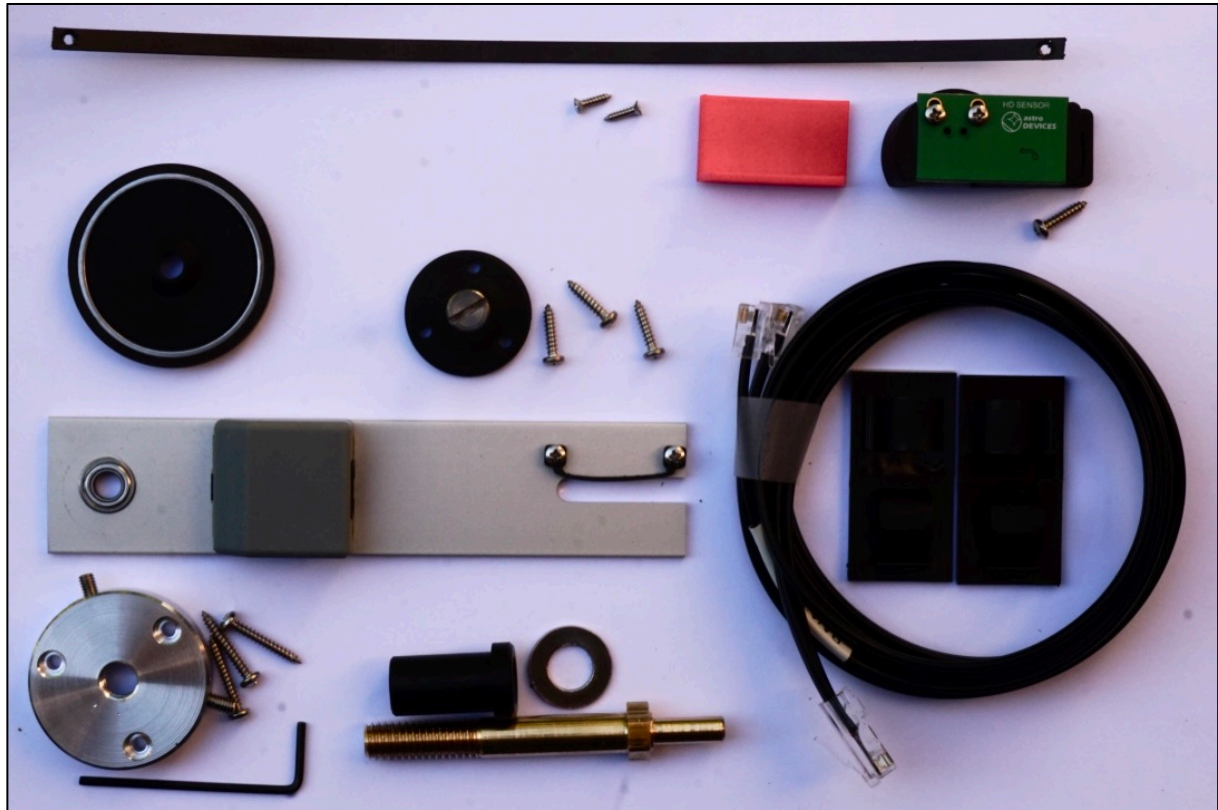


SkyWatcher: Encoders Installation

This kit is suitable for SkyWatcher/Saxon classic 6"-16" and Collapsible up to 16".

Please unpack all parts from the encoder kit. Make sure that your kit contains the following parts:



The following parts are only for the 10":



Encoder resolutions:

Azimuth: 311,296 steps

Altitude: 6"-10" - 842,700 steps, 12" - 943,000 steps, 14"-16" - 1,308,000 steps

Current consumption: Azimuth - 20 mA, Altitude - 20 mA

Azimuth encoder installation

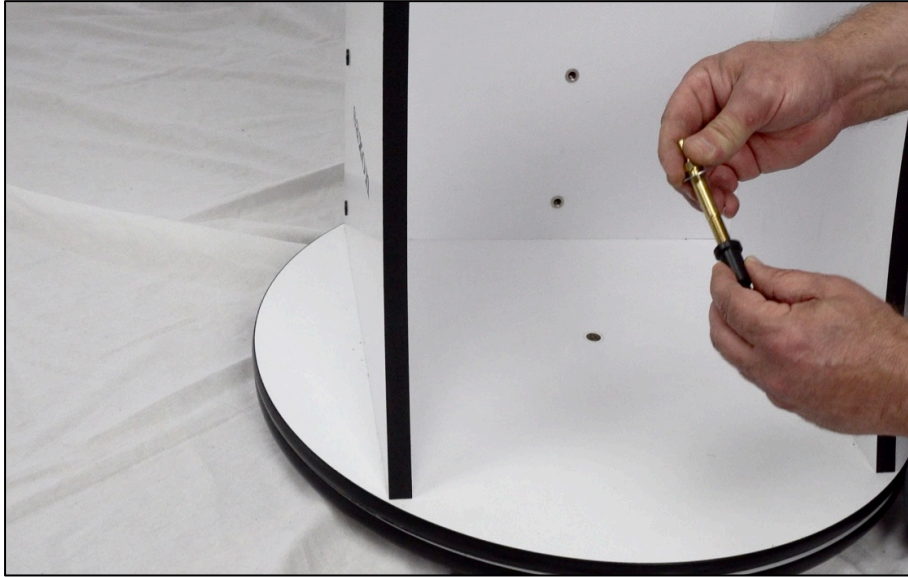
You will need the following parts and tools:



The azimuth pivot bolt needs to be replaced with the supplied azimuth pivot bolt. Use the socket wrench and the shifter tool/adjustable spanner to remove the pivot bolt . You also need to remove the existing plastic bushing from the hole.



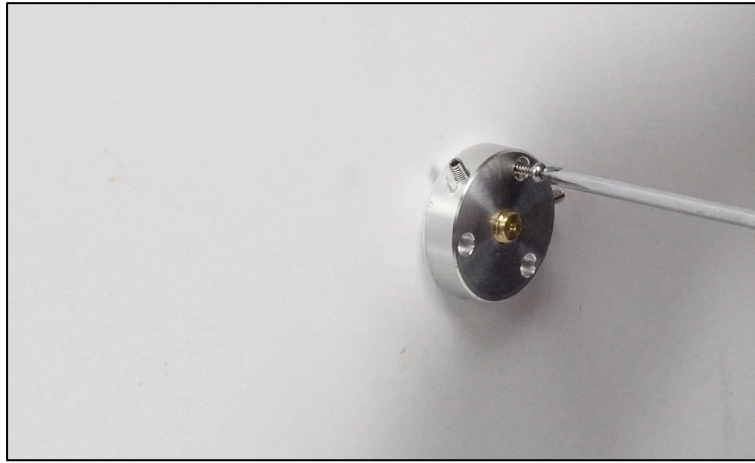
Put the washer and the plastic bushing on the pivot bolt and insert it into the hole



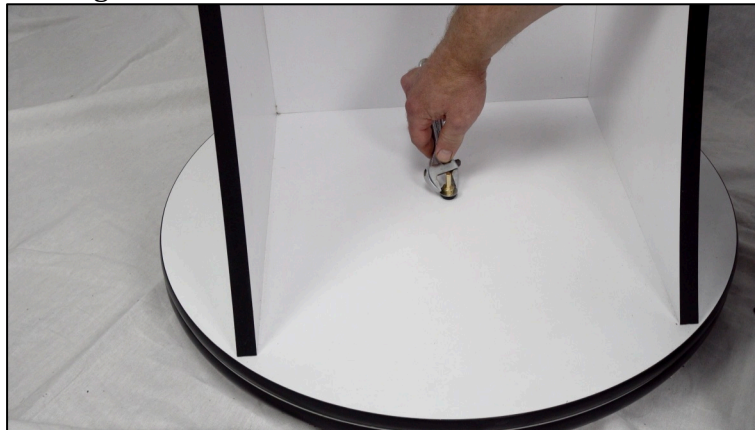
Put the rocker box on its side and install the aluminium plate on the pivot bolt. Drill holes for the screws using the supplied drill bit.



