***Tenayo TK-EG-HM1***

# E-Guitar KIT „BCR“-like: Facts & Manual

*Text and photos: Michael Koch*

**At all: Electric guitars were built to play loud and hard!!! And finally acoustic guitars were much too faint to get through really within bigger ensembles or even orchestras. The first acceptable representative electric guitars were built by Adolph Rickenbacker and George Beauchamp at the beginning of the 30s in the last century. But the very first serial model with a semi hollow body was constructed and distributed by the US American company GIBSON around 1936. The still very famous and by now deceased “Les Paul” followed them up around 1941 with his first Solidbody version of the electric guitar. It was an instrument with a massive body and neck through construction which was able to diminish possible feedbacks the semi hollow body guitars produced very often quite well. From this time on the triumphal procession of the electric guitar couldn’t have been stopped anymore. Only a few decades later the position of modern Rock- and Jazz-Guitarist should have been compared with the same star violinist had until this time in orchestras. Great musicians like Hendrix helped pushing the electric guitar for their final breakthrough in the mid of the 1960s. He was followed up by more and more other unforgettable guitar heroes and virtuous players like Eric Clapton (Cream), Jimmy Page (Led Zeppelin), Angus Young (AC/DC), Eddie Van Halen (Van Halen), Robert Fripp (King Crimson), Alex Lifeson (Rush), Brian May (Queen), David Gilmour (Pink Floyd), Steve Howe (Yes), Ritchie Blackmore (Deep Purple), Steve Vai (Frank Zappa & Solo), Joe Satriani (Solo), Adrian Belew (David Bowie, Talking Heads, King Crimson), Vernon Reid (Living Colour) and much more… But we won’t waste too much time with things like this because we’d like to assemble our own electric guitar. So spending only a little of our precious time for this I would carefully recommend…**

We actually offer around **15 different electric-guitar and e-bass kits** by ***Tenayo*** including nearly all popular shapes and models. A few of them we provide as left hand models too. But all kits are very easy to handle. Even assembling is possible and not very difficult for nonprofessional instrument builders of all levels.

Our ***TK-EG-HM1*** kit is including the pre shaped and well shaped massive body. All panels for the neck, pick-ups, potis, switch, bridge and the electric parts still exist. The neck with its Trussrod, fingerboard and even the frets are well pre handled. So all wooden parts included in the kit must be only fine sandpapered and finished. Furthermore the kit includes 2 Humbuckers (neck and bridge position), 2 Potis (volume and tone) and 2 black Poti-knobs, a 3-way toggle switch, different wires, 1 capacitor, tin-solder, a plastic plate for the electric panel and one for the tremolo bridge panel on the backside of the guitars body, 1 licensed Floyd-Rose tremolo unit including the bridge and the strings saddles, three springs and the whammy bar, 6 tuner mechanics incl. the sleeves, ring washers and screws, 4 black ring washers and screws for fixing the neck, 2 strap holders, different hex keys (to adjust the Trussrod, saddles and the tremolo) and a unit guitar cable.

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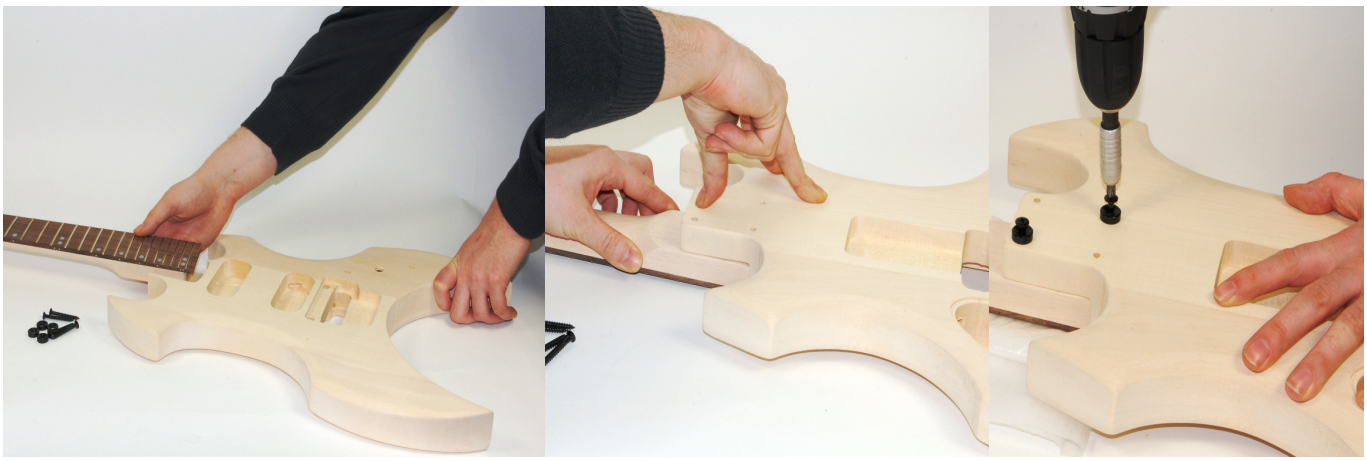
**Tools and Materials which will be needed to assemble the *Tenayo* electric-guitar kit…**

