Chapter 8. Arrival, checking and positioning of CTUs

8.1 CTU Arrival

8.1.1 The type of CTU used for the transport will influence:

- The process of confirming that it is fit for use;
- The CTU's positioning to suit the packing operation and timing;
- The planning of the cargo packing.

8.1.2 The CTU operator will advise of the estimated time of arrival and departure. The type of CTU may influence these timings:

- Rigid road vehicles will come with a driver and it would be expected that the time to pack the vehicle will be dictated by any time restrictions that local regulations may impose.
- Detachable CTUs, such as trailers and rail wagons may be left at the packer's facility and the tractor unit/motor unit permitted to depart if the packing procedure is extended.
- Class C swap bodies fitted with legs can be unloaded onto their legs and the tractor unit/engine unit plus trailer (if present) may be driven away.
- Freight containers and class A and B swap bodies can remain on the trailer or be unloaded and placed on the ground.
- CTUs remaining on trailers may be left for a period of time.

8.1.3 If the consignment requires more than one CTU then it is important to plan what packages go within each unit and how each CTU is managed: multiple units might be delivered all at once and the packer can manage positioning of each unit to suit the facility available. Another option is to deliver the units sequentially so that the container operator delivers an empty unit and picks up a fully packed one.

8.1.4 In both cases planning what packages go into each unit will be important. Demand at the destination may require particular packages to be packed in each CTU. However such demand can have an adverse effect on the load distribution, on possibility to secure the cargo properly, on the segregation of dangerous goods and also on volume utilisation. It is therefore important that a complete plan may be generated for all packages and CTUs prior to the start of packing the first CTU.

8.2 CTU checks

8.2.1 Approval plates

8.2.1.1 Freight containers and, under certain conditions, also swap bodies and road trailers may be required by applicable regulations to bear a safety approval plate. Details of the markings required on swap bodies and road trailers destined for transport by rail within the European railway network and data plates on freight containers transported internationally by sea and covered by the International Convention for Safe Containers (CSC) are shown in annex 4.

8.2.1.2 The safety approval plate as required by the CSC should be permanently affixed to the rear of the freight container, usually the left hand door. On this plate, the most important information for the packer are:

- The maximum gross mass. This is the maximum mass of the packed freight container and should never be exceeded.
- The allowable stacking mass (see annex 4, section 3 for more information). Freight containers having an allowable stacking mass of less than 192,000 kg are not suitable for unrestricted transport by sea (see paragraph 7.3.1).

If there is no CSC approval plate, the freight container should not be used in international traffic.

8.2.1.3 The CSC requires freight containers to be thoroughly examined 5 years after manufacture and subsequently at least every 30 months and two methods are used by the container

industry for recording that the freight container is fit for use. Both methods require marks to be shown on or near to the safety approval plate:

8.2.1.3.1 The date of the next periodic examination is stamped on the approval plate or affixed to it in form of a decal. The date of the next examination shown in figure 8.1 is September 2018.

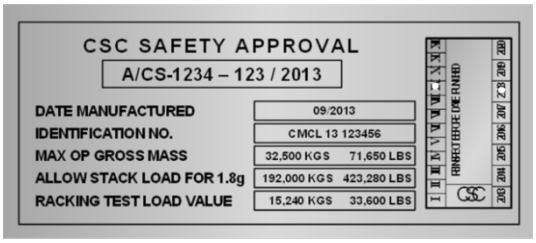


Figure 8.1 CSC safety approval plate with next examination date

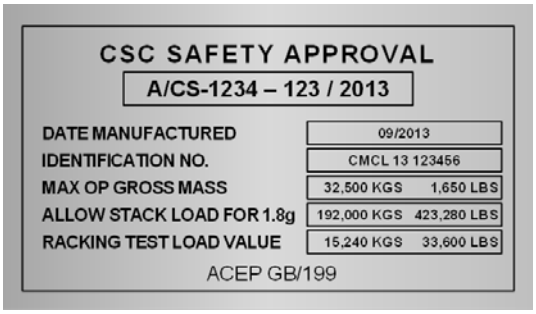


Figure 8.2 CSC safety approval plate with ACEP mark

8.2.1.3.2 As an alternative to such periodic inspections, the owner or operator of the freight container may execute an approved continuous examination programme where the freight container is frequently inspected at major interchanges. Freight containers operated under such a programme should be marked on or near to the safety approval plate with a mark starting “ACEP” followed by numerals and letters indicating the approval number of this continuous examination programme (see figure 8.2).

