

SuperDos 45

Operating Manual

Model 0.3%
Model 0.3% HAC
Model 2.5%
Model 5%



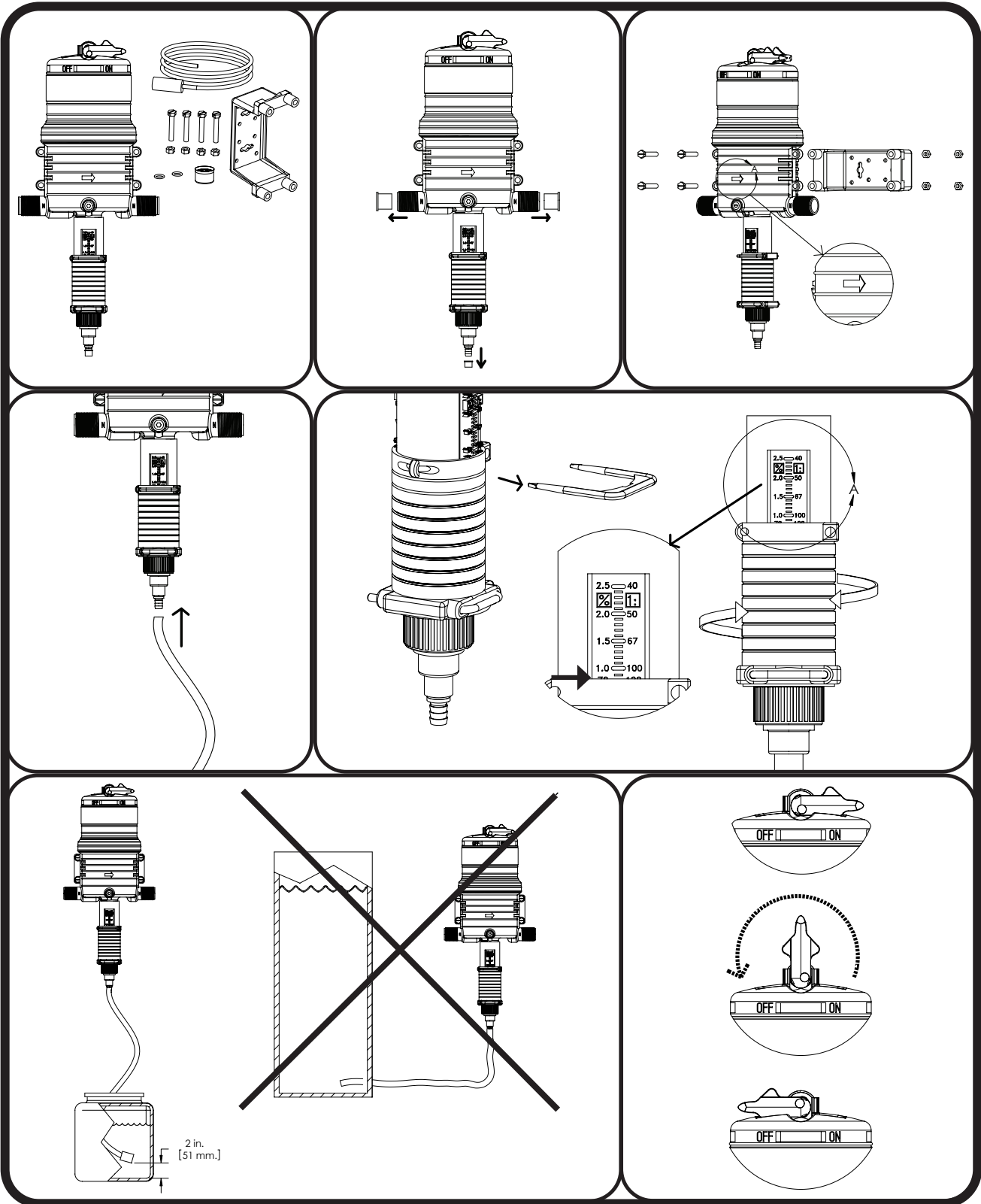
Fluid Flow Range:
0.25 gpm to 45 gpm
57 lph to 10,000 lph*

**Injection Range
Dosage:**
0.025% to 5%
1:4000 to 1:20

Operating Pressure:
5 to 100* psi
0,34 to 6,9* bar

*Specifications vary by model.

