SOLO®

PRK-1

Electric Guitar Kit

Assembly Manual

Version 2.0

Welcome...
Hi, and congratulations on purchasing this Solo DIY Guitar Kit! As you know, a great deal of the 'difficult' work on this guitar has already been completed to a very high quality standard. All the cutting, shaping, drilling and fretwork (including fret dressing and fret levelling) has been completed by our technicians, to ensure you will end up with a functional instrument. It's now up to you to make this a beautiful and functional instrument! Please read through all the instructions before you start finishing and assembling your Solo DIY Guitar Kit!

Before You Start...
We do our very best to accurately and safely package the SOLO Guitar Kits, but just like anyone else, we aren't always perfect. Therefore, before you start any work on this kit, please unpack the body, neck and all the hardware and screws to double check you have received all the parts. Some kits have the pick-guard already fastened to the body....remove the pick-guard at this time, but save the screws! You can lay the rest of the pieces out on a table and compare them to the parts photo for accuracy. Also, carefully examine the body and neck for any issues like cracks or serious dents which may have to be addressed before you begin finishing and assembling.

There are several websites that address guitar building and finishing, as well as guitar set-up. Although we don't endorse any specific website, we suggest you take some time and look over some of these websites to familiarize yourself with the guitar building process, and to make yourself aware of handy tricks and details that will aid you in completing this kit successfully. We might also suggest enlisting the help of friends who may have experience in woodwork, wood finishing and/or electronics if not guitar building.

Safety Measures and Disclaimers...
Please be aware and use all safety precautions when working on this kit, for example safety glasses, dust masks, respirators and protective gloves. Always work in a well lit area with proper ventilation for dust and fumes. If you are a novice, please enlist the help of more experienced friends or professionals.

We all know there is a right way and a wrong way to do things, and since we can't be there to help you decide which way is which.....we have to add in this disclaimer!

'We will not be responsible for any injury or accident that arises, or is a result of the purchase, finishing, assembly and/or usage of this instrument. We suggest getting advise and/or assistance from professionals before attempting any woodwork, finishing or electronic work related to these kits. The purchase of this kit is also an acknowledgement and awareness of this disclaimer!'

Whew! Sorry! As much as we are certain you will make all the right decisions regarding the assembly and finishing of this instrument, we have no guarantee that you will....

What You Need...
It would always be advisable to have a complete basic set of tools available, but at the very least we suggest you have the following....

1. Sand Paper (180, 240, 320, 400 grits)
2. Flat and needle files for metal
3. Sanding block and pad
4. Masking Tape
5. Finishing Supplies
6. Screwdrivers
7. Soldering Iron and Solder

More specific tools and/or materials can be utilized to make the finishing and assembly of this kit easier and more professional. We suggest you do your research on the internet.

Finishing the Body and Neck...

Step 1 - Ok, we have our tools, we have inspected the neck and body and are satisfied that all is well. Take one more look at the neck to make sure that the frets are not sticking out along the fret-board edges (fret sprout). Even though the wood is kiln dried, it can still expand or shrink depending on humidity and the environment. In any case, take your masking tape and tape over the flat parts of the fret-board between the frets, making sure the tape is flat and trimmed evenly along the edge of the fret-board. The masking tape will remain until the finishing is complete. If there is some 'fret sprout', we will want to file the edges flat to conform with the edge of the fret-board (90 degrees to the top of the fret), and then use our needle files to remove the small burrs left by the flat file on either side of the fret ends. This is very much a 'feel' process, and unless you are filing the top of the fret, there is little you can do wrong. Proceed with a small amount of filing at a time and remember...less is more (the less filing you do between checking, the more likely you are to not make a mistake)! You may elect to use some 0000 steel wool and polish the surface of the frets at this time, or you can wait until the finishing is complete and you are ready to remove the masking tape. Just be sure to remove all the metal bits as they will discolour your finish.

Step 2 - Now we are ready to sand the body and neck. The kit is supplied with sealer applied and again, sanding is very much a 'feel' process. Make sure you sand 'with the grain' of the wood (that is in the same direction as the grain) as much as possible. Use a sanding block to sand the flat surfaces, and either your hand or a foam sanding pad for the edges and curves. Start with the 180 grit to 'break down' the sealer, and as it becomes smooth, switch to the finer grits (If the sealed surface is fairly smooth to start, you may be able to begin sanding with a finer grit). Wipe the guitar and neck often while sanding to remove excess dust and ensure you aren't sanding through the sealer. You can also use

a slightly damp cloth to wipe the dust away, just allow the surface to dry before you resume sanding, or you can also use a 'tack cloth' available at most paint stores. In the case of a raw wood body that has not been sealed at the factory, you would wipe with a damp (warm water) cloth before your final grit. This makes the grain fibres wet, and they lift as they dry allowing you to sand them off, giving you the very best surface for finishing after your final grit. When you are satisfied that every surface is even and equally smooth, you are ready to move on. Remember, the better the surface quality, the better your finish will be!

