

# Constructing an Occulting Eyepiece

To be able to see a faint object when it is very close to a bright object is not possible. Your eyes will be overwhelmed by the brilliance of the brighter object and your target will be lost in the glare. The solution is to occult the bright object.

In the “old” days, astronomers would position the bright object just outside of the field of view and leave the target within the eyepiece field of view. Today, this does not work well due to the wide apparent field of view of modern eyepieces. Trying to view faint objects near the edge of the field will yield poor results. You may also see a ghost image of the brighter object even though it is outside the field.

The solution is an Occulting Eyepiece. We are not aware of any that are commercially available, but happily they are reasonably easy to make. We recommend not using your better eyepieces since you will be modifying them. For objects that are quite close to the bright object (such as Mars’ moons, or splitting double stars), you may want to use a higher power eyepiece (9mm).



If you look at the eyepiece from the end where your eye would not normally look, you should see a ring around the edge that hold the lenses in place. This is the field stop. If your eyepiece has a field stop that is not easily accessible, pick a different eyepiece.

For your occulting bar, you need a piece of material that will provide a fairly sharp edge. Paper, cardboard, and the like are not suitable because they will create a fuzzy edge. We recommend using a bit of aluminum foil or plastic. Aluminum foil will create an opaque bar, but a dark filter will let you see the bright object, but it will be much fainter. A deep blue or purple will work well. An advantage of aluminum foil is that you can coax it down towards the lens to get closer to the actual true field stop.

You may use a thin bar of material that crosses the center of the eyepiece field stop, or you may use a semicircle to occult half of the field.

1. Remove the barrel that inserts into the telescope focuser tube (usually silver colored).
2. Insert either a bar or semicircle of your occulting material.
3. If you use a bar, then you may have to experiment a little to determine the best width of the bar for your application.
4. If you used aluminum foil, use a pencil tip to get it closer to the true field stop.
5. Secure it with a small bit of tape.
6. Reattach the barrel.



You should now be ready to use your new occulting eyepiece.