

Engine Repairs

Engine repairs are a growing area of involvement between the FAA and applicants. Repairs are changing in their nature and scope due to many factors including part costs, extending useful engine part lives, and developing repair technologies. The FAA becomes involved in the approval of repairs to ensure that once repaired, each part meets an acceptable level of safety. Various rules, orders and guidance material focus on this activity.

What is a repair?

A repair is the restoration of a worn or damaged engine or engine part accomplished in such a manner and using material of such quality that its restored condition will be at least equal to either its original condition, or a serviceable condition in accordance with the Instructions for Continued Airworthiness (ICAs).

How are major and minor repairs defined?

FAR 1 defines a **Major repair** as a repair that if improperly done, might appreciably affect weight, balance, structural strength, performance, powerplant operation, flight characteristics, or other qualities affecting airworthiness; or that is not done according to accepted practices or cannot be done by elementary operations. A **minor repair** is a repair other than a major repair.

I'm already authorized to perform maintenance as defined in the OEM's manual, what rules should I be familiar with to accomplish these repairs?

FAR 43 Maintenance, Preventive Maintenance, Rebuilding, and Alteration, prescribes rules governing the maintenance, preventive maintenance, rebuilding, and alteration of any aircraft having a U.S. airworthiness certificate, foreign registered civil aircraft used in common carriage or carriage of mail under the provisions of Part 121, 127, or 135 and airframe, aircraft engines, propellers, appliances, and component parts of such aircraft.

What rule governs Repair Stations?

Part 145 titled, Repair Stations, prescribes the requirements for issuing repair station certificates and associated ratings to facilities for the maintenance and alteration of airframes, powerplants, propellers, or appliances, and prescribes the general operating rules for the holders of those certificates and ratings.

Must everyone doing repair work have technical data directly approved by the FAA?

No, Special Federal Aviation Regulation, SFAR No. 36 (see part 121), applies to repair of an aircraft, airframe, aircraft engine, or propeller. The holder of an air carrier certificate or operating certificate, that operates large aircraft, and that has been issued operations specifications for operations required to be conducted in accordance with 14 CFR part 121 or part 135, may perform a major repair on a product using technical data that have not been approved by the Administrator, and approve that product for return to service, if authorized in accordance with this Special Federal Aviation Regulation.

The holder of a domestic repair station certificate, under 14 CFR part 145 may perform a major repair on an article for which it is rated, using technical data not approved by the Administrator, and approve that article for return to service, if authorized in accordance with this Special Federal Aviation Regulation (SFAR). If the certificate holder holds a rating limited to a component of a product or article, the holder may not, by virtue of this Special Federal Aviation Regulation, approve that product or article for return to service.

I'm a DER, where can I get additional guidance on what I'm authorized to do when approving repair data?

Order 8110.37C, The DER Guidance Handbook, provides guidance, procedures, technical guidelines, and limitations of authority for Designated Engineering Representatives. It is to be used by all Aircraft Certification Directorates and Aircraft Certification Offices (ACO's), as an aid in the uniform

administration of the DER program. This handbook contains repair guidance material for the DER.

Are there any repair related Advisory Circulars available to help me?

Yes, there are several useful Repair related ACs, here are brief descriptions of three:

- AC 43-9c describes methods, procedures and practices that have been determined to be acceptable means of showing compliance with the general aviation maintenance record making and record keeping requirements of Title 14 of the Code of Federal Regulations 14 CFR part 43 and part 91.
- AC 43-12a provides information concerning preventive maintenance, who may perform it, the standards of performance applicable to it, authority for approving aircraft for return to service, and the applicable recording requirements.
- AC 43.13-1b contains methods, techniques, and practices acceptable to the Administrator for the inspection and repair of non-pressurized areas of civil aircraft, only when there are no manufacturer repair or maintenance instructions. This data generally pertains to minor repairs. The repairs identified in this AC may also be used as a basis for FAA approval for major repairs