INSTRUCTION MANUAL

Orion® AstroView™ Equatorial Mount

#9822 AstroView Equatorial Mount

ORION TELESCOPES & BINOCULARS
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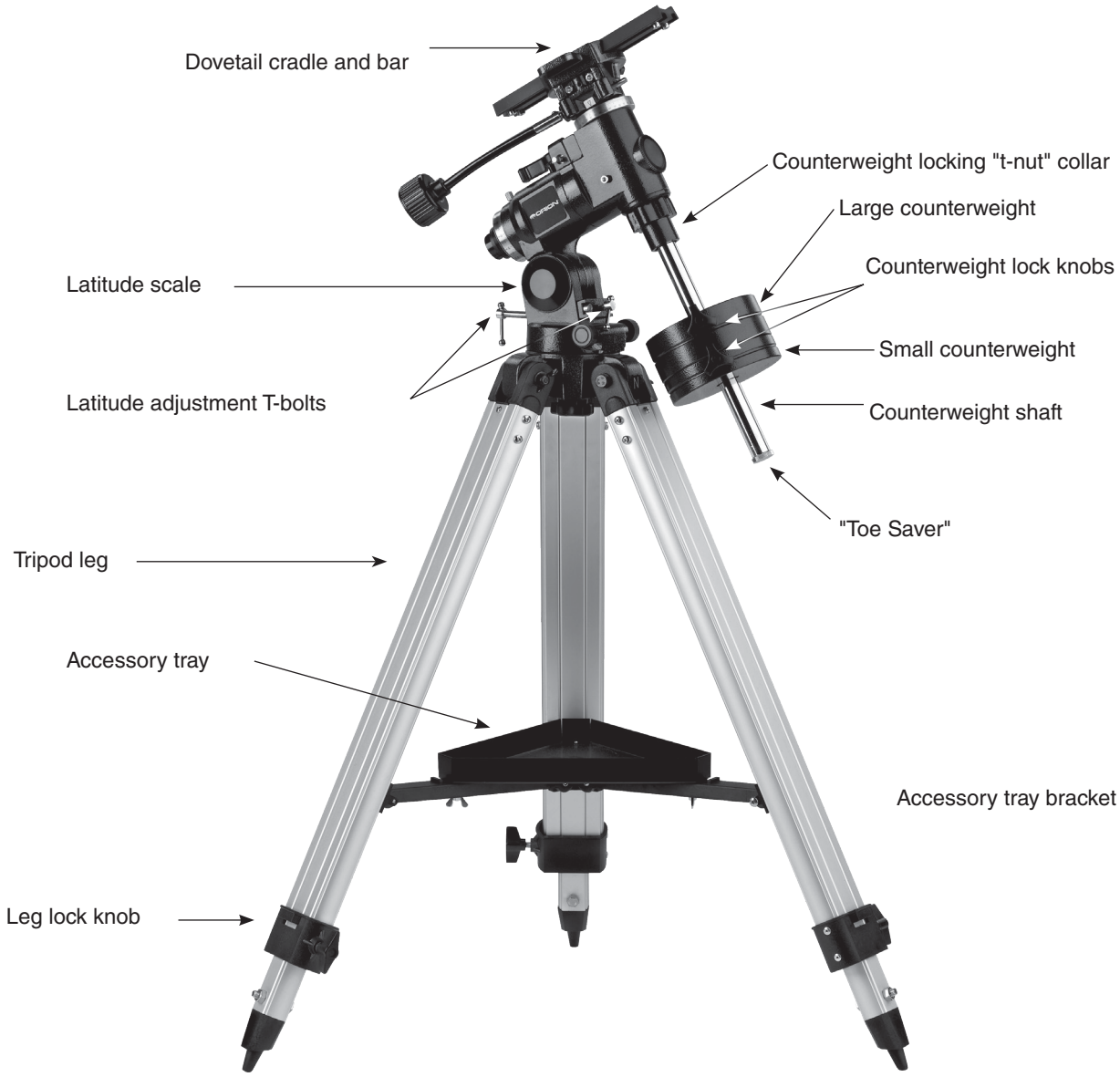

Figure 1. The AstroView Equatorial Mount.

Congratulations on your purchase of a quality Orion mount. Your new AstroView Equatorial Mount was developed to work with many different telescope optical tubes. Designed for astronomical use, this precision mount allows convenient "tracking" of celestial objects as they move slowly across the sky, so they remain within your eyepiece's field of view. The setting circles will assist you in locating hundreds of fascinating celestial denizens, including galaxies, nebulas, and star clusters, from their catalogued coordinates. With a little practice, you'll find that the AstroView Equatorial Mount is an invaluable tool for getting the most out of your astronomical observing sessions.

These instructions will help you set up and properly use your equatorial mount. Please read them over thoroughly before getting started.

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1. Unpacking

The entire mount will arrive in one box. Be careful unpacking the box. We recommend keeping the box and the packaging material. In the event that the mount needs to be shipped to another location, or returned to Orion for warranty repair, having the original packaging will help ensure that your mount will survive the journey intact.

Make sure all the parts in the Parts List are present. Be sure to check box carefully, as some parts are small. If anything appears to be missing or broken, immediately call Orion Customer Support (800-447-1001) or email support@telescope.com for assistance.

