INSTRUCTION MANUAL

Orion® StarBlast™ 62mm Compact Travel Refractor

#10149

ORION
TELESCOPES & BINOCULARS
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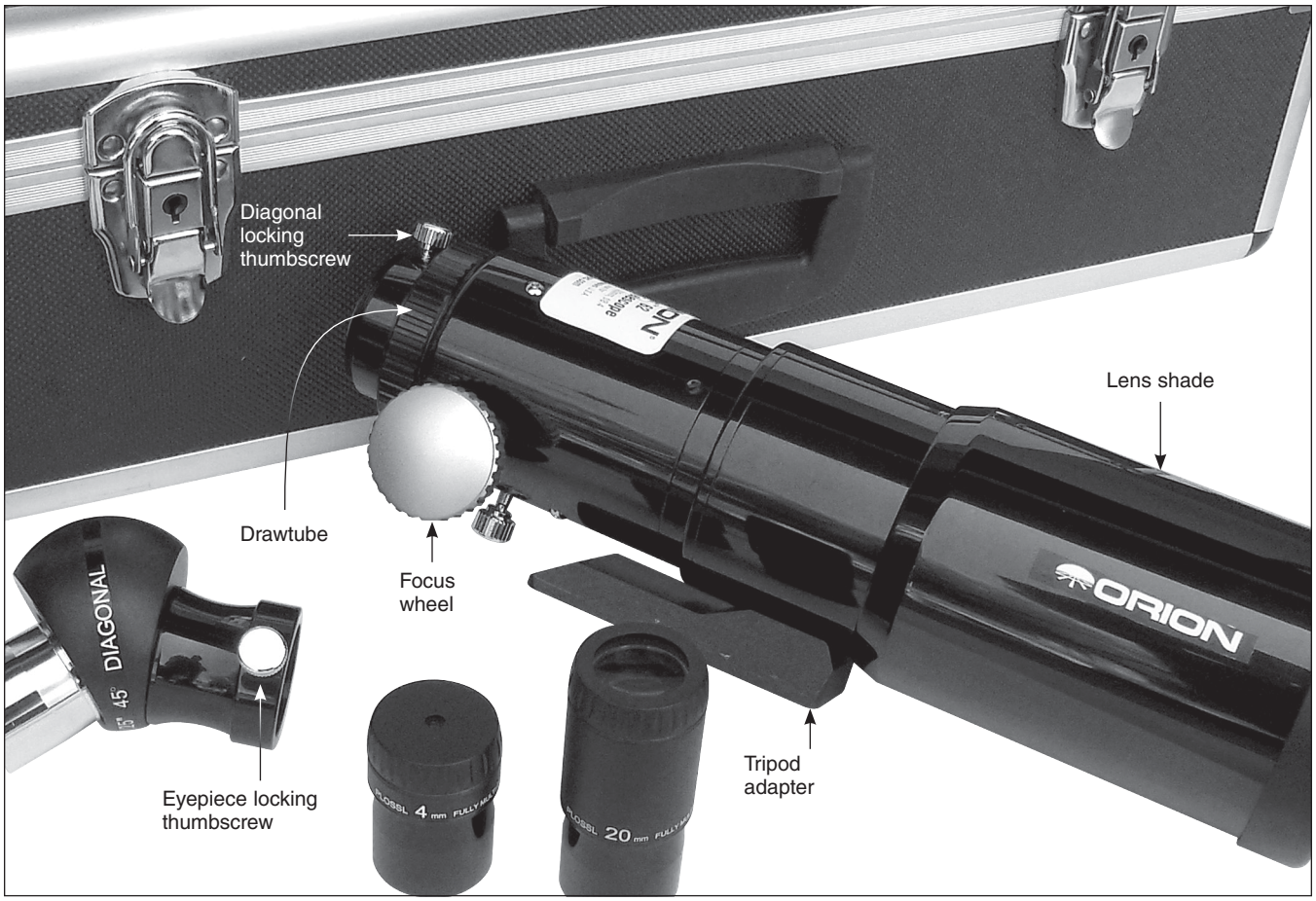

Figure 1. The StarBlast 62mm Compact Travel Refractor

Congratulations on your purchase of the Orion StarBlast 62CTR Telescope. The high resolution optics in this instrument will allow you to see many amazing sights on both the ground and in space. With the standard configuration this telescope gives magnified, correct-image views that allow easy tracking of moving objects such as birds or objects in the night time sky. With two quality Plössl eyepieces you can get either wide field views that are perfect for bird-watching, landscape viewing or wide field astronomy and a high-power view that will let you zoom in on the moon or see the rings of Saturn. The StarBlast 62 assembles in seconds and is a highly portable, compact and extremely versatile telescope!

