

Astronomy tests Oberwerk's 45° 70mm Binocular Telescope

Superb optics, high-quality workmanship, and interchangeable eyepieces make this product a winner. **by Phil Harrington**

It should be no secret that I love big binoculars. Viewing the universe with both eyes is a more personal experience than squinting through a telescope. So, when I was given a chance to review Oberwerk's 45° 70mm Binocular Telescope (BT-70-45), I jumped at the opportunity.

Oberwerk Corp. from Dayton, Ohio, introduced the BT-70-45 in the fall of 2012 as a lighter, downsized version of its flagship BT-100-45. While far less expensive than the larger binoculars, this kid brother shares many of its sibling's finer qualities.

Numbers and features

At the heart of the BT-70-45 is a pair of 70-millimeter *f*/5.4 air-spaced triplet objectives (of flint, flint, and crown glass). The company multicoated each optical surface with a microscopic layer of an antireflection coating to help maximize image contrast.



Oberwerk's 45° 70mm Binocular Telescope features 70-millimeter front lenses and interchangeable eyepieces. The two 23.9mm eyepieces Oberwerk includes provide a magnification of 16x.

ALL IMAGES: ASTRONOMY: JAMES FORBES

At first, I was concerned that the fast focal ratio might cause image-spoiling chromatic aberration (which breaks bright celestial targets into rainbows), especially when aimed at objects like Sirius, the Moon, or Jupiter. But the three-element objective lenses quickly alleviated my fears when I put the BT-70-45 to the test.

The unit's most impressive feature is its interchangeable eyepieces. True, there are several giant binoculars with removable eyepieces. Most, however, use odd-sized barrels, which really limits the possibilities. The BT-70-45 can accept any standard 1¼" telescope eyepiece, making this the smallest and least expensive binocular telescope on the market with this really useful feature.

The 23.9mm eyepieces that come with the BT-70-45 produce a magnification of 16x and cover a real sky field of 4° thanks to their 55° apparent fields of view. Fold-out rubber eyecups and 20mm of eye relief make viewing comfortable.

Oberwerk offers four optional eyepiece sets: 27mm eyepieces yield 14x, the 16.3mm duo is for 23x, the 12mm pair gives 31x, and the 8mm ones produce 47x. Oberwerk recommends not exceeding 47x to preserve image quality. My loaner came with 23.9mm and 8mm eyepiece sets.

Eyepieces slide into helical focusers

PRODUCT INFORMATION

Oberwerk 45° 70mm Binocular Telescope

Objectives: Air-spaced triplet lenses

Objective size: 70 millimeters

Focal ratio: *f*/5.4

Length: 12 inches (30.5 centimeters)

Weight: 8.5 pounds (3.9 kilograms)

Includes: two 1¼" 23.9mm eyepieces (16x), removable handle, slide-out dew caps, foam-lined carry case

Price: \$850

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built into the two cylindrical prism assemblies. After securing the eyepiece by hand using a locking ring, you can focus the view by turning each eyepiece holder left or right. Prism housings tilt at 45° angles to make viewing more comfortable when looking skyward.

You can change the interpupillary distance (the distance between eyepieces, which must match the distance between your eyes) by twisting the prism assemblies, which interconnect by hinged arms. I measured the range of interpupillary distances and found a minimum of 59mm and a maximum of 72mm. (Oberwerk's website gives 58mm and 68mm, respectively, for these values.)

The BT-70-45's all-metal body is painted high-gloss champagne bronze with gold trim for a striking appearance. Standard accessories include a removable handle, slide-out dew caps, and a sturdy foam-fitted hard carrying case.

The handle slides on and off a dovetail shoe that can serve double-duty as a finder

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Each of the 23.9mm eyepieces that come with the BT-70-45 slides into a helical focuser that has a locking ring. The numbers on the barrels are diopter adjustments.

scope base. I found a finder was essential at higher magnifications. The unit also includes two mounts (one on each side) for attaching the binoculars to a fork. Note, however, that Oberwerk does not offer a fork mount for the instrument at this time.

The BT-70-45 weighs 8.5 pounds (3.9 kilograms) and measures 12 inches (30.5 centimeters) long with the dew caps collapsed. That's more than twice what standard 70mm binoculars weigh. But then, these are not standard binoculars. Once mounted on a sturdy tripod, this instrument gives outstanding views of the night sky. Oberwerk suggests and sells the Manfrotto 701HDV tripod head and advises that you pair it with either the Manfrotto 055XDB tripod or the company's own wooden tripod.

