GR No. 6 Electrical Generation Systems – Bus-Bar Low Voltage Warning Single-Engined Aircraft With a UK Certificate of Airworthiness

(Previously Issued as Airworthiness Notice No. 88, Issue 3, 29 October 2001.)

1 Introduction

1.1 When Generic Requirement No. 4 (as Airworthiness Notice No. 82) was introduced in June 1973, it was considered inappropriate to impose the whole or part of those requirements on single-engined aircraft. Since that time, systems which were once fitted only in the more complicated twin-engined general aviation aircraft, have now been developed and fitted to single-engined aircraft. Thus, greater reliance is being placed on the integrity of the electrical power supplies for such aircraft.

1.2 As a result of the above, this Requirement was published as Airworthiness Notice 88, Issue 1, in December 1986. This required certain single-engined aircraft to be equipped with low voltage warning devices to give indication to the pilot of when the aircraft's battery commences to support all or part of the electrical load of the aircraft. Compliance was required by 1 January 1988.

1.3 Since that time, a number of incidents and accidents have continued to occur on single-engined aircraft equipped with electrically operated systems. Investigations have shown that a general misunderstanding exists as to the categories of single engined aircraft (depending upon the level of equipment installed) that have to be equipped with low voltage warning devices.

1.4 The purpose of this Requirement is to extend and clarify the need for a clear and unmistakable warning of the loss of generated electrical power (to the main bus-bar) as detailed in paragraph 2.1.1. This will be by the introduction, where necessary, of retrospective modifications.

2 Requirements

2.1 For all single-engined aircraft with a UK Certificate of Airworthiness (not already modified to meet the requirements of Issue 1 of Airworthiness Notice No. 88) equipped with an engine driven electrical generating system, compliance with paragraphs 2.2 and 2.3, or with an approved alternative, providing an equivalent level of airworthiness, is required not later than 31 December 1992, or next annual check whichever is the latest.

2.1.1 Where an aircraft is equipped to operate under day VMC conditions only and the loss of the generated electrical power could not prejudice safe flight and landing, the requirements of this GR are considered to be satisfied without the provision of a specific warning.

2.2 A clear and unmistakable red visual warning shall be provided, within the pilot's normal scan of vision, to give indication of the reduction of the voltage at the aircraft bus-bar to a level where the battery commences to support all or part of the electrical load of the aircraft.

2.3 Guidance shall be given in the appropriate aircraft manual(s) on any actions to be taken by the pilot should the warning operate. (See also paragraph 3.2.)

3 Additional Information

3.1 The recommended voltage levels for operating the warning required under paragraph 2.2 of this Requirement are 25 volts to 25·5 volts for a nominal 24 volt dc system and 12·5 volts to 13 volts for a nominal 12 volt dc system.

3.2 The battery duration should be sufficient to make a safe landing and should be not less than 30 minutes, subject to the prompt completion of any drills.This duration need only be a reasonable estimate and not necessarily calculated by a detailed electrical load analysis. However, when making this estimate, only 75% of the battery nameplate capacity should be considered as available because of loss of battery efficiency during service.

3.3 Owners and operators are recommended to contact the aircraft manufacturer or main agent for information regarding suitable means of compliance with this Requirement.

3.4 Owners and operators may, on application, submit proposals for their own means of compliance and should refer to the guidelines laid down in CAP 562, Civil Aircraft Airworthiness Information and Procedures (CAAIP) Leaflet 24-50.