

# **Volumetric Injectors**

## Maintenance Manual

# Table Of Contents

## Chemilizer

**Troubleshooting**

- General ..... 4
- Chemical Pump - Fixed & Adjustable ..... 5
- Chemical Pump ..... 6
- Chemical Pump Parts Inspection ..... 7
- Water Motor & Injection Control Panel ..... 8
- Chemical Pump - Fixed ..... 9

**Repair**

- Injector Disassembly, Repair & Reassembly ..... 10-12
- Chemical Pump - Adjustable ..... 13

**Parts**

- Water Motor ..... 14-15
- Chemical Pump ..... 17



# Chemilizer Troubleshooting - General



**If left outdoors fluid can freeze inside the injector causing permanent damage.**



Allow the fluid inside the injector to thaw before troubleshooting to minimize potential damage.



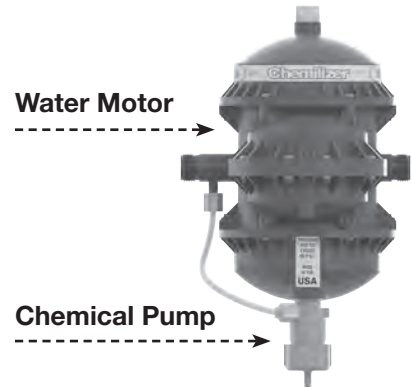
**Always shut off the water and depressurize the injector before doing any repair work on unit.**



**First, determine if the problem is with the water motor or the chemical pump.**



When the water motor is working properly, you will hear a “clicking” sound. (Depending on water flow, the unit may only click once every 2-3 minutes. Be patient.)



**IS IT “CLICKING”?**

**YES**

**NO**

**Problem is in White Chemical Pump**

**Problem is in Blue Water Motor**

Most service issues are with the chemical pump and most of those can be resolved with our inexpensive pump rebuild kit. See the parts catalog in this manual for part numbers.

Sometimes during installation of the pump, the user forgets to fully extend the pump stem prior to inserting it into the motor. If this is the case, merely remove the pump, pull the pump stem out all the way and re-insert in motor.

Also, make sure the cap is tight on the pump. Hand tight is enough. You can overtighten the cap. Do not use pliers or a wrench to tighten the cap.

## **If the Injector does not click or no water flows through the injector:**

1. Check water flow (GPM) and line pressure to the injector and installation.
2. Check tension bands for wear. If wear has occurred change the tension bands.
3. Change motor piston.

## **If the Injector is clicking, but is not pulling chemical:**

1. Unscrew the pump (quarter turn) and inspect the sleeve, o-ring and check disk for wear.
2. Change the pump out.

## **If the Injector is not working on low flow:**

1. Take the top off of the injector and check the actuating and pivot arms for wear.
2. Change the actuating arm, pivot arm and tension bands.

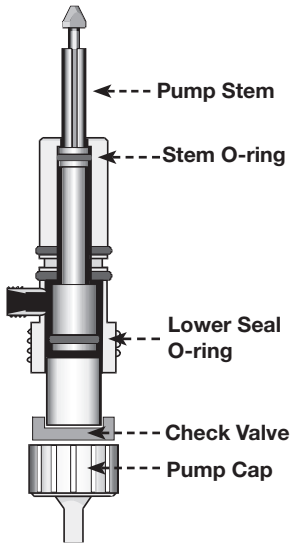

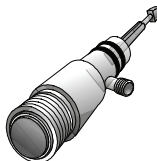

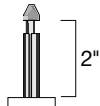
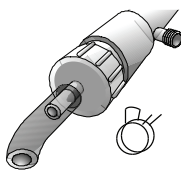
## **If the Injector is leaking:**

1. Take off the top or bottom of the injector and inspect the seal.
2. Change seal if wear has occurred.



# Chemilizer Troubleshooting - Chemical Pump - Fixed & Adjustable

**NOTE:** A general rule of thumb is: If the water motor is clicking - the problem is usually in the chemical pump.

| Fixed Pump   |   |  |
|--|---|--|
| Problem  | Cause   | Solution   |
| <b>Motor clicks, but chemical does not draw up into the tube</b><br><br> | Pump cap not tight  | <p>If pump cap is not tight enough the check valve will not seal properly. Tighten the pump cap.</p>  <p><b>To hand check the pump cap</b> place thumb over bottom nib and pull stem out. If there's no suction tighten the bottom cap and try again. If there's still no suction remove cap.</p>   |
|  | Suction hose filter clogged   | Clean or replace filter. Always use clean water for mixing stock solution. Keep filter off bottom of solution tank where debris settles.   |
|  | Worn or damaged parts on the inside causing pump to lose vacuum.    | <p>Clean or replace check valve. Replace stem assembly. Rebuild with pump rebuild kit.</p>  <p><b>To hand check worn or damaged parts</b> with pump cap and check valve removed, place thumb over bottom of pump body and pull stem out. If there's good suction replace the check valve. If no there's no suction, worn parts need to be replaced.</p> |
|  | Pump not engaged to piston clip in water motor.                     | <p>Remove pump and check for broken or worn pump stem at arrowhead.</p>   <p>Pull stem to up position and reinstall.</p>  |
|  | Piston clip broken on inside of water motor.                        | If pump is still not pumping there is a possibility that the clip is broken. This is a very rare occurrence.   |
| <b>Medication is drawn up the suction hose, but then falls back down</b>   | Vacuum leak   | <ul style="list-style-type: none"> <li>• Clean or replace check valve.</li> <li>• Tighten bottom cap: If not tight it can cause a leak.</li> <li>• If suction hose it not fitting tightly on the bottom cap, it can cause a leak.</li> <li>• Cut off end of the hose and re-attach.</li> <li>• Check hose for holes.</li> </ul>                     |
| Adjustable Pump  |   |  |
| Problem  | Cause   | Solution   |
| <b>Motor clicks, but chemical is not drawn up into the suction hose.</b>   | Large o-ring on lower seal is worn or damaged.                      | Replace pump stem.   |
|  | Pump stem is not engaged into the piston clip in water motor.       | Remove pump, check for a broken or worn pump stem at tip. Pump stem must be pulled out completely (approx. 2.5") before being inserted into the bottom of the water motor.   |
|  | Piston clip may be broken or worn on the inside of the water motor. | This is an extremely rare occurrence, but if the pump stem was not pulled out when initially installed this could cause excessive wear of the piston clip. The water motor must be sent to an authorized repair center or Hydro Systems for repair.  |
| <b>Chemical solution is drawn up in the suction hose, but then falls back down.</b>  | Vacuum leak   | <ul style="list-style-type: none"> <li>• Check valve may need cleaning or replacing.</li> <li>• Check suction hose to ensure a tight fit with tube nut in place.</li> <li>• Prime pump by hand and verify that chemical solution stays up in the suction hose.</li> </ul>  |



**NOTE:** This guide is intended to help you find problems. Hydro Systems suggests a total rebuild kit to eliminate problems that may have been missed or cause the customer future problems.

