INSTRUCTION MANUAL

Optronic SkyLine™ 6" Dobsonian Reflector

#52136

IN 615 Rev. A 04/18

Optronic SkyLine Dobsonians are big, fun telescopes with exceptional features and accessories that give them a performance edge. This instruction manual will guide you through the one-time assembly process for the SkyLine 6" Dobsonian and provide other important information about your new telescope. Read it over carefully and if you still have questions, call Orion Customer Service at 800-676-1343 or send an email to *support@telescope.com*.

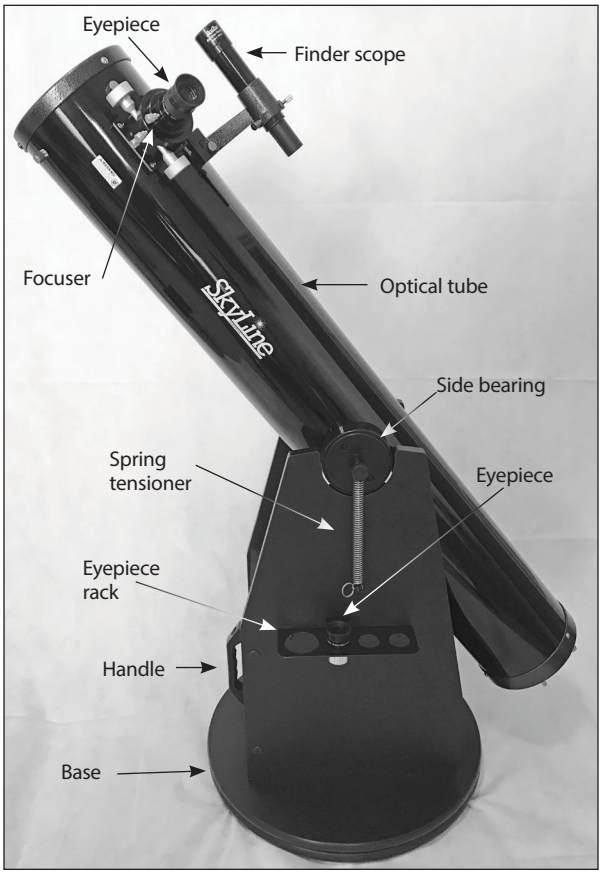

Figure 1. *The SkyLine 6" Dobsonian*

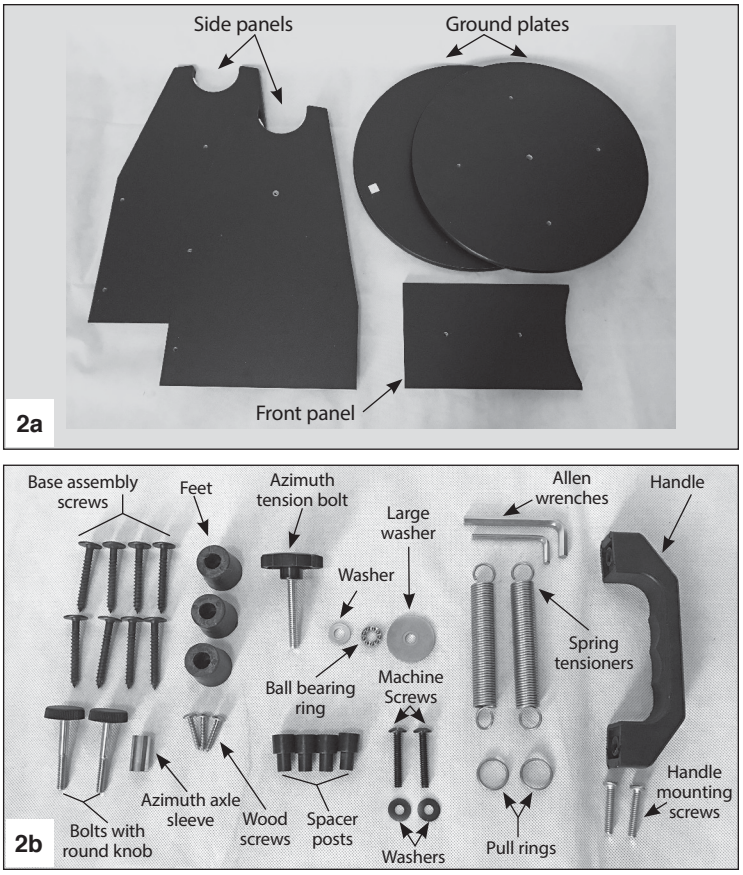

Figure 2. a) *Base board components of the SkyLine 6" Dobsonian.* **b)** *Base assembly hardware.*

Contents

WARNING: ***NEVER look directly at the Sun through your telescope—even for an instant—without a professionally made solar filter that completely covers the front of the instrument, or permanent eye damage could result. Young children should use this telescope only with adult supervision.***

1. Included Parts

Your SkyLine 6" Dobsonian comes packaged in two shipping boxes. Refer to **Figures 2 and 3** to make sure all the parts shown are present.

2. Assembly

Assembly of the Base

The base needs to be assembled only once. The assembly takes about 20 minutes and requires a Phillips screwdriver and the two included Allen wrenches (small and large). Refer to **Figure 2** for identification of the base parts.

