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Introduction

So you want to build a guitar? Ok then. Let's get started. This instruction manual provides basic instructions that cover nearly every model we sell. Wiring diagrams specific to the model you purchased can be found on our support page at vibworksguitar.com/support.

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Before Starting

Buying a kit is different than buying a finished product. Because it is a kit of parts rather than a finished product, you may encounter issues that will require additional attention during the build process. Occasionally a small dent or crack will need to be filled. The neck pocket or pickup pockets may need to be sanded to get a good fit. Glue spots and rough edges are common, and may require sanding.

If you run into any issues that you aren't sure how to handle, please contact us. We'd love to help out how we can, ensuring your build is successful.

Important Tips

1. Inspect and Test Fit before starting. Discover a cracked part as you take it out of the box? We can help with that. Discovering the neck doesn't fit after you've shaped the headstock and applied a finish? That makes things trickier. Inspect parts thoroughly for the best warranty experience.

2. Veneers do not need sanding. They are already prepped for finish. If you do sand, only do it by hand, with a very fine grit sandpaper.

Important Tips - Continued

3. **Power tools need not apply.** Your fancy drill is great for putting screws in fast. It can also put them in crooked, strip the heads, or cause other havoc. Taking a few extra turns of a manual screwdriver like Grandpappy used to have will make for a better long-term experience.

4. **Take your time.** This is the biggest difference we see in order to end up with a beautiful finish and a great playing guitar. No need to rush any of it.

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Test Fit

Before you start with your build, test fit all the parts. This will avoid unpleasant surprises from coming up down the road.

Neck Joint

The neck should fit firmly in the neck pocket. This is especially important on kits with glued-in necks. On guitars with bolt on necks, a small amount of play is generally acceptable. If the neck pocket is too tight to fit the neck, a small amount of sanding to the body is usually sufficient to put it in place. If the neck fit is too loose, a small shim of any materials will help close the gap to ensure a solid connection.

Bolt-on necks should have a snug fit for cosmetics only. A small gap of less than 1/16" or so is not uncommon. It will not affect the structural integrity, playability, or tone of your guitar.

Neck Joint - Continued

Many kits have a fretboard that overhangs over the body. There could even be a small gap under the fretboard on the side or front edge. This gap is intentional, to give the fretboard the right height for the string action. The gap is cosmetic and can be ignored or filled as you see fit. **Do not sand the back of the neck in order to reduce this gap.** This will affect the string height of the guitar and render it unplayable.

Inserting The Neck

The neck pocket of most guitars is slightly tapered, getting wider toward the upper frets of the neck. For this reason, necks need to be inserted in the correct direction, otherwise they will not fit.



Checking the String Length

While this is almost never an issue, it's best to make sure the neck will be positioned correctly in relation to the bridge. This will ensure you will have correct intonation once it comes time to do the final setup on your new guitar.

Checking the String Length - Continued

Contrary to the commonly shared idea, scale length is not the distance from the strings to the bridge. **Scale length** is the distance from the Nut to the crown of the 12th fret, multiplied by two. The distance from the nut to the bridge is the string length. **String length** is normally the scale length + 1/16 to 1/8 inch, depending on where you measure. The reason for this is that the string length needs to be long enough to compensate for the string thickness when you press a string to a fret. Bass string length is longer than treble string length.

A good example of this is on a standard LP guitar. You may have noticed the bridge is not parallel to the pickups or the tailpiece. It sits at a slight angle. This provides the compensation for the various string weights.

On your guitar kit, measure from the nut to the 12th fret, then double that number and add 1/16". This should roughly be the measurement from the nut to the center of the bridge. Most bridges are adjustable to help fine-tune the intonation as part of the final setup.

Neck Angle

Many guitars (especially those with set necks) have necks that angle back. This is normal, and not a defect. To ensure the angle is correct before securing the neck, put the neck and the bridge hardware in position. Take a long straight edge or a string and run it from the nut to the bridge. If the angle is correct, the straight edge should follow the fretboard at a nice, even plane. If the straight edge intersects with the fretboard or the gap gets larger as you move down the fretboard, ensure the neck is straight by adjusting the truss rod, as discussed in the next section.

Inspect Other Parts

Parts should be in good condition. Other than expected cleanup issues such as sanding or filling, they should be ready to use. If you find a broken or unrepairable part, please let us know so we can replace it for you.

Inventory of Parts

The bags of various screws and other parts can be intimidating at first glance, but most parts become self evident as the build proceeds. There won't often be more than one place where any given part can go. Process of elimination will quickly clear up any anxiety. Most model-specific instructions include a labeled part guide to help you identify parts in your kit.