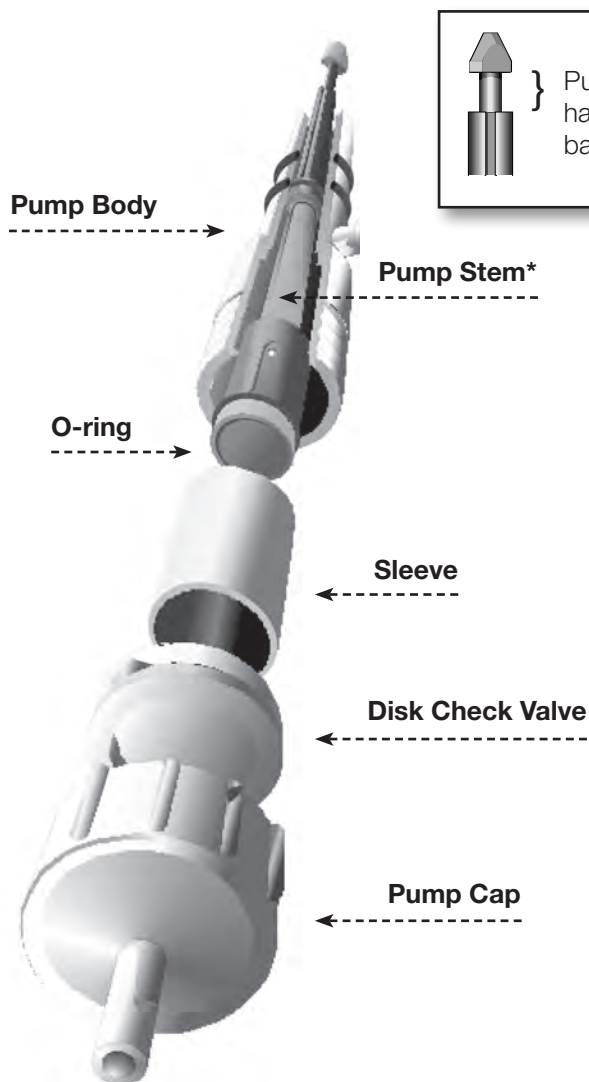
**NOTE:** The adjustable chemical pump will NOT work properly if the pump cap is not tight enough.

# Chemilizer Troubleshooting - Chemical Pump

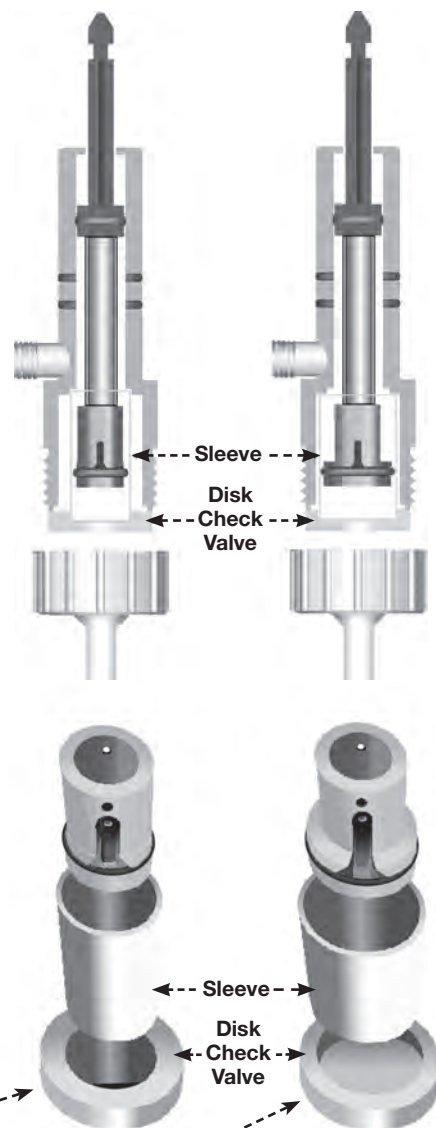
**Chemilizer manufactures two basic types of chemical pumps:** ① General Purpose ② Vinegar

The two types of pumps are available in the following five ratios: 1:128, 1:100, 2:128, 2:100 and 1:250. In addition to these five the **General Purpose** pump is available in 1:500 ratio. The **General Purpose** pump comes with black or brown viton o-rings and the **Vinegar** pump comes with orange silicone o-rings.

**Pump Body:** The pump body is the same for all pump types and ratios.



Pump stems for different ratios have different lengths from the base of the tip to the shaft.



\*Pump stems on **General Purpose** pumps have viton o-rings and **Vinegar** pumps have silicone o-rings.

1:128, 1:100, 1:250 and 1:500 pump stems have a smaller lower seal & sleeve. The disk check valve has a thicker wall to accommodate the sleeve.


2:128 & 2:100 pump stems have a larger lower seal & sleeve. The disk check valve has a thinner wall to accommodate the sleeve.

- The chemical pump is made of chemical resistant materials to withstand most chemical attacks.
- The chemical pump twists in and out of the water motor for easy maintenance.
- No tools are required for assembly or disassembly.

