



# **Solo TC 12 String Style DIY Electric Guitar Kit**

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**Assembly Manual**

**V 2.0**

## Wiring Diagram for your DIY Guitar Kit

All our wiring diagrams are posted on our website at <https://www.solomusicgear.com/wiring-diagrams/>

Please search your corresponding Kits SKU number on that page for the correct diagram. For some Guitar Kits, we also included an interactive version with how to videos within the diagram.

Our diagrams do not include pre-wired connections, we designed them to only show the connections that need to be made, and the focus of certain areas.

## Support

At Solo Music Gear, it's important that we not only provide quality products, but also the best service in the industry. From email support to after sales support we are here to assist our customers at any stage possible.



### Email Support

[sales@solomusicgear.com](mailto:sales@solomusicgear.com)



### Phone Support

1-800-632-SOLO (7656)



### After Sales Support

Available after creating account

## 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>

Remember, you can always find us online at [SoloMusicGear.com](http://SoloMusicGear.com) to upgrade your parts, try a new kit, or ask us a question. Alternatively you can call us at 1-800-632-SOLO (7656) for any questions that you might have.

Hi! Welcome to Solo DIY Instrument kits, and congratulations on either starting or continuing a terrific new hobby!

Thank you for purchasing a Solo DIY guitar kit.

We hope that you will find everything either equal to or exceeding your expectations with this Solo DIY Instrument kit.

Remember, all the major manufacturing has been professionally completed on this instrument. All the cutting, rounding, routing, binding and sealing has been completed by our factory. Only some basic skills and patience are required in order to complete the work and end up with a beautiful and playable instrument!

We are however human, so if there is something in this kit that you have a question about, please feel free to contact us at [www.solomusicgear.com](http://www.solomusicgear.com) , we will be happy to answer all your questions.

Let's get started!

### **Tools and Materials:**

You may or may not require the following tools and materials to complete this instrument kit:

1. Sandpaper with varying grits
2. Selection of files both flat and rounded
3. Chisels and sharp razor knife
4. Fine toothed handsaw (although extremely unlikely)
5. Selection of screwdrivers both large and small
6. Selection of allen keys
7. Selection of flat open ended wrenches
8. Drill (either hand or powered) and selection of drill bits
9. Small hammer and/or dead-blow hammer
10. Soldering iron and flux core solder for electrical components
11. Measuring instruments will include two straight edges at least 12" long
12. Masking or painters tape
13. Glues including wood glue, epoxy and cyano-acrylate (super glue)
14. Various clamping devices (plus you may need to create clamping cauls)
15. Wood veneer for shimming (different thicknesses)
16. Certain kits will require some specialized tools not listed here.

**Safety :** There will always be some woodworking and wiring that is required, whether it be sanding drilling cutting or soldering. We expect that you will use common sense in making sure you are working safely; in a ventilated area, and that you use the proper safety equipment including eye and ear protection. Whether you are doing the wood portion, the electrical or the finishing, always enlist the help of people who are familiar with these skills in order to be safe. It's always better to be safe than to be sorry!

**Checklist :** Now that you have received your new Solo DIY kit, we suggest that you read through all the instructions at least once, so you are familiar with the process of assembling this instrument, and so that you can recognize the parts described. Once you have read through, take a few minutes and check all the parts you have received. Because you are familiar with the manual, you should be able to ensure you have everything required to complete this kit.

Before you begin to assemble any of the Solo kits, setting out a schedule of how you want to go about each instrument is vital. Not all our kits follow the same path when it comes to finishing and assembly. First examine all the parts, especially the bodies and necks. Are there imperfections? Are there dings and bumps you may have to sand out or fill? Are the frets all seated properly and are there any sharp ends that extend past the edge of the neck that may need to be filed smooth. Making sure all of the parts are as close to perfect as you can make them, will aid in a successful assembly. If you have decided to apply a finish or paint to the body and neck of this instrument, you may want to go through the whole assembly to make sure everything fits and all the holes are drilled before you embark on the finish (or paint).

