

# SFS Series

Solid Feed Systems

***Installation***  
***Maintenance***  
***Repair***  
***Manual***



Advantage Controls  
4700 Harold Abitz Dr.  
Muskogee, OK 74403  
Phone: 918-686-6211  
Fax: 888-686-6212  
[www.advantagecontrols.com](http://www.advantagecontrols.com)  
email: [support@advantagecontrols.com](mailto:support@advantagecontrols.com)

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# SFS Series Manual

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## I. Introduction

The SFS system is engineered to inject city water into a bowl containing a solid chemical which will then be dissolved and drained into a chemical solution tank based on high/low level switches. All systems primarily consists of:

1. Liquid Level controller (except SFS-G01, SFS-G02, SFS-10 and SFS-20 models).
2. A Universal dissolving bowl.
3. ¼" plumbing manifold with shut-off, solenoid valve, pressure regulator and pressure gauge.
4. Molded solution tank with pump mounting shelf.
5. A two level float switch assembly (except SFS-G01, SFS-10 and SFS-20 models).

**Note:** Inlet water pressure needs to be at 45-50 psi for best dissolution.

### Model Numbering

SFS systems have two base controller models, a full featured 120 VAC controller or the mini 12 VDC controller. Your unit may be supplied with one or more of the features described in this manual. To determine what features apply to your unit, check the model number label located on the controller.

**SFS-G01** - Single dissolving bowl in a tank with non-electric make-up valve.

**SFS-G02** - Dual dissolving bowls in a tank with non-electric make-up valve

**SFS-101** - Provides a mini 12 VDC controller, dissolving bowl and a supply water plumbing assembly mounted on a molded solution tank.

**SFS-201** - Provides two SFS-101 units mounted on a poly panel with one water inlet.

**SFS-105** - Provides a 120 VAC Liquid Level Controller with one solution tank, liquid level controller, universal dissolving bowl and a supply water plumbing assembly mounted on a poly panel.

**SFS-205** - Provides a 120 VAC Liquid Level Controller, two universal dissolving bowls and a supply water plumbing assembly, solenoid valve and five gallon solution tank mounted on a poly panel.

**SFS-305** - Provides a 120 VAC Liquid Level Controller, three universal dissolving bowls and a supply water plumbing assembly, solenoid valve and five gallon solution tank mounted on a poly panel.

**SFS-10** - Dissolving bowl with 120 volt solenoid, pressure regulator, no tank or controller.

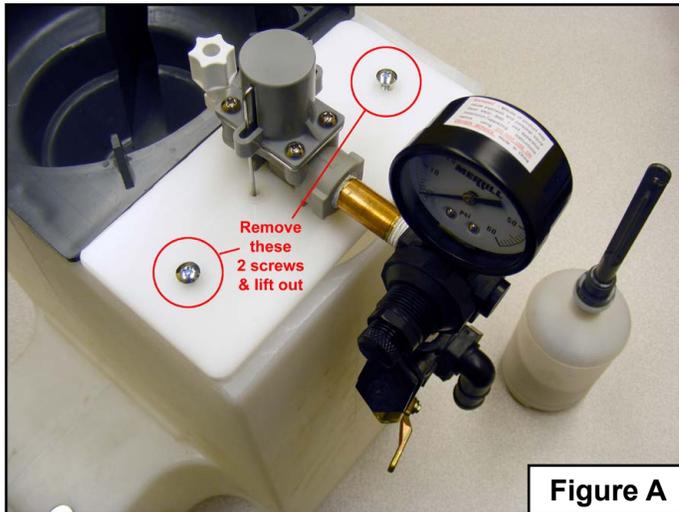
**SFS-20** - Two dissolving bowls with one 120 volt solenoid, regulator, no tank or controller.

## Options

- A** Conduit connections
- A2** 240 volt with conduit connections
- B1** Back check in pump suction line
- D** 1" FNPT port on the top of the tank for conductivity probe (not needed with C2)
- D2** Adjustable level wand for external monitoring
- E** 10' of 3/4" I.D. clear tubing for overflow
- G** Blue back panel for 105 and 205
- H** High level alarm with relay output and cut-off
- H2** High level cut-off for SFS-101 with DC controller
- H3** High alarm with cut-off and second brass solenoid N.O. on 120 volt units
- H4** High level cut-offs on SFS-201, 120 volt modual and N.O. brass shut-off valves
- K** Gray dissolving tank
- L** Provide 120 volt level controller for remote mounting with SFS-101
- P** Non Advantage Controls metering pump mounting adapter
- R1** Remove pressure regulator from 205, 305 & 405 (R2, R3 to remove more than one)
- T2** Dual timer on SFS-205 instead of level controller (Includes MicroTron Timer manual)
- W** Adjustable wands

## II. Installation

### Non-Electric Model Installation



#### Step 1

- Remove the two screws on top plate of solid feeder (Fig. A).
- Lift off cover and set on it's side.

