

Strat Guitar Kit Assembly



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California requires the following notice:

WARNING

Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:

- Lead from lead-based paints.
- Crystalline silica from bricks, cement, and other masonry products.
- Arsenic and chromium from chemically treated lumber.

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.



Warning

Always wear safety glasses or goggles when operating equipment. Everyday glasses or reading glasses are not safety glasses. Be certain the safety glasses you wear meet the appropriate standards of the American National Standards Institute (ANSI). Because there are various ways to cut and join wood, you can make substitutions for the methods stated in this manual. We try to suggest the easiest methods possible. However, only you know your skills with each piece of machinery. Never compromise your safety by using a cutting method with which you are not comfortable. Instead, find an alternative approach that will yield the same result.



Warning

These instructions assume that you are familiar with the safe operation and use of woodworking machinery and woodworking tools, and understand the techniques used to assemble this project. If you do not qualify for both of these criteria, STOP building this project for your own safety. Read and understand the owner's manual for the machinery you intend to use, take a woodworking class or visit your local library for more information. Woodworking machinery and tools are inherently dangerous because they use sharp edges that can and will cause serious personal injury including amputation and death. Do not underestimate the ability of these tools and machinery to cause injury. Never operate any tool without all guards in place and always wear approved safety glasses. For your own safety, please heed this warning.

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1 Introduction

Thank you for purchasing a BYOGuitar.com guitar kit. This kit includes everything you need to build a complete custom guitar. In addition to the construction of your guitar, you will need to consider the finish – natural, solid color and possibly a design that will make your guitar unique. We suggest you do some research to determine your finish preferences. Procuring the required finishing materials,



TIP: Get some finishing ideas by visiting [BYOGuitar.com](http://www.byoguitar.com) and [BYO Guitar on Facebook](#)

(<http://www.byoguitar.com/gallery/index.html>)

especially if they have to be ordered, will allow expedite your guitar project.

We carry a full line of finishing products to give you the beautiful finish you are looking for, whether a clear natural finish or a bold, colorful finish. We also carry an instructional DVD made by Behlen that will give you step by step instructions to help you achieve the look you want for your custom guitar.

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These instructions assume you are familiar with the anatomy of a guitar. Refer to Figure 1 for many of the terms used in the assembly of your guitar.

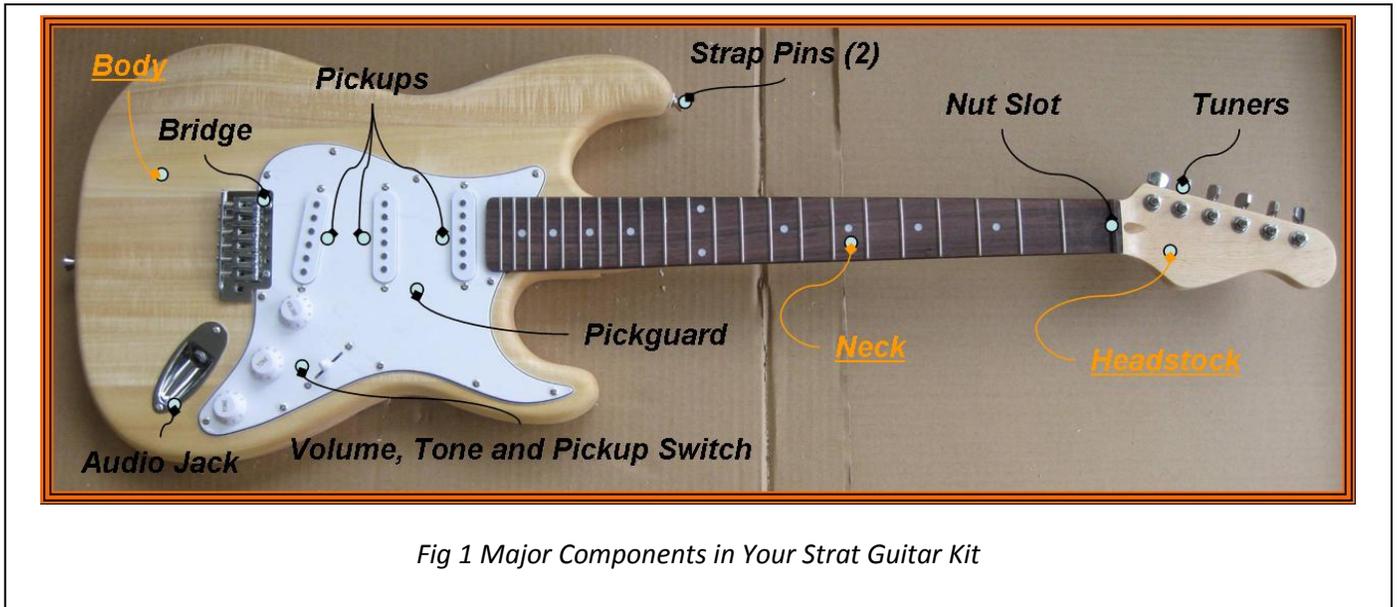


Fig 1 Major Components in Your Strat Guitar Kit

1.1 Material Check List

In preparation for the building of your guitar, all required material should be checked both for type and quantity. Use the following check list to ensure all piece parts are included. If you customized your order (ex. different tuners), ensure that these parts are accounted for. Please contact BYOGuitar if there are any discrepancies.

