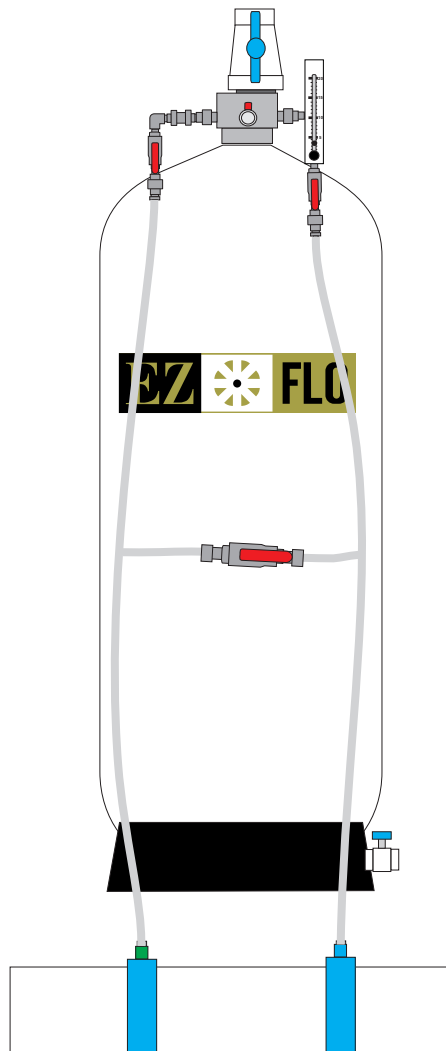




Injection Systems

INSTALLATION AND OPERATING GUIDE HI FLO VERTICAL SYSTEMS



When the HI-FLO Metering Head is attached to a tank, the tank will be pressurized to the same pressure as the irrigation system. Before attaching a tank or other storage device to the irrigation system, make sure the tank is capable of safely containing the pressure of the irrigation system. EZ-FLO assumes no responsibility for failures of tanks that are not manufactured by EZ-FLO.