8.2.1.4 If there is no ACEP mark and if the next examination date is already elapsed, or is before the expected arrival time of the freight container at its destination, the freight container should not be used in intermodal or international traffic.

8.2.1.5 The practice of transporting cargo in one door open or one door removed freight containers is inherently dangerous and therefore is strongly discouraged. The practice is illegal unless it is marked on the CSC plate (see figure 8.3). Additionally, there may be negative consequences to using this practice in the supply chain (e.g. terminals refusing to handle open door freight containers).

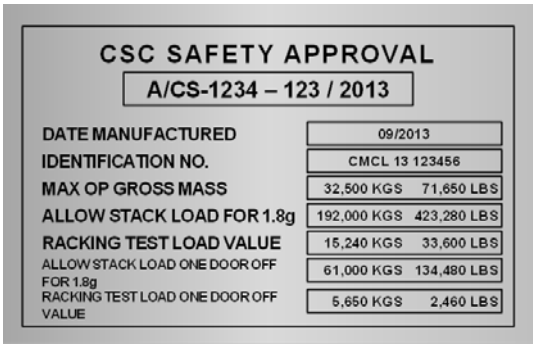


Figure 8.3 CSC safety approval plate for one door off operation

8.2.2 Exterior checks

8.2.2.1 The structural framework, the walls and roof of a CTU should be in good condition, and not significantly distorted, cracked or bent. The CTU operator is responsible for delivering a CTU that complies with international structural integrity requirements and international or national safety regulations. If the structural integrity is in doubt, advice should be sought from supervisory personnel or the CTU operator.

8.2.2.2 The doors of a CTU should work properly and be capable of being securely locked and sealed in the closed position, and properly secured in the open position. Door gaskets and weather strips should be in good condition.

8.2.2.3 A folding CTU with movable or removable main components should be correctly assembled. Care should be taken to ensure that removable parts not in use are packed and secured inside the unit.

Annex 4. Approval plates

1 Safety plates

1.1 Freight containers used in international transport and, under certain conditions, also swap bodies and road trailers are required by applicable regulations to bear safety approval plates.

1.2 Under the International Convention for Safe Containers (CSC), each freight container is required to bear a safety approval plate permanently affixed to the rear of the freight container, usually the left hand door. On this plate, the most important information for the packer is:

- The date manufactured;
- The maximum gross mass[1]; and
- The allowable stacking mass[1],

as shown in figure 4.1.

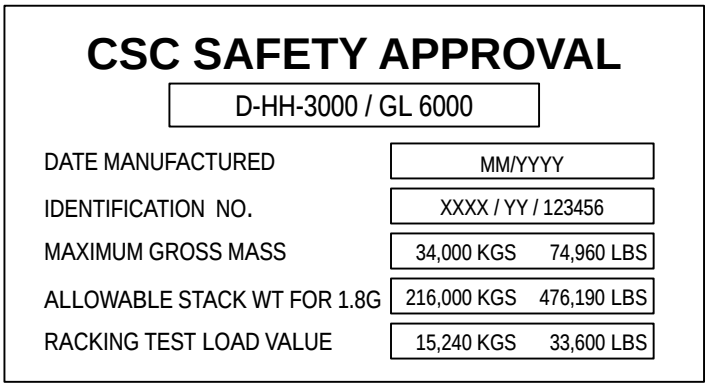


Figure 4.1 Diagram of CSC safety approval plate

1.2.1 The CSC requires freight containers to be thoroughly examined 5 years after manufacture and subsequently at least every 30 months. The date of the next periodic examination is stamped on the approval plate or affixed to it in form of a decal (see figure 4.2).

