BRITISH STANDARD AEROSPACE SERIES

BS 2C 8:1988
ISO 7166:1985
(Superseding British Standard C 8)

Specification for

Rail and stud configuration for aircraft passenger equipment and cargo restraint

[ISO title: Aircraft — Rail and stud configuration for passenger equipment and cargo restraint]

UDC 629.7.046 – 219:684.434.7

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Aerospace Standards Committee (ACE/-) to Technical Committee ACE/57, upon which the following bodies were represented:

Association of Webbing Load Restraint Equipment Manufacturers
British Airways
British Caledonian Airways
British Narrow Fabrics Association
Civil Aviation Authority (Airworthiness Division)
Ministry of Defence
Society of British Aerospace Companies Limited

This British Standard, having been prepared under the direction of the Aerospace Standards Committee, was published under the authority of the Board of BSI and comes into effect on
29 February 1988

The following BSI references relate to the work on this standard:
Committee reference ACE/57
Draft for comment 84/72725 DC

ISBN 0 580 16518 3

Amendments issued since publication

Amd. No.	Date of issue	Comments

Contents

National foreword

This British Standard, published under the direction of the Aerospace Standards Committee, is a revision of British Standard C 8:1969, which is withdrawn. It is identical with ISO 7166:1985 "*Aircraft — Rail and stud configuration for passenger equipment and cargo restraint*", published by the International Organization for Standardization (ISO).

ISO 7166 was produced as a result of international discussion in which the UK took an active part.

Terminology and conventions. The text of the International Standard has been approved as suitable for publication as a British Standard without deviation. Some terminology and certain conventions are not identical with those used in British Standards; attention is drawn especially to the following.

The comma has been used as a decimal marker. In British Standards it is current practice to use a full point on the baseline as the decimal marker.

Wherever the words "International Standard" appear, referring to this standard, they should be read as "British Standard".

Cross-references. The Technical Committee has reviewed the provisions of ISO 4170 and ISO 4171, to which reference is made in the text, and has decided that they are acceptable for use in conjunction with this standard. There are no corresponding British Standards to ISO 4170 and ISO 4171.

NOTE The latest revision of an Aerospace Series standard is indicated by a prefix number.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 4, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

0 Introduction

This International Standard specifies the geometry of aircraft floor rails which are normally set longitudinally into an aircraft floor structure. Seats, galleys, bulkheads and other removable or adjustable equipment are normally secured into the seat rails by means of studs.

This concept is also widely used in the air cargo field for the restraint of cargo: the most frequent application being in the attachment of cargo nets to pallets (see ISO 4170 and ISO 4171).

1 Scope and field of application

1.1 This International Standard specifies the geometry and the partial dimensions of rails and studs used for securing passenger equipment and for cargo restraint, necessary to ensure interchangeability of these items.

1.2 Individual strength requirements will determine the complete rail shape, such as incorporating the standard section integrally into an I-beam extrusion.

1.3 The overall shape of the studs above the top of the rail will depend upon the application. The upper portion may be cylindrical to fit into the tubular structure of a seat or galley unit. Alternatively, it may have a ring attached to serve as a tiedown point for a rope or strap.

1.4 The rail imparts loads in the upward, downward, sideward, forward and aft directions. Forward and aft loads are applied to the track by means of a "shear plug", a part of the pin assembly (or structure to which the stud is joined) which engages in the rail notches [20,8 mm (0.800 in) in diameter], but this is not included in this International Standard.

In the case of seat attachment or similar application, the downward load is applied to the upper face of the rail by a fitting which is also part of the seat, but this is not included in this International Standard.

2 References

ISO 4170, *Interline air cargo pallet nets.*

ISO 4171, *Interline air cargo pallets.*

NOTE ISO Recommendation R 837, *Aircraft seat rails and pins*, provided only for single stud fittings. Furthermore, most of the world's passenger aircraft, and virtually all cargo equipment, used rail and stud configurations based on the USA military specification MS.33601A.

