Solo FB Style DIY Electric Guitar Kit

Assembly Manual
FBK-1

V 1.02

Show Off Your Custom Built Guitar!

When you have your guitar finished, please take a few pictures and send them to us for potential posting into the picture gallery on our website.

Post your photos to our Facebook page
http://Facebook.com/SoloMusicGear

Post your photos to The Solo Café
http://TheSoloCafe.com

Remember, you can always find us online at http://SoloMusicGear.com to upgrade your parts, try a new kit, or ask us a question.

Thank you for purchasing a Solo DIY guitar kit. This unfinished guitar kit has everything for building an electric guitar – you will need only some basic tools and finishing supplies. All challenging wood cutting, drilling and shaping is already professionally done, as well as fret leveling and dressing.

1. CHECKLIST

Before you start working on your DIY guitar project, please check all the parts received in this kit.

2. TOOLS AND MATERIALS NEEDED

You will need the following tools and materials:

1. Sand Paper (180, 240 and 320 grit)
2. Sanding Block
3. Soldering Iron & Solder
4. Masking Tape
5. Finishing Supplies
6. Screwdrivers

3. SAFETY MEASURES

Some woodworking skills are required to complete this project. Always be aware of the necessary safety precautions and follow them – be sure to use safety glasses and a dust mask when you are working with any tools. If you are a novice, you should look for help and guidance of a more experienced friend. And never forget that it's always better safe than sorry.

4. FINISHING THE BODY AND NECK

Before you start finishing the neck, please inspect the frets and the fingerboard. Even though all wood is kiln-dried it may still shrink a little so you may get sharp fret edges.
In this case you need to use a fine needle file (Emory boards for finger nails can be used instead) to remove all sharp edges: first make all fret edges flat with the fretboard edges on both sides, than use masking tape on the top of the fretboard to protect it, and work on each fret's edge to smooth it by slightly rounding it. Before removing the masking tape, consider polishing the frets with fine steel wool.

STEP 1 – The body and neck have been coated with a poly resin sealant. They need to be sanded before finishing. DO NOT SAND THE FINGERBOARD.
For sanding both neck and body, use a flat sanding block for all flat surfaces and by hand for edges and

rounded/curved surfaces. Start with 180 grit sandpaper, continue with 240 and finish with 320, always moving along the grain only. Before the final sanding, wipe the wood with a damp cloth and let it dry to raise the wood grain.

STEP 2 – There are many different ways to apply finish to your guitar. Do a little research to decide which type of finish you want to use. One good starting point is to review tutorials at the Project Guitar website: http://www.projectguitar.com/tut/tutorial5.htm

STEP 3 - For any type of spraying finish (lacquer or paint) you will need to mask three areas with masking tape: neck pocket on the body, neck's fingerboard and truss rod nut. Press the tape tightly to the wood, not allowing any gaps at the edges, to completely prevent the finish leaking to these areas.

STEP 4 - You will also need to make hangers for both the body and neck (if you want to apply any spraying finish). Make them from a strong metal wire (wire dress/coat hanger can be used for it).

STEP 5 – Apply the finish by following the manufacturer instructions. Remember that spraying the finish is not an easy process as it requires certain skill and experience – you might want to practice first on some scrap wood. Always remember your safety – work only in a well ventilated area, away from any open fire and wear a respirator mask and safety glasses.

STEP 6 – Final polishing for high gloss finishes can be done manually or using a power drill with a foam polishing pad. The finishing tools and materials are readily available in many automotive/hardware supplies stores.

TIP: Consider an oil rubbed finish (sometimes called "wipe-on oil finish") as a good and safe alternative. Tru-Oil® (known as a "Gun Stock Finish", based on Linseed Oil) or Waterlox® (Processed Tung Oil) is highly recommended. Oil finishing takes longer, but it is very safe and easy to apply and a high quality finish can be achieved, even by a novice.

