ASTRO-TECH AT80ED

from Astronomy Technologies

Thank you for choosing this **Astro-Tech AT80ED** high-performance ED refractor.

The images from its fully-multicoated ED (Extra-low Dispersion glass element) air-spaced doublet optics are virtually free of the annoying violet haloes of chromatic aberration (spurious color) that are typically seen around the Moon, planets, and bright stars in lesser refractors.

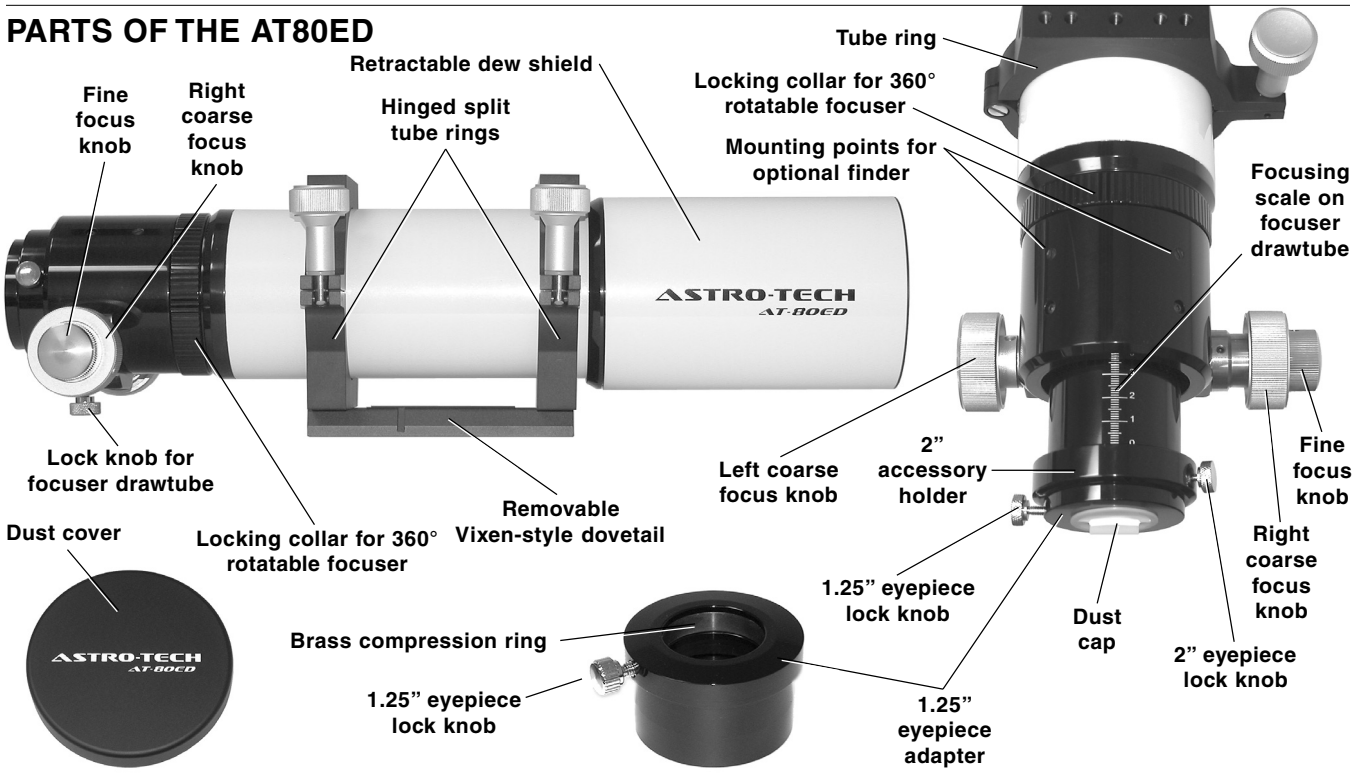
Precision-made, with many useful mechanical features (such as a rotating dual-speed focuser and a very flexible split ring plus dovetail mounting system), the AT80ED is a clear step ahead of competitive scopes.

At its exceptionally low price, we believe that you will find that the mechanical and optical performance of your AT80ED is little short of astonishing.

This instruction sheet will provide you with information on how to get the most out of your new telescope, 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 AT80ED



Astro-Tech AT80ED Doublet Refractor Specifications

Aperture ..... 80mm (3.1")
Focal Length 560mm
Focal Ratio f/7
Objective Type .... air-spaced doublet with ED element
Optical Coatings ..... fully multicoated
Resolving Power (Dawes' Limit) ..... 1.45 arc seconds
Visual Limiting Magnitude ..... 12.0 maximum
Light Grasp (versus the eye) 131x
Field Stops ... two glare-reducing baffles in optical tube
Focuser ..... dual-speed Crayford-type with 11:1 reduction ratio fine focus (a 10:1 ratio *Feather Touch* focuser is optional); 360° rotating camera angle/observing angle adjuster; and 2" and 1.25" compression ring eyepiece holders
Focuser Travel ..... 3.35" (85mm) with millimeter scale on drawtube for repeatable focus
Lens Shade ..... retractable
Objective Lens Cover ..... slip-on metal
Tripod Mount ..... dual split hinged tube rings with Vixen-style dovetail for direct mounting on Astro-Tech, Celestron, Meade, and Vixen mounts
Tube Diameter ..... 90mm o. d.
Tube Length (lens shade retracted) ..... 18" (457mm)
Tube Length (lens shade extended) ... 21.75" (527mm)
Optical Tube Weight ..... 6.8 lbs (3.09 kg) with standard focuser; 6.45 lbs (2.93 kg) with optional *Feather Touch* focuser (both weights include rings and dovetail)
Case ..... aluminum-frame foam-fitted lockable hard case, with carrying handle
Case Dimensions ..... 20.75" x 12.75" x 8.75"
Lowest Usable Power ..... 14x (40mm eyepiece)
Highest Terrestrial Power ..... 80x (7mm eyepiece)
Highest Practical Power ..... 160x (3.5mm eyepiece)
Theoretical Maximum ..... 187x (3mm eyepiece)

