



APCO ASV-401 SEWAGE AIR/VACUUM VALVES



Instruction **D12027**
March 2014

DeZURIK

APCO ASV-401 Sewage Air/Vacuum Valves

Instructions

These instructions provide installation, operation and maintenance information for the APCO ASV-401 Sewage Air/Vacuum Valves. They are for use by personnel who are responsible for installation, operation and maintenance of APCO ASV-401 Sewage Air/Vacuum 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 ASV-401 Sewage Air/Vacuum 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.

Table of Contents

Description - - - - -	4
Handling and Storage - - - - -	4
Installation - - - - -	4
Maintenance/Backflushing - - - - -	4
<i>Backflushing to Force Main</i> - - - - -	5
<i>Backflushing to Atmospheric or Vacuum Tank</i> - - - - -	5
<i>Disassembly Procedure</i> - - - - -	6
<i>Assembly Procedure</i> - - - - -	7
Operation - - - - -	7
Drawings - - - - -	8
Troubleshooting - - - - -	10

DeZURIK

APCO ASV-401 Sewage Air/Vacuum Valves

Description

The APCO ASV-401 Sewage Air/Vacuum Valves are specially designed for use with sewage and waste media. It releases large quantities of air when initially filling the line, and will close automatically with liquid level rise. As long as the line is under pressure, the valve will not open. Under vacuum conditions, the double float will drop, allowing air to re-enter the line. This prevents possible collapse of the pipeline, allows line to drain, and prevents damage due to water column separation within long downward slopes. The valve will close again only when the line is filled.

Handling and Storage

Lifting the valve improperly may damage it. Do not fasten lifting devices to piping or attached components. Lift the valve with a sling around the flanged end of the body.

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 valve on a flat, solid, and well drained surface for protection from ground moisture, runoff and pooled rain water.

Installation

- The sewage Air/Vacuum valve is fitted with a shut off valve for isolating the valve from the main for inspection and backflushing.
- The sewage Air/Vacuum valve and valve vault should have adequate drainage and be sufficiently protected from possible freezing conditions.
- It is recommend the sewage Air/Vacuum valve discharge ports be ordered threaded and piped to a drain, particularly when installed within a pumping station, to prevent the danger of flooding due to malfunction or clogging.

Maintenance/Backflushing

The valve should be backflushed to prevent grease and scum buildup inside the valve which can prevent the valve from operating properly. Valves can be ordered with the optional backflushing attachments.

The valve should be backflushed 6 months after the initial operating date. If the initial backflushing process only takes a few minutes to clean the valve, the next backflushing can be scheduled in 12 months. If the initial backflushing process takes 15 minutes or longer to clean the valve, the next backflushing should be scheduled in 3 months.

See Figure 3 for part identification.

Maintenance/Backflushing *(Continued)****Backflushing to Force Main***

If a clean water service is available, it must be at least 15 psi higher than the main pressure, to prevent sewage from back flowing into the potable water line.

Valves **(with optional Backflush Attachment)** may be flushed back into the force main by:

1. Leave the Isolation Valve A open.
2. Connect the Backflush Hose C to Valve D.
3. Backflush for 2 – 3 minutes (or as long as it takes to flush out all the sediment).
4. Close Valve D.
5. After backflushing, close Isolation Valve A.
6. Remove Backflush Hose C and vent pressure in the valve thru Valve D.
7. Remove cover bolts (4) and remove the cover (2).
8. Visually inspect the valve interior. If grease deposits interfere with the valve operation, scrape out grease deposits.
9. If the valve was leaking thru the Outlet Port during backflushing, replace the seat (6) and needle (7) before replacing the cover (2).
10. Replace cover (2) and cover bolts (4).
Note: If cover gasket (3) is damaged, replace cover gasket.
11. Slowly open Isolation Valve A to place valve back in service.

Backflushing to Atmospheric or Vacuum Tank

If a clean water service is not available, with 15 psi higher than the main pressure, backflush thru Drain Valve B into an atmospheric or vacuum collection tank.