- A rasp, different files and sandpapers with variably granulation for a fine “rose”
- Different metal files
- 1 block for sandpapering
- Fill-in for wood repair
- 1 rubber-mallet
- Rubber stripes or a small scratchpad to prevent damage on screws while hammering
- A flat nose plier
- Different screwdrivers or a battery powered electric screwdriver
- 1 wood drill and a cutter
- A electric soldering iron and some tin for wiring the potis, PUs and the output jack
- Oil (in case the instrument shall be finished with that)
- Different lacquers and colors (if wished)
- Seersucker adhesive tape (to prevent stains while coloring)

## First steps…

Initially the neck and body must be connected together. While doing this you got to keep care on an exact fit because the neck has to be absolutely straight after fixing it. Please check the three photos below too. But the neck should fit into the pre shaped hole at the neck rudiment on the guitar body without having any trouble.



If not: take the file and a bit of sandpaper and remove softly some overcoming wooden parts. And please do not press the neck into with using force. This can result into damaging the parts. After all the neck can be fixed with the 4 big black wood-screws and their plastic ring washers on the backside of the body - please check the 3th photo above too. If any slits or spaces occur at the rudiment between neck and body you got to eliminate that with some fill-in. But if the neck fits correctly this should not happen.

## Sandpapering and finishing your guitar…

Please check if there are no spaces ore damages in the wood which has to be repaired potentially. If all these things have been done all wooden parts of the instrument should be handled with different sandpapers (down to the finest granulation) until you’re satisfied or the guitar “feels like a child’s bum”. If there are any frets which feel sharp at their edges last improvements can now be done with a flat and fine metal-file. Now all wooden parts can be oiled or colored with different lacquers. Oiling can be done with a standard vegetable or olive oil. You only need a primitive cotton flap. But oiling should be repeated a few times within days to get a good effect. Possibly you have to use fine sandpapers again between these processes. If lacquering is wanted you should check for professional (like literature or so) help in front of doing that. But please take care on all parts which shall not be lacquered at all. To prevent stains on the fretboard or other parts you can use seersucker adhesive tape for bonding them in front of doing the coloring or so. You can finish the guitar part by part too.



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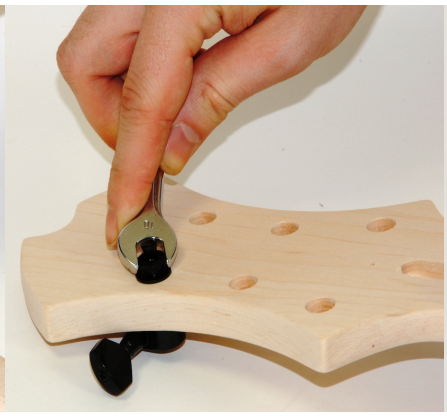
## Assembling of the hardware and the tuner mechanics…

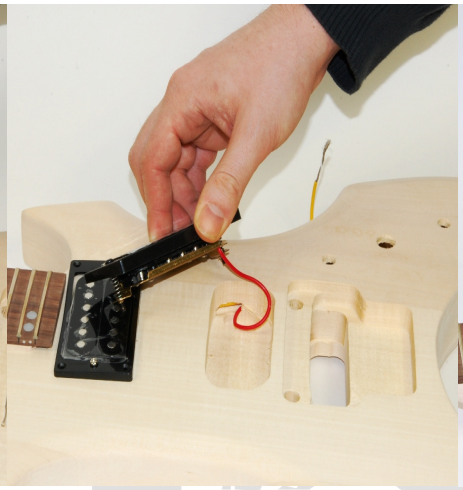
If the guitar finish has been done completely the hardware like pickups, potis, toggle switch and all the other mechanics should be mounted onto the guitar. At first the tuners can be assembled onto the headstock.

