

# Thermoset II

## Diagnostic Procedure Manual

For the HS159-5LFP

### With the PRO-CON Option

The step-by-step procedures in this manual will help a **service technician** or **qualified maintenance person** to quickly identify the cause of problems in the machine. The service technician or qualified maintenance person must have the ability to use a meter to take AC voltage, DC voltage and Resistance readings at specific points in the machine.

#### TOOLS REQUIRED

To perform the tests in this manual, you will need a meter that will measure AC voltage, DC voltage, Resistance ( Ohms ) and simple hand tools. Some of these test procedures require a second person to assist in performing the tests.

When performing any of the test procedures in this manual, **DO NOT** connect the machine to a power source until instructed to do so. When power is connect to the machine, use extreme caution when working on the machine.

\*\*\*\*\* **CAUTION** \*\*\*\*\*

**Some of the test procedures in this manual require that the machine be plugged in and turned on.**

**USE CAUTION WHEN PERFORMING VOLTAGE TESTS.**

# Test Procedures in this Manual

Common Problems and Causes.....	3
Temperature Controller Error Codes.....	4
PRO-CON Controller Error Codes.....	4
Air Leaks.....	5
Temperature Controller Setting Procedure.....	6
Temperature Controller Autotune Procedure.....	6
PRO-CON Controller “SV” Setting Procedure.....	6
PRO-CON Controller Setup Procedure.....	7
PRO-CON Controller Lockout Procedure.....	10
Touch Board Adjustment Procedure.....	11
Touch Board Sensor Wire Test Procedure.....	12
Touch Board Bypass Wiring Procedure.....	13
ATD Relay & Start Switch Test Procedure.....	14
PRO-CON & Delay Timer Test Procedure.....	16
Air Valve Test Procedure.....	19
Muffler (Speed Control) Adjustment Procedure.....	20
Stop Switch Test procedure.....	21
No Heat Test Procedure.....	22
Overheating Test Procedure.....	24
PRO-CON Sensor Mounting Procedure.....	27
Machine Wiring Diagram.....	28

# Common Problems and Causes

**Head will not go down.** The most common causes of this problem are:

1. The PRO-CON controller “ PV ” reading is BELOW the “ SV “ reading. This is caused by:
  - A - The PRO-CON “SV” setting is too high.
  - B – The Upper temperature controller setting is too low.
  - C - Worn or dirty Teflon cover on the upper head.
  - D - Improperly mounted PRO-CON sensor.
  - E - Incorrect setup of the PRO-CON controller.
  - F - A faulty PRO-CON sensor
2. The PRO-CON controller display reads “S.ERR“. This indicates a broken sensor.
3. The two start buttons are not pressed at the same time.
4. The foot switch is disconnected or faulty.
5. Touch board faulty or out of adjustment.
6. Broken touch board sense wire.
7. Faulty ATD relay or faulty start switches
8. Faulty PRO-CON timer
9. Faulty delay timer
10. Faulty relays
11. Faulty valve

**Head will not stay down.** The most common causes of this problem are:

1. Touch board faulty or out of adjustment.
2. Broken touch board sense wire.
3. Faulty PRO-CON timer
4. Faulty DELAY timer
5. Faulty relays
6. Worn or dirty Teflon cover on the upper head.
7. Improperly mounted PRO-CON sensor.
8. Incorrect setup of the PRO-CON controller.
9. Faulty PRO-CON controller

**Head comes up after 6 seconds.**

1. The PRO-CON sensor is not mounted correctly.
2. Worn or dirty Teflon cover on the upper head.
3. Incorrect setup of the PRO-CON controller.
4. Faulty PRO-CON controller

**PRO-CON “ PV ” reading never drops BELOW the “ SV “ reading.**

1. The PRO-CON sensor is not mounted correctly.

**Head will not come up.** The most common causes of this problem are:

1. Faulty timer
2. Faulty valve
3. Faulty PRO-CON controller

**Head moves too slow.** The most common causes of this problem are:

1. Speed control adjustment
2. Faulty speed control
3. Faulty or Plugged valve
4. Faulty air cylinder

**Heating problems ( no heat & overheat )** The most common causes of this problem are:

1. Temperature setting too high or too low
2. Temperature controller set incorrectly
3. Faulty relay
4. Broken wiring to heater
5. Faulty temperature sensor
6. Faulty temperature controller
7. Faulty heater

## **Temperature Controller Error Codes.**

1. The temperature controller display is flashing: **oPEn** . This indicates a faulty or broken temperature sensor

## **PRO-CON Controller Error Code**

1. PRO-CON controller display reads: **S.ERR** . This indicates a faulty or broken PRO-CON sensor.

# Air Leaks

## Effects of Oil and Water in the Air Supply

The pneumatic components ( valves and cylinders ) used in the Thermoset III heat seal machines have self lubricating piston rings and cup seals that do not require any lubrication. Introduction of oil or water into the system degrades the seals in these components and causes premature wear and failure of the seals. Failure of these seals will cause air leaks and erratic operation.

