembly for installation in 1- and 2-hour-rated walls.
- 4. Accessories:
 - a. Water-hammer arrestors.
 - b. Support brackets for installation between framing studs.

2.08 HYDRANTS

- A. Wall Hydrants:
 - 1. Manufacturers:
 - a. Woodford Manufacturing: www.woodfordmfg.com/#sle.
 - b. Zurn Water, LLC: www.zurn.com/#sle.
 - c. Or approved equal.
 - 2. Assembly: ASSE 1011, ASSE 1019, ASSE 1052, or ASSE 1053.
 - 3. Hydrant: Freeze-resistant, self-draining, wall-mounted.
 - a. Valve: Bronze or brass body.
 - b. Hose Connection: Threaded, with integral vacuum breaker or backflow preventer.
 - c. Hose Connection Size: 3/4 inch (19 mm).
 - d. Installation: Recessed lockable box.
 - e. Exterior Finish: Stainless steel.
 - f. Operation: Loose key.
 - 4. Maximum Working Pressure: 125 psi (8.6 bar).
 - 5. Working Temperature Range: 33 to 120 degrees F (0.5 to 50 degrees C).

2.09 DRAIN VALVES

- A. Ball-Valve Hose-End Drain Valves:
 - 1. Valve: Two-piece, full-port ball valve in bronze with capped hose-end connection.
 - 2. Pressure Rating: 250 psi (17.2 bar).
 - 3. Working Temperature Range: 33 to 140 degrees F (0.5 to 60 degrees C).
- B. Stop-and-Drain Valves:
 - 1. Ball-Valve Type:
 - a. Valve: Two-piece, full-port ball valve in bronze with capped drain port.
 - b. Pressure Rating: 600 psi (41.4 bar).
 - c. Working Temperature Range: 33 to 140 degrees F (0.5 to 60 degrees C).
 - 2. Globe-Valve Type:
 - a. Valve: Globe valve in bronze with capped drain port.
 - b. Pressure Rating: 125 psi (8.6 bar).
 - c. Working Temperature Range: 33 to 140 degrees F (0.5 to 60 degrees C).

2.10 WATER-HAMMER ARRESTORS

- A. Manufacturers:
 - 1. Watts: www.watts.com/#sle.
 - 2. Zurn Water, LLC: www.zurn.com/#sle.
 - 3. Or approved equal.
- B. Piston Type:
 - 1. Description: ASSE 1010 or PDI-WH 201, copper body with plastic piston and EPDM O-rings.
 - 2. Air Preload Pressure: 60 psi (410 kPa).
 - 3. Maximum Working Pressure: 150 psi (10.3 bar).
 - 4. Working Temperature Range: 33 to 180 degrees F (0.5 to 82 degrees C).

2.11 TRAP PRIMERS

- A. Water-Supplied Trap Primers:
 - 1. Description: ASSE 1018, bronze or brass body, water-supplied, pressure-drop activated trap primer with internal filter screen and integral vacuum breaker.
 - 2. Operating Pressure Range: 20 to 80 psi (140 to 550 kPa).
 - 3. Activation Pressure Drop: 3 psi (20 kPa).
 - 4. Accessories:
 - a. Shutoff valve on inlet.
 - b. Manufacturer's distribution unit with four outlet ports.

PART 3 EXECUTION

3.01 EXAMINATION

- A. Discard packing materials and verify product interiors are free from debris, damage, and corrosion.
- B. Verify end connections, flanges, threads, and grooves are completely clean without signs of damage or degradation that could result in leakage.
- C. For products containing isolation or shutoff valves, verify isolation and shutoff valves operate smoothly from fully closed to fully open.

3.02 INSTALLATION

- A. Prior to installation of domestic water piping specialties, flush domestic water piping of foreign material.
- B. Install products in accordance with manufacturer's instructions.
- C. Install products level and plumb.
- D. Install products with clearance for access and maintenance.
- E. Support products NPS 2-1/2 (DN 65) and larger independently of surrounding pipe.
- F. Support products with flanged or grooved ends independently of surrounding pipe.
- G. For products containing isolation or shutoff valves, locate valves in horizontal piping with stems at or above center of piping, maintaining unimpeded stem movement.
- H. Backflow Preventers:
 - 1. Install backflow preventers in accordance with requirements of local authorities having jurisdiction, including requirements of local water utility.
 - 2. Pipe relief from reduced-pressure-principle backflow preventers to nearest drain.
- I. Water Pressure Reducing Valves:
 - 1. Install shutoff valves on inlet and outlet.
 - 2. Install pressure gauges on outlet.
- J. Water Hammer Arrestors: Install in accordance with PDI-WH 201.
- K. Trap Primers:
 - 1. Install trap primers minimum of 12 inches (205 mm) above flood level of highest drain being served.
 - 2. Check that water flows through piping and that there are no leaks before pouring slabs or closing in walls.
 - 3. Cap unused ports on distribution manifold.

3.03 FIELD QUALITY CONTROL

- A. See Section 01 4000 - Quality Requirements for additional requirements.
- B. Inspect each product for damage and defects.
- C. Repair or replace damaged products.
- D. Replace defective products.

- E. For products containing isolation or shutoff valves, exercise isolation and shutoff valves from fully closed to fully open. Confirm smooth operation.
- F. Backflow Preventers:
 - 1. Test in accordance with manufacturer's instructions.
 - 2. Test in accordance with requirements of authorities having jurisdiction.
 - 3. Test in accordance with ASSE listing of backflow preventer.
 - 4. Replace backflow preventers that fail testing.
- G. Vacuum Breakers:
 - 1. Test in accordance with manufacturer's instructions.
 - 2. Test in accordance with requirements of authorities having jurisdiction.
 - 3. Test in accordance with ASSE listing of vacuum breaker.
 - 4. Replace vacuum breakers that fail testing.
- H. Water Pressure Reducing Valves: Confirm outlet pressure remains steady without fluctuation.
- I. Mixing Valves: Confirm outlet temperature remains steady without fluctuation.
- J. Coordination of Other Tests and Inspections: Provide access to accommodate tests and inspections by independent testing agencies employed by Owner.

3.04 ADJUSTING

- A. Adjust pressure reducing valves to design pressure set point.
- B. Adjust mixing valves to design temperature set point.
- C. Adjust thermostatic balancing valves to design temperature setpoint.

3.05 CLEANING

- A. See Section 01 7000 - Execution and Closeout Requirements for additional requirements.
- B. Clean products to remove dirt, paint, and other foreign materials.
- C. Clean surfaces of products exposed to view in finished spaces to remove dirt, fingerprints, paint, and other foreign materials. Restore finishes to match original factory finish.
- D. Clean surfaces of products exposed to view on building exterior to remove dirt, fingerprints, paint, and other foreign materials. Restore finishes to match original factory finish.
- E. Remove debris and clean interiors of equipment cabinets.
- F. Clean strainers, including those internal to other products, prior to mm-dd-yyyy.

3.06 PROTECTION

- A. Protect installed products from damage due to subsequent construction operations.

END OF SECTION