

APCO ASC SINGLE BODY SEWAGE COMBINATION AIR VALVES



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DeZURIK

APCO ASC Single Body Sewage Combination Air Valves

Instructions

These instructions provide installation, operation and maintenance information for the APCO ASC Single Body Sewage Combination Air Valves (Body Styles 443, 445, 447, 449 and 456). They are for use by personnel who are responsible for installation, operation and maintenance of APCO ASC Single Body Sewage 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.

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▲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 ASC Single Body Sewage 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 information:

If the valve has a DeZURIK/APCO nameplate please include the 7-digit part number and either the 8-digit serial number or 4-digit revision number (whichever is applicable) 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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APCO ASC Single Body Sewage Combination Air Valves

Description

The APCO ASC Single Body Sewage Combination Air Valves are specially designed for use with sewage and waste media. The small orifice in the valve allow air/gas built up in the pipeline to escape during normal operating conditions. The large orifice allows large volumes of air to escape or enter when the sewage line is filled or drained, preventing a vacuum or column separation from occurring.

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

Combination Sewage Air Valves are installed on all high points of a system where it has been determined Combination Sewage Air Valves are needed to vent and protect a pipeline. These valves should always be installed in a vertical position. An isolation valve between this unit and the transmission (pipeline) system is recommended for inspection and backflushing.

- 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 manufacturer's instructions for the joint used.

NOTICE

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.
- The sewage air valve and valve vault should have adequate drainage and be sufficiently protected from possible freezing conditions.
- It is recommended that the sewage air 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.

Fusion Bonded Epoxy Coated Valves

NOTICE

Valves with optional fusion bonded epoxy coated exterior require flat washers to be installed under the flange nuts when installing the valve to the pipeline flange. This is to prevent the coating from cracking or chipping.

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 Backflush attachments, or they can be ordered separately.

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.

With the exception of back flushing, Single Body Sewage 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 seating area of the large exhaust port or through the valve's small orifice. Should a malfunction occur, the steps starting with the **Disassembly Procedure** section should be taken to repair the valve.

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 water line. Backflush Kit hose pressure is not to exceed 200 psi.

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

See Figures 1-2 for part identification

1. Leave the isolation valve between the ASC Single Body Sewage Combination Air Valve and the pipeline open.
2. Connect the backflush hose (H15) to ball valve (H11) using the quick disconnect (H12).
3. Backflush for 2-3 minutes (or as long as it takes to flush out all sediment).
4. Close ball valve (H11).
5. After backflushing, close the isolation valve between the ASC Single Body Sewage Combination Air Valve and the pipeline.
6. Remove backflush hose (H15) and vent pressure in the valve through ball valve (H11).

▲WARNING

Servicing the Sewage Combination 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 Sewage Combination Air Valve.

7. Remove cover bolts (A4) and remove the cover (A2).
8. Visually inspect the valve interior. If grease deposits interfere with the valve operation, scrape out grease deposits.
9. If the valve was leaking through the outlet port during backflushing, replace the seat (A6) and needle (A7) before reassembling the cover (A2).
10. Reassemble cover (A2) and cover bolts (A4).
Note: If cover gasket (A3) is damaged, replace cover gasket (A3).
11. Slowly open isolation valve between the ASC Single Body Sewage Combination Air Valve and the pipeline to place valve back in service.

Maintenance/Backflushing (Continued)

Backflushing to Atmospheric or Vacuum Tank

If a clean water service with 15 psi higher than the main pressure is not available, backflush through ball valve (H14) into an atmospheric or vacuum collection tank. Backflush Kit hose pressure is not to exceed 200psi.

