S-Board (obsolete) Assembly Instructions

The "bare bones" S-Board you received is an obsolete product and no support is available. We assume that you are familiar with doing upgrades, using tools, soldering and other upgrade-related tasks. The instructions to assemble, test, and install this product are complete and easy to follow.

Using this S-Board, you can create a 2-pickup switch to produce six pickup tones, or a 3-pickup switch to produce 35 pickup tones. The number of switches in parentheses (below) identify the quantity needed for a 2-pickup switch.

Before you start, **<u>read these instructions first</u>** to understand what you need to do to assemble this product.

REQUIRED TOOLS

You need the following tools to assemble, test and install this **Pickup Switch Upgrade**™ product.

- Soldering iron (25/30 watt maximum) with fine point tip, low temperature rosin-core solder .022" dia.
- Wire cutters / Wire strippers
- Electric drill, 1/16" drill bit, 9/32" drill bit, center punch
- Small needlenose pliers
- Small Phillips screwdriver, small straight slot screwdriver
- 6" adjustable crescent wrench
- Ohmmeter to measure continuity

You received the following items with your "bare bones" S-Board (now obsolete) product:

- S-Board printed circuit board, four pieces (1.75" x 1.75")

You need to get the following additional items to assemble, test and install this item.

- 6" insulated 24/26 gauge wire *(cut into several small jumpers)* for testing purposes
- 3 (or 1 for 2 pickup version) mini-toggle switches (On-On) [1]
- 3 (or 2 for 2 pickup version) mini toggle switches (On-Off-On) [1]
- Styrofoam block (1.75" x 1.75" x 7/16" thick)
- Terminal Strip (8-position, green) one per board [2]

[1] Switches are available on eBay, Radio Shack, guitar parts websites, hobby electronic supply stores, etc.
[2] These 8-position terminal strips are about $ 0.94 each and are available at:

   Digikey.com, Mouser.com, Allied.com, and Phoenix.com

Search for the manufacturer part number: 1985250

Manufacturer: Phoenix Contact
Manufacturer Part Number: 1985250
Description: TERMINAL BLOCK, PCB, 8-POSITION, 3.5MM, GREEN

The following documents in PDF format downloaded from our website: **www.AweSome-guitars.com/docs**
- S-Board Assembly Instructions
- S-Board Testing Instructions
- S-Board Installation Instructions
- Switch Table – describes how to use the switches

SWITCH TESTING
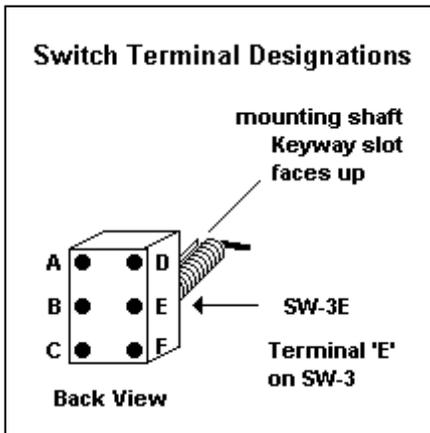
Before you do anything, you need to test the switches that you will be using and make sure that they work correctly.

Switch Testing: (do this before you start assembling the product)

Before you start, use an ohmmeter to test the switches that you will use with your **Pickup Switch Upgrade**™ printed circuit board. Check for correct continuity/open circuit result when testing switches.

Note: open-circuit = no electrical connection,
close-circuit = electrical continuity (typically 0.7 ohms or less).

For 3 DPDT (ON-OFF-ON) mini switches: (these Phase switches are installed in SW1, SW2, SW3 positions)

Terminals "A" and "B" are close-circuit with switch "on" (down). Switch is open-circuit in opposite "on" and "off".
Terminals "D" and "E" are close-circuit with switch "on" (down). Switch is open-circuit in opposite "on" and "off".
Terminals "B" and "C" are close-circuit with switch "on" (up). Switch is open-circuit in opposite "on" and "off".
Terminals "E" and "F" are close-circuit with switch "on" (up). Switch is open-circuit in opposite "on" and "off".

For 3 DPDT (ON-ON) mini switches: (these Connection switches are installed in SW4, SW5, SW6 positions)

Terminals "A" and "B" are close-circuit with switch "on" (down). Switch is open-circuit in opposite position.
Terminals "D" and "E" are close-circuit with switch "on" (down). Switch is open-circuit in opposite position.
Terminals "B" and "C" are close-circuit with switch "on" (up). Switch is open-circuit in opposite position.
Terminals "E" and "F" are close-circuit with switch "on" (up). Switch is open-circuit in opposite position.
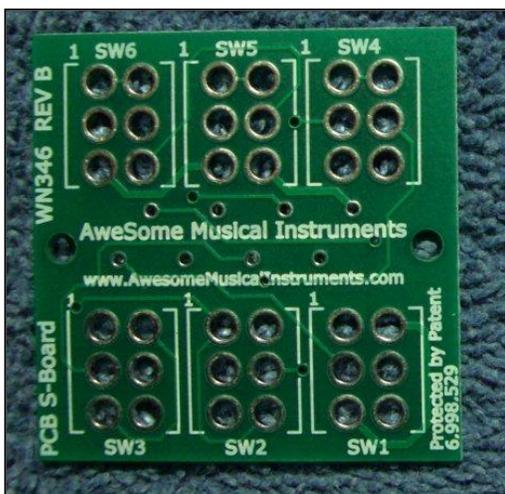
ASSEMBLY

Step-1:

Lay a wash rag (folded into fourths) onto the work surface. Put the printed circuit board onto the wash rag in the orientation illustrated in the picture. The pictures show the S-Board (1.75" x 1.75") that you will use to make either a 2-pickup or 3-pickup switch product.