# Chemilizer Troubleshooting - Chemical Pump Parts Inspection

## Pump O-rings:

- Pump stems for chlorine/medication pumps have viton o-rings.
- Viton o-rings are brown or occasionally black.
- Pump stems for **Vinegar** pumps have silicone o-rings.
- Silicone o-rings are orange.
- **General Purpose** pump bodies have viton o-rings.

New o-rings have round sides -----> 

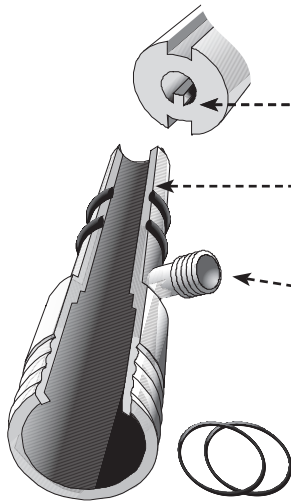
Damaged o-rings have nicks or scratches -> 

Worn o-rings have flattened sides -----> 



**Using the wrong o-ring will cause premature wear.**

## Pump Body:



- Check key on top of body for excessive wear. If key way wears off, the pump will not lock into the water motor.
- Check inside of body for wear marks by holding the body up to a light and look down the barrel. The side wall should be smooth. Wear marks are caused by grit on the o-ring riding up and down the barrel.
- Check the threads for defects such as cross-threading or nicks. Defective threads could cause the bottom cap not to seal properly.
- Worn or damaged o-rings on the pump body can cause water to leak from the water motor.

## Ceramic Sleeve:

- Check the ceramic sleeve for cracks or chips. Most damage to ceramic sleeves is caused by dropping the sleeve.
- Check the inside for scratches caused by grit riding up and down on the o-ring.
- Scratches can cause vacuum loss, or damage to new o-rings.



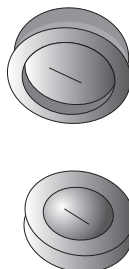
## Pump Stem:

- Arrowheads that are broken at the base of the stem have most likely been dropped.
- If o-rings are damaged or worn, they can let water leak past from the water motor. This can cause the motor not to operate at lower flows.
- This o-ring provides the vacuum for pulling up and pushing out the chemical being injected.



## Check Valve:

Inspect the check valve for worn or torn slit that may cause it not to seal. The check valve slit can fuse itself together if it has been on a shelf for a long time before being sold. This can be fixed by pinching the two sides together.



## Bottom Cap:

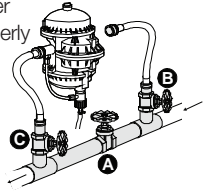
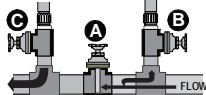
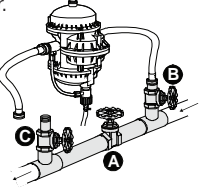
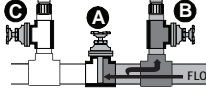
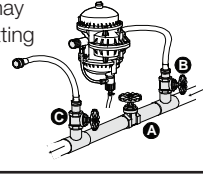
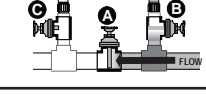
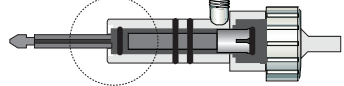

- Check bottom cap for damaged threads and stress cracks.
- Most damage to bottom caps is due to dropping which breaks the nib.





# Chemilizer Troubleshooting - Water Motor & Injection Control Panel

**NOTE:** A general rule of thumb is: If the water motor is clicking - the problem is usually in the chemical pump. For problems with the chemical pump refer to guide on the next page. For problems that are in the water motor follow this guide.

| Water Motor  |  |   |
|--|--|---|
| Problem  | Cause  | Solution  |
| <b>Water motor does not click</b><br><br><b>or</b><br><br><b>Water motor clicks a few times, then stops</b>      | No water flow to the water motor. Water flow improperly attached.<br> | <ul style="list-style-type: none"> <li>• Make sure gate valve "A" is closed, and valves "B" and "C" are open.</li> <li>• Make sure water is entering motor on inlet side and not outlet side.</li> </ul>  <p><b>To determine if water is flowing</b> to the motor, shut water off, disconnect hose from valve "B" and open valve "B". If no water comes out there is a problem with the installation. (Valve "A" is closed during this test.)</p>   |
|  | No water flow through the water motor.<br>                            |  <p>First, determine that water is flowing in main water line. Then, you need to determine if water is flowing through the motor. Shut off water, release pressure, disconnect hose from valve "C" and restart water. If no water comes out of the hose, there is a problem in the water motor. ( Valve "A" is closed during this test.)</p>  |
|  | Defective chemical pump.   | <b>Change the chemical pump.</b> A chemical pump that has become frozen in place due to chemical crystals or clogged due to lack of maintenance can cause motor to stop.  |
|  | Damage to inside parts – possibly broken tension rings or excessive wear on parts.   | Remove top cap and check for broken or worn parts. Repair or rebuild as necessary.  |
| <b>Water Motor works on high flow, but stops on low flow</b>   | Valve "A" may not be shutting off all the water.<br>                | If the by-pass valve "A" is not fully closed, or if it does not close properly, water will leak by. On low flows this could starve the water motor. Test by shutting off valves "B" & "C" and relieving pressure on unit by opening air vent. Disconnect hose on outlet side of motor. Open valve "C". If there is water flowing from hose, valve "A" needs to be replaced.<br>   |
|  | Defective chemical pump may have worn o-ring on stem.  | Change or rebuild the chemical pump. Replacement with pump rebuild kit is recommended, but replacing pump stem is an option.<br>  |
| Injection Control Panel  |  |   |
| Problem  | Cause  | Solution  |
| <b>Low volume float is sitting motionless at the bottom of the Injection Control Panel when water is flowing</b> | The Low Volume Adjustment Valve may be clogged from debris.  | <ol style="list-style-type: none"> <li>1. Turn off pump or other water source.</li> <li>2. Remove the Low Volume Adjustment Valve control knob from the injection Control Panel by unscrewing it.</li> <li>3. Turn pump/water source on for 5-10 seconds. Water will spurt from the open needle valve, clearing the debris.</li> <li>4. Turn off the pump/water source and replace the needle valve.</li> </ol> <p>* Repeat these steps when initially setting the injection level.</p>  |