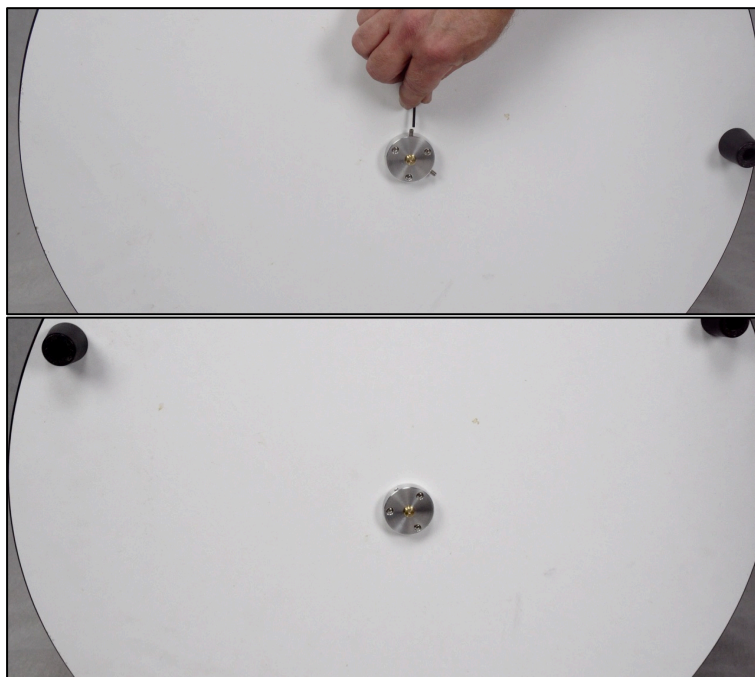
Use the supplied screws to secure the plate.



Tighten the pivot bolt making sure the rocker box still rotates as usual.



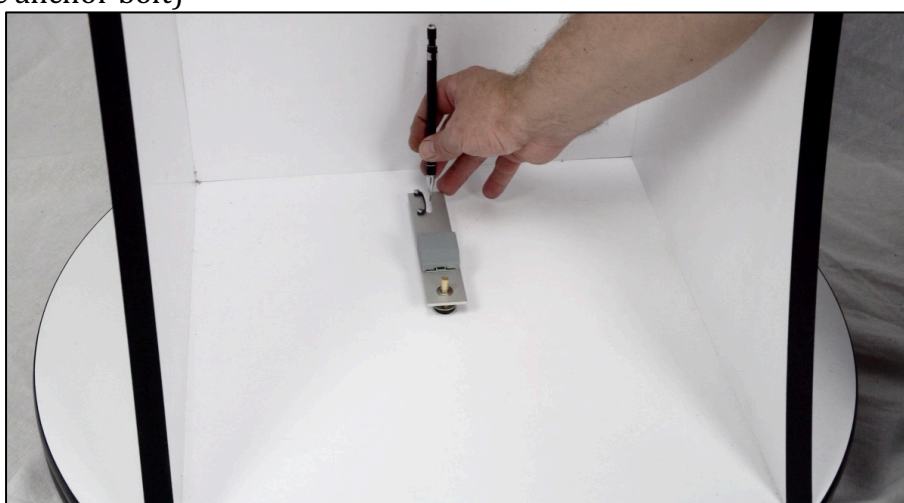
Tighten two set/grub screws using supplied Allen key



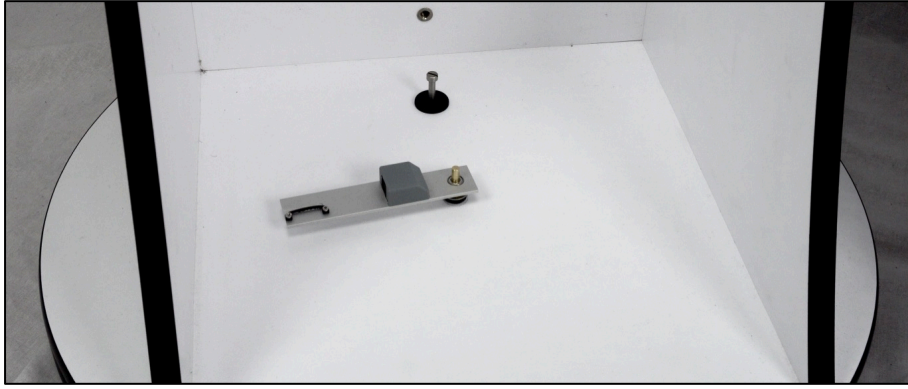
Now install the tangent arm with the encoder reader on the pivot bolt



