

Coupling the Feathertouch focuser to the electrically driven NGF-S

I use a NGF-S Crayford focuser with a motor. Now this is a nice solution to avoid mirror shifting during visual observations and especially for Astro-Photography.

However when using my Mintron video-camera attached to the Hyperstar lens assembly the only way to focus is moving the primary mirror.

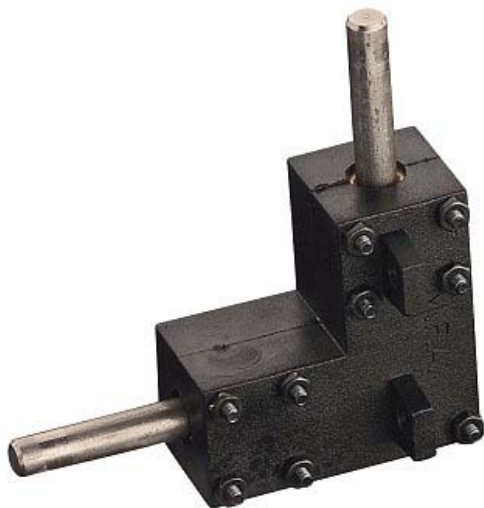
I upgraded my focus knob of the N11GPS by a Feathertouch focuser. This is a big improvement and I highly recommend this upgrade.

For I use my setup very often remotely controlled I also thought about moving the focuser remotely.

Already having a electrically driven focuser including a digital readout came to the conclusion that I wanted to reuse the existing hardware by coupling both focusers.

So when using the Crayford focuser I simply de-couple the Feathertouch focuser. When using the Hyperstar lens assembly I couple the Feathertouch and both focusers move. However only the moving primary mirror is effective for the video-camera attached to the Hyperstar lens assembly.

The transmission is based on a bevel gearbox and additional transmission belts. At first I had tried to use simple rubber bands but this did not work properly because of the high slip. Thus I changed to a gear belt drive. The bevel gearbox has steel gears and shafts running in ballraces and scintered bronze bearings. The housing mouldings are 30% glass filled nylon for strength and have 4 predrilled mounting holes. The backlash is specified as 1°. It features a 1:1 gear ratio and is lubricated for lifetime. However I opened it and replaced the old grease by a better one (based on Teflon) which reduced the friction significantly. I bought the gear box here in Germany at Conrad electronics. Next see some pictures of the gear box, closed on the left and opened at the right.

