INSTRUCTION MANUAL

Orion®
AstroView™
Equatorial Mount

#9822 AstroView Equatorial Mount

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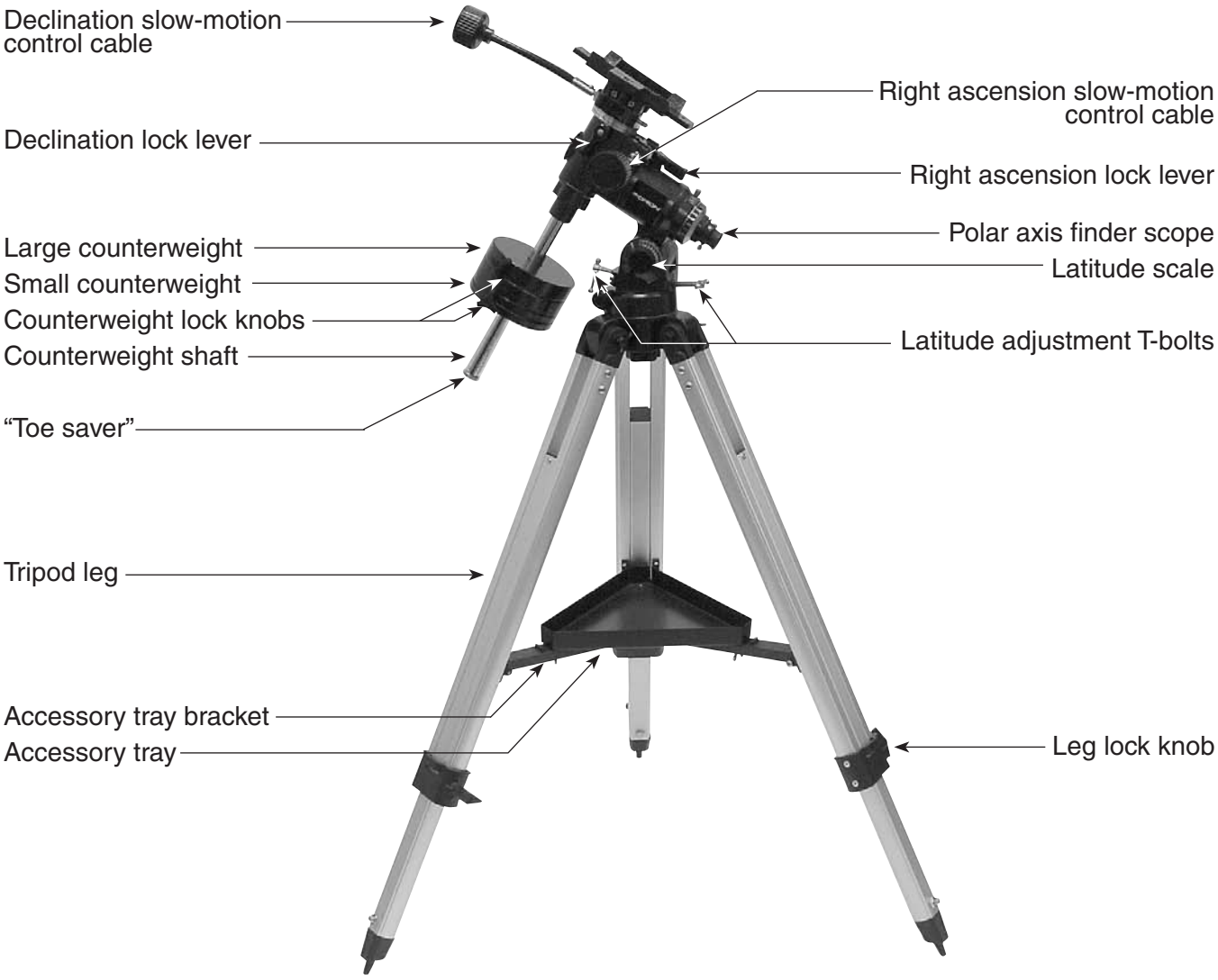

Figure 1. The AstroView Equatorial Mount.

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.

