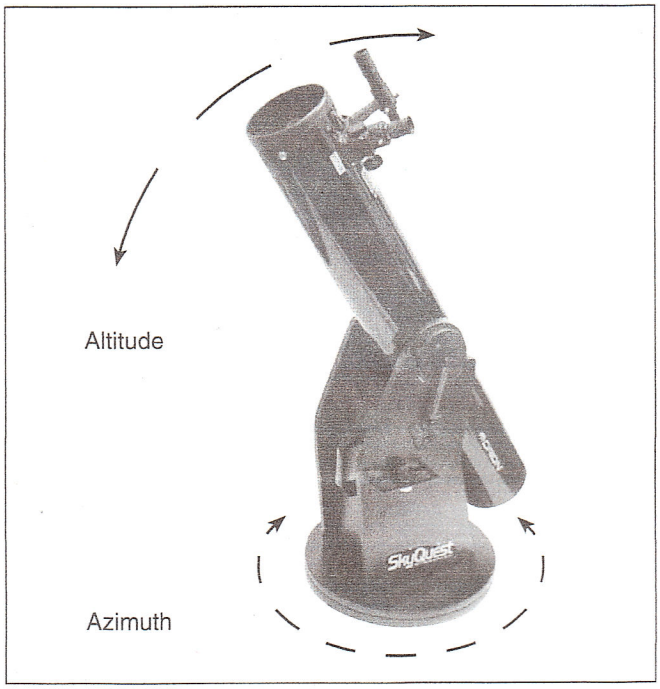



**Figure 9.** The SkyQuest has two axes of motion: altitude (up/down) and azimuth (left/right).

The CorrecTension system is now installed and engaged. If you wish to remove the telescope from the base, you will first need to disconnect the springs from the "posts" on the Dobsonian base. The springs will remain captive on the altitude side bearings, so they will not get lost.

### Inserting an Eyepiece

The final step in the assembly process is to insert an eyepiece into the telescope's focuser. Take the cover cap off the end of the focuser drawtube.

For the XT6: Loosen the two thumbscrews on the eyepiece holder and insert the eyepiece. Then secure it in place with the thumbscrews.

For the XT8 and XT10: There are three thumbscrews on the focuser, one holds the eyepiece, and two hold the 1.25" adapter. To insert the eyepiece, loosen the thumbscrew that is on the 1.25" adapter itself (it will be highest up on the focuser). Insert the eyepiece into the adapter and secure it by tightening the thumbscrew.

The assembly of your SkyQuest Dobsonian is now complete. It should appear as in Figure 1. 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 SkyQuest Dobsonian during the day, before observing astronomical objects at night. This way you will not have to fumble around

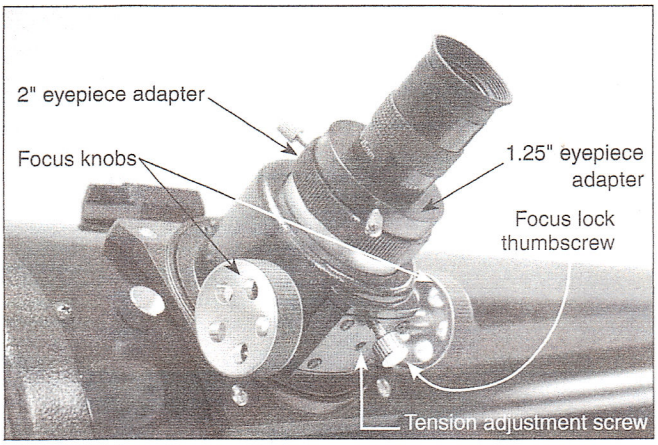



**Figure 10.** The 2" Crayford focuser (XT8 and XT10)

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 or pavement to ensure smooth movement of the telescope.

***Remember, never point the telescope at or near the Sun without using a proper solar filter over the front aperture!***

### Altitude and Azimuth

The Dobsonian base of the SkyQuest permits motion of the telescope along two axes: altitude (up/down) and azimuth (left/right) (Figure 9). This is very convenient, since up/down and left/right are the most "natural" ways that people aim. 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 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. Move the telescope gently—let it glide. In this way you can point the telescope to any position in the night sky, from horizon to horizon.