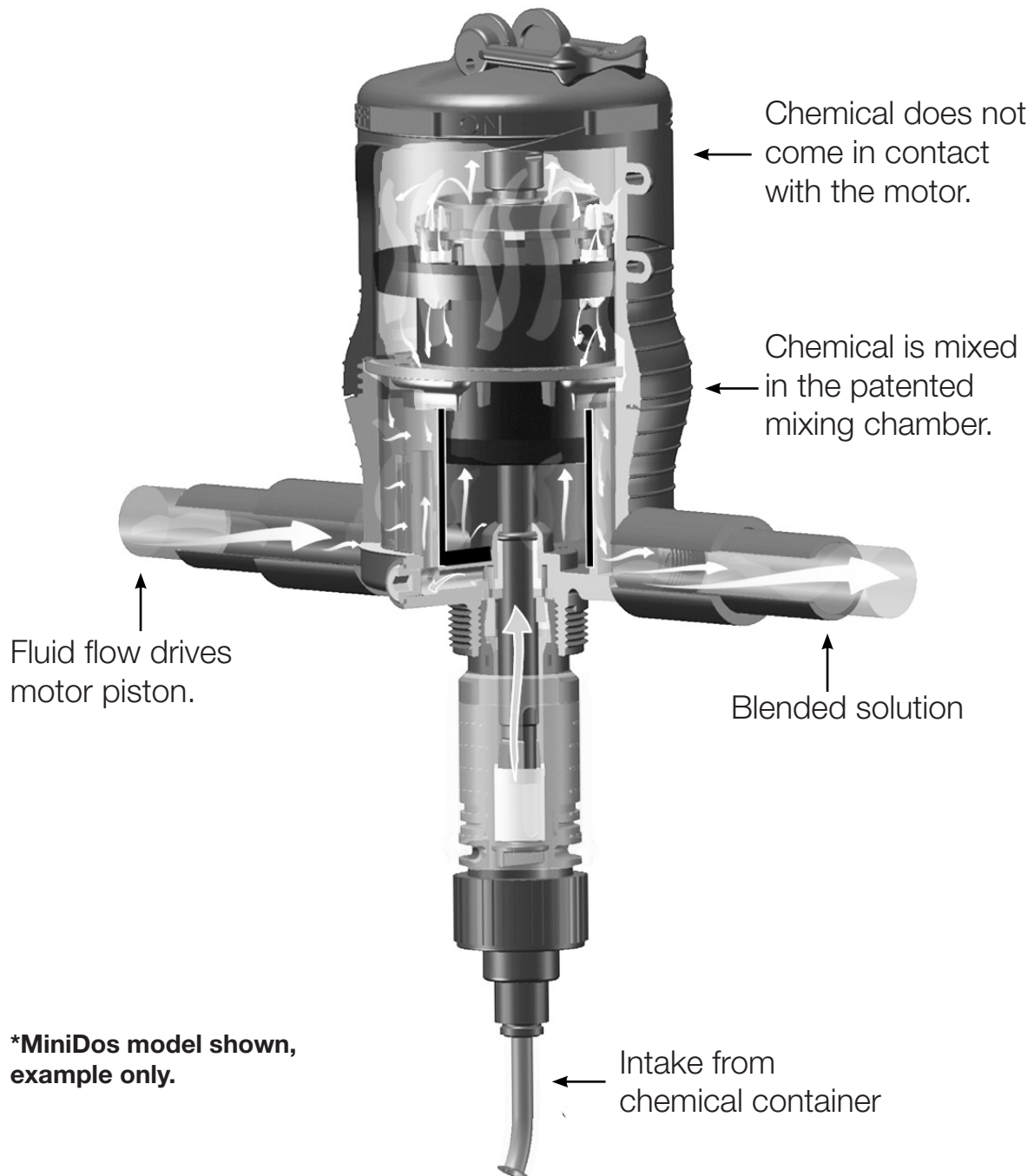
Quick Start-up



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.



***MiniDos model shown, example only.**

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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 #.....

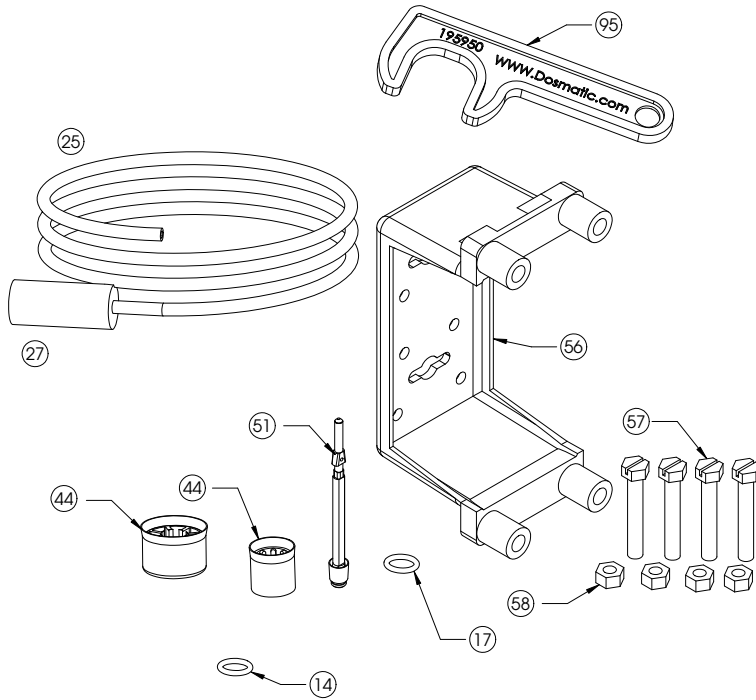
Date Purchased

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

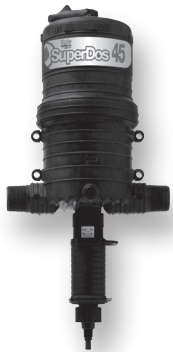
The injector is packaged with the following items:

- Injector (not shown)
- Dosage Piston
- O-ring
- Manual (not shown)
- Lower End Wrench (0.3% only)
- Mounting Bracket
- Mounting Nuts and Bolts
- Filter
- Suction Tube



Model	NPT	BSP
0.3%	113230R	113730R
0.3% HAC	113230HAC	113730HAC
2.5%	113212	113712
5%	113215	113715

Specifications



SuperDos 45 gpm (100 max. psi)

Model 0.3% 0.025% - 0.3% (1:4000 -1:333)

Model 2.5% 0.3% - 2.5% (1:333 -1:40)

Model 5%* 0.5% - 5% (1:200 -1:20)

Flow Rate: 0.25 - 45 gpm** (57 - 10,000 lph)

Operating Pressure: ... 5 - 100 psi (0,34 - 6,9 bar)

Pipe Coupling: 1 1/4" NPT/BSP

* 5% model has maximum operating pressure of 80 psi (5,5 bar).

** 5% model with remote injection kit has maximum flow rate of 20 gpm (75 l/mn).

Housing	Proprietary Engineered Composite Material
Avg. Dosing Accuracy	+/- 5% of ratio
Repeatability	+/- 3% of ratio
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 distributor for specific chemical information	Aflas - Alkaline concentrates Viton - Acids, oils & pesticides EPDM - Alkaline concentrates Kalrez

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 labelled:

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

100 psi (6.9 bar). 5% model has a maximum operating pressure of 80 psi (5.5 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.

Operations

Clicking Sound is Normal

Fluid flowing through the injector will automatically cause the injector to “click” and inject a set amount of solution into the fluid line. The higher the flow rate the more frequent the “clicking”. The injector is designed to inject solution proportionally (at the same set ratio) regardless of fluid flow.

Service Fluid Flow

Fluid flow and pressure must be within the established specifications (see Specification on page 6) for your model.

Change Feed (Injection) Rate

The feed rate on the injector is adjustable EVEN WHILE OPERATING AND UNDER PRESSURE. To change feed rate see (Fig. 1 and Fig. 2). Do not remove #79 when injector is under pressure.

1. Remove Upper Interlock Pin (#65) (Fig. 1).
2. Rotate Ratio Adjuster Sleeve (#61) up or down to the desired setting (Fig. 2). Use the top of the Ratio Adjuster Sleeve to line up with the desired feed rate on the setting (Fig. 2a).
3. Re-insert Upper Interlock Pin (#65). Clip must be parallel with settings to be able to re-insert.

NOTE: Do not screw Ratio Adjuster Sleeve below lowest setting line. Measure outlet fluid to assure desired feed rate is being delivered.

