

Technical Data Sheet

HBH850 – 230V Blender Technical Information

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What is different between Series Levels?

- **Series L+** - The power switch was removed from the front of the machine and replaced with a reset breaker switch on the side of the unit. See repair guide for steps to upgrade Series A-K with Series L and later parts.
- **Series M+** - A stiffener plate has been added and placed behind the touch pad on the outside of the upper housing. When changing the touch pad the stiffener plate must also be changed. The stiffer plate can and should be used in repairs on all units (Series A+) when replacing the touch pad.

Trouble Shooting Guide

- **Symptom:** During a normal cycle the machine stopped.
- **Cause:** The unit has possibly overheated without notice to the warning message indicating to run a cool down cycle. Unplug the machine 15-30 minutes. Plug in the unit and try to operate. If the problem persists proceed to Repair Guide.
- **Symptom:** No jar sensor indicator.
- **Cause:** PC board, membrane switch, ribbon connector or jar sensor has potentially failed.
- **Symptom:** The power switch fails to function.
- **Cause:** Check electrical connections. Ensure the PVC switch cover is present (moisture protection). If problem persists proceed to Repair Guide.
- **Symptom:** Motor runs 3-7 seconds and quits.
- **Cause:** Most probable cause is a broken magnet on motor/hall effect sensor.
- **Symptom:** Blender keeps tripping wall circuit breaker.
- **Cause:** Unit needs a dedicated 7.5-amp circuit (no additional electrical devices should be operating on this circuit). If problem persists with the unit operating on a dedicated circuit the cause could be a shorted diode bridge on the power board.
- **Symptom:** Unit will not turn on.
- **Cause:** No power at wall outlet. Power switch not turned on. Circuit breaker has tripped. Wire disconnected. PC Board failure.
- **Symptom:** Unit will not power down or the display lights without the unit being turned on.
- **Cause:** Power switch failure. Measure continuity at push button switch. If the terminals are shorted proceed to Power Switch section of Repair Guide.
- **Symptom:** The unit displays a "Speed Sensor Error". **An audible "click" is evident when the start button is pressed (this is the relay applying power to the motor).**
- **Cause:** Inspect lead wire connections between motor and relay/rectifier board. Inspect

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the hall effect switch and plug. Ensure the Hall Effect magnet is present on the motor shaft. Check continuity through motor field coils. Check motor brushes. Reconnect wires as needed; replace the motor or motor brushes as needed.

- **Symptom:** The unit displays a "Speed Sensor Error". **No audible "click is evident when the start button is pressed."**
- **Cause:** Inspect lead wire connections between TRIAC board and Transfer Board. Inspect the diode bridge for damage (this will be evident by a burned appearance on the bottom of the PCBA and a dead short that will cause the circuit breaker to open immediately after the start button is pressed). Correct bad connections. Replace transfer board as needed.
- **Symptom:** Display indicates that jar is not in place when jar is present and installed correctly.
- **Cause:** Verify that 4 magnets are present in the bottom of the container. Verify that jar sensor switch in the upper housing is present and functioning. Inspect jar sensor connection on main pc board.
- **Symptom:** Motor operates at excessive speed.
- **Cause:** TRIAC board failure.
- **Symptom:** USB port will not upload custom program.
- **Cause:** Verify that the correct program is installed in the main directory of the USB drive. Save program hbh850.usb into main directory of USB drive prior to loading into unit. If this does not resolve issue, contact HBB for new file as data may be corrupt. Inspect USB socket to verify that the plug is secured. Check continuity of cable connecting USB PCBA to micro controller / VFD PCBA. Replace cable if there are any open circuits. Check USB PCBA for damage (e.g. evidence of liquid ingress). If there is evidence of damage, replace USB PCBA.
- **Symptom:** Unit functions correctly but display is blank or fragmented.
- **Cause:** VFD Board failure. Proceed to Repair Guide.
- **Symptom:** Pixels will not illuminate on display
- **Cause:** Bad pixels. VFD Board failure. Proceed to Repair Guide.
- **Symptom:** One or more buttons on touch pad will not function correctly.
- **Cause:** Touch pad failure. Proceed to Repair Guide.
- **Symptom:** Excessive noise is evident during operation.
- **Cause:** Male clutch is not concentric. Replace.
- **Symptom:** Display indicates an error #51.
- **Cause:** Thermistor (heat sensor) in motor has lost connection or is not working. Check plug on main PC board, Do continuity test on plug for the sensor. Replace motor if sensor is bad.
- **Symptom:** Display indicates an error #29, #30, #42, #100, or #103.
- **Cause:** Communication malfunction between micro controller and EEPROM.

