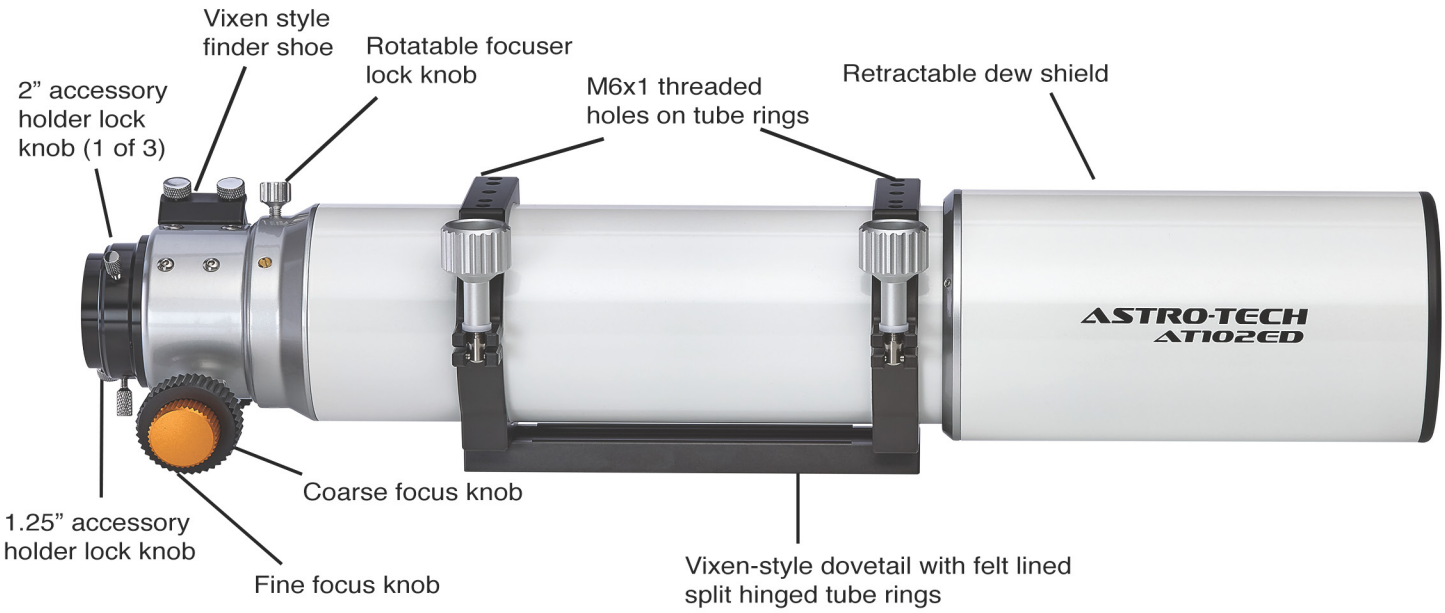
ASTRO-TECH ED SERIES

Thank you for choosing this Astro-Tech ED high-quality doublet refractor!

The images from its ED FPL-51 Equivalent (Extra-low Dispersion FK-61 glass element) air-spaced doublet optics are virtually color-free, even at high magnifications.

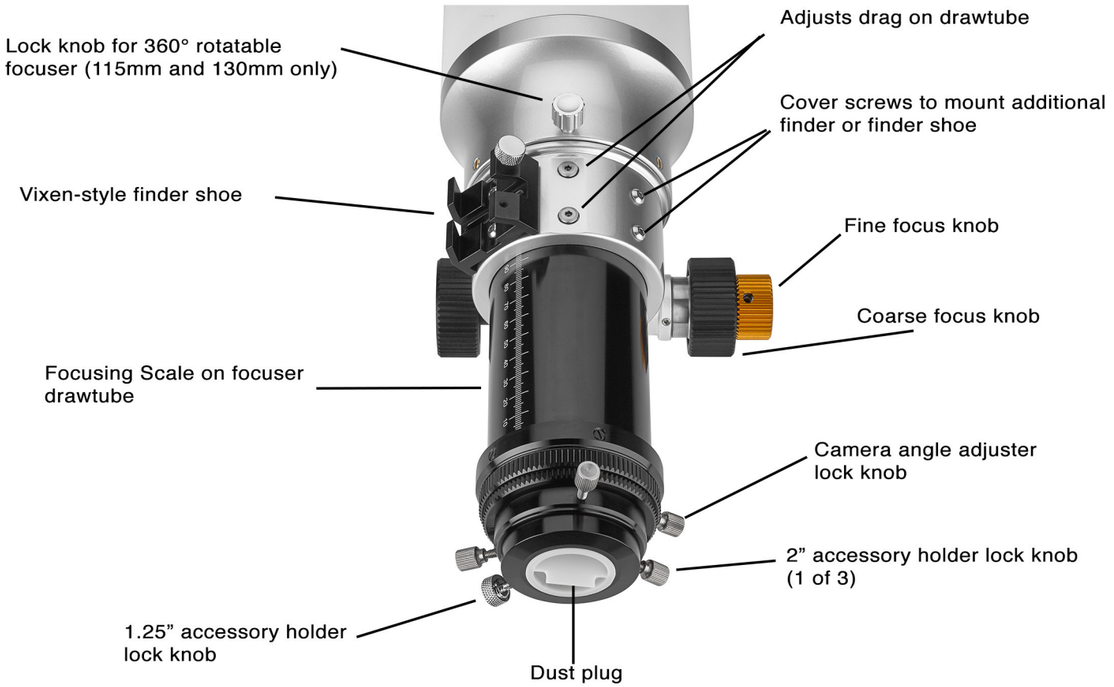
Your focuser is a dual-speed rack-and-pinion with a 10:1 reduction ratio fine focus and a 2" compression ring eyepiece holder. The focuser travel is 3.6" (92mm) with a millimeter scale on the drawtube for repeatable focus. The AT70ED has a 2" focuser, while the AT80ED and AT102ED have a 2.5" diameter focuser. The AT70ED has a clamshell mounting ring with a 1/4" 20 thread hole, with the AT80ED and AT102ED come with felt lined tube rings and a Vixen style dovetail plate.