**Fit on the tuners!! ((-:**

Now the 6 tuner vertebras can be fit onto their right position at the headstock. This step is very easy. How to do that is showed surely very well on the three following photos below. All tuner vertebras shall be fixed with their little black wood screws at the back of the headstock which are included in this kit. **Attention!!!** The loops of all tuners must show 45° to the middle. This you can see perfectly on photo 3. But in fact of that all holes for the screws has been pre drilled so this should not cause into making any problem. Possibly you got to spread them a little more with your wood drill.

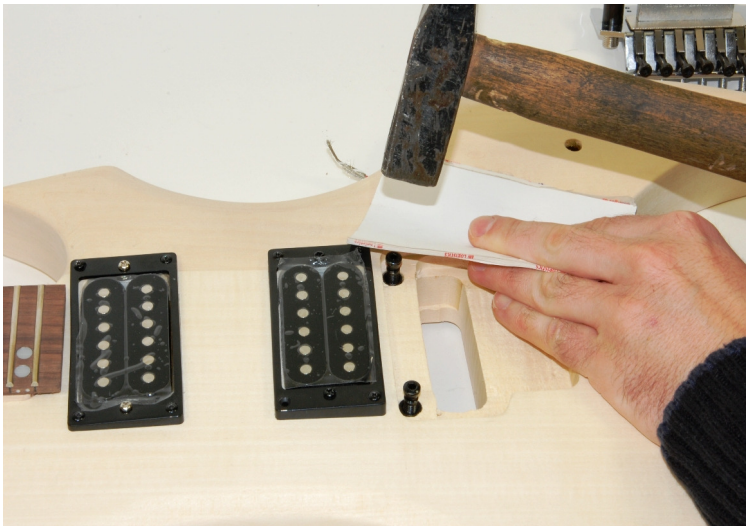




**Installing of the two humbuckers…**

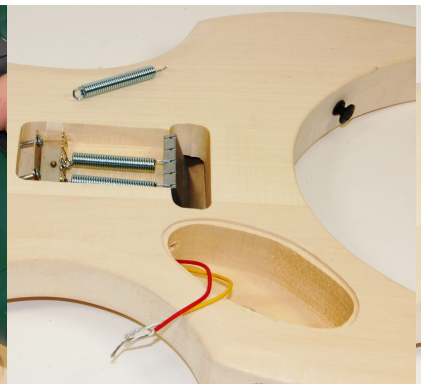



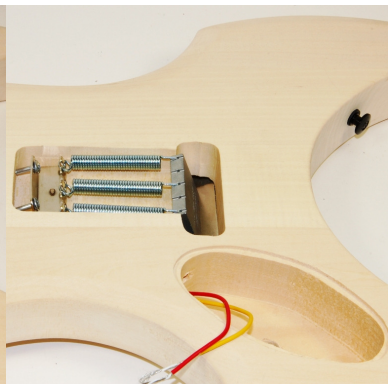

As shown on the three photos above you only got to put the neck and the bridge pickup into their pre drilled holes and fix them with the 8 small wood screws which are included in the kit too. Their cables have to be lead through the two pre drilled chutes to the electric panel which has its vent at the backside of the guitars body. So please check the photos again.

**Assembling of the tremolo bridge retainers…**



Now you have to install the both thread pins (photo on the left) on the top of the guitars body. For this it's recommended using a small or a middle size hammer. To prevent damage on the thread pins while hammering them into the pre drilled holes you should use rubber stripes, hart plastic or for example a small scratch pat putting in between. On the photo you can see we used this unusual but very fine opportunity. ((-:
Both thread pins must be hammered in until reaching its come through edge. The pins their self have to be screwed in up to their half. Now the retainer for the three vibrato springs can be fixed on the backside of the guitar body. The holes for the screws are pre drilled. But please – both screws shall not be engulfed in the wood completely because later on the vibrato unit has to be adjusted and the pulling on all of the three springs should not be too strong. The whole vibrato unit will be stabilized in



