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Series 1 freight containers — Classification, dimensions and ratings

Conteneurs de la série 1 — Classification, dimensions et masses brutes

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Contents

Page

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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 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).

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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 Technical Committee ISO/TC 104, *Freight containers*, Subcommittee SC 1 *General purpose containers.*

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.

This seventh edition cancels and replaces the sixth edition (ISO 668:2013), which has been technically revised. It also incorporates the Amendments ISO 668:2013/Amd1:2016 and ISO 668:2013/Amd2:2016.

The main changes compared to the previous edition are the inclusion of the Amendments.

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Series 1 freight containers — Classification, dimensions and ratings

1 Scope

This document establishes a classification of series 1 freight containers based on external dimensions, and specifies the associated ratings and, where appropriate, the minimum internal and door opening dimensions for certain types of containers.

These containers are intended for intercontinental traffic.

This document summarizes the external and some of the internal dimensions of series 1 containers. The dimensions of each type of container are defined in the appropriate part of ISO 1496, which is the authoritative document for internal container dimensions.

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 830, *Freight containers — Vocabulary*

ISO 6346, *Freight containers — Coding, identification and marking*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 830 and the following apply.

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

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

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

3.1
freight container
article of transport equipment:

a) of a permanent character and accordingly strong enough to be suitable for repeated use;

b) specially designed to facilitate the carriage of goods by one or more modes of transport, without intermediate reloading;

c) fitted with devices permitting its ready handling, particularly its transfer from one mode of transport to another;

d) designed so as to be easy to fill and empty;

e) having an internal volume of 1 m^3 (35,3ft^3) or more

Note 1 to entry: The term "freight container" does not include vehicles or conventional packing.

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3.2
ISO container
freight container (3.1) complying with all relevant ISO container standards in existence at the time of its manufacture

3.3
rating
R
gross mass of a container which is both the maximum mass for operation and the minimum mass for testing

Note 1 to entry: In some countries, in order to conform to current commercial practice, the term "weight" is used (incorrectly) instead of "mass".

3.4
nominal
<dimensions> disregarding tolerances and rounded to the nearest convenient whole number, by which a container may be identified

Note 1 to entry: Nominal dimensions are usually expressed in imperial units.

3.5
internal
<dimensions> relating to the largest unobstructed rectangular parallelepiped which can be inscribed in the container if inward protrusions of the top corner fittings are disregarded

Note 1 to entry: Except where stated otherwise, the term "internal dimensions" is synonymous with the term "unobstructed internal dimensions".

3.6
door opening
size of the (end) door aperture, i.e. width and height dimensions of the largest parallelepiped which could possibly be passed into the container through the door aperture in question

4 Classification and designation

Series 1 freight containers have a uniform width of 2 438 mm (8 ft).

The nominal lengths are listed in Table 1.

Containers 2 896 mm (9 ft 6 in) in height are designated 1EEE, 1AAA and 1BBB.

Containers 2 591 mm (8 ft 6 in) in height are designated 1EE, 1AA, 1BB and 1 CC.

Containers 2 438 mm (8 ft) in height are designated 1A, 1B, 1C and 1D.

Containers less than 2 438 mm (8 ft) in height are designated 1AX, 1BX, 1 CX and 1 DX.

NOTE The letter "X" used in the designation has no specific connotation other than to indicate that the height of the container is between 0 mm and 2 438 mm (8 ft).

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Table 1 — Nominal lengths

Freight container designation	Nominal length	
	m	ft
1EEE 1EE	13,7[a]	45[a]
1AAA 1AA 1A 1AX	12,2[a]	40[a]
1BBB 1BB 1B 1BX	9,1	30
1CCC 1CC 1C 1CX	6,1	20
1D 1DX	3,00	10

[a] Legal limitations to the overall length of vehicle and load can exist in certain countries.

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5 Dimensions, tolerances and ratings

5.1 Reference temperature for measurements

The dimensions and tolerances apply when measured at the temperature of 20 °C (68 °F); measurements taken at other temperatures shall be adjusted accordingly.

5.2 External dimensions, tolerances and ratings

5.2.1 External dimensions and tolerances

The external dimensions and permissible tolerances given in Table 2 are applicable to all types of containers, except that a reduced height is permissible for tank, open top, bulk, platform and platform-based type containers.