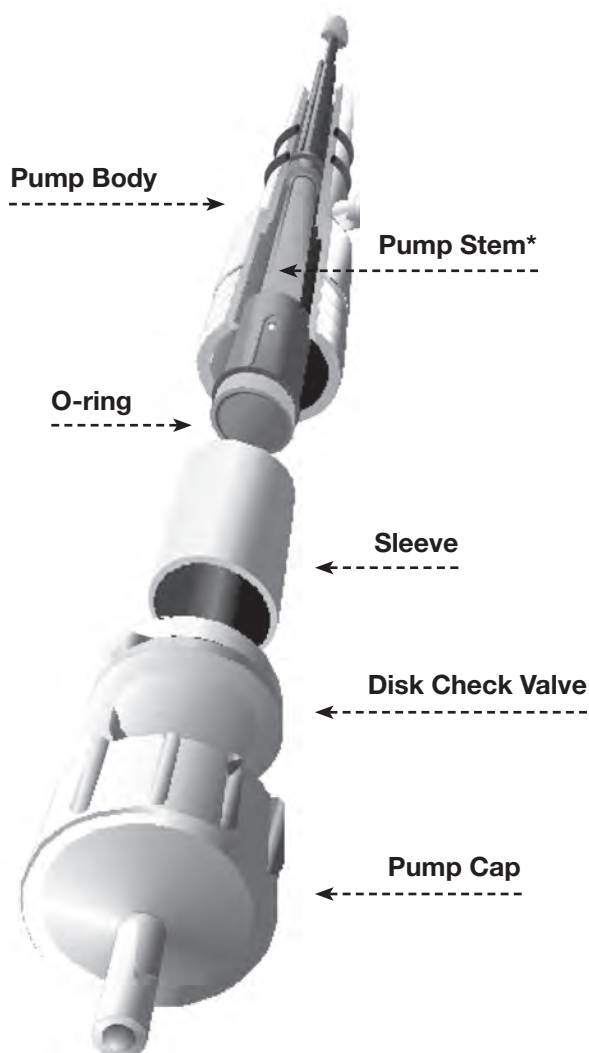
# Chemilizer Troubleshooting - Chemical Pump - Fixed

| Chemical Pump - Fixed                        |                                  |   |
|--|----------------------------------|---|
| Problem                                      | Cause                            | Solution  |
| Chemical pump is not pulling chemical        | Damaged or broken ceramic sleeve | • Remove the pump from the injector. Unscrew the bottom cap and replace ceramic sleeve with a new sleeve and o-rings. |
|  | Excessive o-ring wear            | • Remove the pump from the injector. Unscrew the bottom cap and replace with new o-rings.                             |
|  | Broken stem                      | • Remove the pump from the injector. Unscrew the bottom cap and replace with a new stem.                              |
|  | Defective check valve            | • Remove the pump from the injector. Unscrew the bottom cap and replace with a new check valve.                       |
| Chemical pump is back filling the stock tank | Defective check valve            | • Remove the pump from the injector. Unscrew the bottom cap and replace with a new check valve.                       |

**Pump Body:** The pump body is the same for all pump types and ratios.



**Make sure the pick up and remote injection tubes have a tight seal and are not sucking air.**



\*Pump stems on **General Purpose** pumps have viton o-rings and **Vinegar** pumps have silicone o-rings.

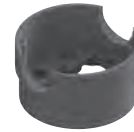


# Chemilizer Repair - Injector Disassembly, Repair & Reassembly

## Tools & Supplies You Will Need:



1. One Phillips-head screw driver
2. One 3/8" combination open-end/box-end wrench
3. One pair needle nose pliers
4. One set of "C" clip tools (*available for purchase* from Hydro Systems Company)
  - a. Removal
  - b. Replacement
5. One repair stand (*supplied to dealer* by Hydro Systems Company)
6. Silicone lubricant



Repair Stand

## Your Work Space Should Be:

1. An area large enough to lay out the disassembled parts.
2. An area with running water to test the rebuilt unit.



**Note: Before starting on the CP33, remove any hoses attached to the Injection Control Panel; remove the two Phillips-head screws that attach the Injection Control Panel to the water motor and then remove the Injection Control Panel. Set it aside where it will not get damaged.**

## I. Section One – Disassembling the Top Cap

- A. With injector upright in the repair stand, remove all Phillips-head screws from the top cap, but leave the screws in the screw holes. This will aid you in realigning the cap to the main body when you reassemble the injector.
- B. Gently remove the top cap by holding the injector firmly in the repair stand with one hand, while grasping and lifting on the mounting brackets on the rear with the other. This will cause the top cap to separate from the main body, exposing the internal parts of the upper section.
- C. You should now see:
  1. The upper portion of the inlet and outlet valves and actuator tee
  2. The pivot arm assembly held in place by "C" clips
  3. The actuator arm assembly held in place by "C" clips
  4. The tension bands (2)
  5. The top by-pass assembly
  6. The top of the diaphragm assembly
  7. The large top cap o-ring
- D. To repair the upper section:
  1. Remove tension bands (be sure there are two bands).
  2. With your "C" clip removal tool, remove the "C" clips from one side of the pivot arm assembly.
  3. With your "C" clip removal tool, remove the "C" clips from one side of the actuator arm assembly.
  4. Remove the pivot pins, then the actuator arm assembly and pivot arm assembly.
  5. Remove the top by-pass assembly.



Chemilizer placed in Repair Stand

**Note:** To disassemble the main body you must remove the main body Phillips-head screw.

## II. Section Two – Disassembling the Bottom Cap

- A. To gain access to the lower half of the injector you must remove the bottom cap.
  1. Place the injector in the repair stand with the top of the unit pointed down, with the top cap removed.
  2. Remove all the Phillips-head screws from the bottom cap, but leave the screws in the screw holes.  
This will aid you in realigning the cap to the main body when you reassemble the injector.
  3. Grasp the injector firmly and lift the bottom cap from the rear holding on to the mounting bracket.