NOTE: When tightening the base assembly screws, tighten them until firm, but be careful not to strip the holes by over-tightening. If you use an electric screwdriver, do the

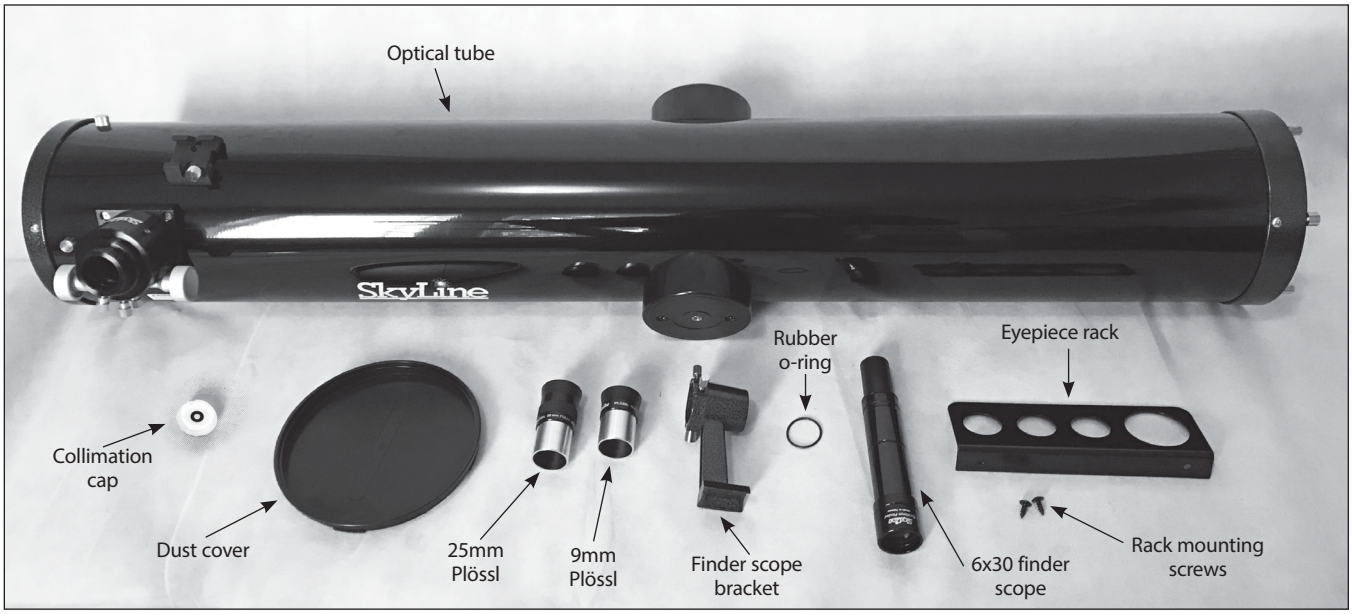

Figure 3. ***Optical tube assembly and accessories.***

final tightening with a standard screwdriver to avoid stripping.

1. Find the ground plate with the threaded metal insert in the center hole. On one side the metal insert is nearly flush with the goundplate surface – this is the bottom side of the groundplate **(Figure 4)**. Screw the 3 plastic feet into the small holes on this side using the long Philips-head wood screws provided, with a Phillips screwdriver **(Figure 5)**.

2. Attach the front panel to the two side panels with four black base assembly screws in the predrilled holes **(Figure 6a)**. Use the included small Allen wrench to tighten the screws. Orient the front panel so that the metal T-nuts face inward. The side panel with the two predrilled holes for the eyepiece rack should be installed on the LEFT side **(Figure 6b)**.

3. Now stand the panel assembly upside down, exposing the bottom edge of the panels. Lay the top goundplate on the panel assembly, aligning the holes in the groundplate with those in the panel edges **(Figure 7)**. **NOTE: Make sure the countersunk holes in the ground plate are facing UP**.

4. Attach the goundplate to the panel assembly with four base assembly screws in the predrilled holes, using the small Allen wrench. Tighten all screws.

5. Install the eyepiece rack with the two small wood screws provided in the predrilled holes on the left side panel. You will need a Philips screwdriver to tighten the screws **(Figure 8)**.

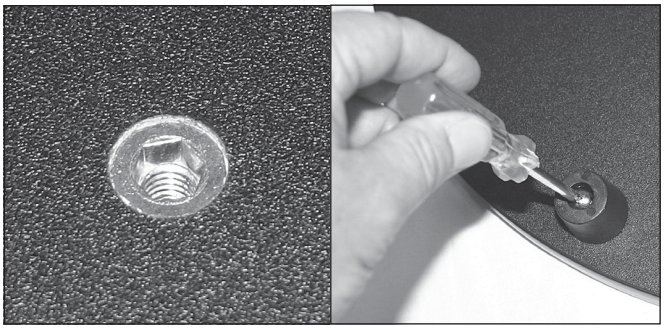

Figure 4. ***The non-threaded end of the metal insert is nearly flush with the bottom side of the bottom groundplate.***

Figure 5. ***Install the three feet with the included screws on the bottom side of the bottom groundplate.***

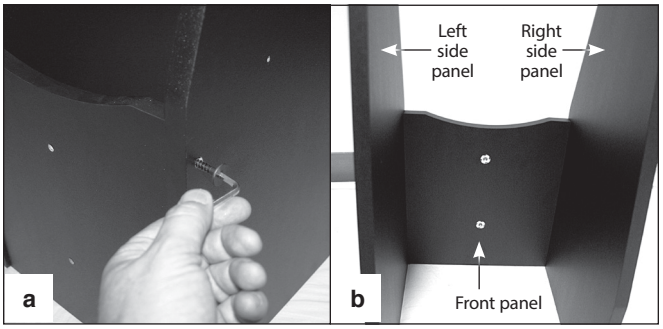

Figure 6. a) ***Attach the two side panels to the front panel with the base assembly screws and included Allen wrench.*** **b)** ***The side panel with the two holes for the eyepiece rack should go on the left side.***

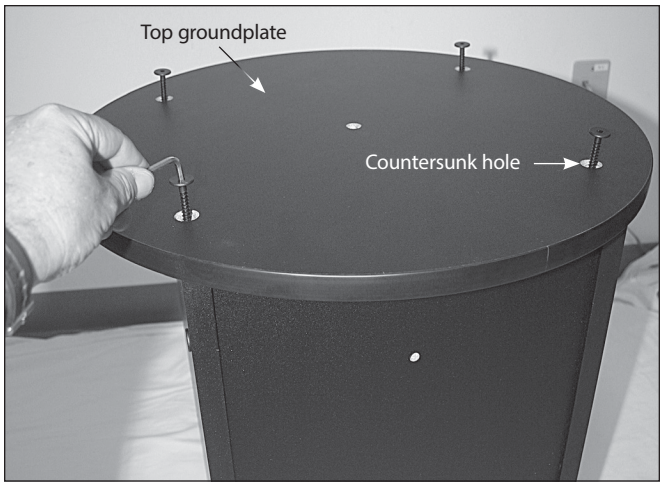

Figure 7. *With the front and side panel assembly turned upside down, attach the top groundplate to the assembly with the countersunk holes facing up.*

