



# AURORA II

Flat Black 114mm Telescope w/  
Slow Motion AZ Mount  
Instruction Manual

## Aurora II Telescope Specifications

Optical Design	Newtonian Reflector
Magnification	20-52x
Front Lens (clear aperture)	114mm
Focal Length	500mm
Standard Eyepieces	Plossl 26mm & 9.7mm
Finish	Flat Black
Tripod	Slow Motion Alt-Azimuth Mount



**WARNING:**  
SUN HAZARD – Never look directly at the sun  
with this device.

**WARNING:**  
CHOKING HAZARD – Small parts.  
Not for children under 3 years.

**WARNING:**  
Contains button or coin cell battery.  
Hazardous if swallowed – see instructions.

### SUN WARNING

**WARNING: NEVER ATTEMPT TO OBSERVE THE SUN WITH THIS DEVICE! OBSERVING THE SUN – EVEN FOR A MOMENT – WILL CAUSE INSTANT AND IRREVERSIBLE DAMAGE TO YOUR EYE OR EVEN BLINDNESS.** Eye damage is often painless, so there is no warning to the observer that the damage has occurred until it is too late. Do not point the device at or near the Sun. Do not look through the device as it is moving. Children should always have adult supervision while observing.

### SAFETY WARNINGS

Read and follow the instructions, safety rules, and first aid information.

- RESPECT PRIVACY: WHEN USING THIS DEVICE, RESPECT THE PRIVACY OF OTHER PEOPLE. FOR EXAMPLE, DO NOT USE THEM TO LOOK INTO PEOPLE'S HOMES.
- CHOKING HAZARD: CHILDREN SHOULD ONLY USE DEVICE UNDER ADULT SUPERVISION. KEEP PACKAGING MATERIALS LIKE PLASTIC BAGS AND RUBBER BANDS OUT OF THE REACH OF CHILDREN AS THESE MATERIALS POSE A CHOKING HAZARD.
- RISK OF BLINDNESS: NEVER USE THIS DEVICE TO LOOK DIRECTLY AT THE SUN OR IN THE DIRECT PROXIMITY OF THE SUN. DOING SO MAY RESULT IN A PERMANENT LOSS OF VISION.
- RISK OF FIRE: DO NOT PLACE DEVICE, PARTICULARLY THE LENSES, IN DIRECT SUNLIGHT. THE CONCENTRATION OF LIGHT RAYS COULD CAUSE A FIRE.
- DO NOT DISASSEMBLE THIS DEVICE. IN THE EVENT OF A DEFECT, PLEASE CONTACT YOUR DEALER. THE DEALER WILL CONTACT THE CUSTOMER SERVICE DEPARTMENT AND CAN SEND THE DEVICE IN TO BE REPAIRED IF NECESSARY.
- DO NOT SUBJECT THE DEVICE TO TEMPERATURES EXCEEDING 60° C (140° F).



- DISPOSAL: KEEP PACKAGING MATERIALS, LIKE PLASTIC BAGS AND RUBBER BANDS, AWAY FROM CHILDREN AS THEY A POSE A RISK OF SUFFOCATION. DISPOSE OF PACKAGING MATERIALS AS LEGALLY REQUIRED. CONSULT THE LOCAL AUTHORITY ON THE MATTER IF NECESSARY AND RECYCLE MATERIALS WHEN POSSIBLE.

### BUTTON/COIN BATTERY WARNING



#### WARNING:

This product contains a Button or Coin Cell Battery. A swallowed Button or Coin Cell Battery can cause internal chemical burns in as little as two hours and lead to death. Dispose of used batteries immediately. Keep new and used batteries away from children. If you think batteries might have been swallowed or placed inside any part of the body, seek immediate medical attention.

Instruction Manual, &  
Downloadable Planisphere Visit:

[www.exploreone.com/pages/product-manuals](http://www.exploreone.com/pages/product-manuals)





## Parts Overview

1. 114mm Telescope Optics
2. Red Dot ViewFinder
3. Focuser
4. Flexible Shaft (Altitude Up and Down)
5. Flexible Shaft (Azimuth Left and Right)
6. 26mm & 9.7mm Plossl Eyepieces
7. Tripod
8. Tripod Accessory Tray

## How To Set Up

### Assembly:

*Note: We recommend assembling your telescope for the first time in the daylight or in a lit room so that you can familiarize yourself with assembly steps and all components.*

#### 1. General Information regarding Assembly, Positioning

Before beginning with the assembly, choose a suitable position for your telescope.

It will help if you assemble this apparatus at a spot from where you have a clear view of the sky, a sturdy surface beneath you, and enough space.

**Important:** Tighten screws only as much as you can by hand - do not “over-tighten” the screws.

#### 2. Tripod

Take the three-legged tripod and set it vertically on the floor with the feet pointing downwards. Now take two of the tripod legs and pull these legs carefully out away from each other, until they have reached their fully opened position. During this time, the entire weight of the tripod rests on one leg. Finally, set the tripod down on all legs, so that it stands straight.

Loosen the three locking clips on the tripod legs, pull each individual tripod leg out until it has reached the desired length close up the locking clips and set the tripod down on a sturdy, even surface.

