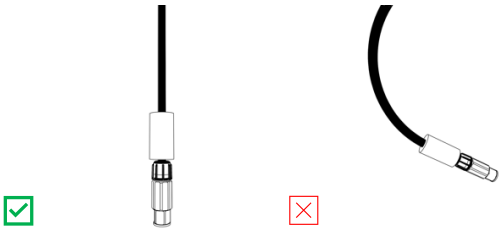
WaterSOLV™ FS-1 Pump Assembly

INSTALLATION NOTES: (see diagrams)

- Choose pump installation location nearest to the chemical suction line (chemical container), then ensure the pumping discharge distance is under 20 ft.
- The suction line in the chemical container **MUST** be upright, **NOT** lying on its side. You can include PVC piping to keep the line straight (not provided).



- Pump suction lines are located on the bottom of both **WaterSOLV™ BC** and **WaterSOLV™ CURATIVE** pumps. (see diagram 1)
- All lines, suction, and discharge should be as short as possible.

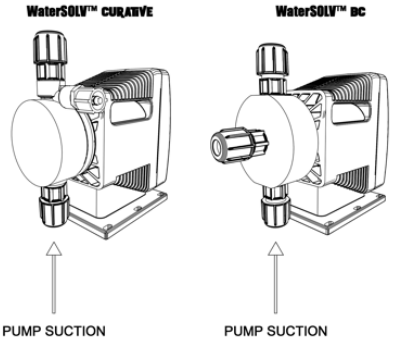
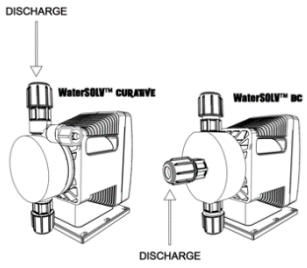


FIGURE 1

- **WaterSOLV™ CURATIVE** pump discharge line & **WaterSOLV™ BC** discharge line (see single exploded diagrams at end of pamplet)



1A 1B

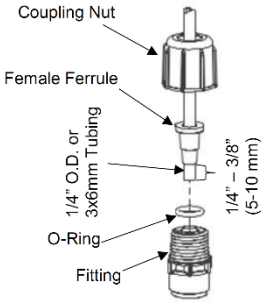


Figure 4: 1/4" OD Tubing Connections

DANGER

DO NOT MIX WaterSOLV™ BC and **WaterSOLV™ CURATIVE** without consulting **HCT** beforehand. To mix, they must be *SIGNIFICANTLY* diluted into water to be non-volatile.

DO NOT store **WaterSOLV™ BC** ON OR NEAR WOOD – This could cause a fire.
Likewise, in case of an accidental leak or spill

Concentrate products **MUST** leak in separate directions
WaterSOLV™ CURATIVE neutralized with baking soda
WaterSOLV™ BC neutralized with water dilution (10-fold water to amount spilled)

i. PERSONAL CONTACT: Rinse with water for 5 minutes
ii. FUMES OF CURATIVE: Rinse area with water/water jug/water bottle
iii. VAPOR RUST OF CURATIVE: Spray with soda water – baking soda and water.

INSTALLATION CAUTIONS

1. Quills and Quill Extension

    - Hand tighten only – be careful not to break.
    - Teflon is recommended, just two rounds of tape on the threads, no more.
    - SCHEDULE TO TIGHTEN THESE FITTINGS BY HAND 2 WEEKS AFTER INSTALLATION

2. Camlock (Tote Connections)

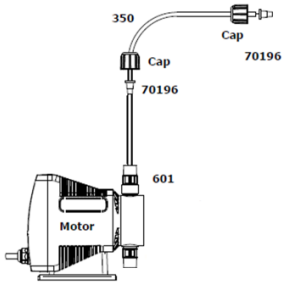
    - These fitting must be Teflon taped as well.
    - Assure these are screwed all the way together, considering the size of the individual parts as to not break them. IF THESE LEAK, THEY ARE NOT FUN TO RE-DO. IF YOU DO EXPERIENCE A LEAK, THIS IS WHERE THE GALLON JUG OF WATER IS EXTREMELY BENEFICIAL. Feel welcome to add some of the baking soda to the gallon jug of water.

3. Compression Fittings

    - Place the cap over the line, threads facing the end of the tube/line.
    - Slide on the ferrule, tapered end facing the end of the tube/line.
    - PUSH the line all the way into the fitting, slide the ferrule against the tube and fitting, begin threading the cap onto the fitting. Hand tighten firmly, no wrenches required.
    - SCHEDULE IN 1-2 WEEKS TO RE-TIGHTEN THE COMPRESSION FITTING CAPS BY HAND

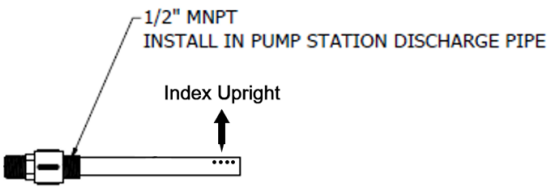
WaterSOLV™ CURATIVE Pump Installation

1. PUMP DISCHARGE - Unscrew yellow cover from the top of the pump. Place Cap and 70196 Ferrule on 350 tubing as shown below.

