

Before you start, **read these instructions first** to understand what you need to do to install this product.

Assumptions

This patented **Pickup Switch Upgrade™** product is designed to use only one Volume and one Tone control for all of your instrument's pickups. These products are designed to control either 3 or 4 magnetic pickup coils. **Note:** *Active* (uses batteries) or *Piezo* pickups cannot be used with this product.

Tools Needed

You may need one or more of the following tools (not included with purchase) to install this **Pickup Switch Upgrade™** product (see each product for additional specific tool requirements).

- Wire cutters / Wire strippers
- Regular pliers
- Small Phillips & straight slot screwdriver (a 4-way screwdriver can be used as a deep-well socket to remove switch mounting nuts.)
- Ohmmeter to measure continuity
- Optional: rotary file and electric drill
- Optional: Soldering iron (25/30 watt max.) with fine tip, rosin-core solder .022" dia.

Preamble

Before you start, completely **remove all strings** from your instrument for easy access to its parts. The strings are probably already old and replacing them will make your instrument sound even more *brilliant* after you install this product.

This **Stratocaster Pickguard Upgrade** will have you cutting existing wires on your instrument. You may need to make wire connections, increase the length of existing wires, and remove some wood in your instrument body cavity.

Because you will be making several changes to your instrument, you need to have a plan to install this *revolutionary Pickup Switch Upgrade™* product.

See the *Reference Drawing* on a later page of this document. Use a pencil to draw the original circuit

of your instrument before you proceed. When you record where the wires (and colors) were removed from your instrument, you have a way to restore it to its original condition should it become necessary. Since there is a large variation of pickup switch wiring that spans 50 years, you will need to draw your own pickup switch used in your original circuit

Adding Extra Wire

If your pickup or input wires are too short to easily reach the specified connection of the green terminal strip on the **Pickup Switch Upgrade™** circuit board, here is what to do. Measure out the needed length of the RED or BLACK in the included **PARTS BAG** to permit the wire to reach the applicable connection. A length of 3" (7.62cm) is budgeted for each wire extension. Insert the unstripped end of each wire into the 2-wire UY2 yellow/clear connector and clamp down using regular pliers.

Use pliers to squeeze the UY2 connector top button so it is flush with the body to create a permanent electrical connection. **Verify electrical continuity between the two pickup wires with an ohmmeter (some coil resistance will be present).** The 71B grey wire nuts are used to make the needed firm and insulated connection to the input jack wires, but let you disconnect the installation if needed.

Note: If either your pickup or input wires use a shielded/braided cable, you will need to solder black wire to the cable because the green terminal strip (J1) does not directly accept shielded cable.

Product Variants

Your installation will involve one of the following upgrade products. This document contains information specific to one of these products.

1. Pickup Tone Multiplier Board
2. Telecaster Control Plate
3. Stratocaster Pickguard
4. Jazz Bass Control Plate

3. STRATOCASTER PICKGUARD

You have received an assembled and tested **Stratocaster Pickguard** Upgrade designed to install into a standard American Stratocaster guitar. It contains one of our *revolutionary* patented **Pickup Switch Upgrade™** growing family of products, one tone and volume control with matching knobs. No soldering is needed to install this product. You will use your own pickups. The following items are included in a Parts Bag.

- An AweSome Musical Instruments headstock decal to apply to your instrument
- Several business cards to pass out to friends
- An equal length each of black and red insulated wire (to lengthen pickup and input jack wire if needed)
- 4 yellow/clear connectors (UY2) to make pickup wire extension connections if needed
- 2 grey wire nuts (71B) to connect input jack wires to your Stratocaster pickguard upgrade product

Preparation

Remove your strings. Remove your existing pickguard attaching screws. Document your existing wiring (see *Preamble* on page 1) *before* you start.

Disconnect the **input jack** hot and ground wires from your original pickguard. The wires stay on the input jack.

Cut the **pickup wires** from the 5-way pickup switch so all wires are of maximum length. If needed, disconnect the bridge ground wire. Remove your original pickguard. Temporarily stow the input jack wires within the body cavity.

