GUITAR MAKER'S EMPORIUM

LES PAUL Set Neck

DIY GUITAR KIT

Joint: Set Neck
Body: Carved Basswood with Flamed Maple Top
Neck: Maple
Fingerboard: Rosewood
Tuning Machines: Chrome Die-cast Grover Style
Scale Length: 628mm/24.75"
Fret: 22
Control: 2V, 2T, 3-Way Toggle
Pickups: H-H
Hardware: Chrome
Bridge: Tune-O-Matic
Pickguard: Ivory Pickguard

Assembly Instructions

Please read these instructions carefully before beginning to build your guitar in order to have a complete overview of the project. There are five steps that you will need to follow to complete your Electric Guitar Kit.

1. Check and Identify Parts
2. Finishing the Body and Neck
3. Shaping the Headstock
4. Assembling the Guitar
5. Setup

Following is the list of parts that are included with your kit. If parts are lost or run through the stump shredder during assembly you may order replacements from your local music shop or directly from us.

Quantity Description

A	1	Basswood with Flame Maple Carve top body
B	1	Maple Neck with Rosewood Fingerboard
C	1	Output Jack & Chrome Jack Plate
D	1	Set 500 Ohm Tone Pot & 500 Ohm Volume Pot
E	1	3 Way Pickup Toggle Switch
G	1	Neck Position Pickup with Cream Mounting Ring
H	1	Bridge Position Pickup with Cream Mounting Ring
I	1	Chrome Stop Tailpiece
J	1	Chrome Tune-o-Matic Bridge
K		Set of 6 Chrome Machine Heads
L	1	Chrome Neck Plate with Neck Plate Pad
M		Set of 6 Electric Guitar Strings
N	1	2m Guitar Lead
O	2	Chrome Strap Buttons, Screws and Rubber Pads
P	1	Truss Rod Cover
Q	4	Control Knobs
R	1	Cream Pickup Selector Ring
T	1	Selector Switch Plate

Installing The Neck

We will now attach the neck to the body with Glue. Clamp the neck in position. First do this without glue to make sure everything fits and lines up. You may need to scrape or file the neck in order to achieve a snug fit – do not apply excessive pressure.
Run a straight edge along the surface of the fingerboard to ensure that the angle of the neck roughly aligns with the bridge – remember the bridge is height adjustable, fine tuning only.
Dry fit the neck pickup so that you can ensure the correct length positioning of the neck.

Installing Bridge

Using a straight edge along the sides of the neck mark 2 reference points in order to align the bridge (L & R). Then from the inside of the nut, measure 628mm/24.75" to get the scale length. You then want to mark the bass side (low E) 2mm futher from the nut.

Bridge placement for 628 mm scale Printable

Distance from the fretboard edge of the nut to center of forward-most mounting screw or pivot post.

The individual saddles in the bridge with allow for several mm's adjustment one the bridge is installed, below is the exact calculations for correct intonation

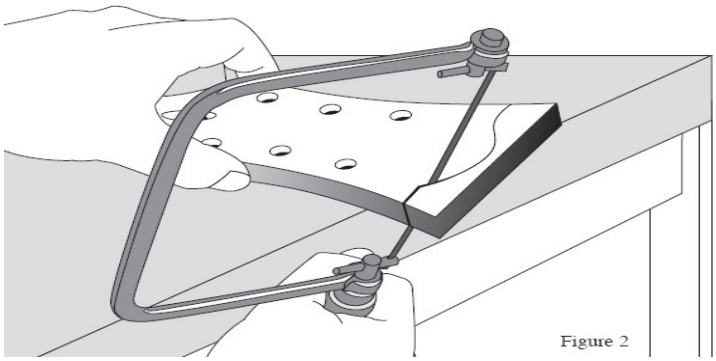
629.539 mm (±0.5 mm) from nut to center of treble-side post (high e string). Mount bass-side post 2 mm further from the nut.

Using the bridge to mark the hole positions, drill 2 holes for the ferrules, drilling first pilot holes then the correct hole size. Nb. It's good practice to first drill a scrap piece in order to ensure that you have the correct size dril bit for the furrule.

