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# **Model 2000 & 2002 Incubator Instruction Manual**

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## 1.1 WARRANTY

THIS PRODUCT IS WARRANTED AGAINST DEFECTS IN MATERIAL AND WORKMANSHIP DURING THE FIRST 12 MONTHS AFTER ORIGINAL DATE OF SHIPMENT.

THE FACTORY WILL, AT ITS OPTION, REPAIR OR REPLACE DEFECTIVE MATERIAL WITHIN THIS PERIOD AT NO CHARGE FOR PARTS AND LABOR.

ALL RETURNS OR EXCHANGES MUST FIRST BE AUTHORIZED BY COY LABORATORY PRODUCTS, INC.

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COY LABORATORY PRODUCTS INC.  
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THE RESPONSIBILITY OF COY LABORATORY PRODUCTS, INC. IS LIMITED TO THE PURCHASE PRICE OF THIS PRODUCT, AND COY LABORATORY PRODUCTS, INC. WILL NOT BE RESPONSIBLE FOR ANY CONSEQUENTIAL DAMAGES.

THIS WARRANTY DOES NOT COVER DAMAGE IN SHIPMENT OR DAMAGE AS A RESULT OF IMPROPER USE OR MAINTENANCE OF THIS PRODUCT. THIS WARRANTY DOES NOT COVER DAMAGES CAUSED BY EXCESSIVE LINE TRANSIENTS ON THE AC SUPPLY LINE.

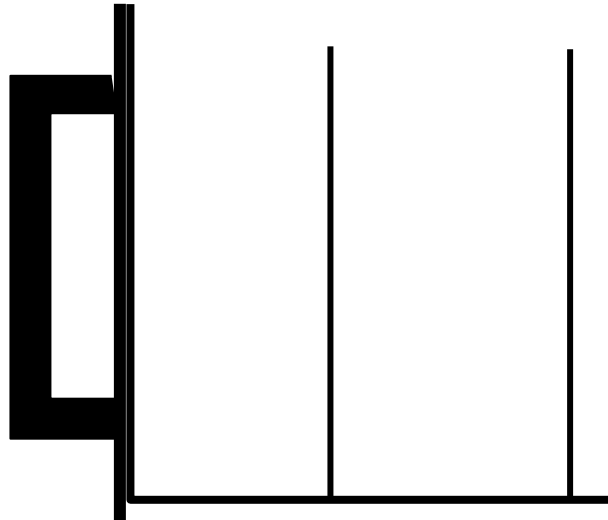
## 2.0 DESCRIPTION

### 2.1 GENERAL INFORMATION

- 2.1.1 This manual will provide a brief description of the operation and theory of design for COY Model 2000 Forced Air Incubator. This manual will also describe the controls found on the front panel and provide the user with a troubleshooting guide.
- 2.1.2 The Model 2002 Incubator's standard design for the drawers is to hold 100 mm Petri dishes (Figure #1), however other drawer designs may be ordered to accommodate the various styles of plates your lab will use. Contact COY Labs for specifics (7434-475-2200/ sales@coylab.com). One extra drawer is provided so that while you are working with one drawer the extra can be placed in the incubator to maintain proper temperature.

*The Model 2000 Incubator is equipped with adjustable shelves and sliding door.*

#### Figure #1 Drawer Design for Incubator



### 2.2 THEORY OF DESIGN

- 2.2.1 A two fans located on the incubator drawer, draws air around the outside of the inner shell and passes it over multiple resistance heaters also located on incubator drawer.
- 2.2.2 This heated air keeps the shell at a constant temperature and provides the extra layer of insulation between the Incubator interior and the outside environment. The inside surface of the outer shell is also lined with a thick layer of insulation.

- 2.2.3 A portion of the airflow is drawn across the inside face of the sliding doors. The air flow provides an additional thermal barrier against heat loss and reduces heat loss when the doors are open. Because this air flow is low and remains near the front surface of the Incubator the risk of cross-contamination is low, and the temperature gradient within the Incubator is greatly improved. Air flows from left to right.