3 Dimensional requirements

3.1 The dimensions and tolerances of the rail and studs shall conform to Figure 1 and Figure 2.

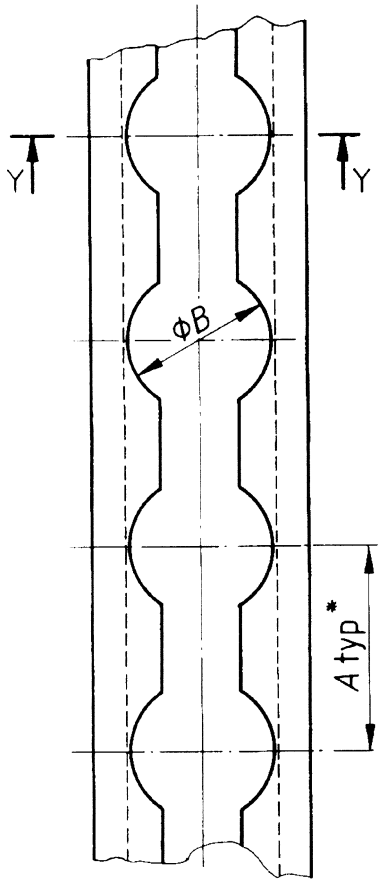
3.2 Sharp edges and corners shall be removed.

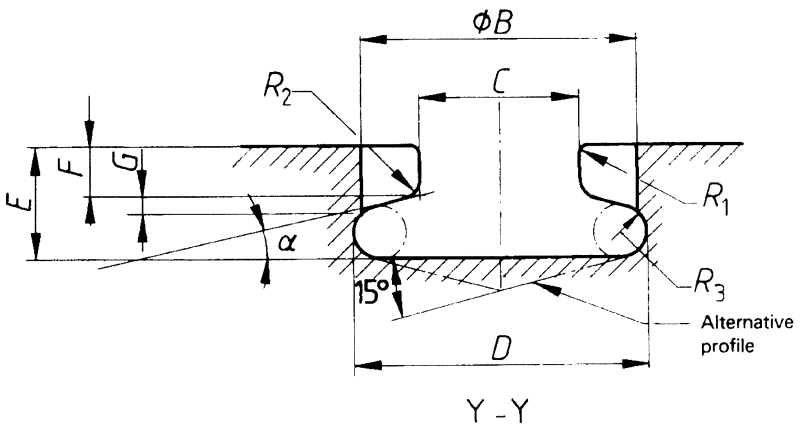
3.3 The stud fitting may have one pair of lips, formed by the diameter *B*, and, in this case, it is known as a single stud fitting.

3.4 Figure 2 shows a double stud fitting. Multiple stud fittings may have up to 5 pairs of lips (or 5 studs).

4 Strength requirements

This International Standard is concerned only with the configuration of rails and studs. The load carrying capacity will be determined by the strength of the materials from which the items are manufactured and by the strength of the structure to which they are attached.





Dimension	mm	in
*A**	25,4	1.00
B	19,7 20,0	0.776 0.787
C	10,7 11,4	0.421 0.449
D	20,3 20,8	0.799 0.819
E	7,6 8,0	0.299 0.310
F	3,9 3,5	0.154 0.133
G ref.	1,3 1,0	0.051 0.039
α	10,5° to 15,5°	
R_1	0,3 0,8	0.012 0.031
R_2	1,3 1,8	0.051 0.071
R_3	Full	Full

* Tolerance of ± 0,1 mm (0.004 in) on 1 pitch.

