CLA-VAL

OWNERS MANUAL

SERIES 39B-WW
SEWAGE & SLURRY

CONTENTS

INTRODUCTION

Thank you for choosing the SERIES 39B-WW air valve for your application.

The SERIES 39B-WW has come about after extensive research and experience into air valves and water pipelines. The air valve is perfectly suited for bulk sewage market demands.

The SERIES 39B-WW has several features which make it the best choice for your air valve application. It is light and compact, easy to install, is simple to service and requires no initial spares. However should you need to clean the valve or investigate the cause of any leakage, all O-Rings are standard metric sizes and are available from most reputable O-Ring suppliers.

The valve has an integral anti slam feature specifically sized for bulk sewage pipelines. The air valve, if correctly sized and placed, will offer surge protection in the event of rapid filling of pipelines and surge events such as pump trips.

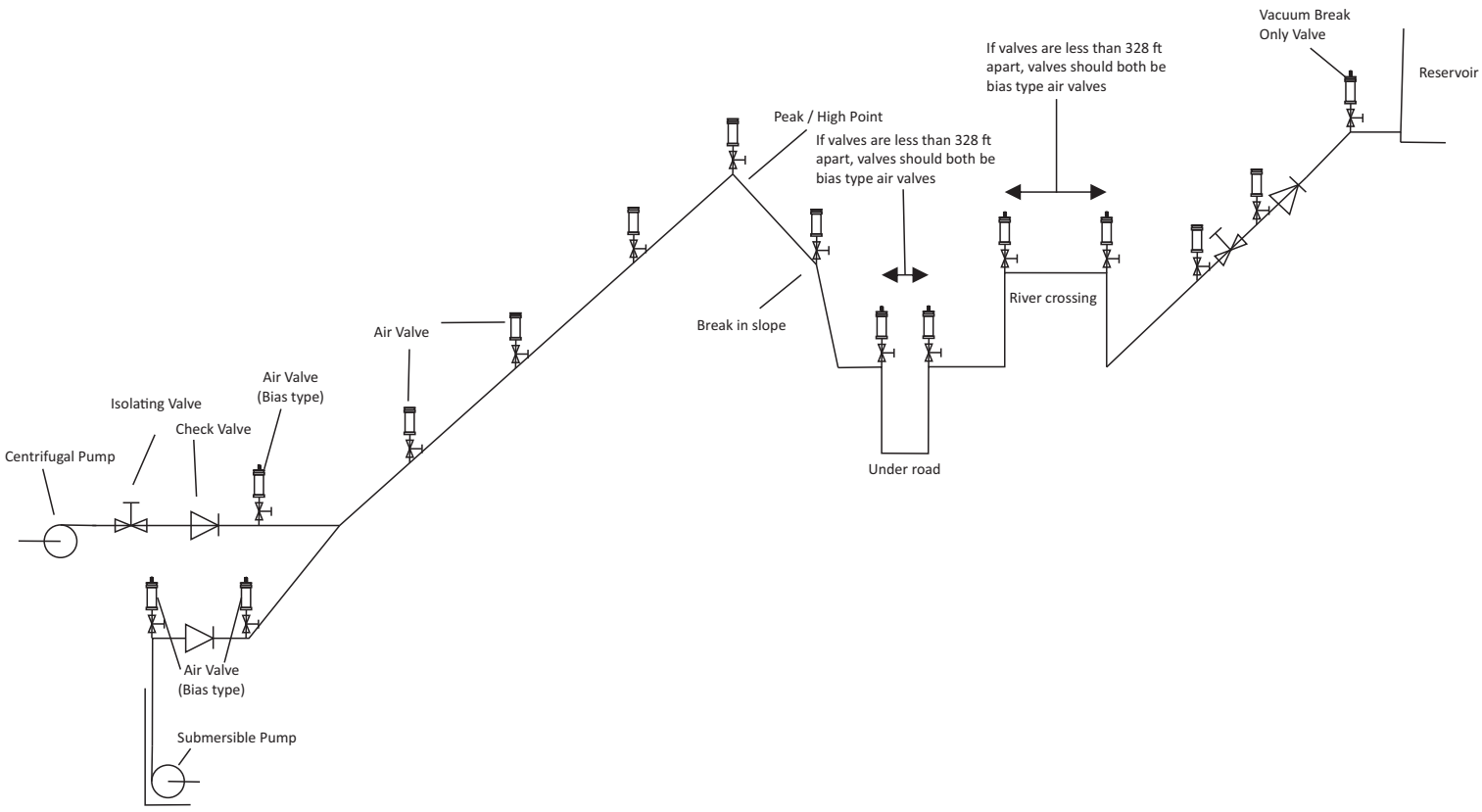
The SERIES 39B-WW is also designed to offer full port vacuum break, in the event that your pipeline has been drained or if your pipeline suffers a pipe burst, thus ensuring the safeguarding of your pipeline, pipe components, valves and seals.