Valves **(with optional Backflush Attachment)** may be flushed back into tank by:

1. Close Isolation Valve A.
2. Connect Drain Valve B to an atmospheric or vacuum collection tank.
Note: If a vacuum collection tank is used, a pipe plug with a ¼" hole in it may be inserted into the outlet port of the Air and Vacuum Valve to limit the amount of air drawn back into the vacuum tank.
3. Open Drain Valve B.
4. Connect the Backflush Hose C to Valve D.
5. Backflush for 2 – 3 minutes (or as long as it takes to flush out all the sediment).
6. Close Valve D.
7. After backflushing, close Isolation Valve A.
8. Remove Backflush Hose C and vent pressure in the valve thru Valve D.
9. Remove cover bolts (4) and remove the cover (2).
10. Visually inspect the valve interior. If grease deposits interfere with the valve operation, scrap out grease deposits.

DeZURIK

APCO ASV-401 Sewage Air/Vacuum Valves

Maintenance/Backflushing *(Continued)*

11. If the valve was leaking thru the Outlet Port during backflushing, replace the seat (6) and needle (7) before replacing the cover (2).
12. Replace cover (2) and cover bolts (4).
Note: If cover gasket (3) is damaged, replace cover gasket.
13. Close Drain Valve B.
14. Slowly open Isolation Valve A to place valve back in service.

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.

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



WARNING!

Do not completely remove pipe plug or cover screws while the valve is under pressure.

2. Loosen pipe plug in cover (2) to relieve internal pressure. **Do not completely remove pipe plug while the valve is under pressure.**
3. Remove cover screws (4) and cover (2). For sizes 4"-14" also remove guide plate screw (34) and guide plate (5).
Note: All internals are attached to the cover.
4. If cover gasket (3) is torn or damaged, clean flange surfaces of cover (2) and body (1).
5. Inspect sealing surface of upper float (14) and seat (6) for nicks, wear or sediment coating from chemicals in the media.
6. Clean or replace upper float (14) and seat (6).
7. Inspect lower float (15) to insure that it is not damaged or that it does not have liquid in it.
8. Inspect all connections of linkage for excessive wear.
9. Clean all surfaces before re-assembly.

Maintenance *(Continued)***Assembly Procedure**

See Figure 1 and Figure 2 for part identification.