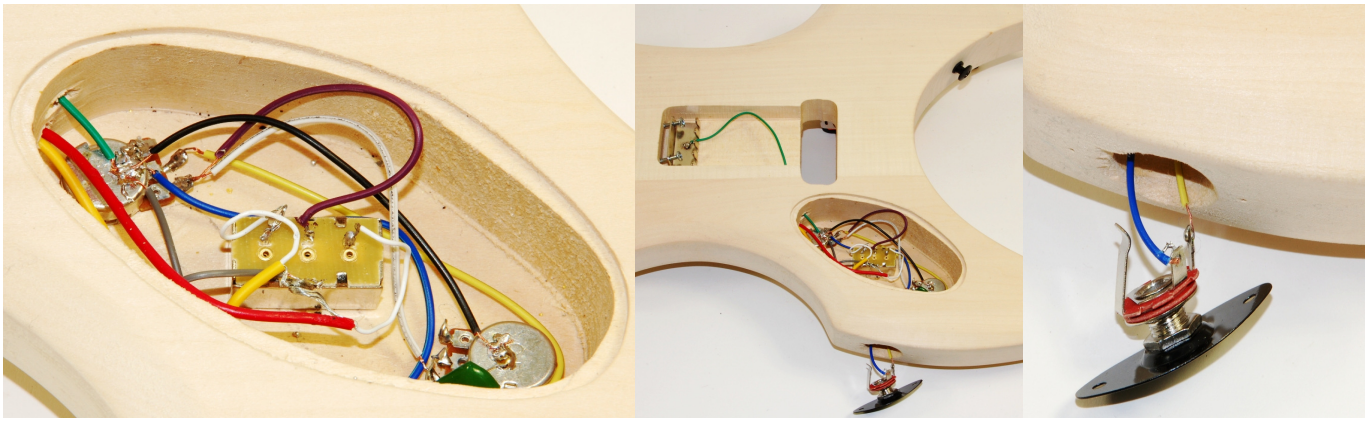
because of these springs and in contrary by the 6 guitar strings. More information you can find later in the chapter **"Putting on the strings / tuning of the guitar"**.

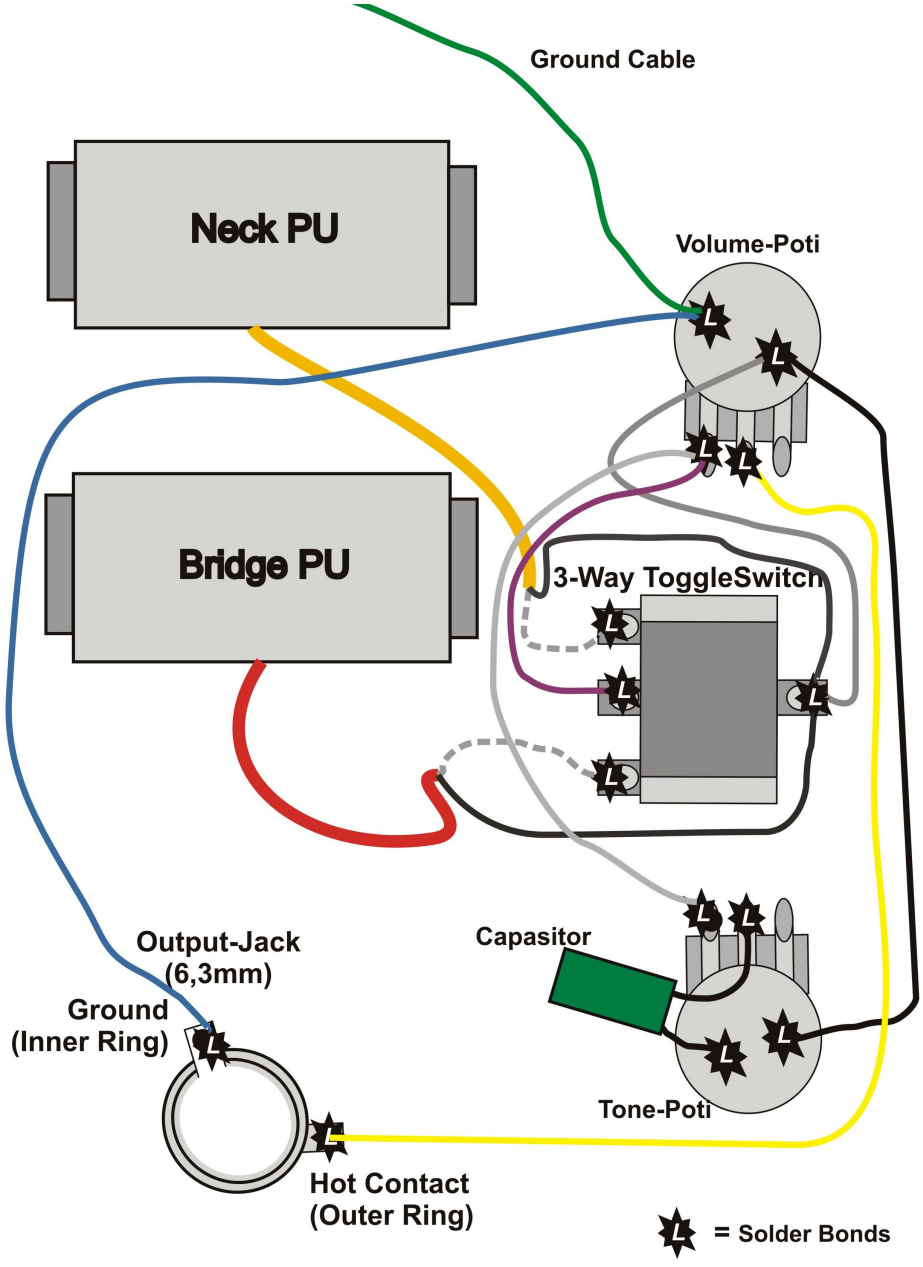
*Now the most difficult part of our "impossible" enterprise is following… ((-:*

