



***INDUSTRIES LIMITED***

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

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**INDUSTRIES LIMITED**

## **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 and isolation valve is open.
4. If the System Feeder will be connected to an alarm system connect alarm circuit to terminals below discharge connection.
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. **Open system isolation valve.**
7. Insert DC plug into the System Feeder 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. If system pressure is below pressure switch setting (18 psi) pump will start.
8. Turn mix/purge valve handle on front of unit to vertical position to purge air from pump. Once air is purged, turn valve handle to horizontal position and allow pump to pressurize system. 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 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.

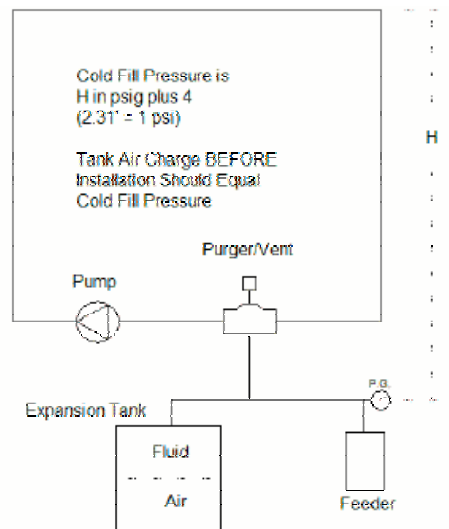
## COLD STATIC FILL PRESSURE

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:

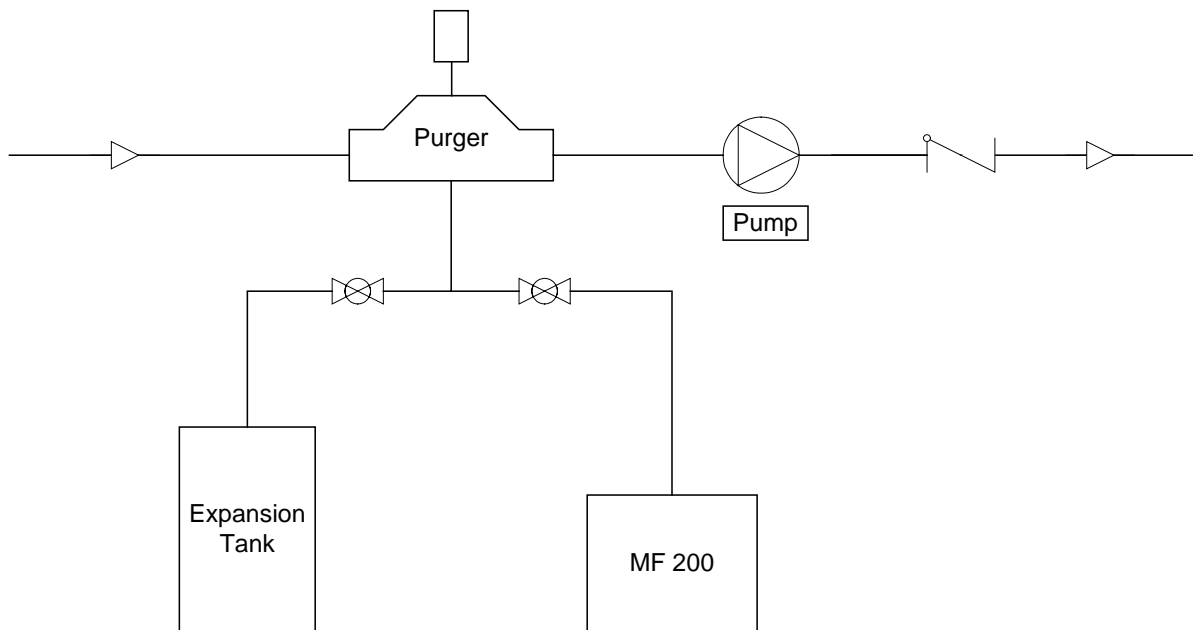
$$(\text{Static height in feet}/2.31) + 4 = \text{CSFP in psig.}$$



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.

