

AquaBlend Adjustable Lower End

Operating Manual

Model 0.2% - 2% WSP
Model 0.78% - 5% WSP

Fluid Flow Range:

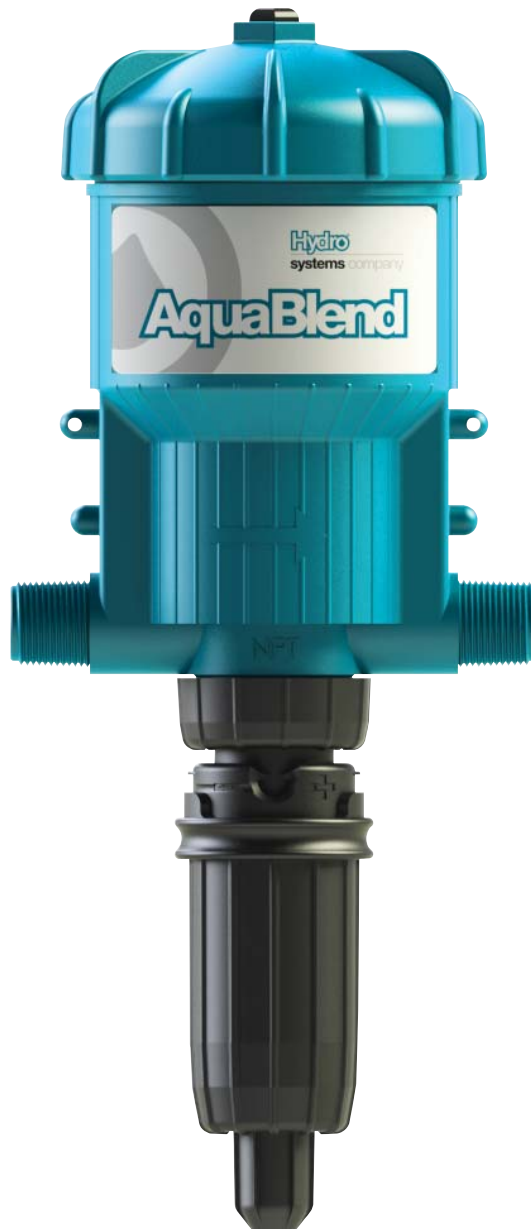
0.04 gpm to 11 gpm
10-2500 l/hr

Injection Range:

0.2% to 5%
1:500 to 1:20

Operating Pressure:

5 to 90 psi
0,3 to 6,2 bar



Quick Start Guide

0.04 - 11 gpm 5 - 90 psi
10 - 2500 l/h 0,34 - 6,2 bar

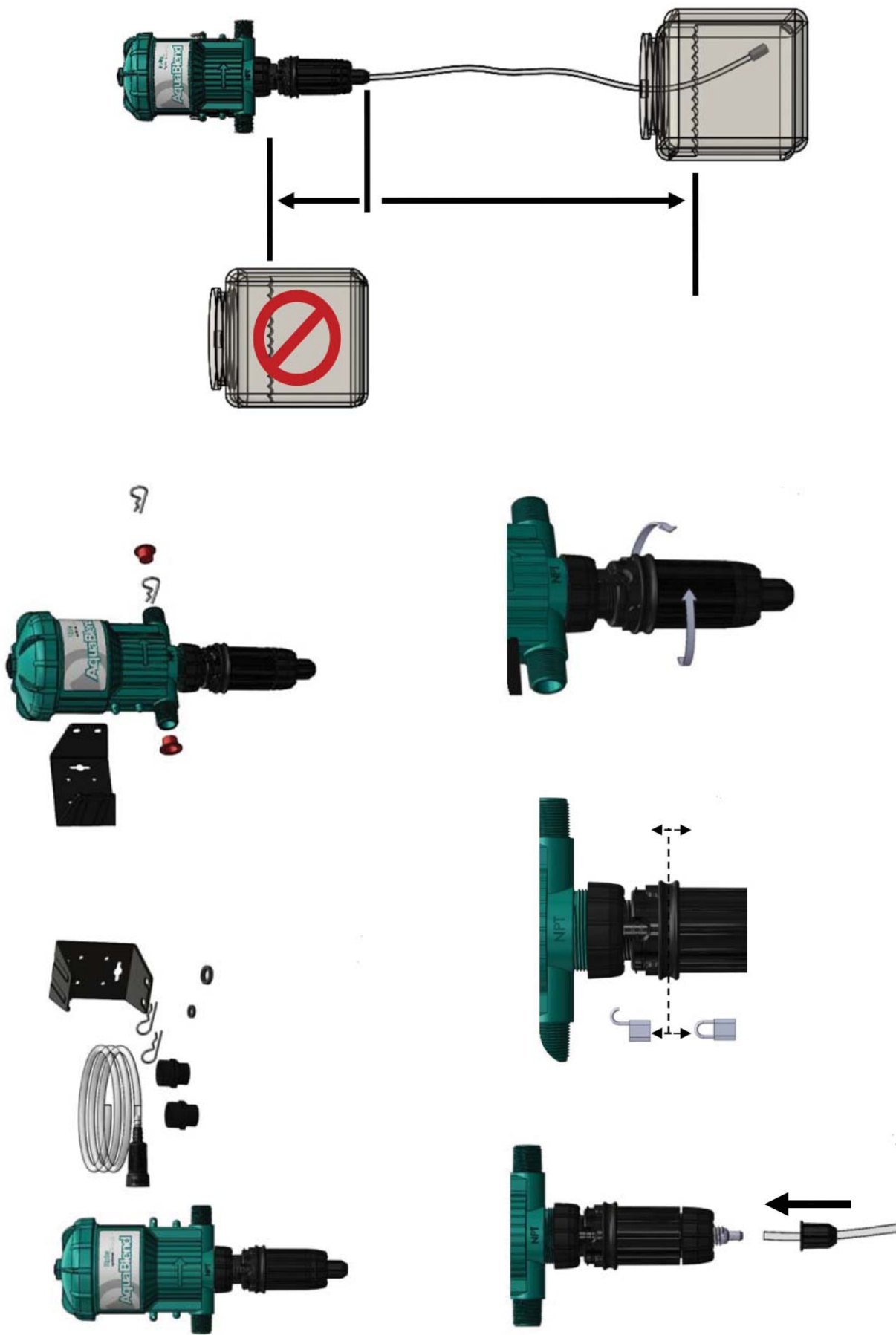


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Please read this manual carefully before putting the Hydro Systems injector into operation.

This booklet has the information you will need for the use and care of your new Hydro Systems 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 Systems offers a one 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. Please review the complete warranty information on page 16.

For Your Records

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

Serial #.....

Date Purchased

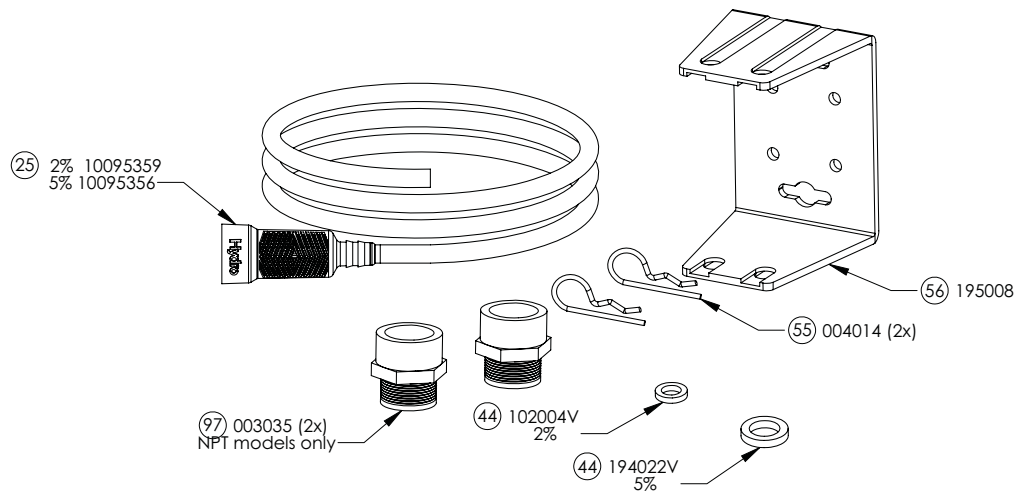
This document does not form a contractual engagement on the part of Hydro Systems and is for information only. Hydro Systems reserves the right to alter product specifications or appearance without prior notice.