Any leaking cylinders, valves, regulators and pressure switches should be repaired or replaced as soon as possible to ensure correct operation of the machine. Repair of the air leaks will require replacement of the leaking component.

## Locating Air Leaks

### General air leaks:

1. Turn the machine off and unplug it.
2. Remove the back cover.

If air is leaking around the shaft of the air cylinder, replace the air cylinder.

( The 3” air cylinder in the HS159-5LFP **can not** be rebuilt )

If air is leaking from the air pressure regulator, air pressure gauge or the air filter assembly, the leaking part will have to be replaced.

( The air valves in these machines **can not** be rebuilt )

### Air leaking from the muffler ( Speed control ),

1. Turn the machine off and unplug it.
2. Disconnect the air line from the machine.
3. Remove the back cover.
4. Disconnect the air line connected to the top of the air cylinder.
5. Connect the air line to the machine.

If air is leaking from the fitting on the air cylinder, replace the air cylinder.

If air is leaking from the air line, replace the air valve

# Temperature Controller Setting Procedure

1. To change the temperature setting, press the  button. The digit on the right of the display will flash.
2. To change this digit press the  or the  button.
3. To select a different digit, Press the  button until the digit you need to change flashes.
4. To change the digit, press the  or the  button.
5. When the changes are completed, press the  button

**(If the alarm sounds, turn the machine off. Wait a few seconds and turn the machine on)**

# Temperature Controller Auto-tune Procedure

1. To Auto tune the controller, Press the  button and hold it until the AT light on the temperature controller turns on.

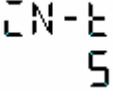
**( To assure temperature accuracy, this procedure should be performed once per month)**

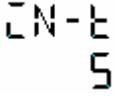
# PRO-CON Controller “SV” Setting Procedure

1. Press the  or  until the “SV” display reads **380**.

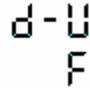
If the “SV” setting will not change, the controller has been locked to prevent changes. To make changes, see the PRO-CON lockout procedure for instructions to unlock the controller.

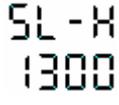
# PRO-CON Controller Setup Procedure

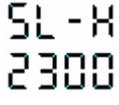
1. Press  and hold it until the display reads:  If the display reading is different,

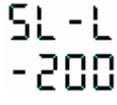
press  or  until the display reads: 

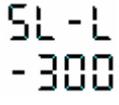
2. Press  until the display reads:  The controller is set to Centigrade.

To change to Fahrenheit, press  or  until the display reads: 

3. Press  until the display reads: 

Press  or  until the display reads:  This sets the upper limit.

4. Press  until the display reads: 

Press  or  until the display reads:  This sets the lower limit.

5. Press  until the display reads: 

Press  or  until the display reads:  This sets the control mode.

6. Press  until the display reads:   
 S-HC  
 SEND

Press  or  until the display reads:   
 S-HC  
 SEND This sets the heating / cooling mode.

7. Press  until the display reads:   
 PLRN  
 OFF

Press  or  until the display reads:   
 PLRN  
 OFF This sets the program pattern.

8. Press  until the display reads:   
 DREV  
 DR-R

Press  or  until the display reads:   
 DREV  
 DR-R This sets the direction mode.

9. Press  until the display reads:   
 ALt 1  
 2

Press  or  until the display reads:   
 ALt 1  
 4 This sets alarm 1 type.

10. Press  until the display reads:   
 ALt 2  
 2

Press  or  until the display reads:   
 ALt 2  
 0 This sets alarm 2 type.

11. Turn OFF the machine, wait 5 seconds and turn the machine back ON.

SP-M

12. Press  and hold it until the display reads:

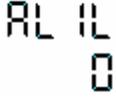
13. Press  until the display reads:  If the display reading is different,

Press  or  until the display reads:  This sets the run / stop setting.

14. Press  until the display reads:  If the display reading is different,

Press  or  until the display reads:  This sets the upper alarm limit.

15. Press  until the display reads: 

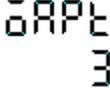
Press  or  until the display reads:  This sets the lower alarm limit.

