CARPET

Serge-bound finished edge.

Renovating an Interior, Part Seventeen

Carpet replacement doesn't have to be just a cosmetic upgrade. A panelized carpet system, held in place by Velcro, can make it easier to perform inspections and maintenance to your aircraft in the future.

BY DENNIS WOLTER

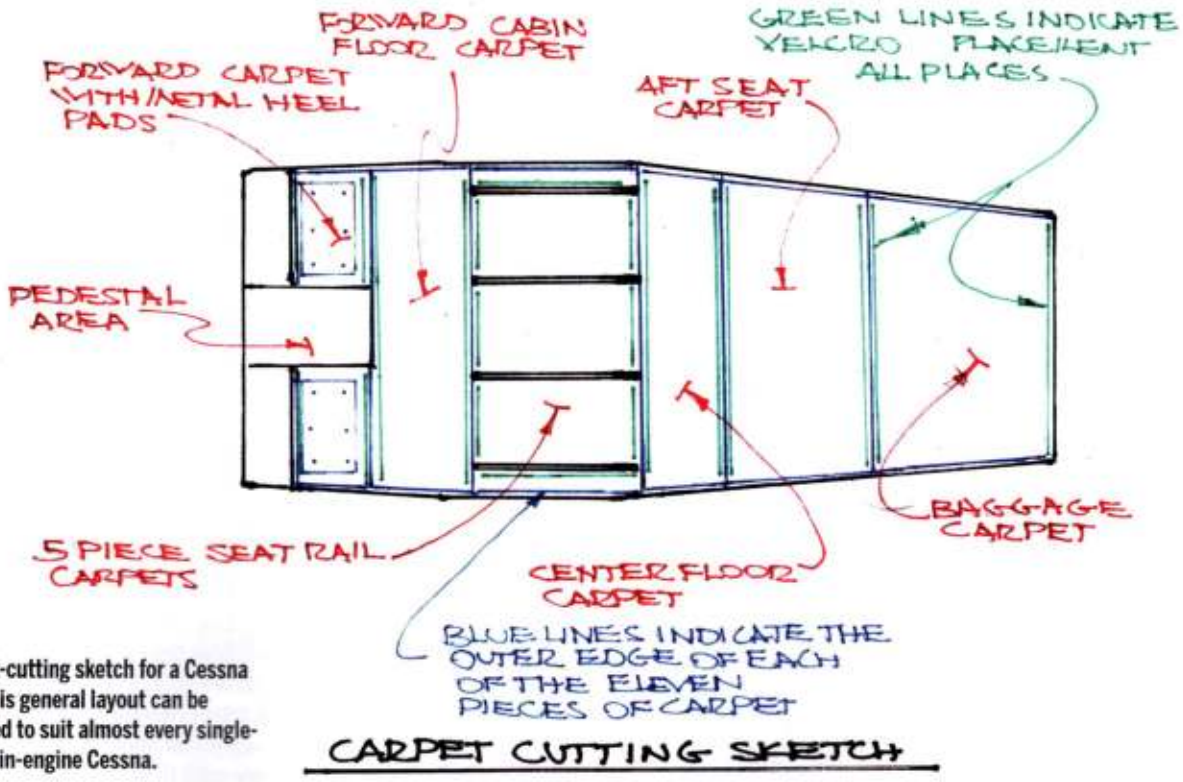
Installing a new interior presents a great opportunity to completely upgrade many elements in the cabin environment. When completed, the cabin will be aesthetically more pleasing; it will be more comfortable, durable, and easier to maintain; and it will be a safer environment in which to spend your flying hours.

Carpet concerns

I was a licensed mechanic before I got into the renovation business. I've often been frustrated with how difficult it is to remove and reinstall delicate interior components in order to perform maintenance, install new avionics, or do an annual inspection. With maintenance in mind, redesigning and modifying the way that side panels, headliners, and carpets are installed can save time and help prevent damage when future maintenance tasks are performed.

Rethinking the way carpets are designed and installed in Cessna airplanes gives us a chance to take advantage of ways to save time in the future. Installing the floor carpet in numerous Velcro-mounted pieces makes it possible to perform an annual inspection in most four-place singles without having to remove the seats, especially the back seats. Removing those cumbersome aft seats not only takes time but also creates the potential for damaging the side panels and armrests. How much fun is that?

I have included a sketch below of how we divide the



Carpet-cutting sketch for a Cessna 172. This general layout can be adapted to suit almost every single- and twin-engine Cessna.

Slightly oversized rough-cut new carpet pieces, ready to be final trimmed and fit in the airplane.

A carpet serger sewing a loop of thick, color-matched yarn to the edge of the new carpet.

Using a hard wood roller to firmly press the adhesive-backed soft-loop Velcro to the metal floor.