#### Step 2

- Clip weighted float to bottom of wire hanger via cutout (Fig. B).

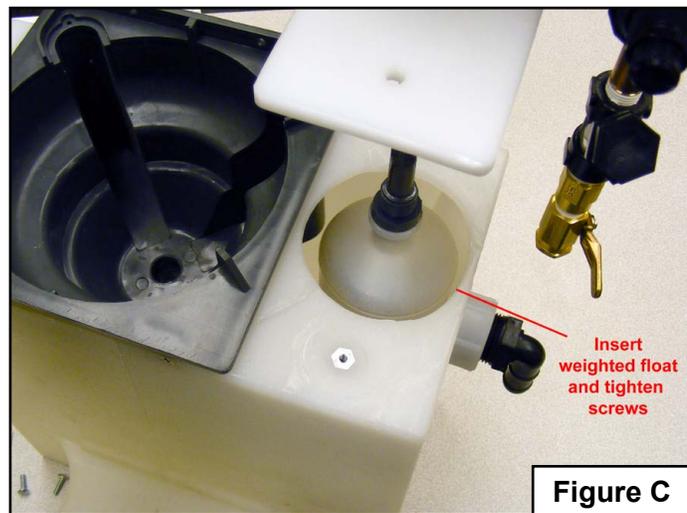
#### Step 3

- Insert weighted float back into solid feeder (Fig. C).

**Note:** Make sure weighted float is centered on wire hanger and that the hanger moves freely up and down through cap.

#### Step 4

- Reattach the two screws previously removed in Step 1.



**WARNING:** Transporting the feeder with the weighted float attached to the hanger can damage the hanger and cause the valve to not shut-off correctly.

## Electric Models

The standard units are designed to be free standing or wall mounted. The level controller, control solenoid valve and level float assembly are all prewired for easy installation.

Models with 120 VAC controllers are supplied with an 8 foot, 3-wire grounded power cord.

Models with 12 VDC controllers are supplied with a wall plug-in transformer.

A 1/4" MNPT connection is supplied for the incoming water supply. The pressure of the incoming water should not exceed 110 PSI.

The reservoir tank has a molded pump mounting shelf. Various pump mounting accessories will be included depending upon the model number for securing pump to tank. A flooded suction connection is also provided for the chemical feed pump.

- Notes:
1. Pressure regulators are preset to approximately 40 psi. If incoming water pressure is below 50 psi the regulator will need to be set to a lower level to insure proper valve operation. Turning the small knob on regulator counter clockwise will reduce the incoming line pressure.
  2. All models have an air gap design utilizing the overflow port (see page 8) that provides a positive back flow prevention leaving no pressurized path for dissolved solution back into the fresh water supply line.

## III. Operation

The electric level controller will activate a relay to power the make-up water solenoid when the solution level in the reservoir tank becomes low and turns off the relay when the solution tank becomes full, reaching the second float or (high) point. The standard level float positioning and 1" MNPT connection for overflow to be piped to drain are designed to maintain a maximum solution level of 2.5 gallons. Changing the pressure regulator setting will change the dissolving rate.

An additional high-level override switch input can be added with the H option on models that operate on 120 VAC. If the controller detects a contact from the high alarm switch, the control relay is turned off and the alarm relay is activated. Models operating on 12 VDC have the H2 option in which the high alarm simply turns off the control relay.

Muti-bowl models are designed to eliminate valuable maintenance time and create easy upkeep. Option C-2 will allow a feed system to operate 2 or more bowls sequentially switching automatically by using a conductivity controller, increasing the jug replacement interval.

## IV. Option C-2 Operation

### A. Front Panel Display

- a. System Menu Functions:
  - Calibrate - Conductivity of dissolved liquids.
  - Switch At - Conductivity value in which the system will advance to the next bowl.
  - Spraying on #1 - Identifies the bowl in use.
  - Zero Cond - Identifies the zero conductivity value.
- b. Run Mode Explanation:
  - Power- Illuminates when the controller is supplied with 120/240VAC.
  - Relay - Illuminates when a relay is activated.
  - Alarm - Illuminates when the final bowl has been utilized.
- c. Control Panel Buttons:
  - View- displays menu options screen and returns back to run mode.
  - Function Select- advances menu options.
  - Value Adjust- changes menu settings.
  - Test- activates relays and alarms on for 3 minutes.

