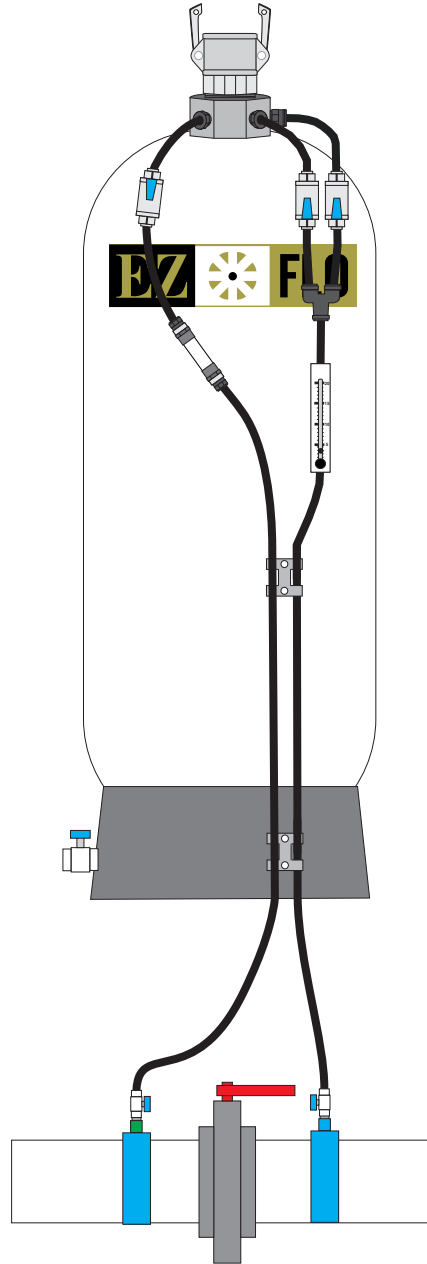




INJECTION SYSTEMS

Engineered Products



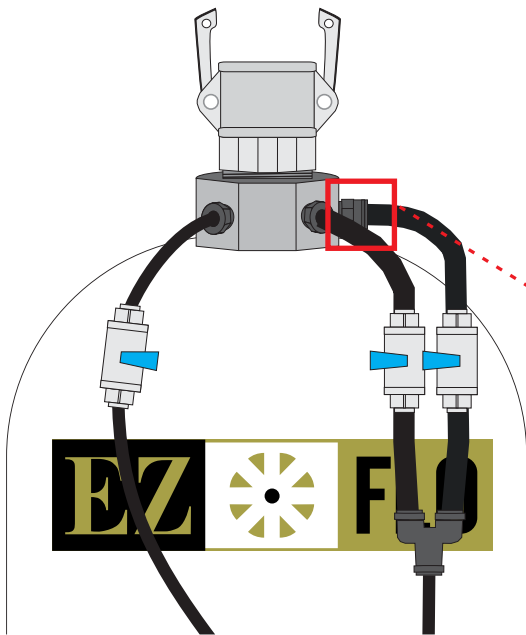
For an overview of the EZ-FLO System Installation & Operation: www.ezfloinjection.com

*** IMPORTANT ***

READ INSTRUCTIONS BEFORE INSTALLING THE SYSTEM

- Do not connect to an irrigation system that is not protected by an approved back flow prevention device
- Do not install if pressure exceeds 125 PSI
- Use only with non-hazardous products
- Minimize exposure to direct sunlight to maximize service life
- Protect against freezing to avoid tank fracture

Fittings Insert & Release



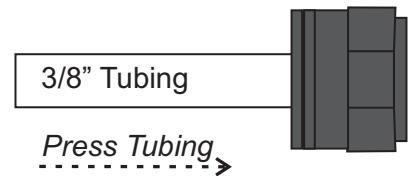
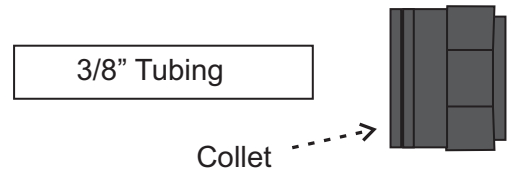
The EZ-FLO system uses push connect fittings to connect black 3/8" tubing to the system. Below are step by step instructions on how to use this connection.

Side View

TO INSERT

Step 1. Insert the end of the tubing into the appropriate side by pressing into the hole. Press gently until the tubing stops.

Step 2. Gently tug the tubing to insure it is locked into place.



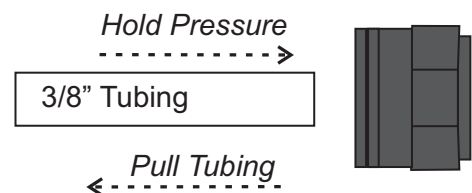
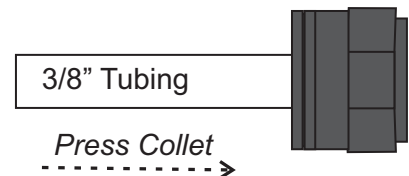
TO REMOVE

Step 1. Shut off pressure to the system.

Step 2. Apply gentle pressure to the collet with your fingers.

Step 3. While holding pressure, gently pull the tubing away from the fitting to release.

Note: Make sure to direct the fitting away from your face and body. A small amount of residual pressure may be in the tank and cause a momentary release of fluid.