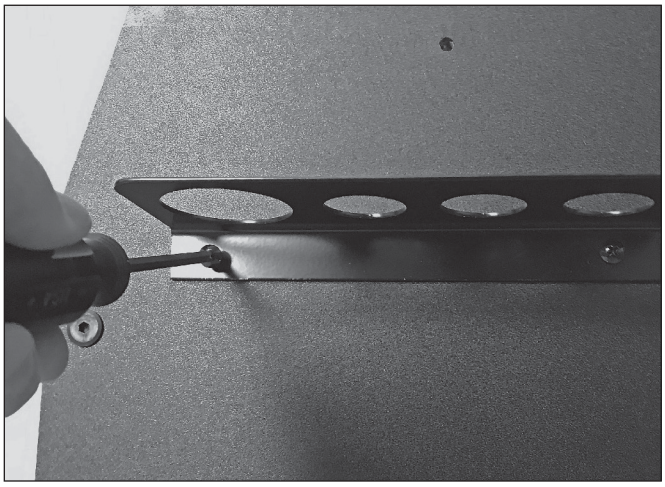

Figure 8. *Install the eyepiece rack on the left side panel with the two small wood screws provided.*

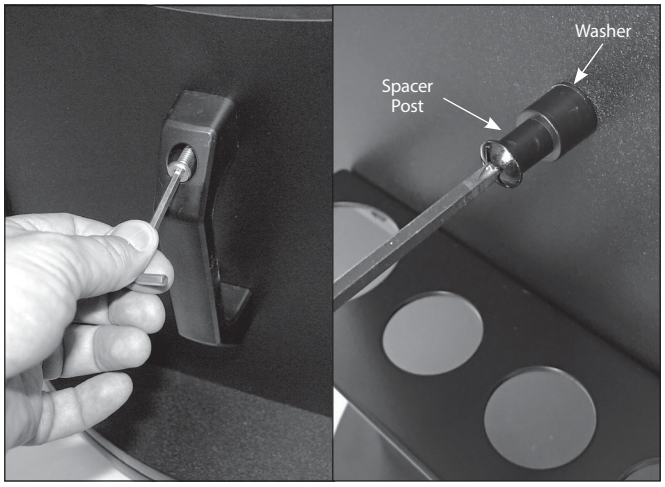

Figure 9. *Use the Allen wrench and the two included handle mounting screws to attach the handle to the front panel*

Figure 10. *Attach a plastic spacer on each side panel using a black washer and machine screw as indicated. The thicker end of the spacer should be closest to the side panel.*

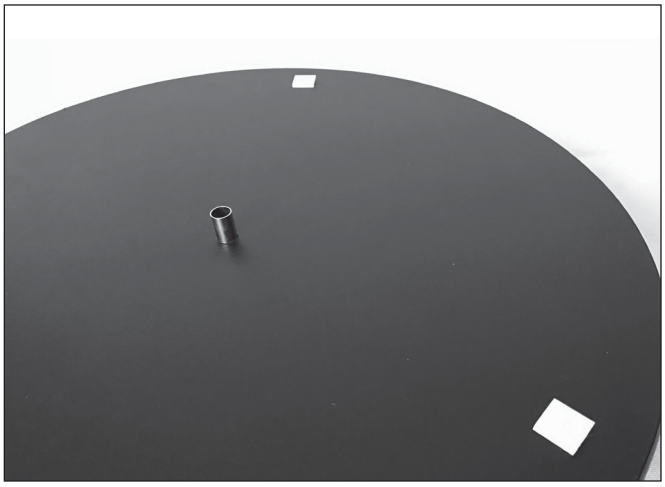

Figure 11. *With the bottom groundplate standing on its three feet, insert the azimuth axle sleeve into the center hole of the groundplate.*

6. Install the base handle on the front panel using the two handle mounting screws and the small Allen wrench.. Insert the screws through the holes in the handle and into the holes containing metal threaded inserts in the front panel, then tighten **(Figure 9)**.

7. Attach a nylon spacer post to both side panels using a black Philips-head machine screw and 1/4" black washer as indicated in **Figure 10**.

8. Now place the metal azimuth axle sleeve in the center hole of the bottom groundplate, as in **Figure 11**.

9. Pick up the top base assembly and place it on the bottom groundplate assembly, lining up the center hole in the top ground-plate with the axle sleeve. The top base assembly should now freely rotate on the bottom groundplate.

10. On the azimuth tension bolt (with rosette knob), place the small silver washer, the ball bearing ring, and the large washer, in that order **(Figure 12a)**. Then thread the bolt into the center hole of the top groundplate and rotate the knob until the desired tension is achieved **(12b)**.

Your Dobsonian base is now fully assembled and should appear as in **Figure 13**.

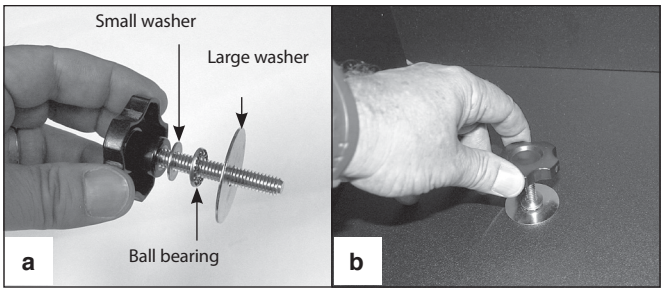

Figure 12. a) *Place the two washers and roller bearing ring on the azimuth tension bolt as shown.* **b)** *Then thread the bolt into the center hole (metal insert) and tighten to the desired tension.*

Figure 13. *The assembled Dobsonian base.*

Installing the Optical Tube Assembly on the Base

1. Put one of the black plastic spacer posts on a bolt with round knob. The spacer post should be oriented so the narrow end is closest to the round knob.

