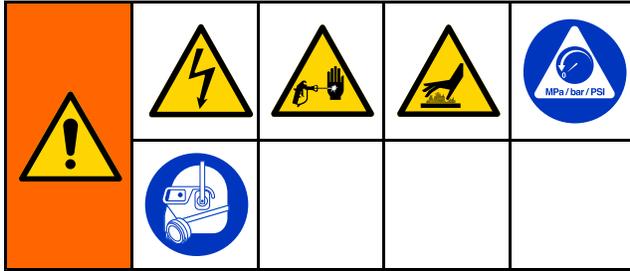


Reactor 2 Hydraulic- Troubleshooting - Proportioning System

Troubleshooting

Proportioning System



1. Follow [Pressure Relief Procedure, page 48](#).
2. Turn main power OFF.
3. Allow equipment to cool.

Problems:

Try the recommended solutions in the order given for each problem, to avoid unnecessary repairs. Also, determine that all circuit breakers, switches, and controls are properly set and wiring is correct before assuming there is a problem.

Before performing any troubleshooting procedures:

PROBLEM	CAUSE	SOLUTION
Proportioning pump does not hold pressure when stalled.	Pump piston or intake valve leaking.	<ol style="list-style-type: none"> 1. Observe gauges to determine which pump is losing pressure. 2. Determine in which direction the pump has stalled by observing which directional icon is displayed on the ADM Home screen. See Table 1. 3. Repair the valve. See pump manual.
Material Imbalance. See Pressure/Material Imbalance, page 40 .	Restriction at the gun.	Clean the gun; see your separate gun manual.
	Inadequate flow from pump; cavitation.	Increase fluid supply to proportioning pump: <ul style="list-style-type: none"> • Use 2:1 supply pump • Use minimum 3/4 in. (19 mm) ID supply hose, as short as practical
		Fluid is too thick. Consult your material supplier for the recommended fluid temperature to maintain a viscosity of 250 to 1500 centipoise.
		Clean inlet strainer screen.
Worn pump inlet valve ball/seat or gasket. Replace pump.		
Pressure relief/circulation valve leaking back to supply.	Remove return line and determine if flow is present while in SPRAY mode.	

Reactor 2 Hydraulic- Troubleshooting - Proportioning System

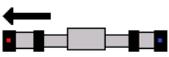
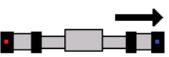
Troubleshooting

PROBLEM	CAUSE	SOLUTION
Pumps do not reverse direction or pumps do not move.	Loose reversing proximity switch.	See Pumps Do Not Reverse Direction, page 41.
	Loose piston packing bolt.	See Pumps Do Not Reverse Direction, page 41.
	Faulty directional valve.	See Pumps Do Not Reverse Direction, page 41.
Erratic pump movement.	Pump cavitation.	Feed pump pressure is too low. Adjust pressure to maintain 100 psi (0.7 MPa, 7 bar) minimum.
		Fluid is too thick. Consult your material supplier for recommended fluid temperature to maintain a viscosity of 250 to 1500 centipoise.
	Loose reversing proximity switch.	See Pumps Do Not Reverse Direction, page 41.
	Faulty directional valve.	Replace directional valve.
Pump output low.	Obstructed fluid hose or gun; fluid hose ID too small.	Open fluid hose to clear obstruction, or use hose with larger ID.
	Worn piston valve or intake valve in displacement pump.	See pump manual.
	Inadequate feed pump pressure.	Check feed pump pressure and adjust to 100 psi (0.7 MPa, 7 bar) minimum.
Fluid leak at pump rod seal.	Worn throat seals.	Replace. See pump manual.
No pressure on one side.	Fluid leaking from pump outlet rupture disk.	Check if heater and PRESSURE RELIEF/SPRAY valve (SA or SB) are plugged. Clear. Replace rupture disk with a new one; do not replace with a pipe plug.
	Inadequate feed pump pressure.	Check feed pump pressure and adjust to 100 psi (0.7 MPa, 7 bar) minimum.

Note

Table 1 is related to troubleshooting problem, "Proportioning pump does not hold pressure when stalled."

Table 1 Determine Valve Leak Location

	
B-side pump piston valve is dirty or damaged.	B-side pump inlet valve is dirty or damaged.
A-side pump inlet valve is dirty or damaged.	A-side pump piston valve is dirty or damaged.

Pressure/Material Imbalance

To determine which component is out of balance, check the color of some sprayed material. Two-component materials are usually a mix of light and dark fluids, so the under-proportioned component can often be readily determined.

When you have determined which component is under-proportioned, spray off-target, focusing on the pressure gauge for that component.

