Tenayo TK-EG-LP2

E-Gitarren KIT „LP“-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-LP-EG2*** kit is including the pre 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 is including 2 Humbucker PUs (neck & bridge), 4 potis (2 tone- and 2 volume-), 4 Poti-Knobs, 1 toggle switch (with cover), cables for wiring, tin solder, 2 capacitors, 1 pick guard, 1 electric cover for panel on the back of the guitar, 1 small cover, 1 “Tune O Matic” bridge + 1 stop bar, both with screws to fix the construction, 6 tuners with sleeves, ring washers and screws, 2 strap holders with screws, 6 standard guitar strings, 1 hex key for adjusting the truss rod and 1 standard guitar cable.

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

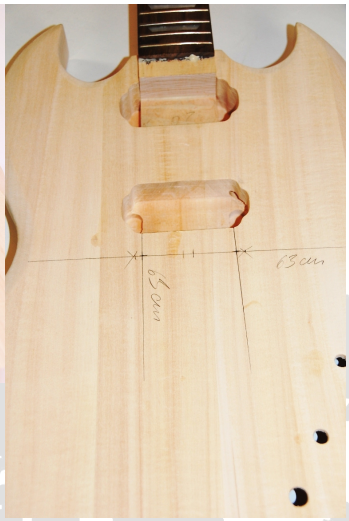
- A rasp, different files and sandpapers with variably granulation for a fine "rose"
- Different metal files
- A wood saw
- 1 block for sandpapering
- Wood glue
- Screw clamps or rubber ties
- Fill-in for wood repair
- 1 rubber-mallet or another hammer
- Wood wedges, rubber stripes or a small scratchpad to prevent damage on screws while hammering
- A flat nose plier
- A lead pencil and a rubber eraser
- 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 desired)
- Seersucker adhesive tape (to prevent stains while coloring)

First Steps…

Initially neck and body of the guitar has to be put together!! Thereby you have to take care on the correct seat of the neck. It has to be absolutely straight later on. Please check the photos below too! But this should not be a problem in because of the pre shaping and the room which has been made for the necks rudiment. If the rudiment does not fit into its place exactly take some sandpapers or a file – don't try to put the neck into its place by force. To fix the construction take the wood glue and not too little. After 24 hours drying (for minimum) you can remove possible stains and overcoming glue by sandpapering. While drying it is recommended fixing the whole thing with clamps (please put some wooden wedges in between to prevent damages on the wooden parts) or rubber ties. If gaps occur in between the parts after drying you can now fill them up with some fill in for wood repair. But by getting in the neck correctly this should be no matter at all.
Now you can handle the **headstocks design** (if desired) – giving it a new shape. Before cutting the wood with a saw take a lead pencil to make some trials first for your like. A rubber eraser can be a great help by correcting your most desired artful design until perfection.

Drilling the holes for the „Tune O Matic" bridge and the stop bar…

This operation demands a high degree of accuracy and attention!! Before start working with the drill it is recommended using the pencil marking all the points for it really exactly. In this way you can do any adjustments if needed.
The following pictures are showing the work in progress on a SG body – but the course of action is the same.



It is still important that the distance between the nut and the bridge saddles (which are pre positioned in the middle of it initially) is exactly the double as the distance between the inner edge of the nut and the 12th fret. Check out the photos on the right side: the distance between the nut and the 12th fret is 315 mm – that results in a scale of 630 mm.

Please note:
Scale = Distance between nut and the middle of the bridge (saddle) x 2!!!

Important too is the distance between the complying holes so that the mechanics fits right into their sleeves or can be hooked in later on without making any problems. Both mechanics are also fine templates for charting their position with a lead pencil on the wood. Please check the photo on the left.
The bridge itself got to take place in the middle of the body top so that the strings run exactly over the fingerboard later on. They should not slip over the fingerboards edges – neither on the left nor on the right side of it. That's why it is better drawing a helping line with the pencil. This is shown very well on the photo too. The line for the position of the bridge and the stop bar has to be marked on in a 45° angle.