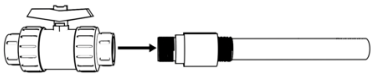


2. Insert 350 tubing as deep into the pump head fitting (601) as possible, slide down the 70196 Ferrule into the 601 fitting, screw the Cap onto the 601 fitting, compressing the 70196 Ferrule into the 601 fitting. Tighten by hand, only.

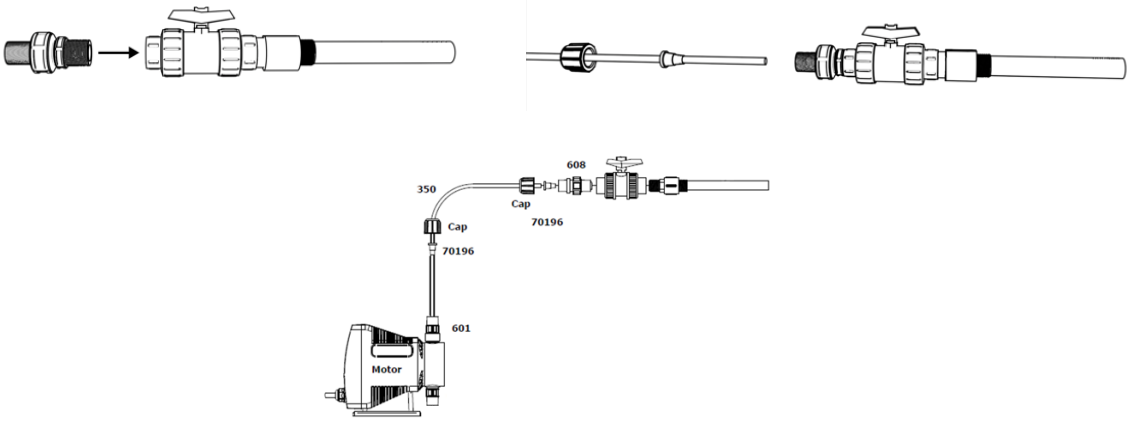
3. INJECTION DISCHARGE – The irrigation system must be de-pressurized. Teflon tape both sides of threads on quill and insert the injection quill extension into the pump station discharge line. Assure the index on the quill extension is upright – indicating the holes at the end of the quill extension are upright. DO NOT use a wrench, tighten by hand.



4. Undo the ball valve and lube the o-rings at both union connections. Reassemble the ball valve and tighten it aggressively by hand. Attach the ball valve to the quill extension.

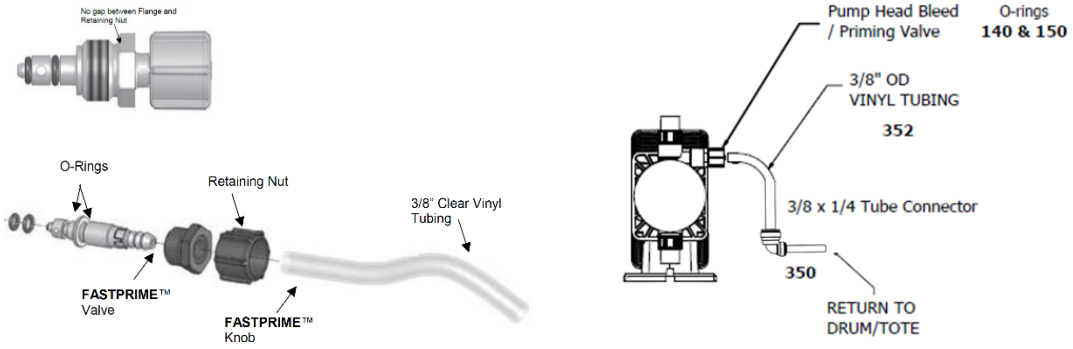


5. Locate the 608 LMI Injection Quill. Teflon tape the 608 LMI Injection Quill. With care, thread the 608 LMI Injection Quill into the Ball Valve. Run the tubing from the pump head to the injection port, shortening the line as much as possible. If the line is exposed to the elements (sun, UV, foot traffic, cover the line with ¾ inch vinyl electrical conduit (not included) and secure it in place. Place Cap and 70196 Ferrule on 350 tubing as shown above. Tighten by hand only, while securing the ball valve and quill extension.