Package Contents

The injector is packaged with the following items:

- AquaBlend Injector (not shown)
 - Dosage Gasket
 - Quick Start Guide (not shown)
 - Mounting Bracket
- Mounting Pins
 - Filter
 - Suction Tube

NPT	BSP
0.2% - 2% 117947WSP	117957WSP
0.78% - 5% 117948WSP	117958WSP



Specifications



AquaBlend (90 max. psi)

Model 0.2% - 2% (1:500 - 1:50)
Model 0.78% - 5% (1:128 - 1:20)
Flow Rate: 0.04 - 11 gpm (10 - 2500 l/h)
Operating Pressure: 5 - 90 psi (0,3 - 6,2 bar)
Pipe Coupling: 3/4" npt/ght/bsp

Housing	Polyacetal (POM)
Dosing Accuracy	+/- 10% of ratio
Repeatability	+/- 5%
Pressure Loss	Available Upon Request
Maximum Temp.	100° F/38° C
Minimum Temp.	34° F/ 1° C
Maximum vertical suction of concentrate	13 Feet/396 Centimeters
Maximum horizontal suction of concentrate	49 Feet/1493 Centimeters
Self-Priming	Yes
Seal Material Available:	Viton - acids, oils & pesticides Alternative material available upon request.
Maximum Viscosity	2,000 cP (Ex. Honey)
Recommended Accessories	140+ mesh filter, check valve, pressure regulator, flow restrictor.

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 Systems 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. 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 90 psi (6,2 bar)

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 9).

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/gasket 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 9).

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 9). Before operation, soak entire unit into room temperature water approx.. 72° F (22° C) for a 24 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. Maximum number of clicks per 15 seconds is 50.

Service Fluid Flow

Fluid flow and pressure must be within the established specifications (see Specifications on page 5) 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. Lift lock ring on (#7) (Fig. 1).
2. Rotate Ratio Adjuster Sleeve (bottom of #7) (Fig. 2) up or down to the desired setting. Use arrows at top of the Ratio Adjuster Sleeve to line up with the desired feed rate on the sleeve.
3. Return ring to lock position by pushing down on ring.

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

Bleed Port

Ensure all air is out of the unit by pressing the bleeder button in until water comes out. Release bleeder button to stop water from flowing out of bleed port.

Fig. 1

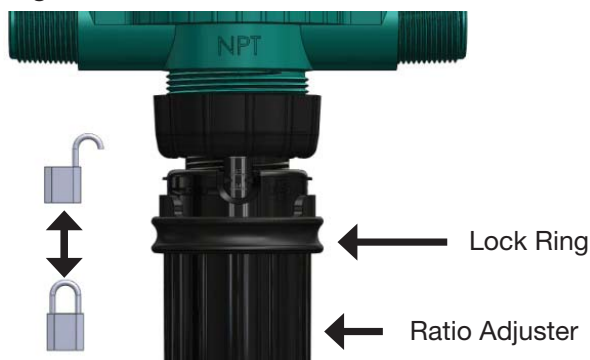


Fig. 2



Fig. 4

Typical wall mounting

Installation & Start-up (Refer to Fig. 4 & 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 Systems 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 -10 gpm (1100-2200 l/hr) 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

