# EQASCOM PolarScope Alignment Tool

Note: If you find the polar reticule appears too bright, on later mounts (Check your SW handcontroller settings) it is possible to dim the illumination by down loading and running EQDimmer. (https://sourceforge.net/projects/eq-mod/files/EQDIMMER/)

Once a satisfactory illumination is achieved. Close EQDimmer and start EQMOD. The brightness of the polar scope illuminator can't be adjusted from within EQMOD.

Initial Set-up Procedure (Both hemispheres):

1. Set up the mount in the HOME position i.e. counterweight shaft down. You may want to mark this position on you mount in some way to ensure accurate and consistent setup between sessions. Some folks use bubble levels for this purpose. Rotate the Mount in RA and using a bubble level lock the clutch when the counterweight shaft is horizontal. Set the RA setting circle so that the indicator reads 0. Unlock and rotate the RA Axis until the setting circle reads 6 (i.e. ¼ turn).
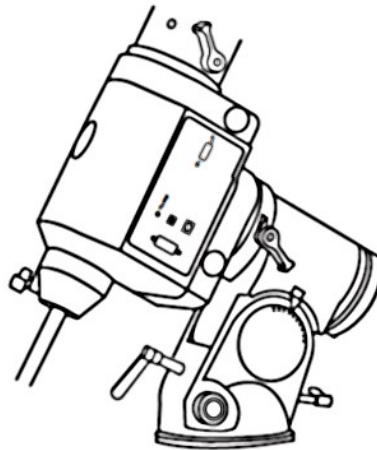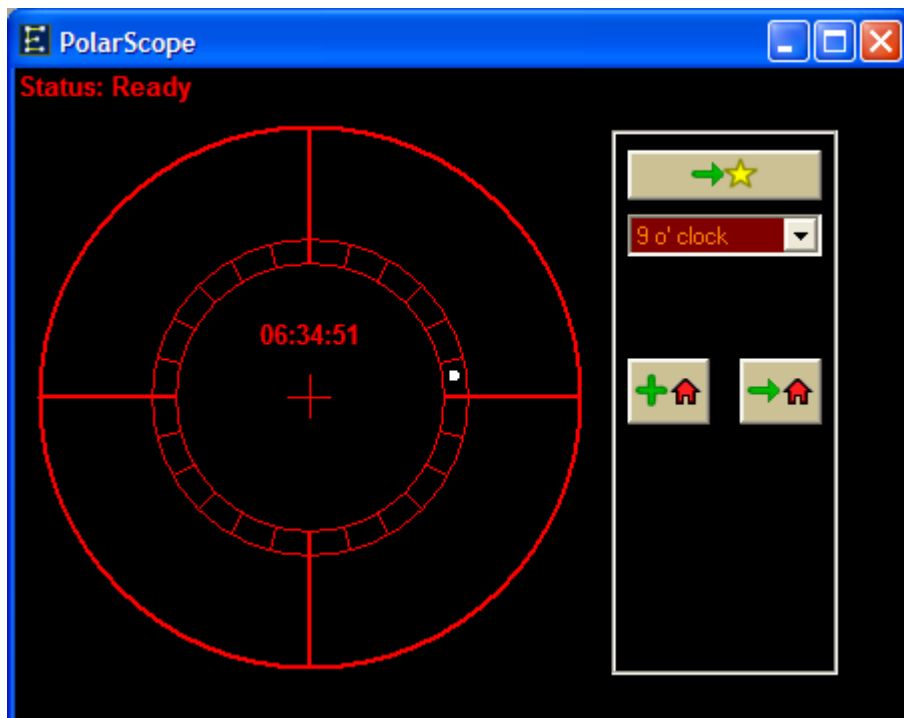