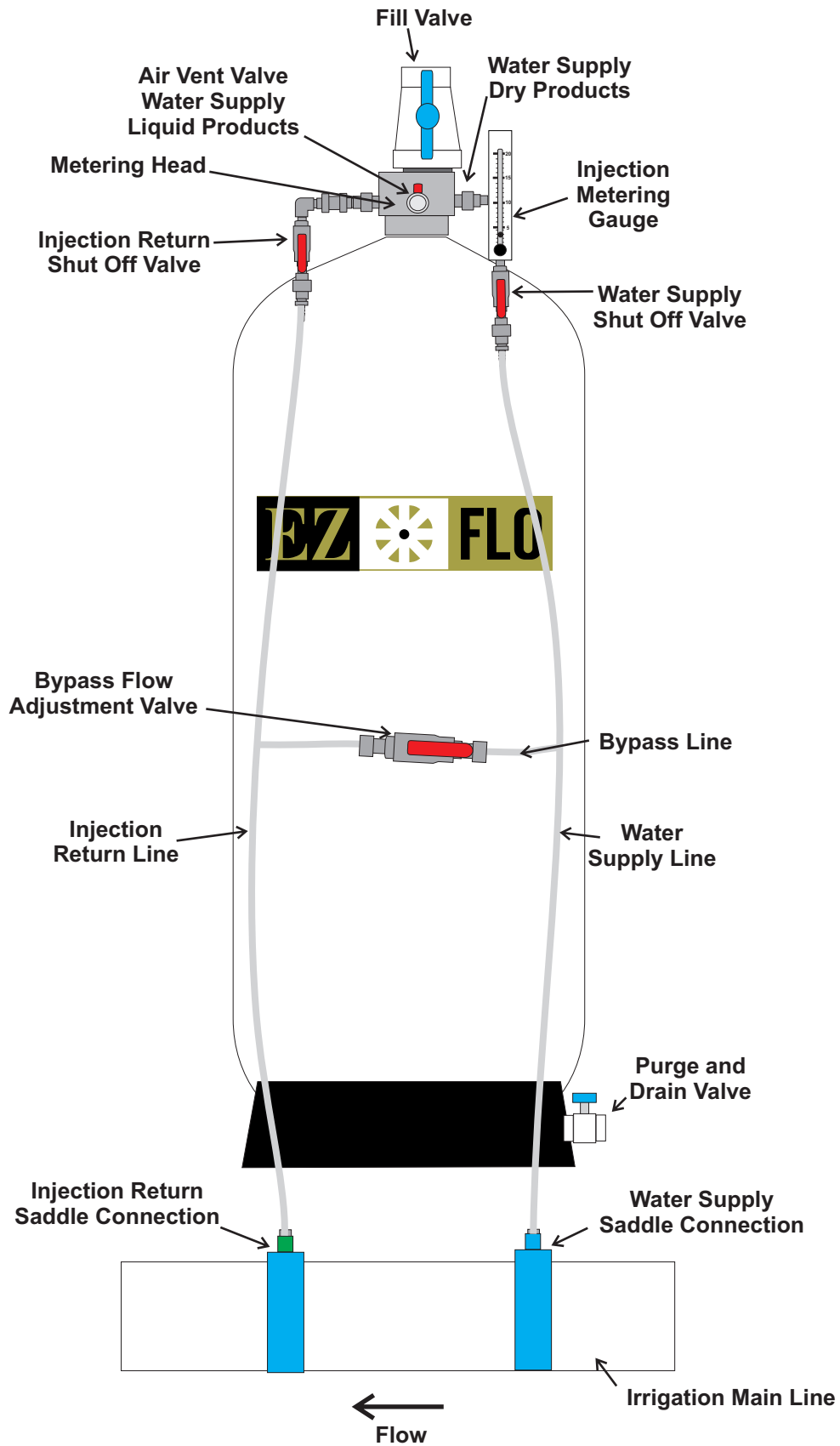
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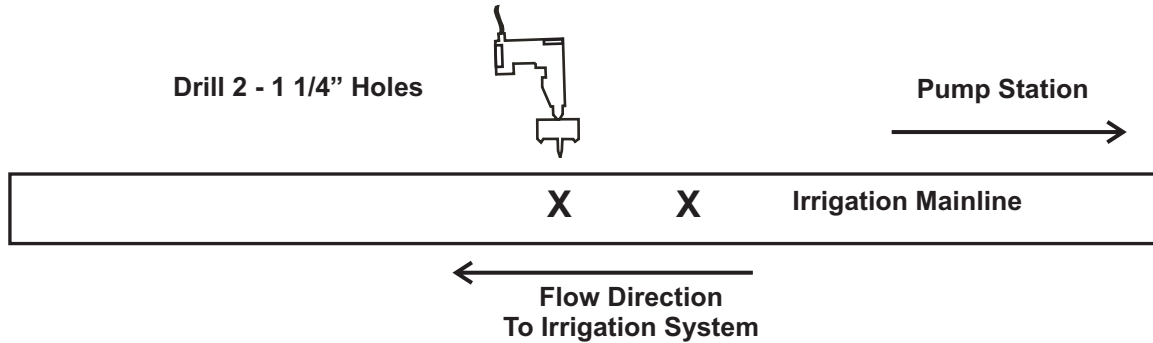
Injection Systems