SHAPING THE HEADSTOCK

The headstock has been left extra long and here is a chance to express your individuality and to make a guitar that is truly your own. First, decide on the shape of the headstock that you would like to use and draw the outline on the top of the headstock.

Using a bandsaw or simple coping saw, cut out the shape of your headstock (*see Figure 2*). A half round file should be used to level the top edge of the headstock. Finally, the edge should be sanded smooth with fine 400 grit sandpaper.



Note: Some headstock shapes are protected by trademark restrictions and we do not recommend that you use them.

FINISHING THE BODY AND NECK

Although the overall tone and playing characteristics of the instrument will not be affected, a high quality finish is a real source of pride to the builder. Both the neck and body of your Electric Guitar Kit have been sanded and are ready for final sanding and then finishing.

FINISHING

First you will need to decide whether you would like a natural finish or a coloured finish on the body. For a natural finish, go directly to "Clear Coat".
There are a number of techniques that will result is various styles of finish and vary in application. Some of these include:
Oiled/Burnished – Oil (usually nut/citrus oil) applied with a rag
French Polish – many layers of Shellac hand rubbed/applied
Epoxy/2 pac –
Polyurethane – spray or brush applied
Nitrocelulose – plant based spray applied
Acrylic Laquer – See below for for more details on this process

Detailed information on all of these techniquques can be easy obtained for free online, YouTube clips can be very informative and useful.

COLOR COAT

For the colour coat your first stop is a shop that specializes in automotive products. The **acrylic lacquer** made by the automotive industry is particularly well suited to your needs. In addition to providing a full range of colour choices, acrylic lacquer is extremely durable and resistant to cracking.

Choose your colour from the many available shades (including metallic options) used for automobile touch up work. A spray can will make your job much easier and will produce great results.

- Hang the guitar. Begin each spray stroke in the air on one side of the body and continue until you reach the air on the other side. Overlap each stroke by one half, and every other stroke spray crosswise, then length wise. This technique will provide an even colour distribution.

- Although lacquer dries quickly, and successive coats may be sprayed in a short period of time, attempts to spray too much in one coat can result in runs or bubbles in the finish. Spraying should not be attempted on excessively humid or rainy days.

- One or two coats of colour should be enough. It should not be necessary to sand between coats unless there are drips, runs or bug feet (!) to be levelled. All exposed surfaces should be dead level and have a nice satin gloss.

CLEAR COAT

The clear lacquer topcoat is also available at most auto parts stores. If you have applied a colour coat, it is advisable to select the same brand of clear lacquer to assure compatibility.

- The clear coat is applied to the body using the same technique as described for the colour coat. Two or three coats of clear should be adequate.

- For best results the body finish should be allowed to harden for one week before the final cut and polish.

Note: The Binding on the guitar body must be taped off to prevent overspray from the finish. To avoid runs and drips, hold the spray can 6-10 inches fromsurface. From best results follow directions on spray can.

Caution: Remember that spray paint is extremely flammable. Do not spray near open flames, heat or sparks. The area where you spray must be well ventilated while spraying and until all vapour is gone. Do not smoke! Do not breathe the vapour and keep doors and windows open during application and drying.

We will now attach the neck to the body with Glue. Clamp the neck in position ensuring to protect the new finish. First do this without glue to make sure everything fits and lines up. You may need to scrape or file the neck in order to achieve a snug fit – do not apply excessive pressure.
Run a straight edge along the surface of the fingerboard to ensure that the angle of the neck roughly aligns with the bridge – remember the bridge is height adjustable, fine tuning only.
Dry fit the neck pickup so that you can ensure the correct length positioning of the neck.

