RULES FOR THE CONSTRUCTION AND CERTIFICATION OF FREIGHT CONTAINERS

Rules for the Construction and Certification of Freight Containers 2014 AMENDMENT NO.1

Rule No.59 30th June 2014

Resolved by Technical Committee on 4th February 2014

Approved by Board of Directors on 24th February 2014



Rule No.59 30th June 2014

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

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

Chapter 1 GENERAL

1.1 General

Paragraph 1.1.4 has been amended as follows.

1.1.4 Definitions

Terms used in these Rules are defines as follows unless otherwise specially provided:

- (1) "Tare weight" or ("T") is the weight mass in kilograms of the empty container including permanently affixed ancillary equipment.
- (2) "Load", when used to describe a physical quantity to which units may be ascribed, signifies mass in kilograms.
- (3) "The standard acceleration of gravity" ("g") is to be equal to 9.8 m/sec^2 .
- (24) "Maximum operating gross weight mass" or "Rating" of "Rating" of the maximum allowable combined weight sum of the mass in kilograms of the container and its cargo. Gravitational forces derived from this value are indicated in newtons as $Rg_{\frac{1}{2}}$.
- ($\frac{35}{2}$) "Maximum permissible payload" $\frac{64}{2}$ ("P") is the difference in kilograms between the maximum operating gross weight mass less and the tare weight. Gravitational forces derived from this value are indicated in newtons as $Pg_{\frac{5}{2}}$.
- (46) "Height", "Width" and "Length" are overall external dimensions measured in vertical, transverse and longitudinal directions respectively.
- (₹7) "Overall external dimensions" are the maximum external overall dimensions of the container including any permanent attachments, and are designated by *H*, *W* and *L* respectively.
- (€8) "Internal dimensions" are the minimum internal dimensions of the container including any permanent attachments except top cover fitting.
- $(\frac{1}{2})$ "Type-series containers" are the containers manufactured under a sole design type.
- (\(\frac{\pmathbf{1}}{2}\))"ISO standards" are the International Standards regarding containers which have been adopted by TC104 of the International Standardization Organization.
- (€11)"*CSC*" is the International Convention for Safe Containers.

1.1.7 Safety Approval Plate

Sub-paragraph -2 has been amended as follows.

Regarding containers which have been inspected in accordance with the requirements in 1.1.5-1 or -3, the Society assigns the Maximum Operating Gross Weight Mass, Allowable Stacking Weight Load, Transverse Racking Test Load Value Force and Values of End Wall Strength and/or Side Wall Strength only if the test loads forces for the end wall and/or side wall are different from the values specified in Chapter 5 Table 5.1. And those assigned values are to be indicated on the

Safety Approval Plate required in the preceding -1.

Chapter 4 TESTS AND INSPECTIONS DURING PRODUCTION

4.2 Tests and Inspections for Type-Series Containers

4.2.1 Type-series Containers manufactured in Works with Approval of Manufacturing Procedure

Sub-paragraph -1(2) has been amended as follows.

- 1 For type-series containers manufactured in the works with Approval of Manufacturing Procedure, the following tests and inspections are to be carried out to the satisfaction of the Surveyor.
- ((1) is omitted.)
- (2) Weighing Mass measurement specified in **5.5** for containers of a certain number accepted by the Society.
- ((3) to (7) are omitted.)

4.2.2 Type-series Containers manufactured in Works without Approval of Manufacturing Procedure

Sub-paragraph (2) has been amended as follows.

(2) Weighting Mass measurement specified in **5.5** for containers of a certain number accepted by the Society.

Chapter 5 GENERAL CARGO CONTAINERS

5.2 Dimensions, Ratings and Structural Arrangements

5.2.2 Dimensions and Ratings

Sub-paragraph -1 has been amended as follows.

