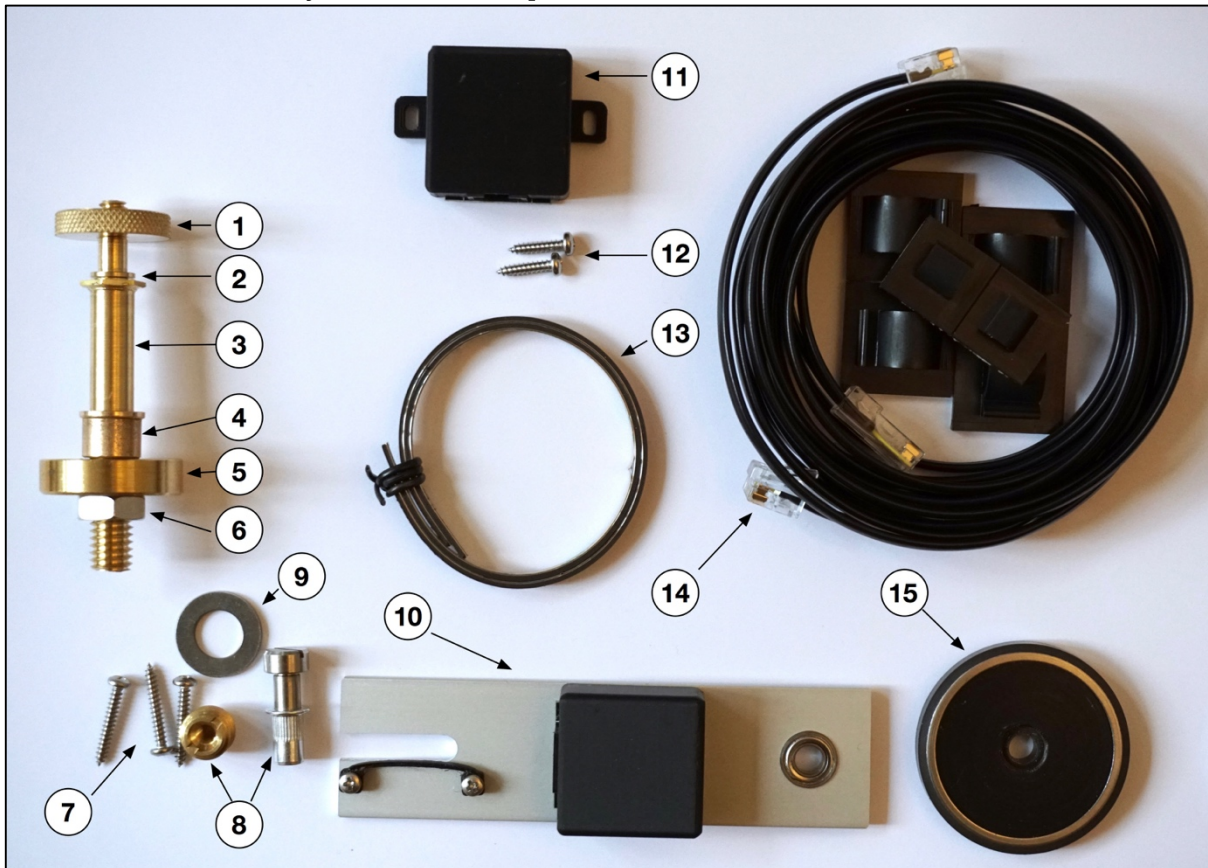


MEADE LightBridge: Encoders Installation

Please make sure that you have all the parts included in the kit:



List of parts:

- ① - thumb nut for the azimuth pivot
- ② - spacer
- ③ - azimuth pivot bolt
- ④ - brass or plastic bushing
- ⑤ - mounting plate for the pivot bolt
- ⑥ - lock nut
- ⑦ - screws for plate ⑤
- ⑧ - threaded insert (3/8") and push-in threaded insert (6.5mm) with anchor bolt
- ⑨ - optional washer for the pivot bolt
- ⑩ - azimuth tangent arm with the encoder sensor
- ⑪ - altitude encoder sensor
- ⑫ - screws for altitude encoder sensor ⑪
- ⑬ - magnetic tape with adhesive layer for the altitude bearing
- ⑭ - encoder cable
- ⑮ - azimuth encoder disk

Specifications:

Azimuth Encoder resolution: **311296** steps per revolution

Altitude Encoder resolution: **952000** steps per revolution

Current consumption: 25 mA each

Please familiarise yourself with how the encoders will look installed (shown here without the OTA):

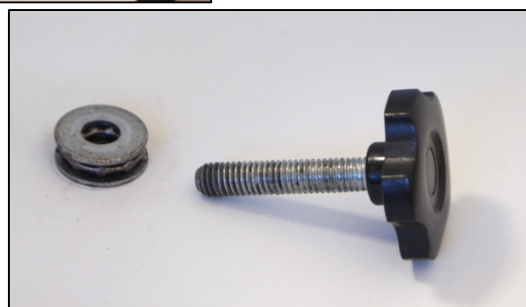
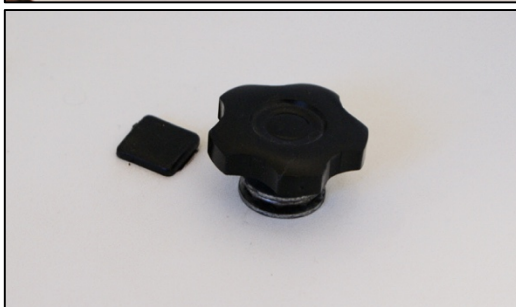


Note: the photo above shows the base of LightBridge 12" Deluxe with installed encoders and some additional wiring for dew heaters; the tangent arm shown is of previous revision without tensioning spring.