Fig. 1

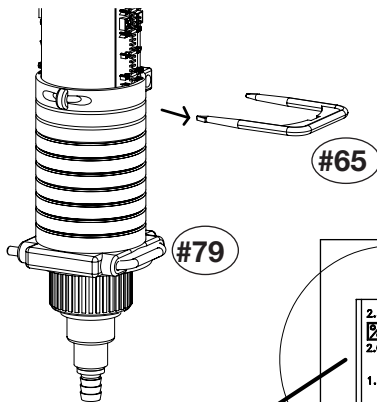


Fig. 2

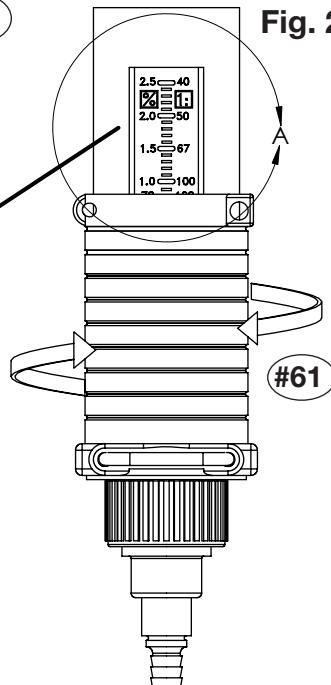
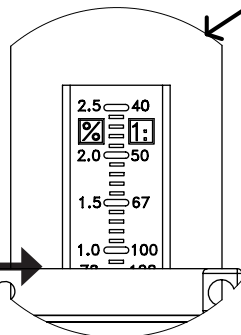


Fig. 2a



Bypass Operation

Injecting solution into the fluid line can be TEMPORARILY stopped with the On/Off feature (Fig. 3). Moving the On/Off Lever to the OFF position allows service fluid to pass through the injector without injecting chemical. No “clicking” will be heard.

With the On/Off lever set to the ON position the injector will operate as normal and “clicking” will be heard when fluid is flowing. It is recommended to use the three-valve bypass (see Fig. 5), for continued bypassing or servicing of the injector.

Off Position (not clicking) Run Position (clicking)

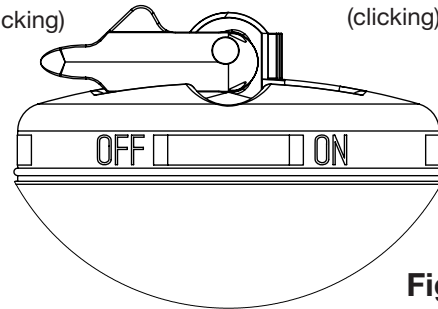


Fig. 3

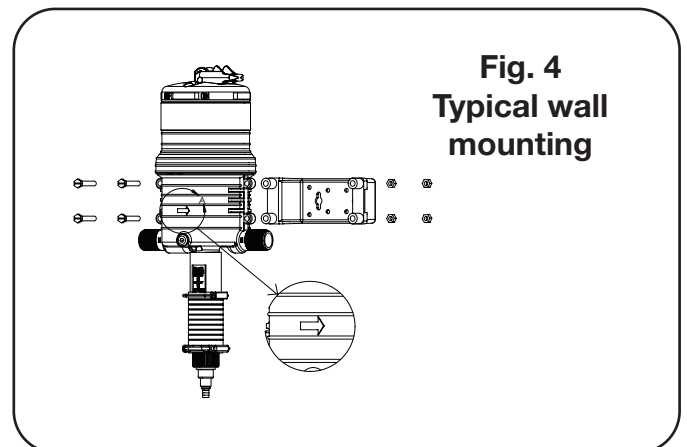
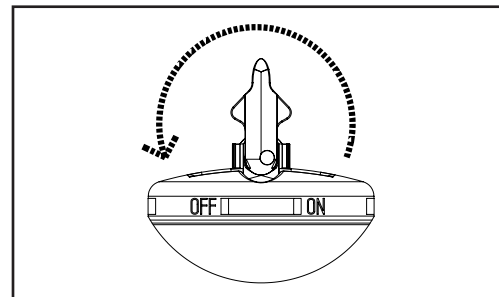


Fig. 4
Typical wall
mounting

Installation & Startup (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" (5 cm) from the bottom and fill with at least 2" (5 cm) 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

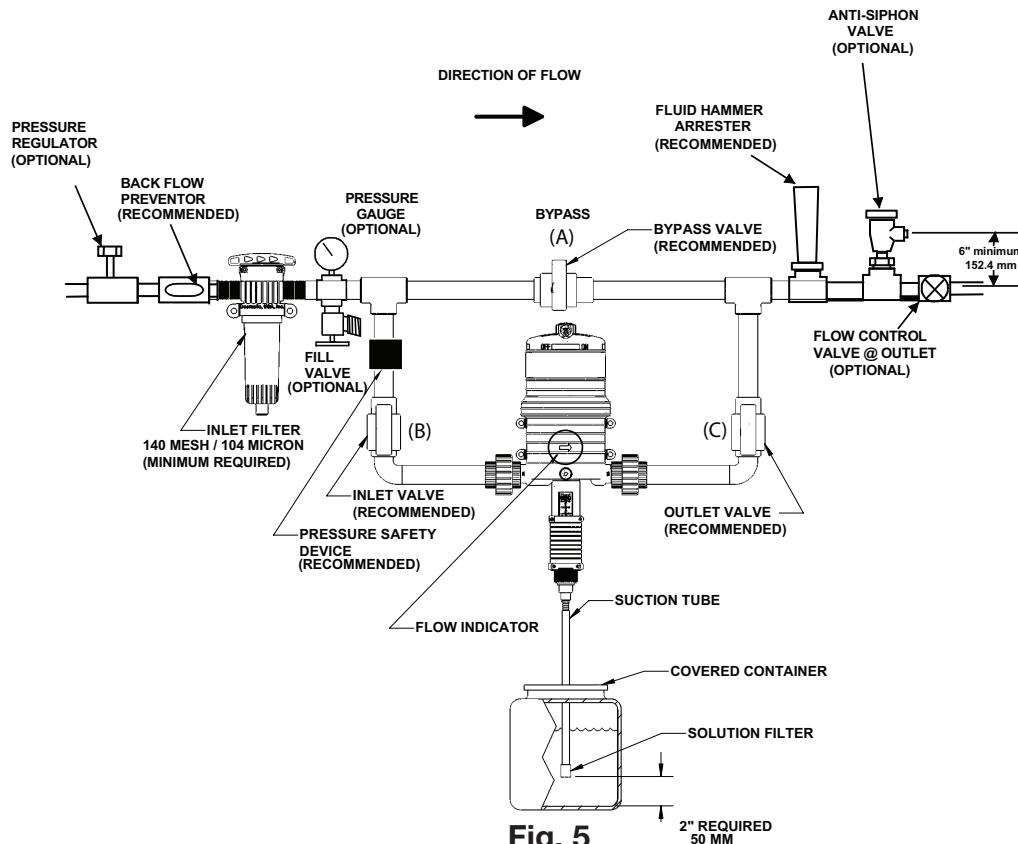


Fig. 5

Remote Injecting

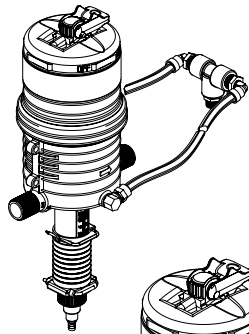


Fig. 6
Remote Injector Kit shown on a single injector.

