ProED Doublet Refractors
Owner's Manual



Sky-Watcher® USA

Be amazed.

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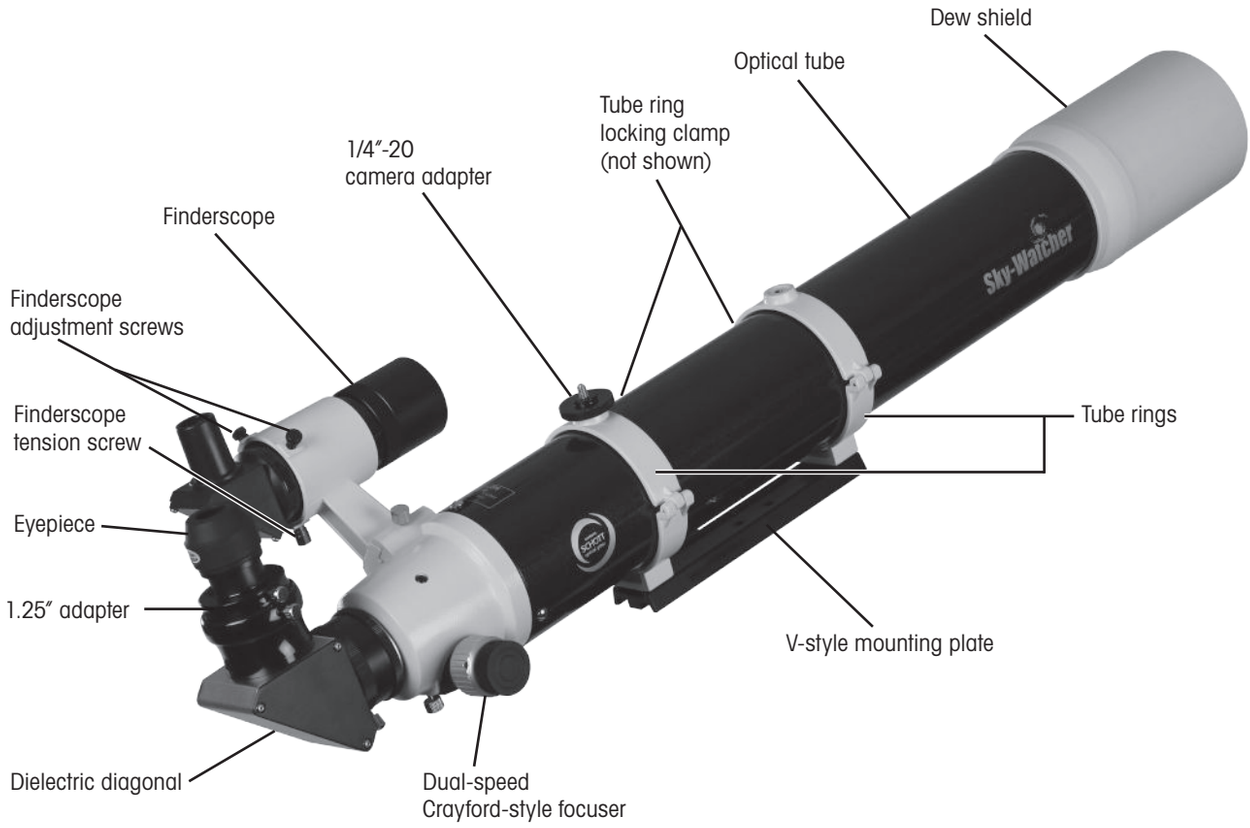
WARNING



- **Never look directly at the Sun with the naked eye or with a telescope (unless you have the proper solar filter). Permanent and irreversible eye damage may result.**
- Never use your telescope to project an image of the Sun onto any surface. Internal heat build-up can damage the telescope and any accessories attached to it.
- Never use an eyepiece solar filter or a Herschel Wedge. Internal heat build-up inside the telescope can cause these devices to crack or break, allowing unfiltered sunlight to pass through to the eye.
- Never leave the telescope unsupervised, either when children are present or with adults who may not be familiar with the correct operating procedures of your telescope.

Specifications

Model	80 mm	100 mm	120 mm
SKU	S11100	S11120	S11130
UPC	050234111003	050234111201	050234111300
Optical design	Apochromatic refractor		
Focal length	600 mm	900 mm	900 mm
F-ratio	7.5	9	7.5
Lens elements	2		
Lens glass	FPL-53 ED and Schott BK-7 glass		
Focuser	2 inch dual-speed Crayford-style		
Eyepieces	5 mm and 20 mm 1.25 inch eyepieces		
Finderscope	8 x 50 right angle, correct image		
Highest useful magnification	189x	236x	283x
Lowest useful magnification	11x	14x	17x
Limiting stellar magnitude	12	12.5	12.9
Resolution (Rayleigh)	1.74 arc seconds	1.39 arc seconds	1.16 arc seconds
Resolution (Dawes)	1.45 arc seconds	1.16 arc seconds	0.97 arc seconds
Light gathering power (compared to human eye)	131x	204x	294x
Mount type	V-style dovetail		
Tube length (inches)	23.8	36.2	37.8
Outer diameter (inches)	4.5625	4.5625	5.625
Tube weight (pounds)	7.3	8.4	13.9



