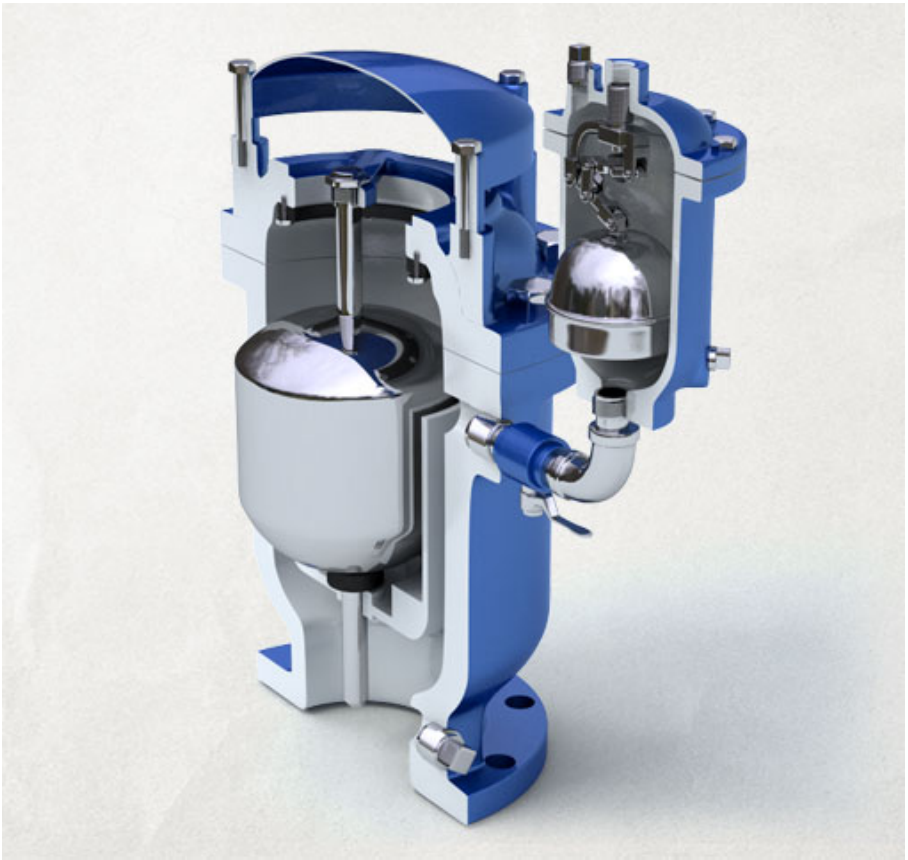
DeZURIK

APCO AVD-1100A\1800 DUAL BODY COMBINATION AIR VALVES



AVD 1800

Instruction **D12024**
March 2014

DeZURIK | APCO | HILTON | WILLAMETTE

Instructions

These instructions provide installation, operation and maintenance information for APCO AVD-1100A\1800 Combination Air Valves. They are for use by personnel who are responsible for installation, operation and maintenance of APCO AVD-1100A\1800 Combination Air Valves.

Safety Messages

All safety messages in the instructions are flagged with an exclamation symbol and the word Caution, Warning or Danger. These messages indicate procedures that must be followed exactly to avoid equipment damage, personal injury or death. Safety label(s) on the product indicate hazards that can cause equipment damage, personal injury or death.

Safety label(s) on the product indicate hazards that can cause equipment damage, personal injury or death. If a safety label becomes difficult to see or read, or if a label has been removed, please contact DeZURIK for replacement label(s).

WARNING!

Personnel involved in the installation or maintenance of valves should be constantly alert to potential emission of pipeline material and take appropriate safety precautions. Always wear suitable protection when dealing with hazardous pipeline materials. Handle valves, which have been removed from service with suitable protection for any potential pipeline material in the valve.

Inspection

Your APCO AVD Combination Air Valve has been packaged to provide protection during shipment; however, it can be damaged in transport. Carefully inspect the unit for damage upon arrival and file a claim with the carrier if damage is apparent.

