

Online Assembly Guide : 70mm Refractor Telescope

INTRODUCTION

Congratulations! You have bought a wonderful telescope. This is a precision optical instrument, and you have many wonderful evenings of observing the night sky ahead of you. This on-line guide is to help you assemble your telescope properly.

Of course, the telescope comes with an assembly guide, and we were able to assemble our first telescope in exactly 1 hour using that guide. We had never assembled a telescope before, so you can be assured that the paper assembly instructions will do the job.

However, we know that many people are visually oriented and that pictures of the assembly process would be helpful. Since your telescope assembly guide and instruction manual does not have a lot of pictures, we have put together this online guide to help you assembly your telescope for your first night of observing. The paper guide in your telescope puts the telescope together in a slightly different order as we do in this online guide, so you may have trouble following both at the same time.

Once your telescope is assembled and ready to go, the rest is up to you. Learning astronomy is all the fun anyhow! So let's get started . . .

SMALL PARTS LIST

Below, you can see the small parts you'll need to complete assembly of the telescope.



The small parts needed to complete assembly

ASSEMBLING THE TRIPOD Putting the tripod together is the hardest part of the whole job and, unfortunately, it comes first.

Step 1: Find one of the three tripod legs as shown in Figure 1 below.



Figure 1 -- A tripod leg.

Step 2: Find a tripod leg tightening screw as shown in Figure 2 below.



Figure 2 -- Tripod leg tightening screw.

Step 3: Insert the tightening screw into the side of the tripod leg as shown in Figure 3 below.



Figure 3 -- Inserting the tripod tightening screw into the tripod leg.

Step 4: Find the base mount shown in Figure 4 below.



Figure 4 -- The base mount.

Step 5: BE CAREFUL HERE. READ THIS STEP CAREFULLY! THEN READ STEPS 6 THROUGH 13 BEFORE CONTINUING ON TO THE NEXT STEP. Figure 5 shows what you are going to do in the next few steps. You are going to attach the base mount to the one end of the tripod. Please notice that there is a metal flap hanging off of the tripod leg in Figure 5 below. That is the mounting for the accessory tray. When you attach the base mount in the next few steps, be sure that the accessory tray mounting flap is on the inside of the tripod -- as shown in Figure 5. (Take a peak ahead at Figures XX & Figure XX to get a look at why those accessory tray flaps need to be on the inside).



Figure 5 -- The base mount attached to one tripod leg. Note the position of the accessory tray support flap.

Step 6: Insert the base mount bolt into the end of the tripod. Be sure to position a washer as shown below in Figure 6 between the head of the bolt and the tripod.. You'll use the tightening screwdriver show to tighten the bolt in Step 7.



Figure 6 -- Inserting the base mount bolt, be sure to use a washer.

Step 7: On the opposite side, be sure to use the second washer before securing the bolt with the wing nut.



Figure 7 -- A washer goes on the other side of the tripod.

Step 8: Use the small wing nut to tighten down the entire assembly, use the tightening screwdriver (figure 6) to get the assembly nice and tight.



Figure 8 -- The wing nut goes on the end to tighten the assembly.

Step 9: Repeat Steps 6 - 8 on the second tripod leg so that it is assembled as shown in Figure 9 below with the accessory tray flap on the inside of the tripod. Then attach the third tripod leg as well and you are done!



Figure 9 -- Two tripod legs. What you're noticing is that the accessory tray flaps point inward!

ASSEMBLING THE ACCESSORY TRAY

Step 10: Locate the metal accessory tray and the component screws. There should be 3 round head metal machine screws, 6 small washers and 3 wing nuts. Insert one of the screws and a

washer into one of the small holes located on the rim of the accessory tray as shown in Figure 10 below. **NOTE: Your accessory tray may be triangular!** The accessory tray has a metal lip that will be facing upwards when the tray is attached to the tripod.



Figure 10 -- Insert the first washer and screw into the top of the accessory tray. (Note: your tray may be triangular).

Step 11: Place a second washer over the screw on the bottom of the accessory tray flap, and tighten with a wing nut.



Figure 11 -- Installing the Accessory Tray.

Step 12: You may want to use the tightening screwdriver, as shown in Figure 12 below, to hold the screw in place while you tighten the wing nut.



Figure 12 -- Using a screwdriver to help tighten the wing nut.

Step 13: Repeat Steps 10 - 12 to finish attaching the accessory tray to the tripod.

ASSEMBLING THE EQUATORIAL MOUNT

Believe it or not, you will be finished in just a few minutes. The rest of the assembly is very easy.

Step 14: Find the equatorial mounting and the single large horizontal axis clamp screw. **MAKE SURE THE TRIPOD LEGS ARE GOOD AND TIGHT!!** Then, attach the equatorial mount to the tripod and tighten it in place from underneath using the horizontal axis clamp screw as shown in Figure 14.



Figure 14 -- Attaching the equatorial mount and tightening it in place.

Step 15: Insert the polar axis screw as shown below in Figure 15 below. Once that is attached, you can adjust the equatorial mount so that it is stable in an upright position.



Figure 15 -- Attaching the polar axis screw.

Step 16: Slide the counterweight onto the balance shaft as shown.



Figure 16 -- Placing the counterweight on the balance shaft.

Step 17: Screw the balance shaft into the hole at the bottom of the declination shaft as shown in Figure 17. You can now use the set screw in the counterweight to hold the counterweight in place up and down the balance shaft. This will allow you to balance the telescope when it is completely assembled, making it possible to rotate the telescope smoothly by the slightest turn of the flexible cable controls.



Figure 17 – Attaching the balance shaft and counterweight to the equatorial mount.

Step 18: Next, we'll install the Right Ascension and Declination flexible control cables. You'll have to remove the plastic cap that covers the RA & Declination worm gear drive control rods. You can install the RA cable on either the right or the left side.



Figure 18 – You'll have to remove the plastic cap on the RA & Declination control rods.

Step 19: Attach one of the flexible cables (the RA flexible cable control is shown) to the worm gear drive as shown in Figure 19 below. There is a groove in the worm gear attachment, use the thumb screw to tighten the flexible cable control to the worm gear drive. Make it good and tight!



Figure 19 – Attaching the RA flexible cable control.

FINAL ASSEMBLY OF THE THE TELESCOPE

Step 20: You can attach the main telescope tube directly to the body belt, and then the entire main telescope assembly screws onto the telescope mount as shown below. Tighten with the wing nuts as shown.



Figure 20 -- Attaching the telescope to the mount.

Step 21: Next, attach the finderscope as shown below.



Figure 21 -- Attaching the finderscope.

Step 22: Finally, remove the dust cap from the end of the telescope, and attach the angle prism as shown below. Use the small set screws to hold the angle prism in place. The included telescope eyepieces slide directly into the prism for a right-side-up view of the universe.



Figure 22 -- Attach the angle prism to the main telescope tube.

Step 23: Smile, you're done. Enjoy your new telescope.



Figure 23 -- Ready to Observe.