NEWTONIAN 114 MM

W/ PAN HANDLE MOUNT

INSTRUCTION MANUAL

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

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

CR1620 3V **x1 INCLUDED**

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

⚠ WARNING:
The lens contains lead that may be harmful.
Wash hands after touching.

SPECIFICATIONS

OPTICAL DESIGN	NEWTONIAN
MAGNIFICATION	25 - 50X (75 - 150X)
FRONT LENS (CLEAR APERTURE)	114mm
FOCAL LENGTH	500mm
STANDARD EYEPIECES	K10mm , K20mm
FINISH	CARBON FIBER
ACCEPTS EYEPIECE BARREL	31.75mm (1.25 ")
MOUNTING	AZ PAN HANDLE MOUNT

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.

How To Set Up

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.

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2)

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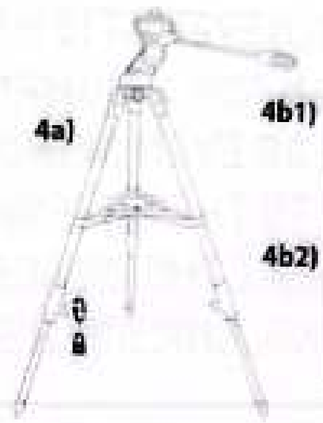
4a)



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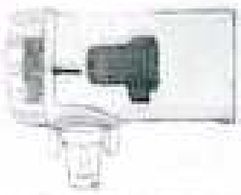

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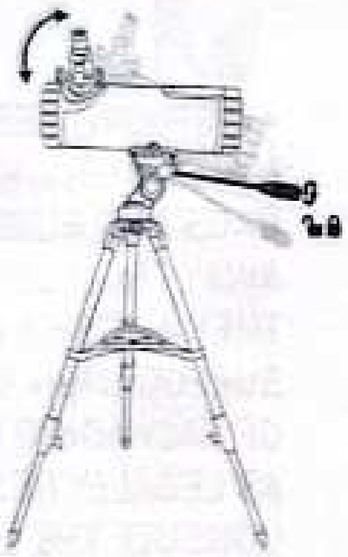

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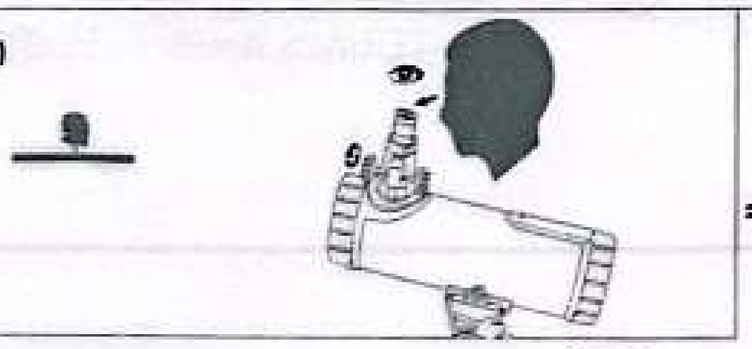

10b)

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11)

Parts Overview

1. 114mm Objective Lens

2. Pan-Tilt Alt-Azimuth Mount

3. Tripod with Accessory Tray

4. Focus Wheel

5. 1.25" Eyepieces (10mm and 20mm)

6. 3x Barlow Lens

7. Red Dot Viewfinder

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-1620 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.
Note: Please recycle batteries responsibly.

For The Viewfinder To Be Effective, It Must Be Aligned.

- 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.

The Red Dot Viewfinder is powered by a battery type CR-1620 (3V); if a replacement is necessary, remove cap (Fig. 1) by twisting counter clockwise (Fig. 2) remove old battery and insert new battery in place with the positive (+) side showing. Replace cap and tighten clockwise. Please recycle batteries responsibly.

Red Dot Viewfinder (back view)

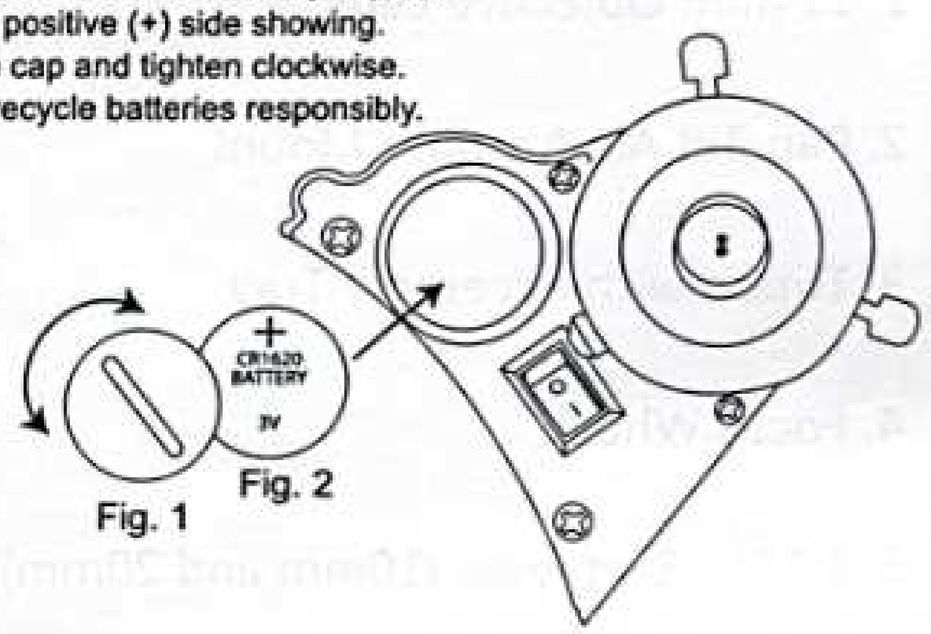


Fig. 1 Fig. 2

Using your telescope:

After you have aligned your viewfinder, 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. Use the panhandle to move the scope up, down and side to side until your target comes into view in the eyepiece. It is important to remember that the rotation of the Earth means objects will move out of your eyepiece fairly quickly. Once you have found and focused on your desired target, you can track it as it journeys across the night sky using the panhandle.

