Renovating an Interior, Part Three: INTERIOR REMOVAL

Protect low-wing aircraft with heavy paper or cardboard and blankets. A step stool will reduce wear and tear on the step.

You've developed an organization plan and you are ready to begin stripping the interior. But what should come out first? A&P/IA DENNIS WOLTER guides you through the steps of disassembling the interior of your Piper.

Finally, it's time to begin removing the old interior. Rule No. 1 is stay organized. Rule No. 2 is don't throw away any old interior stuff until the project is completely finished. Rule No. 3 is don't damage the airplane.

Before continuing, I would like to make three additional suggestions. First, buy a copy of that great how-to manual published by the FAA. I'm referring to AC 43.13-1B, "Aircraft Inspection, Repair and Alterations: Acceptable Methods, Techniques and Practices." *(See link in Resources. —Ed.)*

This book gives in-depth information on how to properly repair and modify almost anything you or your mechanic may encounter when renovating your interior or getting involved in maintenance issues with your aircraft.

The second piece of advice, as I've stated in previous articles, is to keep your mechanic involved in your project. These folks have seen a lot, and a wise owner takes advantage of their experience.

The third bit of advice I have is that you familiarize yourself with the benefits as well as limitations an owner must follow under the guidelines of preventive maintenance, as outlined in AC 43-12A and 14 CFR Part 43, Appendix A, Paragraph C.

Preventing inadvertent damage

During an interior renovation, you will constantly be climbing in and out of the airplane, often carrying bulky items such as seats and side panels. It's very important to protect your aircraft's exterior paint and windows.

Cover the painted wing with thin cardboard neatly taped in place along the edge of the black wingwalk. Putting a low step stool up against the boarding step will eliminate weeks of stress, wear and tear on the step. This will also create a safer, more secure means of ingress and egress.

Here at Air Mod, we protect windows by cutting some heavy paper or thin cardboard to the appropriate shape and taping it around the perimeter of each window, inside and out. With lots of activity happening in your cabin, you should protect the instrument panel with heavy packing paper or a painter's tarp.

In preparation for storing delicate plastic window frames on the wings of your low-wing Piper, I recommend covering wing surfaces with old quilts, wool army blankets or inexpensive moving blankets that can be purchased from a discount tool supply store. The blanket-covered wings create a big, safe place to store delicate plastic window frames and overhead vent ducts.

First steps of interior removal

The first items to come out of the airplane should be the aircraft's documents and flight manual. If ever there is a time for those items to be misplaced, it's during an invasive project like replacing an interior. Temporarily store those important documents in a safe place, away from the airplane.

Every once in a while, we'll get a call from a former customer trying to recreate lost records; looking for copies of anything we have that will help reconstruct an airplane's history. Missing records have a substantial negative effect on the value of your airplane!

I recommend that you make copies of the airworthiness, registration and current weight and balance records. Many aircraft owners, myself included, have scanned all their aircraft documents, creating a second set of records stored in a separate location.

The first interior components to be removed will be the pilot and copilot

A photograph of each seat belt attachment assembly will aid you and your mechanic at reinstallation time.

A detailed drawing of the seat belt configuration and dimensions.

During seat belt disassembly, you may discover substandard hardware. Check the parts book to ensure that the proper nuts, bolts, spacers and washers are used in reassembly.

A typical piece of damaged plastic trim; a broken fragment is taped to the larger trim piece for safekeeping.

Earlier Piper Cherokee, Archer, Lance and Seneca side panels were constructed with cardboard-covered foam board.

Old, delicate cardboard panels can be used as patterns to fabricate new, more durable aluminum panels.

seats, followed by aft seats. Before removing seats, it's a good idea to have someone sit in the seat and actuate the tracking, reclining and seat height adjustments to verify that all systems are functioning properly.

Later in the renovation process, after the seats have been stripped to the bare frame, put them back in the airplane and have your A&P thoroughly inspect everything for structural and mechanical condition.

Don't forget to check the length and function of the seat belts and shoulder harnesses. Here's your chance to add a little length to a seat belt to accommodate some middle-age "growth." Have your licensed mechanic assist in this process. They should inspect these all-important passenger restraints and mountings.

