

# LAFFERTY EQUIPMENT MANUFACTURING, INC.

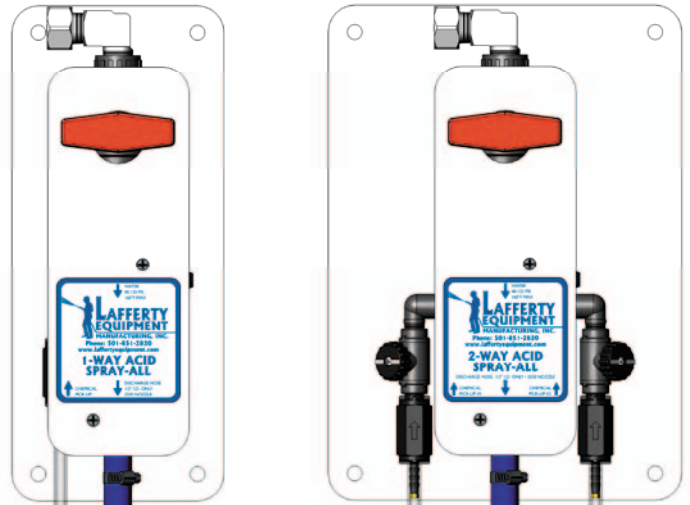
## Installation & Operation Instructions

### 1-Way, 2-Way and 3-Way Acid Spray-Alls and Airless Foamers

Model # 972011, 1-Way Acid Spray-All Complete  
 Model # 972012, 2-Way Acid Spray-All Complete  
 Model # 972013, 3-Way Acid Spray-All Complete

Model # 972211, 1-Way Acid Airless Foamer Complete  
 Model # 972212, 2-Way Acid Airless Foamer Complete  
 Model # 972213, 3-Way Acid Airless Foamer Complete

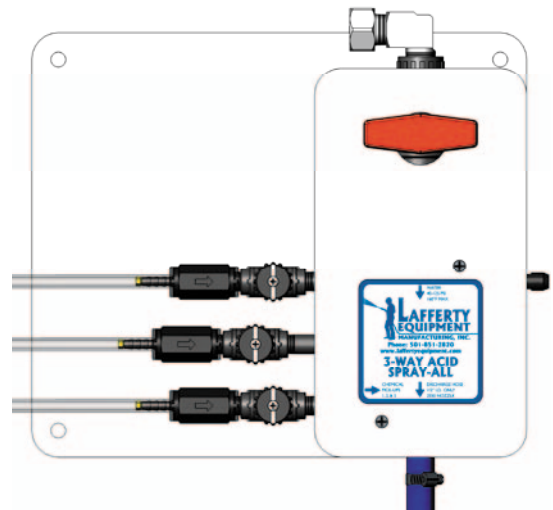
REQUIREMENTS		
Water:	US	S.I.
Supply line:	1/2 in (min.)	12.7 mm (min.)
Temp. range:	ambient to 160°F	ambient to 70°C
Pressure range:	35 to 125 psi	2.4 to 8.6 bar
Flow range:	1.34 to 1.91 gpm	5.1 to 7.2 lpm
Hose:		
ID:	1/2 in	12.7 mm
Length:	50 ft	15.2 m
Nozzle(s):		
Acid Spray-All:	2550 (fan)	
Acid Foamer:	A-25 airless foam wand	



Acid Spray-All Wand



Acid Airless Foamer Wand



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

501-851-2820

**READ ALL  
INSTRUCTIONS BEFORE  
USING EQUIPMENT!**



## Principles of Operation

Lafferty Acid Spray-Alls and Airless Foamers are water-driven venturi systems for diluting highly corrosive chemical concentrates from any sized container, providing up to 21 different dilution ratios from up to three different chemicals, depending on the model. The Spray-Alls project a moderate fan pattern spray onto surfaces, while the Airless Foamers generate a stream of powerful cleaning foam. Both systems require water pressure to mix with chemical and project the spray or foam onto any surface.



## Safety & Operational Precautions

- **Manufacturer assumes no liability for the use or misuse of this unit.**
- **Backflow Prevention:** If you are connecting to a potable water supply, be sure to follow all local codes for backflow prevention.
- Wear protective clothing, gloves and eyewear when working with chemicals.
- Always direct the discharge away from people and electrical devices.
- If water pressure exceeds 100 PSI, remove the discharge ball valve.
- Turn off water when unit is not in use.
- Follow the chemical manufacturer's safe handling instructions.