The high volume air release function allows for uninterrupted filling at a safe filling rate. It will not interfere or slowdown the consultants proposed filling rates as long as the filling rates are within safe parameters for the pipeline.

The small orifice functionality allows air to be removed from the system while the system is pressurised, preventing the formation of air locks in the system and keeping the system running efficiently.

This manual is intended to give all the information necessary to place and maintain the valve correctly when needed.

AIR VALVE PLACEMENT



Peaks/high points
The most important areas to place air valves are high points or peaks along the pipeline. Air will always rise to these points when filling and when the pipeline is operating. Water will also always drain from the peaks first when draining or in the event of a burst.

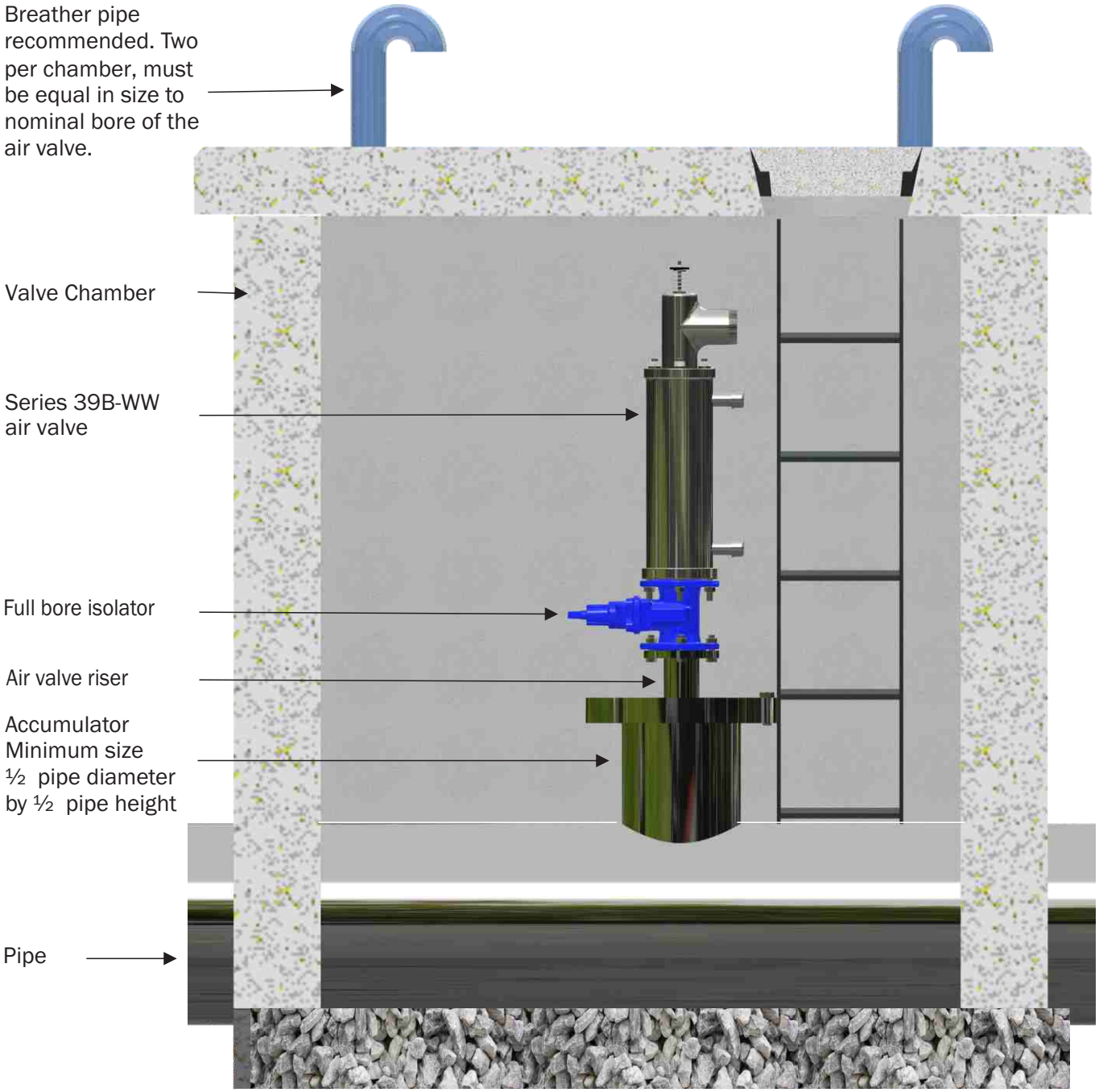
Breaks in slope
A break in slope is defined as any point where, under gravity, water will drain away from a point faster than it reaches that point causing column separation. These points can also be a point of turbulence where air can be released from solution.

