

# Lafferty Equipment Manufacturing, LLC Installation & Operation Instructions

## Model # 901071 • 1-Way Pharma SS Mixing Station W/ Trigger Gun

### REQUIREMENTS

#### Chemical Concentrate

#### Water

Temperature	up to 180°F
Pressure	25-125 PSI
Supply Line	1/2" Minimum
Discharge Hose	1/2" ID x 20' & Trigger Gun

#### Flow

High Flow	4.0 GPM @ 40 PSI
Low Flow	1.95 GPM @ 40 PSI

### OPTIONS

#### Stainless Steel Jug Racks

Jug Rack, SS, 1 Gallon, Round/Square	# 224200
Jug Rack, SS, 2 1/2 Gallon	# 224210
Jug Rack, SS, 5 Gallon, Round/Square	# 224215

#### Safe Flow Lid™ for 1 Gallon Jugs

Lid, Suction Tube, and Strainer	# 709101
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#### Alternate Check Valve - EPDM Standard

Check Valve, Chemical, SS, Viton, 1/4"	# 491324-V
Check Valve, Chemical, SS, Kalrez, 1/4"	# 491324-K



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

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

### OVERVIEW

The 1-Way Pharma SS Mixing Station With Trigger Gun is a turnkey, industrial-grade chemical proportioner for accurately diluting a chemical concentrate. This stainless steel venturi injection system uses city water pressure (25 - 125 PSI) to draw and blend chemical concentrate into the water stream to create and dispense diluted chemical solution. Available with two factory set flow rates to fill any sized container or equipment. The "Pharma" designation indicates that the Materials of Construction are compatible with the requirements of the Pharmaceutical Industry. This unit ships with a Certificate of Conformity.

SAFETY & OPERATIONAL PRECAUTIONS

- When connecting to a potable water supply follow all local codes for backflow prevention.
- 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.
- NEVER mix chemicals without first consulting chemical manufacturer.

TO INSTALL (REFER TO DIAGRAM ON NEXT PAGE)

If you are connecting to a potable water supply follow all local codes for backflow prevention.

1. Mount the unit to a suitable surface above the chemical supply to prevent siphoning.
2. Connect hose(s) as shown in the diagram.
3. Flush any new plumbing of debris before connecting water.
4. Connect water supply. Install a water filter if water piping is older or has known contaminants.

TO SET DILUTION RATIO, thread a color-coded metering tip into each tip holder. See chemical labels for dilution ratio recommendation or consult your chemical supplier.

- For the strongest dilution ratio do NOT install a colored metering tip.
- The dilution ratios in the metering tip chart are based on water thin chemicals with a viscosity of 1CPS. Thicker chemicals will require a larger tip than the ratios shown in the chart.
- Chart shows ratios at 40 PSI water pressure. Actual water pressure is shown on unit gauge during operation. Adjust metering tip selection based on actual water pressure using the online [Metering Tip Calculator](#) or the math formula shown in the chart.
- Select and thread the tip color that is closest to your desired chemical strength into the tip holder. **DO NOT OVER-TIGHTEN**
- Application results will ultimately determine final tip color selection.
- Push the chemical tubes over the tip holders and place the strainer in the chemical concentrate.
- If necessary, cut suction tube(s) to length.

If a leaner solution than the maximum shown in the chart is required, it will be necessary to use one proportioner to pre-dilute the concentrate, and a second to dilute the resulting solution to the required final ratio. If this [Double Dilution](#) procedure is required, choose two metering tips whose ratios, when multiplied together, result in a ratio that is as close as possible to the required final ratio. *Example: For two "Bottle Fill" Mixing Station valves with 40 PSI water pressure, use a White Tip (37:1) and a Corn Yellow Tip (21:1) to achieve a final solution ratio of 777:1.*

With the adjustable pressure regulator it is possible to "dial in" and achieve a specific dilution ratio.

- <http://www.laffertyequipment.com/tools/metering-tip-calculator/>
- Use the Metering Tip Calculator and enter a reference flow rate for your injector.
- Try entering different values for the actual water pressure until a metering tip shows the desired dilution ratio (make sure to stay within the pressure range of the water supply).
- Adjust the pressure regulator to this pressure and install the appropriate metering tip. **DO NOT OVER-TIGHTEN.**
- Relative to the 40 PSI reference chart to the right: higher water pressure will weaken the concentration of the diluted solution, and lower water pressure will increase the concentration.
- If necessary, cut suction tube(s) to length before attaching suction strainer.