Please note: The position line itself means the middle of the complying hardware part not its edges!!

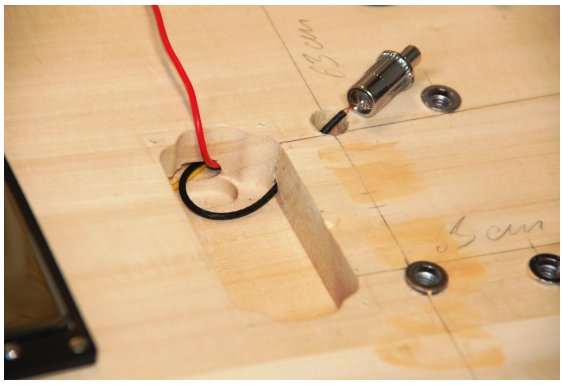
On the left side (on which the thicker E string runs over later) the position mark for the middle of the drill hole should be marked at 633 mm (distance to nut) - on the right side at 630 mm. This means the bridge parts seat is a little skew and stands in relationship to the different string gauges. The higher e string (which runs over on this side of the saddle) has a much smaller gauge. To raise the tone frequency a little its saddle (and the bridge) got to be placed slightly nearer to the neck – in opposite to the thicker E string. Please check the two photos above too. **The drill diameter should have for maximum the same size as the complying sleeves of the bridge mechanic and the Stopbar** (or a little less) so that the sleeves can be fixed very tight in the wood. In distance of about 40 mm (exactly behind the bridge and in a 45° angle to the position line) the holes for the Stopbar have to be drilled. *A skew placement like for the bridge is not needed!!! Please take care on the drill diameter too!!!* It shouldn't be too big in size. If you cannot fix the sleeves tightly use some wood glue. This makes the wood fibers spreading themselves a little and results into a better hold of the sleeves. For getting all the sleeves into the holes use a hammer. To prevent damage on the material put wooden wedges or any other stuff in between.

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. Yet 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 so you can finish the guitar part by part.

Installation of the bridge mechanic and the stop bar…

If the guitar has been completely finished yet the hardware can be assembled. In first line there are the tuners and for sure the bridge and stop bar mechanics. The sleeves of these ones have to be hammered into the drilled holes we made a few steps before. To avoid damage on the material it is recommended putting some wooden wedges or similar in between the tool and the hardware while working. *Most of the pictures are showing a SG body but the course of action is the still same – so don't care about that too much and sorry if I repeat myself… ((-:*



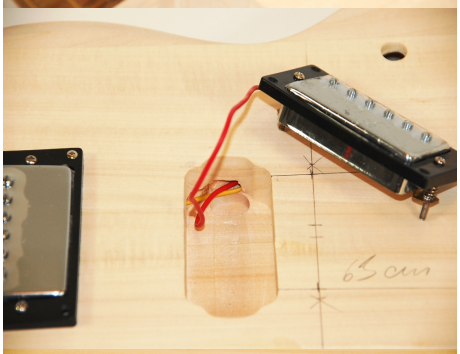
In front of proceeding with that a little hole from the bridge PU panel to one of the bridge holes has to be drilled. Please check out the photo on the right. <u>The ground cable has to be lead through this.</u> The blank end must have contact with the metal sleeve while the other end has to be lead through the pre drilled hole to the electric panel at the backside of the guitars body. Later it will be brazed with one of the tone potis. Check out the photo on the right above again!!

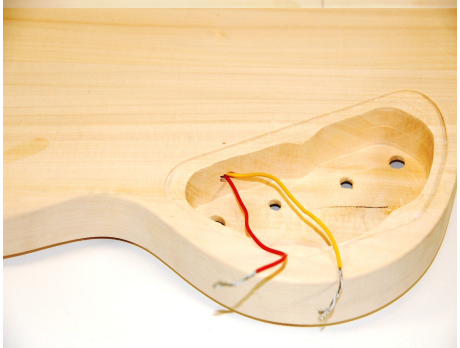
If all sleeves have been hammered in the pins for the bridge and the screw of the stop bar can be put into them. Please check out the three photos on the left side. The bridge itself can be easily plugged on its pins while the stop bar only has to be hooked in. The height adjustment and sloping position of the bridge can be done later after set up the strings and the adjustment of the neck by its Trussrod.