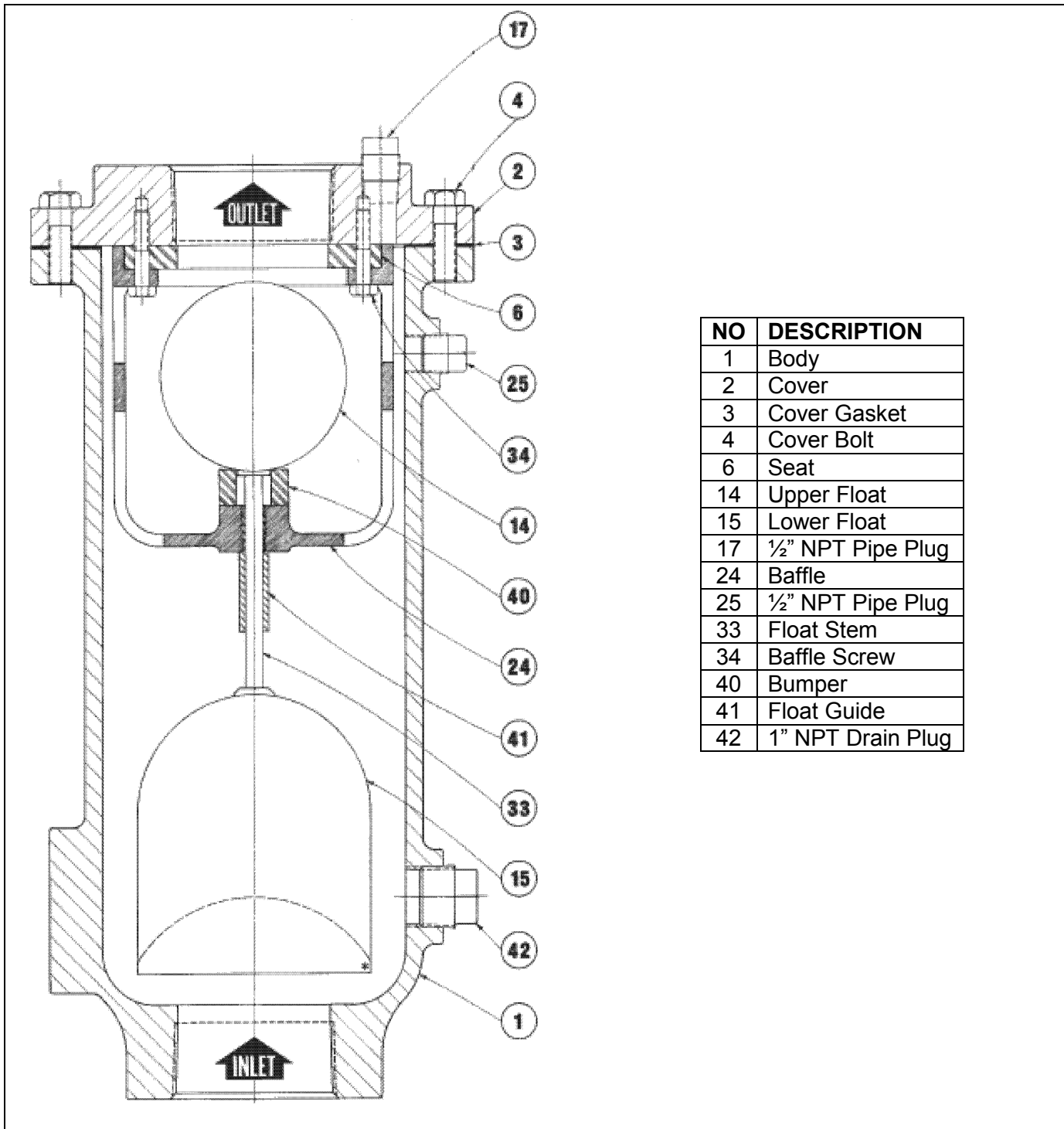
1. Re-assemble in the opposite order as disassembly procedure.
2. Assemble cover (2) to body (1), installing new gasket (3) if necessary. Tighten cover screws (4) opposite each other in rotation.
3. Tighten pipe plug in cover (2).
4. Open isolation valve on inlet to Air Valve. Valve is now back in service.

Operation

Sewage Air/Vacuum Valves are specially designed for use with sewage and waste media. It releases large quantities of air when initially filling the line, and will close automatically with liquid level rise. As long as the line is under pressure, the valve will not open. Under vacuum conditions, the double float will drop, allowing air to re-enter the line.