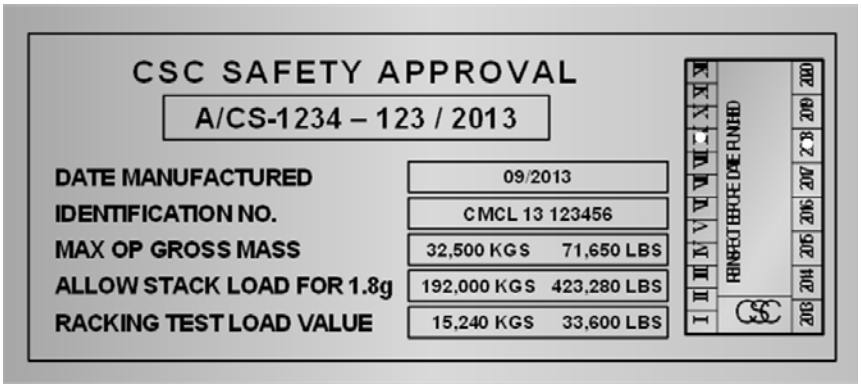


Figure 4.2 CSC safety approval plate with next examination date

1.2.2 As an alternative to such periodic inspections, the owner or operator of the freight container may execute an approved continuous examination programme where the freight container is frequently inspected at major interchanges. Freight containers operated under such programme should be marked on or near to the safety approval plate with a mark starting “ACEP” followed by numerals and letters indicating the approval number of this continuous examination programme (see figure 4.3).

[1] The maximum gross mass and the maximum allowable stacking mass (allow. stack. wt.) should not be exceeded.

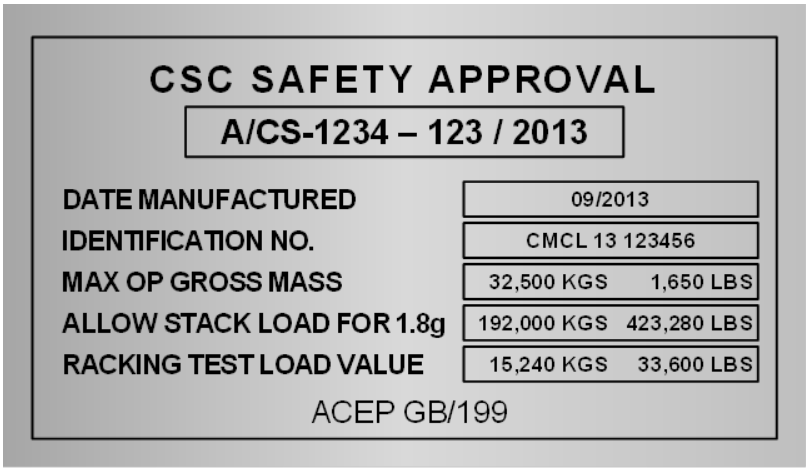


Figure 4.3 Safety approval plate with ACEP mark

1.2.3 If there is no ACEP mark and if the next examination date is already elapsed, or is before the expected arrival time of the freight container at its destination, the freight container should not be used in intermodal or international transport.

1.3 Swap bodies and road trailers destined for transport by rail within the European railway network require a marking as per EN 13044[2]. This operational marking provides information for codification and for approval of the swap body or semi-trailer for rail transport.

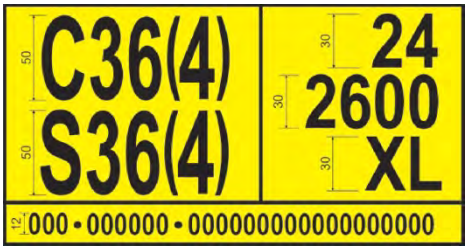


Figure 4.4 Yellow operational mark for swap bodies

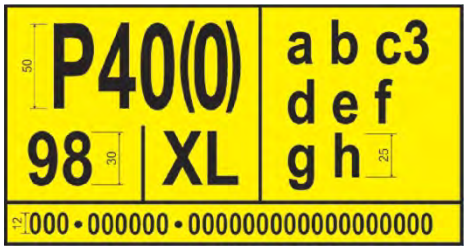


Figure 4.5 Yellow operational mark for trailers

1.3.1 The data on the plates shown in figures 4.4 and 4.5 relate to dimensions of CTU and how they can fit onto rail wagons. The significant information relates to the characters “XL” shown on both plates. This indicates the strength of the swap bodies’ body, standard or reinforced, with the marking referring to EN 12642 (see also figure 4.6).

