



**APCO AVC-140C/150C  
COMBINATION  
AIR VALVES**



**AVC-140C**

Instruction **D12008**  
June 2014

# DeZURIK

## APCO AVC-140C/150C Combination Air Valves

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### Instructions

These instructions provide installation, operation and maintenance information for APCO AVC-140C/150C Combination Air Valves. They are for use by personnel who are responsible for installation, operation and maintenance of APCO AVC-140C/150C 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.**

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### Inspection

Your APCO 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](http://www.dezurik.com).

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This Drinking Water System Component is tested and certified by WQA against NSF/ANSI Standard 61.

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## APCO AVC-140C/150C Combination Air Valves

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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 AVC-140C and AVC-150C are Single Body Combination valve and are used where compactness is preferred and/or where risk of tampering exists due to accessibility of the installation. This style is available from 1" thru 8" sizes.

### 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.**

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- 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.**

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## 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:

### ***Cleaning of Seat Orifice***

See Figure 1 and Figure 2 for part identification.



#### **WARNING!**

**Servicing the Air 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 Valve.**

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- Relieve pipeline pressure or shut off isolation valve at inlet to Air Valve.
- Loosen pipe plug on body (1) to relieve pressure.
- Remove pipe plug.
- Using air or water, blow down into valve to clean any sediment that may be preventing needle (7) from seating properly to orifice of plug (42) and plug seating to seat (6).
- Replace pipe plug.
- Open isolation valve on inlet to Air Valve. Valve is now back in service. If this procedure has not remedied the problem, proceed with disassembly.

### ***Disassembly Procedure***

See Figure 1 and Figure 2 for part identification.



#### **WARNING!**

**Servicing the Air 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 Valve.**

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1. Relieve pipeline pressure or shut off isolation valve at inlet to Air Valve.
2. Loosen pipe plug to relieve pressure in Air Valve.
3. Remove pipe plug.
4. Remove cover bolts (4) and cover (2) from valve body (1). *Note:* All internals are attached to the cover.
5. If cover gasket (3) is torn or damaged, clean flange surfaces of cover (2) and body (1).
6. Remove leverage screws (16) and remove assembly from cover (2).
7. Inspect large seating surface of plug (42) and seat (6) for nicks, wear or sediment coating from chemicals in the media.

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### Maintenance *(Continued)*

8. Inspect seating surface of needle (7) and orifice seat end of plug (42) for same conditions.
9. Inspect surface conditions between seat (6) and cover (2) for possible rust build-up.
10. Inspect all connections of linkage for excessive wear or damage.
11. Inspect float (14) to insure that it is not damaged or that it does not have liquid in it.
12. Check bumper (40) for wear or damage.
13. Thoroughly clean all parts and body.

### Assembly Procedure

See Figure 1 and Figure 2 for part identification.