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Replace VFD board and display.

- **Symptom:** Display indicates an error #60 or #62.
- **Cause:** EEPROM is defective or has corrupt data. Replace VFD board and display.
- **Symptom:** Unit is excessively noisy.
- **Cause:** Remove blender container and test by slowly turning the female clutch at the bottom of the container. It should turn freely and not be loose or wobbly. Check inner portion of clutch for wear. If loose, stiff, or worn replace with part # 98650. See Operators Manual for detailed instructions.

Repair Guide

Housing Disassembly

- Turn switch to the “off” position and unplug the machine.
- Remove the jar pad.
- Remove the four screws under jar pad feet.
- Carefully lift the cover from unit; wires will limit your movement.
- Disconnect the two or three leads to the circuit breaker/on off switch. Position the upper housing to the front of the machine. (See Fig. 1)

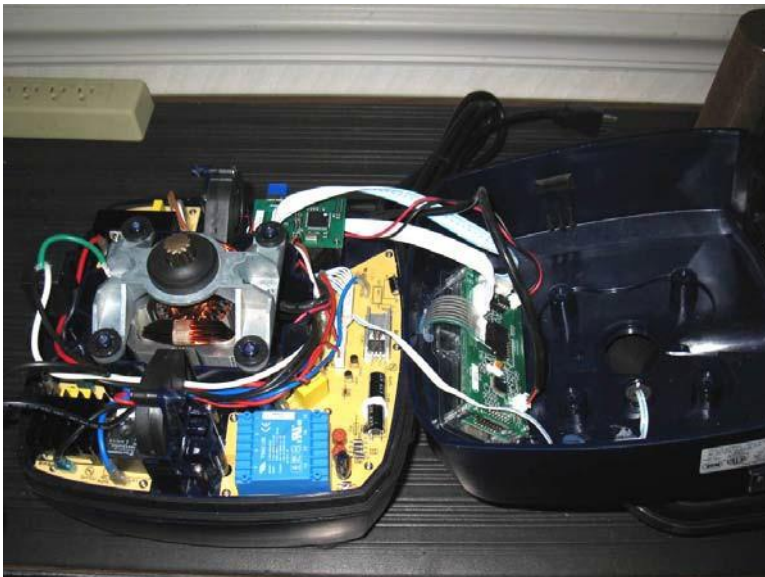


Figure 1. Unit with circuit breaker/on off switch leads disconnected and upper housing positioned to the front of the machine.

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Repair Guide

Housing Disassembly See figure 1.

- Turn switch to the “off” position and unplug the machine.
- Remove the jar pad.
- Remove the four screws under jar pad feet.
- Carefully lift the cover from unit; wires will limit your movement.
- Disconnect the two leads to the circuit breaker. Position the upper housing to the front of the machine.