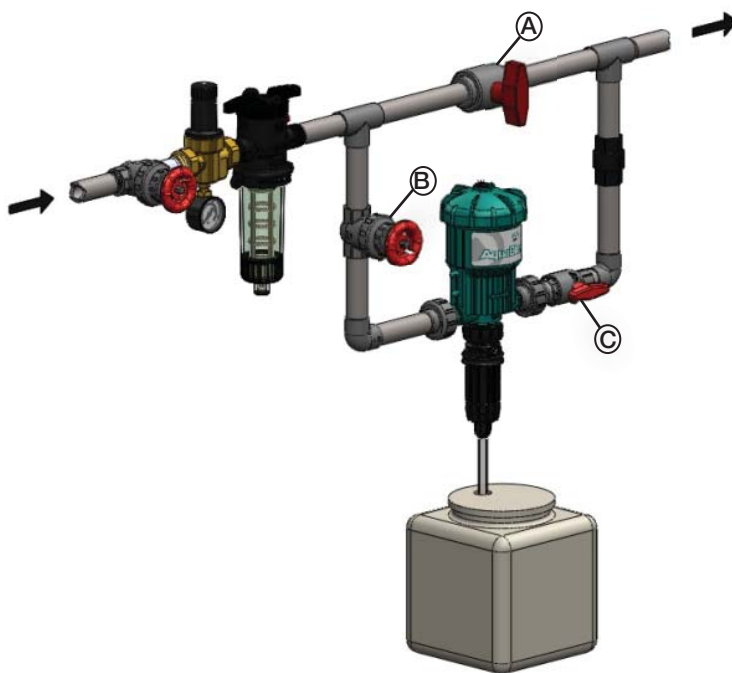


Fig. 5

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, and other 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 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.

Storage

For extended storage, rinse injector using a minimum of 1/2 gallon. (See "Rinse Injector After Each Use") Drain water from unit. Inspect lower end seals. Apply thin coat of silicone to seals and reassemble unit. Place plugs back into inlet/outlet & suction tube fitting. KEEP FROM FREEZING.

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 areas #44. 2. Clean & Check #64 Seal, #68 Cylinder, clean and/or replace as necessary. 3. Clean Filters	1. Replace Dosage gasket #44. 2. Clean and/or replace Check Poppet, inside #11 Suction Tube Fitting.	1. #68 Cylinder 2. #64 O-ring/Gasket 3. Motor Piston #9 4. #51 and #44 Shaft Assembly 5. Check Valve Assy and Tubing

NOTE: Maintenance intervals may vary depending on conditons of use and the chemicals being injected.

Routine Maintenance Instructions



Step 1.
Unscrew and remove lower end from assembly.



Step 2.
Pull down on shaft, rotate shaft 90° and remove.



Step 3.
Remove shaft with gasket and install new. If damage on sealing surface of shaft, replace shaft.



Step 4.
Hold body firmly and unscrew the lid. If lid is tight, use 1" (25 mm) socket to loosen.



Step 5.
Remove motor piston from pump body.



Step 6.
Place new motor piston carefully into pump body and replace lid.



Step 7.
Place shaft into the motor piston.



Step 8.
Rotate shaft 90° to lock into place. Gently pull down to ensure shaft is locked.



Step 9.
Replace lower end assembly onto the pump body.

Troubleshooting

New Install - Always Pressure Up Slowly (Follow start-up on page 8)

Problem	Cause	Solution
No Clicking Sound	Fluid not flowing through unit	Are the red plugs at the inlet, outlet and suction tube fitting openings removed?
		Is the unit installed backward? The arrow on the unit must point in the direction of the fluid flow.
		If still not clicking, do not open the upper body. Call Hydro Systems customer service.
	Fluid flowing through unit	Fluid rate is below or exceeds rated service flow of injector. (See Specifications for maximum flow rate page 4). Maximum number clicks = 50 per 15 seconds.
		Ensure all air is out of the unit by pressing the bleeder button in until water comes out.
		If below increase flow rate, if above, reduce flow rate.
		Operating pressure exceeds maximum limit. Install a pressure reducer valve. (See Specifications for maximum flow rate page 4).

Injector in Operation or After Scheduled Maintenance

Problem	Cause	Solution
No Clicking Sound.	Air trapped in unit	Release trapped air by pressing the bleeder button in until water comes out.
	By-pass valve not open	Set valve to the closed position.
	Broken springs	Replace Motor Piston assembly #9, Clean fluid filter.
	Dirty or plugged inlet filter	Ensure mesh size is correct for proper filtration. Clean filter.
	Main piston assembly #9 worn	Replace Motor Piston assembly #9. Clean fluid filter.
	Main body #1 worn or scored	Replace body and piston.

