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WILLIAM OPTICS

Crafting the World's Finest Astronomical Instruments

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ZenithStar 70 ED

INSTRUCTION MANUAL



Thank you for choosing a William Optics ZenithStar 70 ED high-quality short tube refractor. This simple step-by-step instruction manual is designed to provide ZenithStar 70 ED owners with a better understanding of how to operate their new telescope by providing precise, updated information.

These instructions will also guide you through how to properly maintain the ZenithStar 70 ED, and how to operate it at its maximum capabilities.

Please carefully familiarize yourself with your telescope's parts and functions before operating it for the first time.

WARNING!

DO NOT USE THIS TELESCOPE UNDER ANY CIRCUMSTANCES TO DIRECTLY VIEW THE SUN.

It could easily cause instant blindness or serious damage to your eyes. To view the sun, use only appropriately designed solar filters that will reject 99.96% of the sun light and heat. Educate your family on how to use this telescope properly during day and night time observations. For further information please contact your local dealer.

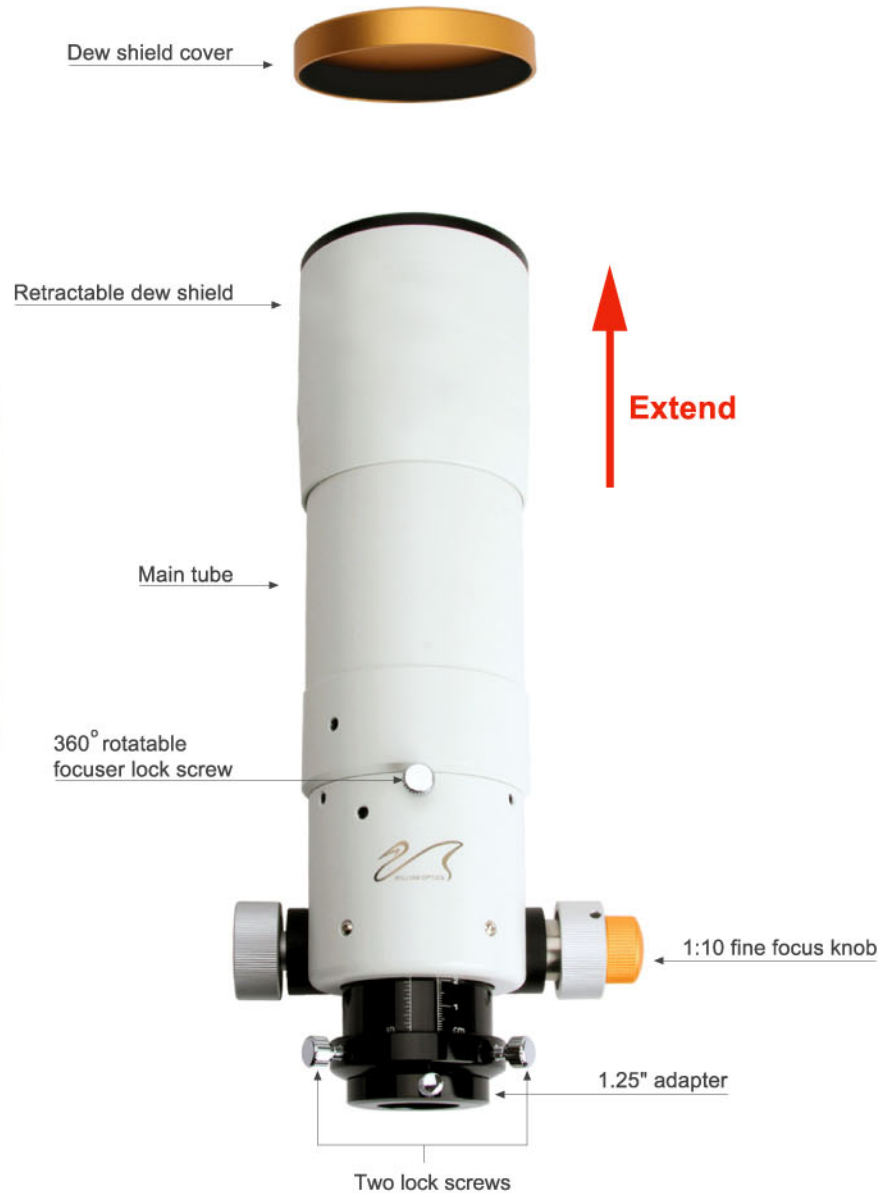


CAUTION!!