Included with the Orion StarBlast 62 Refractor:

- Carrying Case
- Starblast 62 Optical Tube assembly (The Telescope) or OTA, with Retractable Lens Shade
- Objective Dust Cap (also called a lens cap)
- Drawtube Dust Cap
- 1/4x20 Tripod Adapter Block (installed on the bottom of the Optical Tube Assembly)
- 20mm, 1.25" Plössl Eyepiece (26X), with dust caps
- 4mm 1.25" Plössl Eyepiece (130X), with dust caps
- 45-Degree Erecting Prism Diagonal, with dust caps
- Camera Adapter Tube

Assembly Instructions for Viewing

1. Remove contents of the carry/shipping case.
2. Holding the telescope tube remove the lens caps on both ends and extend the sliding lens shade from the front of the tube (**Figure 2**).

The front objective dust cover simply slips off, the drawtube dust cover also just inserts into the drawtube that moves during focusing, but it may be held firmly in place by a thumbscrew on the rear of the telescope. SAVE THE DUSTCAPS for later storage of your StarBlast 62

3. Remove the dust caps from the 45 Degree Diagonal, and insert it into the back of the telescope. Secure in place with the Diagonal Locking Thumbscrew (**Figure 3**).

Figure 2.

Figure 3.

Figure 4.

Figure 5.

The Diagonal Locking Thumbscrew may need to be loosened to insert the Diagonal. Tighten the thumbscrew to secure the diagonal.

4. Insert the 20mm Plössl Eyepiece into the Diagonal; secure with the Eyepiece Locking Thumbscrew (**Figure 4**).
5. Attach the assembled telescope to a photographic tripod using the 1/4x20 receptacle on the bottom of the tripod (**Figure 5**).

The tripod is optional with the StarBlast 62. Orion offers the Paragon and the VersiGo tripods that are excellent choices to securely mount this telescope.

The StarBlast 62 tripod block will also fit "Vixen style" dovetail mounting systems. The tripod adapter block simply slides into the groove on the top of a mount with a "Vixen Dovetail" and the screw on the side of the doetail adapter on the mount, locks the telescope into place. The StarBlast 62 will also fit

WARNING: ***Do NOT look at the Sun without a professionally made*** **solar filter** ***on the telescope; serious eye damage may result if you look at the Sun with any unfiltered optical instrument. Do not leave the telescope unsupervised around children. Always cover the lenses when leaving the telescope in direct sunlight.***

nicely on the motorized StarBlast AutoTracker Mount (for automatic tracking of objects in the night sky), and the AZ4 mount with slow motion controls (both of which have vixen dovetail mounting systems). (**Figure 6**)

6. Point the telescope at a target and focus! Focusing the telescope is accomplished by simple turning the large silver focus wheels on either side of the back of the telescope (**Figure 7**).

We suggest that you practice during the daytime to get a feel for how to point and focus your new telescope. With low power, aiming is simply done by sighting along the tube. The back end of the telescope has set screws that cover mounting holes for an optional dovetail mount for a finderscope. For astronomy, the Orion Red Dot finder is an effective and inexpensive option.

Changing the Telescope's Power

To switch to the higher power, loosen the eyepiece thumbscrew and remove the 20mm Plössl. Replace the dust caps on the eyepiece and put it in the case for safe storage. Remove the 4mm eyepiece and place it in the diagonal, focus.

The StarBlast 62 uses standard 1.25-inch (1.25") diameter eyepieces (also called oculars). The next most popular size is 2" eyepieces, but these are too large to fit this telescope. Inexpensive toy telescopes use 0.96" and are too small. By changing 1.25" eyepieces, you change the power. To get the power with any 1.25" eyepiece, divide the focal length of the telescope by the focal length of the eyepiece (they are labeled by a number in mm, this is the eyepiece focal length). The StarBlast 62 has a 520 focal length; therefore, POWER = 520/Eyepiece focal length (in mm). Using the standard 4mm eyepiece the power is 520/4 = 130x.

