# Lafferty Equipment Manufacturing, LLC
# Installation & Operation Instructions

## Model # 985835SS · High Volume SS Mixing Station

## REQUIREMENTS

**Chemical Concentrate**

**Water**

| | |
|---|---|
| Temperature | up to 180°F |
| Pressure | 35 to 125 PSI |
| Flow | 9.40 GPM @ 40 PSI |
| Supply Line | 3/4" |
| **Hose** | 3/4" ID x 10' |
| **Nozzle** | None - Open Flow |

## OPTIONS

| | |
|---|---|
| **Stainless Steel Hose Racks** | |
| Small Stainless Steel Hose Rack | # 224145 |
| **Stainless Steel Jug Racks** | |
| 5 Gallon Round/Square Locking (12" x 12") | # 224214 |
| 5 Gallon Round/Square (12" x 12") | # 224215 |
| **Hose & Trigger Gun** | |
| Hose, Blue, 3/4" x 25', 1/2" MPT | # 803725 |
| Trigger Gun, PP-V | # 320800 |
| **Hose, Ball Valve & Wand** | |
| Hose, Blue, 3/4" x 25', 1/2" MPT | # 803725 |
| Ball Valve, SS, 1/2" FM | # 413641RH |
| Wand, PP | # 536603 |
| **Alternate Check Valve - EPDM Standard** | |
| Check Valve, Chemical, SS, Viton, 1/4" | # 491324-V |
| Check Valve, Chemical, SS, Kalrez, 1/4" | # 491324-K |

## WEIGHT & DIMENSIONS

| | |
|---|---|
| **Single Package** | |
| Shipping Weight | 10 lbs. |
| Shipping Dimensions | 15" x 15" x 5" |

Lafferty® EQUIPMENT MANUFACTURING LLC

CFS TECHNOLOGIES


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

## OVERVIEW

The High Volume SS Mixing Station is a 9.4 GPM @ 40 PSI chemical proportioner for accurately diluting a chemical concentrate and quickly filling large containers with ready-to-use chemical solution. This stainless steel venturi injection system uses standard city water pressure (35 - 125 PSI) to draw and blend chemical concentrate into the water stream. Ball valve activation allows for hands-free dispensing.

## SAFETY & OPERATIONAL PRECAUTIONS

- **When connecting to a potable water supply follow all local codes for backflow prevention.**
- **WARNING: Severe damage to your facility, or contamination of your potable water supply, can occur without proper 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 safety goggles when working with chemicals.
- Always direct the discharge away from people and electrical devices.
- For pressures over 100 PSI, remove the discharge valve or lower pressure.
- Never leave inlet ball valves on when unit is not in use.
- 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.

**Set the chemical dilution ratio by threading one of the color coded metering tips into each chemical check valve. 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.
- Application results will ultimately determine final tip color.
- Select the tip color that is closest to your desired chemical strength and thread it into the tip holder. **DO NOT OVER-TIGHTEN.**
- Push the chemical tube over the check valve barb and place the suction tube in the chemical concentrate.
- If necessary, cut suction tube(s) to length before attaching suction strainer.

## TO OPERATE

1. Hold the discharge hose inside the container to be filled, do not release it, and completely open the appropriate 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.
3. Make final metering tip adjustments based on application results. Try the next larger or smaller sized metering tip until the results are acceptable.

**WITH OPTIONAL TRIGGER GUN**

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.

**WITH OPTIONAL DISCHARGE BALL VALVE**

1. Hold the ball valve/wand make sure the ball valve is closed, open the inlet ball valve, place the wand in the container to be filled. Open the ball valve to fill container.
2. When container is filled to the desired level, close the discharge and inlet ball valves. Briefly open the discharge ball valve 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 |
|---|---|---|
| Brown | 0.56 | 2149:1 |
| Clear | 0.88 | 1367:1 |
| Bright Purple | 1.38 | 872:1 |
| White | 2.15 | 560:1 |
| Pink | 2.93 | 411:1 |
| Corn Yellow | 3.84 | 313:1 |
| Dark Green | 4.88 | 247:1 |
| Orange | 5.77 | 209:1 |
| Gray | 6.01 | 200:1 |
| Light Green | 7.01 | 172:1 |
| Med. Green | 8.06 | 149:1 |
| Clear Pink | 9.43 | 128:1 |
| Yellow Green | 11.50 | 105:1 |
| Burgundy | 11.93 | 101:1 |
| Pale Pink | 13.87 | 87:1 |
| Light Blue | 15.14 | 79:1 |
| Dark Purple | 17.88 | 67:1 |
| Navy Blue | 25.36 | 47:1 |
| Clear Aqua | 28.60 | 42:1 |
| Black | 50.00 | 24:1 |
| No Tip Ratio Up To: | | 15:1 |

The dilution ratios above are approximate values. Due to chemical viscosity, actual dilution ratios may vary.

