INTERNATIONAL STANDARD

ISO 9367-1

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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

Dispositifs d'arrimage et de saisissage des véhicules routiers en transport maritime sur navires rouliers — Conditions générales —

Partie 1: Véhicules utilitaires et ensembles de véhicules, semi-remorques exceptées

Reference number
ISO 9367-1 : 1989 (E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 9367-1 was prepared jointly by Technical Committee ISO/TC 8, *Shipbuilding and marine structures* and ISO/TC 22, *Road vehicles.*

ISO 9367 at present consists of the following part, under the general title *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.*

NOTE — A future part of ISO 9367 will cover semi-trailers.

Annex A of this part of ISO 9367 is for information only.

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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 part of ISO 9367 specifies the minimum requirements to allow efficient lashing and securing of road vehicles on board roll-on/roll-off (Ro/Ro) ships, indicating in particular the lashing arrangements on the vehicle and the securing method to be used. It also gives, in annex A, for information to vehicle designers, the securing point arrangements generally used on Ro/Ro ships as laid down by International Maritime Organization (IMO) recommendations.

This part of ISO 9367 applies to road vehicle types defined in 3.2 with a maximum authorized total mass of vehicle and cargo, as defined in ISO 1176, of between 3,5 t and 40 t.

Semi-trailers will be the subject of a future part of ISO 9367.

ISO 9367 does not apply to passenger cars, buses, special vehicles (towing vehicles alone) or commercial vehicles which are not intended for transport on Ro/Ro ships but are being freighted for delivery purposes only without pay-load.

NOTE — Road vehicles with characteristics outside the general parameters (particularly where the normal height of the centre of gravity is exceeded) necessitate special consideration of the location and number of securing points.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 9367. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 9367 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 1176: —[1], *Road vehicles — Masses — Vocabulary and symbols.*

ISO 3833 : 1977, *Road vehicles — Types — Terms and definitions.*

3 Definitions

For the purposes of ISO 9367, the following definitions apply.

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, on which goods can be loaded by means of ramps and/or lifts. The cargo is

— either self-moving, on road 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.

3.2 vehicle: All the following types of vehicles as defined in ISO 3833: goods vehicle, semi-trailer-towing vehicle, road train, combination of vehicles.

3.3 securing point: Location of a lashing point on the vehicle, suitably reinforced to withstand lashing forces.

3.4 lashing point: That part within a securing point to which a lashing may be directly attached.

1) To be published. (Revision of ISO 1176 : 1974.)

4 Securing points on road vehicles

4.1 General requirements

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

Each securing point shall have at least one lashing point with an aperture as specified in 4.4.

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

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

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.

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.

4.2 Number of points

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

4.3 Lashing forces

Securing points shall be capable of transferring the forces from the lashings to the chassis of the road vehicle.

Dimensions in millimetres

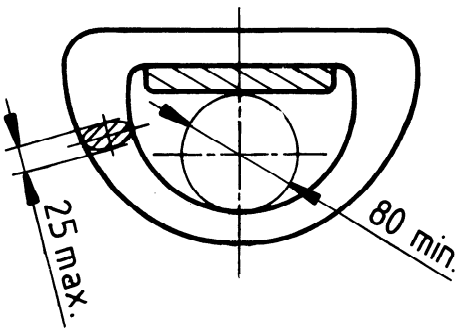

Figure 1 — Free passage and lashing point material thickness

4.4 Free passage and hook opening

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 thickness of the lashing point material shall allow engagement of a hook of at least 25 mm opening (see figure 1).

4.5 Special lashing arrangements

Equivalent or superior securing arrangements may be considered for vehicles for which the conditions of table 1 are unsuitable.

Table 1 — Number and strength of securing points

Maximum design total mass ISO-MO7 (according to ISO 1176)	Number of securing points on each side of road vehicle		Value of load to be used for calculation or test of each securing point F, kN
	min.	max.	
3,5 t ⩽ ISO-MO7 ⩽ 20 t	2	6	$F = \frac{1{,}2\ (\text{ISO-MO7} \times g)}{n}$ where g is the acceleration due to gravity, i.e. $g_n = 9{,}806\ 65\ \text{m/s}^2$; n is the total number of securing points on either side of the vehicle. (In exceptional cases, due to design, more than the maximum number of securing points is permitted.)
20 t < ISO-MO7 ⩽ 30 t	3	6	
30 t < ISO-MO7 ⩽ 40 t	4	6	

NOTES

1 For road trains, table 1 applies to each component, i.e. to the motor vehicle and each trailer respectively.

2 Semi-trailer towing vehicles are excluded from table 1. They shall be provided with two securing points at the front of the vehicle, the strength of which shall be sufficient to prevent lateral movement. A towing coupling at the front may replace the two securing points.