## Wiring of the pickups, the toggle switch and the potis…

Before we keep on with that it will be really not stupid mounting on the potis, the three way toggle and the output jack (photo on the right). All cables should be lead on through the provided channels to the electric panel too. This one is something like a control center for the guitar and makes it possible that the guitar comes alive later on. On the following page there's a wiring diagram. Please check it accurately to prevent failures in wiring and soldering of the parts because dysfunction or needless droning could be the result of this. And please take care of grounding all electric parts too.

All the colors of each wire/ all cables are only for better orientation and do have nothing to do with their function itself. In relation to each kit these colors can vary too. The thicker cables of the pickups (mostly yellow for the neck PU and red for the bridge PU) do include 2 single cables – one with a white sleeve and one blank. The volume- and tone-poti can be differed easily by the letter **B** (volume) and **A** (tone) which you can find on the top of them.






*On the first photo on the left side you can see the position of each switch and other electric parts inside of the electric panel at the back of the guitars body. Finally a ground cable has to be lead from the volume Poti to the retainer of the vibrato springs (2nd photo above). Photo 3 above: Both cables coming from the volume Poti have to be soldered with the inner ground ring and the "hot" contact of the output jack. On the wiring diagram on the left side it can be seen which cable has to be connected/soldered with which pole or contact.*
*But: if you have finished all wiring you should make a test before you close the electric panel with its cover. If a heavy droning occurs for example this is perhaps not only the result of wrong wired cables. Often this is in because of "cold" solder bonds too. So please keep care while soldering cable with its contacts and work accurately.*

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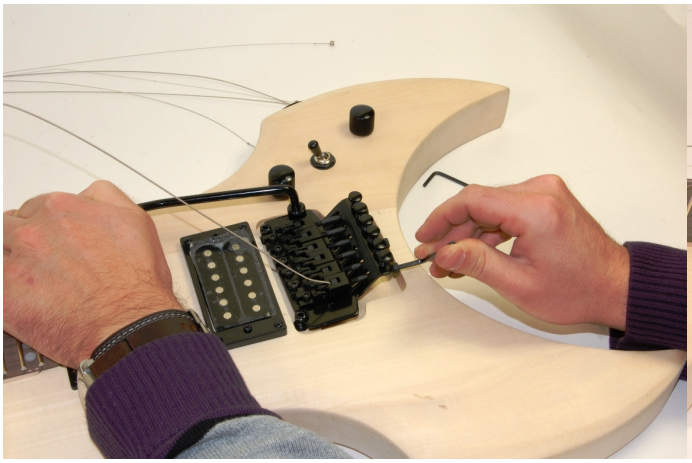
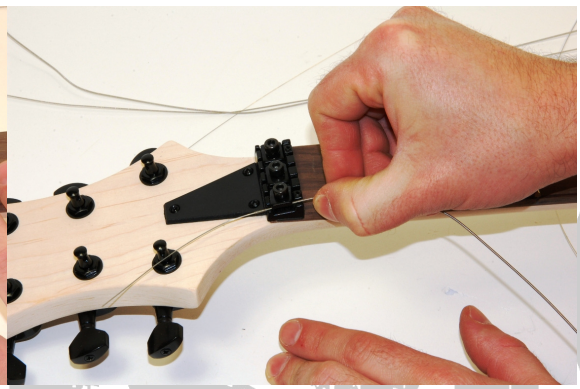
## Putting on the strings / tuning of the guitar…