TANK ASSEMBLY & PARTS LIST

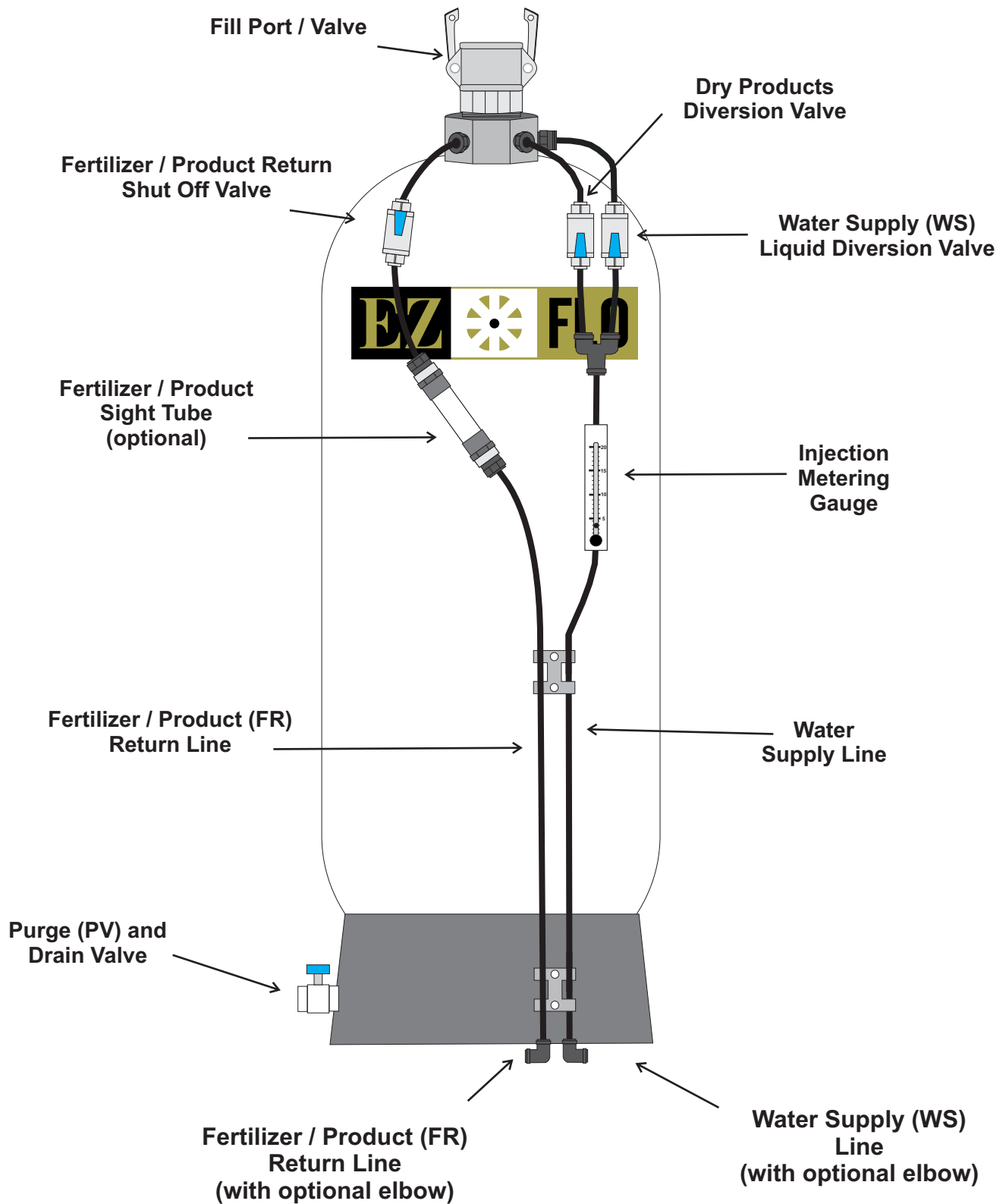


Figure 1

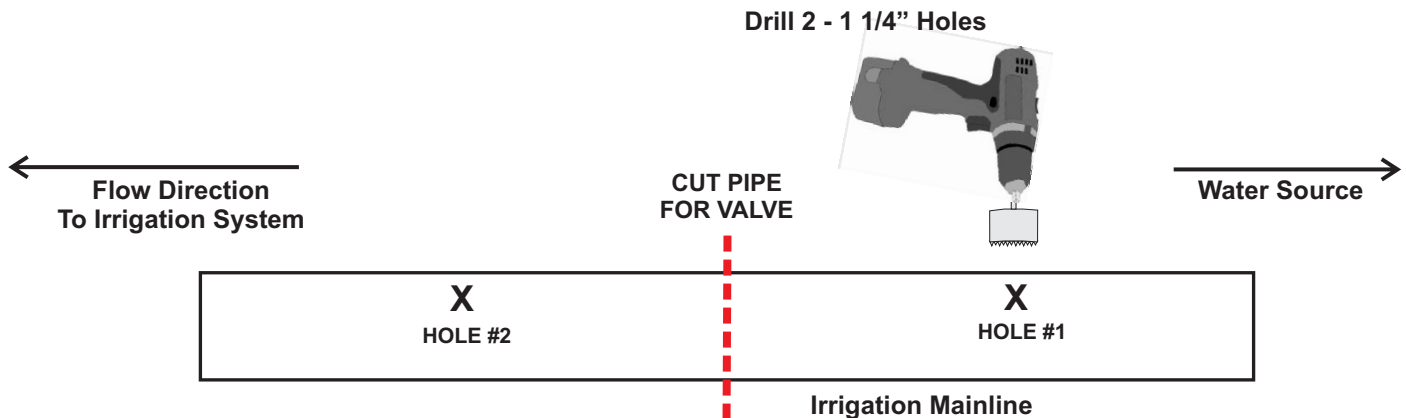
SADDLE CONNECTION

The EZ-FLO Hi-FLO system may be installed using the engineered Saddle Venturi Connection (SVF) or a prefabricated coupling connector. If utilizing the SVF connection, please contact an EZ-FLO representative to insure proper considerations for pressure and flow have been identified.

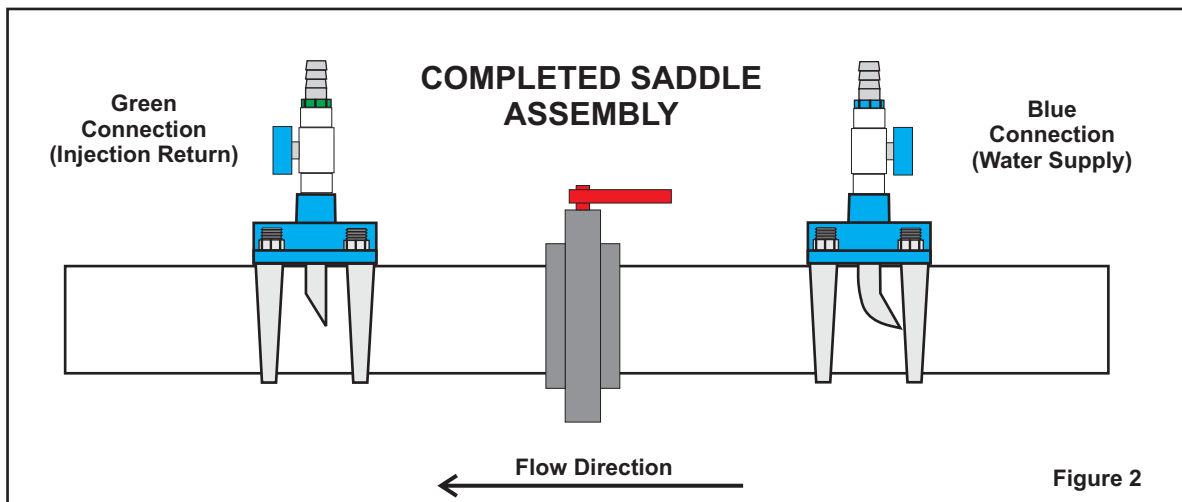
Saddle Venturi Connection (SVF)