16. Turn OFF the machine, wait 5 seconds and turn the machine back on.  
This completes the setup.

# PRO-CON Controller Lockout Procedure

1. Press  and  and hold them until the display reads:

SV  
0

Press  until the display reads:  This locks the “SV” setting from being changed by the operator

2. Press  until the display reads:

SV  
OFF

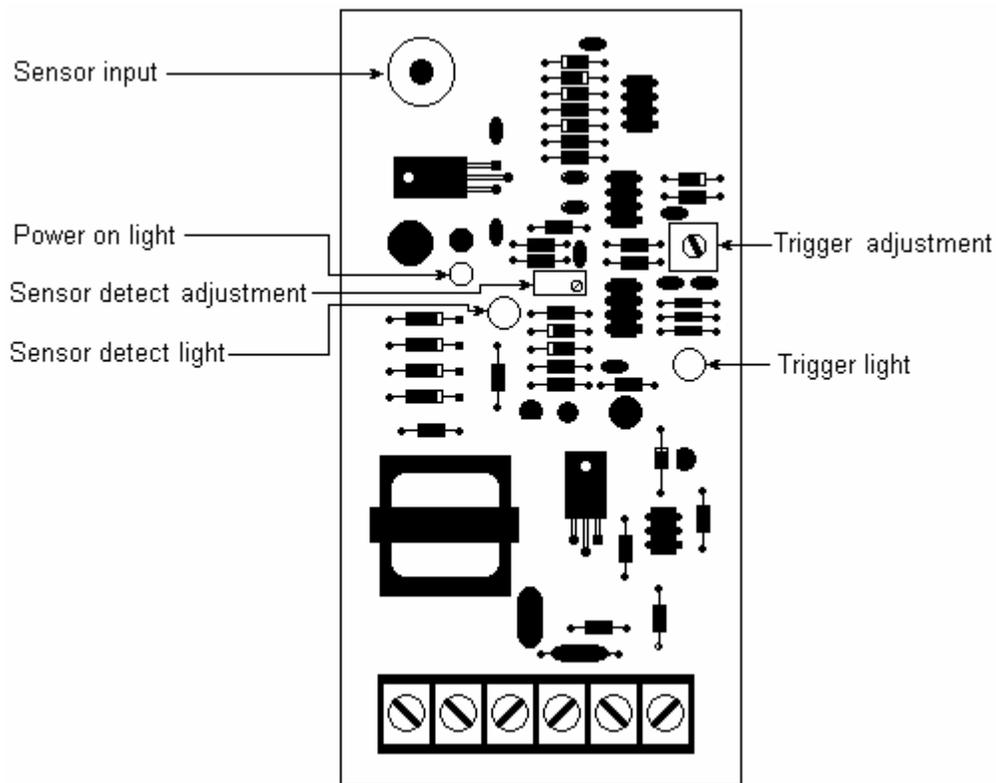
Press  until the display reads:  This locks the internal settings from being changed by the operator.

3. Turn off the machine, wait 5 seconds and turn the machine back on. This completes the lockout procedure.

**To unlock only the “SV” setting, change the number 3 in step one back to 0.**

# Touch Board Adjustment Procedure

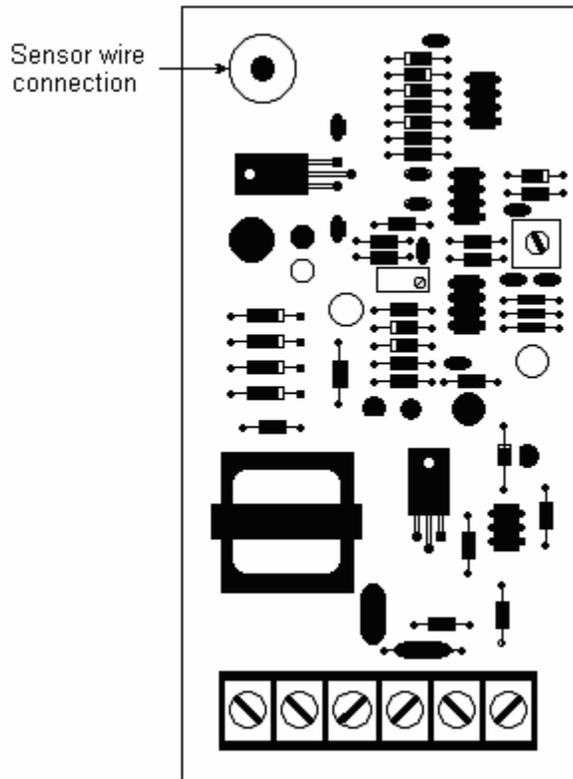
1. Turn the machine off and unplug it.
2. Remove the back cover. The touch board is located inside of the case on the right side.
3. Remove the touch guard sensor wire from the Sensor input connector.
4. Plug in the machine, turn it on and allow it to warm up.
5. Turn the Sensor detect adjustment screw until the Sensor detect light turns off.
6. Adjust the Sensor detect adjustment screw until the Sensor detect light turns back on.
7. Reconnect the touch guard sensor wire to the Sensor input connector.  
( If it is adjusted correctly, the Sensor detect light will go out )
8. Adjust the Trigger adjustment until the Trigger light turns on when you touch the bar with One finger.