Dimensions and their tolerances as well as the rating of the container of each designation are shown in **Table 8.1** and **Fig. 8.1** of **Chapter 8**. However, the maximum operating gross weight mass used in tests may be greater than the value obtained from the ‡table. In this case, the maximum operating gross weight mass to be indicated according to the requirement in **1.1.7-2** and **5.4(2)** is to be of the value used in the test.

Section 5.4 has been amended as follows.

5.4 Marking

Each container is to carry at least the following markings as shown in Fig. 5.1.

- (1) Owner's mark and serial number
- (2) Maximum operating gross weight mass (kg)
- (3) Tare $\frac{\text{weight}}{\text{kg}}$
- (4) Type of container (Manufacturer's model)
- (5) Name of manufacturer

5.5 Tests and Inspections

5.5.1 General

Sub-paragraph -1(3) has been amended as follows.

- 1 The tests and inspections include the followings:
- ((1) and (2) are omitted.)
- (3) Weighting Mass measurement
- ((4) and (5) are omitted.)

Paragraph 5.5.4 has been amended as follows.

5.5.4 Weighing Mass measurement

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

Table 5.1 has been amended as follows.

Table 5.1 Loads and Forces to be Applied

Item	Where Applied	Direction	Notes
Stacking	Top corner fittings Off-set by 38mm longitudinally and 25.4mm laterally	Vertical downwards 2.25 Rg (N) 2.25 Rg (N) 1.8R - T(kg) 2.70 Rg (N) 2.70 Rg (N)	Concentrated eccentrically applied load $9R\underline{g(N)} \left(\frac{9}{4}R\underline{g(N)} \text{ per top corner fitting}\right)$
Top Lifting	Top corner fittings	Vertically upwards for containers $1A$, $1AA$, $1B$, $1BB$, $1C$ and $1CC$ $Rg/2$ (N)	Lifting force $2Rg(N) \left(\frac{2}{4}Rg(N) \text{ per top corner fitting}\right)$
Bottom Lifting	Bottom corner fittings Spacing between the line of action of the lifting force and the outer face of the corner fitting is not further than 38mm,	a: Angle to the horizontal 2Rg(N) 2R - T(kg) a 1A, 1AA 30 1B, 1BB 37 1C, 1CC 45 1D 60	Lifting force 2Rg (N)

Table 5.1 Loads and Forces to be Applied (continued)

_	Table 5.1 Loads and Forces to be Applied (continued)					
Item	Where Applied	Direction	Notes			
Wheel loading	Floor	Vertically downward 2730kg 2730kg 760mm 180mm	5460kg per an axle (2730kg per a wheel) wheel width: 180mm contact area: 142cm² wheel centers: 760mm			
Restraint	Bottom corner fittings	Longitudinal $1P(kg)$ $1Rg(N)$ $1P(kg)$ $1Rg(N)$ $1Rg(N)$ $1Rg(N)$	Concentrated force $2Rg(N)(\frac{2}{2}Rg(N))$ per one side)			
End wall	End wall	Outwards normal to the end $-0.4Pg(N)$	Uniformly distributed load 0.4Pg (N)			
Side wall	Side wall	Outwards normal to the side $0.6Pg(N)$	Uniformly distributed load $0.6Pg\left(N\right)$			
Roof	An area of 600mm×300mm located at the weakest area	Downwards normal to the roof	Uniformly distributed load 300kg			

Table 5.1 Loads and Forces to be Applied (continued)

