



These supplementary instructions are not intended to detail every aspect of the cowl installation. They are supplemental to information contained in the plans and Sonex firewall forward installation manuals provided when you purchase your engine from Sonex Aircraft LLC. They illustrate the most common questions builder's have when installing the cowl. Each builder will likely develop their own fitting procedure and the correct one is the one that works for you to achieve the installation depicted in the plans.

Important Information About Your Cowl

The cowling is not provided as two matched halves. It is two oversized halves which generally must be trimmed on all edges to achieve a proper fit. Gaps in an untrimmed cowling are not an indication of too little material (an undersize cowl), rather it indicates too much material (an oversized cowl).

General Guidelines

Fitting the cowl takes time. Be prepared to install and remove the cowl dozens of times during the fitting process.

Remove the exhaust pipe extensions prior to fitting the cowl. It is easier to fit the cowl to the airframe and then concentrate on the cut-outs for the exhaust. Exhaust cut-outs are detailed in the Sonex Aircraft firewall forward manual supplied separately.

Do not force the cowl into place or use ratchet straps. This will only build stress into the cowl and make the installation more difficult. If the cowl does not seem to go into place, look for interference with the engine, landing gear legs, and prop hub.

Final fit and finish is up to each individual builder. The same cowling is provided in each kit, and the difference between an award winning installation and one that is "good enough for who it's for" is up to each individual builder.

Proper fit of the cowl also depends on the care and accuracy of the engine installation. If you are having problems fitting your cowl it may be worthwhile to check the accuracy of your engine installation.

The polyester cowl can be repaired / modified with any off-the-shelf fiberglass repair kit.

Getting Started

- __ 1. Accurately build and install the Alignment Spacer detailed on the Cowling Installation drawing of your plans.
- __ 2. Remove material from the front of cowl to clear the prop hub. Leave about a 1/4" lip.



The opening for the prop hub must be cut to eliminate interference between the cowl and the flange of the prop hub.

- __ 3. Rough cut the openings for the cylinder head cooling air. This will provide a "handle" for handling the cowl during the fitting process.

Fitting the Right Side

Fit the right cowl half first, ignoring the left side altogether.

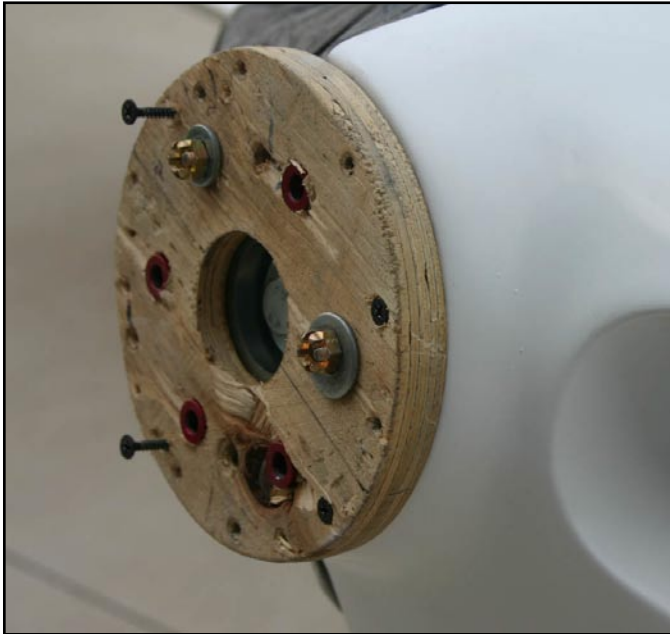
- __ 1. Rough cut a clearance hole for the main gear leg, or the nose gear strut, until the cowl can be positioned behind the prop hub spacer and against the side of the forward fuselage skin.



