

CELESTRON[®]

**TELESCOPE
INSTRUCTION MANUAL**

FIRSTSCOPE 60 EQ REFRACTORS

MODELS #21066, #21066-DX, #21066-DX-AL

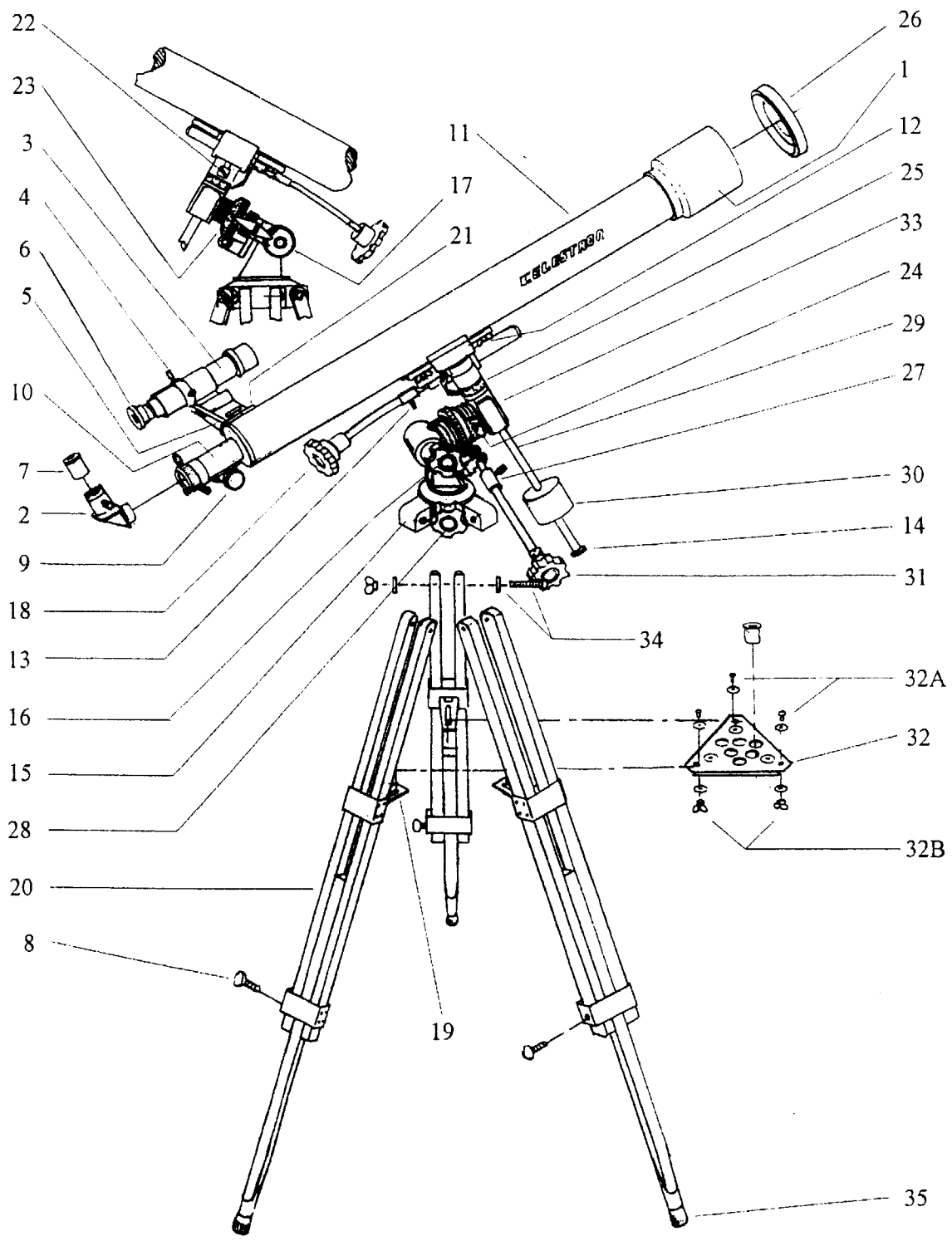
FIRSTSCOPE 60 EQ SHORT REFRACTOR

MODEL #21065

FIRSTSCOPE 70 EQ REFRACTORS

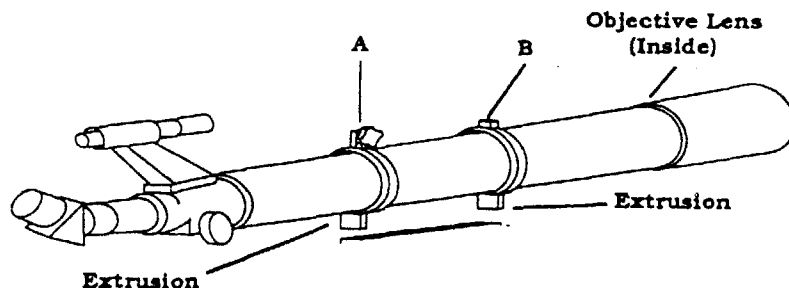
MODELS #21081, #21081-AL

**FIRSTSCOPE 60 EQ SHOWN
 (Other Models Similar)
 FIGURE 1**



LIST OF PARTS: FIRSTSCOPE 60 EQ

- | | |
|-------------------------------------|---|
| 1. Telescope Objective (inside) | 19. Tripod tray bracket |
| 2. Diagonal | 20. Tripod leg |
| 3. Finderscope | 21. Finderscope bracket mounting screws |
| 4. Finderscope adjustment screws | 22. Declination thumb knob |
| 5. Finderscope bracket | 23. Right ascension setting circle |
| 6. Finderscope eyepiece | 24. Right ascension thumb knob |
| 7. Eyepiece | 25. Declination setting circle |
| 8. Tripod leg adjusting screw | 26. Front lens cover |
| 9. Focusing knob | 27. Right ascension cable holder |
| 10. Rack and pinion focuser | 28. Horizontal adjustment knob |
| 11. Telescope optical tube | 29. Counterweight shaft |
| 12. Tube mounting plate and bolts | 30. Counterweight |
| 13. Declination cable holder | 31. Right ascension cable |
| 14. Safety washer for counterweight | 32. Tripod accessory tray & hardware |
| 15. Tripod head (part of mount) | 33. Equatorial mount |
| 16. Polar axis knob | 34. Tripod leg mounting hardware |
| 17. Latitude scale | 35. Tripod leg tips |
| 18. Declination cable | |



70mm models use tube rings (A&B)

INTRODUCTION

Congratulations on your purchase of a Celestron equatorial refractor telescope. This telescope is a precision scientific instrument that will allow you to enjoy viewing numerous objects in the night sky — planets, nebulae, star clusters, galaxies and more.

Before embarking upon an exploration of the sky, please take time to read this manual and familiarize yourself with both the parts and operation of your telescope.

WARNING

NEVER LOOK DIRECTLY AT THE SUN WITH THE NAKED EYE OR WITH A TELESCOPE. NEVER POINT YOUR TELESCOPE AT THE SUN UNLESS YOU ARE USING THE PROPER SOLAR FILTER. PERMANENT AND IRREVERSIBLE EYE DAMAGE MAY RESULT.

NEVER USE YOUR TELESCOPE TO PROJECT AN IMAGE OF THE SUN ONTO ANY SURFACE. INTERNAL HEAT BUILD UP CAN DAMAGE THE TELESCOPE AND/OR ANY ACCESSORIES THAT MAY BE ATTACHED TO IT.

NEVER LEAVE YOUR TELESCOPE UNSUPERVISED, ESPECIALLY WHEN CHILDREN ARE PRESENT. THIS ALSO HOLDS TRUE FOR ADULTS WHO MAY NOT BE FAMILIAR WITH THE CORRECT OPERATING PROCEDURES FOR YOUR TELESCOPE.