## 2.3 OPERATION

- 2.3.1
1. Plug the power cord into an outlet which supplies the proper voltage as indicated on the identification plate found on the rear of the Incubator cabinet.
  2. Turn the Incubator on. The display should light immediately. If the display indicates three E's or does not light, see the trouble shooting guide for help.
  3. Press the “**SET-P**” Key (5) the Display (1) shows the letters “**SP**”, and then the display will show the set point temperature.
  4. Use the “**UP**” Arrow (3) or the “**Down**” Arrow Key’s to change the temperature set point value.

**IMPORTANT: YOU MUST PRESS AND HOLD THE ARROW KEY WHEN CHANGING ANY VALUE PRESSING AND RELEASING THE KEY WILL NOT CHANGE THE VALUE.**

5. After you reach the set point value desired, press the “**ENTER**” Key (4). Note: After the set point is reached, there is a 20 second delay in the menu. If you have not pressed “**ENTER**” in that time frame the controller will exit this menu. The “**ENTER KEY**” has to be pressed for the controller to accept the new set point value.
6. Allow the Incubator to stabilize for at least four (4) hours before you attempt to use it. When the Incubator is operating properly, the **SET POINT TEMPERATURE** should match the Incubator's internal temperature to within +/- 0.5 degrees. Once the Incubator has stabilized, no further adjustments are necessary.
7. If you do not need the Heater feature, you may adjust the thermostat to a temperature less than ambient conditions. The fan will continue to operate, but the heater cones will not turn on. If the “**CO**” cool function is turned on in the hidden menu, the green LED will turn on.

### 2.3.2 PROCEDURE TO RE-CALIBRATE

1. When it is time to re-calibrate the Model 2000 Incubator, place a reliable thermometer as close to the sensor as possible adjust the set-point to 37 deg. C.

Allow the instrument to stabilize for 30-40 minutes.

2. Read the thermometer. Then access the hidden menu (see below). If the temperature is less than 37 deg. C, subtract value to the previous “OF” value (note: each whole number is subtracting about 0.5 deg. C to the temperature.) If the temperature is more than 37 deg. C, add value from the previous “OF” value (note: each whole number is adding about 0.5 deg. C to the temperature).

*Example: Thermometer reads 36 deg. C; subtract 2 from the “OF” value  
Thermometer reads 38.5 deg. C; add 3 to the “OF” value*

### **2.3.3 ACCESSING THE HIDDEN MENU**

1. Press and hold the ENTER Key(4) for about 10 seconds.  
When the Display(1) shows the letters “OF” release the ENTER Key(4).
2. Press ENTER again, the “OF” value will be displayed
3. Press ENTER again, “HL” will display.
4. Press ENTER again, “HL” value will display.
5. Press ENTER again, “CO” will display.
6. Press ENTER again, “CO” value will display.
7. Press ENTER again, to exit the HIDDEN MENU

*Note: There is a 2 minute delay in this menu. If you have not finished in that time frame the controller will exit menu. The ENTER KEY has to be pressed for the controller to accept the new set point value. The 2 minute delay will restart after the ENTER KEY is pressed.*

### **2.3.4 Descriptions of Hidden Menu Settings**

1. “F” (off set) is the first setting. The value is used in the calibration of the controller.
2. Pressing the ENTER KEY (4) takes you to the “OF” value. This value ranges from 0 to 30. Each value is equal to about 0.5 deg. C.
3. Pressing the ENTER KEY (4) takes you to the “HL” (HIGH LIMIT).  
This value is the maximum temperature the set point can be set to.
4. Pressing the ENTER KEY (4) takes you to the “HL” value. The range is 0 to 43 standard range controller.

5. Pressing the ENTER KEY (4) takes you to the “CO” COOL. This function is to enable/disable the cooler output of the controller.
6. Pressing the ENTER KEY (4) takes you to the “CO” value.  
01 enables the cooler output /enables the green led (factory setting).  
00 disables the cooler output/disables the green Led.
7. Pressing the ENTER KEY (4) accepts the value and exits the hidden menu.

