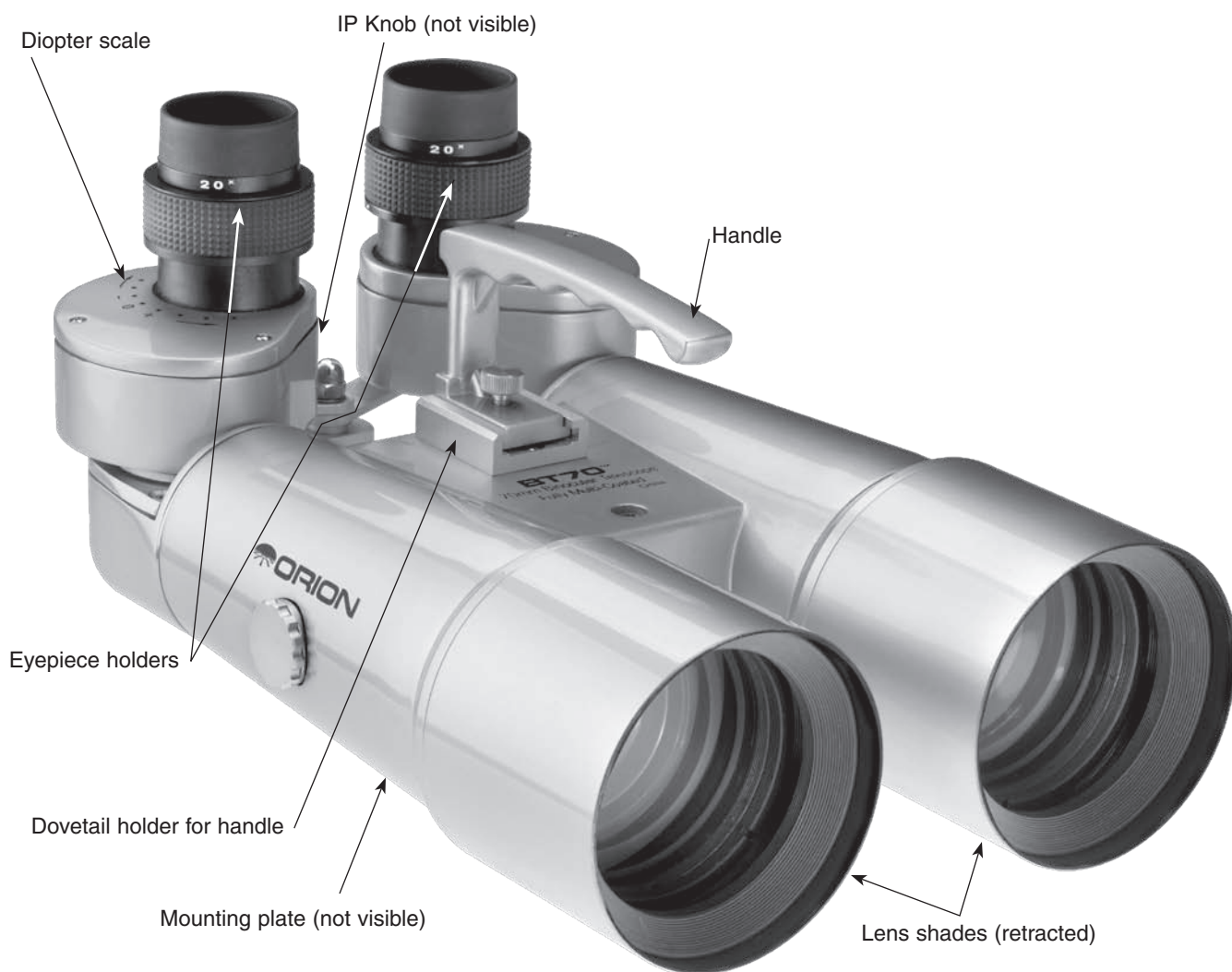


# INSTRUCTION MANUAL

# Orion® BT70 Binocular Telescope #9547



**Figure 1.** The Orion BT70 Binocular Telescope.

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*Congratulations on your purchase of a pair of quality Orion binoculars.* The BT70 Binocular Telescope provides the large light grasp you need for astronomical observation, but unlike a telescope, allows you to use both eyes simultaneously for viewing. This results in better image resolution, contrast, and brightness than a similar sized telescope can provide.

The BT70 is a true binocular telescope, with optical quality and features you'd expect of a fine astronomical instrument. The included eyepieces provide 20x magnification, but optional interchangeable eyepieces (available from Orion) let you vary the magnification for deep-sky, solar system, and terrestrial viewing - with 3D-like depth of field! The 90° eyepiece viewing angle makes nighttime observing more comfortable, as the binoculars don't need to be positioned above your head when looking upwards. The rugged body construction and waterproof design ensure the BT70's will provide viewing enjoyment for years to come.