Step 1 - Drill (2) - 1 1/4" holes a minimum of 6" apart, in the irrigation main line near the installation location of the EZ-FLO System. Make sure there is enough room for the saddles to attach snugly to the pipe. Hole Saw or Reaming bit is recommended.

CAUTION: DRILL SLOWLY TO PREVENT PIPE FRACTURE



Step 2 - Attach saddle to pipe. The blue connection should be installed in the first drilled hole in the irrigation main line with the venturi probe opening facing into the water flow. The green connection should be installed in the second drilled hole in the irrigation main line with the venturi probe opening facing away from the water flow.



Note: A butterfly or ball valve may be required for low flow irrigation mainline to allow for throttling. This will increase the differential pressure necessary to operate the system. Contact an EZ-FLO representative for more details and calculations.

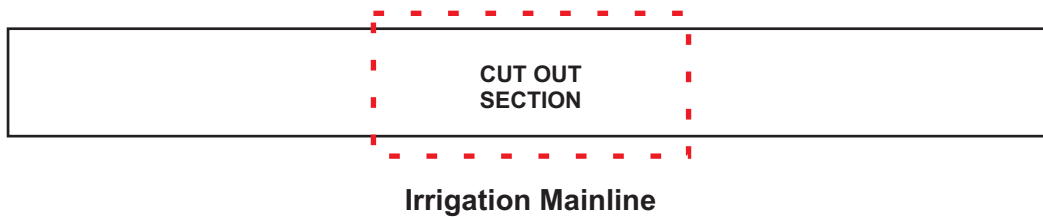
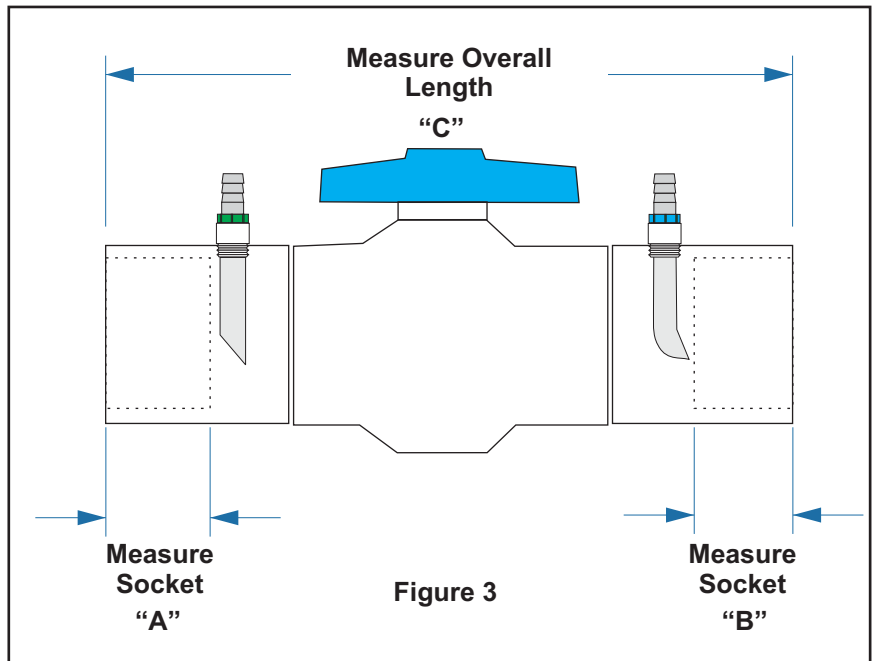
HI-FLO COUPLING CONNECTION

Step 1 - Cut out appropriate section of pipe by measuring the socket depth of the connector and the overall length as shown in figure 3. Due to variations in the fabrication process it is highly recommended each fitting be measured before installation to insure proper spacing.

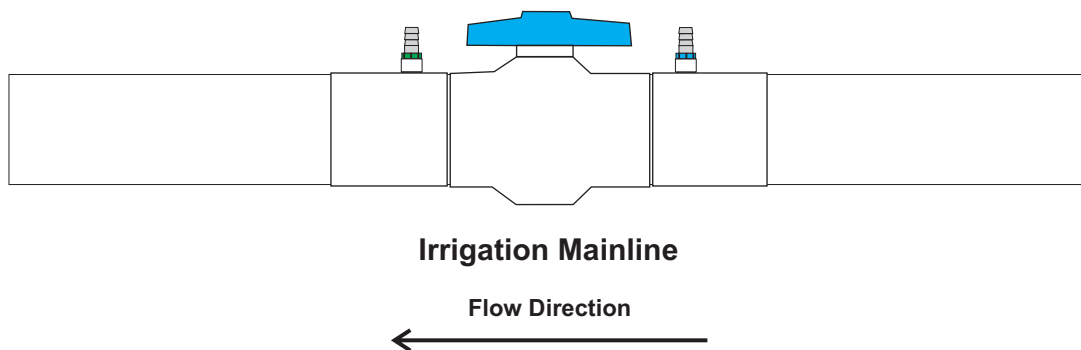
After measuring, use the simple formula of:

$$A + B - C = \text{Cut Out Length}$$

Note: You may also use a slip fix or union to facilitate easier installation.



Step 2 - Use standard solvent cementing techniques to install the HFC connection into the PVC main line.



Note: The HFC connection includes a ball valve for throttling. This may be required for low flow irrigation mainline to allow for throttling. This will increase the differential pressure necessary to operate the system. Contact an EZ-FLO representative for more details and calculations.

