National Geographic 114/900 AZ

National Geographic Newtonian Telescope 114/900 AZ with Tripod User Manual

Model: 114/900 AZ (9011200)

Introduction

This manual provides comprehensive instructions for the assembly, operation, and maintenance of your National Geographic Newtonian Telescope 114/900 AZ with Tripod. Designed for beginners and amateur astronomers, this reflecting telescope allows observation of both large planets and bright deep-sky objects under dark skies. Please read this manual thoroughly before using your telescope to ensure proper setup and optimal viewing experience.

Safety Information

- **Never look directly at the sun through the telescope or its finderscope without a professionally made solar filter.** Permanent and irreversible eye damage, including blindness, can result.
- Do not leave the telescope unsupervised, especially when children are present.
- Handle optical components with care to avoid scratches or damage.
- Ensure the tripod is stable on a level surface to prevent tipping.

Package Contents

Verify that all components are present in your package:

- Newtonian Reflector Telescope Optical Tube (114mm aperture, 900mm focal length)
- Altazimuth Mount with Tripod
- Eyepieces: H25mm, H9mm, SR4mm
- Finderscope: 6x30
- Barlow Lens: 3x
- Erecting Lens: 1.5x

Setup Instructions

Follow these steps to assemble your telescope:

1. Assemble the Tripod and Mount

Extend the tripod legs to a suitable height and spread them apart for stability. Secure the Altazimuth mount to the top of the tripod. Ensure all knobs are tightened.

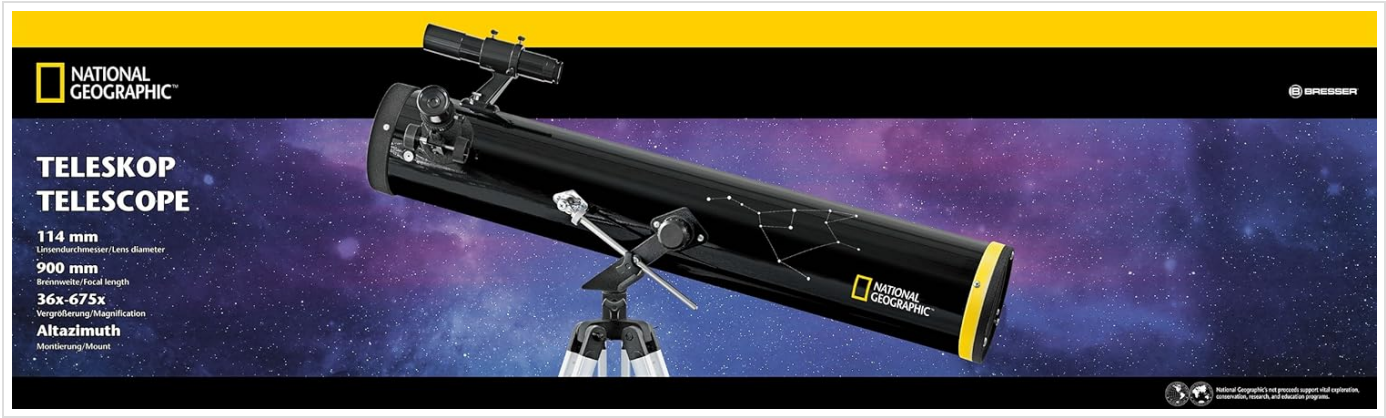

Image: The National Geographic Newtonian Telescope 114/900 AZ fully assembled on its Altazimuth mount and tripod. This provides an overview of the complete setup.

2. Attach the Optical Tube

Carefully place the telescope's optical tube onto the Altazimuth mount. Secure it using the provided mounting rings or clamps. Ensure the tube is balanced and firmly attached.

Image: Close-up of the telescope's optical tube attached to its mount, showing the attachment points and adjustment knobs.

3. Install the Finderscope

Attach the 6x30 finderscope to its bracket on the main telescope tube. Tighten the screws to hold it securely in place. The finderscope is essential for locating objects before viewing them through the main telescope.

