INTERIOR RENOVATIONS - PART 3

by Dennis Wolter, Founder and Owner, Air Mod, Inc.

Developing the Tear-Down Report

Dennis Wolter, founder and owner of Air Mod, recently received the 2020 FAA Maintenance Technician of the Year Award.

In the previous two articles we discussed the many issues that can be seen when we have the advantage of inspecting the cabin structure, components, and systems of a Twin Cessna with all of the interior components removed. Cessna 310s built in the late sixties are fairly representative of what we typically find in a 50-year-old airframe. All of our findings are recorded in what we call our 'tear-down' report.

With an avionics check and ground-run completed, and before we begin to remove any interior components, we first secure all personal items in a safe place, and then remove and store aircraft documents, logbooks, and related paperwork. A licensed technician will test every electrical component before unhooking the battery.

Now the real work begins as we organize

Inspecting a stripped seat frame for structural integrity and mechanical condition.

The nylon retaining sleeve that snugly holds the shoulder harness in the seatbelt buckle is often badly worn or missing, contributing to possible disconnection of the should harness.

the removal and careful storage of every interior component. We begin by removing, stripping, and thoroughly inspecting the seats. We look for cracked seat frames, worn tracking rollers, feet and seat stops, as well as the function of reclining mechanisms and passenger restraints. These components are what protect the occupant in the event of an accident. It's surprising how often we find seats and seat belts that are in service but not in airworthy condition. Seat issues we see too often involve missing, damaged, or homemade seat stops. These seemingly innocuous little items are a very important part of the seat structure. Missing or incorrect seat stops can lead to a seat coming off its mounting rails during an accident. Need I say more?

As the seats are being removed, careful attention is paid to seat belts and shoulder harnesses. We often find incorrect mounting hardware, worn webbing, and believe it or not, belts that were re-webbed using a home sewing machine; this type of stitching will not hold up in an accident. Everything here must conform to FAA approved standards. Remember this: "You can't write the check on the way down."

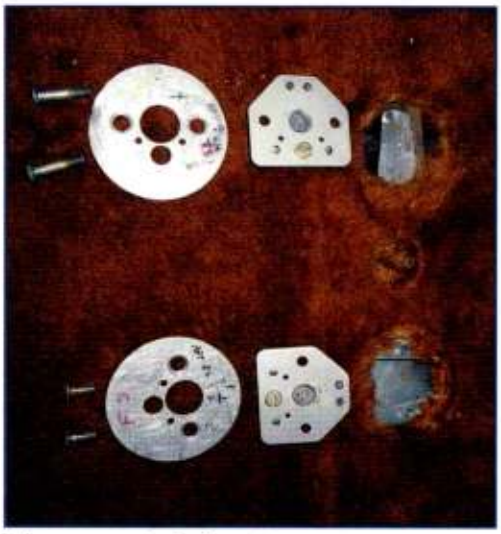
With seats removed, it's time to remove the floor carpets. We get a first look at the condition of the floorboards. Often these thin aluminum floor panels are damaged. We also remove the floor-mounted quick release mountings, which are often so worn or compromised with years of dirt accumulation that they do not latch properly. More on what we often find under the floor later.

Next item on the tear-down list is to remove the plastic window trim, armrests, and side panels. The old plastic window trim often necessitates extensive repair or replacement. Fortunately, Plane Plastics makes most of the replacement plastic parts for almost all of the piston Cessnas, including twins. However, these approved aftermarket parts do require some trimming and fitting to achieve a quality installation. If an original part can be economically repaired, we will rework and reinstall the original piece.

Homemade seatbelts: Note unapproved sewing and stitching pattern and absence of required certification tag.

With the window trim removed, we remove and inspect the armrests and side panels. Cessna originally fabricated the side panels using very thin .016" aluminum. Years of removal and reinstallation due to avionics installations, maintenance, or an interior change or two means these old side panels will have to be newly fabricated using more durable .020" and .025" aircraft aluminum.

Damaged floorboard.

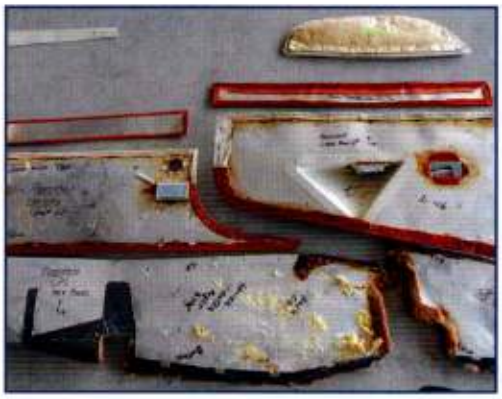


Floor-mounted aft seat mounts.

The armrests in Cessna piston twins are known for being lightly made and poorly mounted. Making new side panels and re-working armrests creates the opportunity to greatly improve the aesthetics, durability, and maintainability of these components.

The next interior component to be removed is the headliner. Cessna employed two different ways to hang a stretched vinyl or cloth headliner in their piston twins. The earlier models used a system of sewing a canvas loop at the edge of each full-length headliner seam. A long, tempered 1/8" diameter tempered steel rod is run through the canvas loop. Cessna installed clips at each bulkhead between the upper aft end of the windshield frame and the aft cabin bulkhead. The clips would hold the rods securely as the headliner is hung, stretched, and bonded to a lengthwise longeron above the cabin windows. Removing this type of headliner involves pulling the outer edges of the material loose and unclipping the rods at each bulkhead.

Typical condition of a 40-year-old plastic window frame.

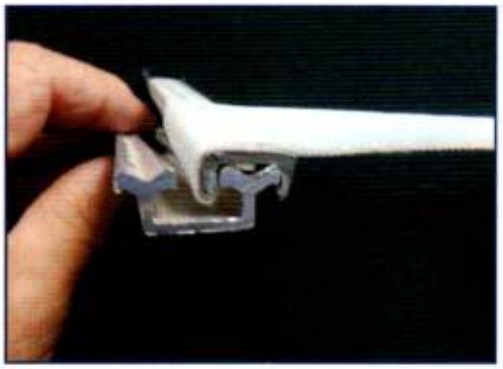


Almost every older Cessna twin will require new, more durable side panels and armrest mounts.

The second system Cessna employed in the later piston twins is a full-length aluminum extrusion and a plastic C-shaped channel that would hold full length cloth or vinyl panels in place. The design of the rail and channel holds the finish material securely in place when it is wrapped over the edge of the plastic "C" channel, and the plastic channel is pressed up into the aluminum extrusion — simple. To remove this type of headliner, all you need to do is start at one end of the headliner and progressively pull the "C" channel down and out of the aluminum extrusion. This plastic "C" channel is often damaged and must be replaced.

The last item to be removed is that lovely old fiberglass insulation. As this activity is in progress, we are photographing any damaged or worn items to be called out on the tear-down report. We're also organizing all the many interior components in a dedicated storage system so we don't lose track of anything. Reassembly is so much easier if nothing has been misplaced!

With all of the interior components and insulation removed, a thorough inspection is made of the cabin structure, systems, and above and below the floorboards. Seeing what has been hidden from view for 40+ years can be an eye-opening experience for an owner.



Extruded aluminum headliner retention rail system found in newer Twin Cessnas.

Thanks to the convenience of digital photography, we will start a detailed journey next month showing all of the aging airplane issues and how to best repair anything that needs to be fixed. As we work our way through the cabin renovation process we will leave no stone unturned. Until then, fly safely!