

**Translation: Only the Danish version is authentic**

*The Danish Maritime Authority's Technical Regulation no. 8 of 12 October 1995*

**Technical regulation on special requirements for location, strength and securing of doors in the shell plating as well as weathertight ramps, etc. on ro-ro ships<sup>1</sup>**

In pursuance of section 2(5), section 3, section 4, section 6, section 11(2) and section 28 of the Act on Ship Safety, etc., cf. consolidated act no. 283 of 2 May 1995 and on authority given in Order no. 694 of 17 August 1995, the following provisions are laid down:

**Chapter 1**

*Definitions and application*

**Section 1.** For the purposes of this technical regulation, the following definitions shall apply:

- 1) "New ship" means a ship the keel of which is laid or which is at a similar stage of construction on or after 1 November 1995.
- 2) "Existing ship" means a ship the keel of which is laid or which is at a similar stage of construction before 1 November 1995.
- 3) "Ro-ro passenger ship" means a ship carrying more than 12 passengers with ro-ro cargo spaces, open or closed ro-ro cargo spaces or special cargo spaces.
- 4) "Ro-ro cargo ship" means a ship with open or closed ro-ro cargo spaces.
- 5) "Ro-ro cargo spaces" means spaces not normally subdivided in any way and extending to either a substantial length or the entire length of the ship in which goods or vehicles can be loaded and unloaded normally in a horizontal direction.
- 6) "Open ro-ro cargo spaces" means ro-ro cargo spaces either open at both ends or open at one end.
- 7) "Special category spaces" means enclosed spaces above or below the bulkhead deck intended for the carriage of trains and motor vehicles into and from which such vehicles can be driven.
- 8) "Closed ro-ro cargo spaces" means ro-ro cargo spaces which are neither open ro-ro cargo spaces nor weather decks.
- 9) "Doors" means doors leading to ro-ro cargo spaces or special category spaces, including bow doors, stern doors, shipyard doors and bunker doors, etc. in the shell plating, enclosed superstructures or the bulwark and doors forming part of the collision bulkhead as well as inner doors and ramps forming a closure behind bow doors.
- 10) "IACS" means the International Association of Classification Societies.

*Subsection 2.* Waters are divided into three categories on the basis of the following guidelines:

- 1) Unsheltered waters: Areas where the significant wave heights can exceed 4 metres for more than three hours a year.

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<sup>1</sup> This technical regulation has been notified in accordance with Council Directive 83/189/EEC, as amended by Directive 94/10/EC.

- 2) Sheltered waters: Areas where significant wave heights of 2-4 metres can occur for more than three hours a year.
- 3) Coastal waters: Areas where the significant wave heights will not exceed 2 metres for more than three hours a year.

The division into sea areas is shown in annex 1.

**Section 2.** With the exception of chapter 7, this technical regulation shall apply to all ro-ro passenger ships with a gross tonnage of or above 20.

*Subsection 2.* Ro-ro passenger ships with open ro-ro cargo spaces that are open at both ends and with freeing ports and good drainage from the ro-ro deck shall be exempted from complying with section 22.

**Section 3.** Sections 23-24 and chapter 7 of this technical regulation shall apply to ro-ro cargo ships with a gross tonnage of or above 500.

**Section 4.** All ro-ro passenger ships operating in unsheltered waters shall comply with this technical regulation.<sup>2</sup>

**Section 5.** Ro-ro passenger ships operating in sheltered waters shall comply with this technical regulation as follows:

- 1) New ships shall comply fully with this technical regulation.<sup>3</sup>
- 2) Existing ships shall comply with this technical regulation,<sup>4</sup> however the design external hydrostatic pressure, etc. may be calculated in accordance with IACS Unified Recommendations UR-S8, revision 1993 as well as UR-S16.<sup>5</sup>

*Subsection 2.* Ships that have, until now, been exempted from meeting the requirement for an inner ramp or inner door or for which the requirements for the design or location of the inner ramp have been relaxed may, in accordance with an assessment in each individual case, continue to be exempted for as long as they operate in the same sea area.

