

ASTRO-TECH AT90EDT from Astronomy Technologies

Thank you for choosing this **Astro-Tech AT90EDT** high-performance apochromatic ED triplet refractor.

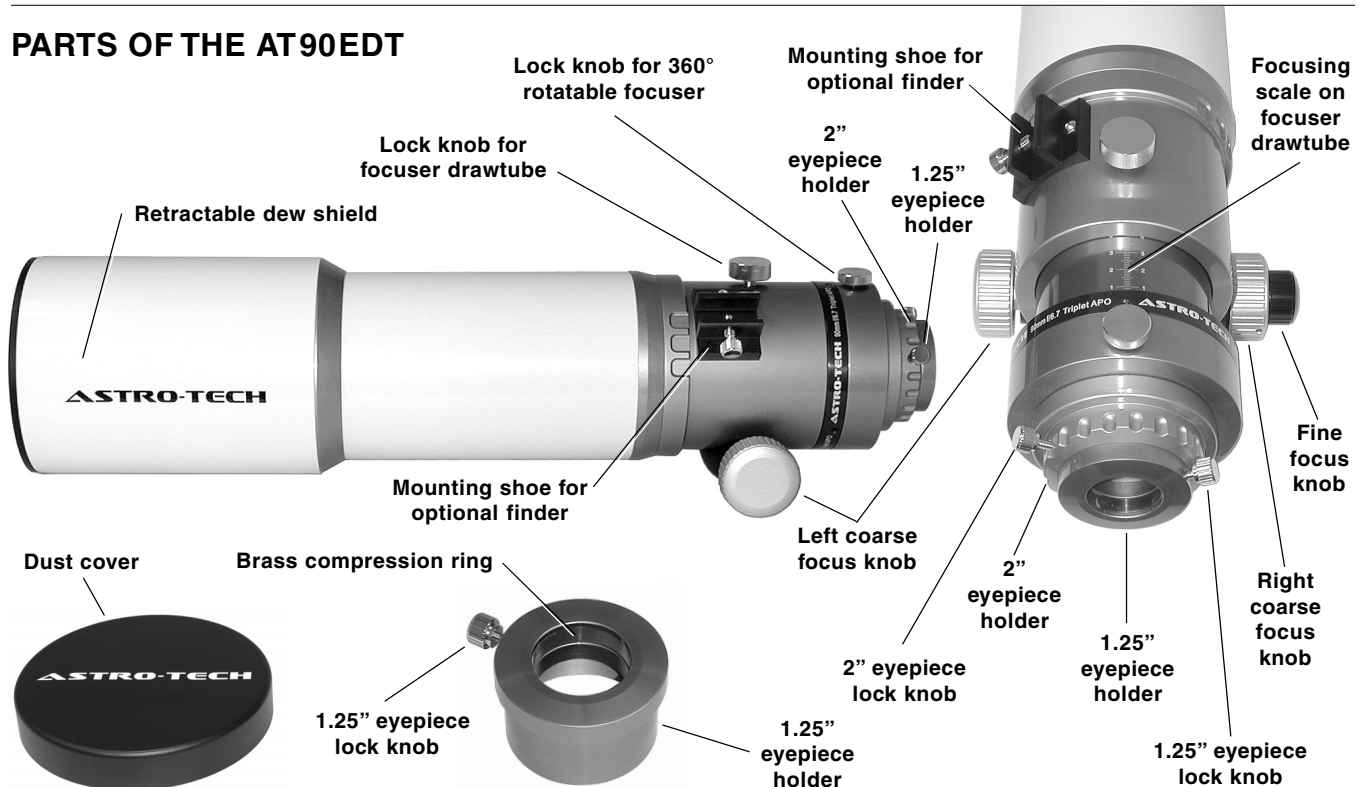
The images from its fully-collimatable 600mm f/6.7 ED (Extra-low Dispersion) air-spaced triplet optics are virtually color-free, even at high magnifications, thanks to its use of advanced Ohara FPL-53 ED glass. At its price, we believe you'll find that the optical performance

of your AT90EDT is little short of astonishing.