NEVER USE AN EYEPIECE SOLAR FILTER OR A HERSHEY WEDGE. INTERNAL HEAT BUILD UP WITHIN THE TELESCOPE CAN CAUSE THESE DEVICES TO CRACK, BREAK OR DAMAGE YOUR TELESCOPE. ANY SOLAR FILTER USED SHOULD BE A FILTER FOR THE PRIMARY OR OBJECTIVE LENS, SUCH AS CELESTRON'S SOLAR SKREEN.

ALWAYS COVER THE FINDERSCOPE WHEN USING YOUR TELESCOPE WITH THE CORRECT SOLAR FILTER. ALTHOUGH SMALL IN APERTURE, THIS INSTRUMENT HAS ENOUGH LIGHT GATHERING POWER TO CAUSE PERMANENT AND IRREVERSIBLE EYE DAMAGE. THE IMAGE PROJECTED BY THE FINDERSCOPE IS HOT ENOUGH TO BURN SKIN OR CLOTHING.

TELESCOPE ASSEMBLY

The Firstscope comes packed in one box, with all the parts you need to assemble it. Unpack and lay out all of the telescope parts in a large, clear area where you'll have room to work. Use the parts list and the telescope diagram to confirm you have, and can identify each part. The parts you'll unpack include:

FOR ALL TELESCOPES —

- Telescope Optical Tube
- German Equatorial Mount
- Adjustable Wood Tripod (some models have an aluminum tripod)
- 5x24 Finderscope and Bracket (70mm models) — 6x24 size for 60mm models
- Counterweight and Shaft
- Tripod Accessory Tray
- Declination Cable
- Right Ascension Cable
- Diagonal

- Eyepieces are different for various models:

#21066	—————	20mm H - .96" (45x), 12.5mm H - .96" (72x)
#21066-DX	—————	25mm (SMA) - 1¼" (36x), 10mm - 1¼" (90x)
#21066-DX-AL	—————	20mm H - 1¼" (45x), 8mm H - 1¼" (113x)
#21081 & 21081-AL	—————	25mm (SMA) - 1¼" (36x), 6mm F - 1¼" (150x)
#21065	—————	20mm H - .96" (45x), 8mm H - .96" (113x)

- Barlow Lens ————— A 2x - .96" model is included with models using .96" eyepieces — it doubles the power of an eyepiece.

Setting Up the Wood Tripod

To set up the tripod, locate the German equatorial mount, the tripod legs, the tripod mounting hardware and the tripod accessory tray.

1. Extend the center portion (35) of each of the three tripod legs down 6-8".
2. Use the three wing nut screws (8) to secure each of the extended legs by threading these screws through the holes in the brackets at the bottom of each leg. This is important. If you do not extend the legs now, you won't be able to once the tripod head is assembled. Fine tuning of the tripod height can be done later, and the wing nut screws can be adjusted to secure the telescope at the desired height.

NOTE: This may have been pre-assembled at the factory.