This instruction sheet will provide you with information on how to get the most out of your new Astro-Tech refractor, and how to properly maintain it so it can give you a lifetime of observing enjoyment. Please familiarize yourself with the parts and functions of your Astro-Tech ED doublet refractor before using it for the first time.



ASTRO-TECH ED SPECS

Specification	70mm	80mm	102mm
Aperture:	70mm (2.75")	80mm (3.15")	102mm (4.01")
Focal Length and Focal Ratio:	420mm, f/6	560mm, f/7	714mm, f/7
Resolving Power (Dawes' Limit):	1.66 arc seconds	1.45 arc seconds	1.14 arc seconds
Visual Limiting Magnitude:	11.9	12.22	12.7
Lens Shade Diameter:	88mm o.d	103mm o.d	121mm o.d.
Tube Diameter:	76mm o.d	88mm o.d	105mm o.d.
Tube Length (lens shade retracted):	11" (279mm)	17.75" (450mm)	24" (610mm)
Tube Length (lens shade extended):	13.5" (343mm)	21.25" (540mm)	30" (762mm)
Tube Weight:	3.9 lbs. (1.8 kg)	5.8 lbs. (2.63 kg)	7.9 lbs. (3.6 kg)
Weight (w/rings & dovetail):	4.8 lbs. (2.1 kg)	6.9lbs. (3.1 kg) (5.5" dovetail)	9.2lbs. (4.2 kg) (8" dovetail)
Vixen Style Finder Shoe	Included	Included	Included



Mounting your scope: A stable altazimuth or equatorial mount is essential for best viewing with your Astro-Tech EDT refractor. Your scope is supplied with split hinged mounting rings and a Vixen-style dovetail for use on a medium duty mount with a Vixen-style saddle plate. In a thoughtful touch, the rings are lined with white felt that won't mark the white powder coat finish of your scope's body, as ordinary black felt will. Losmandy-style D-plate dovetails are available from your Astro-Tech dealer for installing your EDT on those larger mounts that use a Losmandy-style saddle plate.

Visual observing: You will need a diagonal of some sort to reach focus visually with your Astro-Tech EDT refractor You can use any brand or type of 1.25” or 2” eyepiece, from a 40mm for the lowest practical magnification to a 3mm for high power use.

The practical maximum usable power available from the 80mm EDT is 160x (about 50x per inch of aperture), although this requires a 3mm eyepiece that provides a dim 0.5mm diameter exit pupil. With the 115mm EDT, the practical maximum power with a 3.5mm eyepiece (again having a 0.5mm diameter exit pupil) is 230x, while the 130mm EDT has a practical maximum of 260x with the same 3.5mm eyepiece and 0.5mm diameter exit pupil.

Keep in mind that seeing conditions play an important role in how high a magnification you can use on any given night. Only very good seeing conditions will support viewing at the practical maximum or higher. Under the typically less than ideal conditions you will often encounter, lower powers in the 30-40x per inch of aperture range will provide more consistently usable and pleasing images.

However, higher powers are within each scope's capabilities, but require truly excellent seeing conditions and the patience to wait for those conditions to make their brief and infrequent appearances.

Your focuser: The 2.5” rack-and-pinion focuser, on the 115mm and 130mm, can be rotated 360° to put the focus knobs in the most convenient orientation. To rotate the focuser, loosen the chrome lock knob at the forward end of the focuser body (shown in the illustration on the previous page). Rotate the focuser to the desired angle and tighten the lock knob to hold it in position.

