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Translation

OR

Swap bodies for grab handling and spreader gripping - Technical conditions

*Caisses mobiles préhensibles par pinces et/ou palonniers agrippeurs - Conditions techniques
Mittels Greifzangen und/oder Spreader aufnehmbare Wechselbehälter - Technische Bedingungen*



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Summary

Swap bodies are the removable superstructures of road transport vehicles. Their dimensions and some of their fittings are standardised. This standardisation applies particularly to the dimensions, strength parameters, securing devices, of the road vehicle itself, of the wagon and of transhipment arrangements (grab-handling grooves, lower securing parts and, in special cases, upper securing parts).

1 - Swap bodies

1.1 - General arrangements

- 1.1.1 - The outer dimensions of swap bodies shall correspond to the values given in the table below, with due allowance made for the load diagrams of carrier wagons.

1.1.1.1 - Symmetrical dimensions

NB : If these swap bodies are provided with asymmetrical protrusions, the value of the largest protrusion shall be used as a basis for the two sides when determining the group number, taking the length range into account.

Group No. ^a	Maximum length (in mm) ^b	Maximum overhang (in mm)	Distance between centres of securing devices (in mm)	Maximum overhang (in mm)	Securing devices	Width (in mm)	Maximum height of sides (in mm)		
(20)	6 058 (= 20')	102,5	5 853 ± 3	102,5	20'	2 440 to 2 550 ^c	See ^d		
(21)	6 250	198,5	5 853 ± 3	198,5					
22	7 150	648,5	5 853 ± 3	648,5					
23	7 450	798,5	5 853 ± 3	798,5					
24	7 820	983,5	5 853 ± 3	983,5					
(26)	8 150	1 148,5	5 853 ± 3	1 148,5					
(30)	9 125 (= 30')	103,5	8 918 ± 4	103,5	30'				
(31)	9 300	191,0	8 918 ± 4	191,0					
40	12 192 (= 40')	103,5	11 985 ± 5	103,5	40'				
42	12 500	257,5	11 985 ± 5	257,5					
(44)	13 100	557,5	11 985 ± 5	557,5					
(45)	13 716 (= 45')	865,5	11 985 ± 5	865,5					

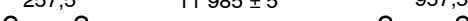
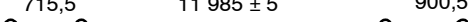
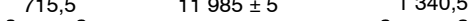
a. Where necessary, three-figure sub-groups are allowed. Group members without () correspond to the CEN coding. Preference should be given to use of these swap bodies.

b. In the case of swap bodies with a distance of 30' and 40' between centres of securing devices and fitted with a protruding cooling unit, the latter shall be included in the overall length of the swap body.

c. The maximum width of 2 600 mm is permitted.

d. Each RU fixes the marking of swap bodies in accordance with UIC Leaflet 596-6.

1.1.1.2 - Asymmetrical dimensions

Group No. ^a	Maximum length (in mm) ^b	Maximum overhang (in mm)	Distance between centres of securing devices (in mm)	Maximum overhang (in mm)	Securing devices	Width (in mm)	Maximum height of sides (in mm)
(60)	8 543		5 853 ± 3	1 500	20'	2 440 to 2 550 ^c	See ^d
(81)	9 275		8 918 ± 4	253,5	30'		
(82)	9 330		8 918 ± 4	308,5			
(84)	10 040		8 918 ± 4	1 018,5			
(85)	10 200		8 918 ± 4	1 178,5			
(86)	10 900		8 918 ± 4	1 878,5			
(91)	12 500		11 985 ± 5	411,5	40'		
(94)	12 750		11 985 ± 5	661,5			
(95)	13 200		11 985 ± 5	957,5			
96	13 600		11 985 ± 5	900,5			
(97)	14 040		11 985 ± 5	1 340,5			

- a. Where necessary, three-figure sub-groups are allowed. Group members without () correspond to the CEN coding. Preference should be given to use of these swap bodies.
- b. In the case of swap bodies with a distance of 30' and 40' between centres of securing devices and fitted with a protruding cooling unit, the latter shall be included in the overall length of the swap body.
- c. The maximum width of 2 600 mm is permitted.
- d. Each RU fixes the marking of swap bodies in accordance with UIC Leaflet 596-6.

- **1.1.2 - Swap bodies shall have four securing devices in the lower part of their frame, positioned as specified in Appendix A - page 14.**

The dimensions of the securing devices are given in Appendix B - page 15.

