

INTERNATIONAL STANDARD



1496 / V

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Series 1 freight containers — Specification and testing — Part V : Platform (container)

*Conteneurs de la série 1 — Spécifications et essais —
Partie V : Conteneurs plates-formes*

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FOREWORD

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Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 1496/V was developed by Technical Committee ISO/TC 104, *Freight containers*, and was circulated to the member bodies in July 1975.

It has been approved by the member bodies of the following countries :

Australia	Hungary	Poland
Austria	India	Romania
Belgium	Iran	South Africa, Rep. of
Brazil	Ireland	Spain
Bulgaria	Israel	Switzerland
Canada	Italy	Turkey
Cuba	Japan	United Kingdom
Czechoslovakia	Malaysia	U.S.A.
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France	New Zealand	
Germany	Norway	

The member body of the following country expressed disapproval of the document on technical grounds :

Sweden

Series 1 freight containers — Specification and testing — Part V : Platform (container)

0 INTRODUCTION

Grouping of container types for specification purposes

Part I

General cargo 00 to 09, 50 to 53, 56 to 59

Part II

Thermal 20 to 49

Part III

Tank 70 to 79

Part IV

Bulk 80 to 84

Part V

Platform (container) 60

Part VI

Platform based 54 and 55, 61 to 69

Part VII

Air mode 90 to 99

NOTE — Container groupings for Parts I to IV, VI and VII will be set forth in details in the relevant documents.

1 SCOPE AND FIELD OF APPLICATION

1.1 This International Standard sets out basic requirements for the specification and testing of ISO series 1, Part V, platform containers designated 1A, 1B, 1C and 1D which, with certain limitations (for example cannot be stacked or top lifted by means of conventional spreaders when loaded), are suitable for international exchange and for conveyance by road, rail and sea, including interchange between these forms of transport.

The equipment covered by this International Standard 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 of the same securing and lifting devices can be used.

1.2 The container types covered by this International Standard are :

Type code designation*	Type
60	platform

* In accordance with ISO 2716.

1.3 The marking requirements for these platform containers are to be in accordance with the principles embodied in ISO 790 and ISO 2716 for the marking and identification of series 1 containers.

2 REFERENCES

ISO 668, *Freight containers — External dimensions and ratings.*

ISO 790, *Marking of series 1 freight containers.*

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

ISO 2716, *Identification marking code for freight containers.*

3 DIMENSIONS AND RATING

3.1 External dimensions

The overall length and width and the tolerances of the platform containers covered by this International Standard are those established in ISO 668.

No part of the platform containers shall project beyond these overall dimensions.

3.2 Ratings

The values of the rating R , being the maximum operating gross weight of the platform container, are those given in ISO 668.

$$R = P + T$$

where P is the maximum operating payload and T is the tare weight.

4 DESIGN REQUIREMENTS

4.1 General

All platform containers shall be capable of fulfilling the following requirements.

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.

The strength requirements of corner fittings (see also 4.2) are given in ISO 1161.

Platform containers shall be capable of withstanding the loads and forces detailed in clause 5.

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 test described in clause 5 shall not be exceeded in any mode of operation.

4.2 Corner fittings

All platform containers type 60 shall be equipped with top and bottom corner fittings whose requirements and positioning in the top and bottom planes are given in ISO 1161. The upper faces of the top corner fittings shall protrude above the highest point on the structure of the unladen platform container by a minimum of 6 mm (1/4 in) (see 4.3.3).

4.3 Base structure

4.3.1 Platform containers type 60 shall be capable of being supported by their bottom corner fittings only.

Platform containers 1A, 1B and 1C type 60 shall also be capable of being supported on load transferring areas in their base structures only. Consequently these containers shall have end transverse members and sufficient intermediate load transferring areas (or a flat underside) of sufficient strength to permit vertical load transfer. These requirements are specified in annex B.

The maximum load to be transferred at the load transfer zones (shown in figure 15) shall not exceed the value R multiplied by a dynamic factor of 2,0.