Step-2:
Populate the printed circuit board with the switches as illustrated below.

The **2-pickup version** uses three switches. Two of the switches are ON-OFF-ON and will go into the switch terminal pads labeled SW1 and SW3. Set these switches in the center (OFF) position. The other switch is an ON-ON switch and it goes into the switch terminal pad labeled SW5. Set this switch paddle to face towards the center of the printed circuit board.

If you are assembling the 2-pickup version, see Step 7a for additional information.

The **3-pickup version** uses six switches. Three of the switches are ON-OFF-ON and will go into the switch terminal pads labeled SW1, SW2 and SW3. Set these switches in the center (OFF) position. The other three switches are ON-ON and it goes into the switch terminal pad labeled SW4, SW5 and SW6. Set these switch paddles to face towards the center of the printed circuit board.

When inserting the switches, orient the mounting shaft *key* (i.e., the "groove" running vertically in the mounting shaft threads) so they all face the same direction. It make it look more professional.

Step-3:

Align the *styrofoam block* to be exactly over the printed circuit board and firmly press down to embed the switch paddles into the styrofoam. The switch paddles are completely inserted into the styrofoam up to the start of the threaded mounting shaft on the switches.

Step-4:
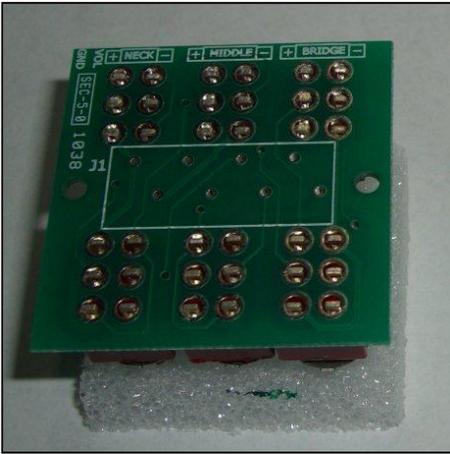
Grab and hold the printed circuit board and styrofoam block as a complete unit (just like a sandwich), flip this assembly over and place it on the flat hard work surface. The styrofoam will now be on the bottom, supporting both the switches and the printed circuit board.

Press down on the printed circuit board to firmly seat the switch bodies to the board.

Step-5:

Using a Low Wattage (25/30 watt) soldering iron, "spot solder" each switch at diagonally adjacent terminals to *anchor* each switch to the printed circuit board. Continue spot soldering all six terminals of each switch, starting with the switch terminals that were not spot soldered. Work quickly as you solder to prevent switch damage caused by excessive heat from the soldering iron.

WARNING: When soldering the switch terminals to the circuit board, do not try to completely fill the terminal hole with solder. Instead solder each switch terminal just enough to be firmly attached to the circuit board pad. If you "over solder" the terminals, this can affect the switch and result in high resistance where there should be open circuit or switch failure. It is best to work "gingerly" when soldering the switches and the terminal strip.
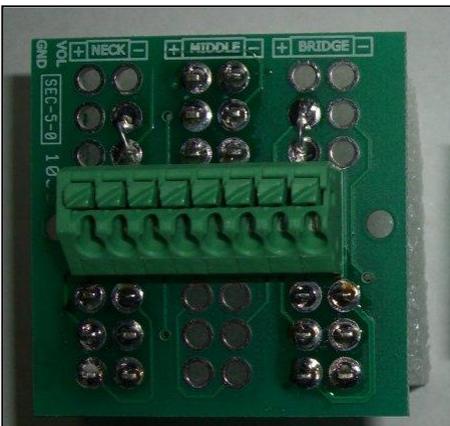
Step-6:

Mount the green 8-position *terminal strip* on the printed circuit board in the location shown within the rectangular line on the board. The correct orientation will have the perimeter of the green terminal strip exactly within the rectangular outline on the printed circuit board. Incorrect orientation is when the green terminal strip body overlaps the rectangular outline on the printed circuit board.

Remove but do not discard the styrofoam sheet. You can use it in the Installation procedure.

Step-7:

While holding the terminal strip and circuit board, flip the printed circuit board over and lay it down on the work surface. Verify that the green terminal strip is in firm contact with the printed circuit board. Solder the 8 connections of the green terminal strip to the printed circuit board.

Step-7a:

Special extra step for a 2-pickup board.

If you are making a 2-pickup switch version, use a 2" length of 26 gauge bare copper wire. Cut it in half equally and put it through the board locations on both SW4 and SW6 as illustrated above.

Twist wire to keep it in position and solder. Cut off excess wire, making sure that no shorting occurs on board.

Make a final visual inspection of all soldered connections and make sure there is no unsoldered joints or solder shorts.

Proceed to the **Testing** section to confirm that correct results can be obtained from the assembled product prior to installation.