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**Lashing and securing arrangements on road vehicles for sea
transportation on Ro/Ro ships - General requirements -
Part 1: Commercial vehicles and combinations of vehicles,
semi-trailers excluded**

用于海上滚装船运输的道路车辆的系固点与系固设施布置 通用要求

第 1 部分：商用车和汽车列车（不包括半挂车）

(ISO 9367-1:1989, MOD)

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Lashing and securing arrangements on road vehicles for sea transportation on Ro/Ro ships - General requirements - Part 1: Commercial vehicles and combinations of vehicles, semi-trailers excluded

1 Scope

This document specifies the types and arrangement requirements, designation system, marking and placarding requirements for lashing and securing points on road vehicles for sea transportation on Ro/Ro ships.

This document applies to N₂, N₃ and O₃, O₄ vehicles (semi-trailers excluded) and combinations of vehicles; it can be used as a reference for the application of vehicles for water transportation on Ro/Ro ships.

This document does not apply to semi-trailers and special vehicles with only the towing function, nor does it apply to empty commercial vehicles that are transported by Ro/Ro ships only for delivery.

Note 1: For vehicles where the vehicle parameters are beyond the general conditions (especially where the height of the center of mass exceeds the normal range), the location and number of special lashing points need to be considered.

Note 2: Appendix A gives the requirements for the arrangement of securing points widely used on Ro/Ro ships recommended by the International Maritime Organization (IMO).

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the version corresponding to that date is applicable to this document; for undated references, the latest version (including all amendments) is applicable to this document.

GB/T 3730.1, Motor vehicles and trailers - Types - Terms and definitions (GB/T 3730.1-2001, ISO/WD 3833:1999, MOD)

GB/T 3730.2, Road vehicle - Masses - Vocabulary and codes (GB/T 3730.2-1996, idt ISO 1176:1990)

GB/T 15089, Classification of power-driven vehicles and trailers (GB/T 15089-2001, eqv ECE R.E.3)

3 Terms and definitions

Terms and definitions determined by GB/T 3730.1, GB/T 3730.2, GB/T 15089, as well as the following ones, are applicable to this document.

3.1

Ro/Ro ship

Ship, normally not transversally subdivided, with one or more decks, closed or open, generally running the entire length of the ship.

Note 1: The cargo is

- either self-moving vehicles including road tank vehicles, semi-trailers, trailers, rolling pallets and similar cargo transport units;
- or transported on loading vehicles moving between ship and shore.

Note 2: Goods can be loaded by means of ramps and/or lifts.

3.2

securing point

A device located on a vehicle or Ro/Ro ship, suitably reinforced to withstand the additional loads caused by the vibration and sway of the ship, and used to secure the vehicle to the Ro/Ro ship deck.

Example: Securing points such as fixing rings, fixing holes, fixing lugs, etc.

3.3

lashing point

That part within a securing port to which a lashing may be directly attached.

4 Securing point requirements

4.1 General requirements

4.1.1 Securing points shall be designed to enable the road vehicle to be secured to the ship.

4.1.2 Each securing point shall have at least one lashing point with dimensions as specified in 4.4.

4.1.3 The securing point and lashing point shall allow different angles of lashing to the ship's decks.

4.1.4 It is not permissible to have more than one lashing at each lashing point.

4.1.5 It is permissible to have more than one lashing point at a securing point, but each lashing point shall have the strength required for a single securing point as given in Table 1.

4.1.6 In the case of a securing point with multiple lashing points, the securing point shall be capable of withstanding the sum of the loads that can be applied at each lashing point.

4.1.7 The surface of the securing point shall be smoothly connected, and shall not have defects such as cracks and over-burning that affect the strength; it should not be used after repair welding.

4.1.8 The securing point shall not affect the vehicle function.

4.1.9 The securing points shall be arranged to facilitate lashing operations.

4.2 Requirements for number of points

The same number of securing points shall be provided on each side of the road vehicle. The number and strength of securing points shall be in accordance with Table 1.

4.3 Requirements for lashing force

Securing points shall be capable of transferring the forces from the lashings or through other main components capable of withstanding the pulling force to the chassis of the road vehicle.

4.4 Basic dimensions of lashing points

Each lashing point, when assembled at the securing point, shall allow the inside free passage of a circle of at least 80 mm diameter, but the aperture need not be circular. The lashing point shall allow the passage of a hook of 25 mm opening (see Figure 1).

the semi-trailer towing vehicle, may replace the two securing points. If the towing coupling is used for securing vehicles other than semi-trailer towing vehicles, this shall not replace the number and minimum strength of securing points on each side of the vehicle given in Table 1.

5 Requirements for spacing of securing points

5.1 General requirements

Securing points on vehicles shall be so located:

- as to ensure effective restraint of the vehicle by the lashings;
- that lashings can be readily and safely attached.

5.2 Requirements for spacing

Requirements for spacing of the securing point are as follows:

- a) Securing points should be positioned in such a way that the angle between the lashing and the horizontal and lateral transverse planes lies preferably between 30° and 60° without interfering with other parts of the vehicle. If interference is unavoidable, tests or calculation analysis shall be used to ensure that the local of the vehicle, and slings and fixed locks are not permanently deformed or damaged;
- b) Securing points should preferably be set two by two on the vehicle symmetrical to its longitudinal axis.

6 Strength requirements and checking of lashing points

6.1 Check

6.1.1 The strength of the lashing points shall be checked either by calculation or by static test carried out in accordance with 6.2.

Note: Other methods may be used if an efficiency at least equivalent can be proved.

6.1.2 If the checking is done by a test, there shall be no cracking, permanent deformation, loosening, etc. of the securing point following the static test.

6.2 Static test

6.2.1 The minimum value of test force, F , to be used is that given in Table 1.

6.2.2 The test force is applied in the plane passing through the lashing point and forming an angle of 60° with the horizontal plane passing through this point, at 60° to the

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