PRESSURIZING THE SYSTEM

To pressurize the system

EZ-FLO recommends the first time the system is used that it be pressurized with only water in the tank to inspect for leaks.

Step 1 - Confirm the drain valve (DV) is closed and the tubes are securely connected.

Step 2 - Fill with water through the top fill valve/fill port.

Step 3 - Open the fill port to exhaust air as the system pressurizes.

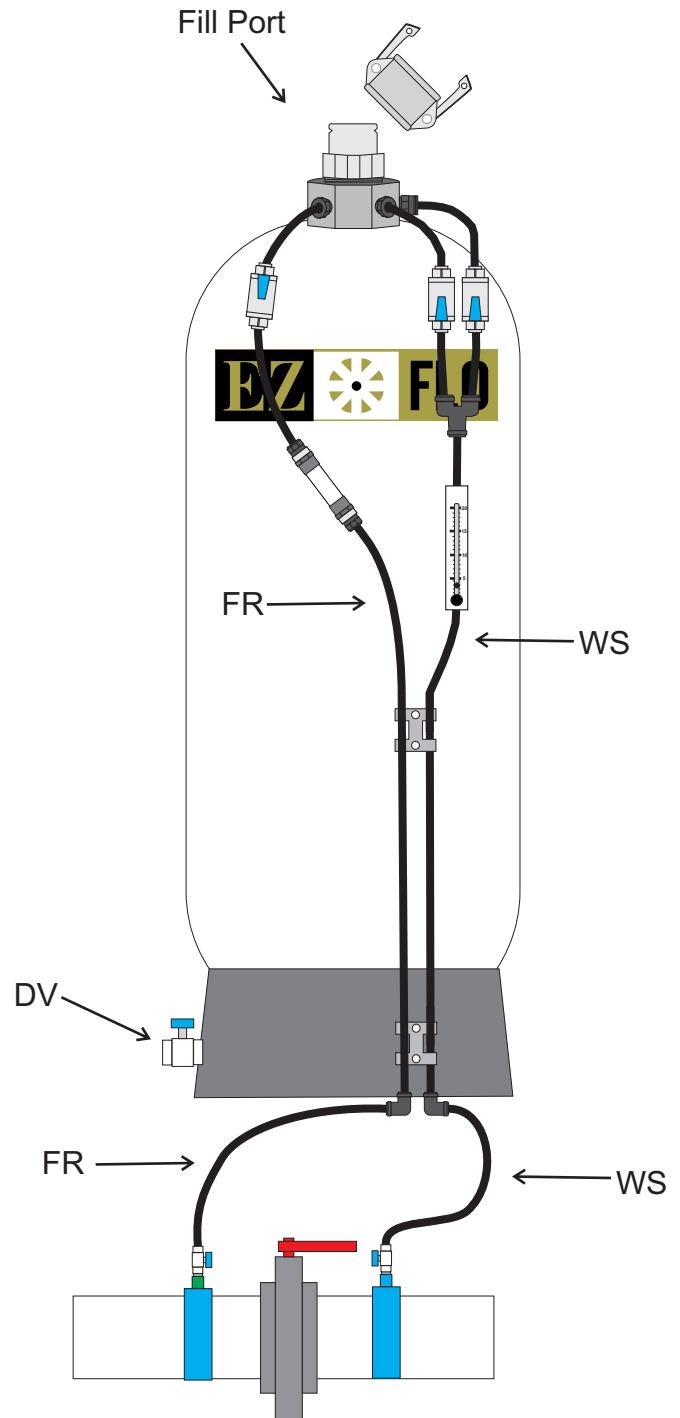
Step 4 - Open the valve on the irrigation mainline, slowly to allow for water pressure to enter tubing.

Step 5 - Open any or all shut off valves on the fertilizer return and water supply tubing.

Note the water supply will not allow water into the tank if the injection metering gauge is closed.

Step 6 - Watch fluid level in tank and close all valves once level reaches fill port (figure 5-1). Over flowing the tank is not necessary.

Step 7 - Replace fill port cap or close fill valve. Open the valves to pressurize. Inspect tank and connections for leaks and tighten if necessary (figure 5-2).



Fluid Level ·····

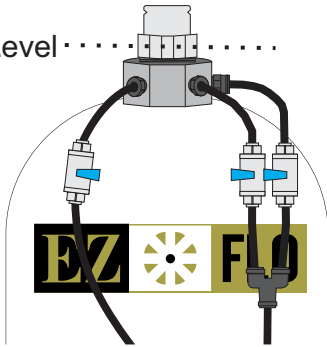


Figure 5-1

Replace Fill Cap & Pressurize

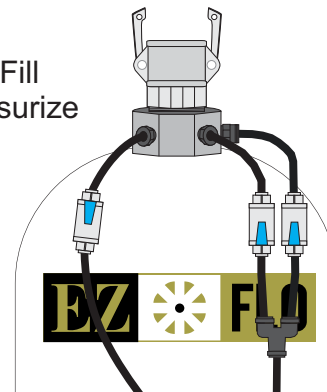


Figure 5-2

***All systems are pressure tested to 125 PSI at the factory but items may shift or loosen during transport and handling**

WATER SOLUBLE POWDER INJECTION

Injecting Water Soluble Powder

The system has the ability to inject Water Soluble Powder products (WSP), Liquid Products (LP), or a combination of both. To change between LP and WSP products, the appropriate valve must be opened. In figure 5 below, the system is configured to deliver WSP products or product requiring heavy agitation. This setting continually agitates the solution allowing for very high concentrations of product to be placed in the system without the concern of plugging.

Step 1- Open the WSP Water In Valve as shown in figure 5. The valve is in the open position when the handle is in line with the valve body and tubing.

Step 2- Close the LP Water In valve as shown in figure 5. The valve is in the closed position when the handle is not in line with the valve body and tubing.

