



INDUSTRIES LIMITED

Installation, Operation & Maintenance
Instructions for SF Series Solution Feeders

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SF100, SF100-L and SF100-HP SF100-L-HP HYDRONIC SYSTEM FEEDER

INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS

Installation Instructions

WARNING: “Risk of electrical shock”. This pump is supplied with a grounding connector and grounding-type attachment plug. To reduce the risk of electrical shock, be certain that it is connected only to a properly grounded, grounding-type receptacle. To prevent electrical shock, disconnect power before initiating any work. In the case of pump failure, the motor housing and/or the pumped fluid may carry high voltage to components normally considered safe.

Set the solution feeder on a secure and level base. Connect the flexible hose supplied with the unit to your system connection point - use a union and isolation valve to allow for future service. **Note that the check valve supplied with the unit must be on the system end of the flexible hose.**

NOTE - Relief and drain valves may be piped to the SF100 tank, but any holes for entry of these pipes should be cut into the side of the tank near the top rather than through the cover. This will allow the cover and top to be easily removed if necessary.

Fill the SF100 tank with fluid. The unit is suitable for water or glycol/water solutions of up to 50% glycol concentration.

Operation Instructions

Leave the field installed isolation valve closed until the SF100 has been cycled and checked for leaks.

Plug the SF100 into an approved electrical outlet. The pump will start, charge the pressure tank, and stop automatically. Check to ensure that all joints are tight and there are no leaks.

NOTE - It may be necessary to purge air from the lines before the pump can draw fluid from the tank. This can be done with the diverting valve, which is accessible through the hole on the left-hand side of the cover. Turn the valve handle so that it is vertical to purge air - return it to horizontal for normal operation.

Verify that the outlet pressure registered on the pressure gauge meets your system needs. It is factory set at 12 psig (83 KPa), but can be increased by turning in the adjusting stem on the top of the regulating valve. **The regular SF100 or SF100L can but increased to 55 psi and the SF100-HP or SF100-HP-L can be increased to 85 psi.**

Fill your system, and then slowly open the valve isolating the system from the SF100.

NOTE: Do not use the SF100 to fill large systems. The pump does not have a high flow rate; using it to fill large systems will cause unnecessary wear on the pump and may void the warranty.



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Once the system is filled to the correct pressure, ensure that there is an adequate level of fluid (we recommend about 2/3 full) in the storage tank and record the fluid level. The SF100 will now feed solution automatically to maintain the desired system pressure. **The SF100 or SF100-HP has a 55 gallon (208 litre) tank and the SF100L or SF100-HP-L has a 100 gallon (383 litre) tank.**

The diverting valve, which is accessible through the hole on the left hand side of the cover, can be used to agitate or mix the solution in the tank. Turn the valve handle so that it is vertical - the pump will start automatically and re-circulate the solution back into the tank. When the solution is adequately mixed, turn the valve handle back to horizontal. The pump will re-charge the pressure tank and shut off automatically.

Maintenance Instructions

Periodically check the fluid level in the storage tank, and visually examine the SF100 to ensure that it is clean and that all joints are tight. There is a strainer on the bottom of the suction hose inside the tank that should be checked monthly.

Solution Feeder Limited Warranty

AXIOM Solution Feeder are warranted to be free of defects in material and workmanship under normal use, for a period of one (1) year from the date of manufacture, or one (1) year of use, with proof of purchase. This limited warranty will not exceed two (2) years, in any event.

The limited warranty will not apply to pumps that were improperly installed, misapplied, or incompatible with fluids or components not manufactured by AXIOM. Pump failure due to foreign debris is not covered under the terms of this limited warranty. AXIOM will not warrant any pump, which is damaged or modified outside the AXIOM factory.

Returns are to be shipped postage prepaid to AXIOM Industries. AXIOM shall not be liable for freight damage incurred during shipping, package returns carefully.

AXIOM's obligation under this warranty policy is limited to the repair or replacement of the pump/product. All returns will be tested per AXIOM factory criteria. Products found not defective (under the terms of this limited warranty) are subject to charges paid by the returnee for the testing and packaging of "tested good" non-warranty returns.

No credit or labor allowances will be given for pumps or products returned as defective. Warranty replacements will be shipped on a freight allowed basis. AXIOM reserves the right to choose the method of transportation.