Assembling of the tuners…

Yet the tuners can be put into the complying predrilled holes on the guitars headstock. Doing that is very simple and well shown on the next two photos. All 6 tuners have to be fixed with its hexagon head screw and a ring washer on the upside and with a little wood screw on the back of the headstock. The loops of all tuners should point out to the middle of the headstock - best seen on the second photo on the right. But normally all holes for the screws are pre drilled so this (indeed) shouldn't be a bigger problem for a well proofed amateur craftsman. ((-:

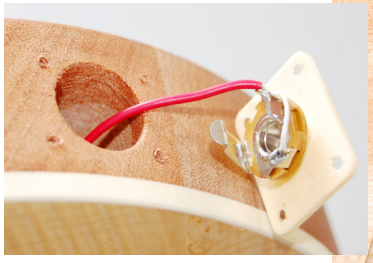
Assembling of the PUs (Humbuckers) and wiring of the potis, switch and the output jack…

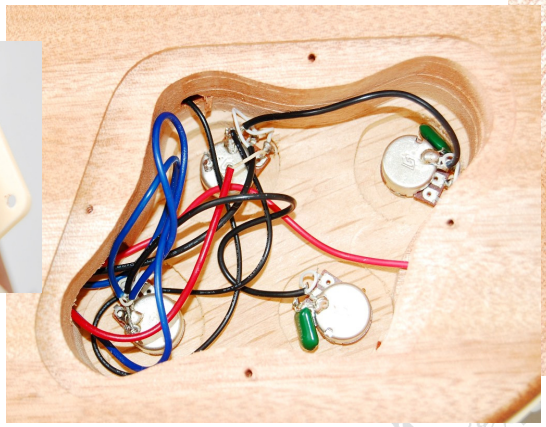


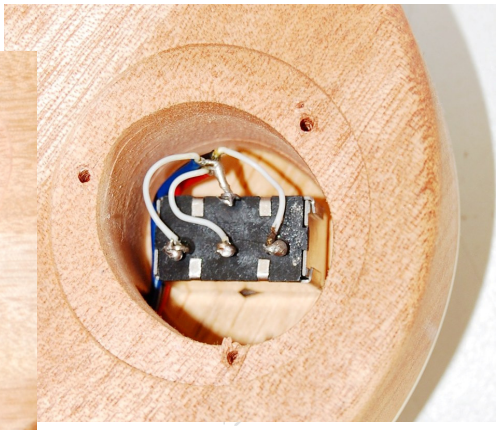


Next step of our entertaining journey *"how to build an electric guitar by our self"* is not as easy as all the other *"silly"* stuff before… ((-:

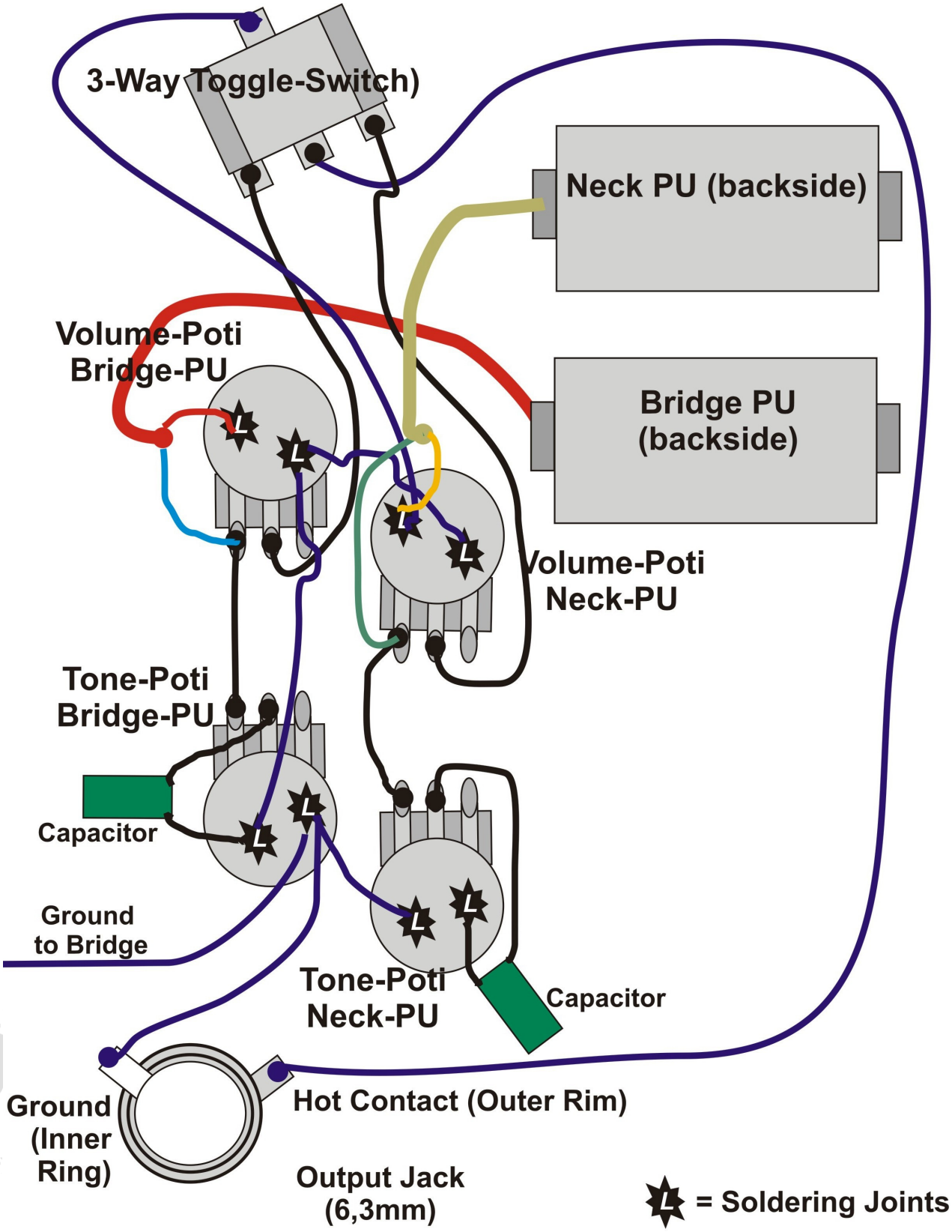
So before we start trying to do the wiring of the guitar and to bring "FRANKENSTEIN" to life it shall be no stupidity set up the electronic hardware first and fixing it on the guitars body. Our "friends" are the so called potis (2 tone- and 2 volume-), a three way toggle switch, and the output jack. Check out the following photos on the right and below. All cables coming from the Humbuckers should be lead through its complying channels to the electric panel on the backside of the guitar (3rd photo on the right). This is our so called "control center" and will help us later on electrifying our guitar. On the following page the wiring plan should lead us through this avoiding further trouble while working with the soldering bolt. To diminish possible droning later - everything should be grounded very well. So please check out the wiring plan first!! Most of the colors of each cable are for better orientation - and it has less to do with their function. Concerning to each kit colors can differ a bit too.
The much thicker cables of both humbuckers do include 2 single cables – one blank and one with (mostly) a white shroud. The blank one has to be soldered onto the top of its complying volume poti. The other one must be connected to the hot contact. Please check out the pictures below and the wiring diagram. Please attend on: If both blank ends of these cables got in contact later everything will be short out. Differing between the volume- and the tone-potis is simple too: they are signed with an **A** (tone) and a **B** (volume) on one side of the top.