Your Astro-Tech AT80ED 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 (14x), to a 3mm (187x) for high power use. The 2" accessory holder on the focuser drawtube and the supplied 1.25" eyepiece adapter let you use either a 1.25" or 2" star diagonal and eyepieces with no other adapter needed.

Your AT80ED's focal length is ideal for low to medium power wide-angle views of nebulas, open star clusters, large galaxies, and comets. Crisp views of the Moon, planets, binary stars, and globular clusters are routine at powers of 112x to 187x 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 5mm eyepiece in your AT80ED will give you a magnification of 112x (560mm/5mm = 112).

Astronomical Observing: The theoretical maximum usable power available from your AT80ED is 187x, although this requires a 3mm eyepiece that provides a narrow and very dim 0.43mm exit pupil. A more practical maximum magnification for astronomical viewing with your AT80ED would be 140x, 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 187x. Under less than ideal conditions, lower powers in the 80x to 112x range provide more consistently usable and pleasing images.

The widest possible field of view with a 1.25" eyepiece is about 3°, which can be achieved with a 14x (40mm) Plössl eyepiece.

While your AT80ED has not been specifically designed for astro-photography, it does an outstanding job as a wide-field astrograph for casual 35mm and CCD imaging. A chrome thumbscrew under the focuser lets you lock in a sharp focus for photography.

The focuser can be rotated a full 360° for the best photographic composition, or to put your diagonal in the most comfortable observing position. To rotate the focuser, loosen the knurled lock ring on the telescope barrel by turning it counterclockwise. Adjust the focuser to the desired angle, then turn the lock ring back in the opposite direction to lock the focuser at the new angle.

Terrestrial Observing: Your AT80ED works well for birding, nature studies, sweeping the landscape from the home with a view, etc. It is also a very good 560mm (11x) f/7 telephoto lens for terrestrial photography. Generally speaking, the maximum usable daytime power with any terrestrial scope is about 1x per mm of aperture (80x with a 7mm eyepiece on your AT80ED). 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 28x (20mm) to 62x (9mm) eyepiece is usually more satisfying for everyday terrestrial use than an 80x eyepiece.

Mounting Your AT80ED: A stable tripod, altazimuth mount, or German equatorial astronomical mount is essential for best viewing. The scope's split tube rings will mount directly onto many German equatorial mounts. The removable 8" long dovetail attached to the rings has a 1/4"-20 thread hole for mounting on a sturdy photo tripod. This Vixen-style dovetail also fits directly into the dovetail slot on Astro-Tech Voyager altazimuth mounts; on Celestron Advanced Series or Meade LXD-75 go-to mounts; or on Vixen Porta altazimuth, Sphinx go-to, or Great Polaris German equatorial mounts.

Installing an Optional Finder: There are two threaded holes for mounting an optional finder, such as the Astro-Tech #ATF illuminated multiple reticle finder. They are at the 10 o'clock and 2 o'clock positions on the top of the focuser, 3/4" behind the focuser rotation locking collar. The holes have screwdriver-slotted inserts to keep dust out of the scope. Please carefully note the position of the finder mounting holes in the illustration on the front page. There are also two hex-head inserts immediately behind the finder mounting holes. Do not loosen these hex-head inserts, as they are for factory adjustments of the focuser mechanism only. Undoing them will void your warranty.

Other Optional Astro-Tech Accessories: Astro-Tech makes 1.25" and 2" star diagonals with state-of-the-art 99% reflectivity dielectric coatings to complement the performance of your AT80ED. These diagonals are available from your Astro-Tech dealer to provide the maximum possible brightness and planetary detail. A 45° viewing image-erecting 1.25" diagonal is also available for terrestrial observing.

Caring for Your Scope Optics: Never store your scope 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 camera stores) in with the telescope to absorb excess moisture, but do not put them in direct contact with the lens. If not properly stored in a humid environment, the telescope may develop mildew which can damage the optics.

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

If your front lens surface becomes dusty, smeared, or shows fingerprints or any other surface build-up, clean the lens 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. 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 cracking the glass if pointed at the same spot on the glass for too long.

Second, moisten a cloth 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 and Zeiss and Kodak both make suitable fluids. Do not drip the cleaning fluid directly on your 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, 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 Finish: The AT80ED uses an automotive-grade paint and anodized components. These very durable surfaces 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 your telescope in the rain or in conditions where it may get wet. Your telescope is not waterproof. If your scope accidentally gets caught in the rain, immediately wipe off all water using a clean and dry soft cloth. If your telescope 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 warranty terms under the limited product warranty, and negates any guarantee.

Caution! Never directly view the Sun with your telescope! Never aim your AT80ED 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
from Astronomy Technologies, 680 24th Avenue SW, Norman, OK 73069

Specifications, features, and descriptions are effective 6/1/2008, but are subject to correction and/or modification without notice and/or obligation.