   a. Curative LMI Injection Quill & Injection Quill Extension
      i. The LMI Injection Quill is spring-loaded to prevent Curative from irrigation siphoning.
      ii. The Injection Quill Extension, is to place the acid in the center of the flow stream but to also contain any of the acid in the extension if the system is depressurized.
      iii. ASSURE THE HOLES OF THE QUILL EXTENSION ARE UPRIGHT.
      iv. ASSURE THE QUILL EXTENSION IS INSERTED INTO THE PIPE, HORIZONTALLY, NOT VERTICALLY. SEE DIAGRAM BELOW.
      v. IF THIS QUILL BREAKS, ASSURE PRESSURIZED WATER IS DIVERTED TO AVOID ANY HAZARDOUS (ELECTRICAL) OR WATER DAMAGE (Note: quill extension threaded in the line should contain most of the water discharged under pressure if the quill is broken externally)
   b. The extension quill has holes in the top end of it, which should be upright.

6. Pump Head Bleed / Priming Valve – Place the clear vinyl tubing INTO the component, as illustrated.



   a. Attach the coupler (push in aggressively to both the fitting and the coupler). Attach the ¼ inch line to the other end of the coupler. Run this line back into the drum of Curative, after drilling a ¼ inch hole into the cap of the Curative container. This must be a tight fit, the tube into the cap, to minimize the Curative fumes.

i. The pumps side port is used to vent the head when putting on a new drum and priming the pump. The vinyl tubing is used to be able to see liquid. This tubing will need to be replaced annually for visibility. There is plenty of additional tubing to do this many times.

1. The Priming Valve is hex screwed into the head, this should never be loose. The thumb cap is what opens and closes the valve. Be sure this valve is closed (clockwise) after priming is complete, and that it is never leaking chemistry in the line when the pump is pumping. If so, this would indicate the o-rings within are bad. Flow should only come out of this line if you unscrew it for priming. If leaking when closed, o-rings must be replaced (2 ea.), items 140 and 150. If leaking, the pump will not inject chemistry.
2. Be sure the end o-ring, is not stuck in the head when changing. It is white, and easily visible. Only one o-ring on the end of the assembly to operate properly, and it is essential.
3. The line from the connector is placed into the drum of Curative. Be sure, ¼ in hole in the cap of the Curative, and tight fitting to the line to minimize fuming/vapors. *Fumes of Curative are corrosive.*
4. To minimize Curative fumes, install an HCT Fume Absorption Chamber provided.

7. SUCTION LINE ASSEMBLY – You may be drawing chemistry up from a container like a drum or a tote, or you may be drawing chemistry from the bottom of a tote utilizing a camlock assembly. The shorter the suction line, the better, as pumps are good at pumping / pushing chemistry, but not nearly as good at drawing chemistry into the pump head.

a. WITHOUT GETTING CONTAMINANTS INTO THE PRODUCT – where the pump will draw chemistry from the top of a container – drum or tote, drill TWO each ¼ inch holes into the container cap where you will place the bleed line return and the suction. IF YOU ARE USING THE FLOODED SUCTION – A TOTE AND A CAMLOCK AT THE BOTTOM OF THE TOTE – You will only drill ONE each ¼ hole in the cap of the tote for the bleed line return, no suction line hole is necessary.
b. Utilizing a container where the pump will be above the container, using the white opaque ¼ tubing (350), cut a length of the tubing from the bottom of the container, to reach to the bottom of the pump head. Now remove 5 inches from the tubing to account for the suction strainer.
c. You will need to remove the cap from the container AND RINSE IT WITH WATER.
    i. On one end of the tube, slide on the ceramic weight, the CAP, the Ferrule, push the tube as far into the suction strainer as possible, slide down the Ferrule, and begin tightening the cap, firmly. Place this line into the hole in the container cap, from underneath. Place a cap and Ferrule onto the line, push it as far into the pump suction port, slide the Ferrule into place and tighten down the cap.
    ii. Reattach the cap to the container
    iii. Insert the bleed line into the container cap hole
d. When you change out containers, you'll pull the bleed line out of the container cap, unscrew the cap from the bottom of the pump, remove the old container, place the new container, be sure to position the container so that the cap threads are the same and in the same location, remove the new product container cap, and insert the old suction strainer and cap. Place the bleed line back into the cap hold.

WORKING WITH Curative

1. When dealing with the Curative chemistry, be sure to have a 1-gallon jug of water, and rinse the acid/fumes with the water to reduce the fuming.
2. To mitigate corrosion from fumes, apply a mixture of baking soda and water to a rag. Brush or mist, to the affected area. Note: KEEP THE CONTAINER OF CURATIVE SEALED. COVER AREAS OF CONTAINERS WHERE HOSES ARE INSERTED WITH A SOCK FILLED WITH BAKING SODA.
3. Neutralize spilled acid and or its fumes with baking soda, beneficial to be rinsed off into the wet well or onto soil surfaces.