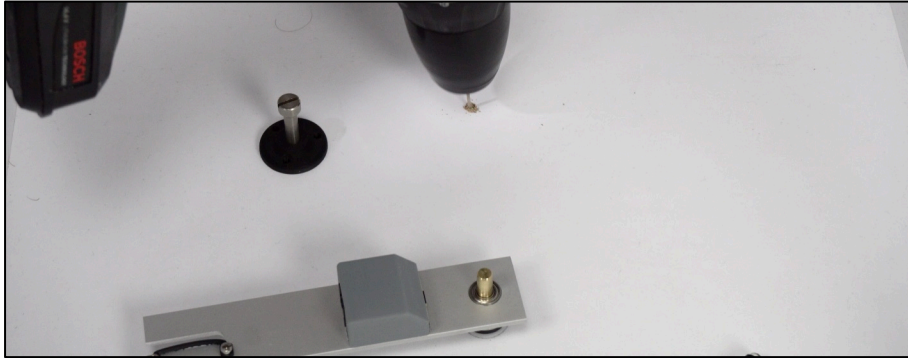
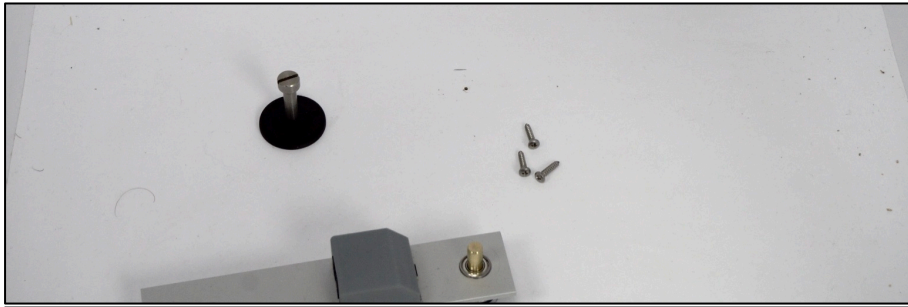
Use a pencil to mark the middle of the slot at the end of the tangent arm on the rocker box (for the placement of the anchor bolt)



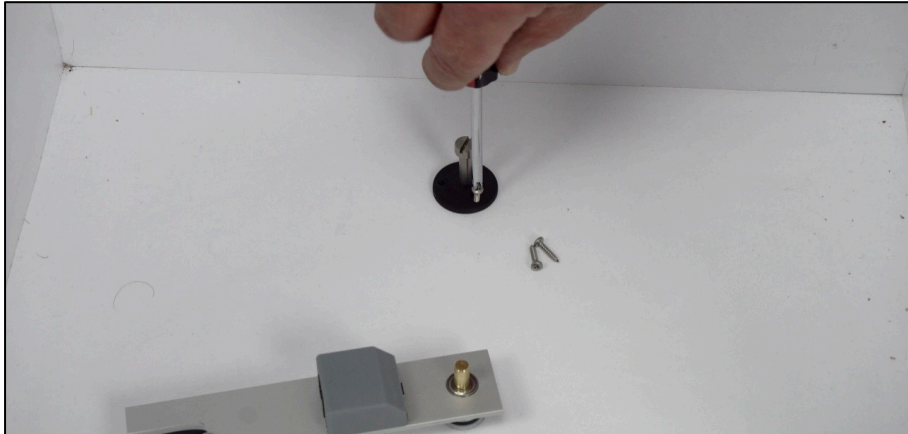
Swing the tangent arm away from the marked spot and put the anchor bolt with the foot on the marked spot. Then use the pencil to mark one of the holes

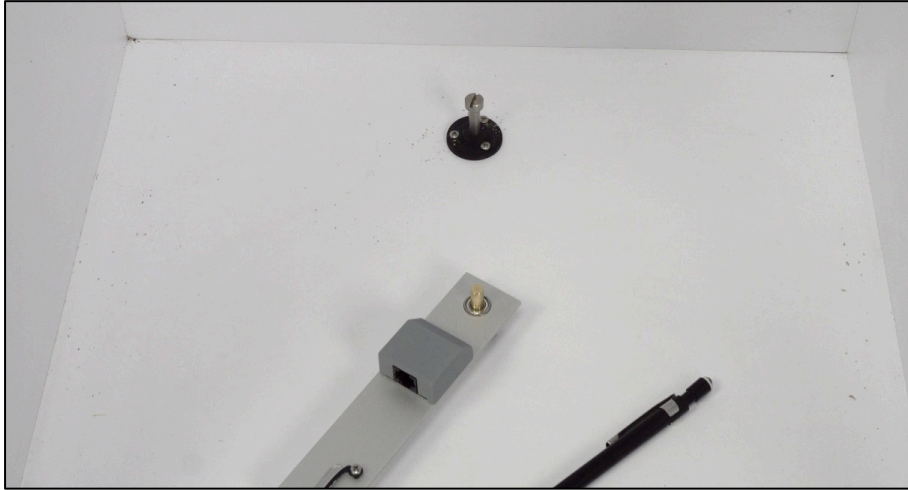


Predrill the hole for the screw



Fix plastic foot to the rocker box with three screws provided





Remove the anchor bolt using a flat head screw driver



Position the slot of the tangent arm over the foot and install the anchor bolt



Slide the two thin washers over the top of the pivot bolt and install the encoder disk – it is press fitted onto the pivot bolt's top



Altitude Encoder Installation (6"-8", 12"-16")



For the installation of the altitude encoder on 10" version only refer to the next section of this document.