2. Parts List

Qty.	Description
1	German-type equatorial mount
3	Tripod legs attached accessory tray bracket
2	Slow-motion control cables
1	8" Dovetail bar
1	Large counterweight
1	Small counterweight
1	Counterweight shaft
1	Counterweight locking "t-nut" collar
1	Accessory tray with mounting wing screws
3	Leg attachment screws with wingnuts and washers
3	Leg lock knobs
1	Polar axis finder scope
1	Polar axis cover

3. Assembly

Assembling the mount for the first time should take about 20 minutes. No tools are needed, other than the ones provided. All screws should be tightened securely to eliminate flexing and wobbling, but be careful not to over-tighten or the threads may strip. Refer to **Figure 1** during the assembly process.

1. Remove the tripod from the box and open it up and place it upright on the ground. The EQ mount head sits on top and is secured by tightening the large thumb knob from underneath the top of the tripod. When placing the EQ head on the tripod, orient the head so the pin sticking up from the top of the tripod sits between the two Azimuth fine adjustment knobs. You may need to loose both Azimuth adjustment knobs for the pin to fit between.
2. For now, keep the legs at their shortest (fully retracted) length; you can extend them to a more desirable length later, after the scope is completely assembled.
3. Attach the accessory tray to the bracket with the three wing screws already installed in the tray. Push the screws up through the holes in the bracket, then thread them into the holes in the tray.
4. Orient the equatorial mount as it appears in Figure 1, at a latitude of about 40°, i.e., so the pointer next to the latitude scale is pointing to the line at "40". To do this, loosen one of the latitude adjusting T-bolts and then tighten the other latitude adjusting T-bolt until the pointer and the "40" line up **(Figure 2)**. The declination (Dec.) and right ascension (R.A.) axes many need re-positioning (rotation) as well. Be

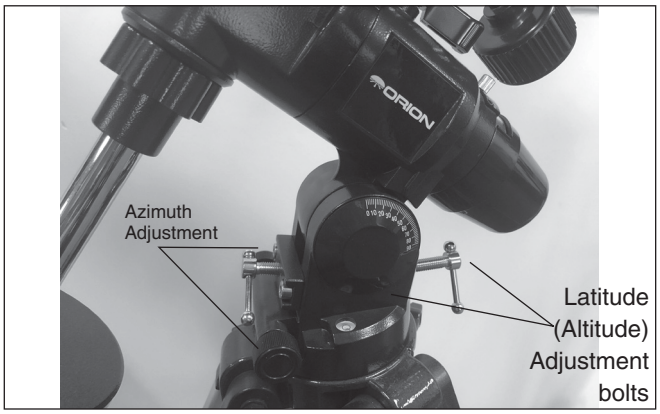

Figure 2. ***The latitude adjustments bolts and azimuth adjustment knobs***

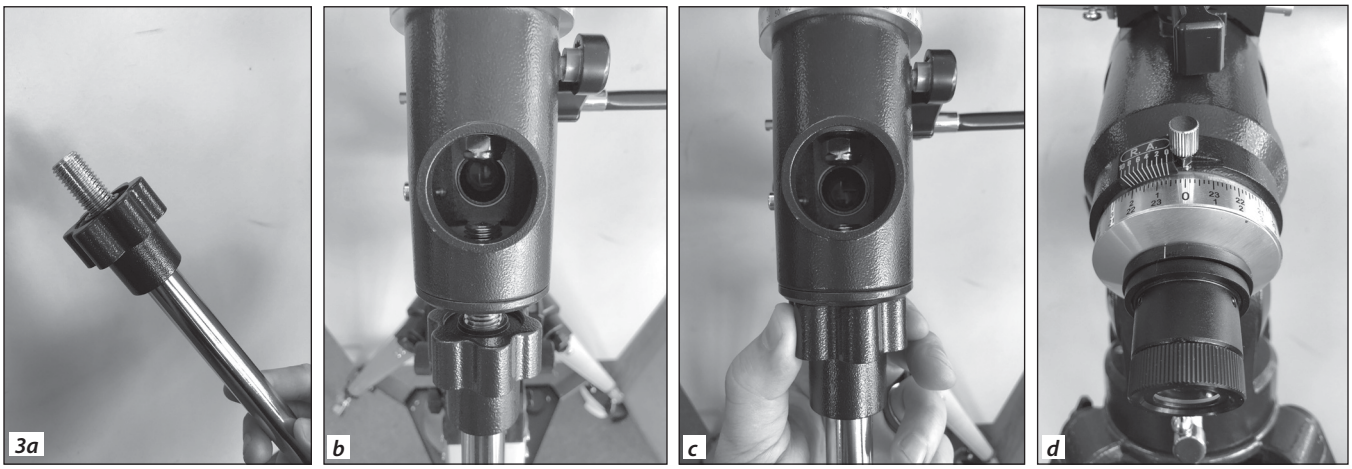

Figure 3. *Attaching the Counterweight shaft to the mount*

sure to loosen the RA and Dec. lock levers before doing this. Retighten them once the equatorial mount is properly oriented.