Orion sells many additional, quality, 1.25"eyepieces that will complement your telescope. Good first choices would be a 25 or 32mm wide angle eyepiece for even wider, brighter views and the Orion 1.25" "Shorty" Barlow Lens, which doubles the power of any 1.25" eyepieces.

NOTE: While high power might sound tempting, low powers give sharper, wider fields of view that most people prefer. High power is usually best used only when you are looking to see detail on the Moon or on a planet like Jupiter or Saturn. High powers magnify the object being viewed, but also amplify the impact of air turbulence (what astronomers call "seeing"), so views are generally not as sharp, but this will vary with observing conditions.

Figure 6.

Figure 7.

Your First Night Out, Hints for Using Your New Telescope

For astronomy, we suggest your first target to be a partially illuminated moon, around first quarter is ideal. The StarBlast 62 will allow you to see hundreds of craters and the lunar "seas." The Orion Learning center has star charts and maps, along with articles on how to use a telescope.

For a good astronomical viewing experience, Orion always recommends:

1. **The "Golden Rule for Astronomy" – Seek out an observing site as far from city lights as possible.**

If you cannot get away from the city, go to a location away from streetlights and other sources of nighttime light pollution. Astronomical objects are very dim, and light pollution strongly

impacts how much you can see through **any** telescope. Your StarBlast 62 is the perfect companion to take camping! From a "dark sky site" – a place remote from city lights where the Milky way is visible – there are hundreds of objects that can be found with the StarBlast 62 – See Appendix A

Even if "remote "observing is the "Golden Rule" for astronomical observing, the StarBlast 62 has high resolution, quality optics and will be able to show you objects from near or within a city – the moon, the planets and the brighter star clusters are within reach of this telescope. Refer to a star chart or Orion's online learning center to learn where to look.

2. Start with Low Power

The 20mm low power eyepiece means the images you get are **brighter** and you get a **WIDE field of view**, so it is much easier to find objects with your StarBlast 62 at low power. The bigger the number on the eyepiece the sharper and brighter the view will be. After you locate an object in low power, switch to the high power eyepiece to see if the view is better.

3. Don't View through Windows

The optics in your StarBlast 62 have been polished to an accuracy of a millionth of an inch. Window glass is thousands of times less accurate; by looking through a window, you are effectively putting a "distorting warp filter" in front of your telescope, and views will never be sharp. That said, you can accomplish some casual daytime or lunar viewing through a window at low power, but the view will never be sharp.

4. Take the Proper Tools with You

a. Dress warmly, if you go out in wintertime; Orion's view is that you can never overdress in winter – hats, gloves, insulated shoes, layers of jackets, etc.

b. Take binoculars – they are the perfect complement to a telescope and will help you find larger objects in the nighttime sky or terrestrial targets on the ground. A good general binocular for astronomy is a 10x50 size – 10 power and with 50mm diameter lenses.

c. Bring a star chart – this will help you find your way around the night sky. Better ones, and astronomy guidebooks will show you how to "star hop" to find faint objects outside the solar system like star clusters and nebula.

4. Attend a "Star Party"

d. It's always fun to share astronomy. Larger cities have local astronomy clubs that will tell you the best places to observe and will hold public observing events that can give you great tips on using a telescope and what's good to look at during the night (this varies during the year!!!).

For many more tips on observing, star charts, and much more help in using a telescope, go to www.telescope.com/community.

Photography Through the StarBlast 62

Single Lens Reflex or SLR cameras work best with a powerful lens like the StarBlast 62. It is simple to attach a SLR Camera:

5. Remove you camera lens and place a standard "T-Ring" in the camera body where the lens normally goes. These vary with camera brand and are available through Orion or many camera stores.
6. Remove the eyepiece and diagonal from the back of the StarBlast 62.
7. Thread on the Standard T-thread Camera Adapter (T-Adapter) onto the back of the StarBlast 62.
8. The T-Ring in the camera body will thread onto the t-adapter. The StarBlast is now directly coupled onto your camera and it acts like a 520mm telephoto lens! Focus and center your target through the camera viewfinder.

The Starblast 62 can be used with *Smart Phone Cameras* and cameras that do not have removable lenses (non-"reflex" camera, such as simple point and shoot cameras) by using the optional Orion SteadyPix camera adapter. To use the SteadyPix, take the 45 degree diagonal off the telescope, place the eyepiece directly into the drawtube of the telescope and secure it with the thumbscrew. Clamp the SteadyPix around the back of the telescope and place your camera on the SteadyPix. Look through the viewfinder of the camera to focus and center the target; in this mode, the image will be inverted through the camera viewfinder.