2. Power up and connect to EQMOD.

3. Disable limits (if enabled), UNPARK.

4. Select your Pole Star –

The following example is for Northern Hemisphere users. (See later for Southern Hemisphere set-up)
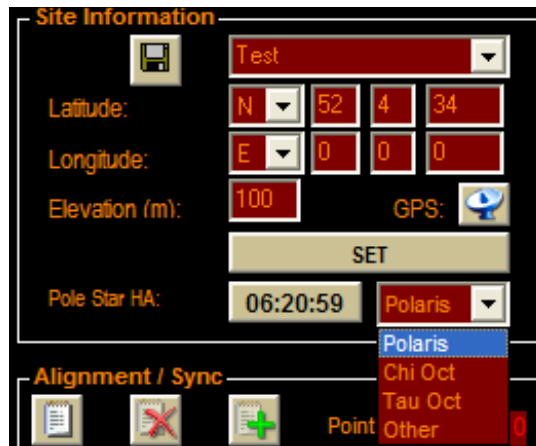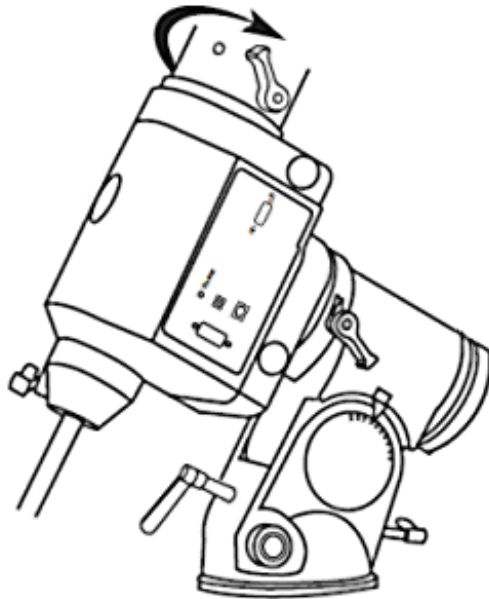
5.   Click on the Pole Star HA button. To bring up the PolarScope View window

6.   Use EQMOD slew controls to move the mount in DEC so the polar scope has a clear view)

7.   You now need to select a "starting position" of either 3, 6, 9 or 12 o'clock using the dropdown list. These different starting positions are provided so that you can chose one that doesn't result in possible mount collisions if your scope is fitted.

8.   Now you must move the mount in RA so that the Polaris indicator is at the selected starting position. Let's assume the 6 o' clock position has been selected. Here's how you can accurately move the mount to this position:

     First adjust the mounts Alt/Az bolts to get the Pole Star (shown in red) centred in the reticule. Older and newer style recticules are shown.
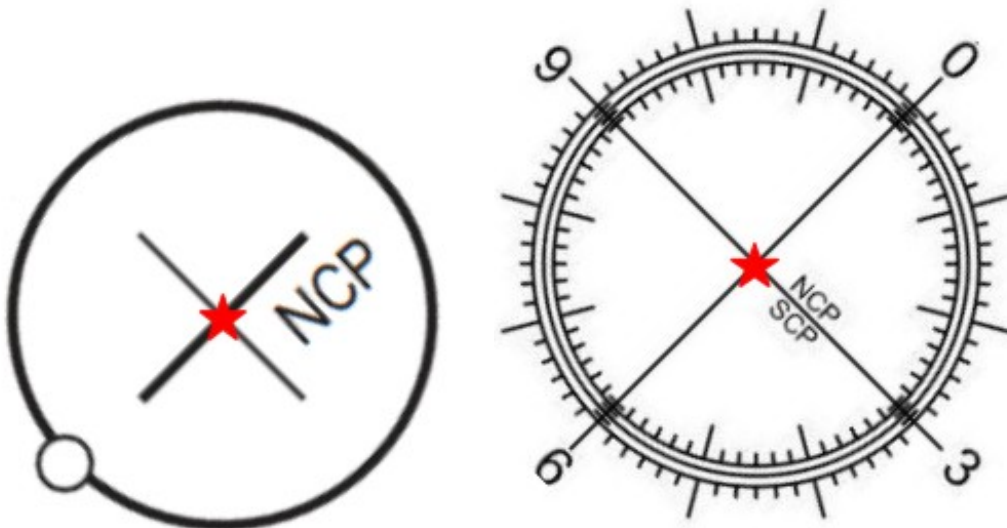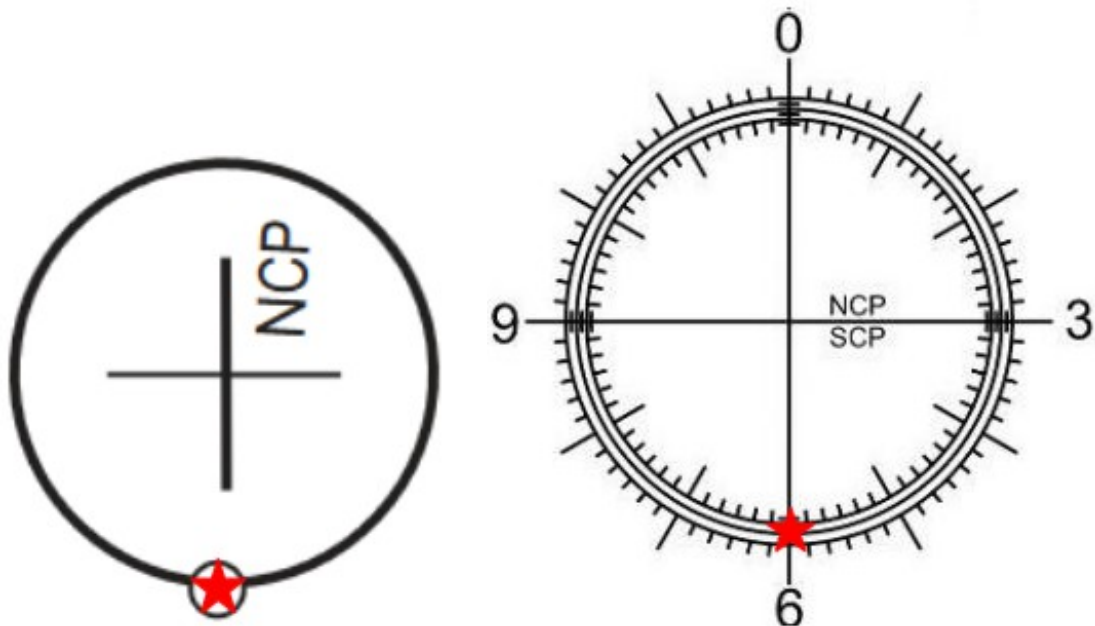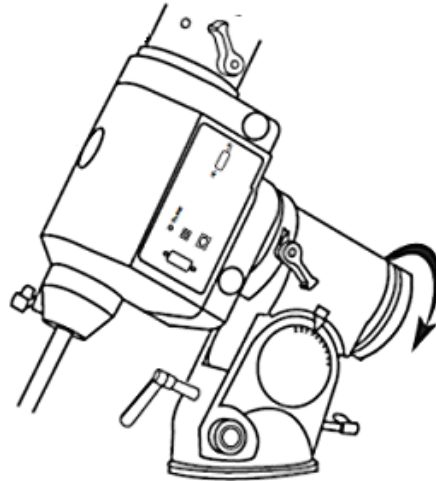

