STANDARD SPECIFICATION
SECTION 15108 COMBINATION AIR RELEASE AND VACUUM VALVES

PART 1 - GENERAL

1.01 DESCRIPTION

This section includes materials, installation, and testing of combination air release and vacuum valves, 3 inches and smaller for potable or recycled water.

1.02 RELATED WORK SPECIFIED ELSEWHERE

A. Standard Drawings.

B. Record Drawings and Submittals: STD SPEC 01300.

C. Combination Air Valve Assemblies: STD SPEC 15092.

D. Disinfection of Piping: STD SPEC 15141.

E. Pressure Testing of Piping: STD SPEC 15144.

1.03 SUBMITTALS

A. Submit submittal packages in accordance with Standard Specification Section 01300.

B. Submit manufacturer's catalog data and detail drawings showing all valve parts and described by material of construction, specification reference, and grade or type.

PART 2 - MATERIALS

2.01 VALVE DESIGN AND OPERATION

A. The combination air-release and vacuum-relief valve shall be of a single chamber design with solid cylindrical HDPE control floats housed in a tubular stainless steel body with epoxy powder-coated cast iron, steel, or stainless steel ends secured by means of stainless steel tie rods or by a flanged connection. The valve shall have an integral orifice mechanism that shall operate automatically to limit transient pressure rise or shock induced by closure to twice valve rated working pressure. Provide a double (small and large) orifice design.

B. The intake orifice area shall be equal to the nominal size of the valve. The large orifice sealing shall be affected by the flat face of the control float seating against a nitrile rubber O-ring housed in dovetail groove circumferentially surrounding the orifice. Discharge of pressurized air shall be controlled by the seating and unseating of a small orifice nozzle on a natural rubber seal affixed into the control float. The nozzle shall have a flat seating land surrounding the orifice.

C. Provide a 1/4-inch NPT test/bleed cock.

D. Prior to the ingress of liquid into the valve chamber, as when the pipeline is being filled, valve shall vent through the large orifice. At higher water approach velocities, the valve shall automatically discharge air through the orifice mechanism and reduce water approach velocity.

E. Valve shall not exhibit leaks or weeping of liquid past the large orifice seal at operating pressures of 7 psi to twice rated working pressure.

F. Valves shall respond to the presence of air by discharging it through the small orifice at any pressures within the specified design range and shall remain leak tight in the absence of air.

G. Valves shall react immediately to pipeline drainage or water column separation by the full opening of the large orifice so as to allow unobstructed air intake at the lowest possible negative internal pipeline pressure.

2.02 MATERIALS OF CONSTRUCTION

Materials of construction for combination air-release and vacuum-relief valves for water service shall be as follows:

Item	Material	Specification
Top flange, lower flange	Stainless Steel	AISI Type 304L
Top cover	ABS plastic	–
Barrel	Stainless steel	AISI Type 304L
Floats	HDPE	–
Air-release nozzle or orifice mechanism	Stainless steel	AISI Type 304
Nozzle seal	Natural rubber	–
Nozzle seal retaining plate	Stainless steel	AISI Type 304
Tie rods assembly and support fasteners	Stainless steel	AISI Type 304
Float O-ring seals	Nitrile rubber	–

2.03 SEATING

Valves shall seal driptight at pressures shown on the Drawings.

2.04 VALVE END CONNECTIONS

A. Valves, 2 inches and smaller, shall have threaded ends. Valves, 3 inches and larger, shall have flanged ends.

B. Flanges for Class 150 valves shall comply with ASME B16.1, Class 125. Flanges for Class 300 valves shall comply with ASME B16.1, Class 250.

C. Threaded ends shall comply with ASME B1.20.1.

2.05 COMBINATION AIR RELEASE AND VACUUM VALVES 3 INCHES AND SMALLER

A. Valves, 2 inches and smaller, shall have a maximum working pressure of 363 psi. Valves shall be Vent-O-Mat Model No 025 RBX 2521 or Model No. 050 RBX 2521, or District approved equal.

B. Valves, 3 inches, shall have a maximum working pressure of 232 psi and Class 150 rating. Valves shall be Vent-O-Mat Model No. 050 RBX 1631 or District approved equal.

C. Valves, 3 inches, shall have a maximum working pressure of 363 psi and Class 300 rating. Valves shall be Vent-O-Mat Model No. 080 RBX 2531 or District approved equal.

PART 3 - EXECUTION

3.01 INSTALLATION

A. See Standard Specification Section 15092 for complete assembly installation.

B. Clean threaded joints by wire brushing or swabbing. Apply Teflon joint compound or Teflon tape to pipe threads before installing screwed valves. Joints shall be watertight.

C. Clean flange stud bolts and nuts by wire brushing, coat threads of stud bolts with lubricant, and tighten nuts uniformly and progressively. If flanges leak under pressure testing, loosen, or remove the nuts, reseat or replace the gasket, reinstall or retighten the nuts, and retest the joints. Joints shall be watertight.

3.02 PRESSURE TESTING

Test valves at the same time that the connecting pipelines are pressure tested. See Standard Specification Section 15144 for pressure testing requirements. Repair leaks in the valves and joints of the interconnecting piping and retest.

3.03 DISINFECTION

See Standard Specification Section 15141 for chlorination requirements.

END OF SECTION