

USING THE TELESCOPE

Choosing a telescope

Pick a telescope that is appropriate for your height. If you are a middle-sized person (from 5 foot 3 inches tall to about 5ft 7in), look to see who else is in your class, and pick a telescope that the other students would not need.

Retrieving your telescope

When moving telescopes to and from the observation deck, make sure the screws near the wheels that lift the telescope up are at least one inch above the bottom of the wheel. If you hear scraping while you move the telescope, stop moving the scope and check the height of these screws. They do lower somehow as the telescope rolls.

Equipment

Each night, make sure you have all of the following equipment: Telescope, three eyepieces (in box), A/C adapter to plug in telescope (in box), Fine control paddle (in box) – not critical, Dew cap, and an extension cord. You may want your copy of the labeled telescope photo.

Setting up

1. Point the telescope (i.e make the fork point) towards the north wall.
2. Plug in your extension cord.
3. Attach the A/C adapter to the telescope mount and the extension cord.
4. Remove the caps from the finder scope and the eyepiece elbow.
5. Remove any caps from the 40mm eyepiece and insert it into the telescope. Make sure the thumbscrews secure the eyepiece tightly.
6. Make sure the thumbscrews for the elbow (diagonal) are tight also.
7. Remove the cover in front of the Schmidt plate, making sure not to touch the glass plate. Store all caps such that they will not collect (much) dew on their surfaces.
8. Put the dew cap on the open end of the telescope.
9. Check that your Telrad batteries work – if not, inform the instructor. To conserve Telrad batteries, please only turn the Telrad on when in use. You may not want to turn it all the way up when it is in use. (This will help you see fainter sky objects.)

How to steer the telescope

Declination

The telescope has two axes around which it can rotate. One is the declination axis, which controls the north/south movement. At the end of one (or maybe both) of the fork arms should be a declination setting circle which indicates the current declination of the telescope after the telescope has been polar aligned. When changing declination, the telescope barrel will rotate around between the two fork arms.

To manually change the telescope's declination, you must unlock the declination using the lock knob at the end of one of the forks. To lock/unlock the declination, push or pull the knob parallel to the telescope tube. **Do not turn the knob to the outside of the fork arm.** The knob should not stick out. If you have difficulty with your knob, please ask for assistance.

To make smaller declination adjustments, you may use the declination slow motion knob located near the bottom of one of the fork arm. You do not need to unlock the declination to use slow motion declination knob. However, **at the end of the night**, look inside the arm with the declination adjust knob. There will be a long arm that is moved when you turn the knob. That **arm should be centered at the end of class.** The declination should read negative 90 at the end of class – such that the telescope is pointed at its base.

Using the Telescope

Right ascension (RA)

Right ascension is the other axis of rotation for the telescope, and controls the east/west motion of the telescope. When the RA is adjust, the fork arms will physically rotate around the base of the telescope. To adjust the telescope's RA, you **must unlock the RA, whether you use the RA slow motion knob or if steer the telescope manually. Do not turn the RA slow motion knob if it resists movement** – you have (probably) forgotten to unlock the RA. To help you remember to unlock RA, the lock is located next to the RA slow motion knob.

Using these two rotation axes, you should be able to point the telescope up at any object.

Aligning the optics

In order to find objects, we will be using the Telrad and the finder telescope. Before these can be used, we must make sure that they are both aligned with the eyepiece so that all 3 “telescopes” are pointed at the same place at the same time. To do this, center the 40mm eyepiece on a bright celestial object. Centering the object may take some time. Once you have centered your object in the eyepiece, you will need to adjust the Telrad and finder scope such that the object is in the center of each.

Do the following only if specifically instructed to:

To adjust the Telrad, use the three fine adjust screws that are located on the front of the Telrad. You may need to lift the dew shield to access the screws. To adjust the finder scope, there are three thumbscrews on one of the finder scope brackets. Adjust the finder scope's position with these screws, but make sure that all three screws are touching the finder scope so that the finder will not move around when the telescope direction changes. To check that the finder is secured in place, give it a TINY nudge.

Whenever you're in doubt, please ask for help!