Strat Material List			
Item	Component	Quantity	Description
1		<ul style="list-style-type: none"> ☐ 1 Strat Body ☐ 1 Strat Neck ☐ Miscellaneous materials (see below) 	BYO Strat Guitar Kit
 TIP: use small interior packing box to inventory and organize piece parts			
2		☐ 1	Strat Pickguard with pickups
3		☐ 20 screws ^{3/8"} + spare	Mounting screws for Pickguard, Audio Jack & Back Plate

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4		<ul style="list-style-type: none"> □ 1 □ 6 mounting screws, 1" 	Tremolo
5		<ul style="list-style-type: none"> □ Tremolo Claw □ Springs, 3 □ Screws, 2 	Tremolo parts
6		<ul style="list-style-type: none"> □ Arm 	Tremolo arm
7		<ul style="list-style-type: none"> □ 1 Plate □ 1 plastic base □ 4 screws, 1^{3/4}" 	Neck Plate/mounting materials
8		<ul style="list-style-type: none"> □ 6 Tuning Pegs □ 6 Washers □ 6 Nuts □ 6 screws, 3/8" 	Tuning Pegs
9		<ul style="list-style-type: none"> □ Jack 	Output Jack

10		<ul style="list-style-type: none"> ☐ 2 Holders ☐ 2 plastic washers ☐ 2 screws, 1" 	Strap Pins
11		<ul style="list-style-type: none"> ☐ 1 String "Nut"/guide ☐ 2 Tees ☐ 2 sleeves ☐ 2 screws, 1/2" ☐ 1 pick 	String Tees and Nut
12		<ul style="list-style-type: none"> ☐ 6 strings 	Strings
13		<ul style="list-style-type: none"> ☐ Output Cable ☐ 2 Allen wrenches 	Other

1.2 Additional tools/materials required:

Drill & drill bits	#1 & #2 Phillips screwdriver	Soldering iron/solder
Masking/painters tape	Finishing/painting material	Sand paper 220 & 320 grit
Guitar strap	Soap or candle	Feeler gauge
ruler		

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The remainder of the assembly instructions is divided into four sections:

Section 2 – Mockup & Fit check: in this section, all components will be checked for proper alignment and ensure that all holes have been drilled.

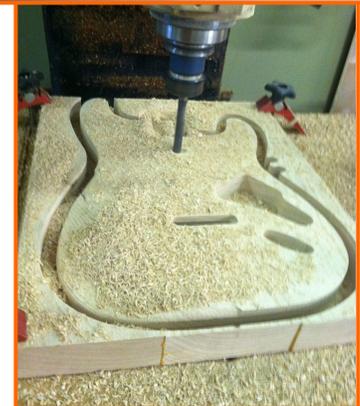
Section 3 – Finishing the Body and Neck: after fit check, the components are removed from the neck & body to allow the selected finish to be applied. This will allow you to customize your guitars' color(s). As the finishing will likely require several coats with sanding between each coat, ensure that the finish is completely dry.

Section 4 – Construction: the final assembly is the next step - once the finish has been applied and completely dried. In this section, all of the components are installed, internal wiring connected and strings attached – your guitar will ready to go!

Section 5 – Setup: in this section, adjustments are made to your guitar such as the height of the pickups.

Again, we thank you for your purchase of a BYO Guitar and we look forward to seeing pictures of your unique guitar! We also look forward to providing you with the guitar for your next project from our Custom Shop where you can select the wood for the body and neck as well as customizing all of the other components.

Let us know if your music, school, church or scouting organization would like to undertake a group project – BYO Guitar can supply multiple kits or custom guitars.



Some Ideas for Finishing Your Guitar and Examples of Our Custom Shop Products

2 Mockup and Fit Check

The following steps will ensure that the body, neck, tuners, pickups, etc. are properly aligned and that all screw holes have been drilled.

2.1 Check Guitar Body & Neck mounting holes

1. Check Neck pocket on the Body for pre-drilled (4) mounting holes (Figure 2.1).
2. Skip to 2.2 if the holes are pre-drilled.

2.1.1 Drilling the Mounting Holes in the Guitar Body

1. Use the neck plate as a template (#7 on material list) to locate the mounting holes in the neck pocket. The simplest way is to place the neck plate into the pocket and properly position it so it is centered in the pocket.
2. Mark the holes, center punch your marks.
3. Drill the holes using a 3/16" drill bit.

2.2 Checking the Mounting Holes in the Neck

1. Check neck for pre-drilled (4) mounting holes.
2. Skip to 2.2.2 if the holes are pre-drilled.

2.2.1 Drilling Mounting Holes in the Neck

1. Place the neck in the pocket (...you should be able to fit the neck in the neck pocket by hand).
 - a. Make sure the neck is aligned properly with the pickup cavities and bridge.
 - b. Carefully clamp the neck in place – frets damage easily.
 - c. Using the same drill bit you drilled the holes in the body, place the bit in the hole through the body and tap it a few times to make a mark on the neck.
2. Remove the neck from the body.
3. Determine the neck mounting hole depth.
 - a. Place one of the neck mounting screws through the neck plate and body into the neck pocket.

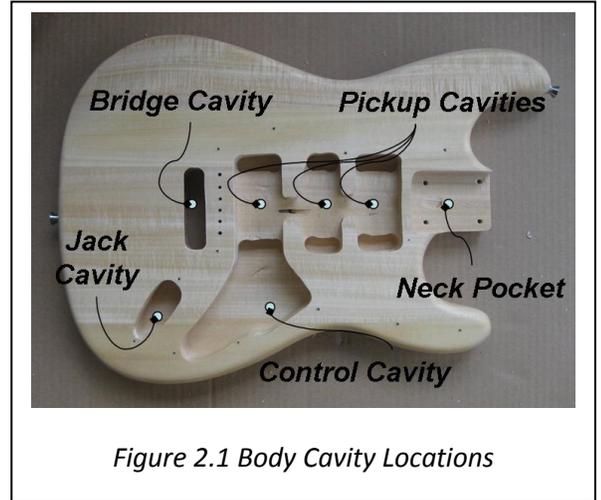


Figure 2.1 Body Cavity Locations

Tip: rubbing the threads of the screw on a bar of soap or candle will help prevent the wood from splitting.

TIP...a piece of masking tape around the drill bit works great as a depth indicator.