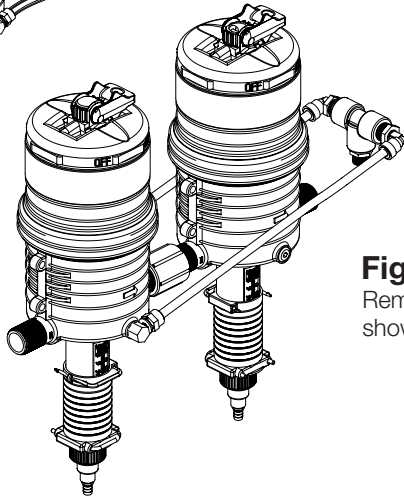


Fig. 7
Remote Injector Kit shown in a series.

Remote Injector Kit (not included)
Is recommended for the following:

Kit Part Numbers
012705

Single Injector:

To prevent mineral buildup within the body of the unit. Use when injecting chemicals that cause minerals to precipitate from fluid (see Fig. 6)

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. 7).

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

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.

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

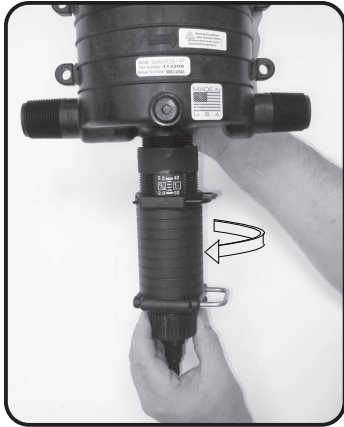
**Refer to pages 14 & 15
SuperDos 45 (0.3%) Model**

Every 3 - 6 Months	Every 6 - 12 months	Replace as necessary
1. Clean seal areas (# 17, 14 & 13). 2. Check #17 O-ring, #7 Cylinder, clean and/or replace as necessary.	1. Replace #17 O-ring and #44 (0.3% - #51) Dosage Piston. 2. Clean and/or replace #13 Check Poppet, #11 Suction Tube Fitting.	1. #7 Cylinder 2. #14 O-ring 3. #51 Shaft Assembly Dosage Piston

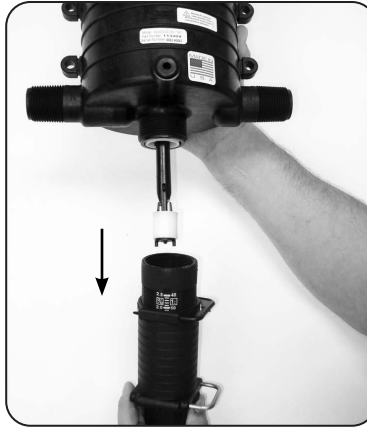
**Refer to pages 16 & 17
SuperDos 45 (2.5%), (5%) Models**

Every 3 - 6 Months	Every 6 - 12 months	Replace as necessary
1. Clean seal areas (# 17, 14 & 13). 2. Check #17 O-ring, #7 Cylinder, clean and/or replace as necessary.	1. Replace #17 O-ring and #44 Dosage Piston. Clean and/or replace. 2. #13 Check Poppet, #11 Suction Tube Fitting.	1. #7 Cylinder 2. #14 O-ring

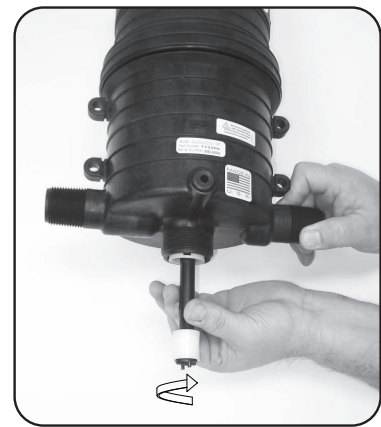
Routine Maintenance Instructions



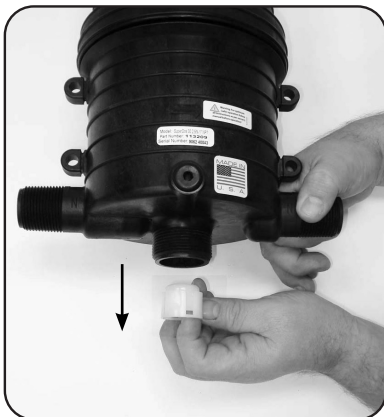
Step 1.
Unscrew LOWER END CYLINDER ASSEMBLY from body.



Step 2.
Remove LOWER END CYLINDER ASSEMBLY.



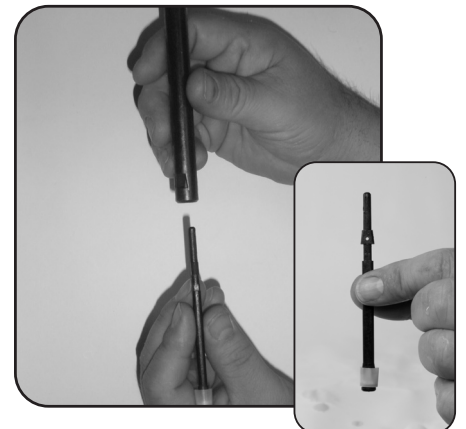
Step 3.
Rotate #51 SHAFT 90° and pull from body.



Step 4.
Pry the #15 SEAL RETAINER from the injector. Pry #17 O-ring from the unit. NOTE: O-ring may still be seated at the base of the unit.



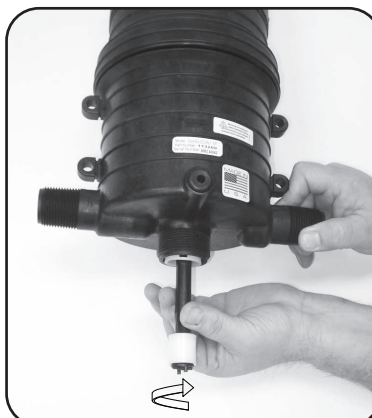
Step 5. For 2.5% & 5% Replace #44 DOSAGE PISTON flared-end up and #14 O-ring. 0.3% only: Replace # 51 SHAFT ASSEMBLY. See Step 5a.



Step 5a. For 0.3%. Replace LOWER SHAFT assembly into upper shaft.



Step 6.
Reinsert #15 SEAL RETAINER and #17 O-ring onto # 51 SHAFT ASSEMBLY.



Step 7.
Reinsert #51 SHAFT ASSEMBLY into body and rotate 90° to lock. Confirm the shaft is locked in by gently tugging on the shaft. Shaft should remain inserted.



Step 8.
Screw LOWER END CYLINDER ASSEMBLY onto body. Ensure #16 gasket is seated on the top of cylinder assembly.