### B. Controller Set-up

1. Press VIEW then adjust the FUNCTION SELECT knob to view functions.
2. Stop on the desired function and use the VALUE ADJUST knob to change the value.
3. After setting a value, adjust FUNCTION SELECT knob again to advance to the next function.
4. Press VIEW after setting the controller to continue with the run mode.

Note: Press the TEST button to force all relays on, press again to force off, press again to return to normal operation. If forced on or off, the unit will return to normal after 3 minutes.

### C. System Operation

In order to activate the conductivity on the controller both level wands must be down (closed) to start, with the 1st relay on for spraying on bowl 1. Both level wands must be up (open) to stop, to turn the "FILL" relays off.

1. Upon startup, the conductivity of the solution in the tank has no effect on the controller. The tank must be filled and emptied one time before the controller will consider the conductivity. This simply means, the level wands must both go up to start filling the tank and then they must both go down to show an empty tank. At this point the controller will accept the conductivity reading.
2. When the conductivity drops below the "Switch At" point, the system will switch from Bowl #1 (Relay #1) to Bowl #2 (Relay #2), Bowl # 1 will have utilized the solid chemical by this point. The first time the controller switches to Bowl #2, it will not consider the conductivity; once again, until the tank has been filled and emptied one time.
3. The controller will continue operating on Bowl #2, even if the conductivity drops below the "Switch At" point while utilizing Bowl #2 the ALARM led will activate. If the controller has option "H", then a relay will also activate for the alarm. This relay can be 120/240VAC or a dry contact.

## D. Resetting Bowls

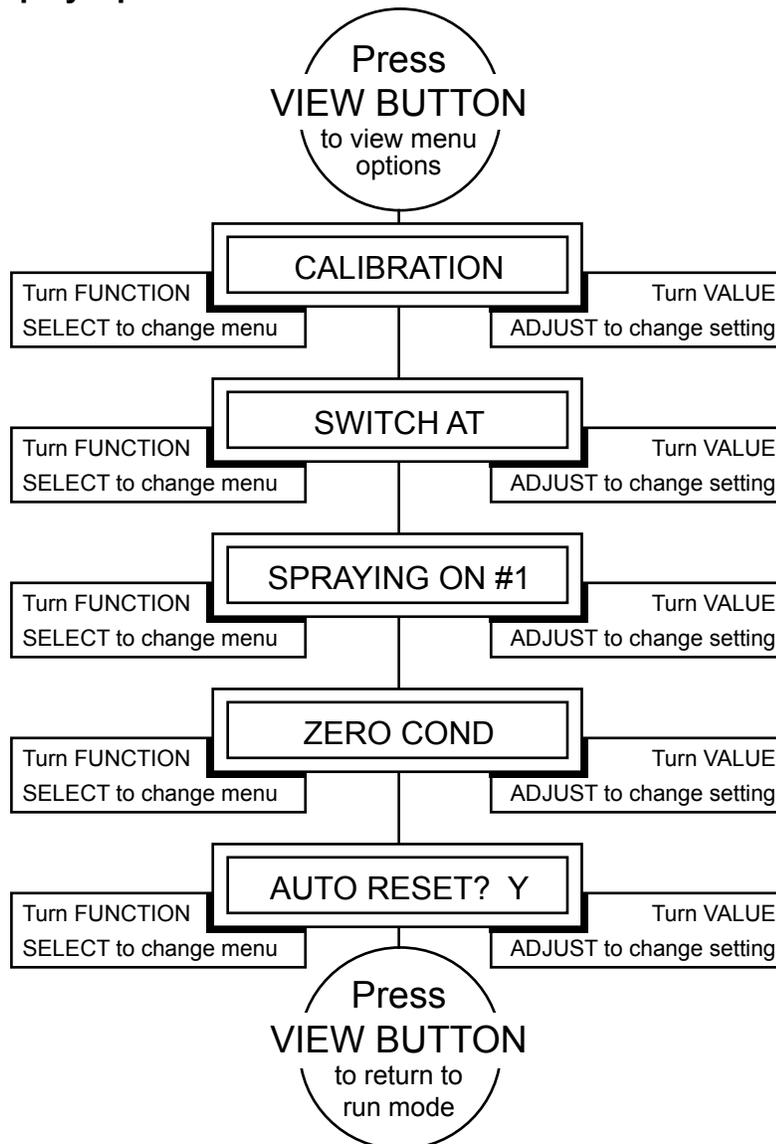
When AUTO RESET is enabled, this will allow the controller to automatically reset itself to the first bowl after the last bowl has gone “low conductivity”. Set to Y will enable.