Table of Contents

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 (800-676-1343) 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	Large counterweight
1	Small counterweight
1	Counterweight shaft
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. Lay the equatorial mount on its side. Attach the tripod legs one at a time to the mount using the leg attachment screws. Line up the holes in the top of the leg with the holes in the base of the mount, and install the screw so it passes through the leg and the mount with one washer on both sides of the tripod leg. Tighten the wingnuts only finger-tight, for now.
2. Install and tighten the leg lock knobs at the base of the tripod legs. For now, keep the legs at their shortest (fully retracted) length; you can extend them to a more desirable length later, after the mount is completely assembled.
3. With the tripod legs now attached to the equatorial mount, stand the tripod upright and spread the tripod legs apart as far as they will go, until the accessory tray bracket is taut. 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. Next, tighten the wingnuts at the top of the tripod legs, so the legs are securely fastened to the equatorial mount. Use the wrench and your fingers to do this.
5. 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 adjustment T-bolts and then tighten the other latitude adjustment 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 sure to loosen the RA and Dec. lock levers before doing this. Retighten them once the equatorial mount is properly oriented.
6. Thread the counterweight shaft into the equatorial mount at the base of the declination axis until tight. Make sure the metal casting at the top of the bar is threaded clockwise as far as it will go before attaching the shaft.

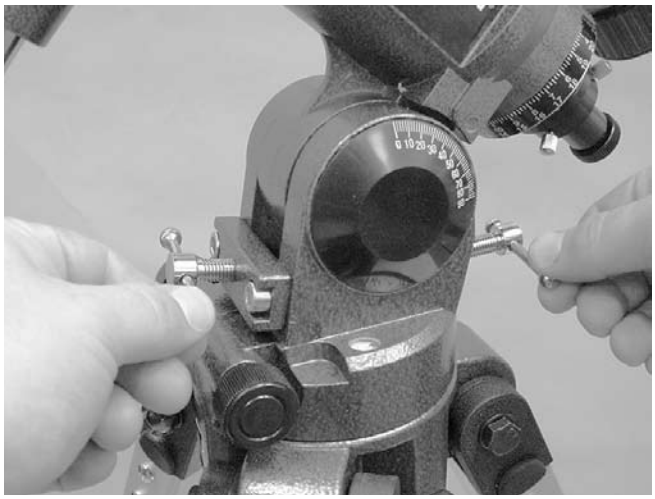

Figure 2. To adjust the latitude angle of the equatorial mount, loosen one of the two latitude adjustment T-bolts, then tighten the other.

7. 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.
8. 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 either end of the worm gear shaft. Then tighten the screw. We recommend using the shorter control cable for the R.A. axis.
9. Install the polar axis finder scope into its housing inside the R.A. axis of the equatorial mount (Figure 3). First loosen the three thumbscrews on the housing, which is located at the rear of the R.A. axis. Insert the front end of the polar finder (the end without the eyeguard) into the housing so only about 1" of the polar finder extends from the back of the housing. Do this slowly and with a twisting motion to prevent the internal O-ring from becoming unseated. Should the O-ring become unseated, remove the entire housing from the mount to locate the O-ring and reseat it by rotating the entire housing counterclockwise. Once the polar axis finder scope is in the housing, tighten the three thumbscrews. These thumbscrews will be used later to align the finder with the mount's R.A. axis.

4. Attaching a Telescope

The AstroView equatorial mount is designed to hold telescope 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, including refractors, Newtonian reflectors, and catadiotropics, provided a set of tube rings is available to couple the tube to the mount. Orion sells a variety of telescope tube rings, please visit our website at telescope.com for details. To attach the tube rings to the mount, you will need to line up the holes in the tube rings with the holes in the top of the mount. Push a mounting screw up through the hole in the top of the mount and thread it into the tube ring. Use a wrench to tighten the screw and secure the tube ring.

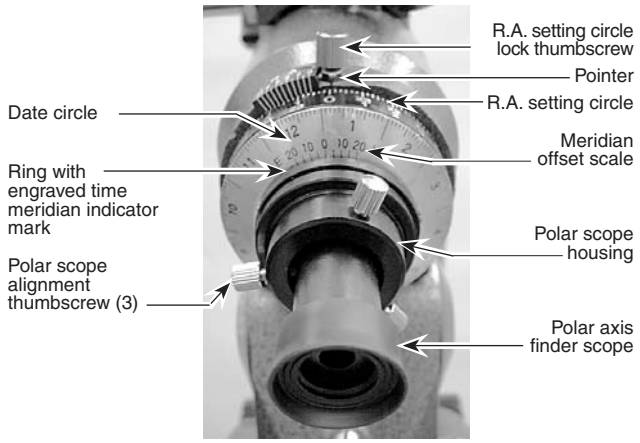

Figure 3. The polar axis finder scope installed in the right ascension (R.A.) axis of the mount.

