

# MiniDos

## Operating Manual



**Model 0.4%**

**Model 1%**

**Model 2.5%**

**Model 5%**

**Model 10%**

**Model 20%**

**Fluid Flow Range:**

0.03 gpm to 12 gpm\*

7 lph to 2,700 lph\*

**Injection Range**

**Dosage:**

0.025% to 20%

1:4000 to 1:5

**Operating Pressure:**

6 to 140 psi\*

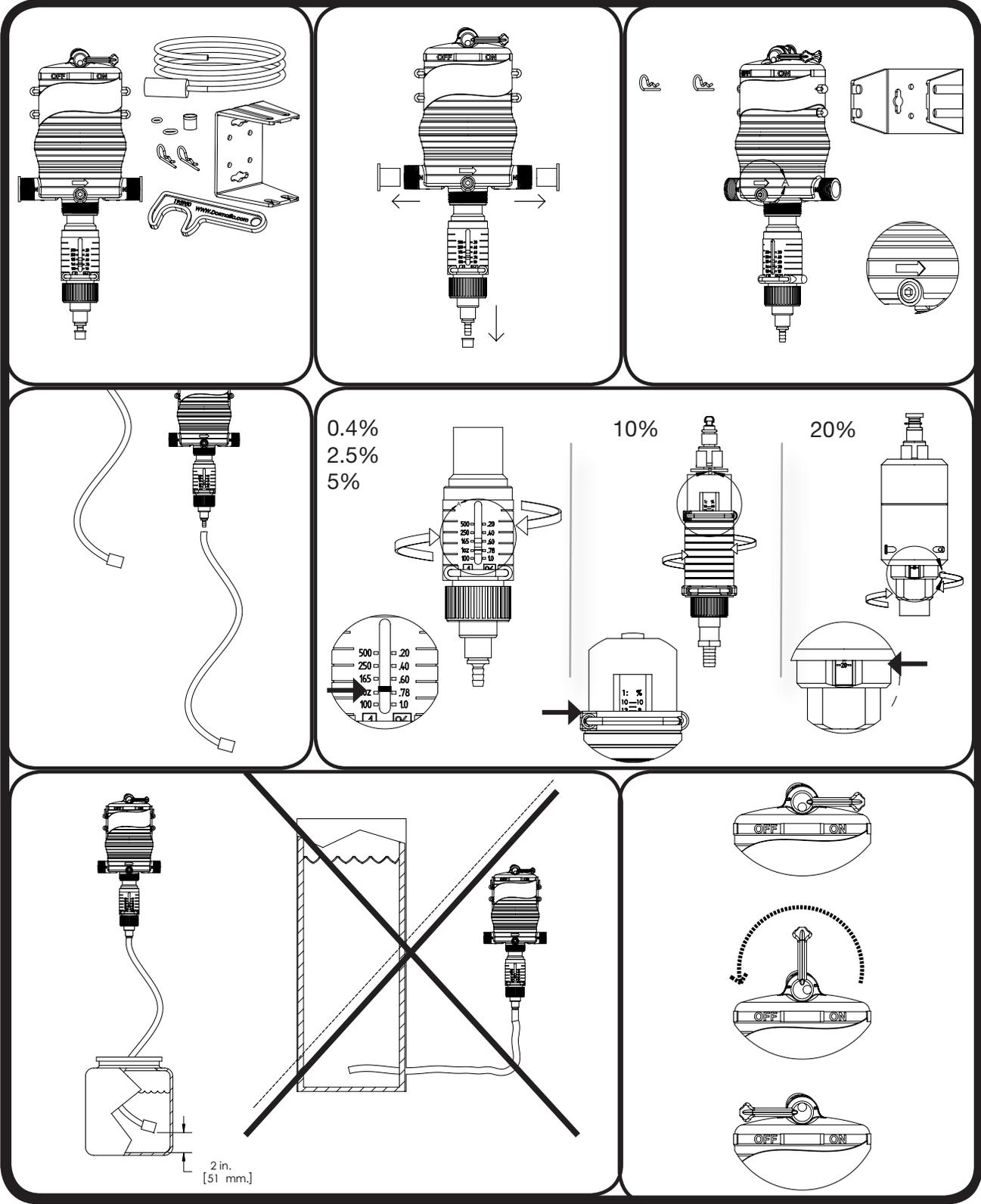
0.5 to 9.6 bar\*

\*Specifications vary by model.

**Hydro**<sup>®</sup>  
**systems**  
A **DOVER**<sup>™</sup> COMPANY



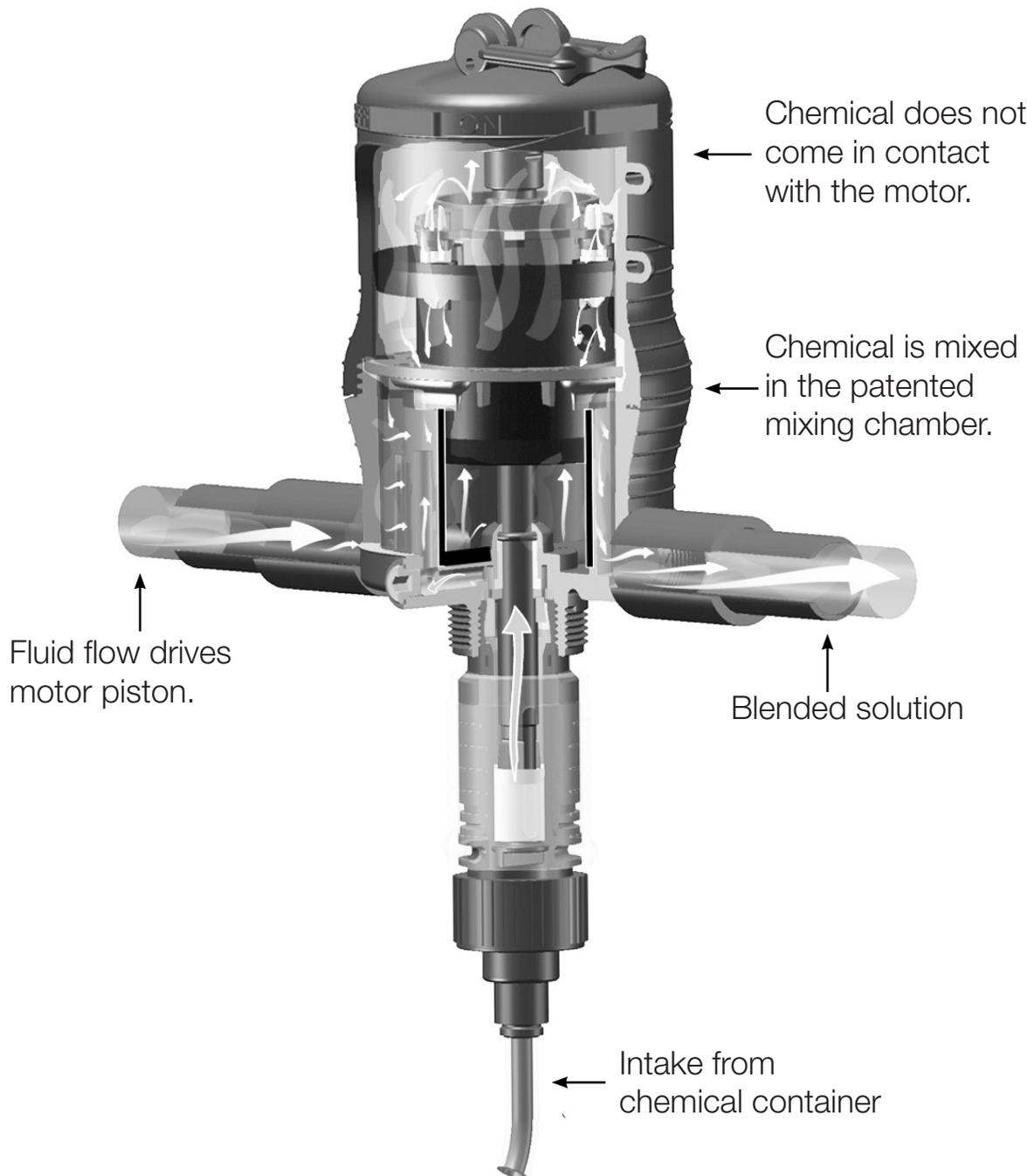
# Quick Start-up



# Operating Principle

## Accurate and Reliable

Installed directly in the fluid supply line, the injector operates without electricity, using fluid (water) pressure as the power source. The fluid drives the injector, which pulls the required percentage of concentrate directly from the chemical solution container. Inside the Hydro patented mixing chamber, the concentrate is mixed with the fluid, and the fluid pressure forces the mixed solution downstream. The amount of concentrate will be directly proportional to the volume of fluid entering the injector, regardless of variations in flow or pressure.



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**Please read this manual carefully before putting the Hydro injector into operation.**

This booklet has the information you will need for the use and care of your new Hydro injector. If you have any further questions about your injector, the warranty, routine maintenance or proper usage, please contact your nearest distributor or Hydro Systems customer service.

These models are designed to inject liquid concentrate or soluble powder that are recommended and approved for injection into fluid systems.

It is the responsibility of the operator to determine the correct dosage settings of the unit using the chemical manufacturers' recommendation for dispensing their product, and to assure that proper dosage is being maintained.

***Maintenance and Warranty***

Hydro offers a three year limited warranty from the original date of purchase for manufacturing or materials defects only. With proper use and care, your injector should provide you long-term performance.

**For Your Records**

The serial number of your Hydro injector is located on the injector body. Please record this number in the space below and reference it when calling your distributor or Hydro for information, parts and service.

Serial #.....