5.2.2 Ratings

The ratings given in Table 2 are applicable to all types of containers, except that for particular traffic, higher values are permissible for containers of any type specified in Table 2. Such containers are considered as ISO containers provided that their maximum gross mass, *R*, does not exceed 36 000 kg and that they are tested and marked to their actual rating, *R* (see 3.3).

WARNING — Recognizing that there will always be a need for special containers for particular traffic, attention is drawn to the fact that numerous containers exist which have length and width dimensions similar to those of ISO series 1 containers but have ratings and/or heights in excess of those defined by this document. This can include containers having maximum gross masses

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in excess of the ratings in Table 2. They may not, therefore, be fully intermodal worldwide and their operation can require special arrangements.

5.2.3 Gooseneck tunnels

Gooseneck tunnels shall be provided as mandatory features in containers 1EEE, 1AAA, and may be provided as optional features in containers 1EE, 1AA, 1A and 1AX. The dimension of gooseneck tunnels shall be in accordance with Annex C. The base structure of a container shall be in accordance with Annex B.

5.3 Internal dimensions and door openings

5.3.1 Dimensions with projecting top corner fitting

Where a top corner fitting projects into the internal space (specified by Table 3), that part of the corner fitting projecting into the container shall not be considered as reducing the size of the container.

5.3.2 General cargo containers for general purposes (see ISO 1496-1)

5.3.2.1 General

The type code numbers shall be in accordance with ISO 6346.

5.3.2.2 Minimum internal dimensions

Internal dimensions of containers shall be as large as possible but, in any case, greater or equal to those given in Table 3 except for the following:

— containers type G3, having partial opening(s) in the side(s), shall comply with the requirements for minimum internal length and height as given in Table 3;

— containers type G9, when fitted with roof opening(s), shall comply with the requirements for minimum internal length and width as given in Table 3;

— closed, ventilated containers type V2, when fitted internal ventilation equipment, shall comply with the requirements for minimum internal height and width as given in Table 3.

5.3.2.3 Minimum door opening dimensions

Closed-type containers designated 1A, 1B, 1C and 1D shall have a door opening, preferably having dimensions equal to those of the internal cross-section (height and width) of the containers and, in any case, not less than the values given in Table 3.

Closed-type containers designated 1EE, 1AA, 1BB and 1CC shall have a door opening, preferably having dimensions equal to those of the internal cross-section (height and width) of the containers and, in any case, not less than the values given in Table 3.

Closed-type containers designated 1EEE, 1AAA and 1BBB shall have a door opening, preferably having dimensions equal to those of the internal cross-section (height and width) of the containers and, in any case, not less than the values given in Table 3.

5.3.3 Thermal containers (see ISO 1496-2)

The internal dimensions and door openings of thermal containers shall be as large as possible. Door openings shall preferably have dimensions equal to those of the internal cross-section of the containers.

The internal dimensions shall be measured from inner faces of battens, bulkheads, ceiling air ducts, floor air ducts, etc., where fitted.

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The minimum internal width shall be 2 200 mm (7 ft 2 $^{5}/_{8}$ in) for all thermal container types.

5.3.4 Other types of container

The internal dimensions, door openings and end openings (if any) shall be as large as possible.

5.4 Corner fitting locations

Centre-to-centre distances (length and width) and diagonal tolerances for corner fittings shall be as in Annex A.

Table 2 — External dimensions, permissible tolerances and ratings for series 1 freight containers