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Getting to know your telescope



ZenithStar 70 ED Doublet APO Specifications

Aperture	70 mm
Focal Ratio	F / 6.2
Focal Length	430 mm (17")
Objective Type	ED Doublet, Air Spaced, Fully Multi-Coated, SMC coating
Resolving Power	1.58"
Limiting Magnitude	11
Lens Shade	Retractable
Focuser	50.8 mm (2") Crayford Focuser with 1:10 dual-speed microfocuser 80 mm (3.2") Focuser Travel Length 360° Rotatable Design
1.25" Adapter	Provided
L-type Mount	Integrated L-Bracket
Field Stops	2 Baffles
Tube Diameter	87 mm (3.43")
Tube Length	308 mm (12.1") Fully Retracted 370 mm (14.5") Fully Extended
Tube Weight	5.1 lbs. (2.3 kg)
Case	Aluminium Case(Standard)
Case Dimension (WxHxD)	57 cm x 32 cm x 21 cm (22.4" x 12.6" x 8.3")

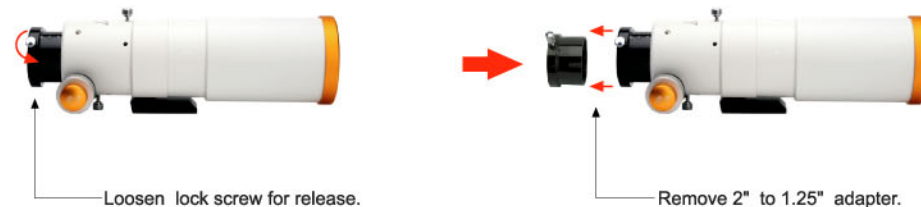
ZenithStar 70 Accessories



Above diagram is only for future connectivity purposes. Please contact our Authorized Dealers for accessories purchase.

Connection Instructions (Adapter 2" Diagonal Mirror)

Step-1



Step-2



Step-3



Connection Instructions

(Red Dot Finder)

Step-1



Take out the finderscope screw from the drawtube top with a small flat screwdriver. This is the larger black screw at the left of the rotation lock thumbscrew. We suggest positioning the RDF base with the thumbscrew facing towards the left (for clarity purposes it's shown on the right hand side on these instructions).

Step-2



Insert the quick release red-dot finder bracket in the base.

Step-3



Lock the bracket thumbscrew properly and follow alignment instructions. Note that this is an optional product available for purchase from WO.

Connection Instructions

(Aligning R.D.F.)



The alignment of the finder needs to be performed only when necessary. We recommend aligning during daytime by point telescope and finder at the same far object.

View Field of Red Dot Finder.
(with WO Erecting Illuminated Red Dot Finder)



Step-1

Find a distant object in the telescope with a low power eyepiece.

Step-2

Use a 2mm Allen key to loosen the setscrew on the left side of the RDF, near the bracket under the letter "R". Using a 2.5 mm Allen key make adjustments to the Alt-Az adjustments (marked R and UP) until the red dot in the reticule overlays the same object as the center of the eyepiece view.

Step-3

Using a high magnification eyepiece (short focal length) repeat this procedure for fine alignment.

Usage

The ZenithStar 70 is designed for both daytime and nighttime viewing, as an outstanding travel scope. We recommend purchasing a WO 2" star diagonal to make the most of these little telescopes.