5. Balancing a 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 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).

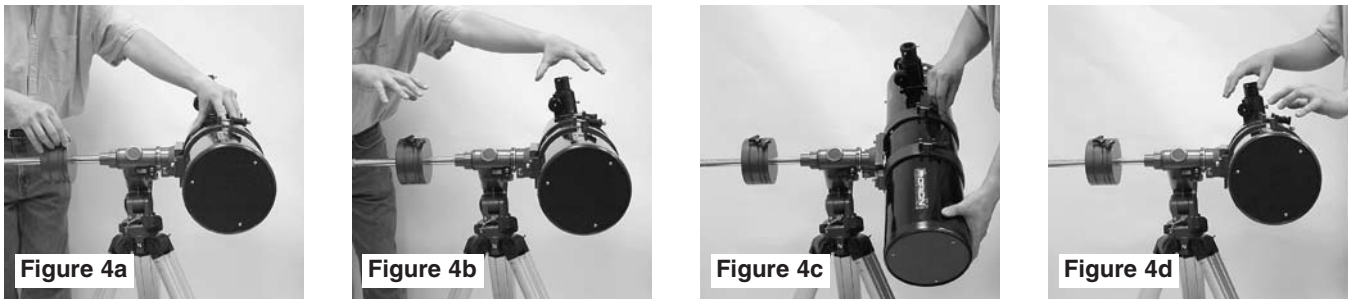

Figure 4a, b, c, d. Proper operation of the equatorial mount requires that the telescope tube be balanced on both the R.A. and Dec. axes. (a) With the R.A. lock lever released, slide the counterweight along the counterweight shaft until it just counterbalances the tube. (b) When you let go with both 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.

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.