For the containers covered by this International Standard the lower faces of the load transferring areas in their bases, including their end transverse members, shall lie in a plane located :

$$12,5 \pm 5 \text{ mm} \left(\frac{1}{2} \pm \frac{3/16}{1/16} \text{ in} \right)$$

above the base plane of the platform container (bottom faces of lower corner fittings) except where camber is provided (see 4.3.2).

4.3.2 Camber may be provided in relation to the end transverse members which shall be located at the height required in 4.3.1.

When a platform container is loaded to its maximum rating R the base should be approximately horizontal to facilitate the carriage of the container when it is supported by its base structure only.

4.3.3 For a series 1 platform container under dynamic conditions, or the static equivalent thereof, with the platform container having a load uniformly distributed over the floor in such a way that the combined weight of the container and the test load is equal to $1,8 R$, no part of the base of the platform container shall deflect more than 6 mm (1/4 in) below the base plane (bottom faces of lower corner fittings).

4.3.4 The base structure shall be designed to withstand all forces, particularly lateral forces, induced by the cargo in service. This is particularly important where provisions are made for securement of cargo to the base structure of the container.

4.4 Lashing devices

Platform containers shall be equipped with permanent devices to permit securement of the cargo to the base structure against lateral and longitudinal movements.

The securing devices shall be designed and fitted to the platform containers in such a way that :

- 1) the ropes or other means of lashing the loads shall not protrude beyond the overall length and width of the container platform.
- 2) no part of the lashing devices shall protrude above the plane located 6 mm (1/4 in) below the upper surfaces of the top corner fittings.

OPTIONAL REQUIREMENTS

4.5 Fork lift pockets

Fork lift pockets may be provided as optional features for handling 1C and 1D platform containers in the loaded or unloaded condition. The dimensional requirements for such pockets are specified in annex C.

Fork pockets, when provided, shall pass completely through the base structure of platform containers, so that lifting devices may be inserted from either side.

It is not necessary for the base of the fork lift pockets to be the full width of the platform containers, but it should be provided in the vicinity of each end.

4.6 Provision for handling at the base by means of grappler arms or similar devices

Provision for handling 1A, 1B, 1C and 1D platform 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.

4.7 Gooseneck tunnels

Gooseneck tunnels may be provided as optional features in platform containers 1A. The dimensional requirements are specified in annex E and, in addition, all other parts of the base structure shall be as specified in 4.3.

NOTE — The requirements of 4.2, 4.5 and 4.6 do not preclude the provision of additional facilities for lifting, either from the top or at the bottom of the platform container.

5 TESTING

5.1 General

Unless otherwise stated, platform containers complying with the design requirements specified in clause 4 shall, in addition, be capable of withstanding the tests specified in 5.2 to 5.7 inclusive, as applicable.

5.1.1 The symbol R denotes the maximum operating gross weight of the platform container and the symbol P denotes the maximum operating payload of the platform container to be tested, that is, the tare weight T subtracted from the maximum operating gross weight R .

$$P = R - T$$

5.1.2 The test load on the platform container shall be uniformly distributed.

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

5.1.4 The dimensional requirements to which reference is made in the requirements sub-clause after each test are those specified in:

- the dimensional and design requirement clauses of this International Standard;
- ISO 668;
- ISO 1161.

5.2 Test No. 1 — Stacking

5.2.1 General

This test shall be carried out to prove the ability of an unladen platform container to support five other fully loaded containers of the same length and rating under the acceleration conditions encountered in ships' cell structures taking into account relative eccentricities between containers due to clearances.

5.2.2 Procedure

The container under test 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 be substantially of the same plan dimensions as the fittings.

The container under test shall be subjected to a vertical force equivalent to a load of $2,25 R$ on each of the top corner fittings simultaneously or $4,5 R$ on each pair of end fittings, in such a manner that the planes of application of the forces and the supports of the container remain horizontal and unchanged during the test. The forces shall be applied through a corner fitting or a pad of the same plan area as a corner fitting. Each pad shall be offset in the same direction by 25,4 mm (1 in) laterally and 38 mm (1 1/2 in) longitudinally.