9. If the touch board operates erratically, Turn off the machine, unplug it and follow the instructions to test the touch sensor wire.
10. If the touch board will not adjust or operate correctly, Turn off the machine, unplug it and follow the instructions to bypass the touch board to test the machine.

# Touch Board Sensor Wire Test Procedure

1. Turn the machine off and unplug it.
2. Remove the back cover. The touch board is located inside of the case on the right side.



3. Remove the sense wire from the touch board.
4. Set your meter to read OHMS and select the lowest OHMS scale on the meter.
5. Connect one of the meter leads to the sensor wire.
6. Connect the other meter lead to the touch bar.

If the wire is good, your meter will read ZERO OHMS.

If you do not have any reading on the meter, replace the sensor wire.

7. Keep the meter leads connected, disconnect the air pressure from the machine and allow the upper head to come down.

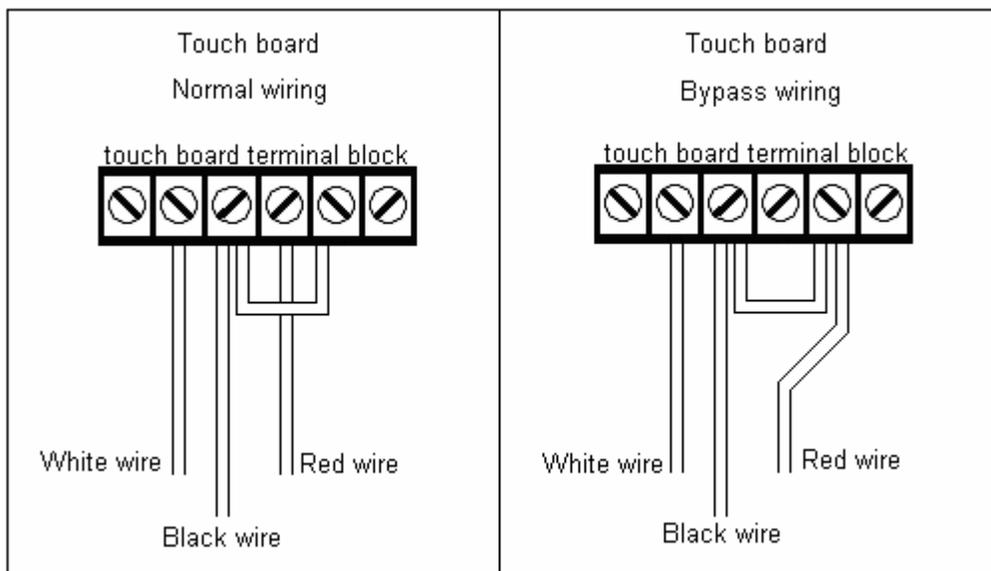
If the meter reading changes when the head is moving, replace the sensor wire.

# Touch Board Bypass Wiring Procedure

## USE FOR DIAGNOSTIC PURPOSES ONLY

### DO NOT OPERATE MACHINE WITH THE TOUCH BOARD BYPASSED

1. Turn the machine off and unplug it.
2. Remove the back cover. The touch board is located inside of the case on the right side.
3. Disconnect the RED wire from the terminal block on the touch board.
4. Connect the RED wire to the same terminal as the black wire as shown.



5. Plug in the machine, turn it on and allow it to warm up.
6. Test the machine.

If Bypassing the Touch board corrects the problem, Turn off the machine, unplug it and replace the Touch board.

### DO NOT OPERATE MACHINE WITH THE TOUCH BOARD BYPASSED

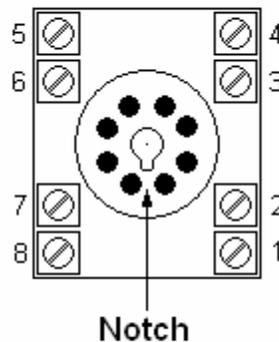
# ATD Relay & Start Switch Test Procedure

\*\*\*\*\* CAUTION \*\*\*\*\*

**THIS TEST PROCEDURE REQUIRES THAT THE MACHINE BE PLUGGED IN AND TURNED ON. USE CAUTION WHEN PERFORMING VOLTAGE TESTS.**

1. Turn the machine off and unplug it.
2. Remove the back cover.
3. Unplug the ATD relay from the socket and remove it from the machine.  
( the ATD relay has a blue case and it is located on the right side of the machine under the touch control board )
4. Set your meter to read AC voltage.
5. Connect the black meter lead onto terminal # 2 on the terminal block.  
( terminal # 2 on the terminal block has all of the white wires connected to it.)
6. Connect air pressure to the machine.
7. Plug in the machine, turn it on and allow it to warm up to operating temperature.