For a closer look at an object, you can insert the 9.7 mm eyepiece. The magnification will increase from 23x to 62x. For a more closer look at an object, you can insert the 2x Barlow lens. The magnification will increase to 46x for the 26 mm eyepiece and 124x for the 9.7 mm eyepiece.

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. f 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.

Terrestrial Images
f=20mm f= 10mm

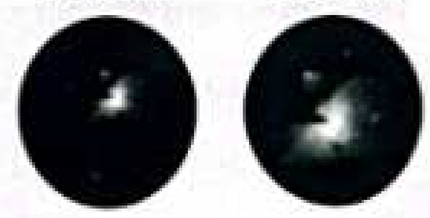
The Moon
Diameter: 3,476 km
Distance: Approximately 384,401 km
The Moon is the Earth's only natural satellite, and it is the second brightest object in the sky (after the Sun). Although it is our closest neighbor, a lot of people have never really taken a good long like at the Moon. With your telescope, 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=20mm f= 10mm

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

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.

Orion Nebula M 42
f=20mm f= 10mm



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

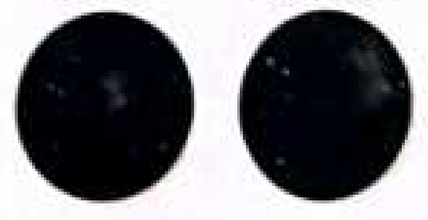
The famous Ring Nebula M 57 in the constellation of Lyra is often viewed as the prototype of a planetary nebula; it is one of the magnificent features of the Northern Hemisphere's summer sky. Recent studies have shown that it is probably comprised of a ring (torus) of brightly shining material that surrounds the central star (only visible with larger telescopes), and not of a gas structure in the form of a sphere or an ellipsis. 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.

Ring Nebula in Lyra Constellation M 57
f=20mm f= 10mm

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

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.

Dumbbell Nebula in Fox Constellation M 27
f=20mm f= 10mm



Troubleshooting Guide:

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

Using the Smartphone Adapter:

SUPERVISION BY ADULTS

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

The Smartphone Adapter will allow you to connect almost any "smart" device to a 1.25" eyepiece.

To use the adapter, place it directly onto the selected eyepiece and secure it by tightening the setscrew until snug.

Be careful not to overtighten because this could damage the adapter and/or the eyepiece.

The camera lens on your smart device will need to be centered over the eyepiece. This alignment is best done by opening the camera function and viewing the image while you center the device. Once you have positioned the device correctly, carefully press it onto the suction cup/non-skid surface of the adapter pad. Never allow the adapter pad to hold your device without you supporting the item as well.

The point at which you secure the eyepiece/adapter combination into the diagonal depends largely on the dimensions of your device. For smaller devices like smart phones, it may be easier to secure it to the eyepiece/adapter combination before inserting the entire unit into the diagonal on the telescope. For larger devices, such as tablets, it may be easier to secure the eyepiece/adapter combination into the diagonal, and then align and attach your device.

After positioning your device and capturing images, you can enhance and edit the photos using the imaging software of

WARNING: Do not leave your device unsupported or unattended on the adapter pad.

Though the surface of the adapter pad is designed with suction cups and is non-skid, the manufacturer cannot assure that the pad will support the weight of various devices or guarantee that it will adhere to all surfaces on various smart devices. The pad is not intended to secure, balance or support the device on its own, and the operator should not let the device rest solely on the adapter pad. Leaving the device unattended or allowing it to balance on its own without operator support may result in the device falling, unbalancing the entire instrument and possibly damaging the telescope or your smart device.

CHEMICALS

Any chemicals and liquids used in preparing, using, or cleaning should be kept out of reach of children. Do not drink any chemicals. Hands should be washed thoroughly under running water after use. In case of accidental contact with the eyes or mouth rinse with water. Seek medical treatment for ailments arising from contact with the chemical substances and take the chemicals with you to the doctor.

Keep packaging materials (plastic bags, rubber bands, etc.) away from children. There is a risk of **SUFFOCATION.**

Dispose of packaging materials as legally required. Consult the local authority on the matter if necessary.

DISPOSAL

Dispose of the packaging materials properly, according to their type, such as paper or cardboard. Contact your local waste-disposal service or environmental authority for information on the proper disposal. Please take the current legal regulations into account when disposing of your device. You can get more information on the proper disposal from your local waste-disposal service or environmental authority.

• The WEEE symbol if present indicates that this item contains electrical or electronic components which must be collected and disposed of separately.

• Never dispose of electrical or electronic waste in general municipal waste. Collect and dispose of such waste separately.

• Make use of the return and collection systems available to you, or your local recycling program. Contact your local authority or place of purchase to find out what schemes are available.

• Electrical and electronic equipment contains hazardous substance which, when disposed of incorrectly, may leak into the ground. This can contribute to soil and water pollution which is hazardous to human health, and endanger wildlife.

• It is essential that consumers look to re-use or recycle electrical or electronic waste to avoid it going to landfill sites or incineration without treatment.

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