Confirm that the **Stratocaster Pickguard** Upgrade product you received will lay completely flat and within the routed body cavity with no interference by the wood body. If the **Stratocaster Pickguard** Upgrade lays flat on your instrument, proceed to the next section, *Terminal Strip*, to continue with the upgrade process.

If your **Stratocaster Pickguard** Upgrade does not lay flat, your body cavity may have a non-standard dimension preventing the upgrade product from being installed. See *Solving Installation Issues* on page 9 to easily resolve this issue.

Terminal Strip

Here is how to attach wires to the **green** terminal strip (J1) that is on the printed circuit board. Use a small screwdriver or writing pen tip and press down on the square *release button* located directly above the wire hole. Hold the button down and insert the stripped wire completely into the wire connection hole and then release the button. Lightly tug on the wire to confirm it is firmly gripped by the Terminal Strip. A legend is printed on the circuit board with the name of each terminal strip wire hole from left to right. Attach each wire to the correct terminal strip hole. In all instances, connect the **GND** and **VOL** wires from the Volume/Tone control circuit displayed in **Figure 2** to the wire connection holes on the terminal strip.

T3-Board (8-hole terminal strip): [GND] [VOL] [+]NECK[-] [+]MIDDLE[-] [+]BRIDGE[-]

T4-Board (10-hole terminal strip): [GND] [VOL] [+]NECK2[-] [+]NECK1[-] [+]BRDG2[-] [+]BRDG1[-]

Caution: Do not insert hard items in the wire holes because it will decrease reliable electrical connection.

Connecting Your Wires

There is no industry standard for pickup wire lead colors. More common color pairs are red/black, red/white, black/white and white/shield. You are advised to use consistency when connecting *your* pickup wire color pairs to the [+] and [-] pickup connections on the green terminal strip (J1).

Determine which wire color for each pickup coil will be attached to the applicable [+] and [-] green terminal strip connector on our PTM board. If one of the pickup wire connections is a shielded lead, always connect the shield to a BLACK [-] wire to be inserted in the green terminal strip on our switching system.

Determine if there is enough wire length from each 2-wire pickup coil to *comfortably* reach the corresponding connectors on the green terminal strip on the **Pickup Switch Upgrade™** printed circuit board. If not, refer to the “*Adding Extra Wire*” topic (page 1 of this document).

WARNING: If your pickups have a metal bottom and if either pickup coil wire is grounded to this housing (use an ohmmeter to check each wire to body), make sure your instrument’s body cavity is not lined with grounded metal shielding and the pickup housing does not have a separate grounding wire. **Reason:** This will cause the pickup to “short” to ground when the pickup switch is put into the regular/reverse phase. To fix this, isolate the pickup housing from the body cavity shielding with soft foam.

Strip off 3/16” (4.76mm) insulation from the end of each pickup wire and also the input jack wires then twist the exposed wire strands so they are tightly bound. Insert the wires of each pickup pair into the correct location on the green terminal strip (J1) using the process described in the above “*Terminal Strip*” topic. Attach the wires using either of the following instructions.

Use the two gray wire nuts (71B) to connect the wires labeled “IN” to the wires on your instrument **input jack**. The red wire goes to the hot lead (normally red) on the input jack and the black wire goes to the ground lead on the input jack.

Note: If you have a ground wire coming from the bridge (and maybe from body cavity shielding), connect them to ground lead on the input jack.

Connecting your pickups to our T3-Board

If your instrument contains three single-coil pickups (SSS):

Connect your **NECK** pickup coil wire pair to the [+]_{NECK} [-] connections on the green terminal strip
Connect your **MIDDLE** pickup coil wire pair to the [+]_{MIDDLE} [-] connections on the green terminal strip
Connect your **BRIDGE** pickup coil wire pair to the [+]_{BRIDGE} [-] connections on the green terminal strip.¹

¹ If you purchased an HSS pickguard with our T3-Switch and you have a 2-wire humbucker pickup, connect it to the green terminal strip as described above. If it is a 4-wire pickup, you need to correctly wire it (either in series or in parallel) to be a 2-wire pickup – or just use one of the pickup coil wire pairs (the other coil pair can be taped off.) Our website's **Document Library** contains information to help. Refer to documents #D and #E.