Please take the time to read this instruction sheet before using your new binoculars.

***WARNING Never look directly at the Sun through your binoculars without professionally made solar filters, even for an instant, or permanent eye damage could result. Young children should use these binoculars on sunny days only with adult supervision.***

### **Using a Tripod**

When observing with large-aperture binoculars like the Orion BT70s, a sturdy photo tripod or altazimuth mount is required. This is because the weight and magnification of the binoculars make it impossible to hold them steady with your hands.

To attach the BT70 to a photo tripod, simply thread the tripod's 1/4"-20 mounting stud into the threaded hole in the BT70's mounting plate. The tripod must be able to support approximately 10 lbs., otherwise it may not be stable enough for the BT70.

To attach the BT70 to an altazimuth mount that utilizes a dovetail holder, like the Orion VersaGo mount, an optional dovetail L-bracket is needed. The L-bracket connects to the BT70's mounting plate, and has a dovetail bar that goes directly into the mount's dovetail holder. Contact Orion to order this optional L-bracket.

### **Inserting the Eyepieces**

Perhaps the most unique feature of the BT70 is its ability to change eyepieces. The two supplied eyepieces provide a magnification of 20x, but other magnifications can be obtained by purchasing optional eyepiece sets from Orion.

To install the eyepieces, first remove the cover caps from the binoculars and eyepieces. Then, simply insert the eyepieces into the binoculars' eyepiece holders (Figure 1). Push the eyepieces into the holders until they are fully

seated. To remove the eyepieces, just pull the eyepieces out of their holders.

### **Extending the Lens Shades**

Another nice feature of the BT70 is its extendable lens shades (Figure 1). These increase image contrast by preventing glare (unwanted stray light) from entering the objective lenses of the binoculars. They also slow the formation of dew on the objective lens exteriors. To use the lens shades, grasp them with your fingers, and pull them outwards.

You will need to retract the lens shades to fit the binoculars into its case.

### **Adjusting the Distance Between Your Eyes (Interpupillary Distance)**

Adjusting the interpupillary (IP) distance of the BT70 is incredibly easy. Simply turn the chrome IP knob located between the eyepieces. Rotate the knob until the distance between the eyepieces matches the distance between your eyes. When properly adjusted, you should see a single, round field of view when looking through the binoculars. Make this adjustment before you attempt to focus the binoculars.

### **Focusing**

The BT70 binoculars utilize individual focus eyepieces. This makes the binoculars mechanically more rugged than similar center-focus models, and generally maintains optical alignment better. For astronomical observation, individual focus eyepieces are usually preferred.

Pick an object in the distance to view. At night, best focus will be achieved by focusing on a bright star. Cover your right eye (or cover the right objective lens of the binocular) and focus the left eyepiece by rotating the rubber grip ring on the eyepiece holder until the image appears clearest. Then cover your left eye (or cover the left objective lens of the binocular) and focus the right eyepiece by rotating the eyepiece holder until the image appears clearest. The binoculars are now focused. If you want to view an object at a different distance, re-focusing of both eyepieces is required. Also, changing eyepieces may require some slight refocusing.

For astronomical observation, all objects will always appear focused at the infinity focus point. This means you only need to focus the binoculars once per observing session. This also means you can take note of the diopter scale (Figure 1) setting for each eyepiece when focused on an astronomical object, and return to those settings when observing another night. You will find this to be a great convenience!

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Since everyone's eyes focus images slightly differently, different observers will need to refocus the binoculars for their own vision.

### **Fold-Down Eyeguards**

BT70 binoculars feature fold-down eyeguards on the eyepieces. The eyeguards are usually left in the up position for use without eyeglasses, as this helps prevent glare from entering between your eye and the eyepieces. To use the binoculars with eyeglasses, you will need to fold the eyeguards down in order to get your eyes close enough to the eyepieces to see the entire field of view.

### **Waterproof Binoculars**

The BT70 is nitrogen-purged and sealed to be waterproof and internally fogproof. While it is impervious to rain, wind, splashing, and humidity, do not immerse the binocular in water under any circumstances. If the binocular becomes wet with fresh water, merely blot it dry with a clean cloth and clean the lens surfaces as outlined below. Saltwater should be rinsed off completely and the binocular then blotted dry and its lenses cleaned as outlined below. If the binocular body becomes dirty, it can be cleaned with warm water and a clean cloth. If extremely dirty, or oily, clean the body with a dilute solution of warm water and mild soap on a cloth, then rinse with clean water and blot dry. Do not clean lens surfaces with soap and water!