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

See Figures 1-2 for part identification

1. Close isolation valve between ASC Single Body Combination Sewage Air Valve and pipeline.
2. Connect ball valve (H14) to an atmospheric or vacuum collection tank.
Note: If a vacuum collection tank is used, a pipe plug with a 1/4" hole in it may be inserted into the outlet port of the ASC Sewage Combination Air Valve to limit the amount of air drawn back into the vacuum tank.
3. Open ball valve (H14).
4. Connect the backflush hose (H15) to ball valve (H11).
5. Backflush for 2-3 minutes (or as long as it takes to flush out all sediment).
6. Close ball valve (H11).
7. After backflushing, keep isolation valve between ASC Single Body Sewage Combination Air Valve and pipeline closed.
8. Remove backflush hose (H15) and vent pressure in the valve through ball valve (H11).

⚠WARNING

Servicing the Sewage Combination 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 Combination Air Valve.

9. Remove cover bolts (A4) and remove the cover (A2).
10. Visually inspect the valve interior. If grease deposits interfere with the valve operation, scrap out grease deposits.
11. If the valve was leaking through the outlet port during backflushing, replace the seat (A6) and needle (A7) before reassembling the cover (A2).
12. Reassemble cover (A2) and cover bolts (A4). Tighten cover bolts (A4) in a crisscross pattern.
Note: If cover gasket (A3) is damaged, replace cover gasket (A3).
13. Close ball valve (H14).
14. Slowly open isolation valve between ASC Single Body Sewage Combination Air Valve and pipeline to place valve back in service.

Maintenance/Backflushing (Continued)

Disassembly Procedure

See Figure 1 for part identification.

▲WARNING

Servicing the Sewage Combination 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 Sewage Combination Air Valve.

1. Relieve pipeline pressure or shut off isolation valve at inlet to Single Body Sewage Combination Air Valve before servicing.

▲WARNING

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

2. Slowly loosen pipe plug (A44) in body (A1) to relieve internal pressure. **Do not completely remove pipe plug while the valve is under pressure.**
3. Check to see if foreign matter or dirt is preventing plug (A42) from seating properly against seat (A6). Clean as necessary.
4. Perform a seat test. Replace pipe plug (A44) and slowly fill valve chamber by cracking open isolation valve on inlet pipe. If seepage persists, repeat Steps 1 and 2 and proceed as follows:
5. Remove cover bolts (A4) and cover (A2) from valve body (A1). **Note:** All internals are attached to the cover.
6. If cover gasket (A3) is torn or damaged, clean flange surfaces of cover (A2) and body (A1).
7. Remove frame screws (A16) and remove assembly from cover (A2).
8. Inspect large seating surface of plug (A42) and seat (A6) for nicks, wear or sediment coating from chemicals in the media.
9. Inspect seating surface of needle (A7) and orifice seat end of plug (A42) for same conditions.
10. Inspect surface conditions between seat (A6) and cover (A2) for possible rust build-up.
11. Inspect all connections of linkage for excessive wear or damage. Replace if necessary.
12. Inspect float (A14) to ensure that it is not damaged or that it does not have liquid in it.
13. Clean all surfaces before re-assembly.

Maintenance/Backflushing (Continued)

Assembly Procedure

See Figure 1 for part identification.

1. Install new needle (A7) in float lever (A13), if necessary.
2. Install new seat (A6), if necessary.
3. Reassemble linkage assembly, replacing lever pins (A10) and retaining rings (A11), as necessary.
Note: Only factory approved and/or factory supplied stainless steel parts should be used.
4. Assemble leverage frame (A5) assembly to cover (A2). Be sure that plug (A42) moves freely from its open to closed position and the plug sits square and flat on seat (A6). Improper positioning of leverage frame (A5) to cover (A2) before tightening frame screws (A16) can result in binding of plug (A42).
5. Assemble cover (A2) to body (A1), installing new gasket (A3) if necessary. Tighten cover bolts (A4) opposite each other in rotation.
6. Tighten pipe plug (A44).
7. Open isolation valve on inlet to Single Body Sewage Combination Air Valve.

Testing

See Figure 1 for part identification.

