30070 - 225 Power
Starwatcher Telescope

NOTES ON VIEWING

WARNING
CAUTION: DO NOT LOOK DIRECTLY AT THE SUN VIEWING THE SUN OR ANY LIGHT SOURCE WITH THIS OPTICAL DEVICE CAN CAUSE PERMANENT EYE DAMAGE.

Looking at or near the sun will cause instant and irreversible damage to your eye(s). Eye damage is often painless, there is no warning to the observer that the damage has occurred until it is too late. Do not point the telescope at or near the sun. Children should always have an adult supervising when using this optical product While observing through the telescope avoid touching the eyepiece or placing the tripod on uneven ground. Vibrations can cause the image in the telescopic field of view to move.

When observing at night allow a few minutes for your eyes to become “dark adapted” prior to observations. Use a red-filtered flashlight to protect your night vision when reading star maps, or inspecting components of the telescope.

Allow your telescope a chance to reach the surrounding temperature before observing.

Avoid setting up the telescope inside a room and observing through an open window. Temperature differences between inside and outside air may result in images appearing blurred or distorted due to temperature differences between inside and outside air.
Avoid looking across objects that produce heat waves, such as asphalt parking lots during the day. Images viewed may appear blurry or distorted

ROTATION OF THE EARTH

Please note if you are observing a celestial object (a planet, the Moon, a star, etc.) the object is in a rather slow but continuous motion through the telescopic field of view. This motion or movement is caused by the rotation of the Earth on its axis which results in an apparent motion of the object in the telescope’s field of view for example a planet, the Moon, a star, for practical purposes, are fixed in their positions during any 2 or 3 hour observing period, the stand on which the telescope is sitting (the Earth) rotates once every 24 hours underneath these fixed objects. To keep astronomical objects centered in the field, simply move the telescope on one or both of its axes (vertical and/or horizontal) as needed. At lower powers, astronomical objects will seem to move through the field slowly through the telescopic field of view. At higher powers, astronomical objects will seem to move through the telescopic field more rapidly.

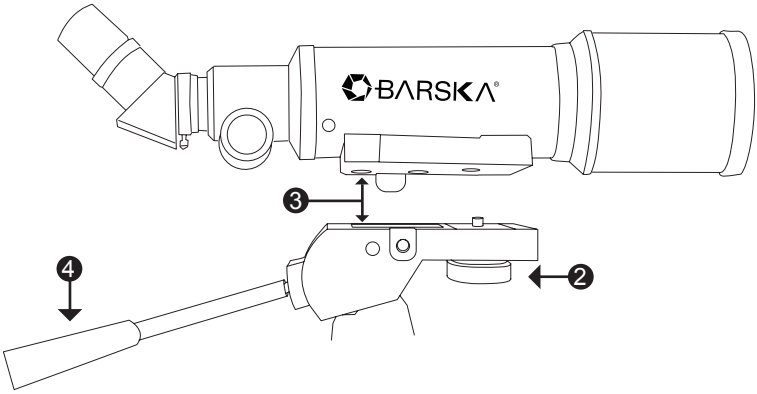
Parts of the Telescope

A. Telescope Optical Tube
B. Objective Lens
C. Eyepiece - 2 Included
D. Diagonal
E. Focus Knob
F. Mounting Plate and Screw
G. Mounting Adjustment Handle
H. Tripod Legs
I. Horizontal Motion Lock

Assembly

Unpack and lay out all of the parts in a large, clear area where you will have room to assemble the pieces.

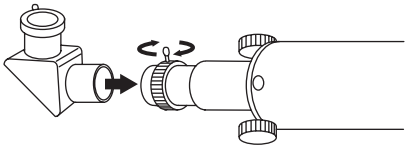
Initial Setup



1. Fully extend the legs of the tripod apart.
2. Under the plate of the tripod head is locking screw for the tripod head. See image above.
3. Place the telescope tube on the mount so that the screw in the mounting platform lines up with the holes in the telescope.
4. Screw mounting adjustment handle into the threaded socket at the rear of the mount.
5. Insert the diagonal into the end of the telescope tube.
6. Remove the dust cap from the large end of the telescope.
7. The telescope is now ready for use.

