

Owner Performed Aircraft Maintenance: What You CAN legally do yourself

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This month's article is about Owner Performed Aircraft Maintenance in honor of the Experimental Aircraft Associations' Annual Convention which will be held at Wittman Regional Airport, and on the West Shore of Lake Winnebago, on July 27 through August 2, 2009. Back in 2000 I was scheduled to make a power point presentation at that year's [Air Venture](#), but unfortunately an aircraft deal took me to another place instead of Oshkosh. Well I have dusted off the power point, updated it and made it more like an article. So please enjoy.

Experimental versus Certificated Aircraft

Experimental:

An aircraft that has had an Experimental certificate issued for one of following purposes:

1. Operating amateur-built aircraft. Operating an aircraft the major portion of which has been fabricated and assembled by persons who undertook the construction project solely for their own education or recreation.
2. Operating kit-built aircraft. Operating a primary category aircraft that meets the criteria of § 21.24(a) that was assembled by a person from a kit manufactured by the holder of a production certificate for that kit, without the supervision and quality control of the production certificate holder under § 21.184(a).

Ref. Cfr 14, FAR Part 21.191 - Experimental Certificates.

Type Certificated:

An aircraft in the normal, utility, acrobatic and commuter category that conforms to the airworthiness standards prescribed for the issue of a type certificates and changes to those certificates.

Ref. Cfr 14, FAR Part 23.1 - Applicability.

What is a Repairman's Certificate?

Repairman Certificate (Experimental Aircraft Builder and/or Light Sport Aircraft Owner) \ Eligibility,

Privileges and Limitations. Reference cfr 14, FAR Section 65.104

To be eligible for a repairman certificate (experimental aircraft builder), an individual must:

1. Be at least 18 years of age;
2. Be the primary builder of the aircraft to which the privileges of the certificate are applicable in the case of an Experimental Aircraft. In the case of a Light Sport Aircraft the applicant must undergo 120 hours of classroom training for an Airplane, 104 hours for a Weight-shift Control or Powered Parachute, and 80 hours for a Lighter than Air, or Glider;

3. Show to the satisfaction of the Administrator that the individual has the requisite skill to determine whether the aircraft is in a condition for safe operations; and Be a citizen of the United States or an individual citizen of a foreign country who has lawfully been admitted for permanent residence in the United States.

The holder of a repairman certificate (experimental aircraft builder) may perform condition inspections on the aircraft constructed by the holder in accordance with the operating limitations of that aircraft, ONLY.

It's an Experimental, but I didn't build it myself.

Regarding Maintenance, if you didn't build it then there is NO difference between this aircraft and a Type Certificated Aircraft.

Further more, you are NOT eligible to become a Repairman for this aircraft as you did not originally construct it yourself; you can however perform Preventative Maintenance on this aircraft I.A.W. cfr. 14, FAR 43, Appendix A.

All subsequent Annual Condition Inspections and any associated repair work, can ONLY be performed by either an A & P Mechanic, or a Repair Station.

I am NOT an A&P or a Repairman, Am I still Legally Qualified?

If you currently hold a pilot certificate issued under part 61, you may perform PREVENTATIVE MAINTENANCE on your own aircraft as long as you do not operate your aircraft under part 121, 127, 129, or 135.

However, unless you already hold either a valid Mechanics or Repairmans Certificate, you only qualify to perform all other maintenance and alteration work only under the direct supervision of an A&P mechanic or a repairman who personally observes your work. However you are not authorized to perform any inspection required by part 91 or part 125 of this chapter or any inspection performed after a major repair or alteration.

What is Preventative Maintenance?

"Preventive maintenance" means:

simple or minor preservation operations and the replacement of small standard parts not involving complex assembly operations.

The 31 items that you CAN do yourself

1. Removal, installation, and repair of landing gear tires.
2. Replacing elastic shock absorber cords on landing gear.
3. Servicing landing gear shock struts by adding oil, air, or both.
4. Servicing landing gear wheel bearings, such as cleaning and greasing.
5. Replacing defective safety wiring or cotter keys.
6. Lubrication not requiring disassembly other than removal of nonstructural items such as cover plates, cowlings, and fairings.
7. Making simple fabric patches not requiring rib stitching or the removal of structural parts or control surfaces. In the case of balloons, the making of small fabric repairs to envelopes (as defined in, and in accordance with, the balloon manufacturers' instructions) not requiring load tape repair or replacement.
8. Replenishing hydraulic fluid in the hydraulic reservoir.

