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 1Kind of aircraft | Column 2Location 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 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:(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:(a) the set: (i) in a single line; and (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 1Kind of aircraft | Column 2Location 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 1Height of markings  | Column 2Distance 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 ⅔ of the height of the character; and

(f) the length of a hyphen must be ⅔ of the height of a letter or number; and

(g) the characters must be formed by solid lines with a thickness of 1/6 of the height of a letter or number; and

(h) the characters must be separated by a space of at least 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 1Aircraft | Column 2Minimum 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.