Itom		Direction Direction	Notes
Item	Where Applied		
Rigidity (transverse) For containers 1A, 1AA, 1B, 1C and 1CC	Top corner fittings	150kN 150kN 150kN	Concentrated force 150kN per top corner fitting
Rigidity (longitudinal) For containers 1A, 1AA, 1B, 1C and 1CC	Top corner fittings	Longitudinal 75kN 75kN 75kN 75kN	Concentrated force 75kN per top corner fittings
For lift pocket For 1C, 1CC and 1D containers (when fitted)	Fork lift pockets	Vertically upwards $ \begin{array}{c c} 1.25R - T(kg) \\ \hline 0.625Rg(N) & 0.625Rg(N) \end{array} $	Distributed load $\frac{1.25}{2} Rg(N) \text{ per fork lift}$ pocket
Grappler lifting position (when fitted)	Grappler lifting position	Vertically upwards $ \begin{array}{ccc} 1.25R - T(kg) \\ \hline 0.3125Rg(N) & 0.3125Rg(N) \\ \hline per side & per side \end{array} $	Distributed load $\frac{1.25}{4} Rg(N)$ per grappler lifting position

Table 5.2 has been amended as follows.

Table 5.2 Test procedures and Measurements

	Table 5	1.2 Test procedures and Measurements
Tests		Procedures and Measurements
	Procedure	
	- Internal load ing :	1.8 <i>R-T</i> (<i>kg</i>) uniformly distributed over the base.
	- Applied forces:	With the container in the normal position supported at the base corner fittings,
		compressive forces equivalent to 2.25 $R(kg)$ are to be applied to each corner post
		through rigidly held dummy corner fittings arranged to simulate an overstowed
		corner base. The test is to be repeated to cover for all positions of offset namely 38
		mm longitudinally and 25.4 mm laterally.
		For containers with doors, stacking loads are also to be added under the one door
		off condition.
	M	
Stacking	Measurements:	i) Deflections at lowest point of both side rails and at the longitudinal centre line
Stacking		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 the corner posts.
		iii) Permanent set remaining on removal of the load.
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		29 - 9 - 9
	D I	
	Procedure:	
	- Internal load ing :	2 <i>R</i> - <i>T</i> (<i>kg</i>) uniformly distributed over the base.
	- Applied forces:	With the container in the normal position, lifting forces are to be applied gradually
		to the top corner fittings.
		i) $\pm \underline{V}$ ertically to 1A, 1AA, 1B, 1BB, 1C and 1CC containers.
		ii) $\frac{\mathbf{aA}}{\mathbf{b}}$ t 30 to the vertical in the case of 1D containers.
	3.6	The container shall be supported for 5 <i>minutes</i> .
	Measurements:	i) While loaded and supported by the four bottom corner fittings before lifting
		clear, the deflection at lowest points of both side rails and at the longitudinal
Top Lifting		centre line of the base.
		ii) <u>aAny</u> distress due to lifting.
		iii) Permanent set remaining on removal of the load.
	Procedure :	-
	- Internal load ing :	2 R-T(kg) uniformly distributed over the base.
	- Applied forces:	With the container in the normal position, lifting forces are to be applied gradually
	_11ppned forces.	through the bottom corner fitting side apertures as follows:
		Direction of applied forces
Bottom		1A, 1AA 30 to horizontal
Lifting		1B, 1BB 37 to horizontal
		2, 22
	M .	The container shall be supported for 5 <i>minutes</i> .
	Measurements:	Any distress due to lifting.

Table 5.2 Test procedures and Measurements (continued)

	Table 5.2 T	est procedures and Measurements (continued)
Tests		Procedures and Measurements
Floor Strength	Procedure— Internal loading: Applied forces: Measurements:	Nil. With container supported at the bottom corner fittings, a vehicle equipped with 180 mm wide wheelstyres at 760 mm centres each having a contact area of 142 mm² loaded to an axle weight load of 5,460 kg is to be manoewerd manoeuvered over the entire floor area. Deflections and permanent set in three locations of the base.
Restraint	Procedure: - Internal loading: - Applied forces: Measurements:	<i>R-T</i> (<i>kg</i>) uniformly distributed over the base. With the container in the normal position, anchored by locking devices through the bottom apertures in the bottom corner fittings at one end, loads equivalent to <i>R</i> (<i>kg</i>) are to be applied to each side rail through the bottom apertures in the 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).
End Wall	Procedure:	d application: 0.4 <i>P</i> (<i>kg</i>) uniformly distributed over the wall under test in such a way as to allow free deflection of the end wall. Deflection and permanent set at the centre and at least two other locations.