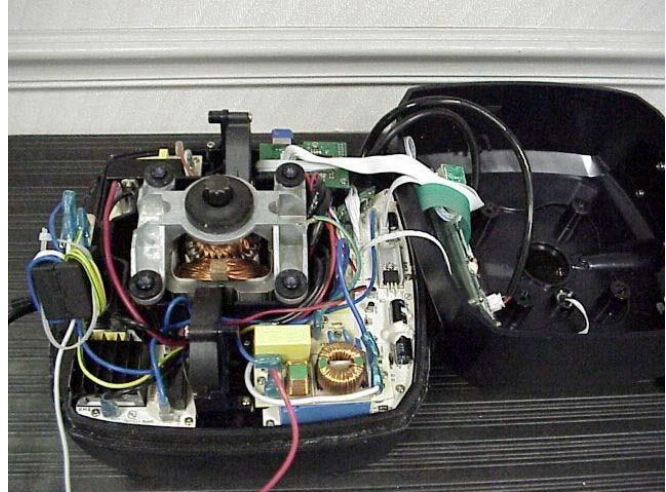
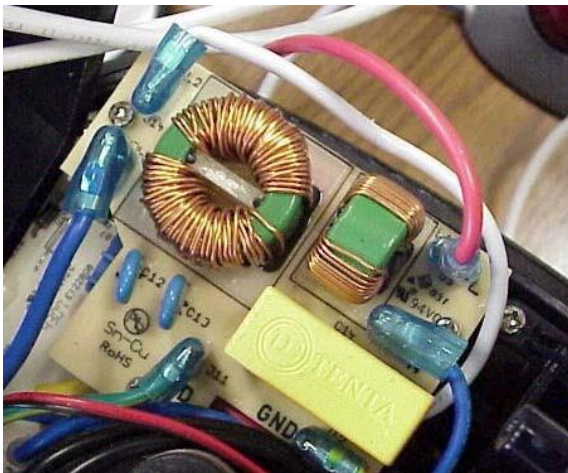


Figure 1. Unit with circuit breaker leads disconnected and upper housing positioned upside down

Wiring Detail

RFI Board (positioned over main board) see figure 2.



- L1 - Red lead 110V to circuit breaker
- J13 – Blue lead 115V to Main board J101
- J14 – White lead 110V to main board J102
- J10 Blue lead 115V to Left front cord socket
- J11 Green lead to Motor ground
- J12 Yellow/Green lead to ground terminal on the cord socket

Figure 2. RFI Board

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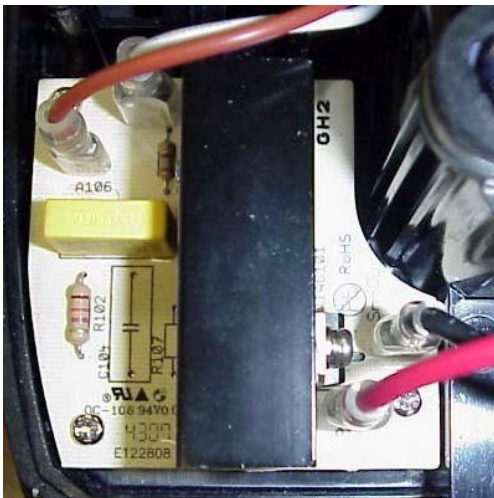
Relay/Rectifier Board Wire Routing and Current Readings (Left Rear of machine) See figure 3.

- A103 Blue lead 115V to B103 Main board
- J302 Black lead to Motor
- J301 Black lead to Motor
- B102 Black lead 110V to A102 Triac board
- A105 Blue lead 12V to B105 Main board
- A104 Red lead 12V to B104 Main board



Figure 3: Relay/Rectifier board

TRIAC Board Wire Routing and Current Readings (Right Rear) See figure 4.



- A107 White lead 110V to B107 Main board
- A106 Brown lead 110V to B106 Main board
- A102 Black lead 110V to B102 Relay/Rectifier board
- A101 Red lead 115V to B101 Main board

Figure 4: TRIAC board

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Cord Connections

- Yellow/Green to J12 RFI board
- White to Circuit breaker
- Blue to J10 RFI board

Main Board See figure 5.