   Now adjust the Altitude bolt until the Pole Star moves downwards to intercept the inner circle.
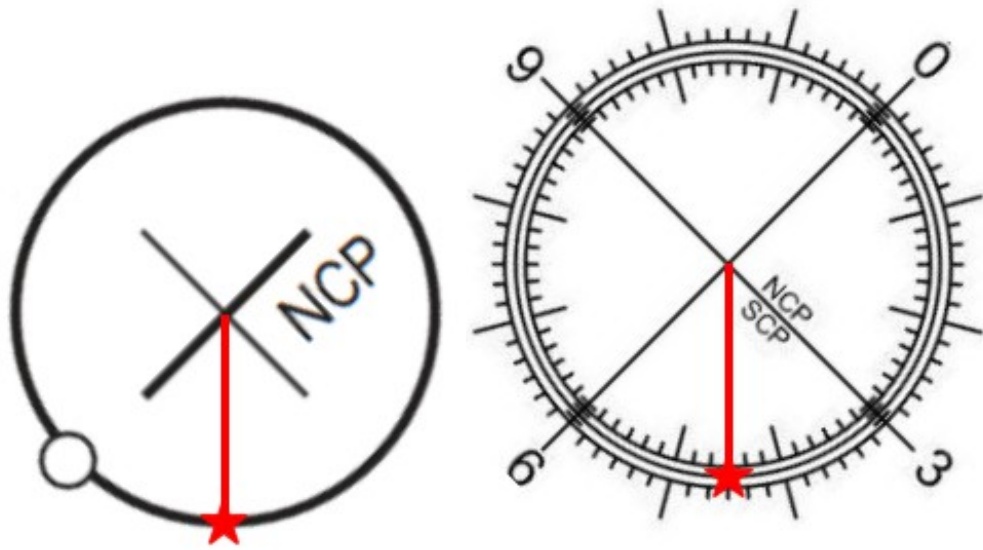
Now slew the mount in RA until the Pole Star indicator (or for the newer style reticules an easily identifiable reticule marker) is superimposed over the Pole Star

For the 12 o' clock position the procedure is the identical except that you would adjust the altitude bolt to move Polaris upwards to intercept the inner circle. For the 3 or 9 o' clock positions adjust the Azimuth bolts to move the star Right or Left until it intercepts the inner circle.

9.   Click on the Set PolarScope Home button to record this position in the EQMOD parameter file.

10.   Click on the Align PolarScope button, which will cause the mount to slew in RA to correctly position the Pole Star marker.

11.   Adjust the mount using the Alt and Az bolts so that the Pole Star is in the little circle. For the newer style reticule adjust the mount using the Alt and Az bolts so that the Pole Star is under your chosen the reticule marker (. This completes polar alignment.
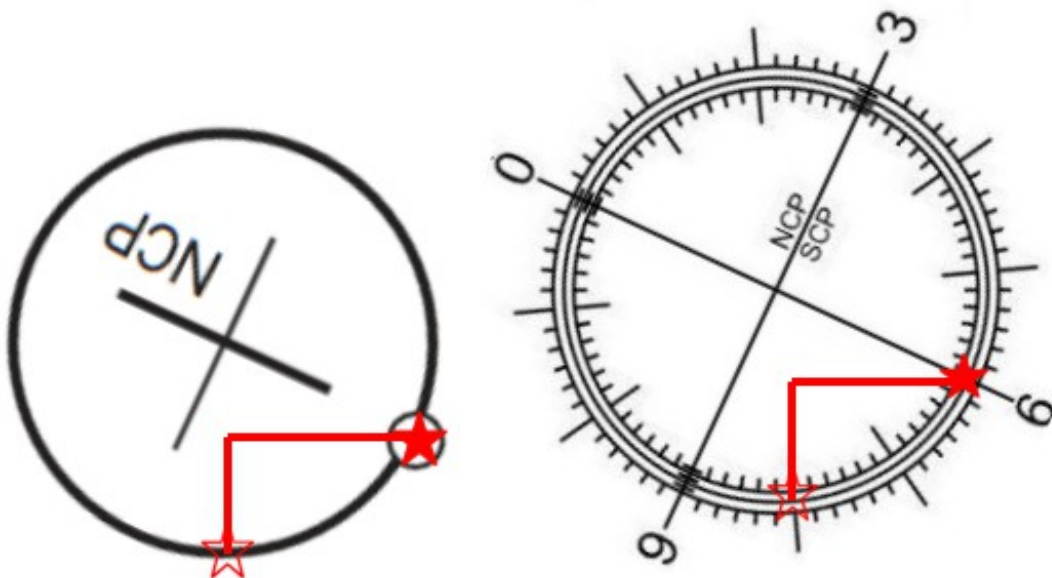
12.   PARK the mount back to HOME and re-enable limits (if required).

