Sky-Watcher EvoStar 100 APO

Sky-Watcher EvoStar 100 APO Doublet Refractor Instruction Manual

Model: EvoStar 100 APO (S11120)

1. Introduction

The Sky-Watcher EvoStar 100 APO Doublet Refractor is an advanced optical tube designed for both visual astronomy and astrophotography. It features a matched doublet objective lens with a synthetic fluorite element, providing excellent color correction and sharp images. The telescope incorporates Metallic High-Transmission Coatings (MHTC) to minimize false color and light baffles to reduce stray light, ensuring optimal performance.
This manual provides essential information for the proper setup, operation, maintenance, and troubleshooting of your EvoStar 100 APO refractor.

2. Package Contents

Before proceeding with setup, ensure all components are present and undamaged. The package should include:

- EvoStar 100 APO Optical Tube
- 2-inch Crayford-style Focuser (integrated)
- Tube Rings (set of 2)
- V-Style Dovetail Plate
- 8x50 Right Angle Correct Image (RACI) Finderscope with bracket
- 2-inch Dielectric Diagonal
- 1.25-inch Eyepieces (LET25mm and LET5mm)
- 1.25-inch Focuser Adapter
- Foam-lined Aluminum Carrying Case

Figure 2.1: Sky-Watcher EvoStar 100 APO Doublet Refractor with accessories.

Figure 2.2: Standard accessories included with the EvoStar 100 APO.

3. Setup

3.1 Mounting the Optical Tube

1. Attach the tube rings to the V-style dovetail plate using the provided hardware.
2. Place the optical tube within the tube rings and secure them firmly, ensuring the telescope is balanced.
3. Mount the dovetail plate onto a compatible astronomical mount (not included). Ensure the mount is stable and capable of supporting the telescope's weight (approximately 8.4 lbs / 3.8 kg).

3.2 Attaching the Finderscope

1. Slide the 8x50 RACI finderscope into its bracket.
2. Attach the finderscope bracket to the designated mounting shoe on the optical tube. Secure it with the thumbscrew.
3. Align the finderscope with the main telescope by pointing the main telescope at a distant object during

daylight hours. Adjust the finderscope's alignment screws until the object is centered in both the finderscope and a low-power eyepiece in the main telescope.

3.3 Inserting the Diagonal and Eyepieces

1. Unscrew the dust cap from the 2-inch focuser drawtube.
2. Insert the 2-inch dielectric diagonal into the focuser drawtube and secure it with the thumbscrews.
3. For 1.25-inch eyepieces, insert the 1.25-inch focuser adapter into the 2-inch diagonal, then insert the desired 1.25-inch eyepiece (e.g., LET25mm or LET5mm) into the adapter. Secure with thumbscrews.
4. For 2-inch eyepieces (not included), insert them directly into the 2-inch diagonal and secure with thumbscrews.

4. Operating the Telescope

4.1 Focusing

The EvoStar 100 APO is equipped with a 2-inch dual-speed Crayford-style focuser, allowing for precise focus adjustments.

- The larger knob provides coarse focus adjustments for quick changes.
- The smaller knob offers a 10:1 reduction ratio for fine focus adjustments, crucial for achieving sharp images, especially at high magnifications or during astrophotography.

To focus, point the telescope at a bright star or distant terrestrial object. Use the coarse focus knob to get close to focus, then use the fine focus knob to achieve the sharpest possible image.

Figure 4.1: Dual-speed Crayford-style focuser for precise image adjustment.

4.2 Eyepiece Selection

The included LET25mm eyepiece provides a lower magnification and wider field of view, ideal for locating objects and observing large celestial bodies like the Moon or star clusters. The LET5mm eyepiece offers higher magnification for detailed views of planets or smaller deep-sky objects.
Experiment with different eyepieces to find the best magnification for your target object and observing conditions.

4.3 Optical Performance

The EvoStar 100 APO's objective lens assembly and Metallic High-Transmission Coatings (MHTC) are designed to minimize chromatic aberration (color fringing) and deliver high-contrast, sharp images. The internal light baffles further enhance image quality by preventing stray light from reaching the focal plane.

Figure 4.2: EvoStar refractor lens with proprietary coatings for optimal color correction.

5. Maintenance

5.1 Cleaning Optical Surfaces

Dust and smudges on the objective lens or eyepieces can degrade image quality. Handle optical components with care to avoid scratching.

- **Dust Removal:** Use a soft camel hair brush or a can of compressed air (held upright to prevent propellant discharge) to gently remove loose dust.
- **Smudge Removal:** For stubborn smudges or fingerprints, use a clean, soft microfiber cloth specifically designed for optics and a small amount of optical cleaning fluid. Apply the fluid to the cloth, not directly to the lens, and wipe gently in a circular motion from the center outwards.
- Avoid over-cleaning, as this can cause micro-scratches over time.

5.2 Storage

When not in use, store the telescope in its foam-lined aluminum carrying case to protect it from dust, moisture, and physical damage. Ensure all caps are on the optical tube, finderscope, and eyepieces.

5.3 Protecting from Moisture and Dew

Observing in humid conditions can lead to dew formation on optical surfaces. While the telescope is designed with internal baffles to minimize stray light, a dew shield (integrated or external) helps prevent dew from forming on the objective lens. Allow the telescope to acclimate to ambient temperature before use to reduce internal condensation.

Figure 5.1: Knife-edge baffles within the optical tube reduce stray light.

6. Troubleshooting

6.1 Blurry or Out-of-Focus Images

- **Check Focus:** Ensure the focuser is properly adjusted using both coarse and fine focus knobs.
- **Atmospheric Conditions:** Turbulent air (poor seeing) can cause images to appear blurry. Wait for more stable atmospheric conditions.
- **Thermal Acclimation:** If the telescope has just been brought outdoors from a warmer environment, allow sufficient time (30-60 minutes) for it to cool down to ambient temperature.

6.2 Stray Light or Glare in Eyepiece

- **Check Dew Shield:** Ensure the dew shield is fully extended.
- **Light Pollution:** Observe from a location away from direct artificial light sources.
- **Internal Baffles:** The telescope is equipped with internal baffles to minimize stray light. If glare persists, ensure no internal components are loose or misaligned.

6.3 Difficulty with Focuser Movement

- **Check Tension:** The Crayford focuser has tension adjustment screws. If the focuser is too stiff or too loose, adjust these screws carefully. Refer to the manufacturer's specific instructions for focuser adjustment if available.
- **Cleanliness:** Ensure no dust or debris is obstructing the focuser mechanism.

7. Specifications

Feature	Specification
Model Name	EvoStar 100ED APO Refractor
Objective Lens Diameter	100 Millimeters
Optical Tube Length	34 Inches
Item Weight	8.4 pounds (3.8 kg)
Product Dimensions	41 x 12 x 15 inches (104.1 x 30.5 x 38.1 cm)
Focus Type	Manual Focus (Dual-speed Crayford)
Finderscope	Reflex (8x50 RACI included)
Eyepiece Lens Description	Barlow (LET25mm, LET5mm included)
Telescope Mount Description	Altazimuth Mount or similar (mount not included)
Manufacturer	Sky-Watcher

8. Warranty and Support

For warranty information and technical support, please refer to the documentation provided with your purchase or contact Sky-Watcher directly through their official website. Warranty terms and conditions may vary by region and retailer.