AEROSPACE STANDARD

AS1614™	REV. D

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Superseding AS1614C

Main Line Aircraft Tow Bar Attach Fitting Interface

RATIONALE

Editorial changes, applicable documents update and requirements homogenization with ISO 8267-1.

TABLE OF CONTENTS

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1. SCOPE

1.1 Purpose

This SAE Aerospace Standard (AS) 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 with a maximum ramp weight higher than 50,000 kg (110,000 pounds), commonly designated as “main line aircraft”.

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

1.2 Field of Application

This document is intended to be applicable to all new models of main line aircraft within the specified maximum ramp weight range, entering service or designed after its original date of publication. See Section 3.

It is not intended to apply to previously in service main line aircraft models, which present a considerable variety of tow bar attachment fittings.

2. APPLICABLE DOCUMENTS

The following publications form a part of this document to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this document and references cited herein, the text of this document takes precedence. Nothing in this document, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

AS5488 Regional Aircraft Towbar Attach Fitting Interface

2.2 Regulatory

Available from U.S. Government Printing Office, M/S SSOP, Washington DC 20402-9328.

Federal Aviation Regulations 14CFR Part 25, Airworthiness Standards: Transport category airplanes, paragraph 25.509, Towing loads

Available from European Aviation Safety Agency: Ottoplatz 1, D-50679 Cologne, Germany - http://easa.europa.eu/official-publication/

Certification Specifications and Acceptable Means of Compliance for Large Aeroplanes CS-25, paragraph 25.509, Towing loads

2.3 ISO Publications

Copies of these documents are available online at http://webstore.ansi.org/.

ISO 8267-1 Aircraft - Tow bar attachment fitting - Interface requirements - Part 1: Main line aircraft

ISO 8267-2 Aircraft - Tow bar attachment fitting - Interface requirements - Part 2: Regional aircraft

3. EFFECTIVITY

3.1 This document is applicable to commercial transport aircraft airworthiness certified under FAR Part 25/CS-25 with a maximum ramp weight over 50,000 kg (110,000 pounds). It does not apply to aircraft airworthiness certified under FAR Part 25/CS-25 with a maximum ramp weight under 50,000 kg (110,000 pounds), which are covered by AS5488 and/or ISO 8267-2.

3.2 Where a family of existing or contemplated aircraft types bridges two weight categories, a single towbar attachment fitting interface should be used for all of them, and consideration should be given to possible use of the standard dimensions for the higher weight category throughout the family.

NOTE: Inasmuch as practical, this document was defined in order to be compatible with as many existing aircraft types as possible in the weight category concerned.

4. REQUIREMENTS

4.1 Towing Loads

The aircraft nose landing gear tow bar attachment fitting shall be able to react the limit towing loads prescribed in FAR Part 25/CS-25, paragraph 25.509 (d), based on the following towing load F_{TOW} :

- F_{TOW} = 0.15 Wr, where Wr is aircraft maximum ramp weight, for Wr in excess of 45,360 kg (100,000 pounds).

4.2 Aircraft Attachment Fitting Location

The fitting shall be designed to enable simple attachment of the tow bar at the front and (when requested by the acquiring airline) at the rear of the nose landing gear for push-pull towing operations.

4.3 Aircraft Weight Categories

See Table 1.

Table 1 - Aircraft weight categories

Category	Maximum Ramp Weight
I	50,000 kg (110,000 pounds) to 100,000 kg (220,000 pounds)
II	100,000 kg (220,000 pounds) to 180,000 kg (400,000 pounds)
III	180,000 kg (400,000 pounds) to 350,000 kg (770,000 pounds)
IV	350,000 kg (770,000 pounds) to 500,000 kg (1,100,000 pounds)
V	over 500,000 kg (1,100,000 pounds)