This instruction sheet will provide you with information on how to get the most out of your new refractor, and how to properly maintain your telescope so it can give you a lifetime of observing enjoyment.

Please familiarize yourself with your telescope's parts and functions before operating it for the first time.

PARTS OF THE AT90EDT



Astro-Tech AT90EDT Apochromatic ED Triplet Refractor Specifications

Aperture 90mm (3.54")
Focal Length 600mm
Focal Ratio f/6.7
Objective Type collimatable air-spaced triplet using Ohara FPL-53 ED glass
Optical Coatings fully multicoated
Resolving Power (Dawes' Limit) 1.29 arc seconds
Visual Limiting Magnitude 12.3 maximum
Light Grasp (versus the eye) 165x
Field Stops three knife-edge baffles
Focuser dual-speed rack and pinion with 11:1 reduction ratio fine focus; 2" and 1.25" compression ring eyepiece holders; 360° rotating camera angle/observing angle adjuster
Focuser Travel 4.7" (120mm) with millimeter scale on drawtube for repeatable focus

Finder mounting shoe provided for optional Astro-Tech multiple reticle finder or similar finder
Lens Shade retractable
Lens Shade Outer Diameter 130mm
Objective Lens Cover slip-on metal
Tube Diameter 114mm o. d.
Tube Length (lens shade retracted) 18.9" (480mm)
Tube Length (lens shade extended) 21.75" (552mm)
Optical Tube Weight 11.45 lbs. (5.2 kg)
Case aluminum-frame foam-fitted lockable hard case, with carrying handle
Case Dimensions 28" x 9" x 9"
Lowest Usable Power 15x (40mm eyepiece)
Highest Terrestrial Power 85x (7mm eyepiece)
Highest Practical Power 150x (4mm eyepiece)
Theoretical Maximum 200x (3mm eyepiece)

Your **Astro-Tech AT90EDT ED triplet** refractor is usable for day and night viewing, simply by adding a star diagonal and eyepiece. Any brand of eyepiece can be used, from a 40mm for the lowest practical magnification (15x) to a 3mm (200x) for high power use. A 2" compression ring eyepiece holder on the focuser drawtube and a separate 1.25" compression ring eyepiece holder let you use either 1.25" or 2" star diagonals and eyepieces with no other adapter needed.

The focal length of the AT90EDT is ideal for low to medium power wide-angle views of nebulas, open star clusters, large galaxies, and comets. Crisp views of the Moon and planets are also routine at magnifications of 120x to 200x when seeing conditions permit.

To calculate the magnification of your telescope and eyepiece combination, divide the telescope focal length in mm by the eyepiece focal length in mm. For example, a 6mm eyepiece in the AT90EDT will give you a magnification of 100x (600mm/6mm = 100).

Astronomical Observing: The theoretical maximum usable power available from this telescope is 200x, although this requires a 3mm eyepiece that provides a very dim 0.45mm diameter exit pupil. Higher powers *are* within the scope's capabilities, but require truly excellent seeing conditions and the patience to wait for those conditions to make their brief and infrequent appearances.

A more practical maximum magnification for astronomical viewing with the AT90EDT would be 150x, using a 4mm eyepiece. 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 (clear skies and calm air) will support viewing at 200x. Under less than ideal conditions, lower powers in the 100x to 120x range provide more consistently usable and pleasing images.

The widest possible field of view with a 1.25" eyepiece is about 2.8°, which can be achieved with a 15x (40mm) Plössl eyepiece yielding a 5.97mm exit pupil. A 2" wide field eyepiece, such as the TMB 40mm Paragon, will give a 4.53° field at the same 15x power.