5. Take the counterweight shaft and thread the locking "t-nut" collar onto the end as far down as it will go **(Figure 3a).** Then thread the counterweight onto the mount. Thread it far enough in for the end of the shaft to sit just below the polar axis opening **(Figure 3b)**, but not far enough where it blocks the light from entering the polarscope. When positioned correctly, thread the locking "t-nut" collar upward until it is snug against the bottom of the mount **(Figure 3c)**. This locks the counterweight shaft in place.
6. Remove the knurled "toe saver" retaining screw on the bottom of the counterweight shaft and slide both counterweights onto the shaft. Make sure the counterweight lock knobs are adequately loosened to allow the counterweight shaft to pass through the hole. Position the counterweights about halfway up the shaft and tighten the lock knobs. Replace the toe saver on the end of the bar. The toe saver prevents the counterweights from falling on your foot if the lock knobs happen to come loose.
7. Attach the two slow-motion cables to the R.A. and Dec. worm gear shafts of the equatorial mount by positioning the small screw on the end of the cable over the indented slot on the worm gear shaft. Then tighten the screw. We recommend using the shorter control cable for the R.A. axis.

4. Attaching a Telescope

Your AstroView EQ mount accepts a Vixen style dovetail tube ring mounting plate. Using a dovetail tube ring mounting plate makes it easier to attach your telescope to the AstroView EQ mount, simplifying set-up and take-down of your telescope system. Additionally, if you have more than one telescope for the AstroView mount, the dovetail mounting allows easy "swapping" of optical tubes without requiring extra tools.

The AstroView equatorial mount is designed to hold telescope optical tubes weighing up to approximately 12lbs. For heavier telescopes, the mount may not provide sufficient stability for steady imaging. Any type of telescope can be mounted on the AstroView mount, including refractors, Newtonian reflectors, and catadioptrics, provided the telescope has a built-in dovetail mounting plate or has a set of tube rings available to couple the tube to a dovetail mounting plate.

Attaching a Telescope with the Dovetail Tube Ring Mounting Plate

Once you've assembled your AstroView EQ mount as described in section 3 of the instruction manual, follow the instructions below to attach your telescope to the mount:

1. Attach the tube rings to the dovetail tube ring mounting plate using the screws that are included with the tube rings. The screws should go through the center holes at both ends of the mounting plate and rethread into the tube rings. Note that the side of the mounting plate with the central "groove" will be facing up. Use a small wrench to secure the tube rings to the mounting plate.

Note: ***The tube ring mounting plate included with the AstroView EQ mount includes four optical axis offset adjustment screws; these are the socket-head cap screws located at each corner of the mounting plate. Prior to attaching tube rings, confirm that all four adjustment screws are sufficiently unthreaded so that the ends of their threaded shafts are flush with the top surface of the dovetail tube ring mounting plate.***

2. Open the tube rings by unthreading the knurled clamps and lay your telescope optical tube in the tube rings at about the midpoint of the tube's length. Close the tube rings and re-tighten the clamps.
3. Loosen the mounting plate lock knob and safety screw on the top of the equatorial mount. Place the dovetail mounting plate, with the tube rings and telescope attached, in the slot on top of the equatorial mount. Re-tighten the mounting plate lock knobs until the plate is secure.

For Reflector telescopes, carefully loosen the knurled tube ring clamps by a few turns each and rotate the tube so that the focuser is at a convenient height for viewing.

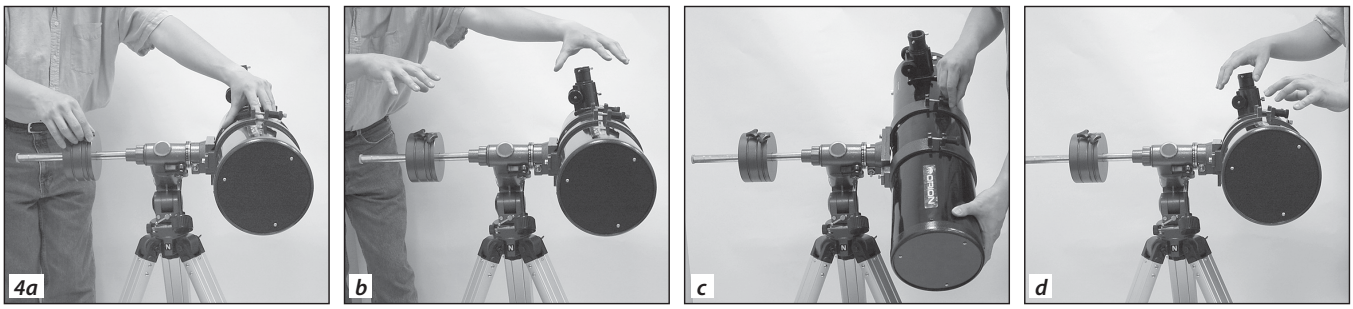

Figure 4. *Proper operation of the equatorial mount requires that the telescope tube be balanced on both the R.A. and Dec. axes. (a) With the R.A. lock lever released, slide the counterweight along the counterweight shaft until it just counterbalances the tube. (b) When you let go with both hands, the tube should not drift up or down. (c) With the Dec. lock lever released, loosen the tube ting clamps a few turns and slide the telescope forward or back in the tube rings. (d) when the tube is balanced about the Dec. axis, it will not move when you let go.*

Attaching the StarMax 127mm to the AstroView Mount

The StarMax 127mm optical tube does not connect to the dovetail mounting plate with tube rings. Rather, the mounting plate comes attached directly on the telescope tube itself.

