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RULES FOR THE CONSTRUCTION AND CERTIFICATION OF FREIGHT CONTAINERS 2013

AMENDMENT No.1

June 2015

CR CLASSIFICATION SOCIETY

RULES FOR THE CONSTRUCTION AND CERTIFICATION OF FREIGHT CONTAINERS

AMENDMENT No.1

The following Chapters have been amended and the effective dates are:	
Chapters	**Effective date**
1	June, 2015
3	June, 2015
4	June, 2015
8	June, 2015

The Rules for the Construction and Certification of Freight Containers thereof is to be read in conjunction with this Amendment.

List of major changes in RULES FOR THE CONSTRUCTION AND CERTIFICATION OF FREIGHT CONTAINERS from 2013 edition

1.2.1	Revised	Fig 8-3	Revised
4.3.3	Revised	Table 3-1	Revised
4.3.6	Revised	Table 3-3	Revised
8.1.1	Revised	Table 4-1, 4-2	Revised
Fig 8-2	Revised		

AMENDMENT TO THE RULES FOR THE CONSTRUCTION AND CERTIFICATION OF FREIGHT CONTAINERS

Rules for the construction and certification of freight containers, 2013 has been partly amended as follows:

Chapter 1 General

Paragraph 1.2.1 has been amended as follows:

1.2.1 Terms and symbols used in the Rules are defined as follows unless otherwise specially provided:

(a) Maximum operating gross mass or Rating, R, is the maximum allowable sum of the mass of the container and its cargo (unit: kg). Gravitational force derived from this value is indicated as Rg (unit: N; g = 9.8 m/s^2).

(b) Tare ~~mass~~, T, is the mass (unit: kg) of the empty container.

(c) Maximum permissible payload, P, is the difference mass between R and T (unit: kg). Gravitational force derived from this value is indicated as Pg (unit: N; g = 9.8 m/s^2).

(d) Overall external dimensions are the maximum external dimensions of the container including any permanent attachments, and are designated by H, W and L (unit: mm) respectively.

(e) Internal dimensions are the minimum internal dimensions of the container including any permanent attachments except top corner fittings.

Chapter 3 Design

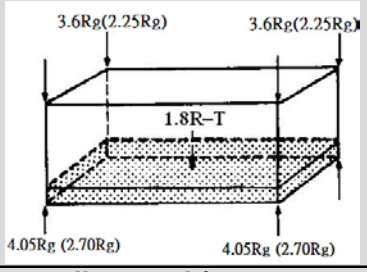
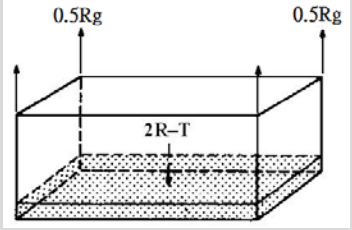
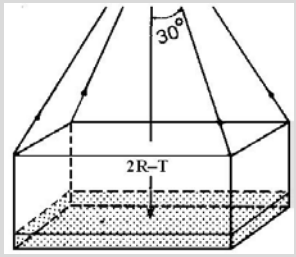
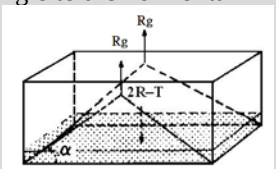
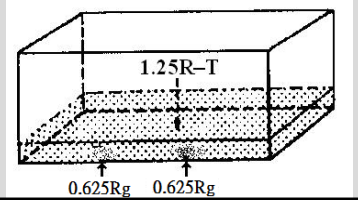
Table 3-1 has been amended as follows:

Table 3-1 Overall External Dimensions, Permissible Tolerances and Maximum Operating Gross ~~Weight~~ Mass of ISO Series 1 Freight Containers

Container Designation	Length, L, (mm)		Width, W, (mm)		Height, H, (mm)		Max. Operating Gross Mass, R, (kg)
	Dimension	Tolerances	Dimension	Tolerances	Dimension	Tolerances	
1A	12,192	0 – 10	2,438	0 – 5	2,438	0 – 5	30,480
1AA	12,192	0 – 10	2,438	0 – 5	2,591	0 – 5	30,480
1AX	12,192	0 – 10	2,438	0 – 5	<2,438		30,480
1B	9,125	0 – 10	2,438	0 – 5	2,438	0 – 5	25,400
1BB	9,125	0 – 10	2,438	0 – 5	2,591	0 – 5	25,400
1BX	9,125	0 – 10	2,438	0 – 5	<2,438		25,400
1C	6,058	0 – 6	2,438	0 – 5	2,438	0 – 5	20,320
1CC	6,058	0 – 6	2,438	0 – 5	2,591	0 – 5	20,320
1CX	6,058	0 – 6	2,438	0 – 5	<2,438		20,320
1D	2,991	0 – 5	2,438	0 – 5	2,438	0 – 5	10,160
1DX	2,991	0 – 5	2,438	0 – 5	<2,438		10,160

