

Instructions

I suggest setting aside a small space at the work table especially for pickup work and covering it with sticky-backed plastic any resin drips can be easily wiped off when wet or picked off when dry. Cut a small rectangle out and glue a bar magnet to the table for bobbin assembly and another one around 300mm to the right.....magnets are marked N so glue this one N side down – this one will be used for final assembly.

Cover the left hand magnet with a strip of plastic insulation tape in case you`re overenthusiastic with the superglue.

Mix resin and hardener to manufacturer`s instructions and cast resin parts. Usually, demould time is a couple of hours but a little more time is better....then set aside to cure for a couple of days.

You`ll both be using differing software so I can`t really help with the laser aspect but I`ve supplied .bmp images which should be importable. These bitmaps are designed at 20px per mm so for example, if the image is 1000X1000px, you should scale so that the work size is 50mmX50mm

Cut the bobbin bases and you`re ready to go!

- 1- Make the eyelets.....using a curved blade (XActo, Swann Morton etc. NOT scalpel as too flimsy, place the copper tube on a scrap piece of wood, position the blade around 1.5mm from the end and roll the tube back and forth until the blade is almost through, put the cut end into the bobbin and wiggle to break off. Repeat for the other hole.
- 2- An old lump hammer or flat piece of steel is used as an anvil - tap the copper tube then using a centre punch, spread the tubes either side so that the eyelet is firmly fixed.....not too much force, just a light tap then flatten again.
- 3- Finally, have 2 sanding blocks ready, one with 100 grit (a cut up sanding belt is ideal) and the other with 400grit Carat paper. Sand over the eyelets to ensure everything is smooth including a quick swipe all around) with no rough bits that could snag the wire.
- 4- Place 4 (or5) Rivnuts flange side down on the taped magnet, check the fibre board for warps correcting as needed and slip the fibre board bobbin plate over the Rivnuts until they are seated on the flanges. A small drop of glue at each joint is all that is needed.
- 5- Clean up the bobbin top casting with 400 grit then using a tapered reamer, open the holes to 6mm and press into place (you`ll notice that the Rivnuts are tapered at the end). **Handy Tip.....using a calliper to help accuracy, mark the reamer at 6mm and 8mm points then using a Dremel with a fine cutting disc, notch the reamer.....ink wears off)!**
- 6- Slide the bobbin off the assembly magnet, flip over and press onto the table. The top should be a firm fit.....check to ensure the top casting is at right angles to the rivnuts....if not, press down again and correct.....once everything lines up, run a thin fillet of superglue around each joint and leave to cure..... **Handy Tip..... a row of magnets glued to the underside of a shelf are a good way of storing the bobbins top side down as the glue cures.**
- 7- THE FUN BIT!!!! Rivnuts can be smooth or knurled – If using knurled, then a wrap with 10mm Tamiya masking tape is a good idea since the knurling can break through the varnish insulation.
- 8- Start with the North coil.....If the winder is a simple tower type with no spool holder, place the bobbin on the floor between the feet, pull off some wire to work height and with the

