

Tele Vue®-NP127fli Operating Guide

680mm f/5.3 IMAGING SYSTEM
4-ELEMENT APO ASTROGRAPH



Thank you for purchasing the Tele Vue-NP127fli. It has been our pleasure to craft this fine instrument for you. Nearly thirty years ago, Al Nagler received a U.S. patent for a fast, refracting telescope design based on Josef Petzval's portrait camera lens concept. Petzval's design uses widely spaced doublets to produce a flat focal plane over a relatively narrow field of view, just the sort of field a fast telescope can see. Nagler's combination of flat-field, fast focal ratio, and unobstructed system lent itself perfectly for testing eyepieces.

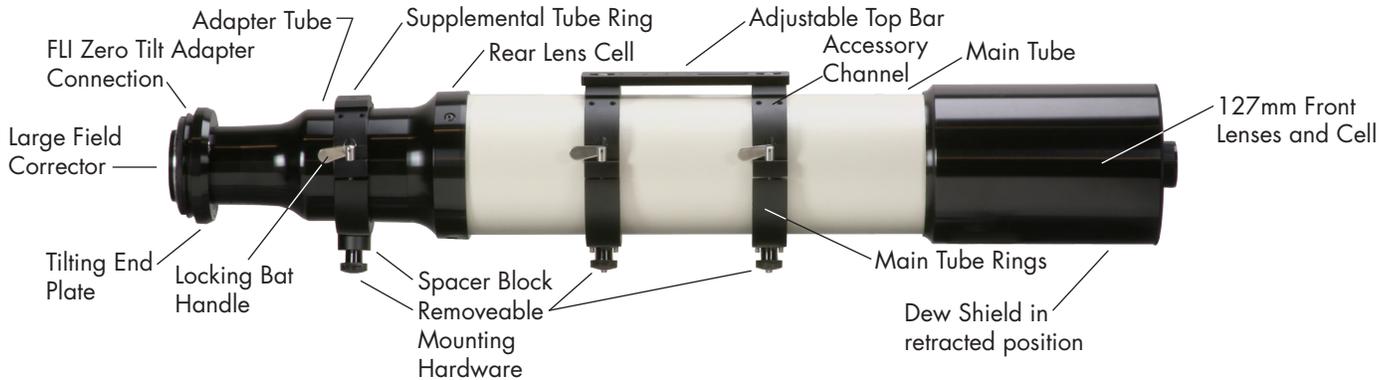
The 5" f/4 MPT (Multi-Purpose Telescope) with its fast speed and wide, flat field, led to a series of continuous improvements, primarily in color correction. The "Halley Commemorative," 4" f/5.5 started the parade where more advanced glasses including special dispersion, fluorite and fluorite substitute glasses brought steady improvements. The 4" f/5 Genesis employed fluorite in the rear doublet, and the subsequent SDF and Tele Vue-101 versions at f/5.4 brought us even closer to perfection. Maintaining this fast f/5.4 speed while reducing tube length in a totally new design with new glasses allowed virtually ideal color correction and improved field flatness in this, the ideal form culminating the 20 year refinement toward perfection with the Nagler-Petzval 101, and NP127 with an even faster f/5.2 speed.

The Tele Vue-NP127fli is Tele Vue's first dedicated imaging instrument. It was developed in collaboration with Finger Lakes Instrumentation to provide you with, what we hope you will agree, is the easiest, most carefree imaging setup you've ever used. The NP127's optics plus Large Field Corrector produce an f/5.3 system that mates beautifully with the variety of CCD chips available in FLI's Proline camera series. The Atlas focuser with its incredible resolution of 85nm/step is also ideally matched to our optical system. The patented Zero Tilt Adapter system ensures all components lock squarely together, while the unique end-plate tilting feature allows for any final adjustment that might be necessary.



WARNING: NEVER image the sun or point the telescope toward or near the sun without professional solar equipment rigidly secured in front of the objective lens. Remove any sighting devices such as Starbeam from the telescope. Use only the Tele Vue Sol Searcher to find the sun. Instant and permanent eye damage may result from viewing the sun directly, even during a solar eclipse, or when viewing through thin clouds, or when the sun is near the horizon.

Standard Features - Optical tube assembly includes: captive sliding dew shield, , tilt adjustment end plate with integrated Zero Tilt Adapter, front and rear screw-on metal lens cover (not shown), universal tube rings, custom hard-shell case, Allen Keys for end plate tilt adjustment.



1.0 Getting Acquainted with the Tele Vue-NP127fli

1.1 Optical tube assembly

The NP optical design contains four elements consisting of two widely spaced, air-spaced doublet groups. The forward group of lenses are contained in a stainless steel lens cell. The cell attaches to the main tube via three alignment screws. The front cell is encased within the sliding dew shield. The rear doublet, making up the rest of the objective, is larger in diameter than the previous NP127 and provides additional illumination at the edge of the field. This benefit is especially useful for large format CCD chips which are extremely sensitive to light fall-off. The rear lens group is housed in the cell that threads on to the back of the tube.

