



## **APCO FRF-100F**

### **FULL FLOW RUBBER FLAPPER FOOT VALVES**



Instruction **D12031**  
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# DeZURIK

## APCO FRF Full Flow Rubber Flapper Foot Valves

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### Instructions

These instructions provide installation, operation and maintenance information for APCO FRF Full Flow Rubber Flapper Foot Valves. They are for use by personnel who are responsible for installation, operation and maintenance of APCO FRF Full Flow Rubber Flapper Foot 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 FRF Full Flow Rubber Flapper Foot 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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## APCO FRF Full Flow Rubber Flapper Foot Valves

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### Description

A rubber flapper foot valve consists of a valve body, a cover, feet, and a flapper that is connected to the body and cover. The flapper swings away from the valve seat to allow flow in the forward direction, and returns to the valve seat when upstream flow is stopped to prevent backflow. They can be equipped with optional strainer attachment in place of the feet.

### Handling and Storage

Lifting the valve improperly may damage it. Do not fasten lifting devices to the actuator or through the seat opening in the body. 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 equipment 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

The APCO FRF Full Flow Rubber Flapper Foot Valve must be installed in the vertical position (with the flow upward). The embossed flow arrow on the valve body must be pointing in the direction of flow.

1. Before installation, remove foreign material such as weld spatter, oil, grease, and dirt from the pipeline.
2. 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.**

**If excessive seat leakage occurs during start-up, recheck the installation and eliminate any distortion to the valve body.**

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3. Ensure the valve and pipeline flanges are concentric to ensure proper flange sealing and seat leakage control.
4. Tighten the flange bolts or studs in a crisscross pattern and minimum of four stages.
5. It is recommended to manually fill the suction line with water. This eliminates the risk of damage to the pump from running dry.

### Fusion/Powder Coated Valves

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#### **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

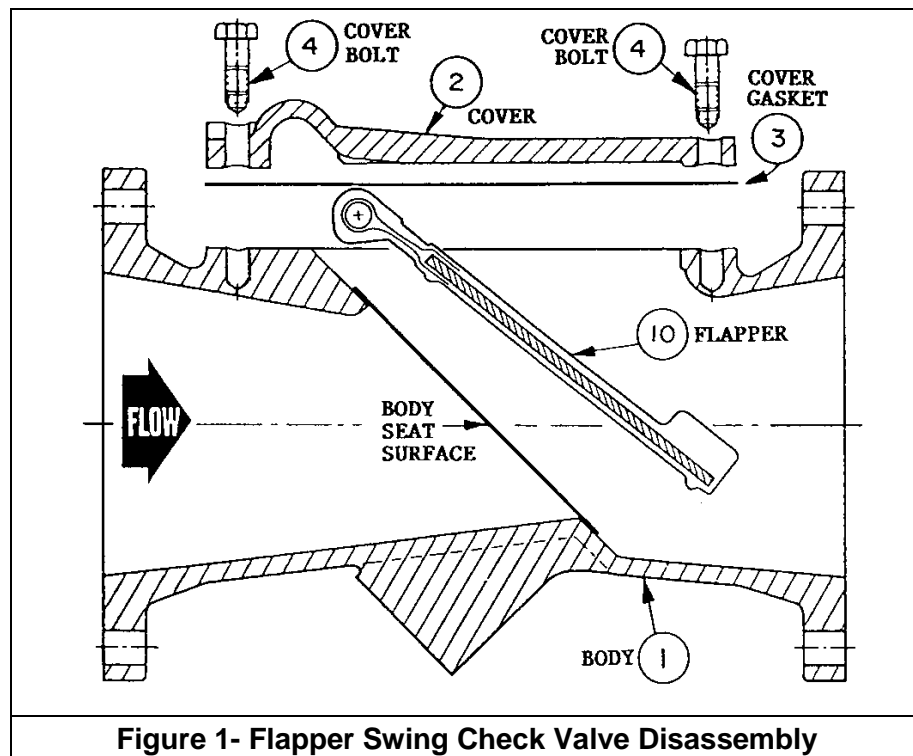
The FRF Full Flow Rubber Flapper Foot Valve does not require routine maintenance, but should be included as part of the normal facility equipment inspections for any malfunction while under normal usage conditions. An inspection can be quickly performed as follows:



### WARNING!

**Servicing the valve while the pipeline is under pressure can cause personal injury or equipment damage. Relieve pipeline pressure before servicing the valve.**

1. Relieve the pressure in the pipeline.
2. Due to the weight of the cover and flapper, it is recommended that 8"+ valves be removed from the vertical position for maintenance.
3. Isolate the Rubber Flapper Check Valve from system **before loosening** the Cover Bolts (4) to remove the Cover (2).
4. Loosen each cover bolt only three full turns, then tap the side of the cover with a mallet to separate only the valve cover from the Cover Gasket (3), this will relieve any pressure in the valve.
5. Continue loosening to remove all cover bolts and lift off the cover. After removing the cover, the Flapper (10) will be fully exposed and freely removed. At this point, the flapper and body surfaces should be examined for wear.



**Figure 1- Flapper Swing Check Valve Disassembly**

6. To reassemble, replace Cover Gasket (3), often the same cover gasket can be reused several times.
7. Replace flapper and be sure it rests flat and centered against the body seat surfaces.

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### Maintenance *(Continued)*

8. Carefully replace cover over the flapper so as not to move the flapper from its seating position, then replace cover bolts and tighten lightly while alternating the tightening of each cover bolt 180° apart to prevent tilting the cover.
9. It is recommended to manually fill the suction line with water. This eliminates the risk of damage to the pump from running dry.
10. Slowly open discharge isolation valve to pressurize rubber flapper check valve and observe the cover gasket (3) joint is not leaking.

### Operation

The flow from the pump opens the flapper. When the pump is shut off, backflow pressure pushes the flapper to close against the body seat surface. The feet allow the valve to sit on the bottom of the wet well. The strainer option helps filter out any large debris.

### Troubleshooting

Condition	Possible Cause	Corrective Action
Cover leaks.	Cover gasket is damaged.	Replace cover gasket.
Valve leaks excessively from one side of the flapper to the other.	Foreign matter caught between flapper and seat.	Fully open valve to remove object.
	Flapper is worn or damaged.	Replace flapper.
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 does not fully close.	Object is wedged between seat and disc.	Fully open valve to remove object.

## 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:

Web site: [www.dezurik.com](http://www.dezurik.com) E-Mail: [info@dezurik.com](mailto:info@dezurik.com)



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