T3-Board Switch Identification and Use Summary

Here is a summary of switch use for this product (see **Figure 1** for switch identification).

A complete *Switch Table* contains more details about how the switches are used for each product. It is available for download from our website's Document Library at <http://www.AweSome-Guitars.com>

SW1, SW2 and SW3 are ON-OFF-ON switches that turn on individual pickups in normal or reverse phase
SW4, SW5 and SW6 are ON-ON switches that change select pickups from *parallel* to *series* connectivity

For a Right-Handed Instrument:

SW1 turns on the **bridge** pickup, either in normal phase (down), or reverse phase (up).
SW2 turns on the **middle** pickup, either in normal phase (down), or reverse phase (up).
SW3 turns on the **neck** pickup, either in normal phase (down), or reverse phase (up).

*When all of the following switches are **down**, the pickups will be in a Parallel circuit.*

SW4 when this switch is **up** it puts the **bridge** and **middle** pickups in series. Both pickups must be on.¹
SW5 when this switch is **up** it puts the **bridge** and **neck** pickups in series. Both pickups must be on.¹
SW6 when this switch is **up** it puts the **neck** and **middle** pickups in series. Both pickups must be on.¹
SW4+SW6 when these switches are **up**, all three pickups in *series*. All pickups must be on. SW5 has no effect.

¹ The remaining *non-series* pickup may be either off -or- on (either in regular or reverse phase).

For a Left-Handed Instrument:

SW1 turns on the **bridge** pickup, either in normal phase (down), or reverse phase (up).
SW2 turns on the **middle** pickup, either in normal phase (down), or reverse phase (up).
SW3 turns on the **neck** pickup, either in normal phase (down), or reverse phase (up).

*When all of the following switches are **up**, the pickups will be in a Parallel circuit.*

SW4 when this switch is **down** it puts **bridge** and **middle** pickups in series. Both pickups must be on.¹
SW5 when this switch is **down** it puts the puts **bridge** and **neck** pickups in series. Both pickups must be on.¹
SW6 when this switch is **down** it puts the puts **neck** and **middle** pickup in series. Both pickups must be on.¹
SW4+SW6 when switches are **down**, all three pickups in series. All pickups must be on. SW5 has no effect.

¹ The remaining *non-series* pickup may be either off -or- on (either in regular or reverse phase).

Connecting your pickups to our T4-Board

If your instrument contains one 4-wire humbucker pickup and two single-coil pickups (HSS):

Connect your **NECK1** pickup coil wire pair to the [+] NECK1 [-] connections on the green terminal strip
Connect your **MIDDLE** pickup coil wire pair to the [+] NECK2 [-] connections on the green terminal strip
Connect your **BRIDGE1** pickup coil wire pair to the [+] BRDG1 [-] connections on the green terminal strip¹
Connect your **BRIDGE2** pickup coil wire pair to the [+] BRDG2 [-] connections on the green terminal strip¹

¹ Assumes that the bridge pickup position contains a 4-wire humbucker pickup

If your instrument contains two 4-wire humbucker pickups (HH):

Connect your **NECK1** pickup coil wire pair to the [+] NECK1 [-] connections on the green terminal strip
Connect your **NECK2** pickup coil wire pair to the [+] NECK2 [-] connections on the green terminal strip
Connect your **BRIDGE1** pickup coil wire pair to the [+] BRDG1 [-] connections on the green terminal strip
Connect your **BRIDGE2** pickup coil wire pair to the [+] BRDG2 [-] connections on the green terminal strip

T4-Board Switch Identification and Use Summary

Here is a summary of switch use for this product (see **Figure 1** for switch identification).