Step 3 - You will need to make a set of hangers for the body and neck so that these parts can hang to dry evenly. We suggest a steel pin that will not sag under the weight of the neck or body....this pin can be inserted through the tuner holes on the neck and through a neck/body screw hole in the neck pocket. However you create these hangers, just make sure you have adequate access to all surfaces for applying your finish, and that there is enough room around the neck or body so the wet surface does not come in contact with anything. Before you proceed, you will also want to tape the neck pocket, pick-up cavities, control cavities and truss rod pocket in order to ensure they don't get covered in finish. Make sure that the tape does not cover any of the surfaces you intend to finish. You have already taped off your fretboard in Step 1, so you are ready for finishing!

Step 4 - Refer to your friendly expert at this time, or your finishing website to continue with whatever form of finish you have selected. This step is where your patience becomes extremely important. You can rush a lot of things in guitar building, but you can't rush the finish. Remember, only finish your guitar in a well ventilated area, away from flame or spark, and while wearing the proper mask and eye protection! Just a quick tip...you may want to practise on a scrap piece of wood to get the feel for the finishing product you have selected.

Step 5 - The finish is now complete with all the colour and/or clear coats and interim sanding and drying...and, you are out of patience....time to move forward. Again, there are several websites which address buffing a finish, and the products required. It is up to you to decide how to proceed, but we suggest for a first guitar to do as much as possible by hand to save you some money, and heartache. It is hard to buff through a finish by hand, but very easy to destroy your hard work with a buffing wheel! Most supplies can be purchased at your local automotive supply or via the internet.

Alternative - If you have decided on a 'colour' for your guitar, you are pretty much going to be painting the body; however, if you are looking to have the natural grain show through, you can use clear lacquers, or you can use a combination of stains and finishing oils. Again, information on oil finishes is readily available on the internet. It may also be less expensive and result in an equally pleasing result. Oil finishes are also easier to apply and maintain.

Assembly PRK-1

1. Gluing the Neck to the Body : The PRK-1 is a set-neck guitar which means the neck is glued to the body, not attached with screws. Because of this difference, you may elect to finish the body and neck before gluing, but we suggest it is easier to glue the neck in, before you start any finishing procedures. First, dry-fit the neck to the body, making sure the neck seats properly to the body and the back of the pickup cavity. Take note or mark the areas which will receive glue, and then remove the neck from the guitar and sand the sealer off these areas to ensure a proper gluing surface. You will require 2 clamps and 2 clamping cauls (blocks of wood used between the clamp and the guitar to prevent the surfaces of the guitar being damaged). One caul should be approximately 4" x 6" (10cm x 15 cm) to sit between the clamp and the back of the guitar....the second caul should fit over the neck with either slots to avoid the frets, or a piece of closed cell foam to protect the frets. Once the gluing surfaces have been cleaned up, dry-fit the neck again to ensure a proper fit, but this time place a ruler against both sides of the neck and make sure the neck aligns with the holes for the bridge posts. Using painters tape, make a mark so you know where to align the neck when it is glued. Using a good quality carpenters glue, apply a thin coat of glue to all the adjoining surfaces. Install the neck in the body, and put light pressure on the clamps (one clamp should be placed on the tongue of the neck, and the other over the last few frets of the neck). Double check your neck alignment, and when you are satisfies, tighten the clamps. Remove any and all excess glue using a warm damp cloth. You will want to leave the neck in the clamps for 24 hours to ensure proper bonding and curing.

2. Installing the Tuners : Organize all the parts for the tuners, in the order in which they will be installed. You will have 3 per side, 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 6 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 it's 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 the tighten the hex barrel nuts with a wrench or socket.

3. Installing the Bridge and Tailpiece : The PRK-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.

4. Wiring : 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 centred 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 2 pots (Tone & Volume) and the 3-way switch. 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 4 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 2 screws supplied.

6. 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.

7. 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 head. 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'.

Setting Up the Guitar....

The art of 'setting up a guitar' is one that can take years before you become truly skilled. The really good tech's make a guitar setup look easy...a little tweak here or there and the guitar plays and sounds so much better than it did before. Basic guitar setup however, is something that can be relatively easy to learn, and to put in practise. It is a balance of several different physical properties that can either work together or can completely ruin the playability or sound of a guitar. We have broken down the process into 4 sections to simplify things....

Adjusting the 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 String 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!

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.
Setting the 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.

Useful Ideas To Improve Your Guitar...

There is an endless list of improvement techniques available on the internet....from lubricating nuts and saddles to how much string you wind on the tuner posts.... We encourage you to take some time to look these tips up, and find out which ones work for you!

PRK-1 Wiring Diagram