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Headstock

Many guitar kits come with an oversized, unshaped headstock. These headstocks, affectionately called “paddles”, are intended to be shaped by you- the builder.

The major guitar manufacturers we know and love normally carry trademark protections for elements of their iconic designs. This includes headstock shapes. For this reason we cannot sell headstocks shaped like your favorite brand, nor do we supply templates to make that happen. However, a quick internet search will normally turn up the template you are looking for.

Is It Legal?

Is it legal for you to use a template to shape your guitar the same as a major brand?

Yes. It's your wood, you can shape it however you like.

Is it legal to shape it like a Fender Stratocaster, put a Fender logo on it, and sell it on eBay as a genuine Fender guitar?

No. That is fraud. Don't do that.

Many customers elect to draw their own shape. This is a great way to go. Afterall, anyone can go buy a name brand guitar, you might as well make yours unique.

Shaping the Headstock - Continued

After selecting the shape, transfer the design to the headstock. Use a heavy cardstock to cut the template if needed, and trace around the outside edge.

Important: Before cutting, test fit the tuners in place to ensure your design will not interfere with the way the **back** of the tuners mount to the headstock.

Cut your design using a coping saw, band saw, or jigsaw. Be sure to keep the saw square with the headstock as you cut (unless you intentionally don't want square edges). For fine details, small files can help you obtain the shape you want quickly. Finish by sanding any rough edges with a medium grit sandpaper.

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Neck & Frets

Nothing determines the playability of your guitar more than having a straight neck with level frets. The effort needed in the setup process will take some time to get right.

Some of this work can be done prior to installing the neck, but many tests and procedures will need to be repeated after installing the neck and adding string tension.

All of the guitar kits we sell feature dual-action truss rods. This will help control the straightness of the neck, and counteract the effect of the string tension. Necks are straightened from the factory, but many factors such as time, humidity, and materials can affect the neck before you start your build. Begin by looking down the length of the fretboard. Ideally the neck is flat. If not, it may have a bit of a concave or a convex bend. Either of these situations can be addressed with an adjustment of the truss rod.

Truss Rod Adjustments

An Allen Wrench for adjusting the truss rod is included in your kit. It is hidden away, normally in the same bag that includes the output cable.

Truss Rod adjustments should happen slowly. Normally $\frac{1}{4}$ turn is enough to get the neck in line. If more adjustment is needed, spread the process over a few days to allow the wood time to adjust.

Concave Bend

If the neck is bending forward, adjust the truss rod by inserting the included Allen Wrench into the truss rod nut which is normally located at the base of the guitar headstock. Turn the nut clockwise to add tension. This will slowly pull the headstock back.

Convex Bend

If the neck is bending backward, adjust the truss rod by inserting the included Allen Wrench into the truss rod nut which is normally located at the base of the guitar headstock. Turn the nut counter-clockwise to add tension. This will slowly pull the headstock forward.

Checking For Level Frets

All of the frets on the kits we sell are leveled, crowned, and polished at the factory. This is intended to reduce the amount of setup required. However, the act of building the guitar, adjusting the neck, and adding string tension, may create the need for some frets to be addressed.

Inspect for high frets by using a fret rocker, or other piece of robust flat material. Place the rocker on each fret one at a time, and try to rock from one side to the other onto the adjoining frets. If the rocker doesn't rock, that fret is level with its neighbors and you can move to the next fret. Continue this process for the length of the fretboard on both the bass and treble sides of the fretboard.

Another method is to color the tops of each fret with a marker, such as a Sharpie. Then, take a long sanding block or a level, wrap it in sandpaper, and sand the length of the fretboard a few times. Any high frets will lose their marker quickly.

If a high fret is encountered, first check to see if it is seated correctly. If it is not, a swift blow with a rubber mallet may put it into place. If it is already seated correctly, use a small file to slowly work down the height of the fret. Frets are a fairly soft metal, so approach the process with care and check the level frequently.

Once the fret is level with the others on the fretboard, it will have a flatter top. Flat frets can be crowned using a crown file, or a small detail file.

Tip: Mask the fretboard on each side of the fret you are working on to ensure that you don't accidentally damage the fretboard.

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Applying a Finish

We could write a whole book about applying a finish to an instrument. In fact, people have. Rather than trying to be the authority on guitar finishes, here are some tips and additional resources you might find useful. Our official stance is that these are not “paint by numbers” projects, and we love seeing adventurous, creative choices made with finishes.