Because the ZenithStar 70 are well suited to viewing nebulae, clusters, large galaxies and comets, we recommend the use of high quality wide-angle eyepieces. The WO SWAN, UWAN and SPL series eyepieces are available in a variety of focal lengths. Viewing the moon and planets is also impressive at magnifications of 140X when seeing conditions permit.

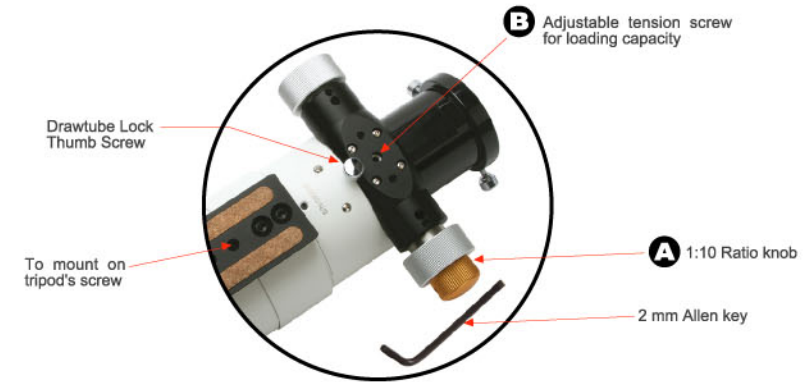
To calculate the magnification of your telescope and eyepiece combination, divide the telescope focal length in mm by the eyepiece focal length in mm.

Keep in mind that the atmosphere plays an important role in seeing conditions, and only the best seeing conditions will support high power viewing. Additional power under less than ideal seeing conditions will not result in an increase in viewable details, and lower powered eyepieces should there be used under those conditions. It's easiest to locate objects using low power eyepieces (20X magnification) and then zoom in by switching to higher powered eyepieces. The largest field of view will be seen using a 12x low power-wide field of view eyepiece.

A stable tripod or mount is recommended for optimal viewing. This includes high quality photography tripods, and German Equatorial mounts, which are designed for astronomical use and include precise tracking of celestial objects. Optional accessories from WO include mounting rings and plates, super high quality 2" Quartz star diagonals which provide for superior viewing and high quality images.

The ZenithStar telescopes are suitable for large-field astrophotography; ZenithStar 70 has great color correction at a fast speed of f/6. Please see our website for examples of photos taken with this telescope. The Accessories Chart on page 03 provides additional details on photographic accessories for various CCD, digital and film cameras.

Never aim your telescope or finderscope at the Sun without proper Solar filters installed on the front of the telescope. Doing so for even a moment may permanently damage your vision. Proper Solar filters consist of a filters made by reputable manufacturers, designed to fit tightly over the front of the dew shield. Solar eyepiece filters are not considered safe, and should not be used. With proper front mounted Solar filters, the telescope will not be harmed by viewing the Sun. Contact your Authorized WO Dealer for further information on the brands, sizes, and prices of proper solar filters.



- A** All WO telescopes, are now fitted with a smooth and precise dual speed 1:10 focusing system, it's means that for every ten full rotations of the small fine-focus knob the large knob rotates once.
- B** The focuser drawtube tension can be adjusted using a 2 mm Allen key and tension should be adjusted only when necessary by progressively tightening the screw until you reach the desired tension.

Storage and Cleaning

- ▶ We suggest placing all accessories inside an airtight container with desiccative control. Secondly, remember to store the telescope in a non-humid environment, never leave it le build up. Be particularly careful after a night observation that the lens has no dew on it before storing the telescope away.
- ▶ In case the lens surface becomes dusty, smeared, or gets fingerprints or fungus build-up on it, first of all, remove any surface particle by using an air blower, then carefully proceed to wiping the lens gently with a lint-free proper soft cloth. Use a lens liquid cleaner to get the best cleaning result. Make sure you change your cloth to a new one from time to time. The above-mentioned indications are not necessary if you carefully protect your telescope.
- ▶ The beautiful finish of your ZenithStar 70 is not easy to ruin. Nonetheless take care of the exterior body tube by wiping it down with a slightly damp soft cloth from time to time. Water should be enough to do the job. Please do not use any organic solvent on your telescope, for example alcohol, benzene and other hazardous chemical as this might ruin it.