	Table 5.2 Test procedures and Measurements (continued)
Tests	Procedures and Measurements
	Procedure Internal Hoading and application: 0.6 P(kg) uniformly distributed over the wall under test in such a way as to allow free deflection of the side wall and its top and bottom side rails. Each side is to be tested separately but only one side need to be tested when both are similar in construction. Measurements: Deflection and permanent set at the centre of the side wall and the centre of the top and bottom side rails.
Side Wall	
Roof Panel	Procedure: Internal loading: Applied forces: Nil. Applied forces: Nil. Applied forces: Nil. Applied forces: Maximum deflection and permanent set of the section under test.
Transverse Racking	Procedure: _ Internal loading: _ Applied forces: With the container in the normal position anchored by locking devices through the apertures in the bottom corner fittings, transverse racking forces of 150 kN (15000 kgf) are to be applied separately or simultaneously to each top corner fitting on one side. Lateral restraint is to be taken up by the anchor devices diagonally opposite to the applied forces. The force (s) shall be applied first towards then away from the container. For containers with doors, transverse racking loads are also to be added under the one door off condition. Measurements: Difference in diagonals before, during and after testing.

Table 5.2 Test procedures and Measurements (continued)

Т	1 able 5.2		
Tests	D I	Procedures and Measurements	
Longitudinal Racking	Procedure: _ Internal loading: _ Applied forces: Measurements: -	Nil. With the container in the normal position anchored by locking devices through the apertures in the bottom corner fittings, longitudinal racking forces of 75 kN (7500 kgf) are to be applied separately or simultaneously to each top corner fitting on one end. Longitudinal restraint is to be taken up by the anchor devices diagonally opposite to the applied forces. The force (s) shall be applied first towards then away from the container. Longitudinal displacement of top side rails.	
Lifting from Fork Lift Pockets	Procedure: _ Internal loading: _Applied forces: Measurements: -	1.25 R - $T(\underline{kg})$ uniformly distributed over the base. The container shall be supported for 5 <i>minutes</i> by two bars 200 mm wide inserted in the fork pockets to a depth of 1,828 \pm 3 mm . Undue local distortion during the test and any permanent distortion.	
Lifting from side Grappler Lift Positions	Procedure: _Internal loading: _Applied forces: Measurements:	1.25 <i>R-T</i> (<i>kg</i>) uniformly distributed over the base. The container shall be supported for 5 <i>minutes</i> by pads at the four grappler arm positions. The pads shall be of the same area as the grappler arms intended to be used. Undue local distortion during the test and any permanent distortion.	
Weathertightness	Procedure⊭	All surfaces of the container are to be subjected to a water test from a 12.5 mm nozzle, with a water pressure of 1 bar at the nozzle, which is to be traversed at a speed of approximately 100 mm per second at a distance of 1.5 m from the surface under test.	

Chapter 6 THERMAL CONTAINERS

6.5 Tests and Inspections

6.5.1 General

Sub-paragraph -2(3) has been amended as follows.

- 2 The tests and inspections for thermal containers include the following:= ((1) and (2) are omitted.)
- (3) Weighing Mass measurement
- ((4) to (8) are omitted.)

Chapter 7 TANK CONTAINERS

7.5 Tests and Inspections

7.5.1 General

Sub-paragraph -2(3) has been amended as follows.

- 2 The tests and inspections for the tank containers include the followings:
- ((1) and (2) are omitted.)
- (3) Weighing Mass measurement
- ((4) and (5) are omitted.)

Table 7.3 has been amended as follows.