## Top View of ATD Socket



**Note - The ATD socket can be mounted in either direction in the machine. The direction of the Notch indicates location of pin 1**

8. Connect the red meter lead to terminal # 3 on the ATD socket. You should read 110 volts AC.

If you do not read 110 volts AC, check these items:

- A: Touch board (incorrect setup)
- B: Emergency stop (switch faulty)
- C: Start switch (faulty)

9. Have an assistant press both start buttons. When the start buttons are pressed, the voltage on terminal # 3 should drop to 0 volts AC.

If the voltage does not drop to 0 volts AC, one of the start switches is faulty.

10. Remove the red meter lead from terminal # 3 and connect it to terminal # 8 on the ATD socket. You should read 0 volts AC.

11. Have an assistant press both start buttons. When the start buttons are pressed, the voltage on terminal # 8 on the ATD socket should read 110 volts AC.

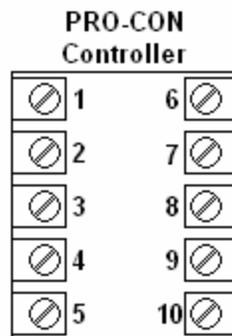
If you do not read 110 volts AC on terminal # 8 on the ATD socket, one of the start switches is faulty.

12. Turn the machine off and unplug it.

13. Reinstall the ATD relay.

14. Plug in the machine, turn it on and allow it to warm up to operating temperature.

15. Connect the red meter lead to terminal # 7 on the PRO-CON controller.



16. Have an assistant press both start buttons. When the start buttons are pressed, you should read 110 volts AC on terminal # 7 of the PRO-CON controller.

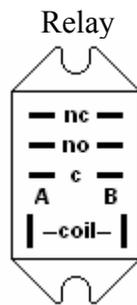
If you do not read 110 volts AC on terminal # 7 of the PRO-CON controller, replace the ATD relay.

# Pro-Con & Delay Timer Test Procedure

\*\*\*\*\* CAUTION \*\*\*\*\*

**THIS TEST PROCEDURE REQUIRES THAT THE MACHINE BE PLUGGED IN AND TURNED ON. USE CAUTION WHEN PERFORMING VOLTAGE TESTS.**

1. Turn the machine off and unplug it.
2. Remove the back cover.
3. Set your meter to read AC voltage.
4. Connect the black meter lead onto terminal # 2 on the terminal block.  
( terminal # 2 on the terminal block has all of the white wires connected to it.)
5. Connect air pressure to the machine.
6. Plug in the machine, turn it on and allow it to warm up to operating temperature.



(These relays have 2 independent sets of contacts, shown as A & B.  
The wires could be connected to either one of the sets of contacts)

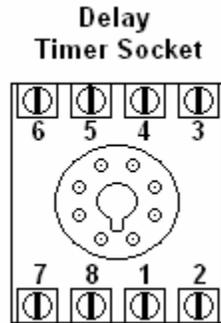
7. Connect the red meter lead to the **NC** terminal, on the same side as the wires, on the CTR relay.  
You should read 110 volts AC.

If you do not read 110 volts AC, check these items:

- A: Touch board (setup)
- B: Stop switch faulty
- C: Faulty relay

8. Block the upper head in the UP position and disconnect the air pressure from the machine.

9. Remove the red meter lead from the **NC** terminal on the CTR relay and connect it to terminal # 2 on the DELAY timer socket. You should read 0 volts AC.



10. Have an assistant press both start buttons. When the start buttons are pressed, the voltage on terminal # 2 should read 110 volts AC.

If you do not read 110 volts AC, check the setup and the settings of the PRO-CON controller.

If the PRO-CON settings are correct, replace the PRO-CON controller

11. Remove the red meter lead from terminal # 2 and connect it to terminal # 6 on the DELAY timer socket. You should read 0 volts AC.

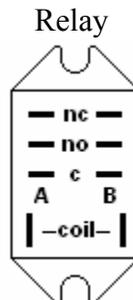
12. Make sure that the DELAY timer is set at 2 seconds.

13. Have an assistant press both start buttons. After the 2 second delay, the voltage on terminal # 6 should read 110 volts AC.

If you do not read 110 volts AC, Replace the DELAY timer.

If the delay is longer or shorter than 2 seconds, replace the DELAY timer

14. Remove the red meter lead from terminal # 6 on the DELAY timer and connect it to the **C** (common) terminal, on the same side as the wires, on the DELAY relay. You should read 0 volts AC.



15. Have an assistant press both start buttons. After the 2 second delay, the voltage on the DELAY relay should read 110 volts AC.

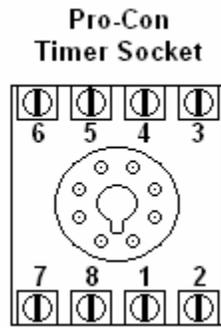
If you do not read 110 volts AC,

A: Check for a broken connection from terminal # 6 on the DELAY timer socket to terminal # 8 on the PRO-CON timer socket.