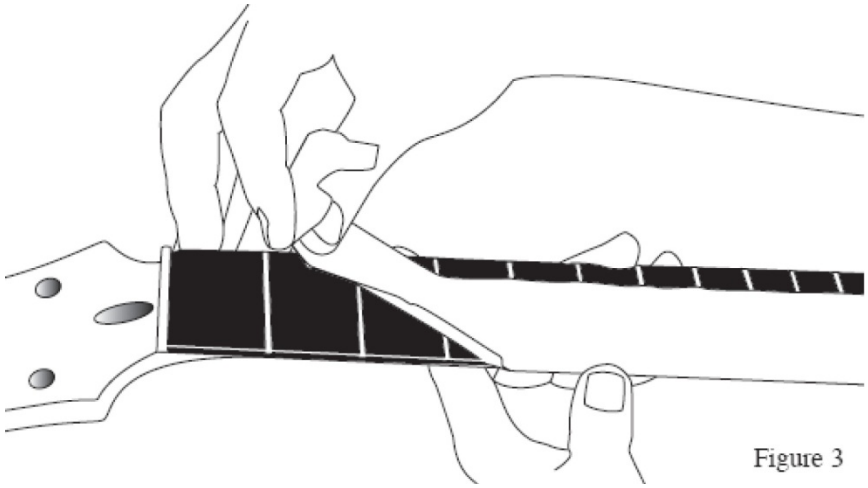


Figure 3

FINAL RUBBING AND POLISHING

After allowing the clear lacquered surfaces to dry and harden for at least one week, sand lightly with non-loading 400 grit sandpaper (commonly known as “wet and dry”). During sanding be sure to place a firm material behind the sandpaper. A large rubber eraser works fine. The eraser is flexible enough to sand the gradual curves but is stiff enough to prevent the sharper edges (of the headstock, for example) from being rounded off. Be sure to sand with the grain of the wood.

- All sanded surfaces should now be a bit dull, indicating that the finish is flat and level. Now repeat the sanding process with very fine 600 grit sandpaper using water and a small amount of dishwashing detergent as a lubricant. This will remove any sanding marks left by the previous step and leave all surfaces a dull gloss.

- The finish may now be rubbed out using a medium grade automotive rubbing compound (DuPont White Polishing Compound for example). The compound should be used sparingly with fairly good pressure at first — as a high gloss develops, pressure should be diminished. An extra fine grade of polishing compound may be used to get that final bit of gloss. If instructions have been followed you should now have a professional quality finish. You can protect your work with a light wax — Guitar Polish is a good choice.

WIRING THE GUITAR

1. Unpack and organise the electrical components and wires

2. THREE WAY PICKUP SWITCH (PART E)

Push the threaded shaft through the 1/2” hole on the upper left side of the guitar top. Turn the body over and slip on the selector switch plate (Part T). Now slip the washer on the protruding shaft and loosely screw on the nut. Look at the switch mechanism inside the

cavity. All of the attached wires should be facing the bottom of the guitar. If the switch is positioned incorrectly it will be like that light switch in your garage, where you have to turn the lights “off” in order to turn them on!

Run the wires from the switch through the hole between the selector switch cavity and neck position pickup cavity. Then, run the same wires through the hole from the neck pickup cavity to the bridge pickup cavity and on to the control cavity. (*See Figure 5*)


Figure 5

3. NECK POSITION PICKUP (PART G)

The cavity for the neck position humbucking pickup is located on the upper part of the body closest to the neck pocket. As you look into the cavity you will notice that a hole has been drilled that connects the cavity for the neck position pickup to the cavity that will house the bridge position pickup. Notice also that the Neck Position Pickup has a thinner mounting ring than the Bridge Position Pickup. Run the Black wire attached to the neck position pickup into the hole from the neck cavity to the bridge pickup cavity. This is same hole that the wires coming from the selector switch have been run through. Use the four 5/8” screws to attach the neck position pickup to the body.

4. BRIDGE POSITION PICKUP (PART H)

There is a hole connecting the bridge position cavity to the control cavity. The black wire from the neck position pickup should run through that hole into the control cavity. The red wire that is attached to the bridge position pickup is now pushed through that same hole emerging into the control cavity also. Attach the bridge position humbucking pickup to the body with four 5/8” screws.

5. VOLUME AND TONE CONTROLS (PARTS D & Q)

There are 2 sets of volume and tone controls for this guitar. Each set of 1 volume and 1 tone potentiometers are assigned to a separate pickup. As you play the guitar, the volume and tone pots sit next to each other. The volume is on the left side and the tone control is on the right side. The top 2 controls are for the neck pickup. The second row of controls are for the bridge pickup. Install the volume and tone controls in the first row of 3/8” holes, then install the volume and tone controls in the bottom row of 3/8” holes.