Priming the Pump

1. Assure the pump is powered.
2. Open the bleed valve on the side of the pump head (counter clockwise)
3. Press the top right button of the pump to see a green circle. (Black means the pump is off. Press the button again to get the green circle.)
4. Press and hold the button. Release it when the pump begins to pump. This will make the pump operate for 60 seconds.
5. Repeat the process until you see liquid come out of the bleed valve.
6. Close the bleed valve
7. Reactivate the 60 second pumping to see the line pulsing.

8. Repeat this several times to feed he chemistry to the discharge quill assembly.
9. When it is pumping, you should observe the discharge line pulsing
10. Check for any leaks and repair them.
11. Immediately schedule to tighten all fittings in 1 week
12. Twice a year check pump head bolts, and tighten if needed.

WaterSOLV™ BC Pump Installation

1. THE TOP PORT – This is NOT the discharge; it is a degassing line. It purges vapors back into the drum, and when liquid is realized, it closes that port. The degassing timing is pre-set on the pump, recognized it is activated by the bubble's icon on the LED screen. This line is run back into the container of the BC.
2. THE DISCHARGE PORT – is out the end of the pump. The discharge line is to be placed into the suction side of the pump station / or into the well or wet well. It is beneficial chemistry for equipment and filters, as well as various forms of corrosion suppression including cathodic and microbial and shell development.
    a. Unscrew yellow cover from the top of the pump. Place Cap, then 70196 Ferrule on 350 tubing. Insert 350 tubing as deep into the pump head fitting (611) as possible, slide down the 70196 Ferrule into the 601 fitting, screw the Cap onto the 601 fitting, compressing the 70196 Ferrule into the 601 fitting. Tighten by hand, only, aggressively.
3. CONTAINER CAP MODIFICATIONS – you'll need to modify the container cap to accept the degassing line, and also to accept the suction line. Note the container has two caps, one is course thread and one is fine thread. You'll be reusing the same cap as you swap put product, so please recognize with cap you're using so that when you replace the product, you locate the proper cap in the proper location.
    a. Utilizing a container where the pump will be above the container, using the white opaque ¼ tubing (350), cut a length of the tubing from the bottom of the container, to reach to the bottom of the pump head. Now remove 5 inches from the tubing to account for the suction strainer.
    b. You will need to remove the cap from the container AND RINSE IT WITH WATER.
        i. On one end of the tube, slide on the ceramic weight, the CAP, the Ferrule, push the tube as far into the suction strainer as possible, slide down the Ferrule, and begin tightening the cap, firmly. Place this line into the hole in the container cap, from underneath. Place a cap and Ferrule onto the line, push it as far into the pump suction port, slide the Ferrule into place and tighten down the cap.
        ii. Reattach the cap to the container
        iii. Insert the degassing line into the container cap hole
    c. When you change out containers, you'll pull the degassing line out of the container cap, unscrew the cap from the bottom of the pump, remove the old container, place the new container, be sure to position the container so that the cap threads are the same and in the same location, remove the new product container cap, and insert the old suction strainer and cap. Place the bleed line back into the cap hold.

General information

Pumps

- The led panel pumps are smart pumps. They are pre-programmed, set at 100%. Their rate of chemical output is based on pulses received from the flow meter, through the computer, adjusted to the application rate you set, for each pump, on the PLC (FS-1 Panel).
- The Pump LED Screen displays a circle.
    - Green means it is on standby awaiting signals from the flow meter.
    - Black means the pump is not going to respond to pulse (off line).
        - Top right button on the pump turns it back on, green circle, or off. Black circle.
        - Blank screen, means no power to the pump.
- Manual Priming / pump activation
    - Hold the top right button down for 3 seconds, a 60 second activation will start. Repeat as needed.

Changing Containers

- You will likely use the same pre-drilled cap on the new drum, that was used on the old drum.
- You will likely have to prime each pump

Periodic Maintenance

1. Tighten Tubing Compression Caps (firm, not aggressive)
2. Tighten quills if any signs of precipitation (firm, BY HAND, not aggressive)
3. Tighten Head Pump Holts (firm, not aggressive)