1. Install new needle (7) in float lever (13), if necessary.

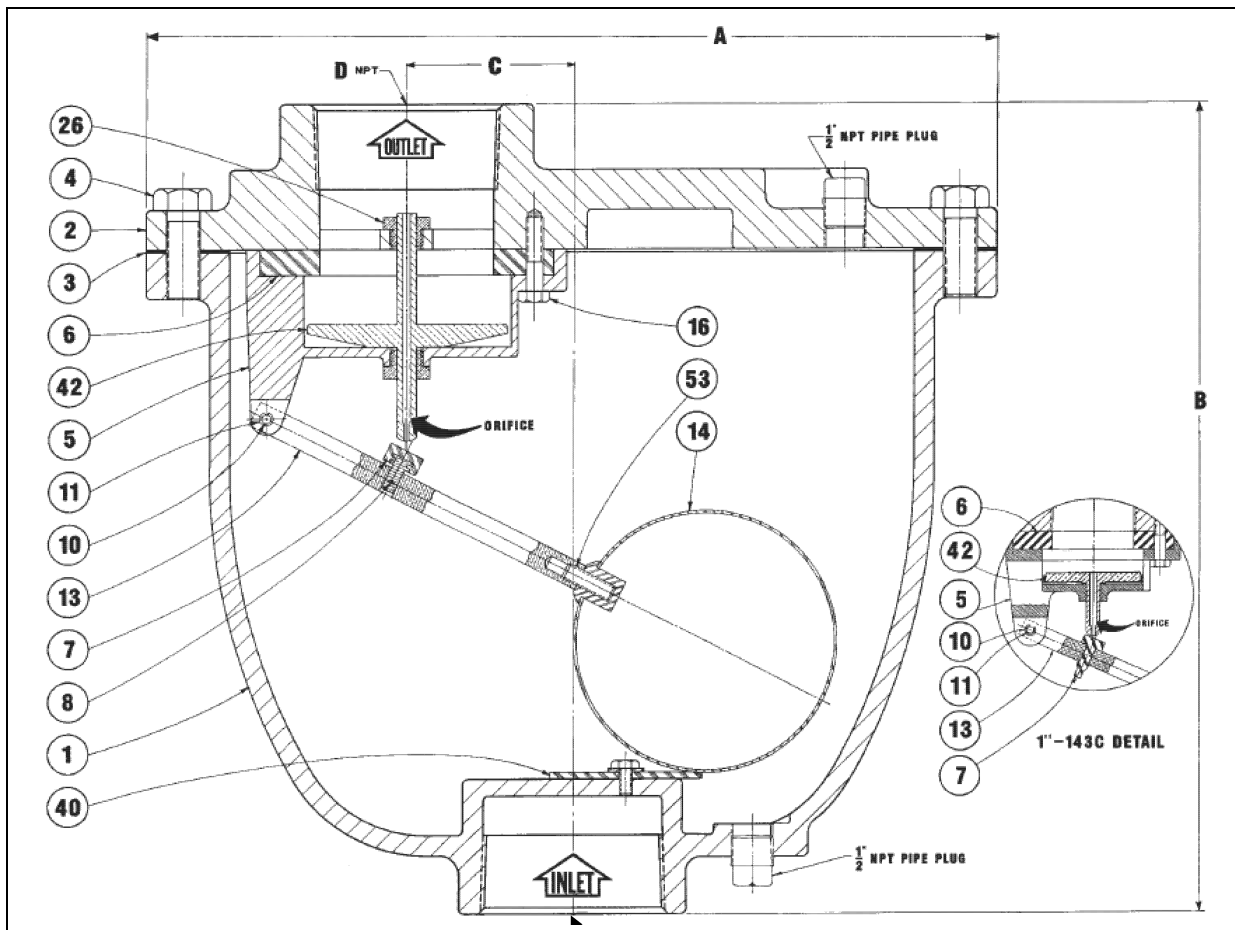
Install new seat (6), if necessary. If line pressure is below 10 PSI and a positive closing cannot be achieved, contact the factory for recommendations for a softer Durometer Buna-N seat.

2. Reassemble linkage assembly, replacing pin (10) and retaining rings (11), as necessary.  
*Note:* Only factory approved and/or factory supplied stainless steel parts should be used.
3. Assemble leverage frame (6) assembly to cover (2). Be sure that plug (42) moves freely from its open to closed position and the plug sits square and flat on seat (6). Improper positioning of leverage frame to cover before tightening screws can result in binding of plug.
4. Assemble cover (2) to body (1), installing new gasket (3) if necessary. Tighten bolts (4) opposite each other in rotation.
5. Install and tighten pipe plug.
6. Open isolation valve at inlet of Air Valve slowly and observe the closing of plug coming up to and seating with Buna-N seat. Except for a very slight spurt of liquid at closing, a positive seal should result.

### 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**



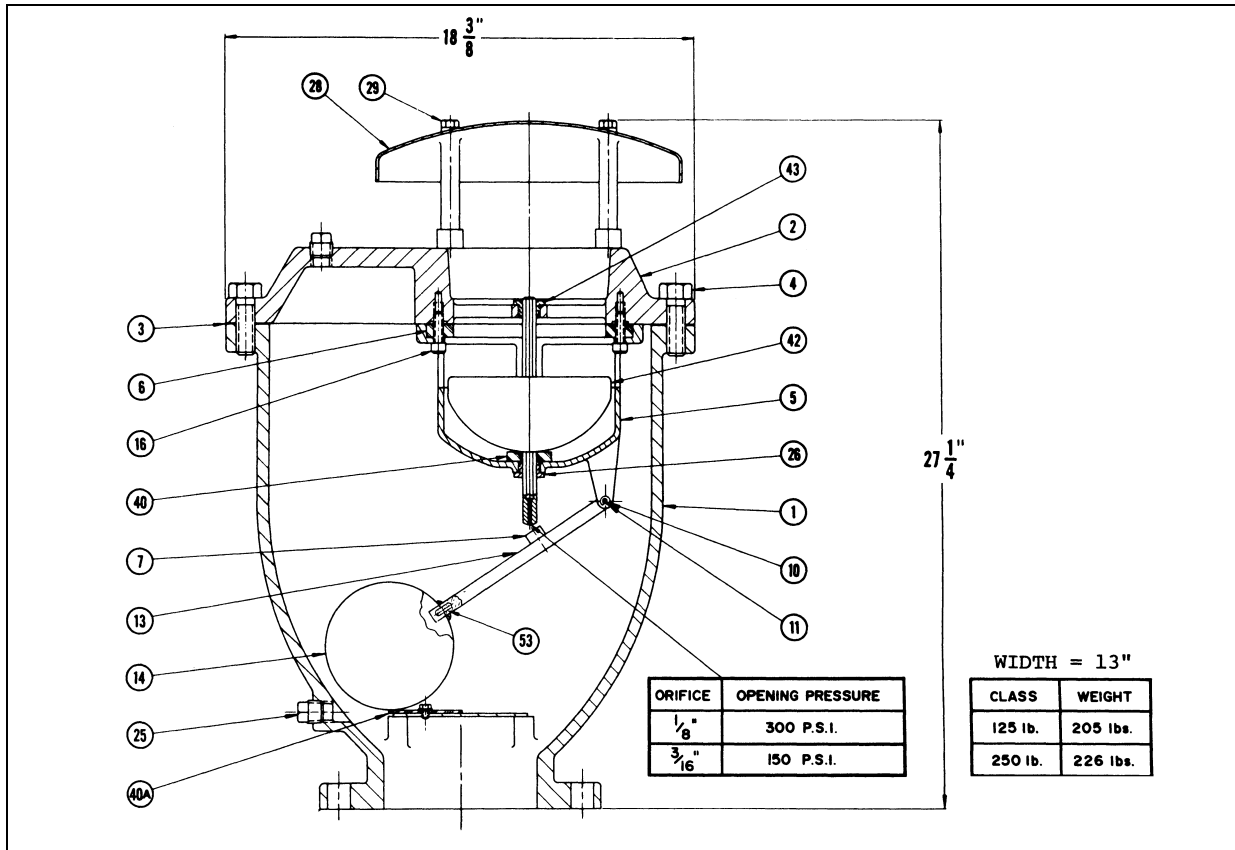
NO.	Description
1	Body
2	Cover
3	Cover Gasket
4	Cover Bolts
5	Leverage Frame
6	Seat
7	Needle
8	Needle Pin
10	Lever Pin
11	Retaining Ring
13	Float Lever
14	Float
16	Leverage Frame Screw
26	Guide Bushing
40	Bumper Assembly
42	Plug
53	Float Retaining Screw