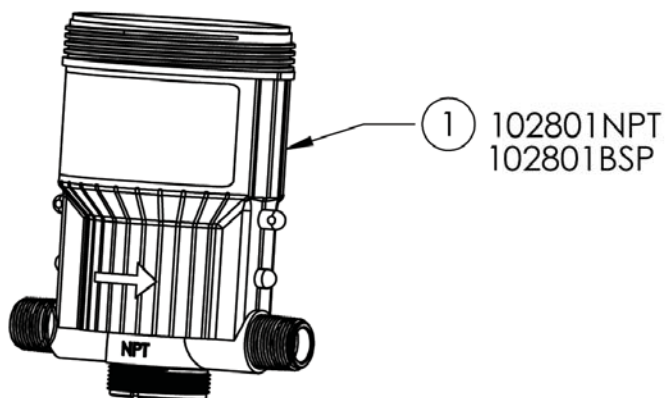
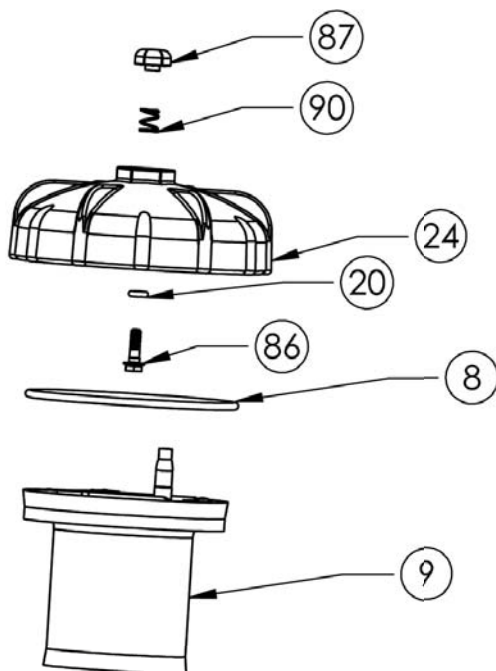
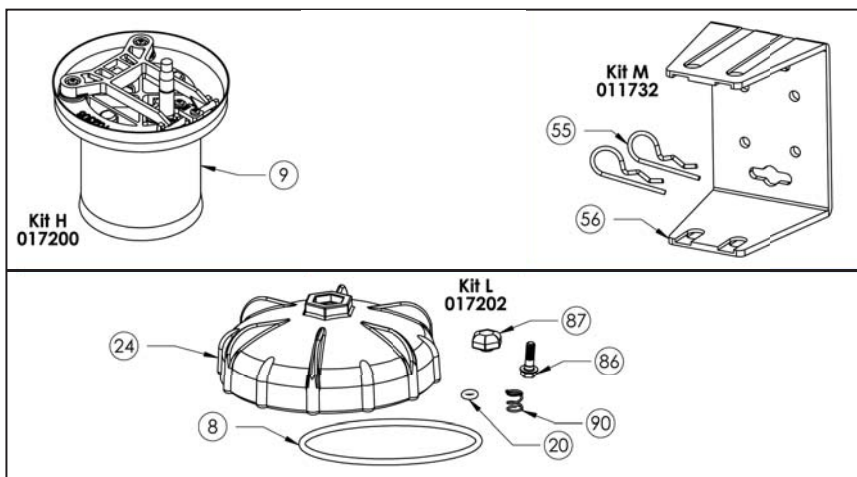
Problem	Cause	Solution
Clicking Sound. No Suction of Solution.	Cracked or loose suction hose	Check for proper fit and/or replace.
	Dosage gasket #44 worn or installed incorrectly	Replace. Ensure during maintenance replacement that #44 dosage gasket was installed correctly.
	Suction tube #25 or suction tube fitting #11 cracked, leaking or clogged suction tube filter	Replace and/or clean as necessary.
	Check valve #11 leaking	Clean and/or replace as necessary.

