

# Lafferty Equipment Manufacturing, LLC Installation & Operation Instructions

Model # 980135 • 105HCDU FPV Mixing Station

## REQUIREMENTS

Three (3) Liquids to Mix

Compressed Air up to 3 CFM

Discharge Hose 1/2" x 5' (Open Flow)



[www.laffertyequipment.com](http://www.laffertyequipment.com)

501-851-2820

**WARNING! READ ALL  
INSTRUCTIONS BEFORE  
USING EQUIPMENT!**

## OVERVIEW

The 105HCDU FPV Mixing Station blends three (3) liquid products (chemicals and/or water) into a single solution and dispenses into any container. This unique proportioning system uses an air-operated pump to draw the first product from a user-supplied container and provide the fluid pressure for a venturi injector that draws in the remaining products. Metering tips control the rate at which the second and third chemicals are drawn into the first, and the resulting solution mixes thoroughly prior to being discharged through the open flow hose.

SAFETY & OPERATIONAL PRECAUTIONS

- For proper performance do NOT modify, substitute nozzle, hose diameter or length
- Manufacturer assumes no liability for the use or misuse of this unit.
- Wear protective clothing, gloves and eye-wear when working with chemicals.
- Always direct the discharge away from people and electrical devices.
- Follow the chemical manufacturer's safe handling instructions.
- DO NOT use chemicals that are not compatible with Viton diaphragms.

TO INSTALL (REFER TO DIAGRAM ON NEXT PAGE)

1. Mount the unit above chemical containers to prevent siphoning.
2. Securely attach the 10' x 1/2" clear suction tube to the pump and place the strainer in a container of Chemical #1. *NOTE: Chemical #1 should be the product that is required in the highest concentration in the final solution - this is the chemical into which the other two are blended.*
3. Splice a metering plug into the shorter 6' x 1/2" clear suction tube and use hose clamps to secure the plug and tube as shown in diagram. Place the strainer into Chemical #2. *NOTE: Chemical #2 should be the product that is required in the second highest concentration in the final solution.*
4. Thread a metering tip into the small check valve (use care not to overtighten) and slide the 1/4" suction tube over the metering tip and check valve barb. Place the strainer in Chemical #3. *NOTE: Chemical #3 should be the product that is required in the lowest concentration in the final solution.*
5. Attach a compressed airline to the inlet ball valve. **Compressed air is set at 60 PSI.** DO NOT TURN ON.

See chemical labels for dilution ratio recommendation or consult your chemical supplier.

- Chemical usage rates are based on water thin chemicals with a viscosity of 1CPS.
- Application results will ultimately determine final tip color.
- Validate output before application.
- BOTH chemical suction tubes must be placed in chemical. If one suction tube will not be used, plug the unused tube to prevent it from drawing in air.

The usage rate of Chemical #2 is regulated using a metering plug.

- Use no metering plug to draw the maximum possible amount of Chemical #2 into Chemical #1
- Plugs with drilled orifices are supplied to mix weaker ratios (1:1, 1:2 and 1:3) and use less Chemical #2
- A blank plug is also included, which can be drilled to the required size

The usage rate of Chemical #3 is regulated using a metering tip.