1. Perform a seat test. Restore pipeline pressure and slowly fill the Single Body Sewage Combination Air Valve chamber by cracking open the isolation valve below the Sewage Combination Air Valve. If seepage occurs once the plug (A42) or needle (A7) is in contact with the seat (A6), refer to the "Disassembly Procedure" and replace seat, needle, plug and/or float.

Operation

Single Body Sewage Combination Air Valves incorporate a large orifice for pipeline filling and draining (Air/Vacuum function) and a small orifice (Air release function) for releasing gas pockets to increase pipeline efficiency. Single Body Sewage Combination Air Valves prevent accumulation of air at high points within a system by exhausting small volumes of air accumulated as 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

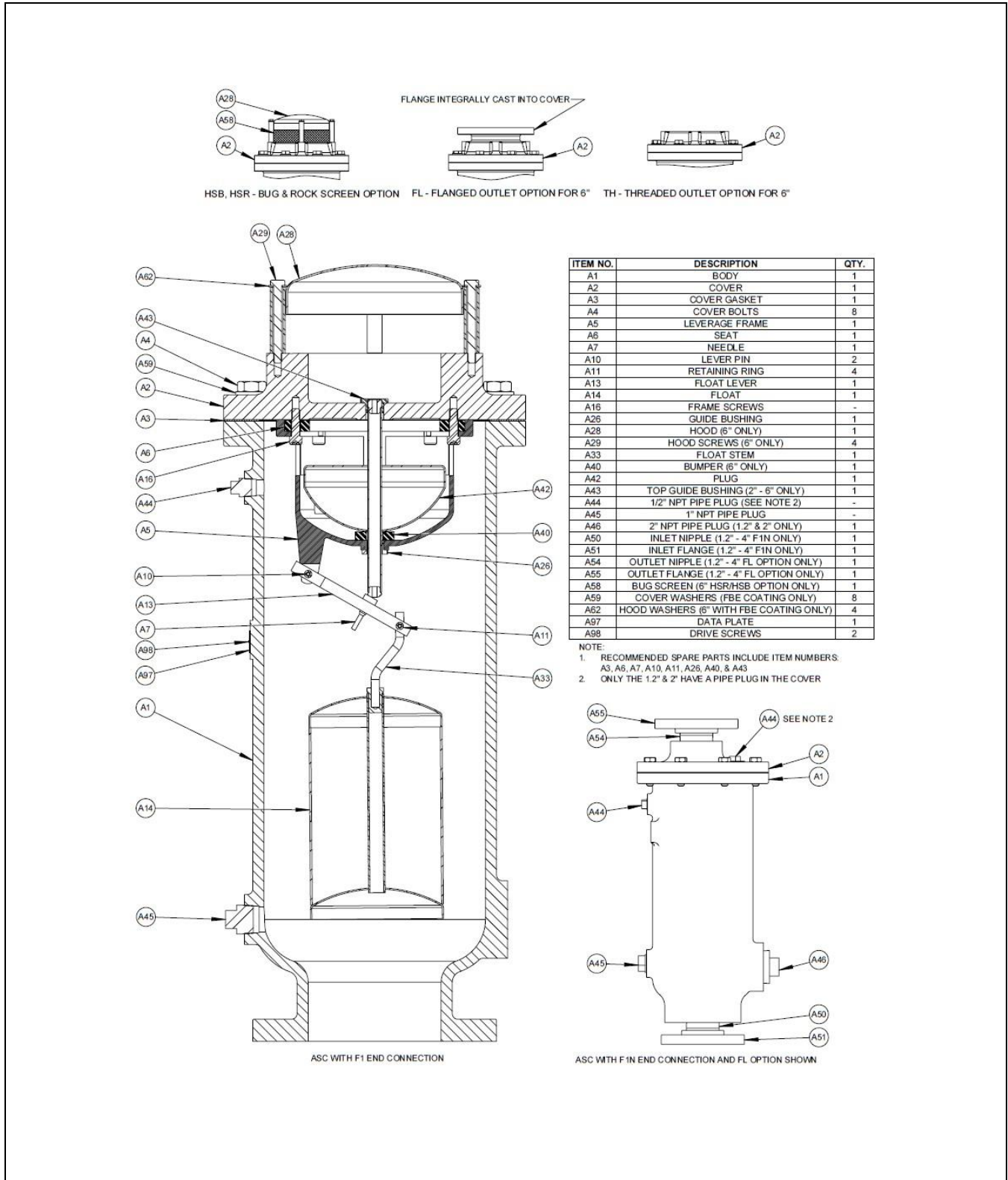


Figure 1: ASC Single Body Sewage Combination Valve

Drawings (continued)