When disabled (Set to N), the controller will function as below:

When the controller is utilizing Bowl #2, it must be manually switched back to Bowl #1, presumably after the solid chemical jugs have been changed. This can be done by:

1. Pressing the “VIEW” button and then rotating the “FUNCTION SELECT” knob two clicks clockwise. The display will read “RESET TO BOWL #1”.
2. By rotating the “VALUE ADJUST” knob (either direction). The display will change to “SPRAYING ON #1”. Chemical Bowl #1 will be used to start the new run cycle.
3. You may then press the “VIEW” button so the controller will return to the “run” mode. (The controller will return to “run” mode after 3 minutes.)

## E. C-2 Menu Display Options

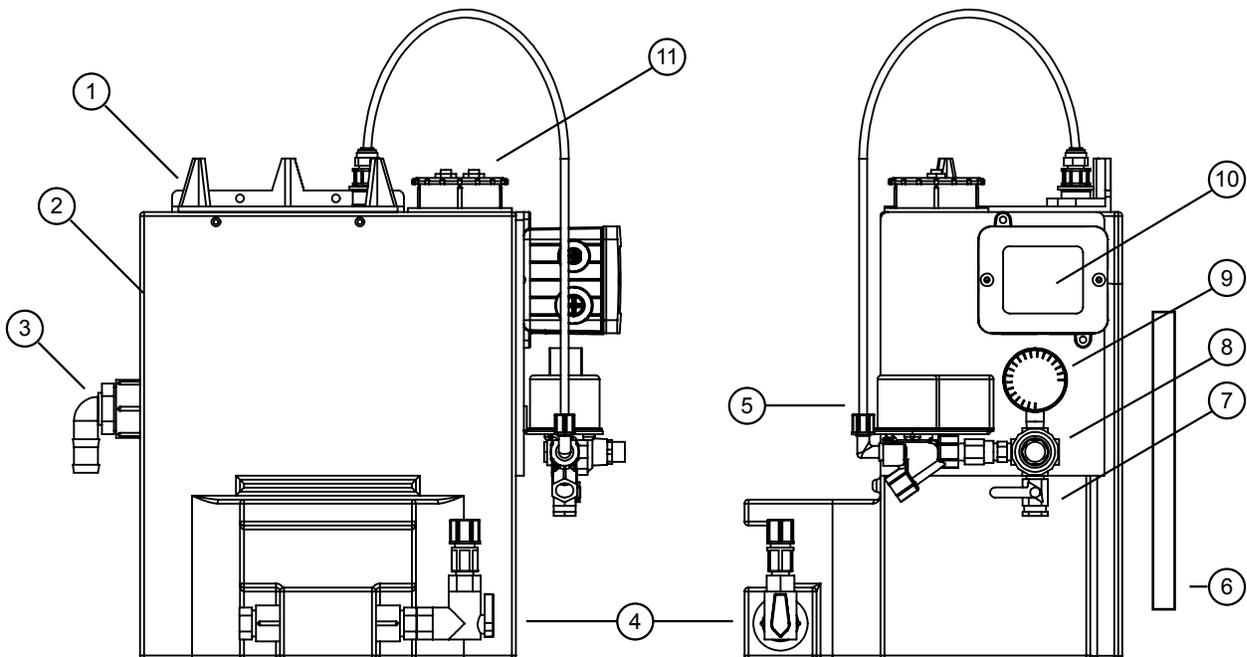
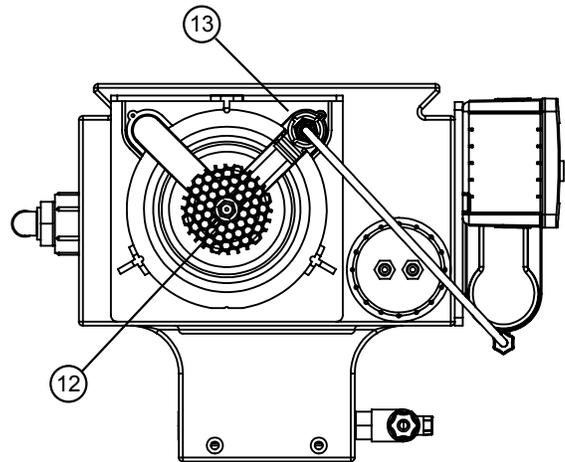