Table 7.3 Test Procedures and Measurements

Tests		Procedures and Measurements
	Procedure:=	As specified in Table 5.2
Stacking		Internal loading need not be provided during this test.
	Measurements:=	As specified Table 5.2
Top Lifting	As specified in Tabl	e 5.2
Bottom Lifting	As specified in Table	e 5.2
Restraint	As specified in Table	e 5.2
	Procedure:=	
Inertia	-Internal loading	With R - $T(\underline{kg})$ internal load, the container is to be positioned with its
(longitudinal)	and application:	longitudinal axis vertical and supported by its four bottom corner fittings.
	Measurements:-	The container is to be supported for 5 <i>minutes</i> .
		Any distress due to the test is to be recorded.
	Procedure:-	
Inertia	-Internal loading	With $R-T(\underline{kg})$ internal load, the container is to be positioned with its
(lateral)	and application:	transverse axis vertical and supported by its four bottom corner fittings.
	Measurements:-	The container is to be supported for 5 <i>minutes</i> .
		Any distress due to the test is to be recorded.
	Procedure:-	
	-Internal loading:	Nil.
Walkway	Applied -Added	300 kg uniformly distributed over a 600 mm×300 mm area at the weakest
	loads:	section of the walkway.
	Measurements:-	Maximum deflection and permanent set of the walkway under test.
Rigidity(transverse)	As specified in Table	
Rigidity(longitudinal)	As specified in Table	
Grappler arm lift	As specified in Table	e 5.2
positions		
	Procedure:-	(1) The tank container together with its associated pipework and fittings is
		to be hydrostatically tested to a test pressure not less than 1.5 times the
		maximum allowable working pressure or design pressure.
Pressure		(2) The test pressure is to be measured at the top of the tank in its normal
		position and is to be maintained to enable a complete examination of
		the tank. For ISO containers, the test pressure to be maintained for not
		less than 30 minutes.
		(3) Relief devices, where fitted, are to be rendered inoperative or removed.

Chapter 8 FIGURES, DIMENSIONS AND OTHERS

8.2 Figures, Dimensions and Others

Title of Paragraph 8.2.1 has been amended as follows.

8.2.1 Dimensions, Tolerances and Maximum Operating Gross Weight Mass

Table 8.1 has been amended as follows.

Table 8.1 Overall external dimensions and Tolerances, etc.

						in and 1 ore			
	Н	leight <i>H</i>	W	idth W	Le	ngth L	$K_1 (mm)$	$K_2(mm)$	Maximum
Designation	mm	Tolerances	mm	Tolerances	mm	Tolerances	Max.	Max.	operating
		mm		mm		mm			gross
									weight
									<u>mass</u>
									(kg) R
1 <i>A</i>	2,438	0	2,438	0	12,192	0	19	10	30,480
		-5		-5		-10			
1AA	2,591	0	2,438	0	12,192	0	19	10	30,480
		-5		-5		-10			
1B	2,438	0	2,438	0	9,125	0	16	10	25,400
		-5		-5		-10			
1BB	2,591	0	2,438	0	9,125	0	16	10	25,400
		-5		-5		-10			
1 <i>C</i>	2,438	0	2,438	0	6,058	0	13	10	20,320
		-5		-5		-6			
1 <i>CC</i>	2,591	0	2,438	0	6,058	0	13	10	20,320
		-5		-5		-6			
1 <i>D</i>	2,438	0	2,438	0	2,991	0	10	10	10,160
		-5		-5		-5			

Note:

The dimensions and tolerances shown in the \pm table apply when measured at the temperature of 20°C and measurements taken at temperatures other than 20°C are to be adjusted accordingly.

Chapter 9 SAFETY APPROVAL PLATE

9.1 Safety Approval Plate

9.1.1 Safety Approval Plate

Sub-paragraph -1 has been amended as follows.

- 1 Safety Approval Plates to be affixed to containers of the container system prescribed by Article $\frac{47-2}{56-4}$, paragraph $\frac{1}{3}$, sub-paragraph $\frac{1}{3}$ of the Regulations for the Enforcement of the Ship's Safety Law in Japan are to be in accordance with **Fig.9.1**.
- 2 The Safety Approval Plates to be affixed to containers under the authority of the Government of the Contracting Parties of *CSC* other than Japanese are to be in accordance with **Fig.9.3**.

