INTERNATIONAL STANDARD

ISO 1496-5

Second edition
1991-12-15

AMENDMENT 2
1994-09-01

Series 1 freight containers — Specification and testing —

Part 5:
Platform and platform-based containers

AMENDMENT 2

Conteneurs de la série 1 — Spécifications et essais —

Partie 5: Conteneurs plates-formes et type plate-forme

AMENDEMENT 2

Reference number
ISO 1496-5:1991/Amd.2:1994(E)

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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Amendment 2 to International Standard ISO 1496-5:1991 was prepared by Technical Committee ISO/TC 104, *Freight containers,* Subcommittee SC 1, *General purpose containers.*

International Organization for Standardization
Case postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

Series 1 freight containers — Specification and testing —

Part 5:
Platform and platform-based containers

AMENDMENT 2

Page 3, subclause 5.2

Add the following final paragraph:

"The sum of the tare weights of the platform containers forming an interlocked pile, together with any required securing devices, shall not exceed the Maximum Gross Mass (MGM) specified in ISO 668 for the size of container in question."

Page 3, subclause 5.3.1

Replace note 3 by the following note:

"NOTE 3 Due to greater inherent flexibility of all sizes of platform-based containers with incomplete superstructure, the top aperture of top corner fittings may be increased by 10 mm in the direction of their end wall.

In such a case the end aperture should be omitted in order to retain corner fitting strength."

Page 5, subclause 6.1

Replace the last paragraph by the following:

"Although the tests are numbered in a certain order, they may be carried out in a different order if more appropriate to optimize utilization of the testing facilities or interpretation of the test results. However, the weatherproofness test (test No. 13), where appropriate, shall always be performed after all structural tests have been completed."

Page 33, subclause F.3.1

Replace the first paragraph by the following text:

"For proof testing of cargo-securing devices, a tensile force equal to 1,5 times the rated load shall be applied, using a hook or shackle having a minimum diameter of 10 mm, the base frame of the container being approximately horizontal.

For cargo-securing devices positioned along the length of the container, this test force shall be applied in a transverse plane and at an angle of 45° to the horizontal. (See figure F.1.)

For cargo-securing devices positioned across the width of the container, this test force shall be applied in a longitudinal plane and at an angle of 45° to the horizontal. (See figure F.1.)"

At the end of the existing second paragraph, add:

"See figure F.1."

Page 33

Add the following figure F.1.

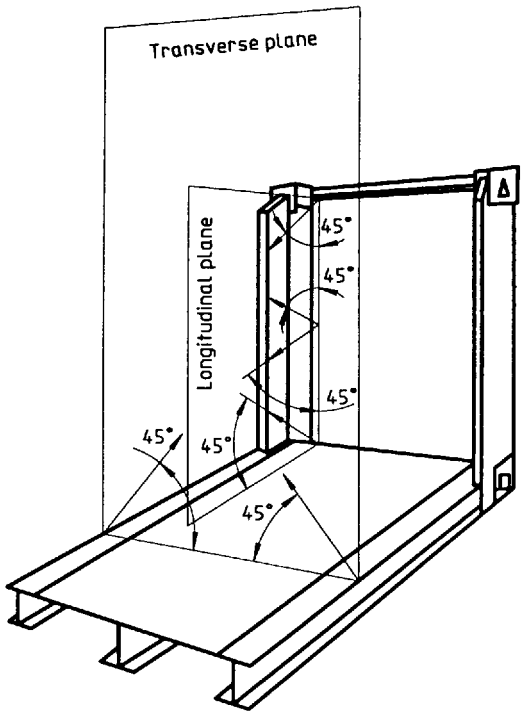


Figure F.1 — Cargo-securing devices — Examples of directions of application of test loadings

Page 34, annex G, title

Replace "intermodal" by "multimodal".

Page 34, figure G.1

In the table, replace the entries concerning height by the following.

		1CC	1C	1CX
Height	H_1	2 591	2 438	< 2 438
	H_2	2 200	2 000	$H_1 - 390$
	H_3	2 000	1 800	$H_1 - 590$

ICS 55.180.10

Descriptors: containers, freight containers, container platforms, specifications, dimensions, tests, performance tests.

Price based on 2 pages

INTERNATIONAL STANDARD

ISO 1496-5

Second edition
1991-12-15

AMENDMENT 1
1993-03-01

Series 1 freight containers – Specification and testing –

Part 5:
Platform and platform-based containers

AMENDMENT 1: 1AAA and 1BBB containers

Conteneurs de la série 1 – Spécifications et essais –

Partie 5: Conteneurs plates-formes et type plate-forme

AMENDEMENT 1: Conteneurs 1AAA et 1BBB

Reference number
ISO 1496-5:1991/Amd.1:1993 (E)

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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Amendment 1 to International Standard ISO 1496-1:1991 was prepared by Technical Committee ISO/TC 104, *Freight containers*, Sub-Committee SC 1, *General purpose containers*.

International Organization for Standardization
Case postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

Series 1 freight containers – Specification and testing –

Part 5:

Platform and platform-based containers

AMENDMENT 1: 1AAA and 1BBB containers

Page 1, Scope, paragraph 1.1

Replace the fourth line by the following:

"based types designated 1AAA, 1AA, 1A, 1AX, 1BBB, 1BB, 1B, 1BX,"

Page 2, table 2

In the column "Container designation", replace the first and second lines with the following:

"1AAA, 1AA, 1A and 1AX

1BBB, 1BB, 1B and 1BX"

Page 4, subclause 5.9.1.1, last paragraph

Replace this paragraph with the following:

"Fork-lift pockets shall not be provided on 1AAA, 1AA, 1A, 1AX, 1BBB, 1BB, 1B and 1BX containers."

Page 5, subclause 5.9.3

Replace the current paragraph with the following:

"Gooseneck tunnels shall be provided as mandatory features in 1AAA containers, and may be provided as optional features in 1AA, 1A and 1AX containers.

The dimensions of gooseneck tunnels shall be in accordance with annex E.

The base structure of the containers, if any, shall be in accordance with 5.4."

Page 6, table 3

In the column "Container designation", replace the first and second lines with the following:

"**1AAA, 1AA, 1A and 1AX**
1BBB, 1BB, 1B and 1BX"

Page 7, subclause 6.4.2, second paragraph

Replace the second to fifth lines with the following:

"30° to the horizontal for 1AAA, 1AA, 1A and 1AX containers;

37° to the horizontal for 1BBB, 1BB, 1B and 1BX containers;"

Page 22, subclause B.2.2, first paragraph

Replace this paragraph with the following:

"**B.2.2** The minimum number of pairs of load-transfer areas is:

For 1CC, 1C and 1CX containers	4
For 1BBB, 1BB, 1B and 1BX containers	5
For 1AAA, 1AA, 1A and 1AX containers	5
For 1AAA, 1AA, 1A and 1AX containers fitted with a non-continuous gooseneck tunnel	6"

Page 24, figure B.3

Replace the current title with the following:

"**Figure B.3 — 1BBB, 1BB, 1B and 1BX containers**"

Page 26, figure B.5

Replace the current title with the following:

"**Figure B.5 — 1AAA, 1AA, 1A and 1AX containers with gooseneck tunnel** (with minimum localized structure)"

Page 30, figure D.1

Insert a reference to "1AAA" containers in the top left-hand drawing and a reference to "1BBB" containers in the drawing below.

Page 32, subclause F.2.2

In item a), replace the second and third lines with the following:

"— for 1AAA, 1AA, 1A and 1AX containers, $N = 16$

— for 1BBB, 1BB, 1B and 1BX containers, $N = 12$"

ISO 1496-5:19910/Amd.1:1993 (E)

UDC 621.869.888

Descriptors: containers, freight containers, container platforms, classification, specifications, dimensions, tests, performance tests.

Price based on 2 pages

INTERNATIONAL STANDARD

ISO 1496-5

Second edition
1991-12-15

Series 1 freight containers — Specification and testing —

Part 5:
Platform and platform-based containers

Conteneurs de la série 1 — Spécifications et essais —
Partie 5: Conteneurs plates-formes et type plate-forme

Reference number
ISO 1496-5:1991(E)

Contents

International Organization for Standardization
Case Postale 56 • CH-1211 Genève 20 • Switzerland

Printed in Switzerland

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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 1496-5 was prepared by Technical Committee ISO/TC 104, *Freight containers*, Sub-Committee SC 1, *General purpose containers*.

This second edition cancels and replaces the first edition (ISO 1496-5:1977), as well as ISO 1496-6C:1977, of which it constitutes a technical revision.

ISO 1496 consists of the following parts, under the general title *Series 1 freight containers — Specification and testing*:

— *Part 1: General cargo containers for general purposes*

— *Part 2: Thermal containers*

— *Part 3: Tank containers for liquids, gases and pressurized dry bulk*

— *Part 4: Non-pressurized containers for dry bulk*

— *Part 5: Platform and platform-based containers*

— *Part 6: International cargo-security devices*

Annexes A, B, C, D, E and F form an integral part of this part of ISO 1496. Annexes G and H are for information only.

Introduction

The following grouping of container types is used for specification purposes in ISO 1496:

Part 1	
General purpose	00 to 09
Specific purpose	
closed, vented/ventilated	10 to 19
open top	50 to 59
Part 2	
Thermal	30 to 49
Part 3	
Tank	70 to 79
Dry bulk, pressurized	85 to 89
Part 4	
Bulk, non-pressurized (box type)	20 to 24
Bulk, non-pressurized (hopper type)	80 to 84
Part 5	
Platform (container)	60
Platform-based with incomplete superstructure and fixed ends	61 and 62
Platform-based with incomplete superstructure and folding ends	63 and 64
Platform-based with complete superstructure	65 to 69

NOTE 1 Containers types 90 to 99 are reserved for air/surface containers (see ISO 8323).

Series 1 freight containers — Specification and testing —

Part 5:
Platform and platform-based containers

1 Scope

1.1 This part of ISO 1496 specifies the basic specifications and testing requirements for ISO series 1 freight containers of the platform and platform-based types designated 1AA, 1A, 1AX, 1BB, 1B, 1BX, 1CC, 1C and 1CX which are suitable for international exchange and for conveyance by road, rail and sea, including interchange between these forms of transport, with certain limitations (for example, when loaded, platforms cannot be stacked or top lifted by means of conventional spreaders).

1.2 The container types covered by this part of ISO 1496 are given in table 1.

Table 1 — Container types

Type	Type code designation[1)]
Platform	60
Platform-based container	
With incomplete superstructure	
with fixed complete end structure	61
with fixed free-standing posts	62
with folding complete end structure	63
with folding free-standing posts	64
With complete superstructure	
with roof	65
with open top	66
with open top, open ends (skeletal)	67

1) In accordance with ISO 6346.

1.3 The marking requirements for these containers shall be in accordance with the principles embodied in ISO 6346.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 1496. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 1496 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 668:1988, *Series 1 freight containers — Classification, dimensions and ratings.*

ISO 830:1981, *Freight containers — Terminology,* and its amendments: ISO 830:1981/Amd.1:1984 and ISO 830:1981/Amd.2:1988.

ISO 1161:1984, *Series 1 freight containers — Corner fittings — Specification.*

ISO 6346:1984, *Freight containers — Coding, identification and marking,* and its amendment: ISO 6346:1984/Amd.1:1988.

3 Definitions

For the purposes of this part of ISO 1496, the definitions given in ISO 830, together with the following, apply. However, for practical reasons, certain definitions taken and adapted from ISO 830 are given below.

3.1 platform: Flat structure having no superstructure whatever. The equipment covered by this part of ISO 1496 is defined as a loadable platform having no superstructure whatever but having the same length and width as the base of series 1 containers, and equipped with top and bottom corner fittings, located in plan view as on other series 1 containers;

so that some securing and lifting devices used on other series 1 containers of the same length can also be used on platforms.

3.2 platform-based container: Container having no side walls but which has a base similar to that of a platform container.

3.3 incomplete superstructure: Lack of any permanently fixed longitudinal load-carrying structure between the ends other than at the base.

3.4 fixed complete end structure: Fixed end frame with a complete load-bearing end wall between corner posts.

3.5 folding complete end structure: Folding end frame with a transverse structural connection between corner posts.

3.6 interlocked pile: A number of platform containers or folding platform-based containers, with ends folded down, which are interlocked to form a unit (module) (see 4.1.3).

4 Dimensions and ratings

4.1 External dimensions

4.1.1 The overall external dimensions and tolerances of the freight containers covered by this part of ISO 1496 shall be those established in ISO 668, except that the requirements for the overall top lengths (L) of platform-based containers with incomplete superstructure may be relaxed to the extreme limits specified in table 2.

Table 2 — Overall top dimension, L

Dimensions in millimetres

Container designation	Overall top dimension in tare condition T L_{max}	Overall top dimension when loaded to R L_{min}
1AA, 1A and 1AX	12 202	12 172
1BB, 1B and 1BX	9 135	9 105
1CC, 1C and 1CX	6 068	6 042

Any movement of the corner posts resulting from the change from the empty to the fully loaded condition of the container should, as far as practicable, be equally disposed about the mean of the values of L_{max} and L_{min}.