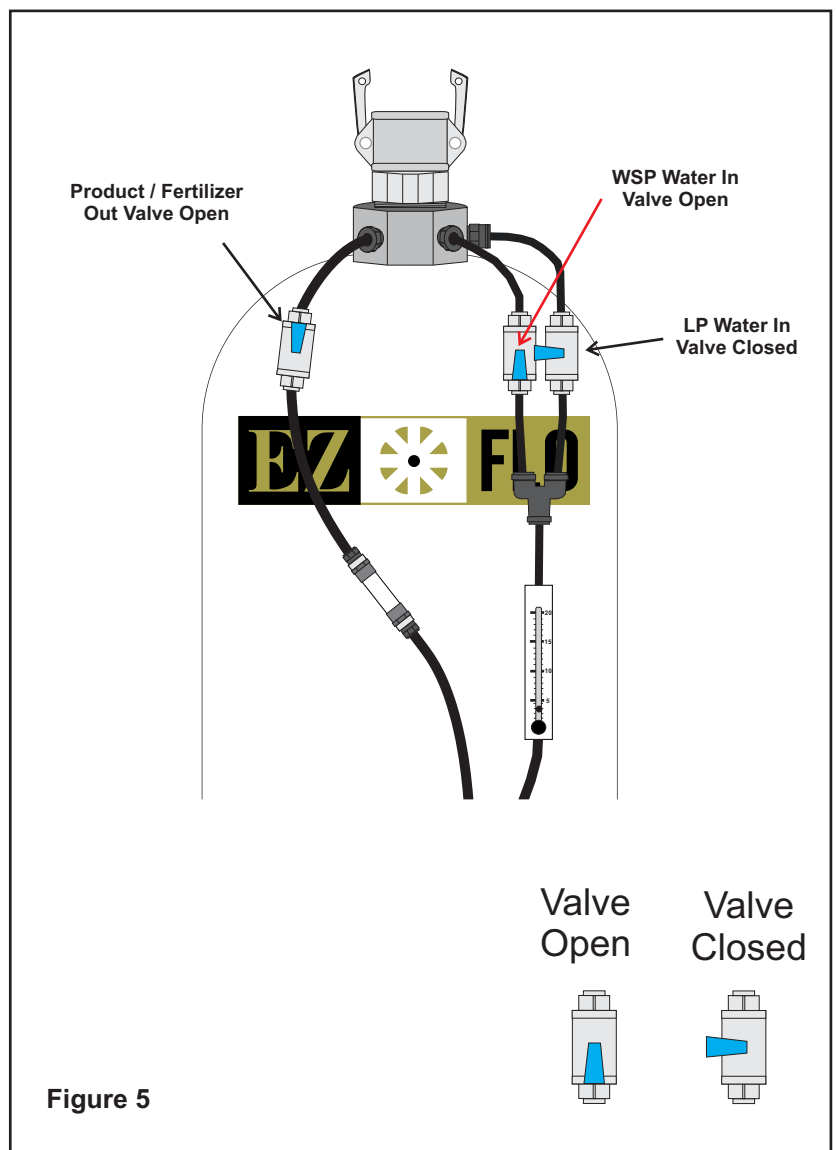
Step 3- Open the Product / Fertilizer out valve as shown in figure 5.

Step 4- Open the two shut off valves in the mainline to allow water flow into the system and product to flow out.

Step 5- Set injection metering gauge to the desired injection rate.

If the gauge is already set, it does not need to be adjusted at time of refill.

If switching to LP from WSP, the system will inject the product on average twice as fast. This is a direct result of the LP already in suspension not requiring dissolving before injection. **Reference Page 8 for "Setting The Injection Meter" for additional information.**



LIQUID PRODUCTS INJECTION

Injecting Liquid Products

The system has the ability to inject Water Soluble Powder products (WSP), Liquid Products (LP), or a combination of both. To change between LP and WSP products, the appropriate valve must be opened. In figure 9 below, the system is configured to deliver LP products or product that does not require mixing or agitation. This setting diverts all incoming water to a special port in the top of the tank to maximize layering of the solution to prevent dilution of the solution.

Step 1- Open the LP Water In Valve as shown in figure 6. The valve is in the open position when the handle is in line with the valve body and tubing.

Step 2- Close the WSP Water In valve as shown in figure 6. The valve is in the closed position when the handle is not inline with the valve body and tubing.

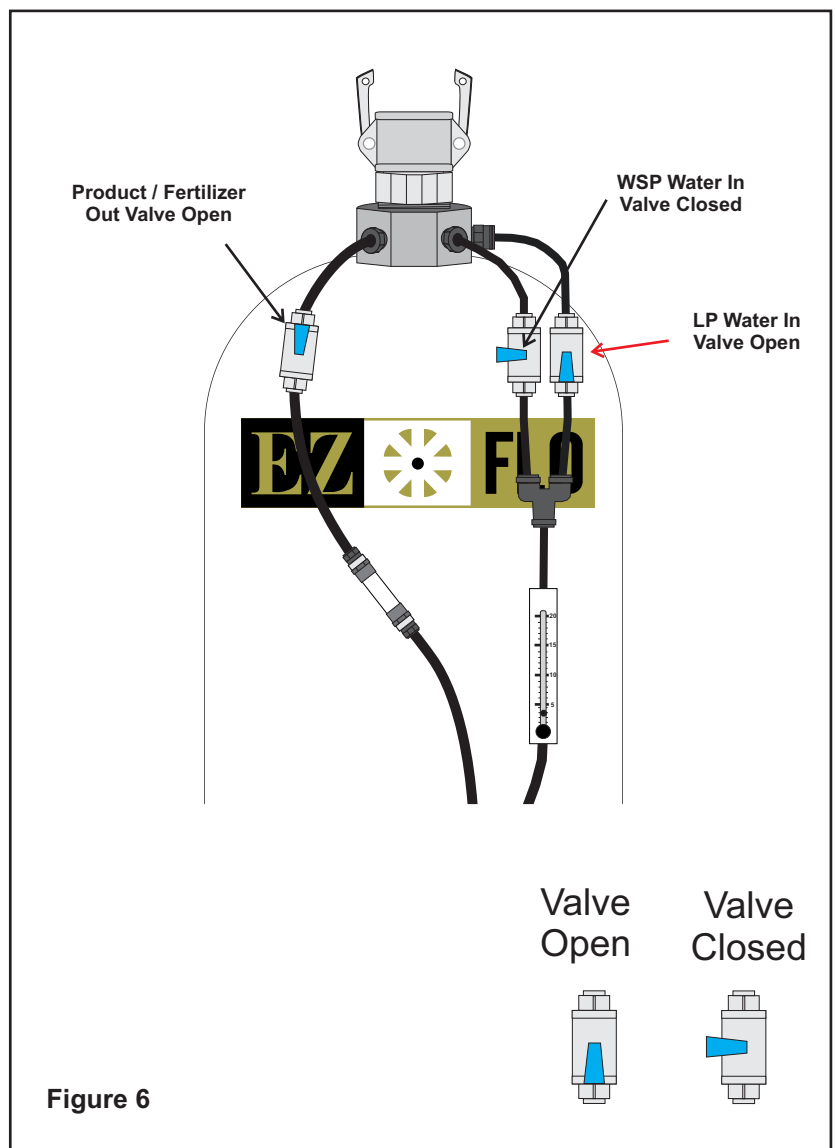
Step 3- Open the Product / Fertilizer out valve as shown in figure 6.