### TO INSTALL *(Refer to diagram, next page.)*

1. **Mount the unit** above chemical supply to prevent siphoning.
2. **Connect water supply and hose assembly** as shown in the diagram.
3. **To set the dilution ratio** you must install the correct metering tip.

**How to Select the Correct Metering Tip** - See chemical label for dilution ratio recommendation or consult your chemical supplier.

- The dilution ratios provided in the Metering Tip Selection Chart, at right, are based on water-thin chemical.
  - Due to varying chemical viscosities, you may need to increase or decrease the metering tip size.
  - If you have water pressure other than the example, use the *Metering Tip Selection Formula*.
4. **Install metering tip into chemical check valve.** Push the chemical tube over the check valve and immerse the chemical strainer into your chemical concentrate.

### TO OPERATE

1. **Make sure the discharge ball valve is closed.** Then, while directing the discharge toward the surface to be cleaned, open the water ball valve.
2. On 2-Way and 3-Way models, open the appropriate chemical ball valve. *Open ONLY ONE chemical ball valve at a time.* Then, open the discharge ball valve.
3. After applying the first chemical, close the discharge ball valve. Next, close the chemical ball valve on 2-Way and 3-Way models. Allow sufficient time for the chemical solution to work. Then, if applicable, rinse the work surface before it dries. (Rinse not included with this unit.)
4. Repeat steps 2-3 for each additional chemical *(2-Way and 3-Way models)*. Allow time for the previous chemical solution to clear the line before applying.
5. When finished, close the discharge ball valve, then the chemical ball valve and finally the foam ball valve. Slowly re-open the discharge ball valve and expect a strong blast of foamy solution. After the air blows the solution out of the hose, close the air ball valve. Close the discharge ball valve and rinse the work surface before foam dries.

**⚠ Always turn off all ball valves and relieve pressure in the hose when unit is not in use.**

Metering Tip Selection		
Metering Tip Color	Oz. per Min.	EXAMPLE: Dilution Ratio @ 40 PSI
Brown	.62	277:1
Clear	.91	188:1
Bright Purple	1.7	104:1
White	2.3	76:1
Pink	3.3	52:1
Corn Yellow	4.0	43:1
Dark Green	5.0	34:1
Orange	6.0	29:1
Gray	6.8	25:1
Light Green	8.1	21:1
Med. Green	9.1	19:1
Clear Pink	11.9	14:1
Yellow Green	13.4	13:1
Burgundy	15.3	11:1
Pale Pink	16.9	10:1
Light Blue	18.0	10:1
Dark Purple	22.5	8:1
Navy Blue	33.1	5:1
Clear Aqua	39.3	4:1
Black	59.0	3:1
No Tip	66.0	3:1

The dilution ratios provided above are approximate values. Your actual dilution ratio may be higher or lower due to variation in chemical viscosity.

Metering Tip Selection Formula	
(GPM x 128)	See chart below for GPM and convert to oz. per min.
÷	
Dilution Ratio	20:1, 30:1, etc.
=	
Oz. per Min.	Match to nearest number in chart above.

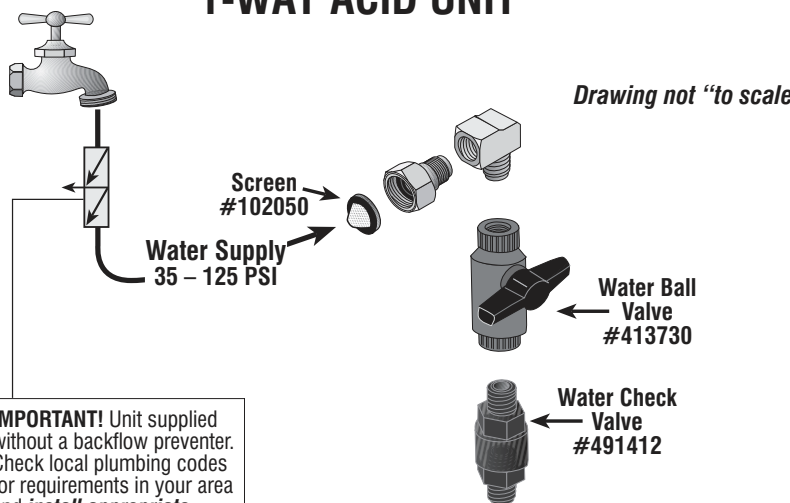
Water Flow Rate Chart	
Water Pressure	Water Flow Rate
PSI	GPM
40	1.34
50	1.46
60	1.54
70	1.59
80	1.76
90	1.80
100	1.91

(FM)=Foamer

(S-A)=Spray-All

### 1-WAY ACID UNIT

Drawing not "to scale"



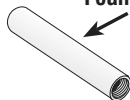
**IMPORTANT!** Unit supplied without a backflow preventer. Check local plumbing codes for requirements in your area and **install appropriate backflow preventer before operating.**



With Acid Spray-Alls

OR

A-25 Airless Foam Wand



With Acid Airless Foamers

For proper operation, use **ONLY** the 2550 nozzle or A-25 Airless Foam Wand supplied with your Acid Spray-All or Airless Foamer.

