

# AFCO Installation & Operation Instructions

## Model #AF 989020 • 20 Gallon Level Master™

### REQUIREMENTS

#### Chemical Concentrate

#### Water

Temperature	up to 160°F
Pressure	25 - 80 PSI
Flow	2.4 GPM @ 40 PSI
Supply Line	1/2"

### 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	# 224215

#### Drum & Tote Stick Lengths, Styles & Seal

#### Materials

Drum Stick, 33" (Viton or EPDM)	# 491643 / 491643-E
Drum Stick, 48" (Viton or EPDM)	# 491648 / 491648-E
Drum Stick, 54" (Viton or EPDM)	# 491645 / 491645-E
Tote Stick, 48" (Viton or EPDM)	# 491654 / 491654-E
Tote Stick, 54" (Viton or EPDM)	# 491656 / 491656-E

#### Alternate Check Valves

Check Valve, Chemical, EPDM (Viton Standard)	# 491401
Check Valve, Siphon Breaker, Viton (EPDM Standard)	# 491315

### WEIGHT & DIMENSIONS

Shipping Weight: 29 lbs.

Shipping Dimensions: 36" x 23" x 16"



<http://www.afcocare.com>

**READ ALL  
INSTRUCTIONS BEFORE  
USING EQUIPMENT!**

## Overview

The 20 Gallon Level Master™ is a water driven chemical proportioner that will automatically maintain a constant supply of ready-to-use solution. When the solution in the 20 gallon tank drops below a pre-set level, this venturi injection system uses city water pressure (25 - 80 PSI) to draw and blend chemical concentrate into the water stream to create an accurately diluted solution using precision metering tips. The solution replenishes at 2.4 GPM @ 40 PSI and will cycle continuously.

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# 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, NEXT PAGE.)

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

1. Carefully unpack and hold the unit next to the tank and adjust the chain length to the desired level of chemical solution in the tank, about 1" from the top of the float.
2. Attach the discharge hose and siphon breaker tube.
3. Position tank on a **level surface** to ensure the float will not "hang-up" in the tank, causing the tank to overflow.
4. Carefully lower the float in the tank and slowly tighten it up. Make sure the float is hanging straight.
5. Connect the water supply. DO NOT TURN ON

**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 strainer in the chemical concentrate.

## TO OPERATE

1. Completely open the water ball valve to fill the container.
2. Observe the level and adjust the float as needed.
3. Unit is now ready for use and will maintain the solution till the inlet ball valve is turned off.
4. Make final metering tip adjustments based on application results.

### Metering Tip Selection Chart

Metering Tip Color	Oz. per Min.	Example: Dilution Ratio @ 40 PSI
Brown	.56	491:1
Clear	.88	313:1
Bright Purple	1.38	199:1
White	2.15	128:1
Pink	2.93	94:1
Corn Yellow	3.84	72:1
Dark Green	4.88	56:1
Orange	5.77	48:1
Gray	6.01	46:1
Light Green	7.01	39:1
Med. Green	8.06	34:1
Clear Pink	9.43	29:1
Yellow Green	11.50	24:1
Burgundy	11.93	23:1
Pale Pink	13.87	20:1
Light Blue	15.14	18:1
Dark Purple	17.88	15:1
Navy Blue	25.36	11:1
Clear Aqua	28.60	10:1
Black	50.00	6:1
No Tip Ratio	up to 2.4:1	