The following parts are required to install the altitude encoder:

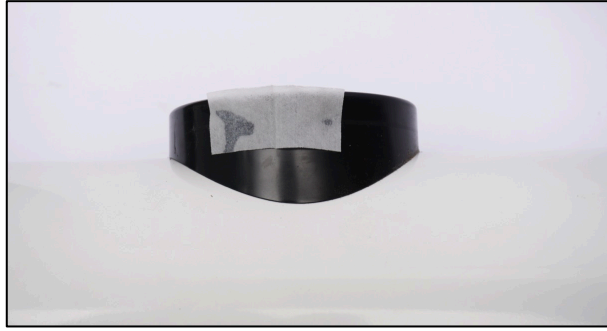


The altitude encoder can be installed on either altitude bearing. However the encoder reader will be easier to install on the left side wall of the rocker box – left side wall shown in the photo below.



The encoder reader is installed on the front bearing cylinder (the same side where the wall connecting two side walls of the rocker box is).

Start with removing the OTA from the rocker box. Then clean the front half of the left altitude bearing with an alcohol wipe:



Then put the OTA back in. Lower the telescope down and slide the reader over the front bearing cylinder:



Now you will need either a pencil or a safety pin to put a marking on the altitude bearing. You need to mark where the magnetic tape will be installed.

Position the telescope vertically or even past 90° so the bottom of the OTA will touch the front wall of the rocker box:



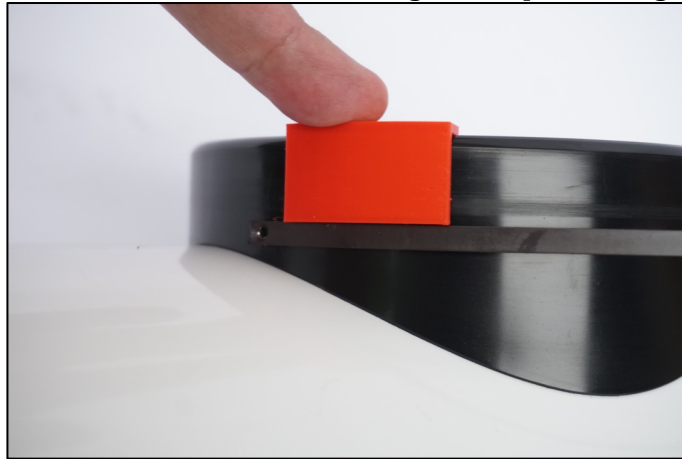
Now mark the altitude bearing just past the body of the encoder reader with a pencil (it might be easier to use something like a safety pin to put a small scratch instead):



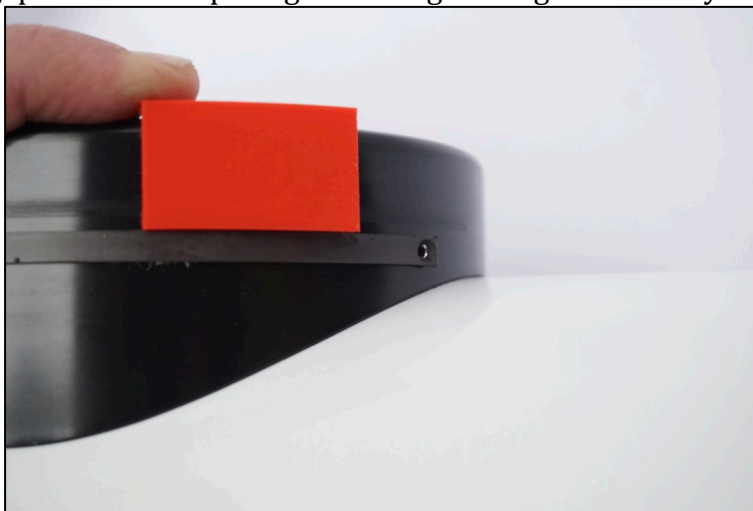
Now remove the OTA from the rocker box. Remove the protective paper from the back of the magnetic tape:



Use the spacing tool to control the distance of the tape from the edge of the bearing. Here the lower part of the OTA is on the left. Position the end of the magnetic tape starting from the marked position.