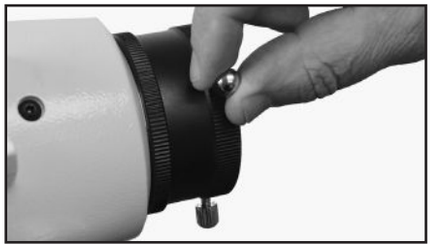
ATTACHING VISUAL ACCESSORIES

INSTALLING THE DIAGONAL

The diagonal is a prism or mirror that diverts light at a right angle to the light path of the telescope. This allows you to observe in positions that are physically more comfortable than if you looked straight through.

To attach the diagonal onto the optical tube:

1. Loosen the adapter ring set screws located on the end of the focuser.



2. Slide the 2” barrel end of the diagonal into the focuser adapter ring.



3. Tighten the set screw on the adapter ring to hold the diagonal in place.



If you wish to change the orientation of the diagonal, loosen the thumb screw on the focuser draw tube. This will allow the diagonal (or camera for photography) to rotate freely. Rotate the diagonal to the desired position and tighten the screw.

INSTALLING THE EYEPIECE

The eyepiece is an optical element that magnifies the image focused by the telescope. To ensure that your telescope properly reaches focus, the eyepiece should be inserted into the diagonal.

To install an eyepiece:

1. Loosen the set screw on the diagonal until the compression ring inside the diagonal is loose enough to slide remove the plastic dust cover.



2. Slide the chrome portion of the eyepiece into the diagonal.



3. Tighten the set screw on the star diagonal to hold the eyepiece in place.



To remove the eyepiece, loosen the set screw on the diagonal and slide the eyepiece out.

ATTACHING VISUAL ACCESSORIES

INSTALLING THE FINDERSCOPE

ProED telescopes come with an 8x50 finderscope. The specifications for the finderscope refer to the magnification and aperture (in millimeters). Therefore, an 8x50 finderscope magnifies objects eight times and has a 50mm objective lens.

FINDERSCOPE INSTALLATION

1. The finderscope comes attached to the dovetail finderscope bracket and is ready to be attached to the telescope.



2. Loosen the thumbscrew on the side of the dovetail mount.

3. Slide the base of the finderscope bracket into the dovetail mount and lock down the thumbscrew to hold in place.



ALIGNING THE FINDERSCOPE

The finderscope is adjusted by using the two adjustment screws and one spring loaded tension screw located on the rings of the finderscope bracket. To make the alignment process a little easier, you should perform this task in the daytime when it is easier to locate objects in the telescope without the finderscope.

To align the finderscope:

1. Choose a visible object that is in excess of one mile away. This will eliminate any possible parallax effect between the telescope and the finderscope.



2. Point your telescope at the object you selected and center it in the eyepiece of the telescope.

3. Check the finderscope to see where the object is located in the field of view.



4. Adjust the thumb screws on the finder bracket until the cross hairs are centered on the target.



SETTING UP FOR ASTROPHOTOGRAPHY

USING YOUR TELESCOPE FOR ASTROPHOTOGRAPHY

ProED 100 and 120 telescopes have an optional thread-on field flattener/ focal reducer to provide pinpoint stars while imaging. To configure your ProED refractor for astrophotography:

1. Remove all visual accessories (eyepiece, diagonal) from the focuser.



2. Unthread the focuser adapter ring from the end of the focuser.



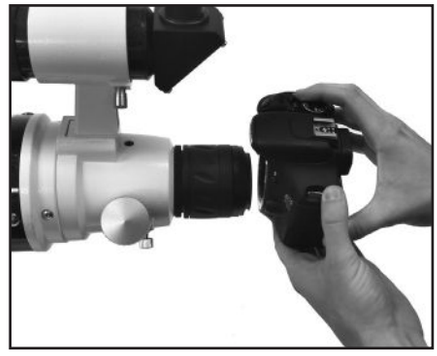
3. Remove the caps from the field flattener lens and thread it onto the focuser draw tube.



4. Now attach the M48 camera adapter onto the other end of the field flattener lens.



5. Attach your camera to the field flattener.





DSLR photography requires a model specific camera adapter for your model of camera. SkyWatcher makes a model for Canon (S20300), Nikon (S20301) and Sony (S20302). Once attached, your DSLR body (not included) will mount onto the telescope just as it would attach to a camera lens.

TELESCOPE MAINTENANCE

While your telescope requires little maintenance, there are a few things to remember that will ensure your telescope performs at its best.

CARE AND CLEANING OF THE OPTICS

Occasionally, dust and/or moisture may build up on the objective lens of your telescope. Special care should be taken when cleaning any instrument so as not to damage the optics.

