SLOVENSKI STANDARD
SIST EN 283:2000

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Swap bodies - Testing

Swap bodies - Testing

Wechselbehälter - Prüfung

Caisses mobiles - Essais

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

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Contents

Foreword

The purpose of this standard is to combine the national standards into one single European Standard to ensure for the future a free, unimpeded circulation of swap bodies in Europe within the road/rail transport chain .

This draft European Standard was prepared by CEN/TC 119 "Swap bodies" the secretariat of which is held by Normenausschuß Kraftfahrzeuge (FAKRA), a subdivision of Deutsches Institut für Normung (DIN). At the 2nd meeting of CEN/TC 119 in Frankfurt/M. in May 1988 the basic decisions for publication of a draft European Standard had been taken. At that meeting delegations from the following countries participated: Belgium, Denmark, Germany, Finland, France, Italy, The Netherlands, Norway, Sweden, United Kingdom.

In accordance with the Common CEN/CENELEC Rules, the following countries are bound to implement this European Standard :

Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

1 Object and field of application

This European Standard lays down the basic testing requirements for swap bodies of class A, B and C, which are suitable for conveyance by road and rail vehicles, including interchange between these modes of transport.

This standard does not apply to specific cargo swap bodies (e.g. tank type swap bodies).

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this European Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on these International Standards are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of CEN maintain registers of currently valid International and European Standards.

ISO	668-1988	Series 1 Freight containers - Classification, dimensions and ratings
ISO	1161-1984	Series 1 Freight containers - Corner fittings - Specification

3 Definitions

For the purpose of this European Standard, the following definitions apply:

3.1 Swap body

Article of transport equipment

- having a mechanical strength designed only for rail and road vehicle transportation on land or on ferries, and for this reason it does not necessarily fulfil conditions such as those of ISO series 1 containers.

- having a width and/or a length exceeding those of ISO series 1 containers of equivalent basic size, for better utilization of the dimensions allowed for road traffic.

- being fixed and secured to the vehicles with the same devices as those of ISO containers of series 1. For this reason these devices are fixed as specified by ISO 668 and ISO 1161, but due to the size difference, they are not always located at the swap body corners.
- which, generally, cannot be stacked (see clause 6)
- which can be handled with grappler arms and with slings
- which, for class C , can be set from road vehicles on support legs and removed from them with on-board means.

3.2 Box type swap body

Swap body, totally enclosed and weather-proof, having a rigid roof, rigid side walls, rigid end walls and a floor and having at least one of its end walls or side walls equipped with doors.

3.3 Open sided swap bodies

Swap body with folding side walls and movable or removable canvas normally supported on movable or removable roof bows.

3.4 Curtainsider swap body

Swap body having a rigid roof, rigid end walls and flexible, movable side walls, for example made of canvas or plastic material normally supported on movable webbing.

Cargo securing devices are mandatory for swap bodies of curtainsider type. Testing of cargo securing devices in swap bodies shall be done according to EN 1) .

3.5 Drop sided swap body

Swap body having folding and/or fixed side boards.

3.6 Rating

The gross mass, R of a swap body in the laden condition which is both the maximum mass for operation and the minimum mass for testing.

$$R = P + T$$

where P = maximum payload
T = Tare

1) in preparation

3.7 Tare

The mass of the unladen swap body.

4 General requirements

4.1 Each swap body shall show technical characteristics at least equivalent to those satisfying all the tests listed in clause 5 so far as they are applicable to the design of swap body under consideration.

In the case of swap bodies of identical construction (series production) it is acceptable for a single unit to undergo all the following tests, provided that the inspecting authority required to give type approval is satisfied that the other swap bodies have technical characteristics at least equivalent to those of the swap body tested.

Any proposal to alter plans or manufacturing procedures shall be submitted to the inspecting authority in advance who will decide whether to repeat the whole or part of the tests.

The swap body under test shall be considered as being approved, provided that the following conditions are met:

Upon completion of any of the following tests the swap body shall show neither permanent deformation which will render it unsuitable for use nor abnormality which will render it unsuitable for use, and the dimensional requirements affecting handling, securing and interchange shall be satisfied.

This approval will extend to all identical series produced, swap bodies subject to any production tests as required by the inspection authority.

4.2 Unless otherwise stated, swap bodies shall be capable of withstanding the tests specified in 5.1 to 5.10 inclusive, as applicable. Swap bodies shall be tested in the condition in which they are designed to be operated. Also, swap bodies equipped with removable structural items shall be tested with these items in position. It is recommended that the test for weatherproofness (see 5.9) be carried out last.

4.3 Supporting legs shall also be tested separately, see 5.11.

4.4 The risk of overturning of an empty swap body standing on its supporting legs shall be determined according to annex B.

5 Testing

5.1 Transportation strength

N O T E : This test shall be carried out to prove the ability of the base structure of a swap body to withstand the vertical forces under dynamic conditions encountered in railway operations.