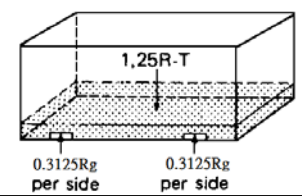
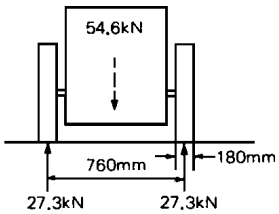
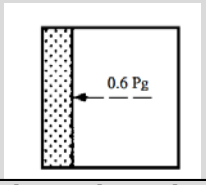
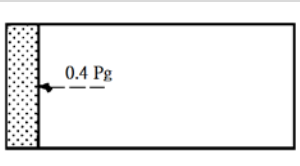
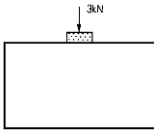
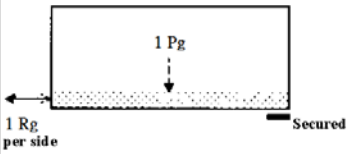
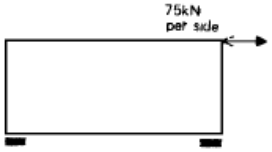
Table 3-3 has been amended as follows:

Table 3-3 Design Load of Containers(1/3)

Items	Type of Load	Direction of Load	Design Load	Remarks
Stacking	Concentrated, eccentrically applied, 38 mm in the longitudinal direction and 25.4 mm in the transverse direction and equally distributed among the 4 corner structures	Vertical downward 	1.8×superimposed stacking load = 1.8 × n × Rg (each corner to take $\frac{1}{4}$ of design load) For 1A, 1AA, 1B, 1BB, 1C and 1CC containers, n = 8, R = 24,000 ~~kgf~~ kg. For 1D containers, n = 5, R = 10,160 ~~kgf~~ kg.	Values for containers of 1D are given in brackets
Top lifting	Concentrated at pick-up points on 4 top corner fittings	Vertically upward for container 1A, 1AA, 1B, 1BB, 1C and 1CC.  30° to the vertical for container 1D 	2R (each corner to take1/4 of design load)	
Bottom lifting	Concentrated at pick-up points on 4 bottom corner fittings	α: Angle to the horizontal 	2R (each corner to take 1/4 of design load)	
Fork lift pockets	Concentrated at pick-up surfaces of two fork lift pockets	Vertically upward 	1.25R (each pocket to take 1/2 of design load)	For 1C, 1CC and 1D containers (when fitted)

	α
1A, 1AA	30°
1B, 1BB	37°
1C, 1CC	45°
1D	60°

Table 3-3 Design Load of Containers (2/3)

Items	Type of Load	Direction of Load	Design Load	Remarks
Grappler lifting positions	Concentrated at four grappler arm pads	Vertically upwared 	1.25R (each grappler position to take1/4 of design load)	When fitted
Floor loads	Concentrated at contact areas of two wheels	Vertically downward 	Axle load 54.6 kN, 27.3 kN per wheel. Wheel width = 180 mm Contact area per wheel ≤ 142 cm^2 Wheel centers = 760 mm	
Side wall loads	Uniformly distributed	Outward normal to sides 	0.6 Pg	
End wall loads	Uniformly distributed	Outward normal to ends 	0.4 Pg	
Roof load	Uniformly distributed over an area of 600 mm × 300 mm located at the weakest area	Downward normal to the roof 	3 kN	
Longitudinal restraint loads	Concentrated at bottom corner fittings at one end while the other end is secured	Longitudinal compression and tension 	2Rg (each side to take 1/2 of design load)	
Racking load (longitudinal)	Concentrated at top corner fittings while bottom corner fittings are secured	Longitudinally toward and away from container 	75 kN	For 1A, 1AA, 1B, 1C and 1CC containers (1BB)

Chapter 4 Tests and Inspections

Paragraph 4.3.3 has been amended as follows:

4.3.3 ~~Weighing~~ Mass measurement

~~Weighing~~ Mass measurement is to be carried out after the completion of all the works to determine the tare ~~weight~~ of the container.