This limited warranty is in lieu of all other warranties, expressed or implied, and no other person is authorized to give any other warranty or assume obligation or liability on AXIOM's behalf. AXIOM shall not be liable for any labor, damage or other expense, nor shall AXIOM be liable for any indirect, incidental or consequential damages of any kind incurred by the reason of the use of sale of any defective product or part. This limited warranty covers products distributed within Canada and the USA. Other world market areas should consult with the distributor for any deviation from this document



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SF100 PRESSURE REDUCING VALVE (PRV)

Pressure reducing valve for automatic control of closed loop boiler make up fluid.

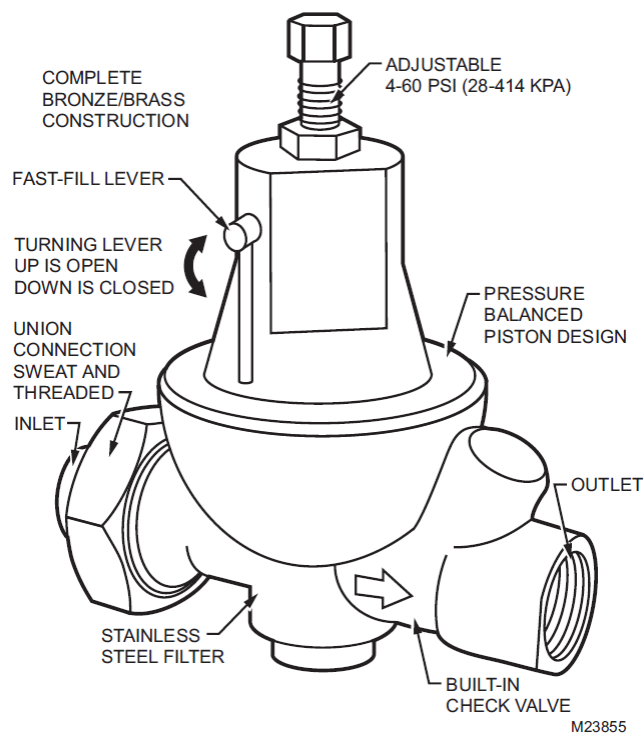
Specifications: Product Number:	FM451	Max. Temp continuous operation:	180°F
Size:	1/2" NPT Union	Min. Temp:	12°F
Body:	brass	Max. pressure:	150 PSI
Inlet Connection:	1/2" NPT	Adjustment range:	4-60 PSI
Dimension (L x H):	4 1/8" x 5 5/16"	Factory set at:	12 PSI
Weight (Lbs.):	1.8	Min. water temp:	40°F

Operation:

The SF100 PRV valve is factory set for 12 PSI. To change setting, loosen the jam nut then turn hex head adjusting screw clockwise to increase the set pressure or counterclockwise to lower the set pressure. When desired pressure is obtained, tighten jam nut while holding adjusting screw stationary. **CAUTION:** The fast fill lever must never be left in the horizontal position. The lever must be placed in the vertical position to avoid over-pressurization and unnecessary relief valve discharge.

Features:

- Good for 12 story building
- Adjustable 4-60 PSI
- Fast-fill
- Built-in check valve
- Stainless steel filter
- Pressure balanced piston design
- Threaded union connections
- Complete bronze



MTC-04-0302



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SF100-HP PRESSURE REDUCING VALVE (PRV)

Pressure reducing valve for automatic control of closed loop boiler make up fluid.

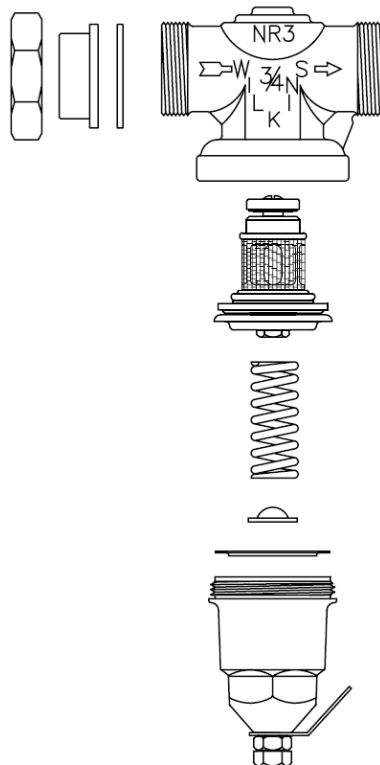
Specifications: Product Number: NR3HRSC
Size: 1/2" NPT Union
Body: brass
Inlet Connection: 1/2" FNPT
Dimension (L x H): 5 1/4" x 5 7/8"
Weight (Lbs.): 2.0

Operation:

The SF100-HP PRV valve is factory set for 50 PSI. To change setting, loosen the jam nut then turn hex head adjusting screw clockwise to increase the set pressure or counterclockwise to lower the set pressure. When desired pressure is obtained, tighten jam nut while holding adjusting screw stationary.