## V. Diagrams

### A. SFS-101

- |                  |   |
|------------------|---|
| 1. SFS-DB-1      | Dissolving bowl (includes spray arm)              |
| 2. SFS-TANK-101  | Replacement Tank                                  |
| 3. 2C4A000056    | 1" MNPT to 3/4" tubing barb overflow elbow        |
| 4. SFS-SUCTION   | Outlet pump suction assembly                      |
| 5. SFS-SB-12V    | Brass solenoid valve with y-strainer 12 volt D.C. |
| 6. R00223        | SS wall mounting bracket                          |
| 7. SFS-BV        | Brass inlet valve                                 |
| 8. SFS-PR        | Pressure regulator                                |
| 9. SFS-PG        | Pressure gauge                                    |
| 10. SFS-C01      | 12 vold controller                                |
| 11. SFS-LF-2     | 2 level float assembly                            |
| 12. 2C4A000059   | Replacement spray nozzle                          |
| 13. SFS-DB-ARM-1 | Spray arm (includes spray nozzle)                 |

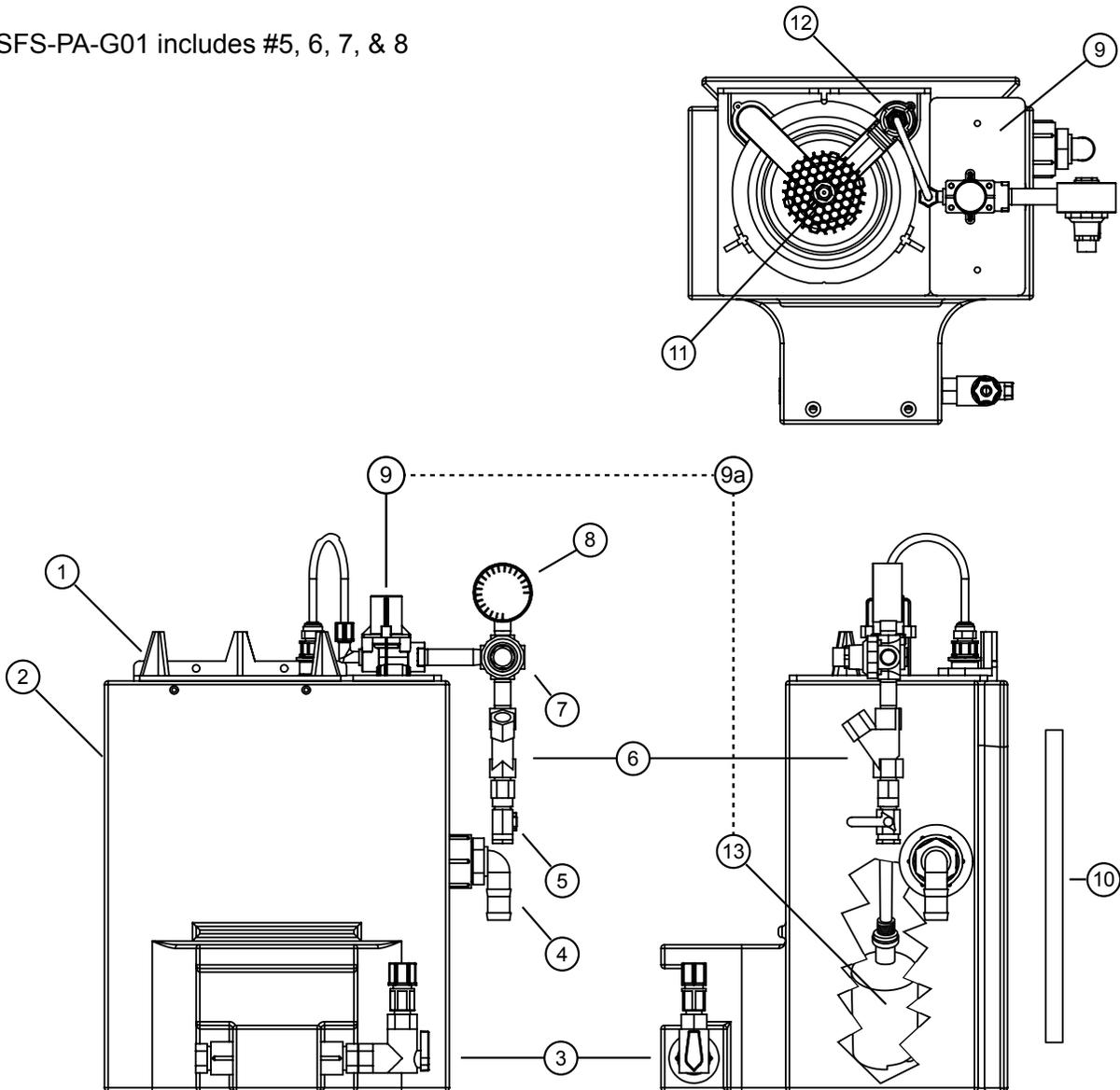
SFS-PA-101M includes #5, 7, 8, 9 & polyboard



