

THIS PROCEDURE MUST BE PERFORMED BY A QUALIFIED TECHNICIAN

CHECK-OUT

1. Disconnect power to all branch circuits of the heater and remove the painted front panel.
2. Hinge the right, side panel open by performing the following:
 - a. Remove the screw (A) located above the grill slats on the lower right side of the heater.
 - b. Loosen the screw (B) located at the top right corner of the electrical compartment.
 - c. Push out on the right, side panel (C). Refer to Figure 1.
3. Remove and set aside the grill slats. Check the blower wheel for dirt and/or debris and clean if necessary.
4. Check the clearance between the output sensor and the discharge air high limit switch. The tip of the output sensor should be located within 1/4" – 1/2" from the face of the discharge air high limit switch (Figure 2).
5. Check the clearance between the damper actuator and the damper lever (Figure 3). The damper actuator should be above the lever. With no heat call, the resistors on the damper actuator assembly should be cool and the clearance between the actuator and the lever should be between an 1/8" – 1/4 ". If necessary, calibrate by bending the actuator near its mounting point. (Figure 3)
6. Verify spacing of resistors on damper actuator as shown in Figure 4.
7. Check damper operation by manually pressing the damper lever down and then slowly raising it. If the damper is not free, remove the blower and clean any debris in that area.



WARNING

HAZARDOUS VOLTAGE:
Risk of electric shock. Can cause injury, or death. System may be connected to more than one branch circuit. Disconnect power to all circuits before servicing. Equipment must be installed and serviced by a qualified technician.

FIGURE 1

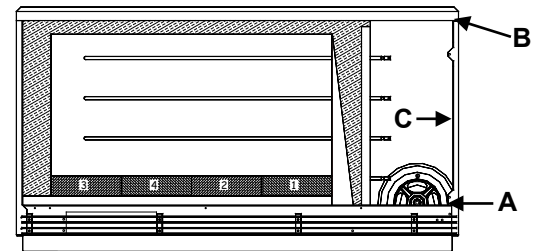


FIGURE 2

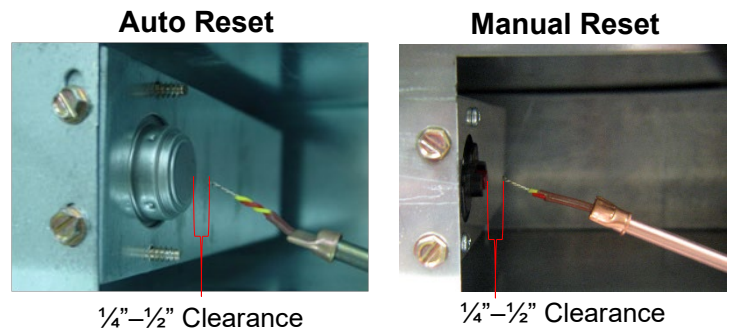


FIGURE 3

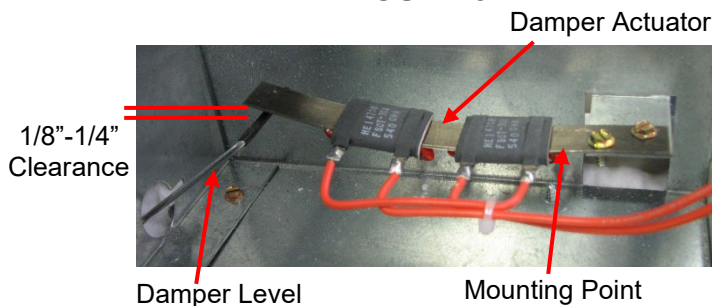
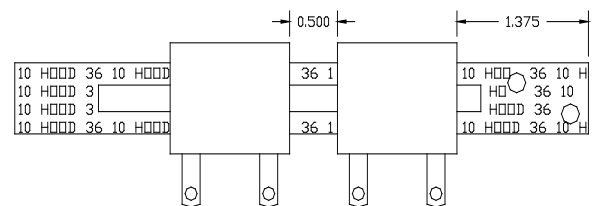


FIGURE 4



Air Discharge System Check-Out Procedure

8. Disconnect the orange wire from the “damper” terminal on the base I/O relay board (Figure 6).
 - ♦ 240V or 208V HEATERS: Read resistance between the orange wire and the terminal labeled “L2 240”. Resistance value should be approximately 1080 ohms. If incorrect, replace the damper actuator assembly.
 - ♦ 120V HEATERS: Read resistance between the wire and the terminal labeled “L2 120”. Resistance value should be approximately 270 ohms. If incorrect, replace the damper actuator assembly.
9. Reconnect the orange wire.
10. Verify that the blower resistor is the correct value for the application. Reference Table 1.
11. Disconnect a lead from one (1) of the two (2) “resistor” terminals on the base I/O relay board (Figure 6). Measure resistance between the removed wire and the other “resistor” terminal. If incorrect, replace the blower resistor.

TABLE 1

BLOWER RESISTOR OHM VALUE (All resistors are 50 Watt +/- 10%)		
Blower Mfg	Input Voltage	Blower Speed Resistor Required
FASCO	120V	150 Ohm 50W
FASCO	208/240V	600 Ohm 50W
P-Tech	120V	250 Ohm 50W
P-Tech	208/240V	1100 Ohm 50W

FIGURE 5



VERIFY OPERATION

DESCRIPTION OF OPERATION:

The processor control board receives a heat call when the room temperature set point is higher than the current room temperature. When a heat call is received, the processor control board tells the base I/O board to energize the blower and the damper. Location 120 and 121 (L120 and L121) indicate what speed the processor control board wants the blower and damper to operate at.