The AT90EDT does an outstanding job as a wide-field astrograph for 35mm and CCD imaging. The focuser's 2" eyepiece/accessory holder can be rotated a full 360° for the best photographic composition, or to put your star diagonal in the most comfortable observing position. To rotate the eyepiece/accessory holder, loosen the chrome lock knob on the telescope barrel just in front of the eyepiece holder by turning it counterclockwise. Adjust the eyepiece holder to the desired angle, then tighten the lock knob to temporarily lock the eyepiece holder at the new angle. A second large chrome lock knob on top of the scope barrel lets you lock the extra-long 140mm rack and pinion focuser drawtube at a sharp focus for photography.

Mounting Your AT90EDT: A stable tripod or astronomical mount is essential for best viewing. The scope is not supplied with mounting rings, but 114mm i. d. split rings are readily available from your Astro-Tech dealer for installing the scope on the mount of your choice.

Terrestrial Observing: Your AT90EDT works well for daytime birding, nature studies, sweeping the landscape from the home with a view, etc. – provided its 11.5 pound weight is installed on a suitably sturdy tripod or altazimuth mount. It is also an excellent flat-field 600mm (12x) f/6.7 telephoto lens for terrestrial photography.

Generally speaking, the maximum usable daytime visual power with any terrestrial scope is about 1x per mm of aperture (85x with a 7mm eyepiece). Attempts to push the daytime power beyond this point often magnify the heat waves, dust, and "mirage" in our atmosphere to the point where the images become blurry and unusable. A 24x (25mm) to 67x (9mm) eyepiece is usually more satisfying for everyday high power terrestrial use than an 85x eyepiece.

Optional Astro-Tech Accessories: Astro-Tech makes 1.25" and 2" star diagonals with state-of-the-art 99% reflectivity dielectric coatings that nicely complement the performance of your AT90EDT. These diagonals are available from your Astro-Tech dealer to provide the maximum possible reflectivity and planetary detail. An Astro-Tech 45° viewing angle image-erecting 1.25" diagonal is available for terrestrial observing. An inexpensive Astro-Tech non-magnifying illuminated multireticle finder is also available for your AT90EDT.

Collimating Your AT90EDT: Full collimation instructions are pro-

vided in the separate collimation sheet packed with your scope.

Caring for Your Telescope 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 the telescope to absorb excess moisture. If not properly stored in a humid environment, the telescope may develop mildew that can damage the optics.

If dew has formed on the scope after a night of observing, 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 lens surface becomes dusty, smeared, or shows fingerprints or any other surface build-up, clean the lens using the following technique. 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. Also, the expanding compressed air drops in temperature as it leaves the can. The cold air coming out of the tiny tube that most compressed air cans use to direct the air flow has been known to chill a lens to the point of spalling glass chips off the lens if pointed at the same spot on the lens for too long.

Next, moisten a cloth with a few drops of a photographic-quality optical cleaning solution designed for use on multicoated camera and binocular lenses. A well-worn cotton handkerchief works well and Zeiss and Kodak both make suitable fluids. Do not drip the cleaning fluid directly on the lens.

Use the barely damp (not wet) cloth to gently wipe the lens surface clean, turning 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 a separate cloth. Start with a clean cloth each time cleaning is needed.

Avoid overcleaning your scope. 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 debris on the lens will not be visible in your images. They are not in the focal plane and do not 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 Finish: The AT90EDT is finished in a durable baked-on white automotive-grade paint, with grey and green anodized trim. The long-life finish 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 the 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 objective lens.

Never use the telescope in the rain or in conditions where it may get wet. The telescope is not waterproof. If your telescope accidentally gets caught in the rain, immediately wipe off all water using a clean and dry soft cloth. If your scope gets totally soaked in water, or submerged, immediately contact your dealer for service instructions. Do not disassemble or attempt to repair your telescope yourself, as this violates the terms of the limited product warranty and negates any guarantee.

Caution! Never directly view the Sun with your telescope! Never aim your AT90EDT 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. Contact your Astro-Tech dealer if you are interested in purchasing a compatible professional solar filter.

 **ASTRO-TECH** www.astronomytechnologies.com
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