

## GR No. 10                      Painting of Aircraft

(Previously Issued as Airworthiness Notice No. 38, Issue 5, 28 September 2004.)

**NOTE:** This text dated 21 July 2017 is a complete replacement of previous versions.

### 1                      **Applicability**

This Generic Requirement is applicable to all UK registered aircraft issued with a Certificate of Airworthiness or Permit to Fly.

### 2                      **Introduction**

Experience has shown that control has to be exercised over the painting of aircraft exterior surfaces. The removal and application of paint is only part of the process, Design Approval Holders (DAH) instructions for surface finish changes also include maintenance requirements. These could include, panel/component removal and refit, structural inspections, function checks and aircraft weighing. The term painting embraces the associated processes of stripping and such terms as refinishing and refurbishing, as well as preparation, inspection and the return to service. Satisfactory maintenance control must be exercised over the painting of an aircraft.

It is recommended that aircraft issued with a Permit to Fly are subject to the same practices set out in this Generic Requirement and that a Permit Maintenance Release is issued on completion of changes to the external finish.

### 3                      **Compliance**

3.1 All aircraft defined in paragraph 1 which are to have their external finish altered, shall comply with this Generic Requirement.

3.2 The proposed paint task must be assessed for its impact on airworthiness, taking into account the aircraft manufacturer's published requirements and precautions and the content of this GR.

3.3 The task of painting an aircraft or making a change to its surface finish, such as paint removal and subsequent polishing, is a maintenance task and consequently a Certificate of Release to Service must be issued upon completion of the process.

3.4 Painting requires the use of the correct equipment and control over the environment where painting is performed. Simple paintwork repairs and paint touch-up of small areas may be completed in a Line Maintenance environment, where environmental conditions are suitable. All other tasks must be carried out in a Base Maintenance environment.

**NOTE:** Line Maintenance is defined as any maintenance that is carried out before flight to ensure that the aircraft is fit for the intended flight. (This includes minor repairs and modifications which do not require extensive disassembly and can be accomplished by simple means.) Maintenance tasks falling outside of these criteria are considered to be Base Maintenance.

3.5 The owner/operator, or its continuing airworthiness management organisation must ensure that the aircraft is placed under the responsibility and control of a licensed engineer or an approved maintenance organisation as appropriate for the aircraft. This individual/organisation will be responsible for the painting process and any associated

maintenance, to ensure that the task is completed in accordance with approved data and to subsequently to issue the Certificate of Release to Service or Permit Maintenance Release.

**a) For Aircraft eligible for:**

- 1 A UK National Permit to Fly must be placed under the responsibility and control of a person authorised in accordance with CAP 553 (BCAR A) Chapter A3-7 or an authorised inspector within an approved organisation such as the Light Aircraft Association (LAA) or British Microlight Aircraft Association (BMAA).
- 2 An EASA permanent Permit to Fly must be placed under the responsibility and control of a person that meets the requirements as described in the approved Flight Conditions.

**b) For Aircraft eligible for a Certificate of Airworthiness**

- 1 ELA1<sup>1</sup> aircraft and non-EASA aircraft up to 5700kg may be placed under the responsibility and control of an appropriately approved licenced engineer, holding the relevant type rating for the aircraft being painted, or;

**NOTE:** For aircraft placed under the responsibility of an authorised person or licenced engineer. The individual must ensure that the paint task is carried out in an appropriate facility/environment. They are responsible for all the work performed, including all related maintenance tasks, all inspections (pre/during/post paint) plus any functional checks, and to issue the release to service on completion.

- 2 Non-complex motor powered aircraft may be placed under the responsibility and control of an appropriately approved maintenance organisation that includes the aircraft type within the scope of their approval.
- 3 A complex motor powered aircraft<sup>2</sup> must be placed under the responsibility and control of an appropriately approved maintenance organisation that includes the aircraft type within the scope of their approval.

**NOTE:** Depending on whether the aircraft is eligible for a National or EASA Certificate of Airworthiness, the choice of maintenance organisation are:

- i) Contract a Part 145 / BCAR A8-23 'A' rated base maintenance organisation, with an in-house paint facility that is approved to work on the specific aircraft type. The organisation must have, appropriate facilities, sufficient competent personnel, tooling/equipment, processes and procedures in place to complete the task, or;
- ii) Contract a Part 145 / BCAR A8-23 'A' rated base maintenance organisation that is approved to work on the specific aircraft type but does not have an in-house paint facility. The contracted maintenance organisation will need to subcontract the paint task to an aircraft paint facility in accordance with approved procedures. The Part 145 / BCAR A8-23 organisation retains responsibility for the all work performed. During the period when the approved organisation is subcontracting work it must extend its quality system to the paint facility, taking responsibility for the facilities, tooling, equipment, data, the competence of all staff involved in and overseeing the painting task, or;

<sup>1</sup> ELA 1 is defined in Commission Regulation (EU) No 1321/2014

<sup>2</sup> Complex Motor Powered Aircraft is defined in Regulation (EU) 2018/1139 and Schedule 1 of the Air Navigation Order 2016. Non complex motor-powered aircraft is to be construed accordingly.