DeZURIK
APCO ASV-401 Sewage Air/Vacuum Valves

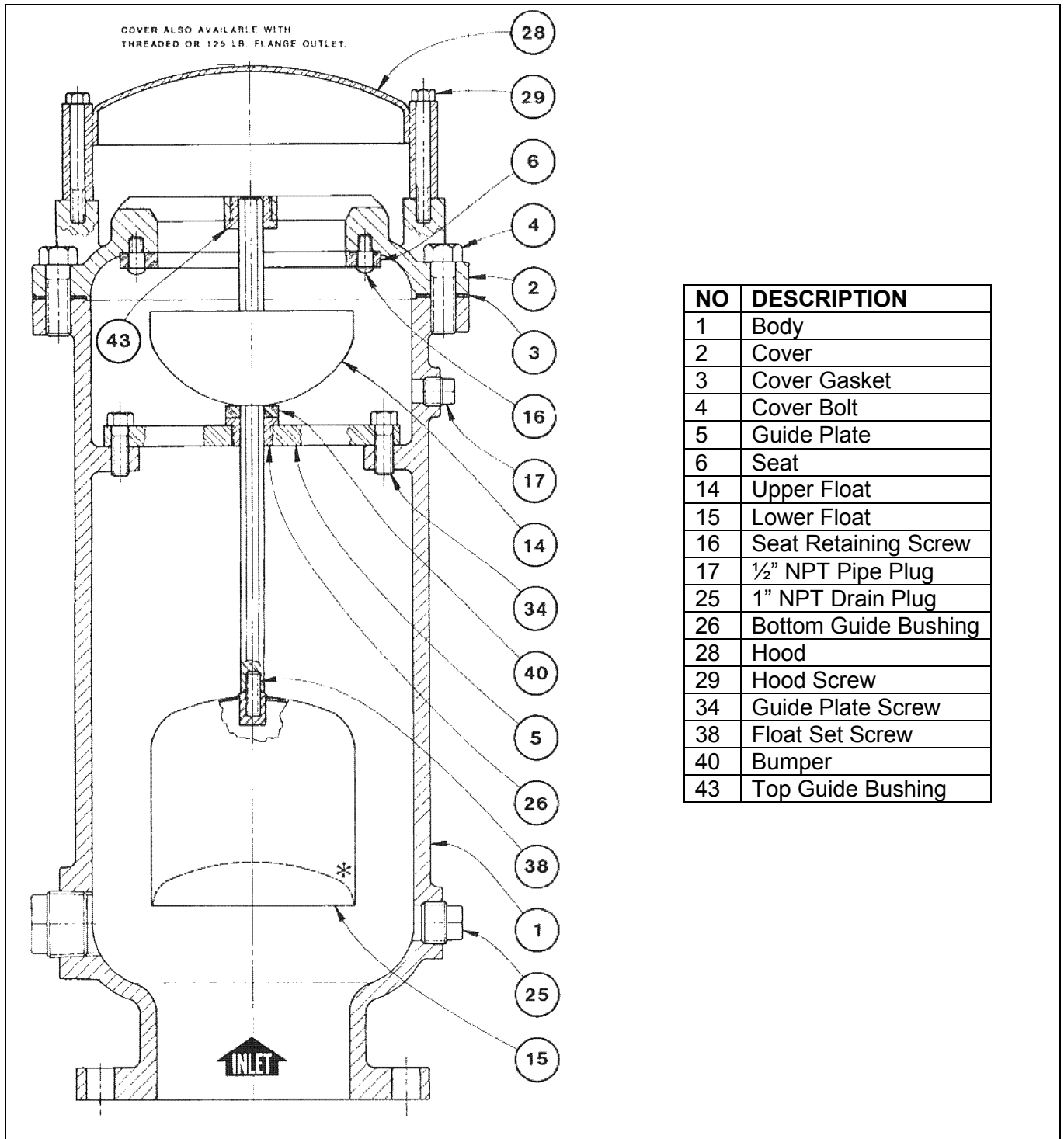
Drawings



NO	DESCRIPTION
1	Body
2	Cover
3	Cover Gasket
4	Cover Bolt
6	Seat
14	Upper Float
15	Lower Float
17	½" NPT Pipe Plug
24	Baffle
25	½" NPT Pipe Plug
33	Float Stem
34	Baffle Screw
40	Bumper
41	Float Guide
42	1" NPT Drain Plug

Figure 1: ASV-401 Part Identification-Sizes 1" Through 3"

Drawings (Continued)



NO	DESCRIPTION
1	Body
2	Cover
3	Cover Gasket
4	Cover Bolt
5	Guide Plate
6	Seat
14	Upper Float
15	Lower Float
16	Seat Retaining Screw
17	1/2" NPT Pipe Plug
25	1" NPT Drain Plug
26	Bottom Guide Bushing
28	Hood
29	Hood Screw
34	Guide Plate Screw
38	Float Set Screw
40	Bumper
43	Top Guide Bushing

