

Replacing the Battery in Patriot SPI 250, 400, 450, and 600 and Patriot SMT 280 and 420 Models

This Patriot Information Publication (PAT) describes how to replace the battery in the Patriot® SPI models 250, 400, 450, and 600(VA) and in the Patriot® SMT models 280 and 420(VA). The battery should be replaced by a qualified service person. If you have any questions or problems during this procedure, call Best Power Worldwide Service at 1-800-356-5737 (U.S. and Canada only), 1-608-565-2100, or call your local Best Power office.

Tools Needed – Use Insulated Tools:

Safety Equipment Required by Local Code(s)
Pen and Tape to Label Wires

Regular Screwdriver
5/16-inch Allen Wrench

Torx Screwdriver

CAUTION!

This procedure must be performed by qualified service personnel ONLY! Patriot UPS units are designed to provide power under a variety of operating conditions. Dangerous voltages may be present even if AC line or DC voltage is removed. **TEST BEFORE TOUCHING!**

Make sure that the Patriot is disconnected from AC power before you replace the battery.



This unit contains electrostatic-sensitive devices. If you do not follow proper ESD procedures, you may cause severe damage to the electrical circuitry.

Patriot UPS batteries are high current sources. Shorting battery terminals can cause severe arcing, equipment damage, and injury. A short circuit can cause a battery to explode.

Best Power recommends that you remove rings, watches, and other jewelry before servicing the Patriot UPS.

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IMPORTANT SAFETY INSTRUCTIONS - SAVE THESE INSTRUCTIONS

This publication contains important instructions that should be followed during battery replacement.

⚠ CAUTION!

The battery used in this UPS is capable of producing dangerous voltages and high currents. It may cause severe injury if terminals are shorted together or to ground (earth). Take extreme care to avoid electrical shock and burns from contacting battery terminals or shorting terminals during battery replacement.

Best Power's batteries come with a one-year warranty. Using batteries not supplied by Best Power invalidates any Best Power service agreement.

A qualified service person who is familiar with the Patriot should replace the battery. The technician must take these precautions:

1. Protective clothing and eye wear must be worn. Batteries contain caustic acids and toxic materials and can rupture or leak if mistreated. Remove rings and metal wristwatches or other jewelry. Don't carry metal objects in pockets where they can fall into the Patriot.
2. Tools must be insulated so that they do not short battery terminals. At no time can a tool be allowed to short a battery terminal to another battery terminal or to the Patriot's cabinet. Do not lay tools or metal parts on top of batteries.
3. When connecting cables, never allow a cable to short across a battery's terminals or to the Patriot's cabinet.
4. Align the cables on the battery terminals so that the connector does not contact any part of the Patriot's cabinet even if the battery is moved. Keep the cable away from any sharp metal edges.
5. Install the battery cables so they cannot be pinched by the Patriot's cabinet.

Section 100: Removing the Cover from the UPS

101. Turn the UPS off by pressing the front button. (See Figure 1.)

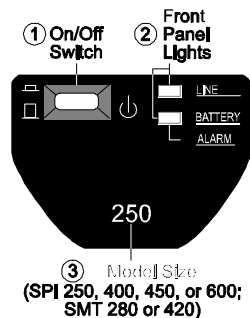


Figure 1

102. Unplug the unit from AC power.
103. Lay the UPS upside down.

For Patriot SMT and Patriot SPI 250 and 400 models, Remove the three (3) screws that hold the cover on the base of the UPS cabinet. (See Figure 2.)

For SPI 450 and 600 models, Remove the six (6) screws that hold the cover on the base of the UPS cabinet. (See Figure 3.)

Note: Some models used torx screws to hold the cover on the UPS cabinet. You can use either a torx screwdriver or a 5/64-inch Allen wrench to remove these screws.

