# Lafferty Equipment Manufacturing, LLC
# Installation & Operation Instructions

## Model # 989408 · Air Level Master™ with SSHM Bracket

## REQUIREMENTS

| | |
|---|---|
| **Satellite Mixing Station(s)** | See Options |
| **Compressed Air** | Up to 80 PSI |

## OPTIONS

**High Flow Satellite Mixing Stations (Specify When Ordering)**

| | |
|---|---|
| HF Satellite Mixing Station (10 GPM each) | # 985885 |
| Gemini HF Satellite Mixing Station (7 GPM each) | # 982185 |



Lafferty EQUIPMENT MANUFACTURING LLC

CFS TECHNOLOGIES

www.laffertyequipment.com
501-851-2820

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

## OVERVIEW

The Air Level Master™ with Stainless Steel, Horizontal Mounted Bracket is a float valve system that bolts to the top of user-supplied day tank and regulates the activation of Satellite Mixing Stations (sold separately) to automatically maintain a constant supply of ready-to-use chemical solution. When the solution in the tank drops below a pre-set level, the primary float valve will open to allow compressed air to flow through and activate one or more Satellite Mixing Stations to quickly replenish the solution. The system cycles continuously and a secondary fail-safe float prevents overfilling.

## 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)

**Backflow prevention:** Follow all local codes for preventing backflow into the water supply before installing / operating equipment.

1. Position empty RTU holding tank on a **level surface.**
2. Carefully unpack the bracket / float assembly and position the bracket on a flat area on the top of the tank.
3. Ensure that the float(s) are hanging freely in the tank.
4. Fasten the mounting bracket to the tank using two 1/4" bolts (not included). Tighten securely to prevent movement during operation.
5. Mount the High Flow Satellite Mixing Station unit(s) to a suitable surface above the chemical supply to prevent siphoning.
6. Connect the discharge hose(s) as shown in the diagram.
7. Flush any new plumbing of debris before connecting water. If water piping is older, or has known contaminants, install a water filter.
8. Connect the water supply to the Mixing Station unit(s).
9. Push lock 5/32 poly-flow tubing to the tube lock fitting on the Level Master and to the wall mount Mixing Station solenoid(s)
10. Connect a clean, dry compressed air supply to the Level Master unit.