Troubleshooting

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

Problem	Cause	Solution
No Clicking Sound	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 fluid 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 for maximum flow rate 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 ON position.</p>

Injector in Operation or After Scheduled Maintenance

Problem	Cause	Solution
No Clicking Sound	Main Piston Assembly #9 worn	Replace # 9 Main Piston Assembly. Clean fluid filter.
	Cover #1 or main body #40 worn or scored	Lightly sand inside diameter of bores to remove grooves. 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 open	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.
Clicking Sound No Suction Of Solution	Cracked or loose Suction Hose	Check for proper fit and /or replace.
	Dosage piston #44 (0.3% model #51) worn or installed incorrectly	Replace. Ensure during maintenance replacement that #44 dosage piston was installed correctly flared-end up.
	O-ring retainer #15 installed incorrectly	Install correctly.
	O-ring seat #14 or dosage piston #44 (0.3% model #51) damaged	Replace.
	#17 O-ring worn and/or loose	Replace.
	Suction tube #25 or suction tube fitting #11 cracked, leaking or clogged suction tube filter	Replace and/or clean as necessary.
	Check valve #13 leaking	Clean & replace as necessary.
Clicking Sound. Under Injecting	#44 (0.3% model #51) Dosage Piston worn	Replace.
	#7 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.
Fluid Re-filling Solution Tank	Cover #1 or main body #40 worn or scored	Lightly sand inside diameter of bores to remove O-ring grooves. Install or clean fluid filter.
	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.

Kits & Spare Parts List

Injector Repair Parts

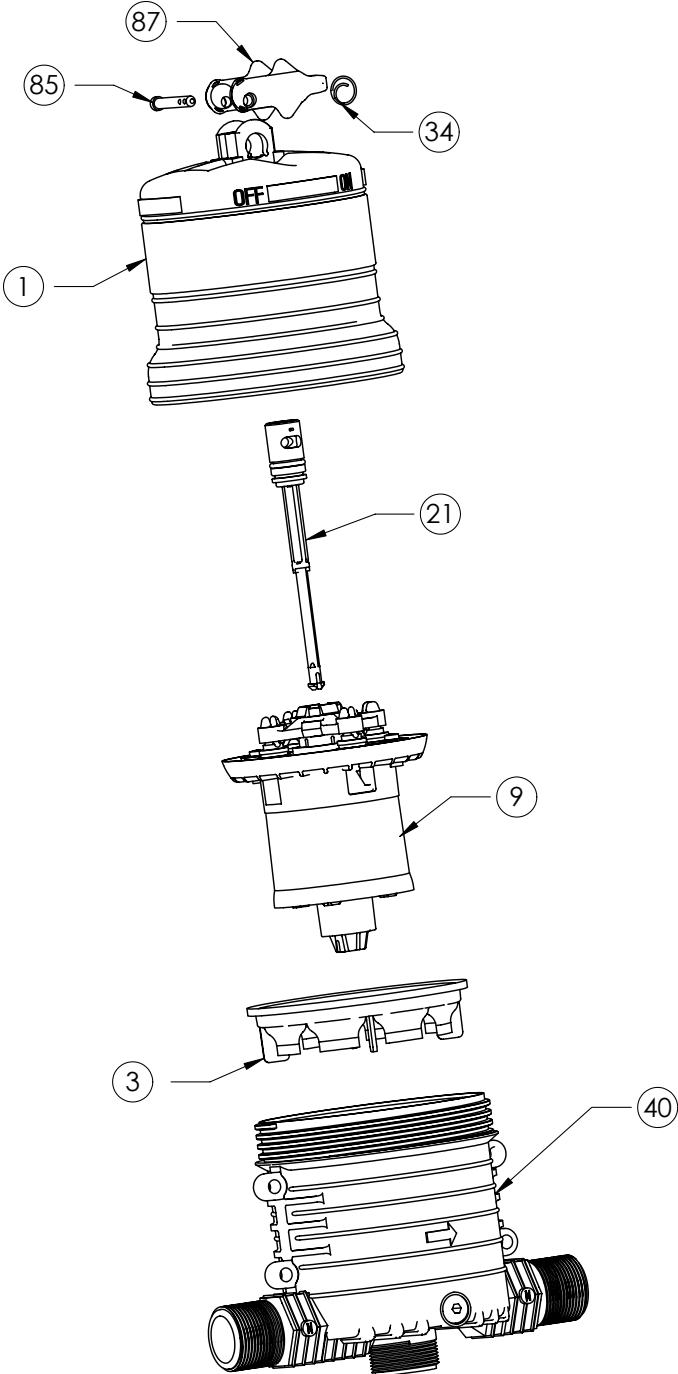
Injector Repair Parts	13
0.3% HAC Rotating:	15
0.3% Rotating:	16
2.5%:	17
5%:	18
Accessories:	19



Kits & Spare Parts List

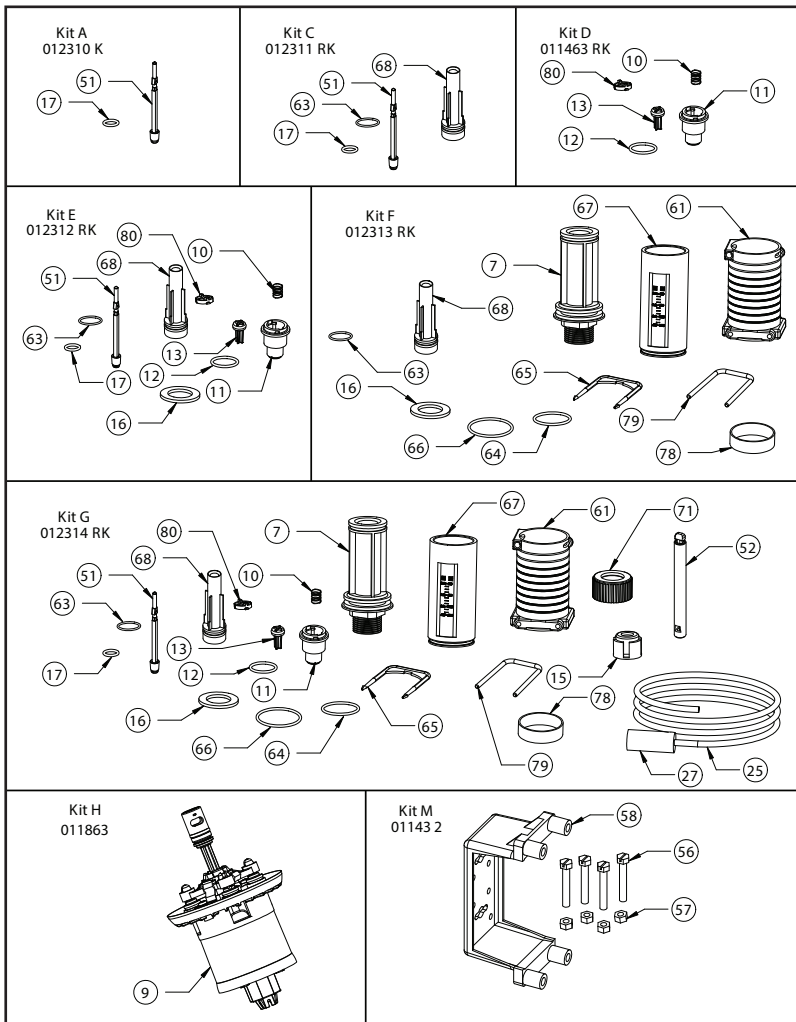
Injector Repair Parts

Reference #	Description
1	Upper Body
3	Mixing Chamber Gasket
9	Piston Assembly
21	Shaft Assembly
34	Cotter ring
40	Lower Body NPT 1 1/4"
	Lower Body BSP 1 1/4"
85	Upper Shaft Pin
87	On/Off Handle