To connect the StarMax 127mm (or other scopes that connect in a similar manner) to the AstroView mount, first loosen the mounting plate lock knob and safety screw on the top of the equatorial mount. Place the telescope on the mount so that the dovetail mounting plate goes in the slot on top of the equatorial mount. Position the tube so the mounting plate is centered in the slot. Re-tighten the mounting plate lock knob and safety screw so the telescope is secure.

5. Balancing the Telescope

To ensure smooth movement of a telescope on both axes of the equatorial mount, it is imperative that the optical tube is properly balanced. We will first balance the telescope with respect to the R.A. axis, then the Dec. axis.

1. Keeping one hand on the telescope optical tube, loosen the R.A. lock lever. Make sure the Dec. lock lever is locked, for now. The telescope should now be able to rotate freely about the R.A. axis. Rotate it until the counterweight shaft is parallel to the ground (i.e., horizontal).
2. Now loosen both counterweight lock knobs and slide the weights along the shaft until they exactly counterbalance the telescope **(Figure 4a)** That's the point at which the

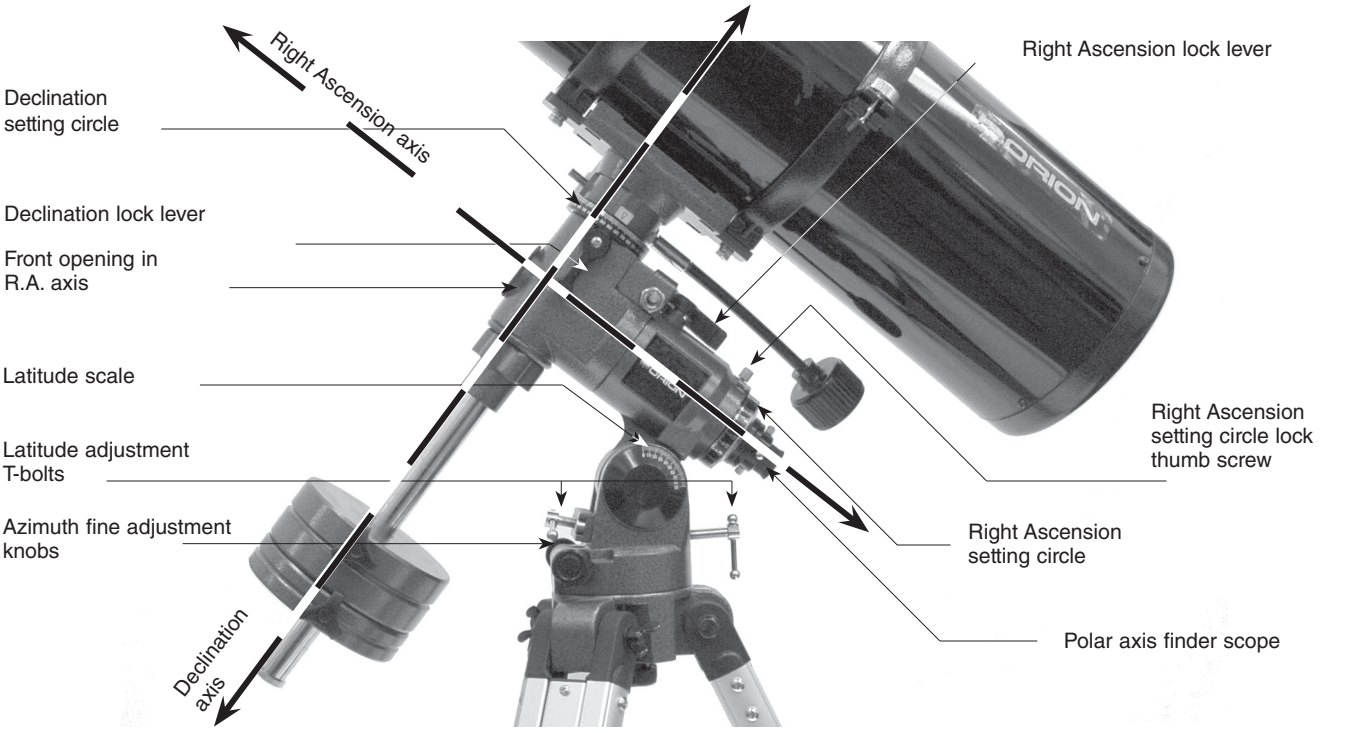

Figure 5. *The AstroView equatorial mount (with attached telescope tube).*

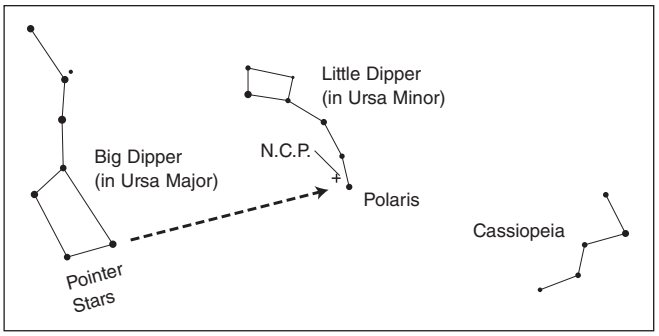

Figure 6. ***To find Polaris in the night sky, look north and find the Big Dipper. Extend an imaginary line from the two "Pointer Stars" in the bowl of the Big Dipper. Go about five times the distance between those stars and you'll reach Polaris, which lies within 1° of the north celestial pole (NCP).***