13.   Put the OTA, weights etc. onto the mount, UNPARK and carry out goto alignment as usual.

14.   At the end of the session PARK the mount and power down.

Subsequent Set-up Procedure:

1.   Set up the mount in the HOME position i.e. weights down

2.   Power up and connect to EQMOD.

3.   Disable limits, UNPARK.

4. Click on the Move To PolarScope Home button . The mount will slew in DEC so the PolarScope can be used and in RA to place the Pole Star marker at the stored starting position (3,6,9 or 12 o'clock)

5. Click on the Align PolarScope button . The mount will slew in RA to correctly position the Pole Star marker.

6. Adjust the mount using the Alt and Az bolts so that the Pole Star is in the little circle. This completes polar alignment.

7. PARK the mount back to HOME and re-enable limits if required.

8. Put the OTA, weights etc. onto the mount, UNPARK and carry out goto alignment as usual.

9. At the end of the session PARK the mount and power down.

Procedures without Park/Unpark.

For those folks who do not wish to use the PARK/UNPARK functionality of EQASCOM the PolarScope alignment tool can still be used. There are two procedures you can use:

Procedure 1 (manual)

1. Set up the mount in the HOME position i.e. weights down.

2. Power up and connect to EQMOD.

3. Select your Pole Star from the dropdown list (if it isn't already selected)

4. Click on the Pole Star HA button. To bring up the PolarScope View window

5. Move the mount in DEC so the polar scope can be used and in RA so the Pole Star marker corresponds to the same position as shown in the PolarScope View window.

6. Adjust the mount using the Alt and Az bolts so that the Pole Star is in the little circle. This completes polar alignment.

7. Move the mount back to HOME.

8. Put the OTA, weights etc. onto the mount, and carry out goto alignment as usual.

Procedure 2 (semi-automatic)

1. Set up the mount in the HOME position i.e. weights down.

2. Power up and connect to EQMOD.

3. Disable limits (if enabled)

4. Move the mount in DEC so the polar scope can be used and in RA to move the Pole Star marker to the 6 o'clock position.
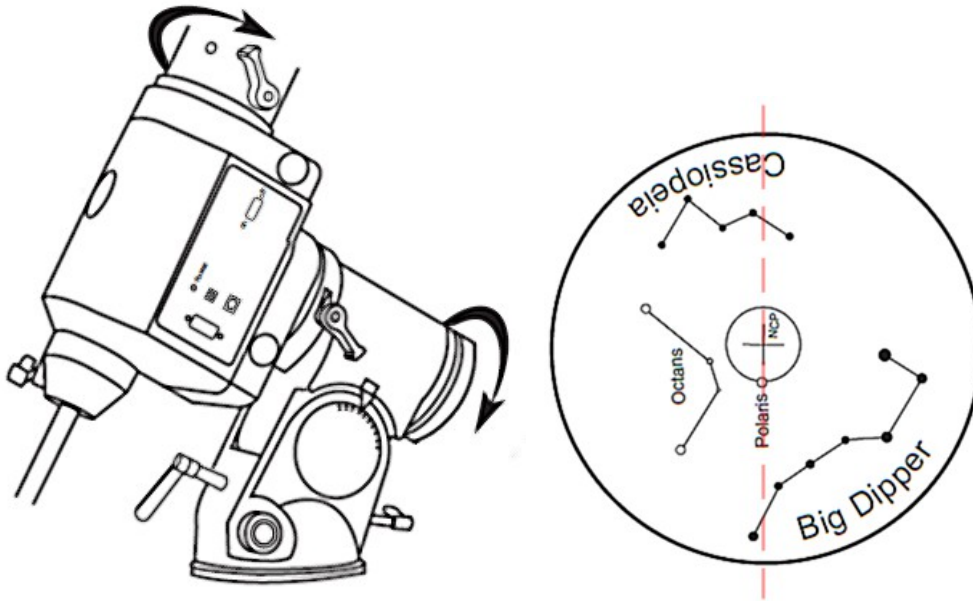
5. Select your Pole Star from the dropdown list (if it isn't already selected)

