

Manufacture of aircraft parts during maintenance

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Issued by the Civil Aviation Authority of New Zealand in the interests of aviation safety. A Continuing Airworthiness Notice (CAN) is intended to alert, educate, and make recommendations to the aviation community. A CAN contains non-regulatory information and guidance that does not meet the criteria for an Airworthiness Directive (AD). The inspections and practices described in this CAN must still be carried out in accordance with the applicable NZCAR Parts 21, 43 and 91.

CAN numbering is by ATA Chapter followed by a sequential number for the next CAN in that ATA Chapter.

Applicability:

All aircraft operators and maintenance providers.

Purpose:

This Continuing Airworthiness Notice (CAN) is published to detail the requirements under which a person performing maintenance on a type certificated product may manufacture replacement parts to be fitted to that product (manufactured during maintenance).

Background:

Civil Aviation Rule (CAR) 43.53(4) states that a person performing maintenance on an aircraft or component must use materials, parts, and appliances in accordance with the requirements of Subpart K of Part 21.

CAR 21.303(2) of Subpart K enables the manufacture of replacement parts under Part 43.

Parts manufactured during maintenance under CAR 21.303(2) must be identified in accordance with Subpart Q of Part 21.

Manufacture during maintenance may be carried out by a an appropriately rated LAME, or by a Part 145 Certificated Maintenance Organisation authorisation holder.

The manufacture of parts during maintenance should be carried out in a way which ensures that parts manufactured under Part 43 deliver the same level of safety as those manufactured under Part 148.

Manufacture during maintenance should not be confused with manufacture carried out under the privileges of a Part 148 Certificate.

Recommendation:

Assessment of acceptable technical data

It is the responsibility of the person carrying out manufacture during maintenance to establish that they have acceptable technical data (ATD) necessary to ensure that the completed part conforms to an approved type design. In practice it may be necessary to refer to multiple documents in order to manufacture a specific part, for example materials may be detailed in one document, while testing is contained in another. ATD is listed in Appendix D of Part 21.

The person carrying out the manufacture must ensure adherence to ATD throughout the manufacturing process.

CAR 43.53 (3)(ii) enables the use of equivalent methods, techniques, and practices that are acceptable to the director, however this should not be considered an allowance to substitute materials without supporting ATD.

Where ATD underpinning the manufacture is not available, compliance with the aircraft type design cannot be assured and the part should not be manufactured.

Manufacture with reference to a sample or pattern

The person carrying out manufacture during maintenance must make an assessment as to which parts must be manufactured with reference to a sample or pattern. Parts which are configured or tailored to a specific product, such as skin panels may be manufactured with reference to a sample or pattern provided the materials and techniques to be used are detailed in ATD.

If a used part or sample is referenced during manufacture, consideration should be given to the potential effects of service life and degradation. For example, referencing used parts and materials that were subject to physical degradation (e.g. tension, compression, torque, bending loads, etc.) increase the likelihood of the manufacture of parts which are out of tolerance and therefore do not conform to an approved type design.

Identification of a part manufactured during maintenance

Parts manufactured during maintenance must be identified per CAR 21.813(b). This marking ensures traceability of the parts manufacturing data, and that the part can be clearly identified as having been manufactured during maintenance.

Recording of manufacture during maintenance

The maintenance records of a part manufactured during maintenance must form part of the work records of the product or component being maintained. Records must include reference to the ATD used to manufacture the part and the materials used. The reference should provide sufficient clarity as to the specific data which has been used in the manufacture. Whereas a reference detailing the chapter, task, or drawing number used will provide clarity, a reference to an entire manual such as the AMM or AC 43.13-1b will not.

The engineer manufacturing the part must certify in the work record that the part conforms to ATD per CAR 21.303(2).

Parts manufactured during maintenance cannot be released to service on a CAA Form One (i.e. they must be manufactured in the course of maintenance of a product, not manufactured, certified, and stocked in isolation of a maintenance activity).