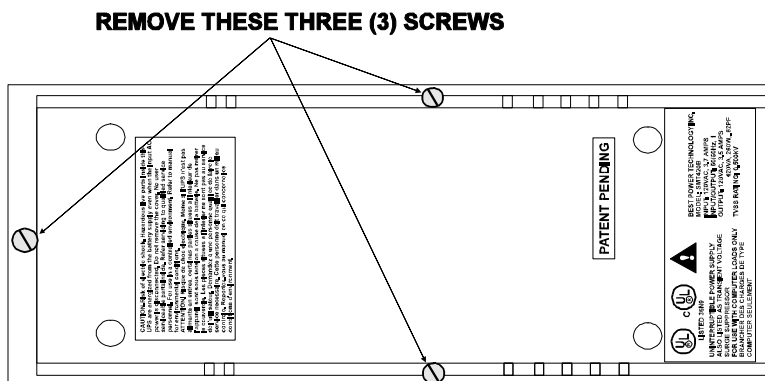


Figure 2

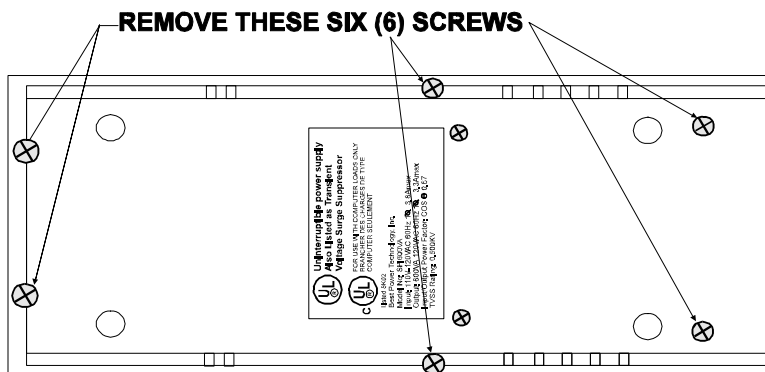


Figure 3

104. Pick up the UPS, turn it over, and set it on its bottom.
105. Lift the cover off the cabinet.

Section 200: Removing the Battery

201. Label the wires connected to the circuit board. Hold the board as you remove the wires from the board.

⚠ CAUTION! Be careful as you remove the wires so that you do not break the circuit board. Firmly hold the board with one (1) hand as you remove the wires with the other.

202. ***On Patriot SPI 450 and 600 models only***, remove the battery wires from the batteries (See Figure 5.)
203. Lift the circuit board from its standoffs and carefully set it in a safe place.
203. Lift the battery from the unit. (See Figure 4 or 5.)

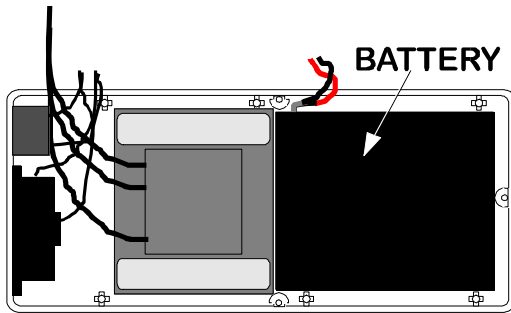


Figure 4 SMT; SPI 250 & 400 Models

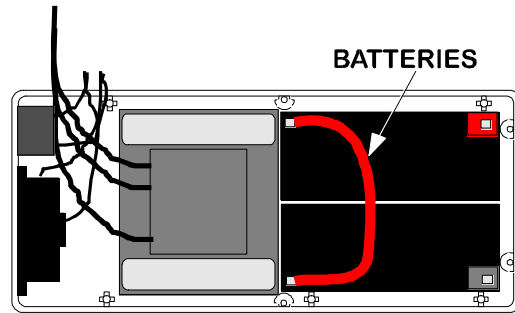


Figure 5 SPI 450 & 600 Models

204. ***On Patriot SMT and SPI 250 and 400 models only***, remove the wires from the battery.
205. Properly dispose of the battery.

