



# Solo Strat Style DIY Electric Double Neck Guitar Kit

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Assembly Manual  
DSTK-1

V 1.02

## Materials List

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

- Threaded hex bushings for 12-string neck (12 flat washers included) 12 pcs
- Tuning machines for 6-string neck (6 mounting screws included) 6 pcs
- Threaded hex bushings for 6-string neck (6 flat washers included) 6 pcs
- Tuning machines for 6-string neck (6 mounting screws included) 6 pcs
- 12-string Neck 1 pc
- 6-string Neck 1 pc
- Strings 12 string set 1 pc
- Strings 6 string set 1 pc
- 12-string 3 single coil Pickups (mounting screws included) 3 pc
- 6-string 3 single coil Pickups (mounting screws included) 3 pc
- 12-string Fixed Bridge 1 pc
- 6-string Vintage Tremolo Bridge 1 pc
- Hex Wrench 1 pc
- Strap Buttons (mounting screws included) 2 pcs
- 12-string Neck Plate (4 mounting screws included)
- 6-string Neck Plate (4 mounting screws included)
- Body
- Back Plate
- Pickguard (mounting screw included)
- 5-Way Pickup Selector Toggle Switch (includes mounting nut and flat washer)
- Control Knobs
- Control Pots (4 pcs, 2 capacitors included for Tone Pots)
- Jack Plate with an Output Jack (4 mounting screws included)
- Cord
- Tremolo Bar
- Wires

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## Show Off Your Custom Built Guitar!

When you have your guitar finished, please take a few pictures and send them to us.



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 NECKS**

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, then 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

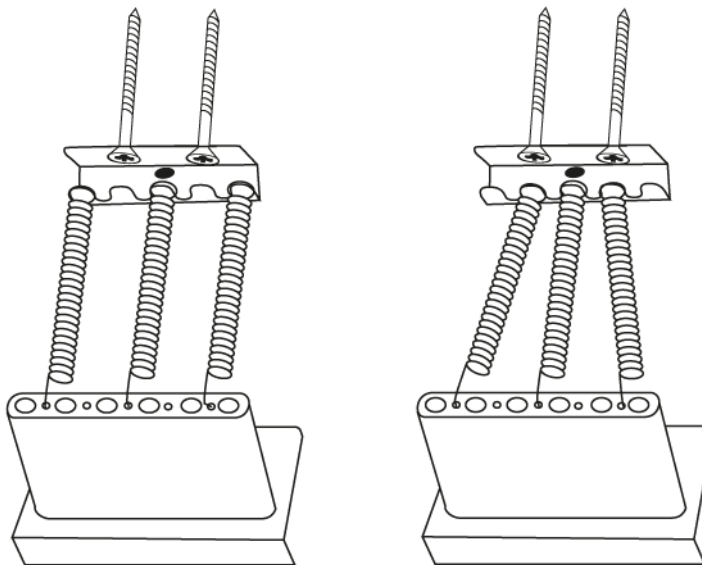
Notes: Before you start assembling the DSTK-1, make sure of a couple things...this is physically a much larger instrument, and although it seems obvious, make sure your work table is large enough to accommodate the body/necks with extra space for parts! It is too easy to start and then end up scratching 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 both headstocks. Use the threaded hex peghead bushings with washers initially tightening them with your fingers only. Align each machine head to match the holes for mounting screws and use the screws to secure the heads. Finally, tighten the hex bushings with a socket wrench (or regular hex wrench).

**STEP 2 - Attach the necks to the body each using 4 screws, a neckplate and a setter. This step can be performed later as you may find it easier to assemble the body without the necks.**

**STEP 3 – Install the tremolo bridge.** First install the spring claw: locate two predrilled holes for the mounting screws on the wall of the cavity on the back of the body and screw in the claw. Initially screw it in just about 1/3" (8mm) as it allow you to install tension springs easier – you will be using these two screws later to adjust springs tension. Mount the tremolo unit on the top of the body with 6 mounting screws – don't screw it down too tight as you need to leave some space allowing the tremolo bridge to float. It is recommended to screw down all the way only the two outside screws while the 4 inside screws are raised about 1/16" (1.6 mm) above the top of the bridge plate. This little trick will improve tuning stability. To install tension springs insert angled ends of the springs into the small holes at the bottom of the tremolo's sustain bar (there are 5 holes use the two outer and one central hole) then stretch springs and put the strings loops into the corresponding notches of the spring claw (the two outer and one center. The alternative way is to put the outer springs on the notches next to the central one – it also improves tuning stability.

Here is an illustration of the two different ways of tension springs installation:



Don't install the tremolo cavity cover – do it later, after stringing your guitar and adjusting the spring tension properly.

**STEP 4 – Install Fixed Bridge**

**STEP 5 – Install all pickups.** First, mount pickups to the pickguard. Look at the wire colour on each pickup and match to wiring diagram on the last page of manual to correctly position the pickups. ie... Neck pickups have yellow wire, middle position pickups have red wire, and bridge position pickups have blue wire.