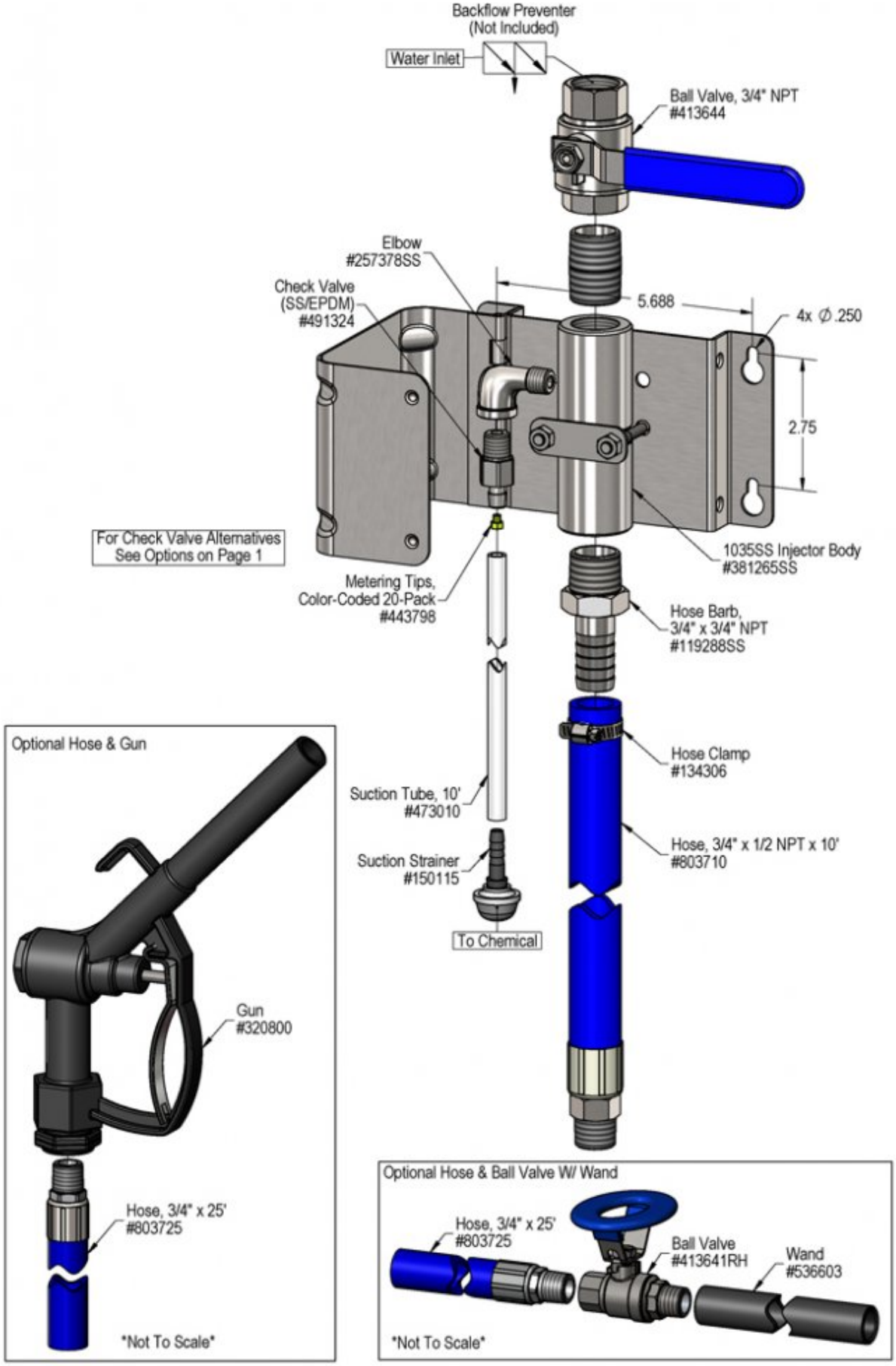
### FORMULA

**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 |
|---|---|
| 35 | 8.79 |
| 40 | 9.40 |
| 50 | 10.51 |
| 60 | 11.51 |
| 70 | 12.44 |
| 80 | 13.29 |
| 90 | 14.10 |
| 100 | 14.86 |
| 110 | 15.59 |
| 120 | 16.28 |
| 125 | 16.62 |


Backflow Preventer
(Not Included)
Water Inlet
Ball Valve, 3/4" NPT
#413644
Elbow
#257378SS
Check Valve
(SS/EPDM)
#491324
5.688
4x Ø .250
2.75
For Check Valve Alternatives
See Options on Page 1
1035SS Injector Body
#381265SS
Metering Tips,
Color-Coded 20-Pack
#443798
Hose Barb,
3/4" x 3/4" NPT
#119288SS
Hose Clamp
#134306
Suction Tube, 10'
#473010
Hose, 3/4" x 1/2 NPT x 10'
#803710
Suction Strainer
#150115
To Chemical
Optional Hose & Gun
Gun
#320800
Hose, 3/4" x 25'
#803725
*Not To Scale*
Optional Hose & Ball Valve W/ Wand
Hose, 3/4" x 25'
#803725
Ball Valve
#413641RH
Wand
#536603
*Not To Scale*

# Troubleshooting Guide

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

## Possible Cause / Solution

### Startup

1. **Water pressure or volume too low**
   - 35 PSI water pressure minimum see requirements.
2. **Inlet or chemical ball valve not completely open**
   - Completely open the ball valves.
3. **Chemical tube not immersed in chemical or chemical depleted**
   - Immerse tube or replenish.
4. **Metering tip too small**
   - Install larger metering tip.
5. **No metering tip installed or metering tip too large**
   - Install smaller metering tip.
6. **Discharge hose kinked or wrong size**
   - See requirements.

### Maintenance

7. **Chemical strainer or metering tip partially blocked**
   - Clean or replace chemical strainer and/or metering tip.
8. **Chemical valve stuck or failed**
   - Clean or replace.
9. **Vacuum leak in chemical pick-up connections**
   - Tighten the connection.
10. **Chemical tube stretched out where tube slides over metering tip holder or pin hole/cut in chemical tube (sucking air in)**
    - Cut off end of tube or replace tube.
11. **Hard water scale or chemical build-up may have formed in the body causing poor or no chemical pick-up**
    - Follow Preventive Maintenance instructions below, using hot water and/or descaling acid. When there is no draw at all carefully remove fittings and soak entire body in descaling acid.
12. **Optional trigger gun or discharge ball valve not completely open (select models only)**
    - Completely depress trigger/open ball valve

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.