- B105 Blue lead to A105 Relay/Rectifier board
- J107 right fan
- J106 left fan
- B107 White lead 110V to A107 TRIAC board
- B106 Brown lead 110V to A106 TRIAC board
- B104 Red lead 13V to A104 Relay/Rectifier board
- J101 Blue lead 115V to J13 RFI board
- B103 Blue lead 115V to A103 Relay/Rectifier board
- B101 Red lead to A101 TRIAC board
- J7 3 wire lead to jar sensor
- J17 4 wire lead to power switch (Series A-K)
- J2 8 wire lead to VFD board

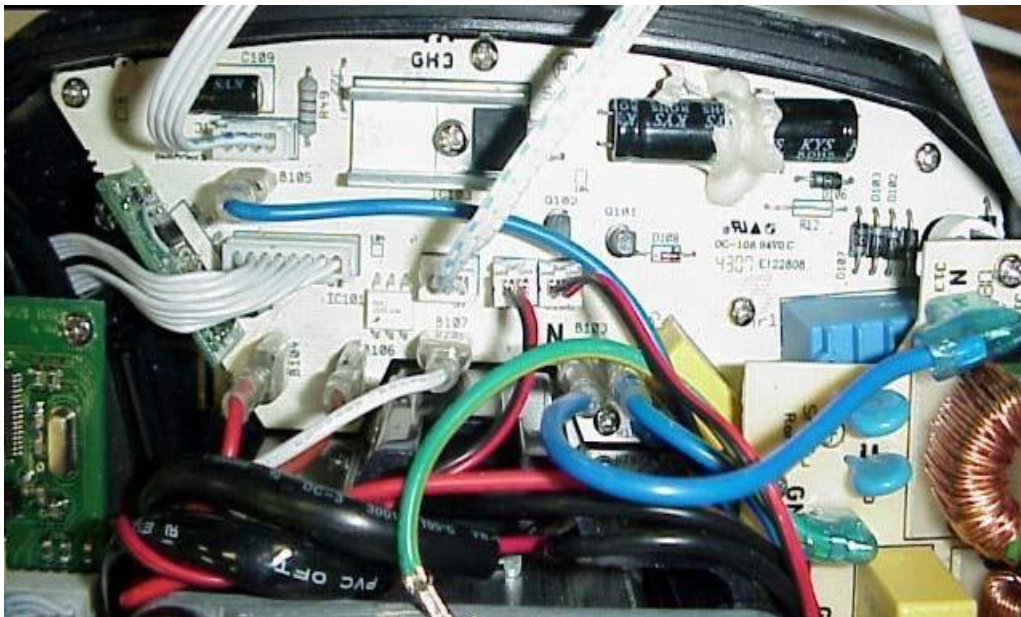


Figure 5: Main Board RFI board in lower right corner

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VFD Board See figure 6

- J18 - 8 conductor cable to the USB Board.
- J6 – 2 conductor cable to the heat sensor on the motor.
- Power board - 8 conductor cable to main board J2.
- J5 - 3 conductor cable to Hall effect sensor on the motor.
- Ribbon cable to touch pad