Component	Standard structure Code L	Reinforced structure Code XL
Front wall	0.4P and maximum limit[a]	0.5P without maximum limit
Rear wall	0.25P and maximum limit[b]	0.3P without maximum limit
Side wall	Up to 0.3P	0.4P[c]
[a] 5,000 daN [b] 3,100 daN [c] Except for double-decker		

Figure 4.6 Static test conditions

1.3.2 The XL test requirements specifically apply to the following types of body structures:

- box type;
- drop side with side and tail boards without cover;
- drop side with side and tail boards with tarpaulin cover;
- curtain-siders.

[2] EN 13044-2:2011 Intermodal loading units – Marking Part 2: markings of swap bodies related to rail operation

2 Maximum gross mass

2.1 Freight containers, like all CTUs, have a maximum gross operating mass or rating which is shown both on the CSC safety approval plate (see figures 4.1, 4.2 and 4.3) and on the rear end of the freight container (see figure 4.7).

Figure 4.7 Rear of freight container

2.2 The two values shown on a freight container should be the same, however if they are different the value shown on the CSC safety approval plate should be used.

2.3 The tare mass shown in the figure relates to the empty mass of the freight container and should always be shown on the rear end of the freight container. This value will include any permanently attached equipment such as an integral refrigeration unit, but will not include items that are attached, such as a nose mounted generator (clip on unit).

2.4 The maximum payload (or net mass) may be shown on the rear of the freight container, however the correct method for calculating the maximum mass of cargo that the freight container can carry is:

$$P = R - (T_c + T_g + T_s)$$

Where:	
P	Maximum payload (or net mass) of cargo
R	Maximum gross mass of freight container
T_c	Tare mass of the freight container
T_g	Mass of additional attached items
T_s	Mass of the securing and bracing materials

3 Allowable stacking mass

3.1 The allowable stacking mass represents the maximum superimposed load that any freight container can be subjected to and is often referred to as the stacking capability or stack height (when converted to a number of freight containers).

3.2 Freight containers built to the provisions of ISO 1496 are required to withstand a minimum superimposed load of 192,000kg. This value is the equivalent of eight superimposed freight containers with an average mass of 24,000kg.

3.3 Freight containers having an allowable stacking mass of less than 192,000 kg are not unrestrictedly suitable for sea transport. This includes:

- Freight containers built to a previous standard;
- Swap bodies;
- Freight containers designed to be used with one door removed/open.

3.4 Swap containers and tanks have a different design and therefore a different stacking capability. The wider designed width of the swap bodies means that there is a step between the corner posts and the top corner fittings which are shown clearly on the swap tank as shown in figures 4.8 and 4.9.

Figure 4.8 Step back at the top fitting

Figure 4.9 Step back with secondary side lift aperture

3.5 Freight containers with a step of this nature will generally have a lower stacking capability. The freight container may be marked with a warning decal that indicates that there is a reduced stacking capability.

3.6 Freight containers with one door off / open will have reduced allowable stacking mass and racking as shown in figure 4.10.

Figure 4.10 CSC safety approval plate for one door off operation

3.7 The practice of transporting cargo in one door open or one door removed freight containers is inherently dangerous and therefore is strongly discouraged. The practice is illegal unless it is marked on the CSC plate (see figure 4.10). Additionally, there may be negative consequences to using this practice in the supply chain (e.g. terminals refusing to handle open door freight containers).

3.8 Where there is reduced allowable stacking mass, due to design or operation, the total gross mass of freight containers and swap bodies placed above should not exceed this value.