- b. Measure the amount of the mounting screw that extends up into the neck pocket, and mark your drill bit.
 - c. **Double check the depth** by holding the marked drill bit to the side of the neck and be certain the drill won't go through the fingerboard.
4. Drill the holes in the neck with a 1/8" drill bit. **Make sure you don't drill through the fingerboard!**

2.2.2 Mount the Neck on the Body

Temporarily attach the neck. Use caution, the last thing you want to do is snap the screw off in the hole!

1. Insert the neck into the neck pocket and place the neck plate (with counter sunk holes facing out) & plastic base on the body.
2. Align the mounting holes in the neck and body.
3. Fasten the Neck & Body with 4 #7 x 1 ^{3/8}" screws (...see TIP above: use soap or wax on threads), but do not tighten them.
4. Unscrew and remove the Neck from the Body.

2.3 Checking the Bridge

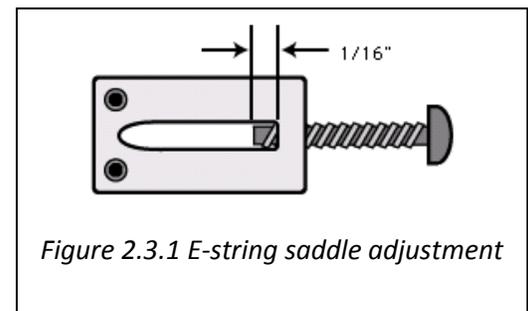
If the Body has 6 holes drilled to mount the Bridge (shown in Figure 2.1), skip to 2.4.

2.3.1 Locating the Bridge (item 2 on the material list)

To locate your bridge correctly, adjust the high E-string saddle to the last 1/16" of its travel toward the neck (Figure 2.3.1). The centers of the bridge mounting screws are approximately 1/4" in front of the saddle break point.

1. Measure 25 1/4" from the nut ("A" in Figure 2.3.2, the edge closest to the fingerboard).
2. Make a light pencil mark on the body, parallel to the frets and the nut.
3. Make another small mark, one corresponding to low E-string, and connect the dots with one line.

This will help ensure that the line is parallel to the nut.



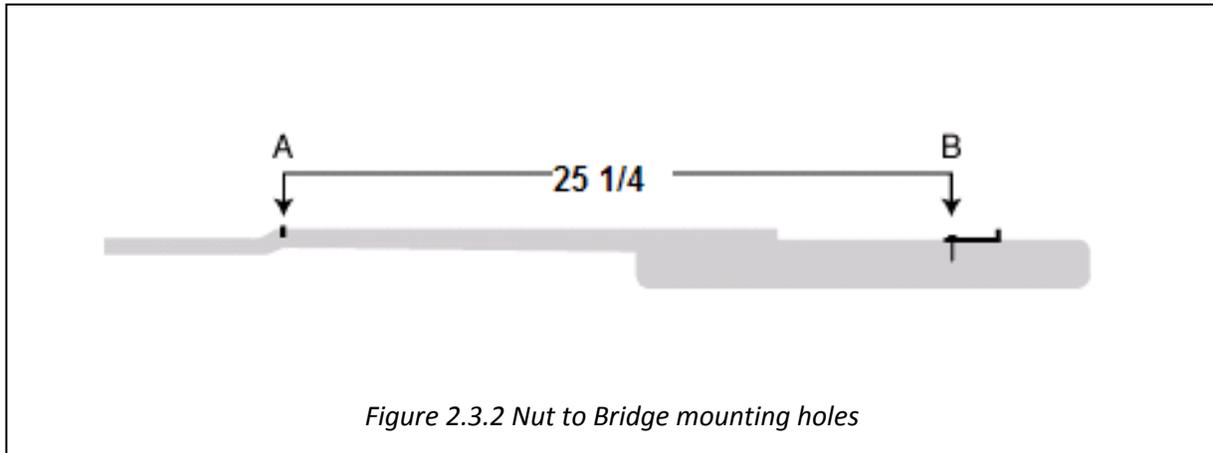


Figure 2.3.2 Nut to Bridge mounting holes

Now you must locate the bridge laterally (side-to-side).

1. Place the bridge on the instrument and align it with the Bridge cavity and your length mark for the mounting screws.
2. Make intersecting "cross-hair" marks for the mounting screw holes through the bridge plate.
3. Make sure the tremolo is moving freely and it's not binding on the edges of the rout.
4. Center punch your marks and pre-drill the Bridge mounting holes.

2.4 Fit check & Alignment of the Pick Guard (with controls mounted) and Bridge (items 2 & 4 on materials list)

1. Mount the Bridge (item 4 on the material list) in the Bridge cavity using 2 of the mounting screws, one in each end hole – tighten the two screws until they're flush with the top of the bridge plate, allowing the Bridge Plate to pivot on the outside screws.
2. Place the Pick Guard in the Pick Guard Cavity (reference Figure 2.1), temporarily running all wiring through the tunnel to the output jack cavity.
3. Carefully move the Pick Guard so that it is aligned with the Neck Pocket, the contours of the body and the Bridge – ensuring that the Bridge is free to pivot. Mark & pre-drill 2 holes in the Body for mounting the Pick Guard, one on each side of the Bridge. Using 3/8" screws (item 3 on Material list), attach the Pick Guard (2 screws) – again ensuring that the Bridge can move.
4. Mark the remaining Pick Guard holes and drill starter holes with 1/16 drill bit. Ensure all holes are pre-drilled.

2.5 Re-check the Neck to the Body Fit

- a. Insert the neck into the neck pocket and place the neck plate (with counter sunk holes facing out) & plastic base on the body.

- b. Align the mounting holes in the neck and body.
- c. Fasten the Neck & Body with 4 #7 x 1 ³/₈" screws (...see TIP above: use soap or wax on threads), ensuring alignment of the Body, Pick Guard and Neck.