Standard wiring diagram for SG, LP und Melodymaker models…



Music-Marketing GmbH – Gewerbepark „Maria Münster“ – Klosterstraße 30 – 32
67547 Worms - Tel. 06241/269831 – Fax 06241-269833
www.music-marketing.de

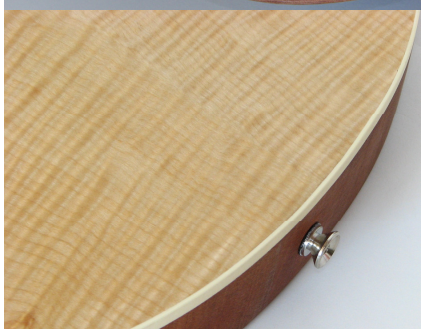
Putting on the strings…

If all miscellaneous works have been done, all parts have been fixed, nothing is wobbling around or is hanging up in the air, and every last hole has been filled up with some putty, yet the guitar can be set up with its 6 guitar strings. Principally a good thing is to start with the 1st String (that's the high "e") and then continue with the 2nd, 3rd, 4th, 5th and 6th (that's the thickest string the low "E"). Just stick each string into its hole at the backside of the stop bar and lead it to the machine on the headstock. There you should wind it up from the middle to the outside by rotating the tuner heads away from your body (3 tuners on the upside) and in direction to your body (the three tuners on the downside). How to wind up all strings can be seen very well on the photo on the left side. Up from the deepest (thickest) string the guitar has to be tuned in **E, A, D, G, b, e.** If your hearing is not sensitive enough detecting all single notes it is recommended using some kind of a standard tuner.

Adjusting the truss rod and the "purity" of intonation…

After the guitar has been tuned it's possible that the neck got a little skew respectively it got some kind of concave. This is the reason why the truss rod has to be adjusted. The approach to that is on the upside of the headstock above the transition from the neck to the nut. Just check out the photo below. In this entry you will find a hexagon socket screw which has to be rotated with the help of the hex key either in direction to your body or the opposite until you feel resistance and the neck gets straight. But: the neck should remain slightly concave. This averts that the strings clanking against some frets up from the 5th. The string action can be fine tuned by putting up/or down the bridge a little. This can be done by using a slot screwdriver.

After doing that the guitar should be tuned again. Shortly grabbed at the 12th fret the tuner must display exactly the same note (one octave higher) as by strumming the same string open. If this one is too high the complying saddle has to be slightly moved into direction of the stop bar. If the tone is too low it has to be moved slightly into the opposite direction. This adjustment must be done with each of the six strings. Then the guitar has to be tuned one more time again.



Setting up the strap holders and the electric panel cover…

As very last act the included strap holder pins have to be fixed at the rib above the neck approach and the middle of the rib at the downside of our guitar. This is shown very well on both photos on the left. The exact position has to be marked in front of drilling the holes for the wood screws with a lead pencil. *"I know I am not your mama…" ((-:* With these two screws the strap holders can be fixed by taking the rubber ring washer in between the pins and woods surface.

So that all electric parts are shielded to pollution or damage in any way – the cover has to be assembled on the electric panel. All holes for the five wood screws got to be drilled. The exact position can be seen on the last photo on the right side below. To get the holes in the cover and the wood synchronal it is recommended doing the holes in the cover first, placing it in the milling groove and doing the holes in the wood by using the cover as a template.

So get a move on – and have a lot of fun while playing your first home-made electric guitar by TENAYO!!!

PS.: The original and full colored version of this fine manual can be requested via info@mm-wo.de …

Attention!!! „All Electric equipment can usually not be disposed with your household refuse!! This guitar kit is including parts which do not belong into domestic waste too!!! All these parts have to be brought to your local collecting point or recycling depot. Our WEEE-**Registration-Number** is **DE 57445331.**

Music-Marketing GmbH – Gewerbepark „Maria Münster" – Klosterstraße 30 – 32
67547 Worms - Tel. 06241/269831 – Fax 06241-269833
www.music-marketing.de