

INTERIOR RENOVATIONS - SIDE PANELS

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Dennis Wolter.

In previous renovation articles, we thoroughly covered preliminary planning, tear down reports, and inspection steps that lead to good renovation results.

With a tear down report sent to and

reviewed by the customer, it's time to get to work building a new interior. I'm going to begin this journey by discussing design options and processes that deal with side panels and armrests.

The process of renovating side panels presents a great opportunity to dramatically upgrade the design and function of the cabin environment.



Typical plastic armrest and side panel design in a 60s Cessna twin. One large, very thin sheet of aluminum with a plastic, vacuum-formed armrest, permanently mounted by the pilot seat.

The following is a list of the many specific ways that these changes can be implemented:



Organically shaped molded fiberglass and aluminum multi panel side panels and armrests with high-gloss, epoxy-finished hardwood inlay trim.

Aesthetics

1. Adding wood, Kevlar, or cloth accents.
2. Changing to a more contemporary and ergonomically correct armrest design.
3. Using multi-piece side panel designs mounted with visually appealing aluminum extrusion rails. This allows for more precise fitting of the panels without the use of a lot of awkward looking mounting screws.
4. Using different finishes of the aluminum extruded mounting rails can create a very appealing detail that creates a unique accent to the new side panel design.

Comfort

1. Much improved thermal and acoustic sound proofing that helps to create a quieter cabin that is cooler in summer and warmer in winter.
2. Improved location of air vent outlets.
3. Customizing the height of armrests, especially for the pilot and co-pilot positions.
4. Installing aesthetically appealing and conveniently located reading lights, USB ports, mic & phone jacks, etc.

Durability

1. Replacing flimsy plastic armrests with built-up, sturdy ones.
2. Permanently securing the armrests to the airframe, eliminating the flimsy mountings installed by Cessna.
3. Ensuring the ability to easily remove the multi panel extrusion mounted side panels reduces damage so the interior looks better and lasts longer.

Maintainability

1. The use of multiple panels secured by aluminum extrusions allows for easier removal and reinstallation of the side panels without needing screwdrivers.
2. No more stripped-out mounting screws to deal with.
3. Eliminate the difficulty of



Molded fiberglass and aluminum multi piece side panels with recessed armrests and convenient, recessed accessory panel. All wood trim is high-gloss hardwood veneer.

disconnecting and reconnecting the cabin heat ducts to the feed hose in 340 and 400 series airframes by modifying the mounting system so that screws are installed from the front side rather than from the back surface of the lower side panel. Your maintenance technician will love it!

Safety

1. All finish materials, foam, and cabin insulation pass FAR 25.853a and will not support combustion.
2. Easier removal and reinstallation of multi-panel, extrusion mounted side panel components in order to access cabin systems saves time and money at Annual time or during maintenance, especially avionics installations. Better access means higher quality installations and improved maintenance, and lessens the potential for inflight failures.

Enough about the mission, let's dive into the process of renovating and/or building new Twin Cessna side panels and armrests. The poster child airplane for this purpose is the 310. This airplane

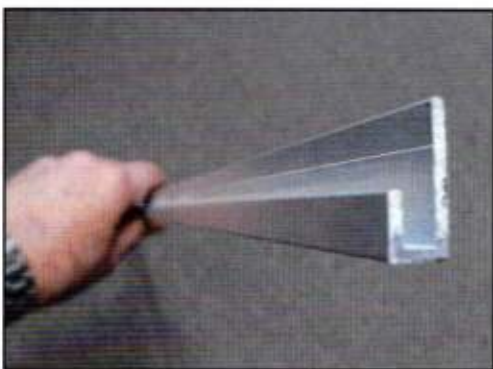


Top: Typical unusable condition of the large, very thin aluminum factory side panels found in early 310s.