3. Orient the three tripod legs so the brackets that hold the accessory tray are on the inside (19).
4. Slide the two top portions of each tripod leg around the sides of each flange on the tripod head (15) of the equatorial mount, so the flange is secured between them.
5. Remove the wing nut and one washer from the screw.
6. Slide the screw through the tripod leg and flange, until the screw extends out the other side.
7. Slide the washer and the nut over the screw and tighten. This can be left slightly loose, to allow for positioning the legs later, when attaching the accessory tray.
8. Repeat this process for the remaining two legs. Now the tripod will stand by itself.

Attaching the Accessory Tray

Start by locating the accessory tray and bolt pack for the accessory tray (32).

1. Remove the wing nut and one washer from each screw.
2. Slide one corner of the accessory tray over the bracket hanging from the inside of the tripod leg. Make sure the tray is placed over the tip of the bracket, so the bracket doesn't cover the holes cut into the accessory tray, allowing for full use. Widen the tripod legs if necessary to accomplish this.
3. Insert a screw—with washer—down through the accessory tray and bracket.
4. Slide the washer and wing nut over the end of the screw. Tighten the screw completely.
5. Repeat this process for the remaining two corners of the accessory tray.

Setting up the Aluminum Tripod

If your model has the Aluminum Tripod:

1. Attach the legs to the tripod head as above.
2. Spread the leg apart.
3. Attach the accessory tray to the leg braces.

SETTING UP THE TELESCOPE

Orienting the Telescope

1. Begin by identifying and loosening knobs #16, 22, 24 and 28, using the diagram in Figure 1 to guide you.
2. Next, rotate the telescope optical tube so the counterweight is pointed down, toward the ground, and the optical tube is above the top of the mount (as opposed to being at the side of the mount).
3. Tighten down knob #24 to secure this position.
4. Now align the optical tube so that the declination setting is 90°. Once you have achieved this, tighten knob #22.
5. Lift the front of the optical tube so that it's at a 30° angle to the ground.

Attaching the Declination and Right Ascension Cables

1. Locate the declination cable holder (13) and the declination cable, which is the shorter of the two cables provided.
2. Insert the declination cable (18) into the cable holder such that the cable is about ¼" short of being fully engaged in the cable holder. Tighten the thumb screw on the end of the cable down completely. This method helps ensure there's no slippage when using the cable. Please note that the orientation of the declination cable can be adjusted to the position that suits you best.
3. Locate the right ascension cable holder (27) and the right ascension cable (31) and assemble the cable to the holder in the same manner described for the declination cable.

Attaching the Counterweight

1. Slide the counterweight shaft (29) through the counterweight (30).
2. Use the nut on the counterweight lock to secure the counterweight in place.
3. Thread the counterweight shaft clockwise into the equatorial mount (33) as shown in Figure 1.

Installing the Telescope Optical Tube on the Equatorial Mount (60mm Models)

1. Remove the two wing nuts and two washers from the telescope optical tube (12).
2. Put the screws through the holes in the mounting plate of the equatorial mount.
3. Tighten the wing nuts on the screws.

Installing the Telescope Optical Tube on the Equatorial Mount (70mm Models)

The optical tube is held to the mount with two mounting rings. On the bottom of the mounting rings are square extrusions — one on each ring. This portion of the ring slides over part of the mounting platform to hold the telescope in place.

1. Slightly loosen the screws (on the bottom) that hold the tube rings on the mount. (If the tube rings are not attached to the mount, you will have to screw them on from the bottom).
2. Place the telescope tube on the mount and orient it so that the objective lens is opposite the slow motion control handles.
3. Open the rings slightly to fit around the tube and then pull down.
4. Tighten the thumb bolts on the rings to hold the telescope to the mount.
5. Tighten the screws that hold the tube rings to the mount (on the bottom).

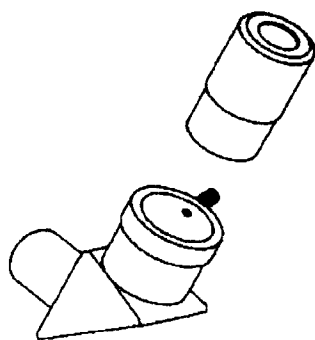
Attaching the Finderscope

1. Remove the screws (21) from the optical tube where the finderscope will be mounted.
2. Place the finderscope bracket (5) over these holes in the optical tube and attach it using the screws you just removed from the optical tube. Orient the bracket as shown in Figure 1.
3. Place the finderscope into the bracket and secure it in place using the adjustment screws (4).

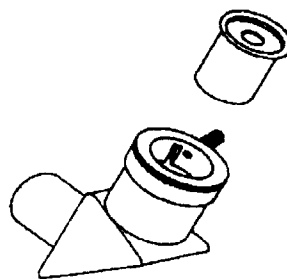
Installing Eyepieces

NOTE: The Firstscope 60 EQ telescopes come equipped for use with either .96" or 1¼" eyepieces. The eyepiece adapter comes set up for use with a .96" size eyepieces. The inner bushing of the adapter is easily removed so that 1¼" eyepieces can be used (see diagrams below). The Firstscope 70 models use only 1¼" eyepiece.