**Figure 1: AVC-140C Standard Combination Single Body Valve**

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## APCO AVC-140C/150C Combination Air Valves

### Drawings (Continued)



NO.	Description
1	Body
2	Cover
3	Cover Gasket
4	Cover Bolts
5	Leverage Frame
6	Seat
7	Needle
10	Lever Pin
11	Retaining Ring
13	Float Lever
14	Float
16	Leverage Frame Screw
25	Pipe Plug
26	Float Guide Bushing
28	Protective Hood
29	Hood Screws
40A	Bumper Assembly
42	Plug
43	Float Guide Bushing
53	Float Retaining Screw

**Figure 2: AVC-150C Standard Combination Single 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.	Dirty seat and/or plug.	Clean seat and/or plug.
	Worn seat and/or plug.	Replace seat and/or plug.
	Line pressure is under 10 psi.	Replace seat with softer seat.
	Dirty needle and/or orifice of plug.	Clean needle and/or orifice of plug.
	Worn needle and/or orifice of plug.	Replace needle and/or plug.
	Plug does not move freely.	Re-adjust position of leverage frame to cover.
	Float has liquid in it.	Replace float.

## Guarantee

Products, auxiliaries and parts thereof of DeZURIK, Inc. manufacture are warranted to the original purchaser for a period of twenty-four (24) months from date of shipment from factory, against defective workmanship and material, but only if properly installed, operated and serviced in accordance with DeZURIK, Inc. recommendations. Repair or replacement, at our option, for items of DeZURIK, Inc. manufacture will be made free of charge, (FOB) our facility with removal, transportation and installation at your cost, if proved to be defective within such time, and this is your sole remedy with respect to such products. Equipment or parts manufactured by others but furnished by DeZURIK, Inc. will be repaired or replaced, but only to the extent provided in and honored by the original manufacturers warranty to DeZURIK, Inc., in each case subject to the limitations contained therein. No claim for transportation, labor or special or consequential damages or any other loss, cost or damage shall be allowed. You shall be solely responsible for determining suitability for use and in no event shall DeZURIK, Inc. be liable in this respect. DeZURIK, Inc. does not guarantee resistance to corrosion, erosion, abrasion or other sources of failure, nor does DeZURIK, Inc. guarantee a minimum length of service. Your failure to give written notice to us of any alleged defect under this warranty within twenty (20) days of its discovery, or attempts by someone other than DeZURIK, Inc. or its authorized representatives to remedy the alleged defects therein, or failure to return product or parts for repair or replacement as herein provided, or failure to install and operate said products and parts according to instructions furnished by DeZURIK, Inc., or misuse, modification, abuse or alteration of such product, accident, fire, flood or other Act of God, or failure to pay entire contract price when due shall be a waiver by you of all rights under this warranty.

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## Sales and Service

For information about our worldwide locations, approvals, certifications and local representative:

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