



Series R freight containers

Part 2: Platform and platform-based containers



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- Australasian Railway Association (RISSB)
 - Australian Industry Group
 - Australian Logistics Council
 - Australian Maritime Safety Authority
 - Container Owners Association
 - ICHCA Australia
 - Ports of Auckland
 - Royalwolf Trading New Zealand
 - Shipping Australia
-

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Australian Standard[®]

Series R freight containers

Part 2: Platform and platform-based containers

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PREFACE

This Standard was prepared by the Standards Australia Committee ME-068, Freight Containers, to supersede AS 4615.2—2000. After consultation with stakeholders in both countries, Standards Australia and Standards New Zealand decided to develop this Standard as an Australian Standard rather than an Australian/New Zealand Standard.

The objective of this Standard is to set out basic specifications and testing requirements for series R freight containers of the platform and platform-based types with nominal lengths of 12 m (40 ft) and 6 m (20 ft).

This Standard is part of a series that applies to series R freight containers, as follows:

AS

4615 Series R freight containers

4615.1 Part 1: Requirements for container compliance

4615.2 Part 2: Platform and platform-based containers (this Standard)

Statements expressed in mandatory terms in notes to figures are deemed to be requirements of this Standard.

The term ‘normative’ has been used in this Standard to define the application of the appendix to which it applies. A ‘normative’ appendix is an integral part of a Standard.

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STANDARDS AUSTRALIA

Australian Standard

Series R freight containers

Part 2: Platform and platform-based containers

1 SCOPE

This Standard sets out basic specifications and testing requirements for series R freight containers of the platform and platform-based types with nominal lengths of 12 m (40 ft) and 6 m (20 ft).

2 NORMATIVE REFERENCES

The following are the normative documents referred to in this Standard:

AS

- 3711 Freight containers
- 3711.1 Part 1: Classification, dimensions and ratings (ISO 668:2013, MOD)
- 3711.2 Part 2: Terminology (ISO 830:1999, MOD)
- 3711.3 Part 3: Corner fittings (ISO 1161:1984, MOD)
- 3711.9 Part 9: Coding, identification and marking
- 4615 Series R freight containers
- 4615.1 Part 1: Requirements for container compliance

Australian Maritime Safety Authority
Marine Orders Part 44 (Safe Containers)

3 DEFINITIONS

For the purpose of this Standard, the definitions given in AS 3711.2, and those below, apply:

3.1 Fixed complete end structure

Fixed end frame with a complete transverse structural connection between corner posts.

3.2 Incomplete superstructure

Lack of any permanently fixed longitudinal load-carrying structure between the ends, other than the base.

3.3 Platform

Flat structure having no superstructure whatever.

NOTE: The equipment covered by this Standard is defined as a loadable platform having no superstructure whatever but having the same length and width as the base of series R containers, and equipped with bottom corner fittings, located in plan-view as on other series R containers, so that some securing and lifting devices of the same length can be used.

3.4 Platform-based container

Container having end walls but no sidewalls and which has a base similar to that of a platform container.

3.5 Series R freight containers

- (a) Freight containers that are able to be readily used in Australia on road trucks and rail carriers, including interchange between these forms of transport, and are sized to accommodate pallets with nominal dimensions of 1168 mm × 1168 mm.
- (b) Freight containers may also be carried by sea in intrastate and interstate voyages provided they comply with Marine Orders Part 44 (Safe Containers) published by the Australian Maritime Safety Authority.

4 EXTERNAL DIMENSIONS AND RATING

4.1 External dimensions

The overall external dimensions and tolerances of containers covered by this Standard shall not exceed those specified in Table 1.

No part of the container shall project beyond the envelope defined by the overall external dimensions specified in Table 1. The overall height of the container may be less than that specified in Table 1.

4.2 External width

Maximum road and rail widths are as standard 2502 mm. However, over dimensional loads are permitted on various routes in Australia.

NOTES:

- 1 Consult relevant authority to validate design and operational corridors.
- 2 Rail width restrictions for ARTC access is defined in ARTC guideline, *Route Access Standard (RAS) General Information*, Version 1.3, April 2014.
- 3 Road width restrictions are regulated through NHVR, reference *Heavy Vehicle National Law Act 2012, Heavy Vehicle (Mass, Dimension and Loading) National Regulation*, September 2014.

4.3 Rating (R)

The maximum container gross mass shall be as specified in Table 1.