1) 2 591 mm = 102 in

Taking into account the fact that the mechanism of the folding end structures may introduce natural play, the values of L_{max} and L_{min} specified in table 2 shall be met. Failure to comply with this requirement is liable to lead to handling difficulties.

4.1.2 No part of the platform or platform-based container shall project beyond the envelope defined by the overall external dimensions specified in

— ISO 668 for the plan dimensions of the base structure of all containers, the plan dimensions of the top part of container with complete superstructure, or the overall maximum height of all containers which may also be of reduced dimensions, or

— table 2 for the plan dimensions of the top part of containers with incomplete superstructure.

4.1.3 An interlocked pile of either platform or folded platform-based containers shall have the plan dimensions specified in ISO 668 and a pile height not exceeding 2 591 mm[1].

4.2 Internal dimensions

Internal dimensions are not specified; however, minimum internal dimensions of existing 1CC, 1C and 1CX platform-based containers for the carriage of small containers are given in annex G . The values are given as a guide to the design of small intermodal containers.

4.3 Ratings

The values of the rating R, the maximum gross mass of these containers, shall be those specified in ISO 668.

5 Design requirements

5.1 General

All containers shall be capable of fulfilling the requirements given in 5.1.1 to 5.1.4.

5.1.1 The strength requirements for containers are given in diagrammatic form in annex A (these requirements are applicable to all containers except where otherwise stated). They apply to containers as complete units, i.e. those removable components in position as required for the intended operating conditions.

5.1.2 The strength requirements for corner fittings (see also 5.3) are specified in ISO 1161.

5.1.3 All containers, except containers with folding ends (codes 63 and 64) in the folded condition, shall be capable of withstanding the loads and loadings specified in clause 6.

Containers with folding ends in the folded condition shall be capable of withstanding the loads and loadings specified in clause 7.

As the effects of loads encountered under any dynamic operating condition should only approach, but not exceed, the effects of the corresponding test loads, it is implicit that the capabilities of containers indicated in annex A and demonstrated by the tests described in clauses 6 and 7 shall not be exceeded in any mode of operation.

Containers need not be weatherproof but if designed to be weatherproof they shall satisfy test No. 13 (see 6.13).

5.1.4 Any movable part which, if unsecured, could lead to a hazardous situation, shall be provided with an adequate securing system having external indication of the positive securement of that part in the appropriate operating position.

5.2 Interlocked pile of folded containers

Horizontal free play shall be limited between individual folded containers forming an interlocked pile so that the pile is capable of complying with the dimensional requirements of 4.1.3.

5.3 Corner fittings

5.3.1 All containers shall be equipped with top and bottom corner fittings (see notes 2 and 3). The requirements and positioning of the corner fittings are given in ISO 1161, except for the case mentioned in 4.1.1.

NOTES

2 For 1CX platforms, the top and bottom corner fittings may be combined providing they comply with ISO 1161.

3 Due to the greater inherent longitudinal flexibility of 1CX containers, the top corner fittings may have their top aperture increased by 10 mm towards the end wall. In such a case, the end aperture should be omitted in order to retain corner fitting strength.

5.3.2 Containers with folding ends shall be equipped with features such that in the folded condition they may be stacked and secured, lifted from the top by means of a spreader equipped with corner fitting locking devices (e.g. twistlocks), and interlocked with other containers having similar folding end structures.

The features shall have at least an equivalent to the upper face and internal cavity of the top corner fitting.

The positioning of the features in the folded condition shall meet the requirements of ISO 1161.

5.3.3 For all containers, including containers with folding ends folded down, the upper faces of the top corner fittings or equivalent features (performing some of the functions of top corner fittings — see 5.3.2) shall protrude above the top of the container by a minimum of 6 mm[2)] (see 5.4.3). By "top of the container" is understood the highest level of any part of the container, for example the level of the top of a soft cover.

However, if reinforced zones or doubler plates are provided to afford protection in the vicinity of the top corner fittings, such plates and their securements shall not protrude above the upper faces of the top corner fittings.

These plates shall not extend more than 750 mm[2)] from either end of the container but may cover the full width.

5.4 Base structure

5.4.1 All containers shall be capable of being supported by their bottom corner fittings only.

5.4.2 All containers shall be capable of being supported only by load-transfer areas in their base structure.

5.4.2.1 Consequently, these containers shall have end transverse members and sufficient intermediate load-transfer areas (or a flat underside) of sufficient strength to permit vertical load transfer to or from the longitudinal members of a carrying vehicle. Such longitudinal members are assumed to lie within the two 250 mm[2)] wide zones defined by the broken lines in figure B.1.

5.4.2.2 The lower faces of the load-transfer areas in the container base structure, including those of the end transverse members, shall be in one plane located

$$12{,}5 \text{ mm } {}^{+5}_{-1{,}5} \text{ mm}^{2)}$$

above the plane of the lower faces of the bottom corner fittings of the container (base plane), except where camber is provided (see 5.4.5).

Apart from the bottom corner fittings and bottom side rail, no part of the container shall project below this plane. However, doubler plates may be provided

2) 6 mm = 1/4 in; 12,5 mm $^{+5}_{-1,5}$ mm = 1/2 in $^{+3/16}_{-1/16}$ in; 250 mm = 10 in; 750 mm = 29 1/2 in

in the vicinity of the bottom corner fittings to afford protection to the understructure.

Such plates shall not extend more than 550 mm[3] from the outer end and not more than 470 mm[3] from the side faces of the bottom corner fittings and their lower faces shall be at least 5 mm[3] above the base plane of the container.

5.4.2.3 The transfer of load between the underside of the bottom side rails and carrying vehicles is not envisaged.

The transfer of load between bottom side rails and handling equipment should only occur when provision has been made in accordance with 5.9.1 and 5.9.2.

5.4.2.4 Containers having all their intermediate transverse members spaced 1 000 mm[3] apart or less (or having a flat underside) shall be deemed to comply with the requirements of 5.4.2.1.

5.4.2.5 Requirements for containers not having transverse members spaced 1 000 mm[3] apart or less (and not having a flat underside) are given in annex B.

5.4.3 For all containers under dynamic conditions, or the static equivalent of a container having a load uniformly distributed over the floor in such a way that the combined mass of the container and test load is equal to 1,8R, no part of the base of the container shall deflect more than 6 mm[3] below the base plane of the container.

5.4.4 The base structure shall be designed to withstand all forces, particularly lateral forces, induced by the cargo in service (see also 5.7.3, 5.7.4 and figures A.7 and A.8). This is particularly important where provisions are made for securement of cargo to the base structure of the container.

5.4.5 Camber may be provided with respect to the end transverse members, which shall be located at the height specified in 5.4.2.2.

When determining camber of a platform-based container, note should be taken of the relationship between the base deflections which occur under load and the longitudinal movement which is permitted at the top of the corner posts (for which the limit is specified in 4.1.1).

When a container with camber is loaded to its rating R, the base should be approximately horizontal to facilitate the transport of the container when it is supported by its base structure only.

5.5 End structure (platform-based containers only)

For all platform-based containers, the sideway deflection of the top of the container with respect to the bottom of the container at the time it is under full transverse rigidity test conditions, shall not cause the sum of the changes in length of the two diagonals to exceed 60 mm[3].

5.6 Side structure (platform-based containers only)

For all platform-based containers, the longitudinal deflection of the top of the container with respect to the bottom of the container at the time it is under full longitudinal rigidity test conditions shall not exceed 42 mm[3].

5.7 Walls and securing devices

5.7.1 Where containers are provided with end walls, these shall be able to withstand the effects of test No. 5 except insofar as is implied in 5.7.3.

5.7.2 Where openings are provided in end walls, the ability of these walls to withstand test No. 5 shall not be impaired.

5.7.3 Where containers are provided with ends which are not able to withstand test No. 5, means shall be provided for securing the cargo to the base structure in such a manner that the cargo does not transmit longitudinal forces to the ends.

5.7.4 Since the containers do not have side walls, adequate means shall be provided to permit the securing of the cargo against lateral movement.

5.7.5 The design requirements for cargo-securing devices presented in 5.7.3 and 5.7.4 are specified in annex F.

5.8 Door openings

Door openings need not be provided.

5.9 Requirements — Optional features

5.9.1 Fork-lift pockets

5.9.1.1 Fork-lift pockets for handling 1CC, 1C and 1CX containers in the loaded or unloaded condition may be provided as optional features.

Fork-lift pockets shall not be provided on 1AA, 1A, 1AX, 1BB, 1B and 1BX containers.

3) 5 mm = 3/16 in; 6 mm = 1/4 in; 42 mm = 1 3/4 in; 60 mm = 2 3/8 in; 470 mm = 18 1/2 in; 550 mm = 22 in; 1 000 mm = 39 3/8 in

5.9.1.2 Where a set of fork-lift pockets has been fitted as in 5.9.1.1, a second set of fork-lift pockets may, in addition, be provided on 1CC, 1C and 1CX containers for empty handling only.

5.9.1.3 The fork-lift pockets, where provided, shall meet the dimensional requirements specified in annex C and shall pass completely through the base structure of the container so that lifting devices may be inserted from either side. The base of the fork-lift pockets need not be the full width of the container but shall be provided near each end of the fork-lift pockets.

5.9.2 Grappler arms or similar devices

Fixtures for handling all containers by means of grappler arms or similar devices may be provided as optional features. The dimensional requirements for such provisions are specified in annex D.

5.9.3 Gooseneck tunnels

Gooseneck tunnels may be provided as optional features in 1AA, 1A and 1AX containers. The dimensional requirements are specified in annex E and, in addition, all other parts of the base structure shall be as specified in 5.4.

6 Testing

6.1 General

Unless otherwise stated, containers complying with the design requirements specified in clause 5 shall, in addition, be capable of withstanding the tests specified in 6.2 to 6.13 and 7.1 to 7.3, as applicable. Containers shall be tested in the condition for which they are designed to be operated. Containers equipped with removable structural items shall be tested with these items in position.

It is recommended that the test for weatherproofness (test No. 13), where appropriate, be made last.

6.1.1 The symbol P denotes the maximum payload of the container to be tested, that is:

$$P = R - T$$

where

R is the rating;

T is the tare.

NOTE 4 R, P and T, by definition, are in units of mass. Where test requirements are based on the gravitational forces derived from these values, these forces, which are inertial forces, are indicated thus:

Rg, Pg, Tg

the units of which are in newtons or multiples thereof.

The word "load", when used to describe a physical quantity to which units may be ascribed, implies mass.

The word "loading", for example as in "internal loading", implies force.

6.1.2 The test load or loading on the platform or platform-based container shall be uniformly distributed.

6.1.3 The test loads and loadings specified in all of the following tests are minimum requirements.

6.1.4 The dimensional requirements to which reference is made after each test are those specified in

a) the dimensional and design requirement clauses of this part of ISO 1496;

b) ISO 668;

c) ISO 1161.

6.2 Test No. 1 — Stacking

6.2.1 General

This test shall be carried out to prove the ability of a fully loaded container to support a superimposed mass of containers, taking into account conditions aboard ships at sea and the relative eccentricities between superimposed containers.

Table 3 specifies the force to be applied as a test to each pair of corner fittings and the superimposed mass that the test force represents.

6.2.2 Procedure

6.2.2.1 Platform container

The container in the tare condition shall be placed on four level pads, one under each bottom corner fitting or equivalent corner structure. The pads shall be centralized under the fittings, and shall be substantially of the same plan dimensions as the fittings.

The container shall be subjected to vertical forces applied either to all four corner fittings simultaneously or to each pair of end fittings, at the appropriate level specified in table 3.

6.2.2.2 Platform-based container

The container shall be placed on four level pads, one under each bottom corner fitting. The pads shall be centralized under the fittings, and shall be substantially of the same plan dimensions as the fittings.

The container shall have a load uniformly distributed over the floor in such a way that the combined mass of the container and test load is equal to $1,8R$.

The container shall be subjected to vertical forces applied either to all four corner fittings simultaneously or to each pair of end fittings, at the appropriate level specified in table 3.

6.2.2.3 Application of force

For platform or platform-based containers, the forces shall be applied through a test fixture equipped with corner fittings as specified in ISO 1161, or equivalent fittings which have imprints of the same geometry (i.e. with the same external dimensions, chamfered aperture and rounded edges) as the lower face of the bottom corner fitting specified in ISO 1161. If equivalent fittings are used they shall be designed to produce the same effect on the container under the test loads as when corner fittings are used.

In all cases, the forces shall be applied in such a manner that rotation of the planes through which the forces are applied and on which the container is supported is minimized.

Each corner fitting or equivalent fitting shall be offset in the same direction by 25,4 mm[4] laterally and 38 mm[4] longitudinally.

