

# Civil Aviation Amendment Order (No. R9) 2004

I, WILLIAM BRUCE BYRON, Director of Aviation Safety, on behalf of CASA, issue the following Civil Aviation Order under subregulation 235 (2) of the *Civil Aviation Regulations 1988*.

**[Signed Bruce Byron]**

Bruce Byron  
Director of Aviation Safety and  
Chief Executive Officer

2 December 2004

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**1 Name of Order**

This Order is the Civil Aviation Amendment Order (No. R9) 2004.

**2 Commencement**

This Order commences on gazettal.

**3 Replacement of section 20.7.4 of the Civil Aviation Orders**

Section 20.7.4 of the Civil Aviation Orders is omitted and a new section substituted as set out in Schedule 1.

# Schedule 1      Substitution of section 20.7.4 of the Civil Aviation Orders

## SECTION 20.7.4

### AEROPLANE WEIGHT AND PERFORMANCE LIMITATIONS — AEROPLANES NOT ABOVE 5 700 KG — PRIVATE, AERIAL WORK (EXCLUDING AGRICULTURAL) AND CHARTER OPERATIONS

#### 2      APPLICATION

This section applies to aeroplanes having a maximum take-off weight not in excess of 5700 kg engaged in regular public transport operations (single-engine aeroplanes only), private operations, aerial work operations (excluding agricultural operations) and charter operations, unless CASA specifies that sections 20.7.1 or 20.7.2 are to be applied.

#### 3      DEFINITIONS

##### 3.1      In this section:

*approved foreign flight manual*, in relation to an aeroplane, means the flight manual approved by the relevant regulatory aviation authority of the country where the aeroplane is, or was, manufactured.

*landing distance available* means the distance specified by CASA as being the effective operational length available for use by aircraft for landing at Government and Licensed Aerodromes or the distance available for landing on an authorised landing or alighting area.

*manufacturer's data manual*, in relation to an aeroplane, means a publication (however described) produced by the manufacturer of the aeroplane as a guide for the flight crew in the operation of the aeroplane.

*pressure height* means the height registered on an altimeter with the sub-scale set to 1013.2 hPa.

*take-off safety speed* means the speed specified on the aeroplane take-off chart being the minimum speed to which an aeroplane must be accelerated in establishing the take-off distance required.

*take-off distance available* means the distance specified by CASA as being the effective operational length available for use by aircraft for take-off at Government or Licensed Aerodromes or the distance available for take-off on an authorised landing or alighting area.

$V_S$  is the symbol used to denote the minimum speed in a stall or the minimum steady flight speed in the aeroplane configuration in which  $V_S$  is being used.

#### **4 TAKE-OFF WEIGHT LIMITATIONS**

- 4.1 An aeroplane must not take off at a weight in excess of the least of the weights determined in accordance with subparagraphs (a) to (d):
- (a) a weight at which the take-off distance required under subsection 6 for the pressure height, temperature, runway slope (if in excess of 1%) and wind component along the runway, is equal to or less than the take-off distance available in the direction of take-off. Approved declared conditions may be used instead of actual pressure height and temperature;
  - (b) a weight which will permit compliance with the take-off climb requirements specified in subsection 7 taking into account ambient temperature and pressure height. Approved declared temperature and pressure height may be used instead of ambient conditions;
  - (c) a weight which will permit compliance with the en-route climb requirements specified in subsection 8;
  - (d) a weight which, allowing for normal consumption of fuel and oil in flight and taking into account either the forecast temperature and pressure or approved declared conditions, will permit compliance with the landing distance limitations specified in subsection 10 related to the longest available landing length under conditions of zero wind.

#### **5 LANDING WEIGHT LIMITATIONS**

- 5.1 Except in an emergency, an aeroplane must not land at a weight in excess of the least of the weights determined in accordance with subparagraphs (a) and (b):
- (a) a weight at which the landing distance required in accordance with subsection 10 for the pressure height, temperature, runway slope (if in excess of 1%), and wind component along the runway at the time of landing, is equal to or less than the landing distance available in the direction of landing. Approved declared conditions may be used instead of actual pressure height and temperature;
  - (b) a weight which will permit compliance with the landing climb requirements specified in subsection 9, taking into account the elevation of the aerodrome of landing instead of actual pressure height and temperature.