Paragraph 4.3.6 has been amended as follows:

4.3.6 strength tests with one door off operation

(a) Containers with one door removed have a significant reduction in their ability to withstand racking loads and, potentially, a reduction in stacking strength. The removal of a door on a container in operation is considered a modification of the container. Containers must be approved for one door off operation. Such approval should be based on test results as set forth below.

(b) On successful completion of the stacking test the container may be rated for the allowable superimposed stacking mass, which should be indicated on the Safety Approval Plate immediately below line 5: "ALLOWABLE STACKING ~~MASS~~ LOAD ONE DOOR OFF FOR 1.8g (kg and lb)."

(c) On successful completion of the racking test the racking test load should be indicated on the Safety Approval Plate immediately below line 6: ~~RACKING TEST LOAD VALUE(kg and lbs) ONE DOOR OFF.~~ "TRANSVERSE RACKING TEST FORCE ONE DOOR OFF (newtons)."

Table 4-1 has been amended as follows:

Table 4-1 Strength Tests for Containers(1/3)

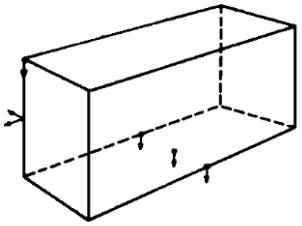
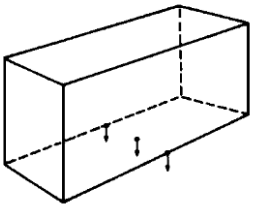
Tests	Test procedures	Measurements
Stacking	Internal loading: 1.8R-T(kg), uniformly distributed over the base. Applied forces on containers of 1A, 1AA, 1B, 1BB, 1C and 1CC (values for containers of 1D are given in brackets): with the container in the normal position supported at the base corner fittings, comprehensive forces of ~~848~~847 kN (224 kN) to be aplied to each of the four top corner fitting simultaneously, or ~~1,696~~1,693 kN(448 kN) on each pair of end fittings. These test forces are derived from the superimposed mass of nine-stacking (six-stacking) i.e. eight (five) containers stacked on top of one container, all being rated 24,000~~kgf~~ kg (10,160~~kgf~~ kg) and acceleration force of 1.8g. The test is to be repeated to cover for all positions of offset, namely 38 mm longitudinally and 25.4 mm laterally.	(i) Deflections at lowest points of bottom side rails and at the longitudinal center line of the base, which may be taken before the application of axial loads. (ii) Deflections in two directions at midheight, or other point of maximum deflection of corner posts. (iii) Permanent set remaining on removal of the load. 
Top lifting	Internal loading: 2R-T (kg), uniformly distributed over the base. Applied forces: Lifting forces are to be applied gradually to top corner fittings. (i) Vertically to 1A, 1AA, 1B, 1BB, 1C and 1CC containers. (ii) At 30°C to the vertical in the case of 1D containers. The container is to be supported for 5 minutes.	(i) While loaded and supported by bottom corner fittings before lifting clear, the deflection at lowest points of bottom side rails and at the longitudinal center line of the base. (ii) Any distress due to lifting. (iii) Permanent set remaining on removal of the load. 
Bottom lifting	Internal loading: 2R-T (kg), uniformly distributed over the base. Applied forces: Lifting forces are to be applied gradually through the bottom corner fitting side apertures in direction to the horizontal as follows: 1A, 1AA 30° 1B, 1BB 37° 1C, 1CC 45° 1D 60° The container is to be supported for 5 minutes.	Any distress due to lifting
Lifting from fork lift pockets	Internal loading:1.25R-T (kg), uniformly distributed over the base. In case the container is fitted with an extra set of fork lift pockets, an additional test is required. A load of 0.625R-T (kg) is to be evenly distributed when lifting from the inner pockets. Applied forces: The container is to be supported for 5 minutes by two bars, 200 mm wide, inserted to a depth of 1,828 ± 3 mm in each set of fork pockets in turn.	Undue local distortion during the test and any permanent distortion.

Table 4-1 Strength Tests for Containers (2/3)