6.2.3 Requirements

On completion of the test, the container shall show neither permanent deformation nor abnormality which will render it unsuitable for use, and the dimensional requirements affecting handling, securing and interchange shall be satisfied.

6.3 Test No. 2 — Lifting from the four top corner fittings

6.3.1 General

This test shall be carried out to prove the ability of a container to withstand being lifted from the four top corner fittings with the lifting forces applied vertically. These are the only recognized ways of lifting these platform containers by the four top corner fittings.

NOTE 5 Loaded platforms should be lifted by means of spreaders with extensions.

This test shall also be regarded as proving the ability of the floor and base structure to withstand the forces arising from acceleration of the payload in lifting operations.

6.3.2 Procedure

The container shall have a load uniformly distributed over the floor in such a way that the combined mass of the container and test load is equal to $2R$, and it shall be carefully lifted from all four top corners in such a way that no significant acceleration or deceleration forces are applied.

For all platform containers, the lifting forces shall be applied vertically.

After lifting, the container shall be suspended for 5 min and then lowered to the ground.

6.3.3 Requirements

On completion of the test, the container shall show neither permanent deformation nor abnormality which will render it unsuitable for use, and the dimensional requirements affecting handling, securing and interchange shall be satisfied.

Table 3 — Forces to be applied in stacking test

Container designation	Test force per container (all four corners simultaneously)		Test force per pair of end fittings		Superimposed mass represented by test force	
	kN	lbf	kN	lbf	kg	lb
1AA, 1A and 1AX	3392	763200	1696	381 600	192000	423320
1BB, 1B and 1BX	3392	763200	1696	381 600	192000	423320
1CC, 1C and 1CX	3392	763200	1696	381 600	192000	423320

NOTE — The test force of 3392 kN per container is derived from the superimposed mass of nine-high stacking, i.e. eight containers stacked on top of one container, all being rated to 24000 kg, and an acceleration of 1,8g. [The corner posts of such containers are known to have been tested to 86400 kg (190480 lb).]

4) 25,4 mm = 1 in; 38 mm = 1 1/2 in

6.4 Test No. 3 — Lifting from the four bottom corner fittings

6.4.1 General

This test shall be carried out to prove the ability of a container to withstand being lifted from its four bottom corner fittings by means of lifting devices bearing on the bottom corner fittings only and attached to a single transverse central spreader beam above the container.

6.4.2 Procedure

The container shall have a load uniformly distributed over the floor in such a way that the combined mass of container and test load is equal to $2R$, and shall be carefully lifted from the side apertures of all four bottom corner fittings in such a way that no significant acceleration or deceleration forces are applied.

Lifting forces shall be applied at an angle of

30° to the horizontal for 1AA, 1A and 1AX containers;

37° to the horizontal for 1BB, 1B and 1BX containers;

45° to the horizontal for 1CC, 1C and 1CX.

In each case, the line of action of the lifting force and the outer face of the corner fitting shall be no further apart than 38 mm[5]. The lifting shall be carried out in such a manner that the lifting devices bear on the four bottom corner fittings only.

After lifting, the container shall be suspended for 5 min and then lowered to the ground.

6.4.3 Requirements

On completion of the test, the container shall show neither permanent deformation nor abnormality which will render it unsuitable for use, and the dimensional requirements affecting handling, securing and interchange shall be satisfied.

6.5 Test No. 4 — External restraint (longitudinal)

6.5.1 General

This test shall be carried out to prove the ability of a container to withstand longitudinal external restraint under dynamic conditions of railway operations, which implies acceleration of $2g$.

6.5.2 Procedure

The container shall have a load uniformly distributed over the floor in such a way that the combined mass of the container and the uniformly distributed test load is equal to R, and it shall be secured longitudinally to rigid anchor points through the bottom aperture of the bottom corner fittings at one end of the container.

A force of $2Rg$ shall be applied horizontally to the container through the bottom apertures of the other bottom corner fittings, first towards and then away from the anchor points.

6.5.3 Requirements

On completion of the test, the container shall show neither permanent deformation nor abnormality which will render it unsuitable for use, and the dimensional requirements affecting handling, securing and interchange shall be satisfied.

6.6 Test No. 5 — Strength of end walls (where provided)[6]

6.6.1 General

This test shall be carried out to prove the ability of a container to withstand forces under the dynamic conditions referred to in 6.5.1.

6.6.2 Procedure

The container shall have each end tested when one end is blind and the other equipped with special features. In the case of symmetrical construction, one end only need be tested. The container shall be subjected to an internal loading of $0{,}4Pg$. The internal loading shall be uniformly distributed over the wall under test and arranged to allow free deflection of the wall.

5) 38 mm = 1 1/2 in

6) Tests No. 5 and No. 7 are applicable to only some types of platform-based containers. Test No. 6 of ISO 1496-1:1990 (strength of side walls) is not applicable.

6.6.3 Requirements

On completion of the test, the container shall show neither permanent deformation nor abnormality which will render it unsuitable for use, and the dimensional requirements affecting handling, securing and interchange shall be satisfied.

6.7 Test No. 7 — Strength of the roof (where provided)[7]

6.7.1 General

This test shall be carried out to prove the ability of the rigid roof of a container, where fitted, to withstand the loads imposed by persons working on the roof.

6.7.2 Procedure

A load of 300 kg[8] shall be uniformly distributed over an area of 600 mm × 300 mm[8] located at the weakest area of the rigid roof of the container.

6.7.3 Requirements

On completion of the test, the container shall show neither permanent deformation nor abnormality which will render it unsuitable for use, and the dimensional requirements affecting handling, securing and interchange shall be satisfied.

6.8 Test No. 8 — Floor strength

6.8.1 General

This test shall be carried out to prove the ability of a container floor to withstand the concentrated dynamic loading during cargo operations involving trucks or similar devices.

6.8.2 Procedure

The test shall be performed using a test vehicle equipped with tyres, with an axle load of 5 460 kg[8] [i.e. 2 730 kg[8] on each of two wheels]. It shall be so arranged that all points of contact between each wheel and a flat continuous surface lie within a rectangular envelope measuring 185 mm[8] (in a direction parallel to the axle of the wheel) by 100 mm[8] and that each wheel makes physical contact over an area within this envelope of not more than 142 cm^2 [8]. The wheel width shall be nominally 180 mm[8] and the wheel centres shall be nominally 760 mm[8]. The test vehicle shall be manœuvred over the entire floor area of the container both longitudinally and transversally. The test shall be made with the container resting on four level supports under its four bottom corner fittings, with its base structure free to deflect.

6.8.3 Requirements

On completion of the test, the container shall show neither permanent deformation nor abnormality which will render it unsuitable for use, and the dimensional requirements affecting handling, securing and interchange shall be satisfied.

6.9 Test No. 9 — Rigidity (transverse) (not applicable to platform containers)

6.9.1 General

This test shall be carried out to prove the ability of a container, other than a platform container, to withstand the transversal racking forces resulting from ship movement.

6.9.2 Procedure

6.9.2.1 The container in tare condition (T) shall be placed on four level supports, one under each corner fitting, and shall be restrained against lateral and vertical movement by means of anchor devices acting through the bottom apertures of the bottom corner fittings. Lateral restraint shall be provided only at a bottom corner fitting diagonally opposite and in the same end frame as the top corner fitting to which forces are applied. When testing the two end frames separately, vertical restraint shall be applied only at the end frame under test.

6.9.2.2 In the case of containers of type code 62 or 64, in order to represent typical service conditions as closely as practicable, the top corner fittings at the end or ends of the container under test should be connected transversally by means of a member or members representing the lower transverse member(s) in the end frame(s) of a superimposed container. The representative member shall be securely attached to the corner fittings so that the loads will be equally applied to the two posts.

6.9.2.3 Forces of 150 kN[8] shall be applied either separately or simultaneously to each of the top corner fittings on one side of the container in lines parallel both to the base and to the planes of the ends of the container. The forces shall be applied first towards and then away from the top corner fittings.

---

7) Tests No. 5 and No. 7 are applicable to only some types of platform-based containers. Test No. 6 of ISO 1496-1:1990 (strength of side walls) is not applicable.

8) 142 cm^2 = 22 in^2; 300 kg = 660 lb; 2 730 kg = 6 000 lb; 5 460 kg = 12 000 lb; 150 kN = 33 700 lbf; 100 mm = 4 in; 180 mm = 7 in; 185 mm = 7 1/4 in; 600 mm × 300 mm = 24 in × 12 in; 760 mm = 30 in

In the case of a container with identical ends, only one end need be tested. Where an end is not essentially symmetrical about its own vertical centreline, both sides of that end shall be tested.

For allowable deflections under full test loading, see 5.5.

6.9.3 Requirements

On completion of the test, the container shall show neither permanent deformation nor abnormality which will render it unsuitable for use, and the dimensional requirements affecting handling, securing and interchange shall be satisfied.

NOTE 6 The satisfactory completion of this test by a container of type code 62 or 64 implies that each post may be subjected to a maximum transverse racking loading of 75 kN[9] in service.

6.10 Test No. 10 — Rigidity (longitudinal) (not applicable to platform containers)

6.10.1 General

This test shall be carried out to prove the ability of a container, other than a platform container, to withstand the longitudinal racking forces resulting from ship movement.

For a container which has incomplete superstructures, a total racking loading of 150 kN[9] is assumed to be shared between the two ends of the container in the ratio of 2 to 1, although there is uncertainty surrounding the precise division of loading. The test shall be applied in accordance with the procedure given in 6.10.2.

6.10.2 Procedure

6.10.2.1 The container in tare condition (T) shall be placed on four level supports, one under each corner fitting, and shall be restrained against longitudinal and vertical movement by means of anchor devices acting through the bottom apertures of the bottom corner fittings. Longitudinal restraint shall be provided only at a bottom corner fitting diagonally opposite and in the same side frame as the top corner fitting to which the force is applied.

6.10.2.2 For containers with incomplete superstructure (types 61, 62, 63 and 64), forces of 50 kN[9] shall be applied either separately or simultaneously to each of the top corner fittings on one end of the container in lines parallel both to the base of the container and to the planes of the sides of the container. The forces shall be applied first towards and then away from the top corner fitting.

6.10.2.3 For containers with complete superstructure (types 65, 66 and 67), forces of 75 kN[9] shall be applied either separately or simultaneously to each of the top corner fittings on one end of the container in lines parallel both to the base of the container and to the planes of the sides of the container. The forces shall be applied first towards and then away from the top corner fitting.

6.10.2.4 In the case of a container with identical sides, only one side need be tested. Where a side is not essentially symmetrical about its own vertical centreline, both ends of that side shall be tested.

For allowable deflections under full test loading, see 5.6.

NOTE 7 The deflection is that produced by the test loading and does not include any natural play existing in the mechanism (see 4.1.1).

6.10.3 Requirements

On completion of the test, the container shall show neither permanent deformation nor abnormality which will render it unsuitable for use, and the dimensional requirements affecting handling, securing and interchange shall be satisfied.

6.11 Test No. 11 — Lifting from fork-lift pockets (where provided)

6.11.1 General

This test shall be carried out on any 1CC, 1C or 1CX container which is fitted with fork-lift pockets.

6.11.2 Procedure

6.11.2.1 Containers fitted with one set of fork-lift pockets

The container shall have a load uniformly distributed over the floor in such a way that the combined mass of container and test load is equal to $1{,}6R$. It shall be supported on two horizontal bars, each 200 mm[9] wide, projecting 1 828 mm $\pm$ 3 mm[9] into the fork pocket, measured from the outside face of the side of the container. The bars shall be centred within the pockets.

After lifting, the container shall be supported for 5 min and then lowered to the ground.

6.11.2.2 Containers fitted with two sets of fork-lift pockets

The test specified in 6.11.2.1 shall be applied to the outer pockets.

9) 50 kN = 11 200 lbf; 75 kN = 16 850 lbf; 150 kN = 33 700 lbf; 200 mm = 8 in; 1 828 mm ± 3 mm = 72 in ± 1/8 in

A second test shall be applied to the (additional) inner pockets. The procedure for this second test shall be as required in 6.11.2.1 except that, in this case, the combined mass of the container and test load shall be equal to $0{,}625R$, and the bars shall be placed in the inner pockets.

6.11.3 Requirements

On completion of the test, the container shall show neither permanent deformation nor abnormality which will render it unsuitable for use, and the dimensional requirements affecting handling, securing and interchange shall be satisfied.

6.12 Test No. 12 — Lifting from the base at grappler-arm positions (where provided)

6.12.1 General

This test shall be carried out on any container which is fitted with fixtures for being lifted by grappler arms or similar devices with lifting positions as detailed in annex D.

6.12.2 Procedure

The container shall have a load uniformly distributed over the floor in such a way that the combined mass of the container and the uniformly distributed test load is equal to $1{,}25R$, and it shall be supported at the four positions where provision has been made for the equipment envisaged in 6.12.1, over an area of 32 mm × 254 mm[10] centrally located at each of the four positions, clear of the safety lips.