Freight container designation	Length, L				Width, W				Height, H				Rating, R[a] (gross mass)	
		tol.		tol.		tol.		tol.		tol.		tol.		
	mm		ft and in	in	mm		ft	in	mm		ft and in	in	kg	lb
1EEE	13 716	0 −10	45′	0 −3/8	2 438	0 −5	8	0 −3/16	2 896[b]	0 −5	9′ 6″	0 −3/16	30 480[a]	67 200[a]
1EE									2 591[b]	0 −5	8′ 6″	0 −3/16	30 480	67 200[a]
1AAA	12 192	0 −10	40′	0 −3/8	2 438	0 −5	8	0 −3/16	2 896[b]	0 −5	9′ 6″[b]	0 −3/16	30 480[a]	67 200[a]
1AA									2 591[b]	0 −5	8′ 6″[b]	0 −3/16		
1A									2 438	0 −5	8′	0 −3/16		
1AX									<2 438		<8′			
1BBB	9 125	0 −10	29′ 11 ¼″		2 438	0 −5	8	0 −3/16	2 896[b]	0 −5	9′ 6″[b]	0 −3/16	30 480[a]	67 200[a]
1BB									2 591[b]	0 −5	8′ 6″[b]	0 −3/16		
1B									2 438	0 −5	8′	0 −3/16		
1BX									<2 438		<8′			
1CCC	6 058	0 −6	19′ 10 ½″	0 −1/4	2 438	0 −5	8	0 −3/16	2 896[b]	0 −5	9′ 6″	0 −3/16	30 480[a]	67 200[a]
1CC									2 591[b]	0 −5	8′ 6″[b]	0 −3/16		
1C									2 438	0 −5	8′	0 −3/16		
1CX									<2 438		<8′			
1D	2 991	0 −6	9′ 9 ¾″	0 −3/16	2 438	0 −5	8	0 −3/16	2 438	0 −5	8′	0 −3/16	10 160	22 400
1DX									<2 438		<8′			

[a] Higher values are permissible under certain conditions. See 5.2.2.

[b] Legal limitations to the overall height of vehicle and load can exist in certain countries (for example for rail/road service).

NOTE It can be difficult to provide a 1CCC container with a gooseneck tunnel. 1CCC containers without gooseneck tunnels can meet height problems in some countries while circulating on the road on straight frame container chassis.

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Table 3 — Minimum internal dimensions and door opening dimensions for series 1 freight containers

Dimensions in millimetres

Freight container designation	Minimum internal dimensions			Minimum door opening dimensions	
	Height	Width	Length	Height	Width
1EEE	Nominal container external height minus 241 mm	2 330	13 542	2 566	2 286
1EE				2 261	
1AAA			11 998	2 566	
1AA			11 998	2 261	
1A			11 998	2 134	
1BBB			8 931	2 566	
1BB			8 931	2 261	
1B			8 931	2 134	
1CCC			5 867	2 566	
1CC			5 867	2 261	
1C			5 867	2 134	
1D			2 802	2 134	

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Annex A
(normative)

Corner fittings

Corner fitting locations (centre-to-centre distances and diagonal tolerances) are given in Table A.1 and Figure A.1.

Table A.1 — Corner fitting locations

Freight container designation	*S* (ref.)		*P* (ref.)		K_1 max.[a]		K_2, max.[b]	
	mm	ft and in	mm	ft and in	mm	in	mm	in
1EEE **1EE**	13 509	44′ 3 7/8″	2 259	7′ 4 31/32″	19	3/4	10	3/8
1AAA **1AA** **1A** **1AX**	11 985	39′ 3 7/8″	2 259	7′ 4 31/32″	19	3/4	10	3/8
1BBB **1BB** **1B** **1BX**	8 918	29′ 3 1/8″	2 259	7′ 4 31/32″	16	5/8	10	3/8
1CCC **1CC** **1C** **1CX**	5 853	19′ 2 7/16″	2 259	7′ 4 31/32″	13	1/2	10	3/8
1D **1DX**	2 787	9′ 1 23/32″	2 259	7′ 4 31/32″	10	3/8	10	3/8

NOTE Attention of manufacturers is drawn to the vital importance of accurately maintaining the reference dimensions of *S* and *P* (see Figure A.1). The tolerances to be applied to *S* and *P* are governed by the tolerances shown for the overall length and width in this document and in ISO 1161.

[a] For all containers:

K_1 is the difference between D_1 and D_2 and between D_5 and D_6; therefore $K_1 = | D_1 - D_2 |$ and $K_1 = | D_5 - D_6 |$.

For containers with intermediate corner fittings (such as 1EE and 1EEE):

K1 shall also be checked for difference between D3 and D4, and between D7 and D8; therefore $K_1 = | D_3 - D_4 |$ and $K_1 = | D_7 - D_8 |$.

[b] K_2 is the difference between D_9 and D_{10}; therefore $K_2 = | D_9 - D_{10} |$.