- iii) For non-complex motor powered aircraft contract a Part M Subpart F / BCAR A8-24 approved maintenance organisation, with an in-house paint facility that is approved to work on the specific aircraft type. The organisation must have, appropriate facilities, sufficient competent personnel, tooling/ equipment and processes and procedures in place to complete the task, or;
  - iv) For non-complex motor powered aircraft contract a Part M Subpart F / BCAR A8-24 approved organisation with the aircraft type on its approval but which does not have an in-house paint facility. The organisation may arrange for the task to be carried out by a non-approved organisation subject to appropriate procedures being included in their maintenance organisation manual.
- 3.6 In all cases it is the responsibility of the maintenance organisation to ensure that all work is completed in accordance with the Design Approval Holder's instructions and to issue the Certificate of Release to Service or Permit Maintenance Release, as appropriate on completion of the task. They are also responsible for ensuring that the paint facility meets all the relevant requirements.
- 3.7 Specialist painting organisations are not entitled to issue any certification in respect of the airworthiness status of an aircraft following painting, unless the organisation also holds an appropriate 'A' rated maintenance organisation approval.
- 3.8 Approved maintenance organisations with in-house painting facilities must ensure that the process and procedures for painting aircraft are included in their exposition.

#### **4 Additional information**

- 4.1 Examples of likely damage and hazards that must be avoided include:
- a) Damage caused during preparation work which could adversely affect the structural integrity of the aircraft, such as:
    - reduction in fastener head size by uncontrolled use of power tools and abrasive media;
    - surface scratching by use of paint scrapers;
    - use of incorrect tools and equipment to remove paint and aerodynamic sealant from lap and butt joints;
    - degradation of composite or plastic surfaces by abuse of particle blasting techniques;
    - aluminium surface contamination by steel wool particles; and
    - use of incorrect chemical paint strippers.
  - b) Damage to transparencies, composites and sealants by solvent and paint removers, due to inadequate protection and/or the retention of these products in crevices.
  - c) Inadvertent deletion of placards and markings, failure to renew them, or failure to comply with the required specification for, e.g. Registration Marks, mandatory door markings and break in zone identification.
  - d) Blockage of vents, drains and other openings by debris, masking tape and residues of paint remover, paint or particle blast material; the possible ingress of water into fuel tanks through vent apertures or past filler cap seals when using high pressure hoses for washing down.
  - e) Loss of correct mass balance moments on flight control surfaces.

- f) Uncontrolled variations to aircraft basic weight.
- g) Variation to surface profile and aerodynamic smoothness at critical points such as surface leading edges, by the uncontrolled use of fillers or excessive paint thickness.
- h) Inadequate knowledge of the manufacturers' finishing schemes for antennas and radomes.
- i) Overly aggressive paint stripping which could damage the sealant around air data ports/orifices on RVSM compliant aircraft (air flow over these areas is critical for the height keeping capability of the aircraft).
- j) For fabric coverings, special procedures which ensure proper adhesion and protection from the effects of ultra-violet light. Aggressive removal of the old finish may cause fabric damage. The exposed fabric should be assessed for its serviceability prior to refinishing. The advice published by the manufacturer of synthetic fabric would have to be made available and complied with in full as well as that of the aircraft manufacturer.
- k) The effects of excessive paint thickness on the application of non-destructive testing techniques using eddy current and ultrasonic methods.
- l) Jamming of flight control and landing gear mechanisms by preparation treatments and paint.

#### 4.2 Examples of finishing work:

- a) Complete repainting from bare metal or fabric, or over coating an existing finish.
- b) Reversion from paint finish to polished metal.
- c) Repainting or reversion to bare metal on flying control surfaces or supercritical lifting surfaces.
- d) Extensive polishing of bare metal finish using abrasive polishes where skin thickness or fastener head dimensions are critical, particularly where polishing is to be a repetitive requirement.
- e) Finishing of radomes, antennas and composite materials used in Primary and Secondary structure.
- f) Painting in areas involving critical orifices or mandatory markings.
- g) Any alteration to the finish of Helicopter main rotor and tail rotor blades or any other critical parts.

**NOTE:** The above list of examples is not intended to be exhaustive.

4.3 Operators and maintenance organisations are reminded that the use of self adhesive decals as an alternative to painting may totally preclude the effective accomplishment of both visual and eddy current inspections. Operators and maintenance organisations need to address the impact on structural inspection tasks when using such decals and ensure that the aircraft maintenance programme requires their removal at the appropriate time.

4.4 It may benefit the owner to anticipate any scheduled structural inspections including Non-Destructive Inspections, which could be better accomplished following the paint removal.

4.5 In all cases, the responsible maintenance organisation or the appropriately approved licenced engineer must have knowledge of painting processes. They must ensure that painting is carried out in the correct environment, (large areas or complete aircraft should only be painted inside a facility) there is adequate control of contaminants, emissions, waste disposal, ambient conditions for curing, humidity controls, and observation of cure times.