Fig. 9.1 and Fig. 9.3 have been amended as follows.

Fig. 9.1 Safety Approval Plate (Type-J) CSC SAFETY APPROVAL SSTAMPS J-NK / DATE MANUFACTURED IDENTIFICASION No. MAXIMUM OPERATING GROSS WEIGHTMASS kg lb<u>s</u> ALLOWABLE STACKING WEIGHTLOAD FOR 1.8g lb<u>s</u> TRANSVERSE RACKING TEST LOAD VALUEFORCE lbnewtons ONE DOOR OFF: ALLOWABLE STACKING MASSLOAD FOR 1.8g lbs TRANSVERSE RACKING TEST LOAD VALUEFORCE lbnewtons FIRST MAINTENANCE EXAMINATION DATE

Remarks:

- (1. to 4. are omitted.)
- 5. Containers subjected to the End wall Test or Side Wall Test by a load different from the specified in **Table 5.1** are to be indicated with the words "END WALL STRENGTH" and the test load of the End Wall Test or the words "SIDE WALL STRENGTH" and the test load of the End Wall Test between the descriptions of "TRANSVERSE RACKING TEST LOAD VALUEFORCE kg lbnewtons" and "FIRST MAINTENANCE EXAMINATION DATE" respectively.
- (6. is omitted.)
- 7. For Safety Approval Plates affixed to containers which do not have doors, the indication of "ONE DOOR OFF:

 ALLOWABLE STACKING MASSLOAD FOR 1.8g kg lbs TRANSVERSE RACKING TEST LOAD VALUEFORCE kg lb

Fig. 9.3 Safety Approval Plate (Type-F)

CCC CAE	ETV ADDDOUAL	
CSC SAF	ETY APPROVAL	
[1] - <i>NK</i> /[2]		
DATE MANUFACTURED		
IDENTIFICASION No.		
MAXIMUM <u>OPERATING</u> GROSS WE	IGHT <u>MASS</u> kg	lb <u>s</u>
ALLOWABLE STACKING WEIGHT LO	<u>OAD</u>	
FOR 1.8g	kg	lb <u>s</u>
<u>TRANSVERSE</u> RACKING TEST LOAE	VALUE FORCE kg	lb newtons
ONE DOOR OFF:		
ALLOWABLE STACKING <u>MASS</u> LOAL	<u>D</u>	
FOR 1.8g	kg	lb <u>s</u>
<u>TRANSVERSE</u> RACKING TEST LOAE	VALUE FORCE kg	lb newtons
FIRST MAINTENANCE EXAMINATIO	ON DATE	

Remarks:

(1. to 4. are omitted.)

5. Containers subjected to the End Wall Test or Side Wall Test by a load different from the specified in Table 5.1 are to be indicated with the words "END WALL STRENGTH" and the test load of the End Wall Test or the words "SIDE WALL STRENGTH" and the test load of the side Wall Test between the descriptions of "TRANSVERSE RACKING TEST LOAD VALUEFORCE ks lbnewtons" and "FIRST MAINTENANCE EXA-MINATION DATE" respectively.

(6. is omitted.)

7. For Safety Approval Plates affixed to containers which do not have doors, the indication of "ONE DOOR OFF: ALLOWABLE STACKING MASSLOAD FOR 1.8g kg lbs TRANSVERSE RACKING TEST LOAD VALUEFORCE kg ** Honewtons** may be omitted.

EFFECTIVE DATE AND APPLICATION

- 1. The effective date of the amendments is 1 July 2014.
- 2. Notwithstanding the amendments to the Rules, the current requirements may apply to the freight containers other than those for which tests and inspections during production are carried out after the effective date.