2. Place one end loop of a spring tensioner onto the bolt, over the spacer.

3. Then thread the bolt into the hole in the optical tube's altitude side bearing and tighten **(Figure 14)**.

4. Place a pull ring onto the free end loop of the spring **(Figure 15)**.

5. Repeat steps 1 to 4 on the other side of the tube.

6. Now lift the optical tube and place it onto the base, lowering the side bearings into the cradle wells at the top of the side panels **(Figure 16)**. The side bearings will rest on the white Teflon pads in the wells. The tube should be oriented so that the focuser faces the left side of the base (the side with the eyepiece rack), as in the picture.

7. Now, on one side, pull the spring tensioner downward using the pull ring, and position the spring's end loop – NOT the pull ring itself – over the head of the Phillips screw and onto the narrow part of the nylon spacer, as shown in **Figure 17**. Then do the same for the other side of the telescope.

If you wish to remove the telescope from the base, you will first need to disconnect the springs from the spacer posts on the Dobsonian base. The springs will remain captive on the optical tube's altitude side bearings, so they will not get lost.

To Install the Finderscope

The SkyLine 6" Dobsonian comes with a 6x30 achromatic crosshair finder scope as standard equipment. Its wide field of view greatly aids in finding and centering objects for viewing in the main telescope.

1. To do so, first remove the rubber O-ring from the bracket. Now insert the foot of the finder scope bracket into the dovetail holder near the focuser **(Figure 18)**. Lock the bracket into position by tightening the knurled thumb screw on the dovetail holder.

2. Now place the O-ring onto the finder scope tube until it seats in the groove in the tube **(Figure 19)**.

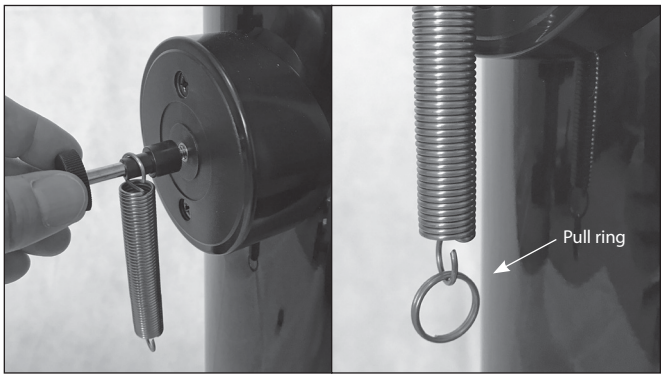

Figure 14. *Place a spring tensioner and plastic spacer on a bolt with round knob as shown, then thread the bolt into the center hole of the side bearing on the optical tube until tight. Repeat on the other side.*

Figure 15. *Place a pull ring on the free end of each spring tensioner.*

3. Then unthread the two screws on the bracket until the screw ends are flush with the inside diameter of the bracket. While pulling the spring pin, slide the eyepiece end (narrow end) of the finder scope into the end of the bracket's cylinder opposite the alignment screws **(Figure 19)**. Push the finder scope through the bracket until the O-ring seats just inside the front opening of the bracket's cylinder. Now, release the tensioner and tighten the two thumbscrews a couple of turns each to secure the finder scope tube in the bracket.

Installing an Eyepiece

Your SkyLine 6" Dobsonian comes with two Plossl type eyepieces equipped with a 1.25"-diameter chrome barrel: one has a 25mm focal length and the other a 9mm focal length. To install an eyepiece in the focuser, first remove the cap from the focuser, then insert the chrome barrel of the eyepiece into the drawtube collar **(Figure 20)**. Secure the eyepiece with the thumbscrew on the collar. You can keep the other eyepiece in the eyepiece rack on the base until you're ready to use it.

Figure 16. *Lift the optical tube and place it in the base as shown.*

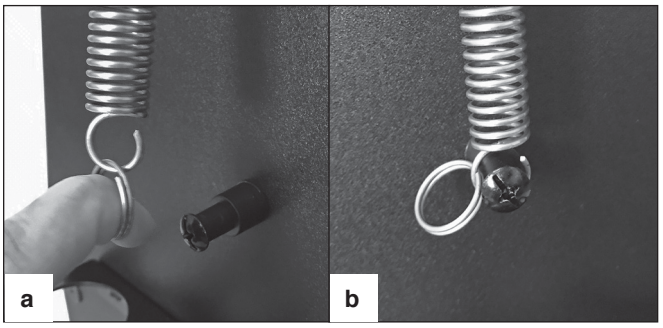

Figure 17. *Using the pull ring* **(a)***, pull the spring tensioner over the screw head of the spacer post on the side panel to secure the optical tube on the base* **(b)**.

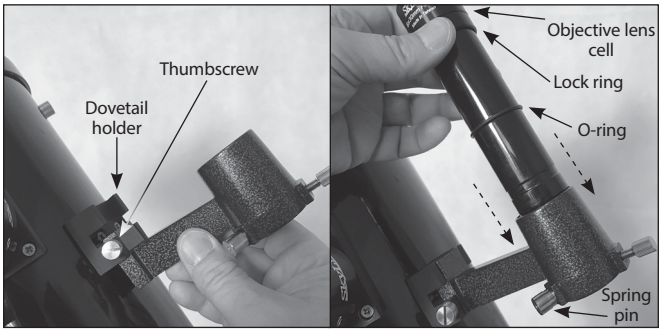

Figure 18. *Slide the foot of the finder scope bracket into the dovetail base as shown, and lock it with the thumbscrew.*

Figure 19. *With the rubber O-ring seated in the groove, insert the finder scope into the bracket as shown until the O-ring seats under the bracket cylinder. You will need to pull back on the spring pin while doing this.*

Your SkyLine 6" Dobsonian is now fully assembled! The dust cover on the front of the telescope should always remain in place when the telescope is not in use. It is also a good idea to store eyepieces in an eyepiece case and to replace the cover cap on the focuser when the telescope is idle.

