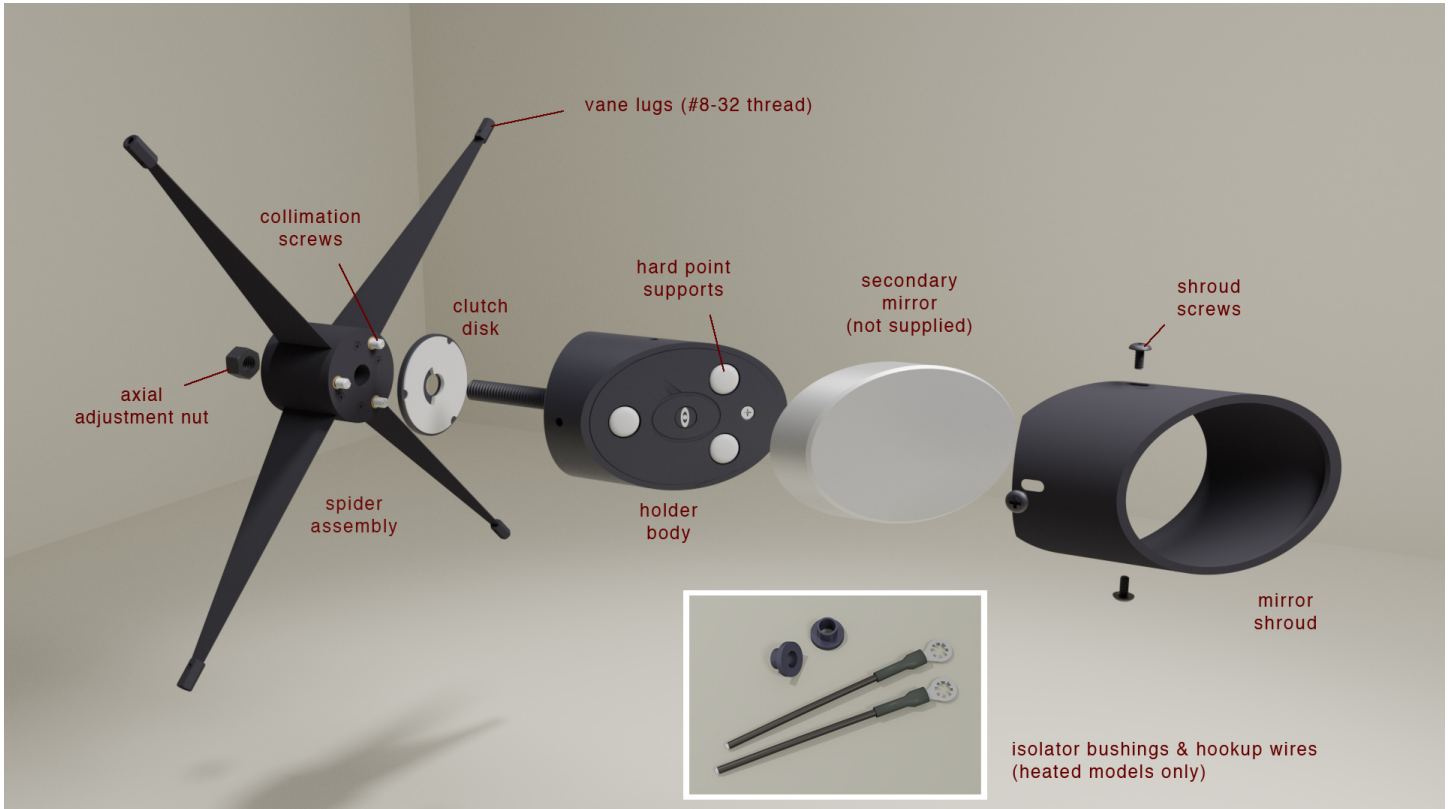




Model 2 Straight-vane Spider (GSO Replacement Model) Installation & Use Guide

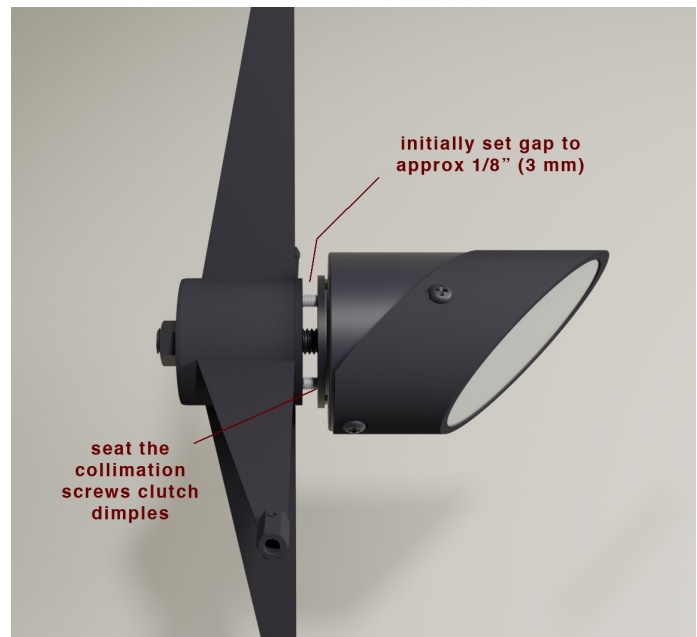
Rev 7/20



Step 1: Install your secondary mirror into the holder

1. Remove the shroud screws and shroud.
2. Wash your hands and trial fit the secondary mirror into the shroud. The mirror should slide freely within the shroud. If it does not, contact us (protostar@fpi-protostar.com or 614-375-3146). Secondary mirrors are sometimes slightly larger than advertised, and we can provide a custom shroud. *Forcing the mirror to fit can cause severe optical problems.*
3. Slide the mirror and shroud together over the holder body. Reinstall the shroud screws, and only lightly tighten the shroud retaining screws.
4. Wiggle the shroud to ensure the mirror is seated on the hard point supports and the shroud's slotted holes line up with the holes in the holder body.
5. Tighten the shroud screws.

Step 2: Join the holder and spider assemblies



6. Adjust the three collimation screws until they are protruding from hub by approximately 1/8" (3 mm).

7. Insert the secondary holder into the spider. The collimation screw tips should be seated in the dimples on the clutch disk.

If your model is heated, pull the heater wire all the way out to more easily connect the micro-plug. Then push the heater wire into the holder body as you join the two assemblies.

8. Install the axial adjustment nut and finger tighten.

Step 3: Install into your telescope

11. Install the spider using the supplied isolator bushings and screws. Two different lengths of screws are provided, and use the length that gives the most thread engagement into the vane lugs without bottoming out. Spider offset can also be achieved by using a combination of the longer and shorter screws. A minimum of about three turns of thread engagement is needed.

12. If your secondary mount is heated, use the supplied hook-up wire leads to connect power to the two conducting vanes. Two of the vane lugs are marked with small red and white dots to indicate '+' and '-' respectively. (No damage will occur if the wires are reversed, but the LED power indicator light will not work.)

The ring lugs on the hook-up wires should be slipped under the vane mounting screw, but on top of the isolator bushing. **Never let the ring lugs contact the metal telescope tube or a electrical short circuit will occur.** Use the longer spider mounting screws for the two vanes that have hook-up wires.

