

Persicope Assembly

Lower Housing

Be sure to orientate all the seams to the rear (pilots rear or facing toward the front of the capsule) of the scope. Most of them will get covered and they will be hard to see back there.

You should double the lower clamp ring. You can do it anyway you like but here is a suggestion to get nice clean, even cut lines.

Cut out one of the rings. Glue the clamp ring to the other one before cutting the second one out. When dry, cut the assembly out so you have two thicknesses of the lower ring. If you are going to punch holes, do it before you cut out the second one. You need the extra card stock to support the hole punch without denting the small part.

Glue the lower cylinder to the small centering ring. Glue the lower cylinder assembly from above to the lower clamp ring centered in the part. I didn't mark it so you wouldn't see any marks in the final part. You should be able to eyeball it close enough.

Roll the lower housing main cylinder and test fit it in the lower clamp ring assembly as shown in the photo. The stripe 1/8 from the edge of the cylinder is to help locate the cylinder in the lower clamp ring assembly. Mark the cylinder when you get a snug fit. Test fit the other end in the upper housing and mark it. Glue the main cylinder together using the marks you just made. When dry, glue it to the lower clamp ring assembly making sure its square with the stripe.

Add the space band just above the clamp rings. This will help hide any misfit on the lower clamp ring. Be sure to put the lettering on the inside so it doesn't show.

Slide the centering ring down the main cylinder to the spacer band and glue in place.

Being careful with the alignment, add the Lower switch, Relay cover and gearbox, in that order.

Don't glue the lower housing to the upper housing yet. We need to do this inside the capsule for proper alignment.

Upper Housing

Carefully fold and glue the upper housing. Gluing one seam at a time might be a little slow but it ensures a nice straight part.

The lens assembly is provided twice. You may wish to cut out the black ring and glue it on top of the face. The prototype had a piece of .010 clear plastic under the face to simulate the lens. If you do this, you should back the lens up with some colored stock to hide the inside of the periscope. Either way, there are enough pieces to play with and decide how you want to build the face. The rear details will never be seen once the periscope is glued into the model but they were included for completeness. You may omit them. If you add the rear details, you need to modify the side rails once the glue is dry. Using a pair of sharp scissors, carefully cut the rails until they are about 1/16 inch high. It makes it easier to glue them on if they are larger. Their position makes it pretty easy to trim after gluing.

Finish the upper housing. DON'T glue the lower housing to the upper housing. It needs to be done while fixtured in the capsule to locate the periscope in the right spatial place. The instrument panel location counts on the periscope being in the right place.

Installation

You might not be ready for this but I wanted to write the instructions while they were fresh. Cut out all the parts for the fixture. The little tabs get taped onto the lower flange at 12,3,6, and 9 o'clock. One goes at stringer 24 which is centered on the window. The photos show the capsule taped down but you don't want to do this until you are ready to glue the periscope in. There should be lots of photos to reference. I used a grid mat that I cut parts on to line everything up. I don't know how you would do this job without one.

A few photos show the periscope taped to the fixture. The fixture gets secured to the table so that the front face of the fixture is on the capsule centerline or $y=0$ axis. Notice I located the capsule on the 10" lines. I centered the fixture and put the front face at the 10" line. I made a small fixture that can be seen in the photo with the toothpicks. It's a rolled tube that fits inside the periscope lower housing. I glued a flange on it that was an extra lower clamp ring. I trimmed it to just fit into the outside of the periscope compartment as seen in the toothpick photo. This was used to hold the periscope in alignment. I put a little handle on it so I could easily take it in and out. I did not want to glue the periscope to the capsule yet. I need to design more parts around it and wanted it removable. In one of the photos of the little fixture, you can see where I cut the top at a taper. The pencil mark on the inside shows this. It makes it easier to insert it in the bottom of the periscope.

Secure the periscope and fixture to the table. Slide the lower housing in place. You might need a small piece of tape to hold it. Locate the capsule in position. Check the alignment. Photo 2212 shows light through the flange holes. 2216 shows the periscope centered in the window. Carefully slide the little fixture in

place. I used toothpicks to hold it in alignment. When everything is lined up, reach in with some long tweezers or a stick and put a few small drops of glue on the periscope lower housing where it touches the upper housing. Let this dry.

The above step sounds easy but I spent several hours making sure the instrument panel would be in the right place and the fixture was the right size. Hopefully this paid off and your periscope ends up in the right place!

When the glue is dry, carefully remove the little fixture and move the capsule out of the way. Make sure the lower housing is secure. Re-check the alignment before you move the periscope. Just sat the capsule back in place and check everything over. When satisfied, carefully remove the periscope from the fixture. Finish gluing the lower housing to the upper housing. I ended up with some gaps where I trimmed the hole in the upper housing hole into an oval shape so the lower housing would make the angle. This will be clear as you test fit the parts. I used an extra centering ring cut into pieces to fill the gap. You can see the centering ring pieces (and some extra glue globs) in photo 2238. You'll never see this in the finished model but I wanted it to be strong! Photo 2226 is the finished scope taped into the capsule. 2236 is the outside showing the little fixture taped in to hold the scope securely while I continue designing other parts.

Next we'll add instrument panel brackets and mount the panels in the capsule. I just need to come up with a way to make them removable. Maybe some miniature screws, paper brads, or just tape....