

Telescope Upgrades

Collection of telescope upgrades

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DIY Electronic Autofocusers

Sky-Watcher Crayford focuser 2" 3D printed motor case

[curly_cz](#) on thingiverse created [an excellent case](#) for a belt driven electronic autofocuser for the Sky-Watcher Crayford 2" focuser commonly found on the EvoStar 72 ED and the N 150/130 PDS. It is just a housing for the motor and a connector, the rest of the electronics would need to be in another housing.

One of the big advantages of this design is that it fits close to the tube on the EvoStar 72 ED like shown in the picture.



What you will need:

- Pancake NEMA 17 motor with a maximum depth of 20 mm.
- GX12 connector
- GT2 158(160) mm belt
- 16 teeth GT2 pulley
- 4x M3x8 countersunk bolt
- 4x M3 nut for the cover
- 4x M3x6 for the motor
- 4x M3 washer for the motor
- 1x M3x25 for the clamp
- 1x M3 nut for the clamp
- The 3D printed case and lid
- A way to connect the motor to the GX12 connector (depends on the motor you bought)

Download if thingiverse doesn't work:

[focuser_cover.stl](#) [focuser_body_v2.stl](#)

How to build it:

curcly_cz notes they printed it with a Creality Ender 3 Pro, but of course this can be printed on just about any printer with enough build volume (which is almost every 3D printer). Furthermore they noted the following settings and filament used:

- Rafts: no
- Supports: yes
- Resolution: 0.16 (0.4 mm nozzle)
- Infill: 25%
- Filament type: PETG
- Filament type: Black

This case can also be printed with PLA, but maybe with a slightly higher infill like 50%.

How to assemble it:

1. Put the pulley wheel on the motor, probably as close to the motor as possible but not touching the motor.
2. Install the motor into the housing with the 4 M3x6 bolts and the M3 washers. The bolts don't need to be tight, because they will have to be adjusted later on.
3. Install the GX12 connector into the housing and connect it to the motor.
4. Close up the housing with the 4 M3x8 countersunk bolts and the lid. Don't try to over tighten it, because you are screwing it into plastic that can be easily stripped.
5. Put in the M3x25 bolt and the M3 nut into the clamp, don't tighten.

6. Remove both knobs on the focuser on the side with the reducer. (keep the big knob in a place where you won't forget it)
7. Install the EAF motor body.
8. Reinstall the fine focus knob.
9. Put on the belt, you might have to move the motor towards the knob a bit to get it on.
10. Tension the belt by pulling the motor away from the knob and tightening the motor bolts.

Out of the factory the set screws on the knobs are extremely tight, be carefull not to strip them since they are made of a very soft metal. It is recommended to replace these with high hardness set screws.

DIY Dew Heaters