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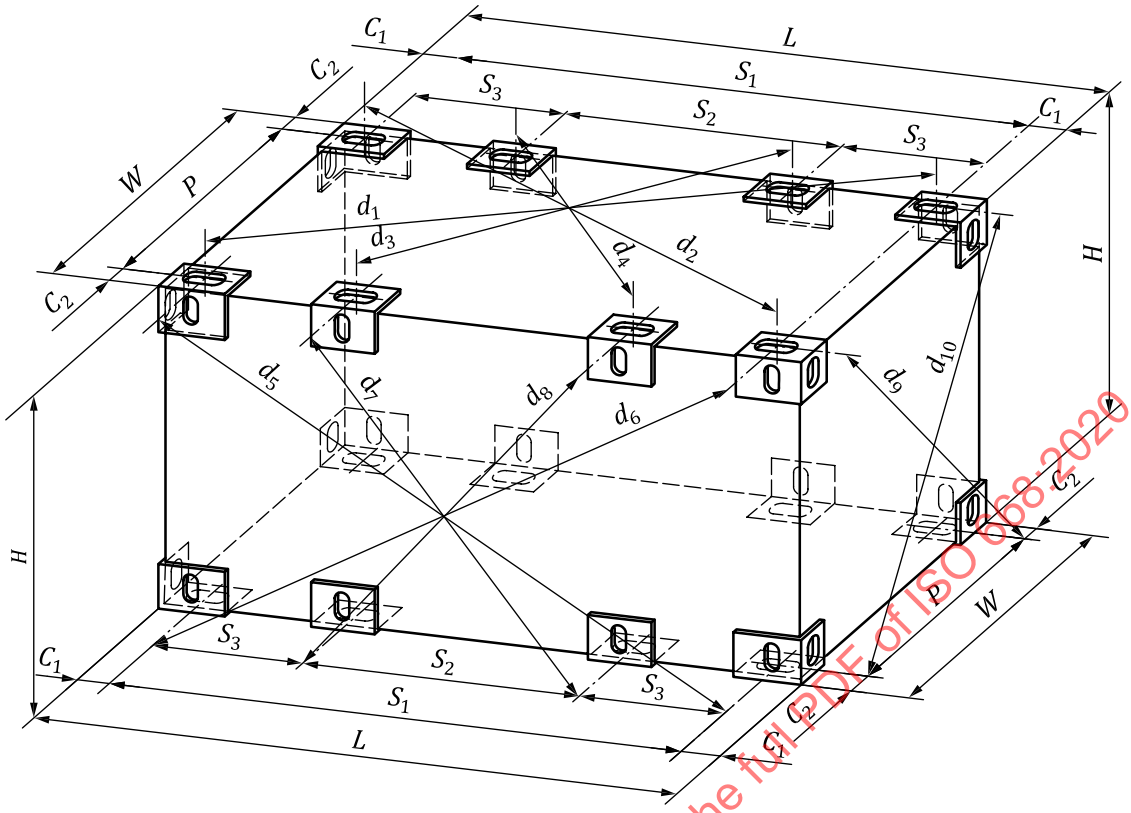

Key

C_1 corner fitting measurement $101{,}5\ ^{0}_{-1{,}5}$ mm ($4\ ^{0}_{-1/16}$ in)

C_2 corner fitting measurement $89\ ^{0}_{-1{,}5}$ mm ($3\ ^{1}/_{2}\ ^{0}_{-1/16}$ in)

D distance between centres of apertures, or projected reference points therefrom, of diagonally opposite corner fittings, resulting in six measurements: D_1, D_2, D_5, D_6, D_9 and D_{10} or ten measurements same as before plus D_3, D_4, D_7 and D_8 for 1 EE and 1 EEE container

H overall height

L external length of the container

P width between centres of apertures in corner fittings

S length between centres of apertures in corner fittings

W external width of the container

NOTE Dimensions L, H and W are measured along the appropriate edges.

Figure A.1 — Corner fitting locations

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Annex B
(normative)

Details of requirements for load transfer areas in base structures of containers

B.1 The base structures of containers, i.e. the end transverse members and such intermediate members as can be fitted (or such flat underside as can be provided) to constitute load transfer areas, shall be capable of transferring load to or from the longitudinal members of a carrying vehicle which are assumed to lie within the two 375 mm (15 in) wide zones defined (by the broken lines) in Figure B.1.

B.2 Containers not having transverse members spaced 1 000 mm (39 ⅜ in) apart or less (and not having a flat underside) shall have load transfer areas as indicated in Figures B.2 to B.9, capable of meeting the following requirements.