## **2.4 TEMPERATURE CONTROL**

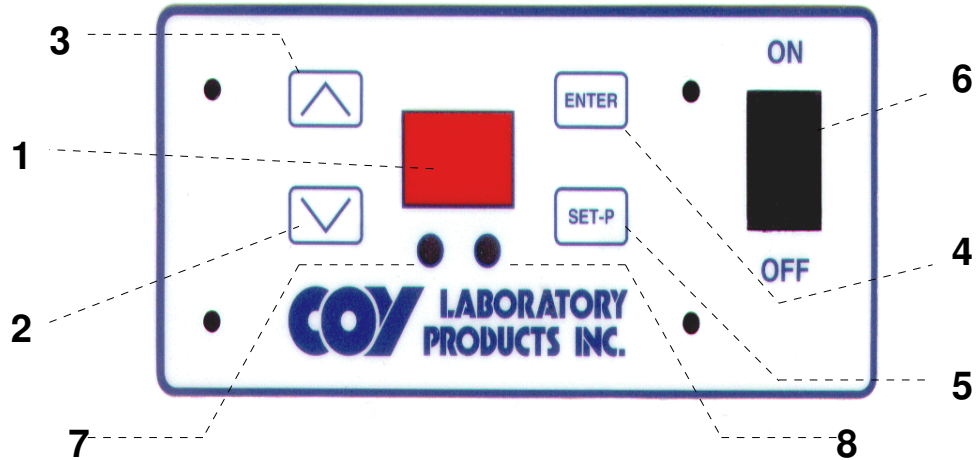
- 2.4.1 After the air is passed over the heating elements, its temperature is measured with the temperature sensor. The temperature sensor is located on the chamber drawer Incubator. The output signal from the temperature is compared with the set point temperature. This relationship is used to proportionally control the heater output. The 100% solid state electronic circuitry provides continuous temperature control to maintain the mean temperature within +/- 1.0 degrees Celsius. A secondary temperature control is provided to prevent extreme overheating in case the primary control circuitry malfunctions. Because the Incubator is not equipped with cooling devices, it will NOT control at temperatures below ambient chamber temperature.

## **2.5 TEMPERATURE DISPLAY**

- 2.5.1 Built into the electronic circuitry is a digital LED readout. During stable operation, the digital readout displays the mean Incubator temperature to within +/- 0.1 degrees Celsius.

## 2.6 FRONT PANEL CONTROLS

### 2.6.1 CONTROL LAYOUT



### 2.6.2 LEGEND

1. Display - Displays the temperature, set point or the tune values.
2. Down Arrow Key - Used to lower the set point or change the tune values.
3. Up Arrow Key - Used to increase the set point or change the tune values.
4. ENTER Key - Used to enter the value after it has been changed or to go to the next setting and also to enter the Hidden menu.
5. SET-P Key - Used to enter set point menu.
6. Main Power Switch - Used to turn power “on” and “off”.
7. Green Led - Used to indicate if the cooling output is “on” or “off”.  
(This can be disabled in the Hidden Menu)
8. RED Led - Used to indicate if the heaters are “on” or “off”.



## **2.7 SERVICE INFORMATION**

2.7.1 In the event your Incubator malfunctions, either during or after the warranty period, check the TROUBLE-SHOOTING GUIDE. If this does not help solve the problem, then please contact the factory.

2.7.2 Please have the following information available before you call or write Coy Laboratory Products, Inc.

1. Model and serial number of incubator (found on back of cabinet).
2. Date of purchase and purchase order number.
3. Nature of problem(s).
4. Name and phone number of person to be contacted by Coy with service instructions or return authorizations.

