



***INDUSTRIES LIMITED***

## **Installation, Operation & Maintenance Instructions for MF Series Solution Feeders**

### **Startup Procedure**

- 1) Close isolation valve between feeder and system connection point
- 2) Fill reservoir, turn valve on feeder to mix/purge and plug in
- 3) Ensure pump is cycling fluid through reservoir (primed)
- 4) Turn valve to run and open isolation valve to system

## **MF200 and MF300 HYDRONIC SYSTEM FEEDER**

### **INSTALLATION, OPERATION AND MAINTENANCE INSTRUCTIONS**

The System Feeder is used to maintain a minimum system pressure within a hydronic heating or cooling system. It should be used to pressurize the system while system temperature is at it's lowest.

#### **Installation Instructions**

1. Set System Feeder on a secure and level base or in the optional tank shelf.
2. Connect the unit to the system using copper or plastic tubing. Ensure that there is a system isolation valve installed to allow for isolation of the unit. **DO NOT INSTALL A CHECK VALVE OR PRESSURE REGULATOR BETWEEN SYSTEM FEEDER AND SYSTEM.**
3. Mount power supply and secure with mounting bracket. Do not power up System Feeder until a system connection is made, isolation valve is closed and Feeder valve is set to mix.
4. To connect the system feeder to the RIA10-1-SAA alarm panel remove low level float switch from circuit and connect to axiom RIA10-1-SAA alarm panel.
5. Install proper water/glycol mix in the tank to a level above minimum level indication on tank scale. A 30-50% Polypropylene Glycol is Recommended.
6. **Close system isolation valve, turn feeder valve to vertical position (mix position).**
7. Insert DC plug into the System Feeder first, and then plug power supply into 120v outlet. The red LED in the power supply cord should light up. If it does not, check the fuse and power receptacle.
8. Once the pump is primed, turn the feeder valve handle to horizontal position (run position), open system isolation valve and allow pump to pressurize system. If system pressure is below pressure switch setting (18 psi), the pump will start. The System Feeder will run until system is pressurized to approximately 18 psi. and shut-off. It may cycle rapidly a number of times while system pressure stabilizes and while air is removed from the system. The cycling will stop once system pressure rises above 18 psi due to thermal expansion.
9. If a higher fill pressure is required (up to 25 psi) the internal pressure switch may be adjusted by turning the center adjusting screw counter clockwise to increase pressure. Access to the pressure switch can be gained by lifting the left side of the top cover.
10. The MF200 is shipped with a small amount of 50% propylene glycol (non-toxic) in the discharge tubing between the pump and the check valve. This is to aid in priming.

Please note that the pressure gauge supplied with the unit may read differently from another gauge, which may be installed elsewhere in the system. This may be due to gauge calibration or differences in elevation within the system and should not be a concern.

The System Feeder does not require any scheduled maintenance. Should you wish to test pump operation, turn mix/purge valve to vertical position to start pump. Turning mix/purge valve handle to horizontal position will stop pump.

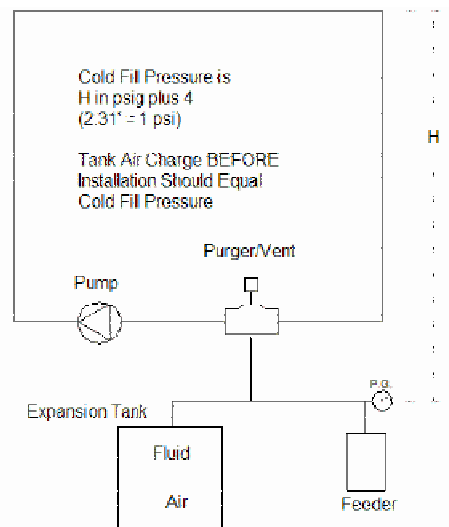
## COLD STATIC FILL PRESSURE

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:

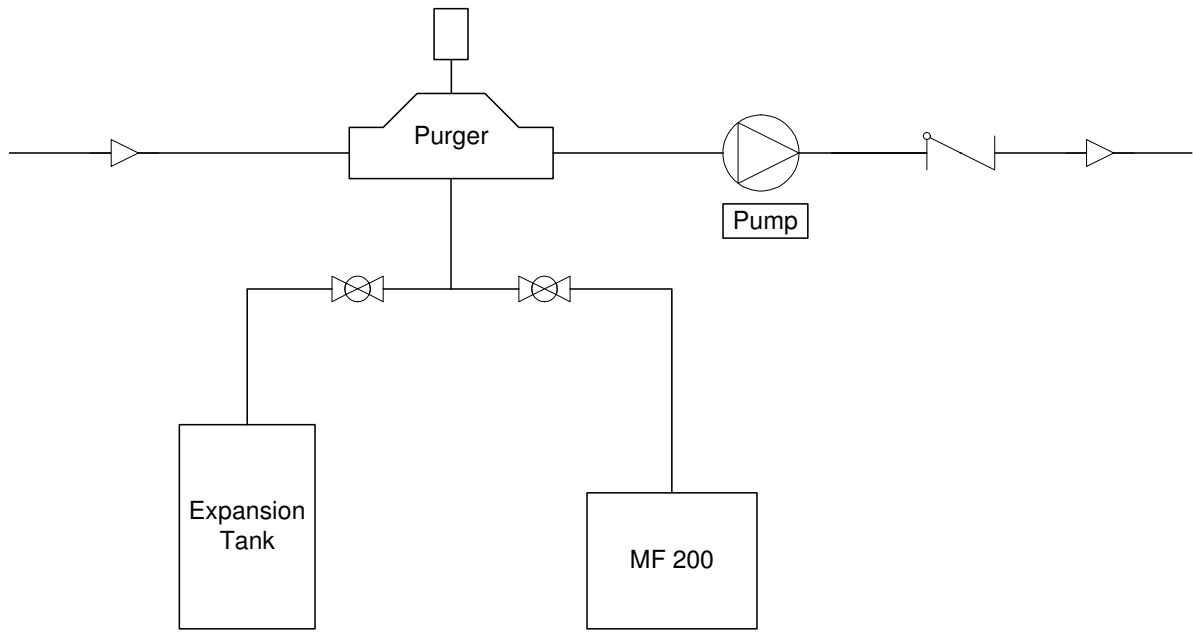
$$(\text{Static height in feet}/2.31) + 4 = \text{CSFP in psig.}$$



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.