SYSTEM COMPONENTS

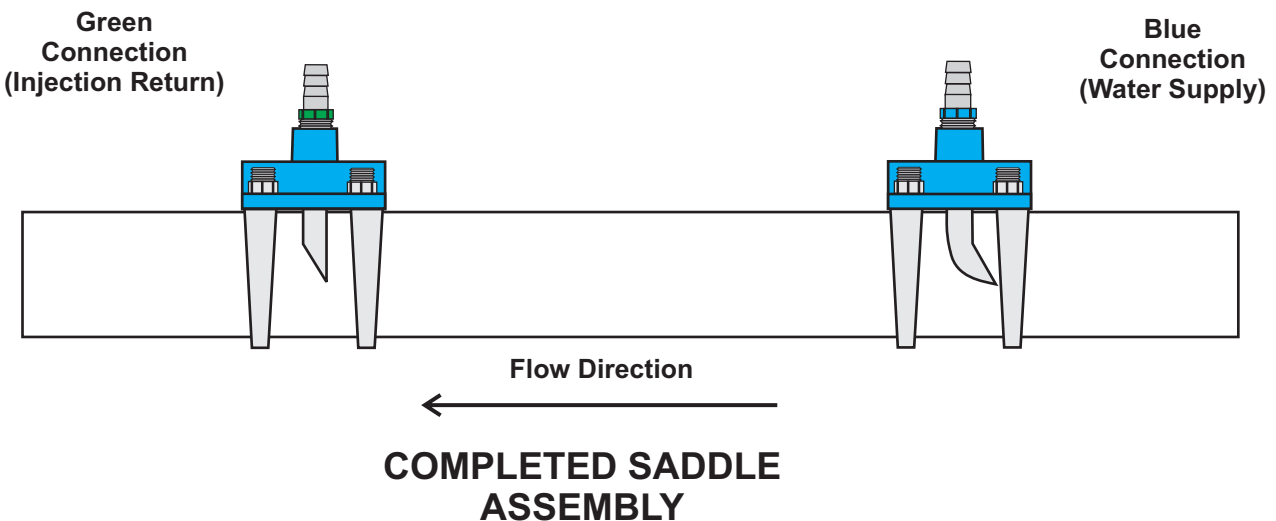


Install Saddle Venturi Connection

Step 1 - Drill (2) - 1 1/4" holes 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. Caution: **DRILL SLOWLY TO PREVENT PIPE FRACTURE**
Hole Saw or Reaming bit is recommended.



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.



EZ FLO™ Injection Systems

To connect the system to the irrigation line

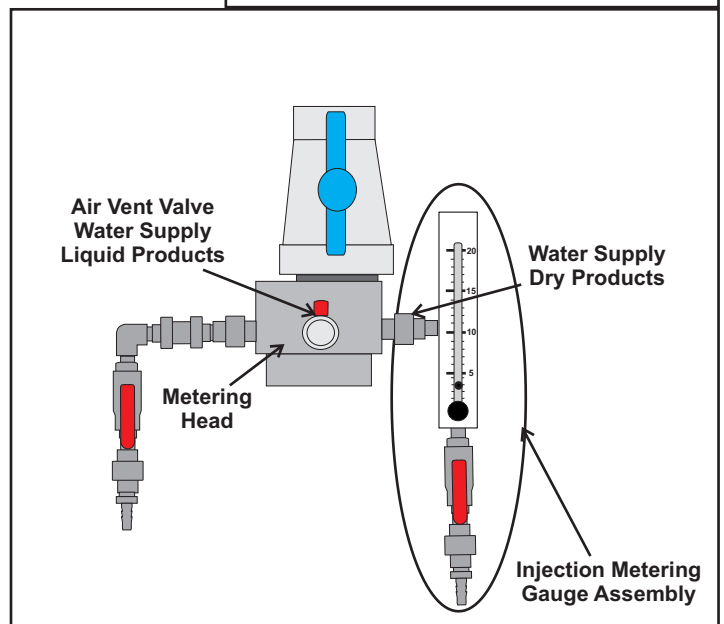
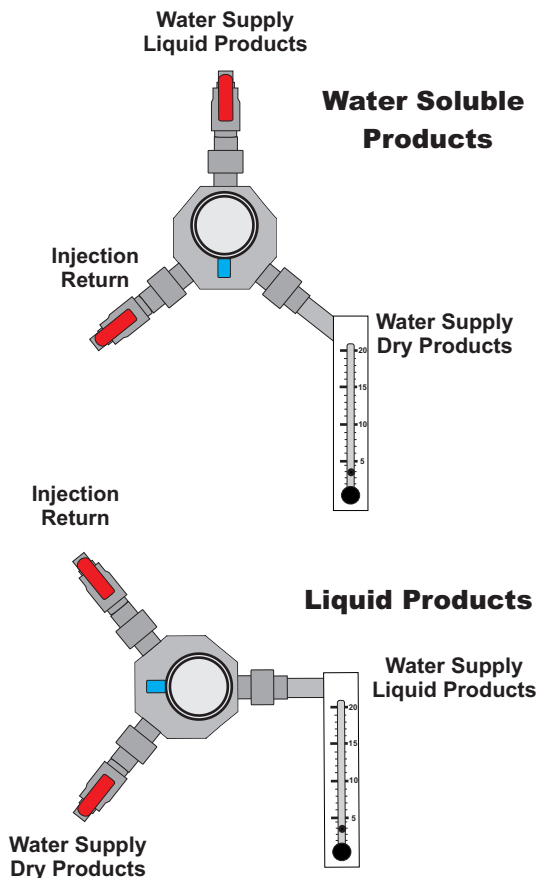
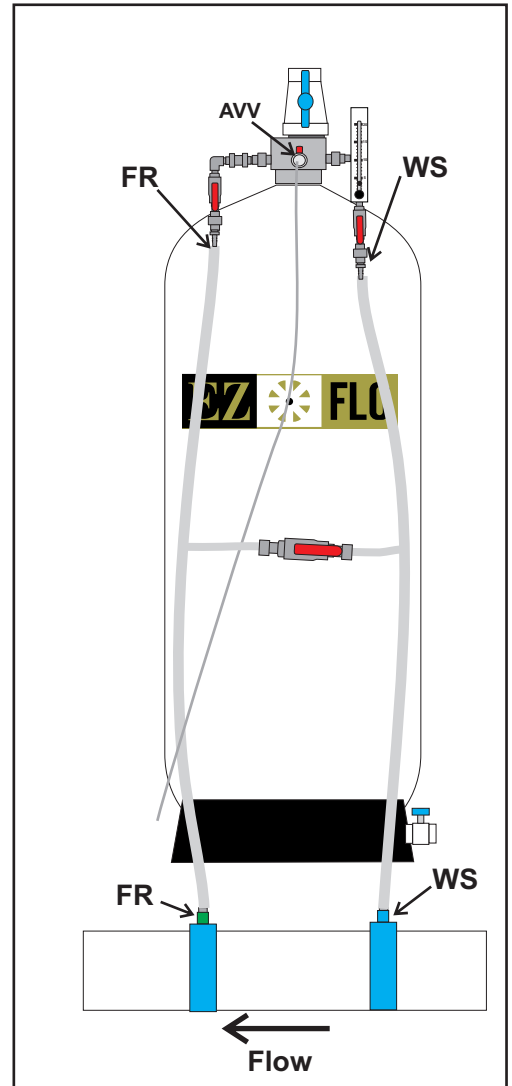
Step 1 - Connect tubing to the system and to the irrigation line.

