

RESOLUTION A.581(14)

*Adopted on 20 November 1985
Agenda item 10(b)*

**GUIDELINES FOR SECURING ARRANGEMENTS FOR THE
TRANSPORT OF ROAD VEHICLES ON RO-RO SHIPS**

THE ASSEMBLY,

RECALLING Article 15(j) of the Convention on the International Maritime Organization concerning the functions of the Assembly in relation to regulations and guidelines concerning maritime safety,

RECALLING ALSO resolution A.489(XII) on safe stowage and securing of cargo units and other entities in ships other than cellular containerships and MSC/Circ.385 of 8 January 1985 containing the provisions to be included in a cargo securing manual to be carried on board ships,

BEARING IN MIND resolution A.533(I3) on elements to be taken into account when considering the safe stowage and securing of cargo units and vehicles in ships,

TAKING ACCOUNT of the revised IMO/ILO Guidelines for the Packing of Cargo in Freight Containers and Vehicles,

RECOGNIZING that the marine transport of road vehicles on ro-ro ships is increasing,

RECOGNIZING ALSO that a number of serious accidents have occurred because of inadequate securing arrangements on ships and road vehicles,

RECOGNIZING FURTHER the need for the Organization to establish guidelines for securing arrangements on board ro-ro ships and on road vehicles,

REALIZING that given adequately designed ships and properly equipped road vehicles, lashings of sufficient strength will be capable of withstanding the forces imposed on them during the voyage,

REALIZING FURTHER that certain requirements for side guards, particularly those positioned very low on road vehicles, will obstruct the proper securing of the road vehicles on board ro-ro ships and that appropriate measures will have to be taken to satisfy both safety aspects,

BELIEVING that application of the guidelines will enhance safety in the transport of road vehicles on ro-ro ships and that this can be achieved on an international basis,

HAVING CONSIDERED the recommendation made by the Maritime Safety Committee at its fifty-first session,

1. ADOPTS the Guidelines for Securing Arrangements for the Transport of Road Vehicles on Ro-ro Ships set out in the Annex to the present resolution;
2. URGES Member Governments to implement these Guidelines at the earliest possible opportunity in respect of new ro-ro ships and new vehicles and, as far as practicable, in respect of existing vehicles which may be transported on ro-ro ships;

3. REQUESTS the Secretary-General to bring these Guidelines to the attention of Member Governments and relevant international organizations responsible for safety in design and construction of ships and road vehicles for action as appropriate.

ANNEX

GUIDELINES FOR SECURING ARRANGEMENTS FOR THE TRANSPORT OF ROAD VEHICLES ON RO-RO SHIPS

PREAMBLE

In view of experience in the transport of road vehicles on ro-ro ships, it is recommended that these Guidelines for securing road vehicles on board such ships should be followed. Shipowners and shipyards, when designing and building ro-ro ships to which these Guidelines apply, should take sections 4 and 6 particularly into account. Manufacturers, owners and operators of road vehicles which may be transported on ro-ro ships should take sections 5 and 7 particularly into account.

1 SCOPE

1.1 These Guidelines for securing and lashing road vehicles on board ro-ro ships outline in particular the securing arrangements on the ship and on the vehicles, and the securing methods to be used.

2 APPLICATION

2.1 These Guidelines apply to ro-ro ships which regularly carry road vehicles on either long or short international voyages in unsheltered waters. They concern:

- .1 road vehicles as defined in 3.2.1, 3.2.2, 3.2.3 and 3.2.5 with an authorized maximum total mass of vehicles and cargo of between 3.5 and 40 tonnes; and
- .2 articulated road trains as defined in 3.2.4 with a maximum total mass of not more than 45 tonnes, which can be carried on ro-ro ships.

2.2 These Guidelines do not apply to buses.

2.3 For road vehicles having characteristics outside the general parameters for road vehicles (particularly where the normal height of the centre of gravity is exceeded), the location and the number of securing points should be specially considered.

3 DEFINITIONS

3.1 *“Ro-ro ship”* means a ship which has one or more decks either closed or open, not normally subdivided in any way and generally running the entire length of the ship, in which goods (packaged or in bulk, in or on road vehicles (including road tank-vehicles), trailers, containers, pallets, demountable or portable tanks or in or on similar cargo transport units or other receptacles) can be loaded or unloaded normally in a horizontal direction.

3.2 In these Guidelines the term road vehicle¹ includes:

- .1 **Commercial vehicle** which means a motor vehicle which, on account of its design and appointments, is used mainly for conveying goods. It may also be towing a trailer.
- .2 **Semi-trailer** which means a trailer which is designed to be coupled to a semi-trailer towing vehicle and to impose a substantial part of its total mass on the towing vehicle.
- .3 **Road train** which means the combination of a motor vehicle with one or more independent trailers connected by a draw-bar. (For the purpose of section 5 each element of a road train is considered a separate vehicle.)
- .4 **Articulated road train** which means the combination of a semi-trailer towing vehicle with a semi-trailer.
- .5 **Combination of vehicles** which means a motor vehicle coupled with one or more towed vehicles. (For the purpose of section 5 each element of a combination of vehicles is considered a separate vehicle.)

4 SECURING POINTS ON SHIPS' DECKS

4.1 The ship should carry a Cargo Securing Manual in accordance with resolution A.489(XII) containing the information listed and recommended in paragraph 10 of the Annex to that resolution.