## B. SFS-G01

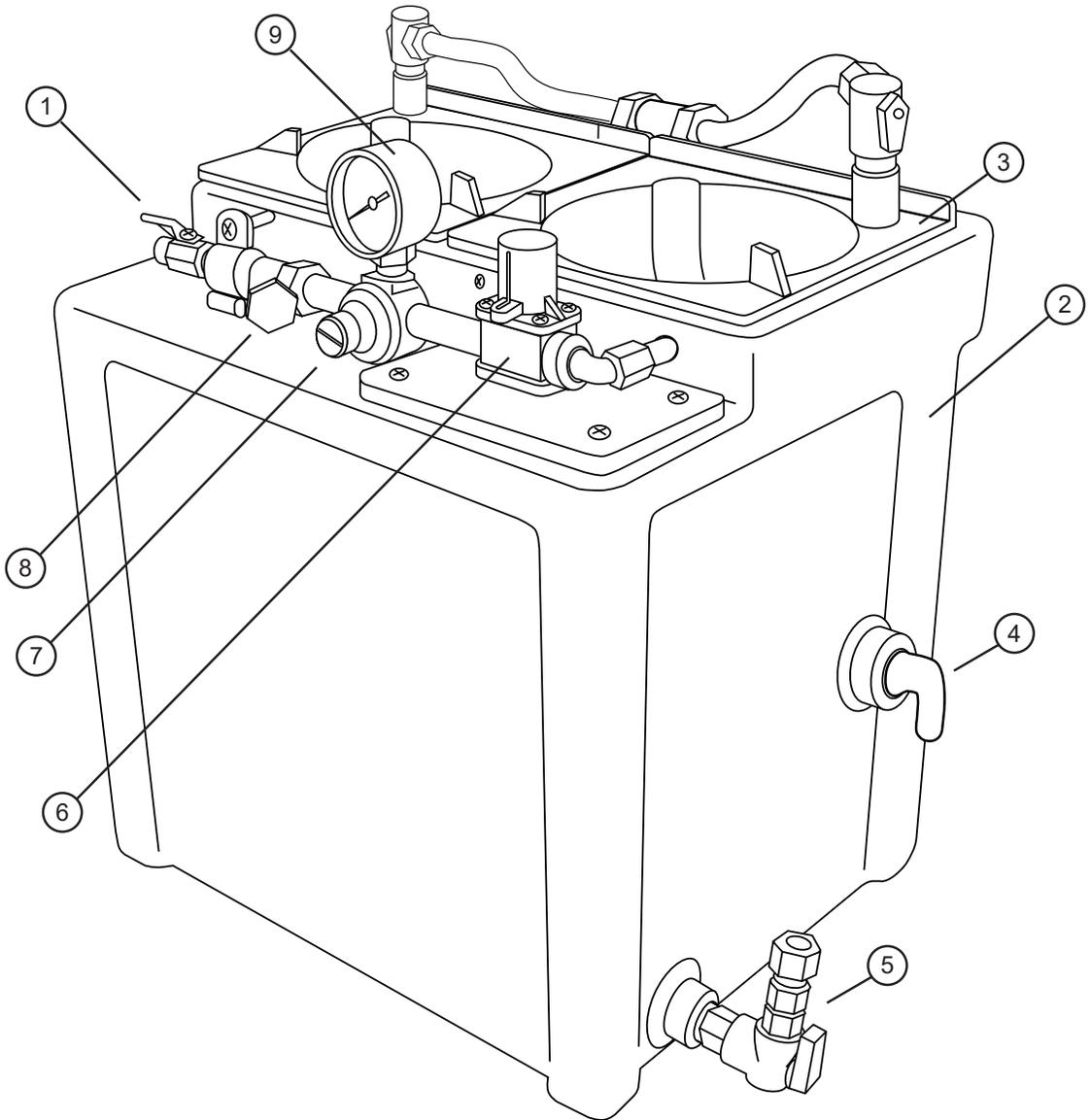
- |                  |  |
|------------------|--|
| 1. SFS-DB-1      | Dissolving bowl (includes spray arm)                             |
| 2. SFS-TANK-G01  | Replacement Tank   |
| 3. SFS-SUCTION   | Outlet pump suction assembly                                     |
| 4. 2C4A000056    | 1" MNPT to 3/4" tubing barb overflow elbow                       |
| 5. SFS-BV        | Brass inlet valve  |
| 6. SFS-Y         | Y-strainer   |
| 7. SFS-PR        | Pressure regulator   |
| 8. SFS-PG        | Pressure gauge   |
| 9. SFS-LF-G01    | Level float & inlet valve assembly (includes weight & polyboard) |
| 9a. SFS-FV-G01   | Fill valve assembly only - no float                              |
| 10. R00223       | SS wall mounting bracket   |
| 11. 2C4A000059   | Replacement spray nozzle   |
| 12. SFS-DB-ARM-1 | Spray arm (includes spray nozzle)                                |
| 13. SFS-FLOAT    | Float bottle   |