Connect the water supply **WS** tubing to the water supply connection on the irrigation main line and tank mixing head. Connect the fertilizer return **FR** tubing to the fertilizer return connection on the tank metering head and the irrigation main line. Connect the tubing to the air vent valve **AVV** to direct air and fluid away from the tank. (Tubing sold separately). Fill with water and pressure test all connections. Fill the tank with water and pressure test the system.

Step 2 - There are 2 water supply connections on the metering head.

One is for liquid products and one is for dry, water soluble powder products. Connect the water supply line to the metering head connection based on the type of product you will be putting in the tank.

To change between liquid and dry products, disconnect the Injection Metering Gauge Assembly from the Metering Head by removing the assembly at the union closest to the Metering Head and connecting it to the desired port. Connect the Vent Valve to the port that is not connected to Injection Metering Gauge Assembly. The simple diagram below shows a top view of the various configurations:





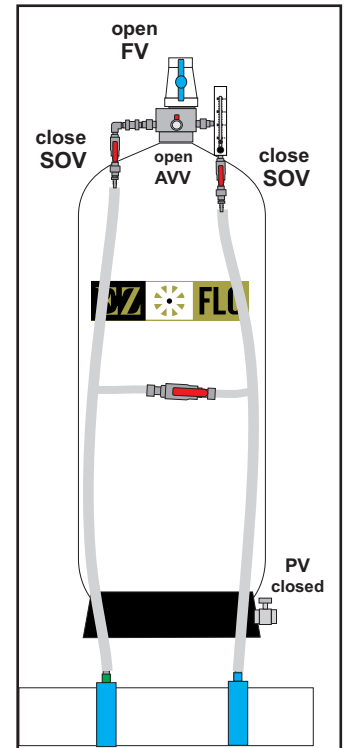
Injection Systems

To fill the tank with product

The system can be filled with any liquid or water soluble product in concentrated form. No premixing or pre-dilution is required. Water soluble products may be easier to pour into the tank if they are mixed with enough water to turn them into an easy to pour slurry.