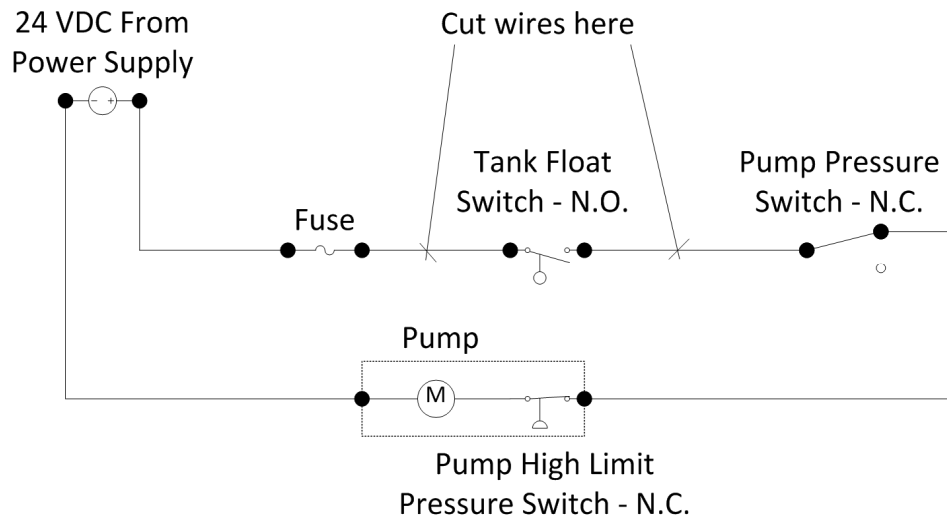


Connection Schematic – MF 200 Packaged System Feeder

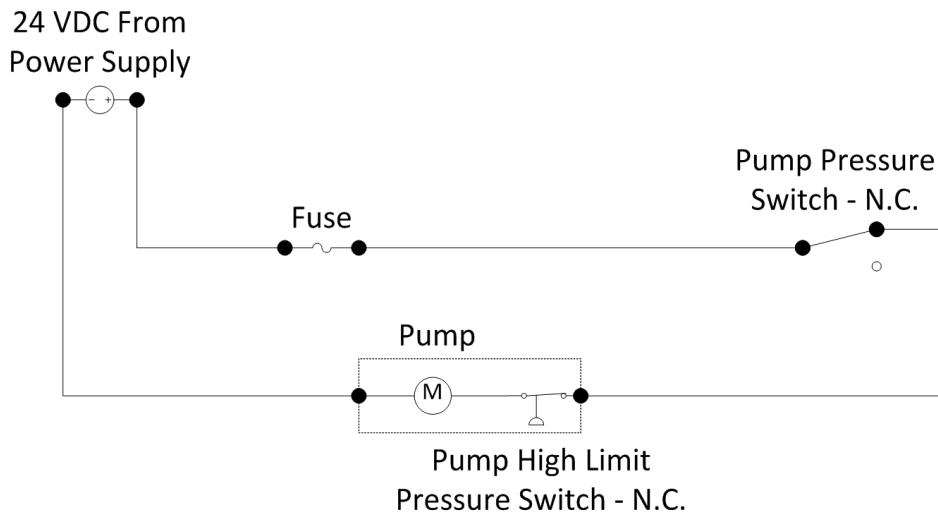
## Installation Instructions for the RIA10-1-SAA Control Panel for use with MF200 Feeder

The low level float switch in the MF series are factory wired to be OPEN on LOW LEVEL. Remove the screws fastening the top cover to the unit and lift the cover to get access to the float switch wiring. Disconnect the power before doing this.