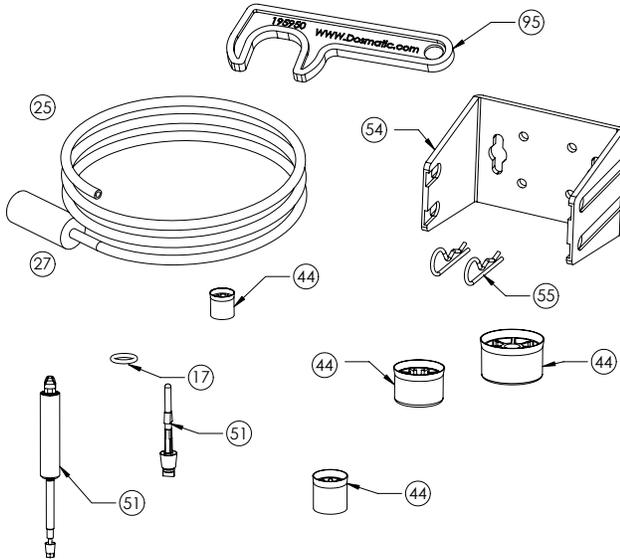
Date Purchased .....

This document does not form a contractual engagement on the part of Hydro Systems Company and is for information only. Hydro reserves the right to alter product specifications or appearance without prior notice.

# Package Contents

## The injector is packaged with the following items:

- Hydro Injector (not shown)
- Dosage Piston
- O-ring
- Manual (not shown)
- Lower Shaft Assembly
- Mounting Bracket
- Mounting Nuts and Bolts
- Filter
- Suction Tube



	<b>Model</b>	<b>NPT</b>	<b>BSP</b>
	0.4%	112608	112609
0.4% Heavy Duty	112638		112639
1%	112600		112601
1& Heavy Duty	112630		112631
2.5%	112602		112603
2.5% Heavy Duty	112632		112633
5%	112604		112605
5% Heavy Duty	112634		112635
10%	112606		112607
10% Heavy Duty	112636		112637
20%	112620		112621
20% Remote Injection	112622		112623

## Specifications



### **MiniDos 7 gpm (65 max. psi)**

Model 20% ..... 4% - 20% (1:25 - 1:5)  
 Flow Rate: ..... 0.07 - 7 gpm (16 - 1,500 lph)  
 Operating Pressure: ... 6 - 65 psi (0.5 - 4.5 bar)  
 Pipe Coupling: ..... 3/4" NPT/BSP

### **MiniDos 10 gpm (65 max. psi)**

Model 10% ..... 2% - 10% (1:50 - 1:10)  
 Flow Rate: ..... 0.07 - 10 gpm (16 - 2,200 lph)  
 Operating Pressure: ... 6 - 65 psi (0.5 - 4.5 bar)  
 Pipe Coupling: ..... 3/4" NPT/BSP

### **MiniDos 12 gpm (140 max. psi)**

Model 0.4% ..... 0.025% - 0.4% (1:4000 - 1:250)  
 Model 1% ..... 0.20% - 1% (1:500 - 1:100)  
 Model 2.5% ..... 0.50% - 2.5% (1:200 - 1:40)  
 Model 5% ..... 1% - 5% (1:100 - 1:20)  
 Flow Rate: ..... 0.03 - 12 gpm (7 - 2,700 lph)  
 Operating Pressure: ... 6 - 140 psi (0.5 - 9.6 bar)  
 Pipe Coupling: ..... 3/4" NPT/BSP

Housing	Proprietary Engineered Composite Material
Avg. Dosing Accuracy	+/- 5% of ratio
Repeatability	+/- 3% of ratio
Pressure Loss	0.2 - 1.2 bar max
Maximum Temp.	100°F (38°C)
Minimum Temp.	34°F (1°C)
Maximum vertical suction of concentrate	13 Feet (3.6 Meter)
Maximum horizontal suction of concentrate	49 Feet (15 Meter)
Self-Priming	Yes
Seal Material Available: *Contact your Hydro representative for specific chemical information	Aflas Viton EPDM

# Safety Precautions/Warranty Compliance



**Warning:** Please read precautions thoroughly before operation. Must meet all applicable local codes and regulations.

## **Remove Red Caps Prior to Installation**

Your injector is 100% factory tested before delivery and may contain a small amount of water. The three red plastic caps are fitted after testing to ensure cleanliness of the injector.

## **Before Applying Aggressive Chemicals**

Please consult your distributor, chemical manufacturer or contact Hydro's customer service to confirm compatibility with your injector. Always wear proper safety protection as recommended by chemical supplier.

## **Label all Fluid Lines, Valves and Connections**

If the solution that is being injected is not suitable for drinking, all fluid lines should be labeled:

*Warning - not for human consumption!*

## **Monitor Outlet Flow**

It is the user's responsibility to monitor the output of chemical injected.

## **A Filter is Recommended and Required**

Install a filter of 140 mesh (104 micron) or finer depending on your fluid quality to prolong the working life of the injector and for the warranty to be valid. A filter is imperative since most fluid contains impurities or particles, especially if the fluid source comes from a well, pond or lake.

## **Avoid a Potentially Hazardous Chemical Accident**

Select a safe location. Chemical container should be kept away from children and/or high usage areas and the location must also not be susceptible to freezing temperatures.

## **Avoid Solution Contamination**

Use only clean FILTERED fluid. Do not allow contaminants to enter the solution container. They can be pumped into the fluid line and may cause the spread of disease. Dirt, debris and other contaminants in the solution container may cause excessive wear to the unit.

## **Fluid Temperature**

Min: 34°F (1°C), Max: 100°F (38°C)

## **Maximum Fluid Pressure**

0.4%, 1%, 2.5%, 5% - 140 psi (9,6 bar)  
10% & 20% models have maximum operating pressure of 65 psi (4,5 bar). Operating pressure and flow are reduced while using remote injection kit. Install a pressure regulator and/or pressure relief valve to ensure operating pressure does not exceed the maximum specification.

## **Before Removing An Injector From The System**

Release fluid pressure. While the system is in operation, turn off the incoming fluid valve. Leave the out going valve open. This will relieve the pressure at the injector and all parts of the system after the injector. Injector is now safe to remove.

## General Tips

Please read this instruction manual thoroughly. Following the procedures, will increase the life of your injector.

## **For A Long Service Life**

Start with clean fluid by using an inline filter to reduce impurities. Keep the solution container covered and clean. Keep the suction tube filter 2" (5 cm) from the bottom of the container. Perform maintenance procedures as recommended (see Maintenance page 10).

## **Soluble Powder Use**

Ensure the chemical is completely dissolved before starting the injector. If necessary, dissolve the chemical in hot water and allow to cool before using. Failure to thoroughly dissolve the chemical will cause premature wear to the dosage piston and the inner cylinder.

## **Keep From Extreme Temperature**

Protect the injector from freezing temperatures or excessive heat.

## **Rinse Injector After Each Use**

Additive allowed to remain in injector can dry out, foul or damage the lower end at the next start-up (see Maintenance page 10).

## **Injector Not in Use for an Extended Period**

If the injector has not been stored properly deposits may have dried onto the motor (see Maintenance page 10). Before operation, soak entire unit into room temperature water approx. 72°F (22°C) for an eight hour period.



# Installation & Start-up

Refer to Fig. 4 and Fig. 5

## Fluid Filter (Required)

Install a filter of 140 mesh (104 micron) or finer depending on your fluid quality to prolong the working life of the injector and for the warranty to be valid. Hydro recommends a Twist II Clean® filter that can be ordered with your injector.

## Mounting Injector

Securely fasten your injector to a solid object such as a wall or in a cold fluid line. Note arrow on injector indicates fluid flow.

## Backflow Preventor (Recommended)

Install one that meets local code requirements.

## Pressure Safety Release Device (Recommended)

Prevents pressure from exceeding specifications of the unit.

## Bypass Valve Set-up (Recommended)

Allows the injector to be taken off-line for maintenance or storage when not in use.

## Fluid-Hammer Arrester (Recommended)

Prevents fluid-hammer damage to the injector when operating quick closing solenoid, pneumatic or hand-operated ball valves on the fluid system.

## Anti-Siphon Valve (Optional)

To prevent solution from being siphoned out (from the solution container) into the feed lines when the upstream valve is shut off. The anti-siphon valve must be installed on the downstream outlet.

## Additional Siphoning Prevention

Place solution container on a level below the injector suction tube fitting. Using the inlet side as a shut-off valve could cause full strength solution to siphon into the feed line.

## Solution Container

Use any size container. A lid or cover is recommended. To connect your solution container, gently push the end of the suction tube onto the bottom of the suction tube fitting assembly. Place the filter into the solution container at least 2" (5cm) from the bottom and fill with at least 2" (5cm) of chemical solution.