Also check to see if all seat stops are still installed and that they are correct. The aircraft's parts book will advise as to how many and what type of seat stop is required for your specific airplane. Believe it or not, we had an airplane come in with a couple of household nails run through a seat stop hole and bent back on themselves in a dangerously crude attempt to replicate a seat stop. I'm not making this stuff up!

With seats out, it's time to remove the seat belts and harnesses where they are secured to sturdy brackets on the floors and to nutplates mounted in the overhead cabin structure. Start by photographing each attachment point to aid you and your mechanic at reinstallation time.

Removing and reinstalling passenger restraints, as with any seat repair, must be done by (or under the direct supervision of) a licensed airframe mechanic.

Check the parts book to ensure that the proper nuts, bolts, spacers and washers were used. The hardware from your local hardware store may look similar and it may fit, but it is not aircraft hardware and may not be made of the same high-strength material as aircraft hardware.

AC 43.13-1B and the aircraft's maintenance manual have great guidelines on hardware identification and torqueing requirements. It's not a bad idea to use the factory parts book to ensure that correct spacers and hardware are used for securing belts and harnesses at reassembly time.

Once the seat belts and shoulder harnesses are removed, lay them out on a table and have your mechanic inspect them for condition and certification adherence.

If anything is not airworthy or if new or re-webbed belts are desired, make a sketch of each belt with dimensions before shipping them out to a certified

repair station for re-webbing or replacement. This sketch is very useful to confirm correct lengths and configuration when the new or re-webbed belts are returned for installation.

We have found a very reliable certified repair station for re-webbing in Aviation Safety Products. *(PFA supporter Wag-Aero also provides seat belt repair services; see Resources. —Ed.)* Never make a field repair on any passenger restraint. This work can only be performed by a certified repair facility. This stuff is extremely important.

Don't forget to tag each belt as to where it was originally positioned in the airplane and put the mounting hardware for each belt and harness in a separate resealable clear plastic bag that is well-marked as to where it goes.

It may sound like I'm being a little retentive here, but as we tear down interiors at Air Mod, we frequently find incorrect hardware holding these all-important restraints in place. There is no room for carelessness when it comes to seat belts and harnesses. In a later article, we will look at certified aftermarket inertia reel shoulder harness upgrades available for Piper aircraft.

Trim and side panel removal

Our next job is to remove all the delicate cabin plastic trim pieces, window frames, overhead consoles, air vents and so on. These components often come into the shop already damaged (what a surprise). Be sure to preserve any broken pieces by temporarily taping the pieces together for later repair or a determination that they need to be replaced. Store these delicate parts out of harm's way on the blanket-covered wings.

Piper fabricated the earlier Cherokee, Archer, Lance and Seneca side panels using delicate cardboard-covered foam board that is not reusable. Try not to damage these panels since they can be used as patterns…

Now, it's time to remove the side panels. Piper fabricated the earlier Cherokee, Archer, Lance and Seneca side panels using delicate cardboard-covered foam board that is not reusable. Try not to damage these panels during removal. They can be used as patterns when you fabricate new, more durable, aluminum panels. More on that in a future article.

With the armrests, window frames, heat outlets and other parts removed, the side panels can easily be removed and stored in a 4-foot by 8-foot roll-around storage box along with the seats. Smaller side panel trim parts, armrests, etc. can be stored in the side panel tub. Keep it organized! *(See Dennis Wolter's previous article in the September 2019 issue of* Piper Flyer *for organization suggestions, including boxes, bags and bins for holding interior parts as they are removed. —Ed.)*

Headliner removal

Now, it's time to take out the headliner. Start by removing the overhead console, fresh air system, shoulder harness mountings, etc. As each of these components is being removed, put small parts in a well-marked plastic baggies and store them in the tub marked "headliner."

Removing the stretched vinyl headliner is a pretty straightforward process of first

Hard-to-find parts aren't hard to find here!

