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Explore Scientific 114mm Reflector Telescope

Explore Scientific National Geographic 114mm Reflector Telescope Instruction Manual

Model: 114mm Reflector Telescope

1. Introduction

Thank you for choosing the Explore Scientific National Geographic 114mm Reflector Telescope. This instrument is designed to provide clear views of celestial objects such as the Moon, planets, and brighter deep-sky objects. This manual provides essential information for the proper assembly, operation, and maintenance of your telescope to ensure optimal performance and longevity.

2. Safety Information

- **Never look directly at the Sun through the telescope or its finderscope without a professionally manufactured solar filter.** Doing so can cause immediate and irreversible eye damage, including blindness.
- Do not leave the telescope unattended, especially when children or inexperienced adults are present.
- Handle optical components with care to avoid scratches or damage.
- Ensure the tripod is stable on a level surface before attaching the telescope.
- Keep the telescope away from moisture and extreme temperatures.

3. Package Contents

Please verify that all components listed below are present in your package:

- 114mm Reflector Optical Tube
- Alt-Azimuth Mount
- Full-Size Tripod with Accessory Tray
- Red Dot Finderscope
- Eyepieces: PL26mm (19x magnification), PL9.7mm (51.5x magnification)
- 2x Barlow Lens

- Smartphone Adapter
- Instruction Manual

Image 3.1: Overview of all included telescope components, including the optical tube, mount, tripod, eyepieces, Barlow lens, and smartphone adapter.

Image 3.2: Close-up of the included PL26mm and PL9.7mm eyepieces, 2x Barlow lens, and the smartphone adapter plate.

4. Assembly and Setup

1. **Set up the Tripod:**

   Spread the tripod legs apart until they are fully extended. Secure the accessory tray to the center brace of the tripod. Ensure the tripod is stable on a flat, level surface.

Image 4.1: The tripod fully extended with the accessory tray attached.

2. **Attach the Alt-Azimuth Mount:**

   The alt-azimuth mount should already be attached to the tripod head. If not, secure it using the provided screw at the top of the tripod.

3. **Mount the Optical Tube:**

   Carefully place the 114mm reflector optical tube onto the alt-azimuth mount. Align the mounting screws or clamps on the mount with the optical tube's attachment points and tighten them securely. Do not overtighten.

Image 4.2: The complete telescope assembly, showing the optical tube securely mounted on the alt-azimuth tripod.

4. **Install the Finderscope:**

Slide the red dot finderscope into its bracket on the optical tube and tighten the retaining screws. Ensure it is oriented correctly for easy viewing.

5. **Insert an Eyepiece:**

   Loosen the thumbscrew on the focuser. Insert the desired eyepiece (e.g., PL26mm for lower magnification) into the focuser barrel. Tighten the thumbscrew to secure it. If using the 2x Barlow lens, insert the Barlow into the focuser first, then the eyepiece into the Barlow.

5. Operating Instructions

5.1. Aligning the Red Dot Finderscope

The finderscope helps you locate objects quickly. It must be aligned with the main telescope:

1. During daylight, point the main telescope at a distant, stationary object (e.g., a treetop or street sign) at least a quarter-mile away.
2. Center the object in the main telescope's eyepiece.
3. Turn on the red dot finderscope. Look through the finderscope and use its adjustment screws to move the red dot until it is centered on the same object you see in the main eyepiece.
4. Once aligned, the finderscope will accurately point to whatever the main telescope is viewing.

5.2. Observing with the Telescope

1. **Choose an Eyepiece:** Start with the lowest magnification eyepiece (PL26mm) for a wider field of view, making it easier to locate objects. Once an object is centered, you can switch to a higher magnification eyepiece (PL9.7mm) or use the 2x Barlow lens for more detailed views.
2. **Locate an Object:** Use the aligned red dot finderscope to point the telescope at your desired celestial object.
3. **Focus:** Look through the eyepiece and slowly turn the focuser knobs until the image is sharp.
4. **Tracking:** As the Earth rotates, objects will drift out of view. Gently move the telescope using the alt-azimuth mount's handles to keep the object centered.

Image 5.1: Detail of the focuser mechanism with an eyepiece inserted, showing the focus knobs.

5.3. Using the Smartphone Adapter for Astrophotography

The included smartphone adapter allows you to capture images of celestial objects through your telescope.

1. **Attach the Adapter:** Secure your smartphone into the adapter's clamp.
2. **Position the Camera:** Align your phone's camera lens with the telescope's eyepiece. The adapter has adjustments to help center the camera over the eyepiece.
3. **Focus and Capture:** Once an object is in focus through the eyepiece, use your phone's camera app to take photos or record videos. Experiment with different camera settings (e.g., exposure, ISO) for best results.

Image 5.2: The telescope with a smartphone attached to the adapter, displaying a clear image of the Moon on the phone's screen.

6. Maintenance and Care

- **Cleaning Optics:** Dust on the primary mirror or eyepieces should be removed carefully. Use a soft brush or compressed air to remove loose particles. For stubborn smudges, use a specialized optical cleaning solution and a microfiber cloth designed for optics. Avoid touching optical surfaces with bare hands.
- **Storage:** When not in use, store the telescope in a dry, dust-free environment. Keep dust caps on the optical tube and eyepieces.
- **Mechanical Parts:** Periodically check all screws and knobs for tightness. Do not lubricate any parts unless specifically instructed by the manufacturer.

7. Troubleshooting

Problem	Possible Cause	Solution
Image is blurry or out of focus.	Incorrect focus setting.	Adjust the focuser knobs slowly until the image is sharp.
Cannot see anything through the eyepiece.	Dust caps still on; finderscope not aligned; wrong eyepiece.	Remove all dust caps. Align the finderscope. Start with the lowest power eyepiece (PL26mm).

Problem	Possible Cause	Solution
Objects drift out of view too quickly.	Earth's rotation; mount not tracking.	This is normal. Gently nudge the telescope to keep the object centered.
Red dot finderscope not pointing correctly.	Finderscope is not aligned with the main telescope.	Re-align the finderscope during daylight hours as described in Section 5.1.

8. Specifications

Optical Design	Newtonian Reflector
Objective Lens Diameter	114 mm
Focal Length	500 mm
Eyepieces Included	PL26mm, PL9.7mm (Plossl type)
Barlow Lens	2x
Finderscope	Red Dot (Reflex)
Mount Type	Alt-Azimuth
Focus Type	Manual Focus
Compatible Devices	Camera, Smartphone (with adapter)
Product Dimensions	27 x 6.5 x 11.5 inches (68.6 x 16.5 x 29.2 cm)
Item Weight	12.17 pounds (5.52 kg)

9. Warranty and Support

For warranty information and technical support, please refer to the documentation included with your purchase or visit the official Explore Scientific website. Keep your proof of purchase for warranty claims.

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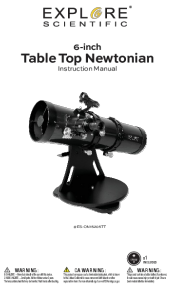	[Explore Scientific 6-inch Table Top Newtonian Telescope Instruction Manual] Comprehensive instruction manual for the Explore Scientific 6-inch Table Top Newtonian Telescope (Model ES-ON15205TT), covering assembly, operation, alignment, collimation, and basic telescope principles.
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