**NOTE:** A small water level on the accessory tray can help you position your tripod horizontally.

#### 3. Mounting The Tray

The accessory tray must be positioned with its flat side down in the middle of the tripod leg brace, and then must be mounted by turning it 60° in a clockwise direction.

The three projections on the tray plate must match up to the mounting brackets on the division bars (and must snap into place. If necessary, you may push the tripod leg brace down-wards a little.

Now set the tube (and holder) onto the mount with the objective opening in the direction marked (N-marking on the tripod head, north point and telescope figure on the mount). Then fasten the tube holder with the clamping screw of the dovetail adapter on the mount head.

#### 4. Inserting the Eyepiece

Two Plossl eyepieces 26 mm and 9.7 mm come with your telescope. With the eyepieces, you can control the magnification of your telescope.

Before installing the eyepieces and the focuser, take the lens cap out of the eyepiece holder.

**NOTE:** Make sure the focuser is closest to the object which you are trying to view. If the focuser is not closest to the object the telescope is facing backwards and the view will not be of the ground and dark or black.

#### 5. Flexible shafts

In order to facilitate the exact fine adjustment of the declination- and right ascension shafts, the flexible shafts have been placed on the holders of both these shafts, in the places designed for that purpose.

The long flexible shaft is mounted parallel to the telescope tube. It is secured with a clamp screw on the designated indentation on the shaft.

The short flexible shaft is mounted sideways. It is secured with a clamp screw on the designated indentation on the shaft. Your telescope is now ready for use.

## Telescope Terms To Know:

**Diagonal:** A mirror that deflects the ray of light 90 degrees.

With a horizontal telescope tube, this device deflects the light upwards so that you can comfortably observe by looking downwards into the eyepiece. The image in a diagonal mirror appears upright, but rotated around its vertical axis (mirror image).

**Focal length:** Everything that magnifies an object via an optic lens has a certain focal length. The focal length is the length of the path the light travels from the surface of the lens to its focal point. The focal point is also referred to as the focus. In focus, the image is clear. In the case of a telescope, the focal length of the telescope tube and the eyepieces are used to determine magnification.

**Lens:** The lens turns the light that falls on it around in such a way so that the light gives a clear image in the focal point after it has traveled a certain distance (focal length).

**Eyepiece:** An eyepiece is a system made for your eye and comprised of one or more lenses. In an eyepiece, the clear image that is generated in the focal point of a lens is captured and magnified still more.

**Magnification:** The magnification corresponds to the difference between observation with the naked eye and observation through a magnifying device like a telescope. If a telescope configuration has a magnification of 30x, then an object viewed through the telescope will appear 30 times larger than it would with the naked eye. To calculate the magnification of your telescope setup, divide the focal length of the telescope tube by the focal length of the eyepiece.

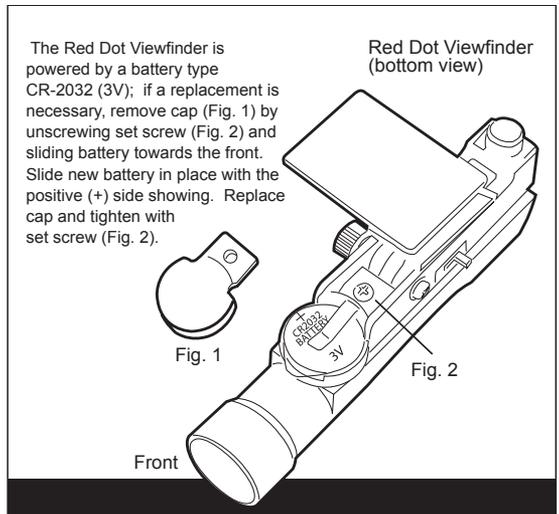
## Using/Aligning the Red Dot Viewfinder:

The viewfinder is powered by a CR-2032 battery that is included. Before using the viewfinder for the first time, remember to remove the plastic insulator that is blocking the battery from connecting.

When it is time to replace the battery, remove the battery cap by loosening the set screw. Take out the old battery and slide a new battery in place with the positive side showing. Replace the cap, and tighten the set screw.

### For The Viewfinder To Be Effective, It Must Be Aligned. To do this:

- Insert the 26 mm eyepiece into the diagonal and power on the viewfinder by sliding the switch on its right side to an "On" position.



- Point the eyepiece at an easy to identify target like a telephone pole that is approximately 200 yards away. Center the object in the eyepiece. Lock the telescope into place by tightening the panhandle.
- Without moving the telescope, position the red dot using the two adjustment screws so that it shares the same view as the one in your eyepiece. The front screw will move the viewfinder up and down, and the other will move it side to side. Your viewfinder is now aligned.

*Note: To preserve battery life, don't forget to turn off the viewfinder after use.*

## Using Your Telescope:

After you have assembled your telescope, you are ready to start observing. Put the 26 mm eyepiece into the diagonal to get the widest field of view. This wider field of view will make it easier to locate and track objects.