Before filling close and open valves in this order:

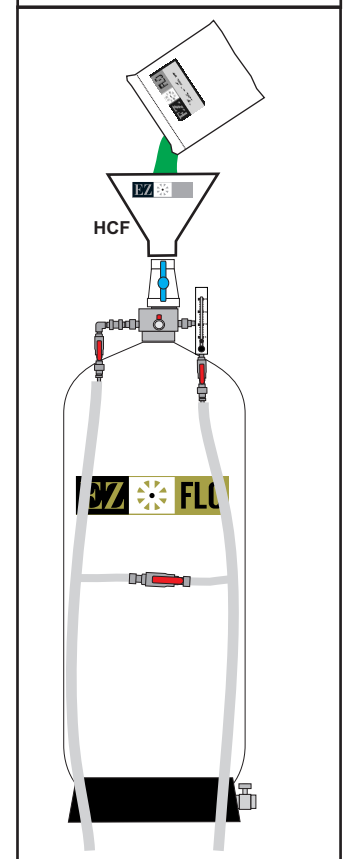
1. Close both shut off valves **SOV**
2. Open the air vent valve **AVV** to exhaust pressure
3. If you are refilling, open the purge and drain valve **PV** to drain the water from the system.
3. When the tank is completely drained, close the purge and drain valve **PV**
4. Open fill valve **FV**



To fill with water soluble products:

No premixing required. Water can be added to the fertilizer to create an easy to pour slurry if that is preferred. **Make sure the system is set up to inject water soluble powders. To do this, connect the Water Supply Gauge Assembly to the water in dry products connection (see step 2 under on the previous page).**

1. Connect the high capacity funnel **HCF** to the fill valve **FV**
2. Pour the fertilizer directly into the high capacity funnel **HCF**
3. Fill the tank the rest of the way with water.



To fill with liquid products: Make sure the system is set up to inject liquid products. To do this, connect the Water Supply Gauge Assembly to the water in liquid products connection (see step 2 on the previous page).

1. Attach the high capacity funnel **HCF** or fill hose from product storage tank to fill valve **FV**. Liquids can also be filled through the Purge and Drain Valve **PV**, at the bottom of the tank. The **PV** can be used to refill the tank when it is only partially empty by filling from the bottom and letting the water in the tank drain from the fill valve **FV**.
3. Fill tank the rest of the way with water.

Injection Systems

After Filling

Step 3 - Get system ready to begin injecting

Open and close valves in this order.

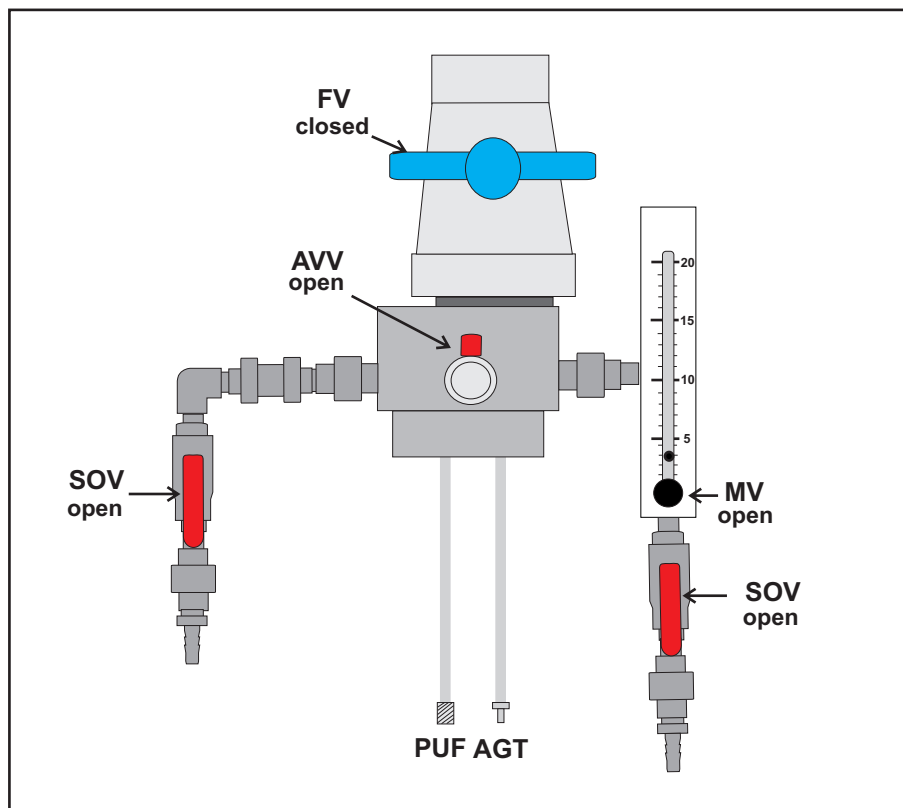
1. Close fill valve **FV**
2. Open shut off valves **SOV**

Step 2 - Set system feed rate

With the irrigation system operating,

1. Open air vent valve **AVV** until air purged from the tank and lines
2. Open the meter valve **MV** to allow water flow into the tank. The meter valve will register maximum flow until the tank is completely full of water and the tank pressure is equal to the line pressure.