1. Cut the wires connecting the float switch to the rest of the MF200 circuit.

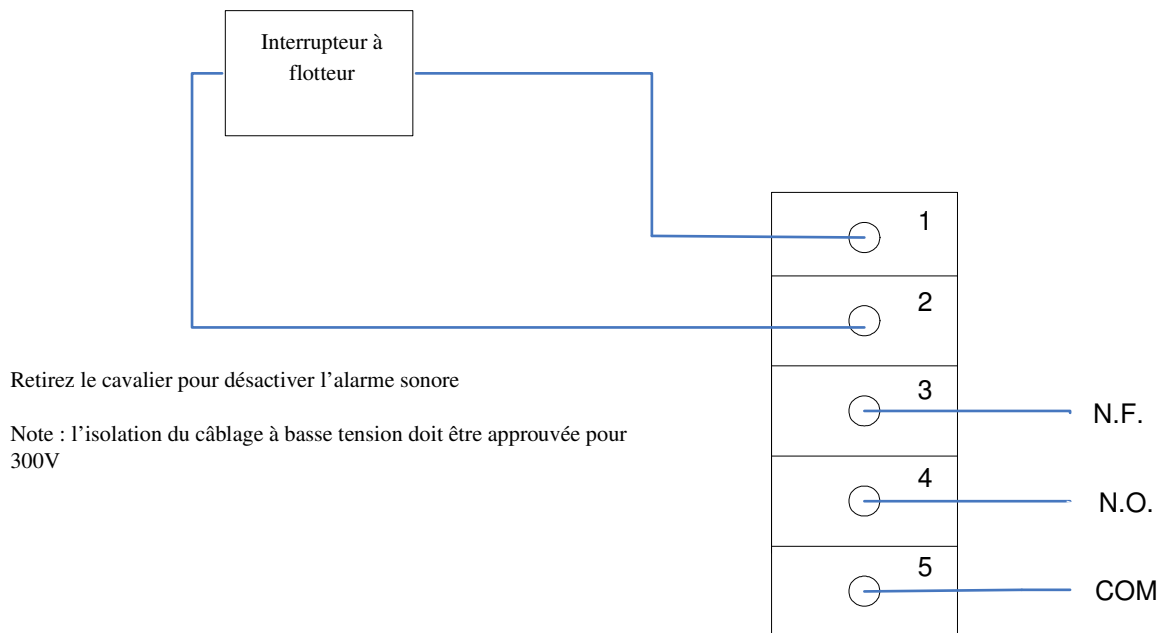


2. Connect the wires to complete the circuit without the float switch.



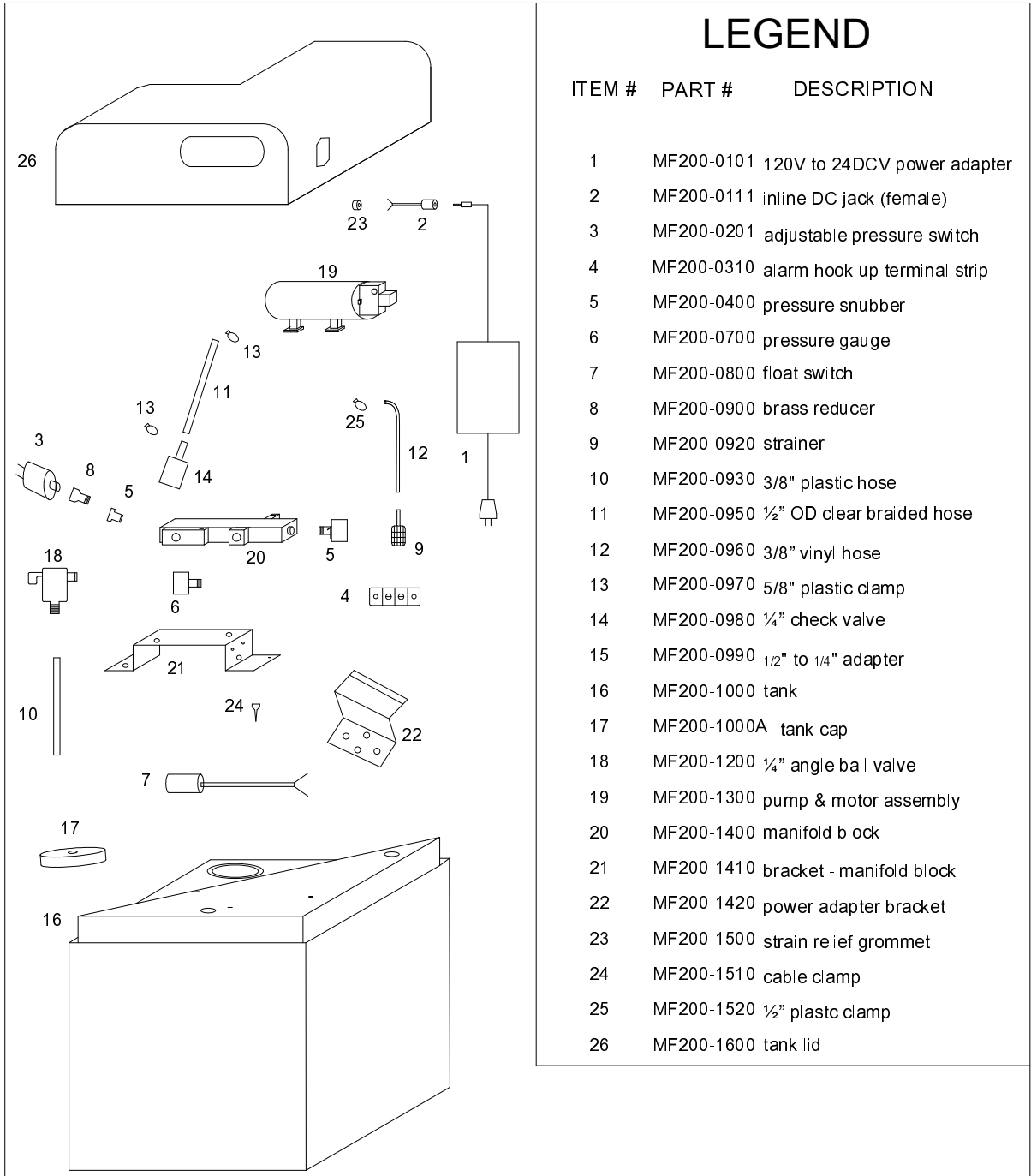
**Note – the switch positions shown in this document are for the unit as it comes out of the box, with no fluid in the tank and no pressure in the system**

3. Extend the wires from the float switch and 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 the MF200 into the RIA10-1-SAA panel.