### **2.7.3 DO NOT**

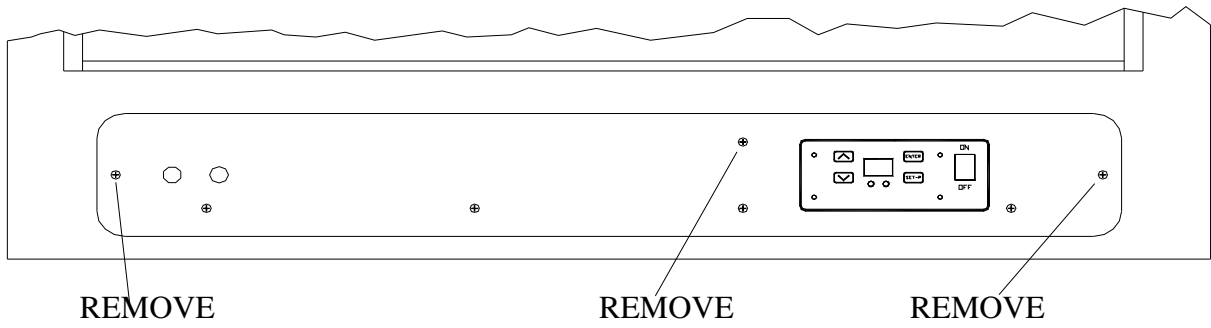
1. Attempt to repair unit with power applied. Before trying to make any repairs disconnect the power cord.
2. Return the Incubator or any of its components to Coy Laboratory Products, Inc., until a return is authorized.

### **2.7.4 WARNING!!!! HAZARDOUS VOLTAGES ARE PRESENT BEHIND THE CONTROL PANEL.**

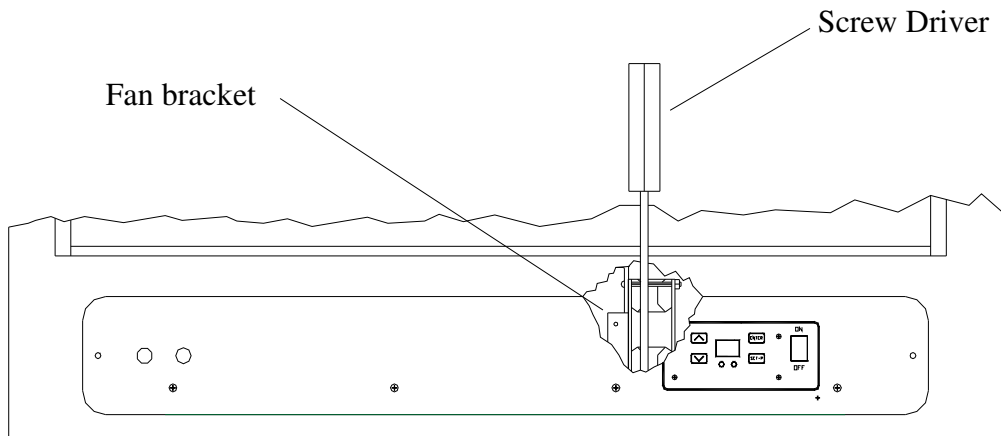
## **3.0 ACCESS TO ELECTRONICS + FANS**

3.0.1 Unplug the power cord, and use the following steps to guide you in accessing the electronics and fans.

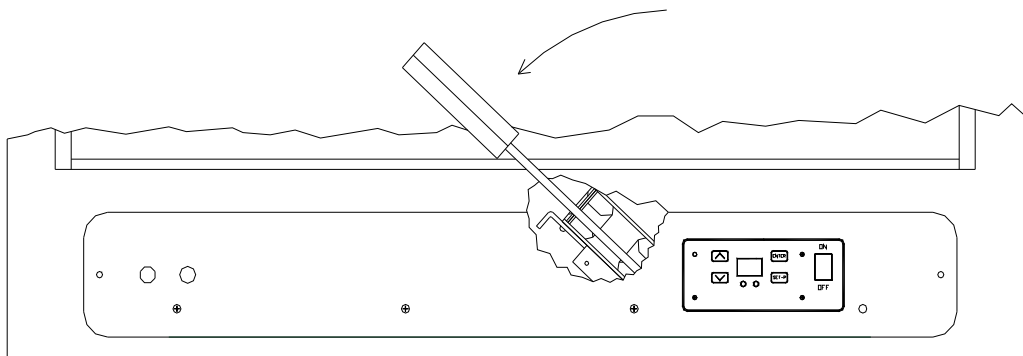
Step 2. Remove the three screws. Slide incubator drawer out until it stops then push it back in about .125”