The values in L120 and L121 are then used to determine how much voltage the base I/O board should send to the blower (L2 240 to Blower) and the damper (L2 240 to Damper). Reference Figure 6. Using the values from L120 and/or L121 and the graph in Figure 7, determine what the voltage reading from L2 240 to Blower and/or L2 240 to Damper should be. Then check voltage across those terminals to verify proper operation.

NOTES:

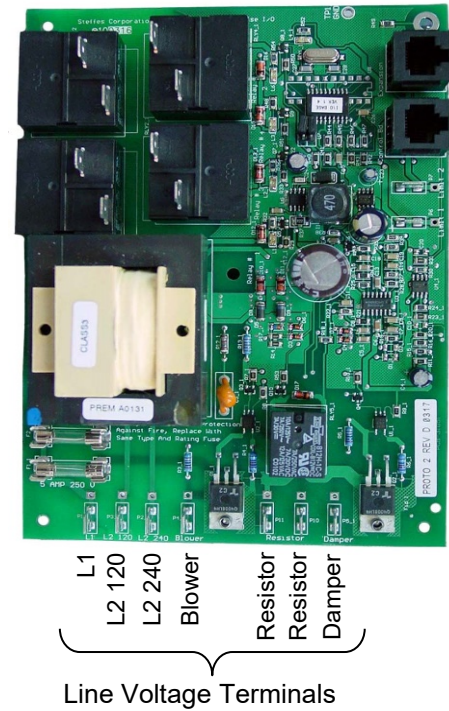
- ***If testing a heater with a 120V control circuit, use L2 120 terminal instead of L2 240 for testing voltage going to the blower and the damper.***
- ***2100 Series heaters have a variable speed blower and damper that are regulated by varying voltage to the corresponding terminals through triacs on the base I/O relay board.***

The blower and the damper actuator should respond to the voltage being sent from the base I/O board. With a heat call, L120 and L121 should have values greater than zero and there should be voltage across the L2 240 and blower/damper terminals. The blower should be running, and the damper actuator should be opening the damper. Without a heat call, the values in L120 and L121 should be zero and there should be no voltage across L2 240 and the blower/damper terminals.

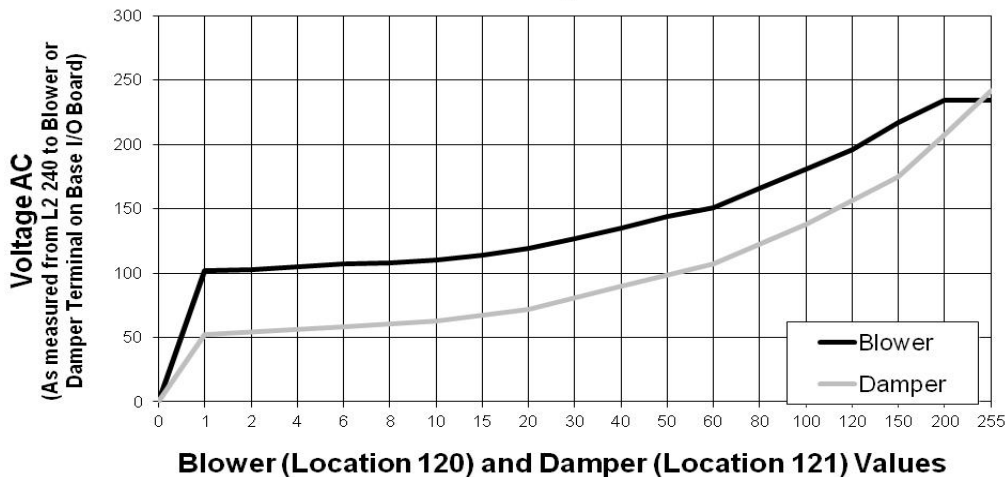
NOTE: The following instructions make sure the processor control board, base I/O board, blower, and damper respond appropriately for the heat call status of the heater. If any of the readings are incorrect, reference the associated flow charts or contact Steffes Technical Support.

12. Reconnect blower resistor wire and energize the heater.
13. Set the room temperature set point four (4) degrees lower than the current room temperature.
 - ◆ L120 = 0 (zero)
 - ◆ L121 = 0 (zero)
 - ◆ Voltage from L2 240 or L2 120 to Blower should be zero.
 - ◆ Voltage from L2 240 or L2 120 to Damper should be zero.
 - ◆ Blower should not be operating.
 - ◆ Damper should not be open.
14. Set the room temperature set point one (1) degree above actual room temperature.
 - ◆ L120 > 0
 - ◆ L121 > 0
 - ◆ Use L120 and Figure 7 to determine what voltage from L2 240 or L2 120 to Blower should be. Check voltage.
 - ◆ Use L121 and Figure 7 to determine what voltage from L2 240 or L2 120 to Damper should be. Check voltage.
 - ◆ Blower should be operating.
 - ◆ Damper should be opening.
15. Reassemble the heater.

FIGURE 6



**FIGURE 7
Blower/Damper Activation**



NOTE: 120V Heaters will have approximately ½ of the voltage readings