2.6 Check Tremolo Claw Alignment and Fit Check (item #5 on material list)

Using the Tremolo claw as a template, start the mounting screws (1 ¼") approximately ½" into the Body - they should be centered horizontally and vertically in the back Body pocket (Figure 2.6). Skip to step 2.7 if the alignment is correct.

1. Using the claw as a template, mark the hole positions and pre-drill 2 holes.
2. Start the mounting screws approximately ½" into the Body – ensure they are centered (Figure 2.6).

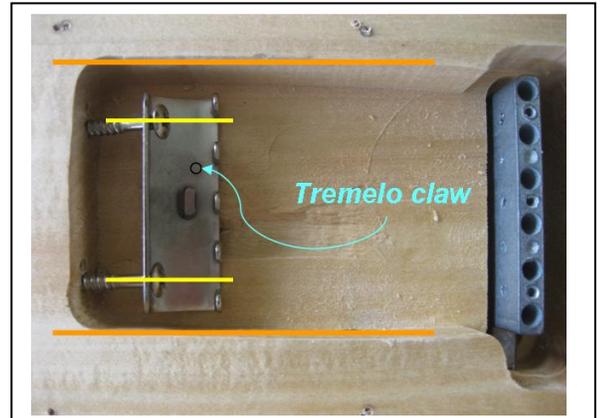


Figure 2.6 Tremolo claw Alignment

2.7 Fit check of the Tremolo cavity Cover (Fig 2.7)

Using the top and bottom elongated holes in the cover as a reference, slide the plate over the string holes in the Tremolo block/Bridge.

1. When centered, if necessary slightly adjust the plate to be parallel to the Neck.
2. Mark the holes and drill starter holes with 1/16 drill bit - ensure all holes are pre-drilled

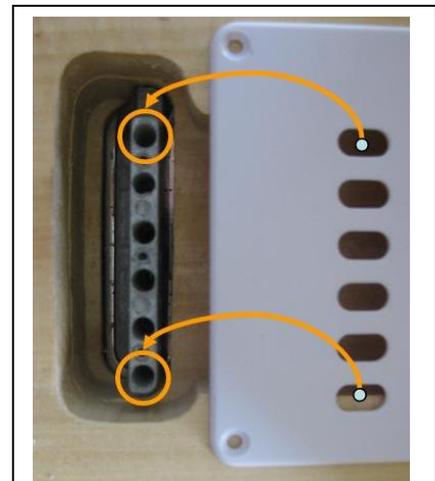


Figure 2.7 Back Body Cover Alignment

2.8 Output Jack

1. Check for pre-drilled holes (2) for the Output Jack (material list #9), reference Figure 2.1 & 2.8.
2. If the holes are pre-drilled, skip to 2.9.
 - a. Insert Output Jack in Jack Cavity (Fig 2.1).
 - b. Mark the holes and drill starter holes with 1/16 drill bit.

2.9 Check Strap Pins

1. Check for pre-drilled holes for the Strap Pins (item 10 on the material list), reference Figure 1.0.



Figure 2.8 Output Jack

byo guitar *TIP... the holes may need to be widened with a peghead reamer or a round file. DO NOT widen the holes too much—the tuners should fit snug*

2. If the holes are pre-drilled, skip to 2.10.
 - a. Mark the rear Strap Pin hole so that it is centered on the Neck/Bridge and the forward Pin on the most forward point on the top of the Body (see Figure 1.0).
 - b. Drill starter holes with a 1/16 drill bit.

2.10 Check Tuner Alignment

Each tuner consists of the tuner, washer, and a threaded bushing. The tuners are attached to the headstock with a small wood screw that attaches between the tuners.

1. Insert tuners, 6 each (item #8 on Material List), into the Neck Headstock (Figure 2.8). Ensure that the Tuner shafts are perpendicular to the Headstock (Fig.2.10).
2. Check alignment of set screw holes and tuner base.
3. If alignment is incorrect or holes are not drilled, mark hole locations and drill starter holes with 1/16 drill bit.

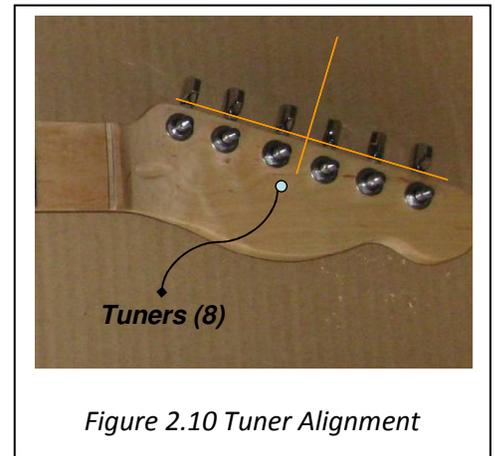


Figure 2.10 Tuner Alignment

2.11 String Tee Position

The two (2) holes required for the installation of String Tees (2), Figure 2.11, will be during the guitar final assembly.

2.12 Mockup and Fit Check complete!

Carefully disassemble the Mockup and move on to the next step: applying the finish to your guitar!

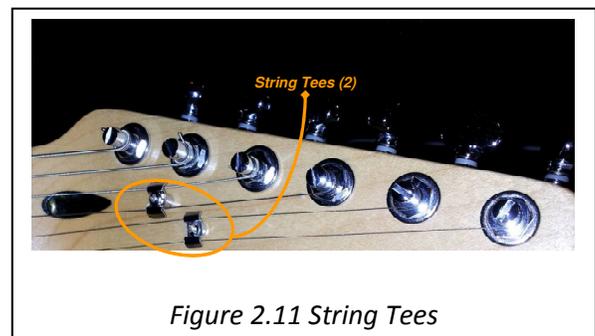


Figure 2.11 String Tees

3 Finish

Before starting the finish make sure all holes are drilled for any remaining hardware (pickguard, jack plate, strap pins etc).