1. Remove the caps from the focuser (at the end of the telescope tube) and the diagonal. The cap for the diagonal is at the center of the top cover. Do not remove the entire outer bushing adapter of the diagonal if installing a .96" eyepiece, as you'll need this for proper installation of the eyepiece.
2. Insert the chrome end of the diagonal into the focuser.
3. Lock into place by tightening the set screws on the focuser.
4. Remove caps from the eyepiece (ocular) and place it into the diagonal. Lock it into place with the set screw.



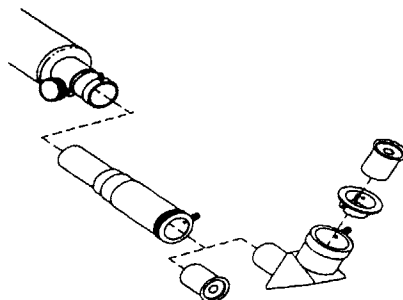
1¼ Eyepiece



.96" Eyepiece

Installing the Barlow Lens - .96"

To install a Barlow Lens (for those models including it). First, you can remove the diagonal from the focuser and insert the Barlow lens directly into the end of the focuser, then put the diagonal in the Barlow-lens and the eyepieces into the diagonal.



TELESCOPE OPERATION — GETTING SET UP

Setting Latitude

Loosen the polar axis knob (16) with one hand, while holding the equatorial mount with the other hand. Look at the latitude scale (17) on the side of the mount, then set the mount at the latitude of your location. If you don't know your latitude, it can be found on a road atlas of your area. Once the latitude is set, tighten the polar axis knob. This only has to be done once for any given latitude, and then readjusted if the telescope is used at a different latitude.

Adjusting and Balancing Declination and Right Ascension

To move the telescope in declination (north/south) there are two options. For large and quick movements, release the declination knob (22), move the telescope in the direction of the object you want to view, then tighten the knob when you're near the object. For very small movements and fine adjustments, use the declination cable (18). The declination cable has a range of about 30°. If you get to the end of this range but haven't yet reached the object you're trying to view, you'll want to loosen the declination lock for greater movement. Manually move the telescope tube past the object you want to view, then use the slow motion control, in the opposite direction, to go back to the object. Tighten the knob and reverse the direction of the declination cable. Do not try to force movement when the declination cable has reached the end of its range. There are the same two options for moving the telescope in right ascension (east/west). For large and quick movements, release the right ascension knob (24), move the telescope toward the object you want to view, then tighten the knob when you're near the object. For very small movements and fine adjustments, use the right ascension cable (31). For quick horizontal movement, loosen the horizontal adjustment knob.

In order for the telescope to move smoothly on both axes it must be properly balanced. To balance the right ascension axis, move the counterweight shaft so it is parallel with the ground. Slowly release the right ascension knob (24) and check to see if the optical tube moves. If the optical tube does move, then slide the counterweight up or down the counterweight shaft until the optical tube remains stationary in a position parallel to the ground. When you have achieved balance, tighten the counterweight lock nut. To balance the declination axis, follow the same procedure, using the declination knob (22) and the tube mounting knob (28).

Focusing the Telescope and Aligning the Finderscope

This procedure will be easiest to do during daylight hours. Remove the front lens cover. Put a low power eyepiece in the diagonal and position the telescope tube to look at an object about one mile away that's easy to focus on, such as a stop sign. You may need to use the declination and/or right ascension slow motion cables to get the object in the center of your field of view. Use the focus knob to get the object in sharp focus. Remove the lens covers from the finderscope and look through it. If the object you're observing either isn't visible in the finderscope or isn't centered in its cross hairs, then you need to align the finderscope. Use the finderscope adjustment screws to align the finderscope with the main telescope by tightening and loosening these screws until the object is centered in the cross hairs.

Once the finderscope is aligned with the main telescope, it becomes a great tool for finding celestial objects because it has a wide field of view. First, find the object you wish to view in the finderscope, then look at the narrower, but much more powerful field of view in the main telescope for detailed views. If the image in the finderscope isn't sharply focused, turn the finderscope eyepiece (6) to get a focused image.

Don't be alarmed when you look through the finderscope and telescope, and the object is upside down and reversed left to right. This is normal with an astronomical telescope.

Preparation for Astronomical Observing

1. Orient the telescope so that the right ascension (polar) axis is pointing as close to true north as possible. You can use a magnetic compass to determine which direction is north.
2. Adjust the mount so that it's level. You may find using a carpenter's level helpful.
3. Recheck all hardware and knobs to make sure they're tight.

UNDERSTANDING THE SKY

The Celestial-Coordinate System

The celestial-coordinate system is an imaginary projection of the earth's geographical coordinate system onto the celestial sphere, which gives the appearance of rotating overhead at night. This celestial grid is complete with equator, latitudes, longitudes and poles. The celestial equator is a full 360° circle dividing the celestial sphere into the northern celestial hemisphere and the southern celestial hemisphere. Like the earth's equator, it is the prime parallel of latitude and is designated 0° . The celestial parallels of latitude are called "coordinates of declination (DEC)." As with the earth's latitudes, they're named for their angular distances from the equator. These distances are measured in degrees, minutes and seconds of arc. There are 60 minutes of arc in each degree, and 60 seconds of arc in each arc minute. Declinations north of the celestial equator are "+" and declinations south are "-". The north pole is $+90$ and the south pole is -90 .