Parts

Recommended spare parts are listed on the assembly drawing. These parts should be stocked to minimize downtime. Order parts from your local DeZURIK sales representative, or directly from DeZURIK. When ordering parts please choose from the following:

If the valve has a DeZURIK APCO nameplate please include the 7-digit part number and 4-digit revision number (example: 9999999R000) located on the data plate attached to the valve assembly. Also include the part name, the assembly drawing number, the balloon number and the quantity stated on the assembly drawing.

If there isn't any nameplate visible on the valve, please include Valve Model number, the part name, and item number from the assembly drawing. You may contact your local DeZURIK APCO Representative to help you identify your valve.

DeZURIK Service

DeZURIK service personnel are available to maintain and repair all DeZURIK products. DeZURIK also offers customized training programs and consultation services. For more information, contact your local DeZURIK sales representative or visit our website at www.dezurik.com.

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Description

Combination Air Valves have operating features of both Air/Vacuum Valves and Air Release Valves. These valves are also called Double Orifice Valves. Combination Air Valves are available in two body styles; a Single Body Combination and a Custom Built Combination with two (2) bodies.

The AVD 1100A and 1800 are Custom Built Combination Valves with an Air/Vacuum Valve piped with a shut-off valve to an Air Release Valve. They have greater versatility than the single body style because a variety of Air Release Valves with a wide range of orifices with higher operating pressures can be used. This style is available in 2" thru 30" sizes. The AVD 1100A has a butterfly valve mounted to its inlet port, otherwise it is the same as the AVD 1800.

Handling and Storage

Lifting the valve improperly may damage it. Do not fasten lifting devices to piping or attached components. Lift the valve with slings, chains or cables fastened around the valve body, or fastened to bolts or rods through bolt holes in the flanges.

If installation will be delayed, place valve indoors in secure, weather tight storage. If temporary outside storage is unavoidable, make sure a vermin proof rain cover (water shedding tarp, etc.) is secured around/over the valve to keep off rain and mud. Skid and set the assembly on a flat, solid, and well drained surface for protection from ground moisture, runoff and pooled rain water.

Installation

Combination Air Valves are installed on all high points of a system where it has been determined Air/Vacuum and Air Release valves are needed to vent and protect a pipeline.

- Before installation, remove foreign material such as weld spatter, oil, grease, and dirt from the pipeline.
- Prepare pipe ends and install valves in accordance with the pipe manufacture's instructions for the joint used.

CAUTION!

Do not deflect the pipe-valve joint. Minimize bending stresses in the valve end connection with pipe loading.

- Tighten the flange bolts or studs in a crisscross pattern and minimum of four stages.

Fusion/Powder Coated Valves

CAUTION!

Valves with fusion/powder coated exterior paint require flat washers to be installed under the flange nuts when installing the valve to the pipeline flange to prevent the paint from cracking or chipping.

Maintenance

Combination Air Valves are automatic in operation and require very little or no maintenance. It is recommended that they be checked visually semi-annually for leakage. A malfunction of the valve will be evident by leakage of the media out of the orifice of plug stem or by the seating area of the exhaust port. Should a malfunction occur, the following steps should be taken to repair the valve.

Disassembly Procedure

See Figures 1 and 2 for part identification.

WARNING!

Servicing the Air/Vacuum Valve while the pipeline is under pressure can cause personal injury or equipment damage. Relieve pipeline pressure or shut off isolation valve before servicing the Air/Vacuum Valve.

1. Relieve pipeline pressure or shut off isolation valve at inlet to Air/Vacuum Valve.

Air/Vacuum Valve

2. Remove pipe plug near inlet of valve body (1) to relieve internal pressure and to drain the unit.
4. Remove cover screws (4) and cover (2).
5. Remove seat screws (16) and remove seat (6) from recess in cover (2).
6. Remove float (14) from body (1). Inspect seat and float seating surfaces for damage. Replace if necessary.