A complete *Switch Table* contains more details about how the switches are used for each product. It is available for download from our website's Document Library at <http://www.AweSome-Guitars.com>

S1N, S2N, S1B and S2B are ON-OFF-ON switches that turn on individual pickups in normal or reverse phase
S5N and S5B are ON-ON switches that change select pickup coils from *parallel* to *series* connectivity

For a Right-Handed Instrument:

S1B turns on **BRIDGE1** pickup coil, either in normal phase (down), or reverse phase (up). Center is off.
S2B turns on **BRIDGE2** pickup coil, either in normal phase (down), or reverse phase (up). Center is off.
S5B When this switch is **down**, both bridge pickup coils will be in a parallel circuit.
When this switch is **up** it puts **BRIDGE1** and **BRIDGE2** pickup coils in a series circuit. Both pickup coils must be on, either in normal phase (down) or reverse phase (up).

S1N turns on **NECK1** pickup coil, either in normal phase (down), or reverse phase (up). Center is off.
S2N turns on **NECK2** pickup coil, either in normal phase (down), or reverse phase (up). Center is off.
S5N When this switch is **down**, both neck pickup coils will be in a parallel circuit.
When this switch is **up** it puts **NECK1** and **NECK2** pickup coils in a series circuit. Both pickup coils must be on, either in normal phase (down) or reverse phase (up).

For a Left-Handed Instrument:

S1B turns on **BRIDGE1** pickup coil, either in normal phase (down), or reverse phase (up). Center is off.
S2B turns on **BRIDGE2** pickup coil, either in normal phase (down), or reverse phase (up). Center is off.
S5B When this switch is **up**, both bridge pickup coils will be in a parallel circuit.
When this switch is **down** it puts **BRIDGE1** and **BRIDGE2** pickup coils in a series circuit. Both pickup coils must be on, either in normal phase (down) or reverse phase (up).

S1N turns on **NECK1** pickup coil, either in normal phase (down), or reverse phase (up). Center is off.
S2N turns on **NECK2** pickup coil, either in normal phase (down), or reverse phase (up). Center is off.
S5N When this switch is **up**, both neck pickup coils will be in a parallel circuit.
When this switch is **down** it puts **NECK1** and **NECK2** pickup coils in a series circuit. Both pickup coils must be on, either in normal phase (down) or reverse phase (up).

Validating

Connect your instrument to an amplified source with the volume set to low. Turn the switches on and off as described in “*Switch Identification and Use Summary*” topic while gently tapping the magnet of the pickup coil that should be “on” with a small screwdriver to confirm pickup response. Also confirm the correct operation of the Volume and Tone controls.

Left hand use note: Our VT-2 volume/tone pot controls are only available as right-hand audio taper item.

If you receive the stated results, install the pickguard screws. Next, install a new set of strings. Welcome to the *Grand Canyon Wide* range of AweSome pickup tones.

These are products that give your 3-pickup coil and 4-pickup coil instruments a HUGE spectrum of sounds ranging from Muddy/Dirty Blues -to- Classic Jazz -to- Ring-in-a-bell Surf -to- Intense Country Twang and will even give you those elusive out-of-phase *Tin-Canny* pickup tones. After this **Pickup Tone Multiplier™** switching system is installed, you can duplicate the sound of virtually every electric guitar (or electric bass) ever made; including a Stratocaster, Telecaster, Les Paul Custom or Studio, Silvertone, National, Mosrite, Airline, Danelectro, Supro, Harmony, Kay, Maestro, Valco or any electric guitar that has ever been manufactured! In fact, this product will produce *dozens* of unique pickup sounds that you have NEVER even heard before.

Figure 1 – Pickguard Switch Identification

The following image shows how the switches are laid out for both the right-hand and the left-hand pickguard.

