



Custom-molded sculpted side panels in a Saratoga, with recessed armrests, and hardwood inlays and switching panel.

Sewing and Wrapping Side Panels

DENNIS WOLTER continues his in-depth guidance on Piper interior renovation with first steps for re-covering side panels.

With the seats sewn, mounted, and set aside in a safe place, it's on to sewing and wrapping the side panels. As mentioned at the end of last month's article, the task of sewing and mounting side panels is less demanding than sewing seats. That said, some details do require close focus and planning in order to get optimum results.

Model-specific side panels

The first step in sewing and mounting Piper side panels involves two very different challenges depending on the type of airframe you have.

Piper Apaches, Aztecs, Navajos, and Comanches have side panels made from very thin aluminum. Considering the age of these airplanes, these aluminum side panels will likely be bent, torn, and/or corroded. Prior to even thinking of recovering the old panels, a lot of aluminum repair or fabrication may be required.

Comanches add to this challenge by creating compound-shaped, riveted-in-place thin aluminum heat ducts that run the entire length of both sides of the cabin. Years of removal and reinstallation of the side panels has often resulted in damage to the delicate heat ducts. Repairing or rebuilding these side panels is a team effort for both you and your maintenance technician.

If you own a Cherokee or Seneca, don't waste your time trying to recover the original cardboard foam composite panels. Carefully remove these bad boys and use them as rough patterns to fabricate slightly oversized duplicates using 0.020-inch 2024T-3 tempered aircraft aluminum (available from Airparts Inc.).

Once the oversized panels are all rough cut, install the new panels in the airplane and trim them to precisely fit. The reason for first cutting the panels a little larger is that the old composite panels can shrink or become deformed over years of exposure to moisture and temperature changes;

you cannot be assured that they are an accurate representations of their original shape and dimension. If the formed plastic upper lips are deformed or badly cracked, partner with your maintenance tech and fabricate new formed 0.020-inch aluminum upper lips.

After you've fabricated the new panels, secure the lips to the new aluminum side panels with plain non-aviation 1/8-inch diameter pop rivets. Getting rid of the old moisture-sensitive composite side panels makes a tremendous improvement in the appearance, maintainability, and durability of your new interior.

Side panel design

Once the side panels are straightened, repaired, or newly fabricated, it's time to lay out the design of the new side panels. We like to draw the new pleating design directly on the hard side backing using thin permanent markers. If a layout change is needed, a little lacquer thinner on a rag quickly removes an unwanted line.

With the new design laid out, it's important that all the uncovered side panels, seats, and armrests are temporarily installed to check the alignment of the panel design and clearance of the various panels and cabin interior components.

Backing material

Then, it's on to the sewing area where we begin by bonding thin cambric backing material to the back surface of 1/2-inch 40-density foam. This cambric is the same



Finished door panel, upholstered in vinyl and fabric with top stitched pleats.



Comanche side panel and heat duct repaired and ready for the covering process.



Deformed and crumbling cardboard and foam composite side panel material.



New 0.020-inch aircraft aluminum side panels with new upper formed lips riveted in place.



Repaired side panel with the new upholstery design drawn with a black marker.



All interior components temporarily installed to check alignment, fit, and clearance before being covered with new upholstery.



Bonding cambric backing material to 1/2-inch foam using a light coat of Camie 300 adhesive.



Bonding finish material to the cambric-backed 1/2-inch foam.

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material we used last month when sewing seats. Next, we lightly bond the cambric-backed foam to the back surface of the finish material.

All this gluing is done using light coats of Camie 300 spray can adhesive. The Camie 300 adhesive is available in convenient spray cans at automotive upholstery supply stores.

Panel layout and sewing

Now, it's time to lay out patterns and cut the various pieces of foam-backed finish material that will be sewn together to create the new side panels. The next step includes using a T-square, straightedge, or curved templates and chalk to lay out the desired pleating lines that, when sewn, will create the artistic design of the new side panels.

Once the pleats are sewn, the chalk line residue can be easily removed with a damp rag. When laying the various large pieces

of side panel material, allow 1 1/2 inches of extra material allowance on any edges that will be wrapped around the perimeter of the rigid side panel. Edges that are being sewn together need only have the same seam allowance as required for sewing corded seat seams.

All these design pleats are then single stitched through the three materials to create a pleasant-looking, well-defined line. Do not attempt to use a folded pleat on the side panels. The thickness will create a heavy pleat that will not lay down well when the sewn cover is bonded to the side panel. Since side panels don't take the abrasion and wear that a seating surface must endure, the exposed thread of a single stitch will hold up well in this application.


Finishing touches

After stitching the side panels, it's time to fabricate and sew the cording

that creates the aesthetically appealing transition between the upper and lower side panel pieces. Start by cutting 1 1/4-inch-wide strips of finish material that are 4 inches longer than the side panel. Then, fold the 1 1/4-inch strips evenly over round 5/32-inch polyurethane foam cord, available at upholstery supply stores. Sew a single stitch closure the entire length of the folded finish material. A cording foot for the sewing machine, as described in a previous article, will be required for this process.

