



# ASTRO-TECH AT8M

from Astronomy Technologies

Thank you for choosing the 8" f/12 **Astro-Tech AT8M** Maksutov-Cassegrain catadioptric optical system.

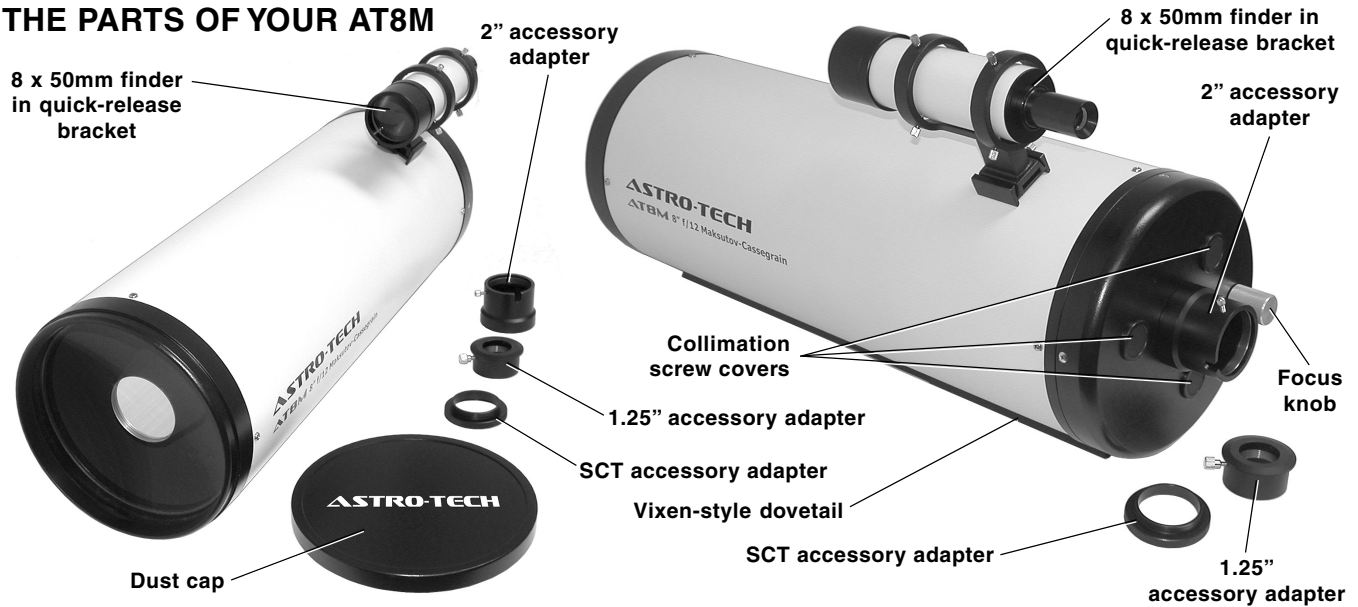
The folded optics of your AT8M provides the high contrast and spurious color-free images typical of a costly apochromatic refractor on solar system objects and the brighter deep space objects, but at only a fraction the cost of a premium refractor. Your AT8M images compare quite favorably with those of 7" apochromatic refractors

five and six times the very reasonable AT8M price.

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

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

## THE PARTS OF YOUR AT8M



### Astro-Tech AT8M Maksutov-Cassegrain Specifications

<b>Aperture</b> .....	200mm (8")
<b>Focal Length</b> .....	2400mm
<b>Focal Ratio</b> .....	f/12
<b>Optical Type</b> .....	Rumak-type Maksutov-Cassegrain
<b>Mirrors</b> .....	BK7 optical glass, aluminized and overcoated with quartz
<b>Corrector Lens</b> .....	BK7 optical glass, multicoated
<b>Secondary Mirror Obstruction</b> .....	57mm in diameter, 38% by diameter, 14.4% by area
<b>Resolving Power</b> (Dawes' Limit) .....	0.57 arc seconds
<b>Visual Limiting Magnitude</b> .....	14 maximum