3.1 The Body

Sand the body and neck with #220 dry sandpaper, followed by #320. If you are applying a finish other than natural, you should consider using a grain filler on the body. This will fill in the valleys in the grain and result in a nice flat surface allowing you to get a nice high gloss finish. An oil based grain filler is recommended. For most finishes, use a natural colored filler. The dyes used in darker fillers may, over time, find their way through the color coat. We carry a full line of Behlen Por-o-pac grain fillers that work perfectly for smoothing out your guitar body.

Apply the filler by wiping across the grain. You can use a course cloth or your fingers to wipe the grain in. After it has dried about ten to twenty minutes the excess can be removed with a cloth dampened with mineral spirits. After about an hour repeat the process and let dry overnight. If you have removed most of the excess with mineral spirits the remaining filler on the field of the wood can be sanded off (use #220 again) in a few minutes. The body is now ready for a sand and sealer coating.



TIP... reopen any of the screw holes in the body. Use a toothpick or small drill held between your fingers to clean out any filler in the holes.

Vinyl sealer is used to give the final coat a level base. It is also helpful in filling scratches which are too deep to sand out. We recommend Behlen's Vinyl Sealer, available on our website.

3.2 Solid Color Finish

The last step before applying the color coats is to apply a white primer coat. We recommend Ohio Valley Nitro's White Primer, available on our website. This is a white pigmented shellac in an aerosol can that will cover the grain and prevent any previous finishes from bleeding through. The white background will also let you apply an opaque color coat with less paint. Spray on two coats. When dry you may notice that the surface feels rough. Sand off the roughness with #320 dry and re-spray. Sand again. If the surface now appears smooth and all grain is opaqued you are ready for the color coat.

3.3 The Neck

On a maple fingerboard you can apply a clear finish to the entire neck and fingerboard. Apply several coats and remove buildup on the frets between coats. An easy way to remove the finish buildup on the frets is to take a nail and file a half round slot in the head about the same size as the frets. You can then use this to easily scrape any finish build up.

If the neck has a Rosewood or Ebony fingerboard be sure to tape off the fingerboard before applying the finish. Behlen's Fingerboard Oil is a great product for your fingerboard.

4 Assembly

After your finish has been applied and thoroughly dried, we can now assemble your guitar. In this section we will permanently install all of the components and solder the wiring for the bridge and pick guard pickup.



TIP... use a blanket or large towel on your work area to protect your guitars' finish

4.1 Assemble Pick Guard, Bridge and Neck to Body

Refer to Figure 4.1 during this section. Noted wiring colors are typical and may vary.

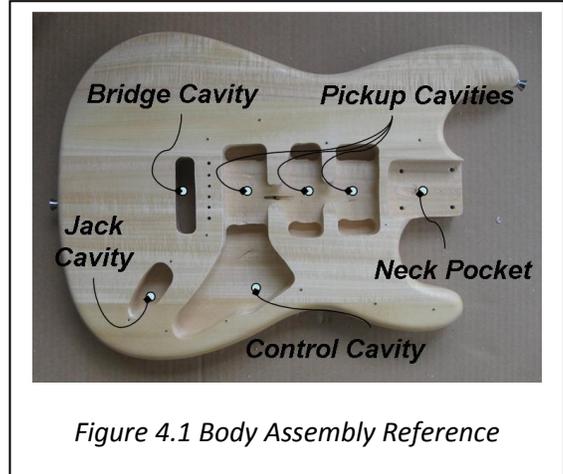
4.1.1 Bridge Installation

1. Mount the Bridge (as done in the mockup Section 2.4) in the Bridge cavity using 2 of the mounting screws, one in each end hole – tighten the two screws until they're flush with the top of the bridge plate.
2. Ensure Bridge Plate to pivot on the outside screws.

4.1.2 Pick Guard & Controls Installation

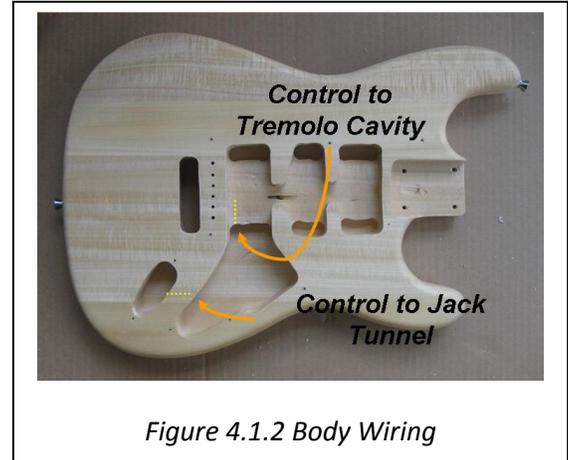
Insert the Pick Guard into the Pick up Cavity (Figure 4.1):

1. with the Red & Black wires (typical) running through the tunnel (Figure 4.1.2) between the Control Cavity and the Jack Cavity, and
2. with the white wire (typical) running through the tunnel (Figure 4.1.2) between the Control Cavity and the Tremolo cavity in the back of the Body.



Tip...if the wires are not red, black & white, the 2 wires soldered to the potentiometer case are the ground wires; the remaining wire is the signal wire: run the signal & 1 ground wire through the output jack tunnel and the remaining wire through the tremolo tunnel

3. Seat the Pick Guard around the Bridge – gently pulling the wires to ensure they are through the tunnels.
4. As done in the Mock up (Section 2.4), carefully move the Pick Guard so that it is aligned with the Neck Pocket, the contours of the body and the Bridge – ensuring that the Bridge is free to pivot. Using two 3/8" screws (item 3 on Material list), attach the Pick Guard (one on each side of the Bridge) – again ensuring that the Bridge can move.