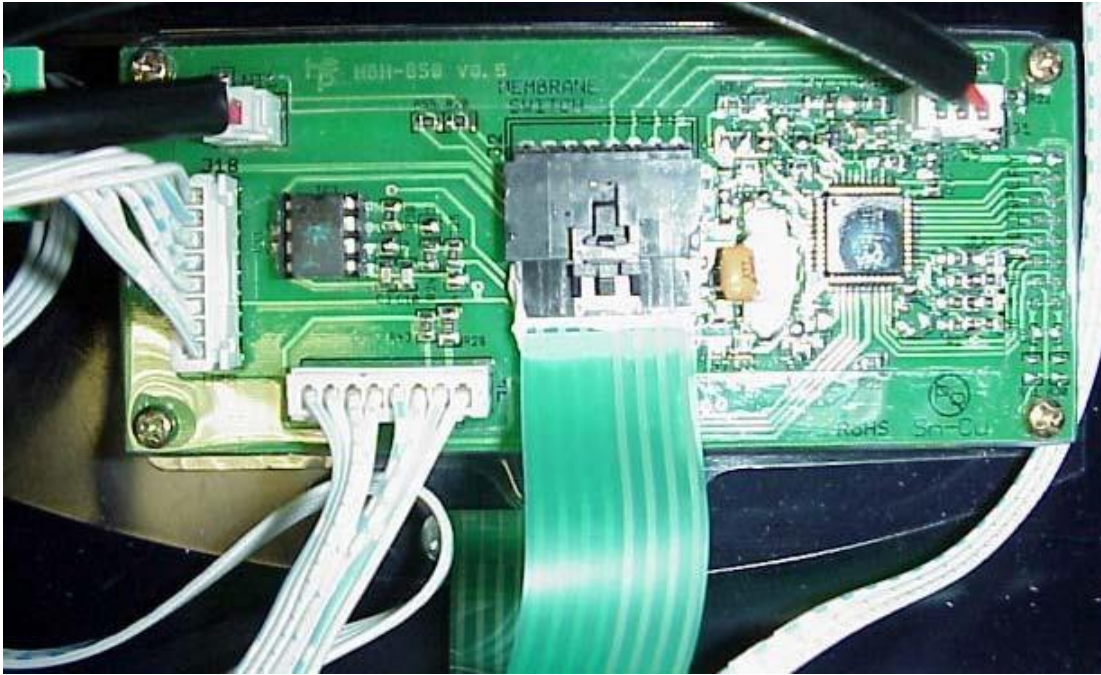


Figure 6: VFD Board (Vacuum Fluorescent Display)

Motor Removal and Replacement

- Remove the ground screw that secures the green ground wire from the cord.
- Remove at least one of the DC fans done by removing the 2 screws that hold the mounting bracket in place.
- No wires need to be disconnected to inspect the motor. You will need to disconnect the wires when you change the motor.
- Inspect the motor windings, fan and Hall Effect magnet. Replace motor as needed.
- Re-assemble in reverse order and ensure to replace wire ties you have removed.

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Power Switch Removal and Replacement A-K Series

- Remove the upper housing (see Housing Disassembly above).
- Disconnect the cables from the power board and PC board. Disconnecting the ribbon cable is optional.
- Remove the wire tie that secures the cable to the power switch.
- Disconnect the small board from the power switch.
- Remove the threaded, knurled ring holding the power switch.
- The power switch is removed from the front of the upper housing.
- Re-assemble in reverse order. Remember to secure the cable to the power switch with a small wire tie being careful not to bend or damage the switch terminals.

Power Switch Removal and Replacement L Series and Above

- Remove the upper housing (see Housing Disassembly above).
- Disconnect the wires from the circuit breaker/on off switch making note of their position.
- Remove moisture seal covering the switch from the upper housing.
- Push in on both ends of power switch and push it through from inside to outside.
- Replace with new switch and reassemble in reverse order.
- Replacing the moisture seal is difficult and is not recommended.

VFD Board Removal and Replacement

- Disconnect all electrical leads.
- Remove the 4 screws securing the top board and remove the board.
- Remove the 4 screws securing the display and remove the display.
- We recommend that you replace the touch pad when making this repair.
- Remove the power switch (see Power Switch Removal and Replacement).
- Carefully peel touch pad from the front of the upper housing ensuring that no residue remains on the housing.
- Feed ribbon cable through slot and affix new touch pad.
- Replace power switch.
- Install new display and VFD board.

Main PC Board – Testing and Replacement

- Remove the 8 screws that hold the PC Board in place. Roll the PC Board back toward the motor.
Use a multi-meter to check voltage between test points 101 and 102. Reading should be +5VDC. **See figure 7**
- If voltage at test pad is not correct, replace Main PC Board.

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Touch Pad Removal and Replacement

- We recommend changing the Stiffener Plate and Touch Pad when making this repair.
- Carefully peel touch pad and stiffener plate from the front of the upper housing ensuring that no residue remains on the housing.
- Feed ribbon cable through slot and affix new Stiffener Plate and Touch Pad.
- Seal the slot the ribbon cable comes through.