Features:

- Max. working water pressure 400psi
- Max. working water temperature 140°F
- Reduced pressure range 15 to 150 psi
- Factory preset 50psi





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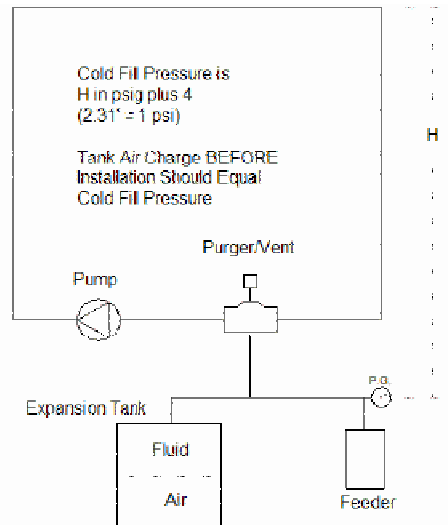
COLD STATIC FILL PRESSURE

The cold static fill pressure (CSFP) in a closed hydronic system has to be high enough to accomplish three things.

- 1) Overcome the static head (height) between the fill point and the highest point in the system.
- 2) Provide adequate pressure (minimum 4 psig) at the top of the system for proper air venting.
- 3) Maintain adequate pressure at the inlet of the system pumps to prevent cavitation.

The formula for calculating the required CSFP to satisfy points 1 & 2 is:

$$(\text{Static height in feet}/2.31) + 4 = \text{CSFP in psig.}$$



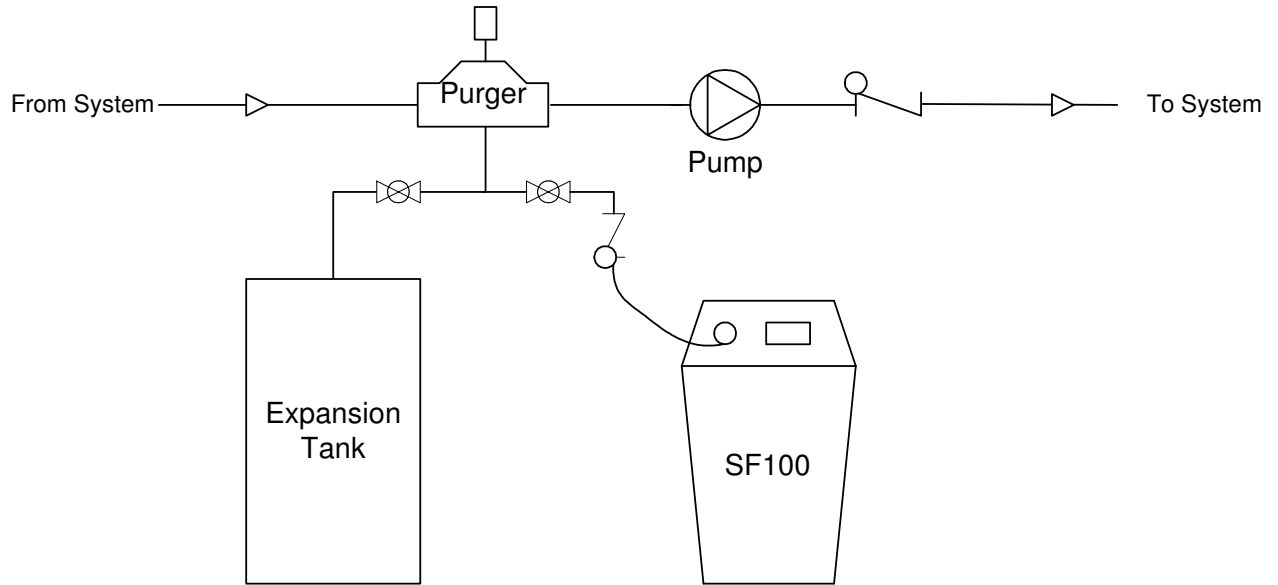
As an example, the CSFP for a system with a static height above the fill point of 40 feet would be: $(40/2.31) + 4 = 21.3$ psig.

