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Aircraft — Tow bar attachment fittings interface requirements —

Part 2: Regional aircraft

Aéronefs — Exigences d'interface des ferrures d'attache de barre de tractage —

Partie 2: Aéronefs régionaux

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 9, *Air cargo and ground equipment*.

This fourth edition cancels and replaces the third edition (ISO 8267-2:2019), which has been technically revised.

The main changes are as follows:

— the normative and aircraft airworthiness references have been updated.

A list of all parts in the ISO 8267 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The purpose of this document is to achieve tow bar attachment fittings interface standardization by aircraft mass category (which determines tow bar forces) in order to ensure that a single type of tow bar with a standard connection can be used for all aircraft types within or near that mass category, so as to assist operators and airport handling companies in reducing the number of different tow bar types used.

In this document, the following verbal forms are used:

— “shall” indicates a requirement;

— “should” indicates a recommendation;

— “may” indicates a permission;

— “can” indicates a possibility or a capability.

Recommended criteria are, while not mandatory, considered to be of primary importance in providing safe aircraft towing arrangements. Deviation from recommended criteria should only occur after careful consideration, extensive testing, and thorough service evaluation have shown alternative methods to be satisfactory.

Aircraft — Tow bar attachment fittings interface requirements —

Part 2: Regional aircraft

1 Scope

This document specifies the interface requirements for tow bar attachment fittings on the nose gear (when towing operations are performed from the nose gear) of conventional tricycle type landing gears of commercial civil transport aircraft.

This document is applicable to all new models of regional aircraft within the specified maximum ramp mass range which enter service or are designed after its date of publication.

It does not apply to previously in-service regional aircraft models, which present a considerable variety of tow bar attachment fittings. However, a simple retrofit modification is described that can make certain in-service fittings compatible with a tow bar head in conformity with this document, where deemed appropriate in order to facilitate operation of such aircraft types at airports.

This document is applicable to regional commercial transport aircraft airworthiness certified with a maximum ramp mass of ≤ 50 000 kg (110 000 lb). It does not apply to:

— aircraft airworthiness certified as commuter category aeroplanes;

— aircraft airworthiness certified as main line aircraft with a maximum ramp mass of > 50 000 kg (110 000 lb), which are covered by ISO 8267-1.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 10254, *Air cargo and ground equipment — Vocabulary*

3 Terms and definitions

For the purposes of this document, the terms and definitions of ISO 10254 and the following apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

3.1
main line aircraft
civil passenger and/or freight transport aircraft with a *maximum ramp mass* (3.3) of > 50 000 kg (110 000 lb)

3.2
regional aircraft
civil passenger and/or freight transport aircraft with a *maximum ramp mass* (3.3) of > 10 000 kg (22 000 lb) and ≤ 50 000 kg (110 000 lb)

3.3
maximum ramp mass
maximum mass allowable for an aircraft type when leaving its parking position either under its own power or towed, comprising maximum structural take-off mass (MTOW) and taxiing fuel allowance

4 Requirements

4.1 Fitting location

The fitting shall be designed to enable simple attachment of the tow bar at the front of the aircraft nose landing gear for push/pull towing operations. No fitting is required at the rear of the nose landing gear.

An axle fitting may be used in the event of two-wheel nose landing gear. This is acceptable provided the towing loads do not exceed those specified in this document and the aircraft is designed accordingly.

4.2 Towing loads

It is presupposed that the aircraft nose landing gear tow bar attachment fitting can withstand the limit towing loads prescribed in applicable regulations, such as 14 CFR Part 25 and EASA-CS 25, paragraphs 25,509 (a), (c) and (d), based on the following towing load F_{TOW} (N):

— $F_{TOW} = 0{,}30\ M_r \times g$ (where M_r is the design maximum ramp mass of the aircraft and g is the mean acceleration due to gravity), when $M_r \leq 13\ 600$ kg (30 000 lb);

— $F_{TOW} = \dfrac{6M_r + 204\,100}{70} \times g$, when 13 600 kg (30 000 lb) < $M_r \leq 45\ 360$ kg (100 000 lb);

— $F_{TOW} = 0{,}15\ M_r \times g$, when $M_r > 45\ 360$ kg (100 000 lb).