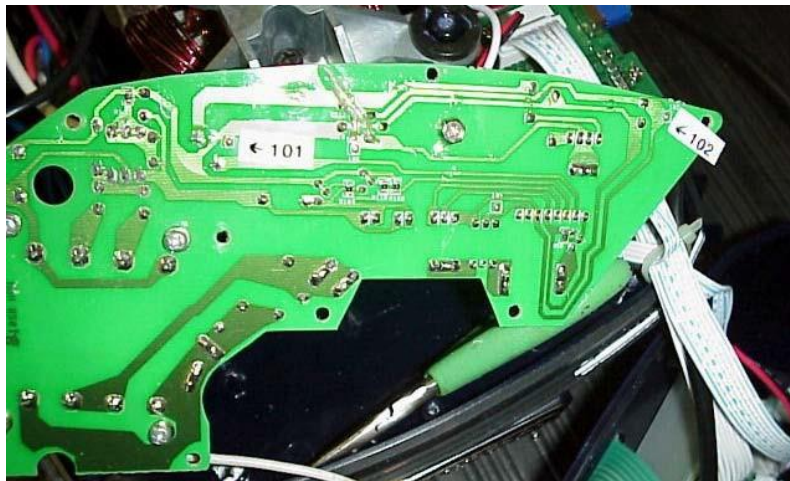


Figure 7. Rear of Main PC Board

- **Cycle Count**
- Turn on the machine.
- Touch the More Button.
- Use the Up or Down Arrow button to change screens until you get to; “Cycles into Warranty”
- “Start to Select”
- Touch the start button.
- The cycle count is displayed.

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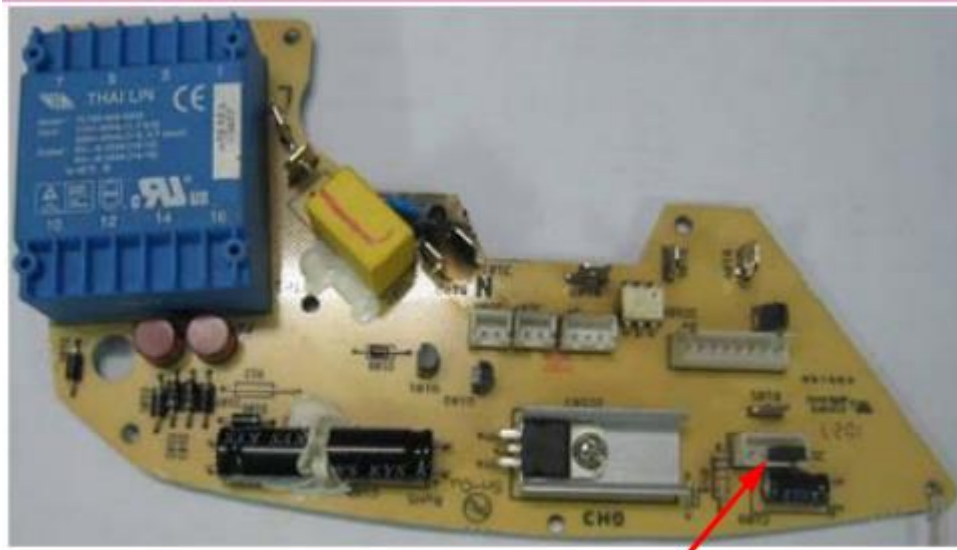
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Upper Housing Replacement on A-K models using L Series and later parts

- Reference Figure 8
- We recommend changing the Stiffener Plate and Touch Pad when making this repair on Series L and above.
- If replacing the upper housing on a model A-K is required you may only be able to get an upper housing for a model L Series and later. In this case you must remove the power switch that was on the front of the housing **and use either Option 1 or 2 shown below:**
 1. **PCB with Cable Connector** – install a jumper pin where the power switch was located at terminal J7 on the Main PC Board. The jumper pin will bridge the two pins farthest to the right of the board, closest to the outer edge.



