

# DIY Guitar Kits

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## ES Style DIY Guitar Kit



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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.

# 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 will have to be sanded with 180 / 240 and 320 grit sandpaper to prepare for 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 or stain, go directly to "Clear Coat".

## NECK

Before application of finish, the fingerboard should be masked off to prevent finish from adhering to the fretted surface.

- Spray all exposed surfaces evenly. The neck of your Guitar has been sanded level so it should not be necessary to sand between coats unless runs, orange peel or drips appear. Use the same procedure that you followed on the body – again, two or three coats should do the job. The final cut and polish take place about one week later when the lacquer has cured.

## COLOR COAT

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.

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 hardware stores. If you have applied a stain 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 polish.

**Note: Any banding on the guitar must be taped off to prevent overspray from the finish.** To avoid runs and drips, hold the spray can 6-10 inches from surface. For 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.

## **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.

# **ASSEMBLING THE GUITAR**

## **1. NECK/BODY ATTACHMENT**

Before gluing the neck to the body inspect the joint at the neck pocket to ensure that it is clean and tight. Apply yellow woodworking glue following the manufactures instructions.

Clamp and clean away excess glue, let dry for 24 hours.

Use scrap pieces of wood along with the clamp to protect the guitar.

## **2. NECK POSITION PICKUP**

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 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.

### 3. BRIDGE POSITION PICKUP

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.

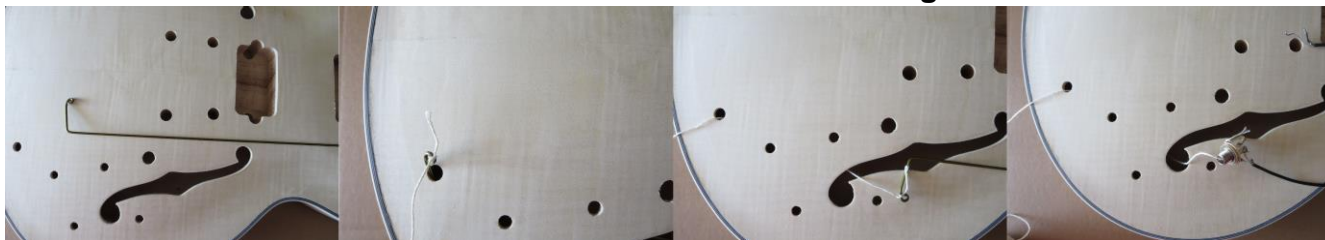
### 4. VOLUME AND TONE CONTROLS

There are 2 sets of volume (A500K) and tone controls (B500K) 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.

### 5. CONNECTING CIRCUITS

The last page 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. Then feed all the components through the sound hole and apply the fastening nuts.

**You can make a tool from a coat hanger.**



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. *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.*

## **6. THE TAILPIECE**

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 bridge stud. 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 ground wire through this hole until it emerges in the hole drilled for the bridge 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 and bridge 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.

## **7. THE BRIDGE**

Now screw in the bridge mounting studs. Attach the bridge.

## **9. TUNERS**

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 thumb-wheel height adjusters. Following is a chart to assist you. This action adjustment is a matter of personal preference. There should be a gradual increase in height from the first to the sixth string.

#### String Height at the 12<sup>th</sup> 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 tightens 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.

### 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.

# 2 Humbuckers w/ 2 Volumes & 2 Tones

with 3-way toggle switch