### Focusing the Telescope

Insert the 25mm eyepiece into the focuser and secure with the thumbscrew(s). 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 2" Crayford focuser of the XT8 and XT10 models features a thumb screw on the bottom of the focuser body (Figure 10)


**Figure 11.** The view through a reflector telescope is upside down.

which will lock the focuser drawtube in place once the telescope is properly focused.

If you find the drawtube tension when focusing is either too tight (focus knob is difficult to turn) or too loose (image shifts when focusing or drawtube moves inward by itself), the tension can be adjusted for optimal performance. On the XT8 & XT10, the focusing tension adjustment set screw is a 3mm socket head set screw located below the focus lock thumb screw (Figure 10). A 3mm hex key is required for adjustment of focus tension. Due to the rack-and-pinion focuser design on the XT6, tension adjustment should not normally be needed as it has been pre-adjusted at the factory.

***Note: The image in the main telescope will appear upside-down (rotated 180°). This is normal for reflector telescopes. (see Figure 11)***

### Aligning the EZ Finder II

When the EZ Finder II is properly aligned with the telescope, an object that is centered on the EZ Finder II's red dot should also appear in the center of the field of view of the telescope's eyepiece. Alignment of the EZ Finder II is easiest during daylight, before observing at night. Aim the telescope at a distant object such as a telephone pole or roof chimney and center it in the telescope's eyepiece. The object should be at least 1/4 mile away. Now, with the EZ Finder II turned on, look though the EZ Finder II. The object should appear in the field of view.

Without moving the main telescope, use the EZ Finder II's azimuth (left/right) and altitude (up/down) adjustment knobs (see Figure 6) to position the red dot on the object in the eyepiece.

When the red dot is centered on the distant object, check to make sure that the object is still centered in the telescope's field of view. If not, recenter it and adjust the EZ Finder II's alignment again. When the object is centered in the eyepiece and on the EZ Finder's red dot, the EZ Finder II is properly aligned with the telescope.

Once aligned, EZ Finder II will usually hold its alignment even after being removed and remounted. Otherwise, only minimal realignment will be needed.

### Replacing the Battery

Should the battery ever die, replacement 3-volt lithium batteries are available from many retail outlets. Remove the old battery by inserting a small flat-head screwdriver into the slot on the battery casing (Figure 6) and gently prying open the case. Then carefully pull back on the retaining clip and remove the old battery. Do not overbend the retaining clip. Then slide the new battery under the battery lead with the positive (+) end facing down and replace the battery casing.

### Aiming/Pointing the Telescope

Now that the EZ Finder II is aligned, the telescope can be quickly and accurately pointed at anything you wish to observe. The EZ Finder II has a much wider field of view than the telescope's eyepiece, and therefore it is much easier to first center an object in the EZ Finder II. Then, if the EZ Finder II is accurately aligned, the object will also be centered in the telescope's field of view.

Start by once again moving the telescope until it is pointed in the general direction of the object you want to see. Some observers find it convenient to sight along the tube to do this. Now, look in the EZ Finder II. If your general aim is accurate, the object should appear somewhere in the EZ Finder II. Make small adjustments to the telescope's position until the object is centered on the red dot of the EZ Finder. Now, look in the telescope's eyepiece and enjoy the view!

### Magnification

Magnification of the telescope can be changed by using additional eyepieces (optional). To switch eyepieces, simply loosen the thumbscrew(s) on the focuser drawtube and lift the eyepiece out of the focuser. Insert your new eyepiece in the focuser and tighten the thumbscrews. If you are careful not to bump the telescope your object should remain in the field of view. With higher powers notice that the object veing viewed is now larger, but somewhat dimmer.

The SkyQuest is designed to accept any eyepiece with a barrel diameter of 1.25". The XT8 and XT10 can also accept 2" eyepieces. Magnification, or power, is determined by the focal length of the telescope and the focal length of the eyepiece. Therefore, by using eyepieces of different focal lengths, the resultant magnification can be varied.

