

How Many Tools Does A Guitar Require?*

Wayne Henderson uses a whittling knife to carve necks good enough for Eric Clapton's guitar.**

We're not all Wayne Henderson, and those of us building kits don't have his 40 years of experience. What we do have is more guidance than he had when he started out, power tools that can speed our work (and help us make errors more quickly), and many helpful books, people and this little Internet thing. Don't forget the generous help of even more accomplished luthiers than WH, who help us daily.

What tools do you need? Tough question. Its answer depends on woodworking experience, skill with tools, knowing what you want to accomplish and how you want to do it.

We have lists ... There are lists provided by tool suppliers, and lists provided by people who want to save as much money as possible. They are usually different, but some tools cross over. Certain tools are needed, even though they might be costly. Cheap doesn't always save money, and it sometimes costs in terms of build quality.

Buy the tool you need when you really need it and can afford it. The tool you need, if you don't have it on hand, can be gotten online or around the corner or in the next town. Building a guitar won't suffer if you have to wait a day or two for the tool you need. So, buy what you really need to get started, and add to it as you progress. You will find out that you can improvise, modify, invent, rent, borrow and beg the tools you don't have. Also, remember this: When you need a tool for a specialized job, it's very satisfying to have the right tool for the job, with which you can do the job well and efficiently.

Begin by educating yourself on what you will need to do and why you will need various tools. Do this by reading here, other good websites and forums, and in the many excellent books available on guitar building. Just reading through the print or online catalogs of the big instrument tool makers will provide a good start, as they illustrate and explain many basic tools. Knowledge can be gained cheaply and quickly these days.

With that said, here are the lists. In these, we've added notes on some of the uses of the tools. (Some items shown are from the Stewart-MacDonald list, published in their kit manual and online. Their parts numbers and current prices are shown for these items, but virtually identical tools are available from other suppliers and from wood crafter stores.)

The tools are listed in categories. (*Items with † are in multiple categories.*)

Specialized Instrument Tools are those from suppliers like Luthiers Mercantile, Stewart-MacDonald and other luthier supply houses.

Woodworking Tools can be found at most any wood crafting store.

Standard Tools and Devices are those that you might already have for around-the-house chores.

Other Miscellaneous Items aren't even necessarily thought of as "tools," but are used in the construction of guitars.

Supplies and Finishing Materials: Self-explanatory.

* "How Much Land Does A Man Require" is the title of a wonderful short story by Leo Tolstoy.

** Wayne Henderson is a guitar maker in Rugby, Virginia, an outstanding bluegrass player, and the main character in Allen St. John's excellent best-selling book, *Clapton's Guitar*.)

Specialized Instrument Tools

(Items with † are in more than one list.)

† Digital hygrometer #5315 (\$24.98)

(If you don't have one of these, get one. You don't have to pay 25 bucks to get a good one, but to protect your guitars (kit components and finished instruments) you need to know the relative humidity (RH) of your work and instrument storage area: That RH should be about 40% to 50%, and the kit components should be exposed in that environment for a week or two before building. When you glue, it's a good idea to do it in this humidified environment and leave it there to dry. (Note: To modify the humidity, you will need either a humidifier or an air dryer, depending on where you live -- unless you live in *just* the right place!)

Small hand plane #3141 (or a bandsaw, or a coping saw, sandpaper and time) (\$133.50)

The hand plane would be a great tool, for those experienced in using it. But, alternatives abound. You can use a coping saw, files and sandpaper if you want to really save money. It will take time to do the things you need done. Using slow hand tools will also reduce the chances of making a mistake and ruining something — always a threat with something like a bandsaw or power coping saw.

† Dremel rotary tool #0399 (or laminate router)(\$109.89)

This is used for routing the binding and purfling channels. It is necessary. I bought my Dremel set for \$60. Discovered it didn't work well enough for bindings/purflings, and bought a laminate trimmer/router on eBay for \$25. including shipping. The Bits (next item) were costly. If you can find a decent used laminate router in a pawn shop, buy it. You might not really need the Dremel.

5 /16" binding router bit #0115 (\$14.98) (See next item too)

This bit is designed for routing the binding and purfling in most kits. However, if you buy the next item, you won't need this one at all.

Ball-bearing binding router cutter set (#1295) (84.95)

You don't have to buy the whole set of these. You can buy just one or two bits; be careful to buy the ones with the right offset. These are also called "rabbeting bits," and you can find them in woodworking shops and on eBay, too. They are easier to guide accurately than the regular 5/16" bit.

† 1/4" & 3/8"-diameter brad point bit (included in Brad Point Drill Bit Set #0339)(\$20.70)

These are not essential. Any set of drill bits will work if you're able to drill accurately on center. Using a center punch and going slowly helps a lot with this.

† Curved Brace-shaping Chisel #1629 (54.50)

This chisel has a curved shaft so you can cut scallops and tapers into braces. This is a nice tool to have, but its function can be carried out using files and sandpaper, and straight chisels.

† Rasp #3064 (Luthiers file set #0842) (\$41.70)

There's nothing magical about this particular file set. I finally bought this set, but before I had it, I did the same work with 40- and 60-grit sandpaper glued to sticks. You will need to file a lot while building, so if you don't already have some of these around, this set of five shapes is about as economical as you'll find anywhere else.