The lower openings of securing devices shall be positioned symmetrically, with respect to the longitudinal centre-line of the underframe. Their positions are given in Appendix A.

If the swap bodies are fitted with more than four lower securing devices, the securing devices used for rail transport shall be identified by means of a triangle pointed downward above the corner fitting concerned, as shown in Appendix C - page 16. If this is not possible (for example, because of the type of design), the securing devices to be used must be specifically marked using a contrasting colour. The same procedure shall be used for securing devices if their longitudinal arrangement is asymmetrical. The group number is determined from the securing devices earmarked for rail transport.

Swap bodies shall be fitted with side openings for the roping. For swap bodies in groups No. 20 to 29 and 60, the asymmetries accepted for side openings with respect to the centre-line of the underframe shall be those of securing devices and may be arranged in the same direction.

The side openings of units in all other group numbers shall be placed symmetrically with respect to the longitudinal and transverse centre-lines of the underframe.

They shall be arranged facing outwards on the side surfaces. Their dimensions and positions are set out in Appendix D - page 17.

The side openings of swap bodies in groups No. 30 to 45 and 81 to 97 may also be placed at a distance of $5\,590^{+400}_{-200}$. The existing side-openings located at a distance of 8 920 mm or 11 985 mm must be neutralised for rope-handling and only be used for visual checking of the correct pin position.

- **1.1.3** - During transport on fixed-recess wagons precluding the use of other bearings for swap bodies on carrier wagons between securing devices, swap bodies shall rest solely on their supporting plates fitted with pins, by means of their securing devices.

If, because of their design, the swap bodies in groups No. 40 to 49 and 91 to 99 also require an intermediate bearing during rail transport, this special requirement must be taken into account during the construction phase (position and strength of bearing points).

The location and dimensions of the intermediate bearing shall conform to Appendix E - page 18.

- **1.1.4** - Swap bodies without upper corner fittings shall be provided with grab-handling grooves, the position and dimensions of which conform to Appendices A - page 14 and F - page 19 or G - page 20. In other words, the handling grooves shall be symmetrically arranged, lengthwise (approximately 200 mm) and crosswise, with respect to the centreline of the swap body. This also applies to asymmetrical swap bodies.

The grab grooves for swap bodies in groups No. 20 to 29 shall always be lodged between the securing devices, also in case of permissible asymmetrical overhang.

These grooves must be designed to prevent the handling grabs sliding outside the grab zone during longitudinal travel of the swap body with respect to the lifting appliance. This is usually ensured by means of two lateral stops fixed 250 mm from either side of the centre-line of the grab-handling zone.

When this not possible (support legs, for example), the overall length of the zone concerned shall be raised from 500 to 850 mm, measured from the centre-line of the securing device, coupled with elimination of the longitudinal bar and part of the grab contact zone:

- over a depth less than 15 mm measured from the inner face of the safety bar, and
- in zones defined by (a) and (b) on the drawing in Appendix G.

In order to materialise their position, grab-handling grooves must be provided with a yellow strip 100 mm in height over their full length. For swap bodies painted yellow, a different contrasting colour shall be used.

- **1.1.5** - When swap bodies are provided with support legs, the locking systems for the support legs when retracted and folded-back must be designed securely to prevent any accidental release at all times, and ensure they can visually be checked from the outside, at least for the second transport security in accordance with standard EN 284, Appendix B (see Bibliography - page 43).

- **1.1.6** - Swap bodies with recesses to accommodate the forks of forklift trucks must, for constructional and testing purposes, comply with the provisions of *UIC Leaflet 592-2* (see Bibliography - page 43). These recesses shall not be permitted:

- for swap bodies with securing devices > 5 853 mm apart;
- for all tank swap bodies, irrespective of the gap between their securing devices.

- **1.1.7** - In addition to the usual strength provisions imposed by National Technical Services or equivalent agencies, swap bodies shall satisfy at minimum the test stipulated in Appendix H - page 21.