After lifting, the container shall be supported for 5 min and then lowered to the ground.

6.12.3 Requirements

On completion of the test, the container shall show neither permanent deformation nor abnormality which will render it unsuitable for use, and the dimensional requirements affecting handling, securing and interchange shall be satisfied.

6.13 Test No. 13 — Weatherproofness (where appropriate)[11]

6.13.1 Procedure

A stream of water shall be applied on all exterior joints and seams of the container from a nozzle of 12,5 mm[10] inside diameter, at a pressure of about 100 kPa[10] [corresponding to a head of about 10 m[10] of water] on the upstream side of the nozzle. The nozzle shall be held 1,5 m[10] from the container under test, and the stream shall be traversed at a velocity of 0,1 m/s[10].

Procedures involving the use of several nozzles are acceptable provided that each joint or seam is subjected to a water loading not less than that which would be given by a single nozzle.

6.13.2 Requirements

On completion of the test, the container shall be free from penetration of water.

7 Testing of platform-based containers with incomplete superstructure in the folded condition (type codes 63 and 64 only) and of an interlocked pile of such containers

7.1 General

The containers complying with the design requirements specified in 5.1.3 shall be capable of withstanding the tests specified in 7.2 and 7.3 as appropriate to their intended operation in the folded condition.

7.1.1 The definitions of terms given in 6.1.1 are equally applicable to this clause.

7.1.2 The symbol n denotes the maximum number of containers which form an interlocked pile as defined in 3.6 and 4.1.3.

7.1.3 The test loads specified in all the following tests are the minimum requirements.

7.2 Test No. 14 — Stacking (type codes 63 and 64 only)

7.2.1 General

This test shall be carried out to prove the ability of a folding container, in the folded condition, to support a superimposed mass of fully loaded containers, taking into account conditions aboard ships at sea and the relative eccentricities between superimposed containers.

Table 3 specifies the force to be applied as a test to each pair of corner fittings and the superimposed mass that the test force represents.

10) 100 kPa = 14,5 psi; 12,5 mm = 1/2 in; 1,5 m = 5 ft; 10 m = 33 ft; 32 mm × 254 mm = 1 1/4 in × 10 in; 0,1 m/s = 4 in/s

11) For example, type 65 containers equipped with side curtains.

7.2.2 Procedure

The container in the tare and folded condition shall be placed on four level pads, one under each bottom corner fitting. The pads shall be centralized under the fittings and shall be substantially of the same plan dimensions as the fittings.

The container shall be subjected to vertical forces applied either to all four features provided for stacking (as in 5.3.2) simultaneously or to each pair of same features at the appropriate level specified in table 3.

The forces shall be applied through a test fixture equipped with corner fittings as specified in ISO 1161 or equivalent fittings which have imprints of the same geometry (i.e. with the same external dimensions, chamfered aperture and rounded edges) as the bottom face of the bottom corner fitting specified in ISO 1161. If equivalent fittings are used they shall be designed to produce the same effect on the container under the test loads as when corner fittings are used.

In all cases, the forces shall be applied in such a manner that rotation of the planes through which the forces are applied and on which the container is supported is minimized.

Each corner fitting or equivalent fitting shall be offset in the same direction by 25,4 mm[12] laterally and 38 mm[12] longitudinally.

7.2.3 Requirements

On completion of the test, the container shall show neither permanent deformation nor abnormality which will render it unsuitable for use, and the dimensional requirements affecting handling, securing and interchange shall be satisfied.

7.3 Test No. 15 — Lifting of an interlocked pile by the top

7.3.1 General

This test shall be carried out to prove the resistance of either a platform or a folded container connected to a interlocked pile when lifted from above using the features (see 5.3.2) provided, and with the lifting forces applied vertically.

7.3.2 Procedure

The container shall be connected by means of interlocking devices or by its integral interlocking devices (where fitted) to another container or to a test fixture which simulates a second container, so that the gross mass lifted by the container under test is $(2n - 1)T$, the mass being equally shared among the interlocking devices, where n is the largest number of interlocked units having a combined height of less than 2 591 mm[12].

The combined units shall be carefully lifted from all four top corners in such a way that no significant acceleration or deceleration forces are applied.

7.3.3 Requirements

On completion of the test, the container shall show neither permanent deformation nor abnormality which will render it unsuitable for use, and the dimensional requirements affecting handling, securing and interchange shall be satisfied.

12) 25,4 mm = 1 in; 38 mm = 1 1/2 in; 2 591 mm = 102 in

Annex A
(normative)

Diagrammatic representation of capabilities of platform and platform-based containers

NOTES

8 The externally applied forces shown below are for one end or one side only. The loads shown within the containers represent uniformly distributed internal loads only, and such loads are for the whole container.

9 The figures in this annex correspond to the tests described in 6.2 to 6.13, and 7.2 and 7.3, only where marked.

10 For definitions of R, P and T, see 6.1.1.

11 When end and side elevations are represented by a complete square or rectangle, such figures apply to platform-based containers either with complete superstructure or with incomplete superstructure of type codes 61 and 63.

When end and side elevations are represented by an incomplete square or rectangle, such figures apply to platform-based containers of type codes 62 and 64 (having no transverse and longitudinal top members).

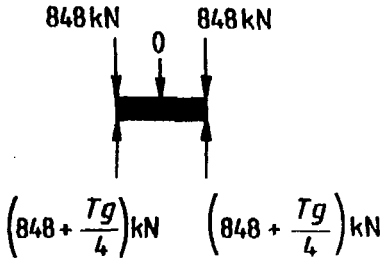
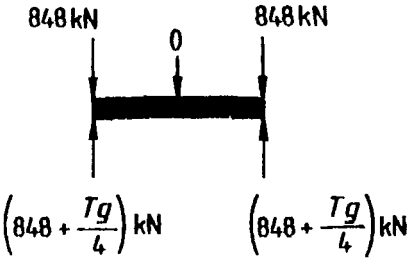
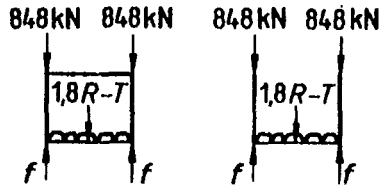
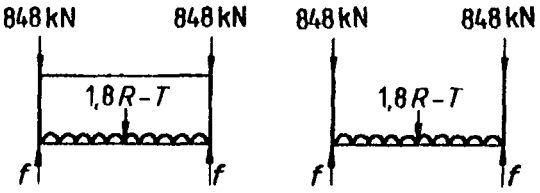
Figure No.	End elevations	Side elevations
A.1	**Platform container**	
	Stacking Test No. 1 	
	Platform-based container	
	Stacking Test No. 1 	

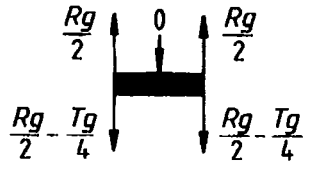
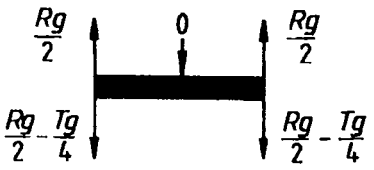
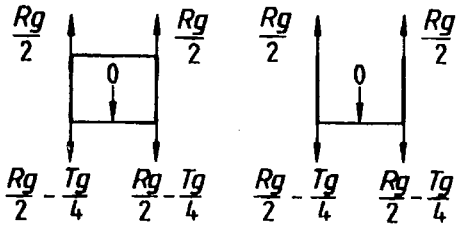
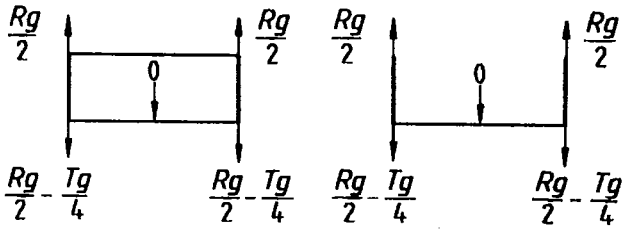
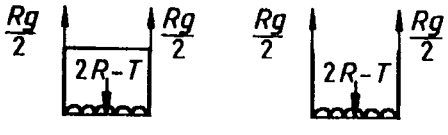
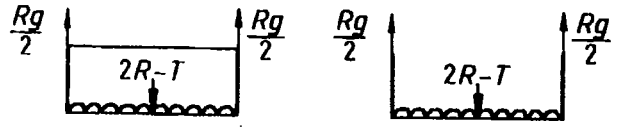
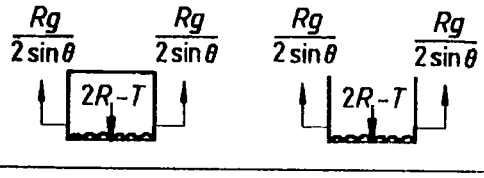
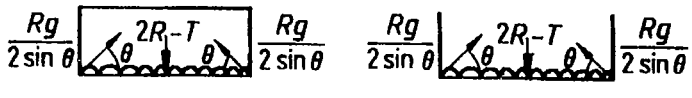
Figure No.	End elevations	Side elevations
A.2	**Platform container**	
	Top lift 	
	Platform-based container	
	Top lift 	
A.3	**Platform container**	
	Top lift Test No. 2 	
	Platform-based container	
	Top lift Test No. 2 	
A.4	**Platform container**	
	Bottom lift Test No. 3 	
	Platform-based container	
	Bottom lift Test No. 3 	

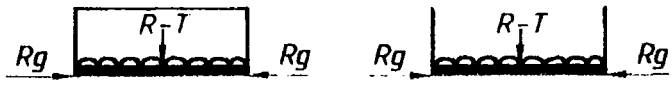
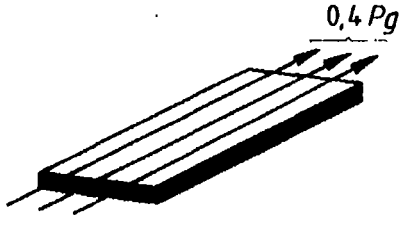
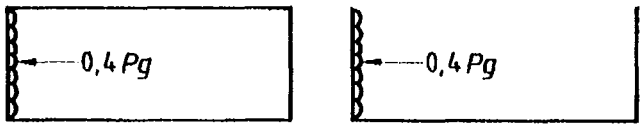
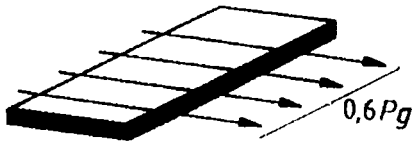
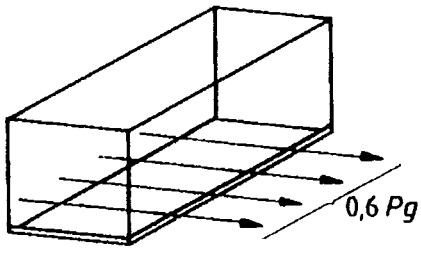
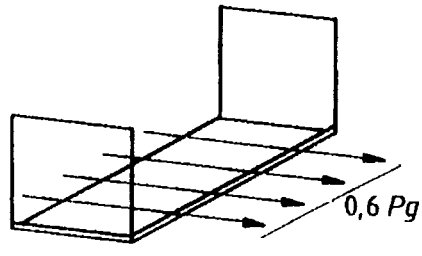
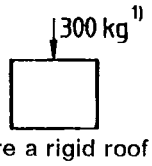
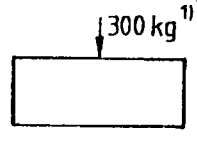
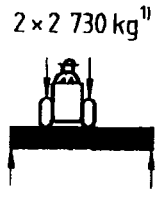
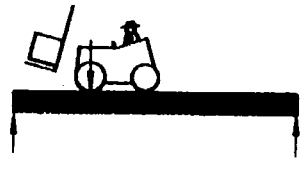
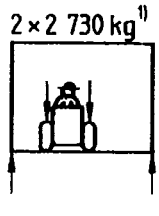
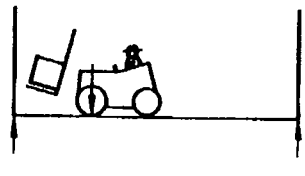
Figure No.	End elevations	Side elevations
A.5	**Platform container**	
	Restraint (longitudinal) Test No. 4 at bottom	
	Platform-based container	
	Restraint (longitudinal) Test No. 4	
A.6	**Platform container**	
	Restraint (longitudinal) Test No. 4 at bottom	
	Platform-based container	
	Restraint (longitudinal) Test No. 4	
A.7	**Platform container**	
	Effect of cargo loading	
	Platform-based container	
	Effect of cargo loading End loading (where provided) Test No. 5 Not applicable to types 62 and 64	

Figure No.	End elevations	Side elevations
A.8	**Platform container**	
	Effect of cargo loading 	
	Platform-based container	
	Effect of cargo loading 	
A.9	**Platform-based container**	
	Roof load Test No. 7  Applicable where a rigid roof is provided: type 65 only	
A.10	**Platform container**	
	Wheel loads Test No. 8 	
	Platform-based container	
	Wheel loads Test No. 8 	

