



USAGE OF PARTS REMOVED FROM AN AIRCRAFT NO LONGER IN SERVICE AND DISPOSAL OF SCRAP PARTS

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- 1. GENERAL.** Advisory Circulars (ACs) are issued by the Civil Aviation Authority of Singapore (CAAS) and contain information about standards, practices and procedures acceptable to the Authority. The revision number of the AC is indicated in parenthesis in the suffix of the AC number.
- 2. PURPOSE.** This AC is issued to provide information and guidance to persons and organisations on the usage of parts removed from an aircraft no longer in service; parts recovered from an aircraft involved in an accident; and the disposal of scrap parts and materials.
- 3. APPLICABILITY.** This AC applies to SAR-145 approved maintenance organisations, AOC Holders and owners/operators of aircraft registered in Singapore.
- 4. CANCELLATION.** This is the first AC on this issue.
- 5. EFFECTIVE DATE.** This Advisory Circular is effective on 17 July 2008.
- 6. REFERENCES.** ANO paragraph 10, AN C5, SAR Chapter 4.1, AOCR Chapter 8 and AC-145-3(2).
- 7. INTRODUCTION.** The Air Navigation Order states that a Singapore aircraft shall not be flown if the aircraft or a component fitted on the aircraft has been overhauled, repaired, replaced, modified or maintained, unless a certificate of release to service or an equivalent release document has been issued for that aircraft or component.

For the overhaul, repair, inspection and modification of aircraft, components or equipment and replacements of components and equipment, the work must be undertaken in accordance with approved conditions and procedures; approved components, parts or material must be used and a certificate of release to service must be issued on completion of the work.

In the aviation industry, owners of aircraft parts may be involved in the usage of parts removed from an aircraft no longer in service; parts recovered from an aircraft involved in an accident; or the disposal of scrap parts. This AC provides information and guidance to persons and organisations involved in the maintenance, distribution, sale or control of such aircraft parts. The need to ensure that parts installed on an aircraft meet the design specification and are serviceable is self-evident. The installation of any part failing to meet the intended design requirements degrades those requirements, leading to a degradation of airworthiness.

8. PARTS REMOVED FROM AN AIRCRAFT NO LONGER IN SERVICE

- 8.1 Aircraft withdrawn from service are often used as a source of spare parts, a process sometimes described as “parting out”. These parts, although serviceable at the time the aircraft was placed in storage, may have been affected adversely by storage conditions, including especially environmental factors, or by the length of storage.
- 8.2 It is important that the part removal process be planned and controlled in a manner as close as possible to that adopted for routine maintenance tasks on in-service aircraft. The following points in particular should be considered:
- (a) The means by which the part is removed should be in accordance with the normal maintenance data (e.g. maintenance manuals), using the tooling specified;
 - (b) Adequate access equipment should be provided;
 - (c) If conducted in the open, disassembly should cease during inclement weather;
 - (d) All work should be carried out by appropriately qualified maintenance personnel;
 - (e) All open connections should be blanked; and
 - (f) A protected and enclosed quarantine storage area for the parts being removed should be provided in the immediate vicinity of the work area.
- 8.3 An assessment for condition and eventual return to service of each removed part will need to be conducted by a suitably approved organisation. The extent of the work necessary before the part is returned to service may range from a simple external visual inspection to a complete overhaul.

9. PARTS RECOVERED FROM AN AIRCRAFT INVOLVED IN ACCIDENTS

- 9.1 When an aircraft has been involved in an accident, the title to the salvage may pass from the insured owner to the other person (e.g. aircraft insurers) and this salvage may be offered for sale either complete or as separate aircraft item in an “as is, where is” condition. Though such items may not manifest any visual evidence of damage, distortion or change of characteristics, a serious airworthiness hazard could result from their use if special precautions are not taken. While some items may be totally unaffected by the accident or incident which caused the aircraft to be declared as salvage, it is essential to obtain clear evidence that this is the case. If such evidence cannot be obtained, the item shall not be returned to service.
- 9.2 Before overhaul and reinstallation can be considered, all such items must therefore be subject to competent assessment and inspection in the light of adequate knowledge of the circumstances of the accident, subsequent storage and transport conditions, and with evidence of previous operational history obtained from valid airworthiness records. Confirmation of this assessment in the form of an airworthiness release is essential.
- 9.3 In particular, if a crash load is sufficient to take any part above its proof strength, residual strains may remain which could reduce the effective strength of the item or otherwise impair its functions. Loads higher than this may cause the item to crack, with an even more dangerous potential. Further, a reduction in strength may be caused by virtue of the change of a material's characteristics following overheating from a fire. It is therefore of the utmost importance to establish that the item is neither cracked, distorted or overheated. The degree of distortion may be difficult to assess if the precise original dimensions are not known, in which case there is no option but to reject the item. Any suggestion of overheating would be cause for a laboratory investigation into significant change of material properties.

10 DISPOSAL OF SCRAP PARTS AND MATERIALS

10.1 Those responsible for the disposal of scrapped aircraft parts and materials should consider the possibility of such parts and materials being misrepresented and sold as serviceable at a later date. Caution should be exercised to ensure that the following types of parts and materials are disposed of in a controlled manner that does not allow them to be returned to service:

- (a) Parts with non-repairable defects, whether visible or not to the naked eye;
- (b) Parts that are not within the specifications set forth by the approved design, and cannot be brought into conformity with applicable specifications;
- (c) Parts and materials for which further processing or rework cannot make them eligible for certification under an approved system;
- (d) Parts are subjected to unacceptable modifications or rework that is irreversible;
- (e) Life-limited parts that have reached or exceeded their life limits, or have missing or incomplete records;
- (f) Parts that cannot be returned to an airworthy condition due to exposure to extreme forces or heat (see paragraph 8 and 9 above); and
- (g) Principal structural elements removed from a high cycle aircraft for which conformity cannot be accomplished by complying with the mandatory requirements applicable to aging aircraft.

10.2 Scrapped parts should always be segregated from serviceable parts and when eventually disposed of should be mutilated or clearly and permanently marked. This should be accomplished in such a manner that the parts become unusable for their original intended use and unable to be reworked or camouflaged to provide the appearance of being serviceable.

10.3 When scrapped parts are disposed of for legitimate non-flight use, such as training and education aids, research and development, or for non-aviation applications, mutilation is often not appropriate. In such cases, the parts should be permanently marked indicating that they are not serviceable; alternatively, the original part number or data plate information can be removed or record kept of the disposition of parts.