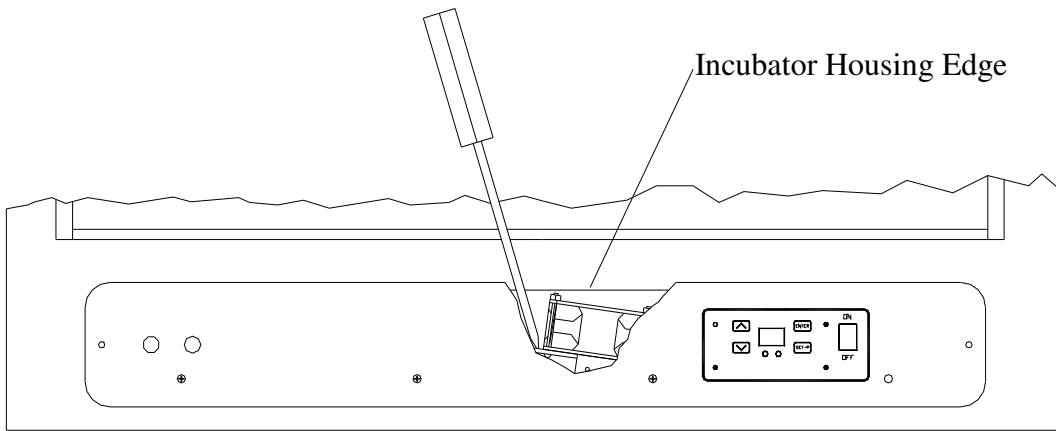
Step 3. Take a long screw drive insert it between the front panel and incubator housing. The screw driver needs to be to the right of the fan bracket.



Step 4. Rotate screw drive counter clockwise until the fans are below the edge of the incubator.



You may have to reposition the screw and push the fan bracket down.

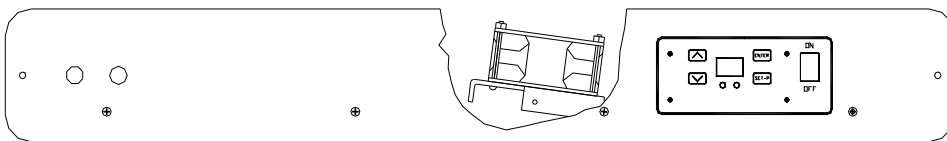


Step 5. Slide the incubator drawer out of the incubator.

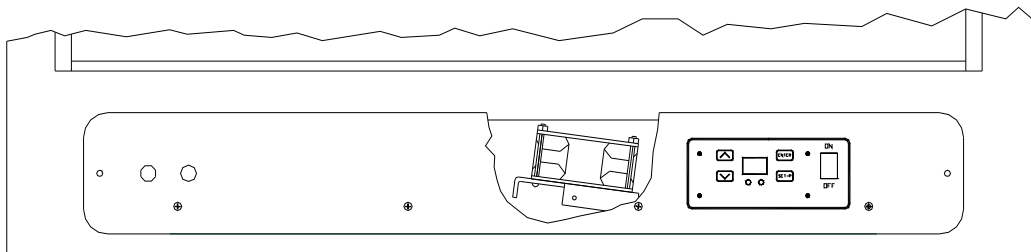
Step 6. Repair the incubator drawer.

### 3.02 Reinstalling Incubator Drawer

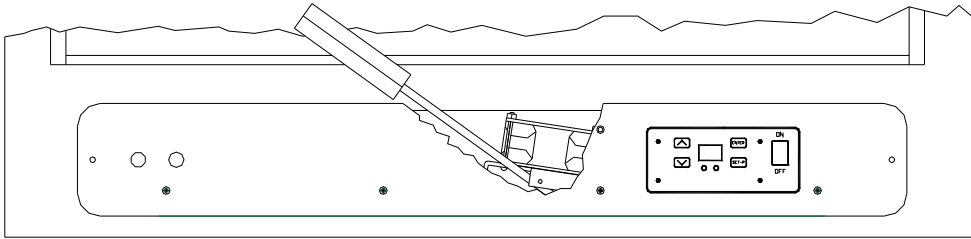
Step 1. Lower the fan bracket so that when the drawer is insert in to the incubator housing the fans will slid into the shelf opening.