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

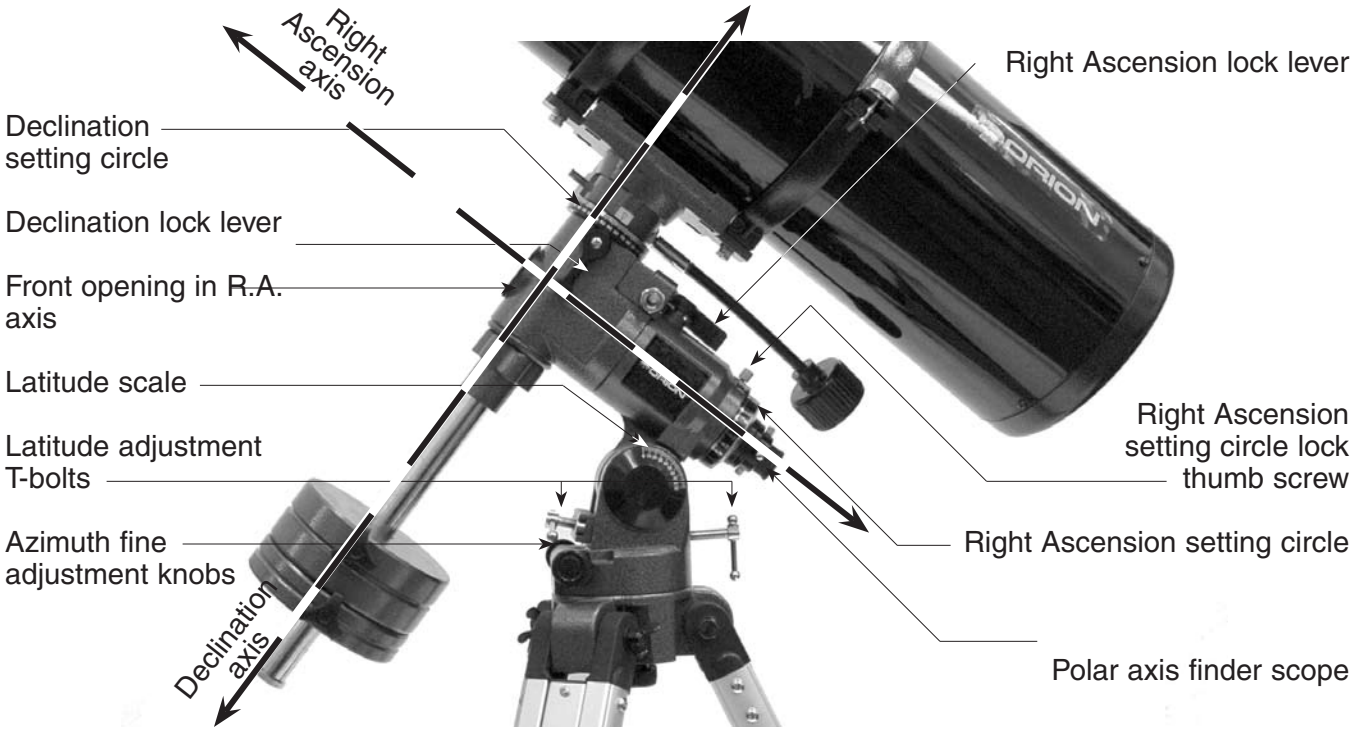

Figure 5. The AstroView equatorial mount (with attached telescope tube).

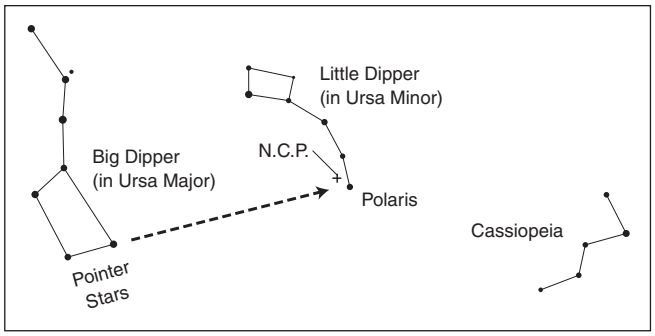

Figure 6. To find Polaris in the night sky, look north and find the Big Dipper. Extend an imaginary line from the two "Pointer Stars" in the bowl of the Big Dipper. Go about five times the distance between those stars and you'll reach Polaris, which lies within 1° of the north celestial pole (NCP).

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 base of the equatorial mount (Figure 7). It should be facing north.

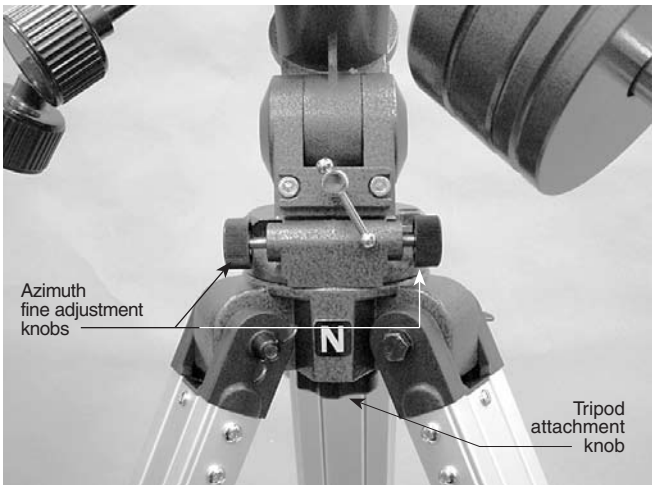

Figure 7. For polar alignment, position the tripod so that the "N" label at the base of the mount faces north. The two azimuth fine adjustment knobs above it are used to make small adjustments to the mount's azimuth position.

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 Equatorial Mount features a polar axis finder scope housed inside the R.A. axis of the mount (see Figure 3). When properly aligned and used, it makes accurate polar alignment quick and easy to do. Alignment of the polar finder need only be done once, unless it gets bumped or otherwise shifts its position.

Remove the round cover cap from the front opening in the R.A. axis of the mount. Look through the polar finder at a distant object during the day. Focus the polar finder so that the images and reticle are sharp by rotating the eyepiece end of the finder. Notice that the reticle pattern consists of a crosshair with a circle around the middle. On the circumference of this circle is a tiny circle; this is where Polaris will be placed for accurate polar alignment once the finder is properly aligned. Alignment of the polar finder is best done during the day, before going out into the field at night.