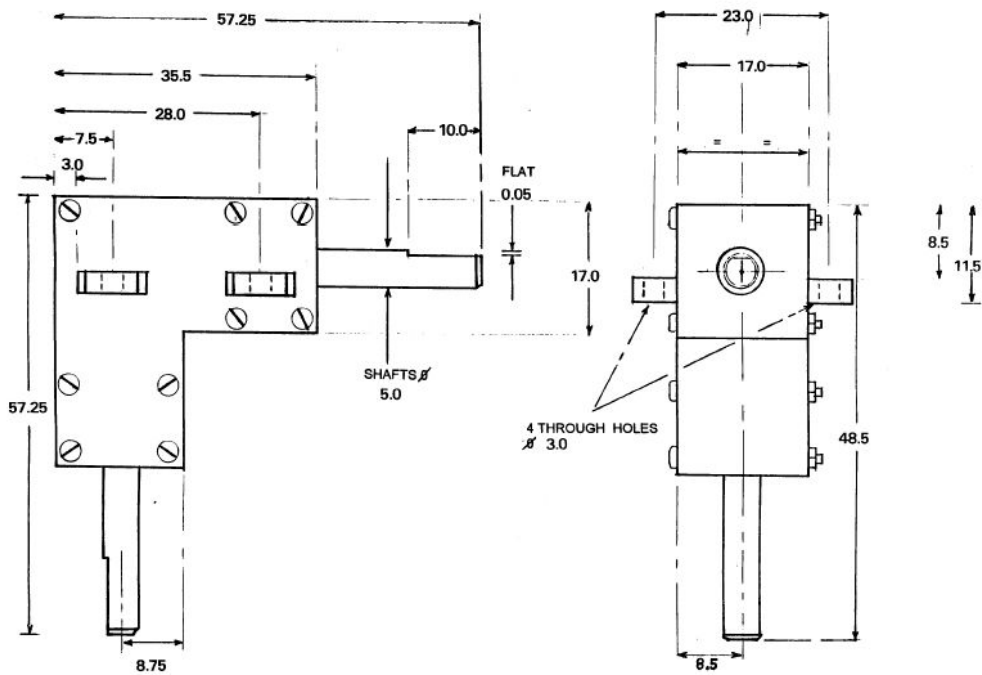


1:1 Gearbox

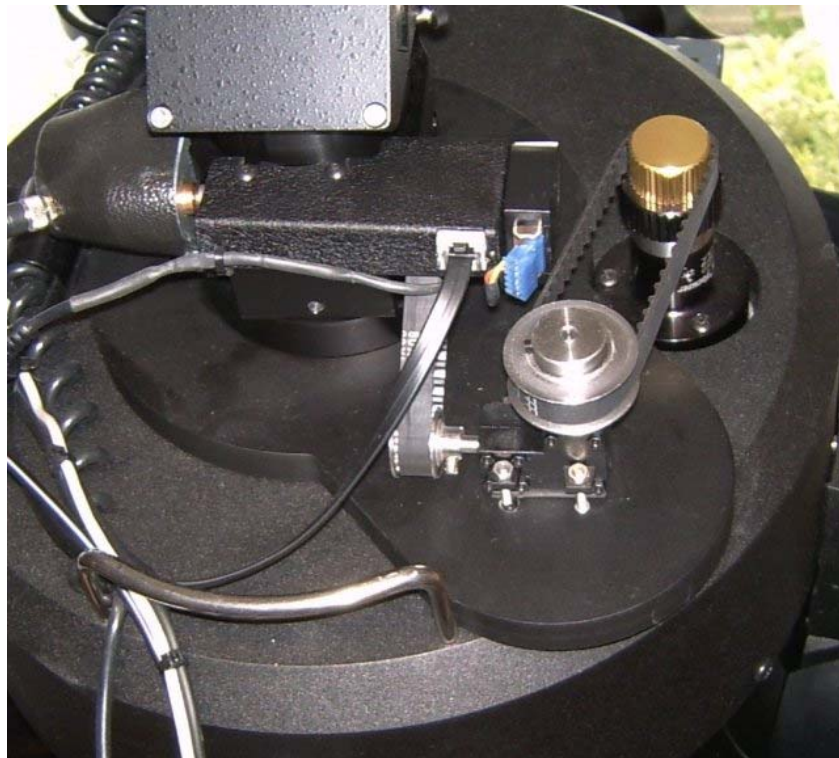


Gearbox opened to re-grease

Please see the dimensions of the gearbox in mm in the next drawing:



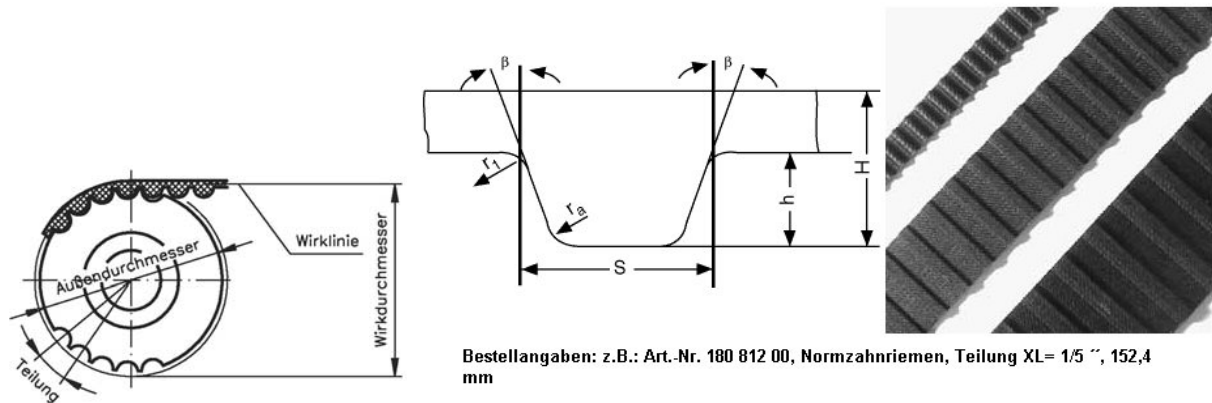
I mounted the gearbox on an aluminium plate which was then clamped under the 3" ring on the rear of the OTA (where the NGF-S is attached to). Thus it can be removed in case it is no longer needed and I could avoid having to drill holes in the OTA. Please see the next picture of this complete assembly.



Mounting plate for transmission clamped under rear 3" ring

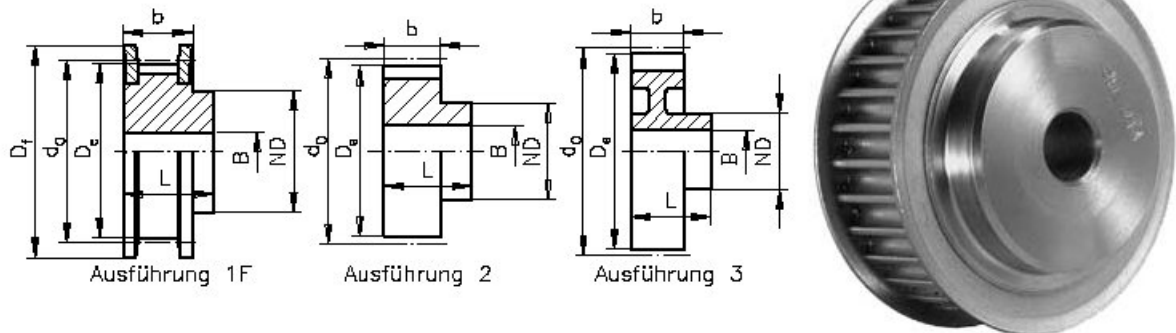
The components of the gear belt drive can be bought at Conrad electronics here in Germany or a bit less expensive directly from Fa. Maedler (see www.maedler.de), where I bought it. The used components are from the XL line. Here are some details of the toothed belt pulley and the toothed belt:

Zahnriemen Teilung XL, Breite 037=9,53mm



Zahnriemenräder Teilung XL, Riemenbreite 037=9,53mm

Material: bis Zz=34: Stahl 11 SMn Pb 30; Zz=35: Stahl C43; ab Zz=36: Aluminium



Bestellangaben: z.B.: Art.-Nr. 180 310 00, Zahnriemenräder, Teilung XL=1,5", 10 Zähne, Zahnriemenbreite 037, 2 Bordscheiben

I use the toothed belt pulleys with 11 teeth (#18031100) and 18 teeth (#18031800) and the toothed belts 80XL (#18081700) and 100XL (#18082000).

Finally here are some pictures of the complete setup mounted at the rear of the N11GPS.



View from back right



View from back right



View from bottom up



View from top down

To activate the electrical focusing based on the primary mirror I just mount the second tooth belt. The Crayford focusing will be still active but not effective using a camera attached to the Hyperstar lens assembly.

I always appreciate comments and I am happy to answer any questions.

Best regards

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