



Australian Government
Department of Defence



Defence Aviation Safety Authority

ADVISORY CIRCULAR

AC 007/2018

LINE AND BASE MAINTENANCE

U10446038

V1.0 – 21 September 2018

An Advisory Circular is issued by the Authority to promulgate important information to the Defence Aviation community, but does not mandate any action. This includes informing the community on aviation safety / airworthiness matters, information that enhances compliance understanding for existing regulation, or policy guidance for aviation issues not yet regulated that requires further understanding.

Audience

This Advisory Circular (AC) is relevant to:

- entities regulated by the Defence Aviation Safety Regulations (DASR) exercising roles or responsibilities associated with Continuing Airworthiness.
- personnel working in DASR 145 maintenance organisations who are responsible for determining whether a maintenance activity constitutes line or base maintenance.
- personnel responsible for defining line and base maintenance in the Maintenance Organisation Exposition (MOE).

Purpose

The purpose of this Advisory Circular (AC) is to define the types of maintenance activities constituting line and base maintenance and to describe the intended outcomes in relation to line and base maintenance as interpreted by Defence Aviation Safety Authority (DASA). This circular is important as DASR brings revised language and concepts to the Defence aviation environment. While retaining the fundamental tenets of the previous system, DASR aims to align the Defence aviation safety framework with contemporary aviation safety conventions.

Further information

For further information on this AC, contact:

The Directorate of Aviation Regulation, [DAVREG-DASA](#).

Status

This AC will remain current until cancelled by DASA.

Version	Date Approved	Approved By	Details
1.0	September 2018	DG DASA	Initial release

Contents

Audience	i
Purpose	i
Further information	i
Status.....	ii
1 Reference material	1
1.1 Acronyms.....	1
1.2 References	1
2 Introduction	2
2.1 Background.....	2
2.2 Organisation responsibilities	2
2.3 When to assess the maintenance activity	3
3 Differentiating Line and Base Maintenance	4
3.1 Assessment of the intended scope of work (initial/change of approval).....	4
3.2 Examples of maintenance activities considered to be base maintenance ...	6
3.3 Assessment of maintenance task by an already approved maintenance organisation	7

1 Reference material

1.1 Acronyms

The acronyms and abbreviations used in this AC are listed in the table below.

Acronym	Description
AC	Advisory Circular
AMP	Aircraft Maintenance Program
AOG	Aircraft on Ground
DASA	Defence Aviation Safety Authority
DASR	Defence Aviation Safety Regulation
EASA	European Aviation Safety Agency
EMAR	European Military Airworthiness Requirements
FC	Flight Cycles
FH	Flight Hours
MAO-AM	Military Air Operator Accountable Manager
AMO	Approved Maintenance Organisation (DASR 145)
MOE	Maintenance Organisation Exposition
MPD	Maintenance Planning Document
MSG	Maintenance Steering Group
SB	Service Bulletin
TCH	Type Certificate Holder

1.2 References

- 1.2.1 AAP 8000.011 Defence Aviation Safety Regulations
- 1.2.2 EASA User Guide: Foreign Part 145 approvals – Aircraft Line Maintenance – 22 Oct 2015

Unless specified otherwise, all regulation references in this AC refer to the Defence Aviation Safety Regulation (DASR).

2 Introduction

2.1 Background

2.1.1 The Defence Aviation Safety Regulations (DASR) requires individual DASR 145 Approved Maintenance Organisations (AMOs) to define their own line and base maintenance activities in their Maintenance Organisation Exposition (MOE). Feedback from the regulated community indicates that there is insufficient DASR guidance on what types of activities constitute line and base maintenance. The DASR Glossary of Terms describes line and base maintenance as:

- a. **Line Maintenance:** Carried out before flight to ensure that the aircraft is fit for the intended flight.
- b. **Base Maintenance:** Maintenance tasks falling outside the criteria for line Maintenance.