ARF-200A Air Release Valve

7. Remove cover bolts (4) and cover (2) from valve body (1).

   Note: All internals are attached to the cover.
8. If cover gasket (3) is torn or damaged, clean flange surfaces of cover (2) and body (1).
9. Clean and inspect all components attached to the cover (2).
10. Inspect float (14) for the presence of water inside float. Replace float if damaged.

Assembly Procedure

See Figures 1 and 2 for part identification.

ARF-200A Air Release Valve

1. Assemble cover (2) and attached components to body (1), installing new gasket (3) if necessary. Tighten bolts (4) opposite each other in rotation.

Air/Vacuum Valve

2. Inspect guide bushings (26 & 43) and bumper (40). Replace if necessary.
3. Inspect seat (6) and float (14) seating surfaces for damage. Replace if necessary.
4. Install bumper (40) and float (14) in body (1).

Maintenance *(Continued)*

5. Clean surface of recess in cover (2) and install seat (6). For valve sizes 4" thru 12", Buna-N seat hardness (Durometer) should correspond to the operating pressure as shown in Table A.
6. Assemble cover (2) to body (1). Tighten cover screws (4) opposite each other in rotation.
7. Install pipe plug.
8. Perform a seat test. Restore pipeline pressure and slowly fill the Air/Vacuum valve chamber by cracking open the isolation valve below Air/Vacuum Valve. If seepage occurs once the float (14) is in contact with the seat (6), reference to the "Disassembly Procedure" and replace seat and/or float.
9. If there is no seepage during the seat test, fully open isolation valve.

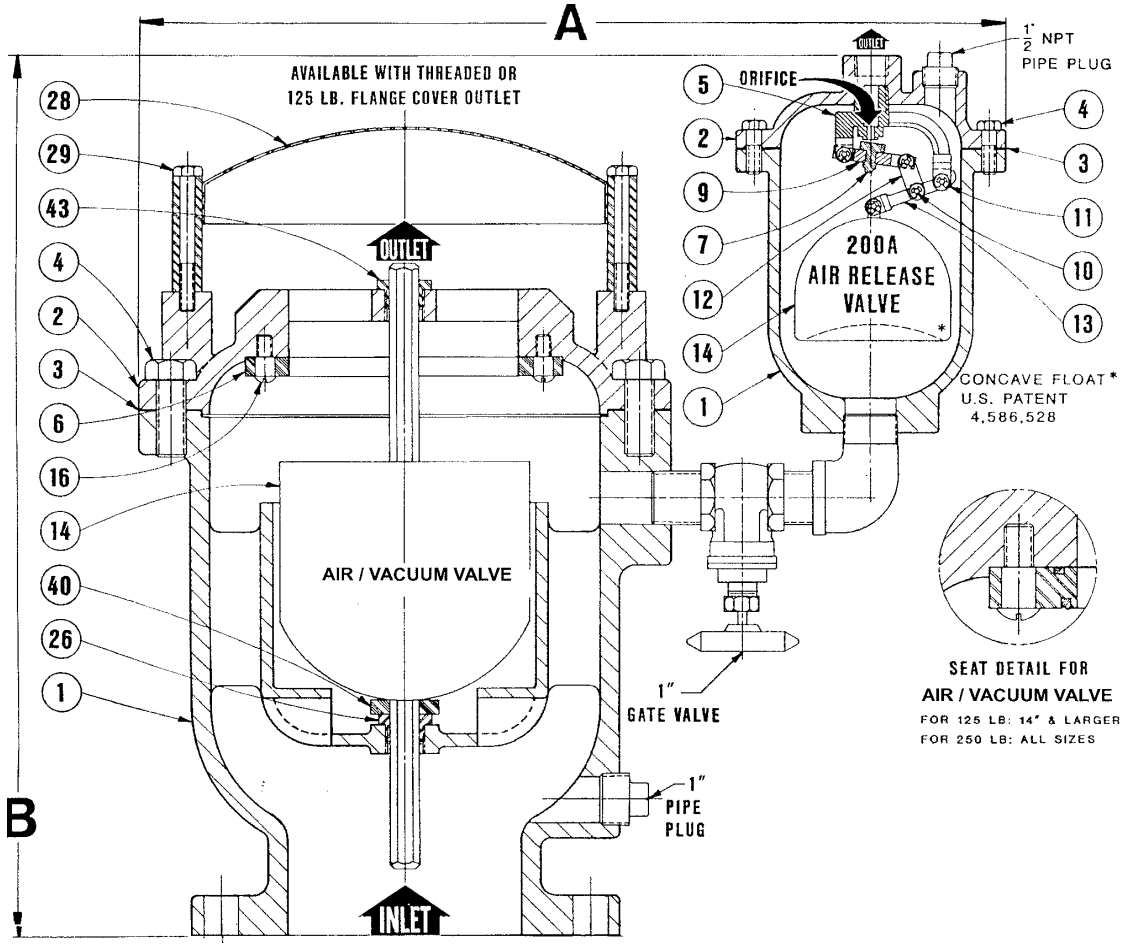
Table A: Buna-N Seat Durometer Vs. Operating Pressure (PSI)