**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

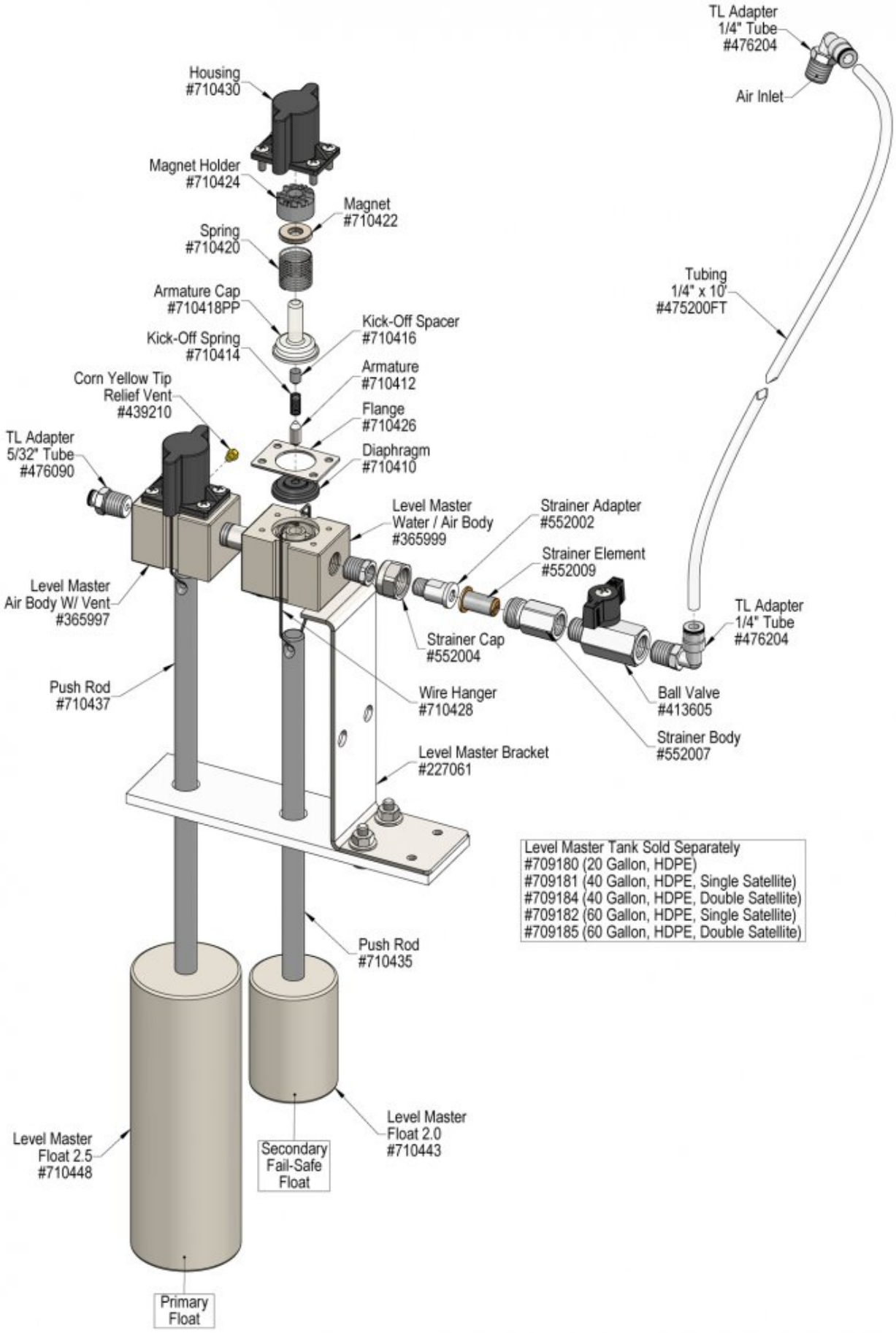
1. With the Level Master assembly securely attached to an empty tank, push down on the secondary safety float valve wire hanger (see diagram) so that it sticks in the "down" position. Gravity will cause the primary float valve to automatically sit in the "down" position. Both float valves are now open.
2. Completely open the air inlet ball valve to activate the Satellite Mixing Station(s) and begin filling the tank with diluted solution.
3. When the solution in the tank reaches the fill level, the primary float will rise and shut off the air flow to the Satellite Mixing Station. This will cause the solenoid on the water inlet to close and deactivate the Satellite Mixing Station.

*NOTE: The fill level and fail-safe shutoff level are pre-determined by the length of the "push rods" attached to the floats, which are intended to be used as provided. If necessary, floats can be lowered 1/2" by partially unscrewing them from the push rods.*

4. System is now ready for use and will maintain the solution level until the inlet ball valve is manually closed.
5. Make final metering tip adjustments to the Satellite Mixing Station(s) based on application results.

**Secondary Fail-Safe Valve Reset Procedure**

- If the solution level in the tank rises above the normal fill level the secondary fail-safe float will rise and cause the secondary fail-safe float valve to close.
- This will shut-off the air supply to the Satellite Mixing Station water solenoid and deactivate the system to prevent overflow.
- The system will not operate until the secondary float valve is manually reset by pushing down on the float valve wire hanger (per operating instructions step 1, above).
- If the secondary fail-safe valve is triggered, refer to the Troubleshooting Guide to determine the cause before continuing operation.


