

WINDSHIELDS AND CANOPIES – TIPS & NOTES

To end up with a final result you are proud of takes time and effort. Slapping something on will look like it too. Open cockpit wind screens are the simplest but care is even required here to achieve a clean installation. Here are some notes from my experiences over the years; hopefully they will make it easier for you finish your model.

VACUUM FORMED CANOPIES – These little wonders can make a bubble type structure easy to create but there is still a test and fitting process to follow to get that great look. The first step is to prepare it, vacuum forming typically involves release agents which can keep glue from sticking. Use lukewarm water with dish detergent to clean the canopy before you start. Rough cut the canopy keeping it obviously oversized. Use a piece of painter's removable tape to mark the centerline of the canopy so you can maintain symmetry throughout the fitting process, a narrow strip suits this purpose. Use a permanent marker or better yet more of the painter's tape to put reference dots on the canopy where it makes contact with the fuselage. Trim a little at a time working towards these points. Stop and test frequently. Use painter's removable tape to start marking definitive lines where you expect the final cut to be made and be certain the centerline is kept aligned. Use painter's tape to hold the canopy in position while you mark it so it doesn't slip or move. See the "Holding Canopies and Windshields" tip for more information on making this task easier.

MAKING A WINDOW TEMPLATE

1. The fuselage must be assembled first. If the wing will have any part of the windows glued to it then you must also have the wing finished.
2. You need to decide if you are going to install your windows before or after covering. And then before or after assembly of the rest of the plane. I like to do it after covering the structure with tissue. I only attach the other components of the plane like the wing if absolutely necessary as they become one more thing to work around.
3. I like to have a clear bench, a soft lead pencil, a sheet of plain copy paper, Scotch tape, painter's tape, a [ruler](#), a [hobby knife](#), scissors, and a [cutting mat](#) to start the task of making the template(s).
4. Look at the plane and decide how many sections you are going to divide the window area into for the purpose of creating all the windows. Take our [kit LC31](#) for example, I decided that there would be 4 sections installed in the following order – the rear window, the two side windows and the main front window.
5. So that meant I need to create a template for each section. I chose a logical place to overlap the windows so the finished model would look correct. Typically, this means making the side windows that are flat as one complete section starting and ending on the outside edge of the fuselage uprights. If there are no uprights then you might want to consider adding some wood for the purpose of holding the window/tissue or window/window interface.
6. The side windows are typically the easiest as they are straight, flat, near rectangular pieces too, I start with them first. One should be a mirror image of the other for most planes.

7. Take a piece of paper a little larger than the window area you are making the template for. If the wing is attached, I typically slide the long flat edge up against the wing as the starting edge then using the soft pencil put hash marks on the outside of the framing that the window will be glued to.
8. Use a ruler to draw straight lines connecting the hash marks. I like to use a knife to cut out on the line but scissors are okay.
9. Do a test fit and trim off any excess so that it is a perfect match. If you have an oops, no worry, just tape an oversize extension over this area, retest and mark the spot so you can cut to the correct size.
10. Test on the other side of the plane. If you need different templates then just repeat what you did for the first side. If not then you are just confirming the same size piece will work on both sides.
11. Notate on the template(s) the kit#, plane, location and date crafted for reference at a later date.
12. Now I'll do the rear window but most planes do not have one. I start off with a definitely larger than needed piece. I put a halfway line on the paper to be my reference line to match against the center line of the fuselage.
13. Now center it up on the fuselage. Test wrap and trim until you can get a close fit all the way around. You are typically working with compound curves so this can be a bit tedious but the more you test, mark and trim, the closer your template will be to perfect.
14. On kit LC31, this is a great example of how you can work the plastic much like metal to fit the form. The rear window goes over the internal framework from the wing to the center of the fuselage creating a triangular upper window with 2 side rear windows. I was able to put a hash mark with a permanent marker on the very ends of the plastic for reference. I then laid the plastic on the table, put our [stiff short ruler](#) over the line that would be the crease line in the rear window. I then just bent the plastic against the ruler's edge and it took this shape on the line. Repeated for the other side of this same window and I had a window part that just dropped right into place.
15. Doing the front window template is pretty much the same as the rear. So, once I've got the front window template close, I start doing the trim and cut. I want to align with the side uprights perfectly so that this seam will be hidden. I will get the lower part of the windshield to match the top of the fuselage as close as possible, making straight lines to go from stringer to stringer where necessary, but I also know that I will be overlaying tissue at these joints that will mimic the metal framework of the real aircraft while covering any minor gaps.
16. A point here about using any tape on your covered model. It doesn't hurt to dull the grip of the tape by applying it to something like your table top, your shirt or something to stick and then pull off of. It just dulls the grip of the tape and minimizes the risk of tearing your tissue or pulling things apart during the tape removal process.
17. If the windshield will wrap over the top of the fuselage/wing such as in [kit FF94](#) then I keep it simple. First, I get the front part of the windshield all sized up. Next tape this template in place as it will be installed. Take an oversize square of paper and scotch tape it to the front windshield template. Roll it over into place, add some