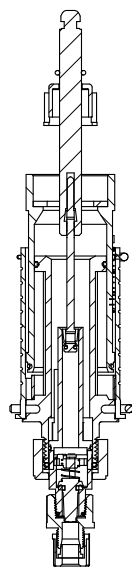


Kits & Spare Parts List

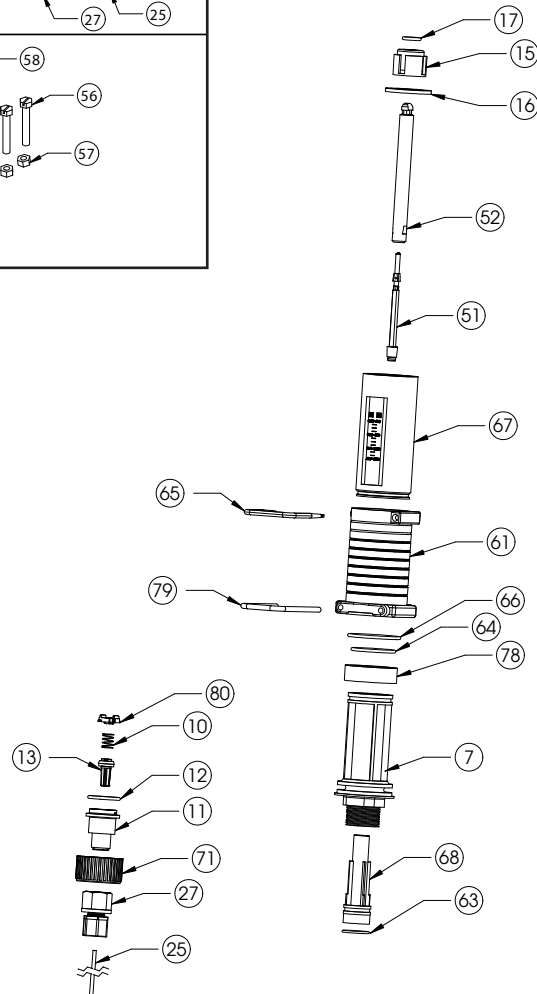
0.3% HAC Rotating



Manual Reference	Description of Part
7	Cylinder, inner
10	Spring
11	Suction tube fitting
12	O-ring
13	Check poppet
15	Seal retainer, O-ring
16	Gasket, inlet/outlet and cylinder
17	O-ring
25	Suction tube, 1/4" ID x 5 ft
27	Compression fitting
51	Lower shaft
52	Upper shaft
61	Ratio adjustment sleeve
63	O-ring
64	O-ring, inner cylinder, lower end
65	Pin, upper interlock
66	O-ring, outer cylinder, lower end
67	Cylinder, outer
68	Cylinder, inner for #7
71	Nut, suction tube fitting
78	Lower end stop
79	Pin, narrow interlock
80	Twistlock