## Never Use Petroleum Based Lubricants

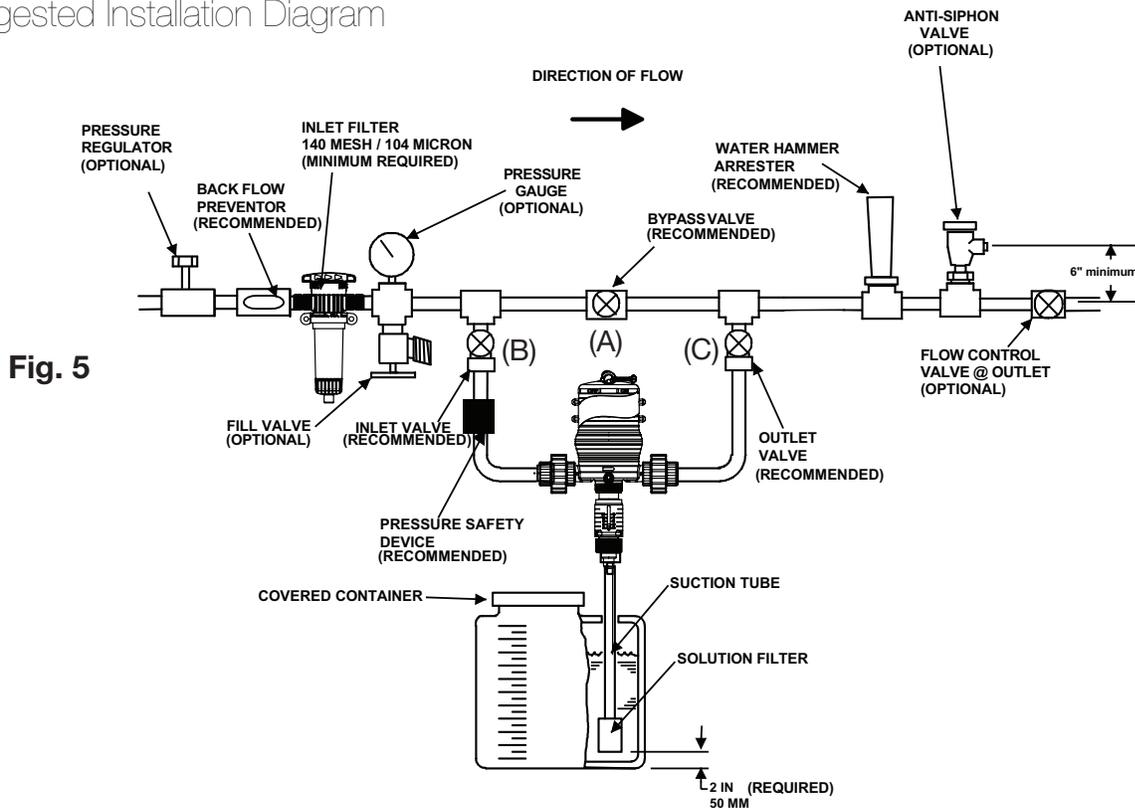
The injector is shipped with a thin coat of silicone around the seals for ease-of-assembly. Petroleum based lubricants such as Vaseline®, baby oil, WD40®, or motor oil on the O-rings or any part of the injector should never be used as this can cause particles to adhere and clog or damage the injector.



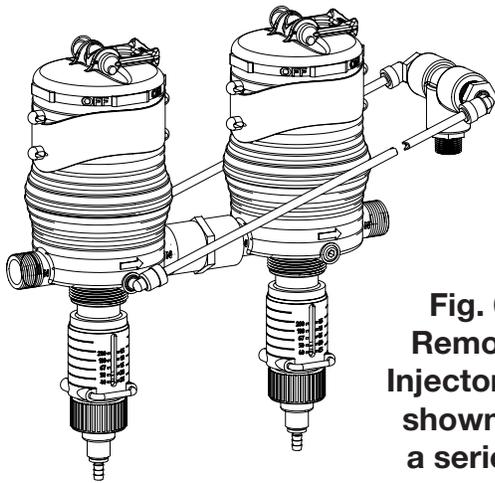
## Check System for Leaks and Start-Up Procedures

Open the bypass valve (A), close inlet valve (B) and outlet valve (C) to prevent fluid flow into the injector. SLOWLY turn on the main fluid line. Run fluid flows between 5 -12 gpm (11-45 l/m) through the plumbing system. Turn on all of the valves located downstream from your injector to release trapped air. SLOWLY turn on the inlet valve (B). Open the outlet valve (C) and close valve (A). As fluid travels through the injector, you will hear a "clicking" sound. Check for leaks and correct if necessary.

## Suggested Installation Diagram



# Remote Injecting



**Fig. 6  
Remote  
Injector Kit  
shown in  
a series.**

## Remote Injector Kit (not included)

Is recommended for the following:

Kit Part Numbers  
011762

### Injectors In a Series:

When injecting multiple chemical injections, using two or more injectors. Each injector adds chemical to the fluid(water) system, while bypassing the next injector and eliminating the potential damage to that injector (see Fig. 6). To prevent mineral buildup within the body of the unit. Use when injecting chemicals that cause minerals to precipitate from fluid.

NOTE: When mixing more than one chemical, always refer to your chemical manufacturer information guide for proper application. Contact your local distributor or Hydro Systems customer service for information or to order.

Reference numbers refer to Page 17 - 24

## Maintenance

### Rinse Injector After Each Use

Additive allowed to remain in injector can dry, foul or damage the lower end at the next start-up. Place suction tube into a 1 qt. (0.95 liters) or more container of fresh filtered water. Flow fresh water through the injector by operating until container is empty. This procedure is not needed for continuous operation.

### Clean Solution Container

Keep covered to prevent dirt, flies, feathers and other flying debris from entering the container. Rinse container thoroughly and often. Do not mix chemicals together that might react and cause a precipitate. Use FILTERED fluid when filling container.

### Clean Suction Tube Filter Screen

Inspect each time new solution is added. Clean filter screen (#27) and suction tube (#25) as necessary by rinsing in fresh water. Replace if necessary. Keep filter screen off bottom of solution container to prevent dirt and precipitate from clogging filter.

### Clean Inlet Filter

Clean or replace inlet filter as required to increase the life of the unit as well as reduce pressure loss.

### Bypass Injector

When not in use place the injector in bypass mode by using the three valve bypass (preferred) or turn the On/Off lever on the top of the injector to the off position.

### Storage

For extended storage, rinse injector (see "Rinse Injector After Each Use") and place underwater in a container. Apply monthly, <0.1 oz. (29 ml) of chlorine bleach to avoid algae growth. KEEP FROM FREEZING.

MiniDos (0.4%)  
Refer to pages  
18 & 19

MiniDos (1%)  
Refer to page 20

MiniDos (2.5%)  
& (5%) Refer to  
pages 21 & 22

MiniDos (10%)  
Refer to page 23

MiniDos (20%)  
Refer to page 24

Perform these maintenance procedures to extend the life of your unit.

Every 3 - 6 Months	Every 6 - 12 months	Replace as necessary
1. Clean seal area (#13). 2. Check #17 O-ring, #51 Shaft Assembly, clean and/or replace as necessary.	1. Replace #17 O-ring and #51 Shaft Assembly. 2. Clean and/or replace #13 Check Poppet, #11 Suction Tube Fitting.	1. #37 Cylinder 2. #17 O-ring 3. #51 Shaft

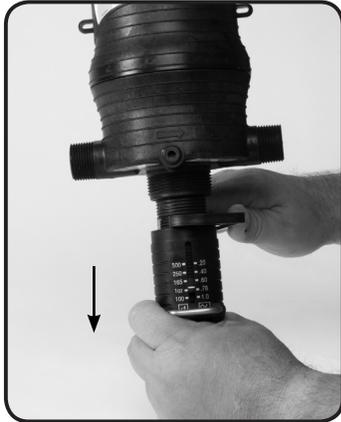
Every 3 - 6 Months	Every 6 - 12 months	Replace as necessary
1. Clean seal areas (#17, 14 & 13). 2. Check #17 O-ring, #68 Cylinder, clean and/or replace as necessary.	1. Replace #17 O-ring and #44 Dosage Piston. 2. Clean and/or replace #13 Check Poppet, #11 Suction Tube Fitting.	1. #68 Cylinder 2. #14, #17 O-ring 3. #51 Shaft 4. #44 Dosage Piston

Every 3 - 6 Months	Every 6 - 12 months	Replace as necessary
1. Clean seal areas (#17, 14 & 13). 2. Check #17 O-ring, #37 Cylinder, clean and/or replace as necessary.	1. Replace #17 O-ring and #44 Dosage Piston. 2. Clean and/or replace #13 Check Poppet, #11 Suction Tube Fitting.	1. #37 Cylinder 2. #14, #17 O-ring 3. #52 Shaft 4. #44 Dosage Piston.

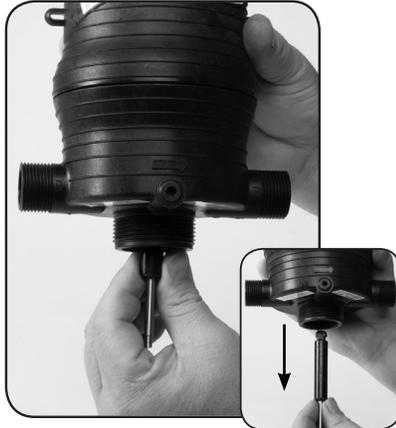
Every 3 - 6 Months	Every 6 - 12 months	Replace as necessary
1. Clean seal areas (#17, 14 & 13). 2. Check #17 O-ring, #37 Cylinder, clean and/or replace as necessary.	1. Replace #17 O-ring and #44 Dosage Piston. 2. Clean and/or replace #13 Check Poppet, #11 Suction Tube Fitting.	1. #37 Cylinder 2. #14, #17 O-ring 3. #52 Shaft 4. #44 Dosage Piston

Every 3 - 6 Months	Every 6 - 12 months	Replace as necessary
1. Clean seal areas (#17, 14). 2. Check #17 O-ring, #7 Cylinder, clean and/or replace as necessary.	1. Replace #17 O-ring and #44 Dosage Piston. 2. Clean and/or replace #60.	1. #7 Cylinder 2. #14, #17 O-ring. 3. #44 Dosage Piston

# Routine Maintenance Instructions 0.4%



Step 1.  
Unscrew #7 OUTER  
CYLINDER from body.



Step 2.  
1/4 turn to remove #51  
SHAFT ASSEMBLY



Step 3.  
Remove #16 Gasket.



Step 4.  
Remove #82 SHAFT  
SEAL SPACER.



Step 5.  
Remove #17 O-ring.



Step 6.  
Replace #17 O-ring.



Step 7.  
Replace #82 SHAFT  
SPACER and #16 Gasket.