Use a soft cloth or a paper towel to put pressure on the tape so it adheres to the surface of the bearing without any gaps. Move the spacing tool along the edge all the way until the end of the tape:



Put the OTA back into the rocker box:



Move the OTA all the way down and make sure the end of the tape does not go beyond the reader's top edge.

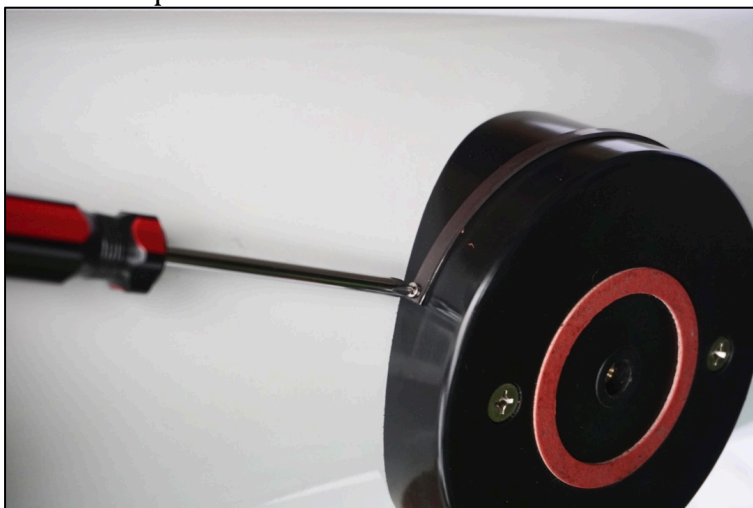
The photo below shows the required gap between the reader and the tape. The gap is controlled by rotating the reader around the bearing cylinder:



Now you need to drill a small hole in the bearing – use 1.5mm or 1/16" drill bit. Drill holes at both end of the tape.



Then fix the end with the screws provided:



Now put the OTA back into the rocker box and make sure that the reader is positioned correctly and does not rub the surface of the magnetic tape.

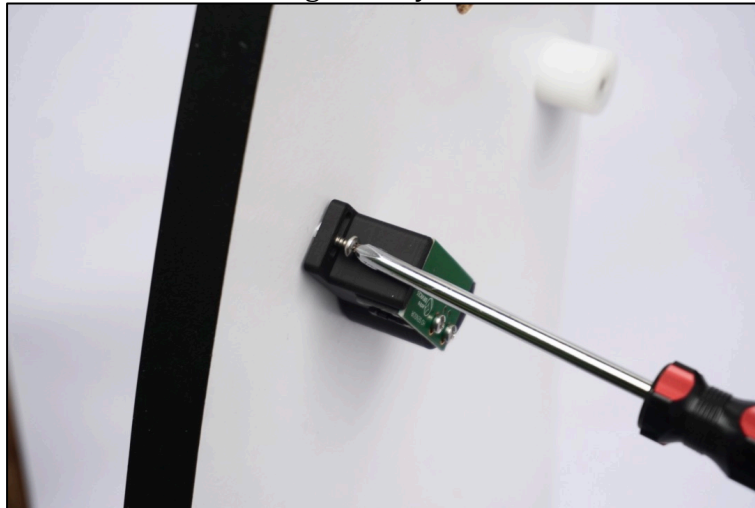
Use a pencil to mark the centre of the slot on the reader:



Drill a small hole for the screw:



And fix the reader with the screw – do not tighten it yet:



Put the OTA back into the rocker box and make sure the gap between the reader and the tape is ~0.8mm. Then tighten the screw:



Then carefully remove the OTA by making sure the reader is not moved.