6. CONNECTING CIRCUITS

Page 8 of this manual has the Wiring Diagram for you to follow. You will need to find a friend or family member with a soldering iron. If no one has one, they are readily available

from hardware and electronics stores and are very inexpensive. You will have some solder in your kit. Follow the wiring diagram to make all the right connections. The cavity for the controls on the back of the body should now resemble a spaghetti factory (See *Figure 6* & *7*). If you have never used a soldering iron before, we strongly suggest looking up free online lessons on how to solder wires together. It really is an easy thing to learn to do and adds another skill to your guitar building tuition.

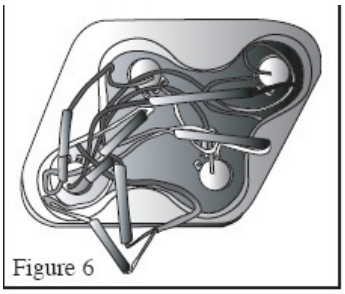


Figure 6

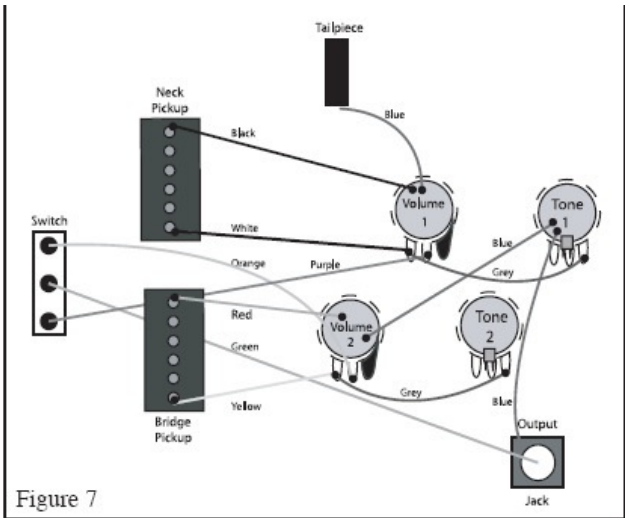


Figure 7

Please remember to turn OFF and unplug your soldering iron when it is not in use – the soldering tip is very hot when switched on.

7. THE TAILPIECE (PART J)

Take a look at the bridge and tailpiece hardware and distinguish the difference between the bridge studs and the tailpiece studs. The tailpiece studs have a much larger set screw. Install the tailpiece first. Separate the tailpiece mounting parts from the threaded bushings. These bushings must be driven in place in the two holes closest to the rear of the guitar body. It will be necessary to ground the electronic circuitry to the tailpiece. The control cavity is at the back of the guitar body. On the inside wall of this cavity you will see a small 1/8” hole.

Run the stripped end of the blue ground wire (attached to the neck pickup volume control) through this hole until it emerges in the hole drilled for the tailpiece bushing. Form the naked wire into a loop, wrap it around the bushing and tap the bushing tightly into the hole. This will ground the circuit.

Installing the tailpiece bushings may be done with a plastic headed mallet or place a small piece of wood on top of the bushing to prevent damage and tap the bushing in place with an ordinary hammer. Now screw the tailpiece mounting screws back into the bushings.

8. THE BRIDGE (PART J)

Now tap the bridge bushings into place and screw in the bridge mounting studs. Attach the bridge.

9. OUTPUT JACK (PART C)

The output jack (once wired) will be attached to the neck pickup tone control pot by a blue grounding wire. Find the green wire running from the pickup selector switch and solder it to the green wire on the output jack. Push the output jack and its wire through the 7/8” hole that has been drilled between the control cavity and the edge of the body.

Attach the output jack plate (Part C) to the output jack (See figure 6) using the washer and nut provided. Screw the output jack plate to the body with the two 3/8” screws provided.

10. BACK PLATE (PART F)

Carefully stuff all of the “spaghetti” into the control cavity and attach the back plate using the three screws provided.

11. TUNERS (PART K)

Attach the six tuning machines to the headstock of the guitar putting a washer beneath each threaded bushing. A small set screw is put in place to prevent the tuner from rotating.

SET UP

Put on the strings and tune to pitch.