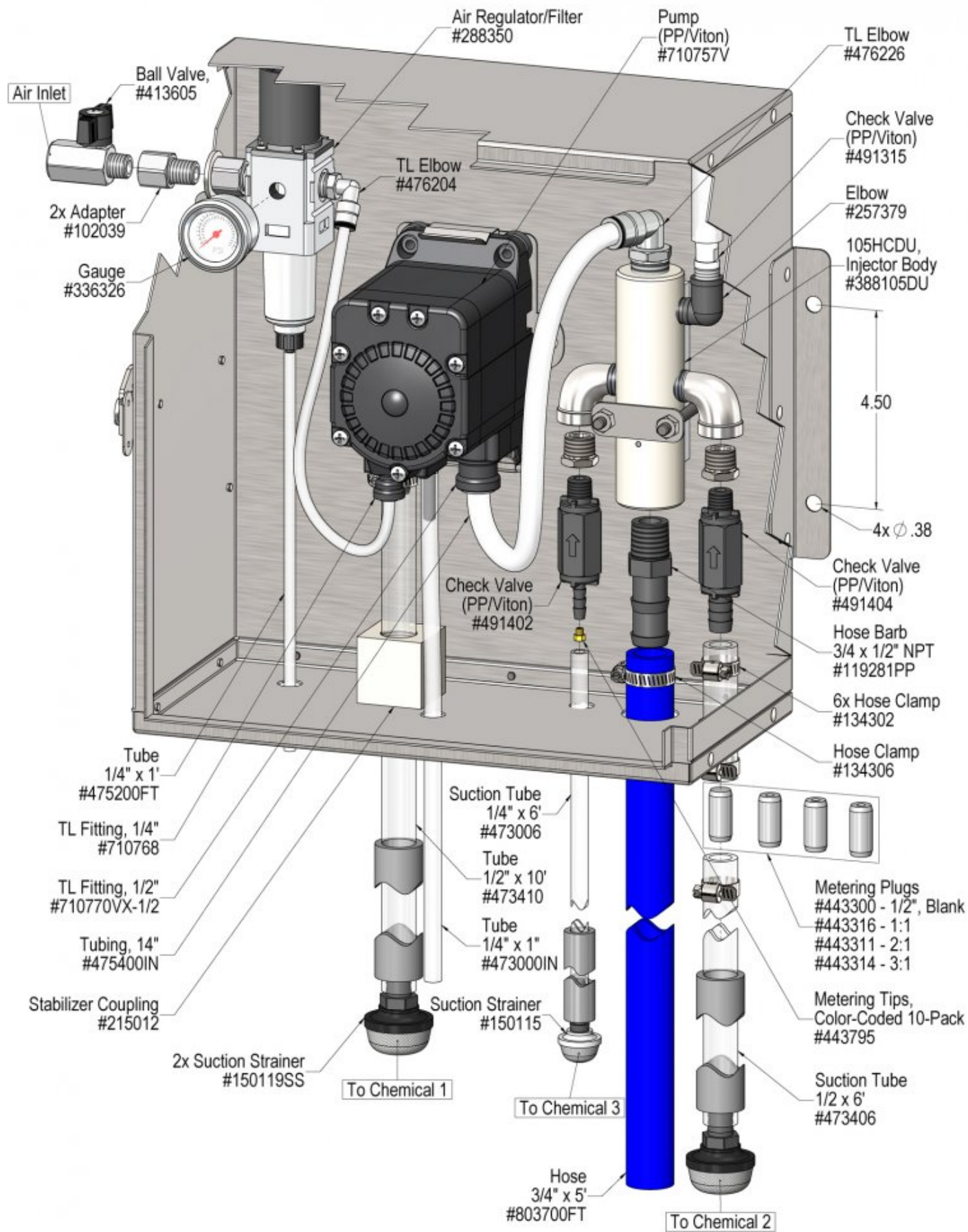
- Color-coded metering tips are included, refer to tip chart

TO OPERATE

1. Hold the discharge tube inside the container to be filled, do not release it, completely open the inlet ball valve.
2. When container is filled to the desired level, close the ball valve and keep the discharge tube in the container until it completely drains before removing it. Do NOT kink the discharge hose.
3. Make final tip metering tip / plug adjustments based on results.

METERING TIP SELECTION

METERING TIP COLOR	FL-OZ PER MIN
Brown	0.56
Clear	0.88
Bright Purple	1.38
White	2.15
Pink	2.93
Corn Yellow	3.84
Dark Green	4.88
Orange	5.77
Gray	6.01
Light Green	7.01
Med. Green	8.06
Clear Pink	9.43
Yellow Green	11.50
Burgundy	11.93
Pale Pink	13.87
Light Blue	15.14
Dark Purple	17.88
Navy Blue	25.36
Clear Aqua	28.60
Black	50.00
The fl-oz/min shown are approximate values. Due to chemical viscosity, actual fl-oz/min may vary.	