**Section 6.** All new ro-ro passenger ships operating exclusively in coastal waters shall comply with either IACS Unified Recommendations UR-S8, revision 1993, or the requirements for hull strength, etc. laid down by the Danish Maritime Authority. Closing and locking devices, coaming heights, indicators, alarms, etc. shall comply with sections 10-11, section 14(4-5), sections 15-17 as well as chapters 5 and 6.

*Subsection 2.* For existing ro-ro passenger ships, previous approvals of the strength of doors in accordance with the rules of the ship's classification society or IACS Unified Recommendations UR-S8 revision 1993 as well as UR-S16<sup>6</sup> shall be accepted, but the closing

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<sup>2</sup> This technical regulation contains the Nordic Rules 1995 and has been based on the application of IACS Unified Recommendations UR-S8 revision 1995 for bow doors and inner doors and IACS Unified Recommendations UR-S9 for other doors.

<sup>3</sup> This technical regulation contains the Nordic Rules 1995 and has been based on the application of IACS Unified Recommendations UR-S8 revision 1995 for bow doors and inner doors and IACS Unified Recommendations UR-S9 for other doors.

<sup>4</sup> This technical regulation contains the Nordic Rules 1995 and has been based on the application of IACS Unified Recommendations UR-S8 revision 1995 for bow doors and inner doors and IACS Unified Recommendations UR-S9 for other doors.

<sup>5</sup> Reference is also made to IACS Unified Recommendations UR-S16 for the application of UR-S8 revision 1995 on existing ro-ro passenger ships.

<sup>6</sup> Reference is also made to IACS Unified Recommendations UR-S16 for the application of UR-S8 revision 1995 on existing ro-ro passenger ships.

and locking devices, coaming heights, indicators and alarms, etc. shall comply with sections 10-11, section 14(4-5), sections 15-17 and chapters 5 and 6.

*Subsection 3.* Ships that have so far been exempted from the requirement for an inner ramp or inner door or for which the requirements for the design or location of the inner ramp have been relaxed may, in accordance with an assessment in each individual case, continue to be exempted for as long as they operate in the same sea area.

**Section 7.** Section 10 and chapters 5 and 6 of this technical regulation shall apply to ro-ro passenger ships constructed in accordance with IMO Resolution MSC.36(63), the High-Speed Craft Code.

## Chapter 2

### *The arrangement and location of doors, inner doors and ramps as well as coaming heights, etc.*

**Section 8.** Where bow doors lead to a complete or long superstructure above the bulkhead deck, an inner door shall be fitted. This shall form part of the collision bulkhead. It shall not be necessary to locate the inner door directly above the bulkhead below provided that it is located within the limits specified for the location of the collision bulkhead, cf. Notice B from the Danish Maritime Authority, II-1, regulation 10. The inner door may be constituted by a vehicle ramp/loading ramp provided that the rules on the location of the collision bulkhead have been complied with.

*Subsection 2.* A watertight ramp forming part of the collision bulkhead's extension over the bulkhead deck may, as far as the part of the ramp that is more than 2.3 metres above the bulkhead deck, not extend for more than 1.0 metre in front of the foremost limit for the location of the collision bulkhead. This 1.0 metre limit may not be exceeded by any part of the ramp that would, in the case of a collision, affect the weathertightness of the inner door or by its associated structure when the ramp constitutes the required inner door. If this is not possible, a separate inner weathertight door or bulkhead shall be fitted.

*Subsection 3.* The separate inner door shall be located within the limits specified for the collision bulkhead.

*Subsection 4.* If the design so necessitates, the Danish Maritime Authority may allow another location immediately aft of the aftmost location of the collision bulkhead according to the rules.

**Section 9.** Bow doors shall be arranged such that they ensure a tightness that is in accordance with the operational conditions and such that they, together with the surrounding structure, offer effective protection for inner doors. Inner doors and bulkheads forming part of the collision bulkhead shall be weathertight over the entire height of the cargo space and, together with the bulkheads in the side houses, they shall be weathertight over the entire breadth of the ship and the inner doors shall have supports on the aft side of the doors.

*Subsection 2.* An inner door forming part of the collision bulkhead shall be designed and dimensioned to withstand the greatest of the compressive stresses arising during operation at the lowest speed ahead calculated on the basis of the following:

- 1) Bow external pressure  $p_e$ <sup>7</sup>
- 2) The external hydrostatic pressure  $p_h$ <sup>8</sup>

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<sup>7</sup> As indicated in IACS Unified Recommendations UR-S8 revision 1995.