3 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 Location on vehicle

5.1 General requirement

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 Positioning of points

Securing points should be positioned in such a way that the angle between the lashing and the horizontal and transverse planes lies preferably between 30° and 60°. Lashing points should preferably be set two by two on the vehicle symmetrical to its longitudinal axis.

6 Strength of lashing points

6.1 Check

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

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

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

6.2 Static test

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

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 transverse plane (plane perpendicular to the longitudinal median plane of the vehicle) (see figure 2).

As an alternative, by two successive tests, the test force may be applied horizontally through the lashing point in the transverse plane and in a vertical direction.

7 Additional safety requirements

7.1 Unstable cargoes

Vehicles transporting types of cargo likely to affect their stability adversely, such as hanging meat, shall have some method of blocking the suspension.

7.2 Jacking points

If jacking points are provided, they shall be clearly marked.

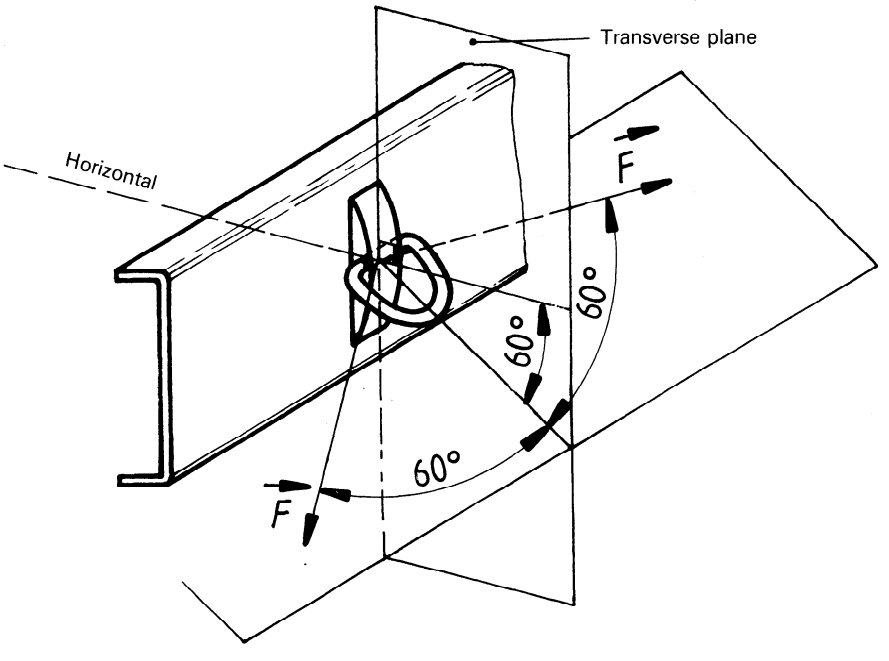

Figure 2 — Direction of application of test force

8 Marking

So as to ensure easy recognition of the securing arrangements on a vehicle or trailer intended for sea transportation of goods, the markings in 8.1 and 8.2 are required.

8.1 Lashing point marking

Each point on the vehicle chassis shall be painted in a contrasting colour. If the body type so permits, this marking shall be repeated on the vehicle structure outside surface.

8.2 Information plate

A plate measuring 200 mm × 150 mm shall be affixed permanently on both sides of the vehicle at or within 1,6 m from the front end. If due to operational conditions further plates are necessary, they may be fitted.

The height from the ground to the plate lower edge shall be 1 m to 1,5 m where possible.

Markings on the plate shall comprise the following (see the example in figure 3):

— a number indicating the number of lashing points per side to be used to comply with table 1;

— the sketch of an anchor.

The number and anchor on the plate shall be at least 100 mm × 25 mm and be such that they cannot be easily removed, defaced or damaged.