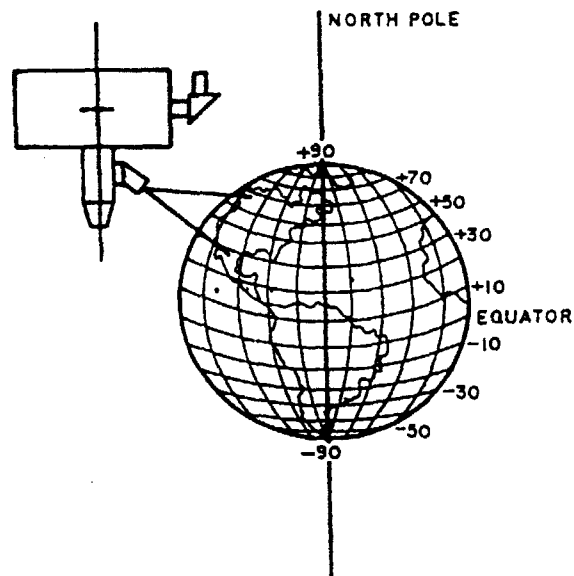


Figure 2

The celestial meridians of longitude are called "coordinates of right ascension" (RA). Like the Earth's longitude meridians, they extend from pole to pole. There are 24 major RA coordinates, evenly spaced around the 360° equator, one every 15° . Like the Earth's longitudes, RA coordinates are a measure of time, as well as angular distance. We speak of each of the Earth's major longitude meridians as being separated by one hour of time because the Earth rotates once every 24 hours (one hour = 15°). The same principle applies to celestial longitudes since the celestial sphere appears to rotate once every 24 hours. Right ascension hours are also divided into minutes of arc and seconds of arc, with each hour having 60 minutes of arc and each arc minute being divided into 60 arc seconds.

Astronomers prefer the time designation for RA coordinates even though the coordinates denote locations on the celestial sphere. Using time makes it easier to tell how long it will be before a particular star will cross a particular north-south line in the sky. RA coordinates are marked off in units of time eastward from an arbitrary point on the celestial equator, in the constellation Pisces. The prime RA coordinate which passes through this point is designated "0 hours 0 minutes 0 seconds." We call this reference point the vernal equinox where it crosses the celestial equator. All other coordinates are names for the number of hours, minutes and seconds that they lag behind the prime coordinate after it passes overhead, moving westward.

Using the celestial coordinate system, it becomes possible to find celestial objects by translating their celestial coordinates, using telescope pointing positions. To do this, you use your RA and DEC setting circles to find celestial coordinates for stellar objects. These coordinates are given in star charts and reference books.

Polar Alignment

To make tracking the stars easier, rough polar alignment is required.

1. The right ascension (polar) axis should be pointed towards the North Pole (see the illustration below).
2. The equatorial mount should be level.
3. Your latitude should be set (see section on "Setting Latitude" on page 7).

