

HB-1000 & HL-2000 Hybridization Servicing Procedure

Overview

The purpose of this Technical Bulletin is to explain the process of servicing the HB-1000 Hybridization Oven and hybridization portion of the HL-2000 HybriLinker™, including replacing the carousel motor, the internal temperature control board and sensor, the speed control potentiometer, the keypad and the heater element.

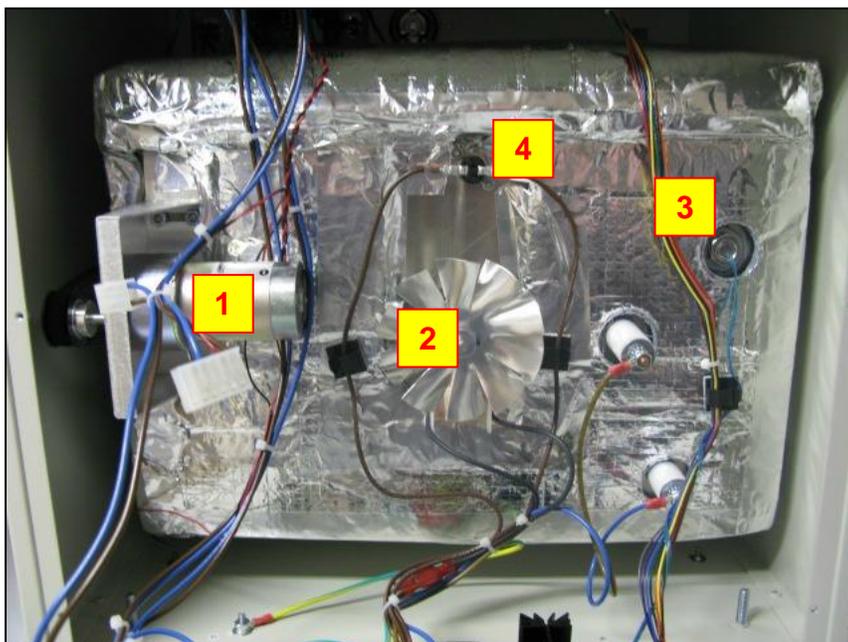
Required Components & Tools

The following components and tools are required:

- Temperature control board kit
- Phillips head screwdriver
- Allen wrench
- Pliers or small wrench

General Servicing Procedure

Most servicing of the HB-1000 requires that the rear panel be removed to gain access to the major components within the unit. The components mounted on the back of the Chamber are shown in the following diagram:

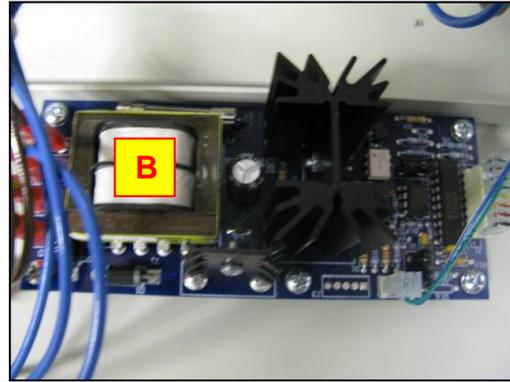
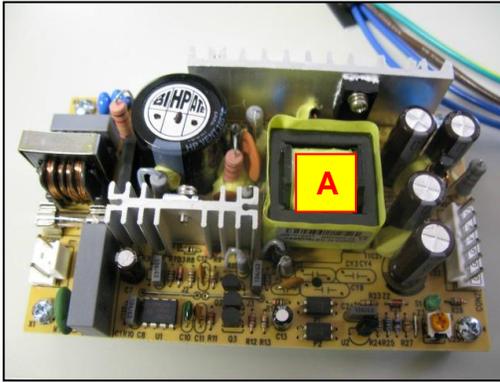


1. Carousel Drive Motor (24V DC)
2. Cooling Fan and Motor
3. Temperature Sensor
4. Over-Heat Switch

To remove the back panel:

1. At the back of the unit, use the Phillips head screwdriver to remove all of the screws securing the back panel to the system.
2. Remove the back panel. **NOTE:** Be careful when removing the panel, as there are components attached to the inside of the panel which are connected with wires.