# Chemilizer Repair - Injector Disassembly, Repair & Reassembly

---

## **II. Section Two – Disassembling the Bottom Cap (continued)**

- B. With the bottom cap removed you are looking at:
  - 1. The lower part of the I/O valve assembly
  - 2. The lower part of the diaphragm assembly including the pump retaining clip
  - 3. The large o-ring for the bottom cap

**Note:** To disassemble the main body assembly you must first remove the o-ring on the bottom of the outlet valve and unscrew the main body Phillips-head screw.

## **III. Section Three – Disassembling the Main Body**

- 1. With the injector in the repair stand and the top and the bottom caps removed, remove all remaining Phillips-head screws.
  - 1. Note: Do not forget to remove the two Phillips-head screws inside the main body; one from the top and one from the bottom.
  - 2. Note: You must remove the o-ring on the bottom of the outlet valve before you can separate the two halves.
- 2. Remove the actuator tee – first spread the inlet and outlet valves until they unsnap from the actuator tee to allow for easy removal.
- 3. With all the screws removed, grip the two halves and pull them apart - **DO NOT PRY THEM APART WITH A SCREWDRIVER.**
- 4. With the main body separated (into the top main body and bottom main body) you should see:
  - a. Diaphragm assembly
  - b. Two center Phillips-head screw o-rings
  - c. Lower section of the I/O valves
- 5. Repairing the main body consists of the following:
  - a. Replacing the diaphragm assembly
  - b. Replacing the I/O valve assembly including the I/O actuator tee
  - c. Replacing the two small Phillips-head screw o-rings

## **IV. Section Four - Reassembling the Main Body**

- 1. Place the bottom main body into the repair stand, with the unit facing you. The saucer shaped portion identifies the front of the bottom main body.
- 2. Take the diaphragm assembly and slide the white piston guide into the guide slot on the bottom main body.
  - a. The long portion of the white piston guide should point up with the screw heads facing the bottom of the unit.
  - b. The 45 degree notch at the top of the white piston guide should face to the back of the unit (towards the valves).
- 3. Take the inlet valve (with the “+” on top of it) and place it into the inlet tee.
- 4. Replace the o-rings in the indented area where the Phillips-head screw goes through the inside of the main body. Use silicone sealant to ensure the o-rings stay in place.
  - a. The indented area is in the rear of each half of the main body.
  - b. The Phillips-head screws hold the two halves together from the inside.
- 5. Now re-attach the two halves of the main body.
  - a. Take the top main body and place it over the bottom main body.
- 6. Place saucer shaped portion facing you with pivot holes facing up.
- 7. Work the inlet valve up through the top main body.
  - a. Align the top main body with the inlet/outlet tees and the white piston guide on the diaphragm assembly.
  - b. Push the top main body straight down until the two halves lock together.
  - c. Use the Phillips-head screws in the holes around the side of the two halves to attach the top main body and bottom main body. Then tighten with the hex head nuts to secure the two parts.

# Chemilizer Repair - Injector Disassembly, Repair & Reassembly

---

## **IV. Section Four - Reassembling the Main Body (continued)**

7. Work the inlet valve up through the top main body (Continued - See steps a-c on previous page).
  - d. Place the Phillips-head screws into the holes provided for them on the insides of the top main body and bottom main body to further secure them.
  - e. Work the diaphragm assembly up and down several times making sure it moves freely.
  - f. Replace the two screws in the back of the unit that anchor the inlet/outlet tees in place.

## **V. Section Five - Reassembling the Top Cap**

1. Flip the injector over in the repair stand so that the top of the water motor is facing up and the front of the unit (saucer shape main body) is facing you. You should be looking at the pivot holes and the top part of the diaphragm assembly.
2. Drop the outlet valve through the hole for the outlet valve (left side of unit) and then snap the outlet valve onto the actuator tee.
3. Snap inlet valve onto actuator tee.
4. Slide the actuator arm assembly through window of actuator tee – one arm on each side of the actuator tee.
5. Insert the top by-pass assembly into the guide slot with the pivot pin slots aligned with the pivot pin holes in the top main body; the by-pass boot should be over the diaphragm assembly.
6. Insert a pivot pin through the pivot pin hole at the rear of unit just in front of the actuator tee and through the pivot pin slot in the actuator arm assembly. Secure with “C” clip using the “C” clip replacement tool.
7. Replace the pivot arm assembly with the tension pins under the top by-pass assembly, and its arms on either side of the molded posts and diaphragm assembly.
8. Insert the pivot pins in:
  - a. The slot at the top of the diaphragm assembly.
  - b. The pivot hole directly behind diaphragm assembly.
9. Secure the pivot arm assembly with “C” clips using the “C” clip replacement tool.
10. Place tension bands over tension pins.
11. Check the operation of the I/O valves and the diaphragm assembly before replacing the top cap.
  - a. Check by alternately pushing down on the top of the diaphragm assembly and then pushing down on the pivot arm assembly where the tension pin is located.
  - b. You should get a hard snapping action.
  - c. Repeat this action several times to ensure proper operation.
12. Place the top cap o-ring in the groove around the perimeter of the top main body.
13. Set the top cap in place, lining up the screw holes with those in the top main body; with your hands on the top cap, lean your weight onto it. You should hear a pop as the top cap is anchored in place.
14. Place hex nuts onto Phillips-head screws and tighten.

## **VI. Section Six - Reassembling the Bottom Cap**

1. Turn the unit upside down in the repair stand so that the bottom of unit is facing up.
2. Replace the o-ring on the bottom of outlet valve.
3. Place the large o-ring seal on the seat of the bottom main body.
4. Set the bottom cap in place, lining up the screw holes in the cap with those in the main body. With both of your hands on the cap, press down, leaning your weight onto the bottom cap to anchor it onto the main body.
  - a. You should hear a pop as the bottom cap locks into place.
  - b. Replace all of the hex nuts and tighten to secure.

**Note:** On the CP33, re-attach the Injection Control Panel on the front of the injector with the two Phillips-head screws.



Be sure to water test the injector before returning to the customer. Hydro Systems Company recommends that you test at a low flow (1 gph) and low (10) and high (50) pressure.