Please note the placement of the altitude sensor and the orientation

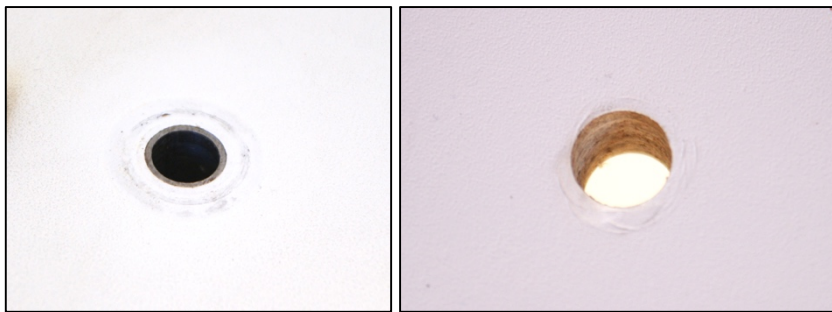
Azimuth encoder installation

Please remove the OTA from the base. Then remove the azimuth tension adjustment knob.

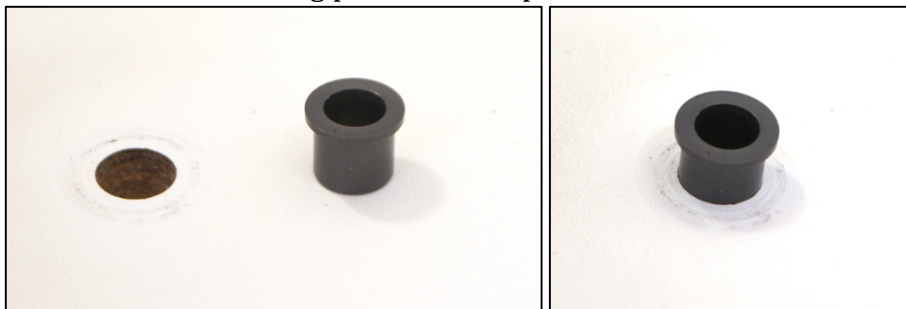


You will see a metal insert. You can either keep it or you can remove it and replace it with the bushing

supplied. Please note that the bushing supplied is either plastic or a brass bushing. In case you want to replace the bushing start with removing the metal insert:



Then insert the bushing provided and push it into the hole:



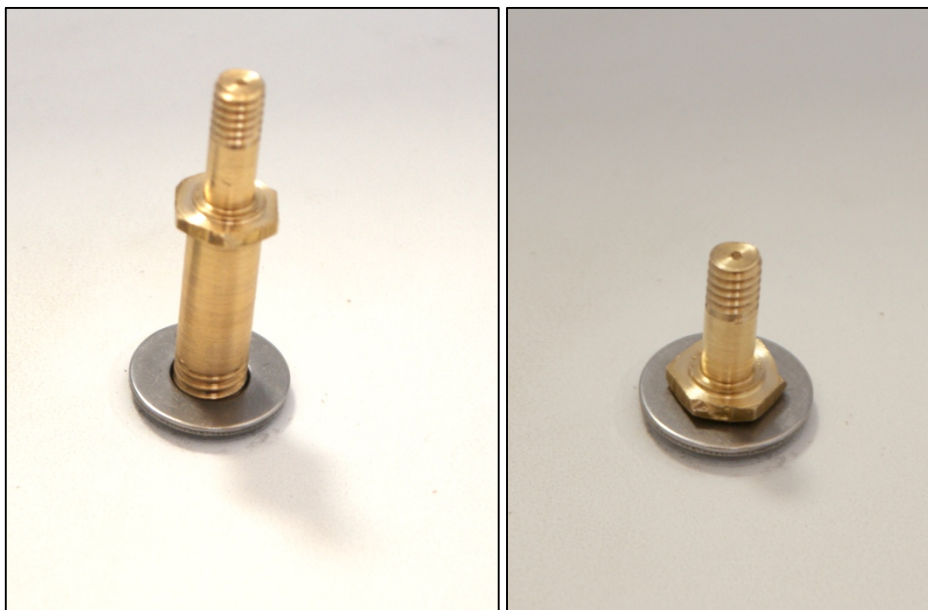
Now you need the washer and the pivot bolt:



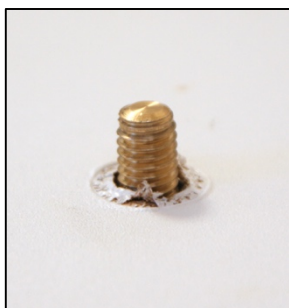
Put the washer on the bushing:



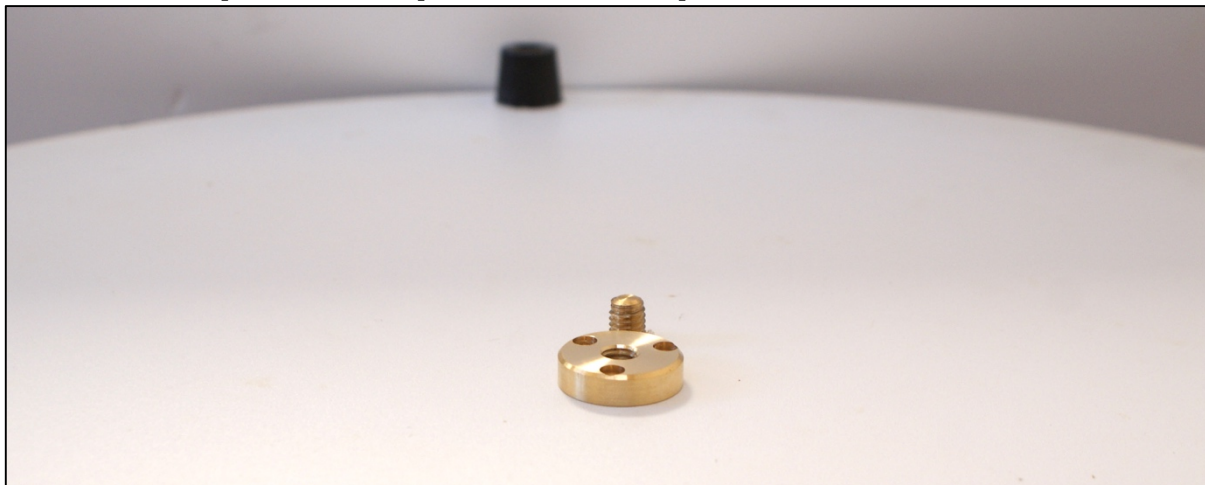
And insert the pivot bolt making sure that you screw it into the threaded insert in the ground board:



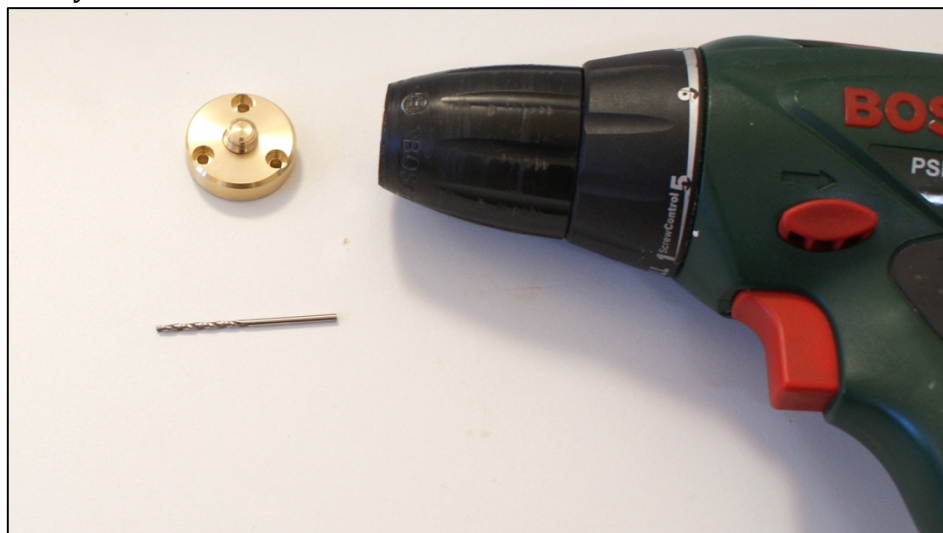
Now turn the base around or put the whole base on a side:



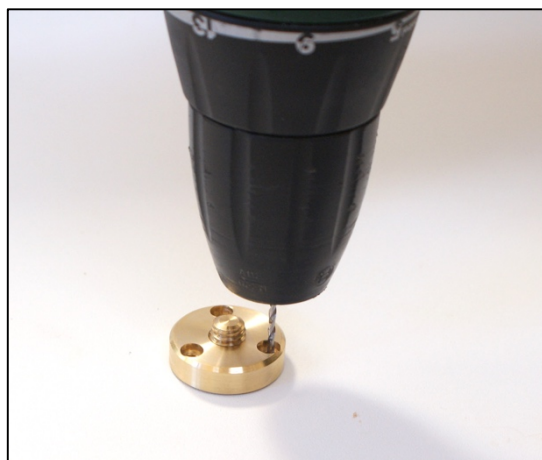
Now thread the plate onto the pivot bolt until the plate cannot be rotated:



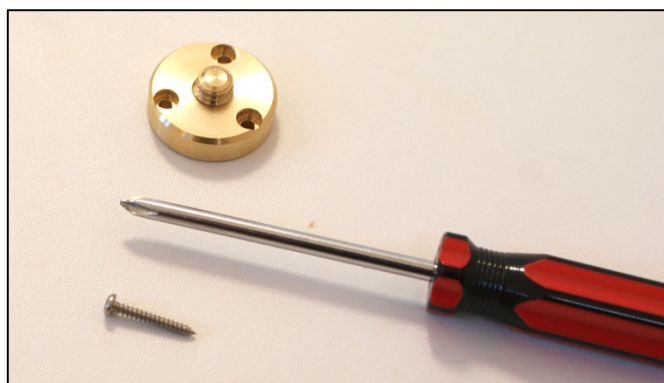
Now you need a drill and a small 2mm or so drill bit:



Drill three holes – for each screw:



You now need a screwdriver and three screws for mounting the plate:



Use the screwdriver to fix the plate in place:



Now put the base on its feet and use a ½" spanner (or 13mm) or an adjustable wrench to adjust the tension so the telescope does not rotate freely (as you will not be able to adjust the tension due to the lack of the knob):



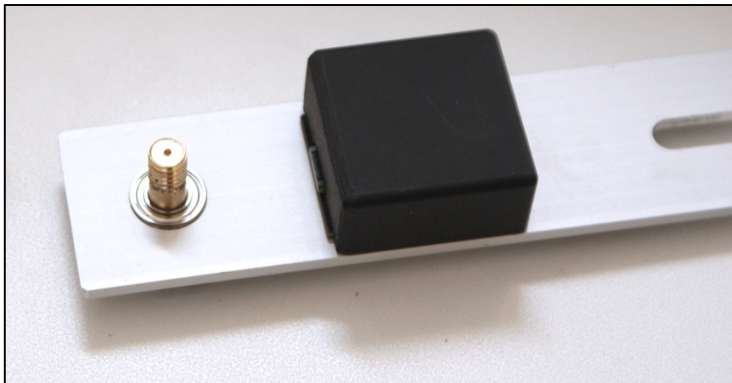
Now turn the base on its side and lock the pivot bolt with the lock nut:



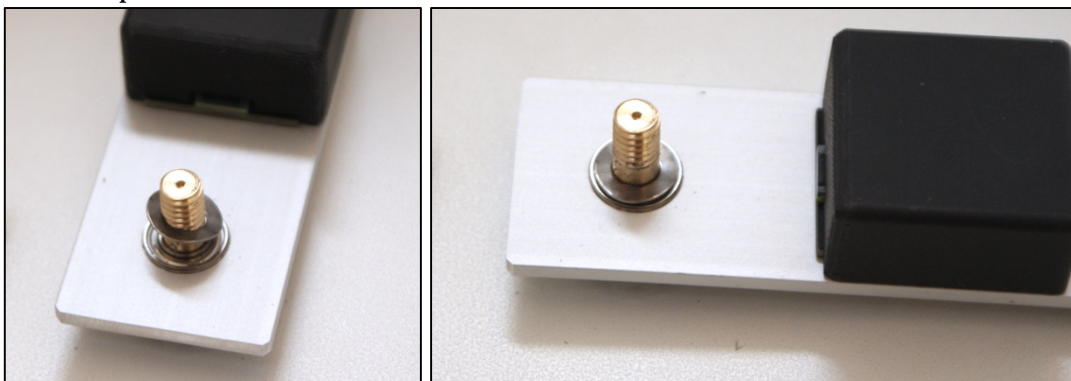
Prepare the tangent arm (10), thumb nut (1) spacer (2) and azimuth encoder ring (15):



Feed the pivot bolt through tangent arm's ball bearing:

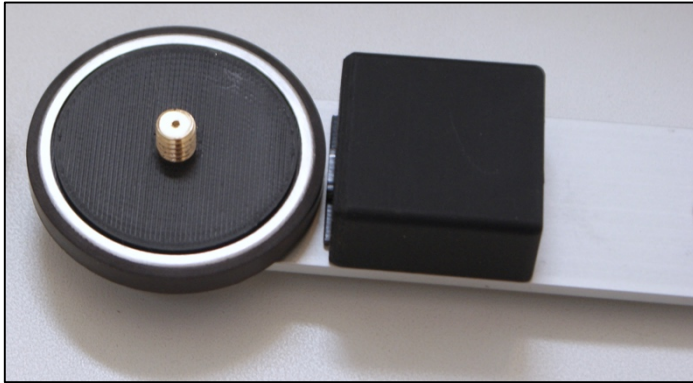


Put the spacer on the bolt:

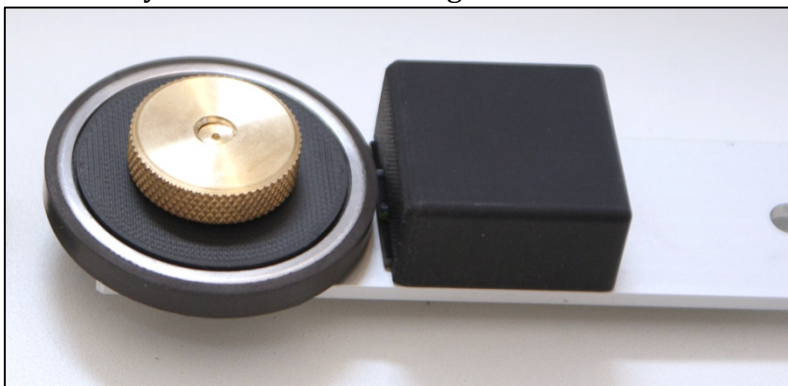


NOTE: The tangent arm should be installed facing the board between side walls of the base of the telescope.

Put the encoder ring now:



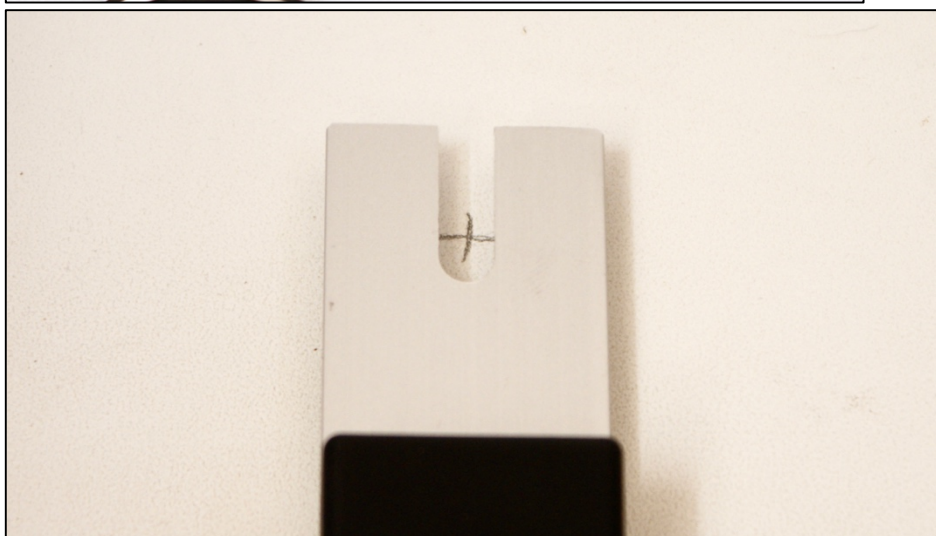
followed by the thumb nut and tighten it:



You will need a pencil for the next step:



Mark the middle of the tangent arm's slot:

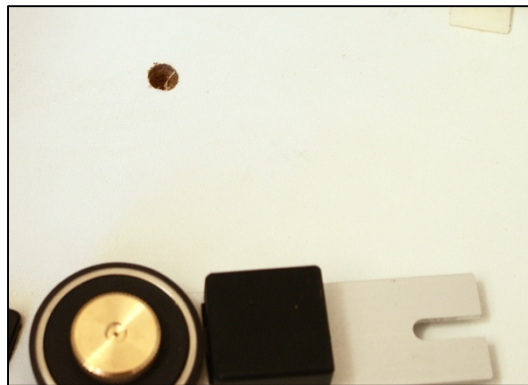


Now you will need a drill and a drill bit of the following size:

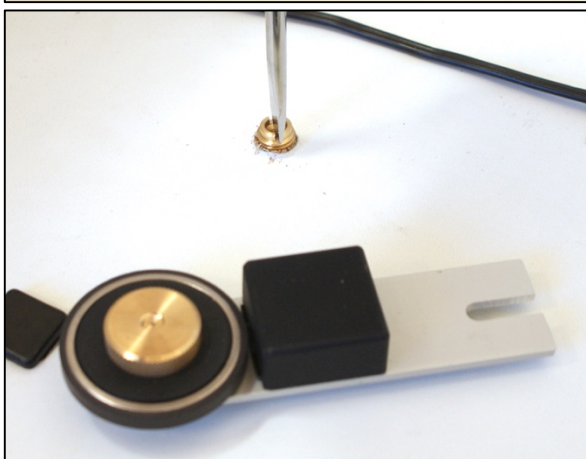
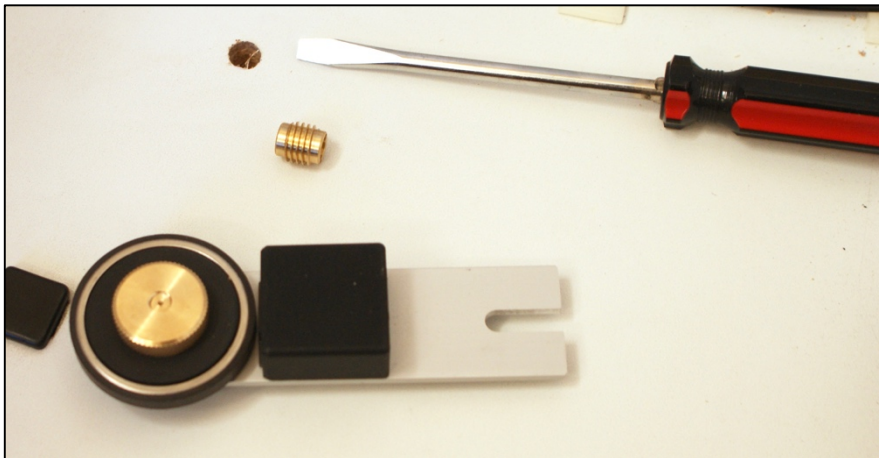
- 6mm or 1/4" for the aluminium insert
- 9.5mm or 3/8" for the brass threaded insert



Drill a hole at the marked spot, remove the wood chips:



Thread the insert into the hole (use a rubber hammer in case of using the aluminium insert to push it into the hole):



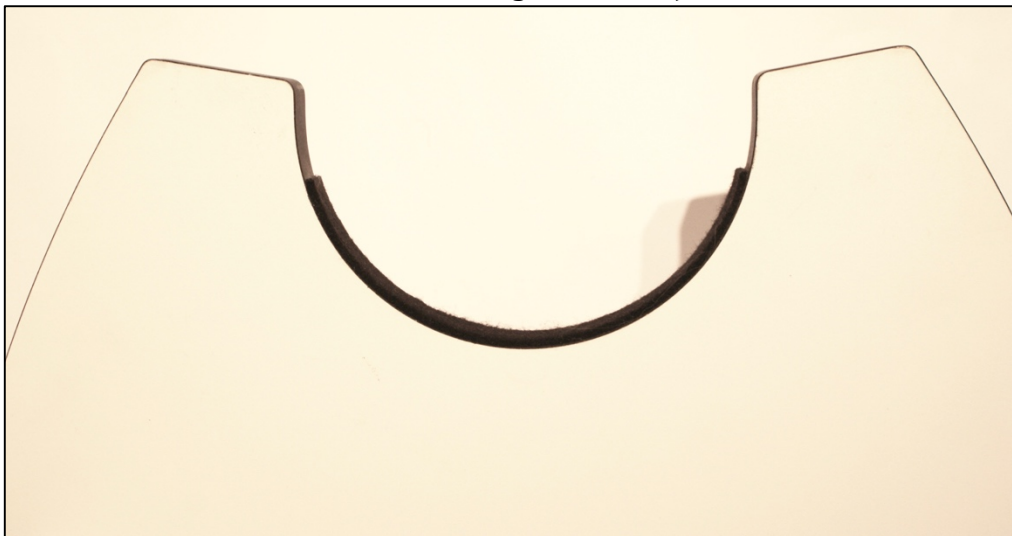
Move the tangent arm until the slot is over the threaded insert and thread the anchor bolt in:



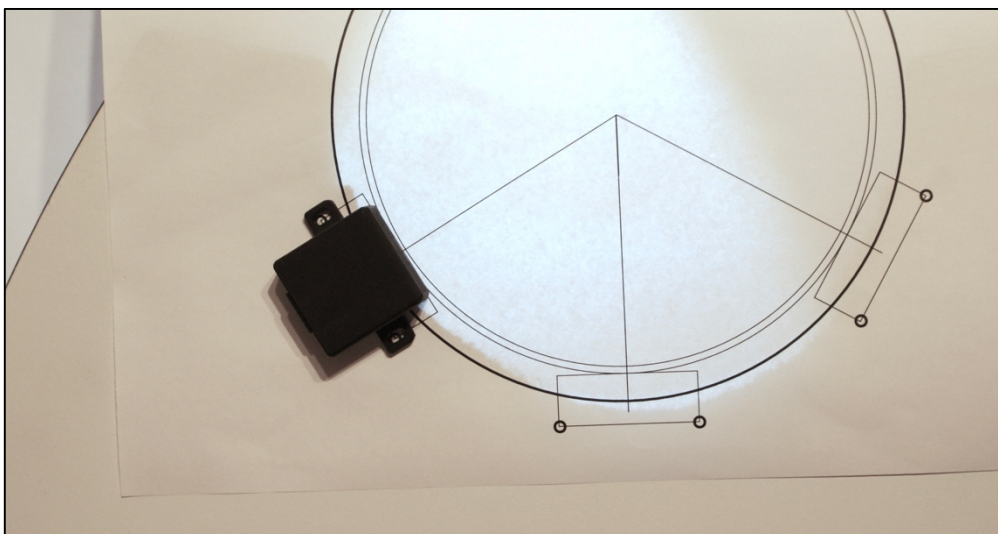
Altitude encoder installation

It is important to follow the steps described here in the exact order it is described.

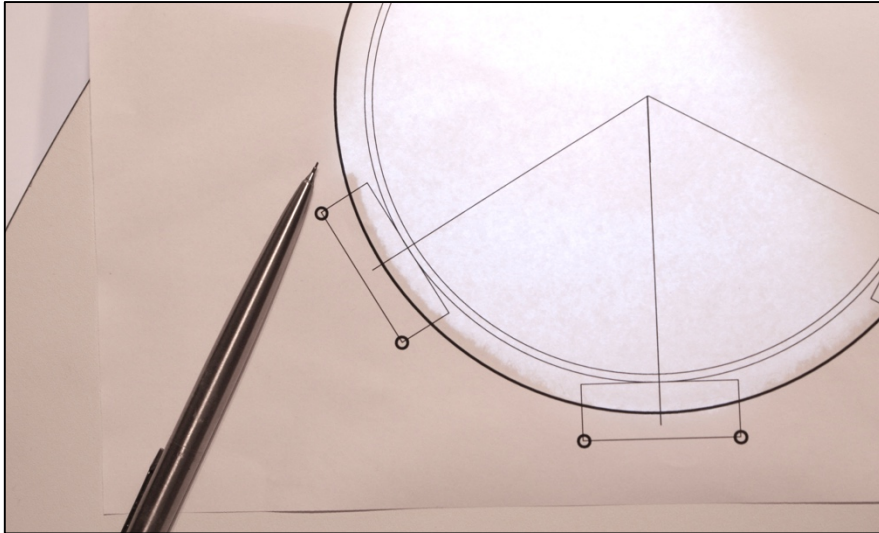
The altitude encoder sensor (11) should be installed on the inside of the side wall of the rocker box that does not have the altitude bearing tension adjustment:



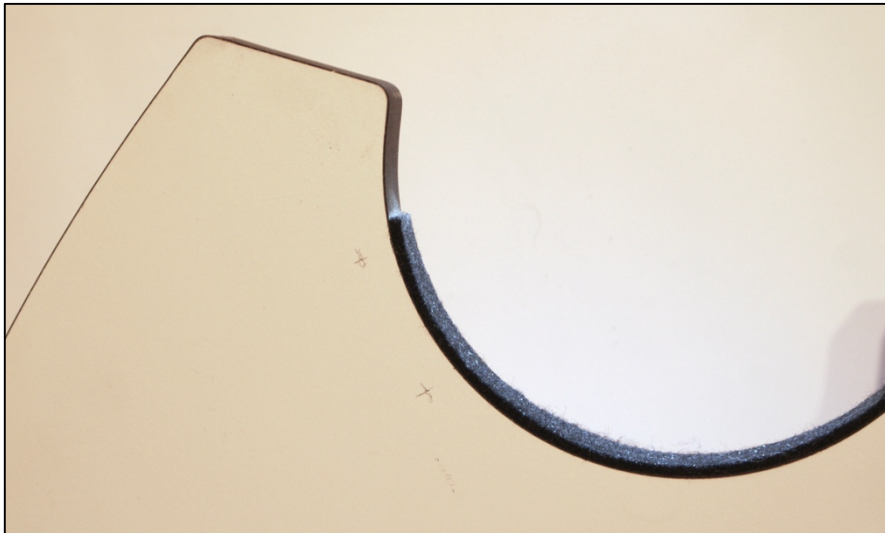
You will need to use the supplied template to mark the placement of the altitude encoder sensor. It is best to use a flashlight or another light source to place the template precisely on the inside of the side wall:



The outer circle of the template must be aligned with the circular line of the wall (not the felt lining):



