



Australian Government

Civil Aviation Safety Authority

I, MARK ALAN SKIDMORE, Director of Aviation Safety, on behalf of CASA, make this instrument under regulation 45.025 of the *Civil Aviation Safety Regulations 1998*.

[Signed M. Skidmore]

Mark Skidmore AM
Director of Aviation Safety

23 May 2016

Part 45 Manual of Standards Instrument 2016

CHAPTER 1 PRELIMINARY

1 Name of instrument

This instrument is the *Part 45 Manual of Standards Instrument 2016*.

2 Commencement

This instrument commences on 4 July 2016, the date on which the amendments to remake Part 45 of the *Civil Aviation Safety Regulations 1998 (CASR 1998)* are given effect.

3 Part 45 Manual of Standards

This instrument may be cited as the Part 45 MOS.

4 Definitions for the Part 45 MOS

- 4.1 A reference to **the MOS**, unless the contrary intention appears, refers to the Part 45 MOS.
- 4.2 In the MOS, a reference to a Part or regulation whose number is, or begins with, 45 is a reference to Part 45, or a regulation in Part 45, of CASR 1998.
- 4.3 Unless a separate meaning applies, words and phrases used in the MOS have the same meaning as in Part 45 of CASR 1998.

CHAPTER 2 AIRCRAFT MARKINGS

5 Australian nationality and registration marks

- 5.1 In accordance with regulation 45.025 of CASR 1998, the MOS prescribes requirements relating to the display of markings on Australian aircraft.
- 5.2 These requirements include the following:
 - (a) the number of sets that must be displayed;
 - (b) the character of the markings, including:
 - (i) the location of the markings; and
 - (ii) the method of application to the aircraft of the markings; and

- (iii) the visibility of the markings; and
- (iv) the size and appearance of the figures, numerals and hyphens in the markings.

6 Number and location of sets of markings

6.1 Fixed-wing aircraft

6.1.1 An aircraft mentioned in an item in Table 1 must have the set or sets of markings mentioned in column 2 of the item, displayed in the location or locations mentioned in column 2 of the same item unless it is operating inside Australia and either:

- (a) certificated under regulation 21.189 or paragraph 21.191 (d) or (e) of CASR 1998; or
- (b) eligible to be certificated under subparagraph 21.189 (1) (a) (ii) of CASR 1998.

6.1.2 The aircraft must meet the requirements mentioned in:

- (a) either:
 - (i) item 1 of the following table; or
 - (ii) whichever of item 2 or 3 of the following table applies to the aircraft; and
- (b) if item 4 of the table applies to the aircraft — item 4.

Table 1 — Fixed-wing aircraft: number and location of sets of markings

Item	Column 1 Kind of aircraft	Column 2 Location of sets of markings
1	Fixed-wing aircraft.	1 set on each side of the fuselage, nacelle or similar fixed obstruction: <ul style="list-style-type: none"> (a) between the trailing edge of the wing and the leading edge of a tail surface; or (b) if the aircraft is of canard configuration and has no tail surface — between the trailing edge of the foreplane and the leading edge of the wing.
2	Fixed-wing aircraft with single vertical tail.	1 set on each side of the upper half of the tail.
3	Fixed-wing aircraft with multiple vertical tails.	1 set on the upper half of the outer sides of each outer tail.
4	Fixed-wing aircraft: <ul style="list-style-type: none"> (a) with a maximum take-off weight of more than 5 700 kg; or (b) operating outside Australia. 	1 set on the left half of the lower surface of the wing structure or, if the lower surface of the aircraft's wing structure extends across the underside of the fuselage, 1 set on any part of the lower surface of the wing structure, with: <ul style="list-style-type: none"> (a) the set: <ul style="list-style-type: none"> (i) in a single line; and

Item	Column 1 Kind of aircraft	Column 2 Location of sets of markings
		(ii) as nearly as possible parallel to the leading edge of the wing structure; and (iii) as nearly as possible equidistant from the leading and trailing edges of the wing structure; and (b) the top of the set towards the leading edge of the wing structure.

6.1.3 An aircraft mentioned in an item in Table 2 must have the set or sets of markings mentioned in column 2 of the item, displayed in the location or locations mentioned in column 2 of the same item.

6.1.4 The aircraft must meet the requirements mentioned in either:

- (a) item 1 of the following table; or
- (b) whichever of item 2 or 3 of the following table applies to the aircraft.