3. Using Your Telescope

It is best to get a feel for the basic functions of the SkyLine Dobsonian during the day, before observing astronomical objects at night. This way you will not have to fumble around trying to orient yourself in the dark! Find a spot outdoors where you have plenty of room to move around the telescope, and where you have a clear view of some object or vista that is at least 1/4-mile away. It is not critical that the base be exactly level, but it should be placed on somewhat flat ground to ensure smooth movement of the telescope.

Altitude and Azimuth

The Dobsonian base permits motion of the telescope along two axes: altitude (up/down) and azimuth (left/right) **(Figure 21)**. As a result, pointing the telescope is exceptionally easy. Simply take hold of the end of the tube and move it left or right so the

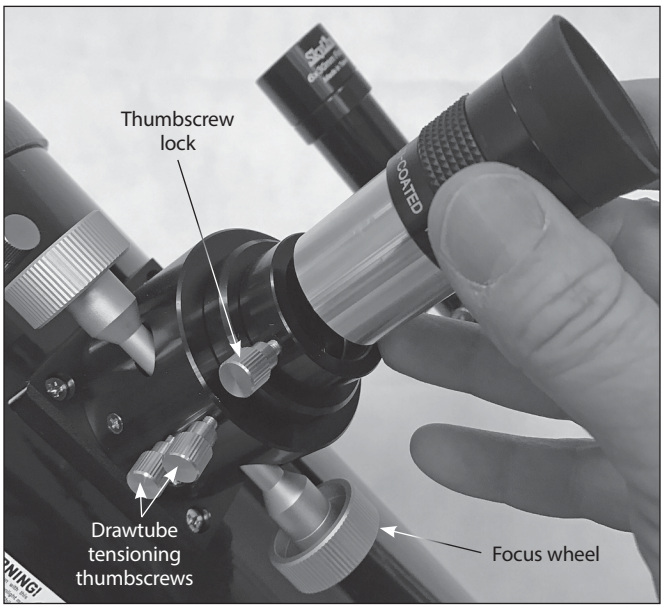

Figure 20. *Insert the eyepiece barrel into the focuser and secure it with the thumbscrew.*

base rotates about its central azimuth bolt, and move it up or down so the altitude side bearings rotate in the base's cradle. Both motions can be made simultaneously and in a continuous manner for easy aiming. In this way you can point the telescope to any position in the night sky, from horizon to horizon.

The azimuth motion should be smooth, with just enough resistance to keep the base from rotating when you want it to stop and stay put after you have slewed the telescope. Azimuth tension, or friction, can be adjusted with the azimuth tension knob in the center of the top groundplate – turn it clockwise for more tension, counterclockwise for less.

The tension for the altitude motion is not adjustable; the spring tensioners are designed to apply an appropriate amount of constant tension to achieve smooth up and down motion while keeping the optical tube from drifting when you let go of it.

Focusing the Telescope

With the 25mm eyepiece secured in the focuser, move the telescope so the front (open) end is pointing in the general direction of an object at least 1/4-mile away. Now, with your fingers, slowly rotate one of the focusing knobs until the object comes into sharp focus. Go a little bit beyond sharp focus until the image just starts to blur again, then reverse the rotation of the knob, just to make sure you've hit the exact focus point.

If you have trouble focusing, rotate the focusing knob so the drawtube is in as far as it will go. Now look through the eyepiece while slowly rotating the focusing knob in the opposite direction. You should soon see the point at which focus is reached.

The Crayford type focuser of the SkyLine 6" Dobsonian features two thumbscrews on the bottom of the focuser body **(Figure 20)**, which allow adjustment of the drawtube tension and will lock the focuser drawtube in place once the telescope is properly focused, if desired.

If you find the drawtube tension when focusing is either too tight (drawtube doesn't move when you turn the focus knobs) or too loose (drawtube slips under the weight of the eyepiece), the tension can be adjusted for optimal performance.

Aligning the Finder Scope

The finder scope must be aligned accurately with the optical tube of the telescope for proper use. This way, when you center an object in the finder scope, it will also be centered in the main telescope's eyepiece and ready to view. The finder scope's bracket has two perpendicular alignment thumbscrews and a silver spring pin. To align the finder scope you will adjust the two thumbscrews, which alters the direction the finder scope is pointing.

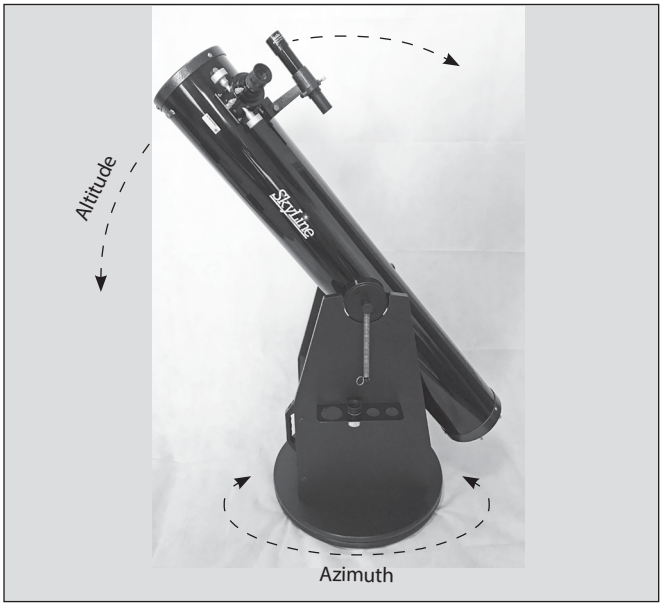

Figure 21. *The SkyLine 6" Dobsonian has two axes of motion: altitude (up and down) and azimuth (left and right).*

First aim the main telescope in the general direction of an object at least 1/4-mile away, e.g., the top of a telephone pole, a chimney, etc. Position that object in the center of the telescope's eyepiece.

NOTE: The image in the main telescope will appear upside-down (rotated 180°). This is normal for reflector telescopes.