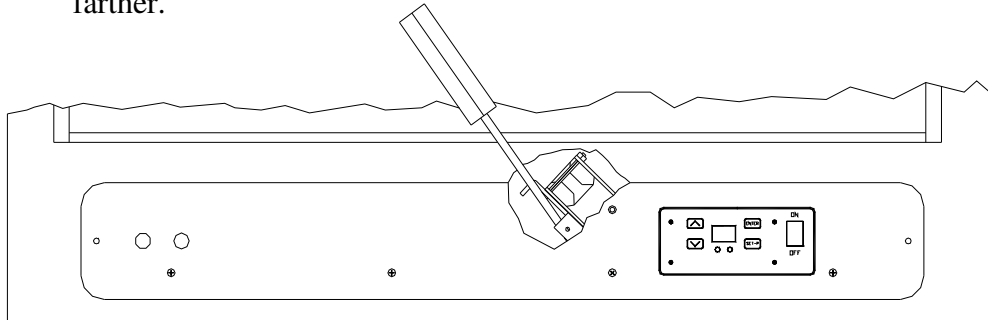
Step 2. Slide the incubator drawer into the incubator housing.



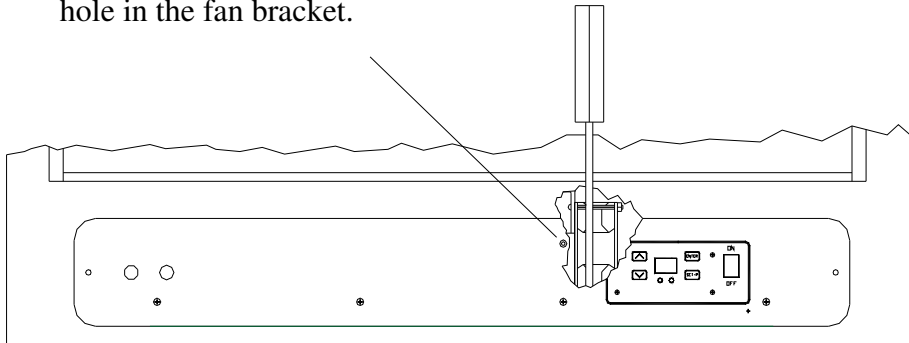
- Step 3. Place screw driver between the front panel and incubator housing. The screw need to be on the left side and under the fan bracket.



- Step 4. Using lever action, lift and rotate the fan bracket in a counter clockwise rotation. Until the hole in the fan bracket is lined up with the hole in the front panel. The fan bracket will be straight up and down. If the bracket hit the foam inside the incubator the incubator drawer needs to be push in farther.



This hole needs to line up with hole in the fan bracket.



- Step 5. Slide the incubator drawer all the in and reinstall the three screws that was removed in Step 2 of Removing incubator drawer.

- Step 6. Plug incubator back in.

## **4.0 COY MODEL 2000 & 2002 INCUBATOR.....TROUBLE-SHOOTING GUIDE**

4.0.1 This guide is intended as an aid in the event the Incubator malfunctions. Please consult factory for problems not mentioned, or if a problem continues.

### **TO PREVENT ELECTRICAL SHOCK, DO NOT ATTEMPT ANY INTERNAL SERVICE WITHOUT UNPLUGGING THE INCUBATOR.**

#### *1. DISPLAY READS "E1" or "E2"*

*E1 indicates the sensor is open. E2 indicates the sensor is shorted. In either case, follow the steps below.*

- A. Remove the drawer, see control drawer removal/replacement procedure (Access to electronics and fans page 9).
- B. Make sure the sensor is securely plugged into the controller.
- C. Check for broken wire leading into the rust color contractor attached to the sensor cable.
- D. Check for damaged PCB components; consult factory.

### **OPERATING THE INCUBATOR WITH THE SENSOR PLUGGED IN INCORRECTLY CAN DESTROY THE SENSOR OR THE CONTROLLER**

#### *2. ERRATIC DISPLAY*

- A. Check connections to Incubator DISPLAY CONTROL switch; repair as needed.
- B. Check connections to PCB; repair as needed.