Step 4- Open the two shut off valves in the mainline to allow water flow into the system and product to flow out.

Step 5- Set injection metering gauge to the desired injection rate.

If the gauge is already set, it does not need to be adjusted at time of refill.

If switching to WSP from LP, the system will inject the product on average at half the speed. This is a direct result of the WSP requiring dissolving before injection. [Reference Page 8 for "Setting The Injection Meter"](#) for additional information.



INJECTION RATE

Setting the Injection Rate

Note: On the initial fill, the tank will stretch and expand for the first few minutes. When the tank has fully expanded the tank pressure will equalize with the line pressure and the feed rate can be set.

Step 1- Insure the irrigation mainline is pressurized.

Step 2- Open all appropriate incoming and outgoing valves.

Step 3- Slowly open the injection metering valve by turning the valve knob to the left. The gauge will register the amount of water entering the tank until it is completely pressurized. Wait for the meter to drop to zero before setting the feed rate.

CAUTION: Not all valve models retain the knob and can become dislodged from the housing if opened too far. As a rule, 8 full revolutions of the knob will generally allow for it to be removed from the valve.

Step 4- Turn on the controller for the irrigation system and run a zone or number of zones that is the average flow rate. For example: if you normally run 3 irrigations zones at once, be sure to have 3 running when setting the feed rate.

Step 5- Rotate the knob on the metering valve to the left until the desired gallons per hour or gallons per minute is achieved.

Note: If the gauge will not reach the desired injection rate you may need to calibrate your connection (Figure 7-1) or call EZ-FLO 866-393-5601

Calibration Procedure:

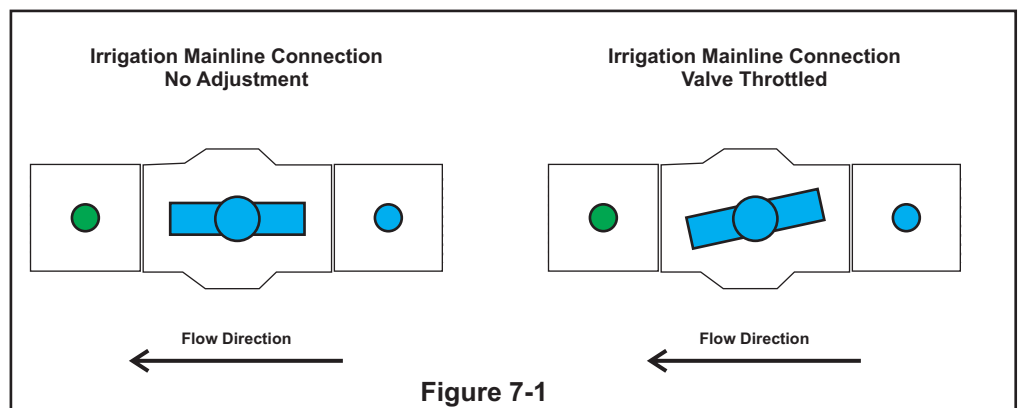
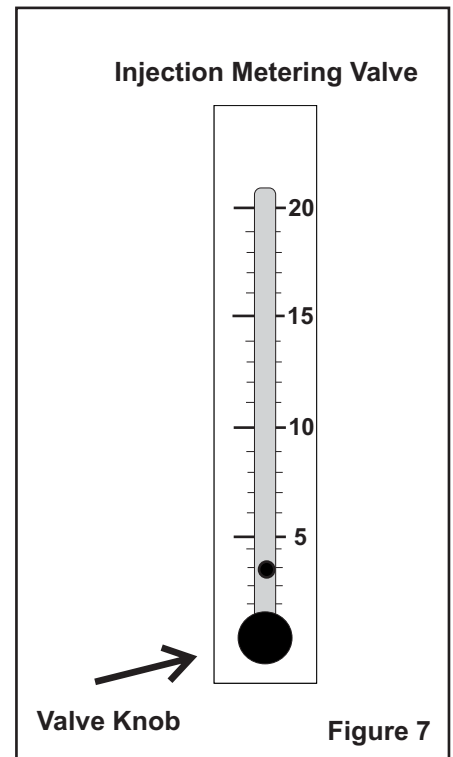
Step 1- Irrigation system is on and running but metering gauge is not able to inject fast enough.

Step 2- Slowly close the valve on the HFC (Page 4) connection or in between the SVF (Page 3) saddles until injection rate is attained.

Step 3- Adjust gauge as needed to control injection rates.

Once the gauge is set, the system will automatically adjust to pressure and flow changes and there is typically no need to make additional adjustments to the gauge.

Note: The gauge is very sensitive and bouncing of the float is normal. This is caused by momentary fluctuations in pressure or flow from the mainline. The gauge will quickly return to the set position after each fluctuation.



SETTING THE FLOW METER

Calculating the Injection Meter Setting

Setting the system is as simple as **A-B-C**:

- A-** Know your tank capacity
- B-** Know your irrigation total run time
- C-** Know how many cycles you want to run before the product runs out (2 to 3 cycles is recommended)

This creates the EZ formula of $(A / B) / C$

Step 1- Know your tank capacity (A)

HF-045	45 gallons (LP)	450 pounds (WSP)
HF-086	86 gallons (LP)	860 pounds (WSP)

EZ-FLO manufactures the two models above but does offer custom sizes as well. Typically you only have to reference one of the above sizes for calculating the feed setting.

Step 2- Know your irrigation run time (B)

The system injection rate is set based on gallons per hour and knowing the total hours of irrigation run time will tell you how long the system will last at each setting. As a general rule, longer irrigation run times typically result in lower feed rate setting to insure the products are not completely dispensed before the end of the cycle.