B: Check for a broken connection from terminal # 8 on the PRO-CON timer socket to Terminal # 2 on the PRO-CON timer socket.

C: Check for a broken connection from terminal # 2 on the PRO-CON timer socket to the C (common) terminal, and the Coil terminal, on the DELAY relay.

16. Remove the red meter lead from the C terminal on the DELAY relay and connect it to terminal # 5 on the PRO-CON timer socket. You should read 0 volts AC.



17. Make sure that the PRO-CON timer is set to 6 seconds.

18. Have an assistant press both start buttons. After the 2 second delay, the voltage on terminal # 5 should read 110 volts AC.

If you do not read 110 volts AC, Replace the PRO-CON timer.

19. Remove the red meter lead from terminal # 5 of the PRO-CON timer socket and connect it to terminal # 6 on the PRO-CON timer socket. You should read 0 volts AC.

20. Have an assistant press both start buttons. When the 6 second timer “Times out”, the voltage on terminal # 6 should read 110 volts AC.

If you do not read 110 volts AC, Replace the PRO-CON timer.

If the delay is longer or shorter than 6 seconds, replace the PRO-CON timer

# Air Valve Test Procedure

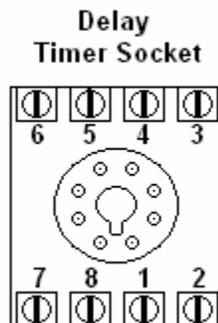
\*\*\*\*\* CAUTION \*\*\*\*\*

**THIS TEST PROCEDURE REQUIRES THAT THE MACHINE BE PLUGGED IN AND TURNED ON. USE CAUTION WHEN PERFORMING VOLTAGE TESTS.**

1. Turn the machine off and unplug it.
2. Remove the back cover.
3. Set your meter to read AC voltage.
4. Connect the black meter lead onto terminal # 2 on the terminal block.  
( terminal # 2 on the terminal block has all of the white wires connected to it.)
5. Connect air pressure to the machine.

If there is air leaking from the air valve, replace the valve.

6. Plug in the machine, turn it on and allow it to warm up to operating temperature.
7. Connect the red meter lead to terminal # 2 on the DELAY timer socket. You should read 0 volts AC.



8. Have an assistant press both start buttons. When the start buttons are pressed, the voltage on terminal # 2 on the DELAY timer socket should read 110 volts AC.

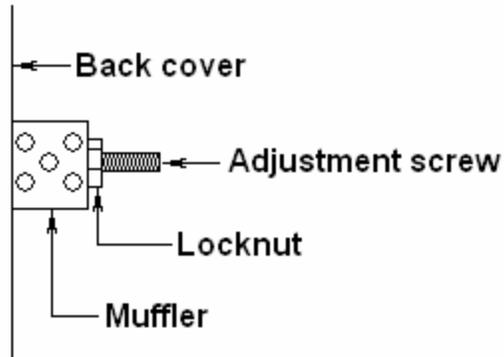
If you do not read 110 volts AC on terminal # 2, check these items:

- A: PRO-CON controller (“PV” reading below the “SV” setting)
- B: ATD relay (faulty)
- C: Start switches (faulty)

If you do read 110 volts AC and the air valve does not operate, replace the valve.

# Muffler ( Speed Control ) Adjustment Procedure

Side view of the muffler



1. Loosen the locknut
2. Turn the adjustment screw to change the speed of the machine.

Clockwise decreases the speed of the machine.

Counter-clockwise increases the speed of the machine.

3. When the desired speed is reached, tighten the locknut.
4. If the speed does not change, remove the muffler from the machine and test the machine. The machine should operate fast.

If it does not operate fast, check the air valve and the air cylinder for water and or oil contamination. If there is water or oil contamination, replace the valve and the air cylinder.

If it does operate fast, replace the muffler.

# Stop Switch Test Procedure

\*\*\*\*\* CAUTION \*\*\*\*\*

**THIS TEST PROCEDURE REQUIRES THAT THE MACHINE BE PLUGGED IN AND TURNED ON. USE CAUTION WHEN PERFORMING VOLTAGE TESTS.**

1. Turn the machine off and unplug it.
2. Remove the back cover.
3. Set your meter to read AC voltage.
4. Connect the black meter lead onto terminal # 2 on the terminal block.  
( terminal # 2 on the terminal block has all of the white wires connected to it.)
5. Plug in the machine and turn it on.
6. Connect the red meter lead to terminal # 3 on the terminal block.  
( terminal # 3 on the terminal block has all of the red wires connected to it.)

You should read 110 volts AC.