1) 300 kg = 660 lb
2 × 2730 kg = 2 × 6000 lb

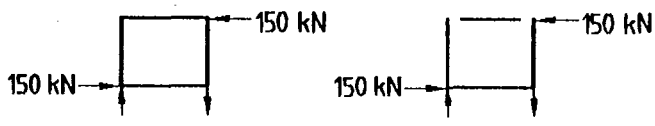
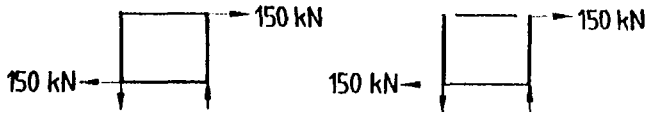
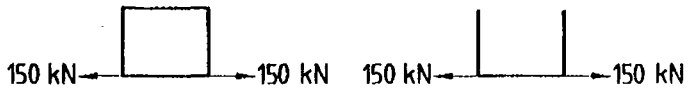
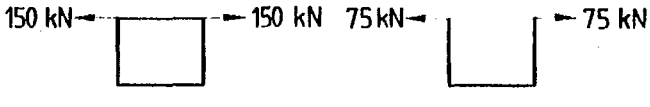
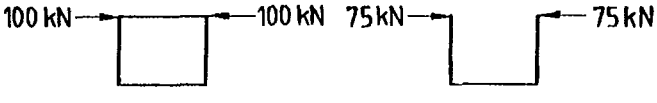
Figure No.	End elevations
A.11	**Platform-based container**
	Rigidity (transversal) Test No. 9 
A.12	**Platform-based container**
	Rigidity (transversal) Test No. 9 
A.13	**Platform container**
	Lashing/securement at bottom 
	Platform-based container
	Lashing/securement 
A.14	**Platform container**
	Lashing/securement at top 
	Platform-based container
	Lashing/securement 
A.15	**Platform container**
	Lashing/securement at top 
	Platform-based container
	Lashing/securement 

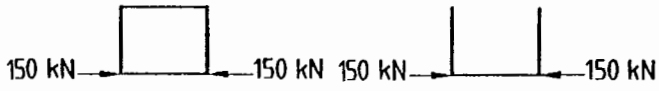
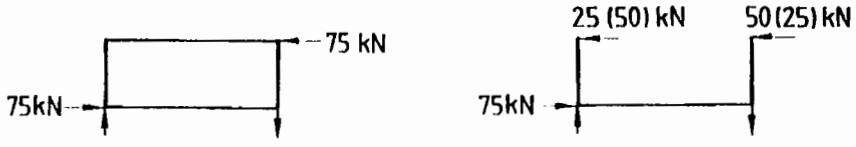
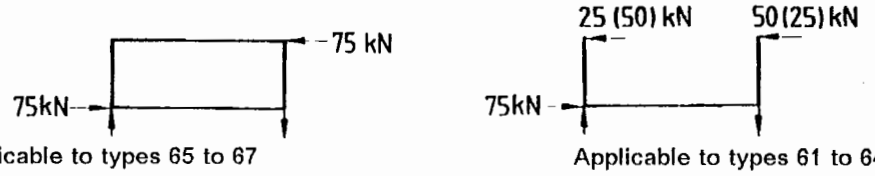
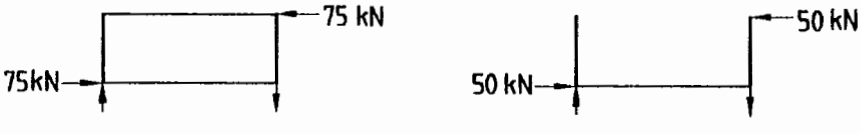
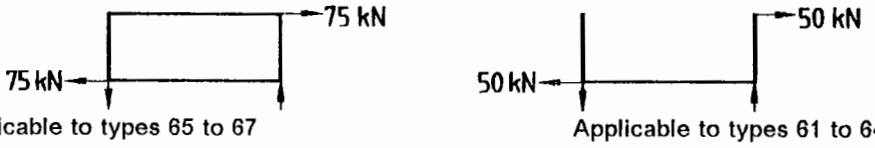
Figure No.	End elevations
A.16	**Platform container**
	Lashing/securement at bottom 
	Platform-based container
	Lashing/securement 
A.17	**Side elevations**
	Platform-based container
	Rigidity (longitudinal) 
A.18	**Platform-based container**
	 Applicable to types 65 to 67 — Applicable to types 61 to 64
A.17A	**Side elevations**
	Platform-based container
	Rigidity (longitudinal) Test No. 10 
A.18A	**Platform-based container**
	Rigidity (longitudinal) Test No. 10  Applicable to types 65 to 67 — Applicable to types 61 to 64

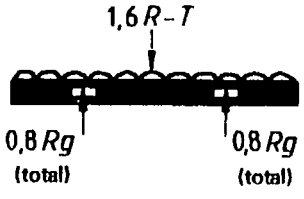
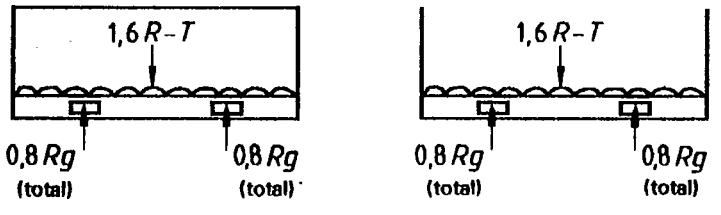
Figure No.	End elevations	Side elevations
A.19	**Platform container**	**Platform-based container**
	Lashing/securement at top  Applicable to code 60 containers only	Not applicable
A.20	**Platform container**	**Platform-based container**
	Lashing/securement at top 	Not applicable
A.21	**Side elevations**	
	Platform container	
	Fork-lift pockets Test No. 11 	
	Platform-based container	
	Applicable to 1CC, 1C and 1CX containers when fitted with one set of fork-lift pockets 	

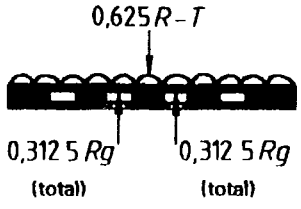
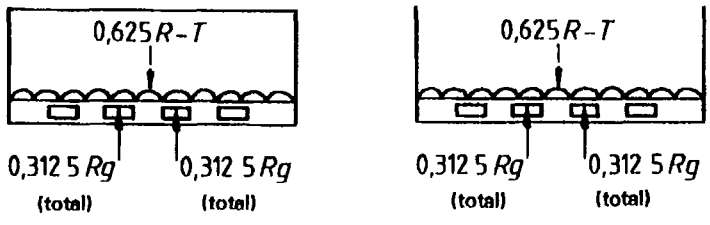
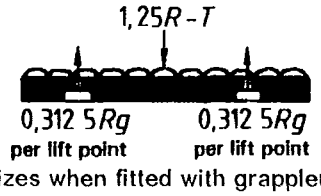
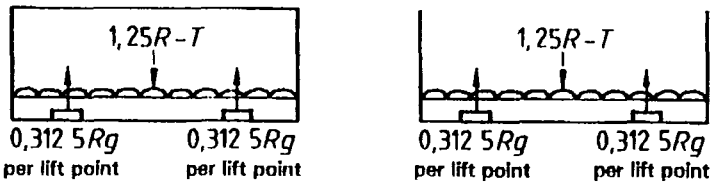
Figure No.	Side elevations
A.22	**Platform container**
	Fork-lift pockets Test No. 11 
	Platform-based container
	Applicable to 1CC, 1C and 1CX containers when fitted with a second set of fork-lift pockets 
A.23	**Platform container**
	Grappler-arm lift Test No. 12  Applicable to all sizes when fitted with grappler-arm lift positions
	Platform-based container
	Applicable to all sizes when fitted with grappler-arm lift positions 

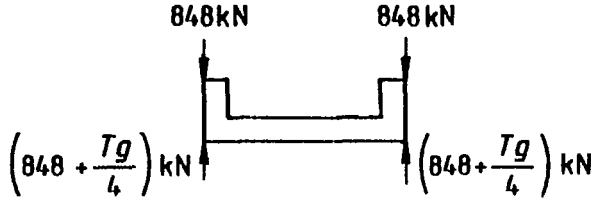
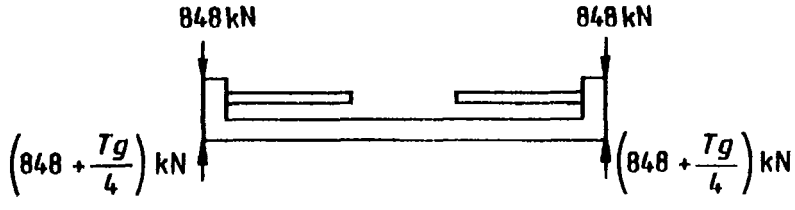
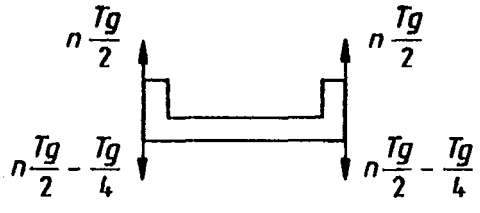
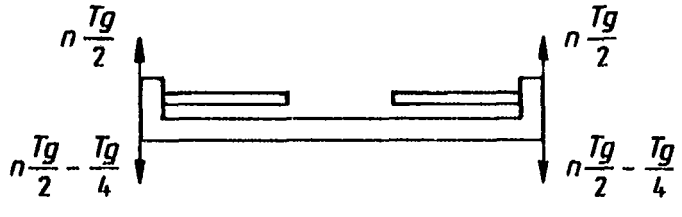
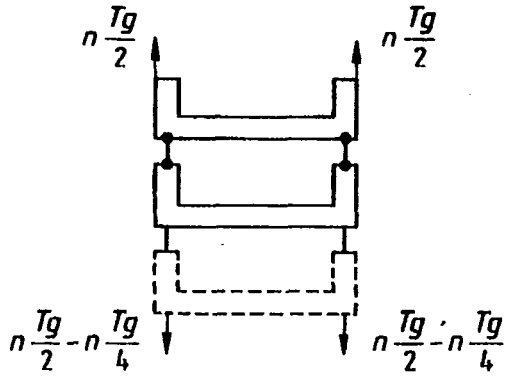
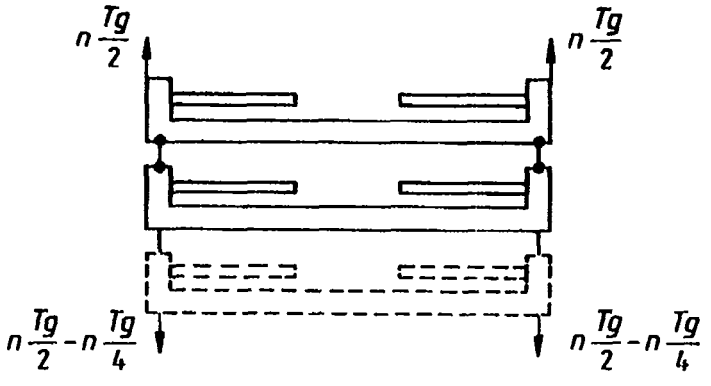
Figure No.	Platform-based container with folding ends in folded condition — Type codes 63 and 64
A.1A	**End elevations**
	Stacking Test No. 14 
	Side elevations
	
	Interlocked pile
A.2A	**End elevations**
	Lifting from the top 
	Side elevations
	

Figure No.	Interlocked pile
A.3A	End elevations
	Lifting from the top 
	Side elevations
	

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 may be fitted (or such flat undersides as may 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 250 mm[13] wide zones defined (by the dotted lines) in figure B.1.

B.2 Containers not having transverse members spaced 1 000 mm[13] apart or less (and not having a flat underside) shall have load-transfer areas as indicated in figures B.2, B.3, B.4 and B.5, 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 $0{,}5R$, i.e. the loads which may occur when a container is placed on 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 $1{,}5R/n$, where n is the number of pairs of intermediate load-transfer areas, i.e. loads which may occur during transport operations.

B.2.2 The minimum number of pairs of load-transfer areas shall be:

For 1CC, 1C and 1CX containers	4
For 1BB, 1B and 1BX containers	5
For 1AA, 1A and 1AX containers	5
For 1AA, 1A and 1AX containers fitted with a non-continuous gooseneck tunnel	6

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

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

— 1 700 mm to 2 000 mm[13] for containers having the minimum number of pairs of load-transfer areas for the container concerned;

— 1 000 mm to 2 000 mm[13] for containers having one more pair of load-transfer areas than the minimum required for the container concerned.