As described in the chapter ***"Assembling of the tremolo bridge retainers"*** the vibrato unit/bridge will be stabilized by the three vibrato springs and the pull of the six guitar strings. But: the springs have to be adjusted a few times. The traction should whether too strong neither too low. The height of the bridge unit can be adjusted with the two hex pins. A suitably hex key is included in this kit. More on this topic later… To bring up the strings and fixing them in their saddles you got to cut them off a few millimeters above each ball end. Check the photo on the right side too. The end of the string hast o be put into the vent of its saddle and must be fixed with the hex pin at the tail piece of the bridge. Please check the two photos below. To get access on them easily you can push down the vibrato arm a little with your left hand.



If you have finished with fixing all 6 strings in their saddles you got to lead each string (it is recommended to begin with the first one) to the headstock and the complying tuner vertebra. To merge them underneath the three plates for fixing the strings you got to detach them a little with their hex screw. You can check that on the following two photos.



Now all strings have to be wired up with the tuners - bit by bit. In this case a standard string winder is a very good help. In addition to that all strings have to be winded up from the middle to the outside. You can check that on the photos at the right side too. In fact of this the tuners for the three thicker strings have to be rotated into direction of the headstocks end – away from your body. Yet the guitar should be tuned a few times from the thicker string up to the highest one. For standard the guitar has to be tuned in **E, A, D, G, b, e**. If you are not perfect in realizing each single note you can take a tuner - as showed on the third photo on the right side. After that you got to control the position of the tremolo bridge again. The bridge plate should stand parallel to the top of the guitar body. Please look at the two photos on the left side below. If this one stands a slightly skew this is also allowed. <u>But:</u> if the character skew is much too much after the guitar has been tuned you should unfix the three vibrato springs a little (2nd photo on the right side above). If the bridge plate at the anterior rudiment is too high or too low – it can be adjusted again with the two hex pins (1st photo on the left side). After you have finished with that the guitar has to be tuned further more.

And now strings can be fixed with the three nut plates (3th photo on the left side above). All six strings can be fine tuned yet with their tuners at the end of the tailbridge unit (2nd photo on the left side).

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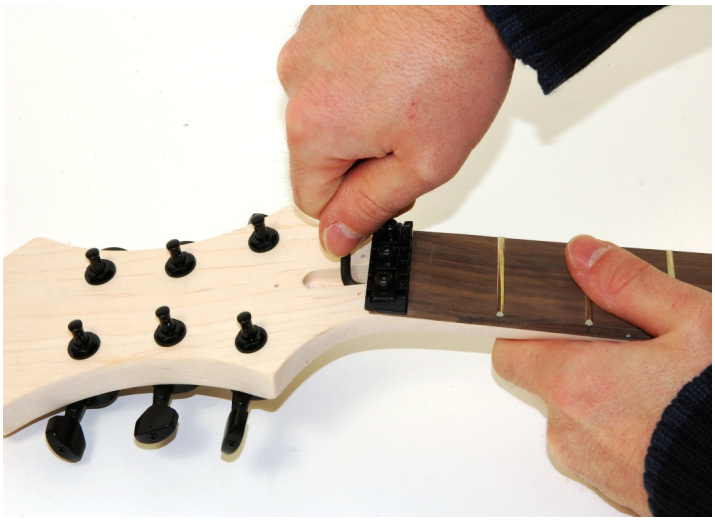
## Adjusting of the truss rod and clearing the fret intonation…



After tuning your guitar correctly you will possibly recognize that the neck is not straight enough. Potentially it is introversive. In case of this the Trussrod has to be adjusted. The vent is above the nut on the headstocks top - please check the photo on the left side. To straighten the neck it is recommended to brace the truss while rotating the hex screw with the complying key into the direction of your body as long as the neck goes definitely straight. If it remains staying slightly inwards this is ok too. Before doing all of that you should loosen the strings a little again. And don't forget: In this case the nut plates have to be unfixed too…
If the distance between the strings and the frets is yet much too low you can adjust that further more with the saddle mechanics on the tremolo bridge unit as described in the chapter before. But now you should bring your guitar in tune again. If you put down strings onto the 12th fret your tuner must show you the same note (the higher octave) as played with the blank string. If this note is too high - you can adjust it while moving its saddle a little into direction of the tail-bridges end. In the opposite case move it slightly into direction of the fingerboard. You should repeat this step by step with each string saddle too.

