If like me you opened up your bright new shiny HEQ5 mount and found yourself stumped by the instructions then this page is for you !!

Rather than use technical jargon I have kept this simple and its a basic step by step guide to setting up the polar scope on the popular HEQ5 Mount.This seems to be a common problem judging by how many times it appears as a question on astronomy chat and help boards so here you are - if you have made it to this page then your problems are (hopefully over) - at least if you live in the Northern Hemisphere - this guide only works for setting up in the Northern Hemisphere.

Although this guide is written specifically for the Sky-Watcher HEQ5 mount the unit is very similar to other EQ5 and the EQ6 mounts so it should be applicable to Orion EQ mounts and many other types as far as I know. To check the HEQ5 out and to see if it is the mounting you have or to see where some of the parts referred to in the PolarScope set-up guide are check the diagram HERE

NOTE: Its easier to do this procedure without the telescope or weights on the mount. This puts less stress on the altitude and azimuth bolts both of which are quite soft and prone to shearing if placed under too much stress it also makes it less likely you will hit your head on the telescope tube and hit the telescope tube against the mount during the alignment procedure.

GETTING THE POLAR SCOPE READY

Before starting you will need to remove the covers for the polar scope. The front cover simply clips off, the rear cover has a screw thread. You must also lower the weight bar and rotate the mount through its declination axis until the polar scope is clear. You can check just by looking down the hole underneath the front cover.

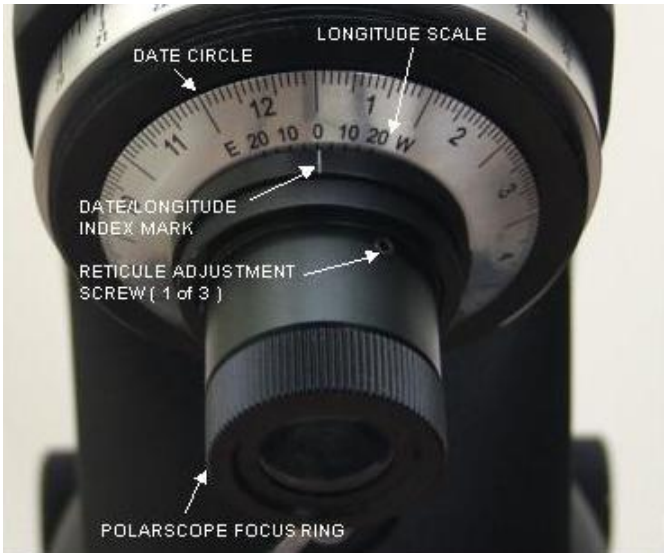
NAMING OF PARTS

The first thing you need to do is get familiar with the parts of the mount around the polar scope set-up. I haven't detailed the altitude and azimuth set up because that's simple enough even for idiots like me but if your really stuck check the diagram here.

The polarscope is also simple BUT not well explained on most web pages or the HEQ5 Manual.

The diagram to the left shows all of the major components of the polar scope **APART FROM THE DATE/LONGITUDE INDEX SET SCREW**. If you rotate your mount through its RA access and look at the ring that carries the DATE/LONGITUDE INDEX MARK you will see a small grub screw on the ring that carries the index mark. You will need to loosen this later.

Note also the RA INDEX LOCK SCREW will ONLY lock the RA index in its Zero position. You'll see as you go through the procedure that this is



pertectly correct as it is only used in the polar alignment process.

Also on the diagram on the left you can only see one of the reticule adjustment screws - there are three of these around the eyepiece of the polar scope. The focus ring can be very stiff when new - turn counter-clockwise to focus the polar scope.

Before starting the alignment procedure you will need an Allen key that fits the reticule adjusters AND a small jewellers screwdriver to release the Date/Longitude Mark ring.

OK we are now ready to set up the scope for alignment.

First you need to adjust the reticule to make sure that its lined up with the mount correctly. **You can skip this step if you wish and are planning only to use the scope for observation use rather than photography**. Skipping this step will introduce some errors into the alignment but that wont matter very much if you are just observing as you will be able to correct any error via the hand controller.