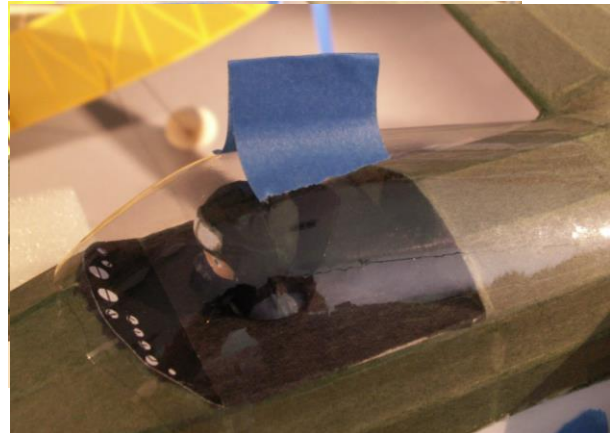
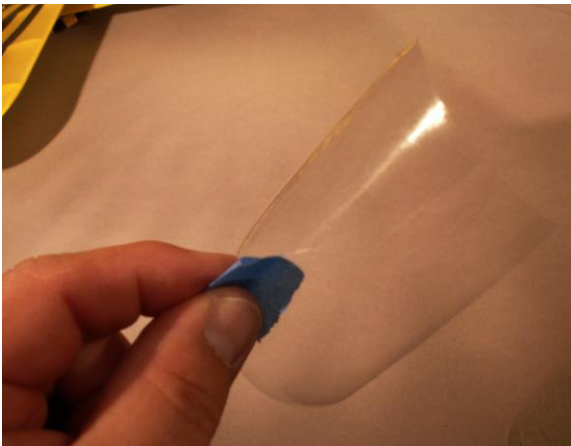
hashmarks on the outside of the frame you will be gluing to. Trim and test to finalize.

18. You now have a template.
19. I like to lay a template on the plastic for the windows. I use the scotch tape on the template at strategic points that allow me to cut the window out without separating the two from each other until the very last of the cuts.
20. Always test fit your plastic before any glue goes on.
21. [Check our other tips on installing windows.](#)
22. If you create a template for one of our older kits we appreciate when you share as we will post for other modelers' use.

INSTALLING CANOPIES AND WINDSHIELDS

CLEAR WINDOWS – start by cleaning your window inside and out. Today there are many lens cleaner products for computer monitors, big screen TVs and eye glasses. Any of these will work with a good lens tissue to give a very clean windscreen.

HOLDING THE CANOPY OR NO GLUE SMEARS – A picture is worth a thousand words so not much to say here. I frequently use blue low tack painter's tape to hold the canopy in place while the glue dries. It is particularly useful for holding a troublesome bow where a gap is forming. But the best thing is it allows me to make a handle to hold the canopy while I apply the glue and then position it onto the plane. This made the job so much easier.



The handles also work well for vacuum formed parts allowing you to position them without getting glue all over your fingers and plane. Leave the tape on until after the glue dries to avoid moving the part and smearing the glue. One thing the using tape handles really does is keep the part from deforming and getting glue where you don't want it while you squeeze the part trying to hold it.

CANOPY STRUCTURE - I would work with the windscreen after the fuselage structure is completed meaning put the root ribs in place first. I like saving the actual install of the windscreen/canopy for last after the tissue is on the plane; this gives the cockpit a more finished look. It also requires that I somehow cover the seams and window frames with

tissue. To do this I usually cut out the tissue in appropriate width strips and attach by smearing a glue stick across the back of the strip. I use a wider strip around the edges to cover where the plastic ends.

USING CANOPY GLUE

CANOPY GLUE - Once the window is ready to install, I like to use our [canopy glue](#) to hold it in place. This glue goes on white but then dries clear. I put a small puddle on a scrap and use a [jeweler's awl](#) to create a fine line of glue around the perimeter of the windshield. I then place it in position and use blue low tack tape to hold it in place. On the Helldiver I will actually only put glue on half the perimeter and hold it in place with tape while it dries. This allows it to stay flat without any stress coming from curving it around the fuselage. Once dried I then apply the rest of the glue and pull it around into position again holding it with more tape. Once everything has dried, I remove the tape and finish making the framework using tissue with [glue stick](#) applied to it. You can use a glue stick in place of double-sided tape. Sometimes I leave some blank spots that I work glue into after the canopy is in position. I used to put the glue on the frame and then push the canopy into the glue but I almost always ended up with glue fingerprints somewhere on the windows. This way for me has been much more reliable and neater looking. The canopy glue cleans up with water before it dries so you can wipe small smudges off with a damp cloth.



On flat and relatively flat windscreens such as on the Auster or most civilian aircraft I will apply the glue to only the top and bottom of the front center portion of the windscreen. I install the windshield using tape to hold it in position. Now after the glue dries in this first zone I will go back and work with a [jeweler's awl](#) and apply a fine bead of glue again to the perimeter of only one of the flaps forming the side or top window. I then hold this again with the low tack tape until dried. Repeat until glued in place. Come back with some tissue strips to create the framing of the real aircraft and you are done.

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Update and added making a template