9. Refinishing decorative coating of fuselage, balloon baskets, wings tail group surfaces (excluding balanced control surfaces), fairings, cowlings, landing gear, cabin, or cockpit interior when removal or disassembly of any primary structure or operating system is not required.
10. Applying preservative or protective material to components where no disassembly of any primary structure or operating system is involved and where such coating is not prohibited or is not contrary to good practices.
11. Repairing upholstery and decorative furnishings of the cabin, cockpit, or balloon basket interior when the repairing does not require disassembly of any primary structure or operating system or interfere with an operating system or affect the primary structure of the aircraft.
12. Making small simple repairs to fairings, nonstructural cover plates, cowlings, and small patches and reinforcements not changing the contour so as to interfere with proper air flow.
13. Replacing side windows where that work does not interfere with the structure or any operating system such as controls, electrical equipment, etc.
14. Replacing safety belts.
15. Replacing seats or seat parts with replacement parts approved for the aircraft, not involving disassembly of any primary structure or operating system.
16. Trouble shooting and repairing broken circuits in landing light wiring circuits.
17. Replacing bulbs, reflectors, and lenses of position and landing lights.
18. Replacing wheels and skis where no weight and balance computation is involved.
19. Replacing any cowling not requiring removal of the propeller or disconnection of flight controls.
20. Replacing or cleaning spark plugs and setting of spark plug gap clearance.
21. Replacing any hose connection except hydraulic connections.
22. Replacing prefabricated fuel lines.
23. Cleaning or replacing fuel and oil strainers or filter elements.
24. Replacing and servicing batteries.
25. Cleaning of balloon burner pilot and main nozzles in accordance with the balloon manufacturer's instructions.
26. Replacement or adjustment of nonstructural standard fasteners incidental to operations.
27. The interchange of balloon baskets and burners on envelopes when the basket or burner is designated as interchangeable in the balloon type certificate data and the baskets and burners are specifically designed for quick removal and installation.
28. The installations of anti-misfueling devices to reduce the diameter of fuel tank filler openings provided the specific device has been made a part of the aircraft type certificate data by the aircraft manufacturer, the aircraft manufacturer has provided FAA-approved instructions for installation of the specific device, and installation does not involve the disassembly of the existing tank filler opening.
29. Removing, checking, and replacing magnetic chip detectors.
30. Removing and replacing self-contained, front instrument panel-mounted navigation and communication devices that employ tray-mounted connectors that connect the unit when the unit is installed into the instrument panel, (excluding automatic flight control systems, transponders and microwave frequency distance measuring equipment (DME)).

The approved unit must be designed to be readily and repeatedly removed and replaced, and pertinent instructions must be provided. Prior to the unit's intended use, an operational check must be performed in accordance with the applicable sections of part 91.

31. Updating self-contained, front instrument panel-mounted Air Traffic Control (ATC) navigational software data bases (excluding those of automatic flight control systems, transponders and microwave frequency distance measuring equipment (DME), provided no disassembly of the unit is required and pertinent instructions are provided. Prior to the unit's intended use, an operational check must be performed in accordance with applicable sections of part 91.

What will I need?

APPROVED DATA

i.e. Maintenance or Service Manuals for your aircraft, any pertinent Advisory Circulars like AC43.13 1B, ADs, and any Special Instructions provided for the Continuing Airworthiness of Supplemental Type Certificate.

SUITABLE WORKING CONDITIONS

Perform the work at a location where all removed parts are protected from dust, dirt or damage.

TOOLS APPROPRIATE FOR THE WORK BEING PERFORMED

May include jacks, air tools, multi-meter, wrenches, sockets and special tools specific for the work, etc.

ABILITY

If the preventative maintenance work that you intend to perform is not simple in nature and is beyond your ability, you are not qualified to continue and must seek the assistance of a certified Mechanic.