3.9 Freight containers which are designed with an allowable stacking mass less than 192,000 kg should be marked in accordance with ISO 6346. This means that the fourth character of the ISO size type code will be a letter.

4 Tank data plates

4.1 All tank containers and swap tanks require essential manufacturing and test data to be recorded on a data plate. This will be generally found on the rear of the tank but may be found attached to the side of one of the rear corner posts.

4.2 The plate shown in figure 4.11 is a typical tank data plate with the sections identified.

Owner's name and address

Manufacturers name, address and manufacturing serial number

Tank design details

Operation details

Pressures

Materials

Connections

Inspecting authority

Hydraulic test data

Timber content

CSC safety approval plate

Customs plate

Figure 4.11 Typical tank data plate

4.3 The important sections are the CSC safety approval plate and the hydraulic test data. Every tank should be subjected to a pressure test every 30 months and a full hydraulic test every 5 years and the date of the test marked on the data plate.

5 European rail wagon marks

5.1 Static axle load and linear load

5.1.1 The axle load and axle spacing of the vehicles defines the vertical quasi-static load input to the track.

5.1.2 The load limits for wagons take into account their geometrical characteristics, weights per axle and weights per linear metre.

5.1.3 They should be in accordance with the classification of lines or sections of lines, categories A, B1, B2, C2, C3, C4, D2, D3, D4 as defined in the following table.

Classification	Mass per axle (P)						
	A	B	C	D	E	F	G
Mass per unit length (*p*)	16.0 t	18.0 t	20 t	22.5 t	25.0 t	27.5 t	30.0 t
5.0 t / m	A	B1					
6.4 t / m		B2	C2	D2			
7.2 t / m			C3	D3			
8.0 t / m			C4	D4	E4		
8.8 t / m					E5		
10.0 t / m							

p = Mass per unit length, i.e. the wagon mass plus the mass of the load, divided by the wagon length in metres, measured over the buffers when uncompressed.

P = Mass per axle

5.1.4 Classification according to the maximum mass per axle P is expressed in capital letters (A, B, C, D, E, F, G); classification according to the maximum mass per unit length *p* is expressed in Arabic numerals (1, 2, 3, 4, 5, 6), except for Category A.

5.1.5 Rail vehicle load table

Shown on each side to the left

The maximum payload is generally not a fixed value for the distinguished wagon, but allocated case by case by means of the intended track category (categories A, B, C, D) and the speed category (S: ≤ 100 km/h; SS: ≥ 120 km/h). These payload figures imply a homogeneous load distribution over the entire loading area (see figure 4.12).

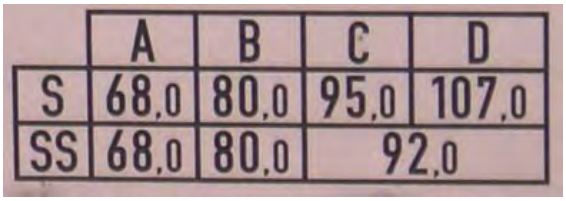
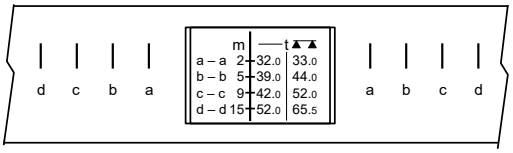


Figure 4.12 Allocation of payload to a rail car

5.1.6 Concentrated loads

Shown in the centre of each solebar[3]

In case of concentrated loads a reduction of the payload is required, which depends on the loaded length and the way of bedding the concentrated load. The applicable load figures are marked in each wagon. Also any longitudinal or transverse eccentricity of concentrated loads is limited by the individual axle load capacity or the wheel load capacity (see figure 4.13).



Column	Symbol	Description
1		Signs showing the length of the supporting surfaces of concentrated loads, or the distance between supports
2	m	Distance in metre between the signs showing the length
3	———	Maximum tonnage of concentrated loads
4	▲ ▲	Maximum tonnage of loads resting on two supports

Figure 4.13 Reduction in payload due to concentrated load and bedding distance

[3] Main side beam of a rail wagon