Now look through the finder scope. Ideally, the object should be visible in the field of view. If it is not, then coarse adjustments to the finder scope bracket's alignment thumbscrews will be needed. Once the image is in the finder scope's field of view, you will now use the alignment thumbscrews to center the object on the intersection of the crosshairs. By loosening or tightening one or both alignment thumbscrews, you change the line of sight of the finder scope. Continue making adjustments to the alignment thumbscrews until the image in both the finder scope and the telescope's eyepiece are exactly centered.

Check the alignment by moving the telescope to another object and fixing the finder scope's crosshairs on the exact point you want to look at. Then look through the telescope's eyepiece to

see if that point is centered in the field of view. If it is, the job is done. If not, make the necessary adjustments until the two images match up.

The finder scope alignment should be checked before every observing session.

Magnification

Magnification, or power, is determined by the focal length of the telescope and the focal length of the eyepiece. Magnification is calculated as follows:

$$\frac{\text{Telescope Focal Length (mm)}}{\text{Eyepiece Focal Length (mm)}} = \text{Magnification}$$

Magnification of the telescope can be changed by using different eyepieces. For example, the SkyLine 6" Dobsonian has a focal length of 1200mm. So, the magnification with the supplied 9mm Plossl eyepiece is:

$$\frac{1200\text{ mm}}{9\text{ mm}} = 133\text{x}$$

By the same formula, when using the 25mm Plossl eyepiece, the magnification would be 48x.

The maximum attainable magnification for a telescope is directly related to how much light its optics can collect. A telescope with more light-collecting area, or aperture, can yield higher magnifications than a smaller aperture telescope. The maximum practical magnification for any telescope, regardless of optical design, is about 50x per inch of aperture. This translates to about 300x for the SkyLine 6".

Keep in mind that as magnification is increased, the brightness of the object being viewed will decrease; this is an inherent principle of the physics of optics and cannot be avoided. If magnification is doubled, an image appears four times dimmer. If magnification is tripled, image brightness is reduced by a factor of nine!

Maximum magnifications are achieved only under the most ideal viewing conditions at the best observing sites. Most of the time, magnification is limited to 200x or less, regardless of aperture. This is because the Earth's atmosphere distorts light as it passes through. On nights of good "seeing," the atmosphere will be still and will yield the least amount of distortion. On nights of poor seeing, the atmosphere will be turbulent, which means different densities of air are rapidly mixing. This causes significant distortion of the incoming light, which prevents sharp views at high magnifications. The sharpest images will always be achieved at lower magnifications.

Cooling the Optics

All optical instruments need time to reach "thermal equilibrium" with the ambient air to achieve maximum stability of the lenses and mirrors, which is essential for peak performance. When moved from a warm indoor location to cooler air outside (or vice-versa), a telescope needs time to equilibrate to the outdoor temperature. The bigger the instrument and the larger the temperature change, the more time will be needed.

Allow at least 30 minutes for your SkyLine Dobsonian to equilibrate. If the scope experiences more than a 40° temperature change, allow an hour or more. In the winter, storing the telescope in a shed or garage greatly reduces the amount of time needed for the optics to stabilize. It also is a good idea to keep the scope covered until the Sun sets so the tube does not heat greatly above the temperature of the outside air.

Carrying/Transporting the Telescope

Moving the SkyLine Dobsonian is easy to do. Because the spring tensioners hold the optical tube captive on the base, the entire telescope can be carried as one unit. This requires some caution, however. If the telescope is lifted improperly, the front of the tube could swing down and hit the ground. First, point the optical tube straight up (vertical). Remove any eyepieces from the telescope and optional eyepiece rack, and place them in an eyepiece case. Grasp the handle on the front of the base with one hand while supporting the telescope tube vertically with the other. Now, lift the telescope from the handle. Once the telescope is in the horizontal position, you can carry the entire unit with one hand. If you wish to carry the optical tube and base separately, simply disengage the springs by unhooking them from the posts on the base, using the pull rings. The springs remain captive on the telescope side bearings. Now the base and tube are disengaged and can be transported separately.

When putting the telescope into a vehicle, common sense prevails. It is especially important that the optical tube does not knock around; this can cause the optics to become misaligned, and could dent the tube. We recommend transporting and storing the tube assembly in a padded case for proper protection.

Finally, keep the dust cover on the front of the telescope when it is not in use. Doing so will keep dust from accumulating on the primary mirror.

4. Collimation

Collimation is the process of adjusting the mirrors so they are correctly aligned with one another. Your telescope's optics were aligned at the factory, but they could have become misaligned during shipment. Accurate mirror alignment is important to ensure the peak performance of your telescope, so it should be checked regularly. Collimation is relatively easy to do and can be done in daylight or in the field at night.

The Collimation Cap

Your Orion SkyLine 6" Dobsonian comes with a "quick collimation cap," shown in **Figure 22**. This is a simple cap that fits on the focuser drawtube like a dust cap, but has a tiny hole in the center. The collimation cap helps center your eye over the focuser drawtube, making it easier to align the optical components. The white surface and black ring on the cap's underside provide a distinct visual reference that is helpful in centering the mirror reflections.

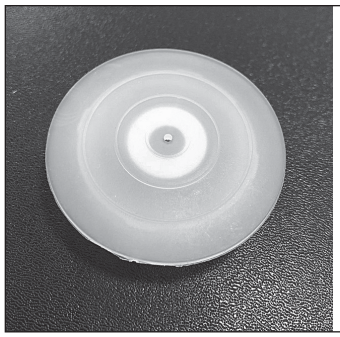

Figure 22. ***The quick collimation cap assists in ensuring precise optical alignment.***

Primary Mirror Center Mark

The primary mirror of your telescope has a tiny ring (sticker) marking its center. This "center mark" is helpful in achieving a precise collimation. Do not remove it! Because it lies directly in the shadow of the secondary mirror, its presence in no way adversely affects the optical performance of the telescope or the image quality. That might seem counterintuitive, but it's true!

Preparing the Telescope for Collimation

Once you get the hang of collimating, you will be able to do it quickly even in the dark. For now, it is best to collimate in daylight, preferably in a brightly lit room and aimed at a light colored wall. It is recommended that the telescope tube be oriented horizontally. This will prevent any parts from the secondary mirror from falling down onto the primary mirror and causing damage if something comes loose while you are making adjustments. Place a small sheet of white paper inside the optical tube directly opposite the focuser **(Figure 23)**. The paper will provide a bright "background" when viewing into the focuser.