Long ascending and descending sections
Air valves on long ascending and descending sections should be placed every 2000 ft.

Other places where air valves should be considered
In Pump Stations
Centrifugal pumps after check valves, preferably six times the pipeline diameter away from the check valve. Turbine and submersible pumps, before and after the check valve. If only one is possible, then before the check valve in these instances. All air valves in pump stations should be a bias type air valve.

Isolation and Check Valves
Air valves should be placed with any isolation or inline check valve that will as a result of closure have water running away from the valve. The air valve should be placed on the side of the valve that water will drain from. In the case of isolation valves or check valves placed on peaks an air valve should be placed either side of the valve.

INSTALLATION AND GENERAL CHAMBER LAYOUT



Please note this chamber layout is based on typical installations and accepted design guidelines. Many councils and water boards will have their own specifications for chamber layout and any chamber design should be confirmed by the end user.

INSTALLATION AND GENERAL CHAMBER LAYOUT

Accumulators
For the installation of an air valve, the air valve is placed on top of the pipe. Best practice is to place an air valve on an accumulator that allows the best feeding of air to the air valve. Accumulators should have a minimum width and height of half the diameter of the main pipeline. On smaller lines, it is often easier to use an equal tee which are freely available and less costly than having specialized tee's manufactured for the air valve.

Isolators
Isolators should be placed between the pipe and the pipeline connection. Isolators allow the valve to be isolated from the pipeline and then to be maintained, removed or replaced without interfering with the operation of the pipeline. Isolators should be full bore valves such as ball valves or resilient seated gate valves. Butterfly valves are not recommended for air valve isolators as they may interfere with full bore air flow through the air valve.

Air valve risers
The air valve riser or stub piece is the connection between the pipeline and the air valve isolator. This riser should have a minimal internal diameter equal to the diameter of the air valve connection. When dealing with flanged valves, one should make sure the riser height allows sufficient clearance so that fasteners can be attached and removed easily.

Air valve chambers
When placed in a closed air valve chamber, provision must be made so that air can be drawn in and released from the chamber, allowing the air valve to function unhindered. This is often done by providing breathing pipes into and out of the air valve chamber. These pipes will be equal in diameter to the air valve connection. In some case two pipes are often recommended to ensure that should one become blocked, there is a backup to ensure the valve functions correctly. Drainage should be provided in air valve chambers in the event of leaking air valves. Adequate space should be available in the chamber to reach, maintain and if necessary, remove the valve. Often maintenance is an afterthought in chamber design and can lead to difficult situations when a valve needs to be maintained.