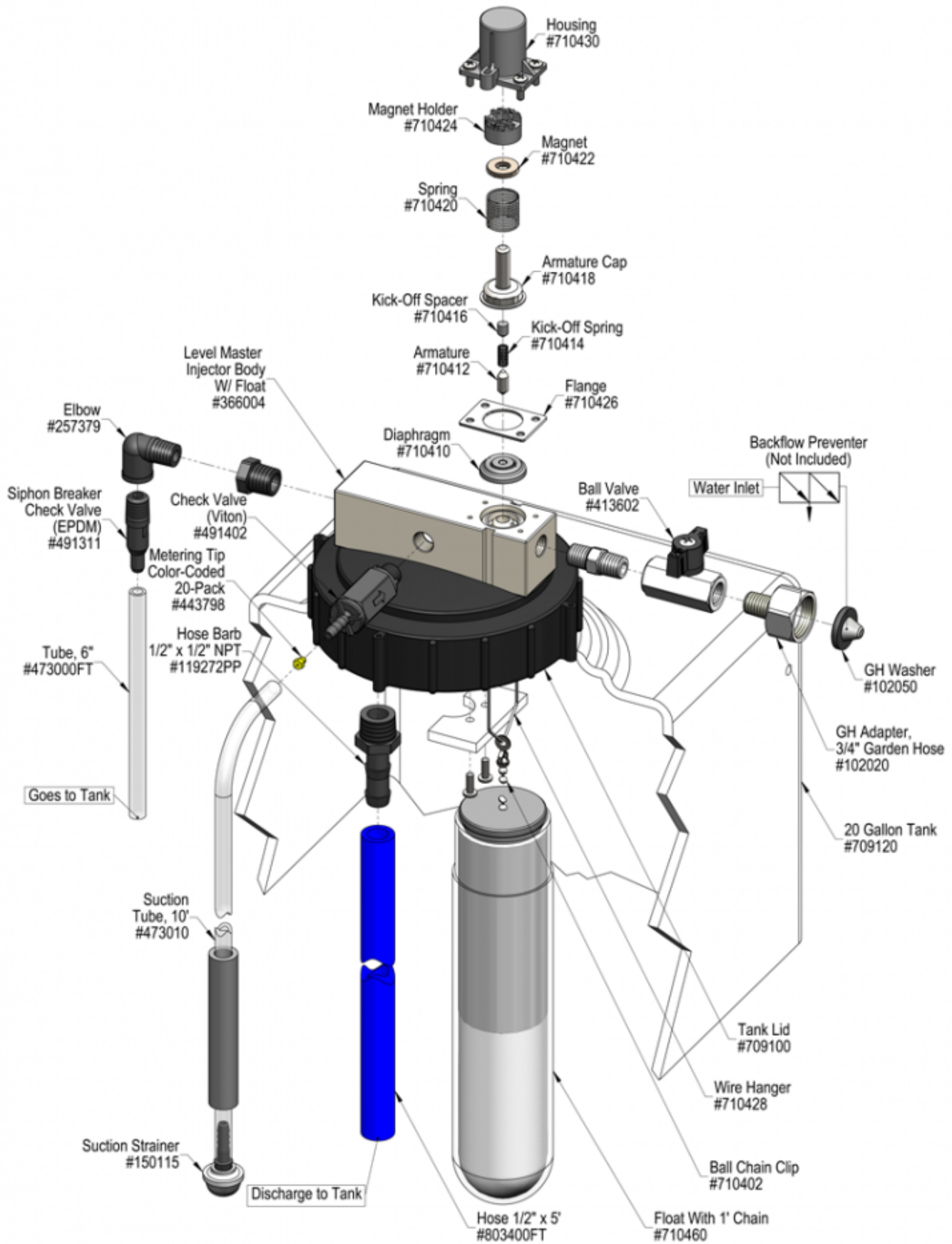
The dilution ratios above are approximate values. Due to chemical viscosity, actual dilution ratios may vary.

### Metering Tip Selection Formula

$$\frac{(\text{GPM} \times 128)}{\text{Dilution Ratio}} = \text{Oz. per Min}$$

### Flow Rate Chart

Pressure	Flow Rate
PSI	GPM
30	2.15
40	2.40
50	2.63
60	2.84
70	3.04
80	3.23



# Troubleshooting Guide

## AF 989020 • 20 Gallon Level Master™

Problem	Possible Cause / Solution	
	Startup	Maintenance
A) Unit will not draw chemical.	1, 4, 5	7, 8, 9, 10, 14
B) Dilution too strong.	2	
C) Dilution too weak.	3, 4, 5	7, 8, 9, 10, 14
D) Float will not turn off.	6	11, 12, 13

Possible Cause / Solution	
Startup	Maintenance
<ol style="list-style-type: none"> <li>1. <b>Water ball valve not completely open</b> <ul style="list-style-type: none"> <li>◦ Completely open water ball valve.</li> </ul> </li> <li>2. <b>Metering tip too large or no tip installed</b> <ul style="list-style-type: none"> <li>◦ Install smaller metering tip.</li> </ul> </li> <li>3. <b>Not enough chemical</b> <ul style="list-style-type: none"> <li>◦ Install a larger metering tip.</li> </ul> </li> <li>4. <b>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>5. <b>Water pressure too low or water temperature too high</b> <ul style="list-style-type: none"> <li>◦ 25 PSI water pressure minimum.</li> </ul> </li> <li>6. <b>Water pressure too high</b> <ul style="list-style-type: none"> <li>◦ Install a water pressure regulator if pressure exceeds 100 PSI.</li> </ul> </li> </ol>	<ol style="list-style-type: none"> <li>7. <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>8. <b>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>9. <b>Vacuum leak in chemical pick-up connections</b> <ul style="list-style-type: none"> <li>◦ Tighten the connection.</li> </ul> </li> <li>10. <b>Water strainer screen clogged</b> <ul style="list-style-type: none"> <li>◦ Clean the water strainer screen.</li> </ul> </li> <li>11. <b>Float is hung up or crooked.</b> <ul style="list-style-type: none"> <li>◦ Straighten the float</li> </ul> </li> <li>12. <b>Float valve parts are dirty or defective</b> <ul style="list-style-type: none"> <li>◦ Clean or replace the affected parts.</li> </ul> </li> <li>13. <b>Float valve diaphragm stretched out</b> <ul style="list-style-type: none"> <li>◦ Replace the float valve diaphragm.</li> </ul> </li> <li>14. <b>Chemical build-up or scale 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 descaling acid. When there is no draw at all, carefully remove fittings and soak entire body in descaling acid.</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.