Section 300: Replacing the Battery

301. ***On Patriot SMT and SPI 250 and 400 models only***, attach the wires to the new battery. The red wire should go on the battery positive (+) terminal; the black wire should go on the battery negative (-) terminal.
302. Place the new battery into the unit.

For Patriot SMT and SPI 250 and 400 models, the battery should lay in the unit on its side with the terminals facing to the right. (See Figure 4 on page 3.)

For Patriot SPI 450 and 600 models, the battery pair goes in with the terminals at the top. (See Figure 5 on page 3.)
303. Place the circuit board back on its standoffs. Reattach the wires using the labels you attached earlier. ***On Patriot SPI 450 and 600 models***, attach the battery wires to the correct battery terminals (See Figure 6, 7, or 8 on the next page and Table 1 on page 6.)
304. Remove the labels you attached to the wires.

Section 400: Putting the Cover Back on the UPS

401. Place the cover back on the cabinet.
402. Turn the UPS over and lay it upside down. Reattach the screws you removed earlier. (See Figure 2 or 3 on page 3.)
403. Turn the UPS over. Plug the UPS into the AC source. Turn the unit on and return it to normal operation.

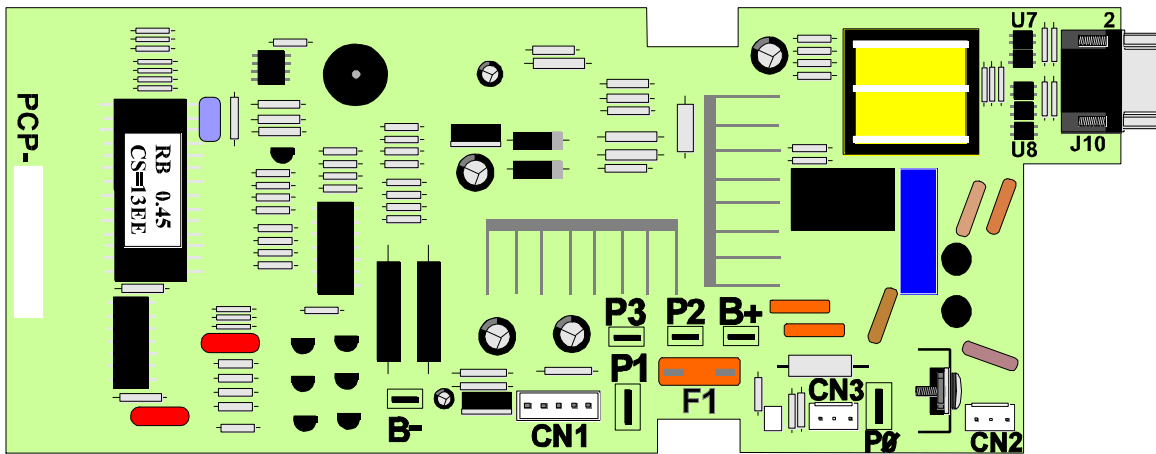


Figure 6 Patriot SMT Circuit Board

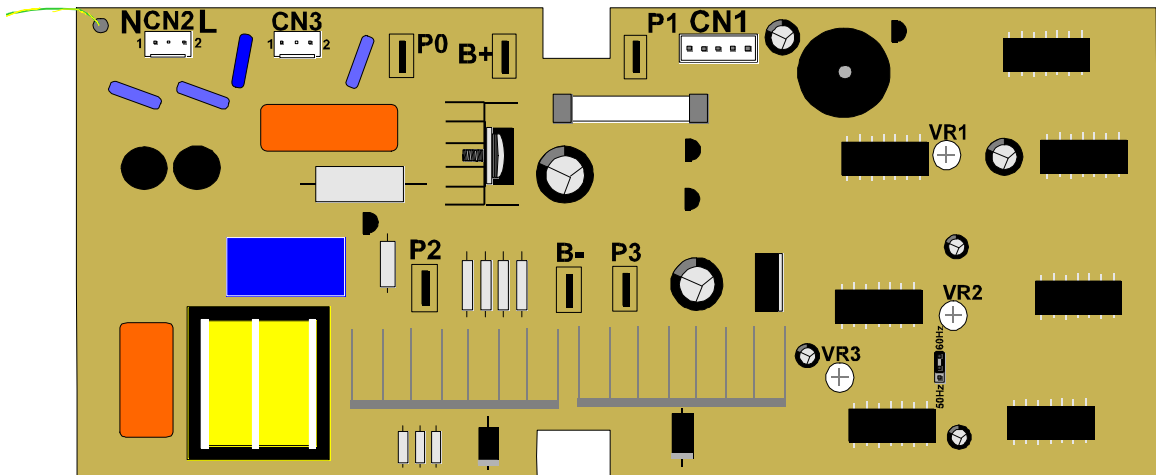


Figure 7 Patriot SPI 250 and 400 Circuit Board

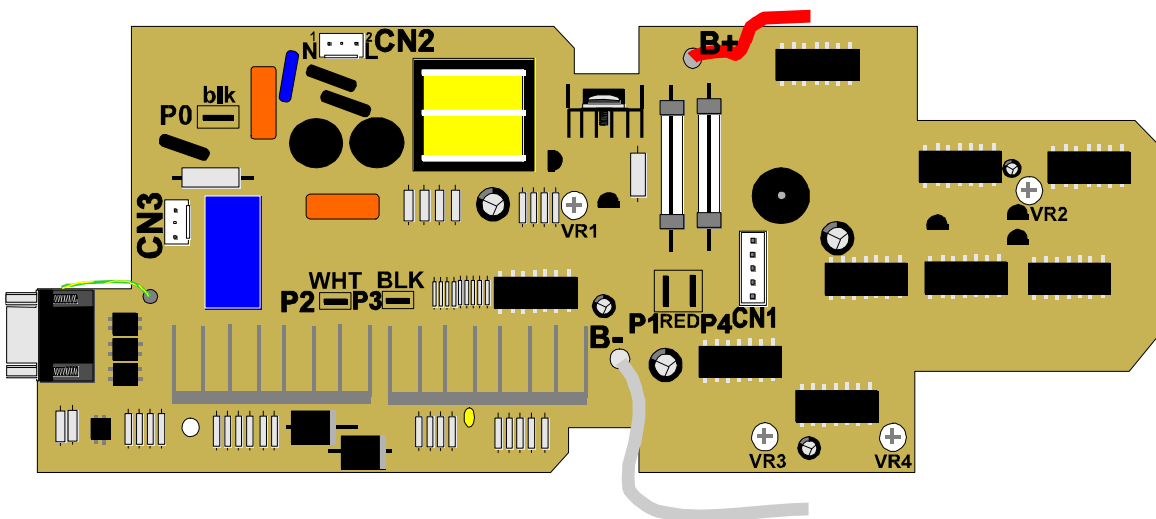


Figure 8 Patriot SPI 450 and 600 Circuit Board

Table 1 Circuit Board Connections

Board Connection	Description:	
	all SMTs and SPI 250 and 400	SPI 450 and 600
B–	Black wire to the negative (–) battery post.	White wire to the negative (–) battery post (Soldered to the circuit board).
B+	Red wire to the positive (+) battery post.	Red wire to the positive (+) battery post (Soldered to the circuit board).
P0	Wire to output receptacle.	
P1	Middle transformer wire (0V).	Red transformer wire.
P2	Right transformer wire (8.2V).	White transformer wire.
P3	Left transformer wire (8.2V).	Black transformer wire.
P4	Not Used.	Red transformer wire.
CN1	Ribbon cable to LED/On-Off switch board.	
CN2	Wires from input receptacle.	
CN3	Wires to transformer.	