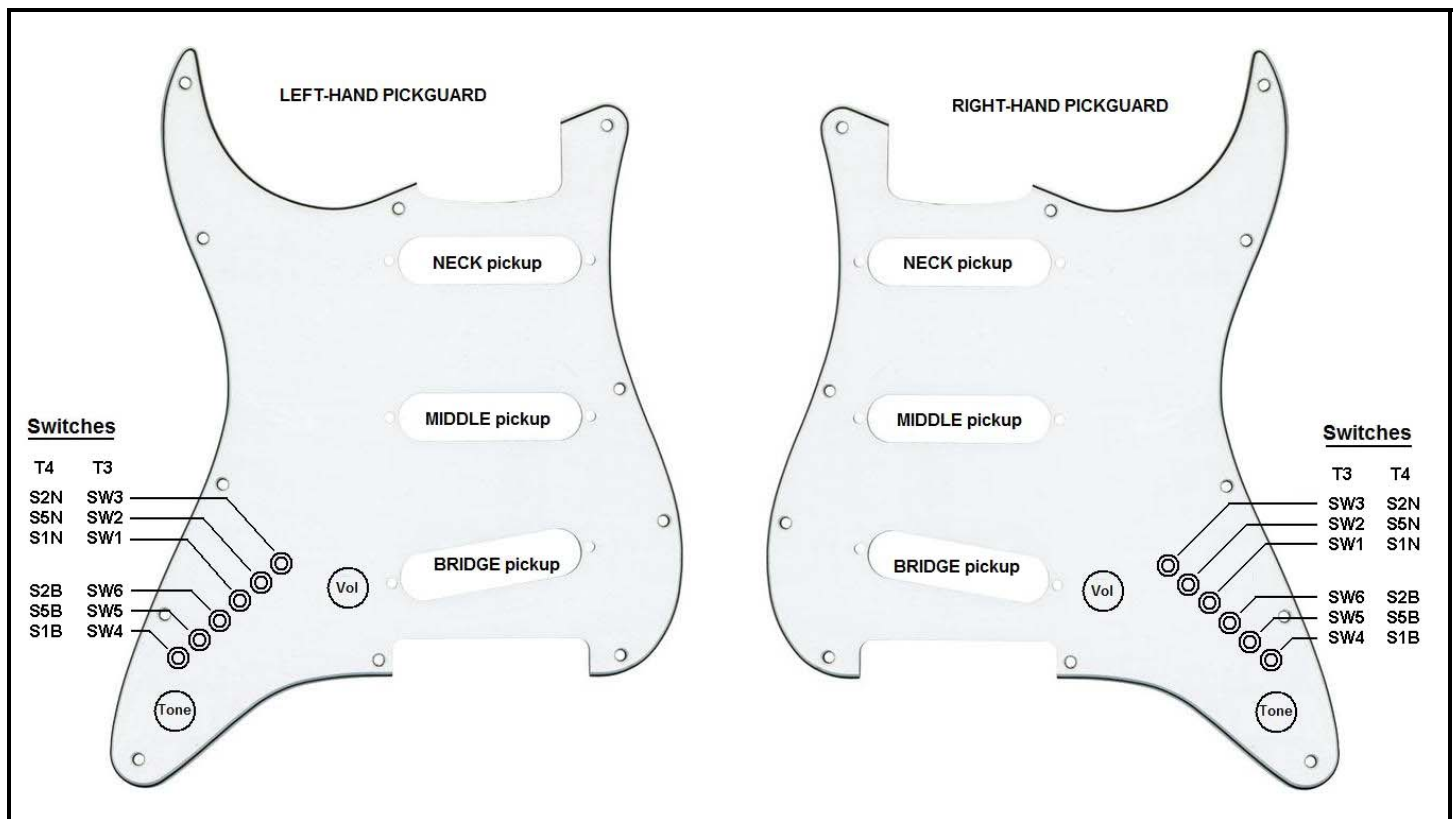