Since swap bodies may be carried in both directions under SS conditions (120 km/h), their bodywork (especially the doors, bodywork components and their fastenings) must be able to withstand wind pressure, in particular, pressures or pressure drops occurring in tunnels or when passing other trains. In the case of sheeted swap bodies, the fastening of the sheet to the bodywork shall comply with the provisions of standard *CEN 12641-1 or -2* (see Bibliography - page 43). In the event of the walls being wholly or partly deficient or not rigid, devices must be provided to secure the load on the base structure of the swap body. The number and positioning of fastening points are specified in standard *EN 284*, Appendix C or in standard *EN 452*, Appendix B (see Bibliography - page 43).

Requests for prototype approval must be accompanied by a test certificate in accordance with *UIC Leaflet 592-3* (see Bibliography - page 43), clearly stating that the swap body meets the conditions stipulated. For later productions, a Certificate from the Manufacturer confirming compliance with the prototype must be submitted. This certificate must be renewed each time the body structure is modified.

NB : Tests shall be carried out by the RU, under its own direction or under the direction of a body authorised by it.

- R **1.1.8** - It is recommended that a box with minimum dimensions of 350 x 250 x 20 mm be fitted to the front of the swap bodies in order to house relevant documents.

- **1.1.9** - Swap bodies must be codified in accordance with the provisions of *UIC Leaflet 596-6* (see Bibliography - page 43), and must moreover bear the following identification plates and markings on both sides.

- **1.1.10** - Each swap body shall require permanent authorisation for conveyance on wagon, issued by the RU concerned, or under its responsibility by one or several agencies selected by it.

The acceptance procedure shall be defined by this RU which may, in this connection, insist on presentation, for each swap body, of a conformity certificate as provided for in the present point.

- **1.1.11** - If any type of swap body is provided with steps, each step shall be capable of withstanding a minimum load of 200 kg.

Swap bodies of whatever design, fitted with steps, shall bear an arrow-sign next to each step, as provided for in Appendix I - page 29.

- **1.1.12** - Swap bodies, with overall dimensions exceeding 2 500 mm but not 2 600 mm, shall not be accepted for loading on fixed-recess wagons as defined in *UIC Leaflet 571-4* (see Bibliography - page 43).

Swap bodies with an overall width exceeding 2 500 mm but with an indent next to the securing devices giving a width of 2 500 mm, as provided for in Appendix J - page 30, may be accepted for loading on fixed-recess wagons of the type defined in *UIC Leaflet 571-4*, on condition they bear an additional plate (as provided for in Appendix K - page 31) next to the code-number plate.

- **1.1.13** - Swap bodies used in international customs-sealed freight transport shall conform with the regulations of existing Customs Agreements.
- **1.1.14** - Swap bodies for the carriage of dangerous goods shall comply with the relevant *RID* (see *Glossary* - page 42) provisions (for example: their safety coefficient must be 1,5 times the yield strength ($\sigma_{0,2}$)).
- **1.1.15** - Swap bodies which can be used for controlled-temperature transport must comply with *ATP* (see *Glossary* - page 42) regulations when they are used for traffic covered by this agreement, in which case they shall be marked as specified in *Annex 1, Appendix 4 to the ATP*.
- **1.1.16** - If the swap bodies incorporate service platforms or gangways, the latter must be fitted with slip-preventing and weatherproof flooring. If these same platforms and gangways are fitted with retractable/removable handrails, the locking mechanism of the latter must be positioned in a way enabling it to be controlled from the running plane.

1.2 - Additional provisions for special-purpose swap bodies

1.2.1 - Swap tank containers

- **1.2.1.1** - Unless otherwise stipulated in the *RID*, these tank containers must be capable of withstanding an internal pressure of 0,3 bar.
- **1.2.1.2** - Swap tank containers for the carriage of dangerous goods listed in the *RID* shall comply with *RID* regulations. The provisions in this leaflet shall also apply unless they are in contradiction with the *RID*.
- **1.2.1.3** - Filling and discharge devices, as well as any other apertures (except automatic venting devices) on swap tank containers, shall be so designed that they cannot open by themselves when closed.
- **1.2.1.3.1** - Filling and emptying devices shall be protected by closures or screw caps.
- **1.2.1.3.2** - The discharge devices shall be provided with a double closure, the inner one consisting of a closure which locks the discharge aperture, and the outer one consisting of a discharge stopcock or valve placed on the discharge pipe or directly attached to the receptacle.
- R **1.2.1.3.3** - However, swap tank containers for the carriage of goods other than those listed in the *RID* may be provided with only one closure on condition the valve or stopcock forming the closure is directly attached to the discharge aperture of the lower tank; this aperture shall be situated in the lower middle part of the tank unless it is specially protected.
- **1.2.1.3.4** - The bodies and handles of stopcocks shall be fastened so that they cannot be removed without use of force.
- R **1.2.1.3.5** - It is recommended that the support frame of the receptacle or the underframe of the swap body be arranged so that it protrudes beyond the widest projections of the tanks and their equipment (dome, filling and discharge devices, etc.) to protect them against any damage.