TO OPERATE

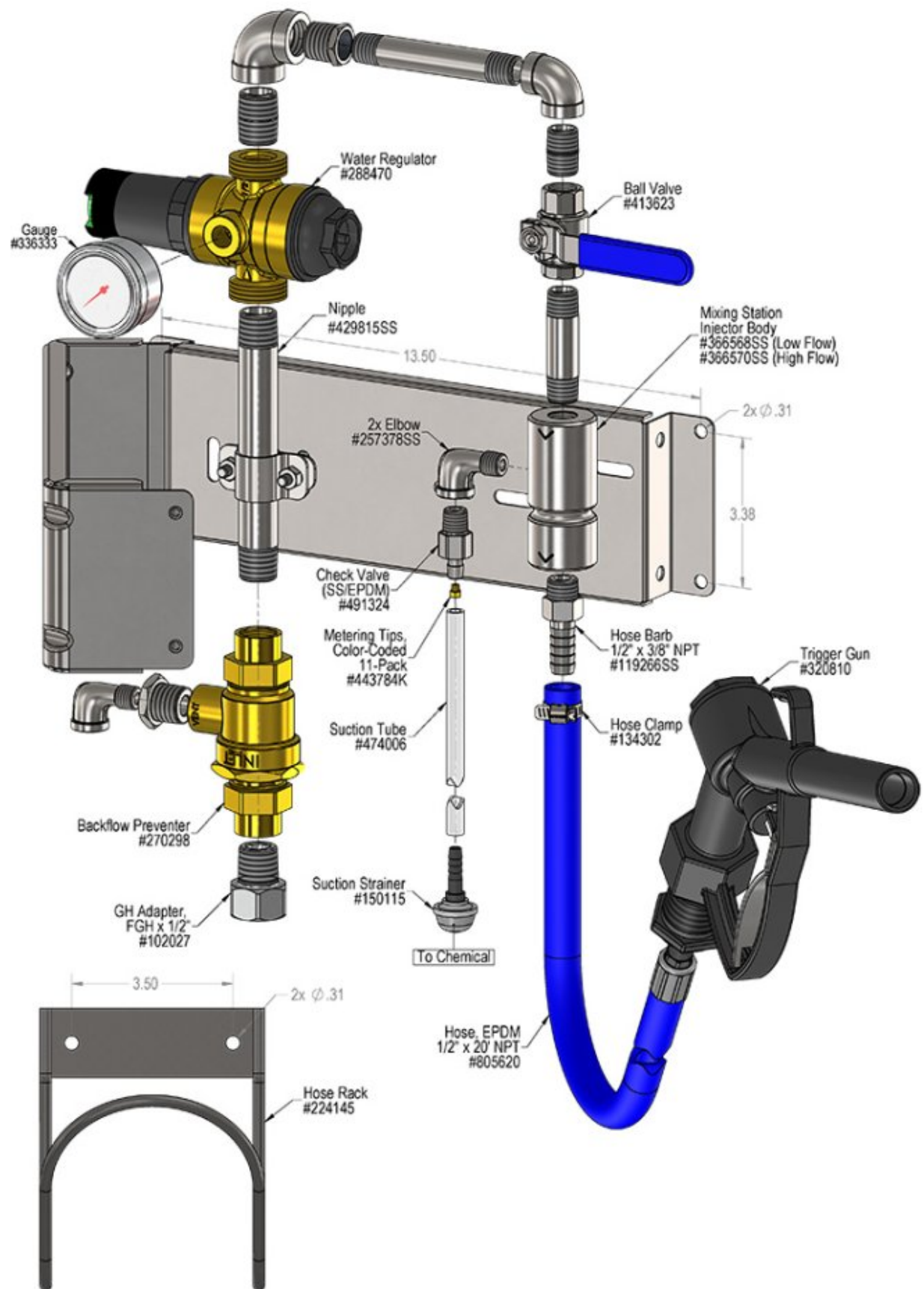
1. Hold the trigger gun, open the inlet ball valve, place the nozzle in the container to be filled. Pull the trigger and begin.
2. When container is filled to the desired level, release the trigger. Close the inlet ball valve and pull the trigger to relieve pressure in the hose.
3. Make final metering tip adjustments based on application results. Try the next larger or smaller sized metering tip until the results are acceptable.

