

**Display Fine On Power But Becomes Erratic After Operation
Controller Resets Itself During Cycles
Display Blanking Out**

Possible Causes:

- Controller assembly
- Poor ground connections
- Loose ribbon cable or power connection to power board

This section is to be used only when the controller operates normally then goes haywire during operation.

Because of the grounding method used to ground the heater platen and the high voltage running through the heaters, there exists a sizable potential for arcing to occur between the heater platen and the press frame. If, or when the arc does occur, large EMI spikes travel through the system causing the controller's microprocessor to become lost. It is important to note that arcing can only occur during a hot cycle or during pump cycling.

It is also possible that the controller itself has an onboard heat problem or prom malfunction causing failures at certain points in its operation.

A small interruption in power to the controller assembly during operation will surely cause the operation to become erratic. Small interruptions will cause a partial reset of the controller's processor and are most likely caused by a poor connection or intermittent short in the ribbon cable.

Non-Intrusive Actions:

1. Turn press "on".
2. Does the display read normal?
If yes- proceed to Step 3.
If no- refer back to "Continuously Erratic Display from power up".
3. Run a cold cycle for 10 minutes or so with the vacuum pump off.
4. Does the display read normal?
If yes- proceed to Step 5.
If no- replace controller assembly and ribbon cable

Intrusive Actions:

5. Run a hot cycle for approx. 5 minutes.
6. Open and close the lid during this 5 minutes, also turn pump "on" and "off" several times.
7. Does the display read normal?
If yes- proceed to Step 8.
If no- there is a grounding problem, check the platen and controller housing grounds and then repeat Step 5.
8. Remove controller from housing.
9. Repeat Steps 3 & 4.

No Display At All

Possible Causes:

- Controller assembly
- Poor ribbon cable or power connections
- Power board
- Circuit breaker

This section is to be used only if there are no signs of life at all on the displays of the controller. If on power up, there are any flashes of leads or an audible "beep", refer to section on "Continuously erratic display from power up".

The power board has a 5 volt fuse that may be blown. If any lights or "beeps" occur, then the power board can be ruled out as the cause of the malfunction and the controller is most likely at fault.

Intrusive Actions:

1. With power off, remove control panel from housing.
2. Check ribbon cable connection and turn power "on".
3. Is display still dead?
 - If yes- proceed to Step 4.
 - If no- replace ribbon cable.
4. Plug lamp or other device into tacking iron outlet.
5. Does the device operate?
 - If yes- circuit breaker and power connections are OK. Proceed to Step 6.
 - If no- circuit breaker or power connections are faulty. Check connections and replace breaker if necessary.
6. Either the controller assembly or power board is bad. Replace controller first.

Programming Malfunctions Button Or Buttons Don't Operate

Possible Causes:

- Controller assembly

This section is to be used only if the controller operates correctly during manual mode but not while running a program, or if there is a stuck button or an inoperable one.

Non-Intrusive Actions:

1. Run controller self diagnostics- directions on page 10.
2. Does controller pass the button test and display "PASS"?
 - If yes- refer to owners manual. Replace controller if problem persists.
 - If no- replace controller assembly.

VACUUM RELATED MALFUNCTIONS

Pump Won't Turn On

Possible Causes:

- Pump
- Bad connection
- Power board
- Controller assembly

This section is to be used only if the controller has power and operates correctly and if a program with vacuum commanded on has been attempted and pump still won't turn on.

Non-Intrusive Actions:

1. Disconnect pump from power outlet.
2. Turn press "on".
3. Press manual "on/off" button on control panel several times while listening for clicking noise near the power board.
4. Does there appear to be a clicking noise?
 - If yes- controller and ribbon cable are OK. Pump, connections, or power board is bad. Proceed to Step 6.
 - If no- proceed to Step 6.

Intrusive Actions:

5. Plug vacuum pump into outlet.
6. With power off, disconnect MTR+ wire from power board and connect to one of the L1 connections. Disconnect tacking iron outlet if necessary.
7. Turn power "on".
8. Does pump turn "on"?
 - If yes- pump is OK, check pump outlet wiring. Proceed to Step 9.
 - If no- check power connections to press and/or replace pump.
9. Either the controller or power board is bad. Replace power board first.

*Note: If the tacking iron outlet is the same as the pump outlet, then use it instead of Steps 6 & 7 to determine whether the pump is OK.

Pump Won't Turn Off Intermittent Pump Operation

Possible Causes:

- Power board
- Controller assembly
- Wiring

The pump operates via 1 signal from the control board. This signal turns “on” the pump relay located on the power board. A faulty power board is most likely the cause.

