Solo Guitar/Bass DIY Electric Double Neck Guitar Kit

Assembly Manual
DJMBK-1

V 1.02

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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

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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

Notes: Before you start assembling the DJMBK-1, make sure of a couple things...this is physically a much larger instrument, and although it seems obvious, make sure your work table is large enough to accommodate the body/necks with extra space for parts! It is too easy to start and then end up scratching the finish because you are cramped for space! Also, make sure the table top is covered with a cushion blanket to protect your finish!

STEP 1 – Install the Machine Heads on the neck's headstock. Organize all the parts for the 10 tuners you are about to install, making sure you have them in the correct order for both headstocks. Insert the post of each tuner through the hole in the back of the headstock, taking care that the pilot hole on the back of the headstock lines up with the screw hole on the tuner body. Place the washer over the post and then thread the hex-head bushing finger tight to the headstock. Now install the screw on the backside and tighten the

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hex-bushing on the front using a socket wrench or a hex-wrench. Do this for all 10 tuners on the guitar and bass headstocks. Both necks of the DJMBK-1 are 'tilt-back' headstocks so there will not be any string retainers required.

STEP 2 - Install the necks. Now, you can attach the necks to the body using the 8 neck screws, the neck plates and the neck plate cushions. Remember, when you are holding the guitar in playing position, the upper neck is the bass neck. Once again organize all the required parts to make sure you have everything and that they fit properly. Make sure the necks fit snugly in the neck pockets and that they are neither loose, nor so tight that you have to force it in. The factory fit should be satisfactory! Rubbing a little bees wax on the screws will make this job easier, and will not compromise the holding power of the screws. Install a screw through the neck-plate and cushion, through the appropriate hole in the body and start to thread it into the correct hole in the back of the neck....screw it in just far enough that it holds, and then repeat for the remaining screws of the first neck. Now, tighten the screws enough that the neck holds in place... do not tighten completely until you have made sure the neck aligns with the holes for the bridge (take two straight edged and hold them against the sides of the neck and make sure the holes for the bridge are centered between your straight edges. You may want to use a piece of painters tape to protect the top of the body while doing this) When you are satisfied that the neck is correctly aligned, finish tightening the screws, and repeat the process for the second neck.

STEP 3 – Install the bridges. Assemble all the parts for the bass and guitar bridges and ensure you have everything required. You must make sure that you include the ground wire that connects the under-surface of the bridge to the ground loop. Strip about 3/8" - 1/2" of the insulation from the ground wire and insert the wire through the hole which goes from the guitar surface to the bridge pickup cavity, leaving only the stripped wire on the surface of the guitar. Now, thread the ground wire through the supplied hole, into the control cavity and start to install the bridge screws. Make sure the bridge sits flat and that it's position conforms with your neck alignment (if there are supplied pilot holes for the bridge screws, the alignment should be acceptable). Install the 5 screws for each bridge, and tighten them....a bit of beeswax on the screw threads will make this an easier task!

STEP 4 – Install the pickups. Before you start this process, 'dry fit' the pick-ups to the pick-up cavities to ensure a proper fit. Starting with the Bass pick-ups, note that both pick-ups are the same in output and physical size, so either pick-up can be used for bridge or neck positions. Insert the bridge pick-up wire through the supplied hole into the neck pick-up cavity and through to the 3-way switch cavity. Use the supplied foam or springs between the pick-up and body, and install the 4 screws to hold the pick-up in place. Repeat for the neck pickup. Double check with your wiring diagram to ensure the correct routing of wires! Go through the same motions for the guitar pick-ups, noting that the pick-up ring screw holes are pre-drilled in the body and that the pick-ups are pre-assembled....you need only route the wires and screw the pick-ups in place.

STEP 5 – Wiring the guitar. The wiring on the DJMBK-1 is somewhat more complex than a normal single neck guitar, so lay out all your wiring as per the wiring diagram and proceed in a logical manner....if you don't have experience soldering, enlist the help of a friend/expert to assist at this time. Solder all connections between the 3-way switches and potentiometers, and then install the

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switches and pots to the body. Be careful to not over-tighten them, as you may damage the surface of the body. You should have left the input jack wire loose...it can now be routed through the hole in the edge of the body and soldered to the input jack. Attach the jack to the jack-plate and install on the body with the two supplied screws. Before moving on, double check all the connections and ensure that the electronics/pick-ups all work properly. When you are satisfied, install the control cavity cover plate with the supplied screws.

STEP 6 – Locate and install the strap pins in their appropriate holes with the supplied screws. Do not install the truss rod covers until after you have set up the guitar.

STEP 7 – Install the strings. You are now ready to install your strings. Just before you start, if you have a rosewood fret-board, it is a good idea to treat it 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. If you have a maple fret-board, you may proceed...