To move the scope up, down and side to side, loosen the locking screws slightly and grip the telescope near where the tube meets the focuser and steadily move the tube until your target comes into view in the eyepiece. Once you have found and focused on your desired target, you can lock the telescope into position by tightening the two locating screws. It is important to remember that the rotation of the Earth means objects will move out of your eyepiece fairly quickly.

For a closer look at an object, you can insert the 9.7 mm eyepiece. The magnification will increase from 20x to 52x.

## Cleaning:

Your telescope is a precision optical device and keeping the optics free of dust and dirt is crucial for optimal performance. To clean the lenses (objective and eyepiece) use only a photo-grade soft brush or a lint-free cloth, like a microfiber cloth. Do not press down too hard while cleaning, as this might scratch the lens. Ask your parents to help if your telescope is really dirty. If necessary, the cleaning cloth can be moistened with an optical glass cleaning fluid and the lens wiped clean using very little pressure. Do not use harsh detergents!

Make sure your telescope is always protected against dust and dirt. After use, leave it in a warm room to dry off before storing.

## Possible Objects For Observation:

### Terrestrial Objects

Take note of the examples below, including Mount Rushmore and the golf course. Start with the 26 mm eyepiece and focus until the image is clear. After mastering the 26 mm eyepiece, switch to the 9.7 mm eyepiece and practice scanning and focusing until the image is clear. Choose several terrestrial objects to practice focusing on, but never point your telescope at or near the sun, or you risk blindness.



## The Moon

**Diameter:** 3,476 km

**Distance:** Approximately 384,401 km

The Moon is the Earth's only natural satellite, and it is the second brightest object in the sky (after the Sun). Although it is our closest neighbor, a lot of people have never really taken a good long look at the Moon. With your telescope, you should be able to see several interesting lunar features. These include lunar maria, which appear as vast plains, and some of the larger craters. The best views will be found along the terminator, which is the edge where the visible and cloaked portions of the Moon meet.

The Moon

f=26 mm

f=9.7 mm



## Orion Nebula (M 42)

M 42 in the Orion constellation

**Right ascension:** 05:35 (Hours: Minutes)

**Declination:** -5:22 (Degrees: Minutes)

**Distance from Earth:** 1,500 light years

Orion Nebula M 42

f=26 mm

f=9.7 mm



Located about 1,500 light years from Earth, the Orion Nebula (Messier 42, abbreviation: M 42) is the brightest diffuse nebula in the sky – visible with the naked eye, and a worthwhile object for telescopes of all types and sizes, from the smallest field glass to the largest earthbound observatories and the Hubble Space Telescope.

When talking about Orion, we're actually referring to the main part of a much larger cloud of hydrogen gas and dust, which spreads out over half of the Orion constellation. The expanse of this enormous cloud stretches several hundred light years.

## Ring Nebula (M 57)

M 57 in the Lyra constellation

**Right ascension:** 18:53 (Hours: Minutes)

**Declination:** -33:02 (Degrees: Minutes)

**Distance from Earth:** 2,400 light years

Ring Nebula in Lyra Constellation M 57

f=26 mm

f=9.7 mm



The famous Ring Nebula M 57 in the constellation of Lyra is often viewed as the prototype of a planetary nebula; it is one of the magnificent features of the Northern Hemisphere's summer sky. Recent studies have shown that it is probably comprised of a ring (torus) of brightly shining material that surrounds the central star (only visible with larger telescopes), and not of a gas structure in the form of a sphere or an ellipsoid. If you were to look at the Ring Nebula from the side, it would look like the Dumbbell Nebula (M27). When viewed from Earth, we are looking directly at the pole of the nebula.

## Dumbbell Nebula (M 27)

M 27 in the Fox constellation

**Right ascension:** 19:59.6 (Hours: Minutes)

**Declination:** +22:43 (Degrees: Minutes)

**Distance from Earth:** 1,360 light years

Dumbbell Nebula in Fox Constellation M 27

f=26 mm

f=9.7 mm



The Dumbbell Nebula (M 27) in Fox was the first planetary nebula ever discovered. On July 12, 1764, Charles Messier discovered this new and fascinating class of objects. We see this nebula almost directly from its equatorial plane. If we could see the Dumbbell Nebula from one of its poles, we would see the shape of a ring, and we would see something very similar to what we know as the Ring Nebula (M 57). In reasonably good weather, we can see this object well even with low magnifications.

## Troubleshooting Guide:

<b>Problem</b>	<b>Solution</b>
<b>No picture</b>	Remove dust protection cap and sun-shield from the objective opening.
<b>Blurred picture</b>	Adjust focus using focus ring.
<b>No focus possible</b>	Wait for temperature to balance out.
<b>Bad quality</b>	Never observe through a glass surface such as a window.
<b>Viewing object visible in the finder, but not through the telescope</b>	Align finder to telescope (see instructions)
<b>Despite using star diagonal prism the picture is "crooked"</b>	The star diagonal prism should be vertical in the eyepiece connection.



© 2017 Explore Scientific®, LLC.  
1010 S 48th Street, Springdale, AR 72762  
exploreone.com | 866.252.3811  
All rights reserved. Made in China.

CONFORMS TO THE SAFETY  
REQUIREMENTS OF ASTM F963

Colors and styles may vary.