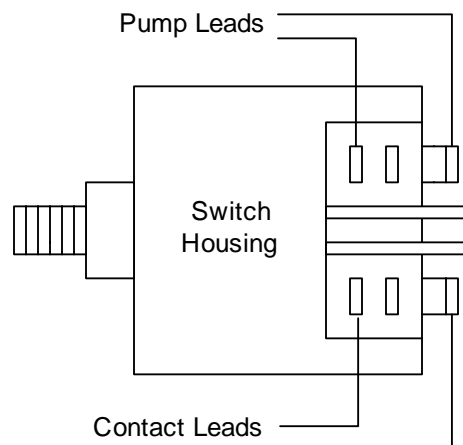


Connection Schematic – MF 200 Packaged System Feeder

## **Connecting the Alarm Contacts in the MF Series to Other Alarm Systems**

The alarm switch contacts in the MF series are factory wired to be OPEN on LOW PRESSURE. The switch is SPDT, so if some other alarm system is connected to this alarm contact and can not be configured to work with an open contact, the wiring on the low-pressure micro-switch can be changed to provide a closed contact on low pressure.

Remove the screws fastening the top cover to the unit and lift the cover to get access to the pressure switch. Disconnect the power before doing this.

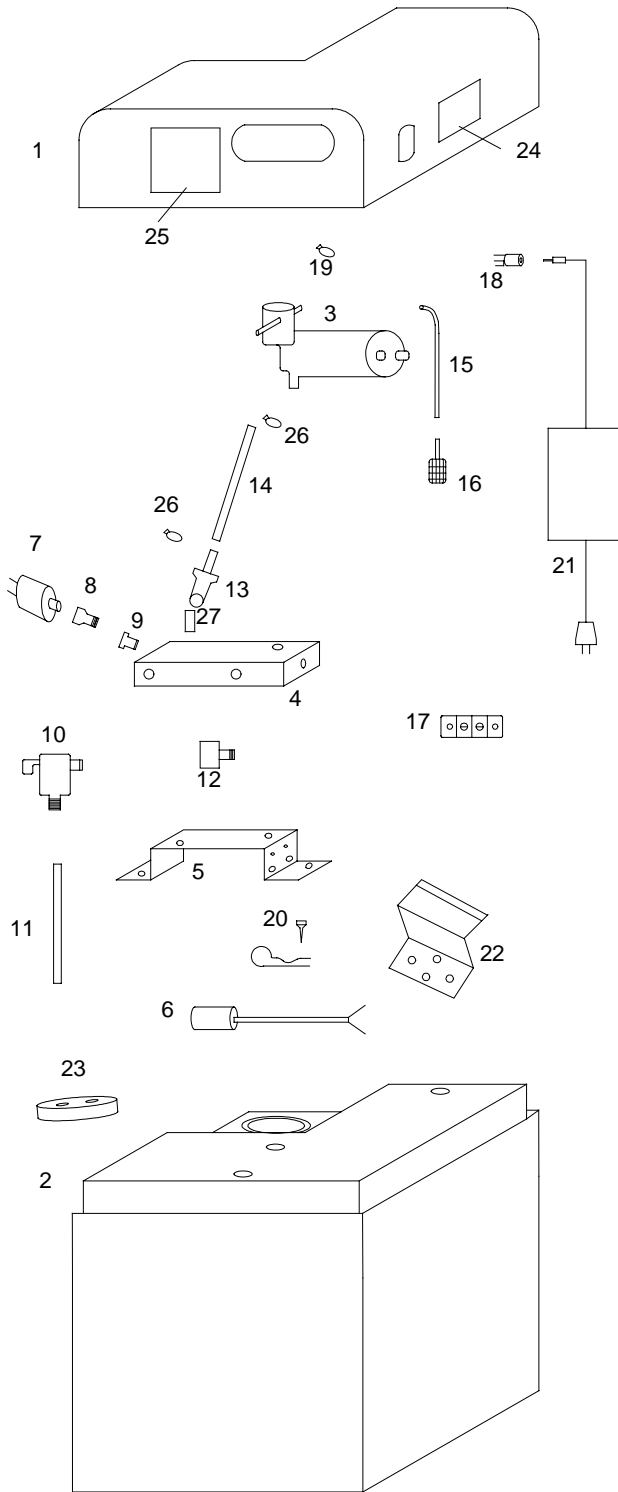


### **Wiring MF200 Pressure Switch For Closed Contact on Low Pressure**

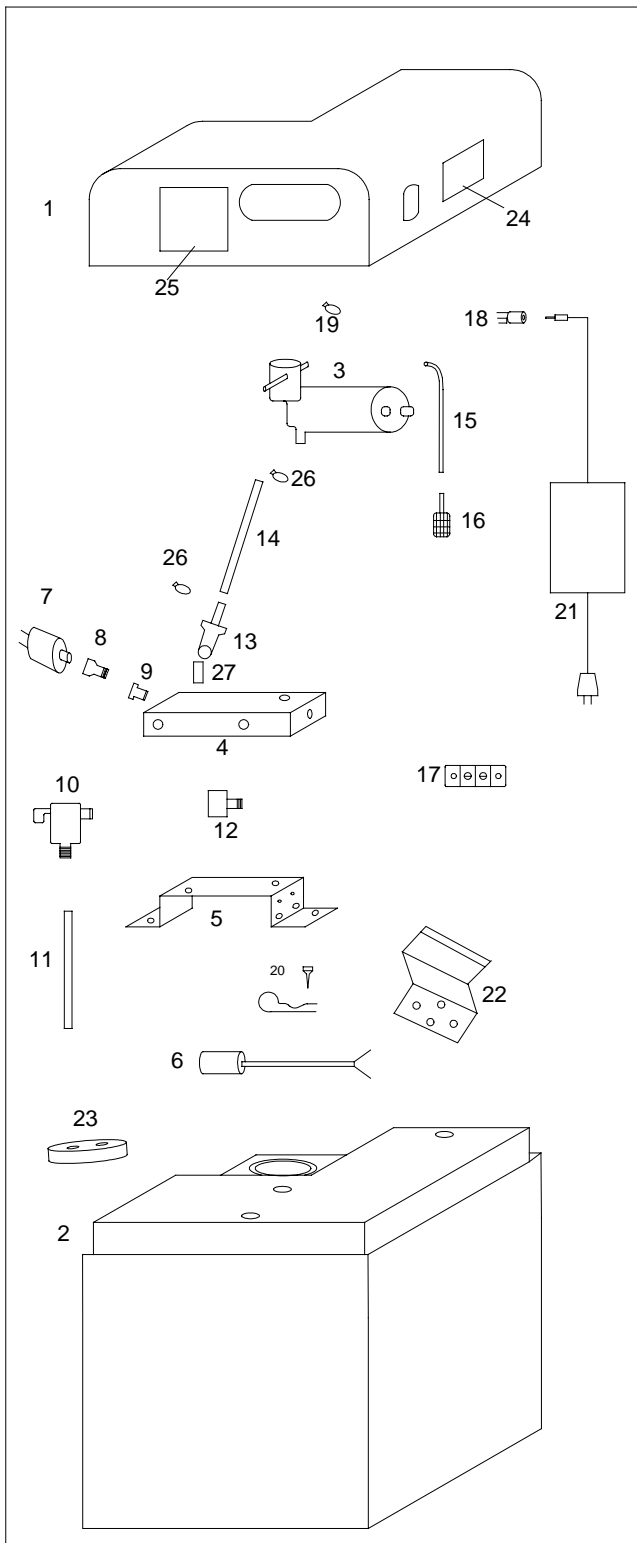
The upper micro-switch controls the pump. The lower micro-switch is used for a low-pressure warning. Move the wire from the middle terminal on the lower micro-switch to the rear-most terminal as shown in the diagram above to get an open circuit on low pressure. You should now have a closed alarm circuit at low pressure.

# LEGEND

ITEM #	PART #	DESCRIPTION
1	MF200-1600	tank lid
2	MF200-1000	tank
3	MF200-1300	pump & motor assembly
4	MF200-1400	fluid diverter block
5	MF200-1410	diverter mounting bracket
6	MF200-0800	in-tank float
7	MF200-0200	adjustable pressure switch
8	MF200-0400	pressure snubber
9	MF200-0900	brass reducer
10	MF200-1200	1/4" angle ball valve
11	MF200-0930	3/8" plastic hose
12	MF200-0700	pressure gauge
13	MF200-0940	1/4" hose adapter
14	MF200-0950	1/2" OD clear hose
15	MF200-0960	1/2" OD plastic tubing
16	MF200-0910	foot valve strainer
17	MF200-0310	alarm hook up terminal block
18	MF200-0110	power adapter plug-in
19	MF200-1520	1/2" plastic clamp
20	MF200-0970	cable clamp
21	MF200-0101	120V to 24DCV power adapter
22	MF200-1420	power adapter bracket
23	MF200-0500	tank bung
24	MF200-0110	side decal
25	MF200-1100	s/n decal
26	MF200-0970	5/8" plastic clamp
27	MF200-0980	1/4" check valve