Aligning the Polar Axis Finder Scope

Aligning the polar axis finder scope so that it will accurately point at the true north pole is a two-step procedure. First, the polar axis finder must be rotated in its housing so that the small circle in which Polaris will be placed is in the proper initial position. Next, the polar axis finder must be adjusted so that it points directly along the mount's R.A. axis.

We will start by aligning the polar finder rotationally. Refer to Figure 3.

1. Loosen the R.A. setting circle lock thumbscrew. Rotate the R.A. setting circle until the line above the "0" on the setting circle lines up with the pointed indicator that is cast into the mount (located directly below the large thumbscrew; see Figure 3). Retighten the thumbscrew.
2. Rotate the date circle until the "0" line on the meridian offset scale lines up with the time meridian indicator mark. The meridian offset scale is printed on the inner circumference of the date circle, and is labeled "E20" to "W20". The time meridian indicator mark is an engraved line on the exterior of the polar finder's housing. It is on the "ring" of the housing that is closest to the date circle.
3. The R.A. setting circle is labeled in hours, from "0" to "23" (military time). For Northern Hemisphere observers, refer to the top numbers on the setting circle. Each small line represents 10 minutes of R.A. The date circle is labeled from "1" to "12", with each number representing a month of the year ("1" is January, "2" is February, etc.). Each small line represents a two-day increment.
4. Loosen the R.A. lock lever and rotate the mount about the R.A. axis until the March 1 indicating mark (the long line between the "2" and the "3") on the date circle lines up with the 4 PM mark (the long line above the "16") on the R.A. setting circle. You may find it convenient to remove both the counterweights and the telescope optical tube to do this.
5. Now, loosen the three thumbscrews on the polar finder housing and rotate the polar finder so the small circle where Polaris will be centered is located straight down from the intersection of the crosshairs. Retighten the thumbscrews.

The polar axis finder scope is now properly set in its initial position. Next, we must align it so that it is exactly parallel to the mount's R.A. axis:

1. Look through the polar finder at a distant object (during the day) and center it on the crosshairs. You may need to adjust the latitude adjustment T-bolts and the tripod position to do this.
2. Rotate the mount 180° about the R.A. axis. Again, it may be convenient to remove the counterweights and optical tube first.
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 thumbscrews on the housing to redirect the crosshairs of the polar finder to the apparent center of this circular path. Repeat this procedure until the position that the crosshairs point to does not rotate off-center when the mount is rotated in R.A. Once this is accomplished, retighten the thumbscrews.

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, which could knock it out of alignment.

Using the Polar Axis Finder

When using the polar finder in the field at night, you will need a red flashlight to illuminate the finder's reticle. Shine the flashlight at an angle into the front opening in the R.A. axis. Do not shine it directly into the opening, or the light will be too bright, and you will also obstruct the view of the polar finder. It may be helpful to have a friend hold the flashlight while you look through the polar finder.

For most accurate polar alignment, you will need to know the approximate longitude of your observing site. This information can be obtained by looking at a local map. Now, you must figure the difference between the longitude of your observing site and the closest standard time meridian. The standard time meridians are 75°, 90°, 105°, and 120° for the 48 continental states (150° and 165° for Hawaii and Alaska). Choose the standard time meridian that is closest in value to your local longitude, and then calculate the difference.

If your local longitude has a value less than the closest standard time meridian, then you are east of the standard time meridian by the calculated amount. If your local longitude has a value greater than the closest standard time meridian, then you are west of the standard time meridian by the calculated amount. For example, if you are in Las Vegas, which has a longitude of 115°, then the closest standard time meridian is 120°. The difference between these two numbers is 5°. Since Las Vegas' longitude value is less than the standard time meridian value, you are 5° east of the closest time meridian.

Take your calculated difference from the closest standard time meridian and rotate the date circle so that the meridian offset scale line that corresponds to your calculated difference lines up with the engraved time meridian indicator mark on the polar finder housing. Each line of the meridian offset scale represents 5° of longitude. Lines to the left of the "0" on the meridian offset scale indicate east of the closest standard time meridian, while lines to the right of the "0" indicate west of the closest standard time meridian.