### **Cleaning and Care of Binocular Lenses**

The lens surfaces of Orion binoculars are coated with anti-reflection multi-coatings that can be damaged with careless handling. Avoid touching lens surfaces with fingers or any coarse material. All optics, even if stored, should be cleaned at least once a year or whenever they are dirty. The dust that builds up on coatings promotes mold growth, which etches glass and destroys coatings. Avoid over-cleaning; it can also damage the coatings. Always use lens cleaning tissue and fluid that are specifically designed for multicoated lenses. Do not use fluids or tissues that are for eyeglasses or household use. Never attempt to disassemble the binocular or eyepieces in order to clean them; this can also void the warranty.

To clean the binocular (and eyepiece) lenses, first blow off the lens with a blower bulb or gently wipe the lens with a lens cleaning brush to remove the larger particles. Put a few drops of lens cleaning fluid on a fresh piece of lens cleaning tissue (never on the lens) and gently wipe the lens. Quickly wipe the excess fluid with a new, dry piece of lens cleaning tissue. For larger lenses, clean only a small area at a time, using a new tissue each time. On excessively dirty lenses, wipe across the lens using one stroke for each tissue, alternating wet and dry. Always avoid excessive pressure or rubbing when wiping, as wiping too hard can scratch the lens.

### **Storage and Transport**

The BT70 binoculars come with a heavy-duty case for safe storage and transport. We recommend always keeping the

binoculars in their case with the cover caps on when not in use. The case has a lock on each latch for extra security. Use one of the supplied keys to lock and unlock the latches. A removable shoulder strap is also provided for ease of transport.

Avoid unnecessary shocks to the binocular, whether it is in its case or not. Although the BT70 is designed to be mechanically rugged, excessive impacts may cause the optics to become misaligned. This is not covered by the warranty.

A metal carry handle is supplied with the BT70. This connects to the dovetail holder on the binoculars, which is located just in front of the eyepieces (Figure 1). Slide the handle's base into the dovetail holder, and secure it in place with the thumbscrew. The handle comes in quite handy when attempting to mount the BT70 onto a tripod. Before the BT70 can be placed into its case, the handle must be removed.

Allow the optics to slowly adjust to cold weather by storing the instrument (in its case) in a cold area, such as an unheated garage or the trunk of a car, for a few hours before use. When bringing the instrument back inside a warm house, open up the case, remove the binoculars, remove the cover caps, and let everything dry out. The binoculars should be stored in a cool, dry place to prevent mold growth, which can damage the optics. This is not covered by the warranty.

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## Specifications

Objective lenses:	70mm clear aperture, air-spaced achromatic doublets	Body design:	All metal construction, single piece body design, waterproof
Magnification:	20x eyepieces included, other magnification eyepieces available from Orion	Interior:	Glare threaded, baffled, blackened
Focusing:	Individual focus eyepieces	Lens shades:	Retractable
Field of view:	3.2° for the included eyepieces	Weight:	8 lbs. 15 oz.
Eye relief:	16mm for the included eyepieces	Mounting provision:	1/4"-20 mounting plate
Close focus:	50 feet	Carry handle:	Included, metal, removable
Prisms:	BAK-4, porro, provide 90° viewing angle	Dust covers:	Metal covers for objective lenses, rubber caps for eyepieces and eyepiece holders
Anti-reflection coatings:	Fully multi-coated	Case:	Custom foam-lined hard carry case included, removable shoulder strap, 2x lock latches with keys
Eyeguards:	Fold-down, rubber		

## One-Year Limited Warranty

This Orion BT70 Binocular Telescope is warranted against defects in materials or workmanship for a period of one year from the date of purchase. This warranty is for the benefit of the original retail purchaser only. During this warranty period Orion Telescopes & Binoculars will repair or replace, at Orion's option, any warranted instrument that proves to be defective, provided it is returned postage paid to:

**Orion Warranty Repair, 89 Hangar Way, Watsonville, CA 95076.**

This warranty specifically does not cover abuse, modification, mishandling, self-repair, or normal wear and tear (including mold growth). Binocular collimation (alignment of the optics) is specifically not covered beyond the 30-day return period. Binoculars go out of collimation only if they are dropped or bumped. Binocular collimation (and cleaning) are considered routine maintenance and should be done every five years, or when necessary.

If the product is not registered, proof of purchase (such as a copy of the original invoice) is required. This warranty gives you specific legal rights, and you may also have other rights, which vary from state to state. For further warranty service information, contact: Customer Service Department, Orion Telescopes.