With the cording made, use a stapler to temporarily hold it in place along the edge of the pleated panel. Next, precisely taper-cut the foam core of the cording at each end of the panel. This creates an appealing tapered end of the cording once both finish panels and cording are sewn together.

Once the cording is sewn in place, remove the staples. You are now ready to



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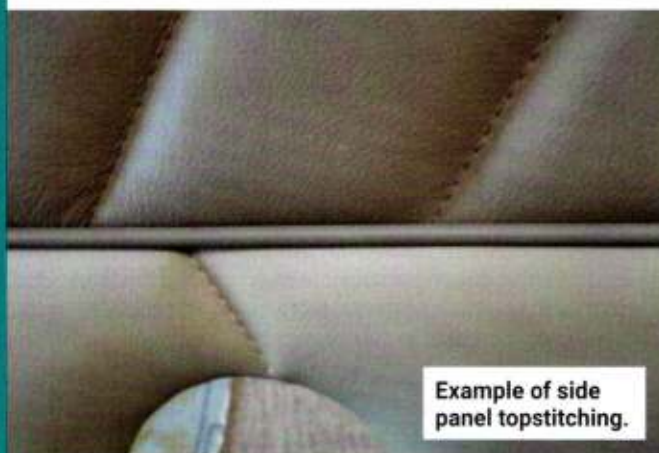
Laying out and cutting the various side panel pieces.



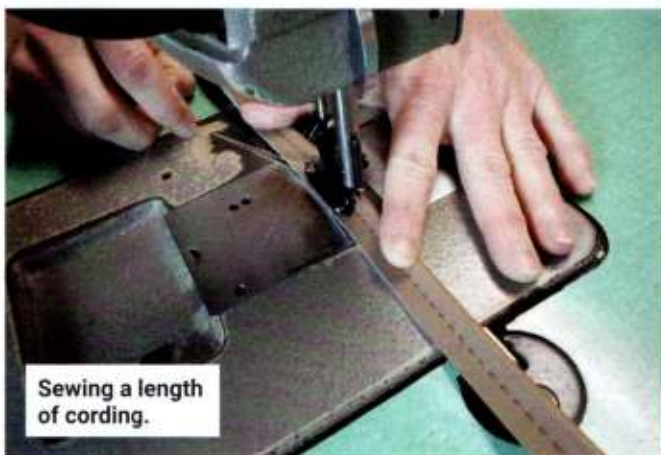
Using straight edges and drafting triangles to draw the new design on the finish side of the upholstery material with sharp chalk.



Topstitching the new side panel design.



Example of side panel topstitching.



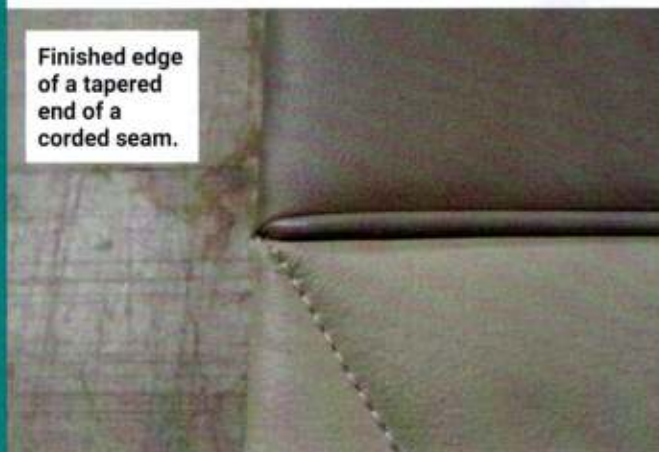
Sewing a length of cording.



Cording core taper-cut and aligned with a small V-cut in the cover material.



Temporarily holding the cording in place before being sewn to a section of the side panel finish cover. Note how the tapered end is folded down.



Finished edge of a tapered end of a corded seam.

temporarily staple the mating panel piece and sew the two finished panels and cording together. The final side panel sewing step is to remove all staples and trim off any excessive selvage edge material as was done on the seat covers.

The processes discussed here will create a nice-looking pleated side panel with very neat tapered cording ends.

The design and sewing techniques I have presented in this article are those used to create basic side panels. I believe that side panel and armrest design is an area where major aesthetic, ergonomic, and functional improvements can be made to bring the interior of an older airplane up to the standards of the 21st century. Explaining these more complex modifications goes beyond the scope of this magazine article.

Due to the numerous photographs needed to illustrate the process of sewing typical side panels, we will make the mounting and final detailing of newly sewn panels a topic for next month.

Until then, fly safe!



Custom armrest, sculpted and recessed with highly finished hardwood inlay on a door panel.

Industrial designer and aviation enthusiast **Dennis Wolter** is well-known for giving countless seminars and contributing his expertise about all phases of aircraft renovation in various publications. Wolter founded AirMod in 1973 in order to offer private aircraft owners the same professional, high-quality work then only offered to corporate jet operators. Send questions or comments to editor@piperflyer.org.

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Aircraft Aluminum
Airparts Inc.
airpartsinc.com

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Camie-Campbell (Camie 300)
camie.com/content/general-purpose-spray-adhesive



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