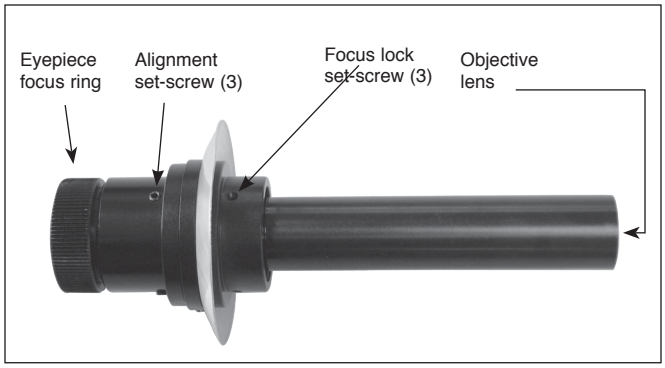

Figure 7. ***The polar axis finder scope.***

shaft remains horizontal even when you let go with both hands **(Figure 4b)**.

3. Retighten the counterweight lock knobs. The telescope is now balanced on the R.A. axis.
4. To balance the telescope on the Dec. axis, first tighten the R.A. lock lever, with the counterweight shaft still in the horizontal position.
5. With one hand on the telescope optical tube, loosen the Dec. lock lever. The telescope should now be able to rotate freely about the Dec. axis. Loosen the tube ring clamps a few turns, until you can slide the telescope tube forward and back inside the rings. Its often helpful to use a slight twisting motion on the optical tube while you push or pull on it. **(Figure 4c)**.
6. Position the telescope in the mounting rings so it remains horizontal when you carefully let go with both hands. This is the balance point for the optical tube with respect to the Dec. axis. **(Figure 4d)**
7. Retighten the tube ring clamps.
8. The telescope is now balanced on both axes. When you loosen the lock lever on one or both axes and manually point the telescope, it should move without resistance and should not drift from where you point it.

6. Setting Up and Using the Equatorial Mount

When you look at the night sky, you no doubt have noticed that the stars appear to move slowly from east to west over time. That apparent motion is caused by the Earth's rotation (from west to east). An equatorial mount **(Figure 5)** is designed to compensate for that motion, allowing you to easily "track" the movement of astronomical objects, thereby keeping them from drifting out of your telescope's field of view while you're observing.

This is accomplished by slowly rotating the telescope on its right ascension (R.A.) axis, using only the R.A. slow-motion cable. But first the R.A. axis of the mount must be aligned with the Earth's rotational (polar) axis – a process called polar alignment.

Polar Alignment

For Northern Hemisphere observers, approximate polar alignment is achieved by pointing the mount's R.A. axis at the North Star, or Polaris. It lies within 1° of the north celestial pole (NCP), which is an extension of the Earth's rotational axis out into space. Stars in the Northern Hemisphere appear to revolve around the NCP.

To find Polaris in the sky, look north and locate the pattern of the Big Dipper **(Figure 6)**. The two stars at the end of the "bowl" of the Big Dipper point right to Polaris.

Observers in the Southern Hemisphere aren't so fortunate to have a bright star so near the south celestial pole (SCP). The star Sigma Octantis lies about 1° from the SCP, but it is barely visible with the naked eye (magnitude 5.5).

For general visual observation, an approximate polar alignment is sufficient.

1. Level the equatorial mount by adjusting the length of the three tripod legs.
2. There are two latitude adjustment T-Bolts (see **Figure 2**); loosen one T-Bolt while tightening the other. By doing this you will adjust the latitude of the mount. Continue adjusting the mount until the pointer on the latitude scale is set at the latitude of your observing site. If you don't know your latitude, consult a geographical atlas to find it. For example, if your latitude is 35° North, set the pointer to 35. The latitude setting should not have to be adjusted again unless you move to a different viewing location some distance away.
3. Loosen the Dec. lock lever and rotate the telescope's optical tube until it is parallel with the R.A. axis, as it is in Figure 5. The pointer on the Dec. setting circle should read 90°. Retighten the Dec. lock lever.
4. Move the tripod so the telescope tube and R.A. axis point roughly at Polaris. If you cannot see Polaris directly from your observing site, consult a compass and rotate

the tripod so the telescope points north. There is a label bearing a large “N” at the top of one tripod leg. It should be facing north.

The equatorial mount is now polar aligned for casual observing. More precise polar alignment is recommended for astrophotography.

From this point on in your observing session, you should not make any further adjustments to the latitude of the mount, nor should you move the tripod. Doing so will undo the polar alignment. The telescope should be moved only about its R.A. and Dec. axes.