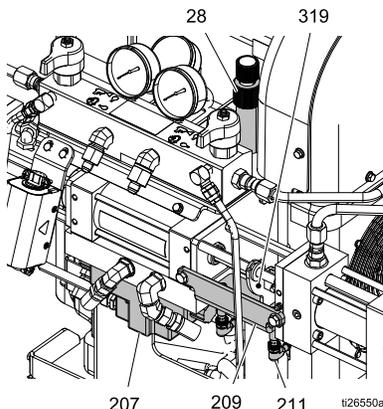
For example: if component B is under-proportioned, focus on the B-side pressure gauge. If the B gauge reads considerably higher than the A gauge, the problem is at the gun. If the B gauge reads considerably lower than the A gauge, the problem is at the pump.

Pumps Do Not Reverse Direction

For proportioning pumps to reverse direction, the proximity switches (211) must sense the switching plate (319) to reverse the directional valve (207).

				
<p>Voltage is still present inside the directional valve. Improper testing of the proximity switch connections inside the directional valve may cause injury or electric shock. Check the proximity switch connections as instructed. Measure voltage across correct terminals. See Electrical Schematics, page 94.</p> <p>The switching plate moves from side to side during operation. Keep hands away from the switching plate, while checking the functionality of the directional valve, to prevent pinching hands.</p>				

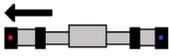
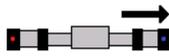
1. Check the functionality of each proximity switch (211).
 - a. Remove the front cover.
 - b. With the motor powered off, confirm that the indicating lights on the body of each proximity switch (211) turns on when a metallic item, such as the shaft of a screwdriver, is placed on the face of each switch.
 - c. If the indicating lights turn on, the proximity switches, its wiring, and the HCM are likely operating correctly; proceed to step 2. If the indicating lights do not turn on, proceed to step 6.
2. Confirm the proximity switches (211), switch bracket (209), and switching plate (319) are firmly mounted and not damaged.
3. Check distance between the proximity switches (211) and the switching plate (319).
 - a. Park the pump.
 - b. Confirm that the proximity switch (211) nearest the A-side of the pump is backed out 0.5 to 1.5 turns from being in contact with the switching plate (319).
 - c. Disconnect the cable from the proximity switch (211) nearest the B-side of the pump. Operate the pump until the switching plate (319) is located above the B-side proximity switch, then turn off the motor/pump.
 - d. Confirm that the proximity switch (211) nearest the B-side of the pump is backed out 0.5 to 1.5 turns from being in contact with the switching plate (319).
 - e. Reconnect the cable to the B-side proximity switch (219).
4. Check functionality of the directional valve (207).
 - a. Confirm that the directional valve cable is connected properly from HCM port 15 to the directional valve body (207) and is not damaged. Inspect wiring inside the cover of the directional valve. See [Electrical Schematics, page 94](#).
 - b. During operation, the direction indicator lights on the directional valve body (207) should switch on based on the valve that is open.



Reactor 2 Hydraulic- Troubleshooting - Proportioning System

Troubleshooting

- c. Turn on the motor and stall the pumps at the lowest pressure setting (compensator knob turned fully counter-clockwise). The pump will travel in either the A or B direction until the pressure setting is reached.
 - d. Identify the solenoid that is operating by viewing the direction indicator lights on the cover of the directional valve (207). Measure voltage across the associated terminals to determine if proper voltage is reaching the valve (approximately 200 to 240 VAC). See [Electrical Schematics, page 94](#), and the table below, to identify the proper terminals to measure across.
 - e. Trigger each proximity switch (211) with the shaft of a screwdriver, confirming each solenoid within the directional valve (207) operates as described in table below.
 - f. If one or both sides are not operating properly, according to the table, first reconfirm wiring to directional valve (207) per [Electrical Schematics, page 94](#), then replace directional valve (207).
5. If you have determined that the cause is none of the previous possible causes, check for a loose piston packing retaining bolt. This causes the piston to contact the inner face of the pump inlet flange before the switching plate activates the proximity switch. Shut down the unit and disassemble the appropriate pump for repair.
- Following step 1, if the proximity switch indicating lights do not light:**
6. Check for loose or faulty proximity switch cable or connections. Confirm the connections to the proximity switches are tight and internally free from oil and other contaminants.
 7. Swap the cables to the proximity switches to see if the problem follows the switch or is in the cable. Replace either the failed switch or the cable.
 8. Replace the HCM. See [Replace HCM, page 65](#).

For given pump movement direction:	Pump driving left (toward park position)	Pump driving right (away from park position)
ADM indicates		
Indicator light on directional valve cover	Left arrow, labeled "b"	Right arrow, labeled "a"
Last proximity switch triggered	Right side proximity switch	Left side proximity switch
Terminals in directional valve energized	Terminals associated with red and orange wires	Terminals associated with black and white wires

Note

For diagnostic purposes, it is possible to manually override the directional valve by using a small screwdriver to depress the button in the center of either directional valve end cap. Depressing the button in the right end cap should cause the pump to travel to the right. Depressing the left button should cause the pump to travel to the left.