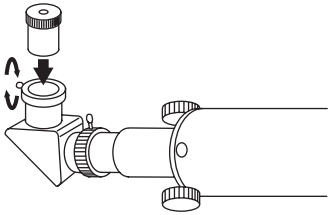
Attaching the Accessories

Diagonal



1. Remove the caps from the focus tube and the diagonal
2. Insert the chrome end of the diagonal into the focuser and lock into place by tightening the thumb screws on the focus tube. See image above.

Eyepiece



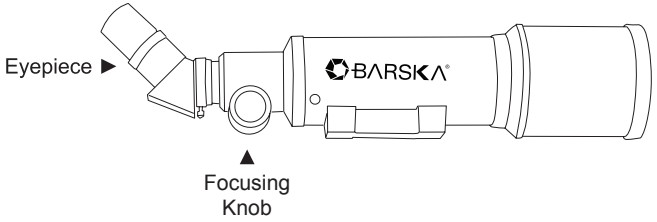
Included with the telescope are H4 mm and H20 mm eyepieces.

1. Select an eyepiece, place it into the diagonal. Lock the eyepiece it into place with the thumb screw. See image above.

Using The Telescope

With the telescope assembled as described above, you are ready to begin observations.

Finding Objects



Look through the eyepiece of the telescope and center the object in telescope's view. If necessary adjust the horizontal adjustment, vertical adjustment and mounting plate adjustment to re-position the telescope so that the desired object can be centered. See Notes on Viewing page 7 Note: When viewing through the telescope, items will appear right side up
Note: Depending on the desired object you may or may not need to change the eyepieces and or use the Barlow lens. When changing pieces on the telescope try not to move the telescope or tripod, the telescope may become misaligned.

Focusing

Once you have found an object in the telescope, turn the focusing knob in either direction until the image is sharp.
Note: When focusing, the tube will either extend or retract from the eye piece of the telescope.

Image Orientation

When observing with a diagonal, the image will be right side up

Magnification

The magnification (or power) of a telescope varies depending upon the focal length of the eyepiece being used and the focal length of the telescope.
The low power (H20) eyepiece is the best eyepiece to use for the initial finding and centering of an object. It presents a bright, wide field of view, ideal for terrestrial and general astronomical observing. The higher power (H4) eyepiece for lunar and planetary viewing. If the image starts to get out of focus decrease the magnification back down to a lower power.
The required magnification depends on the object being observed. The following general guideline is recommended for this purpose: Ideal viewing conditions are obtained if the magnification is not more than 15x - 20x the diameter of the objective lens, i.e. an optimal magnification of 100x -125x can be expected with 60mm diameter objective lens to observe most celestial objects. A lower magnification power is advisable for the observation of stars.
The field of view is wider so that the object for observation is more easily localized. The highest magnification power should only be used for particularly clear observations of the moon an object that is relatively close and exceptionally bright, so that good detail resolution is achieved at high magnification ratios.

Magnification within any telescope has its limits. These limits are determined by the laws of optics and the nature of the human eye. Most viewing will be done in the range of 30x to 100x. Higher powers are used mainly for lunar and sometimes planetary observing where you can greatly enlarge the image and the atmospheric conditions are near perfect. The images at extremely high powers magnify the image, but the contrast will be very low due to the high magnification. For the brightest images with the most contrast, start by using the lower power eyepiece with a smaller image scale.