5.1.1 Swap bodies transported without centre supports

The swap body uniformly loaded to 1,5 R shall be placed on four level pads, one under each bottom fitting. The pads shall be centralized under the fittings and shall be substantially of the same plan dimensions as the fittings. The swap body shall be free to deflect. The swap body shall be supported for at least 5 minutes.

The test procedure for swap bodies of class A designed for transportation without centre supports shall be the same as required above except that in this case the combined mass of swap body and test load shall be 2 R.

5.1.2 Swap bodies of class A designed for transportation with centre supports

The test procedure described in 5.1.1 with 1,5 R shall be applied. In an additional 2nd test, level pads shall be placed under each intermediate support (load transfer zone). The max. force measured on the intermediate supports on each side of the swap body shall not exceed 75 kN during the entire test period.

5.2 Lifting from the slinging apertures

This test shall be carried out to prove the ability of a swap body to withstand being lifted from its side bottom apertures. The swap body uniformly loaded to 1,5 R shall be lifted from all four side bottom apertures in such a way that no significant accelerations or decelerations are applied. The lifting forces shall be applied approximately vertically. The lifting device shall not exert any pressure on the side walls of the swap body. The line of action of the lifting force shall be applied 38 mm clear of the outer face of the side wall of the swap body.

The swap body shall remain lifted for 5 minutes.

If bottom fittings of swap bodies of class A and B are equipped with side apertures and these apertures are not subjected to the above test, they shall be blanked off.

5.3 Lifting from the base at the grappler arm positions

This test shall be carried out to prove the ability of a swap body to withstand being lifted from the base at the grappler arm positions.

The swap body uniformly loaded to 1,25 R shall be lifted by four grappler arms or similar devices at the grappler arm positions. Each grappler arm position shall have contact area of approximately 30mmx260 mm, centrally located at each of the four positions, clear of the safety lips.

The swap body shall remain lifted for 5 minutes.

5.4 Lifting from fork-lift pockets (where fitted)

The swap body shall have a load uniformly distributed over the floor in such a way that the combined mass of the swap body and test load is equal to 1,6 R, and it shall be supported on two horizontal bars, each 200mm wide, projecting 1828 ±3mm into the fork-lift pockets, measured from the outside face of the side of the swap body. The bars shall be centred within the pockets.

The swap body shall remain lifted for 5 minutes.

5.5 Restraint (longitudinal)

N O T E : This test shall be carried out to prove the ability of the base structure of the swap body to withstand longitudinal external restraint under dynamic conditions which imply accelerations or decelerations of 2g, measured at the bottom fittings the test being carried out according to 5.5.1 or 5.5.2.

5.5.1 Static test

The swap body uniformly loaded to 1 R shall be secured longitudinally to rigid anchor points through the bottom apertures of the bottom fittings at one end of the swap body. A longitudinal load of 2 R (1R per side) shall be applied horizontally through the bottom apertures of the other bottom fittings, first towards and then away from the anchor points.

The test load shall be applied in each direction for 5 minutes.

5.5.2 Dynamic test

The swap body uniformly loaded to 1 R using material which permits to cover as far as possible the entire floor shall be positioned centrally on a wagon. The wagon is then accelerated so that at the moment of impact against a stationary wagon of 80 t a deceleration of 2g is measured on the bottom fittings of the swap body, measurements being taken using accelerometers with the resulting signals filtered through a 16 Hz filter. This test shall be carried out in both directions with the swap body secured by the bottom fittings leading in the direction of travel in each case.

5.6 Strength test of end walls

N O T E : This test shall be carried out to prove the ability of a swap body to withstand forces under the dynamic conditions referred to in 5.5 the test being carried out according to 5.6.1 or 5.6.2. However, for special purpose swap bodies having specific cargo equipment (e.g. sliding floor or hanging load) the dynamic test according to 5.6.2 is mandatory.

5.6.1 Static test

The swap body shall be tested each end when only one end wall is equipped with doors. In the case of symmetrical construction, one end wall only needs to be tested.

Each end wall shall be subjected to an internal loading of 0,4 P. The internal loading shall be uniformly distributed over the end wall under test. When the end walls are tested separately, the reaction forces shall be applied to the base structure.

The test load shall be applied for 5 minutes.

5.6.2 Dynamic test

This dynamic test may be carried out together with the test according to 5.5.2. However, contrary to the provisions shown in 5.5.2, this impact procedure shall be carried out twice in both directions. For this test, the specific design of the swap body (e.g. sliding floor or hanging load) shall be taken into account by appropriate measures.

5.7 Strength test of side walls

N O T E : This test shall be carried out to prove the ability of a swap body to withstand the forces resulting from transverse acceleration during transportation.

5.7.1 Boxtype swap bodies

Each side wall shall be subjected to an internal loading of 0,3 P. The internal loading shall be uniformly distributed over the side wall under test. In the case of symmetrical construction, one side wall only need be tested.
The test load shall be applied for 5 minutes.