If dust has built up on the lens, remove it with a brush (made of camel's hair) or with a can of pressurized air. Spray at an angle to the lens for approximately two to four seconds. Next, use an optical cleaning solution and white tissue paper to remove any remaining debris. Apply the solution to the tissue and apply the tissue paper to the lens. Low pressure strokes should go from the center of the corrector to the outer portion. Do NOT rub in circles!

You can use a commercially made lens cleaner or mix your own. A good cleaning solution is isopropyl alcohol mixed with distilled water. The solution should be 60% isopropyl alcohol and 40% distilled water. Or, liquid dish soap diluted with water (a couple of drops per one quart of water) can be used.

Occasionally, you may experience dew build-up on the lens of your telescope during an observing session. If you want to continue observing, the dew must be removed, either with a hair dryer (on low setting) or by pointing the telescope at the ground until the dew has evaporated.

If moisture condenses on the inside of the lens, remove the accessories from the rear cell of the telescope. Place the telescope in a dust-free environment and point it down. This will remove the moisture from the telescope tube.
To minimize the need to clean your telescope, replace all lens covers once you have finished using it. Since the rear cell is NOT sealed, the cover should be placed over the opening when not in use. This will prevent contaminants from entering the optical tube.

SKY-WATCHER USA TWO YEAR LIMITED WARRANTY

A. Sky-Watcher USA warrants your telescope to be free from defects in materials and workmanship for two years. Sky-Watcher USA will repair or replace such product or part thereof which, upon inspection by Sky-Watcher USA, is found to be defective in materials or workmanship. As a condition to the obligation of Sky-Watcher USA to repair or replace such product, the product must be returned to Sky-Watcher USA together with proof-of-purchase satisfactory to Sky-Watcher USA.

B. The Proper Return Authorization Number must be obtained from Sky-Watcher USA in advance of return. Call Sky-Watcher USA at (310) 803-5953 to receive the number to be displayed on the outside of your shipping container.

All returns must be accompanied by a written statement setting forth the name, address, and daytime telephone number of the owner, together with a brief description of any claimed defects. Parts or product for which replacement is made shall become the property of Sky-Watcher USA.
The customer shall be responsible for all costs of transportation and insurance, both to and from the factory of Sky-Watcher USA, and shall be required to prepay such costs.

Sky-Watcher USA shall use reasonable efforts to repair or replace any telescope covered by this warranty within thirty days of receipt. In the event repair or replacement shall require more than thirty days, Sky-Watcher USA shall notify the customer accordingly. Sky-Watcher USA reserves the right to replace any product which has been discontinued from its product line with a new product of comparable value and function.
This warranty shall be void and of no force of effect in the event a covered product has been modified in design or function, or subjected to abuse, misuse, mishandling or unauthorized repair. Further, product malfunction or deterioration due to normal wear is not covered by this warranty.

SKY-WATCHER USA DISCLAIMS ANY WARRANTIES, EXPRESS OR IMPLIED, WHETHER OF MERCHANTABILITY OF FITNESS FOR A PARTICULAR USE, EXCEPT AS EXPRESSLY SET FORTH HEREIN. THE SOLE OBLIGATION OF SKY-WATCHER USA UNDER THIS LIMITED WARRANTY SHALL BE TO REPAIR OR REPLACE THE COVERED PRODUCT, IN ACCORDANCE WITH THE TERMS SET FORTH HEREIN. SKY-WATCHER USA EXPRESSLY DISCLAIMS ANY LOST PROFITS, GENERAL, SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES WHICH MAY RESULT FROM BREACH OF ANY WARRANTY, OR ARISING OUT OF THE USE OR INABILITY TO USE ANY SKY-WATCHER USA PRODUCT. ANY WARRANTIES WHICH ARE IMPLIED AND WHICH CANNOT BE DISCLAIMED SHALL BE LIMITED IN DURATION TO A TERM OF TWO YEARS FROM THE DATE OF ORIGINAL RETAIL PURCHASE.

Some states do not allow the exclusion or limitation of incidental or consequential damages or limitation on how long an implied warranty lasts, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

Sky-Watcher USA reserves the right to modify or discontinue, without prior notice to you, any model or style telescope.

If warranty problems arise, or if you need assistance in using your telescope contact:

Sky-Watcher USA
Customer Service Department
475 Alaska Avenue
Torrance, CA 90503
Tel. (310) 803-5953
Monday-Friday 8AM-4PM PST

NOTE: This warranty is valid to U.S.A. customers who have purchased this product from an authorized Sky-Watcher USA dealer in the U.S.A.

TECHNICAL AND CUSTOMER SUPPORT

If you have any questions about your Sky-Watcher USA ProED refractor telescope, please call us toll-free at **855-327-1587** between 8am and 4pm Pacific Standard Tiime, Monday through Friday, excluding holidays. You can also contact us through email at **support@skywatcherusa.com**.

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Be amazed.