B.2.1 Each pair of load transfer areas associated with an end transverse member shall be capable of transferring loads of not less than 0,5 *R*, i.e. the loads which can occur when a container is placed onto a carrying vehicle of the kind which does not support the container by its corner fittings.

Furthermore, each pair of intermediate load transfer areas shall be capable of transferring loads of not less than 1,5 *R*/*n*, where *n* is the number of pairs of intermediate load transfer areas, i.e. loads which can occur during transport operations.

B.2.2 The minimum number of pairs of load transfer areas are:

— 4 for 1CCC, 1CC, 1C and 1CX containers; (except ISO 1496-3 tank containers, where load transfer areas are optional);

— 5 for 1BBB, 1BB, 1B and 1BX containers;

— 5 for 1AAA, 1AA, 1A and 1AX containers;

— 6 for 1AAA, 1AA, 1A and 1AX containers fitted with a non-continuous gooseneck tunnel.

Where a greater number of pairs of load transfer areas are provided, these should be approximately equally spaced along the length of the container.

NOTE For 1CCC containers with gooseneck tunnel, the number of pairs of load transfer area is determined by considering the gross mass of the container.

B.2.3 The spacing between the end transverse member and the nearest intermediate pair of load transfer areas shall be:

— between 1 700 mm and 2 000 mm (66 $^{15}/_{16}$ in to 78 ¾ in) for containers having the minimum number of pairs of load transfer areas for the container concerned; and

— between 1 000 mm and 2 000 mm (39 ⅜ in to 78 ¾ in) for containers having one more pair of load transfer areas than the minimum required for the containers concerned.

B.2.4 Each load transfer area shall have a longitudinal dimension of at least 25 mm (1 in).

B.3 Minimum requirements for load transfer areas in the vicinity of the gooseneck tunnel are shown in Figure B.10.

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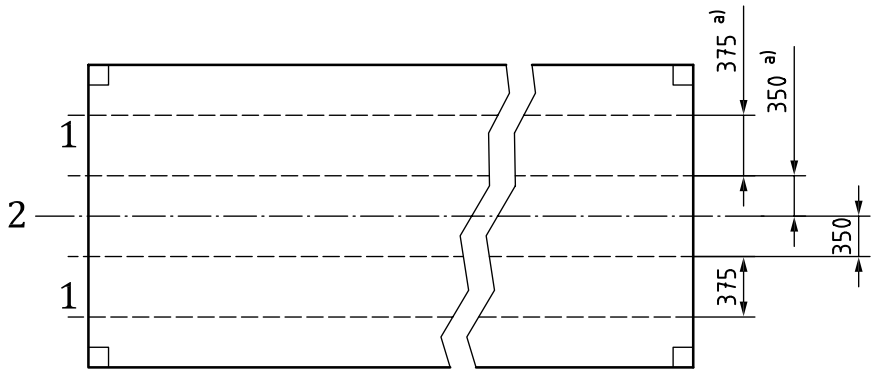
NOTE In Figures B.2 to B.9, the load transfer areas associated with the container base are shown in black. Gooseneck tunnel transfer areas are shown in black in Figure B.10.

Dimensions in millimetres



Key

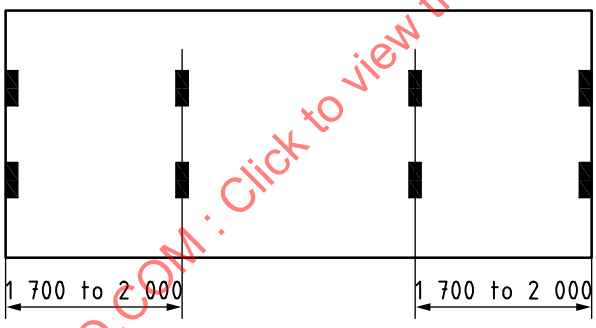
1 zone

2 central axis

NOTE 375 mm corresponds to 15 in, 350 mm corresponds to 14 in.

Figure B.1 — Base structures of containers

Dimensions in millimetres



NOTE 1 Minimum requirements: 4 pairs of load transfer areas (1 pair at each end plus 2 intermediate pairs).

NOTE 2 1 700 mm to 2 000 mm corresponds to 66 $^{15}/_{16}$ in to 78 ¾ in.