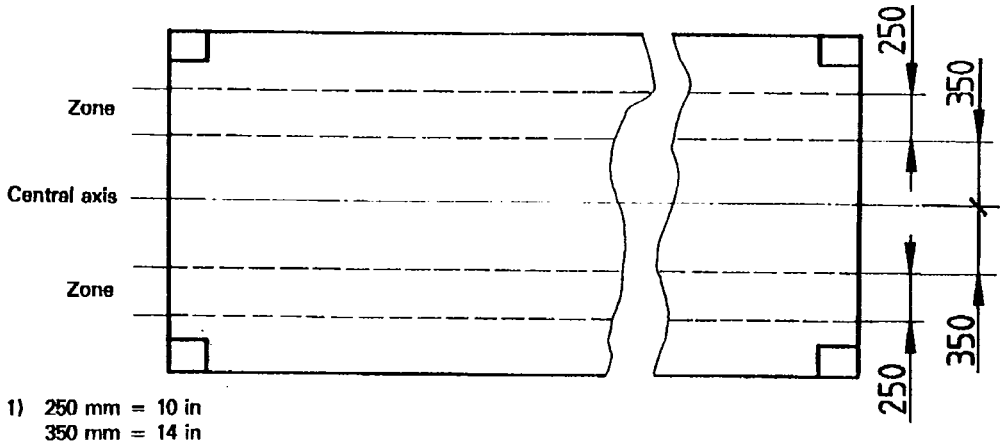
B.2.4 Each load-transfer area shall have a longitudinal dimension of at least 25 mm[13].

B.3 Minimum requirements for load-transfer areas in the vicinity of the gooseneck tunnel are shown in figure B.6.

NOTE 12 In figures B.2, B.3, B.4 and B.5, the load-transfer areas associated with the container base are shown in black. Gooseneck tunnel transfer areas are also shown in black in figure B.6.

13) 25 mm = 1 in; 250 mm = 10 in; 1 000 mm = 39 3/8 in; 1 000 mm to 2 000 mm = 39 3/8 in to 78 3/4 in; 1 700 mm to 2 000 mm = 66 15/16 to 78 3/4 in

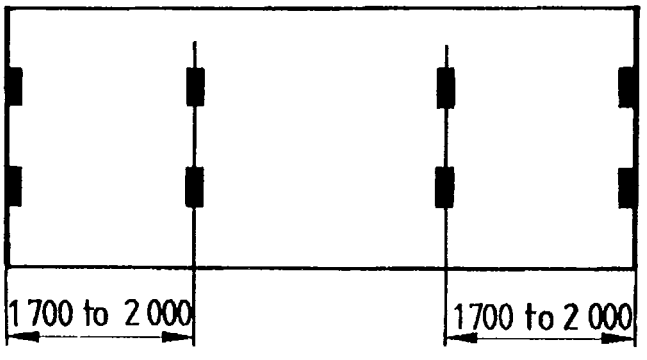
Dimensions in millimetres[1)]



1) 250 mm = 10 in
350 mm = 14 in

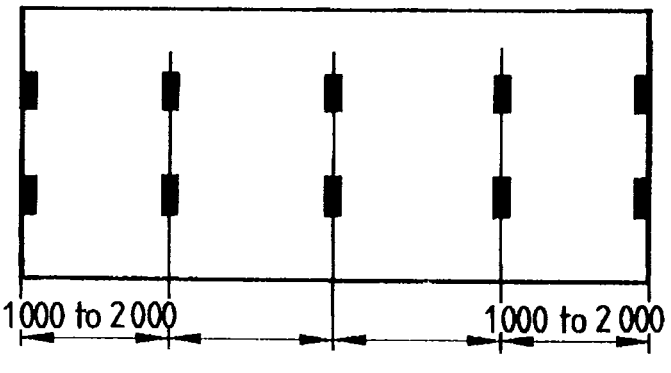
Figure B.1 — Zones for longitudinal members

Dimensions in millimetres[1)]



4 pairs of load-transfer areas
(1 pair at each end plus 2 intermediate pairs)

a) Minimum requirements

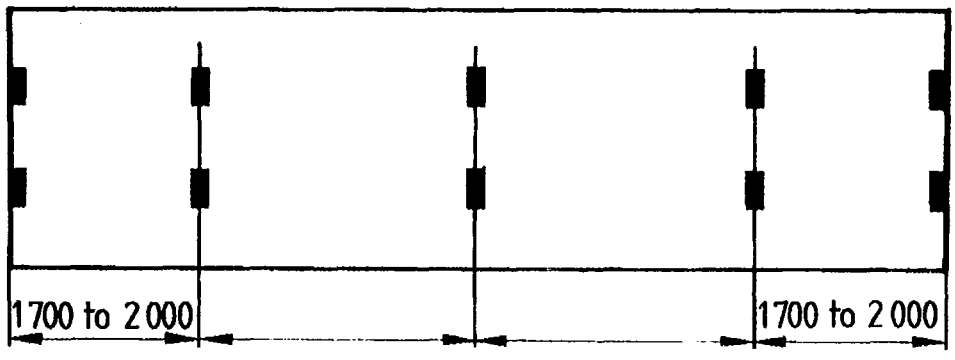


b) Requirements applicable if 5 pairs of load-transfer areas are to be fitted

1) 1 700 mm to 2 000 mm = 66 15/16 in to 78 3/4 in
1 000 mm to 2 000 mm = 39 3/8 in to 78 3/4 in

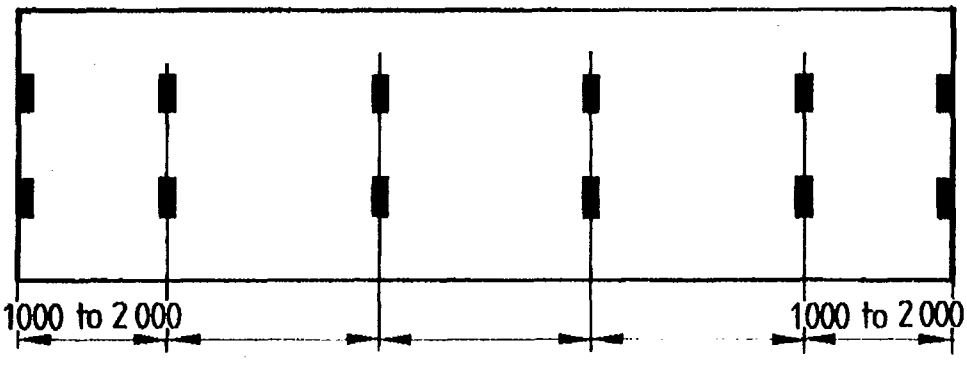
Figure B.2 — 1CC, 1C and 1CX containers

Dimensions in millimetres[1)]



5 pairs of load-transfer areas
(1 pair at each end plus 3 intermediate pairs)

a) Minimum requirements

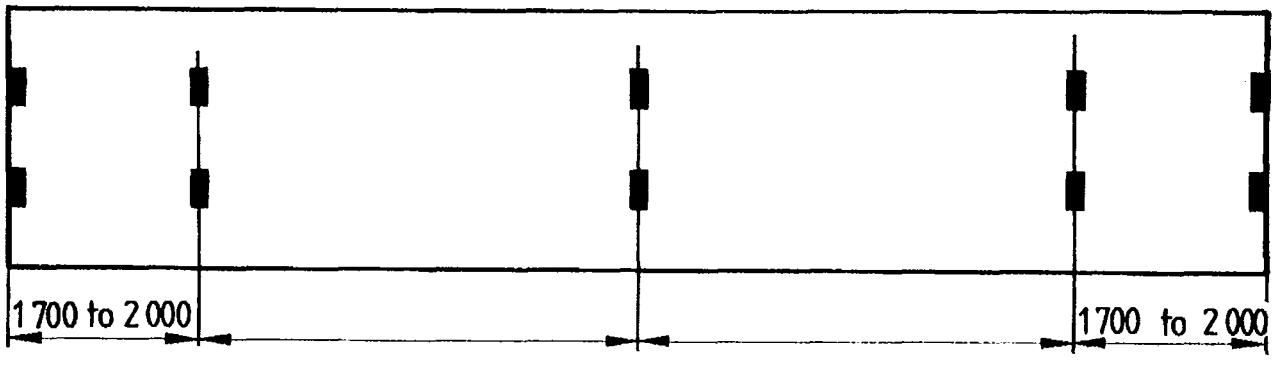


b) Requirements applicable if 6 pairs of load-transfer areas are to be fitted

1) 1 700 mm to 2 000 mm = 66 15/16 in to 78 3/4 in
1 000 mm to 2 000 mm = 39 3/8 in to 78 3/4 in

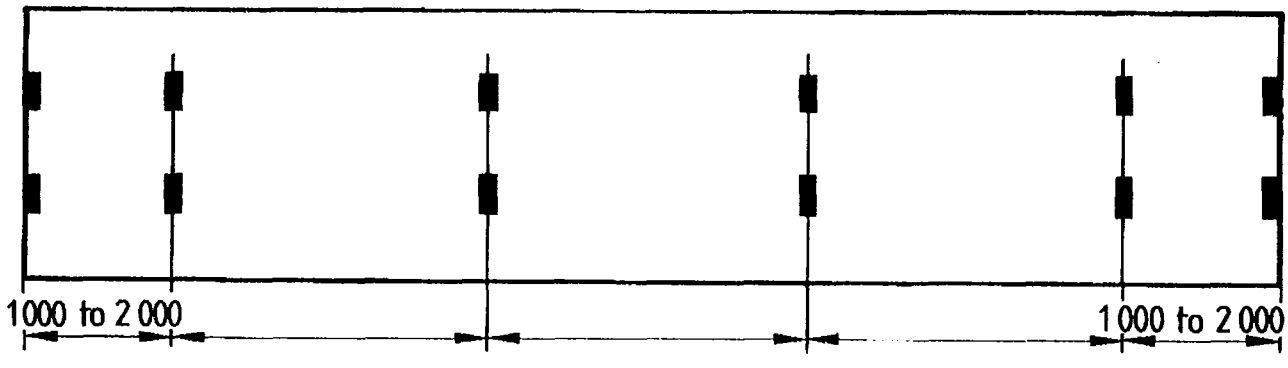
Figure B.3 — 1BB, 1B and 1BX containers

Dimensions in millimetres[1)]



5 pairs of load-transfer areas
(1 pair at each end plus 3 intermediate pairs)

a) Minimum requirements

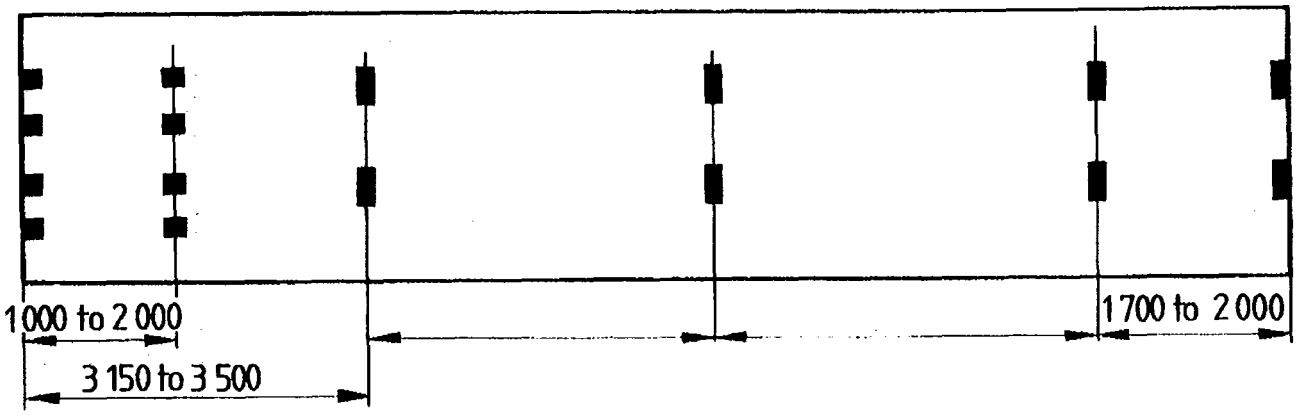


b) Requirements applicable if 6 pairs of load-transfer areas are to be fitted

1) 1 700 mm to 2 000 mm = 66 15/16 in to 78 3/4 in
1 000 mm to 2 000 mm = 39 3/8 in to 78 3/4 in