Step 3- Know how many irrigation cycles you want the system to run before dispensing all of the product (C)

The typical recommendation for various products is a minimum of 2 to 3 complete irrigation cycles. You may run the system faster or slower depending on the product or landscape needs. However, EZ-FLO advises the 2-3 cycle window to achieve even coverage.

Step 4- Put the above together and figure out your desired gauge setting.

EZ Equation: Tank Capacity (A) / Irrigation Run Time (B) = hours to empty (C)

Example: HF-045 = 45 gallon tank and irrigation run time of 4 hours and 3 days of running until empty.

EZ Calculation: $45 \text{ gal} / 4 \text{ hours} = 11.25 \text{ hours until empty}$, then $11.25 / 3 \text{ days of running} = 3.75 \text{ GPH injection setting}$.

The above tells us to set the gauge at 3.75 GPH to empty the tank contents in 3 days or 3 complete cycles.

Using the same figures above, but now you want the tank to last 1 day or irrigation cycle, then you would do the following:

EZ Calculation: $45 \text{ gal} / 4 \text{ hours} = 11.25 \text{ hours until empty}$, then $11.25 / 1 \text{ day of running} = 11.25 \text{ GPH injection setting}$

If you are to do the calculation once again, but using a 2 day watering window, the math would change as follows:

EZ Calculation: $45 \text{ gal} / 4 \text{ hours} = 11.25 \text{ hours until empty}$, then $11.25 / 2 \text{ days of running} = 5.625 \text{ GPH injection setting}$.

Continued on Next Page

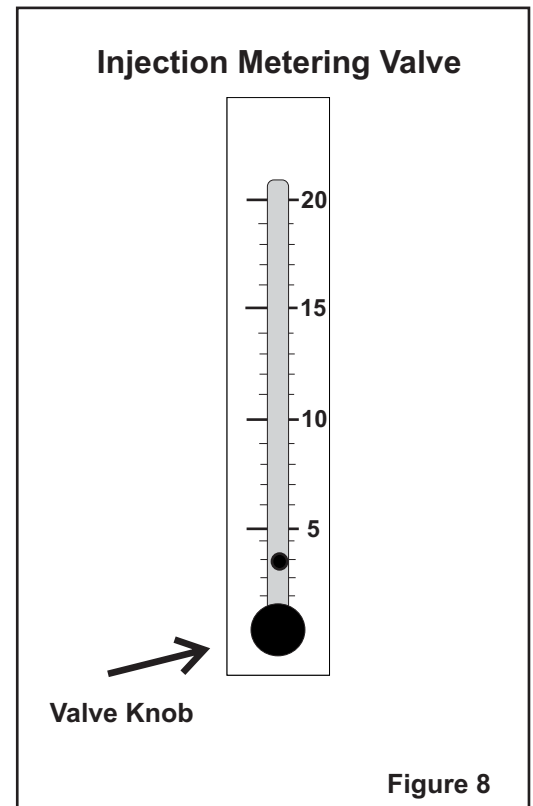


Figure 8

SETTING THE FLOW METER

Calculating the Injection Meter Setting (Cont.)

Step 5- Additional considerations need to be taken into account after selecting the desired feed rate.

It is fine to round up injection rates by a full half or gallon per hour. A good example is to use the above of 5.625, this can be rounded to 6 GPH and not cause any issues with the results. The majority of injectable products do not require the accuracy people tend to attempt. Generally a 10 to 20% differential is acceptable.

Allow an extra day of run time to fully clear any dyes or residual products from the tank. If you are planning to run the system for a 2 day cycle, plan to drain and refill after 3 cycles to allow for a full purge cycle.

All products are not created equal and will differ in solubility and viscosity. This may affect the ability for the system to inject the products. Typically, we do not encounter products that cannot be injected, however the rate may be slower than anticipated.

Injection of WSP versus LP:

Water Soluble Products (WSP) and Liquid Products (LP) have a very distinct difference in that the WSP is not in a readily injectable form. The WSP must first dissolve into a liquid before it can leave the injector where as a LP will immediately leave the injector. If pre dissolving a WSP or adding less than 3 lbs per gallon of total tank capacity, the product should be treated as a liquid per the below chart:

HF-045	45 Gallon Liquid Capacity	up to 135 Lbs Water Soluble Powder is still treated as a liquid
HF-086	86 Gallon Liquid Capacity	up to 250 Lbs Water Soluble Powder is still treated as a liquid

LP injects at a 1 to 1 rate, which means for every gallon of incoming water measured by the injection meter, 1 gallon of product will leave the tank. On an HF-045 system, after 45 gallons of water have passed through the injection meter, the tank will be empty of product.

WSP must dissolve and the rates will vary. The amounts of WSP added to the tank can vary greatly as well. Once the levels listed above are exceeded (135 lbs or 250 lbs) you can use the ratio of 2 lbs of WSP will leave the tank for every 1 gallon of incoming water measured by the injection meter.

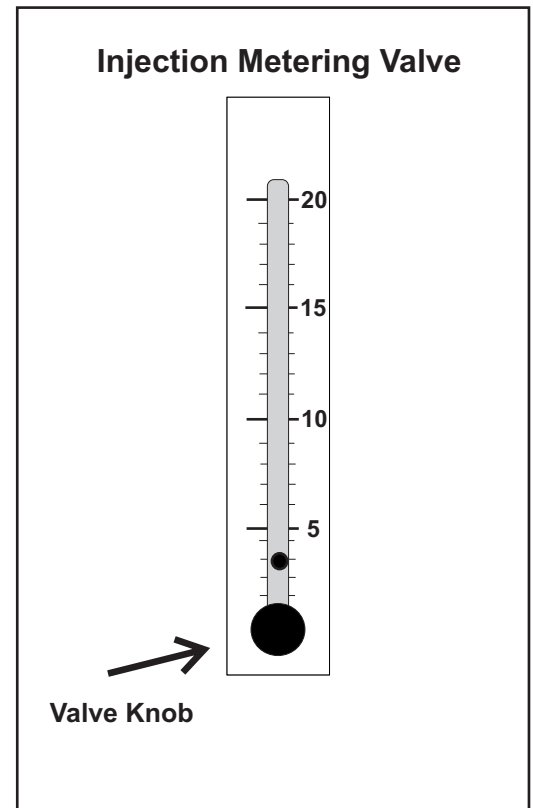
Example: HF-045 with 450 lbs of WSP will take 225 gallons of incoming water to empty the tank

EZ Calculation: $450 \text{ lbs} / 2 \text{ lbs per gallon of incoming water} = 225 \text{ gallons}$

To figure back to the gauge setting, you can use the 225 gallons as your new tank capacity.