5.2.3 Requirements

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

5.3 Test No. 2 — Lifting from top corner fittings

5.3.1 General

This test shall be carried out to prove the ability of platform containers to withstand being lifted from the top corner fittings (side apertures) by means of lifting devices attached to a single transverse central spreader beam, above the platform container.

5.3.2 Procedure

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

Lifting forces shall be applied at:

- 30° to the horizontal for 1A containers;
- 37° to the horizontal for 1B containers;
- 45° to the horizontal for 1C containers;
- 60° to the horizontal for 1D containers.

In each case the line of action of the lifting force and the outer face of the corner fitting shall be no farther apart than 38 mm (1 1/2 in). The lifting shall be carried out in such a manner that the lifting devices bear on the top corner fittings only.

The container shall be suspended for 5 min and then lowered to the ground.

5.3.3 Requirements

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

5.4 Test No. 3 — Restraint (longitudinal)

5.4.1 General

This test shall be carried out to prove the ability of platform containers to withstand longitudinal external restraint under dynamic conditions of railway operations, which implies accelerations of 2 *g*.

5.4.2 Procedure

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

1A, 1B, 1C and 1D platform containers under test shall be restrained longitudinally.

A force equivalent to a load of 2 *R* shall be applied horizontally in a longitudinal direction to the platform container through the bottom apertures of the other bottom corner fittings, first towards and then away from the anchor points.

5.4.3 Requirements

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

5.5 Test No. 4 — Floor strength

5.5.1 General

This test shall be carried out to prove the ability of a platform container floor to withstand the concentrated dynamic loads imposed during loading and unloading operations by trucks or similar devices.

5.5.2 Procedure

The test shall be performed using a test vehicle equipped with tyres, and loaded to an axle weight of 5 460 kg (12 000 lb) (that is, 2 730 kg (6 000 lb) on each of two wheels). It is to be so arranged that all points of contact between each wheel and a flat continuous surface lie within a rectangular envelope measuring 185 mm (7 1/4 in) in a direction parallel to the axle of the wheel, by 100 mm

(4 in), and that each wheel makes physical contact over an area within this envelope of not more than 142 cm² (22 in²). The wheel width is to be nominally 180 mm (7 in) and the wheel centres are to be nominally 760 mm (30 in). The test vehicle shall be manoeuvred over the entire floor area of the container. 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.

5.5.3 Requirements

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

5.6 Test No. 5 — Lifting from fork lift pockets (where fitted)

5.6.1 General

This test applies to platform containers 1C and 1D, where fitted with fork lift pockets.

5.6.2 Procedure

The platform container under test shall have a load uniformly distributed over the floor in such a way that the combined weight of the container and test load is equal to 1,25 *R*, and it shall be supported on two horizontal bars, each 200 mm (8 in) wide, projecting $1\,828 \pm 3$ mm ($72 \pm 1/8$ in) into the fork pocket, measured from the outside face of the side of the platform container. The bars shall be centred within the pockets.

The platform container shall be supported for 5 min and then lowered to the ground.

5.6.3 Requirements

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

5.7 Test No. 6 — Lifting from the base at grappler arm positions (where fitted)

5.7.1 General

This test shall be carried out on all platform containers with provisions for being lifted by grappler arms or similar devices with lifting positions, as detailed in annex D.

5.7.2 Procedure

The platform container under test shall have a load uniformly distributed over the floor in such a way that the combined weight of the container and test load is equal to 1,25 *R*, and it shall be supported at the four positions

where provision has been made for the equipment in 5.7.1, over an area of 32 mm × 254 mm (1.25 in × 10 in), centrally located at each of the four positions, clear of the safety lips.

The platform container shall be supported for 5 min and then lowered to the ground.