2.1.2 A more detailed definition of aircraft line maintenance is provided in AMC 145.A.20, together with a list of activities which “may” be considered as line maintenance. The word “may” is used because it is not possible to establish a provision giving a strict border line between line and base maintenance, having general applicability to all cases.

2.1.3 To assist civil MOs, the European Aviation Safety Agency (EASA) has developed an EASA 145 User Guide chapter on ‘Privileges and limitations of line maintenance’. This guide provides detailed guidance on what constitutes line and base maintenance. This AC is has been developed based on the EASA User Guide to provide an EASA aligned approach to guide DASR 145 MOs in defining line and base maintenance.

2.2 Organisation responsibilities

2.2.1 The maintenance organisation should ensure prior to any intended maintenance event that the activity can be carried out under its line maintenance scope of approval (refer to AMC 145.A.20) and does not fall under Section 3.2 ‘Examples of maintenance activities considered to be base maintenance’ of this AC.

2.2.2 This assessment may not need to take place each time, but be based on already established MOE procedures (i.e. the fact that a daily check is a line maintenance task is obvious and does not need to be assessed each time).

- 2.2.3 Even if this assessment confirms that the activity is line maintenance, the maintenance organisation should also verify if this activity requires other means than the ones already in use at a line maintenance location (e.g. use of a hangar, platforms, stands, etc).

2.3 When to assess the maintenance activity

- 2.3.1 The maintenance organisation`s assessment to decide if any maintenance event falls within the definition of line or base maintenance, may be needed in two different situations:
- a. for an initial/change of approval, when evaluating the scope of work the maintenance organisation is applying for (refer Section 3.1); or
 - b. for an already approved maintenance organisation, when evaluating if maintenance requested by the customer (e.g. a new SB, defect rectification or work package requested by the customer, etc) falls within the approved line maintenance scope of work.

3 Differentiating Line and Base Maintenance

3.1 Assessment of the intended scope of work (initial/change of approval)

3.1.1 It is the responsibility of the maintenance organisation to demonstrate to DASA that the intended scope of work may be carried out in a line maintenance environment, under its line maintenance scope of approval. The main criterion for this assessment is to consider the level of maintenance to be carried out under the line maintenance scope of approval, where the following general criteria apply:

- a. **Trouble shooting, Defect Rectification.** Those unscheduled tasks required for the daily operation of an Aircraft and not falling in Section 3.2 'Examples of maintenance activities considered to be base maintenance';
- b. **Minor scheduled line maintenance.** Those scheduled tasks not exceeding the weekly check as specified in the Aircraft Maintenance Program (AMP);
- c. **Scheduled checks.** Those scheduled tasks which exceed the weekly check (or equivalent as determined by the Authority). In this case, the organisation needs to analyse each of the routine tasks intended to be included in the line maintenance scope of work and identify a clear limit. This assessment needs to be performed having as reference the Type Certificate Holder (TCH) data such as the manufacturer's Maintenance Planning Document (MPD) and/or the operator's AMP. The outcome of this exercise is to identify the intended limitation of the line maintenance scope of approval, in terms of scheduled maintenance checks. In particular, the following is expected:
 - (i) Depending on the AMP logic (i.e. MSG 2, MSG 3, etc) a clear limitation to the line maintenance scope of work may be normally expressed in one of the following ways:
 - “up to and excluding X check” (i.e. X= R1, R2, etc) for a MPD, where letter checks are identified;
 - “up to and excluding “X FH / Y FC / Z calendar time”, for a MPD, where progressive task intervals are defined in terms of FH/FC/calendar time (i.e. X=3000FH, Y=750 FC, Z=12 months, etc);

- (ii) The identified limit, to be indicated in the MOE, should be such that all the related routine/scheduled tasks are excluding any of the tasks listed in Section 3.2 'Examples of maintenance activities considered to be base maintenance';
- (iii) A "decision making process" (refer Section 3.1.2 for example) needs to be established in the MOE in order to assess:
 - the need to access the hangar (even if the activity is permitted under a line maintenance scope of approval), considering in particular the type of aircraft, the maintenance event type/complexity, the environmental and weather conditions;
 - any work order / work package received from the customer operator to ensure it may be fully performed under a line maintenance scope of approval, taking into account additional works to the original work package that may be added, leading out to the line maintenance scope of work, such as:
 - addition of previously deferred maintenance tasks; or
 - defects raising from the routine tasks (these defects are not known in advance, however, the related risk in terms of number and level of defects needs to be taken into account and estimated in advance).

