



ASTRO-TECH AT6M

from Astronomy Technologies

Thank you for choosing the 6" f/12 **Astro-Tech AT6M** Rumak-type Maksutov-Cassegrain catadioptric optical system.

This instruction sheet will provide you with information on how to get the most out of your new Maksutov-

Cassegrain optical tube, 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 AT6M



Astro-Tech AT6M Maksutov-Cassegrain Specifications

Aperture	150mm (6")
Focal Length	1800mm
Focal Ratio	f/12
Optical Type	Rumak-type Maksutov-Cassegrain
Mirrors	both BK7 optical glass, aluminized and overcoated with quartz
Corrector Lens	BK7 optical glass, multicoated
Secondary Mirror Obstruction	57mm in diameter, 38% by diameter, 14.4% by area
Resolving Power (Dawes' Limit)	0.77 arc seconds
Visual Limiting Magnitude	13.4 maximum

Tube Diameter	6.7" (170mm) o. d.
Tube Length (with 2" accessory adapter)	21.5" (546mm)
Tube Weight (with finder & 2" adapter) ...	14.2 lbs. (6.45 kg)
Mounting System	7.85" long Vixen-style dovetail
Focuser	28-turn knob moving primary mirror
Finder	8 x 50mm straight-through dark crosshair finder in quick release bracket
Lowest Usable Power	33x (55mm eyepiece)
Highest Terrestrial Power	100x (18mm eyepiece)
Highest Practical Power	300x (6mm eyepiece)
Theoretical Maximum	360x (5mm eyepiece)

Your **Astro-Tech AT6M** Maksutov-Cassegrain is usable for day and night viewing simply by adding a star diagonal and eyepiece. Any brand of eyepiece can be used, from a 2" 55mm for the lowest practical magnification (33x) to a 6mm (300x) for very high power use. Both 2" and 1.25" accessory adapters are supplied that thread onto the rear cell of your AT6M to let you use optional 2" or 1.25" star diagonals, image erecting diagonals, photo accessories, etc.

The focal length of your AT6M 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 on the AT6M, divide the scope's focal length in mm by the eyepiece focal length in mm. For example, a 10mm eyepiece in your AT6M will give you a magnification of 180x (1800mm/10mm = 180).

Astronomical Observing: The theoretical maximum usable power available from this telescope is 360x, 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 AT6M would be 225x, using an 8mm 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 225x 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 1.5°, which can be achieved with a 2" 55mm (33x) Plössl eyepiece.

Astrophotography: The long focal ratio of the AT6M does not lend itself easily to long exposure deep space imaging. However, the AT6M does an outstanding job of lunar and planetary imaging, either using a DSI-type CCD solar system imaging camera or eyepiece projection with a DSLR camera or CCD imager.

Terrestrial Observing: The AT6M can be used for long distance daytime birding and nature studies if mounted on a suitable high

payload capacity altazimuth mount, such as the Astro-Tech Voyager. It is also a very good (but very high power) 1800mm (36x) f/12 telephoto lens for terrestrial photography.

Generally speaking, the maximum usable daytime power with a terrestrial scope in this size range is about 0.66x per mm of aperture (100x with an 18mm eyepiece on the AT6M). Attempts to push the daytime power beyond 100x often magnify the heat waves, dust, and "mirage" in our atmosphere to the point where the images become blurry and unusable. A 45x (40mm) to 72x (25mm) eyepiece is usually more satisfying for terrestrial use than 100x with the AT6M.

The Supplied Accessory Adapters: Two adapters are provided to thread onto the 2.3" rear cell thread of your AT6M. One is a 2" compression ring accessory holder that accepts 2" star diagonals, camera adapters, etc. The second is a thread-on ring that emulates the standard 2" rear cell thread used on Schmidt-Cassegrain telescopes. This lets you use any SCT thread-on accessories you might already have (star diagonals, camera adapters, etc.)

In addition, two additional slip-fit accessory adapters are provided. One is a 1.25" compression ring adapter that slips into the 2" holder mentioned above. This lets you use optional 1.25" accessories (star diagonal, camera adapter, terrestrial image erecting diagonal, DSI-type camera; etc.) The second is a standard T-adapter that also slips into the 2" holder and lets you use a DSLR for prime focus imaging (full disk lunar or terrestrial, for example).

Mounting the AT6M: At a weight of 14.2 pounds (exclusive of diagonal and eyepiece), your AT6M requires a stable altazimuth or astronomical mount with a 20 pound or greater payload capacity for best viewing. A 7.85" long Vixen-style dovetail bar is mounted on the underside of the AT6M optical tube. This lets you mount your AT6M quickly and directly on an Astro-Tech #ATV Voyager altazimuth mount; a Celestron Advanced Series or Meade LXD-75 German equatorial mount; or on a Vixen Sphinx or Great Polaris German equatorial mount with no other adapter required. All have the appropriate payload capacity to handle the AT6M.

The dovetail bar has a deep groove on one side to engage the mount dovetail's locking screw. There are two safety screws installed at the ends of this dovetail groove so that the scope cannot slip out of the mount, even if the mount's locking screw loosens during use.

You can also use the dovetail bar to piggyback the AT6M on a larger telescope using any accessory mounting system (such as those from Losmandy) that has a Vixen-style dovetail.

Collimation: There are the three plastic press-fit plugs in the rear cell that cover the six push-pull collimation screws of the primary mirror cell and central baffle tube assembly. Your AT6M has been carefully collimated at the factory and the collimation screws locked in place with a clear seal. It is unlikely that you will need to recollimate your AT6M, but it can be done by using the standard Schmidt-Cassegrain out-of-focus "star donut" method (in this case adjusting the AT6M's primary mirror screws of the AT6M 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 AT6M will take some time to cool down to ambient temperature when taken outdoors on a cold 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 AT6M 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: In addition to the Voyager altazimuth mount mentioned above, 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 AT6M. These diagonals are available from your Astro-Tech dealer to provide the maximum possible reflectivity and lunar/planetary contrast. An Astro-

Tech 45° viewing angle image-erecting 1.25" diagonal is available for terrestrial observing.

Finderscope: The supplied 8 x 50mm straight-through finderscope comes in a dual ring quick-release bracket with six collimating screws. The bracket fits into a mounting shoe dovetail located at the upper left rear of the scope.

The finderscope can be focused by loosening the trim ring behind its objective lens cell, screwing the objective in or out until star images are sharp, then tightening the trim ring to lock in the focus.

Caring for Your Scope 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, Nikon, 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 Finish: Your AT6M is finished in durable automotive-type paint with anodized components. The scope 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 or splash 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 AT6M at the Sun without having a professionally-manufactured solar filter mounted over the objective lens. Viewing the Sun through your AT6M 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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