TL Adapter
1/4" Tube
#476204
Air Inlet
Housing
#710430
Magnet Holder
#710424
Magnet
#710422
Spring
#710420
Armature Cap
#710418PP
Kick-Off Spacer
#710416
Kick-Off Spring
#710414
Armature
#710412
Corn Yellow Tip
Relief Vent
#439210
Flange
#710426
TL Adapter
5/32" Tube
#476090
Diaphragm
#710410
Tubing
1/4" x 10'
#475200FT
Level Master
Water / Air Body
#365999
Strainer Adapter
#552002
Strainer Element
#552009
Level Master
Air Body W/ Vent
#365997
Strainer Cap
#552004
TL Adapter
1/4" Tube
#476204
Push Rod
#710437
Wire Hanger
#710428
Ball Valve
#413605
Strainer Body
#552007
Level Master Bracket
#227061
Level Master Tank Sold Separately
#709180 (20 Gallon, HDPE)
#709181 (40 Gallon, HDPE, Single Satellite)
#709184 (40 Gallon, HDPE, Double Satellite)
#709182 (60 Gallon, HDPE, Single Satellite)
#709185 (60 Gallon, HDPE, Double Satellite)
Push Rod
#710435
Level Master
Float 2.0
#710443
Level Master
Float 2.5
#710448
Secondary
Fail-Safe
Float
Primary
Float

# Troubleshooting Guide

| Problem | Possible Cause / Solution | |
|---|---|---|
| | Startup | Maintenance |
| A) Mixing station will not draw chemical. | 1, 4, 5 | 9, 10, 11, 12, 16, 17 |
| B) Dilution too strong. | 2 | |
| C) Dilution too weak. | 3, 4, 5 | 9, 10, 11, 12, 16, 17 |
| D) Primary float will not activate (does not fill) | 7, 9 | 13, 14, 15, 18 |
| E) Primary float valve will not turn off (overfills or triggers secondary fail-safe float valve on double-float models) | 6, 7, 8 | 13, 14, 15, 18 |
| NOTE: This guide is for Air Level Masters used with High Flow Satellite Mixing Stations | | |

## Possible Cause / Solution

### Startup

1. **Air inlet ball valve not completely open**
   - Completely open air inlet ball valve.
2. **Metering tip too large or no tip installed**
   - Install smaller metering tip.
3. **Not enough chemical**
   - Install a larger metering tip.
4. **Chemical tube not immersed in chemical or chemical depleted.**
   - Immerse tube or replenish.
5. **Water pressure too low or water temperature too high**
   - Mixing station requires 25 PSI water pressure, see requirements.
6. **Air pressure to Level Master too high**
   - Install an air pressure regulator in-line before the Level Master if air pressure exceeds 80 PSI.
7. **Level Master body is not level**
   - Install the Level Master on an even surface where the body (injector) is level to the horizon. Ensure that the Level Master will not become unbalanced as it fills.
8. **Secondary fail-safe float has been triggered *(double-float models only)***
   - Manually reset the secondary fail-safe float valve (refer to operation instructions)
   - Inspect the primary float assembly before resetting the secondary float valve. If necessary, troubleshoot the primary float assembly.



### Maintenance

9. **Chemical strainer or metering tip blocked**
   - Clean or replace chemical strainer and/or metering tip.
10. **Chemical tube stretched where tube slides over metering tip holder or pin hole/cut in tube (sucking air)**
    - Cut off end of tube or replace tube.
11. **Vacuum leak in chemical pick-up connections**
    - Tighten the connection.
12. **Water strainer screen clogged**
    - Clean the water strainer screen.
13. **Physical blockage or interference is preventing the float from rising or falling**
    - Ensure that the tank is on a level surface.
    - Ensure that the float, push rods, and metal clips are hanging freely without any interference.
    - Do not modify the float assemblies.
14. **Float valve parts are dirty or defective**
    - Clean or replace the affected parts (may require careful disassembly, refer to parts diagram).
    - Ensure that all parts are free of rust, grease, etc.
    - Depending on the chemical and on-site variables, regular cleaning and/or replacement may be required.
15. **Float valve diaphragm stretched out or damaged**
    - Replace the float valve diaphragm.
16. **Chemical build-up or scale may have formed in the injector 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.
17. **Water solenoid failed or air is turned off**
    - Replace solenoid
    - Ensure air inlet ball valve is completely open
18. **Upward force has unclipped hanger from magnet holder**
    - *Carefully* remove float housing and align wire hanger to grooves in magnet holder.
    - Pull down on wire hanger until you hear a sharp 'click' after the normal activation sound.
    - Wire hanger must be *fully* seated in magnet holder grooves, as shown on LEFT.