Figure B.2 — 1CCC, 1CC, 1C or 1CX containers — Minimum requirements

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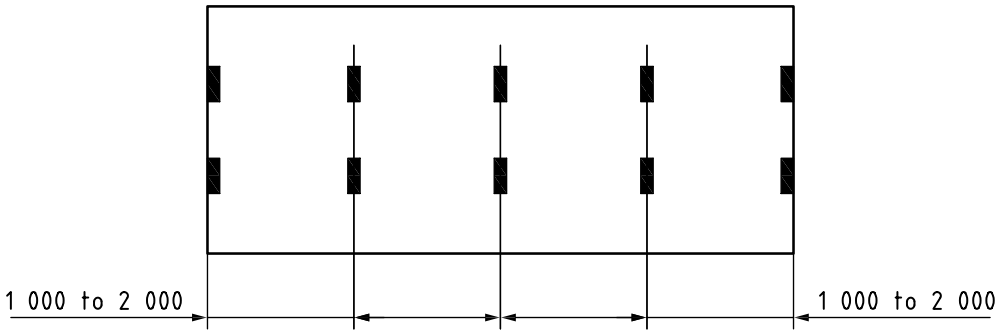
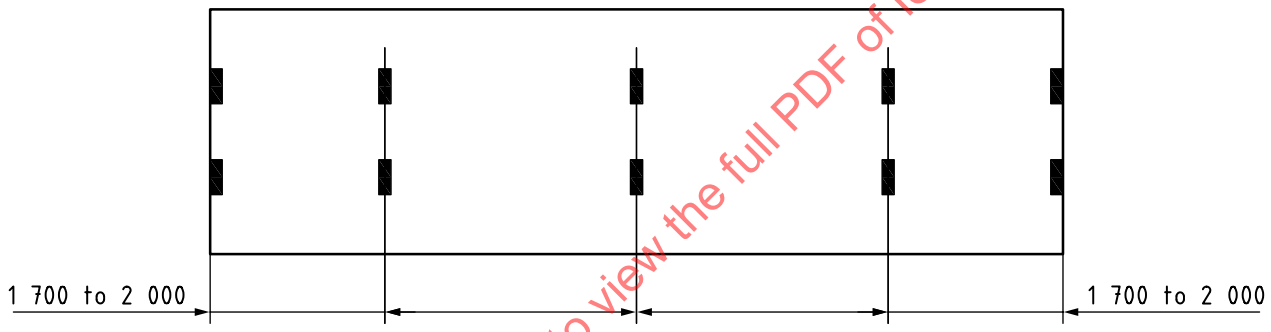
Dimensions in millimetres



NOTE 1 000 mm to 2 000 mm corresponds to 39 $^{3}/_{8}$ in to 78 $^{3}/_{4}$ in.

Figure B.3 — 1CCC, 1CC, 1C or 1CX containers — Requirements if 5 pairs of load transfer areas are to be fitted

Dimensions in millimetres

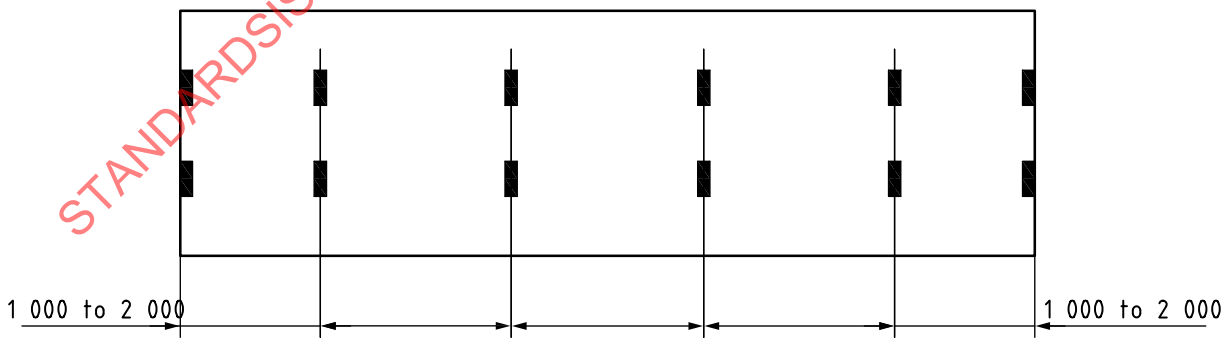


NOTE 1 Minimum requirements: 5 pairs of load transfer areas (1 pair at each end plus 3 intermediate pairs).