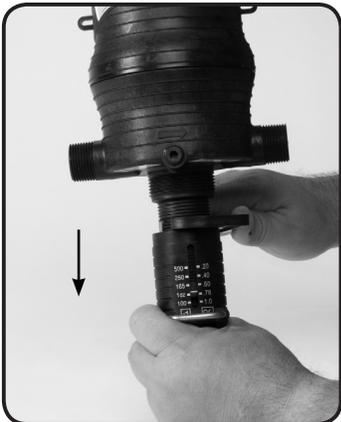


Step 8.  
Replace #51  
SHAFT ASSEMBLY.



Step 9.  
Screw #7 OUTER  
CYLINDER onto body.

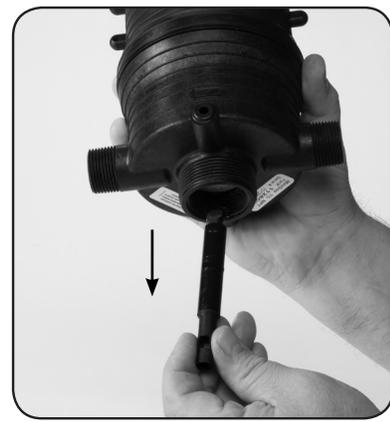
# Routine Maintenance Instructions 1%



Step 1.  
Unscrew #7 OUTER  
CYLINDER from body.



Step 2.  
1/4 turn to unlock and remove  
#51 LOWER SHAFT and replace.



Step 3.  
Remove #52 UPPER  
SHAFT.



Step 4.  
Remove and clean #16 GASKET  
and #82 SEAL SPACER.



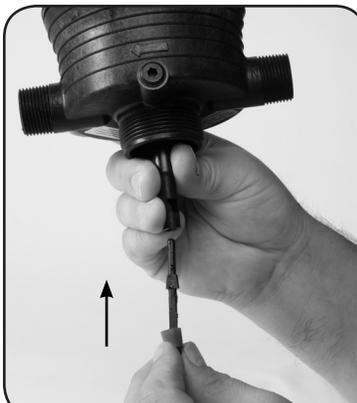
Step 5.  
Remove #17 O-ring and replace.



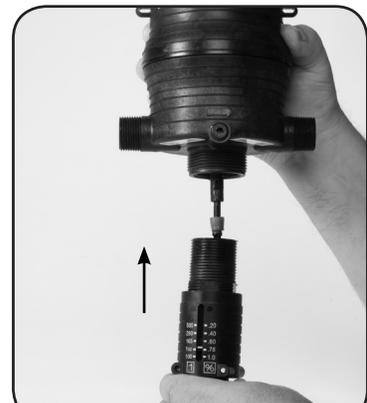
Step 6.  
After replacing #82 SEAL  
SPACER and #18 GASKET,  
replace #52 UPPER SHAFT.  
Turn 1/4 turn to lock in place.



Step 7.  
Re-install #82 SEAL SPACER  
and #16 GASKET.

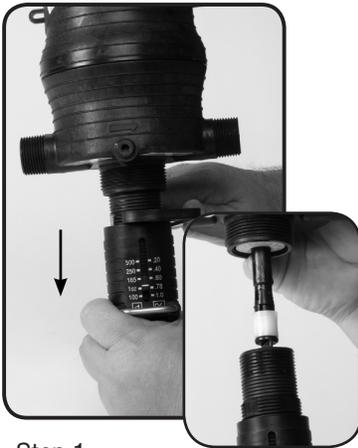


Step 8.  
Reinstall lower shaft with new  
dosage piston and turn 1/4  
turn to lock.

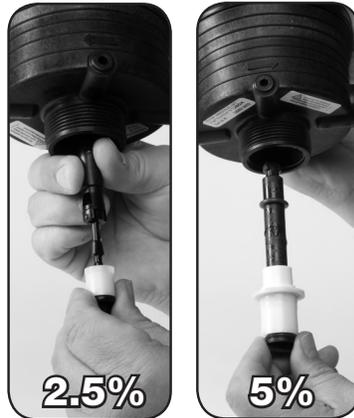


Step 9.  
Screw #7 OUTER  
CYLINDER onto body.

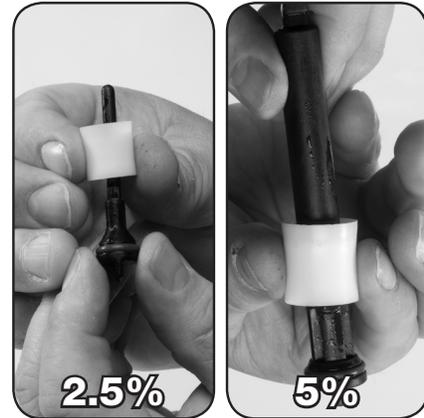
# Routine Maintenance Instructions 2.5 & 5%



Step 1.  
Unscrew #7 OUTER  
CYLINDER from body.



Step 2.  
Rotate #51 or #52 SHAFT  
90° and remove.



Step 3.  
Replace #44 DOSAGE PISTON  
thin lips up. Clean & inspect #14  
O-ring replace if necessary.



Step 4.  
Remove & Clean seal areas  
#16 & #82.



Step 5.  
Replace #17 O-ring.



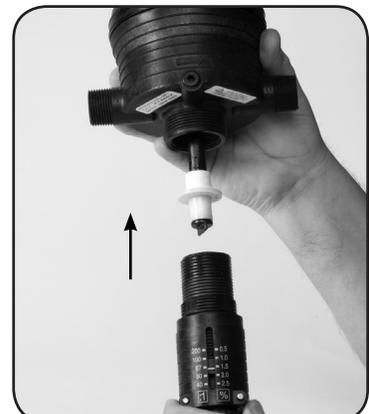
Step 6.  
Re-install #52 UPPER SHAFT  
and #17 O-ring.



Step 7.  
Re-install #16 GASKET  
and #82 SEAL SPACER

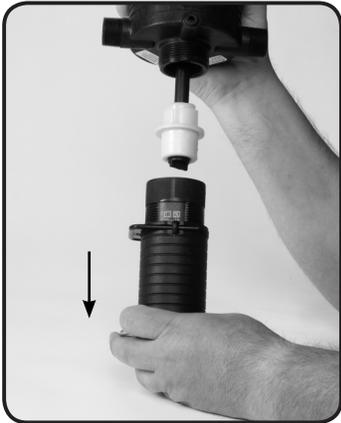


Step 8.  
Reinstall lower shaft with new  
dosage piston by turning 90°  
to lock in place.



Step 9.  
Screw #7 OUTER  
CYLINDER onto body.

# Routine Maintenance Instructions 10%



Step 1.  
Unscrew #7 OUTER  
CYLINDER from body.



Step 2.  
1/4 turn and remove #52  
SHAFT, #16 GASKET and  
#15 RETAINER.



Step 3.  
Remove #83 SHAFT  
SEAL SPACER.



Step 4.  
Remove #17 O-ring and replace.



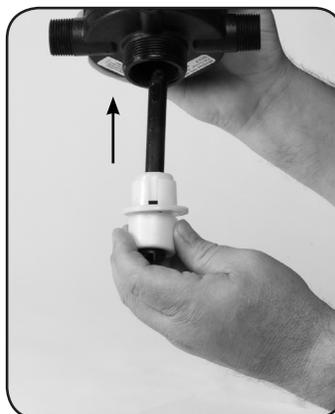
Step 5.  
Replace #83 SHAFT  
SEAL SPACER.



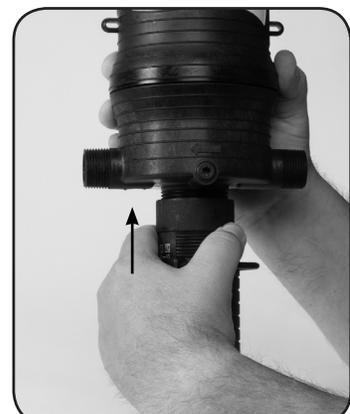
Step 6.  
Squeeze ears on shaft  
and remove #44  
DOSAGE PISTON.



Step 7.  
Replace #44 DOSAGE  
PISTON thin lips up (towards  
the top of the shaft).

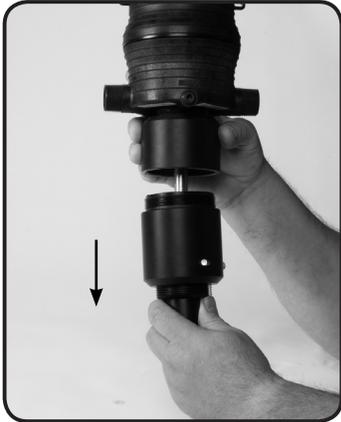


Step 8.  
Re-install #52 SHAFT with  
#16 GASKET, #15 RETAINER.



Step 9.  
Screw #7 OUTER  
CYLINDER onto body.

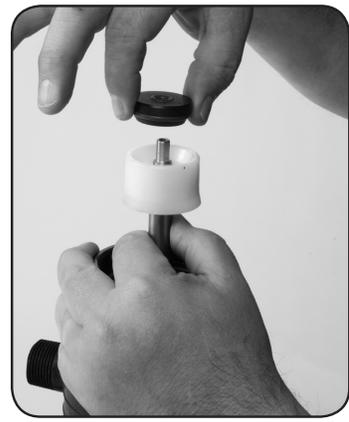
# Routine Maintenance Instructions 20%



Step 1.  
Unscrew #61 OUTER  
CYLINDER from body.



Step 2.  
Unscrew to unlock and remove  
#93 CAPSCREW.



Step 3.  
Remove #73 DOSAGE  
PISTON GUIDE, clean  
and inspect #14 O-ring.



Step 4.  
Remove #44 DOSAGE PISTON.



