

Making an Occulting Bar.

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An occulting bar is useful in many different aspects of astronomical observing.

They are used when trying to view a faint object that lies very close to another object that is much brighter. This could be a faint companion in a double star, such as The Pup in Sirius, or a faint satellite orbiting around a bright planet, such as Phobos & Deimos around Mars.

An occulting bar works by blocking out much of the light coming from the brighter object before it enters the eyepiece, so that glare within the eyepiece is reduced. This can often result in the fainter object being marginally easier to see.

Occulting bars are not available commercially, but they can be easily made from simple materials like a couple of pieces of black card and black electrical insulation tape.

Materials and Tools Required.

Materials:

Black Matt Card.

Black Electrical Insulation Tape.

Tools.

Scissors.

Pencil.

Ruler.

The last page of this article contains templates for cutting out the main body of the device. There is a template for both inch and a quarter and two inch eyepieces.

Instructions.

Cut out the appropriate template for the size of eyepieces that you own.

Trace the outline of the rectangular template onto black card.

Or cut out rectangles of the following size from your card:

Inch and a Quarter Fitting: 5cm x 12cm

Two Inch Fitting: 5cm x 17cm

Cut out the card to the traced shape.

Roll the card rectangle into a cylinder, ensuring it is rolled to a diameter just smaller than the barrel of your eyepiece. Insert the rolled cylinder into the eyepiece. Let go of the roll and it will unravel to fit the eyepiece barrel. Make sure that the roll of card is located in as far as it will go.

Figure 1. Rolling the card to fit into the eyepiece barrel.



You need to mark the end of the card so that you leave a small protrusion sticking out of the barrel of about 4mm. This will make it easier to remove when using it in the dark.

Mark this point using a pencil.

Figure 2. Marking the Excess card for removal.



Remove the card from the eyepiece and trim off the excess.

The same occulting bar can be used on all your eyepieces, so make sure that you measure all your eyepieces, to get this right. You don't want to make it too short so it is harder to retrieve.

Once you are happy with your chosen length, place the roll back into the eyepiece barrel, as before. Stick a small piece of tape in the inner roll of the card to secure it.

Don't worry if part of the tape protrudes at this stage, it can always be trimmed off later.

Figure 3. The inside of the roll of card secured with a piece of black tape.



Once the roll has been stuck together, remove the card from the eyepiece. Trim off any protruding tape, or fold it over and stick it down. Secure the outside of the roll with a piece of tape in a similar manner.

Figure 4. The outside of the roll of card secured.



Once you are happy the roll of card is properly secure, place it back into the eyepiece barrel and slide it backwards and forwards to see how well it fits.

Hold the eyepiece vertical to make sure that the card does not drop out when you will be using it.

Figure 5. Ensure that the roll does not slide out too easily.



If the fitting is too tight, then you will need to remove the tape and re-roll it back into shape.

If the fitting is too loose, take up the slack by wrapping a bit more tape around the outside of the card. Keep adjusting until it is a fairly snug fit will not slide out when being used.

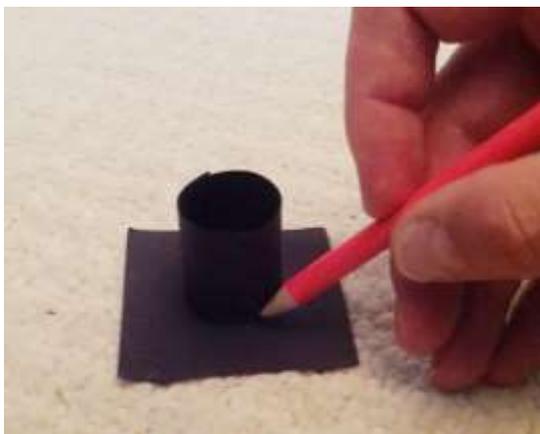
When you add your tape, especially on the inside of the roll, make sure that you trim everything well, so that the tape does not obscure any light coming into the eyepiece.

Once you are happy with the fit, we now need to make the occulting part of the device.

Lay the roll of card on top a piece of black card.

Draw around the roll with a pencil.

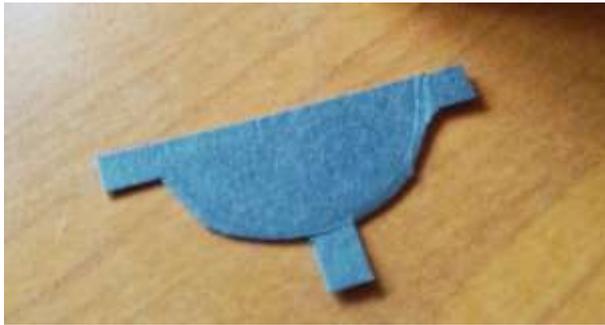
Figure 6. Drawing round the completed body.



Cut out the circle then carefully cut the circle in half with your scissors.

You may want to leave three tabs attached to this part to aid in attaching to the main body.

Figure 7. The completed occulting part.



Using small pieces of black tape, secure the semi-circle of card onto one end on the card roll. You may need to trim the edge of the card to make sure that the occulting part of the card lies halfway across your eyepiece lens. This doesn't need to be exact, but the more accurate you can get it, the better the occulting bar will work.

Figure 8. Securing the Occulting Semi-circle to the roll using black tape.



When you are happy that all is secure, check for any small holes and make sure that these are masked with more small pieces of tape. This is to ensure that light does not come through the shielded part of the occulting bar.

Figure 9. The completed Occulting Bar.



Using the Occulting bar.

The Occulting bar is inserted into the eyepiece with the occulting part closest to the eye. The open end of the device will be sticking out of the end of the eyepiece.

Figure 10. The device in place ready for use.



When the eyepiece is placed in the focuser of the telescope, the occulting bar will now obscure light coming into your eye from one side of the telescope.

Depending on the orientation of the object/s being viewed, the eyepiece can be rotated in the telescope to orientate the occulting bar so that it shields the brightest object from view.

This should enable you to find faint objects fairly close to much brighter ones.

Good luck.

If you have some great successes using this device, please let me know.

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Templates.

Template 1. To fit an Inch and a Quarter Eyepiece.



Template 2. To fit a Two Inch Eyepiece.

