



## Starlight Instruments, LLC

2380 E. Cardinal Drive, Columbia City, Indiana 46725 USA

t: 260.244.0020 f: 260.244.3077

e: [sales@starlightinstruments.com](mailto:sales@starlightinstruments.com)

web: [starlightinstruments.com](http://starlightinstruments.com)

### Introduction

Thank you for purchasing the Starlight Integrated Paracorr System (referred to as SIPS hereafter), which incorporates all the benefits of the Paracorr Type 2. SIPS is the only combination focuser and stationary coma corrector currently on the market.

By placing the SIPS at the proper constant distance from the primary mirror, the SIPS ensures that you will see the best results that the Paracorr system is capable of producing, no matter the focal ratio of your telescope, and no matter which TeleVue eyepiece you place in the focuser.

With this finely-crafted piece of equipment, all you have to do is put in an eyepiece. After proper installation, whenever an eyepiece is focused, it's automatically at the best position for optimal image quality. No "tuning" is needed: just enjoy the views.

### Coma Correction

The Paracorr Type 2 is the updated version of the popular Paracorr coma corrector. It offers improved performance over the Type 1 at all focal ratios, especially in the range below F/4. It makes an F/3 mirror perform like an F/12 without a Paracorr, virtually diffraction limited over the full field as noted on the Tele Vue website

### Diagram

The parts of the SIPS are labeled in *Figure 1*. (The eyepiece is not included!)

The focuser portion is a standard 1.5"-travel Feather Touch focuser, the finest available on the market. (NOTE: The focuser can be purchased with the rest of the unit, or you may use your own 1.5"-travel Feather Touch if you already have one.)

**IMPORTANT:** The SIPS unit was designed for use with the 1.5"-travel, 2" diameter Feather Touch focuser. Other diameters will not fit. Longer focusers will bottom out, possibly providing insufficient travel. Shorter focusers may also provide insufficient travel.

By removing the need to “tune” the Paracorr, less focuser travel is required to reach focus with all TeleVue eyepieces. The 1.5"-travel model comfortably covers the required focusing range.

The focuser portion is mounted on the Paracorr module of the SIPS. It is attached with three setscrews. The Paracorr module sits below it. A locking ring is threaded onto the Paracorr module. Loosening this ring allows the whole assembly to be rotated. This adjusts the height of the whole assembly by threading it into or out of the mounting ring, which sits below the locking ring and inside of the base. The base mounts on your telescope.

## **Installation**

Carefully unpack the SIPS unit parts.

If you already have a 1.5"-travel Feather Touch focuser mounted on your telescope, detach it from the base by loosening the two setscrews that hold it in place. Either a leveling base or standard base (without leveling screws) may be used with the SIPS.

If you do not have a Feather Touch focuser, you will need to purchase and install the focuser and SIPS package.

To install the base, accurately center the base over the existing hole and drill mounting holes. Install the base using the provided bolts and nuts (*Figure 2*).

Next, verify that the mounting ring and locking ring are both threaded onto the SIPS Unit. Install this assembly in the base by tightening the two setscrews on opposite sides of the base (*Figures 3, 4*) using the provided hex wrench.

Install the Feather Touch focuser on top of the SIPS Unit by tightening the three setscrews around the top of the unit (*Figures 5, 6*). But first rack-out the drawtube!

This completes the assembly of the SIPS unit.

If you have purchased a leveling base, then after the focuser is installed, align the focuser using the adjustment screws.

Assemble your telescope if you have not already done so.

## **Collimation**

To collimate your telescope, you must remove the Paracorr lens group.

We recommend pointing your telescope near or at the horizon before removing the lens group. (This will reduce the chance of dropping it onto the ground should you lose your grip on it.)

Reach inside the secondary cage and grasp the knurled bottom of the Paracorr lens group. Carefully unscrew it (counterclockwise). After a few turns, the lens group will disengage from the threads and it can then be pulled out carefully into the secondary cage. (See *Figure 12*.)

Carefully set it aside where it will be safe and clean.

Perform your collimation procedure as normal with your laser, autocollimator, or other collimation tool.