Non-Intrusive Actions:

1. Run controller diagnostics.
2. Check manual “on/off” button. Make sure it is not stuck.
3. If button test fails, replace controller.

Intrusive Actions:

4. With power off, disconnect ribbon cable from control panel.
5. Turn power back “on”.
6. Does pump shut off?
 - If yes- controller or ribbon cable is bad. Replace both.
 - If no- check pump outlet wiring. If OK, replace power board.

Solenoid Won't Open Or Close

Possible Causes:

- Power board
- Controller assembly
- Wiring

This section is to be used only if the controller and pump are working properly.

The solenoid valve is normally open in the de-energized state and operates via 1 signal from the control board. This signal turns on the solenoid power transistor located on the power board.

Non-Intrusive Actions:

1. Disconnect pump from outlet.
2. Press manual "on/off" button several times and listen for clicking noise near solenoid.
3. Can clicking noise be heard?
 - If yes- the wiring, power board, and controller are fine. Replace solenoid.
 - If no- proceed to Step 4.

Intrusive Actions:

4. With power off, disconnect solenoid wire at power board labeled SOL-.
5. Connect it to the ground terminal. Use tacking iron outlet, ground if necessary.
6. Does solenoid click?
 - If yes- either the controller, ribbon cable, or power board is bad. Replace power board first.
 - If no- solenoid or solenoid wiring is bad. Replace both.

TECHNICAL DATA SHEET

Heater Resistance

With the unit unplugged from the wall supply, the resistance of the heaters can be measured. Individual heaters will measure according to the chart below.

Vacuum Press Model Number	Individual Heater Resistance
3444	31.2 ohms +/- 7%
3648H	50.0 ohms +/- 7%
4468	31.2 ohms +/- 7%
5298 (Left or Right)	27.4 ohms +/- 7%
5298 (Center)	34.4 ohms +/- 7%

Parallel Combination of Heaters

To measure the overall parallel combination of the heaters in the press, disconnect the heater terminals from the power board and solid-state relay. Refer to the chart below.

Vacuum Press Model Number	Parallel Combination
3444 (only 1 heater)	31.2 ohms +/- 7%
3648H	25.8 ohms +/- 10%
4468 (2 heaters)	15.6 ohms +/- 10%
5298 (3 heaters)	9.8 ohms +/- 12%

Sensor Resistance at Various Temperatures

Use the following chart to look up the sensor resistance at various temperatures with the sensor unplugged from the controller.

Temperature	Resistance
20° C (68° F)	2000 ohms +/- 5
30° C (86° F)	2075 ohms +/- 6
40° C (104° F)	2153 ohms +/- 7
50° C (122° F)	2231 ohms +/- 7
60° C (140° F)	2312 ohms +/- 9
70° C (158° F)	2394 ohms +/- 10
80° C (176° F)	2478 ohms +/- 12
90° C (194° F)	2564 ohms +/- 14
100° C (212° F)	2651 ohms +/- 16
110° C (230° F)	2740 ohms +/- 18
120° C (248° F)	2831 ohms +/- 20
130° C (266° F)	2924 ohms +/- 22
140° C (284° F)	3018 ohms +/- 24
150° C (302° F)	3114 ohms +/- 25

Solid-State Relay Operational Voltages

Relay input side (marked "coil+" and "coil -" on power board)

Heat "on"= 12 vdc +/- 1.2 volts

Heat "off"= 0 vdc +/- 1 volt

Relay output side (measured from across the relay)