COMMISSIONING OF AN AIR VALVE

Commissioning of an air valve
There are no special procedures for commissioning an air valve.

On a new or empty line, the air valve should be placed on the line and the operators should ensure that the isolator is fully open to await the commencement of filling.

Special attention must be paid to the fact that pipeline debris will make its way through the air valve and will cause the air valve to leak. Pipeline debris include but not limited to rocks, stones, sand, rags, plastic etc.

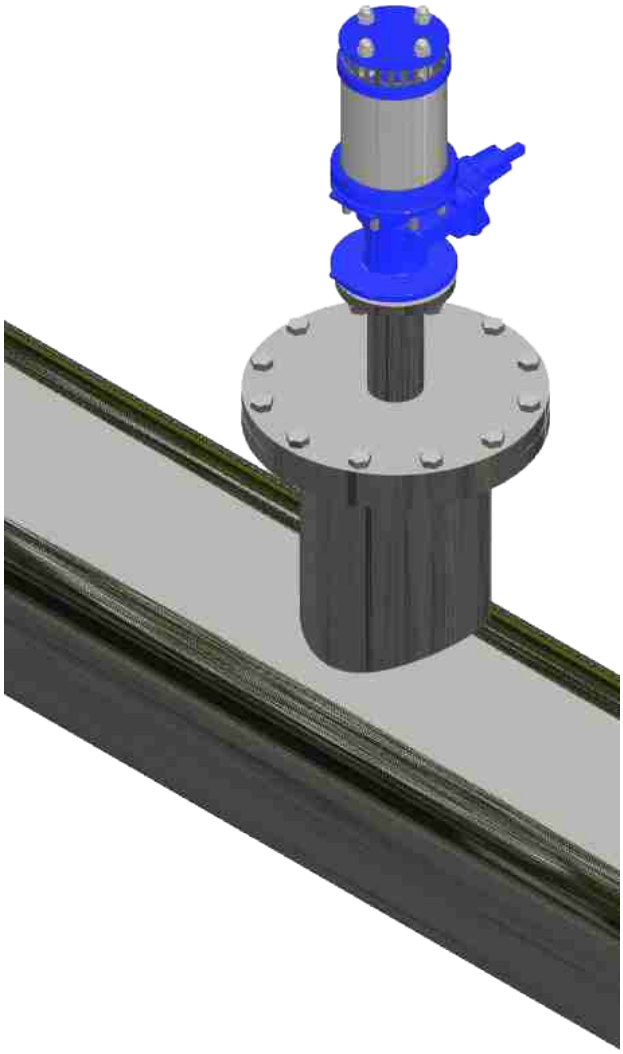
Unless maintenance is required the air valve should remain open at all times and should only be isolated during maintenance of the air valve and immediately opened thereafter.

When opening an air valve on an already active line i.e., after maintenance
Open the isolator slowly, air may have accumulated below the air valve and this air will be pressurised.

Ensuring that the valve isolator is slowly open will avoid sudden spilling or splashing of water as the air valve builds up sufficient pressure to seal.

Be aware that sudden spurt of water is not uncommon when opening a valve on an active pipeline and should cease quickly.

Be aware that high volume air release can be very loud and in some cases ear protection may be necessary.



TROUBLESHOOTING

In general, the air valve will leak as an indication of a problem. As such the first thing that needs to be done is define what we consider leaking: Air valves will always pass some water vapour when discharging pressurised air. This vapour may accumulate within the top of the air valve and offer the appearance of leaking. The second phenomena which is often mistaken for leaking is, as the valve builds to sealing pressure some water may bypass the top float. Some of this water becomes trapped between the sealed float and the top of the flange. As the valve breathes this air will push water out of the flange recess and appear to be leaking. This will stop after a while of the valve been pressurised.

What we define as a leak: A leak is either a constant dripping or rivulet of water that does not stop.