Table 2 — Number and location of sets of markings for fixed-wing aircraft operating inside Australia and either:

(a) certificated under regulation 21.189 or paragraph 21.191 (d) or (e) of CASR 1998; or

(b) eligible to be certificated under subparagraph 21.189 (1) (a) (ii) of CASR 1998.

Item	Column 1 Kind of aircraft	Column 2 Location of sets of markings
1	Fixed-wing aircraft.	1 set on each side of the fuselage, nacelle or similar fixed obstruction: (a) between the trailing edge of the wing and the leading edge of a tail surface; or (b) if the aircraft is of canard configuration and has no tail surface — between the trailing edge of the foreplane and the leading edge of the wing.
2	Fixed-wing aircraft with single vertical tail.	1 set on each side of the tail.
3	Fixed-wing aircraft with multiple vertical tails.	1 set on the outer sides of each outer tail.

6.2 Rotorcraft

6.2.1 A rotorcraft must have 1 set of markings on each side of the rotorcraft's cabin, fuselage, boom or tail.

6.3 Airship

6.3.1 An airship must have:

- (a) the following markings on the hull:
 - (i) 1 set on the line of symmetry of the airship's upper surface;
 - (ii) 1 set on each side of the hull; or
- (b) the following markings on the stabilisers:
 - (i) 1 set on the upper surface of the right horizontal stabiliser;
 - (ii) 1 set on the lower surface of the left horizontal stabiliser;
 - (iii) 1 set on each side of the lower vertical stabiliser.

6.3.2 For subparagraphs 6.3.1 (b) (i) and (ii):

- (a) a set of markings on a stabiliser must be as nearly as possible equidistant from the leading and the trailing edge of the stabiliser; and
- (b) the top of the characters of a set of markings must be towards the leading edge of the stabiliser.

6.4 Manned free balloons

6.4.1 A spherical manned free balloon must have 2 sets of markings, with a set each on diametrically opposite places near the maximum horizontal circumference of the balloon's envelope.

6.4.2 A non-spherical manned free balloon must have 2 sets of markings, with a set each on opposite sides of the balloon's envelope near the balloon's maximum cross-section, but no lower than the higher of:

- (a) the rigging band; and
- (b) the points of attachment of the basket or the basket suspension cables.

7 Requirements for sets of markings

7.1 A set of markings on an aircraft must:

- (a) be securely applied to the aircraft; and
- (b) be legible; and
- (c) not be obscured by a moveable surface of the aircraft; and
- (d) be of a colour that contrasts with the colour of the markings' background.

7.2 For paragraph 7.1 (a), a set of markings is securely applied to an aircraft if:

- (a) the markings are painted on the aircraft; or
- (b) the markings are fixed to the aircraft in a manner that is at least as permanent as painting.

7.3 For paragraph 7.1 (b) a set of markings is legible if it is clearly distinguishable without optical aid:

- (a) from a distance mentioned in column 2 of Table 3; and
- (b) in daylight hours.

Table 3 — Legibility of registration markings

Item	Column 1 Height of markings	Column 2 Distance from aircraft
1	500 mm	150 m
2	300 mm	90 m
3	150 mm	45 m
4	75 mm	22.5 m
5	50 mm	15 m

- 7.4 A design, mark or symbol on an aircraft must not modify, obscure or create confusion about a set of markings on the aircraft.
- 7.5 Subsection 7.4 does not apply in relation to:
- (a) a Defence Force symbol or call-sign on an aircraft operated by the Defence Force; or
 - (b) a design, mark or symbol on an aircraft approved in writing by CASA.

8 Requirements for characters in sets of markings

- 8.1 In a set of markings on an aircraft:
- (a) the letters must be capital letters in Roman characters; and
 - (b) the numbers must be Arabic numbers; and
 - (c) the characters must not be ornamented; and
 - (d) the letters and numbers must be a consistent height; and
 - (e) the width of each character (except the letter “I” and the number “1”) must be $\frac{2}{3}$ of the height of the character; and
 - (f) the length of a hyphen must be $\frac{2}{3}$ of the height of a letter or number; and
 - (g) the characters must be formed by solid lines with a thickness of $\frac{1}{6}$ of the height of a letter or number; and
 - (h) the characters must be separated by a space of at least $\frac{1}{6}$ of the height of a letter or number.
- 8.2 The characters in a set of markings may be arranged 1 above the other only if the set is on:
- (a) the centre-line of the upper surface of an airship; or
 - (b) a balloon; or
 - (c) a rotorcraft.
- 8.3 The characters in a set of markings may be slanted if:
- (a) the characters remain legible; and
 - (b) the slant is no more than 35° from the perpendicular.