Masking and then applying two thick coats of contact cement adhesive to the back of the new carpet, ready for the Velcro.

After the Velcro is glued to the back of the carpet, it is sewn to the carpet by running a stitch on the finish side at the inner edge of the serging; stitching is virtually invisible

The back of the carpet, showing the edge stitching that was done from the other side; Velcro is permanently secured!

carpet sections. The blue lines outline the carpet pieces and the green lines show where we locate the Velcro. The labor investment to install the floor carpet this way is worth it in the long run.

Layout

So, let's get started. We begin by using the old carpet as a pattern for rough-cutting the new carpet. Using the layout sketch as a guide, we cut the old carpet into multiple pieces. We then roll out the new carpet, finish side down, on the hangar floor. Using a magic marker, we draw forward-pointing V-shaped marks to keep all the small pieces of carpet oriented in the same direction. This prevents a color shift, should a piece of carpet be incorrectly oriented.

Next, we lay out the old cut-up carpet pieces as efficiently as possible to eliminate waste, then we trace around the perimeter of each piece, adding 1 inch around all edges to be safe; old carpet exposed to moisture can sometimes shrink. Also, original factory carpets were not always that precisely trimmed to fit the complex shapes of the lower cabin. We put the new, slightly oversized, pieces of carpet in place on the floor of the airplane and carefully trim them to a precise fit.

Edge finishing

With the new carpet pieces carefully trimmed, it's time to finish the edges. There are two ways to apply a finished edge to the carpet sections. One method is to sew a rolled vinyl or cloth edge tape to the perimeter of the carpet. A second method is to have the carpet professionally serge-bound with heavy, color-matched yarn.

I think that applying serging yarn is the best way to finish carpet edges. It requires the use of an expensive carpet serger, but it creates a durable, repairable, and very neat finish to the carpet that I think is more aesthetically pleasing than tape binding.

If you are doing this job yourself, go to a carpet store and they can probably direct you to someone who can serge-bind some small carpet pieces.

Velcro

Now, let's talk about Velcro. Back in the day, we used a lot of self-stick Velcro with good results. But the self-stick Velcro available today has very inferior adhesive and, with time and heat, the adhesive fails. We now buy plain Velcro and apply our own glue. We use MC5 top and trim adhesive.

To properly bond soft-loop Velcro to the aluminum floor, apply one coat of the contact cement (adhesive) to a very clean floor surface. Then, apply a generous coat of adhesive to the back surface of the soft-loop Velcro and allow about 15 minutes curing time. Bond the Velcro to the floor by pressing it in place with a hard wood roller. For the hard-hook Velcro, we apply two coats of adhesive, allowing 15 to 30 minutes drying time for the first coat to tack up before applying the second coat.

Mask the perimeter of the back of the serged carpet and apply two thick coats of adhesive with 15 to 30 minutes curing

time in between coats. Then, locate the outer edge of the Velcro on the back surface of the carpet so that it slightly overlaps the serging yarn. This overlap enables us to stitch the Velcro to the back surface of the carpet by running a seam along the inner edge of the serging from the finished side of the carpet piece. This sewing, in addition to the glue, will eliminate a potential problem of the Velcro peeling off the rough surface of the carpet backing. It works great!

Final touches

An important floor carpet detail is the installation of heel pads for the pilot and co-pilot positions. I prefer 0.040-inch aircraft aluminum heel pads, secured in place with countersunk upholstery screws and Tinnerman nuts. It's important to install the screws and Tinnerman nuts prior to bonding the insulation foam to the back of the carpet.

Use a sanding disc on a drill motor and grind off the sharp point of the mounting screws. This method allows the heel pads to come out when the carpet is removed. There will be no holes in the metal floors.

A 26-year-old aluminum heel pad, tough as nails and easy to clean.

Rectangular, color-matched, ridged-vinyl, heel pads can also be used that are sewn to the carpet; they are similar to what is found in the automotive industry. I've just always liked the look and durability of aluminum heel pads.

Now, it's time to bond 3/16-inch thick, closed-cell, flame-retardant foam insulation to the back of the carpet, using light coats of contact cement.

Most Cessnas also have carpet bonded to the lower side panels. As before, we use original pieces as patterns to create new side panel sections. Once they are serge-bound like the floor carpets, they can be permanently bonded in place with contact cement. We usually add map pockets on the forward side panels, following the original design and sewing patterns as we recreate these handy pockets.

There you have it—a maintenance-friendly, very classy looking carpet installation.

Next month, we will look at small projects and modifications that greatly improve maintenance, as well as some common failures and other issues we've had with working on legacy Cessna interiors.

Until then, fly safe!

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 to offer private aircraft owners the same professional, high-quality work then only offered to corporate jet operators. Send questions or comments to editor@cessnaflyer.org.