

### Addendum to Galileoscope Assembly Instructions

The Galileoscope is a high quality product with excellent optical design, but the instructions provided by the manufacturer are not quite complete. To help with your Galileoscope, UW Space Place offers these additional notes to complement the assembly instructions provided. These notes can also be downloaded as a pdf file from the UW Space Place web site, <http://spaceplace.wisc.edu>

The instructions provided explain how to assemble the 25X magnification Keplerian configuration of the telescope. They also show how to assemble the Galilean configuration of the telescope and the Barlow lens.

Note on the parts list: There are 4 rubber O-rings provided; 2 larger and 2 smaller. One of each size is extra and is not necessary to assemble the telescope.

Additional parts included but not listed:

Two-piece eyepiece assembly (for Galilean telescope configuration and Barlow lens)

Smallest eyepiece ring (flat on both sides; used for the Galilean eyepiece)

Barlow tube

Cradles to hold telescope during assemble (can also be used for observing).

1. Lay one of the telescope body halves in the provided cradles on the table. Examine the 50mm (large) diameter objective lens. Handle the lens by the edge to avoid fingerprints. Note that it is two lenses cemented together. One of the lenses has a thinner edge and the other has a thicker edge. Insert the lens into the groove at the front (wide end) of the telescope body half so the thin edge points forward, out of the telescope.

2. Insert the nut into the slot in the middle of one half of the telescope.

3. Place one half of the focuser tube on the table.

4. Place the second half of the focuser tube on top of the first half. Slide the small telescope cap over the focuser assembly. Orient the telescope cap so that it can extend beyond the end of the focuser assembly that does not have the eyepiece gripping tabs on it.

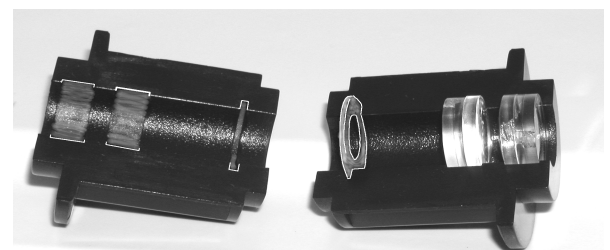
5. Secure the two ends of the focuser assembly with the rubber O-rings that fit into the grooves at the end of the tube. Use the smaller O-ring on the end of the focuser without the gripping tabs and the larger O-ring on the end with the tabs.

6. Place the focuser assembly inside the back (narrow) end of the telescope body you used in step 1. Note that the photo in the original instructions labeled for step 6 is actually for step 7.

7. Place the second half of the telescope body over the bottom half. Make sure the objective lens fits into the slot in the top half.

8. Secure the two halves of the body together by sliding the small telescope cap onto the back and the large telescope cap/dew shield onto the front.

9. Set out one half of the Keplerian eyepiece assembly. Use the eyepiece assembly with the larger hole, two wide slots on the inside of one end and one narrow slot on the inside of the other end. (See Figure.) Examine the four larger eyepiece lenses (the smaller eyepiece lenses are for the Galilean configuration and are not used with this eyepiece). It is best to handle the lenses with tissue paper to avoid fingerprints. Two are concave (thinner in the middle) on both sides, two are flat on one side and convex (curved outward) on the other. You can determine whether a lens is flat or curved inward (concave) by holding the lens up to a straightedge. If the edges touch the straightedge and the center curves inward away from the straightedge, it's concave! The convex surfaces are apparent by eye.



**Keplerian ocular (eyepiece)**

10: You will assemble the four larger lenses in pairs. Place the lenses together as shown in the diagram for step 10.

11. Insert each pair of eyepiece lenses that you assembled into the slots of the eyepiece assembly. Be sure the flat sides point away from each other (toward the outside of the eyepiece assembly).

12. Insert the small thin ring “field stop” into the slot at the front of the eyepiece assembly. Place the second half of the eyepiece assembly on top of the first piece. Make sure all lenses and the field stop all fit into the slots. Slide the small eyepiece ring (which has one rounded edge and one flat edge; the rounded edge should face outward) over the end of the eyepiece assembly that holds the lenses.

13. Insert the eyepiece into the end of the focuser assembly.

To focus your telescope, slide the focuser assembly in and out of the tube. It should not be loose, but should move with slight pressure. Don't be alarmed that your image is inverted (upside down). This is as it should be.

#### Galilean configuration assembly

14. Set one half of the Galilean eyepiece assembly on the table. Use the eyepiece assembly with the smaller hole and one slot near the center. (See Figure.)

15. Place the two smaller lenses together such that the convex side of one fits against the concave side of the other.

16. Place the lenses into the eyepiece assembly with the concave lens nearer to the side of the eyepiece assembly with the larger exterior diameter.

17. Place the second half of the eyepiece assembly on top of the first piece. Make sure the lens fits into the slots.

18. Slide the smallest eyepiece ring (which has two flat edges) over the end of the eyepiece assembly with the small notch. Slide the large eyepiece ring over the other end of the eyepiece assembly.

19. Remove the Keplerian eyepiece and insert the Galilean eyepiece into the end of the focuser assembly.

Your field of view (the image you see when you look through the telescope) will be MUCH smaller with the Galilean configuration than with the Keplerian configuration. You didn't make a mistake. The image will be upright, but inferior to the image delivered by the Keplerian ocular.

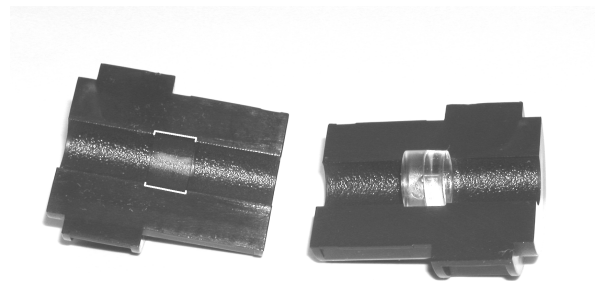
#### Barlow lens assembly

20. Remove the large eyepiece ring from the Galilean eyepiece assembly. Remove the Keplerian eyepiece from the telescope.

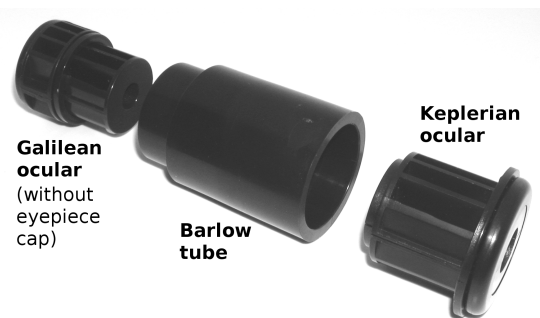
21. Insert the smaller end of the Galilean eyepiece assembly into the smaller end of the Barlow tube.

22. Insert the smaller end of the Keplerian eyepiece assembly into the larger end of the Barlow tube.

23. Insert the complete assembly into the end of the focuser assembly.



**Galilean ocular and Barlow lens**



With the Barlow lens configuration, remember that you're sacrificing image brightness for magnification, so things will appear larger but dimmer.

#### Additional Notes:

Never point the Galileoscope at the sun. Permanent damage to the eye can result.

The Galileoscope tripod socket will fit a standard photographic tripod. Try using a tripod to stabilize the telescope and greatly improve your observing.