For most closed hydronic systems operating below about 210 F, maintaining the minimum top-of-system pressure at 4 psig will be adequate to prevent pump cavitation even if the pumps are at or near the top of the system as well.

IMPORTANT NOTE – For air-charged diaphragm or bladder tanks, the air charge in the tank must be adjusted to equal the cold static fill pressure before it is connected to the system.



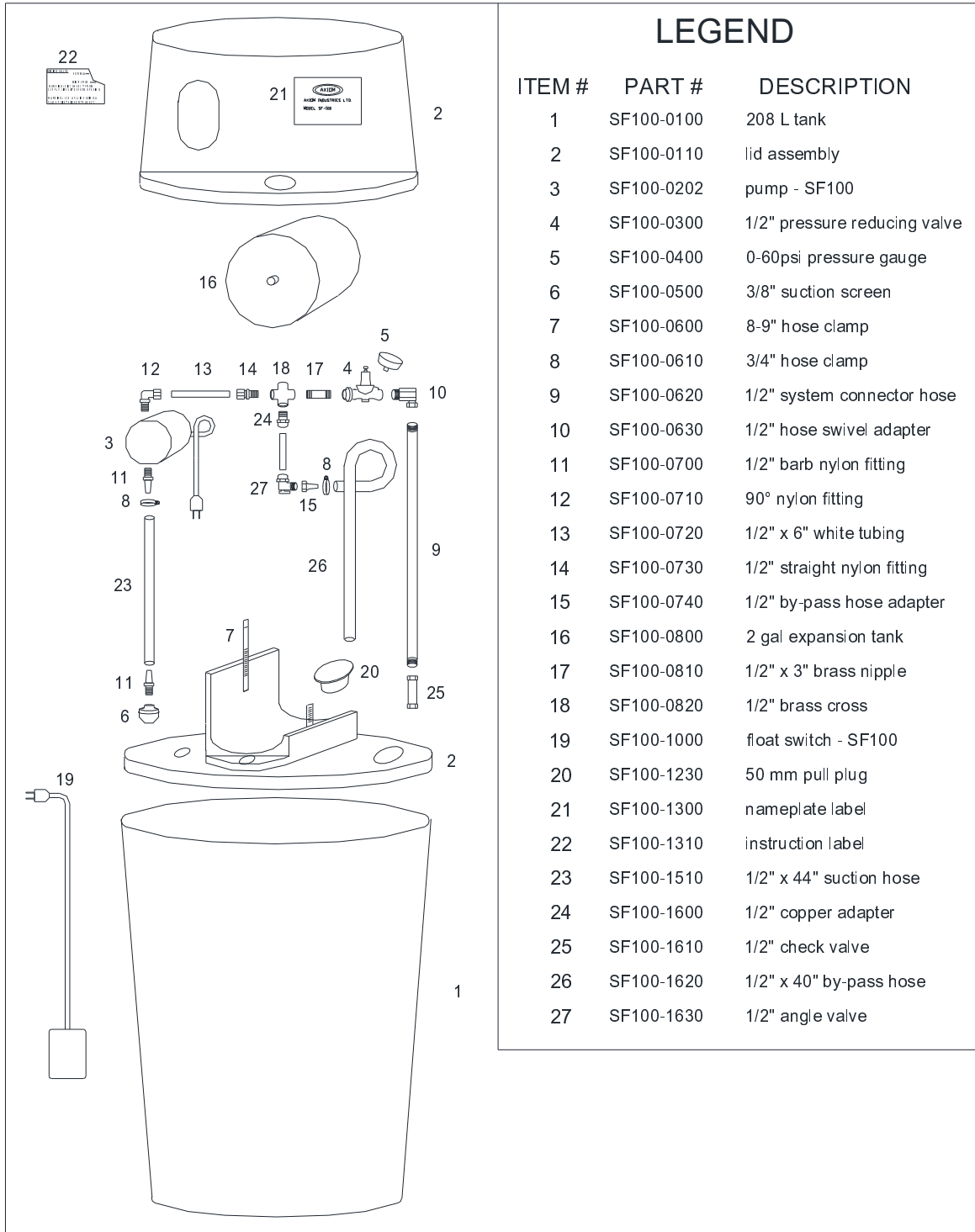
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Connection Schematic - SF100 Packaged System Feeder