Problem	Cause	Comments	Solution
Valve leaking, sometimes gushing, sometimes dripping.	Low pressure or fluctuating pressure.	The valve is designed to seal from 4.4 psi to 7.3 psi depending on the type of air valve installed. If pressures are below this, the valve will leak.	Solution 1: If there is a better location with pressure within the working range of the valve, transfer the valve. Solution 2: If the valve placement is essential for the application, then fit the valve with a discharge pipe, that can pipe away the leakage to a safe place.
Valve leaking constantly.	Sand or silt in the valve.	If sand or silt get passed into the valve, the valve will leak.	Sometimes with sand and silt, the valve can be flushed without disassembly and this may fix the problem. This can be done by isolating the valve from pressure, removing the top cap, push down on the float and letting the water pass through the valve. Repeat two or three times and pressurise valve. If leaking persists the valve may need to be opened and cleaned.

Problem	Cause	Comments	Solution
Valve leaking constantly.	Damage to O-Rings or nozzle seat or nozzle.	On occasion, debris may pass into the valve and pass out freely. After a while, however, during the time the debris is trapped in the valve, an O-Ring seal or other component may get damaged.	Follow maintenance instructions and replace damaged item.
Valve leaking constantly.	Debris trapped in valve.		Follow maintenance instructions and replace damaged item.

SPARES KIT CONTENTS

Barrel O-Rings x 2

Anti Slam O-Rings x 2

Tie Rod O-Rings x 4 or x 8

Nozzle

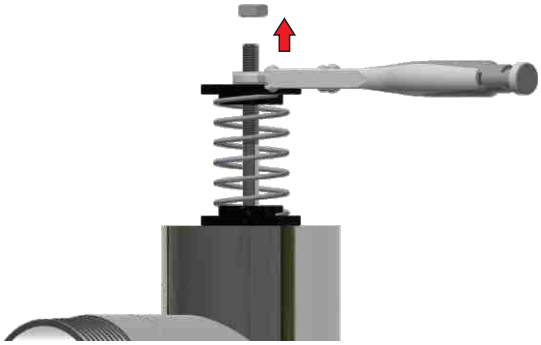
Nozzle seat

MAINTAINING THE VALVE

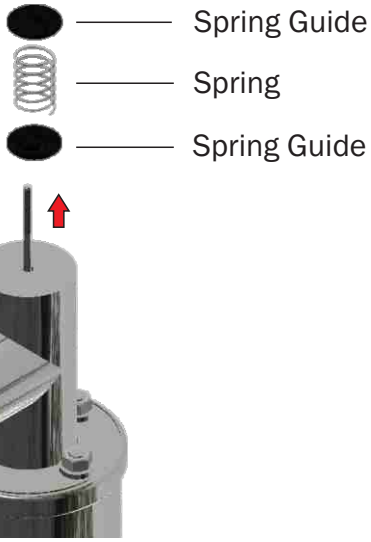
Warning
Isolate the valve before commencing any work

1. Before doing any maintenance make sure the air valve is isolated from pressure.

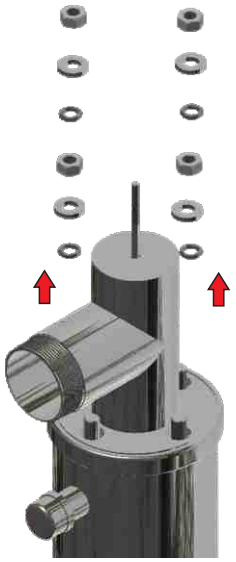
2. To remove the locking nut on the bias mechanism, compress the spring using the spring guide and grip the tie rod with a vice grip pliers.



