



## Telescope, 80mm f/5



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### Summary

A small 80mm telescope

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This is an 80mm diameter, 400mm focal length telescope, inspired by Jerry Oltion's article in the November 2021 issue of Sky & Telescope. The telescope is designed around two parts available from [www.surplussshed.com](http://www.surplussshed.com):

L2196 MTD 80MM DIA ACHROMATIC OBJECTIVE, 400MM FL COATED (\$42)

L3630 INEXPENSIVE 1-1/4" FOCUSER FOR 80MM REFRACTORS (\$17.95)

Construction notes:

- I printed the OTA parts in white PLA, then primed the interiors and the baffle surfaces with white primer, followed by a coat of flat black paint. The primer is necessary to keep the black paint from wicking through to the outside of the print. Be sure to mask off the glue surfaces between the segments.
- The segments are assembled with 5-minute epoxy.
- The focuser is attached with three #4 x 3/8" wood screws and washers.

- The objective lens is also attached with three #4 x 3/8" screws, but you will need to drill two additional holes in the objective housing. Be careful where you drill—you don't want to drill into the lens!
- The screws in the objective needed to be ground down so as not to intrude into the aperture of the objective.
- The straps are secured to the mounting bar with 4mm x 12mm screws and nuts.
- The mounting bar has a recess for a 1/4-20 nut, secured with epoxy. Be careful not to get epoxy on the threads.
- The straps are connected to each other with 3mm x 14mm screws and nuts. The straps are positioned to cover the seams in the OTA.

I've included two different segments for the focuser end, one 25mm shorter than the other. The original design used the longer one, but I couldn't reach infinite focus for some of my shorter f.l. eyepieces. The shorter tube allows me to focus at infinity with even my shortest f.l. eyepieces. In the S&T article Jerry recommends shortening the focuser tube to avoid vignetting. I didn't cut back the tube in the first design, but with the shorter tube I removed about 1-1/4" to avoid interference with the rearmost baffle.

NOTE: When I first looked through the scope, the images were horrible!! I couldn't get a sharp focus on stars, and there was really bad distortion. That night in bed, I had an epiphany, similar to the scene in "No Country for Old Men" where Josh Brolin's in the motel and he figures out there's got to be some kind of radio beacon hidden in the satchel of money (sorry for the spoiler). The next morning I unscrewed the retaining ring on the objective and flipped over the lens. The darn thing was installed backwards!! Now I have sharp, clear images across the whole field of view. This is a very nice little scope for less than \$70.

FLASH UPDATE: I tried it out under the night sky with my homemade 32mm modified Plössl. Damn fine scope. Damn fine.

## **Print Settings**

### **Printer Brand:**

Creality

### **Printer:**

CR-10S

### **Rafts:**

No

**Supports:**

No

**Resolution:**

0.2 mm

**Infill:**

20%

**Filament:** Inland PLA White/Black

**Notes:**

You may need a brim on the OTA segments for adhesion.

Category: Physics & Astronomy

## Model files

**ota\_mounting\_bar.stl**

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**ota\_segment\_objective.stl**

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**ota\_segment.stl**

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**ota\_dew\_shield.stl**

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**focuser\_cover\_1\_25.stl**

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**ota\_cap.stl**

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**ota\_segment\_focuser\_short.stl**

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**ota\_strap\_bottom.stl**

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**ota\_strap\_top.stl**

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**ota\_segment\_focuser.stl**

[Find source .stl files on Thingiverse.com](#)

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