Continuing with the prior example of observing in Las Vegas, you would rotate the date circle so that the first line to the left of the "0" on the meridian offset scale lines up with the time meridian indicator mark.

Make sure that the "0" mark on the R.A. setting circle lines up with the pointed indicator cast into the mount, and that the large thumbscrew just above it is tightened. Now, rotate the mount about the R.A. axis until the line on the R.A. setting circle that corresponds to your current local time lines up with the line on the date circle that indicates the current date. If you are on daylight savings time, subtract one hour from your current local time.

For example, if it was November 1 at 9 PM, standard time, you would rotate the telescope in R.A. until the line above the "21" (9 P.M.) on the R.A. setting circle lines up with the long line between the "10" and "11" on the date circle. The long line indicates the first day of the higher numbered month, i.e. the line between "10" and "11" marks November 1st.

Finally, look through the polar alignment finder scope while shining a red flashlight at an angle down the front opening of the R.A. axis, and center Polaris in the small circle. Adjust the tilt of the altitude up-or-down with the latitude adjustment T-bolts and use the azimuth fine adjustment knobs (Figure 8) for final positioning. To do this, you will first need to loosen the big tripod attachment knob directly underneath the base of the equatorial mount. The fine adjustment knobs work by loosening one and then tightening the other. Once Polaris is centered in the small circle, retighten the tripod attachment knob to firmly secure the mount and tripod. If the fine adjustment knobs do not allow the mount to move far enough to center Polaris, you will need to rotate the entire tripod left or right to get it within the fine adjustment's range.

The telescope is now accurately polar aligned, and can be used for advanced observational applications, such as astrophotography or precise use of the manual setting circles. As mentioned before, only move the telescope along the R.A. and Dec. axes; if you move the tripod, or change the tilt of the equatorial mount, you will need to polar align again.

Remember, accurate polar alignment is not needed for casual visual observing. Most of the time, approximate polar alignment, as outlined previously, will suffice.

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 3.

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 3); 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. setting

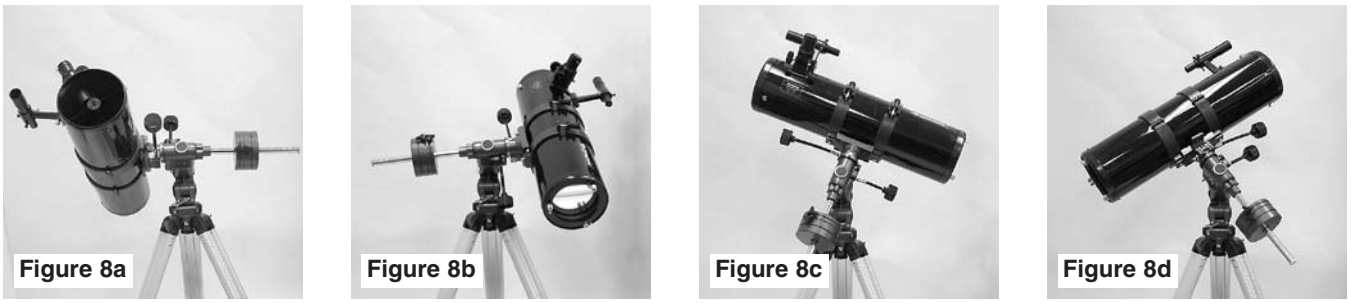

Figure 8a,b,c,d. This illustration shows the telescope pointed in the four cardinal directions: (a) North, (b) South, (c) East, (d) West. Note that the tripod and mount have not been moved; only the telescope tube has move on the R.A. and Dec. axis.

circles for finding objects; the thumbscrew is only needed for polar alignment using the polar axis finder scope.

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.

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°

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 Astroview Equatorial Mount 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 to: Orion Warranty Repair, 89 Hangar Way, Watsonville, CA 95076. If the product is not registered, proof of purchase (such as a copy of the original invoice) is required.

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, and you may also have other rights, which vary from state to state. For further warranty service information, contact: Customer Service Department, Orion Telescopes & Binoculars, 89 Hangar Way, Watsonville, CA 95076; (800) 676-1343.

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