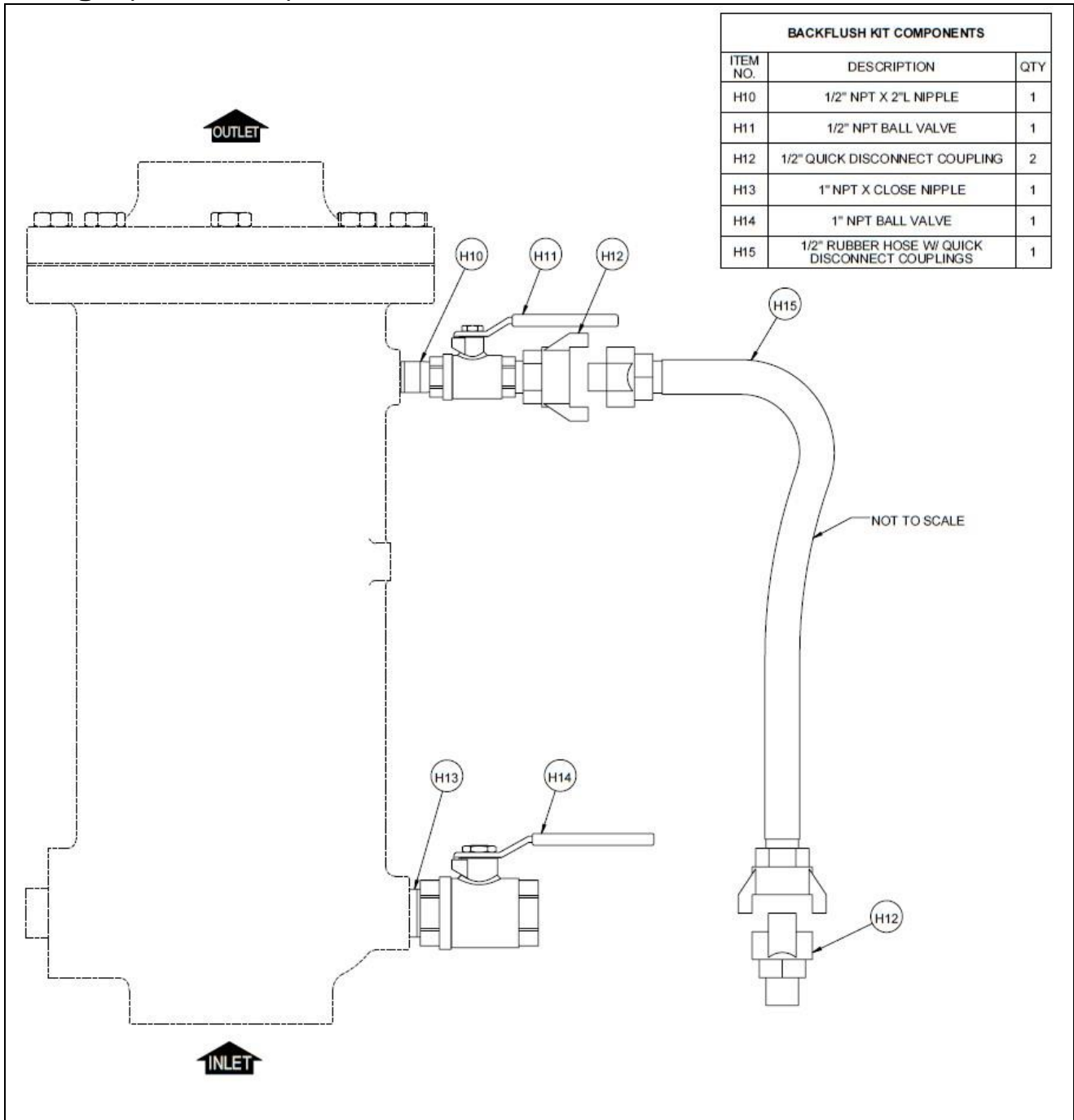


Figure 2: ASC Single Body Sewage Combination Valve BFK Backflush Kit

Troubleshooting

Condition	Possible Cause	Corrective Action
Valve leaks at flange joint.	Loose flange bolting.	Tighten flange bolting.
	Blown flange gasket.	Replace flange gasket.
	Misalignment or damage to field piping and supports.	Adjust misalignment 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.	Worn needle and/or plug orifice.	Replace needle and/or plug.
	Float does not move freely.	Readjust position of leverage frame to cover.
	Float has liquid in it.	Replace float.
	Dirty seat and/or plug.	Clean seat and/or plug.
	Worn seat and/or plug.	Replace seat and/or plug.
	Dirty needle and/or plug orifice.	Clean needle and/or plug orifice.
	Float linkage is dirty.	Clean float linkage.
	Line pressure is under valve working pressure.	Replace needle and/or seat with softer needle and/or seat.

Limited Warranty

DeZURIK, Inc. ("Seller") manufactured products, auxiliaries and parts for a period of twenty-four (24) months from date of shipment from Seller's factory, are warranted to the original purchaser only against defective workmanship and material, but only if properly stored, installed, operated, and serviced in accordance with Seller's recommendations and instructions.

For items proven to be defective within the warranty period, your exclusive remedy under this limited warranty is repair or replacement of the defective item, at Seller's option, FCA Incoterms 2020 Seller's facility with removal, transportation, and installation at your cost.

Products or parts manufactured by others but furnished by Seller are not covered by this limited warranty. Seller will provide repair or replacement for other's products or parts only to the extent provided in and honored by the original manufacturer's warranty to Seller, in each case subject to the limitations contained in the original manufacturer's warranty.