Caution for Safety

- ▶ **Caution! Never directly view the sun light with your telescope.**
Do not aim your ZenithStar 70 at the Sun because this might impair your Loss of eyesight can occur when your telescope is not properly protected by solar viewing filter. (Solar filters can be easily purchased through your WO Authorized Dealers).
- ▶ Always place the optical telescope assembly (OTA) on a completely flat surface, unstable placement of telescope may cause it to fall, and if handled without caution, it may easily injure yourself and others.
- ▶ Never use your telescope under rainy conditions: this telescope is not designed to be water-proof. If your telescope accidentally gets caught in rain, please wipe down the water with a dry clean cloth, but if the lens gets totally soaked by water, please contact your WO Authorized Dealer right away for details on a service solution.
- ▶ Do not disassemble or attempt repairing your telescope without a written authorization from William Optics Corp. : this violates the warranty terms under the limited product warranty section and invalids any guarantee. Always consult with your local WO Authorized Dealer or with William Optics Corp. for details on how to service your telescope.

Optional Equipment

In order to operate your ZenithStar 70 you will need the following minimum equipment:

A sturdy tripod for astronomical or birding usage or a mount (equatorial or ALT-AZ).

A mirror diagonal or erecting prism (The WO 2" Dielectric Diagonal is strongly recommended for better results in star observation and digital photography. A top-quality Dielectric Quartz model is also available now).

At least one or two good eyepieces (6 to 40 mm wide-field recommended) depending on the application.

Other accessories depending on application.

Bundle Equipment

1. L-bracket base.
2. Dew shield cover.
3. 2" to 1.25" adapter.

Also available from WO:



■ W.O. 2" extender / adapter.



■ DCL 52 series "Digital Camera adapter Lens for Digital Cameras and Digital Video".



■ Digiscoping adapter: universal adapter for any type of digital camera.



■ Red dot finder.



2" SCT Quartz Dielectric Diagonal 2" Dielectric Fiber Carbon Diagonal 1.25" Dielectric Carbon Diagonal

■ W.O. 2" Star Mirror Diagonals.



2" 45° 1.25" 45° with 2" Barrel 1.25" 45°

■ W.O. 1.25" 45° Erecting prisms.



4mm 7mm 16mm 28mm 3mm 6mm 12.5mm

■ Ultra wide angle UWAN and SPL (Super Planetary Long eye-relief) Eyepieces.

Recommended Products

Diagonal Mirrors



2" SCT Quartz Dielectric Diagonal



2" Dielectric Carbon Fiber Diagonal



1.25" Dielectric Carbon Diagonal

Dielectric Diagonals

New Dielectric Diagonals with Carbon Fiber Plates (2" and 1.25"). Minimum 99% reflectivity 10mm thick oversize flat for optimal image stability for those who need just the best, Quartz mirror version, with even higher polishing accuracy and reflectivity. 2" Adapters with compression rings and SC telescope adapter included in 2" versions.

Erecting Prisms



2" 45°



1.25" 45° with 2" Barrel



1.25" 45°

45° Erecting Prisms

Perfect both for astronomical and terrestrial observations. Revolutionary and sophisticated design, extra-smooth feel.

Erecting Finder Scope



6x30 Erecting Finder Scope

An unique, high-quality erecting illuminated-reticle finderscope that fits perfectly on your Megrez or ZenithStar. It's 6 deg. of field paired with illuminated reticle will make finding that faint star a cinch. 50 mm finder bracket can also fits other 50 mm finder scope.

Red Dot Finder



Red Dot Finder with Quick Release Bracket

This very practical r.d.f. comes with a handy, quick-release bracket included in the price. Centering your object in the sky has never been easier!