7. If you do not read 110 volts AC, Turn the machine off and unplug it.
8. Disconnect the red meter lead from terminal # 3 on the terminal block and connect the red meter lead onto the red wire on the touch control board.
9. Plug in the machine and turn it on. You should read 110 volts AC.

If you do read 110 volts AC, Turn the machine off, unplug it and replace the stop switch.

If you do not read 110 volts AC, Turn the machine off, unplug it and follow the instructions to re-adjust the touch board.

# No Heat Test Procedure

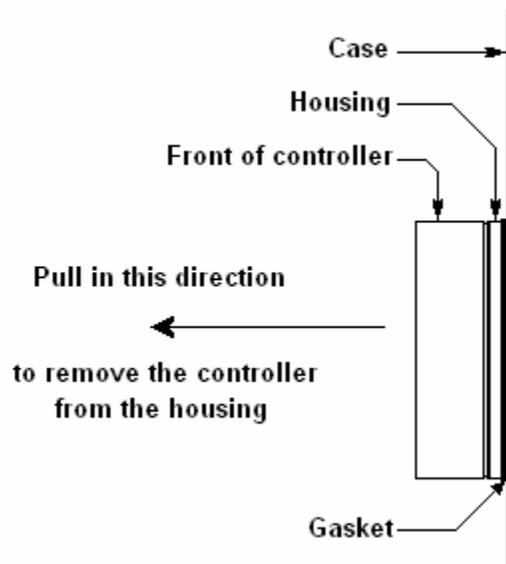
\*\*\*\*\* CAUTION \*\*\*\*\*

**THIS TEST PROCEDURE REQUIRES THAT THE MACHINE BE PLUGGED IN AND TURNED ON. USE CAUTION WHEN PERFORMING VOLTAGE TESTS.**

1. Turn the machine off and unplug it.
2. Swap the upper and lower controllers. ( **DO NOT** disconnect the wiring from the controllers )

**To remove the controller, pull the controller out of the housing as shown.**

( Side View of Machine )



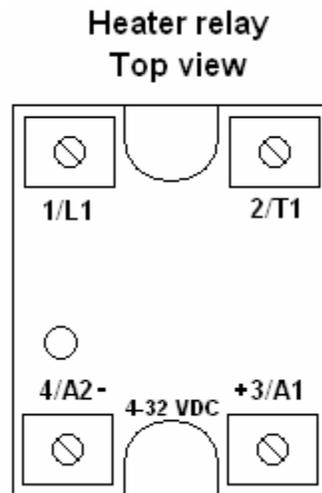
**To install the controller, push the controller into the housing.**

3. Plug in the machine and turn it on and allow it to warm up.

If the other heater stops heating, Turn the machine off, unplug it and replace the temperature controller.

4. If the same heater still doesn't heat, Turn the machine off and unplug it.

5. Remove the back cover.
6. Set your meter to read DC voltage.
7. Connect the black meter lead onto the terminal marked **4/A2-** on the relay.
8. Connect the red meter lead onto the terminal marked **+3/A1** on the relay.



9. Plug in the machine and turn it on. After approx 10 seconds, the Green light on the relay should turn on and you should read 12 volts DC.

If you do not read 12 volts DC, Turn the machine off and unplug it. The problem is a faulty temperature sensor or a broken wire from the temperature controller to the relay.

10. Turn the machine off and unplug it. Disconnect the meter leads from the relay.
11. Set your meter to read AC voltage. Connect the black meter lead onto terminal # 2 on the terminal block. (terminal # 2 on the terminal block has all of the white wires connected to it.)
12. Connect the red meter lead to the terminal marked **1/L1** on the relay.
13. Plug in the machine and turn it on. You should read 110 volts AC.

If you do not read 110 volts AC, Turn the machine off and unplug it. The problem is a broken connection from the terminal block to the relay.

14. Turn the machine off and unplug it. Disconnect the red meter lead from the terminal marked **1/L1** on the relay.
15. Connect the red meter lead to the terminal marked **2/T1** on the relay.
16. Plug in the machine, turn it on. After approx 3 seconds, you should read 110 volts AC.

If you do not read 110 volts AC, Turn the machine off, unplug it and replace the relay.

If you do read 110 volts AC, Turn the machine off and unplug it. The problem is a break in the heater wiring or a faulty heater.