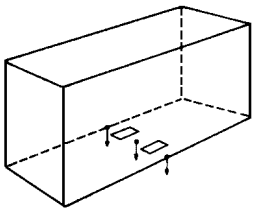
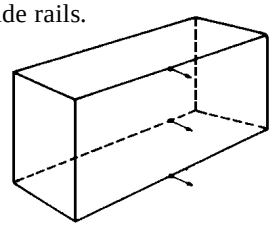
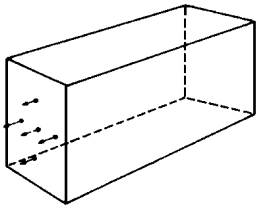
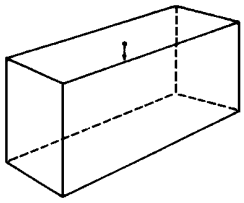
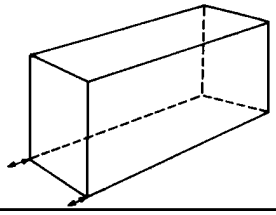
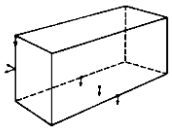
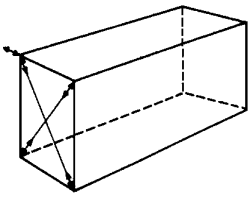
Tests	Test Procedures	Measurements
Lifting from grappler arm positions	Internal loading: 1.25R-T (kg), uniformly distributed over the base. Applied forces: The container is to be supported by four grapler arm positions for 5 minutes. The area of suppport position is to be the same as the grappler arms intended to be used.	Undue local distortion during the test and any permanent distortion.
Floor strength	Internal loading: Nil Applied forces: A vehicle (wheel centers 760 mm, wheel width 180 mm, maximum contact area per wheel 142 cm^2 in the rectangular envelope of 185 mm wide, 100 mm long) loaded to an axle weight of 54.6 kN, 27.3 kN per wheel, is to be maneuvered over the entire base area.	Deflection and permanent set in three locations of the base. 
Side wall strength	Internal loading: 0.6 Pg (N), uniformly distributed over the wall under test. Application: The container is to be supported in such a manner that the panel is free to deflect over the side wall and its top and bottom side rails. Unless they are identical, both side walls are to be tested.	Deflection and permanent set at the center of the side wall and the center of the top and bottom side rails. 
End wall strength	Internal loading: 0.4 Pg (N), uniformly distributed over the wall under test. Application: The container is to be supported in such a manner that the panel is free to deflect over its entire surface. Unless they are identical, both end walls are to be tested.	Delfection and permanent set at the center and at least two other locations. 
Roof strength	Internal loading: Nil. Applied forces: 3 kN, uniformly distributed over an area of 600 mm × 300 mm at the weakest area of the roof.	Maximum deflection and permanent set of the section under test. 
Longitudinal restraint	Internal loading: R-T (kg), uniformly distributed over the base. Applied forces: The container is to be secured to rigid anchor points through the bottom apertures in bottom corner fittings at one end. Forces equivalent to Rg (N) are to be applied longitudinally through bottom apertures in bottom corner fittings at the other end, first in compression then in tension.	The change in length of both bottom side rails during and after the test in each direction. 

Table 4-2 has been amended as follows:

Table 4-2 Strength Tests for Container with One Door Off Operation

Tests	Test procedures	Measurements
Stacking	The test procedures should be as set forth under stacking in Table 4-1 except: Interal loading: A uniformly distributed such that the combined mass of the container and test load is equal to 1.8R. Externally applied forces: Such as to subject each of the four corner fittings to a vertical downward force equal to 0.25 x 1.8 x (the gravitational force of the allowable superimposed static stacking load.)(newtons) ~~the allowable superimposed static stacking mass.~~	(i) Deflections at lowest points of bottom side rails and at the longitudinal center line of the base, which may be taken before the application of axial loads. (ii) Deflections in two directions at mid-height, or other point of maximum deflection of corner posts. (iii) Permanent set remaining on removal of the load. 
Transverse racking	The test procedures should be as set forth under transverse racking in Table 4-1 except: Internal loading: None. Externally applied forces: Such as to rack the end structures of the container sideways. The forces shall be equal to those for which the container was designed.	Difference in diagonals on one end is not to exceed 60 mm.. 

Chapter 8 Identification and Marking

Paragraph 8.1.1 has been amended as follows:

8.1.1 Each container is to be permanently marked with following information:

(a) Owner's mark and serial number.

(b) Manufacturer's mark and serial number.

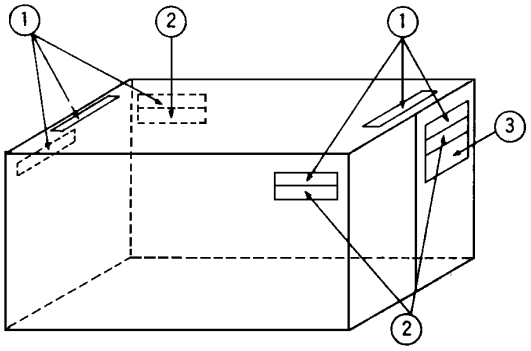
(c) Type and/or model.

(d) Maximum operating gross ~~weight~~ mass.