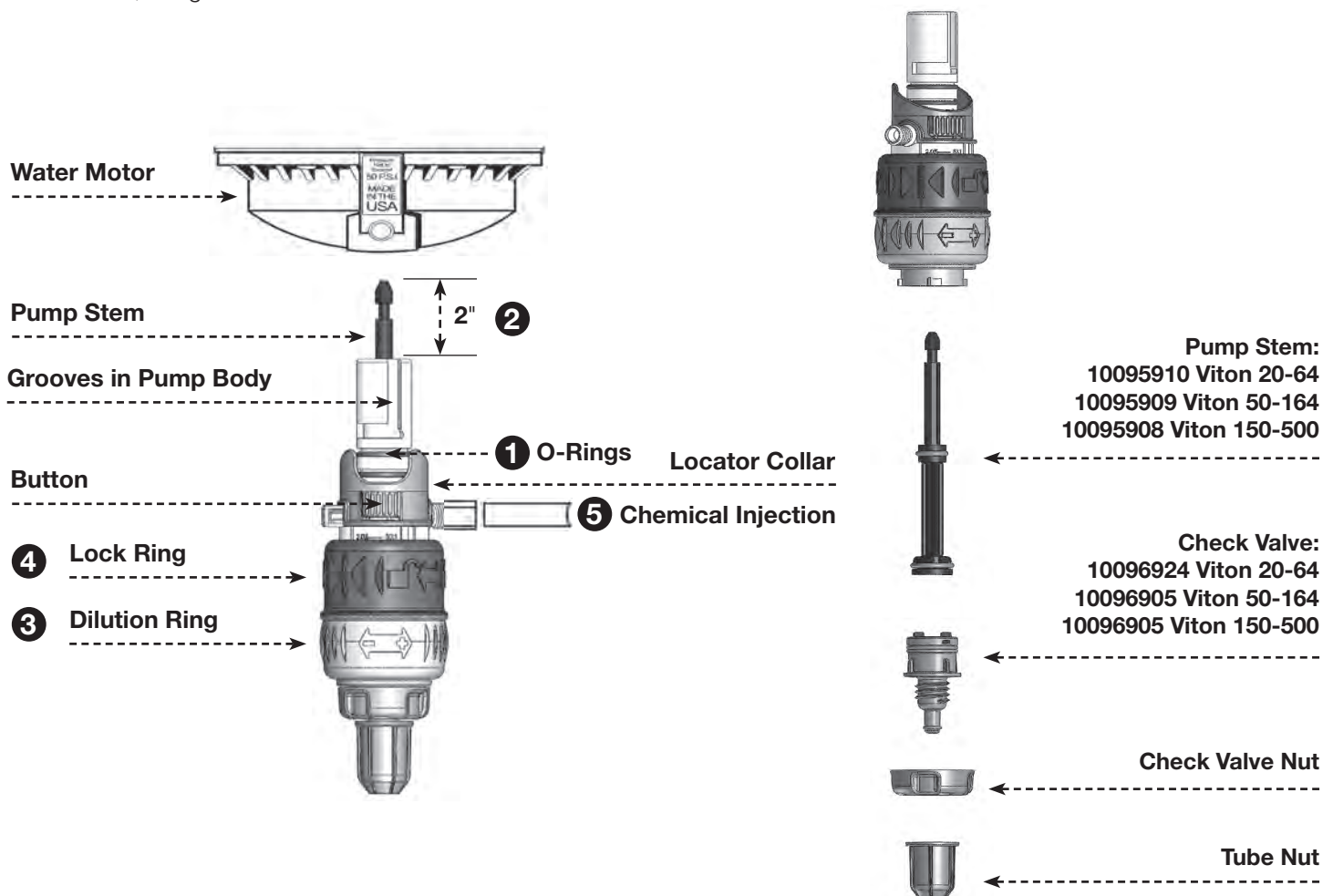
# Chemilizer Repair - Chemical Pump - Adjustable

1. Lubricate the o-rings on the pump housing with silicone lubricant before the pump is installed into the motor. A light coating of lubricant is all that is required.
2. Make sure the pump stem is pulled all the way out (about 2"). Push the pump up into the water motor. Pins inside the water motor will engage with the grooves in the pump body. Turn the pump 1/4 turn clockwise. The slot in the locator collar will mate with the square projection on the water motor.



**NOTE:** Depressing the buttons on each side of the locator lock will allow the locator collar to rotate 180° to allow installation with chemical injection on the right side. If the slot in the locator collar does not mate with the water motor, depress the buttons and rotate the locator collar until the groove mates with the water motor.

3. Rotating the dilution ring changes the dilution ratio. Rotate the dilution ring either direction until the correct dilution is set.
4. Rotate the lock ring clockwise to lock the dilution setting. Rotating the lock ring counter-clockwise allows the dilution to be changed.
5. After installing pump into bottom of water motor - loosen Jaco nut on pump and insert hose into fitting. Then, re-tighten Jaco nut.

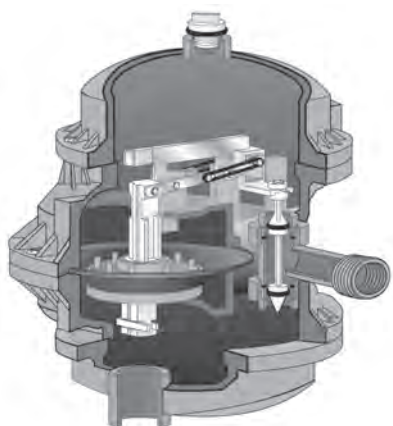


# Chemilizer Parts - Water Motor

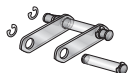
The body parts for Chemilizer injectors are made of reinforced plastic. With minimum care and maintenance, they will provide years of service.

Since there is little wear caused by interior moving parts, Chemilizer injectors can be rebuilt using original body parts.

The o-rings are primarily used to seal the parts together and eliminate leaking. Whenever the injectors are taken apart, the o-rings should be replaced. Special care should always be taken when replacing o-rings. If the o-rings do not seal properly there will be leaks.