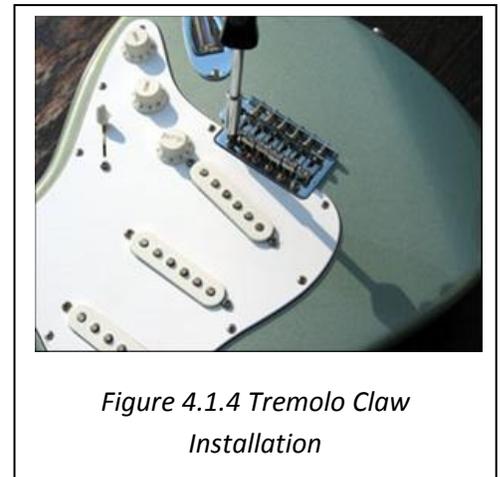
4.1.3 Neck Installation

1. Insert the neck into the neck pocket and place the neck plate (with counter sunk holes facing out) & plastic base on the body.
2. Align the mounting holes in the neck and body.
3. Fasten the Neck & Body with 4 #7 x 1 ^{3/8}" screws ensuring alignment of the Body, Pick Guard and Neck – do not over tighten.

4.1.4 Finishing Bridge and Pick Guard Installation

Bridge (Figure 4.1.4):

1. Insert the remaining 4 screws in the Bridge and tighten them to approximately 1/16" above the top of the bridge plate.
2. Tighten the two outside screws back down until they're flush with the top of the bridge plate. The bridge will now pivot on the outside screws, leaving the four inside screws in place for bridge stability.



Pick Guard:

Using 3/8" screws (item 3 on Material list), complete the installation of the Pick Guard to the Body – again ensuring that the Bridge can move.



TIP... remove the clear protective film from the Pick Guard & pickups

4.1.5 Tremolo Claw, spring and ground installation

The tremolo claw, spring and grounding wire are installed in the back of the Body:

1. Install the claw in the front of the tremolo cavity; screw in only about a ¼ of the way (Figure 4.1.5).
2. Solder the ground wire (from the control tunnel) to the tab on the tremolo claw (Figure 4.1.5a).
3. Use pliers to stretch the springs into position (Figure 4.1.5a). Leave one space in between each one on the block and the center 3 “claws”. **CAUTION:** If you lose grip of a spring it can fly hitting you, and cause damage to the paint on the body. Ensure the spring hook is completely down in the Tremolo block.
4. Tighten the screws on the spring claw so there is little play in the block. The block still needs to be able to move if you plan on using a whammy bar.



Figure 4.1.5a Tremolo Spring Installation

4.1.6 Output Jack wiring & installation

Insert the Output Jack wiring through the tunnel between the Control cavity and the jack hole.

1. Solder the signal and ground wires to the jack (see Figure 4.1.6) (Note: if the signal wire is shielded, solder the shield to the ground terminal on the jack).
2. Attach jack mounting plate to the body with the supplied mounting screws (2).

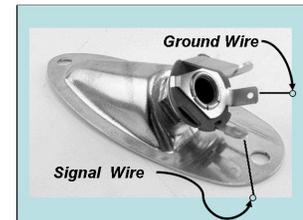


Figure 4.1.6 Output Jack Wiring

4.2 Installing the Nut

The nut holds the strings at the peghead the correct distance above the frets. It is not necessary to cut the string notches in the nut that comes with this kit.

1. Use a chisel or razor blade to scrape any finish out of the nut slot. DO NOT remove any wood from the nut slot.
2. Spread a thin layer of wood glue in the nut slot and center the nut in the nut slot.



TIP... wipe away the excess glue before it sets up - allow the glue to thoroughly dry

4.3 Installing the tuners

Each tuner consists of the tuner, washer, and a threaded bushing. The tuners are attached to the headstock with $\frac{3}{8}$ " wood screws (refer to Section 2.8).

1. Place the six tuners into the holes on the back of the headstock.
2. Slide a washer over the tuner shaft and secure the threaded bushing onto the tuner.
3. Secure the machine heads to the guitar headstock with the supplied screws. Remove the protective film if necessary.

4.4 Install the Strings

Like most projects, there often several tricks that will make the assembly easier and your guitar better. Properly stringing your guitar is just one of those tricks. Please review the following  video:

<http://www.youtube.com/watch?v=tlfP3v-bxwE>

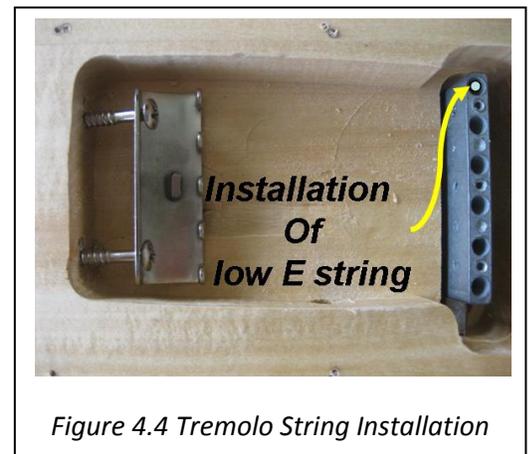
Although the video addresses restringing a guitar, the principles and techniques will help you string your guitar – as well as provide a visual for the stringing of your guitar.

1. Carefully uncoil each of the strings (6), ensuring that the strings do not have a kink.
2. Run the low E string (largest diameter string) through the upper hole in the Tremolo block from the Tremolo cavity (Figure 4.4). Carefully seat the string ball in the block.
3. Adjust the hole in the first tuner to be perpendicular to the neck.
4. Run the string upward through the hole in the tuner till



snug on the neck; gently pull the string backward for a length of about 2 frets (check the video).