The formula used to calculate the magnification of a telescope is:

Focal length of the telescope in mm / Focal length of the eyepiece in mm = Magnification

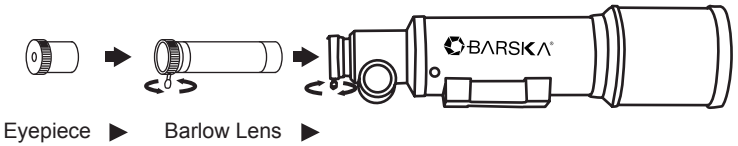
Example: 300mm Focal length telescope / 4mm Focal length of eyepiece = 75x magnification
The following magnification levels can be achieved when using the included H4 or H20 eyepiece and in conjunction with the 3x Barlow lens:

Telescope Focal Length (FL)	Eyepiece Focal Length (FL)		Magnification	Magnification with 3x Barlow Lens
300mm	H4	4mm	75x	225x
300mm	H20	20mm	15x	45x

Barlow Lens

The included 3x Barlow lens triples the magnifying power of each eyepiece. The highest magnification power of the Barlow lens should only be used for large and bright objects such as the moon and the brightest planets, as well as for nights with optimal observation conditions.

Attaching and Using the Barlow Lens



1. Remove the Diagonal from telescope (the image will be upside down)
2. Insert the Barlow lens directly into telescope and tighten screw on telescope.
3. Loosen the screw of the Barlow lens and start by using the H20 eyepiece, and insert it directly into the Barlow lens and tighten the thumb screw.

CARE AND CLEANING

With proper care, your telescope should rarely need any maintenance work. To maintain your telescope in the best possible condition, observe the follow suggestions:

NEVER attempt to clean the telescope internally or try to take it apart.

When not in use, replace all covers to keep dust and contaminants off the optical surfaces. Store in a cool, dry place

Blow away any dust or debris on the lens (or use a soft lens brush)

To remove dirt or fingerprints, clean with a soft cotton cloth rubbing in a circular motion. Use of a coarse cloth or unnecessary rubbing may scratch the lens surface and eventually cause permanent damage.

For a more thorough cleaning, photographic lens tissue and photographic-type lens cleaning fluid or isopropyl alcohol may be used.

Always apply the fluid to the cleaning cloth never directly on the lens.

Do not expose telescope to moisture

Avoid banging and dropping

1 YEAR LIMITED WARRANTY

TELESCOPES

BARSKA® Optics, as manufacturer, warrants this new precision optical product to be by this warranty. This warranty does not include damage caused by abuse, improper handling, installation, maintenance, normal wear-and-tear, unauthorized repairs purchaser and is not transferable.

This warranty applies only to products purchased in the United States of America.

In the event of a defect within 30 days, the consumer must return the defective unit to the BARSKA dealer (the place of purchase) at his/her own expense.

Beyond 30 days, BARSKA products should be sent to the following address for warranty repairs. Products must be packed carefully and sturdily to prevent damage in transit, and returned freight prepaid to:

BARSKA® OPTICS
855 Towne Center Drive
Pomona, CA 91767

For additional and updated information
please visit our website at www.barska.com

Please email service@barska.com or call 1.888.666.6769 for Return Merchandise Number (RMA#) before any returns. NOTE: All merchandise received without a valid RMA # will be returned to shipper at his/her own expense.

Please include all of the following when returning BARSKA products for service and/or replacement:

1. Please write your complete details (Name, Address, Telephone #, E-mail address, RMA#, etc.)
2. Purchase receipt or Proof of Purchase. (Original/Copy)
3. A brief explanation of the defect.
4. A Check/Money Order of $25.00 cover inspection, shipping and handling.

*Please allow 6-8 weeks for delivery.

This product will either be replaced or repaired at the discretion of the warrantor. If it's a discontinued item, we will replace the product with an equivalent product. Should the repair not be covered by this warranty, an estimate will be sent for your approval. Non-warranty repairs or refurbishing of your optical products are always provided at a reasonable cost.

BARSKA® shall not be liable for any consequential, incidental and/or contingent damages whatsoever. We will not pay shipping, insurance or transportation charges from you to us, or any import fees, duties and or taxes. This warranty supersedes all previous BARSKA warranties.