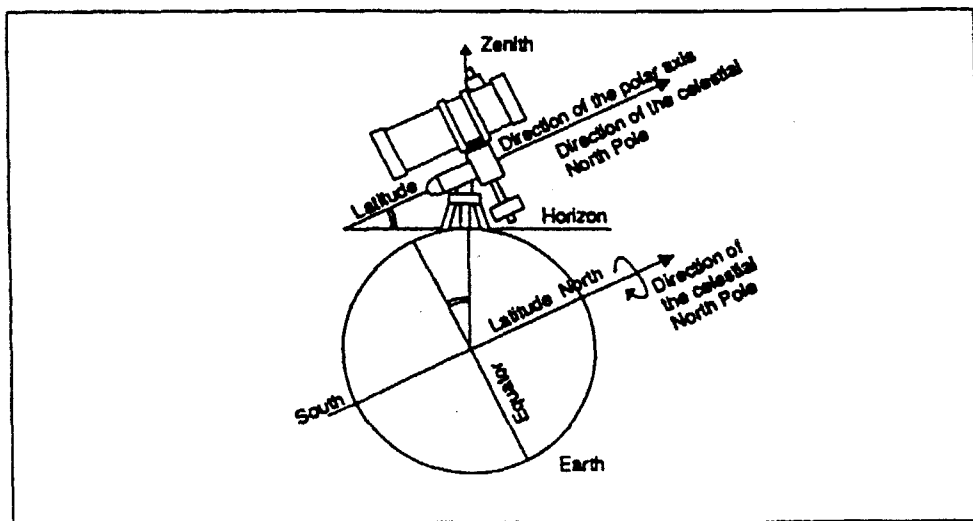


Figure 3

See the illustration below if you are not sure where the North Pole is located

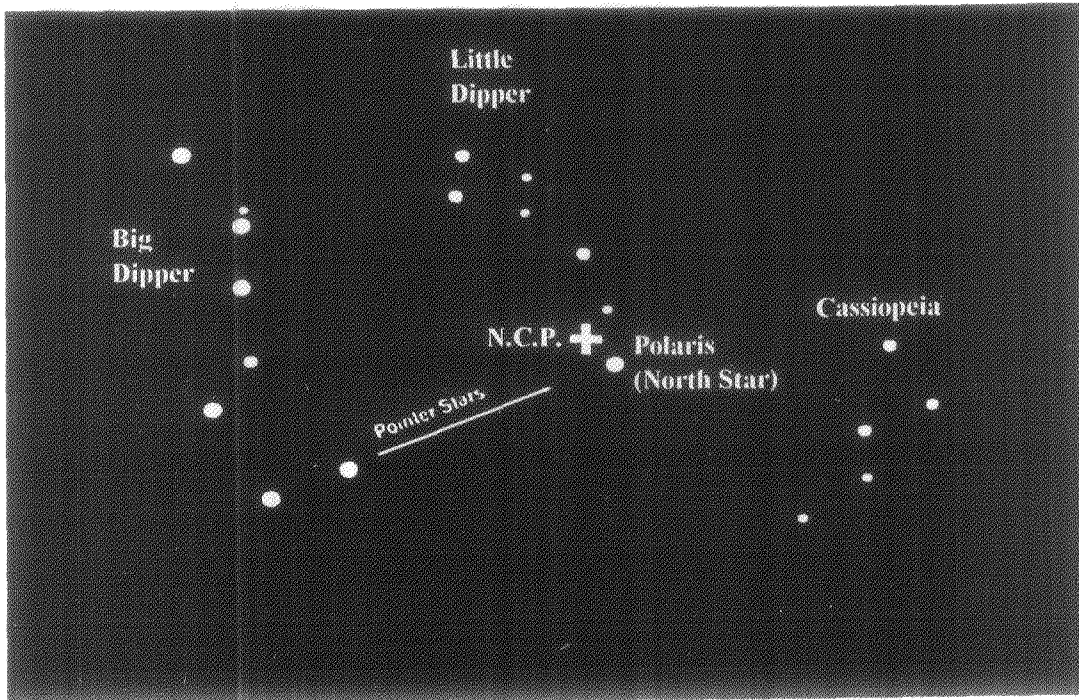


Figure 3A

For the most part, to find astronomical objects you'll be using the right ascension axis, as polar alignment virtually eliminates the need to adjust the declination axis. To track objects continuously, adjustments must be made with the right ascension cable, otherwise the rotation of the earth will cause the object you're viewing to drift out of your field of view.

The method of polar alignment described above is adequate for casual observing. More precise methods of polar alignment are available, and most astronomy or telescope textbooks describe these procedures.

Look at the North Star after doing the polar alignment procedure given here - your declination setting circle should read 90° .

SETTING CIRCLES

The setting circles are dials, or gauges, for right ascension and declination that allow you to locate a celestial object easily using its coordinates, as listed in a star chart or atlas.

The declination setting circle is scaled in degrees and the right ascension setting circle is laid out in increments of minutes. The setting circles will assist you to get close to your target, but not directly on it. It's important to note that the accuracy of your polar alignment will affect the accuracy of your setting circles readings.

The declination setting circle is set at the factory and won't require adjustment if it reads accurately. The right ascension setting circle must be aligned. Choose a bright and easy to find star on a star chart, and note its right

ascension and declination coordinates. Find the star and center it first in the finderscope, then in the telescope. Rotate the right ascension circle to match the coordinates of the star with the indicator mark. The right ascension setting circle does not move as the telescope moves in right ascension, and thus it must be aligned each time you want to use it to find a new object. However, you don't need to use a bright star each time. Instead, you can use the object you're observing at the time.

Now, using a star chart or atlas, you can find numerous objects. First, move the telescope in declination to the correct declination coordinate. Then move the telescope in right ascension until the indicator points to the correct coordinate.

After moving the telescope to the correct celestial coordinates, look through the finderscope to see if you have located the object you wish to view. Center the object in the finderscope. Now look through the telescope with a low power eyepiece, and the object should be in view.

Fainter objects may not be visible in the finderscope. If this is the case, gradually pan the telescope, using the right ascension and declination cables, until the object is visible.

MAGNIFICATION

The magnification (or power) of a telescope varies depending upon the focal length of the eyepiece being used and the focal length of the telescope.

The Firstscope 60 telescope has a focal length of 900mm and the Firstscope 60 EQ Deluxe comes with a 25mm 1¼" eyepiece. To calculate magnification, use the following formula, in which FL = focal length:

$$\text{Magnification} = \frac{FL (\text{telescope}) \text{ in mm}}{FL (\text{eyepiece}) \text{ in mm}}$$

Therefore, if you use the 25mm eyepiece your magnification is $900/25 = 36x$. The same formula can be applied to any of your eyepieces.

Celestron offers numerous optional eyepieces to expand your range of magnification. Eyepieces come in barrel diameters of .96" and 1¼". In general, 1¼" eyepieces are of a higher optical quality and give you sharper images, along with a wider field of view and better eye relief.

Magnification through the telescope has its limits. These limits are determined by the laws of optics and the nature of the human eye. The maximum usable power (with sharp images) is equal to 60 times the aperture of the telescope (in inches). So, with a 60mm telescope it has a maximum useful power of 142x ($2.3622" \times 60$) and with the 70mm the maximum is 165x (2.7559×60). Most of your viewing will be done in the range of 30x to 120x. Higher powers are used mainly for lunar and sometimes planetary observing where you can greatly enlarge the image. The images at extremely high powers like 675x magnify the image but remember that the contrast will be very low and the image somewhat blurred due to the super power. For the brightest images with the most contrast, use the lower powers with a smaller image scale.

TELESCOPE OPERATION — ASTRONOMICAL OBSERVING

Now that your telescope is set up, you're ready to use it for observing.

Observing the Moon

In the night sky, the moon is a prime target for your first look because it is extremely bright and easy to find. Although the beauty of the full moon may make it seem a perfect viewing object, in fact, the light reflected from its fully illuminated face can be overpowering. In addition, little or no contrast can be seen during this phase.