Aligning the Secondary Mirror

There are two adjustments to the secondary mirror that you may have to make. The first is to center the secondary mirror in the circle formed by the focuser drawtube. This adjustment will rarely, if ever, need to be done. The second adjustment you'll make is to the tilt of the secondary mirror, to make sure all the light from the primary mirror is properly reflected up through the focuser into the eyepiece. This is the more common secondary mirror adjustment.

To make adjustments to the secondary mirror tilt, you will need a small Philips screwdriver. Remember to always slightly loosen (by 1/4 turn or less) one screw before tightening one or both of the other two screws. And do not overtighten them or you could damage the secondary mirror support housing!

Centering the Secondary Mirror in the Focuser Drawtube

Let's start with the first adjustment – centering the secondary mirror in (actually, under) the focuser drawtube. With the collimation cap in place on the focuser collar, look through the hole in the collimation cap at the secondary (diagonal) mirror. Ignore the reflections for the time being. The secondary mirror itself should be centered in the circle of the focuser drawtube. If it is, as in **Figure 24c**, you can move on to the next section,

Figure 23. *The SkyLine 6" Dobsonian ready for collimation. Orient the tube horizontally and place a piece of white paper inside the tube opposite the focuser.*

Adjusting the Secondary Mirror's Tilt. If it isn't centered, as in **Figure 24b**, it must be adjusted as follows.

Using a Philips screwdriver, loosen the three small alignment setscrews in the center hub of the 4-vaned spider several turns **(Figure 25a)**. Now hold the mirror holder stationary (be careful not to touch the surface of the mirror), while turning the center screw with a Phillips head screwdriver. Turning the screw clockwise will move the secondary mirror toward the front opening of the optical tube, while turning the screw counter-clockwise will move the secondary mirror toward the primary mirror.

When the secondary mirror is centered under the focuser drawtube, rotate the secondary mirror holder until the reflection of the primary mirror is as centered in the secondary mirror as possible. It may not be perfectly centered, but that is OK. Now tighten the three small alignment screws equally to secure the secondary mirror in that position. If the entire primary mirror reflection is not visible in the secondary mirror, as in **Figure 24c**, you will need to adjust the tilt of the secondary mirror.

Adjusting the Secondary Mirror's Tilt

The goal with this adjustment is to center the primary mirror reflection in the secondary mirror, as in **Figure 24d**. Don't worry that the reflection of the secondary mirror (the smallest circle, with the collimation cap "dot" in the center) is off-center. You will fix that in the next step. Using the Philips screwdriver, first loosen one of the three alignment screws by no more than ¼ turn, then lightly tighten the other two to take up the slack. Is the primary mirror reflection more centered now? If not, then try loosening one of the other two screws. Always loosen one first, then tighten one or both of the other two screws. It will take some trial and error, but by adjusting the three small screws a small amount at a time, you should be able eventually to see the whole primary mirror in the secondary mirror, just like in **Figure**

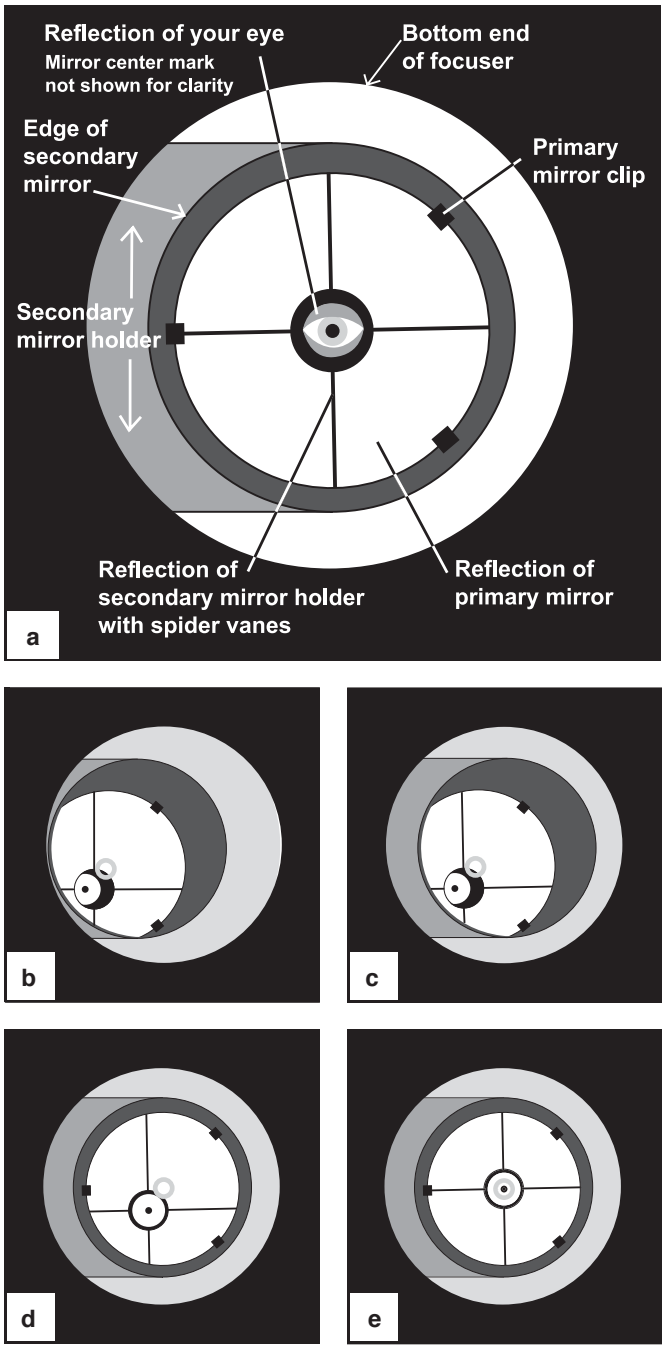

Figure 24. *Collimating the optics.* **(a)** *When the mirrors are properly aligned, the view down the focuser drawtube should look like this;* **(b)** *With the collimation cap in place, if the optics are out of alignment, the view might look something like this;* **(c)** *Here, the secondary mirror is centered under the focuser, but it needs to be adjusted (tilted) so that the entire primary mirror is visible;* **(d)** *The secondary mirror is correctly aligned, but the primary mirror still needs adjustment. When the primary mirror is correctly aligned, the "dot" will be centered, as in* **(e).**

24d. At the end of the procedure all three alignment screws should be tight – but don't overtighten! -- to ensure that the secondary mirror can't move.