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## LEGEND

ITEM #	PART #	DESCRIPTION
1	MF200-0101	120V to 24DCV power adapter
2	MF200-0111	inline DC jack (female)
3	MF200-0201	adjustable pressure switch
4	MF200-0310	alarm hook up terminal strip
5	MF200-0400	pressure snubber
6	MF200-0700	pressure gauge
7	MF200-0800	float switch
8	MF200-0900	brass reducer
9	MF200-0920	strainer
10	MF200-0930	3/8" plastic hose
11	MF200-0950	1/2" OD clear braided hose
12	MF200-0960	3/8" vinyl hose
13	MF200-0970	5/8" plastic clamp
14	MF200-0980	1/4" check valve
15	MF200-0990	1/2" to 1/4" adapter
16	MF200-1000	tank
17	MF200-1000A	tank cap
18	MF200-1200	1/4" angle ball valve
19	MF200-1300	pump & motor assembly
20	MF200-1400	manifold block
21	MF200-1410	bracket - manifold block
22	MF200-1420	power adapter bracket
23	MF200-1500	strain relief grommet
24	MF200-1510	cable clamp
25	MF200-1520	1/2" plastic clamp
26	MF200-1600	tank lid

PROJECT <b>MF-200 (EXPLODE)</b>		<b>AXIOM INDUSTRIES</b>	
CUSTO MER			
DRWG. NO. <b>TLL-MF200-1005</b>	EQUIP. NO. <b>PARTS LIST</b>	JOB NO.	DATE <b>AUG 26 2014</b>





## Adjusting the Pressure setting on the MF200

The high limit pressure switch is integral to the pump and will open if the pressure reaches approx. 27 psig.

*NOTE* – this switch is only found in units with the new style pump, serial number 03-1215 and higher.

The pressure switch is factory set to shut off the pump at about 18 psig. It can be field adjusted to a maximum of 25 psig.

Adjustable  
pressure set  
screw



## Troubleshooting Chart

### Symptom

### Possible Cause

### Resolution

#### **Pump will not start**

Fluid level in tank is low	Add correct fluid. Check for cause of system fluid loss
Blown fuse	Check LED indicator light on power cord, check fuse and replace if needed (2.5 Amps)
Power supply or Breaker	Check LED indicator light on power cord, flip breaker or obtain power supply from reseller and replace
Power supply unplugged or loose electrical connections	Plug in power supply or correct faulty electrical connection
Pressure switch out of adjustment	Adjust pressure switch according to the manufacturers recommendations
Faulty pressure switch	First obtain snubber from reseller and replace. If problem continues obtain pressure switch from reseller then 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	Obtain pressure switch and snubber from reseller then replace

#### **Pump will not prime**

Check valve stuck	Tap check valve lightly
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	Obtain Replacement pump from reseller and install
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**

Manifold block over tightened and cracked	Obtain replacement manifold block from reseller and install
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
Blown fuse	Check LED indicator light on power cord, check fuse and replace if needed
Power supply or Breaker	Check LED indicator light on power cord, flip breaker or obtain power supply from reseller and replace
Pressure switch out of adjustment	Adjust pressure switch according to the manufacturers recommendations
Snubber on pressure switch is plugged	Obtain snubber from reseller and replace
Faulty pressure switch	Obtain pressure switch and snubber from reseller then replace
Power supply unplugged or loose electrical connections	Plug in power supply 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
Snubber on pressure switch is plugged	Obtain snubber from reseller and replace. Ensure fluid in tank is clean.
Faulty pressure switch	Obtain pressure switch and snubber from reseller then replace

**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
Check valve or Regulator installed between System Feeder and system	Remove check valve or regulator