REWORK **jumper terminal**
Figure 8. Main PC Board with Jumper Pin installed in terminal J7.

NOTE: If a jumper pin is not available you can create a jumper pin using the wiring from the removed power switch. See more detail **in the pages** below in Creating a Jumper Pin when needed for combining A-K Series Main PC Boards with L+ Upper Housings and TouchPads.

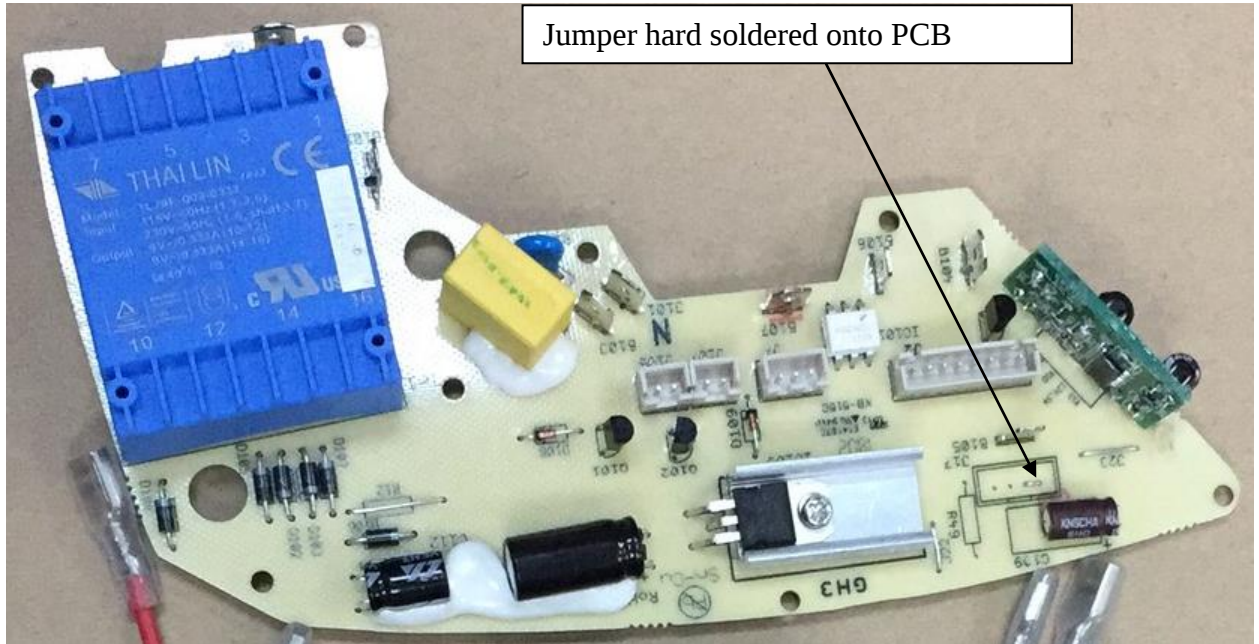
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2. PCB without Cable Connector – no jumper is required to be installed as it is hard soldered on the board.



- The leads that connected to the circuit breaker will now connect to the reset breaker switch in the side of the upper housing.

Creating a Jumper Pin when needed for combining A-K Series Main PC Boards with L+ Upper Housings and TouchPads

- Take power switch communication cable and cut off pin end with approximately one inch of cable. (Two jumper pins can be made from on cable)



Figure 9 Power Switch Cable

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Figure 10 Pin end cut off

- Separate four wires in cable. With the pairing side (side of pin with two protrusions) facing up, cut off the two wires on the right.