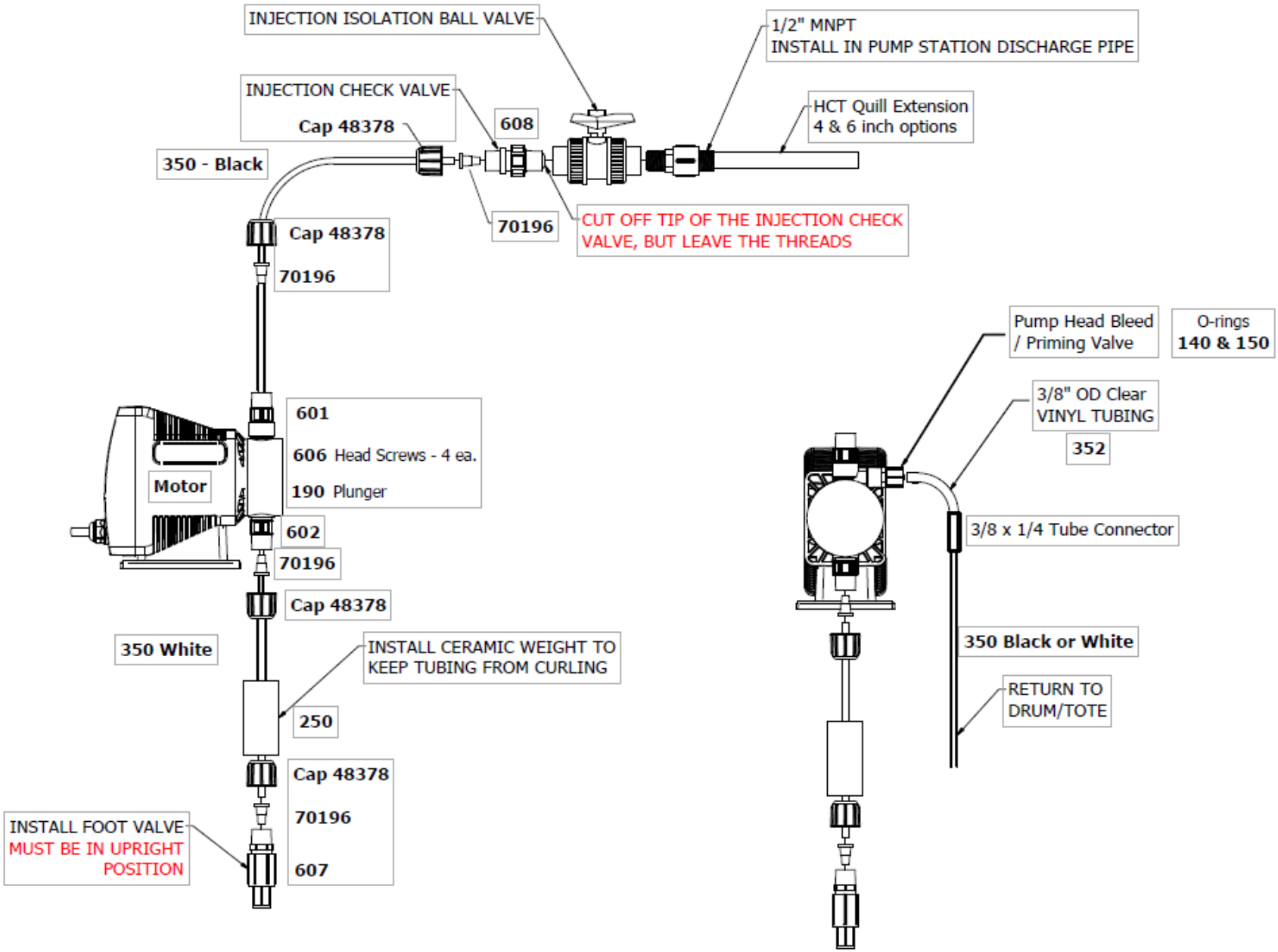
4. Annually
    a. Replace Curative internal Plunger
    b. Replace Curative bleeder valve o-rings (2 ea., both different)
5. Every two years
    a. Replace discharge and suction lines