NOTE 2 1 700 mm to 2 000 mm corresponds to 66 $^{15}/_{16}$ in to 78 $^{3}/_{4}$ in.

Figure B.4 — 1BBB, 1BB, 1B or 1BX containers — Minimum requirements

Dimensions in millimetres



NOTE 1 000 mm to 2 000 mm corresponds to 39 $^{3}/_{8}$ in to 78 $^{3}/_{4}$ in.

Figure B.5 — 1BBB, 1BB, 1B or 1BX containers — Requirements if 6 pairs of load transfer areas are to be fitted

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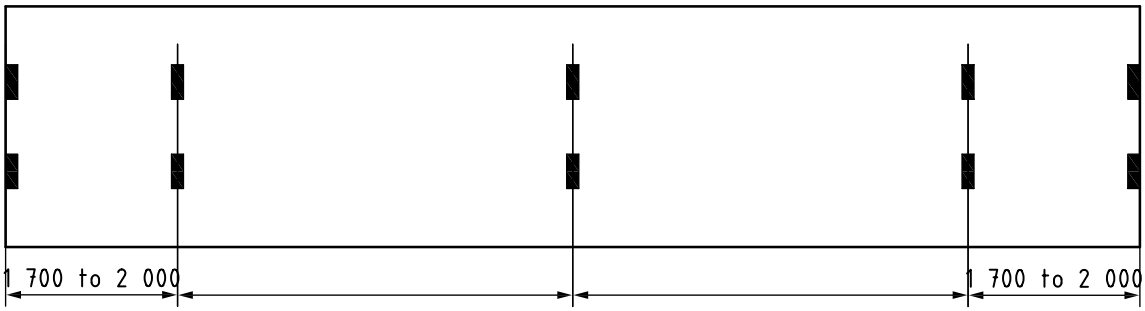
Dimensions in millimetres

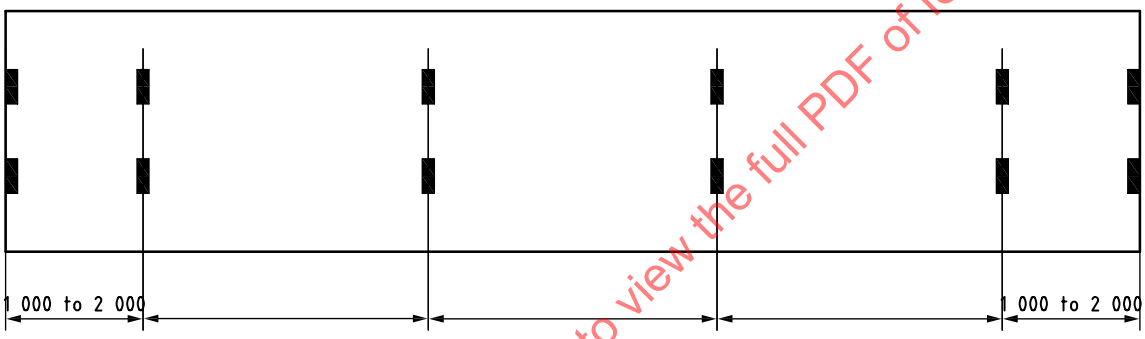


NOTE 1 Minimum requirements: 5 pairs of load transfer areas (1 pair at each end plus 3 intermediate pairs).

NOTE 2 1 700 mm to 2 000 mm corresponds to 66 $^{15}/_{16}$ in to 78 $^{3}/_{4}$ in.

Figure B.6 — 1AA, 1A or 1AX containers without gooseneck tunnel — Minimum requirements

Dimensions in millimetres



NOTE 1 000 mm to 2 000 mm corresponds to 39 $^{3}/_{8}$ in to 78 $^{3}/_{4}$ in.