PROJECT <b>MF-200 (EXPLODE)</b>		<b>AXIOM INDUSTRIES</b>	
CUSTOMER			
DRWG. NO. <b>TLL-MF200-1005</b>	EQUIP. NO. <b>PARTS LIST</b>	JOB NO.	DATE <b>13 OCTOBER 2005</b>



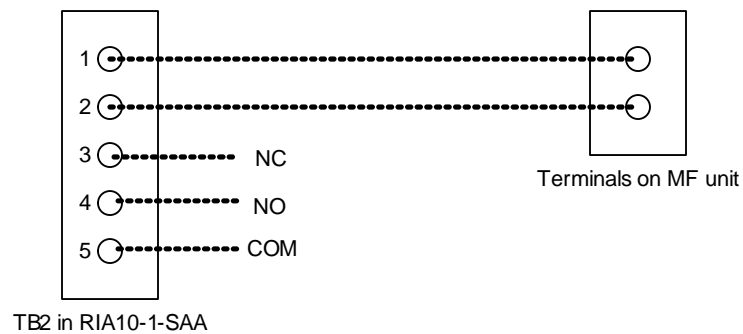
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22	MF200-1420	power adapter bracket
23	MF200-0500	tank bung
24	MF200-0110	side decal
25	MF200-1100	s/n decal
26	MF200-0970	5/8" plastic clamp
27	MF200-0980	1/4" check valve

PROJECT <b>MF-300 (EXPLODE)</b>		AXIOM INDUSTRIES	
CUSTOMER			
DRWG. NO. <b>TLL-MF300-1005</b>	EQUIP. NO. <b>PARTS LIST</b>	JOB NO.	DATE <b>13 OCTOBER 2005</b>

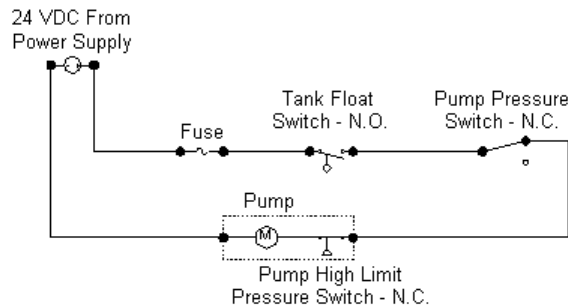
## Installation Instructions for the RIA10-1-SAA Control Panel for use with MF200 & MF300 Feeders

The MF series alarm dry contacts are factory wired to provide an OPEN contact on LOW PRESSURE. This is compatible with the alarm circuit in the RIA10-1-SAA panel. Connect terminals 1 and 2 from terminal block TB2 in the panel to the contact terminals located beside the power plug on the MF unit.



To disable the audible alarm in the RIA10-1-SAA panel, remove the jumper from the control board of the RIA10-1-SAA.

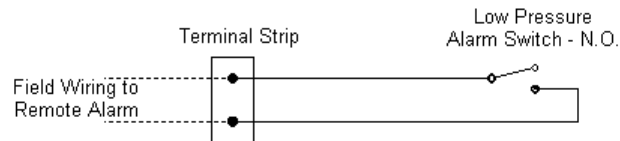
**Note - the switch positions shown in this document are for the unit as it comes out of the box, with no fluid in the tank and no pressure in the system.**



### **MF200 Power Wiring**

The high limit pressure switch is integral to the pump and will open if the pressure reaches approx. 25 psig. *NOTE - this switch is only found in units with the new style pump, serial number 03-1215 and higher.*

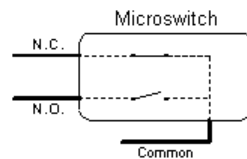
The pump pressure switch is factory set to shut off the pump at about 12 psig. It can be field adjusted to a maximum of about 18 psig.



### **MF200 Low Pressure Dry Contact**

The low limit pressure switch is factory wired to OPEN on low system pressure. It can, however, be re-wired to CLOSE on low pressure if necessary.

The pressure control switch in the MF200 has two microswitches. The upper switch controls the pump, and the lower switch provides the low pressure dry contacts. Switching action at low pressure is shown in the diagram below.



## 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	Obtain Replacement pump from
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pressure switch not cutting out	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
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