

Aligning and Using Telescope Finders

Types of Finders

- Index, reflex, or zero-power finders. These finders do no magnification and use a mirror system to project an illuminated red dot or circles against the naked eye sky. Examples include the Rigel and Telrad systems and the red dot gun sight types of finders.
- Optical finders. These are actually small telescopes with low powers and large fields of view. There are many varieties including straight through (image is flipped both left to right and up to down), right angle (image is flipped left to right), and right angle correct image (no flipping at all so the view matches the naked eye sky).

Aligning a Finder

This is often best done during the day or twilight so terrestrial objects can be used to do the alignment.

1. Put a low power eyepiece in the telescope.
2. Move the telescope down to the horizon and looking through the main telescope track along the horizon to find a tree, pole or some object a fair distance away. Centre the top of the object in the eyepiece view.
3. Look through the finder to check alignment. The object you centered in the telescope needs to be in the center of your finder for it to be aligned.
4. Without moving the telescope, adjust the finder until the selected object is centered. Finders use different adjustment systems so become familiar with the system used by your finders. Most use small thumbscrews but some need screwdrivers to adjust. Make very small adjustments using one screw at a time to see which direction the image moves and slowly move the image until it is aligned with the object in the main telescope. Keep checking the main telescope view to make sure the telescope has not been moving during the process.
5. For a more accurate alignment, put a higher power (75x or so) eyepiece in the telescope, center the object in the field of view and tweak the finder again.

Using an Index Finder

- Select a bright naked eye star close to your target and look through the finder while moving the telescope until the illuminated red dot is on the star or the star is in the center of the illuminated circles. Look into the telescope and the bright star should be in the field of a low power eyepiece. You should now be able to star hop to the target using the view in the telescope.
- If your target object is at a convenient position relative to some bright naked eye stars, you can use the finder to place the telescope there right away and the object should be in the low power view of the telescope or you can find it by just sweeping around a little. For instance, M57 (the Ring Nebula) is found half-way between the two stars at the bottom of Lyra. Just use your finder to position your telescope at this point.

Using an Optical Finder

- Select a bright naked eye star close to your target and look through the finder while moving the telescope until that star is centered in the field of the finder. This may be difficult at first as the finder can show a lot of stars and they may be moving in unexpected directions depending on the type of optical finder you are using. Using other bright stars in the field of the finder verify that you are on the correct star.
- You can now starhop using the view in the finder to center the position of the target – if the target is big and bright enough you will likely see it in the finder. Once you are sure the finder is centered on the position of your target you can look into the telescope eyepiece and hopefully find the object in view. If it is not there you may need to move the telescope around a bit to pick up the target.
- Using optical finders alone can be tricky and many observers mount both types on their telescopes. They first use the index finder to position the telescope on the bright star and then starhop to the target object using the optical finder.