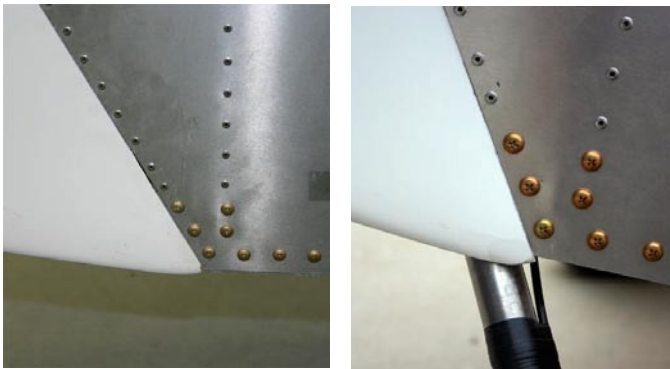


- __ 2. Attach the cowl to the spacer with drywall screws. The cowl should conform to the edge of the spacer. If it does not, make sure the cut-out for the prop hub is large enough that the cowl is not in contact with the hub, and make sure the hub spacer is properly made.

Important: The cowl should extend to or beyond the vertical centerline of the prop hub spacer. If it does not, investigate the cause.

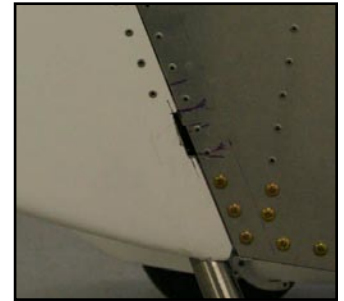


- __ 3. Hold the aft edge of the cowl against the fuselage side skin and mark the trim line on the cowl so the aft edge of the cowl will match the angle of the forward fuselage. Generally, approximately 1" needs to be removed from the rear of the cowl.



When properly fit the lower corner of the cowl will flow smoothly into the lower edge of the skin (Left photo). The cowl in the right photo still has too much material and can likely be trimmed further.

- __ 4. Remove the cowl and trim the aft edge of the cowl to match the angle of the forward fuselage. A fine-tooth pull saw works well. Touch-up can be easily accomplished with a long piece of aluminum channel with 180 grit sandpaper attached.
- __ 5. Once the cowl is properly trimmed to match the side skin, the piano hinge for that seam can be installed. Drill through the side of the cowl using the pilot holes in the hinge as your guide. Clecos will hold the hinge half to the cowl until the entire cowl has been fit.
- __ 6. Cut the clearance slot for the piano hinge as detailed in the plans.



- __ 7. Re-install the cowl half and attach it to the hub spacer and fuselage side.
- __ 8. Clamp the top of the cowl to the cowl strap with a swivel pad vise grips or, alternatively, install the (Southco) fasteners that will secure the top of the cowl to the firewall.



- ___9. Mark the centerline of the top seam. This can be done by projecting a centerline to the top of the hub spacer and stretching a string from the top center of the hub to the top center of the turtle deck.



A string stretched from the centerline of the prop hub to the centerline of the turtledeck identifies the centerline (trim line) of the upper cowl seam.

- ___10. Tape the bottom aft edge of the cowl up against the fuselage floor and mark the bottom centerline of the cowl half in the same way you marked the upper centerline.
- Important: Do not trim the lower aft edge of the cowl where it attaches to the fuselage floor, at this time.*
- ___11. Remove the cowl and trim the upper and lower centerlines.

- ___12. Mark and trim the aft, bottom cowl edge where it attaches to the fuselage floor.
- ___13. Attach the lower firewall hinge half to the cowl. An easy way to do this is by attaching the two hinge halves with the piano hinge pin, inserting a bright light into the cowl, and then drilling through the cowl where you can see the pilot holes in the piano hinge half.

Fitting the Left Side

The left side is fit in the same manner as the right. It is best to remove the right side during the initial fitting of the left side.

The right side can be re-installed prior to trimming the centerline of the left half. This allows you to adjust the centerline of one or the other as needed for the desired fit.

Exhaust Cut-outs

The exhaust cut-outs for each engine are detailed in the specific firewall forward manual included with your engine purchase. The cutouts may impact the installation of the lower centerline hinge. Review your firewall forward manual and detailed blueprints prior to installing the lower, centerline hinge.

Installing the Centerline Hinges

Once the centerline of each cowl half is trimmed to your satisfaction, the cowl halves can be removed from the airframe and the centerline hinges installed per the detailed drawing in your plans.

Install the Fiberglass Tab

With the two cowls halves removed from the airframe and pinned together, manufacture and install the fiberglass tab below the prop hub.

Finishing Up

The remainder of the cut-outs and fasteners can be installed according to the cowl installation drawing and the Sonex firewall forward manual provided with your engine purchase from Sonex Aircraft.