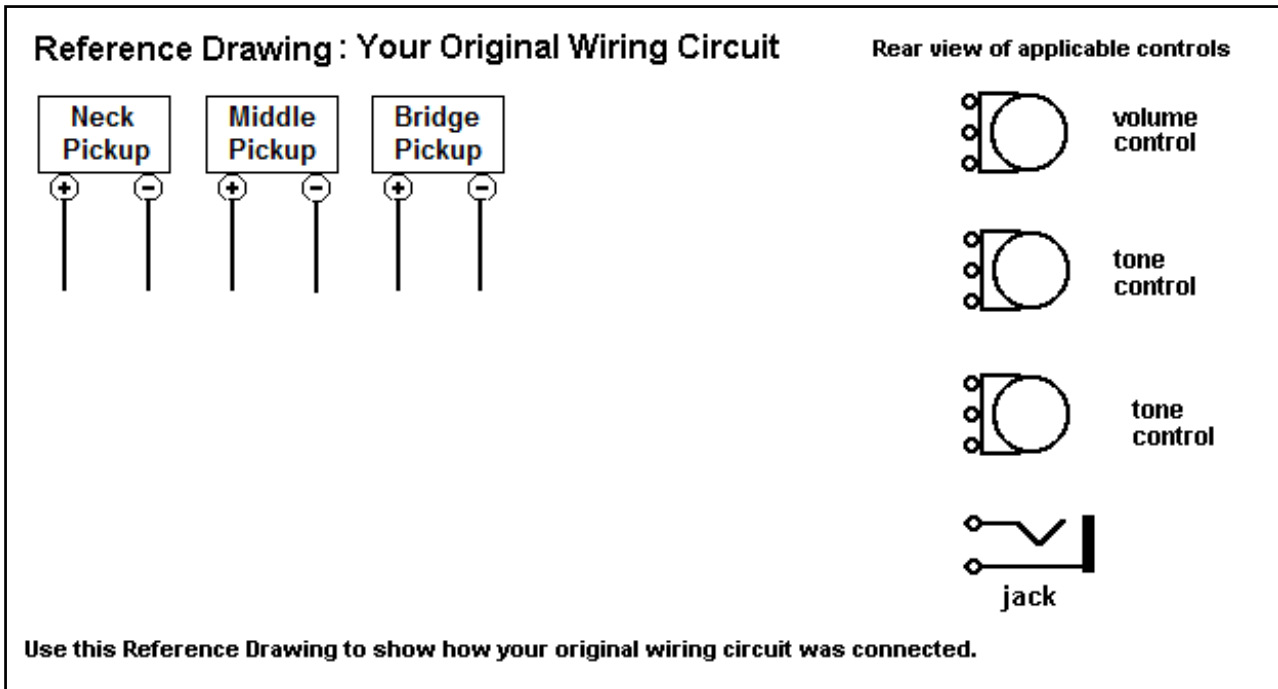