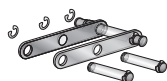
**Tension Bands**



**Actuator Arm Assembly**



**Top By-Pass Assembly**



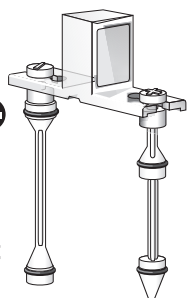
**Pivot Arm Assembly**

**Actuator Tee**

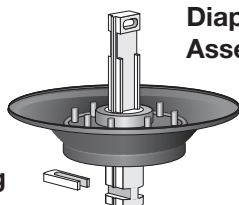
**Outlet Valve** 

 **Inlet Valve**

**Inlet Valve/Outlet Valve Assembly**



**Diaphragm Assembly**



**Pump Retaining Clip**

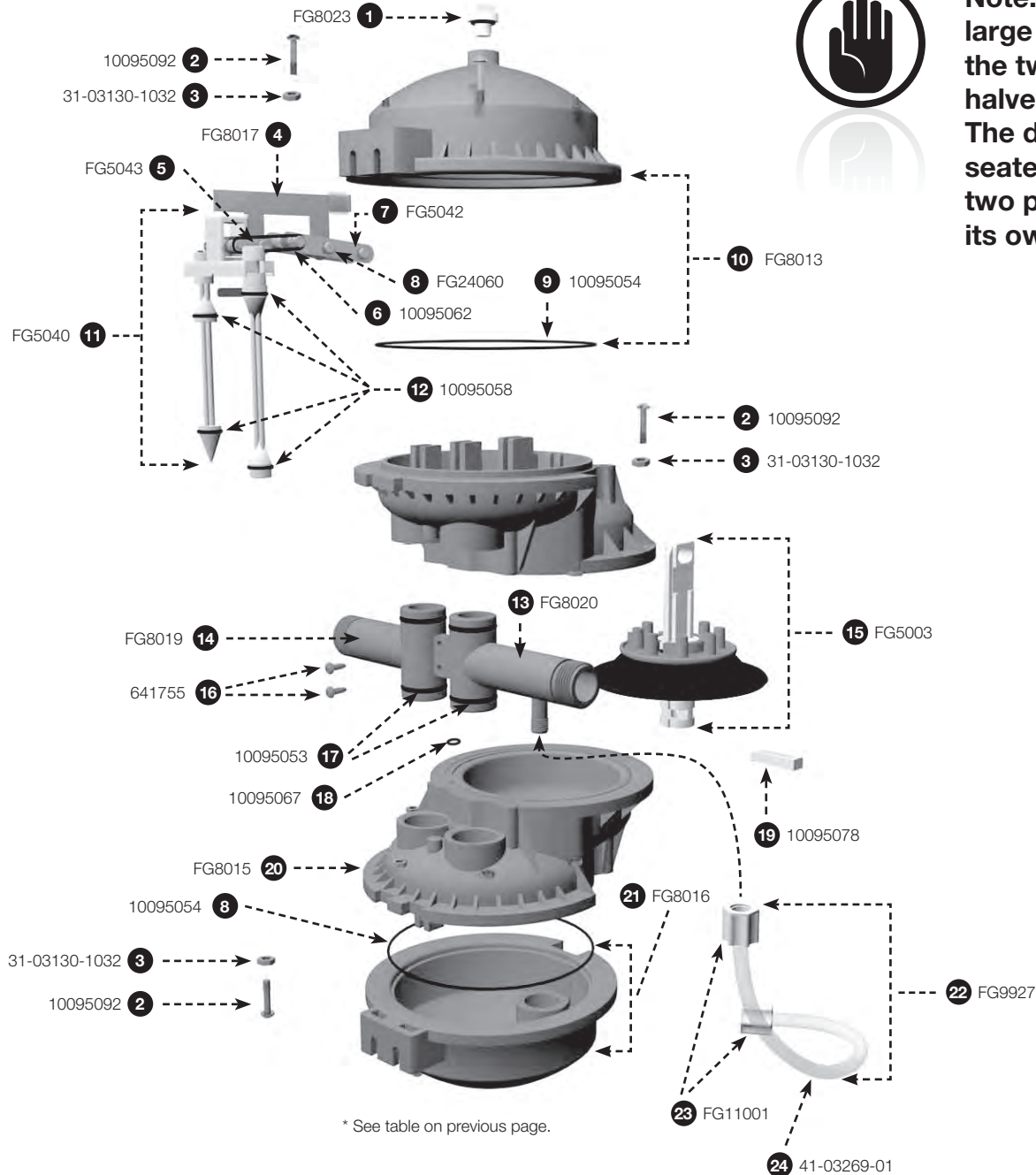
| Manual Reference | Part #        | Description                    |
|------------------|---------------|--------------------------------|
| Chemilizer Body  |               |                                |
| 1                | FG8023        | Twist Air Vent Assembly        |
| 2                | 10095092      | Screw 10-32 S.S.               |
| 3                | 31-03130-1032 | Nut 10-32 S.S.                 |
| 4                | FG8017        | Top By-pass Assembly           |
| 5                | FG5043        | Actuator Arm Assembly          |
| 6                | 10095062      | Tension Bands                  |
| 7                | FG5042        | Pivot Arm Assembly             |
| 8                | FG24060       | Retaining Clip                 |
| 9                | 10095054      | O-rings 159 Buna               |
| 10               | FG8013        | Top Cap Assembly               |
| 11               | FG5040        | Inlet/Outlet Valve Assembly    |
| 12               | 10095058      | Inlet/Outlet O-rings           |
| 13               | FG8020        | Outlet Tee Assembly            |
| 14               | FG8019        | Inlet Tee Assembly             |
| 15               | FG5003        | Diaphragm Assembly             |
| 16               | 641755        | Screw 8x1/2                    |
| 17               | 10095053      | O-rings 159 Buna               |
| 18               | 10095067      | O-rings 009 Buna               |
| 19               | 10095078      | Piston Clip                    |
| 20               | FG8015        | Main Bottom Body Assembly      |
| 21               | FG8016        | Bottom Body Assembly           |
| 22               | FG9927        | Hose Chemical Assembly         |
| 23               | FG11001       | Jaco Nut 1/4                   |
| 24               | 41-03265-01   | PE Tube 3/16x1/4x1/16 Chemical |

\* See diagram on next page.