Using the Anti-Dew Heater In the Field

If conditions at your observing site indicate a possibility of dew, it's best to use the heater in a "preventative mode". Power the heater with 4-6 Volts DC (VDC) throughout the observing session. It requires a very small amount of power to prevent dew from forming.

If dew surprises you and forms, applying full voltage (12-13 VDC) will clear the dew within about 15 minutes without having to wipe the secondary mirror's optical surface. It's not recommended to leave the heater at full power during the observing session, as it can create subtle thermal currents in the optical path.

First-time collimation

First-time collimation includes the extra steps of making the secondary mirror's axial and rotational adjustments. After the initial collimation, only minor tip-tilt tweaks with the collimation screws are typically needed in the field.

1. Using a sight tube or laser projection collimation tool, adjust the axial position of the secondary holder until it appears centered in the focuser. This is done by either tightening or loosening the axial adjustment nut to permit the mirror hold to slide to the proper position. It's important that the height of your eye be approximately where the focal plane is (usually just an inch or so above the focuser drawtube) or the perspective illusion will fool you. Finger tighten the axial adjustment nut hold the mirror's position.

2. Rotate the mirror holder until the secondary mirror appears circular. When the secondary mirror appears circular and centered under the focuser, tighten all three collimation screws about one full turn to create tension in the holder's stem.

3. The telescope is now ready for your standard collimation practice. Tip-tilt adjustments with the collimation screws can be made independently (i.e., you don't have to loosen one in order to tighten another). Maintaining tension in the holder's central stem keeps your precise adjustments locked into place, and it works well under a wide range of stem tension.

Note: The axial adjustment nut (i.e., the hex nut in the center of the hub) is to be finger tightened initially. Do not use a wrench or socket. Tension is developed in the holder's stem during the tip-tilt collimation process. Only a small amount of tension is required to hold collimation due to the large surface area of the clutch disk.