Guiding Rings



Guiding Rings

These beautiful 100mm guiding rings are made out of solid aluminum, anodized in black, and will fit virtually every 60 to 90mm O.D. tube to be used as guiding scope. You can use these rings for most 80mm telescopes like our Megrez or ZenithStar and for our ZS66 series!

EAZY-Touch Alt-Az Mount



What is that you prize the most for your wide-field refractor? It's ease of use: EASY TOUCH is the mount you need, without sacrificing stability, looks and portability. Made by WO, this mount allows you to be ready to go in 5 minutes even with a 4" telescopes!

Telescope & Camera Tripod



The William Optics Light-Medium Tripod is for the photographer or observer who wants everything he needs without killing his wallet!

In fact, the WO tripod offers everything you need in a tripod and more. A working height range of 30.9 to 74 inches means you can find the perfect angle, high or low, to capture your objects. And it comes with a 3 section leg, which will give you all the stability you'll ever need.

It is entirely aluminum made, with a stylish finish. The leg material and leg lock type are made of high quality aluminum.

The tripod weighs 6.6lbs and offers great stability without compromising its portability and ease of use.

Using our WTR-188 quality tripod, you can easily mount up to (7 lbs) maximum on it. That means that any small telescope like 66mm William Optics for example is perfect and easily handled. For larger or heavier scopes -or for high power observations-, we recommend our EZ Touch ALT-AZ Mount with wooden tripod instead.

Digital Camera adapter Lens



This innovative digital adapter len is designed for large-len digital camera and digital video cams users' needs. It can be connected to any 2" diagonal or erecting prism through a 2" to 1.25" adapter.

2" Extender



This 2" extension tube is designed for "close-up" viewing or photography purpose.

Flattener

Flattener/Reducer 0.8x reducer/ff v.II



Flattener II

It now boasts a removable 2" nosepiece and rotating function. The field flattener is optimized for APS size chips, and recommended with telescopes from 66 to 90mm. Suggested lens to chip distance for optimal results is 56 mm. The field flattener has 2" barrel that will easily screw onto your ZenithStar 70 to achieve an amazing ultra-wide field at f/4.8.

NEW Reducer/Field Flattener V.III



Flattener III

Especially recommended for users of our ZenithStar 70, 90 and 110. The large 50mm clear aperture lens will reduce vignetting to almost nil. Simply loosen the set screws on the side and your adapter will rotate 360 deg. with a thumbscrew to lock it into place!

The antireflection multi-coatings on all optical surfaces will boost transmission and enhance your astro-imaging performance!

What you care most, your shots will show pinpoint stars and you will maximize to the full your apochromatic refractors' potential. The field flattener has 2" barrel that will easily screw onto your ZenithStar 70 to achieve an amazing ultra-wide field at f/4.8.

72° SWAN Eyepiece



20mm

15mm

9mm

1.25" Eyepieces

super Wild Angle(72°).
9mm,15mm,20mm focal lengths.
5 elements in 4 groups, fully multi coated.
Parfocal.



40mm

33mm

25mm

2" Eyepieces

super Wild Angle(72°).
25mm,33mm,40mm focal lengths, FMC.
Generous eye-relief.

82° UWAN Eyepiece



4mm

7mm

16mm

28mm

Ultra Wild Angle(82°).
28mm(2"),16mm(1.25"),
7mm(1.25"),4mm(1.25).

55° SPL Eyepieces



3mm

6mm

12.5mm

SPL
EYEPIECES

1.25" Eyepieces

Super Planetary Long eye-relief (55°)
3mm, 6mm, and 12.5mm focal lengths, Internally baffled, All lenses' edges and
internal spacers blackened, Fully multicoated.

66° Zoom Eyepiece



Zoom Eyepiece 22.5-7.5 mm

Finally a zoom eyepiece at a price everyone can afford! Experience the
convenience of 5 eyepieces in one at the price of half!New-design, long eye
relief,66° high quality wide angle eyepiece.