# Overheating Test Procedure

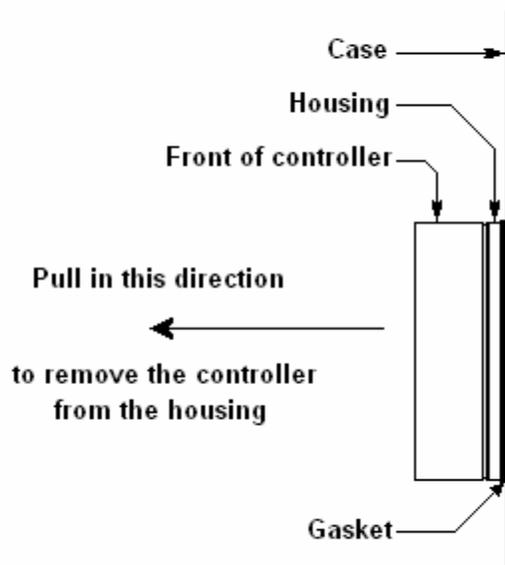
\*\*\*\*\* CAUTION \*\*\*\*\*

**THIS TEST PROCEDURE REQUIRES THAT THE MACHINE BE PLUGGED IN AND TURNED ON. USE CAUTION WHEN PERFORMING VOLTAGE TESTS.**

1. Check that the temperature setting is correct.
2. Turn the machine off and unplug it.
3. Swap the upper and lower controllers. ( **DO NOT** disconnect the wiring from the controllers )

**To remove the controller, pull the controller out of the housing as shown.**

( Side View of Machine )



**To install the controller, push the controller into the housing.**

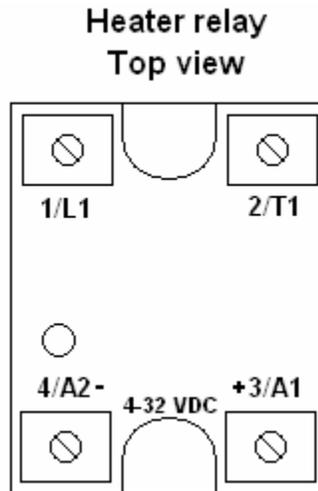
4. Plug in the machine and turn it on and allow it to warm up to operating temperature.

If the other heater overheats, Turn the machine off, unplug it and replace the temperature controller.

5. If the same heater still overheats, Turn the machine off and unplug it.
6. Remove the back cover.
7. Set your meter to read DC voltage.

8. Connect the black meter lead onto the terminal marked **4/A2-** on the relay.

9. Connect the red meter lead onto the terminal marked **+3/A1** on the relay.



10. Plug in the machine and turn it on and allow it to warm up to operating temperature. You should read 12 volts DC until the temperature of the heater reaches the set temperature.

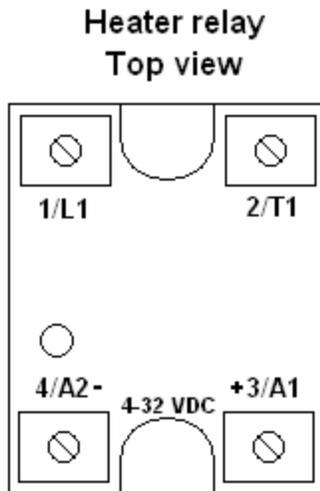
11. When the temperature of the heater reaches the set temperature, the 12 volts DC should change to 0 volts DC.

If the voltage on the meter reads 12 volts DC, and the temperature continues to rise above the temperature setting, Turn off the machine off and unplug it. The problem is a faulty temperature sensor, or a faulty temperature controller.

If the voltage on the meter does change to 0 volts DC and the temperature continues to rise, turn the machine off, unplug it and replace the relay.

# Heater and Wiring Test Procedure

1. Turn the machine off and unplug it.
2. Remove the back cover.
3. Set your meter to read OHMS and select the lowest OHMS scale on the meter.
4. Connect the black meter lead onto terminal # 2 on the terminal block.  
( terminal # 2 on the terminal block has all of the white wires connected to it.)
5. Disconnect the black wire from the terminal marked **2/T1** on the relay.
6. Connect the red meter lead to the wire that was connected to the terminal marked **2/T1** on the relay.



7. The resistance reading varies with the size of the heater.

The correct reading for the HS159-5LFP should be between 40 - 50 Ohms.

8. If you do not have any resistance reading, the heater wiring is broken or the heater is faulty
9. If the resistance reading of the heater is higher or lower than above, replace the heater wiring harness.

# PRO-CON Sensor Mounting Instructions

The PRO-CON sensor must be isolated from the surface of the heater by 1 layer of Teflon. The sensor also must have 1 layer of Teflon covering the sensor.

If the sensor is not “sandwiched” between the 2 layers of Teflon, the sensor will not react correctly to the temperature changes during the seal cycle of the machine.

The outer layer of Teflon will get dirty during normal use and will require periodic replacement. When replacing the outer layer of Teflon, be careful not to damage the PRO-CON sensor. If it is damaged, it will have to be replaced.

**When replacing the PRO-CON sensor, ALWAYS clean all of the adhesive off of the heater surface and REPLACE ALL of the Teflon.**

**Failure to do this can cause PRO-CON errors**