Aligning the Primary Mirror

The final adjustment is made to the primary mirror. It will need adjustment if, as in **Figure 24d**, the secondary mirror is centered under the focuser and the reflection of the primary mirror is centered in the secondary mirror, but the small reflection of the secondary mirror (with the "dot" of the collimation cap) is off-center. The tilt of the primary mirror is adjusted with three spring-loaded collimation thumb-screws on the bottom end of the optical tube **(Figure 25b)**; these are the larger thumbscrews. The other three, smaller thumbscrews lock the mirror's position in place; these locking thumbscrews must first be loosened before any collimation adjustments can be made to the primary mirror.

To start, loosen the locking thumbscrews a few turns each. Now, try tightening or loosening one of the larger collimation thumbscrews with your fingers. Look into the focuser and see if the secondary mirror reflection has moved closer to the center of the primary. You can tell this easily with the collimation cap and mirror center mark by simply watching to see if the "dot" of the collimation cap is moving closer or farther away from the ring on the center of the primary mirror. If the dot moved farther away from the ring, try turning the thumbscrew the opposite way, or try turning a different collimation thumbscrew and seeing what happens. When you have the dot centered as much as possible in the ring, your primary mirror is collimated. The view through the collimation cap should now resemble **Figure 24e**. Retighten the locking thumbscrews. The true test of whether your telescope's optics are accurately collimated is a star test. Here's how to do it.

Star-Testing the Telescope

To determine whether your optics are well collimated, when it is dark, point the telescope at a bright star -- Polaris is ideal since it will not drift noticeably -- and accurately center it in the eyepiece's field of view. Slowly de-focus the image with the focusing knob. If the telescope is correctly collimated, the expanding disk should be a perfect circle **(Figure 26)**. If the image is unsymmetrical, the scope is out of collimation. The dark shadow cast by the secondary mirror should appear in the very center of the out-of-focus circle, like the hole in a donut. If the "hole" appears off-center, the telescope is out of collimation.

If you try the star test and the bright star you have selected is not accurately centered in the eyepiece, the optics will always appear out of collimation, even though they may be perfectly aligned. It is critical to keep the star centered, so over time you will need to make slight corrections to the telescope's position in order to account for the sky's apparent motion.

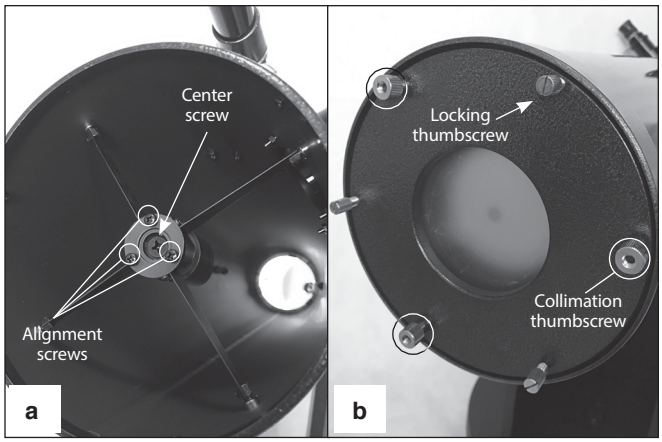

Figure 25. a) ***The tilt of the secondary mirror is adjusted with the three Philips screws shown here.*** **b)** ***The primary mirror's tilt is adjusted with the three large thumbscrews on the rear cell. The three narrow locking thumbscrews should be loosened a couple of turns first, then retightened once the adjustment has been made.***

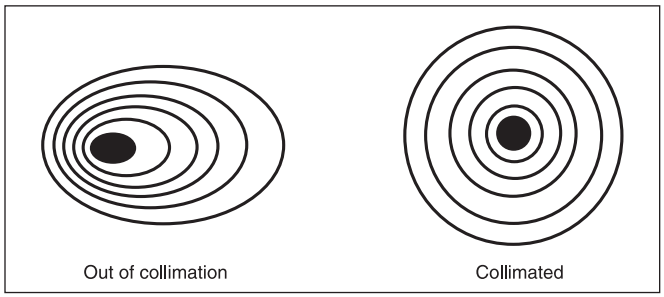

Figure 26. ***A star test will determine if a telescope's optics are properly collimated. An unfocused view of a bright star through the eyepiece should appear as illustrated on the right if the optics are perfectly collimated. If the circle is unsymmetrical, as in the illustration on the left, the scope needs collimation.***

5. Specifications

Objective lens:	1200mm
Primary mirror diameter:	152mm
Focal ratio:	f/7.9
Minor axis of secondary mirror:	33mm
Optics:	Parabolic, diffraction limited
Mirror coatings:	Enhanced aluminum (94%-96% reflectivity), with SiO2 overcoat
Focuser:	1.25" Crayford
Optical tube material:	Rolled steel
Eyepieces:	9mm Plössl, 1.25".
	25mm Plössl, 1.25"
Magnification with supplied eyepieces:	133x (9mm Plossl)
	48x (25mm Plössl)
Finder scope:	6x30 achromatic
Collimation:	Quick collimation cap included
Optical tube weight:	12 lbs. 8 oz
Base weight:	29 lbs. 1 oz.
Tube length:	45.5"
Tube outer diameter:	10.25" (including side bearings)

One-Year Limited Warranty

This 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 Optronic Technologies will repair or replace, at Optronic'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 Optronic'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.

Optronic Technologies