Magnification is calculated as follows:

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

The 6", 8" and 10" SkyQuest Dobsonians all have a focal length of 1200mm. So, the magnification with the supplied 25mm eyepiece is:

$$\frac{1200\text{mm}}{25\text{mm}} = 48\text{x}$$

The maximum attainable magnification for a telescope is directly related to how much light its optics can collect. A telescope with

carrying the telescope

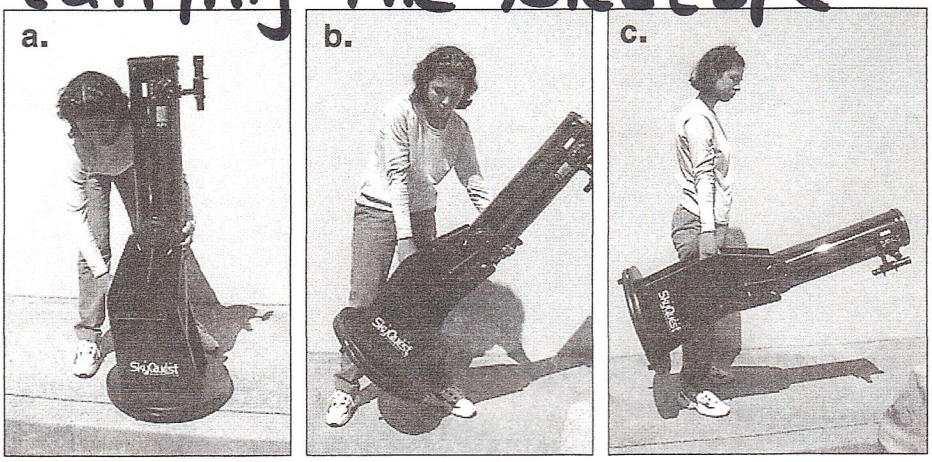



**Figure 12.** Picking up and carrying the SkyQuest as a single unit (with tube held captive on the base) requires some caution. **(a)** First, position the tube vertically. Then, grasp the handle on the base with one hand while supporting the tube with the other. **(b)** With knees bent, slowly lift the base while supporting the tube with one hand. This ensures that the tube will not swing down and impact the ground. **(c)** As you lift, the whole assembly will tilt down, becoming nearly parallel with the ground, at which time you can let go of the tube with your supporting hand. Make sure you are comfortable with the weight of the whole assembly before attempting to carry it!

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 60x per inch of aperture. This translates to about 360x for the SkyQuest XT6 and 480x for the XT8.

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!

### Note About High Magnifications:

Maximum magnifications are achieved only under the most ideal viewing conditions at the best observing sites. Most of the time, magnifications are 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.

### Tube Balance

Dobsonians are designed to balance with standard supplied accessories, such as an eyepiece and EZ Finder II. But what if you want to use a larger finder scope or a heavier eyepiece? The telescope will no longer be properly balanced, and will not hold its position properly. This makes the telescope difficult to use, since it is critical that it hold its position (when not purposefully moved) to keep objects centered in the field of vision.

Traditional Dobsonian designs expect the user to compensate for heavier accessories by adding weight to the opposite end of the telescope tube. Such counterweighting systems can be expensive and unwieldy. The CorrecTension Friction Optimization system of the SkyQuest Dobsonians, however, solves the finicky balance problem. The spring coils pull the tube down onto the base, thereby increasing the friction on the altitude bearing pads. With CorrecTension, the added weight of small front-end loads will not adversely affect the balance of the telescope.

If you install an array of heavier accessories onto your SkyQuest's optical tube, you may need at some point to counterbalance the telescope with a counterweight system.

### Carrying the Telescope

Moving the SkyQuest is easy to do. Because the springs of the CorrecTension system hold the optical tube captive on the base, the entire telescope can be carried as one unit (6" and 8" models only). 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 (see Figure 12). Now, lift the telescope from the handle. Once the telescope is in the horizontal position, you can carry the entire unit with one hand. The handle position properly balances the load for easy carrying.

