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**Aircraft — Tow bar attachment fittings  
interface requirements —**

**Part 1:  
Main line aircraft**

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

*Partie 1: Aéronefs de ligne*



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# Contents

	Page
Foreword .....	iv
Introduction .....	v
1 Scope .....	1
2 Normative references .....	1
3 Terms and definitions .....	1
4 Requirements .....	2
4.1 Fitting location .....	2
4.2 Towing loads .....	2
4.3 Aircraft mass categories .....	3
4.4 Fitting configuration, dimensions and clearances .....	3
4.5 Tow bar fit .....	4
Bibliography .....	5

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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 documents 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](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: [Foreword - Supplementary information](#)

The committee responsible for this document is ISO/TC 20, *Aircraft and space vehicles*, Subcommittee SC 9, *Air cargo and ground equipment*.

This second edition of ISO 8267-1 cancels and replaces the first edition (ISO 8267-1:2005), which has been technically revised.

ISO 8267 consists of the following parts, under the general title *Aircraft — Tow bar attachment fittings interface requirements*:

- *Part 1: Main line aircraft*
- *Part 2: Regional aircraft*

## Introduction

The aim of this part of ISO 8267 is to standardize main line aircraft tow bar attachment fittings according to aircraft mass category (which determines tow bar forces), so that one tow bar can be used for all aircraft within that mass category.

Throughout this part of ISO 8267, the minimum essential criteria are identified by the use of the key-word 'shall'. Recommended criteria are identified by the use of the key-word 'should' and, while not mandatory, are 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.

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# Aircraft — Tow bar attachment fittings interface requirements —

## Part 1: Main line aircraft

### 1 Scope

This part of ISO 8267 specifies the interface requirements for tow bar attachment fittings on the nose gear (when towing operations are performed from the nose gear) in conventional tricycle type landing gears of commercial civil transport passenger and freight aircraft.

Its purpose 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.

This part of ISO 8267 is applicable to all new models of main line aircraft within the specified maximum ramp mass range, entering service or designed after its date of publication.

This part of ISO 8267 is applicable to main line commercial transport aircraft of airworthiness certified under FAR/EASA-CS Parts 25 with a maximum ramp mass of > 50 000 kg (110 000 lb).

It does not apply to aircraft of airworthiness certified under FAR/EASA-CS Parts 25 but with a maximum ramp mass of  $\leq 50\,000$  kg (110 000 lb), which are covered by ISO 8267-2.

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 throughout the family.

**NOTE** As far as practical, this part of ISO 8267 was defined in order to be compatible with as many existing aircraft types as possible in the mass category concerned.

### 2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

Federal Aviation Regulations (FAR) 14CFR Part 25, *Airworthiness Standards: Transport category airplanes*, paragraph 25.509, Towing loads<sup>1)</sup>

EASA CS-25, *Airworthiness Standards: Transport category aeroplanes*, paragraph 25.509, Towing loads<sup>2)</sup>

### 3 Terms and definitions

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

1) FAR Part 25 constitute the USA government transport aircraft airworthiness regulations, and can be obtained from the following address: US Government Printing Office, Mail Stop SSOP, Washington, DC 20402-9328, USA.

2) EASA CS-25 constitute the European Union transport aircraft airworthiness regulations, and can be obtained from the following address: [www.easa.europa.eu](http://www.easa.europa.eu)

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

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

**3.3**  
**maximum ramp mass**  
**MRW**  
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 straightforward attachment of the tow bar at the front and, where applicable, the rear of the aircraft nose landing gear for push/pull towing operations.

An axle fitting may be used in the event of two-wheel nose landing gear. This is acceptable providing the towing loads do not exceed those specified in this part of ISO 8267 and the aircraft is designed accordingly.

### 4.2 Towing loads

**4.2.1** The allowable towing forces on the nose landing gear shall be specified by the aircraft manufacturer and shall conform to 4.2.2 to 4.2.6.

**4.2.2** The towing loads shall be applied to the tow bar attachment fittings and to the structure to which they are immediately attached.

**4.2.3** The towing loads specified in 4.2.6 shall be considered separately. These loads shall be applied at the towing fittings and shall act parallel to the ground. In addition,

- a) a vertical load factor equal to 1,0 shall be considered as acting at the centre of gravity of the aircraft, and
- b) the shock struts and tyres shall be in their stationary positions.

**4.2.4** If  $M_r$  is the design maximum ramp mass of the aircraft and  $g$  is the mean acceleration due to gravity, the towing load,  $F_{TOW}$  (N), is equal to  $0,15 M_r \times g$ .

**4.2.5** With regard to towing loads where the specified angle of swivel cannot be reached, the maximum obtainable angle shall be used.

**4.2.6** The specified towing loads are given in Table 1.



**Table 1 — Specified towing loads**

Position of the nose gear	Load	
	Magnitude	Direction
Swivelled forward	$1,0 F_{TOW}$	$\left\{ \begin{array}{l} \text{Forward} \\ \text{Aft} \end{array} \right.$
Swivelled aft	$1,0 F_{TOW}$	$\left\{ \begin{array}{l} \text{Forward} \\ \text{Aft} \end{array} \right.$
Swivelled 45° from forward	$0,5 F_{TOW}$	$\left\{ \begin{array}{l} \text{Forward}^a \\ \text{Aft}^a \end{array} \right.$
Swivelled 45° from aft	$0,5 F_{TOW}$	$\left\{ \begin{array}{l} \text{Forward}^a \\ \text{Aft}^a \end{array} \right.$
<sup>a</sup> Parallel and midway between the planes of the wheels.		

### 4.3 Aircraft mass categories

See [Table 2](#).

**Table 2 — Aircraft mass categories**

Masses in kilograms (Values in pounds in parentheses)

Category	Maximum ramp mass, $M_R$
I	$50\,000\ (110\,000) < M_R \leq 100\,000\ (220\,000)$
II	$100\,000\ (220\,000) < M_R \leq 180\,000\ (400\,000)$
III	$180\,000\ (400\,000) < M_R \leq 350\,000\ (770\,000)$
IV	$350\,000\ (770\,000) < M_R \leq 500\,000\ (1\,100\,000)$
V	$M_R > 500\,000\ (1\,100\,000)$
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 <a href="#">Clause 1</a> ).	

### 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 3](#).

**Table 3 — Dimensions of the pin**

Dimensions in millimetres (Values in inches in parentheses)

Dimensions	Category				
	I	II	III	IV	V
Diameter, $A$	38,10	44,45	57,25	63,50	85,85
	(1.50)	(1.75)	(2.25)	(2.50)	(3.38)
Length, $B$	113,03	133,35	184,15	203,20	203,20
	(4.45)	(5.25)	(7.25)	(8.00)	(8.00)