The Polar Axis Finder Scope

The AstroView mount comes with a polar axis finder scope **(Figure 7)** housed inside the right ascension axis of the mount. When properly aligned and used, it makes accurate polar alignment quick and easy to do. Remove the caps from both sides of the AstroView mount’s right ascension axis to view through the polar axis finder scope.

Alignment of the Polar Axis Finder Scope (during the day)

1. Look through the polar finder at a distant object (during the day) and center it in the crosshairs. You may need to adjust the latitude adjustment L-bolts and the tripod position to do this.
2. Rotate the mount 180° about the R.A. axis. It may be convenient to remove the counterweights and optical tube before doing this.
3. Look through the polar finder again. Is the object being viewed still centered on the crosshairs? If it is, then no further adjustment is necessary. If not, then look through the polar finder while rotating the mount about the R.A. axis. You will notice that the object you have previously centered moves in a circular path. Use the three alignment set-screws on the polar axis finder **(Figure 7)** to redirect the crosshairs of the polar finder to the apparent center of this circular path. You will need a 1.5mm hex key (not included) to adjust the three alignment set-screws.
4. Repeat this procedure until the position that the crosshairs point to does not rotate off-center when the mount is rotated in R.A.

The polar axis finder scope is now ready to be used. When not in use, replace the plastic protective cover to prevent the polar finder from getting bumped. The above procedure only needs to be performed once, and it should stay aligned.

Using the Polar Axis Finder Scope

The reticle of the AstroView mount’s polar axis finder scope has a tiny star map printed on it that makes precise polar alignment quick and easy. To align the mount using the polar axis finder scope, follow these instructions:

1. Move the tripod so the telescope tube and right ascension axis point roughly at Polaris. If you cannot see Polaris directly from your observing site, consult a compass and rotate the tripod so the telescope points north.
2. Remove the cap on the front opening of the equatorial mount. Focus the polar finder by rotating the eyepiece. Now, sight Polaris in the polar axis finder scope. If you have followed the approximate polar alignment procedure accurately, Polaris will probably be within the field of view. If not, move the tripod left-to-right, and adjust the latitude up-and down until Polaris is somewhere within the field of view of the polar axis finder scope.
3. Note the constellation Cassiopeia and the Big Dipper in the reticle of the polar axis finder scope. They do not appear in scale, but they indicate the general positions of Cassiopeia and the Big Dipper relative to the north celestial pole (which is indicated by the cross at the center of the reticle). Rotate the reticle so the constellations depicted match their current orientation in the sky when viewed with the naked eye. To do this, release the R.A. lock lever and rotate the main telescope around the R.A. axis until the reticle is oriented with sky. For larger optical tubes, you may need to remove the tube from the mount to prevent it from bumping into the mount. Once the reticle is correctly oriented, use the right ascension lock lever to secure the mount’s position.
4. Now use the azimuth adjustment knobs and the latitude adjustment L-bolts **(Figure 2)** on the mount to position the star Polaris inside the tiny circle marked “Polaris” on the finder’s reticle. You must first loosen the knob underneath the equatorial mount SLIGHTLY on the center support shaft to use the azimuth adjustment knobs. Once Polaris is properly positioned within the reticle, you are precisely polar aligned. Retighten the knob underneath the equatorial mount.

If you do not have a clear view of Polaris from your observing site, you will not be able to use the polar-axis finder to precisely polar align the telescope.

Note: ***From this point on in your observing session, you should not make any further adjustments in the azimuth or the latitude of the mount, nor should you move the tripod. Doing so will undo the polar alignment. The telescope should be moved only about its right ascension and declination axes.***

Additional Note Regarding Focusing the Polar Axis Finder Scope

The polar axis finder scope is normally focused by simple rotation of the eyepiece focus ring. However, if after adjusting the focus ring you find that the image of the reticle is sharp, but the stars are out of focus, then you must adjust the focus of the polar axis finder’s objective lens. To do this, first remove the polar axis finder from the mount. Look through the polar axis finder at a star (at night) or distant object at least 1/4 mile away (during daylight). Use the eyepiece focus ring to bring the reticle into sharp focus. Now, use a 1.5mm hex key (not included) to carefully loosen the three focus lock set-screws **(Figure 7)** by a few turns each and thread the entire objective end of the finder

inward or outward until images appear sharp. Carefully re-tighten the focus lock set-screws. Once the polar axis finder's objective lens is focused, it should not need to be adjusted again.

Use of the R.A. and Dec. Slow-Motion Control Cables

The R.A. and Dec. slow-motion control cables allow fine adjustment of the telescope's position to center objects within the field of view. Before you can use the cables, you must manually "slew" the mount to point the telescope in the vicinity of the desired target. Do this by loosening the R.A. and Dec. lock levers and moving the telescope about the mount's R.A. and Dec. axes. Once the telescope is pointed somewhere close to the object to be viewed, retighten the mount's R.A. and Dec. lock levers.