5.7.3 Requirements

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

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ANNEX A

DIAGRAMMATIC REPRESENTATION OF CAPABILITIES APPROPRIATE TO ALL CONTAINERS COVERED BY THIS INTERNATIONAL STANDARD, EXCEPT WHERE OTHERWISE STATED

NOTES

- 1 The externally applied forces shown below are for one end or one side only. The internal loads are for the whole container.
- 2 The diagrams of the annex correspond to tests described in clauses 5.2 to 5.7 only where marked.

	End elevations	Side elevations
1	Stacking Test No. 1 2,25 R 2,25 R 2,70 R 2,70 R Applies to all sizes	2,25 R 2,25 R 2,70 R 2,70 R
2	Top lift Top corner fittings R/2 R/2 0 R/2 R/2	2 R 0 R/2 R/2
3 A	Top lift Test No. 2 R / (2 sin theta) R / (2 sin theta) 2 R - T R / (2 sin theta) R / (2 sin theta) Applicable to 1A, 1B and 1C containers only	R / (2 sin theta) R / (2 sin theta) 2 R - T R / (2 sin theta) R / (2 sin theta)
3 B	Top lift Test No. 2 2 R 30° 2 R - T Applicable to 1D containers only	
4	100 kN → ← 100 kN Lashing/securement at top	Applicable to 1A, 1B and 1C containers only
5	150 kN → ← 150 kN Lashing/securement at top	
6	Lashing/securement at bottom 150 kN → ← 150 kN	
7	Lashing/securement at bottom 150 kN → ← 150 kN	

	End elevations	Side elevations
8	Lashing/securement at top (This type of loading is inadmissible except as applied in 3B)	
9	Lashing/securement at top	
10	Restraint (longitudinal) – Test No. 3 at bottom	
	Applicable to all sizes	
11	Internal loadings 	
12	Wheel loadings Test No. 4 2 X 2 730 kg 2 X 6 000 lb 	
13	Optional features Applicable to 1C, 1D, containers when fitted with fork pockets – Test No. 5	
14	Applicable to 1A, 1B, 1C and 1D containers when fitted with grapple arm lift positions – Test No. 6	

NOTE – 1 kN $\approx$ 100 kgf (within 2 %)

ANNEX B

DETAILS OF REQUIREMENTS FOR LOAD TRANSFERRING AREAS IN BASE STRUCTURES OF CONTAINERS

To comply with 4.3.1 the base structures of containers shall have load transferring areas of 250 mm minimum width within the zones shown in figure 15. These areas shall be provided by either of the following :

- 1) Containers fitted with intermediate transverse members having a spacing of 1 000 mm (39 3/8 in) or less comply with this requirement.
- 2) Containers not complying as in 1) shall have at least sufficient load transferring areas at the positions shown in figures 16 to 19 as appropriate.

NOTE — 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 provisions have been made in accordance with 4.5 and/or 4.6.

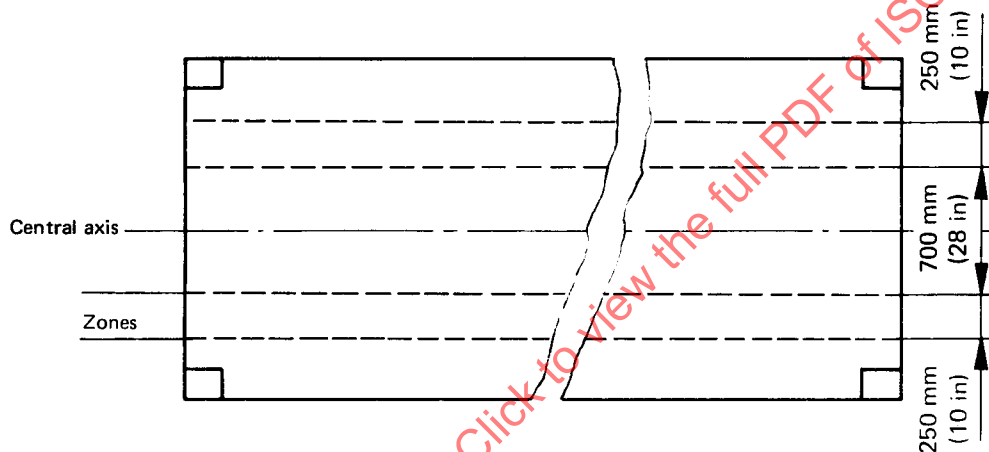


FIGURE 15 — Load transfer zones

NOTE — In figures 16, 17, 18 and 19, the load transferring areas associated with the container base are shown in black. Gooseneck tunnel transfer areas are shown shaded in figure 19.