Chemical Check Valve #491402

Metering Tips, Color-Coded 20-pack #443798

Suction Tube, 10' #473000FT

Suction Strainer #150115

Hose, Blue 1/2" x 50' #8033650

Wand #536616

Discharge Ball Valve #413730

If water pressure exceeds 100 PSI, remove the discharge ball valve.

Acid W-25HC Injector Body 1-Way & 2-Way #390012

2x Chemical Ball Valve #413651

### 2-WAY ACID UNIT

Acid W-25HC Injector Body 3-Way #390013

3x Chemical Ball Valve #413651

### 3-WAY ACID UNIT

# Troubleshooting Guide

## 1-Way, 2-Way and 3-Way Acid Spray-Alls and Airless Foamers

Problem	Possible Cause / Solution Categories	
A) Unit will not draw chemical.	1, 2, 3, 4, 5, 6, 7	9, 10, 11, 12, 13
B) Water flowing into chemical container.		9
C) Using too much chemical.		15
D) Spray/foam does not clean/perform properly.	1	14, 16, 17
E) Chemical solution backing up into water line.	8	

### Possible Cause / Solution

- |  |   |
|--|---|
| <ol style="list-style-type: none"> <li>1. <b>Water pressure too low</b> <ul style="list-style-type: none"> <li>• 35 PSI minimum <i>after</i> backflow preventer.</li> </ul> </li> <li>2. <b>Water ball valve or discharge ball valve not completely open</b></li> <li>3. <b>Water strainer screen clogged</b> <ul style="list-style-type: none"> <li>• Clean the water strainer screen. (See diagram, pg. 3.)</li> </ul> </li> <li>4. <b>Discharge hose wrong size or kinked (See REQUIREMENTS on page 1)</b></li> <li>5. <b>Nozzle size too small</b> <ul style="list-style-type: none"> <li>• Use only the supplied nozzle or equivalent.</li> </ul> </li> <li>6. <b>Airless foam wand wrong size</b> <ul style="list-style-type: none"> <li>• Must be an A-25 Airless Foam Wand.</li> </ul> </li> <li>7. <b>Foam wand screen blocked</b> <ul style="list-style-type: none"> <li>• Dried chemical build-up may be obstructing screen. Back flush with hot water to remove debris.</li> </ul> </li> <li>8. <b>Water check valve failed and no backflow preventer installed</b> <ul style="list-style-type: none"> <li>• Replace the water check valve. Install appropriate backflow preventer onto water line.</li> </ul> </li> </ol> | <ol style="list-style-type: none"> <li>9. <b>Chemical check valve stuck or clogged</b> <ul style="list-style-type: none"> <li>• Clean or replace.</li> </ul> </li> <li>10. <b>Chemical tube not immersed in chemical or chemical depleted</b></li> <li>11. <b>Chemical strainer or metering tip blocked</b> <ul style="list-style-type: none"> <li>• Clean or replace chemical strainer and/or metering tip.</li> </ul> </li> <li>12. <b>Chemical tube stretched out where tube slides over check valve 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>13. <b>Vacuum leak in chemical pick-up connection</b> <ul style="list-style-type: none"> <li>• Tighten the connection.</li> </ul> </li> <li>14. <b>More than one chemical ball valve is open (2-Way and 3-Way models)</b></li> <li>15. <b>Dilution too strong</b> <ul style="list-style-type: none"> <li>• Install smaller metering tip.</li> </ul> </li> <li>16. <b>Dilution too weak</b> <ul style="list-style-type: none"> <li>• Install larger metering tip.</li> </ul> </li> <li>17. <b>Improper chemical</b> <ul style="list-style-type: none"> <li>• Ensure product is recommended for foaming and/or the application.</li> </ul> </li> </ol> |
|--|---|

**PREVENTIVE MAINTENANCE:** When the unit will be out of service for extended periods, remove chemical tube from chemical concentrate and place in water. Completely open the water and discharge ball valves for a few seconds to flush chemical and help prevent chemical build-up. Check and/or clean chemical strainer; replace if missing.