3. Using a spanner loosen the locking nut. Release the vice grip pliers, the float and tie rod will drop.



4. Remove the spring guides and spring.

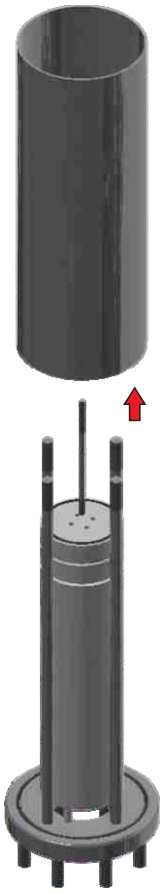


5. Remove nuts, washers and O-Rings.

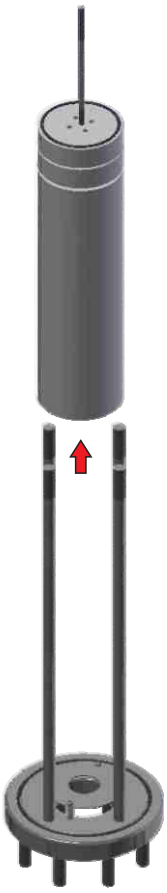
6. Remove the top flange, be aware that some pressure may still be trapped in the valve. Open cautiously, initially pulling the flange up and away from you.

7. Check top flange O-Ring. If damaged, replace with new O-Ring.

8. Check valve internals for obvious debris and clear.

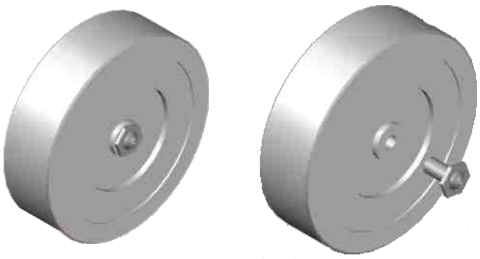


9. Remove barrel, be aware when removing the barrel that water may still be inside and will spill as you lift the barrel.



10. Remove float set.

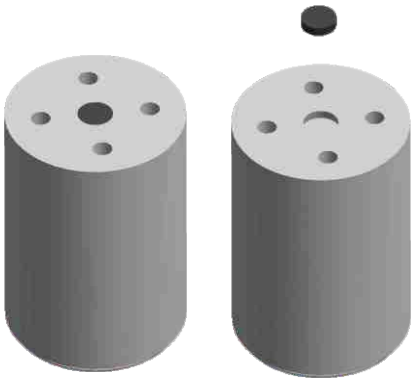
11. Check anti slam O-Rings top and bottom and replace if necessary.



12. Check nozzle for blockages. This can be simply done by holding the nozzle up to the sun and seeing if light is visible through the orifice. If the nozzle is blocked then clean with thin wire or paperclip. If the nozzle is damaged, remove and replace.

Tip

If you do not have a spare nozzle seat available simply flip the existing seat over.



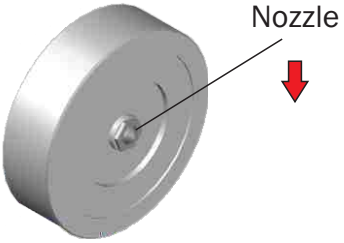
13. Check the nozzle seat in the lower float for any damage to the surface, remove and replace.

14. Check bottom flange O-Ring and replace if necessary.

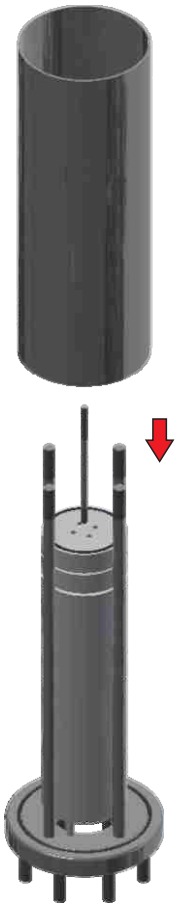
1
Control Float

2
Nozzle Float

3
Anti Slam Float

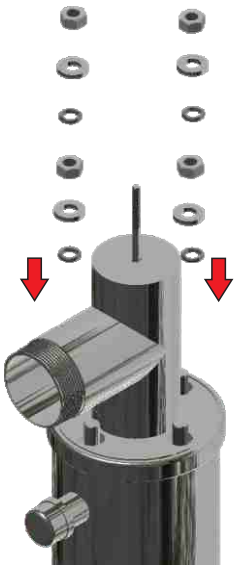


15. Replace the float stack, control float (lower float) first with the nozzle seat facing upward. Then the nozzle float with the nozzle facing downwards and finally the anti slam float. Make sure that one O-Ring makes contact with the surface of the nozzle float.