Bottom: Five of 20 new multi section .020" aircraft aluminum side panels required to create the side panel system in a 310L.

typifies Cessna piston twin interior design and construction philosophy, from its beginning in the early 1950s through the end of twin piston and turbo prop production in the 1980s. Due to major differences between early 310 side panel and armrest designs and those installed in later twin Cessnas, this article will focus on early 310s only. We will move on next month to side panels in later model twin Cessnas.

About four years ago, we renovated the interior of a late '60s production 310L that, when it arrive at our shop, presented the usual aging airplane issues you would expect to find in an airplane of this age with at least one previously



Extruded aluminum mounting rail that allows a very secure installation of armrests and side panels.

installed aftermarket interior. The '60s velour interior fits right in with bell bottom pants, sideburns, and Jimi Hendrix coming through the headphones as you cruise along with the Bendix ADF tuned to an AM radio station. Note the "V" shaped plastic armrest installed on a large, flat, thin aluminum side panel.

The old armrests and side panels had to go. On drop-off day, the customer and I spent about four hours discussing design, installation, and detail options for the purpose of creating a new, ergonomically correct interior with updated armrests and all new aluminum extrusion-mounted multi panel side panels—an easier-to-maintain, and aesthetically pleasing cabin environment.

First on the side panel renovation list is armrest design. After discussing several different designs (some of which are shown in the accompanying images), the customer chose a pleasant looking molded armrest that could be installed at a precise height and location to comfortably accommodate the owner. The customer chose to have us design new multi-piece side panel components held in place by aluminum extruded, cabin length support rails throughout. At this time, the customer considered other cabin details (ventilation, lighting, storage features, passenger restraints, new windows, etc) as all of these can relate to the new side panel design.

Next on the agenda is material selection. After reviewing the comfort and durability aspects of the many fabric, leather, vinyl and carpet choices available, the customer chose a very durable combination of synthetic fabric, trimmed in aircraft vinyl, to be used on the side panels (as well as on seats). Fortunately, the customer arrived with a very inclusive wish list, detailing problems he wanted to solve and features that he wanted to include in the new interior. You should do the same when you are anticipating an



The unupholstered interior installed in order to double check everything for fit, function and clearance before it all goes into the sewing room for upholstery.

upcoming interior renovation. Create a list in advance as you fly along, writing down things that you would like to address in a new interior. Here's your chance! Professional interior renovation shops are not miracle workers, but it's surprising what these shops can accomplish in order to put together an interior that is as close to perfect as possible for you and your passengers.

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The finished product!

With side panel design decisions made, we get down to business. As removed, the old thin aluminum side panels were beyond repair, so the decision was made to fabricate all new panels using .020" 2024T-3 aircraft aluminum. The process begins by temporarily installing the new extruded aluminum mounting rails. Then each of the approximately eighteen side panel sections are carefully cut and trimmed to be a little oversized so they fit neatly into the mounting rails. Next, we design, fabricate, and install new support brackets for each of the redesigned armrests.

With all the mounting rails and new un-upholstered panels temporarily installed in the cabin, we check everything for security and fit. We then use magic markers and draw the pleating designs, mapcase, and document holder locations on the panels. Then all cut-outs and brackets for air vent outlets, USB ports, reading lights, etc. are fit and installed. Finally, the new armrests are trimmed, fit, and test mounted; then the newly padded seats are temporarily installed. With each cabin component installed, we recheck for fit, function, and clearance.

Once the new aluminum side panels are fabricated, fit, and checked, they are brought to the sewing room, where they will be padded, sewn, and detailed per the customer's specifications with mapcases, storage pockets, reading lights, mic and phone jacks, etc. There are numerous stitching patterns and

pleating options we can implement as we lay out patterns and cut the various pieces of foam-backed finish material (leather, vinyl, fabric) that will be used on the new side panels and armrests. The aesthetics and design of the side panels will complement the design used on the seats.

Everything we've done to the side panels results in easy-to-remove components

that are durable and aesthetically appealing. So much for early 310s. Next month we will thoroughly discuss renovating side panels and armrests in newer production Cessna twins. Until then, fly safe!



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