SFS-PA-G01 includes #5, 6, 7, & 8



### C. SFS-G02

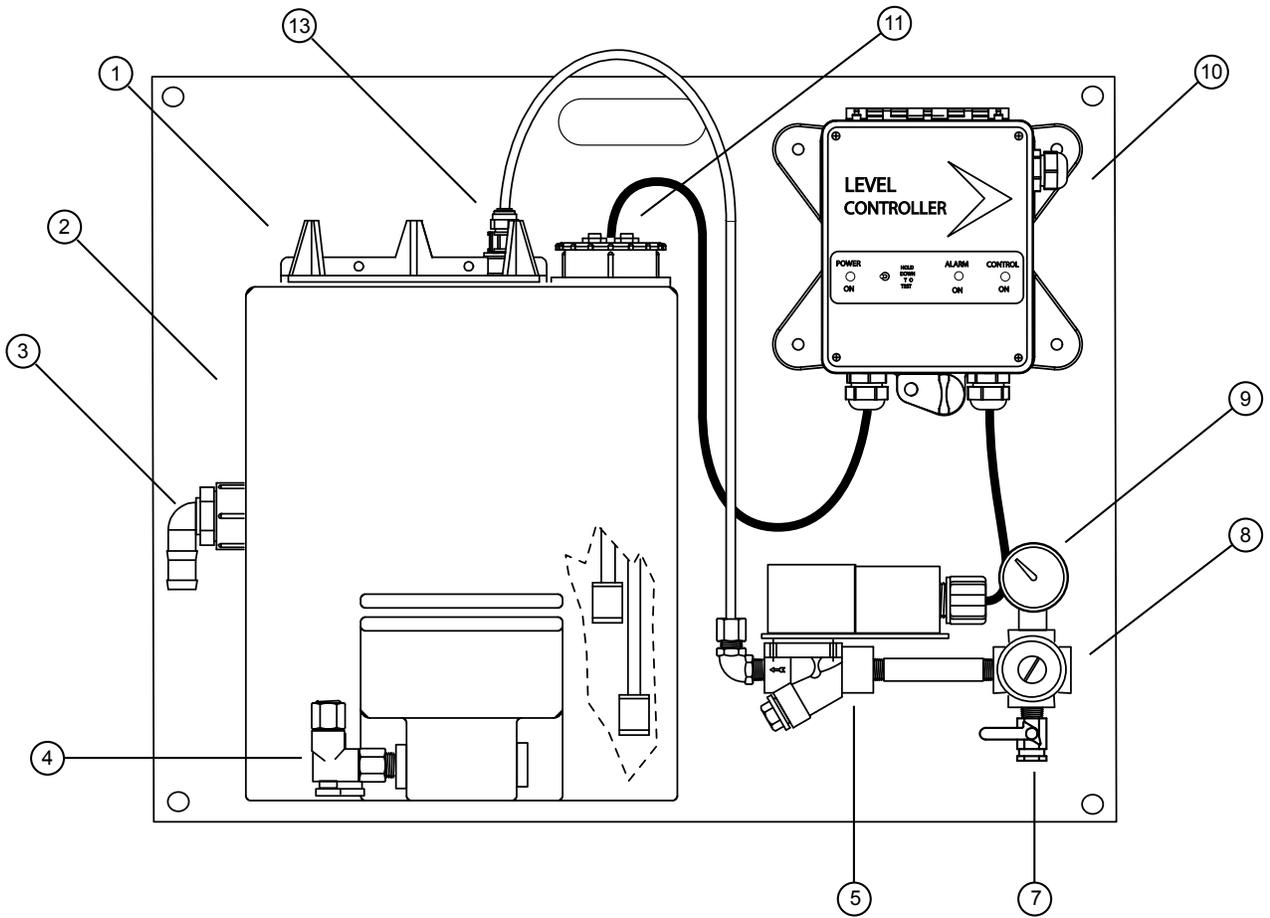
- |                 |  |
|-----------------|--|
| 1. SFS-BV       | Brass inlet valve  |
| 2. SFS-TANK-G02 | Tank   |
| 3. SFS-DB-1     | Dissolving bowl  |
| 4. 2C4A000056   | 1" MNPT to 3/4" tubing barb overflow elbow                       |
| 5. SFS-SUCTION  | Outlet pump suction assembly                                     |
| 6. SFS-LF-G02   | Level float & inlet valve assembly (includes weight & polyboard) |
| 7. SFS-PR       | Pressure regulator   |
| 8. SFS-Y        | Y-strainer   |
| 9. SFS-PG       | Pressure gauge   |
| 10. 2C4A000059  | Replacement spray nozzle (not shown)                             |
| 11. R00339      | SS wall mounting bracket (not shown)                             |