Figure B.4 — 1AA, 1A and 1AX containers without gooseneck tunnel

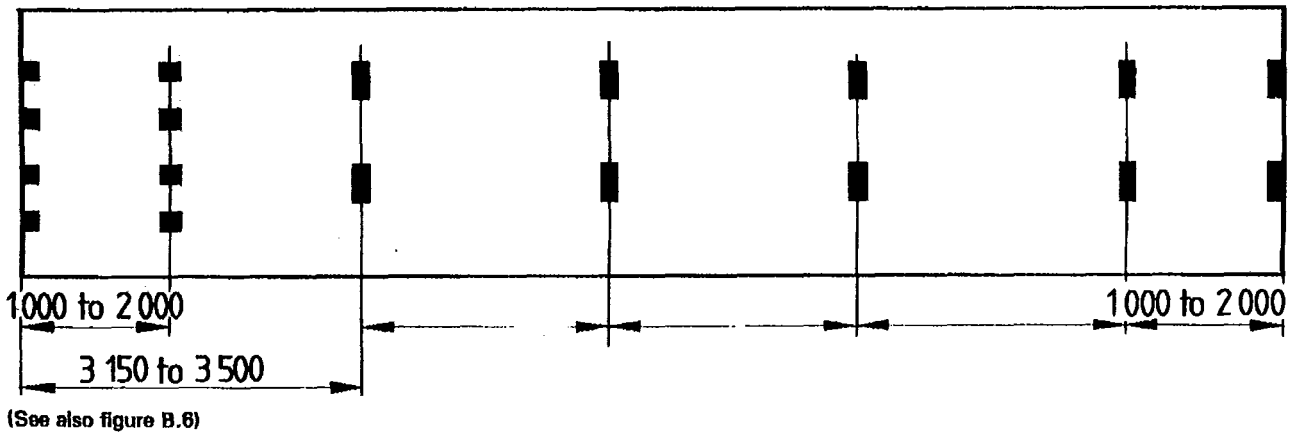
Dimensions in millimetres[1)]



(See also figure B.6)

6 pairs of load-transfer areas
(1 pair at each end plus 4 intermediate pairs)

a) Minimum requirements



(See also figure B.6)

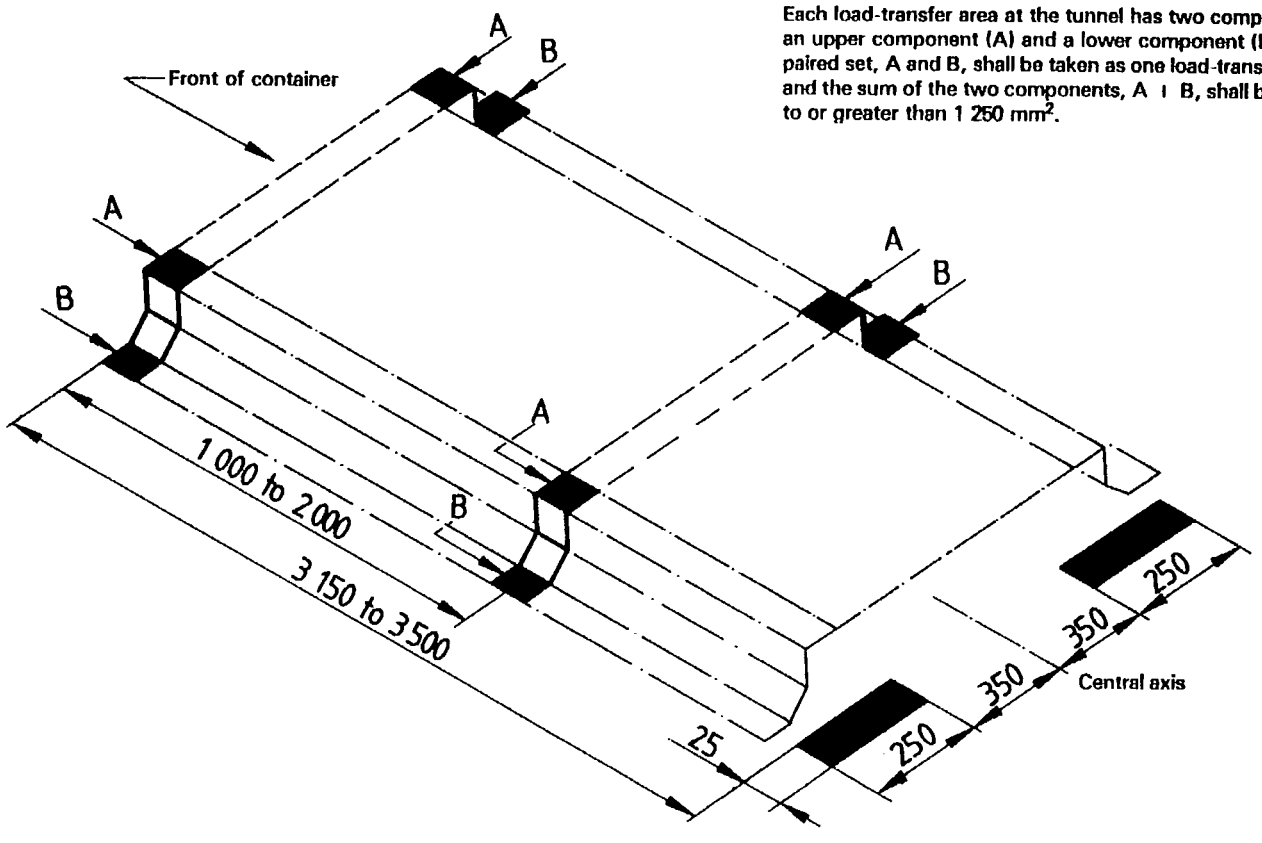
b) Requirements applicable if 7 pairs of load-transfer areas are to be fitted

1) 1 000 mm to 2 000 mm = 39 3/8 in to 78 3/4 in
1 700 mm to 2 000 mm = 66 15/16 in to 78 3/4 in
3 150 mm to 3 500 mm = 124 1/4 in to 137 7/8 in

Figure B.5 — 1AA, 1A and 1AX containers with gooseneck tunnel (with minimum localized structure)

Dimensions in millimetres[1)]

Each load-transfer area at the tunnel has two components, an upper component (A) and a lower component (B). This paired set, A and B, shall be taken as one load-transfer area and the sum of the two components, A + B, shall be equal to or greater than 1 250 mm^2.



(See annex E for details of tunnel section.)

NOTE — Where continuous tunnel side members are provided, the load transfer areas situated between 3 150 mm and 3 500 mm[1)] from the end of the container may be omitted.

1) 1 250 mm^2 = 2 in^2

1 000 mm to 2 000 mm = 39 3/8 in to 78 3/4 in

3 150 mm to 3 500 mm = 124 1/4 in to 137 7/8 in

25 mm = 1 in

250 mm = 10 in

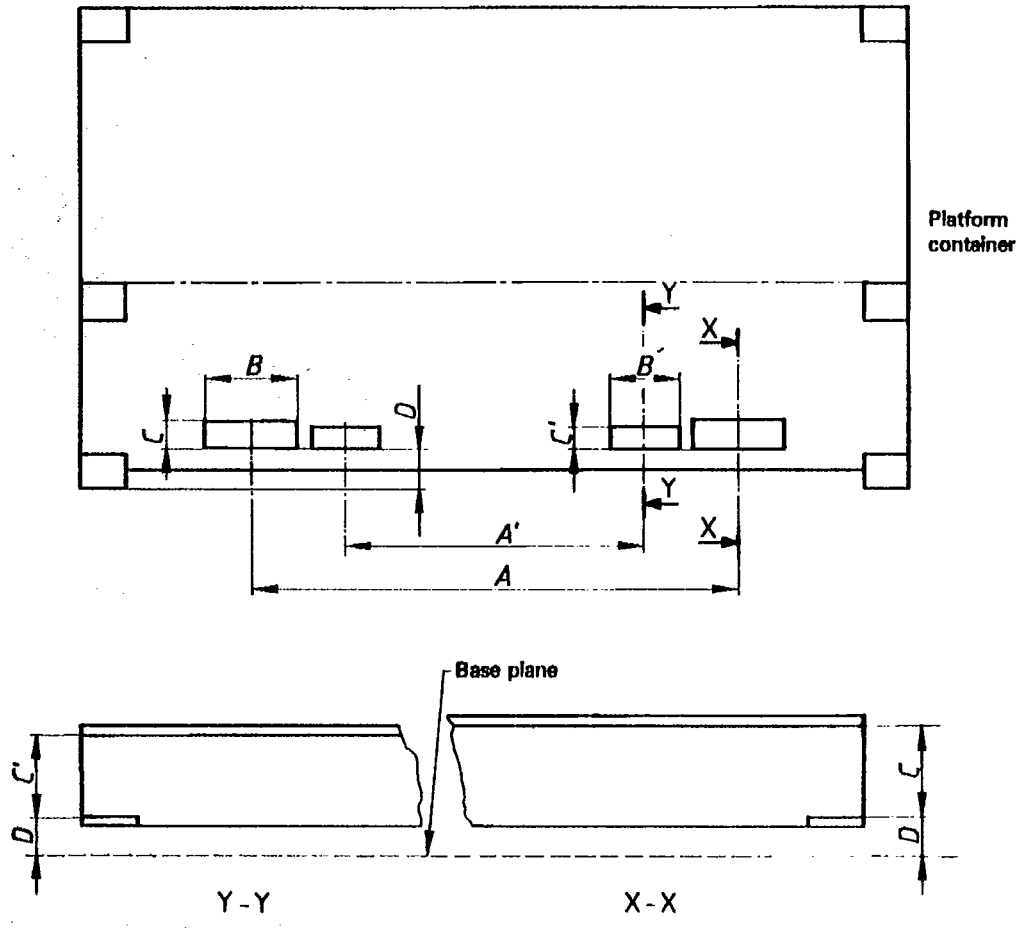
350 mm = 14 in

Figure B.6 — Minimum requirements for load-transfer areas near gooseneck tunnel

Annex C
(normative)

Dimensions of fork-lift pockets (where provided)

See 5.9.1 and figure C.1.



Container	Dimensions													
	Fork-lift pockets for loaded and unloaded containers								Fork-lift pockets for unloaded containers only					
	mm				in				mm			in		
	A	*B*	*C*	*D*	*A*	*B*	*C*	*D*	*A'*	*B'*	*C'*	*A'*	*B'*	*C'*
1CC, 1C or 1CX	2 050 ± 50	355 min.	115 min.	20 min.	81 ± 2	14 min.	4 1/2 min.	1/32 min.	900 ± 50	305 min.	102 min.	35 1/2 ± 2	12 min.	4 min.
NOTE — *C* = clear opening														

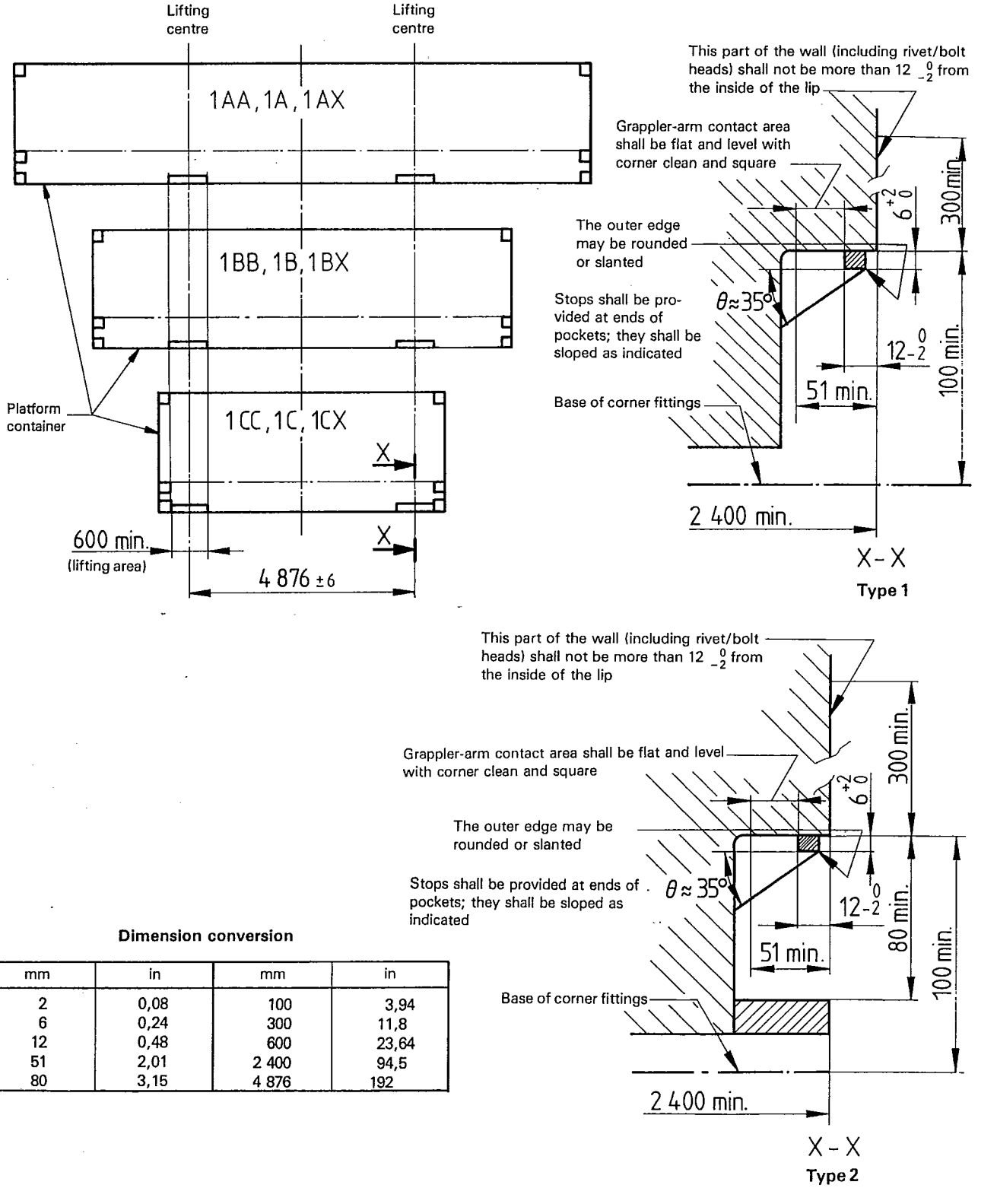
Figure C.1

Annex D
(normative)

Dimensions of grappler-arm lifting areas (where provided)

See 5.9.2 and figure D.1.