3.1.2 **Example of 'decision making process'.** A R1 maintenance check on the Boeing Business Jet (BBJ) aircraft type is normally considered "line maintenance" when the routine tasks are assessed as per the manufacturer MPD/operator AMP. Therefore a maintenance organisation may be approved to perform this check under a line maintenance scope of work. However, a work order to perform the "R1 check", where the customer operator would request the performance of works in addition to the "R1" routine tasks, such as the addition of ADs, SBs, deferred tasks, will need to be carefully assessed by the maintenance organisation with the use of the "decision making process".

3.1.3 This type of maintenance check may easily fall within the examples given in Section 3.2 'Examples of maintenance activities considered to be base maintenance' having the result to be considered as base maintenance and being outside the maintenance organisation scope of work. In such a case, the outcome of the "decision making process", may be for example:

- a. The impossibility to accept such work order from the operating organisation, being outside the scope of work of the maintenance organisation; or

- b. to agree with the operating organisation a revised work order, to remove the works which have been identified as base maintenance tasks (e.g. removal of a SB which was requiring extensive disassembly and modification of flight controls, etc).

3.2 Examples of maintenance activities considered to be base maintenance

- 3.2.1 When any of the following tasks are required to be carried out (regardless if contained in a scheduled maintenance check or arising from a defect rectification/AOG situation), a base maintenance scope of approval is needed:
- a. High number of different type of tasks to be carried out, even if taken singularly those tasks may still fall under the definition of line maintenance (i.e. a combination of routine task cards, non-routine task cards issued following defects discovered during the check, out of phase tasks, deferred items from previous maintenance, minor repairs, minor modifications, component replacement, etc). Such cases require base maintenance production planning support and/or a base maintenance release to service process (category C Certifying Staff supported by B1/B2 support staff) in order to ensure that all the maintenance ordered has been carried out before issuing the CRS;
 - b. Replacement of any major component where the related maintenance procedures address the need of a hangar environment requiring special ground support equipment and/or structured production planning and/or complex and lengthy maintenance, such as for example a full landing gear replacement, simultaneous replacement of two engines, etc;
 - c. Any scheduled maintenance task (i.e. routine task from the AMP) which requires extensive disassembly of the aircraft and/or extensive in depth inspection;
 - d. Major repairs and/or major modifications;
 - e. Trouble shooting and/or defect rectification requiring special ground support usually relevant to base maintenance (e.g. special equipment, structured production planning, complex and lengthy maintenance);
 - f. A scheduled maintenance event, which in the planning phase has been already identified as significant in terms of duration and/or man-hours (i.e. an aircraft down time above 72 hours or four shifts, whichever is less);

- g. A work package requiring a complex team composition in terms of high number and categories (avionic, structure, cabin, NDT qualification and skills, etc) of staff involved per shift; or
- h. The management of the event by B1 and B2 support staff and the release by a C certifying staff.

3.2.2 For AMOs that do not hold a base maintenance approval, the AMO remains responsible to ensure that even if each individual work order constitutes a line maintenance activity, a maintenance event cumulating several of these work orders remains within the AMO's line maintenance scope of approval.

3.3 Assessment of maintenance task by an already approved maintenance organisation

3.3.1 For AMOs that do not hold a base maintenance approval, the AMO remains responsible to assess if any maintenance requested by the operating organisation falls within the approved line maintenance scope of work. This assessment is expected to be performed based on the "decision making process" described in Section 3.1.1.c.(iii).

Original Signed

September 2018

Director General – Defence Aviation Safety Authority