Bass neck: The strings are numbered from the thinnest to the thickest from 1-4. (This means the top string when you are playing the guitar is the thickest and is number 4) In standard tuning the open notes are 1-G, 2-D, 3-A, 4-E. Starting with the E string, insert the bare end of the string through the appropriate hole in the back of the bridge, over the saddle and nut, and insert the wire through the hole in the shaft of 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. Remember though, that the diameter of bass strings can be much larger than those on guitar strings, so you may have less winds on the shaft of the tuner due to space restrictions. Repeat this process for all four strings. You will adjust the height of the bridge in the 'Set Up' section, and adjust the position of the saddles as well.

Six String Neck: 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. The strings are installed by inserting the bare end through the appropriate hole at the back of the bridge beside the saddle adjustment screws, over the saddle and over the appropriate slot in the nut. 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.

Once all the strings are installed and brought up to pitch using a tuner, you are ready to move on to ‘Tuning and Setup’.

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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.

Tuning a 4-string bass guitar:

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

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

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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.

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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.

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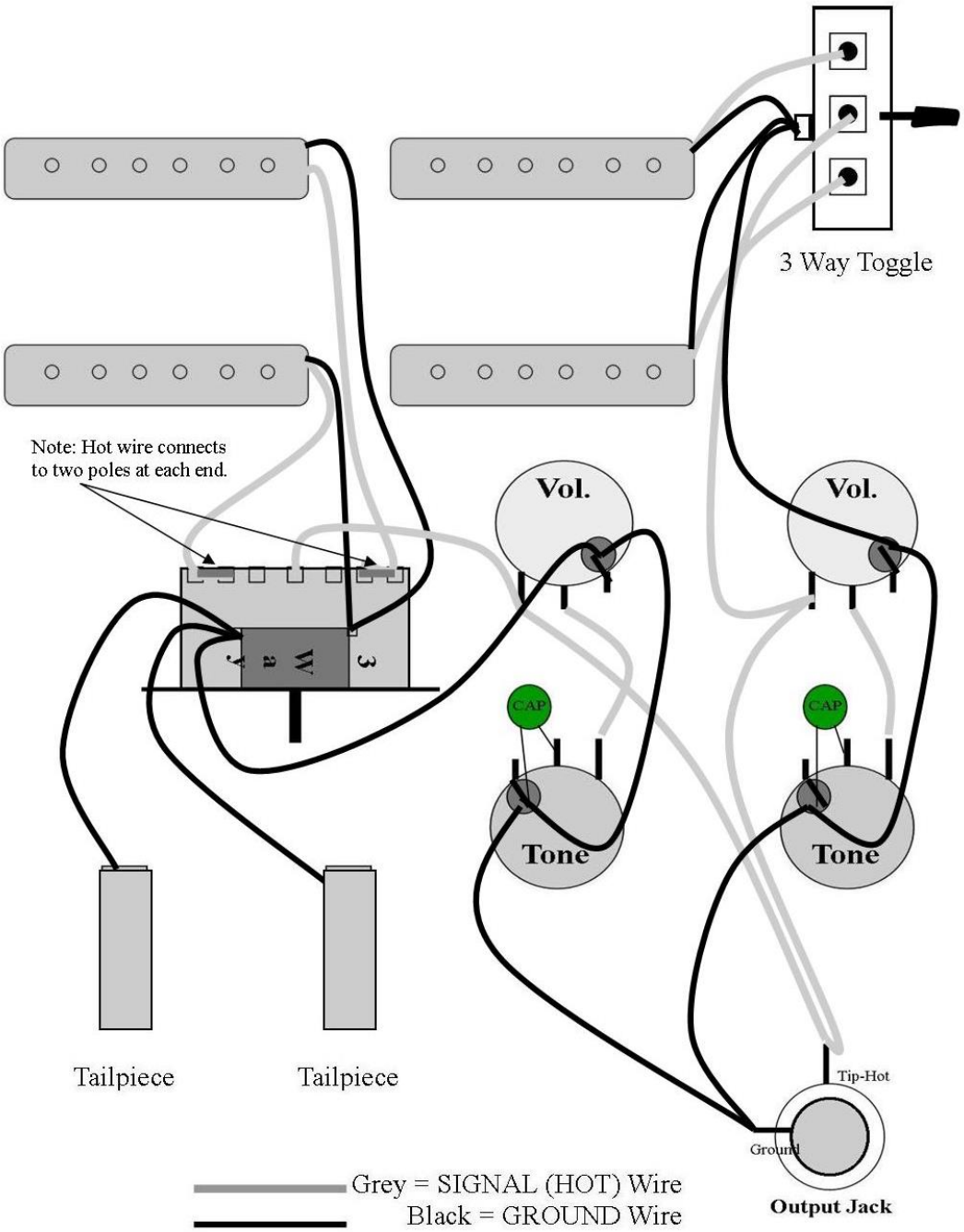
DJMBK-1 Wiring Diagram



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