It is recommended that swap tank containers be arranged so that they can preferably be emptied by pump or pressure-application rather than by gravity.

- **1.2.1.4 - Swap tank containers for the carriage of liquids which develop gases and which are not included in the RID, shall be designed and built so that the development of any gauge-pressure endangering the tank is prevented.**

If, to prevent development of such gauge pressure, the swap tank containers are fitted with automatic venting devices, they shall be built such that inward penetration of fire, leakage of liquids, unauthorised discharge, or smuggling, are prevented.

NB : Acceptance of the swap bodies mentioned in points 1.2.1.3.3, 1.2.1.3.5 and 1.2.1.4 for traffic on **Network Rail**, shall require special prior agreement.

- **1.2.2 - Swap bodies with tensioned or sliding side-sheeting**

1.2.2.1 - Swap bodies with tensioned or sliding side-sheeting must incorporate load-securing devices of the type specified in standard *EN 284, Appendix 1* for groups No. 20 to 29 and 60, and in standard *EN 452, Appendix 1* for groups No. 40 to 45 and 91 to 97. For groups No. 30, 31 and 81 to 86, corresponding conditions must be adapted.

1.2.2.2 - The sheet fastening equipment on the swap bodies must be designed to prevent any loosening or slackening during transport even under the impact of dynamic or aerodynamic forces.

1.2.2.3 - The coding plates, contrary to the provisions of *UIC Leaflet 596-6*, may be made of printed self-adhesive flexible sheets.

- **1.2.3 - Swap bodies with railings, sheets and hoops**

1.2.3.1 - At right angles to the roof, the hoops must protrude on both sides by a minimum of 40 mm into the brackets/sheath. They must also be made secure on all sides to prevent them from coming out.

1.2.3.2 - When horizontal, removable slats (in metal, wood or other materials) exist on the sides, they must overlap into the brackets of vertical stanchions in accordance with Appendix **L - page 32**.

- **1.2.4 - Van-type swap bodies**

Completely closed swap bodies, protected from bad weather by a rigid roof, rigid side and end walls and a floor, must incorporate at least one door for loading/unloading.

- **1.2.5 - Platform-type swap bodies**

Swap bodies of this type must be provided with securing devices as per point **1.2.2 - page 7** in their floor. Special floor designs that do not offer a level floor (for example, fixed cradles for coils) are not subjected to this obligation, but they must nevertheless incorporate load securing fixtures specific to the swap body and these fixtures must be subjected to the test set out in point **H.4 - page 22**.

1.2.5.1 - With fixed or folding end walls

During rail transport, these walls are generally in the raised position.

Loads on these platform-type swap bodies must not foul the clearance gauge in the longitudinal and transversal plane formed by the raised end walls.

If this type of swap body is carried in stacked form (bundle, etc.), *RIV* conditions must be observed, and the profile number given on the coding plate does not apply in this case.

Intermodal transport of these swap bodies when empty, in stacked form, may be governed by bi- or multilateral agreements. However, *RIV* conditions must be observed, to the extent that they are applicable.

1.2.5.2 - Without end walls

Swap bodies in this category do not bear a coding plate but an identifier plate on which the permissible profile number is replaced with the "Flat" marking. Loads on these swap bodies must first undergo a geometrical check. An example of identifier plate is given in Appendix **M** - page 33.

If these swap bodies are carried empty in stacked form (bundle, etc.), *RIV* conditions must then be observed.

If these swap bodies are carried by intermodal transport in stacked form (bundle, etc.), the conditions in point **1.2.5.1** must be observed to the extent that they are applicable.

o 1.2.6 - Swap bodies adapted to the transport of concentrated loads

1.2.6.1 - Swap bodies adapted to the transport of concentrated loads must bear a corresponding marking on the side walls near the identification plate (see Fig. 4, Appendix **S** - page 41).