Valve Size	Model No.	Working Pressure, PSI				
		0-10	11-50	51-100	101-200	201-300
4"	152	45	65	85	85	Metal
6"	153	65	85	85	85	Metal
8"	154	65	85	85	85	Metal
10"	155	65	85	85	85	Metal
12"	156	65	85	85	85	Metal
14"	157	Metal	Metal	Metal	Metal	Metal
16"	158	Metal	Metal	Metal	Metal	Metal
18"	159	Metal	Metal	Metal	Metal	Metal
20"	160	Metal	Metal	Metal	Metal	Metal
24"	162	Metal	Metal	Metal	Metal	Metal

Operation

Combination Air Valves prevent accumulation of air at high points within a system by exhausting large volumes of air as the system is filled and releasing accumulated pockets of air while the system is operational and under pressure. They also prevent potentially destructive vacuums from forming by admitting large quantities of air into the system. This can occur during power outage, water column separation or sudden rupture of the pipeline. Additionally, these valves allow the system to be easily drained because air will re-enter as needed.

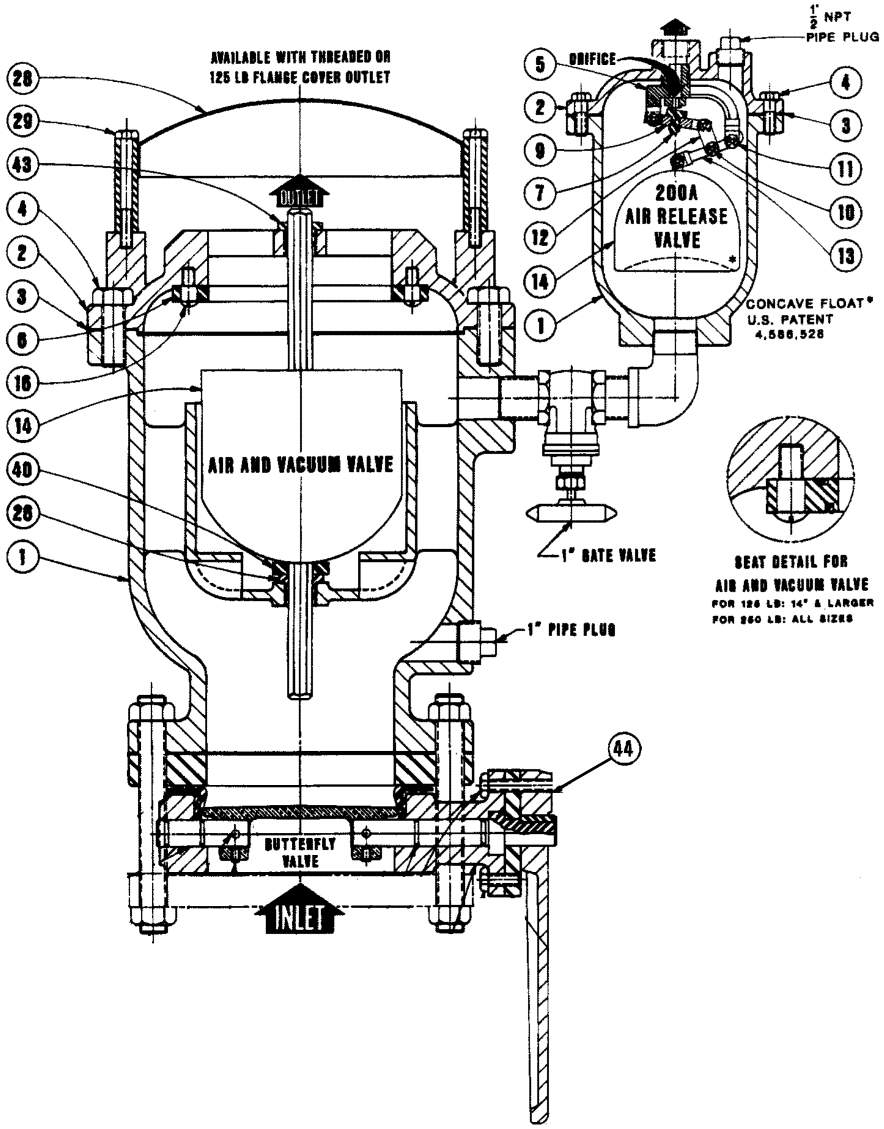
Drawings



Air/Vacuum Valve		200A Air Release Valve	
NO	**DESCRIPTION**	**NO**	**DESCRIPTION**
1	Body	1	Body
2	Cover	2	Cover
3	Gasket	3	Gasket
4	Cover Bolt	4	Cover Bolt
6	Seat	5	Leverage Frame
14	Float	7	Needle
16	Seat Screw	9	Needle Lever
26	Float Guide Bushing	10	Lever Pin
28	Hood	11	Retaining Ring
29	Hood Screw	12	Connecting Link
40	Bumper	13	Float Lever
43	Float Guide Bushing	14	Concave Float

Figure 1: AVD-1800 Custom Combination Duplex Body Valve

Drawings *(Continued)*



