

Constructing a Solar Filter for Binoculars with Baader AstroSolar Film

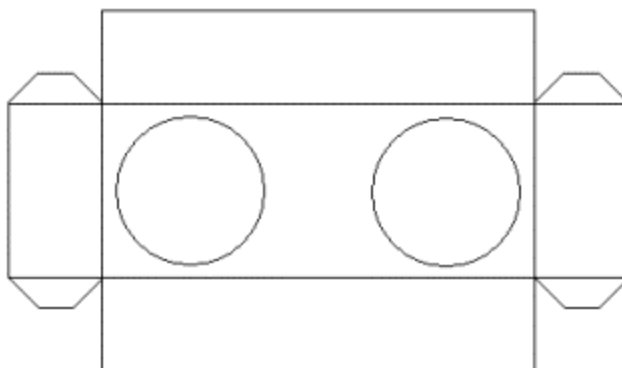
If you've ever wanted a truly grab and go instrument for solar observation, this filter is for you. All you need is a small sheet of Baader AstroSolar Film and a few other odds & ends and you are on your way.



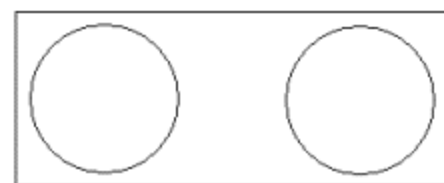
You will need:

- A sheet of Baader AstroSolar Film - in North America you can purchase sheets of film from Astro-Physics (www.astro-physics.com) or in Europe, you can purchase filters and film directly from Baader (www.baader-planetarium.de). The cost is a little over \$30 and is enough to make a filter for large binos and even a small telescope or two.
- A piece of poster board - white is preferred to prevent heat build-up.
- Two-sided tape - not foam-backed two-sided tape, but rather the plastic transparent tape used to mount pictures in albums.
- White glue made for paper.
- String or Velcro to hold the completed filter securely on the binoculars.
- Sharp scissors and a razor knife.

Start by standing the front of the binoculars on the poster board and marking the width and the height of the box required to fit over the objective (large lens) end of the binos. Add about 1/8th inch (3mm) to each side so the filter will easily fit over the front of the binoculars. Draw a rectangle of the indicated size. Add sides so that the resulting figure looks like this as shown for the "Front Piece":



Front Piece



Back Piece

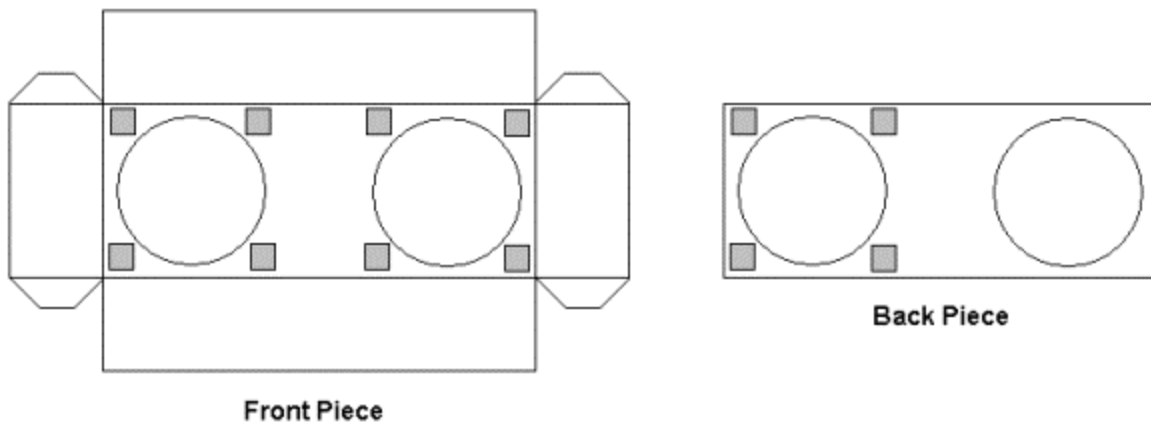
Draw another rectangle just a bit smaller (the "Back Piece") as it will be fit inside the filter to hold the film in place. Cut both pieces from the poster board using scissors.

On both pieces, draw circles that are at least 1/8th inch smaller than the rings on the front of the binoculars. After these are cut, the front of the binoculars should not fit through the holes but rather the cardboard should fit on the front while not blocking too much of the full aperture of each objective. Use the razor knife to cut out these holes.

Using a ruler or other straightedge, fold the front piece along all of the lines such that you are creating a small box. Flatten the piece again for the next step.

Next, cut two squares from the Baader film. Use care to not touch the film with your hands - rather, keep the film between two sheets of paper and cut the paper as well. The squares should be the full height of the inside of the front poster board.

Apply small pieces of two-sided tape to the front piece and **around just one hole of the back piece** as indicated below:



Lay one piece of the Baader film on a piece of paper and carefully lower the taped side of the back piece unto the film, pressing down on the poster board to secure the tape. Turn the back piece over and apply tape around the open hole. Lay the other piece of Baader film on a piece of paper and carefully lower the taped side of the back piece unto the film, again pressing down to secure the tape.

Apply a thin film of white glue to the poster board in the area between the two pieces of Baader film. Carefully position the back piece onto the front piece with the film-side down. Thus you are sandwiching the film between the two pieces of poster board which will be held together by both the two-sided tape and the white glue.

Apply a thin film of white glue to the tabs that hold the sides of the box together. Fold the sides and form the box. Use clothes pins (or apply tape) to hold the sides in position until dry.

After the filter box is dry, you need to fashion a method to hold the filter securely to the front of the binoculars. You can use string or yarn threaded through the top and bottom of the filter and then tie this securely over the center brace of the binoculars. Or you can use Velcro as I have done in the picture at the top of the page. I used two strips of self-adhesive Velcro (both the hook type) attached to the top and bottom of the filter. Then I used thin strips of Velcro straps (the loop or fuzzy part) to hold the filter to the binoculars. Whatever you use it is absolutely **critical for the safety of your eyesight** that there is no possibility that the filter could ever fall off. **DO NOT** rely on a seemingly tight fit to hold the filter on your binoculars - the possibility is too high that the filter could come loose, resulting in **permanent blindness**. Also, as described in the general instructions that come with the film, prior to use you should always hold your filter up to the daytime sky to check for any pinholes or leaks. **SAFETY FIRST!**

When not in use, I store my filter in a plastic storage container from the kitchen section of the department store.

Enjoy your two-eyed views of our nearest star!