



Flo-Pro Injection Tank Bidding Specifications

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General Description

The Flo-Pro HI-FLO proportional injection system can be used to inject water-soluble powder or liquid products through an irrigation system when installed and set properly. This product is designed for golf, sports fields, and large commercial landscape applications.

The injection system consists of an above ground tank that is either oriented horizontally or vertically depending the size specified. The system utilizes a patented fluid-flow design for precise delivery of product while offering adjustable feed rates for various ratios. The system does not have any moving parts nor does it require an electrical connection to operate.

The Flo-Pro Injection system includes the following components:

- Horizontal or vertical tank system w/ bottom drain
- Metering head w/ ball valves and fittings
- Clearing tubing (length 20')
- Fill valve.

The saddle connection kits are specified separately depending on the size of the existing irrigation mainline. Saddle kits are made for mainline sizes from 3-6" and 6-12" in diameter.

The two vertically oriented tanks can also be specified with green-painted metal enclosures as separate components.

Materials

The Flo-Pro Injection tank is constructed of materials conforming to a minimum of Schedule 40 PVC. The finished color of the injection tank is white with a black base.

Metal enclosures are available for the 45 and 86-gallon vertical tanks only. The enclosures are constructed of 16-gauge steel that is primed and painted green to blend into surrounding landscapes. The top of the enclosure shall be hinged with 2 (qty) gas-type shocks for ease of opening and closure. The front panel of the enclosure is completely removable providing front access to the metering head and/or bypass valves as needed.

Weights and Dimensions

The following table identifies weights and dimensions of available models. Weights are measured with Injector tanks empty.

Tank Sizes (in gallons)				
No.	Part Number	Description	Weight	Dimensions
1	IHF-010	10 Gallon Hi-Flo Horizontal Tank System	90 lbs. (40.83 Kg)	36" x 13" x 26" (91 x 33 x 66 cm)
2	IHF-017	17 Gallon Hi-Flo Horizontal Tank System	110 lbs. (49.90 Kg)	36" x 16" x 32" (91 x 41 x 81 cm)
3	IHF-025	25-Gallon Hi-Flo Horizontal Tank System	130 lbs. (58.97 Kg)	36" x 18" x 34" (91 x 46 x 86 cm)
4	IHF-045	45-Gallon Hi-Flo Vertical Tank System	80 lbs. (36.39 Kg)	25" x 25" x 72" (64 x 64 x 183 cm)
5	IHF-086	86-Gallon Hi-Flo Vertical Tank System	100 lbs. (45.36 Kg)	30" x 30" x 78" (76 x 76 x 198 cm)
6	IHF-36S	Saddle Connection kits for 3-6" mainline sizes	10 lbs. (4.54 Kg)	10" x 10" x 10" (25 x 25 x 25 cm)
7	IHF-612S	Saddle Connection kits for 6-12" mainline sizes	15 lbs. (6.80 Kg)	12" x 12" x 12" (30 x 30 x 30 cm)
Optional Enclosures (45 & 86-Gallon Vertical Tank Models Only)				
No.	Part Number	Description	Weight	Dimensions
1	IHF-MC-45	Metal Vertical Enclosure for 45-Gallon Tank	300 lbs. (136.08 Kg)	25" x 25" x 66" (64 x 64 x 168 cm)
2	IHF-MC-86	Metal Vertical Enclosure for 86-Gallon Tank	500 lbs. (226.80 Kg)	31" x 31" x 78" (79 x 79 x 198 cm)

Function

The Flo-Pro is a pressurized, non-mechanical or electrical system that operates exclusively on the differential pressure created by water flowing past inlet and outlet ports installed in the irrigation mainline system and connected to the fertigation tank. The Flo-Pro system does not contain moving parts to create fertilizer flow from the tank to the irrigation mainline. Even metering is accomplished by creating a patented layering process inside the tank that separates incoming water from the fertilizer solution without requiring an internal bladder.

Water flow entering the tank it to be directed both the top and the bottom of the tank to provide even and consistent metering with adequate agitation to accommodate the use of either liquid or water-soluble, non-hazardous fertilizers and other supplements.

The system is to be connected to flexible tubing and provide for easy disconnection and reconnection for subsequent removal and refill.