The greatest of these stresses shall be used. As regards the securing devices, an internal hydrostatic pressure shall also be considered.<sup>9</sup> The stress used may, however, not be less than the normal strength requirement for the collision bulkhead.

*Subsection 3.* The arrangement of bow doors and inner doors forming part of the collision bulkhead shall be arranged such that the inner ramp and the bow door cannot interfere with each other and that the possibility of the bow door causing structural damage to the inner door in case of damage to the bow door or the surrounding structure is precluded. If this is impossible, a separate weathertight inner door shall be installed.

**Section 10.** All companionways from car decks located immediately above the summer load line to spaces below the car deck shall have a coaming height of at least 380 mm.

*Subsection 2.* On existing ships, the Danish Maritime Authority may in special cases accept another solution equivalent to the required coaming height, but in such cases a procedure shall be available in accordance with section 23 ensuring that the coaming height has been established when the ship departs from its place of call.

**Section 11.** Internal weathertight ramps or inner doors forming part of the extension of the collision bulkhead above the bulkhead deck shall be fitted with an extra mechanical securing arrangement that can be used for keeping the ramp/door closed weathertight in case of failure of the primary locking and battening down system.

### **Chapter 3**

#### *Materials*

**Section 12.** For materials used separately for locking and supporting arrangements, a material factor greater than 1.39 may not be used unless the result of a direct fatigue analysis indicates a deviation that results in a safety factor greater than what is otherwise required.

### **Chapter 4**

#### *Stresses, scantling and design*

**Section 13.** Doors shall in general be dimensioned in accordance with IACS Unified Recommendations for bow doors and inner doors UR-S8 and IACS Unified Recommendations for other doors UR-S9 applied in accordance with sections 4-6.

**Section 14.** The maximum forces affecting doors, closing and supporting devices shall be calculated on the basis of the external and internal forces.<sup>10</sup>

*Subsection 2.* Only effective supporting devices shall be included. A limited number of strong devices shall be preferred to a similar great number of less strong devices. Lack of room in the steel structure of the hull may, however, limit the size of and increase the number of devices. Doors with complex closing and supporting arrangements may lead to a requirement for a direct calculation of the supporting forces.

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<sup>8</sup> As indicated in IACS Unified Recommendations UR-S8 revision 1995.

<sup>9</sup> As indicated in IACS Unified Recommendations UR-S8 revision 1995.

<sup>10</sup> As indicated in IACS Unified Recommendations UR-S8 revision 1995.

*Subsection 3.* The calculation method shall take into consideration the flexibility of the construction, the way in which the forces affect the door as well as the location of the closing and supporting devices.

*Subsection 4.* The calculations shall take into consideration the maximum permissible tolerance in hinges, bearings, locking and supporting devices, and the tolerance shall be given in the operating and maintenance manual. No tolerance may exceed 3 mm.

*Subsection 5.* The arrangement and strength of the securing and supporting devices of bow doors as well as associated parts of the hull shall be such that, in case of defects or failure in any securing device or its support, the remaining securing devices and supports shall be capable of withstanding, with a sufficient strength, the forces stipulated in subsections 1-4 and the tensions may not exceed more than 20% of the permissible values.

*Subsection 6.* For bow doors of the visor type, at least two locking devices shall be fitted at the lower end of the door. Each of these shall be capable of absorbing the entire reaction force necessary to prevent the door from opening.

**Section 15.** The hull structure of the ship which supports bow doors shall be located and designed for absorbing the stresses from the supporting and closing devices of the bow doors.

**Section 16.** The nominal bearing pressure in the hinges, locks, etc. of doors may not exceed  $120 \text{ N/mm}^2$  calculated as the stress divided by the projected area.

*Subsection 2.* The maximum tension for bolts not carrying support forces may not exceed  $125f \text{ N/mm}^2$ ,<sup>11</sup> where f is the material factor.

**Section 17.** Where packings are needed, the packing material shall be of a relatively soft type. The supporting forces shall be carried exclusively steel against steel of the steel structure. Other types of packings shall be assessed separately by the respective classification societies.