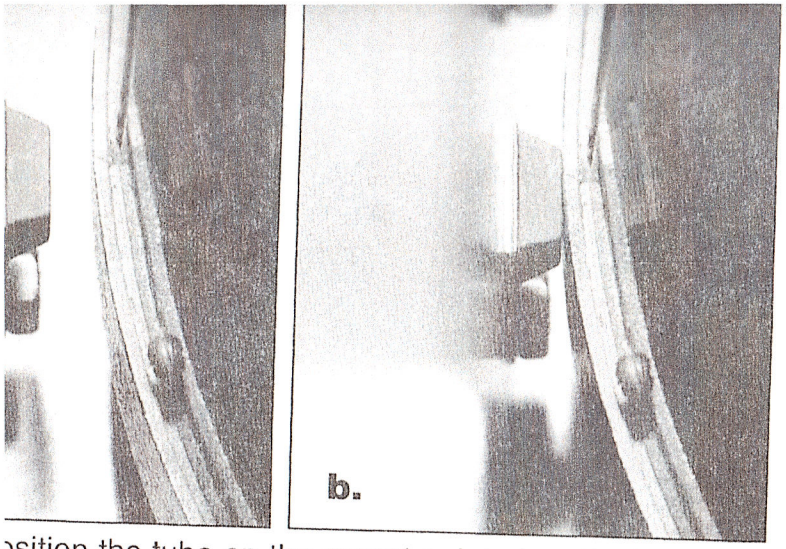
If you wish to carry the optical tube and base separately, simply disengage the CorrecTension springs by unhooking them from the posts on the base, using the pull loops. The springs remain captive on the telescope side bearings. Now the base and tube are disengaged and can be transported separately.

***Note: The SkyQuest may be too heavy for some users to lift and carry as one unit. Do not strain yourself! If the load seems too heavy, disengage the springs and carry the base and tube separately.***

When putting the SkyQuest 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.

## 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, and should not need much adjustment unless the telescope is handled roughly. Accurate mirror




osition the tube on the mount pointed vertical. Place
per "stop" where the mirror cell contacts the front
the impact.

ne cradle, the tube should pivot freely up and
gentle hand pressure. Note that the tube will
properly balanced, since the eyepiece and EZ
re not in place, and the CorrecTension system
en installed.

bumper (L) provides a convenient "stop" for the
altitude motion; it prevents the telescope mir-
n being knocked against the hard surface of the
t brace. Remove the backing from the rubber
d position the bumper so it is positioned in the
the optical tube (mirror cell) contacts the front
own in Figure 4a and 4b. Press firmly so the
olds the bumper securely in place.

## e Optional Eyepiece Rack

eyepiece rack is an optional accessory for
sonians. On the XT6 it holds three 1.25" eye-
nvenient place on the base; on the XT8 and
three 1.25" eyepieces and one 2" eyepiece.
ces will be within easy reach while you're

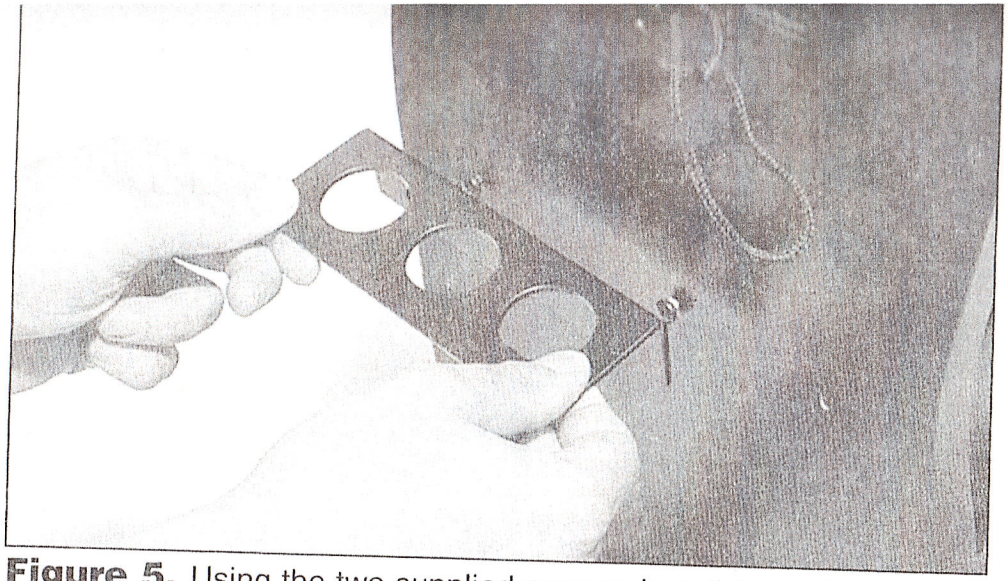


**Figure 5.** Using the two supplied screws, install the optional aluminum eyepiece rack in the predrilled holes about halfway down the left side panel of the base. (XT6 eyepiece rack shown)