<b>Tube Diameter</b> .....	8.63" (220mm) o. d.
<b>Tube Length</b> (with 2" accessory adapter) ..	27.25" (692mm)
<b>Tube Weight</b> (with 2" accessory adapter) .....	22 lbs. (10 kg)
<b>Mounting System</b> .....	22" long Vixen-style dovetail
<b>Focuser</b> .....	19-turn knob moving primary mirror
<b>Finder</b> .....	8 x 50mm in quick-release bracket
<b>Supplied adapters</b> .....	1.25" and 2" compression ring accessory holders, plus SCT rear cell adapter
<b>Lowest Usable Power</b> .....	44x (55mm eyepiece)
<b>Highest Practical Power</b> .....	320x (7.5mm eyepiece)
<b>Theoretical Maximum</b> .....	480x (5mm eyepiece)

Your **Astro-Tech AT8M** Maksutov-Cassegrain is usable for astronomical viewing simply by installing it on a suitable mount and adding a star diagonal and eyepiece. Any brand of eyepiece can be used, from a 2" 55mm for the lowest practical magnification (44x) to a 7.5mm (320x) for very high power use. Both 2" and 1.25" accessory adapters are supplied to let you use optional 2" or 1.25" star diagonals, image erecting diagonals, photo accessories, etc. A threaded adapter that emulates the 2" rear cell thread of a Schmidt-Cassegrain telescope is also included, to let you take advantage of the wide variety of available visual and photographic SCT accessories.

The focal length of your AT8M is ideal for high resolution/high power views of the Moon, planets, binary stars, and globular star clusters. Excellent views of the brighter nebulas, galaxies, and comets are also routine over a wide range of magnifications.

To calculate the magnification of an eyepiece used with your AT8M, divide the scope's focal length in mm by the eyepiece focal length in mm. For example, a 15mm eyepiece in your AT8M will give you a magnification of 160x (2400mm/15mm = 160).

**Astronomical Observing:** The theoretical maximum usable power available from this telescope is 480x, although this requires a 5mm eyepiece that provides a narrow and very dim 0.42mm exit pupil. A more practical maximum magnification for astronomical viewing with the AT8M would be 320x, using a 7.5mm 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 240x and above. Under less than ideal conditions, lower powers in the 100x to 150x range provide more consistently usable and pleasing images.

The widest possible field of view is about 1.18°, which can be achieved with a 2" 55mm (44x) Plössl eyepiece.

**Astrophotography:** The AT8M has been optimized primarily for high quality/high magnification visual observing that rivals that of a large apochromatic refractor, rather than astrophotography. Its long focal ratio does not lend itself easily to long exposure deep space imaging. However, it does an outstanding job of lunar and planetary imaging, using a webcam or DSI-type solar system imaging camera, a full-size CCD camera, or eyepiece projection with a 35mm single lens reflex or DSLR camera.

**Terrestrial Observing:** The AT8M can be used for occasional long distance daytime birding and nature studies under excellent seeing conditions, if mounted on a suitable high payload capacity altazimuth mount. However, its large aperture (about twice that of the typical largest dedicated terrestrial spotting scope) will limit its usefulness. The large aperture of the AT8M and the inherent high power of its long focal length will magnify the heat waves, dust, and "mirage" in our atmosphere to the point where terrestrial images usually become blurry and unusable.

**The Supplied Accessory Adapters:** Three accessory adapters are provided to attach visual and photographic accessories to the 2.3" rear cell thread on the back of your AT8M. One is a 2" accessory adapter that threads onto your AT8M rear cell. It uses a non-marring brass compression ring to hold your optional refractor-style 2" star diagonal, 2" camera adapter, etc.

The second is a non-marring 1.25" compression ring adapter that slips into the 2" adapter to hold optional 1.25" accessories (a star diagonal, camera adapter, terrestrial image erecting diagonal, 1.25" nosepiece DSI-type camera, etc.)

The third is a ring that threads onto your 2.3" diameter AT8M rear cell and steps it down to the standard 2" diameter 24TPI male thread that is used on a Schmidt-Cassegrain rear cell. This lets you use the wide variety of optional SCT accessories that are available (star diagonal, T-adapter, tele-extender, off-axis guider, etc.)