1. TRUSS ROD ADJUSTMENT

The adjustable truss rod in the neck of your Guitar has been shop adjusted and should not require any change. If the neck should develop a dip or hollow spot over time it can be removed by tightening the truss rod adjustment nut that protrudes from the base of the headstock just above the nut.

A "back bow" or "hog-back" can be removed by loosening the nut. Great care should be taken with truss rod adjustments where as little as 1/4 of a turn can vastly alter the shape of a neck. A broken truss rod of course means a costly replacement.

2. STRING ACTION

The string "action" refers to the height of the strings above the frets. If the action is too low, the strings will buzz on the frets. If it is too high the guitar will be difficult to play.

3. ACTION AT THE NUT

Setting the string action that is right for you starts at the string nut. The slots at the string nut should already be close to perfection but you might want to make some adjustment. Here's how to do it!
Push the sixth string down between second and third fret. The space between the top of the first fret and the bottom of the string should be about .006" or just about the thickness of the paper that these instructions are printed on. If the gap is wider than .006" you should deepen the slot with a small needle file until it is correct. **DO NOT FILE TOO DEEP!** If the slot is too deep you can fill the slots with a mixture of white plastic sanding dust and crazy glue and then re-shape the slot. Repeat this same procedure for the other five strings. The action at the nut is either right or wrong; it is not a matter of personal preference.

Now let's adjust the height of the strings over the 12th fret. Adjustments to the string action are made by raising or lowering the Tune-o-Matic Bridge with the thumbwheel height adjusters. Following is a chart to assist you. This action adjustment is a matter of personal reference. There should be a gradual increase in height from the first to the sixth string.

String Height at the 12th fret		
	First String	Sixth String
Low Action	1/32"	1/16"
Medium Action	1/16"	3/32"
High Action	3/32"	1/8"

4. INTONATION

The saddles on the bridge can be adjusted to compensate for the pitch modification that occurs when the string is stretched as it is fretted. This adjustment is made by tightening or

loosening the set screws at the rear of the bridge (*see Figure 7*). Start by tuning your guitar and sounding a harmonic chime directly above the twelfth fret on the sixth string. Now fret the sixth string at the twelfth fret and compare that pitch to the harmonic. If the fretted note is higher than the harmonic pitch tighten the set screw to lengthen the string. If the fretted note is lower than the harmonic, loosen the set screw to shorten the string length. When the harmonic and the fretted note sound the same note, the saddle is at the correct position. Repeat this procedure for the other five strings.

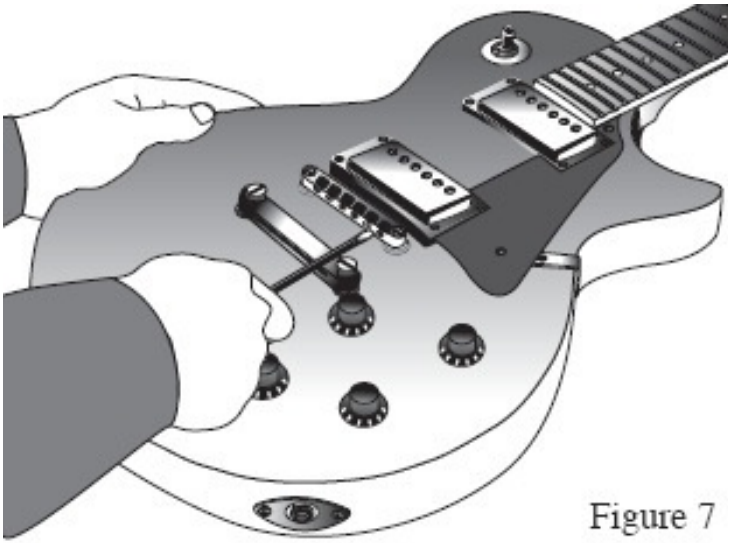


Figure 7

5. PICKUP HEIGHT

Each humbucking pickup is adjustable on the bass and treble sides. Finding the best combination of tone and volume will require some experimentation. A good place to start is to adjust the pickup height so that the first string is about 1/8" over the pickup pole and the sixth string is about 3/16" over its pole.

Electric Guitar setup is an art in itself. For more detailed discussion we highly recommend searching "Electric Guitar Setups" on the internet. There you will find a many experience people sharing their knowledge and techniques on doing this.