5. ASSEMBLY

STEP 1 – Installing the Neck. Using the 4 screws supplied, the neck-plate and neck-plate cushion, install the neck to the guitar. Insert a screw through the neck-plate and cushion, guide it through the appropriate hole in the body and into the corresponding hole on the neck. Start to thread the screw into the neck enough that it holds. Repeat until you have all 4 screws threaded into the neck. Now you can proceed to drive these screws in until they are almost tight. Double check that the neck aligns with the bridge post holes, and once satisfied, tighten all 4 screws to the neck.

STEP 2 – Installing the Tuners. Organize all the parts for the tuners, in the order in which they will be installed. You will have 6 in a row, and the small flange with the screw-hole should face the middle of the headstock, and point toward the body of the guitar. There will be 6 tuners, 6 washers, 6 hex barrel nuts and 4 small screws. Once arranged, take the tuner and install through the headstock from the back, placing the washer over the

post, and threading the hex barrel nut so that it is finger tight. Install all 6 tuners in the same fashion. Now flip the guitar over and align all the tuners so they are properly aligned. If the screws are pre-drilled, you can align each tuner to its respective hole, but if not...align all the tuners to your satisfaction and make a mark on the back of the headstock with a pencil or awl. Drill pilot holes for all the screws, install the screws and tighten the hex barrel nuts with a wrench or socket.

STEP 3 – Installing the Bridge and Tailpiece. The FBBK-1 has two sets of bushings included in the kit for the bridge and tail-piece. Take the two bushings with the narrow post on top and press into the two holes closest to the pickup cavity. You can press these in with an arbour press, a drill press, or by tapping them in with a hammer. We suggest using a hollow tube or something like a socket to sit on the shoulder of the bushing, to prevent damage to the post. Before installing the second pair of bushings (the one's with the large head on top), take the red ground wire, strip 3/8 - 1/2" of bare wire, and insert the opposite end into the hole that goes between the bushing hole and the control cavity. Leave only the bare wire in the bushing hole, and then press in both the tailpiece bushings. Make sure the bushings are pressed in to the shoulder on the top edge of the bushing. We will add the bridge and tailpiece when we are ready to string the guitar.

STEP 4 – Wiring. Take the 3-way switch and solder the wires to the lugs as per the wiring diagram. Fasten the switch to the pick-guard with the washer and hex nut. Insert the wire through the hole in the switch cavity, through the pickup cavities and into the control cavity. Go ahead and fasten the pick-guard with the supplied screws. Now, starting with the neck pickup (see wiring diagram), insert the pickup wire through the holes in the pickup cavities and into the control cavity. Align the pickup with the end of the neck making sure that it is parallel to the neck and centered between the edges of the neck. If there are pre-drilled holes for the pickup rings, install the screws now making sure not to over-tighten, as this may break the plastic rings. If there are no pre-drilled holes, you will have to mark the hole locations through the pickup ring, and pre-drill the pilot holes yourself. Repeat this process for the bridge pickup. Now, following the wiring diagram, install the 4 pots (Volume/Tone & Volume/Tone). Proceed to solder all the connections as per the diagram, making sure to connect the ground-wire from the bridge, and leaving the input jack wire inserted through the hole in the pickup cavity, to the outside of the guitar. Solder the two leads to the jack and again, mark the locations for the 4 screws to hold the input jack. Install the 2 screws and check all your connections. Remember, if you are not experienced in soldering, ask a friend or expert to assist you! Once you are satisfied that your electronics work properly, install the control cavity cover with the 4 screws supplied.

STEP 5 – Extras. Take a moment to ensure there are pilot holes for the truss rod cover and the strap pins. If not, locate and mark these screw locations and pre-drill as necessary. The strap pins can be installed now, but wait until you have completed your guitar set-up before installing the truss rod cover.

STEP 6 – You are now ready to install your strings. Just before you start, it is a good idea to treat the fret-board with a light oil. This keeps the fret-board from shrinking and cracking, plus reduces discoloration and dirt from entering the pores in the wood. You can purchase fret-board oil, or you can use any light non-food oils, like tung oil or walnut oil or lemon oil.