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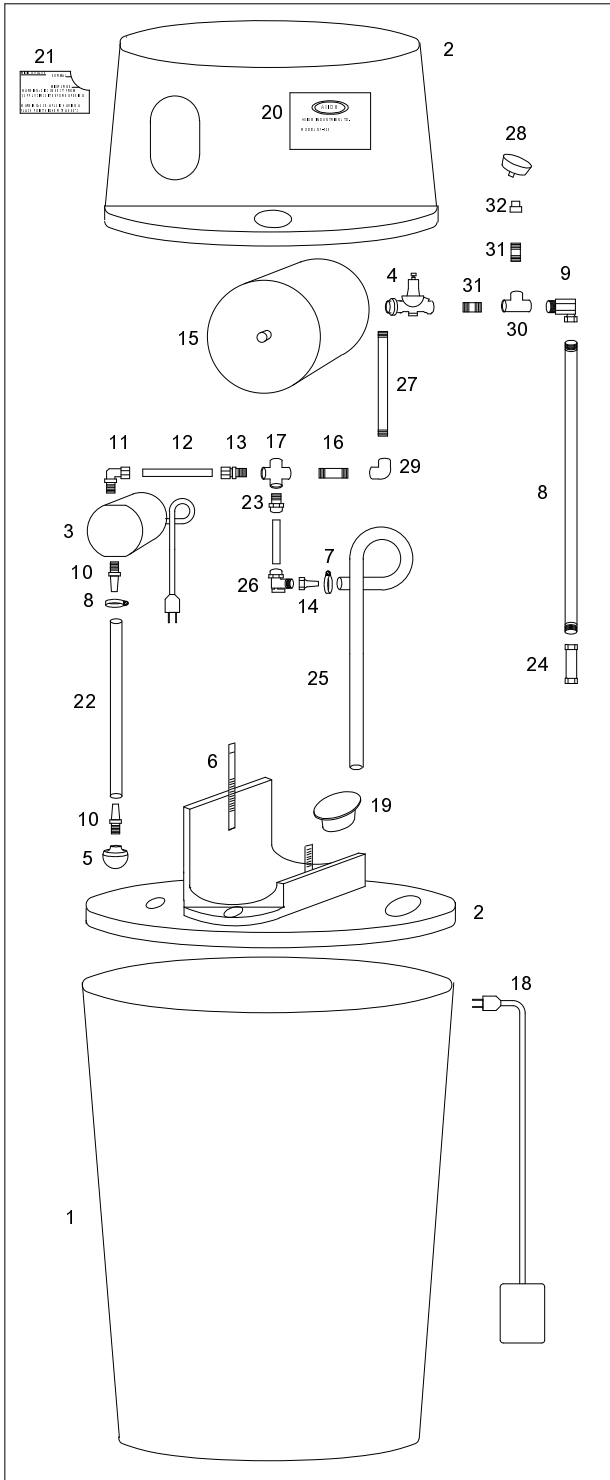
LEGEND

ITEM #	PART #	DESCRIPTION
1	SF100-0100	208 L tank
2	SF100-0110	lid assembly
3	SF100-0202	pump - SF100
4	SF100-0300	1/2" pressure reducing valve
5	SF100-0400	0-60psi pressure gauge
6	SF100-0500	3/8" suction screen
7	SF100-0600	8-9" hose clamp
8	SF100-0610	3/4" hose clamp
9	SF100-0620	1/2" system connector hose
10	SF100-0630	1/2" hose swivel adapter
11	SF100-0700	1/2" barb nylon fitting
12	SF100-0710	90° nylon fitting
13	SF100-0720	1/2" x 6" white tubing
14	SF100-0730	1/2" straight nylon fitting
15	SF100-0740	1/2" by-pass hose adapter
16	SF100-0800	2 gal expansion tank
17	SF100-0810	1/2" x 3" brass nipple
18	SF100-0820	1/2" brass cross
19	SF100-1000	float switch - SF100
20	SF100-1230	50 mm pull plug
21	SF100-1300	nameplate label
22	SF100-1310	instruction label
23	SF100-1510	1/2" x 44" suction hose
24	SF100-1600	1/2" copper adapter
25	SF100-1610	1/2" check valve
26	SF100-1620	1/2" x 40" by-pass hose
27	SF100-1630	1/2" angle valve