Figure B.7 — 1AA, 1A or 1AX containers without gooseneck tunnel — Requirements if 6 pairs of load transfer areas are to be fitted

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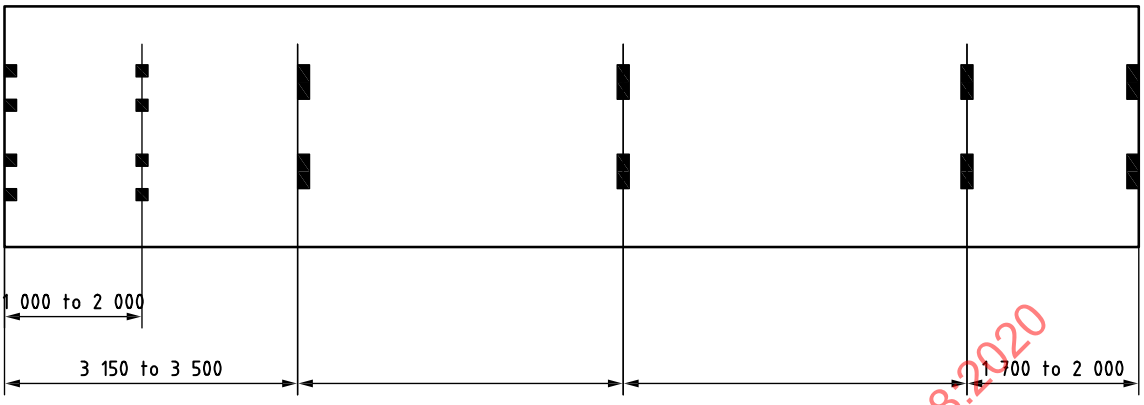
Dimensions in millimetres



NOTE 1 Minimum requirements: 6 pairs of load transfer areas (1 pair at each end plus 4 intermediate pairs).

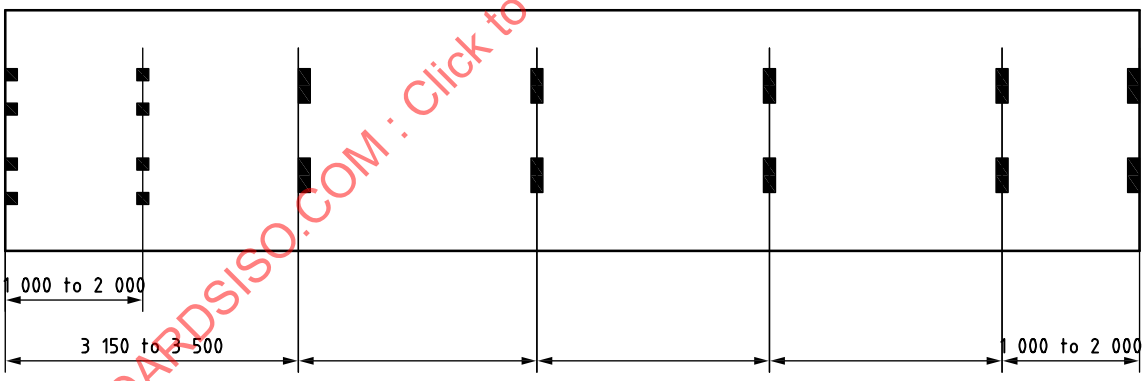
NOTE 2 Minimum localized structure.

NOTE 3 See also Figure B.10.

NOTE 4 1 000 mm to 2 000 mm corresponds to 39 $^{3}/_{8}$ in to 78 $^{3}/_{4}$ in, 1 700 mm to 2 000 mm corresponds to 66 $^{15}/_{16}$ in to 78 $^{3}/_{4}$ in, 3 150 mm to 3 500 mm corresponds to 124 $^{1}/_{4}$ in to 137 $^{7}/_{8}$ in.

Figure B.8 — 1AAA, 1AA, 1A or 1AX containers with gooseneck tunnel — Minimum requirements

Dimensions in millimetres



NOTE 1 Minimum localized structure.

NOTE 2 See also Figure B.10.

NOTE 3 1 000 mm to 2 000 mm corresponds to 39 $^{3}/_{8}$ in to 78 $^{3}/_{4}$ in, 3 150 mm to 3 500 mm corresponds to 124 $^{1}/_{4}$ in to 137 $^{7}/_{8}$ in.

NOTE 4 Only for 1 EEE, 1 EE container.

NOTE 5 For 1 EEE and 1 EE container, the LTA is positioned at 40 ft intermediate frame position.

Figure B.9 — 1 EEE, 1 EE, 1AAA, 1AA, 1A or 1AX containers with gooseneck tunnel — Requirements if 7 pairs of load transfer areas are to be fitted

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