The strings are numbered from the thinnest to the thickest from 1-6. (This means the top string when you are playing the guitar is the thickest and is number 6) In standard tuning the open notes are 1-E, 2-B, 3-G, 4-D, 5-A, 6-E. First, install the bridge on the two bridge posts with the screws facing away from the pickup. The tailpiece sits against the other posts, under the large heads. When you attach the strings, the pressure of the strings will hold the tailpiece in place. The strings are installed by inserting the bare end through the appropriate hole at the back of the tail-piece and stretching the string over the appropriate saddle, nut slot and then onto the tuner. Winding the string onto the tuning post can be accomplished in various ways....you may already have your own preferred method, or you may defer to a friend or expert to show you the correct method. Having the proper number of winds on the tuning post helps to keep your strings from slipping and/or stretching, and therefore keeps your strings in tune. Repeat this process for all six strings. You will adjust the height of the bridge in the 'Set Up' section, and once set, you can adjust the height of the tailpiece so that it is adjusted as close to the body as possible, without the strings hitting the back of the bridge (you should be able to slide a piece of paper between the strings and the edge of the bridge).

Once all the strings are installed and brought up to pitch using a tuner, you are ready to move on to 'Setting Up the Guitar'.

6. TUNING AND SETUP

Tuning a 6-string guitar:

The open strings of a guitar, from the thickest to thinnest, in standard tuning are:

- E (2nd octave) – the thickest (or lowest sounding) string - is the 6th string
- A (2nd octave) – is the 5th
- D (3rd octave) – is the 4th
- G (3rd octave) – is the 3rd
- B (3rd octave) – is the 2nd
- E (4th octave) – the thinnest (or highest sounding) is the 1st string.

There are different methods to tune a guitar. Using a digital tuner is the easiest way. However, it is good to learn tuning (and checking the accuracy of tuning) by ear with natural harmonics, unisons, octaves etc.

Guitar playability and intonation depends on its setup, so you may want to spend some time mastering the necessary skills – be persistent in finding the optimal action (string height), neck relief and intonation throughout the entire neck.

Adjusting Strings Height:

The string height is ruled by 3 physical adjustments. First, the nut at the headstock of the guitar must be properly slotted for height and string gauge. The nut supplied with this kit has been slotted for medium gauge strings and should be acceptable as far as the height of the string over the 1st fret. Second is the height of the

bridge and/or saddles (depending on what style of bridge is supplied with the kit). Since the fret-board has a radius on top, you must be sure to reflect that radius in the string height...in other words, when the string height is adjusted, the strings should have the same radius as the neck. The third adjustment is the 'Neck Relief' and you will be referring back to the section 'Adjusting Neck Relief' during this part of the set-up. Using the supplied allen key for the saddle screws, you can raise or lower the strings at the bridge....remember, the lower the action the easier the guitar will play, but the more prone to the strings buzzing on the frets! The higher the strings, the harder the guitar is to play, but you eliminate the fret buzz.

For the 1st string (the thinnest one) adjust the height using the saddle for that string, so there is a 0.063" - 0.078" gap (1.6 - 2 mm) between the string and the 12fth fret. This should create a gap of about 0.01" - 0.016" (0.25 - 0.4 mm) between the string and the 1st fret (this is a very small gap so you may want to use feeler gauges for this measurement).

For the 6th string (the thick one), adjust the gap between the string and the 12fth fret to 0.078" - .01" (2 - 2.5 mm) and you should find yourself 0.016" - 0.024" (0.4 - 06 mm) between the string and the 1st fret. Adjust the height of the remaining 4 strings so they create the same radius as the fret-board (you may want to make a cardboard radius template to assist in these adjustments....resting the template on the two outside strings will allow you to adjust the inner 4 to the face of the template).

You may have to go back and forth between String Height and Neck Relief until you come to the perfect union the first time you set up the guitar!