There are three brass rotation tension screws around the base of the focuser. If the focuser rotation becomes too stiff or loose due to temperature extremes, you can adjust these screws slightly and evenly to tailor the rotation tension to suit your preference.

With all scopes, it is also possible (and often more convenient) to simply rotate the 2” camera angle adjuster/accessory holder on the focuser drawtube to put your star diagonal in the most comfortable observing position.

There are two coarse focusing knobs, one on each side of the rack-and-pinion focuser body. There is also a concentric 10:1 ratio fine focus knob on the right hand coarse focus knob. Both the right coarse focus knob and the fine focus knob are protected by a slip-on cap during shipping. Remove the protective cap before using your EDT refractor.

A chrome lock knob under the focuser body lets you lock the focuser drawtube at a sharp focus for photography. A millimeter scale on the focuser drawtube will let you quickly return to a rough focus when switching between imaging and viewing.

Camera angle adjuster (CAA): All EDT scopes come equipped with a camera angle adjuster/2" accessory holder. To rotate the CAA to adjust the camera angle for the best photographic composition, or to put your star diagonal in the most comfortable observing position, loosen the chrome lock knob at the side of the CAA body. Rotate the CAA to the desired angle and tighten the lock knob to hold it in position.

There are six rotation tension screws around the rotation mechanism. If the rotation becomes too stiff or too loose due to temperature extremes, you can adjust these screws slightly and evenly to tailor the rotation tension to suit your preference. These should rarely need adjustment, however, and should only be turned in small increments. Excessive or uneven tightening of these screws can damage them, and/or the Teflon bearing strip they press against, a problem not covered by warranty.
There is a small gap in the Teflon bearing strip to allow for temperature induced expansion and contraction. The six tension screws will hit this gap as the CAA rotates, causing a small "tic" or hesitation as each screw passes over the gap. This is normal and not a cause for alarm.

A chrome lock knob under the rack-and-pinion focuser body lets you lock the focuser drawtube at a sharp focus for photography.

Photography: Your Astro-Tech EDT will do a very good job for APS-format CCD and DSLR imaging, particularly when used with the optional Astro-Tech 0.8x reducer/field flattener designed specifically for your EDT scope.

Caring for your scope's optics: Never store your telescope in a damp or humid environment. Avoid leaving it in a hot environment (exposed to direct sunlight on a window sill, in a car trunk, etc.) If you must store it in high humidity conditions, put a few packets of desiccant (silica gel or the equivalent, available from most camera stores) in with your scope to absorb excess moisture. If not properly stored in a humid environment, your EDT refractor may develop mildew which can damage the optics.

If dew has formed on your scope after an observing session, allow the scope optics to air dry at room temperature before putting the lens cover on the scope and storing it away.

If the front surface of the objective becomes dusty, smeared, or shows fingerprints or any other surface build-up, clean it as follows.

First, gently blow away any surface dust or particles with a clean air blower (a child's ear syringe or a photographer's camel's hair brush with attached blower bulb, for example). Using canned or compressed air is not recommended, as the propellant in the can may spit out and leave difficult-to-remove deposits on the lens.

Next, moisten a cloth or low-linting Kimwipe with a few drops of a photographic-quality optical cleaning solution designed for multicoated camera and binocular lenses. A well-worn cotton handkerchief works well. Do not drip the cleaning fluid directly on the lens. Use the barely damp (not wet) cloth to gently wipe the lens surface clean. Turn the cloth frequently to always keep a clean portion of the cloth in contact with the lens. Blot the lens dry with a dry portion of the cleaning cloth or with a separate cloth or Kimwipe. Start with a clean cloth each time cleaning is needed.

Avoid overcleaning your optics. The multicoatings on the lens are quite hard and durable. However, frequent overzealous cleaning can scratch the coatings if all the dust particles (which are often tiny flecks of windborne rock) are not removed before you start pushing a damp cloth around the lens surface. A few specks of dust on the lens will not be visible in your images, as they are not in the focal plane and don't block enough light to measure, let alone be seen. Clean your optics only when absolutely necessary. If you take proper care of your scope, cleaning should rarely be needed.

Caring for your scope's finish: Your EDT refractor has a durable powder-coated finish on its white body and matte black focuser, with black anodized trim. The body can become smudged with fingerprints during use, but these will not harm the finish. A clean soft cloth slightly dampened with plain water (or a little moisture from your breath and a quick wipe with a clean handkerchief) is generally enough to remove any fingerprints. Avoid harsh chemical cleaners or organic solvents like benzene, alcohol, etc., as these may ruin the finish. They can certainly affect the optical coatings if they accidentally drip or splash on the lens.

Caution! Never directly view the Sun with your telescope! Never aim your EDT scope at the Sun without having a professionally-manufactured solar filter mounted over the objective lens. Viewing the Sun through the scope without the proper protection for even a moment may result in permanent severe damage to your eyes, and can even cause blindness.