4.2 The decks of a ship intended for road vehicles as defined in 3.2 should be provided with securing points. The arrangement of securing points should be left to the discretion of the shipowner provided that for each road vehicle or element of a combination of road vehicles, there is the following minimum arrangement of securing points:

- .1 The distance between securing points in the longitudinal direction should 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.
- .2 The thwartships spacing of securing points should not be 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.
- .3 The minimum strength without permanent deformation of each securing point should be 120 kN. If the securing point is designed to accommodate more than one lashing (y lashings) the corresponding strength should be not less than $y \times 120$ kN.

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

5 SECURING POINTS ON ROAD VEHICLES

5.1 Securing points on road vehicles should be designed for securing the road vehicles to the ship and should have an aperture capable of accepting only one lashing. The securing

¹ Reference is made to ISO Standard No. 3833 (under revision).

point and aperture should permit varying directions of the lashing to the ship's deck¹.

5.2 The same number of not less than two or more than six securing points should be provided on each side of the road vehicle in accordance with the provisions of 5.3.

5.3 Subject to the provisions of notes 1, 2 and 3 hereunder, the minimum number and minimum strength of securing points should be in accordance with the following table:

Gross vehicle mass (GVM) tonnes	Minimum number of securing points on each side of the road vehicle	Minimum strength without permanent deformation of each securing point as fitted (kN)
3.5 t ≤ GVM ≤ 20 t	2	$\frac{GVM \times 10 \times 1.2}{n^*}$
20 t < GVM ≤ 30 t	3	
30 t < GVM ≤ 40 t	4	

* Where n is the total number of securing points on each side of the road vehicle.

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

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

Note 3: If the towing coupling is used for securing vehicles other than semi-trailer towing vehicles, this should not replace or be substituted for the above-mentioned minimum number and strength of securing points on each side of the vehicle.

5.4 Each securing point on the vehicle should be marked in a clearly visible colour.

5.5 Securing points on vehicles should be so located as to ensure effective restraint of the vehicle by the lashings.

5.6 Securing points should be capable of transferring the forces from the lashings to the chassis of the road vehicle and should never be fitted to bumpers or axles unless these are specially constructed and the forces are transmitted directly to the chassis.

5.7 Securing points should be so located that lashings can be readily and safely attached, particularly where side-guards are fitted to the vehicle.

5.8 The internal free passage of each securing point's aperture should be not less than 80 mm but the aperture need not be circular in shape.

5.9 Equivalent or superior securing arrangements may be considered for vehicles for which the provisions of table 5.3 are unsuitable.

¹ If more than one aperture is provided at a securing point, each aperture should have the strength for the securing point in the table in 5.3.

6 LASHINGS

6.1 lashings should consist of chain or any other device and be made of material having strength and elongation characteristics at least equivalent to those of steel chain. The strength of the lashings, without permanent deformation, should be not less than 120 kN.

6.2 lashings should be so designed and attached that, provided there is safe access, it is possible to tighten them if they become slack. Where practicable and necessary, the lashings should be examined at regular intervals during the voyage and tightened as necessary.

6.3 lashings should be attached to the securing points with hooks or other devices so designed that they cannot disengage from the aperture of the securing point if the lashing slackens during the voyage.

6.4 Only one lashing should be attached to any one aperture of the securing point on the vehicle.

6.5 lashings should only be attached to the securing points provided for that purpose.

6.6 lashings should be attached to the securing points on the vehicle in such a way that the angle between the lashing and the horizontal and vertical planes lies preferably between 30° and 60°.

6.7 Bearing in mind the characteristics of the ship and the weather conditions expected on the intended voyage, the master should decide on the number of securing points and lashings to be used for each voyage.

6.8 Where there is doubt that a road vehicle complies with the provisions of table 5.3, the master may, at his discretion, load the vehicle on board, taking into account the apparent condition of the vehicle, the weather and sea conditions expected on the intended voyage and all other circumstances.

7 STOWAGE

7.1 Depending on the area of operation, the predominant weather conditions and the characteristics of the ship, road vehicles should be stowed so that the chassis are kept as static as possible by not allowing free play in the suspension of the vehicles. This can be done, for example, by compressing the springs by tightly securing the vehicle to the deck, by jacking up the chassis prior to securing the vehicle or by releasing the air pressure on compressed air suspension systems.

7.2 Taking into account the conditions referred to in 7.1 and the fact that compressed air suspension systems may lose air, the air pressure should be released on every vehicle fitted with such a system if the voyage is of more than 24 hours duration. If practicable, the air pressure should be released also on voyages of a shorter duration. If the air pressure is not released, the vehicle should be jacked up to prevent any slackening of the lashings resulting from any air leakage from the system during the voyage.

7.3 Where jacks are used on a vehicle, the chassis should be strengthened in way of the jacking-up points and the position of the jacking-up points should be clearly marked.

7.4 Special consideration should be given to the securing of road vehicles stowed in positions where they may be exposed to additional forces. Where vehicles are stowed athwartship, special consideration should be given to the forces which may arise from such stowage.

7.5 Wheels should be chocked to provide additional security in adverse conditions.

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7.6 Vehicles with diesel engines should not be left in gear during the voyage.

7.7 Vehicles designed to transport loads likely to have an adverse effect on their stability, such as hanging meat, should have integrated in their design a means of neutralizing the suspension system.

7.8 Stowage should be arranged in accordance with the following:

- .1 The parking brakes of each vehicle or of each element of a combination of vehicles should be applied and locked.
- .2 *Semi-trailers, by the nature of their design, should not be supported on their landing legs during sea transport unless the landing legs are specially designed for that purpose and so marked. An uncoupled semi-trailer should be supported by a trestle or similar device placed in the immediate area of the drawplate so that the connection of the fifth-wheel to the kingpin is not restricted. Semi-trailer designers should consider the space and the reinforcements required and the selected areas should be clearly marked.*