Contact HCT for HCT Manual Repair Kits

Online Video Tutorials & Manuals

https://www.hctllc.com/chemigation

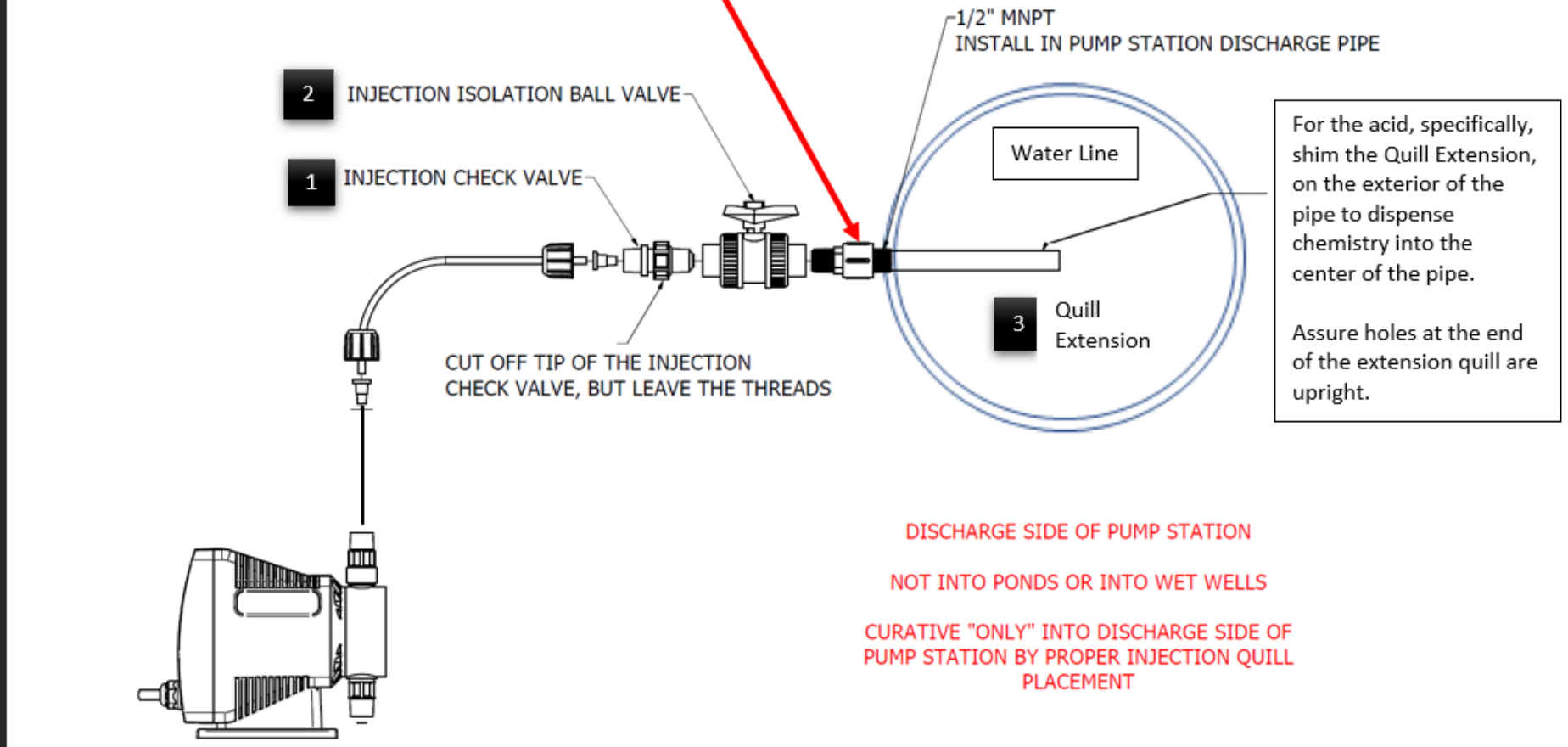
HCT WaterSOLV Curative - Smart Pump



Injection Quill & Quill Extension Configuration

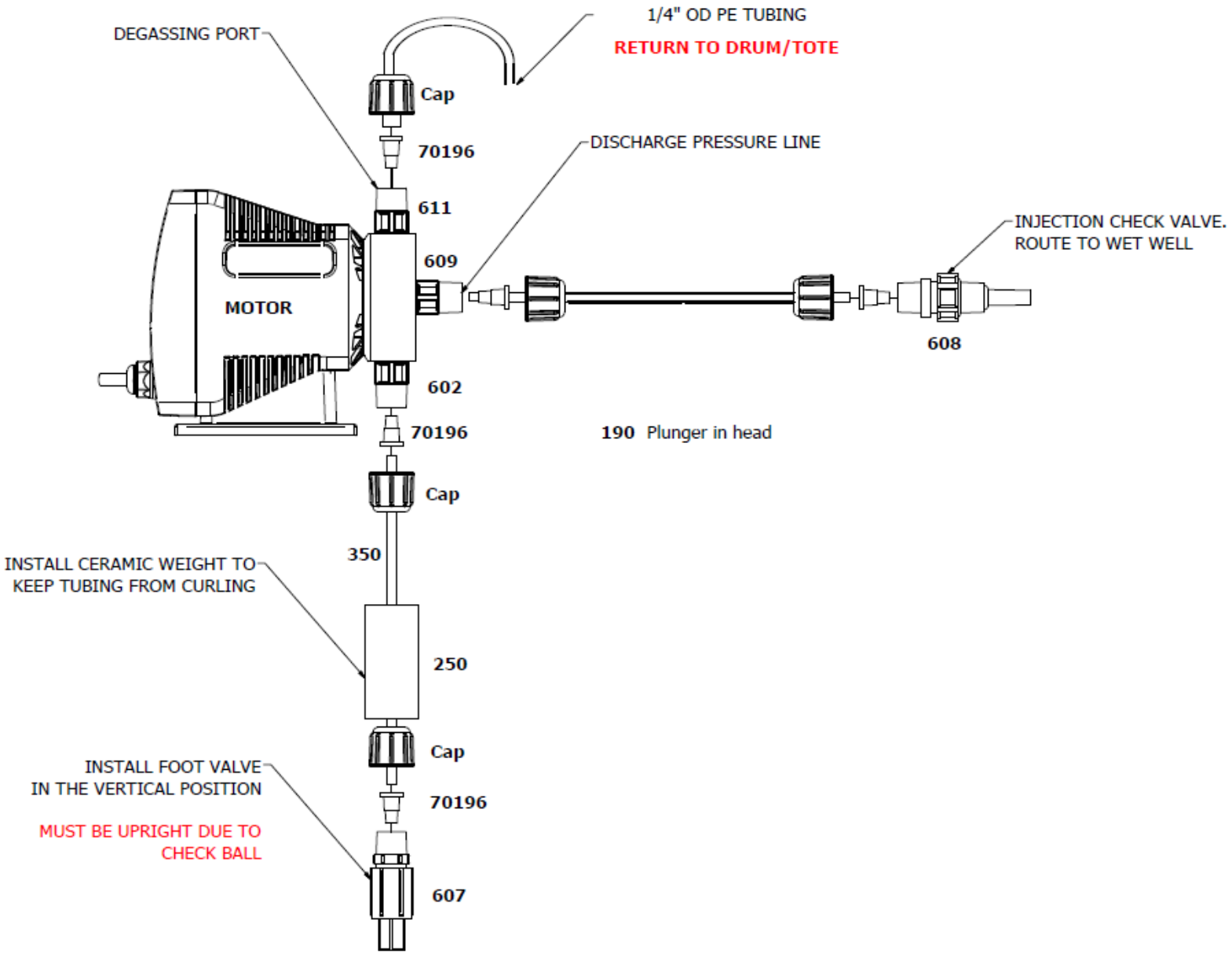
For WaterSOLV™ Curative Pump Only

DO NOT OVER TIGHTEN.
PLACEMENT AND CONFIGURATION SHOULD BE CONSIDERED IN CASE OF BREAKAGE AND PURSUANT WATER SPRAY.



PLACEMENT OF THE QUILL IN ANY OTHER ANGLE THAN HORIZONTAL OR ON THE UPPER ½ OF THE PIPE POINTING DOWN, WHATSOEVER, IS NOT ALLOWABLE.

HCT WaterSOLV BC - Smart Pump

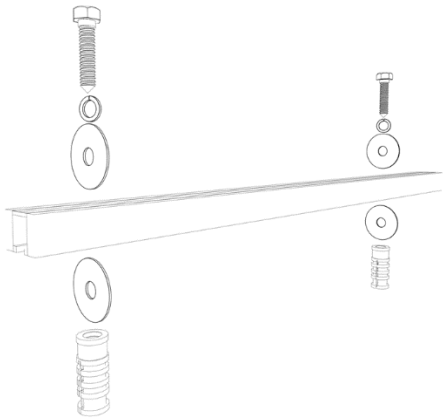


Mounting Rack Assy. – Packages

FS-1 Mounting

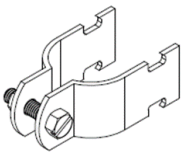