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A 1/4-inch thick piece of acrylic can be fashioned into a sturdy tool for the removal of bonded-in-place carpet.

After pulling the interior, you may find a few surprises—like this corrosion on the belly of the aircraft.

A Piper cabin after interior removal.

removing any supporting hardware and peeling off glued-in-place vinyl at the outer edge of the headliner.

Piper Comanches have long cabin-length rods on the back surface of the headliner that are threaded at the ends and hold the midsections of the headliner in place. These rods are removed by removing the nuts at the forward end of the rods and pulling the rods aft into the fuselage. Later Cherokee Sixes, Lances, Saratogas and Senecas use Velcro instead of the old rod method to hold the long headliner in place. Either way, the removal process for these headliners is quite intuitive.

Carpet removal

The last major interior item to remove is the carpet. In Comanches, Apaches and Aztecs, the carpet is either secured by the seat rails that must be removed in order to get the carpet out, or, in older airplanes that have had after-market carpet installed, the carpet is secured to the floor with Velcro or snaps and is easily removed.

Cherokees, Lances, Saratogas and Senecas with original carpet intact are a very different story. Unfortunately, Piper glued either hard foam or thick cardboard directly to the belly skin, which is also the floorboard. They then glued the carpet to the foam or cardboard. In my opinion, this is one of General Aviation's biggest design mistakes. This system causes a lot of corrosion issues and makes it impossible to easily remove the carpet for cleaning. More on correcting this in a later article.

To remove bonded-in-place carpet, we use plastic scrapers made from acrylic plastic (i.e., plexiglass). We cut a piece of 1/4-inch thick acrylic 6 inches long and 2 inches wide and then round off the handle end for comfort, leaving a 2-inch-wide straight edge at the other end. We then sharpen the straight edge against a running belt sander.

The finished product will look a lot like a sturdy automotive windshield scraper—but don't be fooled into thinking you can use an automotive windshield scraper. Windshield scrapers are typically made of a lesser-quality plastic that will not hold up to the aggressive task of removing old carpet backing material.

Never use a steel metal scraper to remove anything from an aluminum aircraft component. Hard steel can scratch softer aluminum, weakening the structural skins and bulkheads of your airplane.

As we finish disassembling your interior, the final task is to remove all the old

cabin insulation. This is relatively simple and intuitive work.

Generally, the full interior disassembly process will take a day to complete. Your efforts are rewarded with the ability to see a completely bare cabin, albeit one in need of some attention. There could be some major work ahead in the area of dirt and corrosion removal, so don't relax yet! It is likely that no one has been able to see or access the entire cabin area of your airplane since the day it was built.

It's now time to bring in your mechanic to inspect the cabin's structure and systems. You may find a few surprises, but here's your chance to thoroughly clean, corrosion-proof and repair everything. As stated earlier, with proper cleanup and corrosion prevention methods, we are helping to save these airframes for future generations of aviators.

Next month, we'll go into detail about corrosion in the cabin. I'll explain the four types of corrosion, the various stages of those four types, and when owners need to be concerned. Until then, fly safe! PF

IMPORTANT: This article describes work that may need to be performed/supervised by a certificated aviation maintenance technician. Know your FAR/AIM and check with your mechanic before starting any work.

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 Air Mod 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.

RESOURCES: PIPER FLYER SUPPORTER >>>>>

SEAT BELT REPAIRS

Wag-Aero
https://www.wagaero.com/repair-station/seat-belt-and-shoulder-harnesses-repairs.html

RESOURCES: OTHER >>>>>

MAINTENANCE GUIDES

AC 43.13-1B "Aircraft Inspection, Repair and Alterations: Acceptable Methods, Techniques and Practices."
https://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.information/documentid/99861

AC 43-12A "Preventive Maintenance"
https://www.faa.gov/regulations_policies/advisory_circulars/index.cfm/go/document.information/documentID/99859

14 CFR Part 43, Appendix A
https://www.ecfr.gov/cgi-bin/retrieveECFR?gp=&r=PART&n=14y1.0.1.3.21#ap14.1.43_117.a

SEAT BELT REPAIRS

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