**Mounting the AT8M:** At a weight of 22 pounds (exclusive of diagonal, eyepiece, etc.), your AT8M requires a stable astronomical mount with a 30 pound or greater payload capacity for best viewing. A 22" long Vixen-style dovetail bar is mounted underneath the AT8M optical tube to let you easily balance your scope and any accessory combination you might choose to add. This dovetail bar lets you quickly mount your AT8M directly on any suitable high payload capacity German equatorial mount using a Vixen-style dovetail – such as a Celestron Advanced Series, Meade LX-75, Orion Atlas EQ-G, Vixen Sphinx Deluxe or Great Polaris Deluxe – with no other adapter required. All have the appropriate payload capacity to handle your AT8M.

**Collimation:** There are the three plastic press-fit plugs in the rear cell. These cover the six push-pull collimation screws of the primary mirror cell and central baffle tube assembly. Your AT8M has been carefully collimated at the factory and the collimation screws locked with a clear seal. It is unlikely that you will need to adjust the collimation of your AT8M, but it can be done by using the standard Schmidt-Cassegrain out-of-focus "star donut" method (in this case adjusting the primary mirror screws of the AT8M rather than the secondary mirror screws as is done with a Schmidt-Cassegrain).

**Cooldown time:** Like all closed Maksutov-Cassegrain systems, the thick meniscus lens and primary mirror of the AT8M will take some time to cool down to ambient temperature when taken outdoors on a cold winter evening. The cooldown time can be shortened by removing any star diagonal and the three plastic collimation screw plugs in the rear cell of the AT8M to expose the rear of the mirror cell, then placing the scope (meniscus end down) in an unheated garage or protected outdoor space for an hour or so before observing. This will allow the warm air inside the tube to rise and escape out the three one inch collimation screw apertures and the Cassegrain focus in the rear cell. Cover the rear cell with a light cloth to keep dust from entering the scope while it is cooling.

**Optional Astro-Tech Accessories:** Astro-Tech makes 1.25" and 2" star diagonals with state-of-the-art 99% reflectivity dielectric coat-

ings that nicely complement the performance of your AT8M. These diagonals are available from your Astro-Tech dealer to provide the maximum possible reflectivity and planetary detail.

**Finderscope:** A straight-through viewing 8 x 50mm finderscope and quick-release bracket are provided. The bracket slips into mounting shoe dovetail at the top left of the scope's rear cell. If you have your own finder, it can be installed in the provided mounting shoe. The slot in the mounting shoe is wider than in a standard Vixen-style shoe, but its locking screw is long enough to lock a Vixen-style finder bracket in place, although some shimming might be necessary,

**Caring for Your AT8M 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 which can damage the optics.

If dew remains on the scope when you bring it in after a night of observing, allow the optics to air dry at room temperature before putting the dust cap on the scope and storing it away.

If the corrector lens becomes dusty, smeared, or shows fingerprints or any other surface build-up, clean the corrector 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).

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, Canon, and Kodak all make suitable fluids. Do not drip the cleaning fluid directly on the corrector lens. Use the barely damp (not wet) cloth to gently wipe the lens surface clean, always moving from center to edge and turning the cloth frequently to keep a clean portion of the cloth always in contact with the lens. Blot the corrector 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 corrector 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 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 AT8M is finished in an automotive-grade paint. The 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 fingerprints. Avoid harsh chemical cleaners or organic solvents like benzene, alcohol, etc., as these may ruin the finish or affect the optical coatings if they accidentally drip on the corrector lens.

Never use the telescope terrestrially in the rain or in conditions where it may get wet. The telescope is not waterproof. If the telescope accidentally gets caught in the rain during terrestrial observing, immediately wipe off all water using a clean and dry soft cloth. If the 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 terms of the limited product warranty, and negates any guarantee.

**Caution! Never directly view the Sun with your telescope!** Never aim your AT8M at the Sun without having a professionally-manufactured solar filter mounted over the objective lens. Viewing the Sun through your AT8M 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.

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