1. Mount Unistrut flat face, to FS-1 – Upper and lower
    a. 12 inch Unistrut for FS-1 – 18 inch Unistrut for FS-1 XL
    b. Remove 4 of the extender tabs from the back of the enclosure

2. FS-1 Unistrut to Wall - (after mounting Unistrut to FS-1)
   Once the Unistrut is mounted to the FS-1 Box, then mount the Unistrut to the wall. The Unistrut extends past the box for mounting.



Pole Mounting:

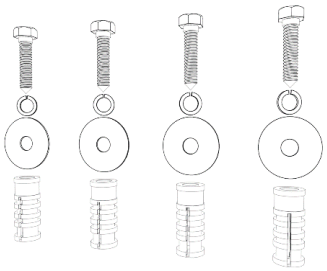
FS-1's – Unistrut clamp to pole – 2 each



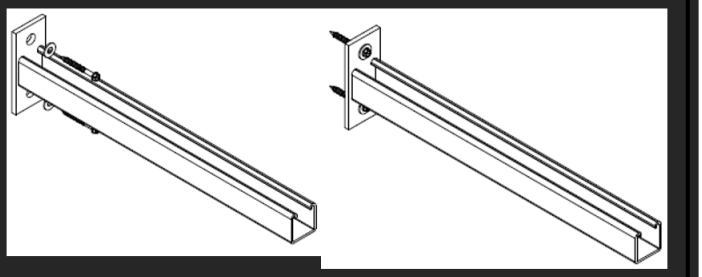
Pump Stand(s)

3. Mount the Pump Stand Unistrut(s) to the wall or pole, directly above the container, with spacing to remove the suction line when changing out containers.