5. Run the string forward (toward the end of the headstock) wrapping the around the tuner and under the string; bend over the string (toward the end of the headstock).
6. Tighten the string down the tuner; when the string is snug against the 1st slot in the nut, trim the excess string.
7. Repeat steps 2-6 using the next smaller diameter string & the tuner.



8. Install the Tremolo arm (item #6 on the material list) in the Bridge.

4.5 Tremolo Claw Adjustment

After the tremolo and strings are installed, you can get your guitar close to in tune. As the strings tighten, the rear of the bridge will lift off the guitar body. Allowing the bridge to float freely (...with no tension on the tremolo arm) using the claw screws in the tremolo cavity, adjust the bridge to your desired angle—Fender spec is a 1/8" (3.2 mm) gap at rear of bridge. You'll need to retune periodically to get the right balance between the strings and the springs. If you prefer a bridge flush to the body, adjust spring tension to equal string tension, while the bridge rests on the body (you may want to put an extra 1/2 turn to each claw screw to ensure that the bridge remains flush to the body during string bends). **Caution:** Do not over-tighten the springs, as this can put unnecessary tension on the arm during tremolo use. Finally, you may wish to apply a small dab of Chapstick® or Vaseline® at the pivot contact points of the bridge for very smooth operation.

byo guitar *build your own* **Tip...** Put a shim between the back of the tremolo block and the guitar body. This will hold the tremolo where you want it while you tune the guitar. Then tighten the screws to the claw until the shim comes free.

Install the Tremolo cover over the Tremolo cavity using supplied 3/8" screws.

4.6 Installing the Strap Pins

Secure each strap pins (2) in the pre-drilled holes with the supplied screws (2ea, 1").

4.7 Installing the String Retainer

The String Retainers are used to ensure a steep angle of the strings (relative to the nut) and are placed to the left and right of the 2nd tuner (refer to Figure 4.9).

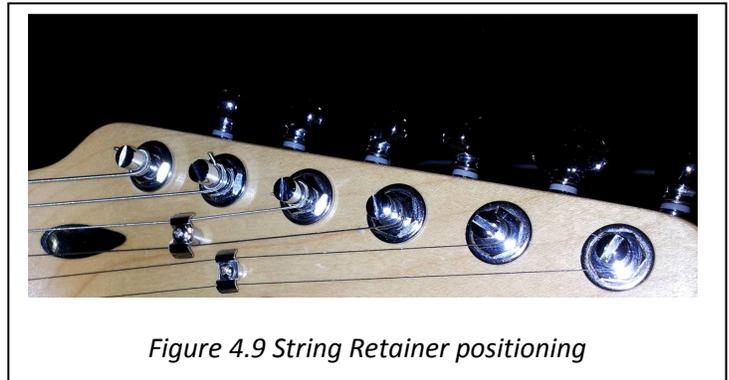


Figure 4.9 String Retainer positioning

1. Snug up strings 3 through 6. Using a Spring Tee, mark the headstock just on the left side of tuner #2 and between strings 3 & 4. Mark the headstock just to the right of tuner #2 and between strings 5 & 6.
2. Carefully drill 1/16" starter holes.
3. Insert screw through the retainer and large spacer - fasten to headstock, left of the 2nd tuner.
4. Insert screw through the retainer and small spacer - fasten to headstock, right of the 2nd tuner.

Assembly of your Guitar is now complete – let's set it up!!

5 Setup

In this section, we will address the initial setup for:

1. Adjusting the Neck (Truss Rod);
2. Adjusting the String Action (string height);
3. Adjusting the Pickup heights;
4. Adjusting the Intonation.

These adjustments will provide preliminary settings from which you can fine tune the sounds to your individual playing style. As with previous sections, references are included for additional clarification of specific adjustments.





Reference...check out the following  **references that can be helpful in tuning your guitar:**

- ✓ **tone generator for tuning:** http://www.get-tuned.com/online_guitar_tuner.php & <http://www.guitarforbeginners.com/onlinetuner.html>
- ✓ **downloadable “musical instrument tuner” from PerfectPitch** (<http://www.nch.com.au/tuner/>) **that will allow visualization of string adjustments**

String up the guitar with your desired gauge of strings – check the tuning.

5.1 Adjust the Guitar Neck: Truss Rod

The first major procedure in the setup is adjusting the neck relief. Neck relief simply refers to how much the neck bows. The degree of bowing in the neck is a matter of personal preference and is correlated to your playing style.

To adjust the neck relief, locate the truss rod at the neck/headstock junction. The truss rod is adjusted with the supplied 1/8” allen wrench.

Tightening the truss rod adjustment bolt will cause the neck to warp backward (too much and the strings will buzz on the frets), and loosening it will cause it to bow forward (giving



Reference: ...check out the  **following** **references for adjusting the Truss rod:**

- ✓ <http://www.youtube.com/watch?v=PHHepmTX3So>
- ✓ <http://www.youtube.com/watch?v=4j3QryKIXrc>

more relief.)

First, check your tuning. Put a capo at the first fret and press the sixth string at the last fret. With a feeler gauge, check the gap between the bottom of the string and the top of the 8th fret—you should have about 4/64”.

Sight down the edge of the fingerboard from behind the headstock, looking toward the body of the guitar. If the neck is too concave (action too high), turn the truss rod nut clockwise to remove excess relief (only adjust ¼ turn at a time) If the neck is too convex (strings too close to the fingerboard), turn the truss rod nut counter-clockwise to allow the string tension to pull more relief into the neck. Check your tuning, then re-check the gap with the feeler gauge and re-adjust as needed.



TIP: ... do the neck adjustment in a series of intermediate steps and re-tune your guitar before each step – different tension on the strings changes the adjustment of the neck

5.2 String Lubrication

Lubricate the contact points of a string's travel to ensure tuning stability and reduce string breakage. Lubricate:

1. string/saddle contact points with a light machine oil (...such as 3-in-1 oil because it contains anti-rust and anti-corrosive properties) every time you change strings.
2. string trees should also be lubricated; a small amount of lip balm applied with a toothpick works well.