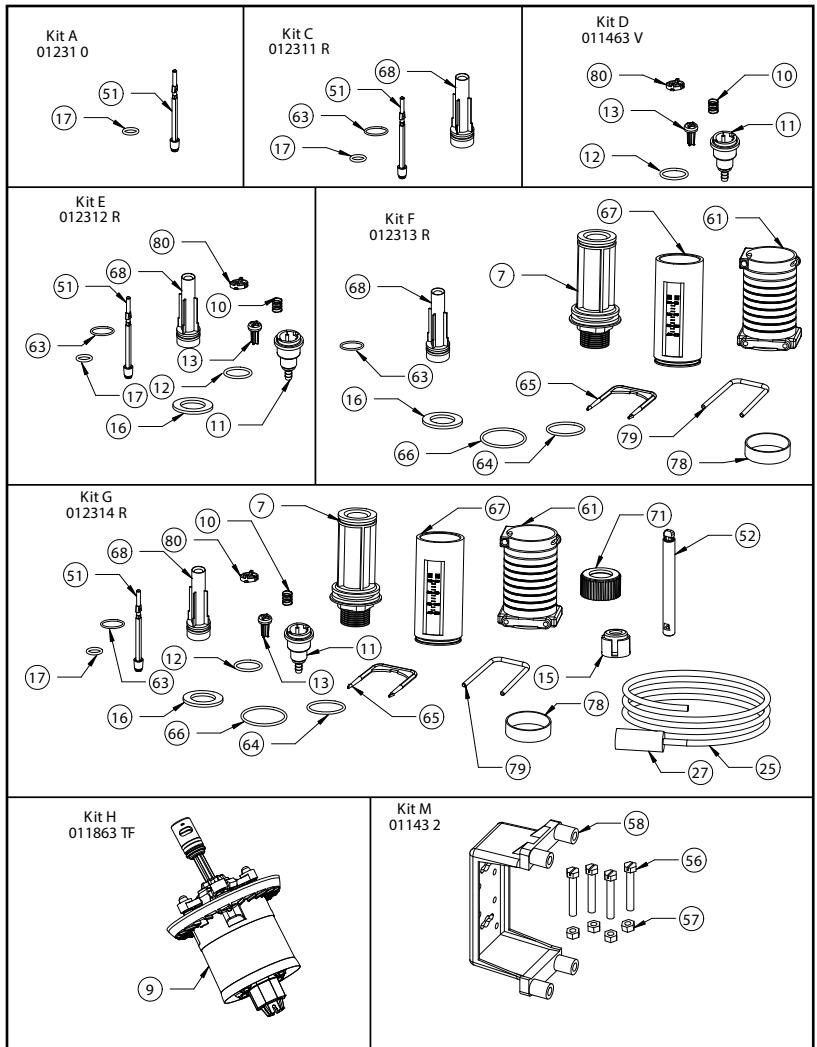


Lower End Assembly



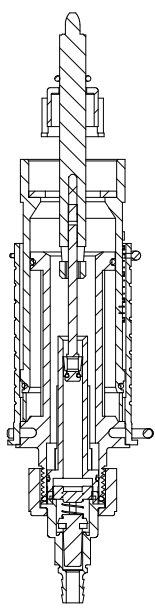
Kits & Spare Parts List

0.3% Rotating

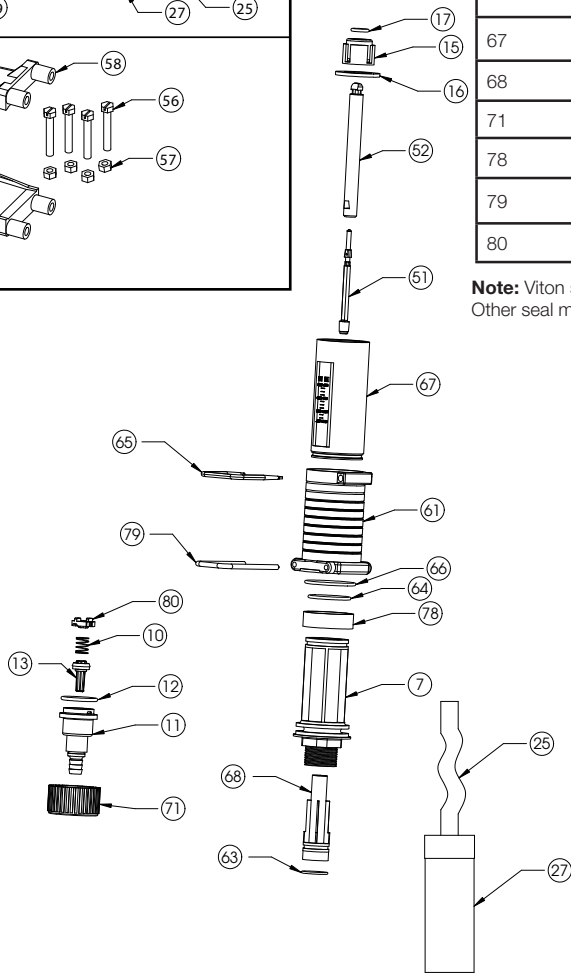


Manual Reference	Description of Part
7	Cylinder, Inner
10	Spring
11	Fitting, Suction Tube, 3/8"
12	O-ring
13	Check poppet
15	Seal Retainer, O-ring
16	Gasket
17	O-ring
25	Suction Tube, 3/8" X 5'
27	Filter Suction Tube 3/8" Id
51	Shaft, Assy With Dosage Piston
52	Upper Shaft
61	Ratio Adjustment Sleeve
63	O-ring, Inner Cylinder (#68)
64	O-ring, Inner Cylinder, Lower End
65	Pin, Upper Interlock
66	O-ring, Outer Cylinder, Lower End
67	Ratio Adjuster
68	Cylinder, Inner For #7
71	Nut, Suction Tube Fitting
78	Lower End Stop
79	Pin, Narrow Interlock
80	Twistlock

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

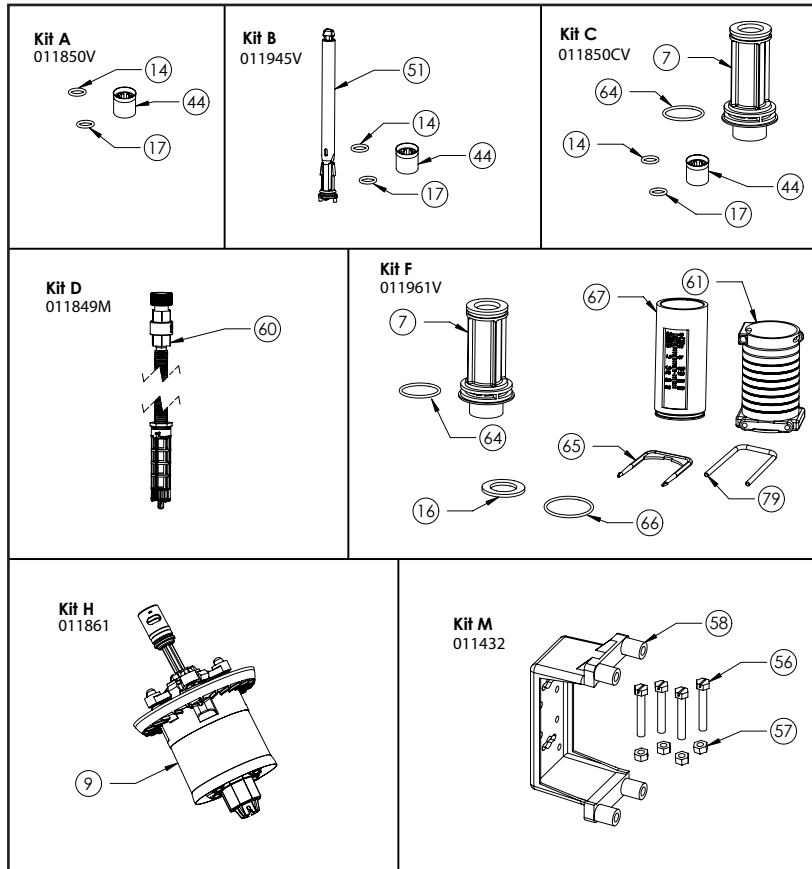


Lower End Assembly



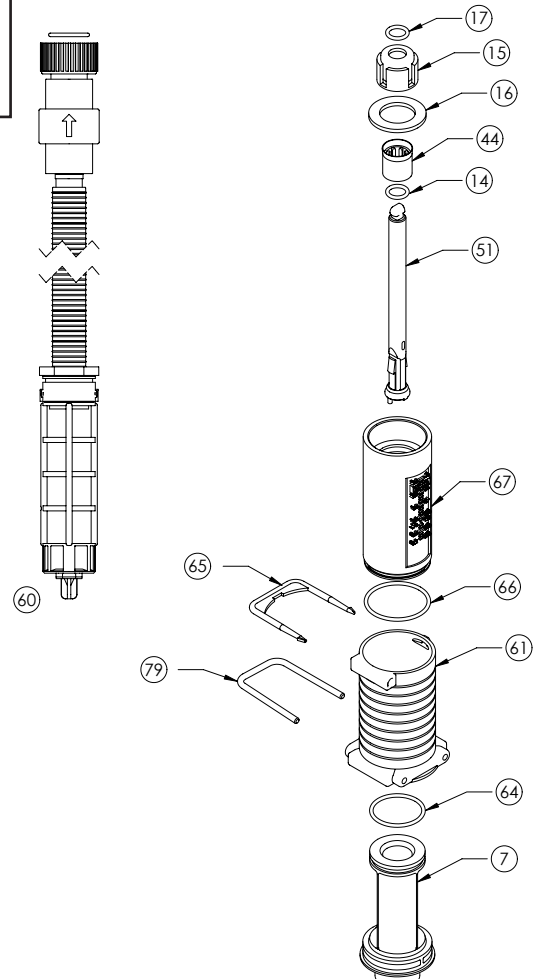
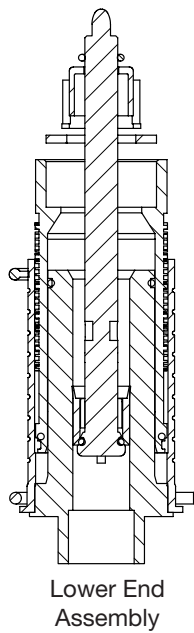
Kits & Spare Parts List

