# SECTION 400560 COMBINATION AIR-RELEASE VALVES

## PART 1 - GENERAL

A. Description

1. This section includes materials and installation of combination air-release valves for water service.

B. Related Work Specified Elsewhere

1. Painting and Coating: 099000.

2. General Piping Requirements: 400500.

3. Pressure Testing of Piping: 400515.

4. Manual Valves: 400520.

C. Submittals

1. Submit shop drawings in accordance with the General Conditions and Section 013300.

2. Submit manufacturer's catalog data and detail drawings showing all valve parts and described by material of construction, specification (such as AISI, ASTM, SAE, or CDA), and grade or type. Show linings and coatings.

## PART 2 - MATERIALS

A. Bolts, Nuts, and Gaskets for Flanged Valves

See Section 400500 and specification for the pipe to which the valve is attached.

B. Valve Design and Operation

1. Valve design shall comply with AWWA C512, except as modified herein. Class 150 valves shall have a maximum working pressure of at least 150 psi.

2. Combination air valves 3 inches and smaller shall have a float with lever arm to actuate a poppet valve. A needle shall be attached to the float arm. The poppet valve shall serve to admit large quantities of air when the pipeline drains. The needle shall serve to release small quantities of air as the pipeline fills or as air accumulates in the pipeline.

3. Combination air valves 4 inches and larger for water service shall consist of an air and vacuum valve with an air-release valve attached to it or integral with it. Connect the attached air-release valve to the air and vacuum valve with standard weight steel piping (ASME B36.10) and an isolation gate valve.

C. Materials of Construction

1. Materials of construction shall be as follows:

| Item | Material | Specification |
|---|---|---|
| Body and cover | Cast iron | ASTM A48, Class 35; or ASTM A126, Class B |
| Float, lever or linkage, air-release mechanism, poppet, guide rod, guide bushings, fasteners, other internal metal parts | Stainless steel | AISI Type 304 |
| Plugs | Bronze | See paragraph 5 below |
| Seat, plunger, needle | Buna-N | – |

2. Bronze shall have the following chemical characteristics:

| Constituent | Content |
|---|---|
| Zinc | 7% maximum |
| Aluminum | 2% maximum |
| Lead | 8% maximum |
| Copper + Nickel + Silicon | 83% minimum |

3. Rubber seats shall be made of a rubber compound that is resistant to free chlorine and monochloramine concentrations up to 10 mg/L in the fluid conveyed.

4. Body and cover bolts, nuts, and cap screws shall be carbon steel, ASTM A307.

D. Valve End Connections

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

2. Flanges for Class 150 valves shall comply with ASME B16.1, Class 125. Threaded ends shall comply with ASME B1.20.1.

E. Valves

1. Combination Air Valves, 1 Through 3 Inches, Class 300: Valves shall have a maximum working pressure of 300 psi. Valves shall be APCO 143C, 145C, or 147C; Crispin UL10, UL20, or UL30; or equal.

2. Combination Air Valves, 4 through 8 Inches, Class 150: Provide steel hood above the top cover and orifice. Minimum orifice size for the air-release valve shall be 3/16 inch. Combination air-release valves shall be APCO 150/200 Series, Crispin AL/PL series, or equal.

PART 3 - EXECUTION

A. Lining and Coating

1. Coat cast-iron valves per Section 099000, System No. 10. Apply the specified prime, intermediate and finish coats at the place of manufacture. Finish coat shall match the color of the adjacent piping.

2. Coat interior surfaces of cast-iron valves at the place of manufacture per Section 099000, System No. 7. Do not coat seating areas and plastic, bronze, stainless steel, or other high alloy parts.

B. Installation

1. Clean flanges by wire brushing before installing flanged valves. Clean flange bolts and nuts by wire brushing, lubricate threads with oil and graphite, and tighten nuts uniformly and progressively. If flanges leak under pressure testing, loosen or remove the nuts and bolts, reseat or replace the gasket, reinstall or retighten the bolts and nuts, and retest the joints. Joints shall be watertight.

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

C. Valve Pressure Testing

Test valves at the same time that the connecting pipelines are pressure tested. See Section 400515 for pressure testing requirements. Protect or isolate any parts of valves, operators, or control and instrumentation systems whose pressure rating is less than the test pressure.

END OF SECTION