PROJECT		SF100 (EXPLODE)		AXIOM INDUSTRIES	
CUSTOMER					
DRWG. NO.	EQUIP. NO.	JOB NO.	DATE		
TLL-SF100-0212	PARTS LIST		JAN 2014		



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LEGEND

ITEM #	PART #	DESCRIPTION
1	SF100-0100	208 L tank
2	SF100-0110	lid assembly
3	SF100-0201HP	pump - SF100-HP
4	SF100-0300HP	1/2" pres. reducing valve HP
5	SF100-0500	3/8" suction screen
6	SF100-0600	8-9" hose clamp
7	SF100-0610	3/4" hose clamp
8	SF100-0620	1/2" system connector hose
9	SF100-0630	1/2" hose swivel adapter
10	SF100-0700	1/2" barb nylon fitting
11	SF100-0710	90° adapter
12	SF100-0720	1/2" x 6" white tubing
13	SF100-0730	1/2" straight adapter
14	SF100-0740	1/2" by-pass hose adapter
15	SF100-0800	2 gal expansion tank
16	SF100-0810	1/2" x 3" brass nipple
17	SF100-0820	1/2" brass cross
18	SF100-1000	float switch - SF100
19	SF100-1230	50 mm pull plug
20	SF100-1300	nameplate label
21	SF100-1310	instruction label
22	SF100-1510	1/2" x 44" suction hose
23	SF100-1600	1/2" copper adapter
24	SF100-1610	1/2" check valve
25	SF100-1620	1/2" x 44" by-pass hose
26	SF100-1630	1/2" angle valve
27	SF100-2000	1/2" x 6" brass nipple
28	SF100-2110	0-100psi pressure gauge
29	SF100-2010	elbow - brass
30	SF100-2020	tee - brass
31	SF100-2030	close nipple - brass
32	SF100-2040	bushing - brass

PROJECT SF100-HP (EXPLODE)

AXIOM INDUSTRIES

DRWG. NO.

EQUIP. NO.

JOB NO.