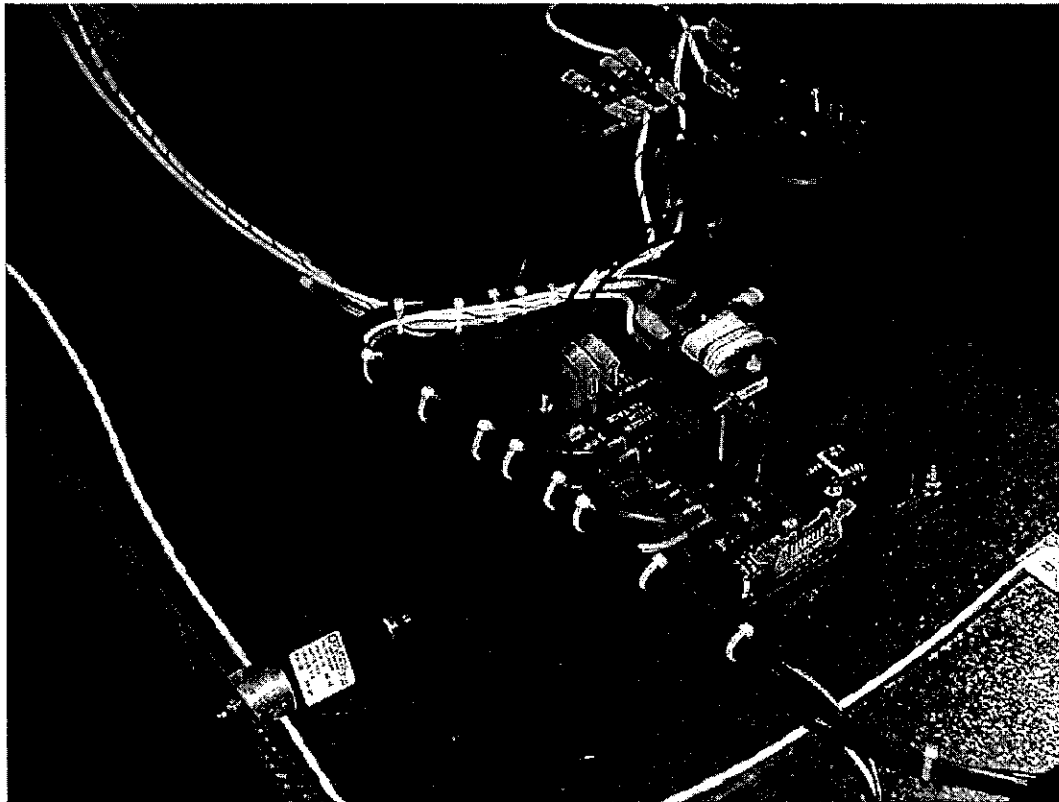
Heat "on"= 0 vac +/- 5 vac

Heat "off"= 220 vac +/- 20 volts

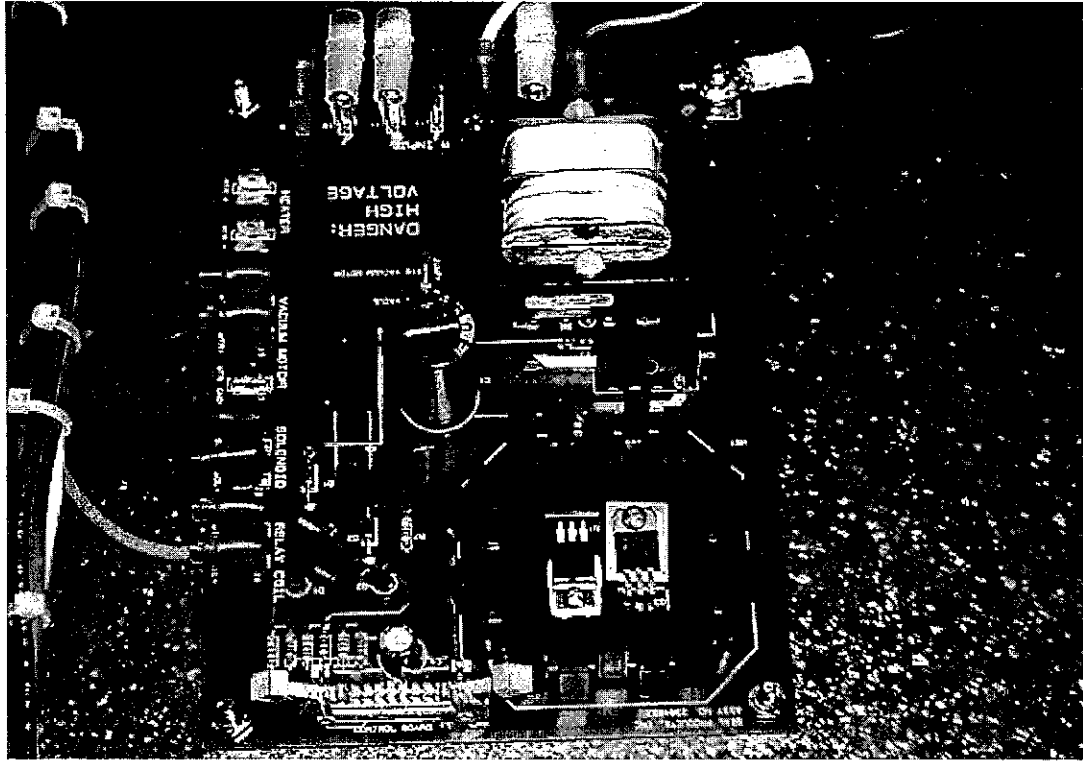
Picture References



Pictured above is the solid-state relay. It is mounted beneath the diaphragm on the far right side of the access panel.



Pictured above is the access panel. Located from left to right- solenoid, power board, distribution block, and solid-state relay.



Pictured above is the power board.