



TELESCOPE  
**STARWATCHER**  
**300 POWER 40070**  
HIGHEST ATTAINABLE POWER



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

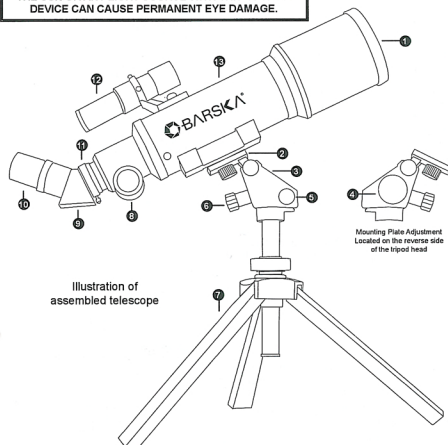


Illustration of assembled telescope

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**Parts of the Telescope**

1.	Objective Lens
2.	Mounting Plate and Screw
3.	Tripod Head
4.	Mounting Plate Adjustment
5.	Horizontal (Right to Left) Adjustment
6.	Vertical (Up or Down) Adjustment
7.	Tripod legs
8.	Focus Knob
9.	Diagonal
10.	Eyepiece - 2 Included
11.	Focusing Tube
12.	5x24 Finderscope with Bracket and Sight Tube
13.	Telescope Optical Tube

# 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

See Figure 1

1. Fully extend the legs of the tripod apart
2. Under the plate of the tripod head is locking screw for the tripod head
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. Keep telescope in place by tightening the mounting plate adjustment
5. Remove caps from telescope

**Note:** When mounting the parts ensure that the securing screws are not tightened too tightly. Tightening too tightly could result in damage the parts or the internal thread of the holders.

## Attaching the Accessories

### Finderscope

See Figure 2

1. Remove caps from the eyepiece of the finderscope
2. Remove the two small, silver thumbscrews located at the back of the telescope tube
3. Place the finderscope bracket over the two screws, lining up the holes on the finderscope bracket with those of the screws
4. Replace the two small, silver thumbscrews back on to the screws to secure the finderscope on to the telescope optical tube

### Diagonal

See Figure 3

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

### Eyepiece

See Figure 4

Included with the telescope are SR4 and K20 eyepieces. The K20 eyepiece has a 20x magnification, the SR4 eyepiece has a 100x magnification.

1. Select an eyepiece, place it into the diagonal. Lock the eyepiece into place with the thumb screw. See Magnification page 5



Figure 1

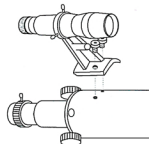


Figure 2

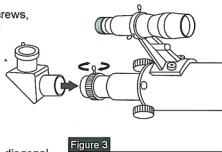


Figure 3

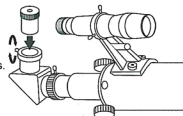


Figure 4

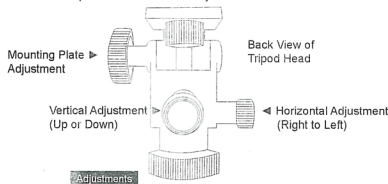
## Barlow Lens

The included 3x Barlow lens triples the magnifying power of each eyepiece. See Barlow Lens page 6

## USING THE TELESCOPE

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

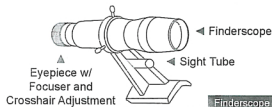
When using the telescope you may need to adjust one or all three of the adjustments. To re-position the telescope so that the desired object can be seen



## Aligning the Finderscope

The finderscope is your sighting aid. The telescope itself sees a small portion of the sky that you must have the finderscope aligned on a target to start observing with. Locating objects simply by looking in the main telescope would be very difficult. Even at the telescope's lowest magnification, it is still far too much magnification for locating objects easily. Basically, a finderscope is a tool for bringing objects into your telescope's field of view. Included with the telescope is a 5x24 finderscope.

1. Locate a distant fixed daytime object. Land objects during the daytime are a good way to become get familiar with the functions and operations of the telescope. At night if it is visible try observing the Moon or a bright star first.



2. Position the telescope so that the objective lens is pointing at the general direction of the desired object.
3. On the mount of the finderscope there is a sight tube for quick targeting. Generally viewing through the sight tube, it should then, also be somewhere in the finderscope's field of view.
4. Look through the finderscope and focus the image by rotating the eyepiece. The cross hairs will move while focusing.  
**Note:** When viewing through the finderscope at land objects, items will appear upside down, this is normal.
5. If necessary adjust one or all three of the adjustments; the horizontal adjustment, vertical adjustment and mounting plate adjustment to re-position the telescope so that the desired object can be centred in the cross hairs of viewfinder.
6. Once the object is centred in the viewfinder, it should then, also be somewhere in the main telescope's field of view.

### Finding Objects



1. With an aligned findscope, 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 centred. 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 findscope may become misaligned.

### Focusing

1. 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

1. When observing with a diagonal and barlow lens, the image will be right side up
2. When observing with the findscope the image will be upside down

### 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 (K20) eyepiece is the best eyepiece to use for the initial finding and centring of an object. It presents a bright, wide field of view, ideal for terrestrial and general astronomical observing. The higher power (SR4) 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: 400mm Focal length telescope / 4mm Focal length of eyepiece = 100x magnification

The following magnification levels can be achieved when using the included SR4 or K20 eyepiece and in conjunction with the 3x Barlow lens:

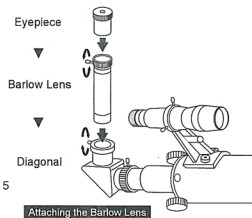
Telescope Focal Length (FL)	Eyepiece Focal Length (FL)	Magnification	Magnification with 3x Barlow Lens
400mm	SR4 4mm	100x	300x
400mm	K20 20mm	20x	60x

### 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. Insert the barlow lens directly into the diagonal and tighten the thumb screw on the diagonal.
2. Loosen the thumb screw of the Barlow lens and start by using the K20 eyepiece, and insert it directly into the barlow lens and tighten the thumb screw.
3. Focusing is then completed in the customary manner See Focusing page 5





# 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 centred 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.

## 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.

# CARE AND CLEANING cont.

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

## TECHNICAL DATA

Telescope Type	Refractor
Highest Magnification	300x
Lowest Magnification	20x
Focal Length	400mm
Objective Lens	70mm
Finder Scope	5x24
Mount	Pan Head
Eyepiece 1	SR4
Eyepiece 2	K20
Barlow Lens	3x
Erecting Image Eyepiece	1.5x
Moon Filter	No
Tripod	Table Top
Optical Coating	Fully Coated
Telescope and Tripod Weight	4.4 lbs / 2 kg



## 1 YEAR LIMITED WARRANTY

### TELESCOPES

BARSKA® Optics, as manufacturer, warrants this new precision optical product to be free of original defects in materials and/or workmanship for the length of time specified by this warranty. This warranty does not include damage caused by abuse, improper handling, installation, maintenance, normal wear-and-tear, unauthorized repairs or modifications and tampering in anyway. This warranty is limited to the original purchaser and is not transferable.

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

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  
1721 Wright Ave.  
La Verne, CA 91750, USA

For additional and updated information  
please visit our website at [www.barska.com](http://www.barska.com)

Please email [info@barska.com](mailto:info@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.