DATE

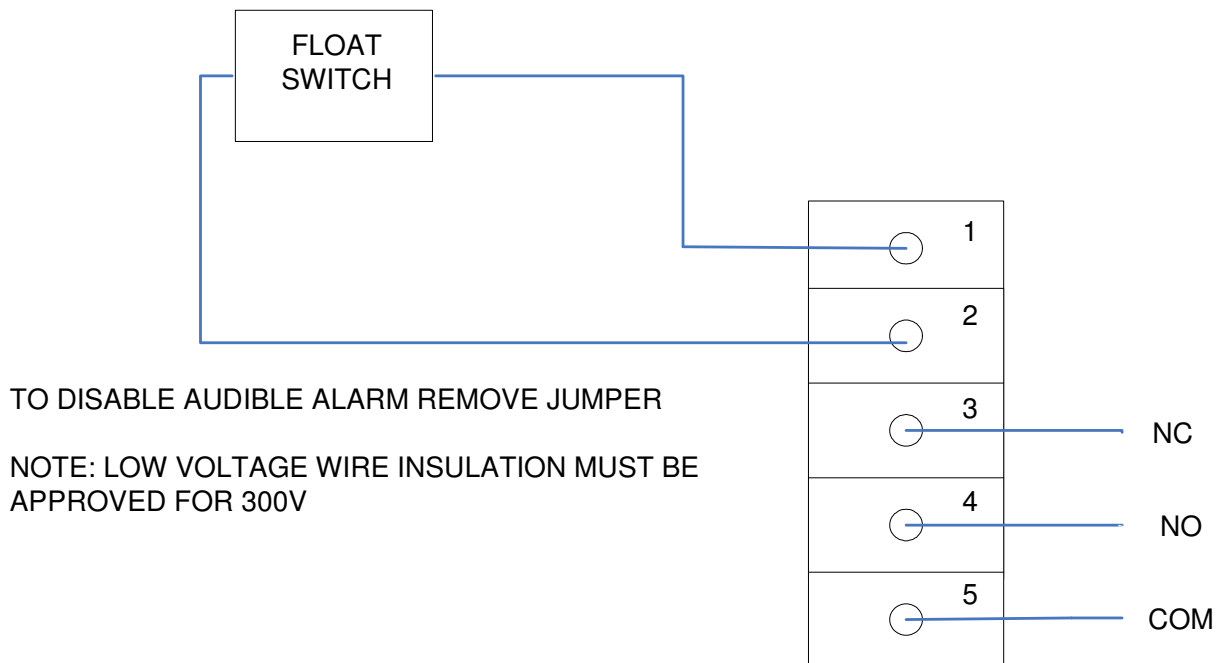
PARTS LIST

20 JUNE 2013



SF100 Installation Instructions for the RIA10-1-SAA Control Panel

1. Mount the RIA10-1-SAA control panel on a wall next to the SF100 Glycol Feed System.
2. Cut the plug-in end of the tank float cord
3. Push the float cable through strain relief fitting in control panel and connect float wires to terminals 1 and 2 on terminal strip. Connect ground wire to ground connection. Tighten strain relief nut to secure cable into panel.
4. Connect DCS wiring to remote alarm dry contacts as requested to provide alarm signal.
5. To disable the audible alarm, remove the jumper on the control board.
6. Plug pump cord into RIA10-1-SAA panel.



SF100 trouble shooting chart

<u>Symptom</u>	<u>Possible Cause</u>	<u>Resolution</u>
Pump will not start	Fluid level in tank is low	Add correct fluid. Check for cause of system fluid loss
	Thermal fuse tripped	Allow pump sufficient time to cool down. Pumps are designed for intermittent duty
	Power unplugged or loose electrical connections	Plug in power or correct faulty electrical connection
	Pressure switch out of adjustment	Adjust pressure switch according to the manufacturers recommendations
	Faulty pressure switch on pump	Obtain pump from reseller and replace
	Pump failure	Obtain pump from reseller and replace
Pump will not shut off	Air lock in pump	Turn purge/mixing valve to prime pump
	Leak in system or pump	Inspect system and repair leak
	Faulty pressure switch on pump	Obtain pump from reseller and replace
Pump will not prime	Fluid level in tank is low	Add correct fluid. Check for cause of system fluid loss
	Strainer on inlet hose is blocked	Clean strainer
	Product in tank is too thick or Congealed glycol	Clean strainer and check concentration of glycol mixture
	Inlet tubing leak is drawing air	Replace tubing and repair leak
	Inlet/Outlet tube severely restricted (Kinked)	Replace tubing
Noisy / Rough operation	Pump is overloaded and pump pressure switch not cutting out or cutting out at very high pressure	Obtain Replacement pump from reseller and install
	Pump pressure switch cutting out at very high pressure	Adjust pressure switch to lower pressure.
	Loose pump head or drive screws	Tighten screws
	Feeder is plumbed with rigid pipe causing noise to transmit	Plumb with PEX or plastic pipe
Feeder Leaking	Loose fittings	Tighten fittings
	Pump has punctured diaphragm	Obtain Replacement pump from reseller and install
System pressure low	Fluid level in tank is low	Add correct fluid. Check for cause of system fluid loss
	Breaker	Flip breaker
	Pressure switch out of adjustment	Adjust pressure switch according to the manufacturers recommendations
	PRV adjusted to low pressure	Loosen jam nut and adjust hex screw clockwise to increase pressure
	PRV plugged	Open bottom, remove screen if it is still there and clean thoroughly
	Faulty pressure switch	Obtain Replacement pump from reseller and install
	Power unplugged or loose electrical connections	Plug in or correct faulty electrical connection
	Pump failure	Obtain pump from reseller and install

System pressure to high

Pressure switch not adjusted to proper setpoint	Adjust pressure switch, refer to maintenance manual for instructions
PRV adjusted to high pressure	Loosen jam nut and adjust hex screw counter clockwise to decrease system pressure
PRV fast fill valve open	Move fast fill lever to vertical position
PRV plugged	Open bottom, remove screen if it is still there and clean thoroughly

Pump Cycles Continually

Air is being removed from system and pump is only making up fluid	No action required
Leak in system	Inspect system and repair leak
Bladder in expansion tank is broken	Replace expansion tank