

FAASTeam

MEMPHIS

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Safety Tips

FSDO CE21

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Periodic Newsletter

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Reference: Order 8900.1 CHG 569 Vol. 3, Chapter 15, Section 1 dated 1/9/2018.

I have created this newsletter in hope of providing useful and valuable aircraft maintenance and safety information to both pilots and mechanics within this district. I am presenting this article in numerous issues to avoid creating a lengthy read. Much of the information I provide comes directly from FAA Order 8900.1 as revised, which is one of the main references used by FAA inspectors while performing their surveillance responsibilities. It would be very much to your benefit to get familiar with this order for all your day-to-day aircraft activities.

Upcoming issues;

Issue 2 - Inspections

Issue 3 – Overhauls

The “Elements” of Maintenance

OBJECTIVE

This section clarifies what constitutes maintenance and the differences between the elements that make up maintenance. The term “*maintenance*” is

defined in Title 14 of the Code of Federal Regulations (14 CFR) part 1, § 1.1 as “inspection, overhaul, repair, preservation, and the replacement of parts, but excludes preventive maintenance.” While this definition has been around for a long time, differences between the five elements that make up maintenance (i.e., inspection, overhaul, repair, preservation, and the replacement of parts) have not always been clearly understood throughout industry. Also, note that the definition of maintenance does not include the terms “rebuild” or “rebuilt”. Those functions are limited to the design approval holder (DAH) (i.e., manufacturer) with Production Certificate (PC) approval using its approved design (proprietary) data. Refer to 14 CFR part 43, §§ 43.3(j) and 43.7(d), and 14 CFR part 21, § 21.137(o). In this section, we discuss key differences, the implications of those differences, and then discuss items that do not fall into these categories.

ADDITIONAL REGULATORY BACKGROUND

Part 43 identifies persons authorized to perform maintenance and the performance standards that must be followed. Regardless if maintenance, preventive maintenance, or alteration are being performed on an aircraft, engine, propeller, or techniques, and practices prescribed in the current manufacturer’s maintenance manual or

instructions for continued airworthiness (ICA) prepared by its manufacturer, or other methods, techniques, and practices acceptable to the Administrator. A manufacturer is required under § 21.50(b) to prepare a complete set of ICAs in accordance with (IAW) the applicable certification standard for the product (14 CFR parts 23, 25, 27, 29, 33, 35) that is acceptable to the Federal Aviation Administration (FAA). The purpose of the ICAs are to enable persons authorized by the FAA to maintain the continued airworthiness of the product and approve the product for return to service. The manufacturer is also required to furnish the ICA to each owner of the product and then make it available to persons requiring its use. This is how the certification rules interface with the continued airworthiness rules of part 43 and 14 CFR part 91. In addition, as part of the ICAs, the manufacturer is required to provide airworthiness limitations (AWL). The FAA-approved Airworthiness Limitation Section (ALS) is required to be separate and distinct from the remainder of the FAA-accepted ICA document. All of the certification standards (e.g., parts 23, 25, 33, 35) require ICAs to have an ALS that states the following: “The Airworthiness Limitations section is FAA approved and specifies maintenance required under §§ 43.16 and 91.403 of Title 14 of the Code of Federal Regulations unless an alternative program has been FAA approved.”



Exhaust and V-band Safety

Nearly all maintenance and inspections address situations that have the potential to cause significant damage or harm if not performed properly. The objective of inspections is to identify

deficiencies and to confirm the airworthiness status in order to reduce the likelihood of mishaps.

Exhaust system components require special attention. Inadequate/ infrequent inspections or checks, and the lack of routine and preventive maintenance between inspections, cause most exhaust system failures. Engine operating temperatures and vibrations can cause exhaust system deterioration and metal fatigue in areas of stress concentration. This also wears at joints or connections. V-band clamps are the preferred connection for many exhaust or intake systems; however, in order for the V-band clamp to work properly, the tubes and components of the coupling have to be connected before installation. Additionally, the flanges have to be aligned correctly prior to coupling installation to prevent failures. Ensure that the V-band does not bottom out on the flange before reaching the required torque. The installation process should include torqueing the latch to its proper torque value, then seating the coupling and re-torqueing the coupling until the torque value is stable. Tapping the coupling with a rubber mallet can help seating the coupling while re-torqueing. Use safety wire as needed.



Exhaust leaks are inherently more dangerous than induction leaks because of the very serious threat of in-flight fire. Fortunately, exhaust leaks are usually a lot easier to detect because they typically leave brightly colored exhaust stains (and sometimes, obvious heat damage) that can be detected during an engine-compartment inspection. Several V-band/exhaust system failures have involved accidents. As a result, these have prompted Airworthiness Directives as well as manufacturer’s bulletins.

The operator of a turbocharged aircraft that experiences a sudden unexplained loss of

Exhaust and V-band Safety *cont.*

manifold pressure in-flight should assume that an exhaust failure possibly occurred. It is vitally important to ground the airplane as soon as possible then contact the maintenance provider. If the aircraft is a twin, the operator should consider the possibility of shutting down and securing the engine to minimize the threat of in-flight fire, and then contact the maintenance provider as soon as possible.

Follow the manufacturer's guidelines on the use of V-band gaskets and safety wire to secure the V-band.

Knowledge and education are key to the maintenance of these advanced exhaust systems. Make sure you:

- Have the appropriate service information
- Inspect closely
- Get a second opinion when in doubt

Remember, the owner/pilot is relying on you!

courses, notifications of upcoming safety seminars, information on obtaining AMT and Wings credits, etc. If you like this newsletter, register online at FAASAFETY.GOV and you will receive more in the future.

New Airworthiness Directives

This link is for Airworthiness Directives, for all aircraft: ([Control-Click the below site](#))

http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgAD.nsf/MainFrame?OpenFrameset



We all have heard of “**Replacement**” and “**Amendment**” of an airworthiness certificates, what is meant by “**Exchange**” of an airworthiness certificate as stated in FAA Order 8130.2J?

ANSWER: *To be included in Issue 2.*



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