Sealers - Our kits are sold as raw wood with no sanding sealer applied beforehand.

Grain Fillers - These can be used at your discretion. Many of our woods, such as Basswood and Alder, have a fairly tight grain and filler should not be needed. Others such as Mahogany have a more open grain and a filler could be used.

Materials - While “instrument grade” finishes are not required, many people choose them for the authentic colors and behaviors similar to vintage or contemporary instruments. If you’d rather use dyes, materials off the shelf of your local hardware store, or nontraditional options such as gun stock oil, that will work too.

Masking - Mask the binding prior to applying your finish. After you apply your finish, remove the tape. You might notice that it has bled under the tape. Before you start cursing, know this is normal. The excess finish can be removed with a thinning agent such as alcohol, or scraped off using a razor blade and a steady hand.

Temperatures - Follow the manufacturer’s instructions for recommended ambient temperature. For spray cans, warming the spray can in a tub of hot water before use will result in a smoother finish that is less likely to splatter.

Patience - Take your time when applying finishes, especially clear coats. Follow the manufacturer's instructions for wait time between coats. The difference between a \$100 guitar finish and a \$5,000 guitar finish normally lies in the number of coats and the prep work between coats, such as wet sanding.

Neck Installation - Before or after finish? That is up to you. For a more uniform look, installing the neck prior to applying the finish will be the way to go. If the neck will have a contrasting color, finishing with the parts separate will make things easier. Either option is viable.

Additional Resources - If you want a specific look but you're not sure how to apply it, there are many experts on the internet making every kind of finish imaginable. YouTube will undoubtedly be full of tips, opinions, and instruction to suit the kind of finish you are looking for.

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Securing The Neck

Whether you decide to secure the neck before or after you apply your finish, the process will be the same.

Tip: When clamping, be sure to protect the frets from damage from the clamp by using a padded clamp, or insert a rag between the clamp and the fretboard.

Set Neck: For guitars with set necks (glued in place), first, ensure the fit is correct as outlined in Section III above. Apply wood glue to the 3 mating surfaces of the neck and insert into position. Ensure the neck is seated at the back of the neck pocket, just as it was during your test fit. Use gentle pressure with a clamp and allow it to dry overnight.

Any wood glue will work fine. We sell Titebond Original, but most products at your local hardware store designed for gluing wood will work just as well.

Bolt On Necks: This neck joint version is less anxiety-inducing for novice builders. Ensure the fit is good, as outlined in Section III of this guide. Secure the neck to the guitar using a clamp. This will ensure a tight fit and help the screws to travel straight. Use the included neck plate or inserts, and secure the neck screws into position.


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Wiring

Wiring diagrams for individual models can be found on the support page at vibeworksguitars.com/support

Similar to applying a finish, wiring can be adapted to your personal taste. We supply standard wiring diagrams to get you started, but more options exist. Here are a couple tips as you start the process:

Soldering Basics - If you are new to soldering, it can be intimidating. Don't stress. It isn't too complicated. There are several Youtube tutorials you might find helpful as you start.

Grounding - One common aspect of building from a guitar kit is the idea of grounding different components. You will see the grounds noted on the wiring diagram with this symbol: 

The principle of grounding is simple: All the components (pickups, pots, switch, jack) have a ground. All these grounds need to be connected to each other in one way or another. For instance, if the pickups are connected directly to the volume pot, the bare wire of the pickup (the ground wire) will be connected to the back of the pot. A wire will also be run from the back of the pot to the output jack. This ensures the ground has continuity from the pickup all the way to the jack.

Colors - The colors noted on the diagrams are not set in stone, they are a representation only. Actual colors will vary over time. Color representations are usually not universal. If you ran out of red wire but have orange? Use the orange.

Bridge Ground - A commonly overlooked ground is the bridge ground wire. This goes from a grounding point (commonly the back of a pot) and makes contact with the bridge somewhere. This may come out under the bridge,

like in a TL or ST guitar, or perhaps make contact with one of the bridge posts on a LP or Hollow Body style. This is an important part of making the electronics nice and quiet.

Wiring Videos - In addition to the wiring diagrams, lots of wiring videos are available on popular video sharing sites. If you want to do a standard wiring setup or a custom mod, you can likely find a step-by-step example to follow.

Pot Types - Each pot is marked with either A500k or B500k. "A" pots are generally used for Volume control, as they have a logarithmic sweep that sounds more natural for volume. "B" pots are generally used for tone, as their sweep is linear. The truth is, you can use either pot in either position, the amount of adjustment will just sound slightly different as you operate the knob.