4.3 Aircraft mass categories

Where a family of existing or contemplated aircraft types bridges two mass categories, use a single tow bar attachment fitting interface for all of them, and consider the use of the standard dimensions for the higher mass category, be it part of this document or ISO 8267-1, throughout the family.

See Table 1.

Table 1 — Aircraft mass categories

Masses in kilograms (Values in pounds in parentheses)

Category	Maximum ramp mass M_r
I	10 000 (22 000) < $M_r \leq$ 22 680 (50 000)
II	13 600 (30 000) < $M_r \leq$ 50 000 (110 000)
The tow bar attachment fitting category shall be selected in such a way that no change of type will become necessary during aircraft development. Aircraft of a design which is near the upper limit of a mass category may be classified in the next higher category to allow for mass growth (see Clause 1).	

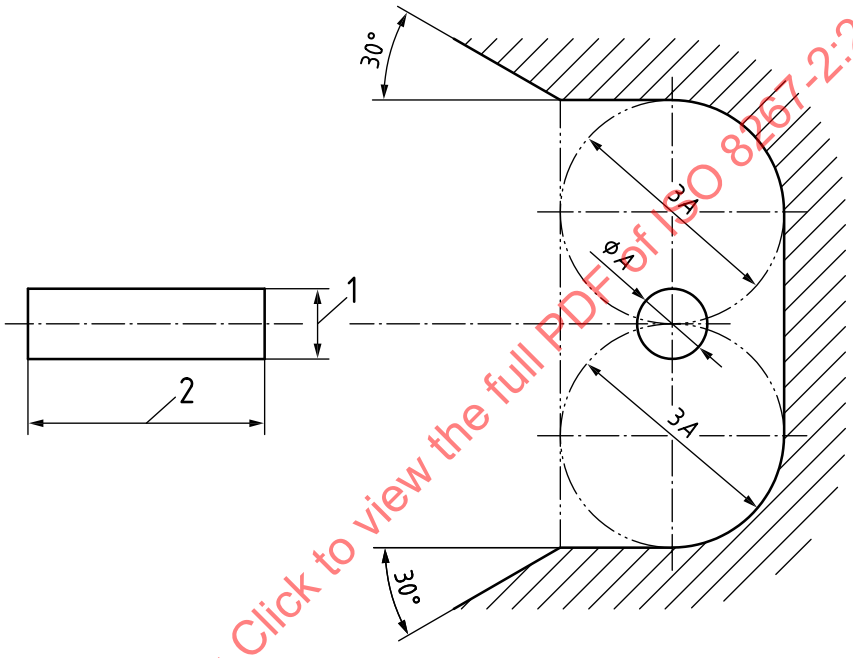
4.4 Fitting configuration, dimensions and clearances

The standard configuration of the attachment fitting shall be a horizontal cylindrical pin with the dimensions given in Figure 1 and in Table 2.

Table 2 — Nominal pin dimensions

Dimensions in millimetres (values in inches in parentheses)

Dimensions	Category	
	I	II
Diameter, *A*	19,05 (0,75)	25,40 (1,00)
Length, *B*	38,10 (1,50)	63,50 (2,50)



Key

1 diameter, A $\begin{matrix}0\\-0{,}125\end{matrix}$ mm $\begin{pmatrix}0\\-0{,}005\end{pmatrix}$ in

2 length, B $\begin{matrix}+0{,}5\\0\end{matrix}$ mm $\begin{pmatrix}+0{,}020\\0\end{pmatrix}$ in

Required space envelope for clearance: 3*A* above and below the towing spool centre.

Figure 1 — Dimensions of the pin

4.5 Tow bar fit

The design of the tow bar device that clamps to the horizontal cylindrical pin shall be such that it:

— grips the pin uniformly over 93 % to 95 % of the length (dimension *B*);

— is adjustable in order to provide positive engagement on the pin when locked.

5 Retrofit option

Where deemed appropriate in order to facilitate operation of such aircraft types at airports, in-service regional aircraft types within the specified maximum ramp mass range, which present tow bar attachment fittings with different dimensions but of an adaptable design, may be rendered compatible