200A Air Release Valve	
NO	**DESCRIPTION**
1	Body
2	Cover
3	Gasket
4	Cover Bolt
5	Leverage Frame
7	Needle
9	Needle Lever
10	Lever Pin
11	Retaining Ring
12	Connecting Link
13	Float Lever
14	Concave Float
Air/Vacuum Valve	
NO	**DESCRIPTION**
1	Body
2	Cover
3	Gasket
4	Cover Bolt
6	Seat
14	Float
16	Seat Screw
26	Float Guide Bushing
28	Hood
29	Hood Screw
40	Bumper
43	Float Guide Bushing
44	Butterfly Valve with Actuator

Figure 2: AVD-1100A Custom Combination Duplex Body Valve

Troubleshooting

Condition	Possible Cause	Corrective Action
Valve leaks at flange joint.	Loose flange bolting.	Tighten flange bolting.
	Blown flange gasket.	Replace flange gasket.
	Miss-alignment or damage to field piping and supports.	Adjust miss-alignment or repair piping or supports.
	Damaged flange face/s or improper flange connections.	Repair flange, replace valve body or adjust flange connections.
Valve leaks out of Outlet port.	Line pressure is under 10 psi.	Replace seat with softer seat.
	Worn needle and/or orifice.	Replace needle and/or orifice.
	Float does not move freely.	Re-adjust position of leverage frame to cover.
	Float has liquid in it.	Replace float.
	Dirty seat and/or float.	Clean seat and/or float.
	Worn seat and/or float.	Replace seat and/or float.
	Dirty needle and/or orifice of leverage frame.	Clean needle and/or orifice of leverage frame.
	Float linkage is dirty.	Clean float linkage.

Guarantee

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