Adjusting Neck Relief:

Neck relief is the amount of bend in the neck to allow for proper string vibration. The physical properties involved here are the strings pulling the headstock forward (toward the front of the guitar), the thickness of the strings (heavier gauges obviously have more tension and will pull the headstock forward more forcibly), and string height (a combination of how the nut is cut and how high the bridge and or saddles are adjusted). Because of the relationship between string height and neck relief, you may have to go back and forth between adjusting the neck relief and adjusting the string height a couple times.

Your Solo Guitar neck has a built in truss rod which counter-acts the forward pull of the strings...in other words, when you tighten your truss rod, you straighten the neck, or pull the headstock toward the back of the guitar. You will have to make truss rod adjustments usually when setting up the guitar for the first time, and then in spring and fall when there are major humidity changes in the weather (remember, humidity affects the wood of the guitar neck, either swelling or shrinking it).

String up the guitar as normal with your chosen gauge of strings....make sure the strings sit properly in the nut slots at the headstock of the neck and that the strings are brought to tension (tune the guitar). The strings should sit easily in the nut slots, not be loose, and especially not sit on top of the slot (if either the slots are too loose or too small, you will want to consult an expert to either fill or file out the slots). Now, take a couple minutes and refer to 'Adjusting String Height' to ensure the bridge and/or saddles are correctly adjusted. Place a capo at the first fret and press down on the 16th fret....now place

a straight edge (which is at least 12"/30cm long) on top of the frets between the capo and the 16th fret and measure the gap between the ruler and the 8th fret. Use the 6th (heaviest) string to measure. Optimally, you will look for a gap of .001” - .002" 0.25 - 0.5 mm) but slightly more could still be acceptable. By turning the truss rod screw with the supplied allen key clockwise, you will reduce the gap, and by turning counter-clockwise you will increase the gap. Never turn the truss rod screw more than 1/4 turn at a time! Now return to the 'Adjusting String Height' section and re-adjust your string height so you have nice low action on the strings without buzzing on the frets! If you do have 'string or fret buzz', you will either have to increase the neck relief slightly, or increase you string height.

Adjusting Intonation:

There are several factors that come into play when setting the intonation on your guitar. For this kit, we will adjust to the basics and leave you to research the rest for yourself. Essentially, each string played open, should have exactly the same pitch as that string fretted on the 12fth fret (the 12fth fret is the halfway point between the nut and the saddle). You will want to use your guitar tuner for this adjustment.....play each string open and adjust them to their prescribed notes (E,A,D,G,B,E thickest to thinnest or 6th - 1st). Now play each string while you fret at the 12fth fret and adjust each saddle toward the 12fth fret or away until the fretted note matches the open note. If the fretted note is sharp, you must move the saddle away from the neck.....if the fretted note is flat; you must move the saddle closer. Intonating your guitar properly will help to ensure that it plays in tune up and down the neck, and that chords sound correct.

Adjusting Pickup Height:

The final step in your guitar set-up is setting the pickup height. Pickups work on a magnetic field that is affected by the vibration of each string. You can be too close to the strings and you can also be too far away from the strings with the pickup....too close will create 'ghost tones' that will make tuning your guitar difficult and will also affect the sound of your guitar in a negative way. Adjusting the pickups too far away reduces the effect of the magnetic field and therefore reduces the output of the pickup....so the guitar will sound quieter and have less dynamics.

You will find one or both of two types of pickups in your kit....either single coil or humbucker. Because humbuckers use opposing magnets, they can be adjusted much closer to the strings than single coils can... Set your volume on full for each pickup and the tone control at halfway...plug your guitar into an amplifier and start adjusting the pickup height closer and away from the body while you play each string or strum.....you should notice an obvious difference in volume and tone by doing so. Adjust each pickup to where it sounds best. There is no universal rule for pickup height because it relies on string height, string gauge, pickup type, magnet type etc etc...so by experimenting, you will find an adjustment that provides the best sound.

FBK-1 Wiring Diagram