STEP 6 – Solder corresponding pickup wires to the 5 way switch followed by volume & tone pots. Install them onto the pickguard. Be sure to install input & ground wires before mounting the pickguard. Then complete the wiring by using the diagram on the last page of this manual to finish wiring all pickups, switches, pots, ground wires and output jack.

STEP 7 – Install Switch Plate, mount Pickguard, Jack Plate and Control Cavity Cover with mounting screws, but before doing so check out the electronics: plug it in with a cable into the amp and see if all switches and pots are working properly by slightly tapping the magnetic poles of each pickup with a screwdriver.

STEP 8 – Before stringing your guitar apply some oil to the Rosewood fingerboards to protect them from possible shrinking and cracking. . Tung oil or Linseed oil work well, or it's OK to use Walnut or Olive oil. One thin layer is enough. Wipe the fingerboard thoroughly with a clean cloth.

STEP 9 – Install bridges and tailpieces on the mounting studs and then install the strings by inserting them through the holes on the back of the tailpieces and over the bridge saddles. There are a few different ways to wrap the strings around the post of a tuning head. When threading the string through the post hole, bring it tight before wrapping it in the opposite direction of the threading, under and then back over the string and around the post, holding it tight as you tighten to pitch. Wrapping each string around two-three times should be enough.

## 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.

Standard tuning of a 12-string guitar:

The open strings are tuned in pairs as follows:

- 2 E strings (2nd octave and 3rd octave)
- 2 A strings (2nd octave and 3rd octave)
- 2 D strings (3rd octave and 4th octave)
- 2 G strings (3rd octave and 4th octave)
- 2 B strings (3rd octave)
- 2 E strings (4th octave)

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:

String height is adjusted by the bridge saddle screws (use included Allen key). Since the fretboard has a radius (12"), the heights of all strings should also match it. Thicker strings need more room for vibration without "buzzing" (touching frets) and must be set up higher than thinner strings. Low action allows easier fretting and faster playing. Recommended measurements for electric guitar with low action:

For the 1st String (the thinnest) – height at the 1st fret: 0.01" – 0.016" (0.25 – 0.4mm); at the 12th fret: .063" –

.078" (1.6 - 2mm).

For the 6th String (the thickest) – height at the 1st fret: 0.016" – 0.024" (0.4 – 0.6mm); at the 12th fret: .078" –

.01" (2 – 2.5mm).

The height at the first fret can be adjusted by cutting deeper slots for strings at the nut. However, it needs a very precise job not to spoil the nut. If you are not sure that you can do it properly, stay with a factory pre-cut nut.

A higher string action makes the guitar harder to play, yet some musicians may prefer it.

## Adjusting Neck Relief:

The truss rod compensates for string tension and allows adjusting the neck relief. You may need such adjustment due to changes of humidity and temperature (or if you switch strings to a different gauge). Lay a straight edge on the frets of a properly tuned guitar and measure the clearance at the 8th fret (alternatively you can put a capo on the first fret and press down 6<sup>th</sup> string at 16th fret – then the height of the string at the 8th fret will show you the clearance). Optimal relief for an electric guitar neck must be very small – around .001" - .002" (0.25 - 0.5mm). Turning the truss rod nut (with the included Allen key) clockwise will reduce neck relief and turning it counterclockwise will increase the relief. Be very careful with truss rod adjustments and never turn the nut more than ¼ of a turn at a time.

## Adjusting Intonation:

The "speaking length" (or "working length") of each string can be adjusted by turning the saddle position adjustment screw. The best intonation can be achieved when the string fretted at the 12 fret sounds precisely an octave higher than the open string. If the fretted string sounds sharper you need to increase the working length of the string by moving the saddle away from the neck. If it sounds flat, you need to shorten the working length of the string by moving the saddle towards the neck. The alternative way to intonate your guitar is to compare a natural octave harmonic of the open string (you can get it by touching the string exactly above the 12th and picking it) to the pitch of the string fretted at the 12th fret and adjusting the saddle position so that they sound the same. This method is less accurate because the fretted string sounds a bit sharper due to the height of the string, and the higher the action, the sharper it gets.



### **Adjusting Pickup Height:**

Before adjusting the pickup height, make sure that both the volume and tone controls on your guitar are set to the full ("10") position. Get your amp set to a medium/low volume and all tone controls to the middle. You will get a better picture of the pickup's tone change during its height adjustment with a clear sound.