Altitude Encoder Installation (10" only)



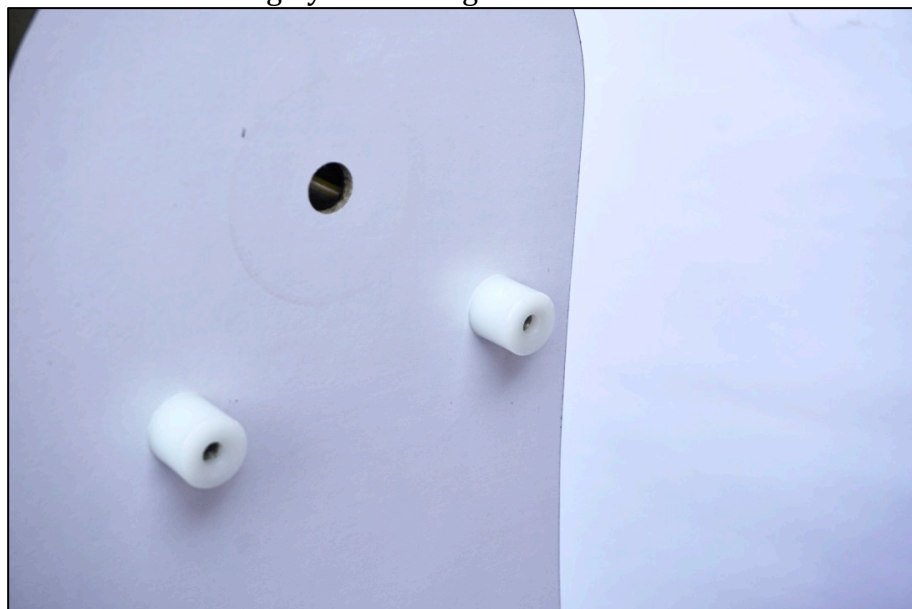
For the installation of the altitude encoder on 6-8" and 12"-16" versions refer to the previous section of this document.

The following parts are required to install the altitude encoder:

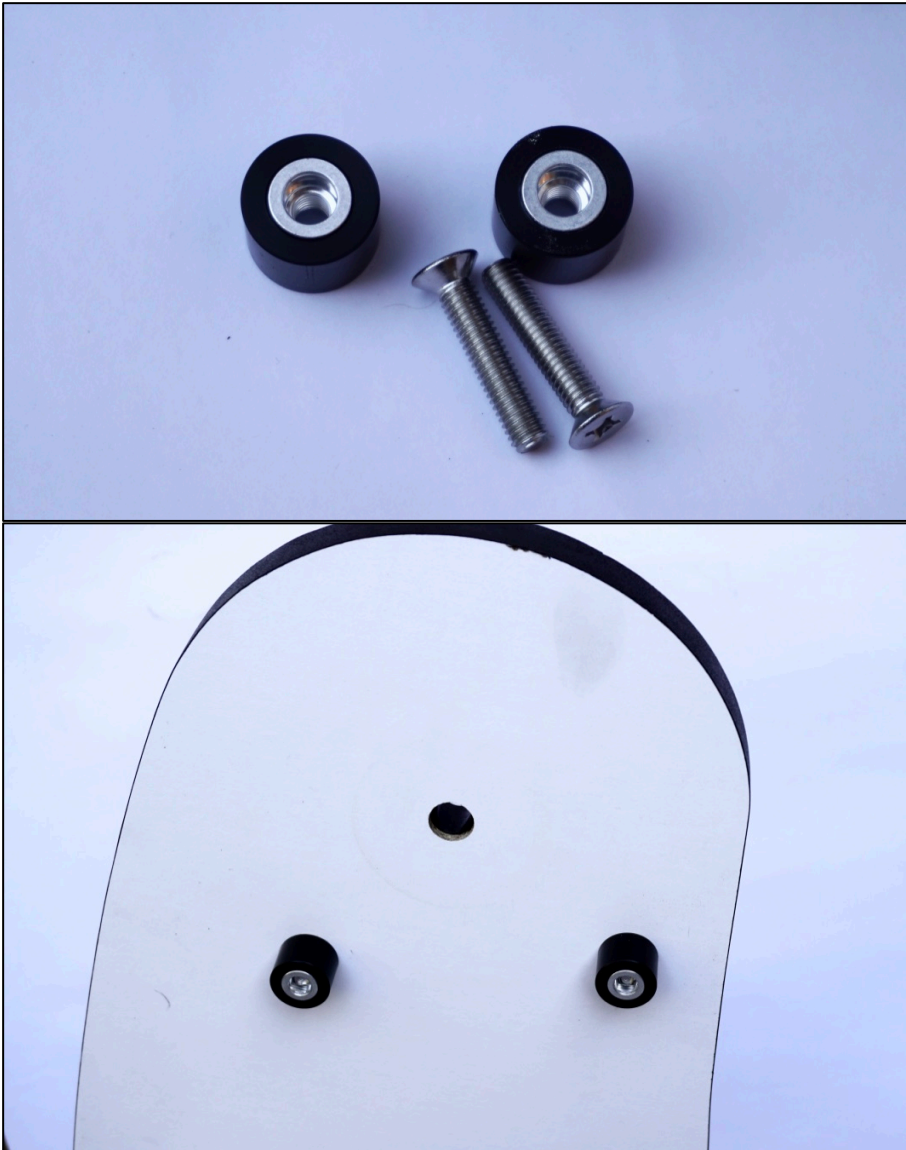
The altitude encoder can be installed on either altitude bearing. However the encoder reader will be easier to install on the left side wall of the rocker box – left side wall shown in the photo below.