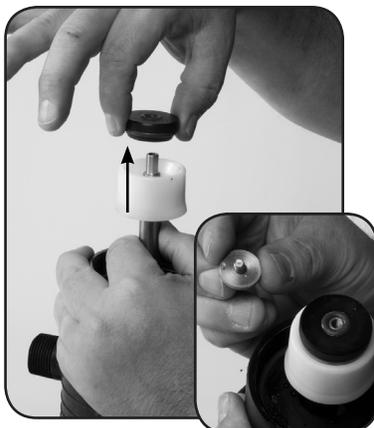
Step 5.  
Unscrew and remove #72  
ADAPTER as well as #68 O-ring,  
#15 SEAL RETAINER. Clean and  
replace if damaged or worn.



Step 6.  
Remove and replace #17  
O-ring. Re-install #83 SHAFT  
SEAL SPACER and #15  
SEAL RETAINER.



Step 7.  
Reset #68 O-ring and screw  
#72 ADAPTER onto body.



Step 8.  
Replace #73 DOSAGE  
PISTON GUIDE and #44  
DOSAGE PISTON.



Step 9.  
Screw #61 OUTER  
CYLINDER onto body.

# Troubleshooting

## New Install - Always Pressure Up Slowly (Follow start up on page 9)

Problem	Cause	Solution
<b>No Clicking Sound</b>	Fluid not flowing through unit	<p>Are the red plugs at the inlet, outlet and suction tube fitting openings removed?</p> <p>Is the unit installed backward? The arrow on the unit must point in the direction of the fluid flow.</p> <p>Has the new injector been stored for an extended period. If so, submerge the injector in room temperature water for 24 hours so that the working parts can reabsorb fluid and swell back to the proper size.</p> <p>If still not clicking, do not open the upper body. Call Hydro Customer Service.</p>
	Fluid flowing through unit	<p>Fluid rate is below or exceeds rated service flow of injector. (See Specifications page 6).</p> <p>If below increase flow rate, if above, reduce flow rate.</p> <p>Operating pressure exceeds maximum limit. Install a pressure reducer valve. (See Specifications for maximum flow rate page 6).</p> <p>On/Off Lever in off position. Place the On/Off lever switch to the ON position.</p> <p>By-pass valve not closed. Check and set valve to the OFF position.</p>

## Injector in Operation or After Scheduled Maintenance

Problem	Cause	Solution
<b>No Clicking Sound</b>	Main Piston Assembly #9 worn.	Replace # 9 Main Piston Assembly. Clean fluid filter.
	Cover #1 or main body #40 worn or scored.	Replace and install or clean fluid filter.
	On/Off Lever in off position.	Place the On/Off lever switch to the ON position.
	By-Pass Valve not closed.	Set Valve to the closed position.
	Dirty or plugged inlet filter.	Ensure mesh size is correct for proper filtration. Clean filter.
	#17 Worn or not seated properly.	Re-seat #17 or replace.
<b>Clicking Sound No Suction of Solution</b>	Suction tube #25 (#60 - 20%) or suction tube fitting #11 cracked, loose, leaking or clogged suction tube filter.	Check for proper fit, replace and/or clean as necessary.
	Dosage piston #44 worn or installed incorrectly, inner cylinder #37 (#68 - 1% & #7 - 20%) worn.	Replace. Ensure during maintenance replacement that #44 dosage piston was installed correctly flared-end up.
	O-ring retainer #82 (#15 - 10% & 20%) installed incorrectly	Install correctly.
	O-ring seat #14 or dosage piston #44 damaged or worn.	Replace, on 0.4% models replace #51 Shaft Assembly.
	Check valve #13 (#60 - 20%) leaking.	Clean & replace as necessary.
<b>Clicking Sound. Under Injecting</b>	#44 Dosage Piston worn.	Replace, on 0.4% models replace #51 Shaft Assembly.
	#37 (#7 - 20%) Inner Cylinder worn.	Replace.
	Unit operates at high-flow and not at low flow.	Replace #17 O-ring.
	Main Piston Assembly #9 worn.	Replace # 9 Main Piston Assembly. Clean fluid filter.
	Cover #1 or main body #40 worn or scored.	Replace and install or clean fluid filter.
<b>Fluid Re-filling Solution Tank</b>	Check valve #13 leaking.	Check seat area on suction tube fitting #11. Check valve and seal must fit loose in the suction tube fitting. Clean seal and inside fitting for debris.
	Washer seal on #13 is swollen or chemical attack.	Replace with new check valve assembly.
	Hose Kit #60 (20%) leaking.	Replace.

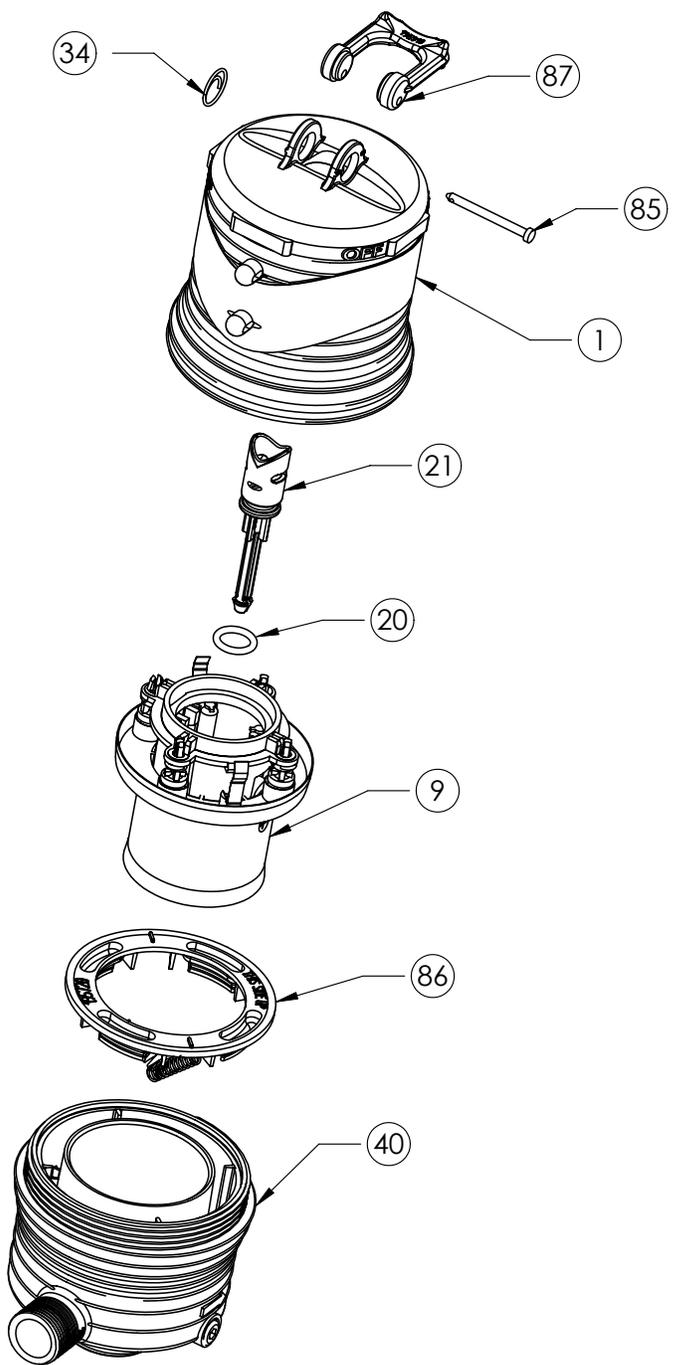
# Kits & Spare Parts List

Injector Repair Parts .....	18
0.4%: .....	19
1%: .....	20
2.5%: .....	21
5%: .....	22
10%: .....	23
20%: .....	24
Accessories: .....	25

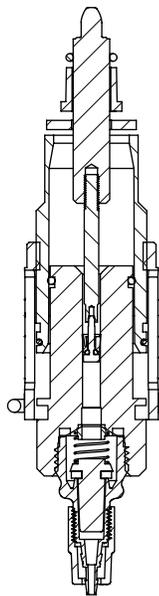
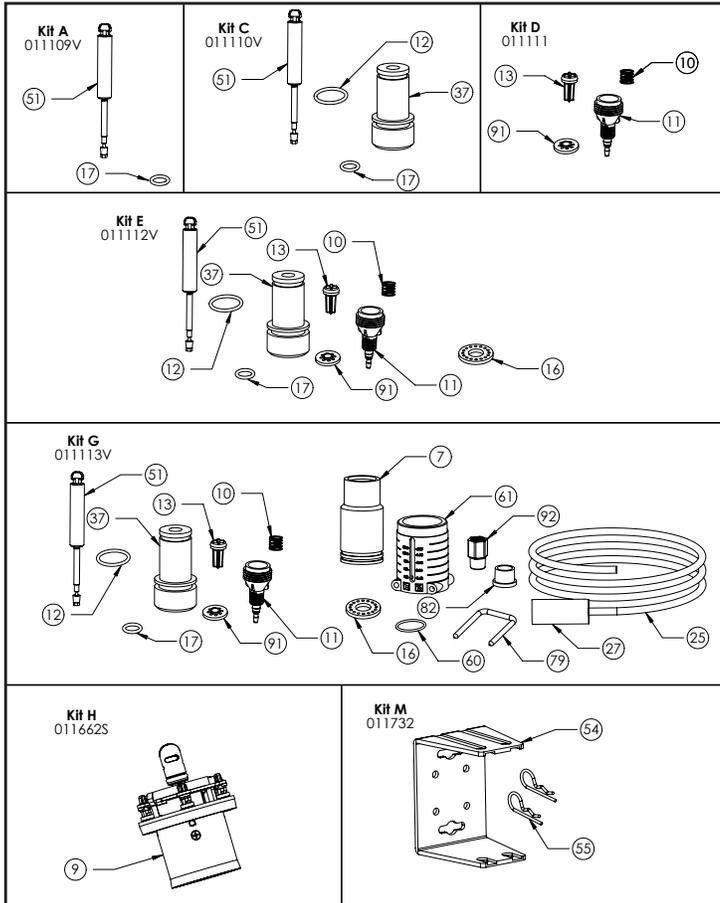