EZ Calculation: $225 \text{ gallon capacity} / 4 \text{ hours of irrigation run time} = 56.25 / 5 \text{ irrigation cycles} = 11.25 \text{ GPH gauge setting.}$

If you have any questions regarding the above, please call toll free: 866-393-5601



FILLING THE TANK

To Fill the Tank with Product

The EZ-FLO HI-FLO system may be filled with virtually any Liquid Product (LP) or Water Soluble Product (WSP) in full concentrated form. No premixing or dilution is required although it may be applicable in high coverage rate products. Water soluble products may be easier to pour into the tank if premixed into a slurry or flowable paste.

Tank Capacities:

HF-045	45 Gallons (LP)	450 Pounds (WSP)
HF-086	86 Gallons (LP)	860 Pounds (WSP)

Step 1- Confirm all valves are closed and the tank is empty or enough fluid has been removed to allow for the addition of the new product. If filling to maximum capacity all fluid should be drained through the drain valve (Figure 13)

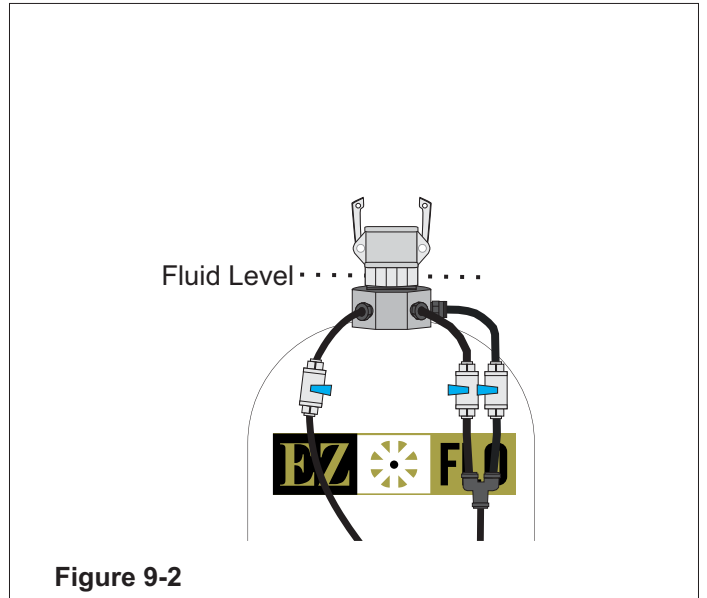
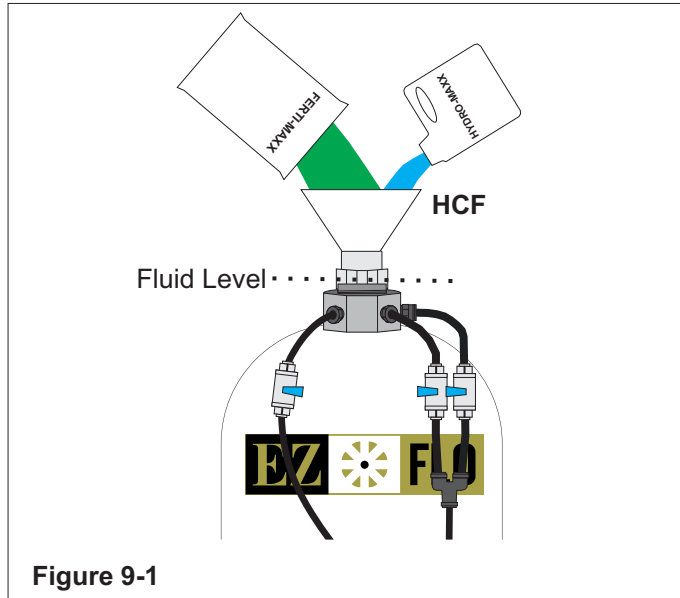
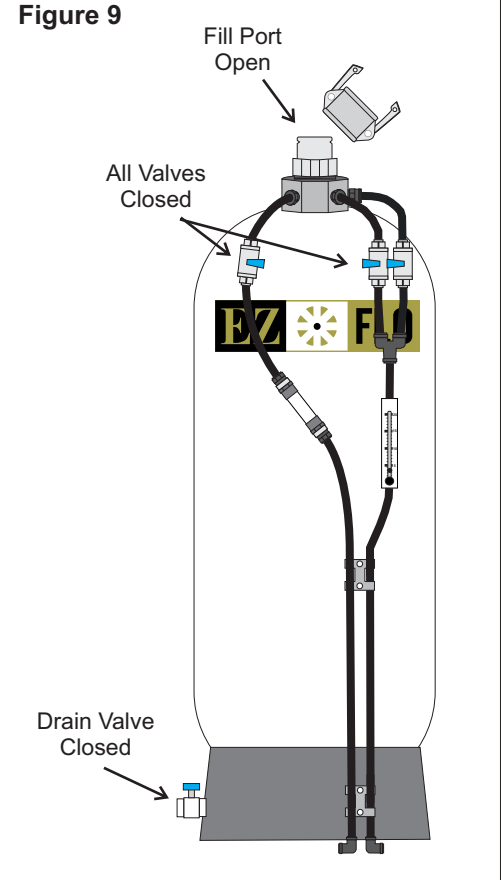
Do not close or adjust the injection metering valve, this will unnecessarily change your injection rate.

Step 2- Open the fill port and attach the High Capacity Funnel (HCF, Optional) (Figure 9)

Step 3- Add the desired amount of products (Figure 9-1)

Step 4- Top off with water and close the fill port/valve (Figure 9-2)

Do not leave air in the tank, this will delay injection and may cause damage to the system and its components.



Note: The system will always have 1 quart to 1/2 gallon of dyed material or residual product at the time of draining. This is due to the location of the dip tube assembly and materials sitting in the drain. The product may be saved and added to the next batch without issue.