Then, when your finish (or paint) has been applied and cured, you can assemble the instrument with the confidence that comes from knowing everything will fit. Even the electronics can be pre-assembled to some degree (if they aren't already) so that you can check wire length and pickup function. \* in the case of bridges and tailpieces that have posts to be pressure inserted into the body, you may not want to insert these until the finish (paint) has been applied, or you may elect to insert them but cover the opening on the post with tape to protect the threads.

Also on the headstocks, many tuners have grommets that may need to be inserted....these too should wait until after the finish (paint) is applied.

**Disclaimer :** We make sure the materials we include in our kits are safe to use and do not present any significant health risk. However, we cannot take responsibility for any existing health conditions that may affect the person building these kits, nor any responsibility arising from the assembly or work required in order to complete the kit. The kits can be assembled without any finish or coating being applied, so we leave the entire subject of applying a finish or coating to the bodies and necks up to the individual. There are ample websites and videos on the internet that can assist you in putting a beautiful and lasting finish on this instrument, plus there are often classes available in night school and local businesses that will be an aid to this process. We therefore do not take any responsibility in any issues that may arise from or because of the finish application to this instrument. Likewise, we are not here to instruct in the art of soldering or woodworking, so the responsibility lies with the person assembling this kit to obtain the proper instruction or help on any part of the assembly process, and to complete the assembly process in a safe manor. If we could be there with you to help you along, we would.....but we can't.

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## 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 and videos on YouTube

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 – Install the Machine Heads and String Tree Retainers on the neck’s headstock. 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). Note that string tree retainers have different heights; install the higher one with a longer screw between the 3rd and 4th strings (G and D), and a shorter one between the 1st and 2nd (E and B) strings.

STEP 2 - Attach the neck to the body using 4 screws with a neckplate and a setter.

STEP 3 – Install the bridge. First insert the ground wire (the insulation must be removed on both ends, about 1/3” – 8mm max) into the hole between the predrilled mounting screw holes and the bridge pickup cavity (pull it through the second hole into the control cavity). Make sure that enough length of bare metal wire is left on top of the body to make a secure contact with the bridge. Now, take the bridge with the mounted pickup and insert the pickup’s wire into the hole between the pickup cavity and the control cavity. Align the bridge with mounting screw holes and attach it tightly with 4 screws (7/8”).

STEP 4 – Install the pickguard. First, insert the neck pickup wire into the hole at the pickup cavity and push it all the way through into the control cavity. Properly align and secure it with 8 screws (15/32”). Do not over tighten the screws as it can crack the pickguard.

STEP 5 - Wire the control plate and pickups, ground wire and output jack. For wiring instructions, please visit <https://www.solomusicgear.com/wiring-diagrams/>

STEP 6 – After you complete the wiring, install the jackplate with the jack using 4 mounting screws, and then install the control plate with 2 screws.

STEP 7 – Before stringing your guitar, apply some oil to the Rosewood fingerboard to protect it 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 8 – Install the strings by inserting them through the holes on the back of the bridge, 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 12-string guitar:

A 12 string guitar is split up into 6 pairs of 2 strings. The thicker string of the pair is tuned to the same note and octave as a regular 6 string guitar. The thinner string, on the pair of strings 3-6, is tuned one octave higher than its pair.

Standard tuning of a 12-string guitar:

The open strings are tuned in pairs as follows:

- 2 E strings tuned in octave (2nd octave and 3rd octave)
- 2 A strings tuned in octave (2nd octave and 3rd octave)
- 2 D strings tuned in octave (3rd octave and 4th octave)
- 2 G strings tuned in octave (3rd octave and 4th octave)
- 2 B strings tuned in unison (3rd h octave)
- 2 E strings tuned in unison (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.

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### **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 6th 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.