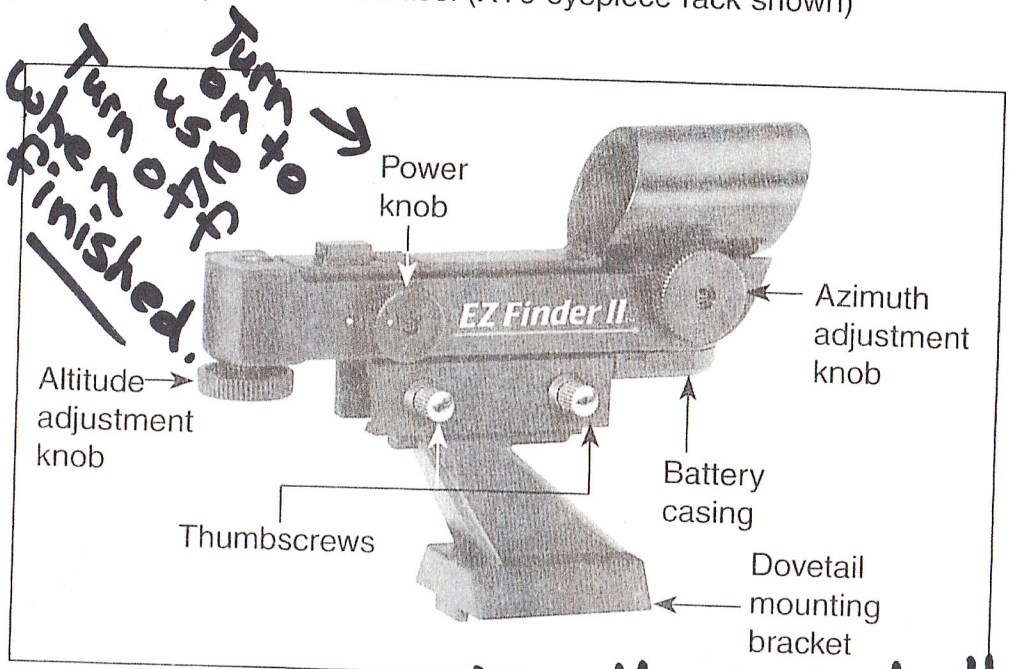



**Figure 6.** The EZ Finder II is attached to the telescope

slide the dovetail mounting bracket into the telescope's dove-
tail mounting base and tighten the thumbscrew on the base to
secure the mounting bracket.

Black nylon spacers

1/4" washer (black)

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Dobsonians
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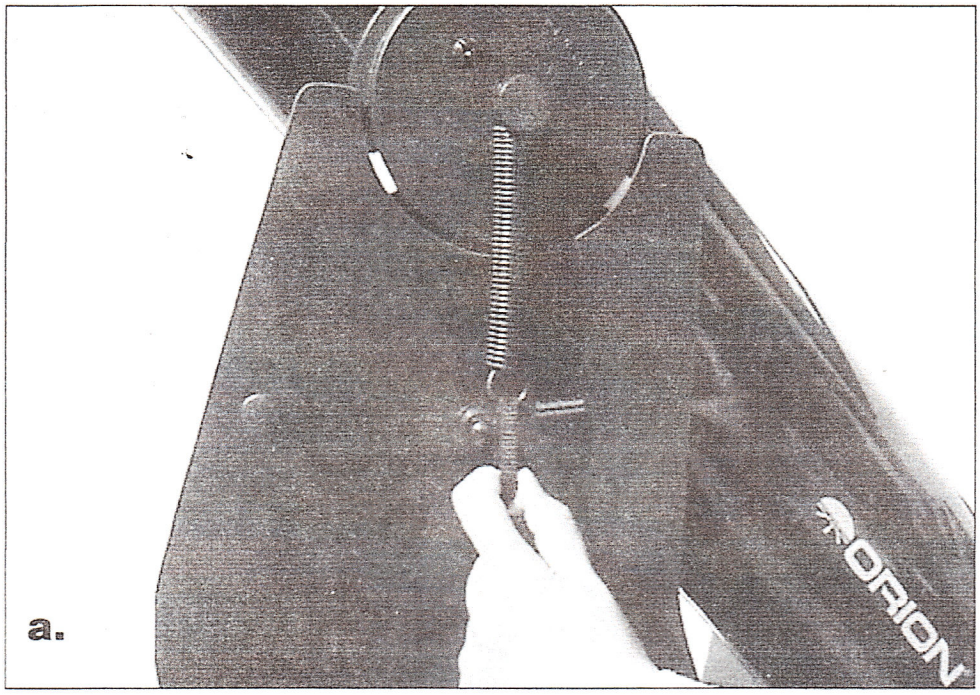