† Half-round bastard file (\$10.00), Smooth mill file (\$10.00), Rat-tail file (\$10.00)

Put these three together for \$30; might as well buy the set above if you don't already have files. Don't forget the technique of attaching sandpaper to sticks and blocks for "filing."

Nut-slotting files (#4541, 4542, 4543, & 4544 suggested for acoustic guitar)(\$91.76)

These are very expensive, obviously. They are quality tools that you might need if you are going to slot many nuts, but for only one kit guitar, check out a set of gauged edgecut files at a wood crafter's store.

Fret leveling bar #4578 (\$40.87)

This is a precisely flat rectangular bar that is used to sand down the frets, leveling all of them to each other. (Then, the fret crowning file is used to individually round them.) Sandpaper is attached to it for this purpose. Any precisely straight, flat bar could be substituted. The published tool description suggests a carpenter's level as an alternative. Use any similar tool with sandpaper stuck to it.

Courtesy of The Kit Guitar Website -- <http://www.KitGuitarBuilder.com>

Visit our Forum -- <http://www.KitGuitarForum.com>

Fret crowning file #4490 (\$37.83)

After frets are levelled, they need to be crowned to provide an accurate point of contact; intonation depends on it. Used properly, this file will do the job without scarring the fretboard. It's one of those "specialized tools" you probably need to pay the high price for. Some people have used sandpaper and regular files; it's risky. You'll forget about the \$38 bucks long before you might stop being irritated that you saved it and scarred your fretboard.

† Fret cutters #0619 (\$27.48)

These are handy since they cut on the end instead of on the side. They are used to cut the fret wire before installing in the slots, and for cutting them flush to the fretboard edge after installing them. However, you can find a substitute at the hardware store, or you can use a good pair of medium-duty side-cut wire cutters. Cut carefully so you don't scar the fretboard. (Masking tape will help protect it.)

† Fret hammer #4895 (\$15.95)

This hammer is used to tap fret wire into the slots of the fretboard. At the hardware store, these hard plastic and brass hammers are less expensive.

Large Cam clamps (8) #3723 (\$123.20)(\$15.40 each)

Instrument makers have used these for eons; they simply stress a piece of wood to apply pressure. You can make them if you already have a wood shop. If not, buy them. You'll need them. Minimum of four.

Spool clamps (24) #0684 (\$66.60)

StewMac's instructions tell how to make these yourself. You will need them if you don't use an outside mold for your guitar body. (StewMac's and some other ways of molding the body make the use of these clamps possible, but using a hard mold or other outside mold make them unusable.)

16" radius gauge (included in Radius Gauge Set #5432) (\$15.95)

This helps you to radius your fretboard, but most kits include a radiused and slotted board. It might also come in handy for radiusing a saddle, but there are many other ways of doing that task. You can make one easily enough by drawing your own radius and cutting it out of plywood, plastic, aluminum ...

Bridge pin reamer #3229 (\$44.90)

For either 3- or 5-degree angle bridge pins, this is possibly available at a well-stocked wood crafting store. Ditto for the following item. To get a tapered hole, you can also use a tapered rat tail (round) file.

Violin reamer #0344 (\$38.58) (to enlarge pegholes for bushings)

This is only required for certain types of bushings and tuner assemblies. You might not need it at all, depending on the tuners you use. I bought one and never have used it on three kits.

Long straightedge #3799 (or #3800) \$56.40

The one in the list is a very precise straightedge. A good marked 24" steel rule from a wood crafting store works well.

Woodworking Tools

† Chisel(s): 1/4", 1/2", 1"

Dremel tool or Laminated Router/Trimmer (You'll need this; check eBay and local pawn shops.)

Precise Ruler (How precise? Just get a good one from a wood crafter shop.)

† Long straightedge (The precise ruler will do it: Get a 24" one with a channel for angle attachment.)

Razor knife (X-acto®) (Any kind of razor knife will do.)

Centerpunch or awl (File a heavy nail to the right kind of point.)

Small razor saw (A hacksaw blade can be substituted if used carefully.)

Scraper blades (My very favorite tool of all I have newly discovered!)

† Fret Hammer (plastic/lexan-tipped hammer)(Or attach something to your regular hammer.)

† File Sets

† Drill Bits

Clamps: Lots, all kinds! (Find them at swap meets and garage sales, or borrow.)

Around The House Tools and Devices

Tape measure

Clothespins (at least 100)

Small artist brush

Rubber squeegee or edge of a credit card (I used a new unused deck of plastic coated playing cards.)

Electric hand drill (required)

Other Miscellaneous Items

Feeler gauges (auto or hardware store) or use various guitar strings, already gauged for you.

Guitar capo (Rubber band and popsicle stick will do for this purpose.)

Heat gun (or hair dryer) borrow one. For warming tape adhesive to remove it. (I used a light bulb.)

† Digital Hygrometer

Humidifier for shop/storage room (Needed depending on climate; you want 40-50% RH.)

Scrap wood for cauls, sanding forms and blocks

Supplies and Finishing Materials

Cheap plain vanilla masking tape

Low-Tack drafting Tape

Blue 1" Masking Tape

Double-sided tape

Glue (titebond, LMI White Instrument Glue, and Binding glue)

Acetone and Thinner

Paper towels, tissue

Clean cotton rags

Sand Papers

Finishing Materials: An Entirely Separate and Hugely Detailed Subject!

Suggestions Welcome!
Send to Bill Cory

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