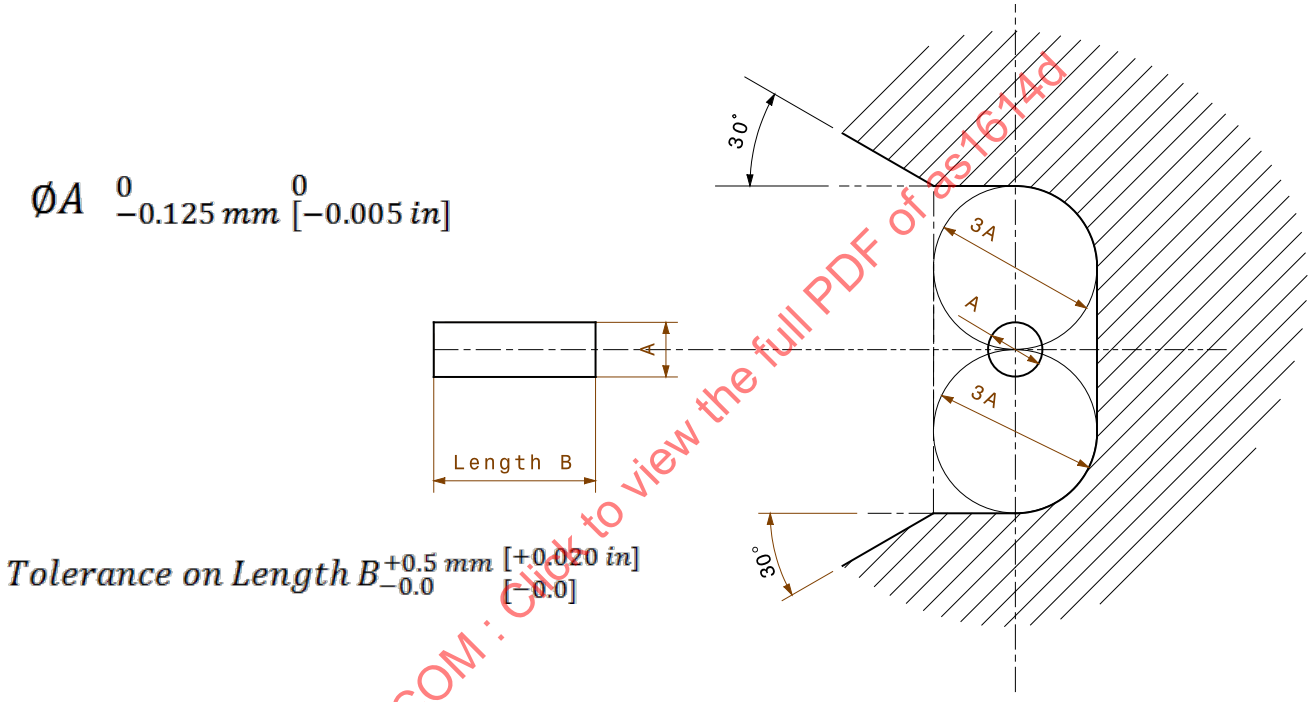
NOTE: The tow bar attachment fitting category shall be selected in such a way that no change of type will be necessary during aircraft development. For aircraft whose design maximum ramp weight is near the top limit of a weight category, it may be classified in the next higher category to allow for weight growth.

4.4 Tow Bar Attachment Fitting Configuration, Dimensions and Clearances

The standard configuration of the attachment fitting shall be a horizontal cylindrical pin (Table 2, Figure 1).

Table 2 - Nominal pin dimensions

Dimension	Category I	Category II	Category III	Category IV	Category V
A (diameter)	38.10 mm (1.50 inches)	44.45 mm (1.75 inches)	57.15 mm (2.25 inches)	63.50 mm (2.50 inches)	85.85 mm (3.38 inches)
B (length)	113.03 mm (4.45 inches)	133.35 mm (5.25 inches)	184.15 mm (7.25 inches)	203.20 mm (8.00 inches)	203.20 mm (8.00 inches)



Required clear space envelope:
3 A above and below pin center

Figure 1 - Pin dimensions/clearances

4.5 Required Tow Bar Fit

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

a. grip the pin uniformly over 96 to 98% of the length (B dimension),

b. be adjustable in order to provide positive engagement on the pin when locked.