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.



3. The meter registers the gallons per hour being injected. This reading will change as the flow rate of the irrigation system changes. To accurately set the feed rate, set it when the irrigation system is running at its normal operating GPM.

To set the feed rate:

Know the desired dispensing time, the upcoming irrigation schedule and the unit size. For example -

- a. Liquid products - Note: Any amount of liquid product can be added to the system up to the total amount of the tank's capacity. If adding less than the full tank capacity, mix the solution with water. This will provide a 45 gallon mix that will be injected at the rate shown on the metering gauge.

if the irrigation schedule is 6 hours per day, the desired dispensing time is 3 days and the system has a 45 gallon capacity, set the meter to 2.5 gallons per hour. At this rate 45 gallons of product will dispense in 18 hours. **45 gallons / 18 hours of injection time = 2.5 gallons per hour**

- b. Dry water soluble products - Note: Approximately two pounds of water soluble product is delivered in each gallon of the injected mix and the system will hold up to 10 pounds of dry product for every gallon of capacity.

If the irrigation schedule is 6 hours per day, the desired dispensing time is 3 days, the system has a 45 gallon capacity and 450 pounds of dry product has been added to the tank, set the meter to 12.5 gallons per hour. At this rate 450 pounds of dry product will dispense in 18 hours. **450 pounds / 2 pounds per gallon = 225 gallons to be injected / 18 hours of injection time = 12.5 gallons per hour**

If you have the same conditions but only want to put 100 pounds of dry product in the system, set the meter to 2.75 gallons per hour. **100 pounds / 2 pounds per gallon = 50 gallons to be injected / 18 hours of irrigation time = 2.75 gallons per hour**

Special Note:

Normally the injectors are set once to dispense the product over three to five days. Longer dispensing times improve coverage rates and nutrient uptake.

EZ-FLO HI-FLO By-Pass Operation

Typically the EZ-FLO HI-FLO systems will operate perfectly fine without the use of a bypass / venturi relief valve, but if you are injecting into flow streams above 1200 GPM the valve may be required.

To properly calibrate and adjust:

- 1.) Make sure the tank is completely filled (fluid or supplement) so no air is present.
 - a. Purging the ½" tubing lines is not necessary as all air will evacuate automatically
- 2.) Start with the by-pass valve in the full closed position
 - a. Allow the irrigation system to reach maximum flow
 - b. The bypass valve and flow meter cannot effectively be configured at flow ranges below the maximum flow rate
- 3.) Once the mainline is operating at full flow set the flow meter to the desired feed rate
 - a. Do not adjust the bypass yet, it should still be in the full closed position
- 4.) Observe the flow meter float and its ability to maintain the set level for a period of 2 to 3 minutes.
 - a. The float will bounce due to fluctuations in pressure but quickly recover to the selected setting, this is normal operation.
 - b. Continue to observe and confirm the float is returning to the appropriate level and not steadily dropping
- 5.) If the float continues to return to the appropriate level and the irrigation system is operating at full flow, no adjustment needs to be made to the bypass valve.
- 6.) While observing, if the float fails to return to the appropriate level and steadily to lower levels the bypass valve will need to be opened
 - a. When the float steadily drops, increase the observation time to 5 minutes to insure it does not recover
- 7.) To adjust the bypass valve, simply open the valve to the full position.
 - a. This will instantly relive the turbulence in the venturi fitting
- 8.) Once in the full open position, slowly close the valve until the float begins to fall again
 - a. Once the float falls, adjust the valve slightly towards the open position until the float maintains its set level
- 9.) After the float is stabilized, observe operation for 3 to 5 minutes and insure the bypass valve is appropriately set.
- 10.) Now the flow meter may be set to the desired level of injection

The bypass valve is now configured and it is recommended the handle be removed and set aside to avoid any future tampering. If the bypass valve is ever accidentally adjusted the above steps may be repeated.

Special notations:

If the bypass valve is too far open, the system will lose the ability to inject at higher rates. Depending on the desired level of injection, this may not be an issue. When the bypass valve is too far closed, the injection may suddenly stop.