Problem	Cause	Solution
Clicking Sound. Under Injecting or Unit Operates at High-flow and not at Low Flow.	#44 Dosage gasket worn	Replace.
	#68 Inner Cylinder worn	Replace Inner Cylinder and Gasket #44
	Broken Springs	Replace Motor Piston assembly #9, Clean Fluid Filter.
	Main Piston Assembly #9 worn	Replace Motor Piston assembly #9. Clean fluid filter.
	Main body #1 worn or scored	Replace Body & Piston

Problem	Cause	Solution
Fluid Re-filling Solution Tank	Check valve #11 leaking or dirty	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 #11 is swollen or chemical attack	Replace with new check valve assembly.

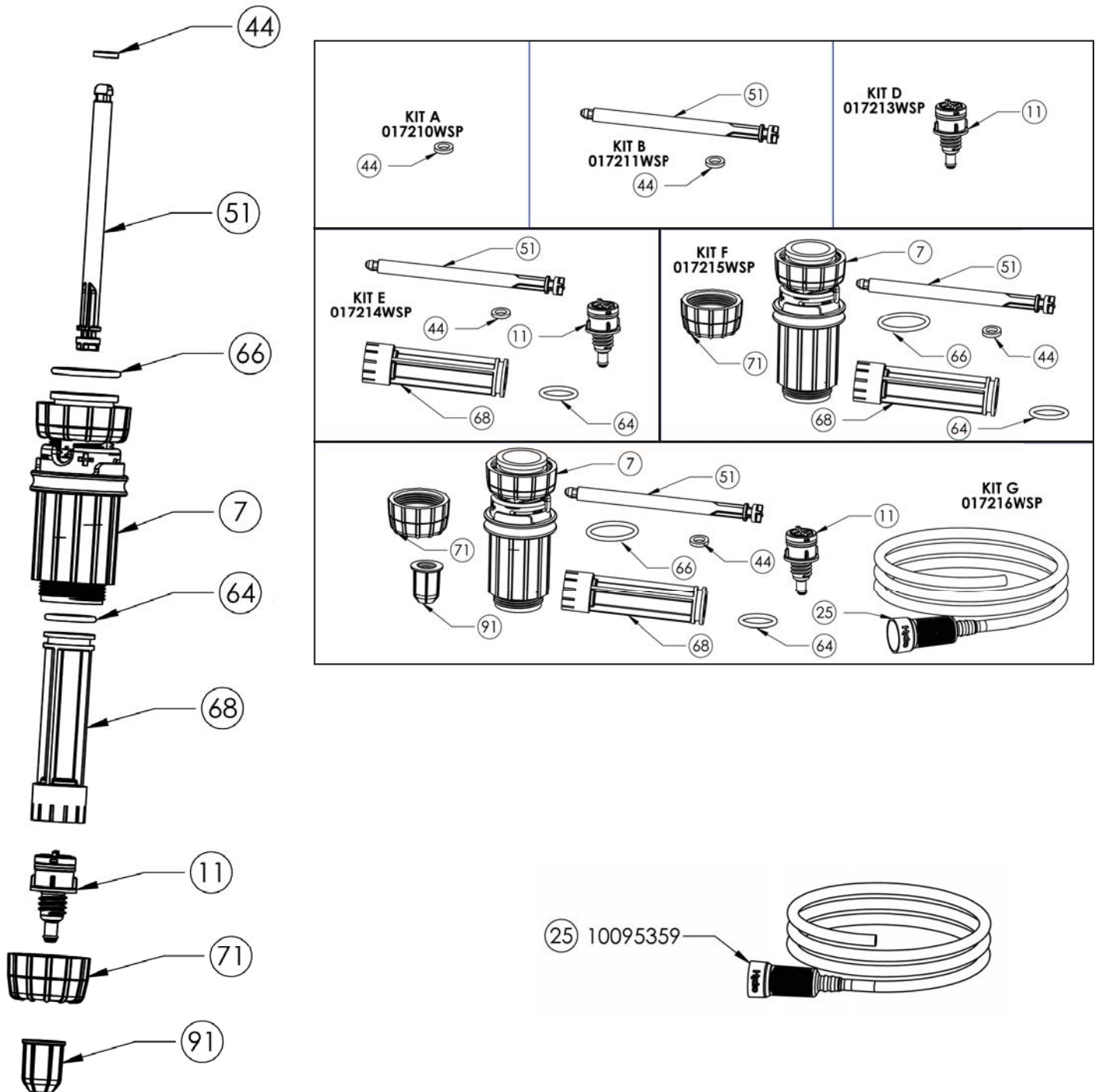
Injector Repair Parts

Part #	Description of Part
102801NPT	Body, Adjustable AquaBlend NPT
102801BSP	Body, Adjustable AquaBlend BSP
Kit H - 017200	Motor Piston Replacement
Kit L - 017202	Replacement Cover Kit
Kit M - 011732	Mounting Bracket Kit