Pickup Positions - Some guitars feature two pickups, where one is designed to go in the neck position, and the other near the bridge. Sometimes these pickups are not labeled, and unfortunately the wiring color is not consistent. If these pickups are mounted in rings (as found in a LP and others), the pickup in the taller ring is for the bridge, and the shorter ring goes in the neck position.

Testing - You can test your components before stringing the guitar. Plug the wiring harness in, and tap on the pole pieces of the pickup using a screwdriver or other metal object. You should hear an audible thump. If you don't, make sure the volume pots are turned up and try again. If you still get nothing, check your connections.

Hollow Body Wiring

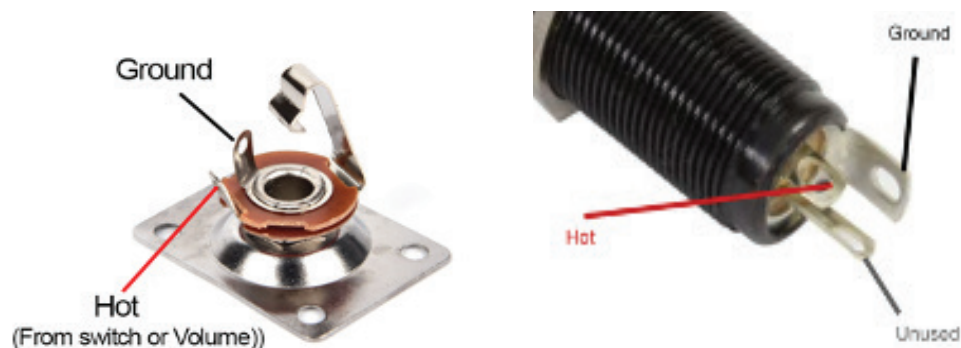
Hollow body and Semi Hollow body guitars do not have a control access plate, which presents an additional challenge. Rest assured, people have been wiring guitars like this for about 75 years, so there is a solution!

All of the soldering will be done outside of the guitar. Draw a template of the guitar to ensure you are allowing yourself long enough wires between components. Some components, such as the pickups, may need to be wired after passing the wires through an access cavity. Examine your guitar to see if those needs exist.

Once the wiring harness is complete, run a small string or dental floss through the mounting hole for the component (i.e, the switch) and out the F-Hole. Tie the switch (or pot, or jack) to the end of the string and pull. This will put the component into position, where you can secure it with the mounting nut.

Output Jacks

There are primarily two types of output jacks used on our kits. Mono and Stereo. Connections are made as shown below.



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Final Assembly

With the neck in place and the wiring complete, you are now ready for final assembly and setup.

Insert the tuners, using hand tools and firm pressure.
Install the string retainers, if equipped.

Attach the strap knobs

Secure the bridge and tailpiece, if equipped.

Install the knobs.

Install the strings. The strings included in your kit are a generic set intended to help with the setup. After installing the strings, verify the straightness of the neck and the playability of the guitar. Make adjustments as needed.

Guitar Setup

Setup of the guitar ensures good intonation and playability throughout the length of the neck.

1. Ensure the neck is straight. Skipping this step will make subsequent steps impossible to complete.

2. Set the string height by adjusting the bridge. Measure the distance between the fretboard and the strings at the 12th fret. Generally this should be around $5/64$ " for bass strings, and $4/64$ " for treble.

3. Set the intonation of the guitar. An electronic tuner is very helpful for this step. Tune your guitar to its corresponding note. Now play the string at the 12th fret and check the tune. If it is in tune at the 12th fret (one octave above the open note), no adjustment is needed.

If the note at the 12th fret is sharp (too high), adjust the bridge to bring the corresponding saddle to the back, toward the bottom of the guitar. This elongates the string allowing it to sound lower. Retune using the open string,

then check at 12th fret again.

If the note at the 12th fret is flat (too low), adjust the saddle forward, shortening the string between the 12th fret and the saddle. Retune using the open string, then check at the 12th fret again.

Repeat this process until your guitar is in tune with the open strings and also at the 12th fret.

Tip: If you change the gauge of the strings you use or adjust your truss rod or string height, you will need to repeat this process. The thickness of the string and distance from the fretboard affect the intonation of each string.

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Conclusion

Congratulations!

Your build is now complete! We'd love to see what you have created, and share it with our community. Submit your build at: vibeworksguitars.com/gallery