# Injector Repair Parts

Reference #	Description
1	Upper Body
9	Motor Piston
20	O-ring
21	Bypass Shaft
34	Cotter Ring
40	NPT Lower Body BSP Lower Body 20% NPT 20% BSP 20% NPT Remote Inject 20% BSP Remote Inject
85	Upper Shaft Pin
86	Mixing Chamber Gasket
87	On/Off Handle



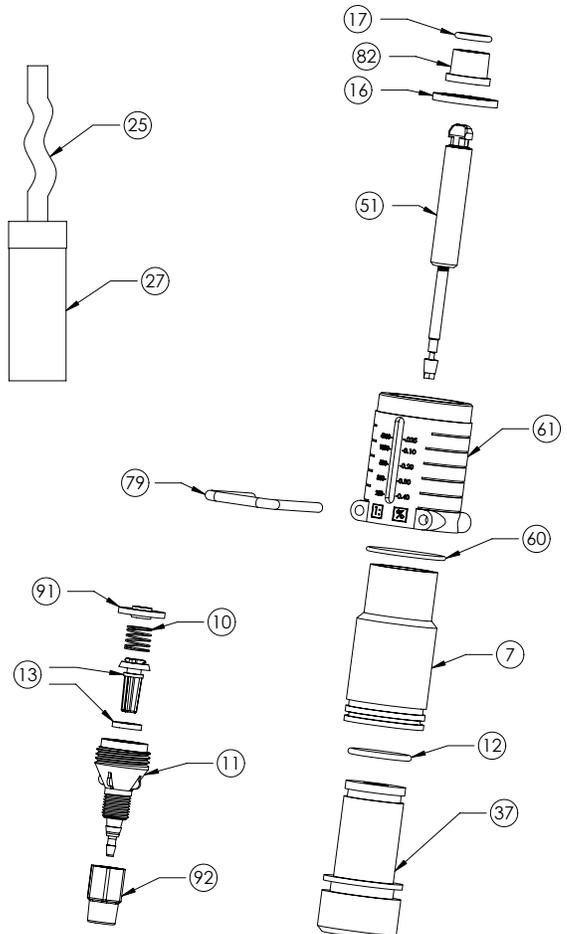
# 0.4%



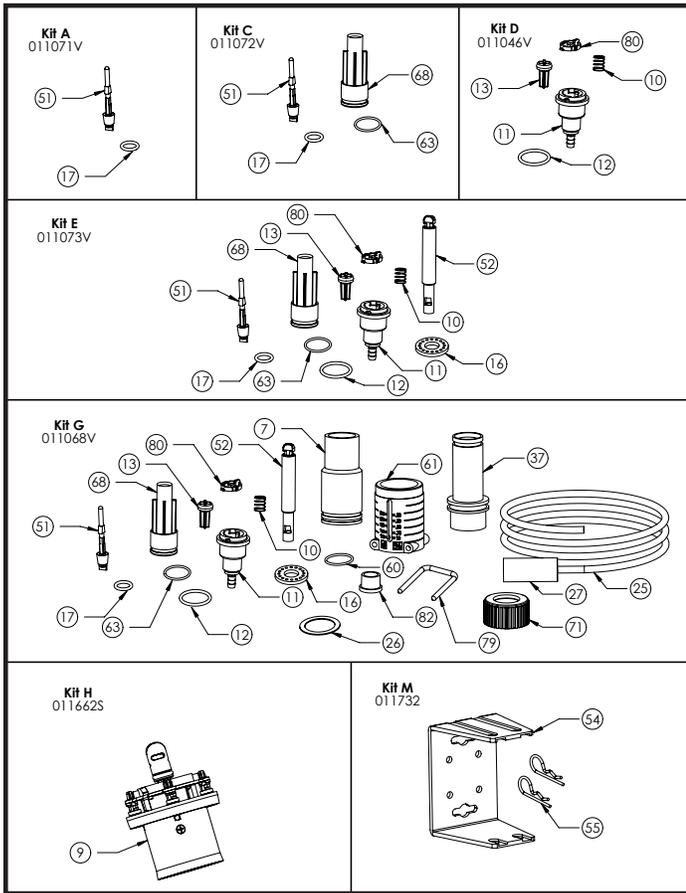
Lower End Assembly

Ref. #	Description of Part
7	MiniDos Outer Cylinder
10	MiniDos 0.4% Spring
11	Suction Tube Fitting, 1/8"
12	O-ring
13	Check Poppet w/Washer
16	Gasket
17	O-ring
25	Suction Tube 1/8" x 3'
27	Filter For Suction Tube 1/8"
37	MiniDos 0.4% Inner Cylinder
51	MiniDos 0.4% Shaft Assy
60	O-ring
61	MiniDos 0.4% Ratio Adjuster
79	Interlock Pin
82	Shaft Seal Spacer
91	Seal, Check Valve
92	Hose Nut 1/8"

**Note:** Viton seal materials are standard. Other seal materials are available.

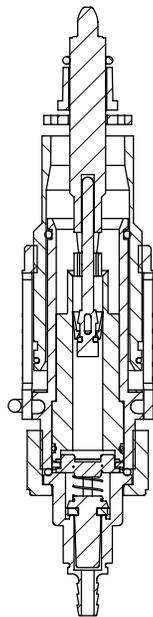


# 1%

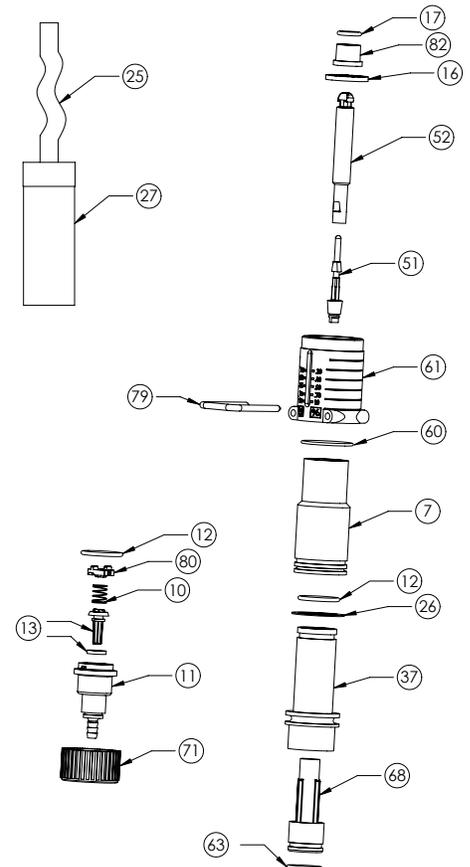


Manual	Description of Part
7	Cylinder, Outer
10	Spring
11	Suction Tube Fitting
12	O-ring
13	Check Poppet w/Washer
16	Gasket
17	O-ring
25	Suction Tube, 1/4" X 5'
26	Anti Lock Gasket
27	Filter For Suction Tube, 1/4" Id
37	Inner Cylinder
51	Lower Shaft Assembly
52	Shaft, Upper
60	O-ring
61	Ratio Adjuster
63	O-ring, Inner Cylinder
68	Inner Cylinder For #37
71	Nut, Suction Tube Fitting
79	Interlock Pin
80	Twistlock
82	Shaft Seal Spacer

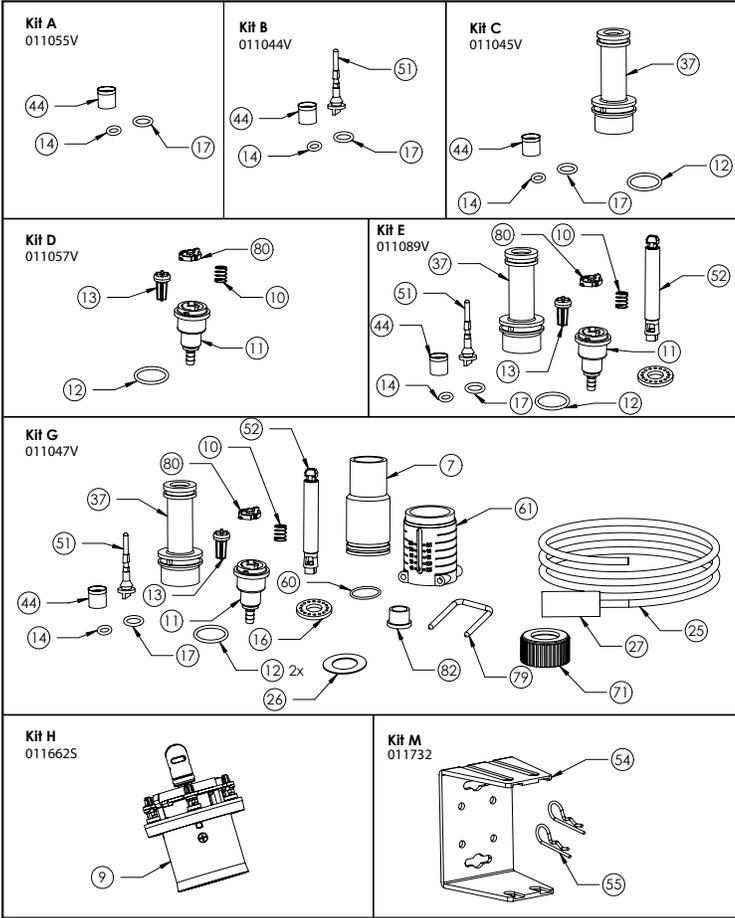
**Note:** Viton seal materials are standard. Other seal materials are available.