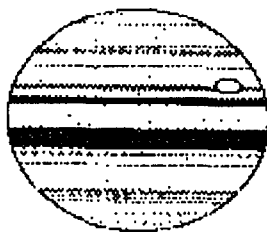
One of the best times to observe the moon is during its partial phases, such as a crescent or quarter moon. At these times, long shadows reveal a great amount of detail on the lunar surface. At low power, with the standard eyepiece, you'll be able to see the whole lunar disk at one time. Change to higher power (magnification) to focus in on a smaller area. Keep in mind that the rotation of the earth will cause the moon to drift out of your field of view. You'll have to manually adjust the telescope to keep the moon centered. This effect is more noticeable at higher power. Consult a current astronomy magazine or your local newspaper to find out the current phase of the moon.

Lunar Observing Hint

To increase contrast and bring out visible detail on the lunar surface, try using different eyepiece filters (available through your local **Celestron** dealer). A yellow filter works well for improving contrast.

Observing the Planets

Other easy targets include the five "naked eye" planets of our solar system, so called because they can be spotted in the night sky by the unaided eye. You can see **Venus** go through its lunar-like phases. **Mars** can reveal a host of surface detail and one, if not both, of its polar caps. You'll be able to see the cloud belts of **Jupiter**, perhaps even the great Red Spot. In addition, you'll be able to see the moons of Jupiter as they orbit the giant planet. **Saturn**, with its beautiful rings, is easily visible at moderate power, as is **Mercury**. All you need to know is where to look. Most astronomy publications indicate where the planets are in the sky each month.



The drawing above of Jupiter provides a good representation of what you can expect to see with moderate magnification, during good "seeing" conditions.

Observing the Sun

Although overlooked by many amateur astronomers, solar observation is both rewarding and fun. However, because the sun is so bright, special precautions must be taken when observing this star, so as not to damage your eyes or your telescope. Never project an image of the sun through the telescope. This can damage the telescope and/or any accessories attached to the telescope. For safe solar viewing, use a **Celestron** solar filter. This filter reduces the intensity of the sun's light, making it safe to view. With this filter you can see sunspots as they move across the solar disk and faculae, which are bright patches seen near the sun's edge. Be sure to cover the finderscope's lens or remove it completely when observing the sun. This will ensure that the finderscope itself is

not damaged and that no one looks through it inadvertently. Before any solar viewing, please review the warning on page 4.

To enable you to find objects you should have a set of Star Charts. The location of the planets may appear in local newspapers.

Observing Deep-Sky Objects

Deep-sky objects are simply those objects outside the boundaries of our solar system. They include star clusters, planetary nebulae, diffuse nebulae, double stars and other galaxies outside our own Milky Way. Unlike the sun, moon and our five major planets, most deep-sky objects are not visible to the naked eye. **Celestron Sky Maps** (#93722) can help you locate the brightest deep-sky objects.

Most deep-sky objects have a large angular size. Therefore, a low-to-moderate power eyepiece is all you need to see them. Visually, they are too faint to reveal any of the color seen in long exposure photographs. Instead, they appear black and white. Because of their low surface brightness, they should be observed from a "dark-sky" location. Light pollution around large urban areas washes out most nebulae making them difficult, if not impossible, to observe. The amount of detail you can see is dependent on your observing site (dark-sky rural locations are best), atmospheric conditions, brightness of the object and your observing experience.

TELESCOPE MAINTENANCE

With proper care, your telescope should rarely need any maintenance work. To maintain your telescope in the best possible condition, observe the follow suggestions:

1. When your telescope isn't in use, replace all lens covers to keep dust and contaminants off the optical surfaces.
2. A small amount of dust on any optical surface isn't a problem and doesn't need to be removed. If the dust builds up, then use a can of compressed air and a camels hair brush to remove the dust. To remove fingerprints or other contaminants, use an optical cleaning kit or the **Celestron Lens Pen** (#93575).
3. If the inside of the objective lens needs cleaning, it should be done by a professional. Either have your instrument serviced by a telescope repair facility or return it to the factory for servicing.

SPECIFICATIONS

	Firstscope 60's	Firstscope 60's Short	Firstscope 70's
Aperture	60mm	60mm	70mm
Focal Length	900mm	910mm	900mm
Focal Ratio	f/15	f/15.2	f/12.9
Mounting	German Equatorial	German Equatorial	German Equatorial
Tripod	Adjustable Wood (or some models aluminum)	Adjustable Wood (or some models aluminum)	Adjustable Wood (or some models aluminum)
Rack & Pinion Focuser	1¼"	1¼"	1¼"

NOTE: Specifications are subject to change without notice.

OPTIONAL ACCESSORIES

Eyepieces - An assortment of .96" and 1¼" eyepieces are available to give you a wide range of magnifications.

Eyepiece filters - To enhance your visual observations, individual filters and sets are available for 1¼" eyepieces.

Flashlights - Celestron's #93592 and #93588 LED (light emitting diode) flashlights conveniently allow you to read star maps without diminishing your night vision. Both feature adjustable brightness and are small and lightweight, (#93592 is only 6 inches long, and weighs in at a mere 3 ounces).

Light Pollution Reduction (LPR) Filter (#94126A) - A 1¼" filter that threads into a 1¼" eyepiece, designed to enhance your views of deep-sky astronomical objects when observed from urban areas. The LPR filter selectively reduces the transmission of certain wavelengths of light, specifically those produced by artificial lights. This includes mercury, and high and low pressure sodium vapor lights. Additionally, it blocks unwanted natural light (also known as sky glow).