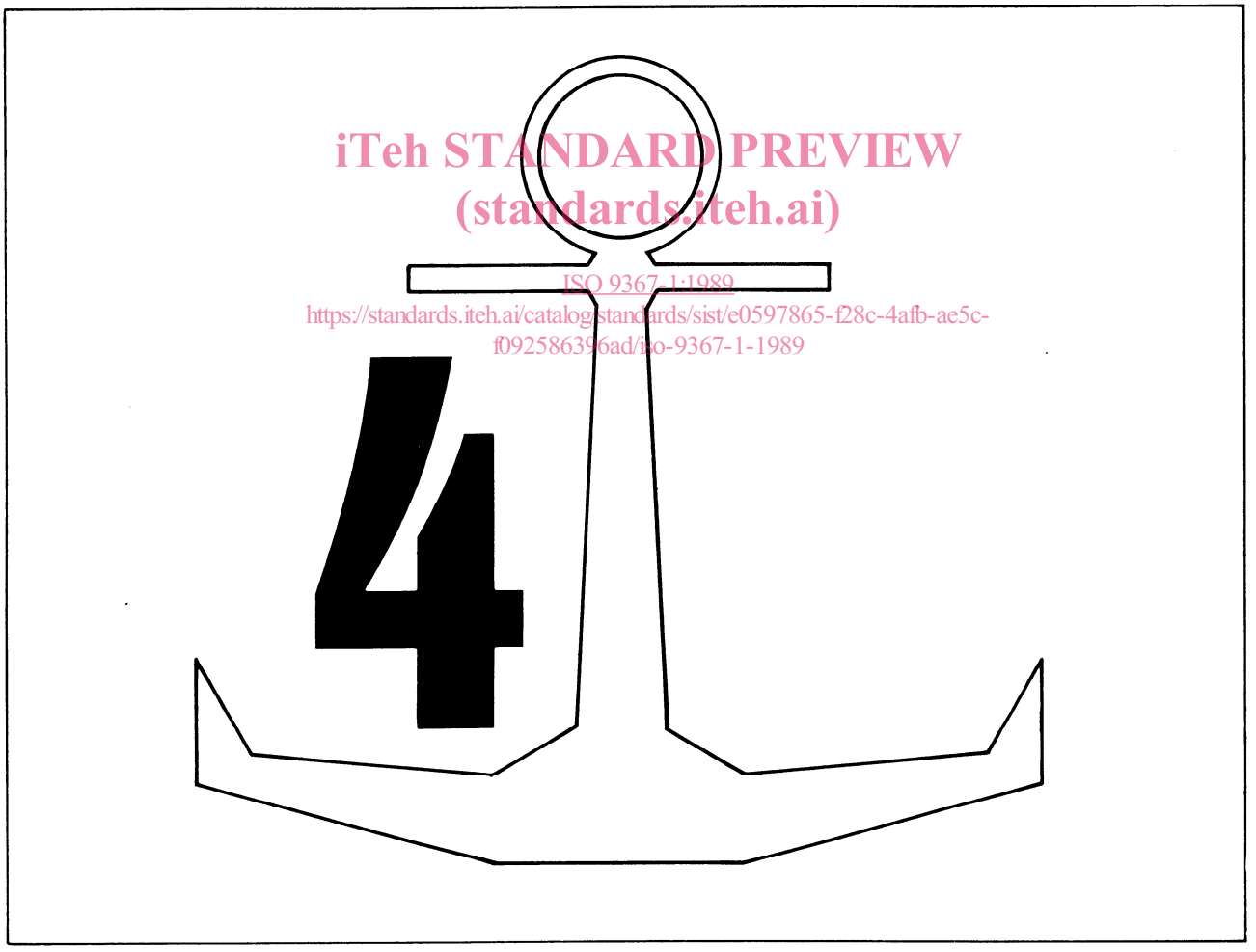

Figure 3 — Information plate example

Annex A
(informative)

Securing points on ship's decks and lashings

A.1 Minimum requirements

The decks of a ship intended for road vehicles as defined in 3.2 shall be equipped with securing points. The arrangement of securing points is left to the discretion of the shipowner, provided that for each road vehicle or element of a road vehicle combination, the minimum requirements in A.1.1 to A.1.3 are met.

A.1.1 The distance between securing points in the longitudinal direction shall in general not exceed 2,5 m. However, there may be a need for the securing points in the forward and after parts of the ship to be more closely spaced than they are amidships.

A.1.2 The spacing between longitudinal lines of securing points shall be not less than 2,8 m nor more than 3 m. However, there may be a need for the securing points in the forward and after parts of the ship to be more closely spaced than they are amidships.

A.1.3 The minimum strength without permanent deformation of each securing point shall be 120 kN. If the securing point is designed to accommodate more than one lashing, the corresponding strength shall be not less than 120 kN times the number of lashings.

A.2 Periodic transport

In Ro/Ro ships which only occasionally carry road vehicles, the spacing and strength of securing points shall be such that special considerations which may be necessary to stow and secure road vehicles safely are taken into account.

A.3 Lashings

Lashings shall be made of chain or any other material of strength and elongation characteristics equivalent or superior to those of steel. The strength of the lashings, without permanent deformation, shall be not less than 120 kN.

UDC 629.123.5-238 : 656.614.3 : 629.11

Descriptors: road vehicles, commercial road vehicles, transportation, sea transport, fasteners, mooring devices, specifications, safety requirements, marking.

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