4. Insert an Eyepiece

Loosen the thumbscrew on the focuser and insert the desired eyepiece (e.g., the H25mm for lowest magnification and widest field of view). Tighten the thumbscrew to secure the eyepiece. You can also insert the Barlow lens or erecting lens before the eyepiece for different effects.

Operating the Telescope

1. Aligning the Finderscope

Before observing, the finderscope must be aligned with the main telescope. Point the main telescope at a distant, stationary object (e.g., a streetlight or a distant tree) during daylight hours. Center the object in the main telescope's eyepiece. Then, adjust the finderscope's alignment screws until the same object is centered in the finderscope's crosshairs.

2. Focusing

Once an object is centered in the eyepiece, turn the focuser knobs slowly until the image appears sharp and clear. Start with the lowest magnification eyepiece (H25mm) for easier focusing and wider field of view.

3. Changing Magnification

To change magnification, remove the current eyepiece and insert another. The H25mm eyepiece provides the lowest magnification, the H9mm provides medium, and the SR4mm provides the highest. Higher magnification eyepieces have smaller focal lengths.

Image: The three included eyepieces: H25mm, H9mm, and SR4mm. These are used to adjust the magnification of the telescope.

4. Using the Barlow Lens

The 3x Barlow lens triples the magnification of any eyepiece. Insert the Barlow lens into the focuser first, then insert an eyepiece into the Barlow lens. This allows for higher magnifications, but may reduce image brightness and clarity, especially under poor viewing conditions.

Image: The 3x Barlow lens. This accessory increases the magnification of any eyepiece it is used with.

5. Using the Erecting Lens

The 1.5x erecting lens corrects the inverted image produced by the Newtonian telescope, making it suitable for terrestrial (land-based) observations. Insert the erecting lens into the focuser, then insert an eyepiece into the erecting lens.

Image: The 1.5x Erecting Eyepiece. This lens corrects the inverted image for terrestrial viewing.

6. Observing Celestial Objects

For astronomical observations, choose a location away from city lights. Use the finderscope to locate your desired celestial object, then look through the main telescope's eyepiece. Start with the lowest magnification and gradually increase it if conditions allow. The Altazimuth mount allows for easy up-down and left-right movement to track objects.

Maintenance and Care

- **Cleaning Optics:** Use a soft, lint-free cloth specifically designed for optical lenses. For stubborn smudges, use a

small amount of optical cleaning fluid. Avoid touching the mirror surface.

- **Storage:** When not in use, store the telescope in a dry, dust-free environment. Use dust caps for the optical tube and eyepieces.
- **General Care:** Avoid exposing the telescope to extreme temperatures or sudden temperature changes. Do not overtighten knobs or screws.

Troubleshooting

Problem	Possible Cause	Solution
Image is blurry or out of focus.	Focuser not adjusted correctly.	Adjust the focuser knobs slowly until the image is sharp.
Cannot find objects.	Finderscope is not aligned.	Align the finderscope with the main telescope during daylight hours.
Image is dim or dark.	Too high magnification for conditions; light pollution.	Use a lower magnification eyepiece. Observe from a darker location.
Image is inverted.	Normal for Newtonian telescopes (astronomical viewing).	Use the 1.5x erecting lens for terrestrial viewing to correct the image orientation.

Specifications

Brand: National Geographic
Model Name: 114/900 AZ
Model Number: 9011200
Optical Design: Newtonian Reflector
Aperture: 114 mm
Focal Length: 900 mm
Focal Ratio: f/7.9
Magnification Range: 36x - 675x (with included accessories)
Mount Type: Altazimuth Mount
Finderscope: 6x30 Reflex
Eyepieces Included: H25mm, H9mm, SR4mm
Additional Lenses: 3x Barlow Lens, 1.5x Erecting Lens
Optical Tube Length: 900 Millimeters
Item Weight: 7.14 Kilograms
Manufacturer: Bresser

Warranty and Support

For warranty information, technical support, or service inquiries, please refer to the official National Geographic or Bresser website, or contact their customer service directly. Keep your purchase receipt as proof of purchase.