# Chemilizer Parts - Water Motor

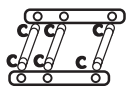


**Note:** There is no large o-ring sealing the two center body halves together. The diaphragm is seated between these two parts and forms its own seal.

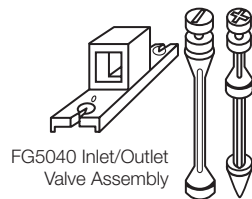


## 24 FG5001

Motor Rebuild Kit



FG5042 Pivot Arm Assembly



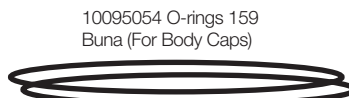
FG5040 Inlet/Outlet Valve Assembly



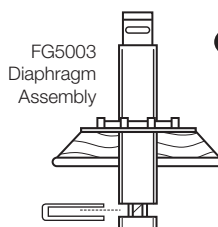
FG5043 Actuator Arm Assembly



FG8017 Top By-Pass Assembly



10095054 O-rings 159 Buna (For Body Caps)



FG5003 Diaphragm Assembly




10095053 O-rings 119 Buna (For Inlet/Outlet Tees)





10095067 O-rings 009 Buna (Main Body)

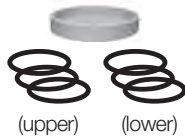




# Chemilizer Parts - Chemical Pump - Fixed

| Fixed Chemical Pumps |                              |   |
|----------------------|------------------------------|---|
| FG9209-V             | 1:128 Pump Viton Assembly    |  |
| FG9210-V             | 1:100 Pump Viton Assembly    |   |
| FG9211-V             | 2:100 Pump Viton Assembly    |   |
| FG9220-V             | 2:128 Pump Viton Assembly    |   |
| FG9222-V             | 1:250 Pump Viton Assembly    |   |
| FG9225-V             | 1:500 Pump Viton Assembly    |   |
| FG9309               | 1:128 Pump Silicone Assembly |   |
| FG9310               | 1:100 Pump Silicone Assembly |   |
| FG9311               | 2:100 Pump Silicone Assembly |   |
| FG9320               | 2:128 Pump Silicone Assembly |   |
| FG9322               | 1:250 Pump Silicone Assembly |   |





| Fixed Chemical Pump Stems |                          |   |
|---------------------------|--------------------------|---|
| FG9009                    | 1:128 Pump Stem Viton    |  |
| FG9010                    | 1:100 Pump Stem Viton    |   |
| FG9011                    | 2:100 Pump Stem Viton    |   |
| FG9020                    | 2:128 Pump Stem Viton    |   |
| FG9022                    | 1:250 Pump Stem Viton    |   |
| FG9025                    | 1:500 Pump Stem Viton    |   |
| FG9109                    | 1:128 Pump Stem Silicone |   |
| FG9110                    | 1:100 Pump Stem Silicone |   |
| FG9111                    | 2:100 Pump Stem Silicone |   |
| FG9120                    | 2:128 Pump Stem Silicone |   |
| FG9122                    | 1:250 Pump Stem Silicone |   |

| Pump Rebuild Kits |                                 |  |
|-------------------|---------------------------------|--|
| FG9409-V          | 1:128 Pump Rebuild Viton Kit    |  |
| FG9410-V          | 1:100 Pump Rebuild Viton Kit    |  |
| FG9411-V          | 2:100 Pump Rebuild Viton Kit    |  |
| FG9420-V          | 2:128 Pump Rebuild Viton Kit    |  |
| FG9422-V          | 1:250 Pump Rebuild Viton Kit    |  |
| FG9425-V          | 1:500 Pump Rebuild Viton Kit    |  |
| FG9509            | 1:128 Pump Rebuild Silicone Kit |  |
| FG9510            | 1:100 Pump Rebuild Silicone Kit |  |
| FG9511            | 2:100 Pump Rebuild Silicone Kit |  |
| FG9520            | 2:128 Pump Rebuild Silicone Kit |  |
| FG9522            | 1:250 Pump Rebuild Silicone Kit |  |

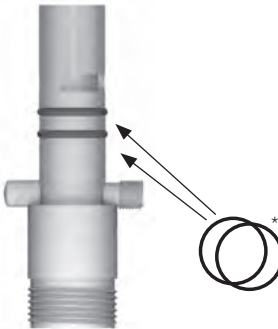
| O-ring Kits |                           |  |
|-------------|---------------------------|--|
| FG9910      | 1% Viton Repair Kit       |   |
| FG9911      | 1% Silicone Repair Kit    |  |
| FG9912      | 2% Viton Repair Kit       |  |
| FG9913      | 2% Silicone Repair Kit    |   |
| FG15104     | Check Valve 2% - Silicone |  |
| FG15504     | Check Valve 2% - Viton    |  |
| FG15204     | Check Valve 1% - Silicone |  |
| FG15404     | Check Valve 1% - Viton    |  |

**Note:** All o-ring kits come with 3 upper and 3 lower o-rings and a check valve.

**Note:** All pump rebuild kits come with stem, check valve and housing o-rings.

| Fixed Pump Housing |                                |   |
|--------------------|--------------------------------|---|
| FG9936             | 1% Silicone Pump Cap Assembly* |  |
| FG9936-V           | 1% Viton Pump Cap Assembly*    |   |
| FG9937             | 2% Silicone Pump Cap Assembly* |   |
| FG9937-V           | 2% Viton Pump Cap Assembly*    |   |
| 003921             | Filter PVC Assembly            |  |
| 10095071           | Sleeve 1%                      |  |
| 10095072           | Sleeve 2%                      |  |

\* Includes check valve

| Fixed Pump Housing |  |   |
|--------------------|--|---|
| 10095065*          | <b>Pump Housing O-rings</b>  |  |
|                    | 117 Viton Pump Housing   |   |
|                    | <i>Fits 1% or 2% Pumps</i>   |   |
|                    | <ul style="list-style-type: none"> <li>• 1%=1:100, 1:128, 1:250 &amp; 1:500 ratios</li> <li>• 2%=2:100 &amp; 2:128 ratios</li> </ul> |   |

\* Universal o-rings