The object should now be visible somewhere in the telescope's finder scope. If it isn't, use the slow-motion controls to scan the surrounding area of sky. When the object is visible in the finder scope, use the slow-motion controls to center it. Now, look in the telescope's eyepiece. If the finder scope is properly aligned, the object should be visible somewhere in the field of view. Once the object is visible in the eyepiece, use the slow-motion controls to center it in the field of view.

Tracking Celestial Objects

When you observe a celestial object through the telescope, you'll see it drift slowly across the field of view. To keep it in the field, if your equatorial mount is polar aligned, just turn the R.A. slow-motion control cable clockwise. The Dec. slow-motion control cable is not needed for tracking. Objects will appear to move faster at higher magnifications, because the field of view is narrower.

Optional Motor Drives for Automatic Tracking

An optional DC motor drive can be mounted on the R.A. axis of the equatorial mount to provide hands-free tracking. Objects will then remain stationary in the field of view without any manual adjustment of the R.A. slow-motion control cable.

Understanding the Setting Circles

The setting circles on an equatorial mount enable you to locate celestial objects by their "celestial coordinates". Every object resides in a specific location on the "celestial sphere." That location is denoted by two numbers: its right ascension (R.A.) and declination (Dec.). In the same way, every location on Earth can be described by its longitude and latitude. R.A. is similar to longitude on Earth, and Dec. is similar to latitude. The R.A. and Dec. values for celestial objects can be found in any star atlas or star catalog.

The R.A. setting circle is scaled in hours, from 1 through 24, with small marks in between representing 10-minute increments (there are 60 minutes in 1 hour of R.A.). The upper set of numbers apply to viewing in the Northern Hemisphere, while the numbers below them apply to viewing in the Southern Hemisphere. The location of the R.A. coordinate indicator arrow is shown in **Figure 3d**.

The Dec. setting circle is scaled in degrees, with each mark representing 2° increments. Values of Dec. coordinates range from +90° to -90°. The 0° mark indicates the celestial equator. When the telescope is pointed north of the celestial equator, values of the Dec. setting circle are positive; when the telescope is pointed south of the celestial equator, values of the Dec. setting circle are negative.

So, the coordinates for the Orion Nebula listed in a star atlas will look like this:

R.A. 5h 35.4m Dec. - 5° 27'

That's 5 hours and 35.4 minutes in right ascension, and -5 degrees and 27 arc-minutes in declination (there are 60 arc-minutes in 1 degree of declination).

Before you can use the setting circles to locate objects, the mount must be well polar aligned, and the R.A. setting circle must be calibrated. The Dec. setting circle has been calibrated at the factory, and should read 90° whenever the telescope optical tube is parallel with the R.A. axis.

Calibrating the Right Ascension Setting Circle

1. Identify a bright star in the sky near the celestial equator (Dec. = 0°) and look up its coordinates in a star atlas.
2. Loosen the R.A. and Dec. lock levers on the equatorial mount, so the telescope optical tube can move freely.
3. Point the telescope at the bright star whose coordinates you know. Lock the R.A. and Dec. lock levers. Center the star in the telescope's field of view with the slow-motion control cables.
4. Loosen the R.A. setting circle lock thumbscrew (see **Figure 3d**); this will allow the setting circle to rotate freely. Rotate the setting circle until the arrow under the thumbscrew indicates the R.A. coordinate listed in the star atlas for the object. Do not retighten the thumbscrew when using the R.A.

Finding Objects With the Setting Circles

Now that both setting circles are calibrated, look up in a star atlas the coordinates of an object you wish to view.

1. Loosen the Dec. lock lever and rotate the telescope until the Dec. value from the star atlas matches the reading on the Dec. setting circle. Remember that values of the Dec. setting circle are positive when the telescope is pointing north of the celestial equator (Dec. = 0°), and negative when the telescope is pointing south of the celestial equator. Retighten the lock lever.
2. Loosen the R.A. lock lever and rotate the telescope until the R.A. value from the star atlas matches the reading on the R.A. setting circle. Remember to use the upper set of numbers on the R.A. setting circle. Retighten the lock lever.

Most setting circles are not accurate enough to put an object dead-center in the telescope's eyepiece, but they should place the object somewhere within the field of view of the finder scope, assuming the equatorial mount is accurately polar aligned. Use the slow-motion controls to center the object in the finder scope, and it should appear in the telescope's field of view.

The R.A. setting circle must be re-calibrated every time you wish to locate a new object. Do so by calibrating the setting circle for the centered object before moving on to the next one.

