



# **Cassegrain Secondary Mount**

## **INSTALLATION INSTRUCTIONS**

# INSTALLATION

## Install the Secondary Mirror

Your Cassegrain secondary mirror is bonded to the holder face using silicone adhesive. Common brands are GE Silicone II, Dow Corning 733, and Devcon Silicone Rubber, but there are many others available at hardware stores. Use a fresh tube, or a tube of known quality (the catalyst in these adhesives evaporates over time). The aluminum face of the holder has been sanded and cleaned to ensure good bond strength, so avoid touching this face.

The three, small, screw heads on the face of the holder create a small glue gap which prevents optical strain when the glue sets.

Glue the mirror to the holder using multiple dollops of silicone adhesive about 1/4" to 3/8" (6-8mm) in diameter. The number of dollops depends on the size of the mirror, but try to space them approximately evenly, and about 3/4" (19 mm) apart. Let the silicone adhesive cure for 24 hours in a 70° F (minimum) environment.



## Install the Spider

Using the supplied adjusting wrench, position the three collimation screws so they protrude from the spider hub by about 3/16" (4 mm). Insert the Cassegrain mirror holder into the spider hub. Visually ensure that the collimation screws are engaged into the dimples on the *clutch disk*. Hand tighten the *tensioning nut* until its seated.

Using the supplied drill, drill your tube for mounting the spider. Sight measure along the body of the secondary mount to determine the distance from the spider vane mounting lugs and the surface of your Cassegrain secondary mirror. There is approximately 1/2" (12 mm) of total axial adjustment for the mirror's position, so you do not need to measure with high accuracy.

Install the spider with the supplied #8-32 stainless steel screws (or supply your own M5-0.8 screws if you have a metric spider). Start the screws with your fingers, and finish tightening the screws with a screwdriver. (It's easy to damage the threads in the aluminum lugs if you try to start the screws with a screwdriver.)

# PRINCIPLE OF OPERATION

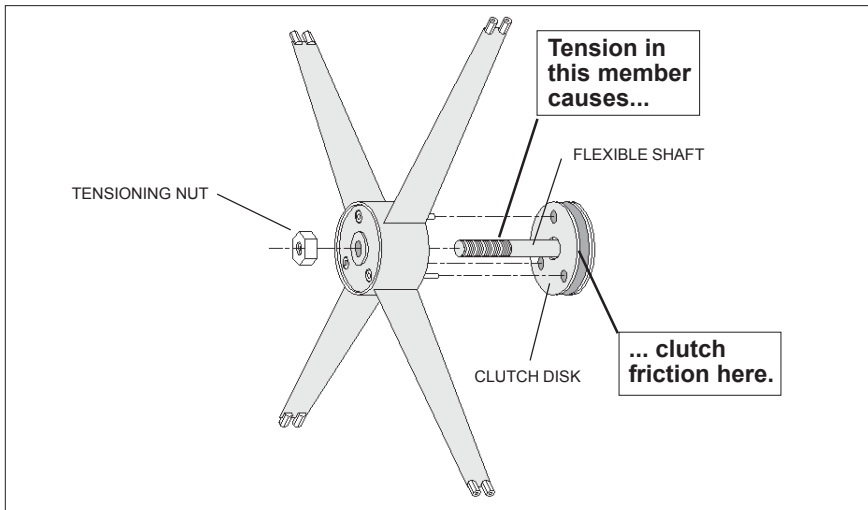
## How It Works

Unlike traditional ball and socket pivot designs, **ProtoStar** diagonal mounts utilize a *flexible shaft* which permits the range of diagonal mirror movement needed. The three collimating screws press against a *clutch disk* on the back of the mirror holder. The clutch effectively limits the action of the collimating screws to the desired mirror tilting motion, while also maintaining the friction necessary to hold collimation – even during rough transport.

A major benefit of the design is that it simplifies collimation of the secondary mirror. The tilt adjustment of the secondary mirror can be done directly, without the need to unlock a nut first. Similarly, nothing needs to be “locked down” to hold collimation in place. The *system tension* is used to hold all adjustments in place. In addition, the design permits minor collimating screw adjustments to be made independently (i.e., you can tighten one without having to also loosen others).

## System Tension

Tension is developed in the *flexible shaft* by turning the three collimation screws clockwise, or by tightening the *tensioning nut*. Tension in the shaft causes a reactive compressive force against the *clutch disk* which locks in proper collimation. Start the collimation process with the tensioning nut only finger tight, and sufficient tension is usually created just by going through the collimation process (i.e., turning the collimation screws). If more tension is needed after collimation, you can tighten the tensioning nut another 1/2 turn. *Do not overtighten the tensioning nut*, as this can damage the stem threads. Only a modest amount of tension is required to hold everything in place.



**Contact Information:**



**© 1996-2008 ProtoStar**

P.O. Box 448

Worthington, Ohio 43085

(614)-785-0245

e-mail: [protostar@fpi-protostar.com](mailto:protostar@fpi-protostar.com)

WWW: <http://www.fpi-protostar.com/>