ORION®
TELESCOPES & BINOCULARS

Providing Exceptional Consumer Optical Products Since 1975

Thank you for your purchase of an Orion eyepiece. This instruction sheet is intended as a reference for any Orion eyepiece, and is not written for a specific model. Below are a few simple formulas to help you determine the magnification and field of view for your equipment, along with helpful tips for proper care of your eyepieces.

Magnification

The magnification is based on a simple formula:

Mag = fTel ÷ fEye

where fTel is the focal length of the telescope, and fEye is the focal length of the eyepiece.

So for example, the Orion SkyQuest XT8" has as focal length of 1200mm, and if a 10mm eyepiece is inserted, the power will be 120x (1200mm ÷ 10mm).

The upper limit of magnification of any telescope is about 50x per inch (or 2x per mm) of aperture. Anything higher, and detail becomes lost as the resolution limit is exceeded. Also, on a night of good “seeing conditions” (steady air, no wind or jet stream passing overhead) the approximate limit of magnification that the atmosphere can support is around 300x. So a 90mm refractor can be pushed to 180x, and a 10" reflector could theoretically do 500x, but usually the atmosphere will only support 300x.

Field of View

The true field of view (in degrees) is based on another simple formula:

True Field (in degrees) = aFov ÷ Mag

where aFov is the apparent field of view of the eyepiece, and Mag is the Magnification that the eyepiece provides.

The apparent field of view is a specification of every eyepiece, sometimes written on the eyepiece next to the focal length, but always listed as a spec for each eyepiece on our website. So for example, the Sirius Plossl eyepieces all feature a 52° apparent field of view, and the Magnification of the 10mm Sirius on the SkyQuest XT8" is 120x. So the true field of view for this combination is 0.43° (52° ÷ 120x).

Use of Filters

Filters can be threaded into the bottom of all Orion eyepieces. Lunar filters can be used to boost contrast on the moon’s surface, color filters can be used for planetary detail, and light pollution and nebulae filters can be used to block out the ambient light and boost contrast for deep-sky objects.

Care and Maintenance

Let the eyepiece dry after use if dew is present. If it is capped with moisture on the surface of the glass, fungus may grow on the optical coatings, eating them away. Therefore, place caps on the eyepiece only when you are sure it is completely dry. For storage, keep the eyepiece in an appropriate enclosure--preferably a dedicated eyepiece case with foam padding.

Cleaning the Eyepiece

The lens elements of Orion eyepieces are coated with anti-reflection coatings, which can be damaged with careless handling. Avoid touching lens surfaces with your fingers or any coarse material. Clean the lenses if they get noticeably dirty. Always use lens cleaning tissue and fluid specifically designed for telescope optical coatings. Do not use regular tissue or fluids made for eyeglasses or household use. Do not disassemble the eyepiece to clean it, with the exception of the chrome barrel, which may be unscrewed to better access the lens surfaces.

To clean the lens surfaces, first blow air on them with a blower bulb or compressed air to remove any large particles. Then brush the lens surfaces with a soft lens brush and blow air on them again to remove any dislodged particles. Put two drops of lens cleaning fluid on a sheet of lens tissue (never directly on the lenses). Wipe the lenses gently with a circular motion, taking care to avoid undue pressure or rubbing, which can scratch the coatings. Quickly remove the excess fluid by wiping with a clean, dry lens tissue.

One-Year Limited Warranty

Orion eyepieces are 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. If the product is not registered, proof of purchase (such as a copy of the original invoice) is required.

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, and you may also have other rights, which vary from state to state. For further warranty service information, contact: Customer Service Department, Orion Telescopes & Binoculars, 89 Hangar Way, Watsonville, CA 95076; (800) 676-1343.

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