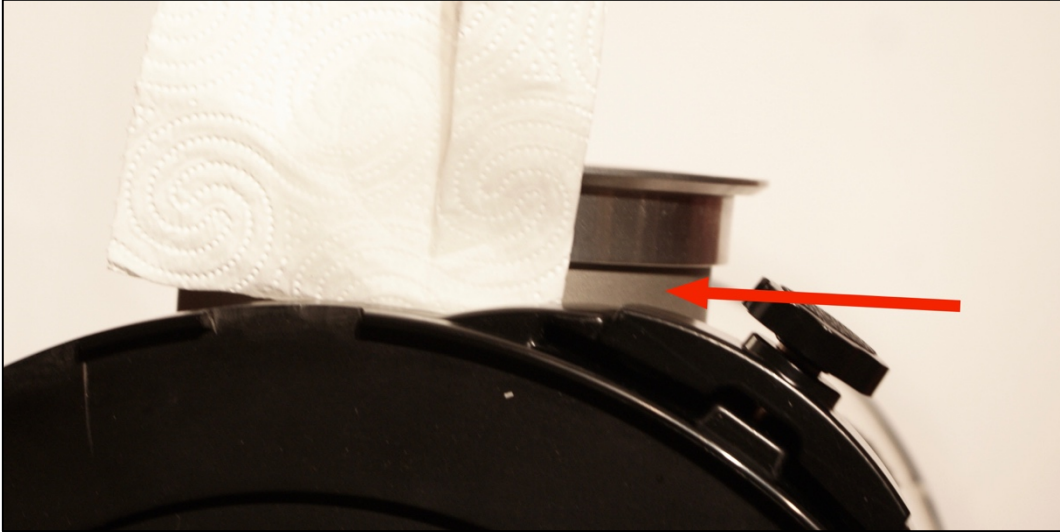
Mark two mounting holes for the sensor - here the two left holes are used:



Now the magnetic tape (13) of the altitude encoder needs to be installed. You will need Isopropyl alcohol or similar solvent to clean the surface of the altitude bearing:



Use a paper towel to clean the part of the altitude bearing marked with a red arrow in the photo below:



Put the OTA on the base once the surface is clean:



Locate the bottom hole of the marked position of mounting hole of the altitude sensor and use a pencil to draw a horizontal line on the bearing aligned with the marked position or slightly below:

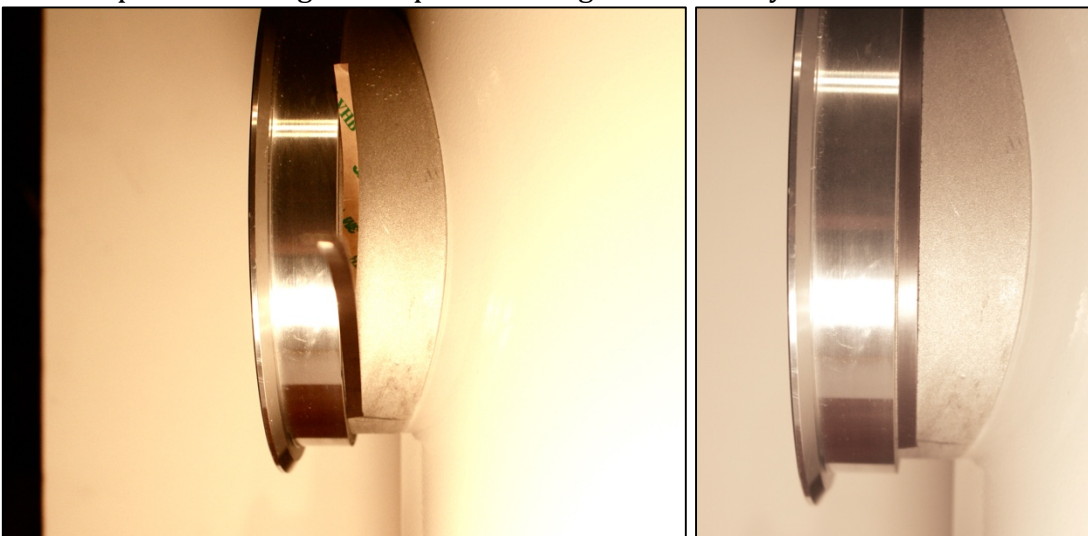




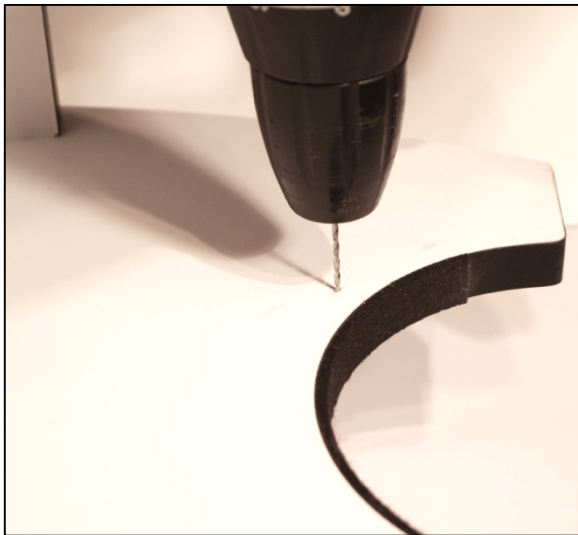
The magnetic tape is a very special tape with multiple magnetic poles magnetised with a high degree of precision. The tape has a stainless steel backing with a thin layer of adhesive. Peel the protective tape of the magnetic tape on one end:



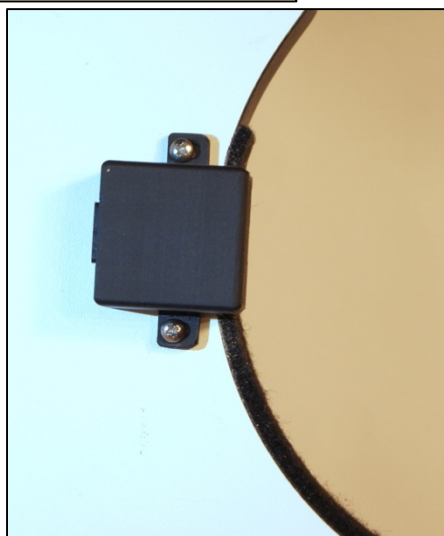
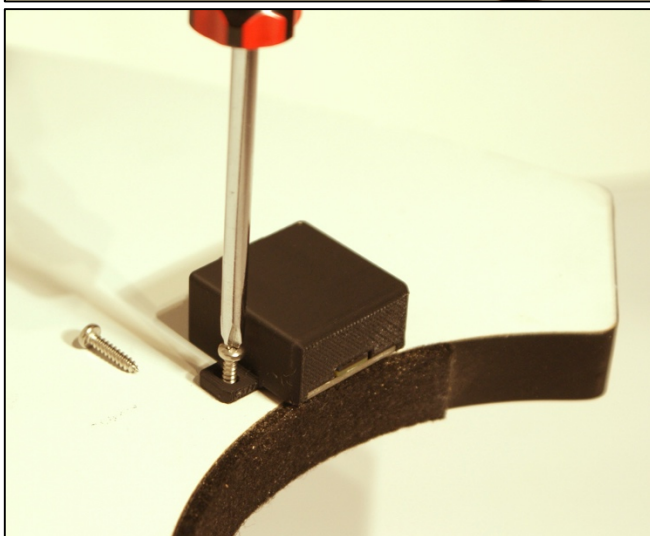
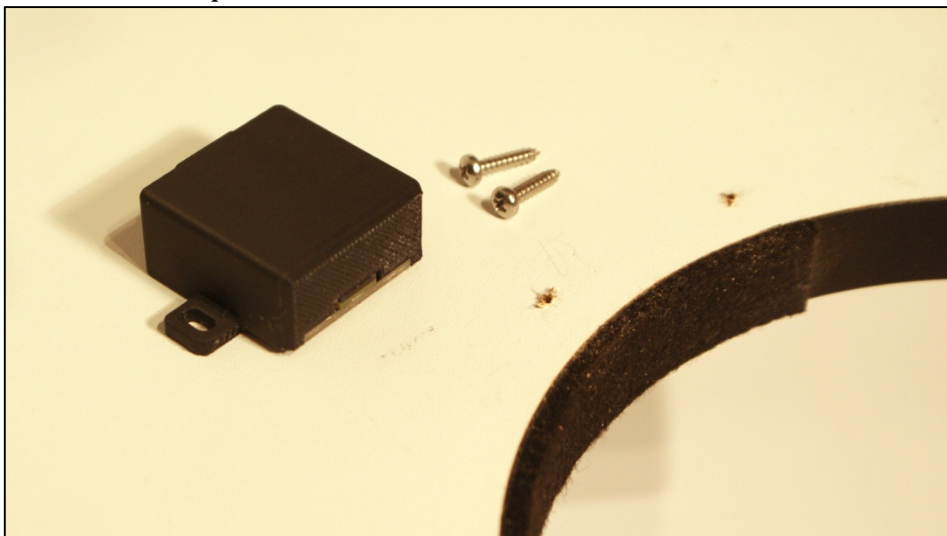
Remove the OTA from the rocker box. The magnetic tape needs to be glued very carefully on the inside of the altitude bearing starting from the line you marked in the previous step. For best results the ends of the tape should be glued with an epoxy glue (the adhesive needs to be scraped off in that case). Here only the adhesive of the magnetic tape is used. Use a soft cloth to put pressure on the tape while it is glued in place making sure it is fully adhered to the surface of the bearing:



Use the small drill bit to drill small holes for the mounting screws making sure they do not go through the hole board:



Use the screws provided to install the altitude encoder sensor. Do not tighten them just yet:

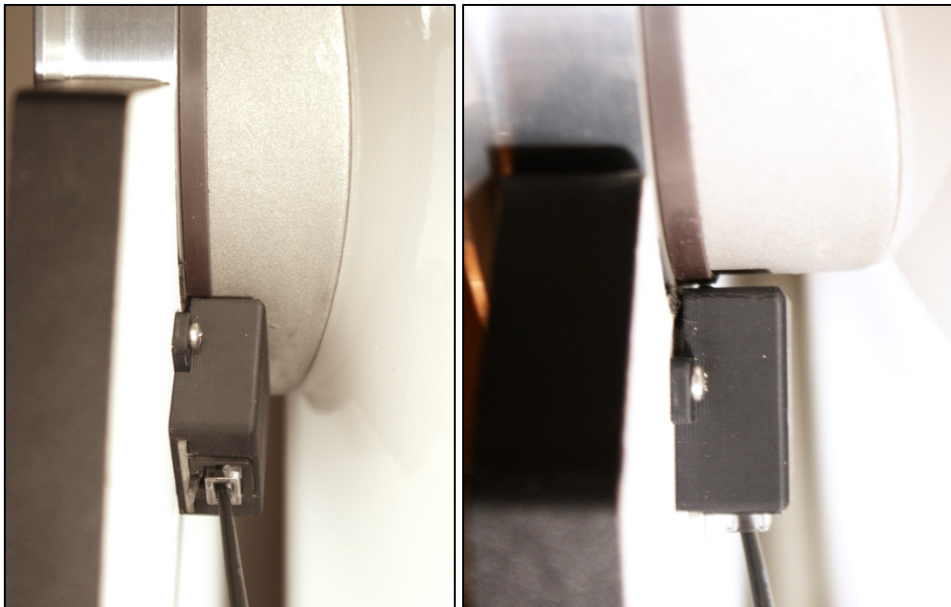


The next step is very important.

The sensor (a small black rectangle on the PCB marked with a red arrow in the photo below) should ideally be placed at 0.5mm from the magnetic tape – it can be smaller but it should not touch the tape.



Put the OTA onto the rocker box and check the gap between the actual sensor and the magnetic tape. Adjust the placement of the sensor until the gap is 0.5mm or less and tighten the screws:



DONE! Not plug the encoder cable into the jacks of the encoders and connect it to the DSC and enjoy!