OPTIONAL EYEPIECES

- 27mm**
This set gives a magnification of 14x in the 45° 70mm Binocular Telescope. Oberwerk eyepiece barrel diameters are 1¼". **\$189.95/pair**
- 16mm**
This set gives a magnification of 23x in the 45° 70mm Binocular Telescope. Oberwerk matches each eyepiece pair. **\$179.95/pair**
- 12mm**
This set gives a magnification of 31x in the 45° 70mm Binocular Telescope. Oberwerk eyepieces have a 70° apparent field of view. **\$179.95/pair**
- 8mm**
This set gives a magnification of 47x in the 45° 70mm Binocular Telescope. Oberwerk eyepieces have adjustable rubber eyecups. **\$179.95/pair**

combined with the excellent optics in the binoculars proved just enough to resolve three of the four stars in the tiny Trapezium cluster. Switching to the 47x eyepieces, I saw all four easily.

Each subsequent port of call proved equally breathtaking. I was especially impressed by the views of the Pleiades (M45), the Beehive Cluster (M44), and the Double Cluster (NGC 869 and NGC 884). The optics resolved the bright open cluster M35 in Gemini, and there was even a hint of resolution in open cluster NGC 2158, which lies nearby.

One terrific product

Throughout my voyages, I found no chromatic aberration, no hint of ghosting, and only the slightest hint of edge distortion. Images remained sharp across nearly the entire field of both eyepiece sets. Contrast and brightness also were excellent.

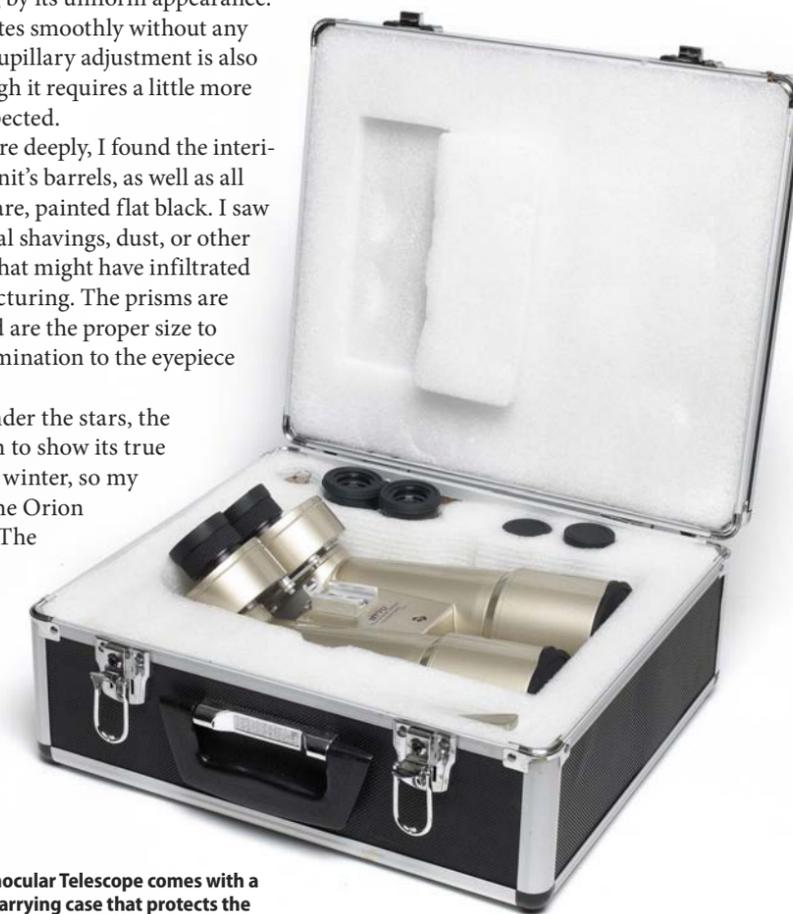
In summary, I fell in love with the 45° 70mm Binocular Telescope in our short stay together. The ability to swap eyepieces combined with the unit's high-quality optics — all at such an attractive price — make it one of my favorite instruments sold today. ☛

Under the sky

It becomes clear as soon as you take the binoculars out of the case that you're holding something special. The high-quality design of the BT-70-45 results in a solid feel and a fit and finish that are both excellent. The greenish-tinted finish on the multicoated objective lenses appears evenly applied judging by its uniform appearance. Focusing operates smoothly without any binding. Interpupillary adjustment is also smooth, although it requires a little more force than I expected.

Looking more deeply, I found the interiors of my test unit's barrels, as well as all internal hardware, painted flat black. I saw no signs of metal shavings, dust, or other contaminants that might have infiltrated during manufacturing. The prisms are BaK-4 glass and are the proper size to deliver full illumination to the eyepiece field of view.

Once out under the stars, the BT-70-45 began to show its true prowess. It was winter, so my first stop was the Orion Nebula (M42). The gas cloud itself put on a beautiful display, but what impressed me most was image sharpness. The 16x eyepieces



The 45° 70mm Binocular Telescope comes with a foam-lined hard carrying case that protects the binoculars and eyepieces.