Figure 2 – Reference Drawings

Use the following image to document your instrument's original wiring. Be sure to identify wire colors where needed. Use a pencil when doing this. You need to draw the pickup switch in your instrument.

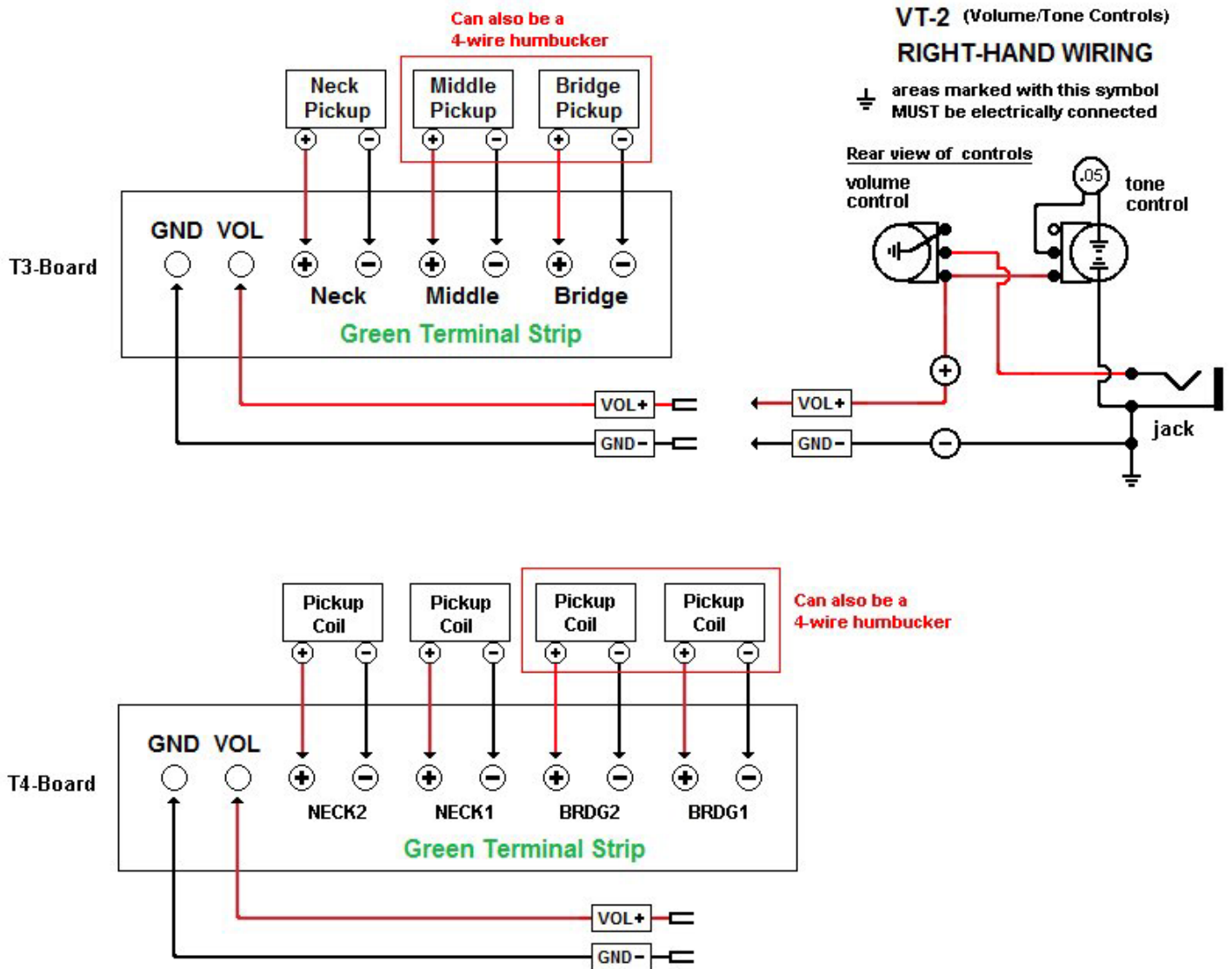


The following drawing identifies where to connect your pickups and input jack to our **Pickup Switch Upgrade™** product. The **Stratocaster Pickguard Upgrade** includes our VT-2 product that is only available in Right-Hand audio taper.

Left hand use note: Our VT-2 volume/tone pot control products are only available in Right-Hand audio taper.

Suggested Volume-Tone Wiring for use with our Pickup Tone Multiplier™ switching system

Pickup Tone Multiplier terminal strip connection guide



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Solving Installation Issues

Here is how to solve installation issues that involve insufficient body cavity width and/or depth.

1. The mounting holes for the **Stratocaster Pickguard Upgrade** do not line up with the body mounting holes.

You will need to re-drill the needed body holes for the pickguard mounting holes. (see explanation below)

2. The **Stratocaster Pickguard Upgrade** does not fit into the body cavity because of insufficient depth.

It appears the “F” company never imposed rigorous standards on their manufacturing *partners* in China, Malaysia, Indonesia, Mexico, Korea, India, etc. Depending on the manufacturing factory, these instrument may not have pickguard mounting holes in the *standard* American Stratocaster position. In addition, they may have a body cavity that is different than the cavity in the *standard* American Stratocaster. These instruments may have a body cavity depth with two different levels and may require some material removal so the *standard* **American Stratocaster Pickguard Upgrade** that you received will completely lay flat on the body.

To solve these body cavity depth issues, you can use a power drill with a rotary file to remove the needed amount of material in the body cavity to permit installation.

The illustrations (below) identify how to use the electric drill and rotary file bit to remove excess material in the body cavity. Also illustrated are two common rotary file bits. The top one is a rasp bit, the lower one is a scraping bit. Either will work.

When using this procedure, it is recommended that you enlist the help of a friend to firmly hold the guitar body while removing the unneeded wood using the rotary file. Also use a blanket or other material between the guitar body and the working surface to prevent the bottom of the body from being scratched.