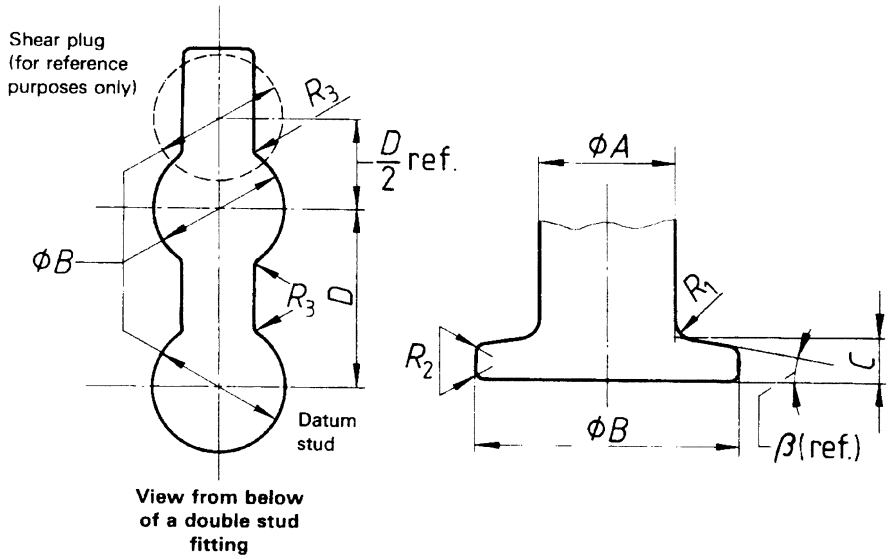
Tolerance of ± 0,5 mm (0.020 in) on 100 pitches.

NOTE 1 Diameter *B* and slot centreline *D* shall be coincident with slot centreline *C* to within 0,13 mm (0.005 in).

NOTE 2 All faces shall be within 0,5° of the specified position relative to the upper surface of the rail.

NOTE 3 For low-weight or low-load applications dimensions *E* and *F* may be reduced by 0,76 to 1,02 mm (0.03 to 0.04 in) and the rail shall be specified accordingly as a "lightweight rail".

Figure 1 — Rail



Dimension	mm	in
A[a]	9,8 9,7	0.386 0.382
B[a]	18,8 18,3	0.740 0.721
C	3,3 3,2	0.130 0.126
D[b]	25,5 25,3	1.004 0.996
β[c]	8,5° to 10,5°	
R_1	1,8 1,5	0.071 0.059
R_2	1,5 1,2	0.059 0.047
R_3	0,8 0,5	0.031 0.020

[a] Diameters A and B shall be concentric to within 0,13 mm (0.005 in).
[b] The tolerance on successive D dimensions shall not be cumulative for multiple stud fittings. All studs shall be within 0,1 mm (0.004 in) of the specified position relative to the datum stud.
[c] The angular variation for those surfaces defined by angle E shall be within 0,5° of the specified plane relative to the lower surface of the stud.

Figure 2 — Stud fitting

blank

Publications referred to

See national foreword.

BS 2C 8:1988
ISO 7166:1985

BSI — British Standards Institution

BSI is the independent national body responsible for preparing British Standards. It presents the UK view on standards in Europe and at the international level. It is incorporated by Royal Charter.

Revisions

British Standards are updated by amendment or revision. Users of British Standards should make sure that they possess the latest amendments or editions.

It is the constant aim of BSI to improve the quality of our products and services. We would be grateful if anyone finding an inaccuracy or ambiguity while using this British Standard would inform the Secretary of the technical committee responsible, the identity of which can be found on the inside front cover. Tel: 020 8996 9000. Fax: 020 8996 7400.

BSI offers members an individual updating service called PLUS which ensures that subscribers automatically receive the latest editions of standards.

Buying standards

Orders for all BSI, international and foreign standards publications should be addressed to Customer Services. Tel: 020 8996 9001. Fax: 020 8996 7001.

In response to orders for international standards, it is BSI policy to supply the BSI implementation of those that have been published as British Standards, unless otherwise requested.

Information on standards

BSI provides a wide range of information on national, European and international standards through its Library and its Technical Help to Exporters Service. Various BSI electronic information services are also available which give details on all its products and services. Contact the Information Centre. Tel: 020 8996 7111. Fax: 020 8996 7048.

Subscribing members of BSI are kept up to date with standards developments and receive substantial discounts on the purchase price of standards. For details of these and other benefits contact Membership Administration. Tel: 020 8996 7002. Fax: 020 8996 7001.

Copyright

BSI
389 Chiswick High Road
London
W4 4AL