## **6 TAKE-OFF DISTANCE REQUIRED**

- 6.1 Subject to paragraph 6.3, the take-off distance required is the distance to accelerate from a standing start with all engines operating and to achieve take-off safety speed at a height of 50 feet above the take-off surface, multiplied by the following factors:
- (a) 1.15 for aeroplanes with maximum take-off weights of 2 000 kg or less;
  - (b) 1.25 for aeroplanes with maximum take-off weights of 3 500 kg or greater; or
  - (c) for aeroplanes with maximum take-off weights between 2 000 kg and 3 500 kg, a factor derived by linear interpolation between 1.15 and 1.25 according to the maximum take-off weight of the aeroplane.
- 6.2 For aeroplanes operated on land, take-off distances are to be determined for a level short dry grass surface. For aeroplanes operated on water, take-off distances are to be determined taking into account the maximum crosswind component and the most adverse water conditions for the aeroplane type.
- 6.3 Where there is an approved foreign flight manual or a manufacturer's data manual for an aeroplane that sets out the take-off distance required for that aeroplane, then that aeroplane must be operated so as to comply with either the requirements set out in paragraphs 6.1 and 6.2 or the requirements relating to take-off distance set out in either of those manuals.

Note: The data contained in some manufacturers' data manuals is unfactored and makes no allowance for degraded aircraft performance. Where there is a considerable difference between the data in a manufacturer's data manual and the data in the flight manual for the aeroplane then the manufacturer's data should be treated with caution.

## **7 TAKE-OFF CLIMB PERFORMANCE**

- 7.1 In the take-off configuration with landing gear extended, an aeroplane must have the ability to achieve a climb gradient of 6% at take-off safety speed, without ground effect, and with all engines operating at take-off power.

## **8 EN-ROUTE CLIMB PERFORMANCE**

- 8.1 Multi-engined aeroplanes engaged in charter operations under the Instrument Flight Rules or aerial work operations under the Instrument Flight Rules must have the ability to climb with a critical engine inoperative at a gradient of 1% at all heights up to 5 000 feet in the standard atmosphere in the following configuration:
- (a) propeller of inoperative engine stopped;
  - (b) undercarriage (if retractable) and flaps retracted;

- (c) remaining engine(s) operating at maximum continuous power;
  - (d) airspeed not less than  $1.2 V_S$ .
- 8.2 Multi-engined aeroplanes (other than those specified in paragraph 8.1) must have the ability to maintain height at all heights up to 5 000 feet in the standard atmosphere in the configuration specified in subparagraphs 8.1 (a), (b), (c) and (d).
- 8.3 Single-engined aeroplanes must have the ability to climb at a gradient of 4.5% at an airspeed not less than  $1.2V_S$  at all heights up to 5 000 feet in standard atmospheric conditions with the engine operating at maximum continuous power, undercarriage (if retractable) and flaps retracted.

## **9 LANDING CLIMB PERFORMANCE**

- 9.1 In the landing configuration with all engines operating at take-off power an aeroplane must have the ability to climb at a gradient of 3.2% in standard atmospheric conditions at a speed not exceeding  $1.3V_S$ .

## **10 LANDING DISTANCE REQUIRED**

- 10.1 Subject to paragraphs 10.3 and 10.4, an aeroplane must not land unless the landing distance available is equal to or greater than the distance required to bring the aeroplane to a complete stop or, in the case of aeroplanes operated on water, to a speed of 3 knots, following an approach to land at a speed not less than  $1.3V_S$  maintained to within 50 feet of the landing surface. This distance is to be measured from the point where the aeroplane first reaches a height of 50 feet above the landing surface and must be multiplied by the following factors:
- (a) 1.15 for aeroplanes with maximum take-off weights of 2 000 kg or less;
  - (b) 1.43 for aeroplanes with maximum take-off weights of 4 500 kg or greater;
  - (c) for aeroplanes with maximum take-off weights between 2 000 kg and 4500 kg, a factor derived by linear interpolation between 1.15 and 1.43 according to the maximum take-off weight of the aeroplane.
- 10.2 For aeroplanes operated on land, landing distances are to be determined for a level short dry grass surface. For aeroplanes operated on water, landing distances are to be determined on flat broken water.
- 10.3 Subject to paragraph 10.4, where there is an approved foreign flight manual or a manufacturer's data manual for an aeroplane that sets out the landing distance required for that aeroplane, then that aeroplane must be operated so as to comply with the requirements set out in

paragraphs 10.1 and 10.2 or the requirements relating to landing distance set out in either of those manuals.

Note: The data contained in some manufacturers' data manuals is unfactored and makes no allowance for degraded aircraft performance. Where there is a considerable difference between the data in a manufacturer's data manual and the data in the flight manual for the aeroplane then the manufacturer's data should be treated with caution.

10.4 This subsection does not apply in the case of an emergency.

## **12 AEROPLANE CONFIGURATION AND PROCEDURES**

12.1 An operator of a multi-engined aeroplane engaged in charter operations or aerial work operations, and an operator of a single-engine aeroplane engaged in RPT operations under the Instrument Flight Rules, must include in his or her operations manual the procedures to be followed by the pilot in the event of an engine failure.