## Troubleshooting Guide

Problem	Possible Cause / Solution	
	Startup	Maintenance
A) Air pump will not run or pump chemical solution.	1, 2, 5, 6	8, 10, 11
B) Chemical mixture not right / does not get intended results	3, 4	7, 8, 9
C) Unit doesn't turn on	1, 5, 6	10

Possible Cause / Solution	
Startup	Maintenance
<ol style="list-style-type: none"> <li><b>1. Inlet ball valve partially closed or air pressure too low.</b> <ul style="list-style-type: none"> <li>◦ Completely open air inlet ball valve.</li> </ul> </li> <li><b>2. Problem with suction tube to Chemical #1 or Chemical #1 is depleted</b> <ul style="list-style-type: none"> <li>◦ Immerse pump's suction tube strainer completely in primary chemical #1.</li> <li>◦ Check that suction tube is securely attached to pump with no gaps between tube and barb.</li> <li>◦ Check that suction tube does not have a split, cut or pin hole and is not stretched out near the end. As needed, cut off end of tube or replace tube.</li> <li>◦ Refill Chemical #1.</li> </ul> </li> <li><b>3. Problem with suction tube to Chemical #2 and/or Chemical #3</b> <ul style="list-style-type: none"> <li>◦ Immerse tube(s) strainer(s) completely in intended chemical concentrate</li> <li>◦ Check that suction tubes are securely attached.</li> <li>◦ Check that suction tubes are in good condition (see details in item 2, above). As needed, cut off end of tube(s) or replace.</li> </ul> </li> <li><b>4. Incorrect metering plug (chemical 2) and/or metering tip (chemical 3) is installed. (For chemical designations, see diagram)</b> <ul style="list-style-type: none"> <li>◦ Refer to Metering Tip Selection chart and metering plug details on instructions page 2.</li> <li>◦ Select larger or smaller metering tip/plug to draw in more or less of the respective chemical until the desired chemical mixture / results are achieved.</li> </ul> </li> <li><b>5. Discharge hose kinked</b> <ul style="list-style-type: none"> <li>◦ Straighten the hose.</li> </ul> </li> <li><b>6. Ice particles from condensation in air line — Air pump can periodically "freeze up" (stall) due to ice particles in the pump's exhaust (depending on air humidity &amp; other factors)</b> <ul style="list-style-type: none"> <li>◦ WAIT several seconds to allow the ice particles to melt and blow out, at which time the pump will automatically resume pumping.</li> </ul> </li> </ol>	<ol style="list-style-type: none"> <li><b>7. Chemical check valve stuck or failed</b> <ul style="list-style-type: none"> <li>◦ Clean or replace.</li> </ul> </li> <li><b>8. Chemical strainer or metering tip partially blocked</b> <ul style="list-style-type: none"> <li>◦ Clean or replace chemical strainer and/or metering tip.</li> </ul> </li> <li><b>9. Hard water scale or chemical build-up may have formed in the injector body causing poor or no chemical pick-up</b> <ul style="list-style-type: none"> <li>◦ Follow Preventive Maintenance instructions below, using hot water and/or de-scaling acid. When there is no draw at all, carefully remove fittings and soak entire injector body in de-scaling acid.</li> </ul> </li> <li><b>10. Problem with air pump</b> <ul style="list-style-type: none"> <li>◦ Refer to air pump instruction manual.</li> <li>◦ <a href="https://www.xylem.com/en-us/brands/Flojet/flojet-products/g57-air-operated-double-diaphragm-pump">https://www.xylem.com/en-us/brands/Flojet/flojet-products/g57-air-operated-double-diaphragm-pump</a></li> <li>◦ Replace pump.</li> </ul> </li> <li><b>11. Use of an oiler in the airline will cause pump to stall</b> <ul style="list-style-type: none"> <li>◦ Use only clean, dry air.</li> </ul> </li> </ol>

**PREVENTIVE MAINTENANCE:** When the unit will be out of service for extended periods, place chemical tube(s) in water and flush the chemical out of the unit to help prevent chemical from drying out and causing build-up. Periodically check and clean chemical strainer and replace if missing.