   Nut and Bolt Package



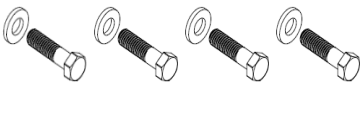
Pump Stand Unistrut to Wall

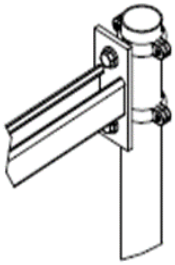


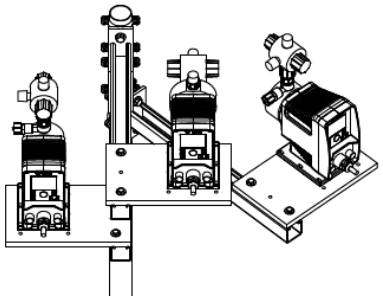
Using the appropriate drill bit, drill the wall for the anchors. Mount the Strut to the wall using two (2) anchors that are suitable for the type of wall being installed on. **Make sure the bottom of the strut is no less than 48 inches, or 4 feet, above the ground to accommodate chemical removal and replacement.**

Pole Mounting:

Pump Stand Unistrut
2 each pipe clamps, nuts and bolts per Unistrut

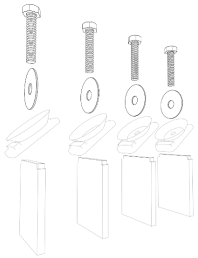


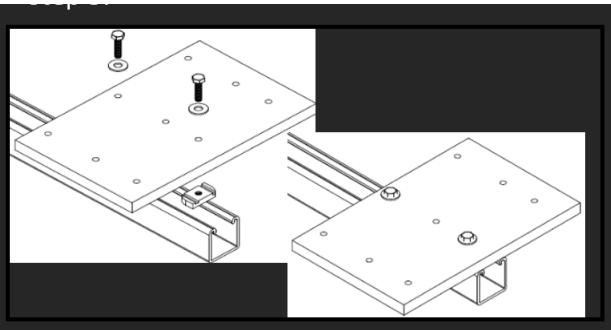




Pump Platform Mounting to Pump Stand Unistrut

Nut & Bolt Package



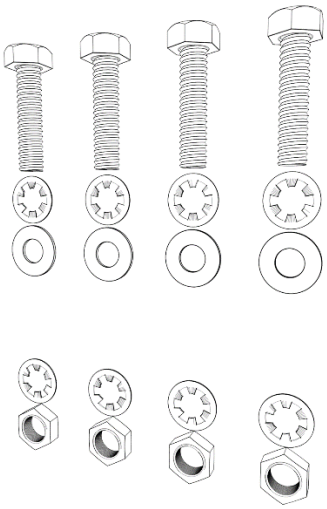


Be sure the largest distance on the shelf and holes are facing forward. This creates room at the back of the pump for suction line access of the pump.

Tighten the shelf to the strut nuts, loosely for now.

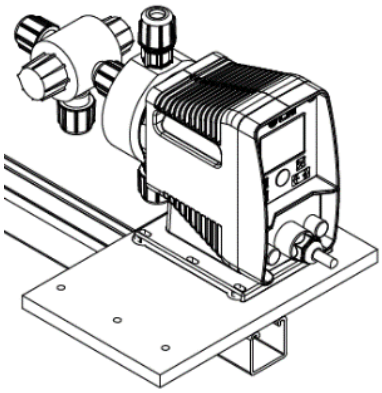
Pump Mounting to Pump Platform

Nut & Bolt Package



Above Pump

Under pump platform



THANK YOU

We're delighted you have chosen to utilize our works – chemistry, chemigation, services, and our support. We're here or you; call, text, email. We have put an enormous amount of information on our website, so when you want to know something, you can review it from our website, when time is most favorable for your schedule. Use the keyword search tool to get you to where you want to go.

Thank you.

OPERATIONAL FUNCTION

Flow Meter -------→ Signals (pulses) --------→

FS-1 ----------→ Treatment Rates ----------→ Managed pulses to Individual Pumps

Pumps – Chemical Output ----------→ Flow validation (FS-1 XL systems only)

Have you Registered?

Benefits;

- Stay informed with updates and improvements
- Receive seasonal reminders and promotions
- If you register, we're going to offer you a rebate on new product s we offer that you choose to try

Go online and complete the form. <link / path>

What we need to know;
All fields required

First and Last Name
Your email address - company
Your email address, personal (in case you move)
Your Cell Phone number
Company Name
Company Delivery Address
City, State and Postal Code

FS-1 Installation Date

The Serial Numbers of the pumps you purchased from us.

Did you do HCT's Analytical Testing (yes or no, plan to);

Water
Water Bacteria
Total Soil Properties
Available Nutrition Analysis