6. Click on the Pole Star HA button. To bring up the PolarScope View window

7. Click on the Align PolarScope button ⬛, which will cause the mount to slew in RA to correctly position the Pole Star marker.

8. Adjust the mount using the Alt and Az bolts so that the Pole Star is in the little circle. This completes polar alignment.

9. Move the mount back to HOME, re-enable limits (if required).

10. Put the OTA, weights etc. onto the mount, and carry out Goto alignment as usual.

Southern Hemisphere Use

EQASCOM V1.23h and later provides the capability for the user to select the pole star to be used. For Southern Hemisphere the drop down choice of Chi, Tau or Sigma Octans is available Follow the above procedures.
(Note: the four stars shown in the SW reticule are – Chi/ Sigma/ CG Oct and Tau Octans)
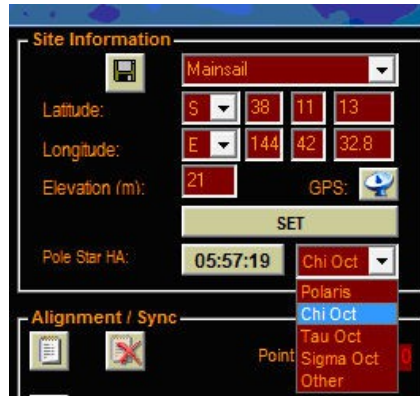
The PolarScope home position would then be when that star is in the "six o'clock" position. So if Chi Octans were selected the "6 o' clock home" position for the polar scope alignment tool would be:
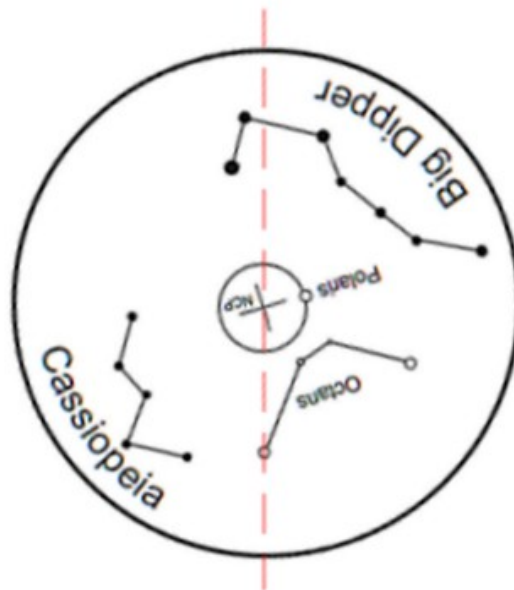
Alternative Method

If the initial polar alignment of the mount is roughly close to the Pole, then the whole of the Octans SW template star pattern will be visible in the PolarScope.

Slew the mount by rotating the RA axis to bring the Octans pattern template into the approximate area to match the stars as seen.

By using the Az and Alt adjustments align the stars with the Octans template. This may involve a slight adjustment of the RA axis to obtain perfect registration. Once all the Octans stars are seen in each of the template circles, you have achieved good polar alignment.

Custom Pole Star

For advanced users the J2000 RA and DEC coordinates of the pole star are read from the EQMOD.ini file (located in the %APPDATA%/EQMOD folder). If you wish to use a different pole star to the ones already provided by EQASCOM then you could edit the ini file and specify your own coordinates by changing the lines shown below

POLE_STAR_J2000RA=2.53061361
POLE_STAR_J2000DEC=89.2641278

You would then select "other" from the Pole Star drop down.