- bobbin top facing upwards with the eyelets to the right, insert the wire through the top eyelet and put five turns of wire and ensure that the wire is looped up to the long side.
- 9- Double sided carpet tape is ideal for holding the bobbin on the faceplate and many pickups can be wound before the tape needs replacing.....stick the bobbin carefully to the faceplate so that it is centred and once happy that it's correctly positioned, start winding. Various machines may have differing power so I'll leave it up to you how to start winding (mine is set up so that pinching the wire firmly stops the machine running so I pinch, switch on then gradually release until the winder starts..... For North coil, run ANTICLOCKWISE.
 - 10- Once the required amount of turns are on, snip wire and feed through the other eyelet and loop 5 times to the lower long edge.
 - 11- Repeat for the South coil but this time, start at the bottom of the two eyelets and once wound, finish by looping the wire through the top eyelet TOWARDS THE END OF THE BOBBIN. This will ensure that there's no chance of the windings touching when the pickup is assembled and also, acts as a good way to identify which coil is which **Handy Tip..... If using a fresh spool of wire, quite often, the end can be stuck with tape – remove any tape residue with Isopropyl Alcohol before starting and check the spool for bad moulding seams – If in doubt, carefully remove the raised seams with an emery board.**
 - 12- Clean up the baseplate casting and drill the holes for screws and wire with a 2.5mm drill.
 - 13- Ream the magnet holes so that the treble side holes are slightly over 8mm with the remaining 6 (or 8 for five string mandos) being slightly over 6mm.
 - 14- Place coil face down on the assembly magnet and solder the wires to the eyelets.....I usually use a pointed bit on my iron (25W) and slowly count to 10 before removing the iron to ensure that the solder has melted the varnish and leave a few more seconds before removing and repeating for the other coil.....Do not blow to cool things down – that's naughty. Coat the windings with acrylic varnish or shellac to bind in place and reduce microphonics.
 - 15- Select the North coil and place face down on the assembly magnet with eyelets to the right.
 - 16- Strip 25mm of the output insulation, tease the foil away, remove and also trim away the bare wire. Separate the wires and trim the green and white wires so they are around 5mm shorter. Remove a small amount of insulation from each wire, twist and tin. Repeat for other end but this time, no need to shorten white and green and do not trim braid as this will ground the cable insulation when soldered to controls or cavity.
 - 17- Holding the pickup baseplate with the bottom facing you and the connector wires in a line left to right, insert the black wire through the right hand hole and the white next left. Position the baseplate so it's just above the bobbin with just enough room for a soldering iron, melt the farthest eyelet solder and quickly move the base down so the exposed white wire goes into the melted solder, hold for a few seconds to cool then slide the parts away from the magnet.
 - 18- Place the South coil on the magnet, gently pull the black and white wires to take up any slack then seat the North coil on the baseplate.
 - 19- Insert the green wire in the hole next to the white wire and finally, the red in the remaining hole and repeat.
 - 20- At this point, it's worth checking with a multimeter to ensure that the coils have been properly soldered.
 - 21- Holding the coils on top of the baseplate, adjust by eye so that they look parallel then using a fine nozzle, give a squirt of thin superglue either end and hold for a few seconds to bond the coils to the baseplate
 - 22- Have a cuppa or a ciggie.....or both while the glue cures.
 - 23- Pile your chosen magnets on the other magnet which is South up – for 4 pole mandolin pickups, each magnet is graduated so for E, use 8X3 , A=6X2, D=6X3 and G=6X2 (obviously 2

of each required for a humbucker.....For 5 pole pickups another of the 6X2 magnet is added for the C string.

- 24- To place the magnets in the holes in the baseplate, firstly, SLIDE the magnets from the pile and insert into the North coil holes.....black and white – SLIDE
- 25- Repeat for the South coil but this time, slide the magnets from the holding magnet and FLIP them before inserting in the baseplate holes..... **Handy Tip.....A cheap and easy polarity checker can be made using an old clear ballpoint pen and a suitably sized rod magnet. Saw the tube in half, remove the writing end / ink tube, drop in the magnet and seal the open end with tape.....As long as the magnets have been inserted correctly, then running the end of the tube along one side, the magnet inside will be attracted to all the magnets for one coil and when you test the other side, the magnet will be repelled Stewmac sell something similar at a stupid price!!!**
- 26- Lock the magnets in place with a little superglue and flip over so that no glue runs into the Rivnuts and allow glue to cure. I place the pickup on the back of a pickup mould since the glue doesn't stick to silicon rubber.
- 27- A little thick superglue can be used to lock the wires into the holes to reduce risk of handling damage.
- 28- I use black bicycle handlebar tape but insulation tape is fine.....Stick one end of the tape to a cutting mat and stick down around 150mm in a straight line using a rule (or mat markings) to ensure the tape is straight and using a fresh scalpel blade, cut to length. By eye, centre the scalpel into the tape, move a straight edge up to the blade and check that it's parallel the slice along the length – you should then have 2 strips of cloth tape the same..... Peel one away and wrap the coil (the other can be saved for pickup #2).
- 29- Using the chrome screws with a "nick" in the end, tap the holes for the height screws. Please keep them in a safe place – EY Guitars changed the specification and the current screws no longer self-tap.
- 30- Finally (PHEW!!!!) using M4X12 steel BZP grub screws, insert 2 at a time (alternate holes) and squeeze with wire cutters to slightly deform the thread around 4mm from the top. The idea is to make them slightly tight so they don't vibrate loose. A little practise may be needed as metals can vary in hardness from batch to batch.....repeat until all the screw holes are filled the double check with multimeter to ensure that everything is fine and that's it.....Job done