Parts mounted to the back panel are as follows:



- A. 24V DC Power Supply
- B. Temperature Control Board
- C. Mains Power Input Filter (for 230V versions only)

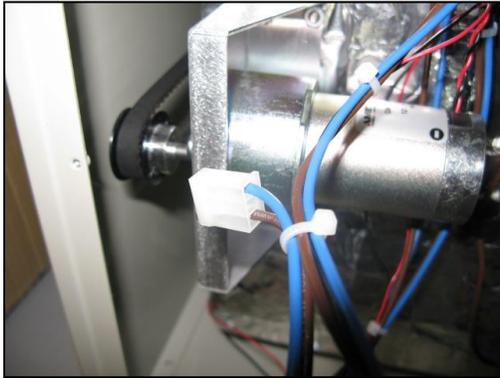
Access is required to the main Chamber to remove the temperature sensor and the heating element. These components are mounted behind a safety cover.

Note: The air circulator fan runs on the same motor as the cooling fan at the rear of the HB-1000.



Replacing the Carousel Motor

1. Remove the rear panel of the HB-1000 as described in "General Servicing Procedure" above.
2. Remove the two nuts securing the bracket to the rear of the Chamber.
3. Remove the bracket and motor from the rear of the Chamber.
4. Remove the 2 Pozi-driv screws securing the motor to the bracket. Note the position of the screws, as this will affect the tension of the drive belt.
5. Disconnect the red/black wires by pulling the spade connections apart. Take care not to damage the Varistor which is attached to the connection.
6. Installation of the replacement motor is the reverse of removal. Take care not to over or under tension the drive belt.



Replacing the Temperature Control Board and Sensor

Note: Always replace the sensor and control board at the same time.

Note: The keypad is included with the temperature control board and sensor replacement kit. See "Replacing the Keypad" below for keypad replacement instructions.

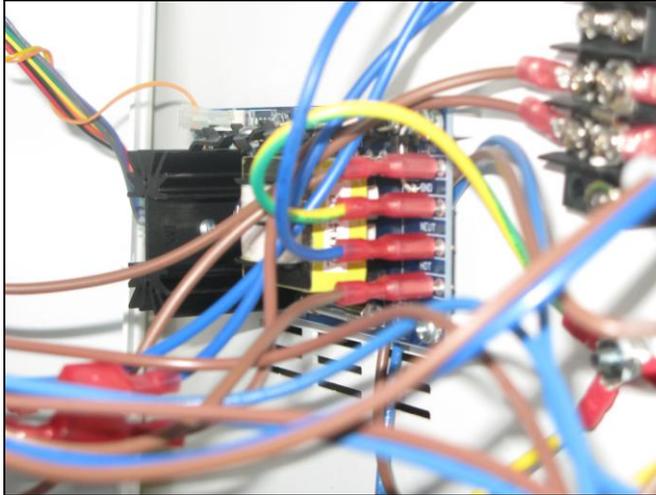
1. Remove the rear panel of the HB-1000 as described in "General Servicing Procedure" above.
2. Use the Allen wrench to remove the rubber control knob from the front of the unit.

Once the panel is removed, the main control panel will be visible:

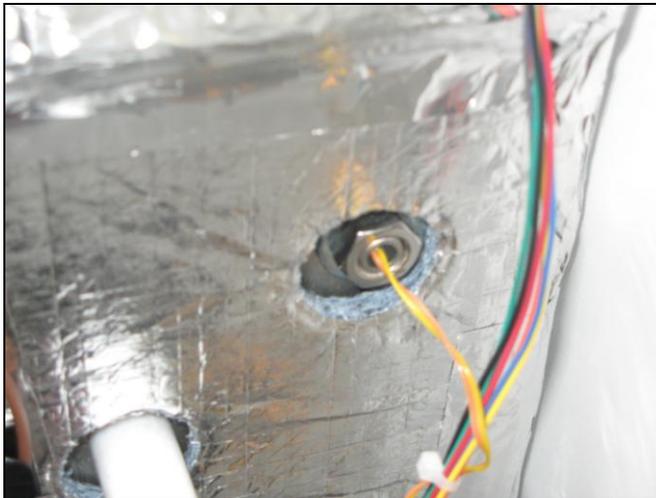


3. Unplug all wires from the old control board, noting the position of each. **NOTE:** All wiring must be reconnected in the same positions.

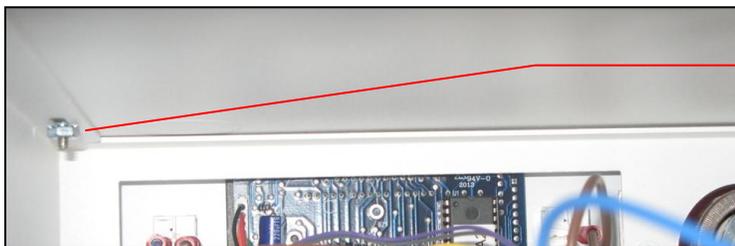
Below is another view of the control board and connectors for reference:



4. Use pliers or a small wrench to remove the sensor, located inside the back. Insert the new sensor and use the pliers/wrench to secure the new sensor:



5. Remove the top panel of the HB-1000 by removing the 4 nuts on the upper inside of the unit holding it in place (see image below). Then, lift the top off. **NOTE:** Be careful when removing the panel, as there are components attached to the inside of the back panel which are connected with wires.