Figure 2: ASV-401 Part Identification-Sizes 4" Through 14"

DeZURIK

APCO ASV-401 Sewage Air/Vacuum Valves

Drawings (Continued)

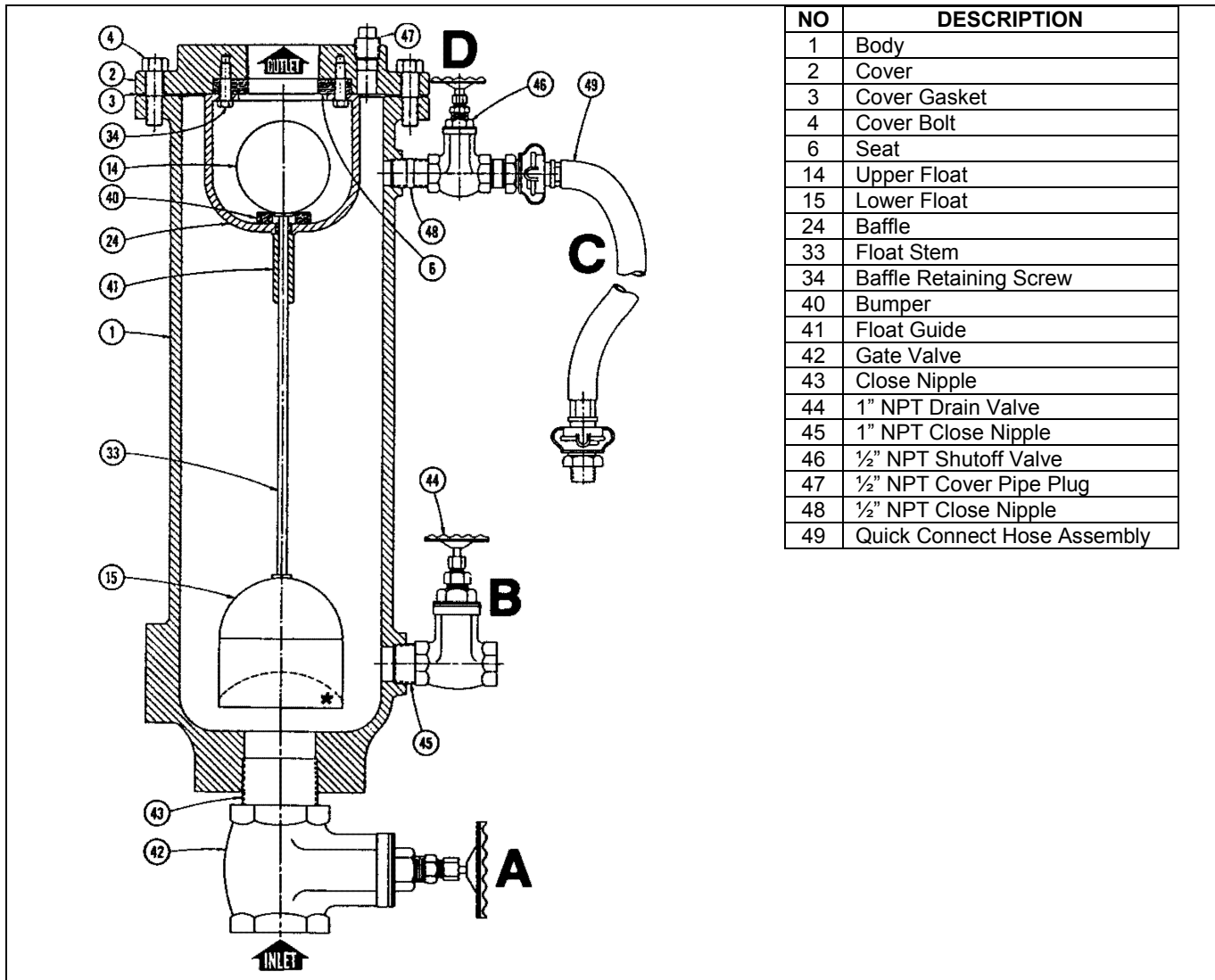


Figure 3: ASV-401 with Attachments-Parts Identification

Troubleshooting

Condition	Possible Cause	Corrective Action
Valve leaks out of Outlet port.	Dirty seat and/or upper float.	Clean seat and/or upper float.
	Worn seat and/or upper float.	Replace seat and/or upper float.
	Float stem is dirty.	Clean float stem.