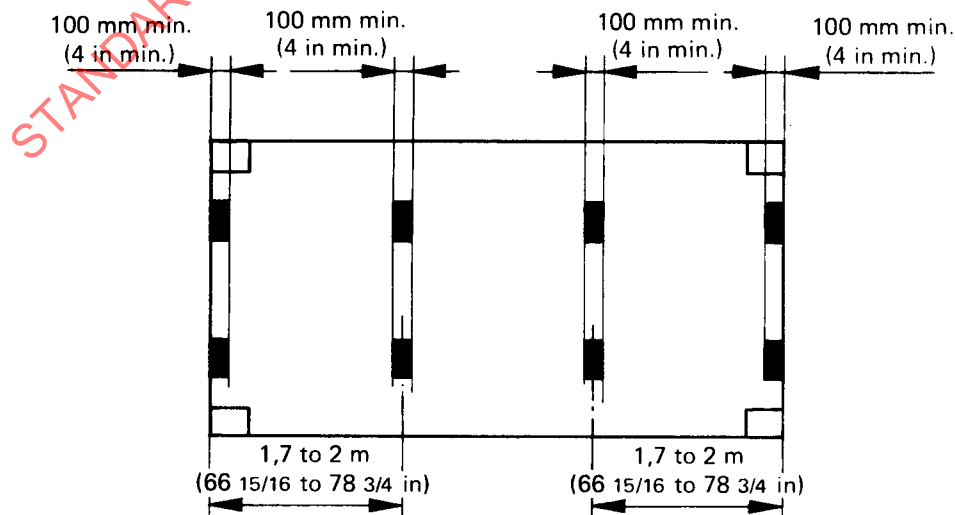


FIGURE 16 — Load transfer areas for container 1C

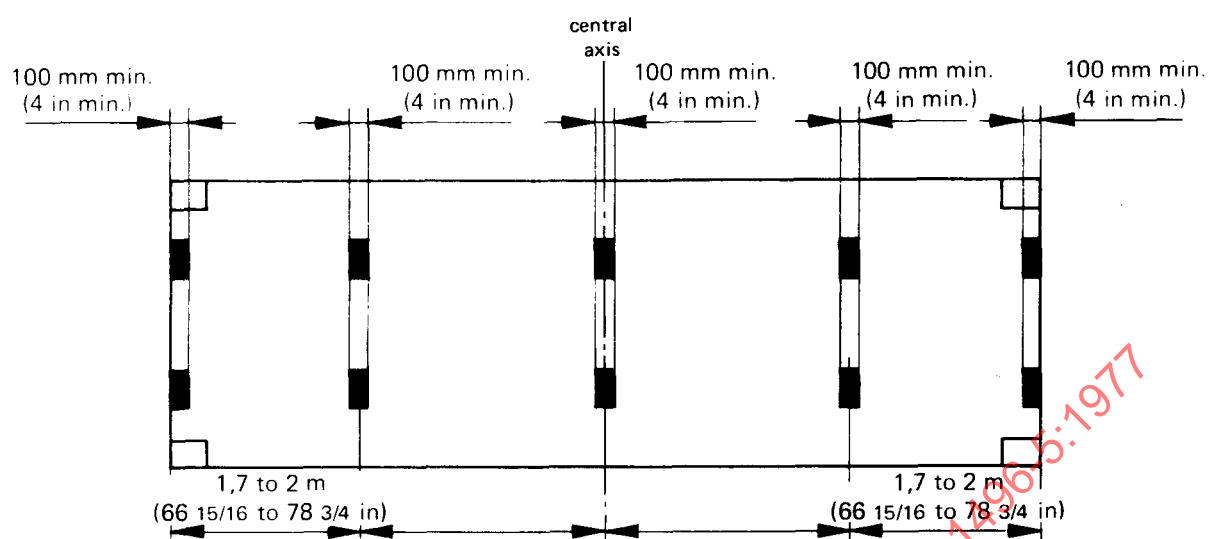


FIGURE 17 — Load transfer areas for container 1B

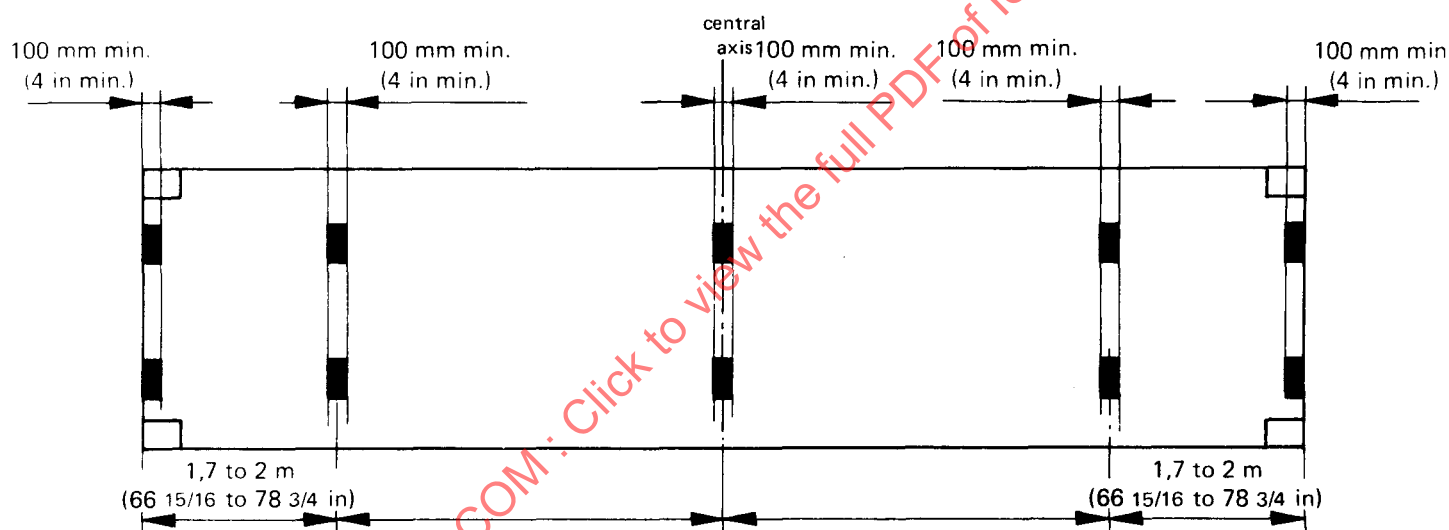