## Fixing the strap-holders, mounting on the cover plates (electric- and vibrato-panel) and fixing the output-jack…

Finally you should install the strap-holders which are both included in the kit. The first one has to be fixed with its wood screw in the middle of the neck rudiment underneath the backside of the neck (photo 1) with the help of screw driver. The other one you got to place like shown up on the second photo. But: Most of the time the little holes for this were pre drilled. If not it is recommended to mark the correct position of both strap holder first with a lead pencil before drilling.



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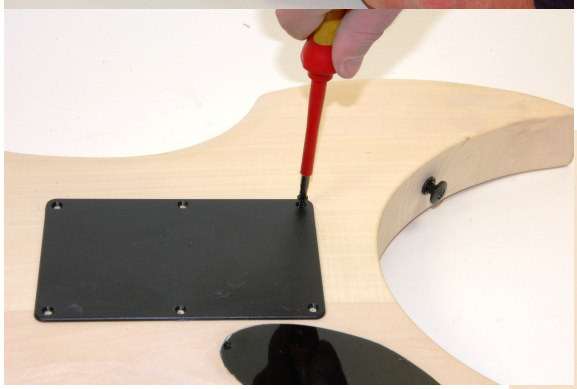
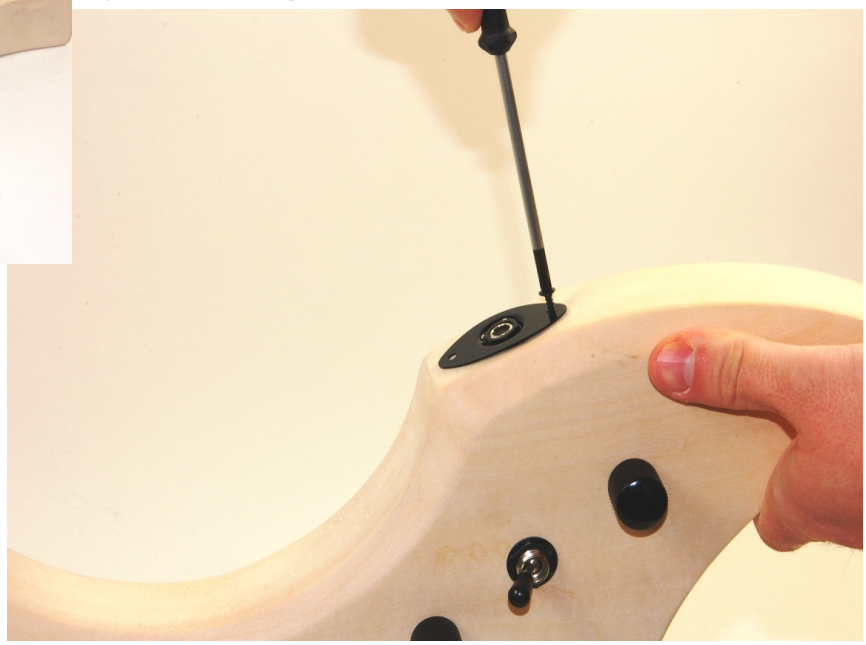


To prevent getting dirt into the electronic panel or diminishing the danger of causing damage to electric parts and the tremolo you should mount on the panel plate covers. The screw holes for these have to be drilled in. So you got to mark the position of all holes better with the lead pin before drilling them. The plates itself are very good as template for this. To check out the correct position of all holes you can also check both photos on the left. If the plate cover for the electric panel does not fit without forcing it into its place you should handle it in front of fixing it with a fine file and sandpaper. After that possible spaces between can be filled up with wood filler before finishing it. Last of all you should fix the output-jack plate with its two wood screws if you didn't have done that some steps before (photo on the right below).



***Take care and have a lot of fun with your first self-made electric-guitar by Tenayo!!!***

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