To replace the lens group, carefully insert it back into the bottom of the SIPS and turn it clockwise until it stops. **Do not over-tighten it.**

## **Adjustment**

Now the Paracorr lens group must be positioned the proper distance from your primary mirror. The SIPS may be used before this step is completed, but the best performance will only be obtained after positioning is done.

If there is no tape present, place two pieces of frosted tape (Scotch® Magic™ Tape) across the top of the positioning aid (plastic cylinder). This is shown in *Figure 7*.

Under the night sky, point the telescope at the moon, a bright planet, or a bright star. Using an eyepiece, center the object in the field of view. If your telescope has tracking, engage the drive so that the object stays centered in the field of view. If it does not have tracking, you will need to move the telescope every so often to keep it in the field of view.

With the object roughly centered, remove the eyepiece, and set it aside where it will be safe.

Slide the positioning aid all the way down into the focuser barrel (*Figure 8*). It will bottom out when it touches the top of the Paracorr lens group. This places the tape at a particular distance from the lenses. Tighten the thumbscrews on the focuser to hold the positioning aid in place.

**IMPORTANT:** Verify that the focuser is racked all the way in, that is, it will go no farther down. The top of the barrel will be even with the top of the focuser housing.

Loosen the locking nut by turning it counterclockwise (*Figure 9*).

The entire SIPS assembly may now be turned (*Figure 10*). Turning it counterclockwise will raise the unit, and turning it clockwise will lower it.

Adjust the height of the unit so that the bright object is sharply focused on the tape. This means that you should make the image of a bright star or planet as small as possible on the tape. The moon, however, should be focused as sharply as possible. (Using the edge of the moon's disk may be the easiest way to do this.)

*Figure 11* shows Jupiter focused on the tape. (*Figure 11* was a time exposure and the telescope was not tracking, so it appears as a short, thin line rather than a point.)

One method that may make adjustment easier is to thread the SIPS all the way into the base until it stops. Use the focuser to find the sharpest focus, and then raise the unit by rotating it counterclockwise until the sharpest focus occurs when the focuser is racked all the way in (down).

With the object focused sharply on the tape and the focuser racked all the way in, adjustment is complete.

It is important to realize that this procedure sets the distance between the Paracorr lens group and the primary mirror. If the primary mirror moves up or down in its cell due to collimation adjustments that are made over time, the SIPS position should be adjusted periodically to maintain the proper distance between the Paracorr lens group and the primary mirror.

Remove the positioning aid, insert an eyepiece, and enjoy the views!

## **Usage**

The SIPS should always be used when using an eyepiece. Frequent removal and installation of the lens group is not recommended.

To use other accessories, such as cameras, binoviewers, etc., the focuser may be detached from the SIPS unit. The SIPS unit is then removed from the base without loosening the locking ring or mounting ring (thus ensuring that it will be positioned properly when it is reinstalled.) The focuser may then be mounted directly on the base.

## **Accessories**

Various accessories, such as cameras, binoviewers, etc. may be used so long as they do not come into contact with the Paracorr lens group.

Be careful when inserting these accessories into the focuser barrel if you have not previously verified that they do not contact the lenses. (Maximum safe depth below the top of the focuser body should be 1-3/4")

## **Final Notes**

For information on cleaning of the Paracorr lenses go to the link below, or contact TeleVue directly.

[http://www.televue.com/engine/TV3\\_Page.asp?return=Advice&id=103](http://www.televue.com/engine/TV3_Page.asp?return=Advice&id=103)

Credits:

Mike Lockwood (<http://www.loptics.com>) for his time and effort in the production of this manual.







Figure 3 - Installing the Paracorr Unit



Figure 4 - Installing the Paracorr Unit





Figure 5 - Installing the Feather Touch focuser



Figure 6 - Installing the Feather Touch Focuser





Figure 7 - Frosted tape installed on the positioning aid



Figure 8 - Positioning aid installed in the focuser



Figure 9 - Tightening or loosening the locking ring



Figure 10 - Adjusting the Paracorr position by rotating the focuser/Paracorr assembly (locking ring loose)