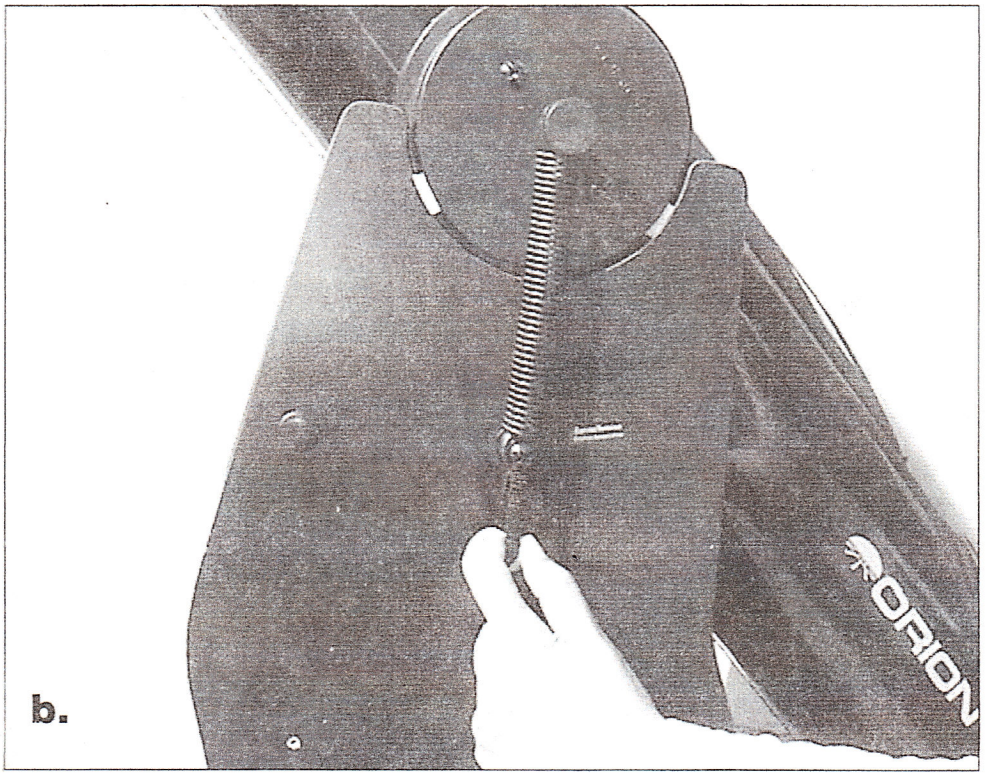


**Figure 8. (a)** To attach the spring to the base, grip the pull loop with your index finger and pull down on the spring. **(b)** While pulling down, slip the end ring of the spring over the bolt head and onto the narrow part of the nylon spacer, then release the pull loop.

the hole. Use a Phillips screwdriver to tighten the screw. Repeat this procedure on the opposite side panel.

2. Next, insert one of the screws with a round plastic knob attached through the end ring of one of the springs. Slip a black nylon spacer onto the screw. Orient the spacer so the narrow end is closest to the knob. Thread the entire assembly into the hole in the center of the telescope's altitude side bearing until tight. The end ring of the spring