No claim for transportation, labor, or special or consequential damages or any other loss, cost or damage is being provided in this limited warranty. You shall be solely responsible for determining suitability for use and in no event shall Seller be liable in this respect.

This limited warranty does not warrant that any Seller product or part is resistant to corrosion, erosion, abrasion or other sources of failure, nor does Seller warrant 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 Seller 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 store, install, or operate said products and parts according to the recommendations and instructions furnished by Seller shall be a waiver by you of all rights under this limited warranty.

This limited warranty is voided by any misuse, modification, abuse or alteration of Seller's product, accident, fire, flood or other Act of God, or your failure to pay entire contract price when due.

The foregoing limited warranty 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 a Seller factory authorized 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 Seller, despite anything to the contrary contained in the purchase order or represented by any agent or employee of Seller in writing or otherwise, notwithstanding, including but not limited to implied warranties.

THE FOREGOING REPAIR AND REPLACEMENT LIMITED WARRANTY IS 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 SELLER'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.

Disclaimer

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.

Limitation of Liability

IN NO EVENT SHALL SELLER BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, PUNITIVE, OR CONSEQUENTIAL DAMAGES WHATSOEVER, AND SELLER'S LIABILITY, UNDER NO CIRCUMSTANCES, WILL EXCEED THE CONTRACT PRICE FOR THE GOODS AND/OR SERVICES FOR WHICH LIABILITY IS CLAIMED. ANY ACTION FOR BREACH OF CONTRACT BY YOU, OTHER THAN RIGHTS RESPECTING OUR LIMITED WARRANTY DESCRIBED ABOVE, 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:

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