TABLE 1
EXTERNAL DIMENSIONS, TOLERANCES AND RATINGS
FOR SERIES R PLATFORM AND PLATFORM-BASED CONTAINERS

Freight container designation	Length (<i>L</i>), mm		Width (<i>W</i>), mm		Height (<i>H</i>), mm		Rating (<i>R</i>) (max. gross mass), kg
	Dimension	Tolerance	Dimension	Tolerance	Dimension	Tolerance	
RAAAA	12 192	0 -10	3000	0 -5	3000	0 -5	30 480
RAAA	12 192	0 -10	3000	0 -5	2896	0 -5	30 480
RAA	12 192	0 -10	3000	0 -5	2591	0 -5	30 480
RA	12 192	0 -10	3000	0 -5	2438	0 -5	30 480
RAX	12 192	0 -10	3000	0 -5	2438	0 -5	30 480
RCCCC	6120	0 -6	3000	0 -5	3000	0 -5	30 480
RCCC	6120	0 -6	3000	0 -5	2896	0 -5	30 480
RCC	6120	0 -6	3000	0 -5	2591	0 -5	30 480
RC	6120	0 -6	3000	0 -5	2438	0 -5	30 480
RCX	6120	0 -6	3000	0 -5	2438	0 -5	30 480

* See Clause 4.1 regarding height limit, and Clause 4.2 regarding width limits.

5 DESIGN REQUIREMENTS

5.1 General

All containers shall comply with the following requirements:

- (a) The standard test requirements for containers shall be in accordance with Appendix A. They shall apply to—
 - (i) all containers unless otherwise stated; and
 - (ii) containers as complete units, that is, with removable components in position as required for the intended operating conditions.
- (b) The standard test requirements for corner fittings (see also Clause 5.2) shall be in accordance with AS 3711.3.
- (c) All containers, platform and platform-based, shall be capable of withstanding the loads and loadings specified in Clause 6.
- (d) Platform-based containers shall be designed such that, during static testing according to the requirements of Appendix A, stresses do not exceed those allowed by an appropriate structural design code.
- (e) A platform or platform-based container over 12 m in length shall be provided with centrally located load transfer points placed at the same level as the lower faces of the corner castings, to enable top stacking.
- (f) Where containers are designed to be weatherproof, they shall satisfy Test No. 11 of Clause 6.13.

- (g) 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.
- (h) For series R freight containers, the area surrounding all the upper lifting points shall be reinforced to reduce vertical impact damage caused by top lift handling equipment. The reinforced area shall extend a minimum of 460 mm laterally and 200 mm longitudinally from the centre of the lifting point aperture.
- (i) For series R freight containers, the area surrounding all the upper lifting points shall be painted in a contrasting colour to the remainder of the container.

5.2 Corner fittings

All containers shall be equipped with bottom corner fittings.

NOTE: Containers may be equipped with top corner fittings.

The requirements and positioning of the corner fittings are specified in AS 3711.3.

5.3 Base structure

All containers shall be capable of being supported by their bottom corner fittings only. Containers with all their intermediate transverse members spaced 1000 mm apart or less (or having a flat underside) shall be deemed to comply with this requirement.

The base structure of containers not having transverse members spaced 1000 mm apart or less (and not having a flat underside) shall be in accordance with Appendix B.

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

All 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.

NOTE: Such longitudinal members are assumed to lie within the two 250 mm wide zones defined by the broken lines in Figure B1, Appendix B.

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 $12.5 +5, -1.5$ mm above the plane of the lower faces of the bottom corner fittings of the container (base plane).

Apart from the bottom corner fittings and bottom side rail, no part of the container shall project below this plane. Double plates may be provided in the vicinity of the bottom corner fittings to afford protection to the understructure.

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

For all containers under dynamic conditions, or the static equivalent of having a load uniformly distributed over the floor in such a way that the combined mass of the container and the test load is equal to $2R - T$, no part of the base of the container shall deflect more than 25 mm below the base plane of the container.

The base structure shall be designed to withstand all forces, particularly lateral forces, induced by the cargo in service (see also Clause 5.6 regarding securing of the cargo). This is particularly important where provisions are made for securement of cargo to the base structure of the container.

5.4 End structure—Platform-based containers

For all platform-based containers, the sideways deflection of the top of the container with respect to the bottom of the container when under full transverse rigidity test conditions shall not cause the sum of the changes in length of the two diagonals to exceed 60 mm.

5.5 Side structure—Platform-based containers

For all platform-based containers, the longitudinal deflection of the top of the container with respect to the bottom of the container when under full longitudinal rigidity test conditions shall not exceed 42 mm.

5.6 Walls and securing devices

Container end walls shall withstand Test No. 2 of Clause 6.4. Alternatively, 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.

Where openings are provided in end walls, the ability of these walls to withstand the test of Clause 6.4 shall not be impaired.

Where the containers do not have sidewalls, adequate means shall be provided to permit the securing of the cargo against lateral movement.

Cargo-securing devices shall meet the requirements of Appendix C.

5.7 Doors

Doors need not be provided.

5.8 Lifting requirements

5.8.1 *Forklift pockets*

Where forklift pockets are provided for lifting in the unloaded condition only, the container shall be marked accordingly. The forklift pockets shall meet the dimensional requirements specified in Appendix D 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 forklift pockets shall be provided near each end of the forklift pockets, but need not be the full width of the container.