#### *3. UNSTABLE OR INCORRECT TEMPERATURE*

- A. Check power supply mains for abnormally high amounts of electrical noise; install approved line filter of proper rating.

#### *4. UNIT TOTALLY INOPERATIVE*

- A. Make sure proper power is being supplied to the unit.
- B. Unplug the unit and try another device plugged into the same outlet.
- C. Check for blown fuse. Replace only with a 3 amp 3AG fuse.
- D. Check internal wiring for any loose or disconnected wires or connections. Reconnect, if necessary.
- E. Check Incubator drawer for any damaged parts; consult factory for replacement.

## 5. *FANS INOPERATIVE*

- A. Make sure the fan blades rotate freely on both fan's; remove or clean out any obstructions.
- B. Check for faulty connections to the fans; repair as necessary.

## 6. *DISPLAY AND HEATERS INOPERATIVE*

- A. Check for faulty wiring or connection to printed circuit board connector; repair as necessary.
- B. Make sure printed circuit board connector has not been reversed.
- C. Check for open, dirty, or damaged manual thermostat (near heating elements/remove heat shield), clean or replace (consult factory) as required. **DO NOT ADJUST**
- D. Check for any damaged components on printed circuit board; consult factory.

## 7. *HEATERS INOPERATIVE*

- A. Make sure all three heating elements are snugly screwed into their socket.
- B. Check for faulty wiring to heating elements; repair as necessary.
- C. Check for damaged heating element(s). A single element can disable the other two; consult factory.
- D. Check for open, dirty or damaged manual thermostat (near heating elements); clean or replace (consult factory) as required. **DO NOT ADJUST**.
- E. Check for damaged printed circuit board components; consult factory.

## 8. *HEATERS OPERATE CONTINUOUSLY, REGARDLESS OF SET POINT*

- A. This is usually a malfunction of the main printed circuit board; consult factory.
- B. Check for faulty wiring to heating elements, possible short, consult factory.
- C. Check for damaged printed circuit board components; consult factory.

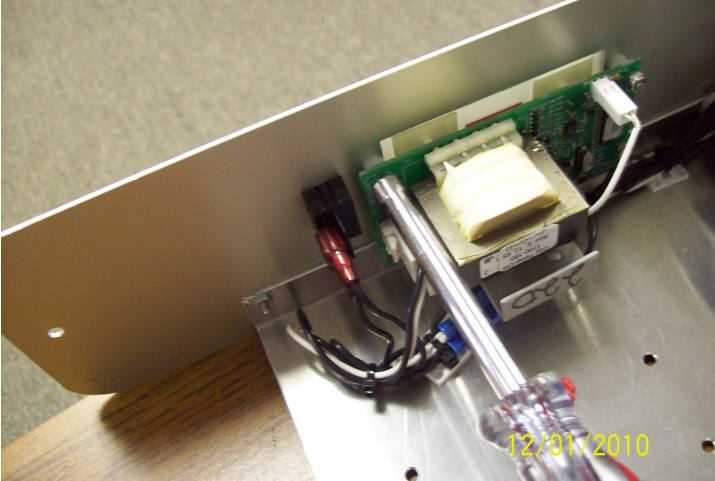
COY LABORATORY PRODUCTS, INC., cannot be held responsible for any field calibrations performed by anyone except factory authorized personnel. **PLEASE CONSULT FACTORY FOR ANY PROBLEMS OUTSIDE THE SCOPE OF THIS GUIDE.**

## **PRINTED CIRCUIT BOARD REPLACEMENT PROCEDURE**

Please follow instructions carefully while installing your replacement printed circuit board. Turning switch off is insufficient since life threatening voltages are still present. Your new PCB and Sensor have been calibrated at the factory.

- 1. Unplug Incubator power cord a/c source.

2. Remove the two end screws on the front panel and use instructions listed in section 3.0 for removing the incubator drawer.
3. Gently unplug the rust colored connector from the existing circuit board. Remove the 4 nuts & screws holding the display board to the front panel. Keep the two PCB boards together as you remove them from the aluminum tray.



```
ERROR: undefined  
OFFENDING COMMAND: so'h*;*aK
```

```
STACK:
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