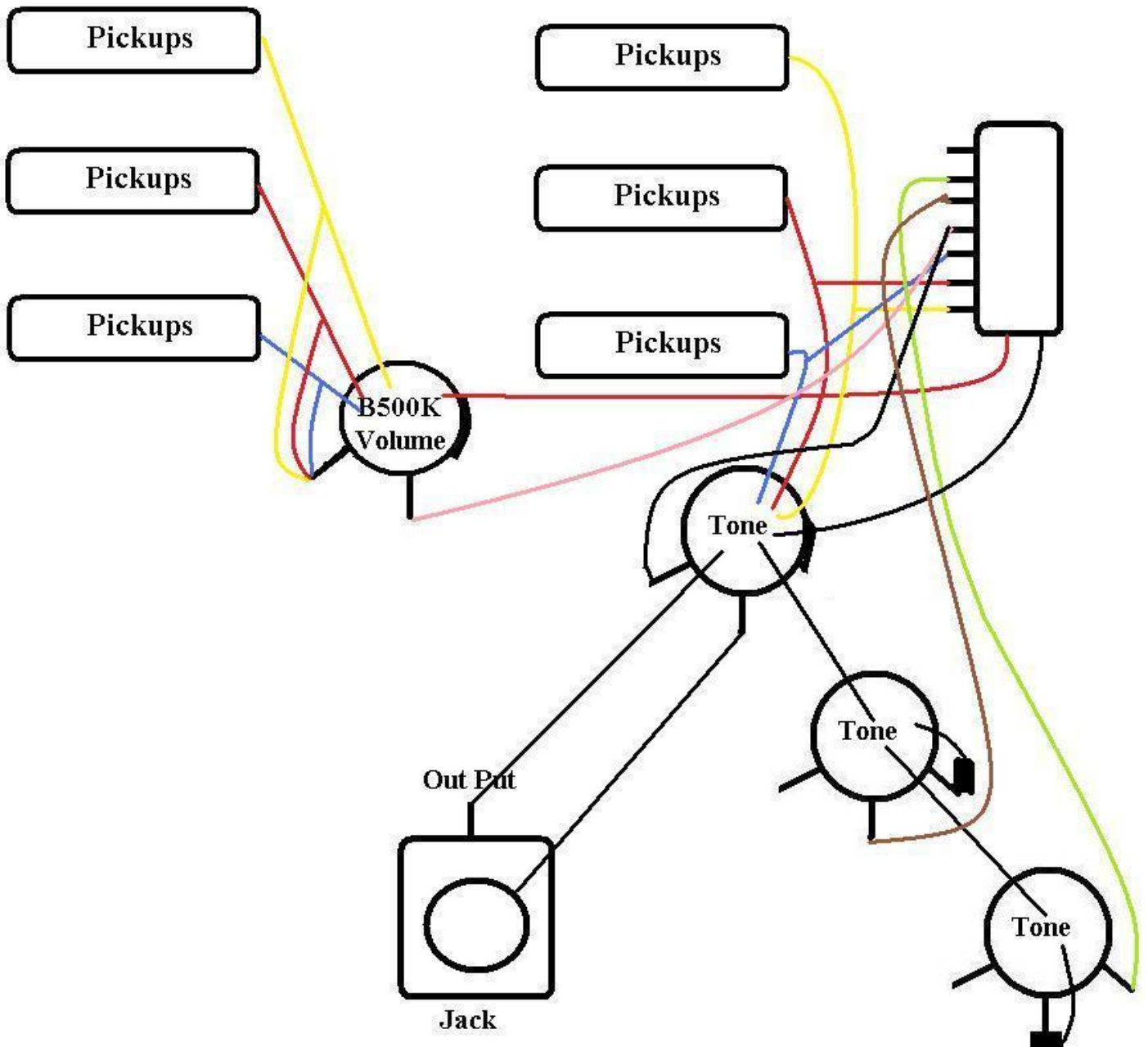
There is no universal "optimal" pickup height position in a setup – it depends on playing style and personal preferences of a guitarist. Remember: bringing a pickup closer to the strings makes it sound brighter, but bringing it too close will make the magnetic field of the pickup interfere with the vibration of a string which will, not only result in reduced sustain, but may also cause complex harmonics sound rather unpleasant. Moving a pickup too far from the strings will result in loss of its output signal and some higher frequencies. It's not necessary to maintain an even height of the pickup – you may find it more satisfactory sounding by setting it somewhat angled, depending on what you are looking for in the output sound.

There are a few mm of real usable range where you can find the pickup tone that you'll like the best.

### **Recommended Books**

1. Melvyn Hiscock. Make Your Own Electric Guitar. NBS Publications, 2003. ISBN: 0953104907
2. Dennis Waring. Make your own Electric Guitar & Bass. Sterling/Tamos, 2001, ISBN: 1895569702
3. Martin Koch. Building Electric Guitars: How to Make Solid-Body, Hollow-Body and Semi- Acoustic Electric Guitars and Bass Guitars. Koch Verlag; 2001, ISBN: 3901314075

## DSTK-1 Wiring Diagram



Black = Ground Wire, other Ground Wires noted