Sky Maps (#93722) - When learning the night sky, Celestron Sky Maps offer just the guidance you need. The maps show all the constellations and brighter deep-sky objects and are printed on heavy, moisture-resistant paper for durability. The front cover features a rotating planisphere, indicating when specific constellations are visible.

Solar Filters - Celestron's Solar Skreen solar filters permit completely safe, direct observation of the sun. This filter, which transmits .001% of visible light, allows sunspots to be seen as they move across the solar disk. While reducing the intensity of the sun's visible light, it also blocks 99.999% of invisible infrared light. The Solar Skreen solar filter is made of precision engineered Mylar polyester film. A layer of aluminum is vacuum-deposited on one surface of the dual sheets of Mylar used to make each filter. This aluminum coating produces a cool, comfortable, pale blue image of the sun. A #21 orange eyepiece filter works well in conjunction with the Solar Skreen filter to produce a more naturally colored image of the sun.

Peterson First Guides® - Astronomy

A simplified field guide to the stars, the planets and the universe featuring full color maps showing the positions of the stars throughout the year. This useful guide also includes beautiful constellation paintings, photographs, and clear, concise descriptions of stars, the planets, the sun, the moon, comets, black holes, galaxies and more.

Planisphere (#93720) - A colorful rotating star map that indicates when specific constellations are visible, with removable markers for tracking the movement of planets. Available in three different latitudes: 30°, 40°, and 50° — all ±10°.

"The Sky - Level 1 for Celestron" CD-ROM (#93700) presented by Celestron and Software Bisque, is the most comprehensive and inexpensive CD-ROM on the market for all levels of astronomers. It features a 10,000 object database, 75 full color enhanced images, 360° screen rotation, zoom from 4° to 235°, realistic sky display showing stellar brightness and contrast and more. This CD-ROM is easy to load, requiring only a 4MB system to run. Windows and Windows 95 compatible.

A full description of all Celestron accessories can be found in the Celestron Accessory Catalog (#93685).

CELESTRON ONE YEAR LIMITED WARRANTY

A. Celestron International (CI) warrants this telescope to be free from defects in materials and workmanship for one year. CI will repair or replace such product or part thereof which, upon inspection by CI is found to be defective in materials or workmanship. As a condition to the obligation of CI to repair or replace such product, the product must be returned to CI together with proof-of-purchase satisfactory to CI.

B. The proper Return Authorization Number must be obtained from CI in advance of return. Call Celestron at 310-328-9560 to receive the number to be displayed on the outside of your shipping container.

All returns must be accompanied by a written statement setting forth the name, address and daytime telephone number of the owner, together with a brief description of any claimed defects. Parts or product for which replacement is made shall become the property of CI.

The customer shall be responsible for all costs of transportation and insurance, both to and from the factory of CI, and shall be required to prepay such costs.

CI shall use reasonable effort to repair or replace any telescope covered by this limited one year warranty within thirty days of receipt. In the event repair or replacement shall require more than thirty days, CI shall notify the customer accordingly. CI reserves the right to replace any product which has been discontinued from its product line with a new product of comparable value and function.

This warranty shall be void and of no force of effect in the event a covered product has been modified in design or function, or subject to abuse, misuse, manhandling or unauthorized repair. Further, product malfunction or deterioration due to normal wear is not covered by this warranty.

CI DISCLAIMS ANY WARRANTIES, EXPRESS OR IMPLIED, WHETHER OF MERCHANTABILITY OF FITNESS FOR A PARTICULAR USE, EXCEPT AS EXPRESSLY SET FORTH HEREIN.

THE SOLE OBLIGATION OF CI UNDER THIS LIMITED ONE YEAR WARRANTY SHALL BE TO REPAIR OR REPLACE THE COVERED PRODUCT, IN ACCORDANCE WITH THE TERMS SET FORTH HEREIN. CI EXPRESSLY DISCLAIMS ANY LOST PROFITS, GENERAL, SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES WHICH MAY RESULT FROM BREACH OF ANY WARRANTY, OR ARISING OUT OF THE USE OR INABILITY TO USE ANY CI PRODUCT. ANY WARRANTIES WHICH ARE IMPLIED AND WHICH CANNOT BE DISCLAIMED SHALL BE LIMITED IN DURATION TO A TERM OF ONE YEAR FROM THE DATE OF ORIGINAL PURCHASE.

Some states do not allow the exclusion or limitation of incidental or consequential damages or limitation on how long an implied warranty lasts, so the above limitations and exclusions may not apply to you.

This warranty gives you specific legal rights, and you may also have other rights which vary from state to state.

CI reserves the right to modify or discontinue, without prior notice to you, any model or style of telescope.

If warranty problems arise, or if you need assistance in using your telescope, contact:

Celestron International
Customer Service Department
2835 Columbia Street, Torrance, CA 90503 U.S.A.
Tel.: 310-328-9560
Fax: 310-212-5835
Monday - Friday 8AM-4PM PST

This warranty supersedes all other product warranties.

NOTE: This warranty is valid to U.S.A. and Canadian customers who have purchased this product from an authorized CI dealer in the U.S.A. or Canada. Warranty outside the U.S.A. and Canada is valid only to customers who purchased from a CI International Distributor or Authorized CI Dealer in the specific country. Please contact them for any warranty service.