FIGURE 18 — Load transfer areas for container 1A without gooseneck tunnel

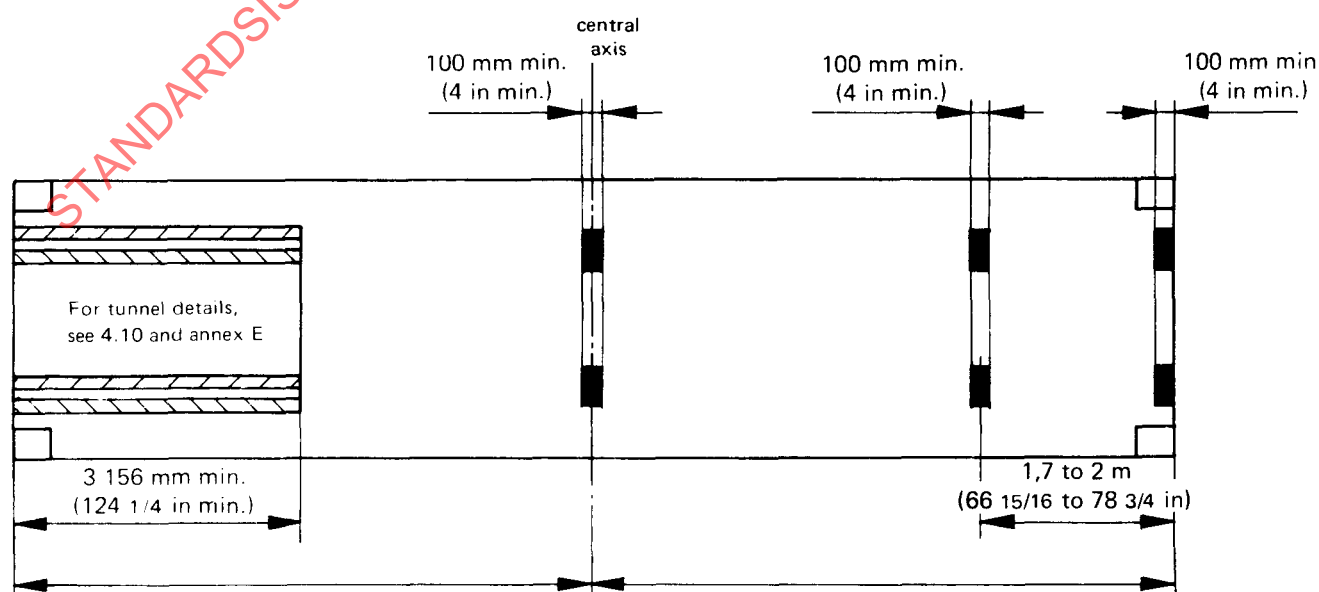
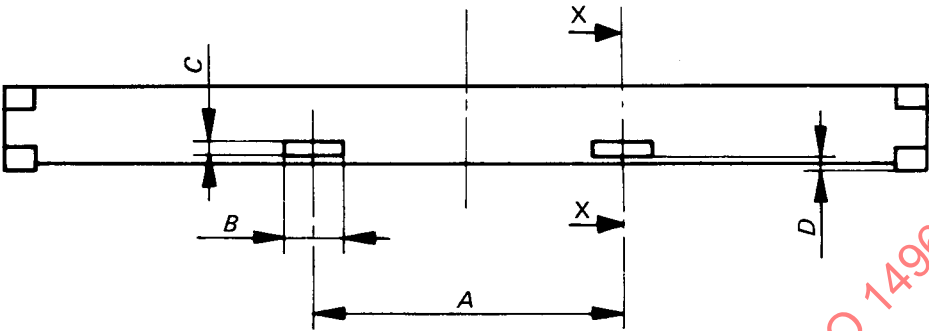


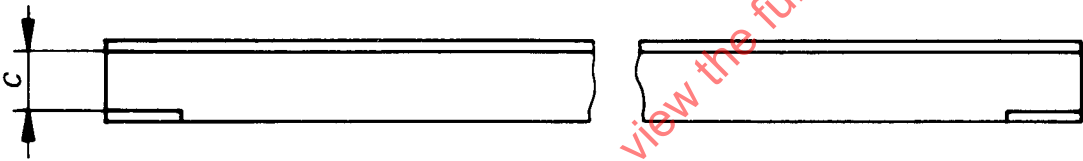
FIGURE 19 — Load transfer areas for container 1A with gooseneck tunnel

ANNEX C

DIMENSIONS OF FORK LIFT POCKETS
(Where provided) (See 4.5)



Section X-X



Container	Dimensions							
	mm				in			
	A	B	C	D	A	B	C	D
1C	2 050 ± 50	355 min.	115 min.	20 min.	81 ± 2	14 min.	4 1/2 min.	0.8 min.
1D	900 ± 50	305 min.	102 min.	20 min.	35 1/2 ± 2	12 min.	4 min.	0.8 min.