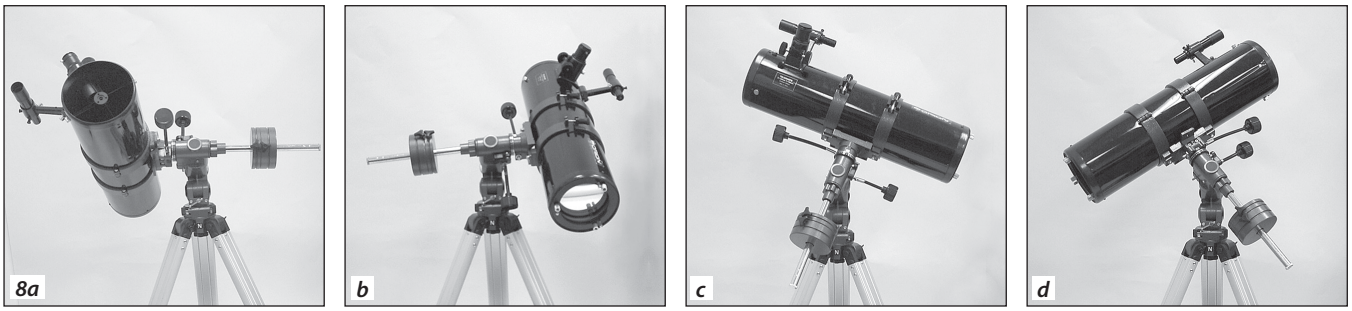

Figure 8. ***This illustration shows the telescope pointed in the four cardinal directions:*** **(a)** ***North,*** **(b)** ***South,*** **(c)** ***East,*** **(d)** ***West. Note that the tripod and mount have not been moved; only the telescope tube has move on the R.A. and Dec. axis.***

Using the Vernier Scale

The R.A. setting circle includes a Vernier scale (Figure 3d) in order to read fractions of ticks on the R.A. circle. The smallest marks on the R.A. scale are 10 minutes of arc, and the Venier scale divides each of these marks into 10, meaning you can get a resolution of 1 arc minute when using the Vernier scale.

Look at the Venier scale and notice how the lines almost match up with tick marks directly below it on the R.A. scale. They almost match up, but not quite. Count from the 0 on the Venier scale until you reach a R.A. mark that lines up because it is DIRECTLY below a mark on the Venier scale. That corresponding number on the Venier scale is the number of arc minutes between the two R.A. marks under the main R.A. pointer. So for example, if you R.A. pointer is sitting between the 12h 10min mark and the 12h 20min mark, and the 3rd mark on the Venier scale lines up with a mark below it, that means the scope is pointing to 12h 13minutes of R.A.

Confused About Pointing the Telescope?

Beginners occasionally experience some confusion about how to point the telescope overhead or in other directions. In **Figure 1** the telescope is pointed north as it would be during polar alignment. The counterweight shaft is oriented downward. But it will not look like that when the telescope is pointed in other directions. Let's say you want to view an object that is directly overhead, at the zenith. How do you do it?

DO NOT make any adjustment to the latitude adjustment T-bolts. That will spoil the mount's polar alignment. Remember, once the mount is polar aligned, the telescope should be moved only on the R.A. and Dec. axes. To point the scope overhead, first loosen the R.A. lock lever and rotate the telescope on the R.A. axis until the counterweight shaft is horizontal (parallel to the ground). Then loosen the Dec. lock lever and rotate the telescope until it is pointing straight overhead. The counterweight shaft is still horizontal. Then retighten both lock levers.

What if you need to aim the telescope directly north, but at an object that is nearer to the horizon than Polaris? You can't do it with the counterweights down as pictured in **Figure 1***. Again, you have to rotate the scope in R.A. so that the counterweight shaft is positioned horizontally. Then rotate the scope in Dec. so it points to where you want it near the horizon.*

To point the telescope directly south, the counterweight shaft should again be horizontal. Then you simply rotate the scope on the Dec. axis until it points in the south direction.

To point the telescope to the east or west, or in other directions, you rotate the telescope on its R.A. and Dec. axes. Depending on the altitude of the object you want to observe, the counterweight shaft will be oriented somewhere between vertical and horizontal.

Figure 8 illustrates how the telescope will look when pointed at the four cardinal directions: north, south, east and west.

The key things to remember when pointing the telescope are that a) you only move it in R.A. and Dec., not in azimuth or latitude (altitude), and b) the counterweight and shaft will not always appear as it does in **Figure 1**. In fact it almost never will!

7. Specifications

Mount:	German equatorial
Tripod:	Aluminum, adjustable height, accessory tray included
Counterweights:	7lbs. 9oz. and 4lbs.
Slow-motion controls:	For both R.A. and Dec. axes
Setting circles:	R.A. scaled in 10 min. increments, Dec. scaled in 2° increments. for N or S Hemispheres
Latitude adjustment:	5° to 75°
Polar Alignment:	Polar scope with N hemisphere reticle included
Motor drives:	Optional
Weight:	27.5 lbs.
Polar Alignment:	Polar axis finder scope for Northern Hemisphere included, fine adjustments for latitude and azimuth

One-Year Limited Warranty

This Orion product is warranted against defects in materials or workmanship for a period of one year from the date of purchase. This warranty is for the benefit of the original retail purchaser only. During this warranty period Orion Telescopes & Binoculars will repair or replace, at Orion's option, any warranted instrument that proves to be defective, provided it is returned postage paid. Proof of purchase (such as a copy of the original receipt) is required. This warranty is only valid in the country of purchase.

This warranty does not apply if, in Orion's judgment, the instrument has been abused, mishandled, or modified, nor does it apply to normal wear and tear. This warranty gives you specific legal rights. It is not intended to remove or restrict your other legal rights under applicable local consumer law; your state or national statutory consumer rights governing the sale of consumer goods remain fully applicable.

For further warranty information, please visit www.OrionTelescopes.com/warranty.

ORION
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