9 Minimum height of characters in sets of markings

- 9.1 A character, other than a hyphen, in a set of markings on an aircraft mentioned in column 1 of an item in Table 4 must be at least the height mentioned in column 2 for the item.

Table 4 — Minimum height of characters in set of markings

Item	Column 1 Aircraft	Column 2 Minimum height of characters
1	Fixed-wing aircraft: (a) with a maximum take-off weight of 5 700 kg or less; and (b) not mentioned in item 7 or 8.	For characters on a vertical surface — 150 mm. For characters on a wing — 500 mm.
2	Fixed-wing aircraft: (a) with a maximum take-off weight of more than 5 700 kg; and (b) not mentioned in item 7 or 8.	For characters on a vertical surface — 300 mm. For characters on a wing — 500 mm.
3	Rotorcraft: (a) with a maximum take-off weight of 5 700 kg or less; and (b) not mentioned in item 7 or 8.	150 mm.
4	Rotorcraft: (a) with a maximum take-off weight of more than 5 700 kg; and (b) not mentioned in item 7 or 8.	300 mm.
5	Airship or manned free balloon with a maximum take-off weight of 5 700 kg or less.	150 mm.
6	Airship or manned free balloon with a maximum take-off weight of more than 5 700 kg.	500 mm.
7	Any of the following: (a) glider or powered sailplane; (b) aircraft certificated under regulation 21.184, 21.186 or 21.190 or paragraph 21.191 (g), (h), (j) or (k) of CASR 1998.	75 mm.
8	Aircraft: (a) certificated under regulation 21.189; or paragraph 21.191 (d) or (e) of CASR 1998; or (b) eligible to be certificated under subparagraph 21.189 (1) (a) (ii) of CASR 1998.	50 mm.

Note 1 Paragraph (b) of item 7 applies to primary category aircraft, light sport aircraft, amateur-built category aircraft accepted under an ABAA, and certain aircraft operated under experimental certificates.

Note 2 Item 8 applies to limited category aircraft and certain aircraft operated under experimental certificates.

- 9.2 If a surface of the aircraft on which there must be a set of markings is not large enough to allow the characters to be as high as required by subsection 9.1, then:
- (a) the characters must be as high as possible, taking into account the size of the surface; and
 - (b) the required proportions must be kept.
- 9.3 If a set of markings is required to be on each of 2 symmetrical parts of the aircraft, the height of the letters and numbers in both sets must be the same.
- Example* A set of markings on each side of a fuselage.

CHAPTER 3 DISPLAY OF WORDS ON CERTAIN AIRCRAFT

10 Words in sets of markings

For regulation 45.090 of CASR 1998, the requirements for the display of words are the following:

- (a) the aircraft must display the following word near each entrance to the cabin and cockpit of the aircraft:
 - (i) for a limited category aircraft — “LIMITED”;
 - (ii) for a restricted category aircraft — “RESTRICTED”;
 - (iii) for a provisionally certificated aircraft — “PROVISIONAL”;
 - (iv) for an experimental aircraft — “EXPERIMENTAL”;
- (b) the word must be clearly visible to a person when entering the aircraft;
- (c) the word must:
 - (i) be written in capital letters without ornamentation; and
 - (ii) be no less than 50 millimetres high; and
 - (iii) be of a colour that contrasts with the background.

CHAPTER 4 REGISTRATION IDENTIFICATION PLATE REQUIREMENTS

11 Identification plates — making and marking

11.1 For subregulation 45.125 (2) of CASR 1998, the requirements for the identification plate are the following:

- (a) the plate must be made of:
 - (i) steel; or
 - (ii) another material that withstands the heat of a fire at least as well as steel;
- (b) the markings required to be displayed on the plate must be marked by:
 - (i) etching, stamping or engraving; or
 - (ii) a method of displaying the aircraft’s markings approved by CASA under regulation 45.135 of CASR 1998.
- (c) for an aircraft other than a manned free balloon — the plate must be attached at a place:
 - (i) near the aircraft’s entrance; and
 - (ii) where it is clearly visible; and
 - (iii) where it is accessible.

- (d) for a manned free balloon — the plate must be attached on the balloon's envelope, in a place where it is clearly visible before the balloon is inflated.
 - 11.2 For subparagraph 11.1 (c), the aircraft registration identification plate can be located internal or external to the aircraft.
 - 11.3 If the plate is covered or enclosed in any manner, its accessibility is acceptable if it can be revealed without the use of tools or removing aircraft components.
-