Dimensions in millimetres



Dimension conversion

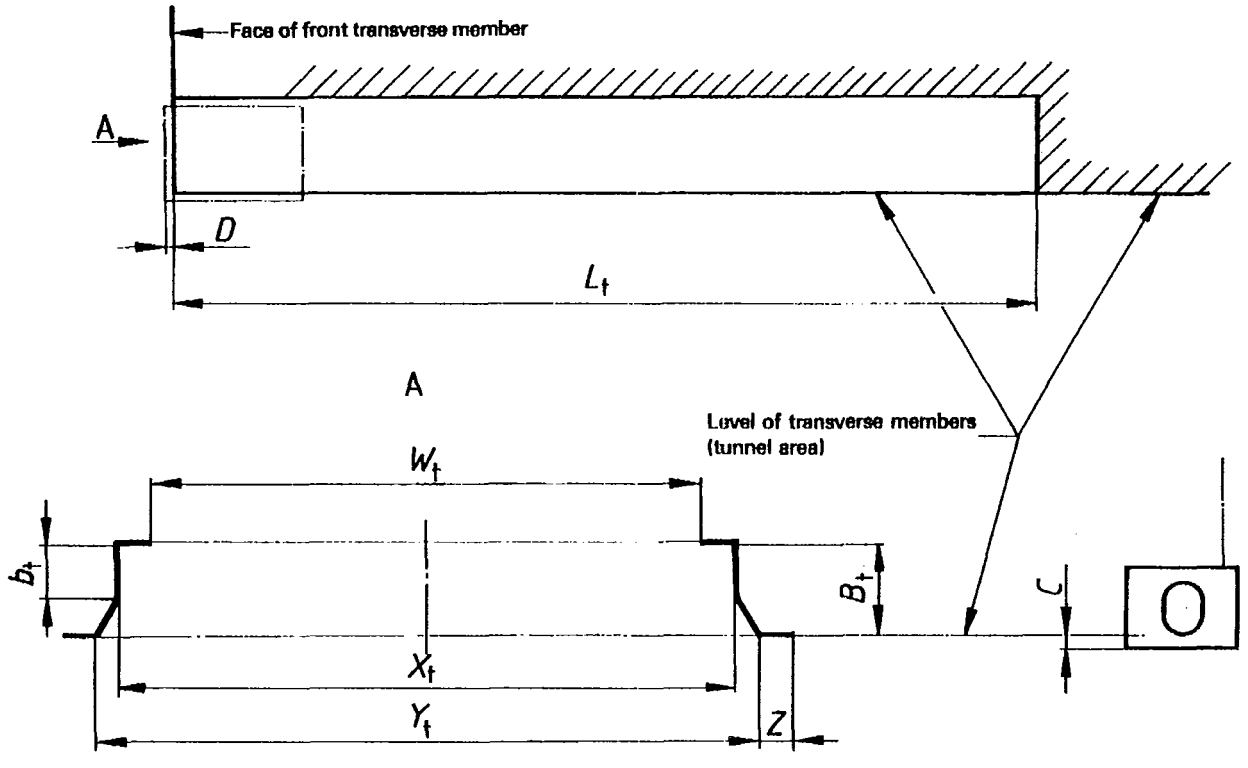
mm	in	mm	in
2	0,08	100	3,94
6	0,24	300	11,8
12	0,48	600	23,64
51	2,01	2 400	94,5
80	3,15	4 876	192

Figure D.1

Annex E
(normative)

Dimensions of gooseneck tunnels (where provided)

See 5.9.3. The space required to constitute a gooseneck tunnel into which the gooseneck of a trailer may fit is shown in figure E.1.



Dimensions	Length		Width				Height		
	L_t	D	W_t, max.	X_t	Y_t	Z, min.	B_t	b_t	C
mm	3 500 3 150	6^{+1}_{-2}	930	$1\,029^{+3}_{0}$	1 130 1 070	25	120^{0}_{-3}	70 35	$12{,}5^{+5}_{-1{,}5}$
in	137 7/8 124 1/4	$1/4^{+3/64}_{-3/32}$	36 5/8	$40\ 1/2^{+1/8}_{0}$	44 1/2 42 1/8	1	$4\ 23/32^{0}_{-1/8}$	2 3/4 1 3/8	$1/2^{+3/16}_{-1/16}$

NOTES

1 Tolerance B_t shall be measured in the back part of the tunnel, over a length of about 600 mm (23 5/8 in).

2 The tunnel structure may be formed by continuous members having the minimum length specified in the table and the internal dimensions given for the thick lines in the figure or, alternatively, localized structures may be provided at the positions shown in black in figure B.6.

Figure E.1

Annex F
(normative)

Cargo-securing systems for platform and platform-based containers

F.1 General

F.1.1 A cargo-securing system is designed to restrain the movement of cargo resulting from dynamic forces induced during transportation.

F.1.2 Cargo-securing systems consist of

— shoring, or

— cargo-securing devices, or

— a combination of both.

F.1.3 This annex describes cargo-securing devices only (see 5.7). They are fixtures to which lashings (such as ropes, straps, chains, cables, etc.) may be attached.

Such devices are not intended for any other purpose, for example handling or securing containers.

They are either fixed, hinged or sliding eyes, rings or bars.

F.1.3.1 Anchor points are securing devices located on the base structure of the container.

F.1.3.2 Lashing points are securing devices located in any part of the container other than their base structure.

F.2 Design requirements

Platform and platform-based containers shall be fitted with cargo-securing devices complying with the following requirements.

F.2.1 The anchor points shall be designed and installed along the perimeter of the container base structure in such a way as to provide a total minimum securing capability at least equivalent to

0,6P transversally;

0,4P longitudinally (for those containers having no end walls or end walls not capable of withstanding test No. 5).

Such securing capability can be reached either

— by a combination of a minimum number of anchor points rated to an appropriate load, or

— a combination of a higher number of anchor points having a lower individual rate load.

F.2.2 The typical number N of cargo-securing devices are

a) for anchor points:

— for 1AA, 1A and 1AX containers, $N = 16$

— for 1BB, 1B and 1BX containers, $N = 12$

— for 1CC, 1C and 1CX containers, $N = 10$

b) for lashing points, N is unspecified.

F.2.3 Anchor points and lashing points shall be designed and fitted in such a way that

— the ropes or other means of lashing the cargo shall not protrude beyond the overall dimensions given in 4.1;

— no part of the securing devices shall protrude above the plane located 6 mm below the upper face of the top corner fittings;

— as far as practicable, they should not infringe the cargo-loading area and should therefore be located less than 0,25 m from the edge of the platform.

F.2.4 Cargo-securing devices shall provide, on all sides, an unobstructed access for a minimum of 50 mm from any fixed surface, to allow for

— passage of the lashing through the aperture of the cargo-securing devices, or

— attachment of restraint fixtures such as hooks, clips, shackles, bars, etc.

F.2.5 Each anchor point as specified in F.2.1 and F.2.2 a) shall, whatever their actual number, be designed and installed to provide a minimum rated load of 3 000 kg applied in any direction.

F.2.6 Each lashing point as specified in F.2.2 b) shall be designed and installed to provide a minimum rated load of 1 000 kg in any direction.

F.3 Testing

F.3.1 For proof testing of cargo-securing devices, a tensile force equal to 1,5 times the rated load shall be applied, using a hook or shackle having a maximum diameter of 10 mm in a plane oriented 45° from the axis of the container structural member to which it is attached and at an angle of 45° to the horizontal plane.

For cargo-securing devices installed at positions above the floor plane, the test force shall wherever possible be applied at 45° upwards and downwards from the horizontal plane. For devices installed close to the top of the container (or other extreme heights) the test angle shall be 45° downwards.

The tensile force shall be continuously applied at the specified angle for 5 min.

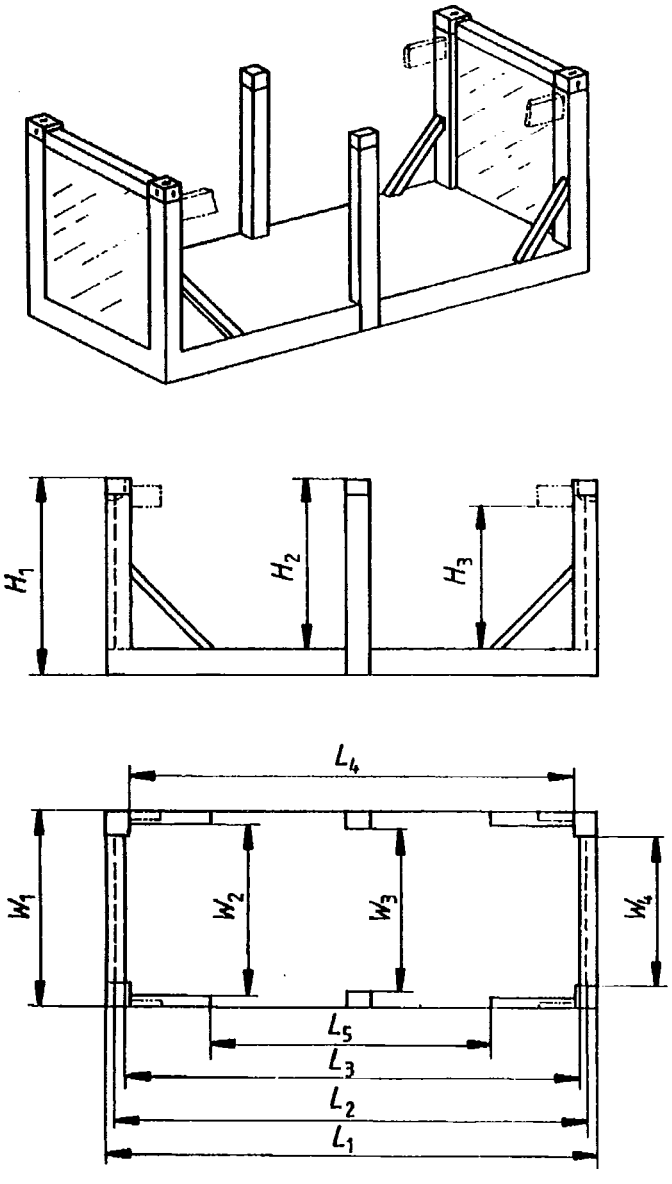
F.3.2 When containers are fitted with cargo-securing devices of different types, at least one device of each type shall be tested.

F.3.3 On completion of the test, the cargo-securing devices, or their attachment to the container structure, or the container structure itself shall not show any permanent deformation or abnormality which will render them unsuitable for continuous service at full rated load.

Annex G
(informative)

Dimensions of existing 1CC, 1C and 1CX platform-based containers (type codes 61 to 64) for the carriage of small intermodal containers

See 4.2, figure G.1 and ISO 668.



Length

L_1 = Overall external length

L_2 = Internal length between walls

L_3 = Internal length between top transverse member

L_4 = Internal length between corner posts

L_5 = Internal length between the diagonals of the lateral stiffeners (if any)

Width

W_1 = Overall external width

W_2 = Internal width between the diagonals of the stiffeners (if any)

W_3 = Internal width between intermediate posts (if any)

W_4 = Internal width between corner posts

Height

H_1 = Overall external height

H_2 = Internal height

H_3 = Internal height under bearer (if any) of intermediate side longitudinal rail

Dimensions in millimetres

Length	L_1	6 058
	L_2	5 800
	L_3	5 600
	L_4	5 600
	L_5	5 200
Width	W_1	2 438
	W_2	2 100
	W_3	2 100
	W_4	1 700
Height	H_1	2 438 to 2 591
	H_2	1 850 to 2 000
	H_3	1 850 to 2 000

Figure G.1

Annex H
(informative)

Bibliography

[1] ISO 8323:1985, *Freight containers — Air/surface (intermodal) general purpose containers — Specification and tests.*

UDC 621.869.88

Descriptors: containers, freight containers, container platforms, classification, specifications, dimensions, tests, performance tests.

Price based on 35 pages