## D. SFS-105

- |                  |  |
|------------------|--|
| 1. SFS-DB-1      | Dissolving bowl (includes spray arm)               |
| 2. SFS-TANK-101  | Replacement Tank                                   |
| 3. 2C4A000056    | 1" MNPT to 3/4" tubing barb overflow elbow         |
| 4. SFS-SUCTION   | Outlet pump suction assembly (left or right)       |
| 5. SFS-SB-120V   | Brass solenoid valve with y-strainer 120 volt A.C. |
| 6. R00223        | SS wall mounting bracket (not shown)               |
| 7. SFS-BV        | Brass inlet valve                                  |
| 8. SFS-PR        | Pressure regulator                                 |
| 9. SFS-PG        | Pressure gauge                                     |
| 10. SFS-C105     | Level controller                                   |
| 11. SFS-LF-2     | 2 level float assembly                             |
| 12. 2C4A000059   | Replacement spray nozzle (not shown)               |
| 13. SFS-DB-ARM-1 | Spray arm (includes spray nozzle)                  |

SFS-PA-101M includes #5, 7, 8, 9 & polyboard



## VI. Trouble Shooting

PROBLEM	CAUSE	REMEDY
Solenoids not activating	Power Source	Check power source
	Output Power	Check or replace fuse
	Bad or Dirty Level Floats	Clean or replace as needed
	Faulty Wiring to Level Floats	Level floats as needed
System not spraying	Dirty Bowl Injection Nozzle	Clean as needed
	Clogged Y-Strainer Screen	Clean as needed
	Low Water Pressure	Lower regulator setting
No system power	Power Source	Check power source
	Check Fuse	Replace as needed
No output power	Check Ribbon (120/240V Controller)	Make sure connection is fully seated on both ends
	Check Fuse	Replace as needed
<b>(C-2 Option)</b>		
False reading	Bad or Dirty Electrode	Clean as needed
	Out of Calibration	Calibrate unit
Will not calibrate	Dirty Electrode	Clean electrode
	Faulty Electrode	Replace controller or
	Faulty Wiring to Electrode	Replace as needed
	Out of Calibration	Calibrate unit
Alarm Lights ON	System has utilized all bowls	Reset to bowl #1

## **VII. Manufacturer's Product Warranty**

Advantage Controls warrants control systems of its manufacture to be free of defects in material or workmanship. Liability under this policy extends for 24 months from date of installation (sensors are not included). Liability is limited to repair or replacement of any failed equipment or part proven defective in material or workmanship upon manufacturer's examination. Removal and installation costs are not included under this warranty. Manufacturer's liability shall never exceed the selling price of equipment or part in question. Advantage disclaims all liability for damage caused by its products by improper installation, maintenance, use or attempts to operate products beyond their intended functionality, intentionally or otherwise, or any unauthorized repair. Advantage is not responsible for damages, injuries or expense incurred through the use of its products. The above warranty is in lieu of other warranties, either expressed or implied. No agent of ours is authorized to provide any warranty other than the above.

### **30 Day Billing Memo Policy**

Advantage Controls maintains a unique factory exchange program to ensure uninterrupted service with minimum downtime. If your controller malfunctions, call 1-918-686-6211 (international customers dial +1918 686-6211), and provide our technician with Model and Serial Number information. If they are unable to diagnose and solve your problem over the phone, a fully warranted replacement unit will be shipped, usually within 48 hours, on a 30 Day Billing Memo. This service requires a purchase order and the replacement unit is billed to your regular account for payment. The replacement unit will be billed at current list price for that model less any applicable resale discount. Upon return of your old unit, credit will be issued to your account if the unit is in warranty. If the unit is out of warranty or the damage not covered, a partial credit will be applied based upon a prorated replacement price schedule dependent on the age of the unit. Any exchange covers only the controller or pump. Electrodes and other external accessories are not included.



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