1.2 Large Field Corrector

The placement of the large field corrector lens at the very end of the OTA is critical to the edge of field performance and is dependant on the camera used. The lens assembly has been factory set and locked to be properly spaced for the back focus of the combination of Atlas focuser, CenterLine filter wheel, and ProLine series cameras. These products have been tested and proven together as a system with NP127fli. Should you choose to adapt any other camera to this system or use any other products, you may need to adjust the lens position. You may do so by first loosening the set screw located in the knurled ring. While holding the Large Field Corrector lens assembly, loosen the knurled ring. You are now free to thread the Large Field Corrector lens assembly in or out as necessary. To tighten the assembly, hold the Large Field Corrector assembly in place and fully tighten the knurled ring. Finish by tightening the set screw.



1.3 Tilting End Plate

The tilt of the end plate to the optical axis can be changed to compensate for any tilt errors you may see in your images. The telescope has been factory aligned with the end plate square to the optical axis. However, this alignment process cannot take into account production tolerances contributed by other pieces of equipment. The good news is that in our testing with random selections of FLI equipment, no additional tilt compensation has been necessary. We have, however, left this capability accessible should you ever find it necessary.

To determine which way to tilt the end plate, it is necessary to focus on the part of the image that comes to focus first when moving the focuser out from its "in" position. That will permit adjusting, or "jacking," the end plate "out" to match that focus point in the field. The goal is to get the star images in the four corners as uniform to each other as possible.

To make an adjustment, slightly loosen the three Jamb Screws located on the forward facing side of the end plate. Then, "jack" the end plate a little using the appropriate Allen key jack screws. Tighten the Jamb Screws against the end plate. Some trial and error imaging will be necessary, so it is best to carry out any necessary adjustments during a test imaging session.



2.0 Mounting Options and Set Up

The telescope tube diameter is 5". Dual rings are supplied on the tube and can be used tied together with the top mounting bar for additional rigidity. This bar is easily removable should your mounting plate require a ring spacing beyond its adjustment range. In addition, a third mount ring is located on the adapter tube to add extra rigidity. In practice we found that the adapter tube did not present any flexure issues with the weight of the FLI equipment. However, we have provided it should you wish to fashion a custom mount adapter. Please note that this ring must remain fixed in its position along the adapter tube. Therefore, any custom adapter plate should be designing after achieving balance and knowing the final position of the 5" rings.

The bottom of the tube rings have 1/4-20 holes to accept mounting studs or screws. The 5" rings have additional locating pins and the 4" adapter tube ring has a spacer block to create an even plane to the base of the 5" rings. Telescope balance is achieved by unlocking the "bat handle" screws and sliding the tube fore or aft. Once the O.T.A. is repositioned, retighten the bat handle screws. Each tube ring has two machined channels with #10-32 threaded holes for mounting accessories.

3.0 Caring for your NP127fli

The Tele Vue-NP127fli requires no special care. Treat it as you would any fine camera lens. Use the lens cap when the telescope is being stored or not in use. The captive dew shield provides protection from glare, helps protect the lens from dust or spray blown in by the wind and minimizes dew formation on the lens.

If dew forms on the lens during cold weather, it is best to use a hair dryer (on the lowest setting) to gently warm it away. A few specks of dust will have no effect on image quality and may be gently blown off with a squeeze bulb. Do not use compressed air cans to blow dust off optical surfaces.

Fingerprints, however should be cleaned off. Though the anti-reflection coatings are durable, they are easily scratched. The simplest cleaning method is to moisten (not soak) a very soft, lint-free tissue, cloth, "Q-Tip" or surgical cotton with a lens or glass cleaner and gently whisk away the stain. Do not apply any solutions directly to the glass surfaces. After every cleaning stroke, use a fresh applicator. The fewer strokes the better! Any residual "film" will not affect performance.

Collimation of your Tele Vue-NP127fli has been locked at the factory. With reasonable care it will remain aligned. However, rough handling can cause misalignment. **WARNING:** Do not loosen the button head screws in the front or rear lens cells as this will cause misalignment. If necessary, contact Tele Vue for re-collimation.

The tube is powder-coated for durability and requires no special care. Black anodized surfaces can be cleaned with Windex. If you have any questions about the care, operation or performance of your Tele Vue-NP127fli, please call us at (845) 469-4551 from 9:30 am to 5:00 pm EST.

4.0 Warranty

Tele Vue telescopes are warranted to be free of manufacturing or workmanship defects for 5 (five) years from the date of purchase, to the original owner. Please return the warranty card as validation of your ownership and for easy identification. If your Tele Vue telescope requires warranty service, please call Tele Vue to discuss the problem, upon which you will receive a return authorization. **NO RETURNS ARE ACCEPTED WITHOUT PRIOR AUTHORIZATION.**

The warranty does NOT include: collimation, defects caused by mishandling, defects of subjective nature, or coverage for any telescope purchased through an unauthorized Tele Vue dealer.

Warranty work will be performed at Tele Vue's discretion and may only be performed by Tele Vue Optics. The telescope must be shipped in its case with proper inner and outer packaging. Return shipping and insurance charges are the purchaser's responsibility.

5.0 Specifications

Type	4-element Nagler-Petzval APO with integrated Large Field Corrector
Clear Aperture	5 inches (127mm)
Focal Length	680mm
Focal Ratio	f/5.3
Resolution (photographic)	272 line pairs per mm
Field (photographic)	4.4° with 16803 chip
Mounting	two 5" mount rings, one 4" mount ring
Weight	15.75 lbs. (tube assembly) 28.5 lbs. in case
Length	36-inches (O.T.A. only)
Accessories	included as standard: custom fitted case, screw-on lens covers, sliding dew shield
Tube	Powder-coated aluminum

Specifications subject to change without notice.