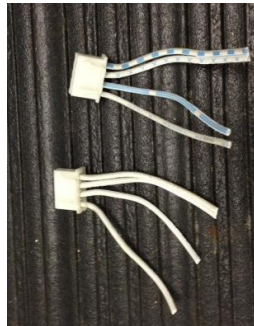


Figure 11 Wires from communication cable separated



Figure 12 Two Wires on Right Removed

- Strip wire insulation and splice two wires on left side of pin

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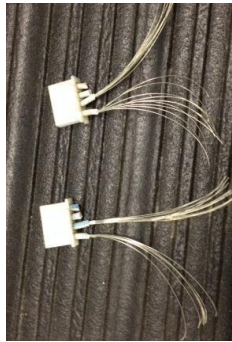


Figure 13 Wire Insulation Stripped

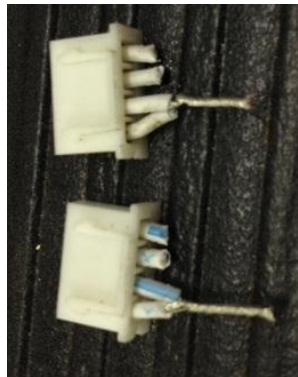


Figure 14 Wires Spliced

- Cover spliced wires with heat shrink wrap. Apply heat and seal heat shrink

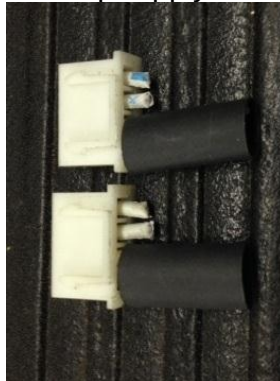


Figure 15 Heat Shrink Wrap on Spliced Wires

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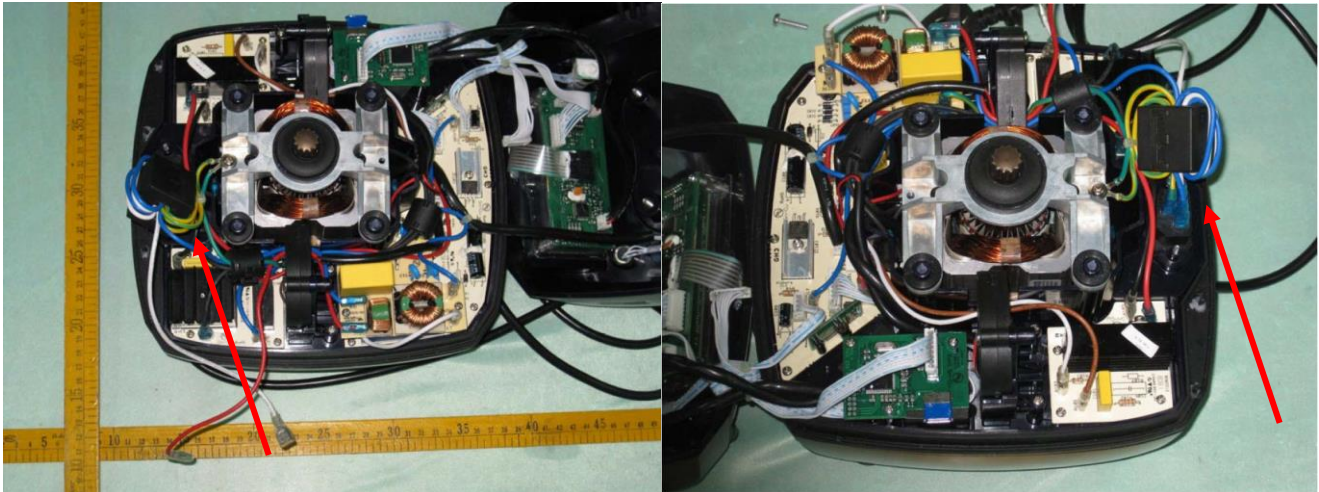
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Figure 16 Heat Shrink Wrap Sealed

- Plug jumper pin to Main PC Board at terminal J17 where the power switch was previously plugged into.
- New On/Off switch is location on side of upper housing, where circuit breaker was previously located.

NOTE: After new PCB is installed with the new Leadwires, the leadwires (for 230V) should be wound around the Ferrite Bead halves and the halves assembled as shown below.



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