5.8.2 *Grappler arms or similar devices*

All platform and platform-based containers shall have provisions for being lifted by grappler arms or similar devices where top lifting is not provided for. The dimensional requirements for such provisions shall be in accordance with Appendix E.

Provision for straddle lift from the bottom edge may be provided as an optional feature. The dimensions of the straddle lift shall be in accordance Appendix F.

5.8.3 *Gooseneck tunnels*

Gooseneck tunnels may be provided as an optional feature. The dimensions of gooseneck tunnels shall be in accordance with Appendix G.

5.8.4 *Nesting requirements*

Containers shall be capable of being positively locked, or located together in a nest, by substantial locating pins or fitments between each tier which prevent movement in transit.

Locking pins shall be simple to operate with a positive lock in both the engaged and disengaged positions. Their state of engagement shall be able to be readily observed.

A permanent marking that clearly indicates the method of operation shall be clearly displayed adjacent to each locking pin.

A permanent marking shall be displayed on each side of the container to indicate that all locking pins shall be engaged between each tier in a nest.

When locking pins are not used and containers are located by fitments, other means shall be provided to ensure that fitments remain securely engaged in transit.

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 Clauses 6.3 to 6.15, 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.

NOTE: The test for weatherproofness (Test No. 12), where appropriate, should be made last.

6.2 Ratings, test loads and dimensional requirements

6.2.1 Ratings

The symbol R denotes the maximum operating gross mass of the container and the symbol P denotes the maximum payload of the container to be tested, that is—

$$P = R - T$$

where

R = the rating

T = the tare

NOTES:

- 1 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 as R_g , P_g and T_g , respectively, the units of which are in newtons or multiples thereof.
- 2 The word 'load', when used to describe a physical quantity to which units may be ascribed, implies mass.
- 3 The word 'loading', for example as in 'internal loading', implies forces.

6.2.2 Test loads

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

The test loads and loadings specified in the tests of Clauses 6.3 to 6.15 are minimum requirements.

6.2.3 Dimensional requirements

The dimensional requirements to which reference is made in the 'Requirements' Clause after each test are those specified in—

- (a) Clauses 4 and 5 of this Standard;
- (b) AS 3711.1; and
- (c) AS 3711.3.

6.3 Test Nos 1A and 1B—Restraint (longitudinal)

6.3.1 General

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

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 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 $(2 \times R_g)$ 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.

6.3.3 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.

6.4 Test Nos 2A and 2B—Strength of end walls (where provided)

6.4.1 General

This test shall be carried out to demonstrate the ability of a container to withstand forces under the dynamic conditions specified in Clause 6.3.1.

6.4.2 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 $(0.4 \times P_g)$. The internal loading shall be uniformly distributed over the wall under test and arranged to allow free deflection of the wall.

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. 3—Strength of the roof (where provided)

6.5.1 General

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

6.5.2 Procedure

A load of 300 kg shall be uniformly distributed over an area of 600 mm $\times$ 300 mm located at the weakest area of the rigid roof of the container.

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. 4—Floor strength

6.6.1 General

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

6.6.2 Procedure

The test shall be performed using a test vehicle equipped with tyres, with an axle load of 5460 kg (i.e. 2730 kg on each of two wheels). The test vehicle 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 (in a direction parallel to the axle of the wheel) by 100 mm, and so that each wheel makes physical contact over an area within this envelope of not more than 142 cm². The wheel width shall be nominally 180 mm and the wheel centres shall be nominally 760 mm. The test vehicle shall be manoeuvred over the entire floor area of the container both longitudinally and transversally.

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 Nos 5A and 5B—Lifting from forklift pockets (where provided)

6.7.1 General

This test shall be carried out on any container which is fitted with forklift pockets to demonstrate the ability of the pockets to lift in the loaded condition.

6.7.2 Procedure

6.7.2.1 Containers fitted with forklift pockets for lifting in the loaded condition

For containers fitted with forklift pockets for lifting in the loaded condition, 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 it shall be supported on two horizontal bars, each 200 mm wide, projecting 2400 mm into the forklift 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.

6.7.2.2 Containers fitted with two sets of forklift pockets

For containers fitted with two sets of forklift pockets, the test specified in Clause 6.7.2.1 shall be applied to the outer pockets.

A second test shall be applied to the (additional) inner pockets. The procedure for this second test shall be as specified in Clause 6.7.2.1, except that the combined mass of the container and test load shall be equal to $0.4R$, and the bars shall be placed in the inner pockets.

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.

Where containers are fitted with forklift pockets for lifting in the empty condition, only the second test in Clause 6.7.2.2 shall apply.

6.8 Test No. 6—Lifting from the base at grapple arm positions

6.8.1 General

This test shall be carried out on all platform and platform-based containers.