METERING TIP SELECTION

METERING TIP COLOR	OZ/MIN	DILUTION RATIO @ 40 PSI	
		HIGH FLOW	LOW FLOW
Brown	0.56	914:1	446:1
Clear	0.88	582:1	284:1
Bright Purple	1.38	371:1	181:1
White	2.15	238:1	116:1
Pink	2.93	175:1	85:1
Corn Yellow	3.84	133:1	65:1
Dark Green	4.88	105:1	51:1
Orange	5.77	89:1	43:1
Gray	6.01	85:1	42:1
Light Green	7.01	73:1	36:1
Med. Green	8.06	64:1	31:1
Clear Pink	9.43	54:1	26:1
Yellow Green	11.50	45:1	22:1
Burgundy	11.93	43:1	21:1
Pale Pink	13.87	37:1	18:1
Light Blue	15.14	34:1	16:1
Dark Purple	17.88	29:1	14:1
Navy Blue	25.36	20:1	10:1
Clear Aqua	28.60	18:1	9:1
Black	50.00	10:1	5:1
No Tip Ratio Up To:		9:1	4:1
The dilution ratios above are approximate values. Due to chemical viscosity, actual dilution ratios may vary.			
FORMULA			
GPM × 128 ÷ Desired Dilution Ratio = oz/min			
• See Unit Flow Rates chart for GPM			
• Use 20 for 20:1 dilution ratio, 30 for 30:1, etc.			
• Match calculated ounces per minute (oz/min) to nearest oz/min in Metering Tip Selection chart.			

UNIT FLOW RATES

PSI	GPM	
	HIGH FLOW	LOW FLOW
35	3.74	1.82
40	4.00	1.95
50	4.47	2.18
60	4.90	2.39
70	5.29	2.58
80	5.66	2.76
90	6.00	2.93
100	6.32	3.08
110	6.63	3.23
120	6.93	3.38
125	7.07	3.45



## Troubleshooting Guide

Problem	Possible Cause / Solution	
	Startup	Maintenance
A) Unit will not draw chemical. B) Dilution too weak. C) Dilution too strong D) Water backing up into chemical container. E) Backflow preventer constantly dripping / leaking.	1, 2, 3 4 5	6, 7, 8, 9, 10, 11 11 8 12

Possible Cause / Solution	
Startup	Maintenance
<ol style="list-style-type: none"> <li><b>1. Water pressure too low or water temperature too high</b> <ul style="list-style-type: none"> <li>◦ See requirements.</li> </ul> </li> <li><b>2. Ball valve not completely open</b> <ul style="list-style-type: none"> <li>◦ Completely open the ball valve.</li> </ul> </li> <li><b>3. Chemical tube not immersed in chemical or chemical depleted</b> <ul style="list-style-type: none"> <li>◦ Immerse tube or replenish.</li> </ul> </li> <li><b>4. Metering tip too small</b> <ul style="list-style-type: none"> <li>◦ Install larger metering tip (major adjustments)</li> <li>◦ Lower regulator pressure (small refinements only)</li> </ul> </li> <li><b>5. No metering tip installed or metering tip too large</b> <ul style="list-style-type: none"> <li>◦ Install smaller metering tip (major adjustments)</li> <li>◦ Increase regulator pressure (small refinements only)</li> </ul> </li> </ol>	<ol style="list-style-type: none"> <li><b>6. Water inlet strainer screen clogged</b> <ul style="list-style-type: none"> <li>◦ Disconnect water and clean the screen.</li> </ul> </li> <li><b>7. 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>8. Check valve stuck or failed</b> <ul style="list-style-type: none"> <li>◦ Clean or replace.</li> </ul> </li> <li><b>9. Vacuum leak in chemical pick-up connections</b> <ul style="list-style-type: none"> <li>◦ Tighten the connection.</li> </ul> </li> <li><b>10. Chemical tube stretched out where tube slides over metering tip holder or pin hole/cut in chemical tube (sucking air in)</b> <ul style="list-style-type: none"> <li>◦ Cut off end of tube or replace tube.</li> </ul> </li> <li><b>11. Water scale or chemical build-up may have formed in the body causing poor or no chemical pick-up</b> <ul style="list-style-type: none"> <li>◦ Follow Preventive Maintenance instructions below, using hotwater and/or descaling acid. When there is no draw at all carefully remove fittings and soak entire body in descaling acid.</li> </ul> </li> <li><b>12. Backflow preventer failed or defective</b> <ul style="list-style-type: none"> <li>◦ Replace backflow preventer if <i>constantly</i> leaking</li> <li>◦ NOTE: Water and chemical flowing from the backflow preventer "vent" is normal during situations when the backflow preventer is engaged</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.