(e) Tare ~~weight~~.

(f) Date of manufacture.

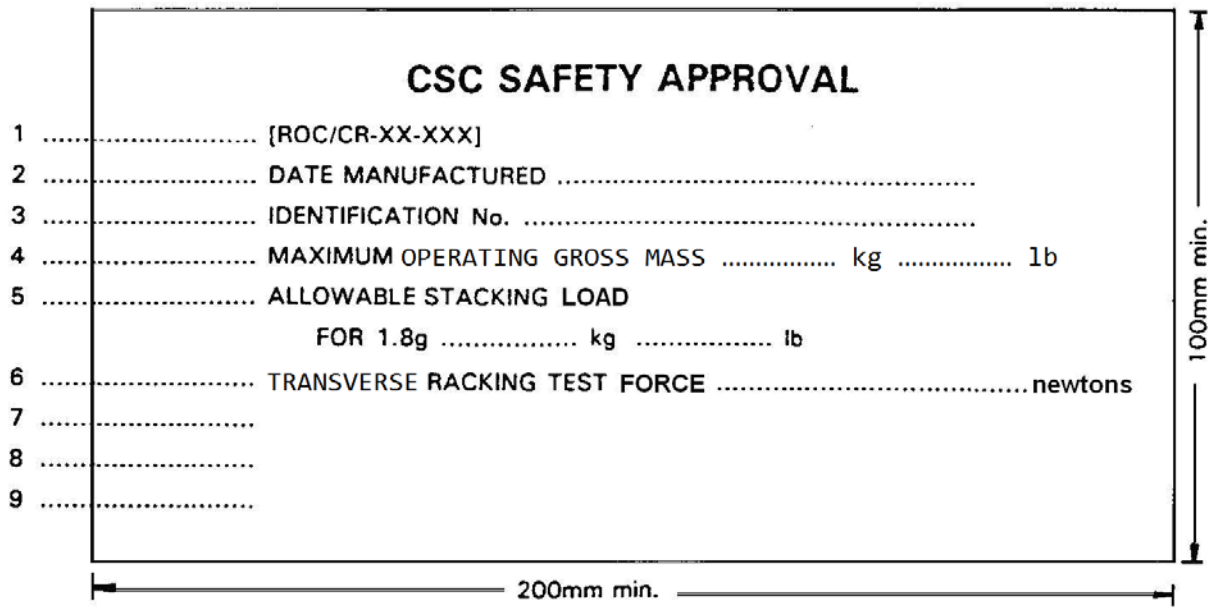
Fig 8-2 has been amended as follows:



1. – Owner code, serial number and check digit
2. – Country code, size and type code
3. – Maximum gross and tare mass (kg and lb)

Fig. 8-2 Container Marking

Fig 8-3 has been amended as follows:



1. Country of Approval and Approval Reference as given in the example on line 1. (The country of Approval is to be indicated by means of the distinguishing sign used to indicate country of registration of motor vehicles in international road traffic).
2. Date (month and year) of manufacture.
3. Manufacturer's identification number of the container, or in the case of existing containers for which that number is unknown, the number allotted by the Administration.
4. Maximum Operating Gross Mass (~~kilogrammes and lbs~~ kg and lb).
5. Allowable Stacking Load for 1.8 g (~~kilogrammes and lbs~~ kg and lb).
6. Transverse Racking Test Force (newtons).
7. End Wall Strength to be indicated on plate only if end walls are designed to withstand a load of less or greater than 0.4 times the gravitational force by maximum permissible payload, i.e. 0.4Pg.
8. Side Wall Strength to be indicated on plate only if side walls are designed to withstand a load of less or greater than 0.6 times the gravitational force by maximum permissible payload, i.e. 0.6Pg.
9. First maintenance examination date (month and year) for new containers and subsequent maintenance examination dates (month and year) if Plate used for this purpose.
10. One door off stacking strength to be indicated on plate only if the container is approved for one door off operation. The marking shall show: ALLOWABLE STACKING ~~MASS~~LOAD ONE DOOR OFF FOR 1.8g (… kg … lb). This marking shall be displayed immediately near the ~~racking~~ stacking test value (see line 5).
11. One door off racking strength to be indicated on plate only if the container is approved for one door off operation. The marking shall show: ~~RACKING TEST LOAD VALUE ONE DOOR OFF(…kg…lbs)~~TRANSVERSE RACKING TEST FORCE ONE DOOR OFF (... newtons). This marking shall be displayed immediately ~~the stacking~~ near the racking test value (see line 6).

Fig. 8-3 CSC Safety Approval Plates