1.2.6.2 - Swap bodies specially equipped for the transport of steel coils must bear a marking comprising a load diagram specifying the maximum and minimum diameters for each cradle as well as the maximum permissible weight (see Fig. 5, Appendix **S**).

1.2.6.3 - These markings shall be used with immediate effect. For existing units, they shall be introduced within 6 years.

o 1.3 - Swap bodies without upper corner fittings

The maximum gross weight shall be 36 000 kg irrespective of group number.

NB : Allowance must be made for the strength of wagons and handling gear.

1.4 - Stackable swap bodies with upper corner fittings

1.4.1 - General

R 1.4.1.1 - It is recommended that the lower part of swap bodies with a maximum gross weight > 30 480 kg but ≤ 34 000 kg be fitted with grab grooves so that they can be offloaded by means of lifting devices with grab pincers.

NB : In the absence of grab grooves, the strength of the pins of spreaders must be taken into consideration.

- **1.4.1.2** - Irrespective of their category, swap bodies with a maximum gross weight > 34 000 kg but ≤ 36 000 kg must incorporate grab grooves in accordance with point **1.1.4** - page 4.
- **1.4.1.3** - Swap bodies with upper corner fittings must obtain CSC approval (see Glossary - page 42) by carrying a CSC approval plate on their end wall.

1.4.2 - Stackable swap bodies in accordance with EN standards

(Reserved pending decisions by CEN TC119)

1.4.2.1 - Stackable swap bodies with upper corner fittings and a maximum gross weight of 16 000 kg

(Reserved pending decisions by CEN TC119)

1.4.2.2 - Stackable swap bodies with upper corner fittings and a maximum gross weight of 34 000 kg

(Reserved pending decisions by CEN TC119)

1.4.3 - Stackable swap bodies as per UIC prescriptions

UIC swap bodies comprise a recess ≥ 6 mm in the roof and of $12,5^{+5}_{-1,5}$ mm in the floor. They shall have a maximum gross weight ≤ 36 000 kg. The total weight to be taken into account for the stacking test is still 36 000 kg, irrespective of the effective maximum gross weight. When defining the testing weight for continental traffic, stacking over three heights (with two other swap bodies successively placed on the lower swap body), corresponding to $2,8 \times 36$ 000 kg = 100 800 kg, shall be used as a basis. For this testing weight, the resulting stacking weight on the CSC approval plate is 56 000 kg. The upper and lower corner fittings must be positioned in accordance with *UIC Leaflet 592-2*.

When the swap body is uniformly loaded such that its total weight is 1,8 times its maximum gross weight, no part of its frame (floor) must foul by more than 6 mm the zone underneath the plane formed by the lower planes of the lower corner fittings.

1.4.3.1 - Skeleton tank swap bodies

In the case of skeleton tank swap bodies, the tank generally protrudes beyond the frame. For the purposes of securing them on combined transport wagons and transshipment at intermodal platforms, the frame shall be provided with upper and lower corner fittings. Clearances for transshipment must correspond exactly to those given in *UIC Leaflet 592-2*.

1.4.3.2 - "Beam" tank swap bodies

"Beam" tank swap bodies are appliances where the tank incorporates arms with integrated anchoring points that, in terms of design, dimensions and assembly, correspond to corner/securing fittings defined in *UIC Leaflet 592-2*. This type of tank swap bodies does not identify with any other underframe. Here too, the tank itself can exceed the level of securing devices/corner fittings.

1.4.3.3 - "Box"-type swap bodies

In terms of length and width, "box" swap bodies correspond to containers as defined in *UIC Leaflet 592-2*. Generally speaking, swap-body heights are variable and, as a matter of policy, they are coded in accordance with *UIC Leaflet 596-6*.

1.4.3.4 - "Box"-type swap bodies with bilateral protrusions

These swap bodies may incorporate corner fittings with upper and lower angles and at the same time comprise lower and upper securing devices at distances stipulated for 10', 20', 30' and 40' containers, in accordance with *UIC Leaflet 592-2*. The lower and upper securing devices are vertically superimposed. The lateral clearances on the upper securing devices shall be superimposed in accordance with *UIC Leaflet 592-2*.

This type of swap body:

- may not be offloaded anywhere indiscriminately because of the need solely to use grip-spreaders with liftable front guide plates,
- may be coded in accordance with *UIC Leaflet 596-6*.