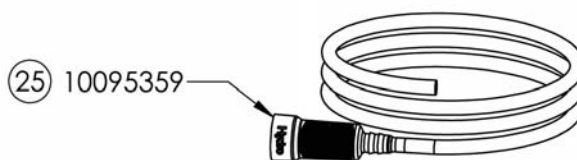
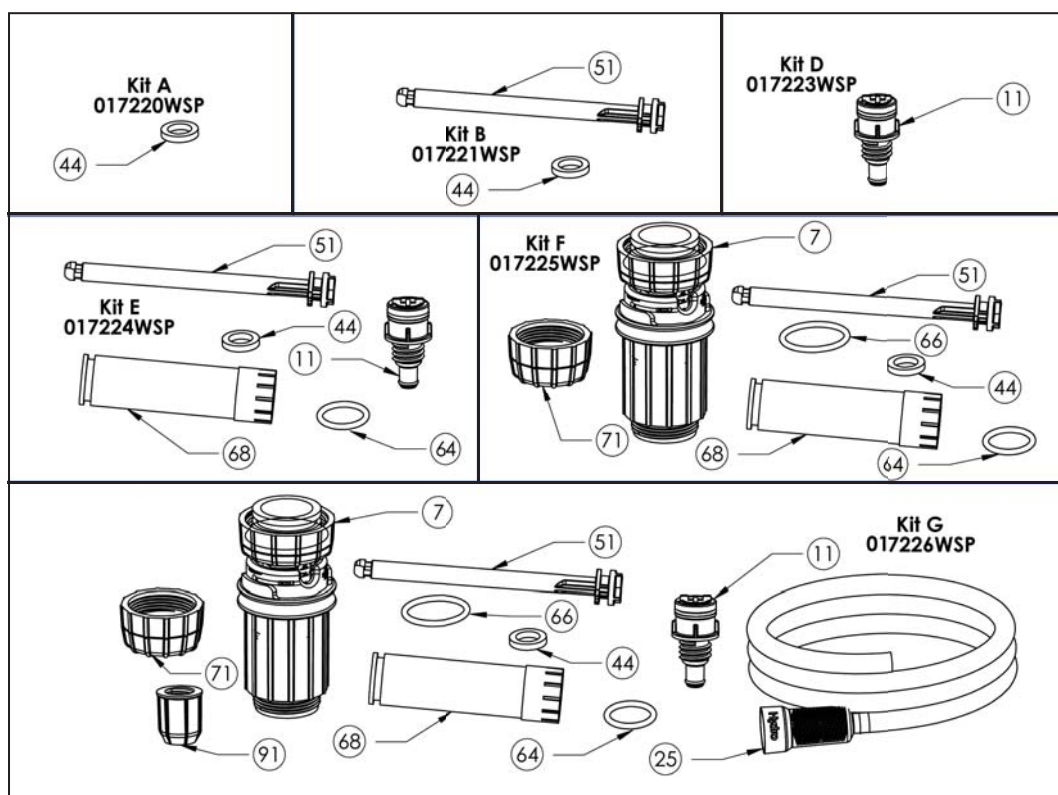
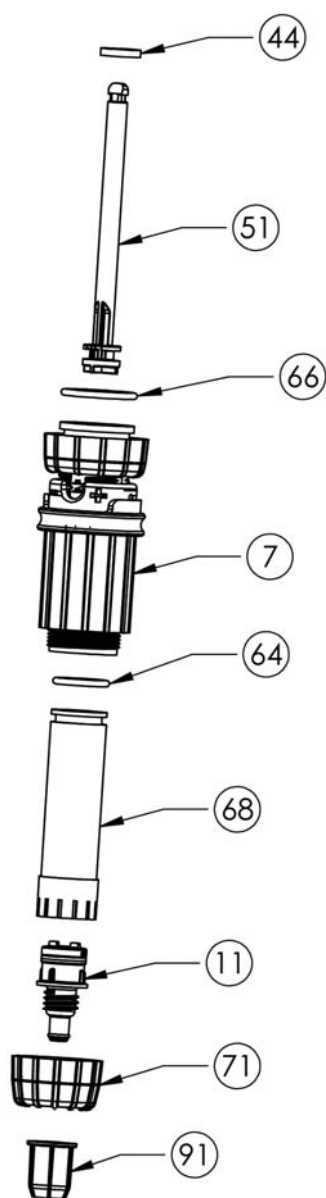
Lower End Parts 0.2% - 2% Wettable Powder:

Part #	Description of Part
Kit A - 017210WSP	AquaBlend 0.2% - 2% Adjustable WSP Wear Kit A Viton
Kit B - 017211WSP	AquaBlend 0.2% - 2% Adjustable Wear Kit B Viton
Kit D - 017213WSP	AquaBlend 0.2% - 2% Adjustable Wear Kit D Viton
Kit F - 017215WSP	AquaBlend 0.2% - 2% Adjustable Wear Kit F Viton
Kit G - 017216WSP	AquaBlend 0.2% - 2% Adjustable Wear Kit G Viton
10095359	Pick Up Tube Assembly 0.2% - 2% Adjustable



Lower End Parts 0.78% - 5% Wettable Powder:

Part #	Description of Part
Kit A - 017220WSP	AquaBlend 0.78% - 5% Adjustable WSP Wear Kit A Viton
Kit B - 017221WSP	AquaBlend 0.78% - 5% Adjustable Wear Kit B Viton
Kit D - 017223WSP	AquaBlend 0.78% - 5% Adjustable Wear Kit D Viton
Kit E - 017224WSP	AquaBlend 0.78% - 5% Adjustable Wear Kit E Viton
Kit F - 017225WSP	AquaBlend 0.78% - 5% Adjustable Wear Kit F Viton
Kit G - 017226WSP	AquaBlend 0.78% - 5% Adjustable Wear Kit G Viton
10095359	Pick Up Tube Assembly



Congratulations on Your Purchase!

We make the best and most reliable fluid-driven injectors available. Hydro Systems will provide for replacement of all parts proven to be defective in material or workmanship from the date of purchase for the following periods:

1 Year

Covers your unit from manufacturing and material defects only.

Hydro Systems products are warranted to be free from defects in materials and workmanship for the above time frames. Hydro Systems will at its sole option repair or replace any component that fails in normal use. Any repairs made under warranty shall not extend the initial warranty period.

To Maintain Your Warranty

Your only responsibility is ordinary maintenance - filtering incoming fluid, replacing the O-ring and dosage piston/gasket when worn. Seals and O-rings are not covered under the warranty.

This warranty is not valid if the defects are found to be due to the product's misuse, lack of maintenance, fluid impurities such as sand or iron, defective installation, freezing, fluid hammer, abuse, unwanted side effects due to the chemicals you choose to inject or service provided by anyone who is not an authorized service provider. Hydro Systems declines any responsibility if the product is not used in compliance with the operating instructions and specifications as indicated in this owner's manual.

IN NO EVENT SHALL HYDRO SYSTEMS BE LIABLE FOR ANY INCIDENTAL, SPECIAL; INDIRECT, OR CONSEQUENTIAL DAMAGES, WHETHER RESULTING FROM THE USE, MISUSE OR INABILITY TO USE THIS PRODUCT OR FROM DEFECTS IN THE PRODUCT.

There is no warranty expressed or implied relating in any way to products used in conjunction with Hydro Systems.

Hydro Systems or authorized distributor shall not be liable for incidental or consequential damage, such as any economic loss. Hydro Systems retains the exclusive right to repair or replace the product. Such remedy shall be your sole and exclusive remedy for any breach of warranty. There are no warranties, expressed or implied, which extend beyond those described above.

To Return an injector for Warranty or Non-Warranty repair:

Contact Hydro Systems Company or your local distributor for return information.

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