Taking Care of the StarBlast 62

The StarBlast 62 is a ruggedly build quality, optical instrument; if you don't drop it or toss it around/handle it roughly while out in the field it should never need service or adjustment. How to care for the StarBlast 62:

a. Keep it clean – wipe dust from the surfaces (not the lens) if needed.

b. Keep the lens covers on the telescope when not in use – if you do always do this, you may never need to clean the telescope lenses.

c. Use a lens brush and optical cleaning solution/tissue if you get fingerprints, etc. on the lenses and they require cleaning for sharp views. Cleaning kits are available at better camera stores and Orion.

Specifications

Telescope diameter:	62mm
Optical System:	4-element Refracting telescope
Telescope Focal Length	520mm
Eyepiece Diameter:	Standard 1.25-inch
Weight (OTA Only):	3.1 Lbs.
Minimum Length (focuser racked in, dust caps on and Lens shade retracted):	12.75 inches
Maximum Length (Lens shade extended, diagonal and 20mm eyepiece installed, focus racked all the way out):	21.25 inches
Resolution Power:	1.87" (Seconds of Arc)
Light Gathering Power:	78 times the light gathering power of a dilated human eye (assumes 7mm pupil size)
Limiting Visual Magnitude (faintest star visible):	12.5
Solar Filter Size	Orion 7745, 3.68"(this filter has a slightly oversize cap, but can be secured onto the front of the StarBlast 62 with the three adjusting/lock screws on the solar filter).
Focuser:	Single Speed “Crayford” Style

Appendix A – Deep Sky Observing with the Orion 62mm CTR Telescope

The Starblast 62 is a powerful, little telescope! It will show you all the Messier Objects (the best deep sky objects) and many more astronomical wonders.

During the final testing of the Orion StarBlast 62 our development team took the telescope to Deep Sky Ranch, a dark sky site 90 miles from the San Jose, CA airport in Paicines, California. Below is a log of objects we observed over a couple of hours spread over two nights of testing in February of 2013. These objects were observed without filters and the standard 20mm eyepiece (at 26 power).

Gaseous Nebulas (Emission Nebula)

- M42 (The Orion Nebula) – including splitting the trapezium
- M78
- M97
- NGC 2359 – Thor’s Helmet
- NGC 2467
- Witch Head Nebula (Reflection Nebula near the star Rigel)
- M76 – Planetary Nebula
- The Flame Nebula (Next to Zeta Orion)
- M57 (The Ring Nebula)
- M8 (The Lagoon Nebula)
- M20 (The Trifid Nebula)
- M16 (The Swan Nebula)

- M17 (The Swan Nebula)
- M27 (The Dumbell Nebula)
- M1 – The Crab Nebula, a Supernova remnant
- The California Nebula, NGC 1499
- NGC 2174
- Flame Nebula near Zeta Orionius
- M76
- NGC 2392
- IC443 – The Jellyfish Nebula in Gemini- a Super Nova Remnant
- **Open Star Clusters**
- M46
- M47
- M45 (The Pleiades)
- M44 (The Beehive)
- M41
- M35 and companion Star Cluster
- 2451 – Open
- M67
- The Double Cluster in Perseus! (NGC 869 & 884)
- M36
- M37
- M38
- NGC 2420
- NGC 2281
- **Globular Star Clusters**
- M92
- NGC 5139 (Omega Centauri)
- M4
- M80
- M22
- M28
- NGC 5297
- NGC 6939
- **Galaxies**
- M81 & M82
- M65/M66
- M108
- NGC 2903
- 2613
- M106
- NGC 3344 – Very faint, but there!
- M51
- M101
- NGC 5128
- M86
- M99 (Faint!)

One-Year Limited Warranty

This Orion product 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. Proof of purchase (such as a copy of the original receipt) is required. This warranty is only valid in the country of purchase.

This warranty does not apply if, in Orion's judgment, the instrument has been abused, mishandled, or modified, nor does it apply to normal wear and tear. This warranty gives you specific legal rights. It is not intended to remove or restrict your other legal rights under applicable local consumer law; your state or national statutory consumer rights governing the sale of consumer goods remain fully applicable.

For further warranty information, please visit www.OrionTelescopes.com/warranty.

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