The Sign-Off

Ref. CFR 14 FAR 43.9 - Content, Form, and Disposition of Maintenance, Preventive Maintenance, Rebuilding, and Alteration Records

Each person who maintains, performs preventive maintenance, rebuilds, or alters an aircraft, airframe, aircraft engine, propeller, appliance, or component part shall make an entry in the maintenance record of that equipment containing the following information:

- (1) A description (or reference to data acceptable to the Administrator) of work performed.
- (2) The date of completion of the work performed.
- (3) The name of the person performing the work if other than the person making the entry.
- (4) If the work performed on the aircraft, airframe, aircraft engine, propeller, appliance, or component part has been performed satisfactorily, the signature, certificate number, and kind of certificate held by the person approving the work. The signature constitutes the approval for return to service only for the work performed.

In the case of a Repairman who performs his own Condition Inspection, the Logbook Entry must also include:

- (5) The type of inspection and a brief description of the extent of the inspection.
- (6) The date of the inspection and aircraft total time in service.

Owner Assisted Annuals

Annual Time always provides an excellent opportunity for an aircraft owner to become better acquainted with his/her aircraft. Obviously in the case of a Type Certificated Aircraft, an A&P Mechanic with an Inspection Authorization or a Certified Repair Station, are the only entities that are normally authorized to perform your Annual Inspection. However with careful coordination with the Inspector, it is usually possible for you to assist, not only by removing panels, seats, etc., but also to actually perform some of the required maintenance and repair tasks (under the supervision of an A&P Mechanic) that may result from the inspection.

Don't expect to save yourself much money by talking your Inspector into letting you assist, as I have found from personal experience that by asking your chosen Inspector to supervise you and to also answer your questions, he/she is spending a not inconsiderable amount of time in providing you with Training. As we all know, Training Consumes both Time and Money, when it is done Right.

Airworthiness Directives

[Airworthiness Directives](#) are published in the Federal Register as amendments to part 39. Each AD contains an applicability statement specifying the product (aircraft, aircraft engine, propeller, or appliance) to which it applies. Some aircraft owners and operators mistakenly assume that ADs do not apply to aircraft with other than standard airworthiness certificates, i.e., special airworthiness certificates in the restricted, limited, or experimental category. Unless specifically stated, ADs apply to the make and model set forth in the applicability statement regardless of the classification or category of the airworthiness certificate issued for the aircraft. Type certificate and airworthiness certification information are used to identify the product affected. Limitations may be placed on applicability by specifying the serial number or number series to which the AD is applicable. When there is no reference to serial numbers, all serial numbers are affected. The following are examples of AD applicability statements:

The registered owner or operator of an aircraft is responsible for compliance with ADs applicable to the airframe, engine, propeller, appliances, and parts and components thereof for all aircraft it owns or operates. Maintenance personnel are responsible for determining that all applicable airworthiness requirements are met when they accomplish an inspection in accordance with part 43.

Experimental Liability

This is a very misunderstood subject that deserves at least a very short mention, even though it does not entirely relate to Owner Maintenance.

When selling a Homebuilt/Experimental Aircraft, the seller has a legal duty to the buyer as legally the Homebuilder is the Manufacturer with all of the potential liability of any other manufacturer for Negligence, Product Liability and Warranty Exposure when the aircraft is sold.

Based upon the legal principles of Negligence, if the aircraft or a component of it fails, or if the aircraft crashes because the builder didn't use Reasonable Care in Design, Construction or Maintenance, the Builder will be liable EVEN IF THE AIRCRAFT IS PARTIALLY DISASSEMBLED BEFORE BEING SOLD. This is called TORT LIABILITY.

All you can do is minimize the risk of liability based upon the total circumstances of the sale and purchase of a particular homebuilt/experimental aircraft. This can be done by reading the EAA publications that have been written on this subject and also by hiring the services of a good [aviation lawyer](#).

Get to know your Local FAA FSDO Personnel

There are nine domestic FAA Regions that are home to 83 Flight Standards District Offices (FSDOs) in the U.S.A.

Each FSDO is staffed by knowledgeable Maintenance Inspectors, who have been trained to oversee, assist and provide you with guidance in the field of aircraft maintenance.

To get the location of your FSDO office, call the FAA Aviation Safety Hotline at: 1-866-835-53222.

Thanks to:

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