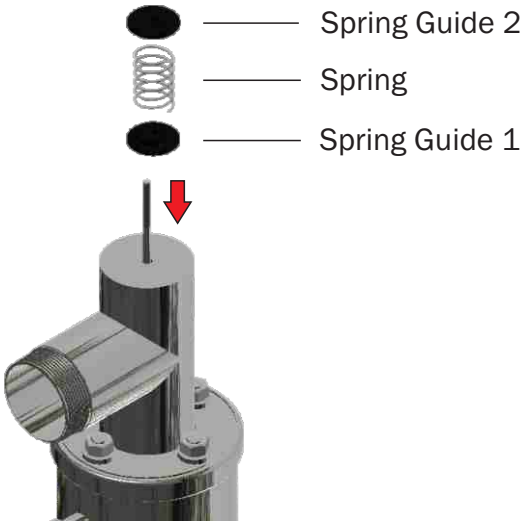
16. Replace the barrel. Make sure the barrel is in the O-Ring groove and centered on the O-Ring.

17. Replace the top flange, making sure the barrel fits snugly into the O-Ring groove and does not slide to the extreme side of the bottom flange O-Ring groove while fitting. If the barrel has moved, lightly tap until centered again.

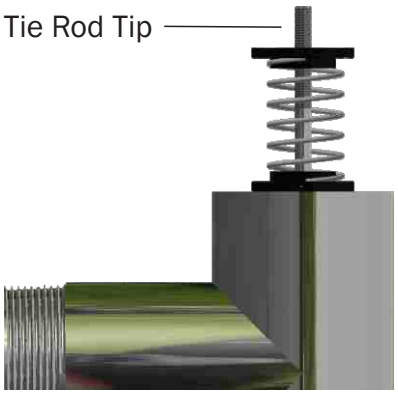


18. Replace O-Rings, then washers, then nyloc nuts.

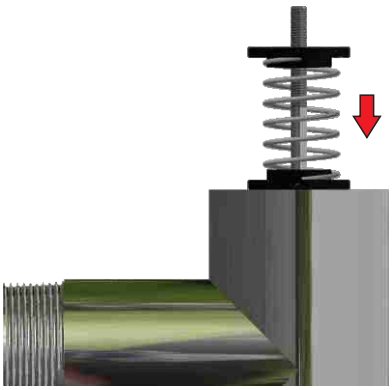
19. Torque nyloc nuts to the correct value (torque table on page 7).



20. Thread spring guide 1 over the tie rod and place against the equal tee with spigot facing up. Thread the spring over the tie rod fitting into the spigot of spring guide 1. Thread spring guide 2 over the tie rod with spigot facing downwards and connect spigot into the top of the spring.

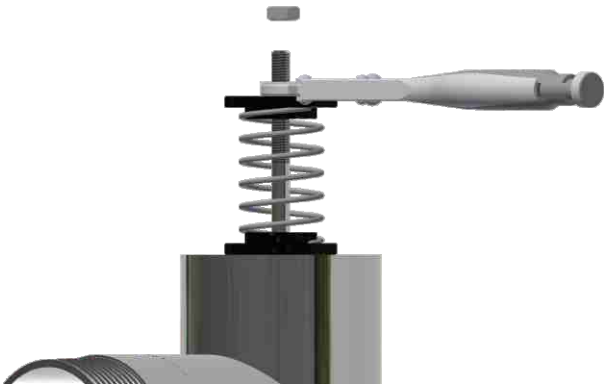


21. Grip the tip of the tie rod and pull the float up until it is flush against the flange.



22. While holding the float against the top flange compress the spring to half it's full length. Mark the point above spring guide 2.

23. Grasp just below the point where you marked the rod with a vice grip plier making sure that the top of the vice grip is just below the mark.



24. Screw the nyloc nut until it reaches the mark and then release the vice grip.

25. Open isolating valve slowly, be aware there may be a splash of water as the valve attains a seal.

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