2.5% Rotating



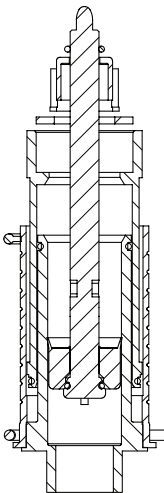
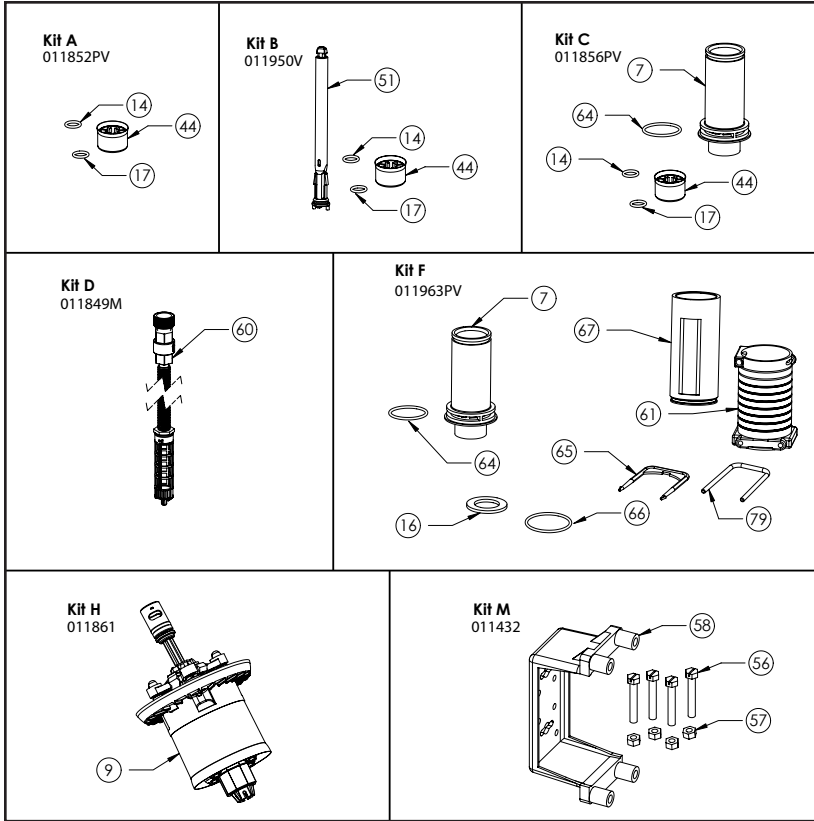
Manual Reference	Description of Part
7	Cylinder, Inner
14	O-ring
15	Seal Retainer, O-ring
16	Gasket
17	O-ring
44	Dosage Piston
51	Shaft
60	Hose Braid Kit
61	Ratio Adjustment Sleeve
64	O-ring, Inner Cylinder, Lower End
65	Pin, Upper Interlock
66	O-ring, Outer Cylinder, Lower End
67	Cylinder, Outer
79	Pin, Narrow Interlock

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



Kits & Spare Parts List

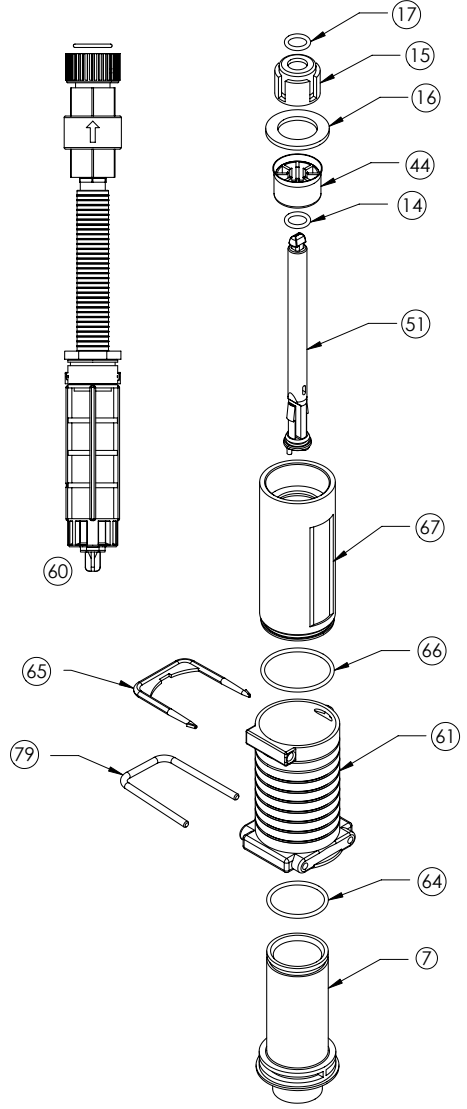
5%



Lower End Assembly

Manual Reference	Description of Part
7	Cylinder, Inner
14	O-ring
15	Seal Retainer, O-ring
16	Gasket
17	O-ring
44	Dosage Piston
51	Shaft
60	Hose Braid Kit
61	Ratio Adjustment Sleeve
64	O-ring, Inner Cylinder, Lower End
65	Pin, Upper Interlock
66	O-ring, Outer Cylinder, Lower End
67	Cylinder, Outer
79	Pin, Narrow Interlock

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



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.



Mobile Cart

Warranty

Limited Warranty

Seller warrants solely to **Buyer** the products will be free from defects in material and workmanship under normal use and service for a period of one year from the date of completion of manufacture. This limited warranty does not apply to (a) hoses; (b) products that have a normal life shorter than one year; or (c) failure in performance or damage caused by chemicals, abrasive materials, corrosion, lightning, improper voltage supply, physical abuse, mishandling or misapplication. In the event the products are altered or repaired by **Buyer** without **Seller's** prior written approval, all warranties will be void.

No other warranty, oral, expressed or implied, including any warranty of merchantability or fitness for any particular purpose, is made for these products, and all other warranties are hereby expressly excluded.

Seller's sole obligation under this warranty will be, at **Seller's** option, to repair or replace F.O.B. **Seller's** facility in Cincinnati, Ohio any Products found to be other than as warranted.

Limitation of Liability

Seller's warranty obligations and **Buyer's** remedies are solely and exclusively as stated herein. **Seller** shall have no other liability, direct or indirect, of any kind, including liability for special, incidental, or consequential damages or for any other claims for damage or loss resulting from any cause whatsoever, whether based on negligence, strict liability, breach of contract or breach of warranty.



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