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.

The foregoing guarantee shall be null and void if, after shipment from our factory, the item is modified in any way or a component of another manufacturer, such as but not limited to, an actuator is attached to the item by anyone other than DeZURIK, Inc. Factory Service personnel. All orders accepted shall be deemed accepted subject to this limited warranty, which shall be exclusive of any other or previous Warranty, and this shall be the only effective guarantee or warranty binding on DeZURIK, Inc., despite anything to the contrary contained in the purchase order or represented by any agent or employee of DeZURIK, Inc., in writing or otherwise, notwithstanding, including but not limited to implied warranties.

Metric fasteners should not be used with ASME Class 150/300 bolt holes and flange bolt patterns. If you use metric fasteners with ASME Class 150/300 bolt holes and flange bolt patterns, it may lead to product failure, injury, and loss of life. DeZURIK Inc. disclaims all liability associated with the use of metric fasteners with ASME Class 150/300 bolt holes and flange patterns, including but not limited to personal injury, loss of life, loss of product, production time, equipment, property damage, lost profits, consequential damages of any kind and environment damage and/or cleanup. Use of metric fasteners with ASME Class 150/300 bolt holes and flange bolt patterns is a misuse that voids all warranties and contractual assurances. If you use metric fasteners with ASME Class 150/300 bolt holes and flange bolt patterns, you do so at your sole risk and any liability associated with such use shall not be the responsibility of DeZURIK, Inc. In addition to the foregoing, DeZURIK's Manufacturer's Conditions apply.

THE FOREGOING REPAIR AND REPLACEMENT OBLIGATIONS ARE IN LIEU OF ALL OTHER WARRANTIES, OBLIGATIONS AND LIABILITIES, INCLUDING ALL WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE OR OF MERCHANTABILITY OR OTHERWISE, EXPRESSED OR IMPLIED IN FACT OR BY LAW, AND STATE DEZURIK, INC.'S ENTIRE AND EXCLUSIVE LIABILITY AND YOUR EXCLUSIVE REMEDY FOR ANY CLAIM IN CONNECTION WITH THE SALE AND FURNISHING OF SERVICES, GOODS OR PARTS, THEIR DESIGN, SUITABILITY FOR USE, INSTALLATION OR OPERATIONS.

Limitation of liability

LIMITATION OF LIABILITY: IN NO EVENT SHALL DEZURIK, INC. BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL OR CONSEQUENTIAL DAMAGES WHATSOEVER, AND DEZURIK, INC.'S LIABILITY, UNDER NO CIRCUMSTANCES, WILL EXCEED THE CONTRACT PRICE FOR THE GOODS AND/OR SERVICES FOR WHICH LIABILITY IS CLAIMED. ANY ACTION BY YOU FOR BREACH OF CONTRACT MUST BE COMMENCED WITHIN 12 MONTHS AFTER THE DATE OF SALE.

Sales and Service

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

Web site: www.dezurik.com E-Mail: info@dezurik.com



250 Riverside Ave. N., Sartell, MN 56377 • Phone: 320-259-2000 • Fax: 320-259-2227

DeZURIK, Inc. reserves the right to incorporate our latest design and material changes without notice or obligation. Design features, materials of construction and dimensional data, as described in this manual, are provided for your information only and should not be relied upon unless confirmed in writing by DeZURIK, Inc. Certified drawings are available upon request.