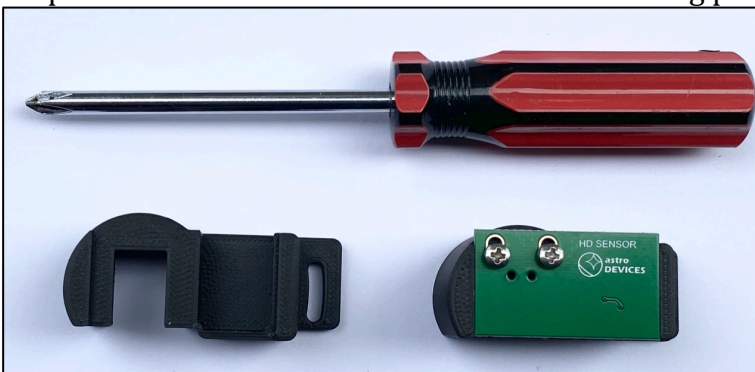
Remove the existing nylon bearings



And install two bearings provided with the kit:



Prepare the encoder reader. You need the following parts:



Remove the reader PCB and move the PCB to the other housing:



Put the screws into the housing and tighten them carefully (finger tight):



Slide the encoder reader over the left (front) bearing



Put the OTA on the right bearing with the left bearing facing up. This bearing will be on the same side as the encoder reader when the OTA is installed on the rocker box.



Clean the smaller part of the bearing with IPA:



You will now need the following parts:



The magnetic tape will be positioned at the bottom of the smaller part of the altitude bearing:



You will need to remove drill a hole using the provided drill bit approximately at the bottom most point of the bearing:



Remove the protective film from the back of the magnetic tape:



Now fix the tape to the bottom part of the altitude bearing with the provided screw:



Use a soft cloth to attach the tape firmly to the bearing:



Drill the second hole at the end of the tape and fix that end to the altitude bearing:



Now put the OTA back on the rocker box and make sure that the top of the reader PCB is a line tangent to the circle of the altitude bearing:



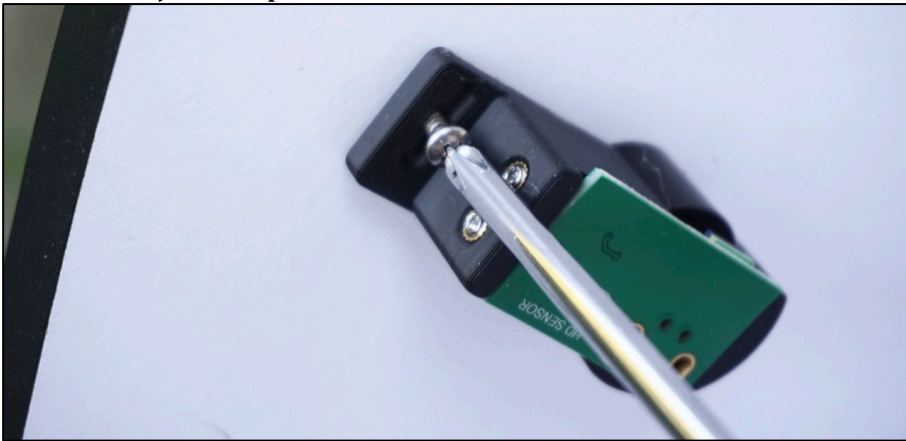
Remove the OTA again and use the pencil to mark the middle of the slot in the reader's housing:



Drill a hole around 6-9mm deep:



Fix the reader to the side wall making sure the housing does not move. You can always loosen the screw to adjust the position of the reader.



Put the OTA back on the rocker box and examine the gap between the encoder reader's top and the magnetic tape – it should not exceed 0.8mm (ideally it should be 0.4mm)



Finished!

Now connect the encoder cable and plug it into the DSC. Please make sure to set the encoder steps in your DSC to the values specified on the front page of this manual.