1 of 4 Nuts
Securing Top to
System

6. Unplug all wires from the board and remove the board. Install the new board in this location and plug all wires back in.
7. Reassembly is the reverse of removal.

Replacing the Keypad

1. Remove the knob from the speed control potentiometer.
2. Remove the top panel as described in “Replacing the Temperature Control Board and Sensor” above.
3. Lift the top panel at the rear and un-hook it from the front panel.
4. Remove the connector from the circuit board.
5. Remove the four screws securing the circuit board and replace the circuit board.

Replacing the Speed Control Potentiometer

1. Remove the knob from the speed control potentiometer.
2. Remove the top panel as described in “Replacing the Temperature Control Board and Sensor” above.
3. Lift the top panel at the rear and un-hook it from the front panel.
4. Remove the nut securing the potentiometer and pull the potentiometer from the bracket.
5. Disconnect the potentiometer and fit the replacement.

Replacing the Heater Element

1. Remove the nuts on the ends of the element and disconnect.
2. Remove the nuts, washers and ceramic spacers from the element.
3. Remove the element from inside the Chamber.
4. Fit the replacement element, taking care not to over-tighten the securing nuts or ceramic spacers could be broken.
5. Re-attach the connections to the ends of the element.

Troubleshooting

Problem	Possible Cause
Oven not turning on	Blown main fuse(s) Faulty Power switch
Oven not heating up	Defective heater element Defective control board/sensor
Display indicating “Hi” or “Lo”	Faulty control board/sensor
Temperature not accurate	See “Temperature Calibration Procedure”
Carousel not rotating	Faulty switch Faulty 24V power supply Faulty motor Faulty potentiometer
Orbital Tray not working	Check 24V supply at socket within the Chamber
Carousel speed incorrect	Faulty motor/power supply
HB-1000 overheating	Faulty cooling fan motor

Temperature Calibration Procedure

NOTE: The unit must be completely assembled before for calibration. Ensure that all panels (i.e. top, sides, and back) are in place when calibrating.

1. Place the bottled thermometer into the bottle clip, facing away from you. Make sure that it will not scrape the sides or back walls.
2. Rotate assembly and place a second bottle directly across from the thermometer. This is for counter balance.
3. Set the controller LED temperature to 68°C. Run the unit for a minimum of 1 hour. (If you are at this step due to recalibration and the chamber temperature is at or above 65°C, then run the unit for a minimum of 20 minutes). If the temperature has not yet stabilized, continue to run the unit until the temperature stabilizes.
4. Record the chamber temperature from the controller LED and the temperature of the bottle thermometer.

NOTE: Do not open the door!

5. Evaluate data:
 - a. If both temperature readings are 68°C, then continue by repeating steps #3 and #4 at the following temperature settings: 37°C and 50°C. The object of this step is to record and compare the temperature readings on the controller LED and the bottle thermometer. This data is not used for calibration or re-calibration of the unit. This will complete the calibration procedure.
 - b. If both temperatures do not read 68°C, then re-calibration is required. Proceed to Step 6.
6. Recalibrating the controller:
 - a. Simultaneously depress and hold both the “up” and “down” buttons on the controller until the decimal points in the display flash to indicate that the controller is in calibration mode. Release the buttons.
 - b. The flashing display will indicate the controller temperature. Reset the temperature to the bottle temperature as recorded in Step 4 by depressing the “up” or “down” buttons as needed.

- c. The display will revert to normal mode after (5) seconds. Return to Step (3) and repeat entire the procedure.

Technical Support

Contact UVP Technical Support for additional assistance:

<u>If you are in North America, South America, East Asia or Australia:</u>	<u>If you are in Europe, Africa, the Middle East or Western Asia:</u>
Call (800) 452-6788 or (909) 946-3197 , and ask for Technical Support during regular business days, between 7:00 am and 5:00 pm, PST.	Call +44(0) 1223-42002 , and ask for Customer Service during regular business days between 8:30 am and 5:30 pm.
E-mail your message to: info@uvp.com or techsupport@uvp.com	E-mail your message to: uvp@uvp.co.uk
Fax Technical Support at (909) 946-3597	Fax Customer Service at +44(0) 1223-420561

HybriLinker is a trademark of UVP, LLC.