



SECTION 40_XX_XX
COMBINATION AIR VALVES

PART 1 GENERAL

1.01 SUMMARY

- A. Section Includes:
 - 1. Combination Air Valves
- B. Related Sections:
 - 1. (provided by the engineer)
 - 2.
 - 3.

1.02 REFERENCES

- A. American Water Works Association (AWWA):
 - a. C512 Air-Release, Air/Vacuum, and Combination Air Valves for Waterworks Service
 - b. M51 Air Valves: Air Release, Air/Vacuum, and Combination
- B. ASME B1.20.1 Pipe Threads, General Purpose
- C. ASME/MSS-SP-114 Corrosion Resistant Pipe Fittings Threaded and Socket Welding Class 150
- D. ASME B16.5 Pipe Flanges and Flanged Fittings
- E. ASTM A-105/SA-105 Carbon Steel Forgings for Piping Applications
- F. NSF/ANSI 372 lead free and NSF/ANSI 61 for drinking water

1.03 SUBMITTALS

- A. (provided by the engineer)

1.04 WARRANTY

- B. Valves shall be warranted by the manufacturer for defects in materials and workmanship for a period of two years (24 months) from date of shipment.

PART 2 PRODUCTS

2.01 GENERAL

- A. (provided by the engineer)

2.02 COMBINATION AIR VALVES FOR SEWAGE

- A. Manufacturers: DeZURIK APCO Model ASU or pre-approved equal.
- B. Design:
 - 1. Combination Air Valves shall be single body design and shall provide both Air Release and Air/Vacuum valve functions.
 - 2. General:
 - a. Design Maximum Working Pressure: 150 psi (1030 kPa) for ASU-SCAV body

- b. style, sizes 1-6" (25-150mm) and 300 psi (2070 kPa) for ASU-CAV body style, sizes 1-4" (25-100mm).
- c. Maximum Fluid Temperature: 180 deg F (82.2 deg C)
- d. Air release shall be accomplished by dual-range venting design to provide varied and predictable air flow over a wide range of conditions. Air release shall have a 5/16" self-adjusting orifice. The fractional air release orifice must be capable of releasing 140 scfm of air at 150 psi differential pressure.
- e. Valves shall close tightly at any pressure as low as 2 psi without leaking or spilling. The Air/Vacuum inlet and outlet areas shall meet the flow area requirements set forth in AWWA C512. In any case, the smallest cross-sectional area must define the size of the valve.
- f. Valve shall have an upper body compression chamber to limit fluid level and solids interference. It shall also have a funnel shaped lower body to reduce solids buildup and allow for self-cleaning and maximum outflow.
- g. A hydraulics-based float design shall be used to reduce the ballistic effect and instability of high-speed fluid flow. Float shall be oversized so Combination Air Valves will work in fluids containing fats, oils or greases (FOG) with specific gravity as low as 0.7.
- h. The guided float shaft shall provide smooth Air Release and Air/Vacuum operation that will not foul and reduce performance on dirty service applications. To avoid loss of performance, the Air Release and Air/Vacuum seating action shall be direct driven by the shaft-mounted float. No linkages shall be used.
- i. Flow deflector/splash reduction ring shall be used to restrict solids entry and minimize flow effect and splash that can cause float instability.
- j. A 90-degree threaded side outlet shall be included with the valve with an extension pipe having a drip line beyond the valve body (1-4"). 1-4" valves shall be capable of converting to optional vertical threaded outlet or mushroom cap without removing the valve from service and valve disassembly.
- k. When using the standard side outlet (1-4") or mushroom cap outlet (6"), the overall valve height and weight shall not exceed:

Size	Threaded Inlet		Flanged Inlet	
	Height	Weight	Height	Weight
1", 2"	22"	43 lb.	24"	50 lb.
3", 4"	25"	52 lb.	27"	71 lb.
6"	-	-	27"	95 lb.

C. Materials:

- 1. Body: 316 Stainless Steel.
- 2. Float: 316 Stainless Steel.
- 3. Float Shaft: 316 Stainless Steel (1-4") or 17-4PH stainless steel (6").
- 4. Piston stem and seat shall be 17-4 PH stainless steel.
- 5. Elastomer seals shall be Acrylonitrile-butadiene (NBR).
- 6. Piston stem guide bushings shall be Acetal Polyoxymethylene (POM).
- 7. All metal internal and external bolting and other hardware including pins, set screws, studs, bolts, nuts, and washers: Stainless Steel.

8. End connections: shall be NPT or ASME 125/150 flanged. Valves shall have two lifting lugs for ease of valve installation.
- D. Specifications for optional accessories:
 1. BFK = Backflush Kit for ASU Valves; Includes Two Brass Back Flush Shut Off Valves, 316 Stainless Steel Piping, and 5 Feet of Hose with Galvanized Steel Quick Disconnect couplings.
 2. DAT = Double Acting Throttling Device (1-4"). Double-Acting Throttling Device should be used to regulate and restrict air venting.
 - a. This device will establish a pressure loading on the rising column of fluid to eliminate damaging shock to the pump, controls and check valve on pump start.
 - b. On pump stop, the Double-Acting Throttling Device shall automatically open allowing full line unrestricted air re-entry to prevent vacuum from forming in the suction column.
 - c. Materials of construction shall be certified conforming to following ASTM specifications:
 1. Housing: Iron (with Fusion Bonded Epoxy on Exterior)
 2. Adjusting screw: Stainless Steel
 3. Spring: Stainless Steel
 4. Plug: PTFE
 3. MRC = Mushroom Cap - 304 Stainless Steel (1-4") (Standard on 6" Valve Size)
 4. VTO = Vertical Outlet (1-4"). Vertical Outlet: Type 303 Stainless Steel
- E. Testing:
 - a. Each Valve shall be shop tested in conformance with AWWA C512.
 - b. Certified test reports shall be available upon request.

PART 3 EXECUTION

3.01 INSTALLATION

- A. Install valves as specified in section (filled in by the engineer) and the manufacturer's instructions.
- B. (specification by engineer instructing how discharge piping should be installed)

3.02 COMMISSIONING

- A. Field testing (specification by engineer)