5.3 Adjusting the Action

The Nut

Setting the string action that is right for you starts at the nut. The slots should already be close, but you might want to make some adjustments.

Push the sixth string down between the second and third fret. The space between the first fret and the bottom of the string should be about .006 or just about the thickness of two sheets of paper. If the gap is wider than .006” you should deepen the slot with a small needle file. **DO NOT FILE TOO DEEP!** Make sure when you file, the file is angled down toward the headstock. This will ensure the string sits on the edge of the nut closest to the fretboard.



reference...check out the following  **references for adjusting the “Nut Action”:**

✓ <http://www.youtube.com/watch?v=zz9UKX2lcxw>



TIP...check out the following  **references for adjusting the “Bridge Action Height”:**

✓ <http://www.youtube.com/watch?v=oWpnW8ICn-U>

Repeat the procedure for the remaining 5 strings.

5.4 Bridge Saddle Adjustment

This will adjust the height of the strings over the 12th fret. Minor adjustments are made by raising or lowering the bridge. This adjustment is a matter of personal preference. There should be a gradual increase in height from the first string to the sixth string.

5.5 Pickup Height

Each pickup is adjustable on the bass and treble sides. Finding the best combination of tone and volume will require some experimentation.

- 1 Bridge pickup:
 - 1.1 Press the 1st string onto the last fret and hold;
 - 1.2 Using a machinist ruler, measure the distance from the top of the pole to the bottom of the 1st wire – note bass measurement;
 - 1.3 Repeat #1.1 & #1.2 on the 6th wire – note the treble measurement;
- 2 Middle & Neck Pickup: repeat steps 1.1 through 1.3 (above) on the remaining pickups, noting measured heights.

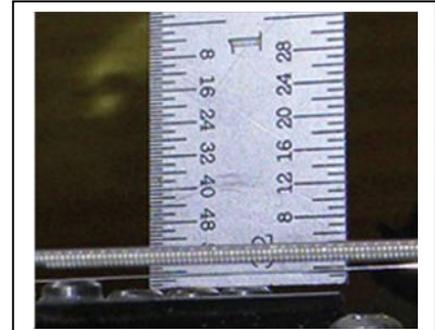


Fig 5.3.2 Pickup Height Measurement

Table 5.6 Pickup Height Guide		
Pickup	1st String	6th String
Bridge	2/64"	3/63"
Middle	3/64"	4/64"
Neck	3/64"	4/64"

Using Table 5.6 as a reference, adjust the height of the pickups by turning the screws for the bridge, middle & neck pickups – recheck string heights after each adjustment.

5.6 Intonation

Adjustments should be made after all of the above have been accomplished.

1. Set the pickup selector switch in the middle position.



**reference...check out the following
for adjusting Intonation:**

✓ <http://www.youtube.com/watch?v=CqN7xJD1rdE>



2. Turn the volume & tone controls to maximum.
3. Check tuning. Check each string at the 12th fret, harmonic to fretted note (make sure you are depressing the string evenly to the fret, not the fingerboard).
4. If sharp, lengthen the string by adjusting the saddle back. If flat, shorten the string by moving the saddle forward.

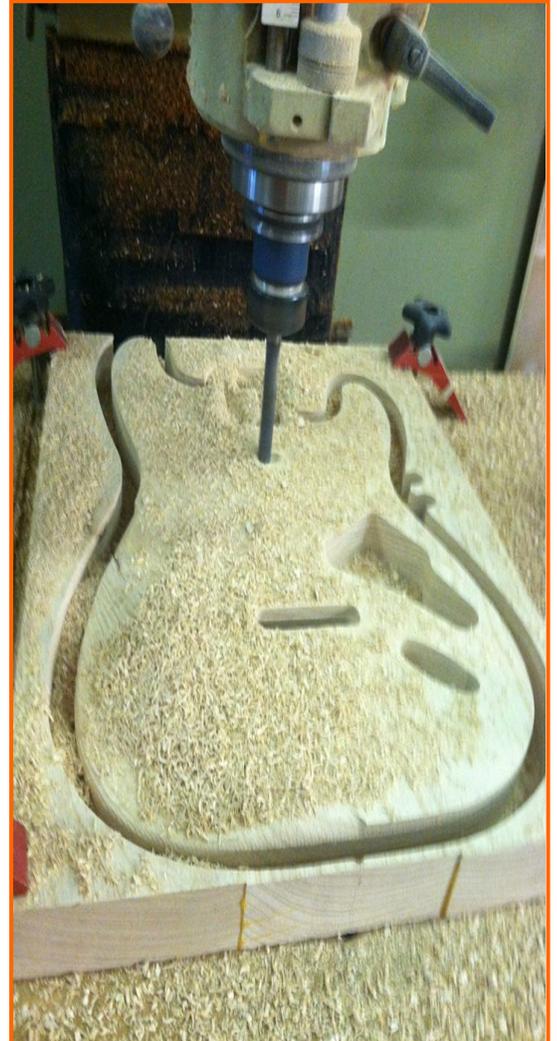
5.7 ...Other Hints

There are a few other things that you can do to optimize your tuning stability:

1. Each time you play your guitar, before you do your final tuning, play for a few minutes to allow the strings to warm up. Metal expands when warm and contracts when cool. After you've played a few riffs, you can then do your final tuning;
2. Wipe the strings, neck and bridge with a lint-free cloth after playing;
3. When transporting or storing your guitar, even for short periods, avoid leaving it anyplace you wouldn't feel comfortable yourself.

Remember, guitars are tempered instruments! Re-tune, play and make further adjustments as needed.

We hope you have enjoyed building your guitar! If you have any questions along the way please email us at sales@BYOGuitar.com.



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