The system shall also have the ability to quickly adapt between liquid and water-soluble powdered materials with minimal effort and no additional accessories.

The proportional rates shall be adjustable from 100:1 to 150,000:1 and automatically adjusts to changes in water pressure and flow without the use of electronic meters, pumps and/or control valves.

Locating the Injection Tank

The Flo-Pro tank is to be installed on-grade downstream of a pump station or approved backflow device and upstream of the first valve, or valve-in-head sprinkler in an irrigation system.

The tank is to be located on a flat and level surface for maximum stability. In seismic-prone areas, additional support maybe required to provide stability in light to moderate ground shaking events.

The inlet and outlet feeds are to be located top-dead-center of a pipe and used with approved double-strap saddles to accommodate various mainline pipe diameters.

Installation and Operation

The following procedures are to be considered to install the injection tank once it's located properly.

- Locate the shut-off valve(s) and relieve any internal water pressure in the mainline pipe before starting any of the following tasks.
- Excavate and locate the irrigation mainline digging a large enough excavation to reach under the mainline pipe.
- Install the water supply and injection return inlets by drilling the sidewall of the mainline pipe and using the saddle clamps to make a water-tight connection. Use the approved Flo-Pro injector ports only. Tighten the saddle clamps to a proper torque. Note the flow direction indicator on the ports and install accordingly.
- Install a valve box around the water supply and injection return inlets for future access or maintenance.
- Connect tubing between the injection ports installed on the mainline and the injector tank. The water supply tube it be connected to the blue connector and the injector return to the green connector. The tubing is to be terminated to the inlet side of a ball valve connection.
- Verify the metering head is positioned correctly for the type of material to be injected (liquid vs. water-soluble powder product). Change the metering head position per the installation instructions.
- When filling the tank for the first time, follow the prescribed sequence of ball valve closure and air valve opening to exhaust internal pressure. The tank will stretch and expand for the first few minutes. Once the tank has fully expanded the tank pressure will equalize with the mainline pressure so the feed rate can be set.
- Set the feed based on the following factors:

- Type of material to be injected,
- Its recommended injection rate
- Length of irrigation watering window
- The number of days in which injection will be accomplished (generally a 3-5 day period is recommended)
- Flow rate of the mainline pipe.
- Calculate the metering feed rate based on examples provided in the Installation and User guide.

Operation

- Shut-off pressure to the system by closing both ball valves
- Open the drain valve at the bottom of the tank
- Open the fill valve at the top of the tank
- Allow tank to completely drain or drain enough fluid to accommodate new product quantity to be injected
- Fill the tank with material to be injected, using a large funnel to avoid spilling concentrated material
- Fill the tank the rest of the way with water by opening one of the shut-off valves and direct flow into the tank until all of the air has been exhausted
- Close the valve on top of the tank
- Slowly turn both Shut-Off valves to the “On” position visually checking for leaks
- Material to be injected during scheduled irrigation.

Testing

- Operate one or more valve or sprinkler
- Set the metering rate on fast and observe for color in the clear injection tube. If color is present, the system is ready for operation
- Set the feed rate back to the pre-calculated feed rate
- Allow scheduled irrigation to inject the product and refill the tank as needed until the desired amount of product is applied.

Ordering Information

The following table identifies the various tank sizes and other system accessories.

Tank Sizes / Corresponding Saddle Connection Kits		
No.	Part Number	Description
1	IHF-010	10 Gallon Hi-Flo Horizontal Tank System
2	IHF-017	17 Gallon Hi-Flo Horizontal Tank System
3	IHF-025	25-Gallon Hi-Flo Horizontal Tank System
4	IHF-045	45-Gallon Hi-Flo Vertical Tank System
5	IHF-086	86-Gallon Hi-Flo Vertical Tank System
6	IHF-36S	Saddle Connection kits for 3-6” mainline sizes
7	IHF-612S	Saddle Connection kits for 6-12” mainline sizes



No.	Part Number	Description
Optional Enclosures <i>(45 & 86-Gallon Vertical Tank Models Only)</i>		
1	IHF-MC-45	Metal Vertical Enclosure for 45-Gallon Tank
2	IHF-MC-86	Metal Vertical Enclosure for 86 Gallon Tank

The Flo-Pro Injection system shall be sold and distributed by Underhill International Corporation, Lake Forest, CA.