Lower End Assembly

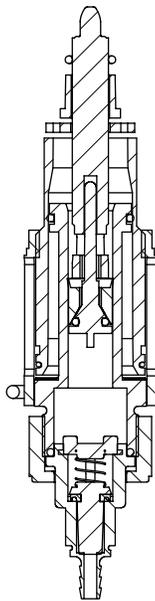


# 2.5%

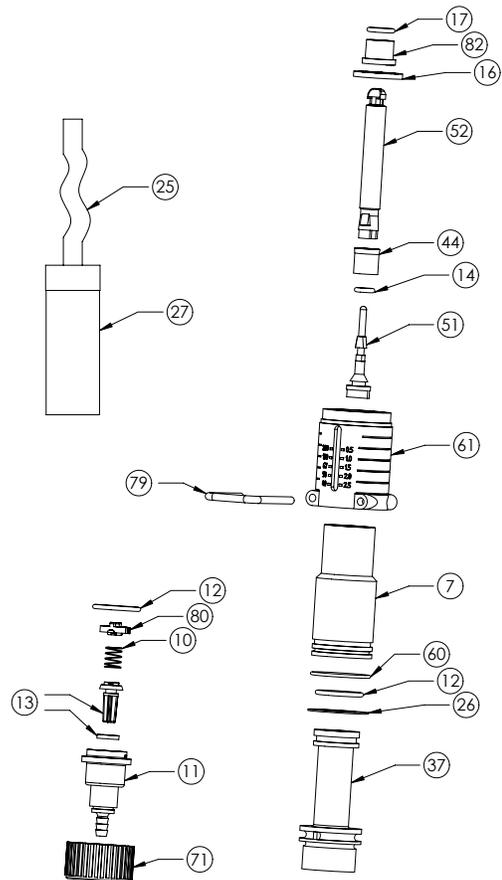


Ref. #	Description of Part
7	Cylinder, Outer
10	Spring
11	Suction Tube Fitting
12	O-ring
13	Check Poppet w/Washer
14	O-ring
16	Gasket
17	O-ring
25	Suction Tube, 1/4" X 5'
26	Anti Lock Gasket
27	Filter For Suction Tube, 1/4" Id
37	Inner Cylinder
44	Dosage Piston
51	Shaft, Lower
52	Shaft, Upper
60	O-ring
61	Ratio Adjuster
71	Nut, Suction Tube Fitting
79	Interlock Pin
80	Twistlock
82	Shaft Seal Spacer

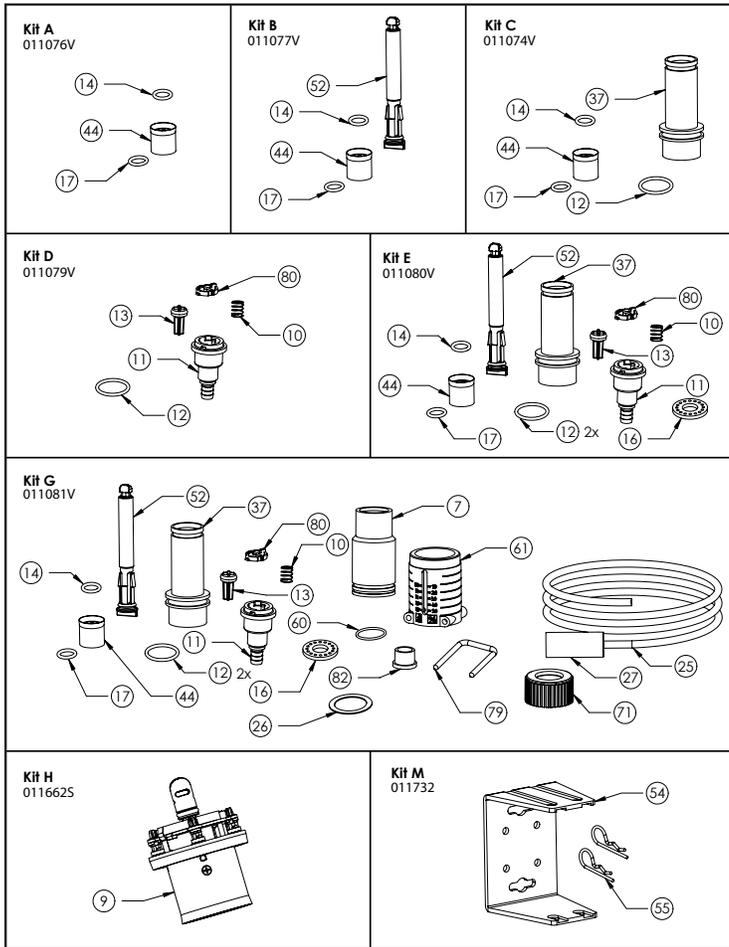
**Note:** Viton seal materials are standard. Other seal materials are available.



Lower End Assembly

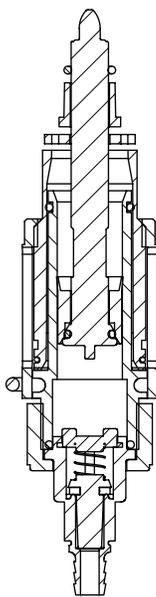


# 5%

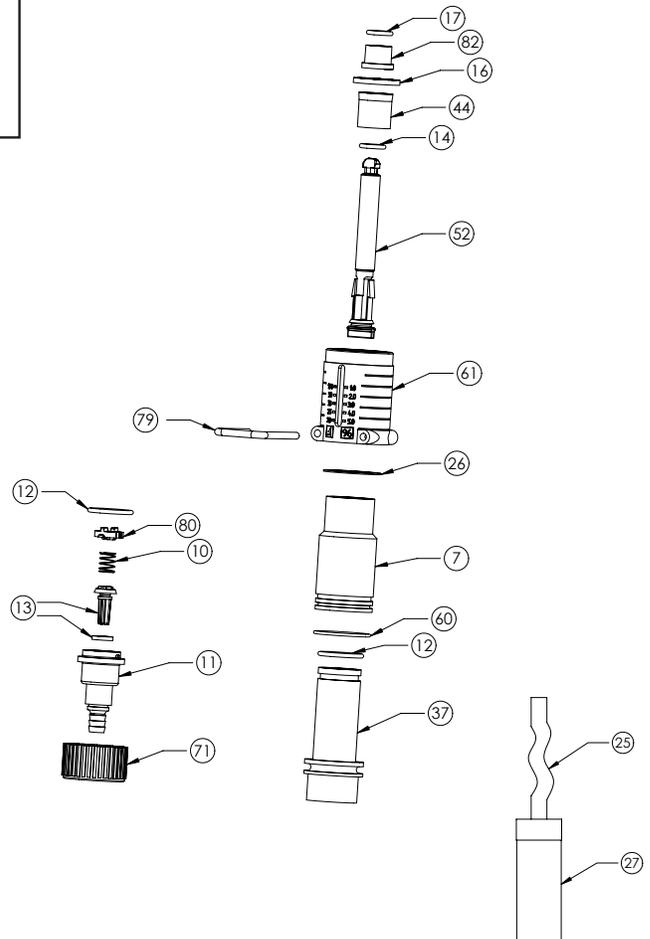


Ref. #	Description of Part
7	Cylinder, Outer
10	Spring
11	Fitting, Suction Tube, 3/8"
12	O-ring
13	Check Poppet w/Washer
14	O-ring
16	Gasket
17	O-ring
25	Suction Tube, 3/8" X 5'
26	Anti Lock Gasket
27	Filter For Suction Tube, 3/8" Id
37	Inner Cylinder
44	Dosage Piston
52	Shaft
60	O-ring
61	Ratio Adjuster
71	Nut, Suction Tube Fitting
79	Interlock Pin
80	Twistlock
82	Shaft Seal Spacer

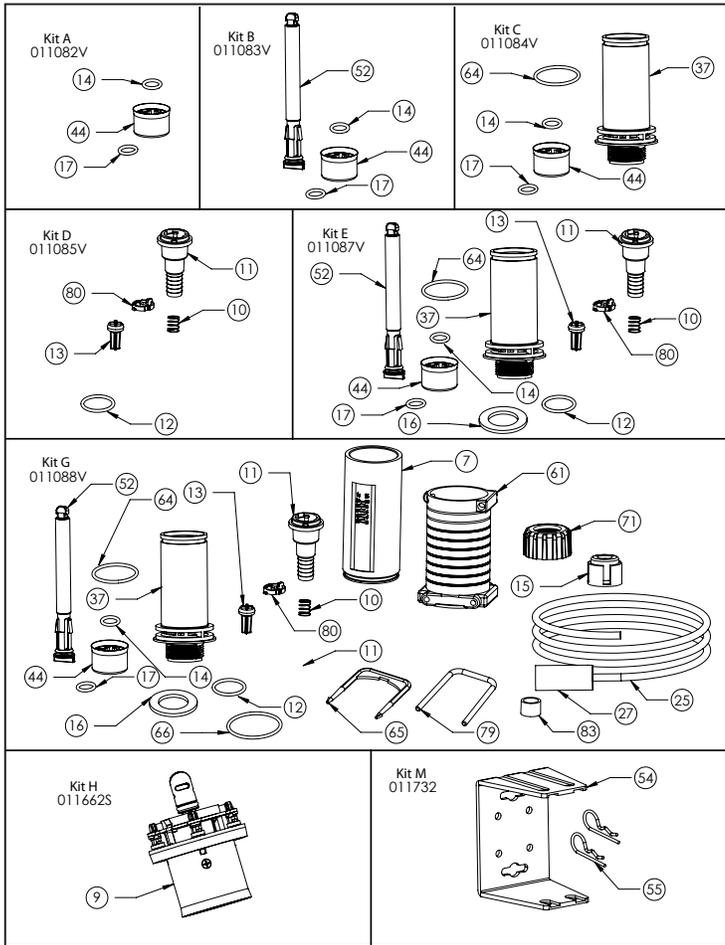
**Note:** Viton seal materials are standard. Other seal materials are available.