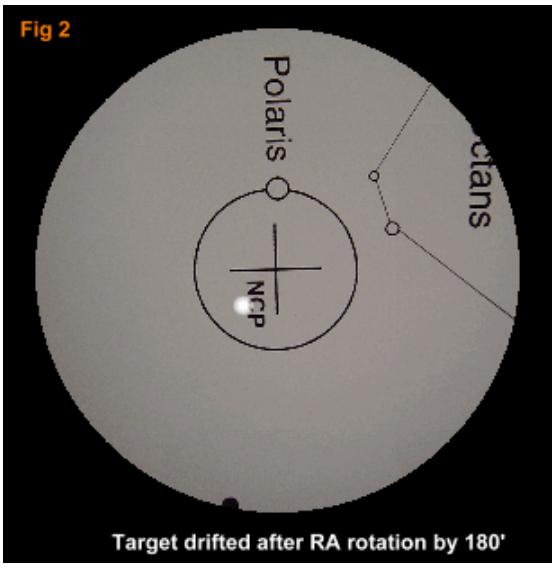
Skip aligning the reticule and take me to page 2

ALIGNING THE RETICULE

Possibly the toughest and scariest job for a newbie on the HEQ5 is getting the reticule aligned correctly to the mount.
Trust me its not as hard as you might think and if you take your time and don't rush quite a simple job.

This is an easier job if done indoors with decent lighting and your adjustment tools by your side. You will need one Allen key to adjust the reticule using the reticule adjustment screws shown above. There are three of these around the eyepiece and you will need to slacken one and tighten the others to take up the slack slowly and bit at a time to get alignment. **DO NOT TURN ANY OF THESE SCREWS MORE THAN 1/8 OF A TURN AT TIME** or else the reticule may fall out. These screws are quite coarse and are adjusting the reticule by fractions of a millimeter - a small amount of turn make the reticule move quite a bit as you will see.

I would also advise to do this with the mount set for zero elevation and with the polar scope almost horizontal. That way if you do end up having the reticule fall out it wont go too far.

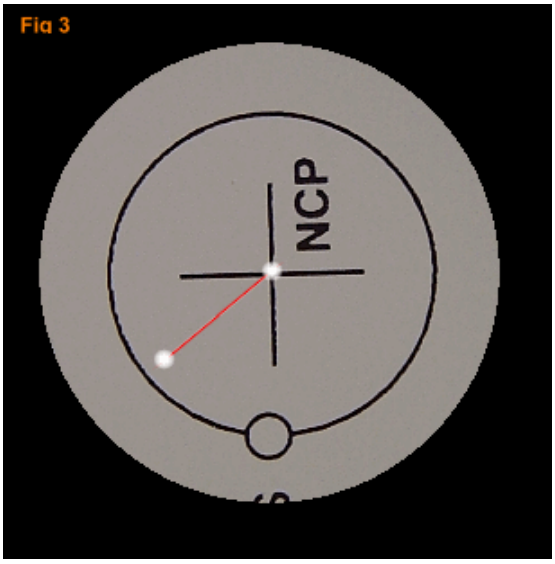


The manual assumes you will have the mount pointed at Polaris but its far easier to do this task with the scope aligned to a distant object. I use a light on top of a distant radio tower but you can also use a small dot on a white card pinned to a wall. The further away the target object the better.

Point the polar scope at the target, using the altitude and azimuth screws on the mount to fine tune. When you look through the polarscope the central area has a cross-hair. Align this over your target as in Fig 1.
Now rotate the mount through the RA axis by releasing the RA lock and turning the mount slowly through 180 degrees and then lock the RA axis . Observe the target against the cross-hairs. Chances are it drifts off as in Fig 2. This indicates the polarscope is out of alignment with the mount and will need correcting.

To correct this drift of the target from the cross-hairs use an Allen key to slightly loosen the reticule adjustment screw most nearly opposite the cross-hair in the direction by which the the target is 'off' i.e. in Fig 2 you would slightly release the screw nearest the 2 'o' clock position. Now tighten the screw that's nearest to the object you are targeting on. You will find the screws are quite tight and will tend to 'click' a little as they are loosened. I use these clicks as a guide in any event - remember never to release any of the screws more than 1/8th of a turn.

You need to adjust for HALF the distance that the target has drifted. As an example in Figure 3 adjust the target to be halfway along the red line.



Now release the RA lock and rotate the mount back to its original position and re-lock the RA. Realign the target on the cross-hairs and now release the RA and rotate the scope again.

If the target still drifts you will need to keep repeating this until the target stays on the cross-hairs as the mount rotates. With a little experience and taking things slowly you will achieve a good accuracy in quite a short time.

In these examples I have shown the target as drifting by a huge amount to illustrate the point. In reality you will find the drift is very small and quite easy to correct.

Once done I usually put a small amount of tightening to each Allen bolt and recheck. **DO NOT OVERTIGHTEN** as you will damage the reticule.

The reticule is now aligned - take me to page 2