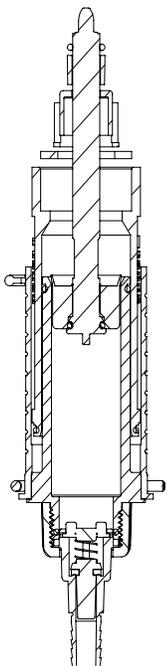
Lower End Assembly



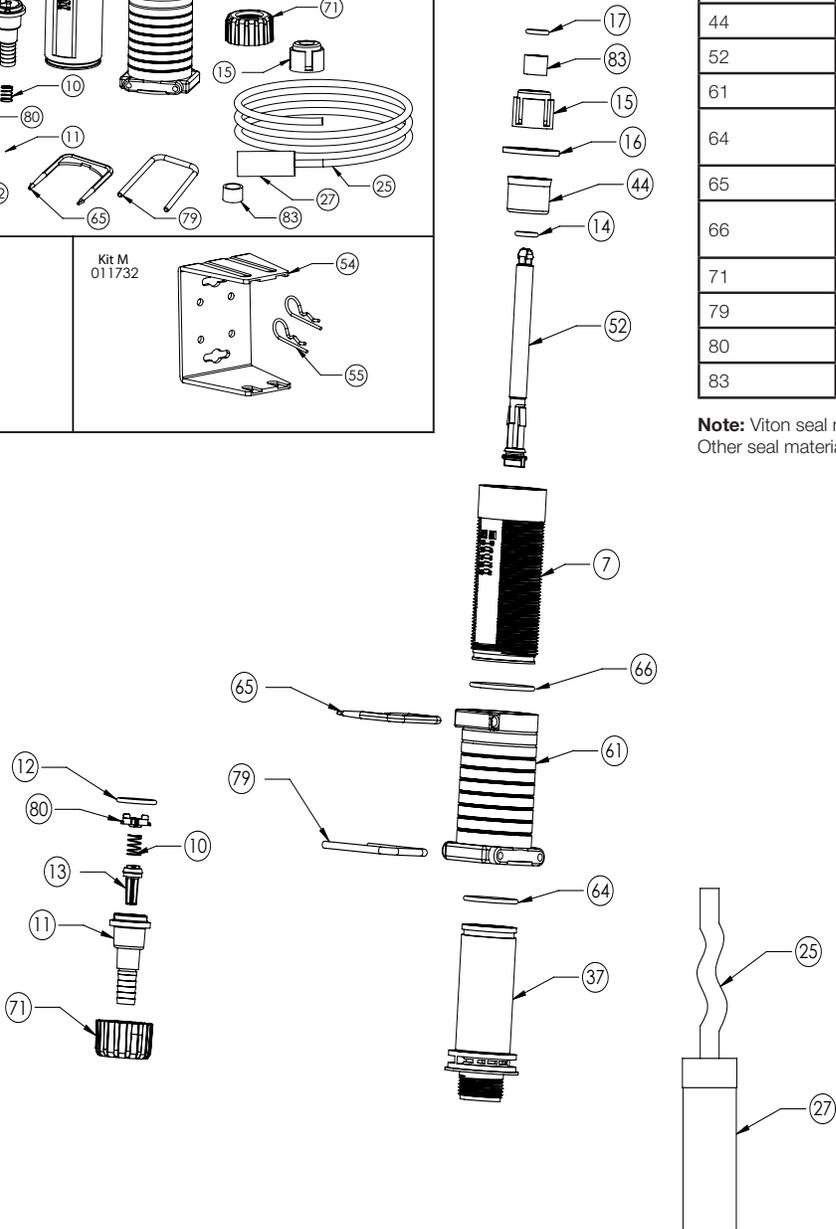
# 10%



Manual Reference	Description of Part
7	Cylinder, Outer
10	Spring
11	Suction Tube Fitting
12	O-ring
13	Check Poppet w/Washer
14	O-ring
15	Seal Retainer, O-ring
16	Gasket
17	O-ring
25	Suction Tube, 1/2" X 5'
27	Filter For Suction Tube, 1/2" Id
37	Inner Cylinder
44	Dosage Piston
52	Shaft
61	Ratio Adjustment Sleeve
64	O-ring, Inner Cylinder, Lower End
65	Interlock Pin
66	O-ring, Outer Cylinder, Lower End
71	Nut, Suction Tube Fitting
79	Retainer Clip Bottom
80	Twistlock
83	Shaft Seal Spacer

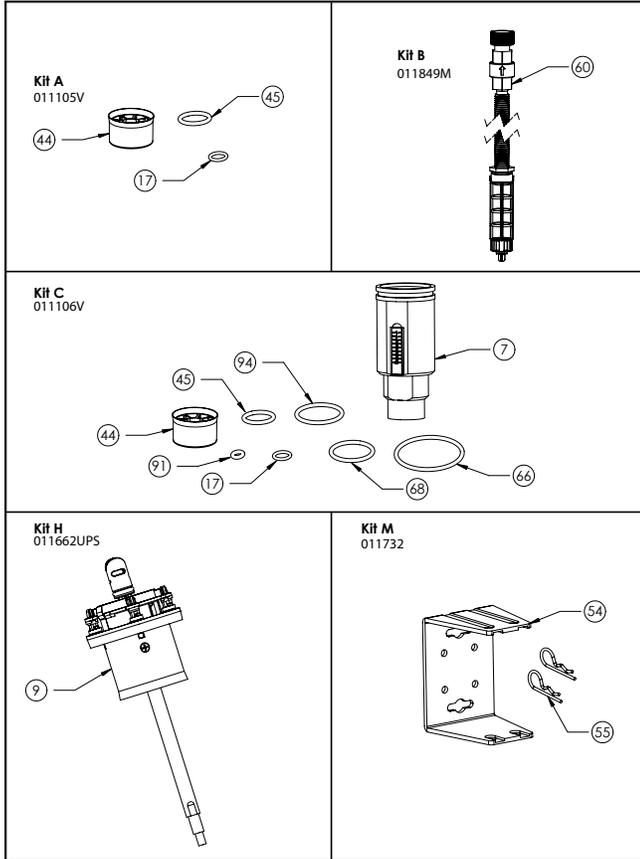


Lower End Assembly



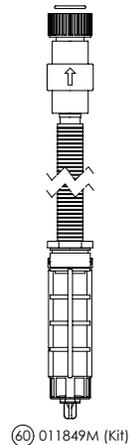
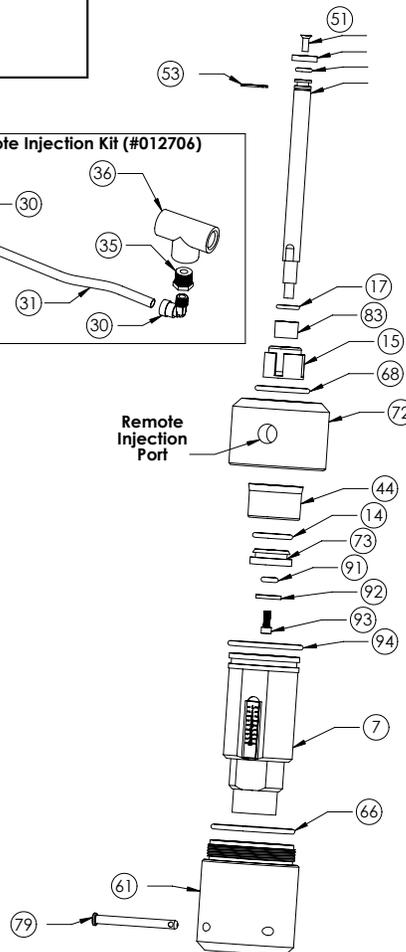
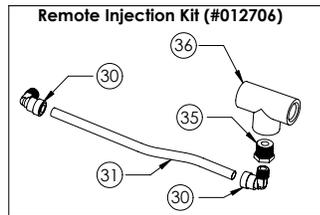
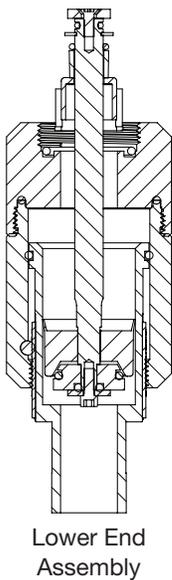
**Note:** Viton seal materials are standard. Other seal materials are available.

# 20%



Manual	Description of Part
7	Inner Cylinder
14	O-ring
15	Seal Retainer O-ring (Retainer Quad Ring)
17	O-ring
44	Dosage Piston
51	Shaft Assy
53	Klipring
60	Hose Kit
61	Outer Cylinder
66	O-ring
68	O-ring
72	Adapter
72	Remote Adapter
73	Dosage Piston Guide
79	Ratio Locking Pin
83	Shaft Seal Spacer
91	O-ring
92	Shaft Cap
93	Capscrew 10-32 X 1/2" Ss Hex Head
94	O-ring

**Note:** Viton seal materials are standard. Other seal materials are available.



60 011849M (Kit)

# Accessories



**Twist II Clean Inline Filter®**

**Available In:**

- 3/4" - 25 gpm (95 l/mn) 100 psi (7 bar)
- 1" - 39 gpm (114 l/mn) 100 psi (7 bar)
- 1.5" - 78 gpm (295 l/mn) 100 psi (7 bar)
- 2" - 150 gpm (568 l/mn) 100 psi (7 bar)

\* Various mesh sizes available.



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