## Chapter 5

### *Closing devices, indicators and alarms*<sup>12</sup>

**Section 18.** Closing and locking devices shall be easy to operate and it shall be easy to get access to them. Locking devices shall be fitted with a mechanical securing arrangement (self-locking or a separate arrangement) or be of the gravity type.

*Subsection 2.* The opening and closing system for the doors as well as the locking and securing devices shall be designed in such a way that it is not possible to operate them in the wrong sequence.

**Section 19.** Bow doors and inner doors shall be fitted with closing devices including an arrangement for remote operation of the closing and opening of the doors as well as operation of associated locking and securing devices from a suitable position above the freeboard deck. The open/closed position for each door and for each locking and securing arrangement shall be indicated at the remote control station.

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<sup>11</sup> Reference is made to IACS Unified Recommendations UR-S8 revision 1995.

<sup>12</sup> Existing ships already fitted with indicators and alarms, etc. approved by the Danish Maritime Authority in accordance with technical regulation no. 9 of 2 December 1994 that may be different from the requirements of this chapter need not change these systems.

*Subsection 2.* Remote control shall not be required for doors that are not used constantly or only on special occasions, such as shipyard doors and simple bow door constructions on open ro-ro passenger ships.

*Subsection 3.* The control station for the remote-controlled doors shall be inaccessible to unauthorised persons. The securing of the control station may, for example, consist in locating the operation arrangement for the doors in a lockable space or a lockable box, or each individual operating function may be fitted with a lock.

**Section 20.** On new ships where hydraulically operated locking devices are used, they shall remain locked in case of failure in the hydraulic system. The hydraulic locking and securing system shall be separate from other hydraulic systems and pressure-less when in the closed and locked position. Cylinders for locking mechanisms shall be fitted in such a way that the greatest pressure area of the piston is used for closing.

**Section 21.** Separate indicators and an acoustic alarm shall be fitted on the navigation bridge for each bow door and inner doors forming part of the collision bulkhead as well as for other doors in the bulwark indicating that they have been properly closed and subsequently that the locking devices and packings are in the right position. The acoustic alarms shall sound an alarm if the doors have not been closed and secured or if they open while the ship is in operation.

*Subsection 2.* Sensors shall be fitted on each locking and securing device, but the indication may be given by means of a joint indicator lamp and alarm. Similar indicators, except for acoustic alarms, shall be fitted at the control station.

*Subsection 3.* What has been stipulated in subsections 1 and 2 about indicators does not cover the extra mechanical securing system required by section 11.

*Subsection 4.* The indicator system shall be designed in accordance with the fail-safe principle.

*Subsection 5.* The indicator board on the navigation bridge and the control station shall be fitted with a lamp test function, and it may not be possible to disconnect the indicators.

*Subsection 6.* The control station on the navigation bridge shall be fitted with a change-over function for the ship's status "in port/at sea" arranged such that an acoustic alarm is sounded on the navigation bridge if the ships leaves port without the bow doors, inner doors, stern doors or any other door in the shell plating being closed and secured in a sound and secure way.

*Subsection 7.* On open ro-ro passenger ships with manual closing and locking devices, the indicators and alarms shall cover the position of the doors as well as the most important locks for securing the doors, however always on at least two locking devices.

*Subsection 8.* Open ro-ro passenger ships operating in particularly sheltered waters with doors of simple design with manual closing and locking devices may be exempted from the indicators on the basis of an assessment in each individual case and if it is considered reasonable.

*Subsection 9.* The sensors of the indicator system shall be protected against damage from water, ice formation and mechanical effects.

*Subsection 10.* The supply of power to the indicator system shall be separate from the power supply for operating and closing the doors.

**Section 22.** On the navigation bridge, a system shall be provided indicating and sounding an acoustic alarm in case of leakage through inner doors or any other door that may lead to water flowing into special category spaces or ro-ro cargo spaces.

*Subsection 2.* The system for the surveillance of water ingress on the car deck shall be based on water level indicators placed on the car deck.

*Subsection 3.* The alarm on the navigation bridge shall indicate the position where water is found on deck.

*Subsection 4.* When installing water level indicators on car decks, at least one such indicator shall be installed between the bow door and the inner ramp and a sufficient number of indicators shall be installed on the car deck at the points where water will occur in all actual conditions of trim and heel.

*Subsection 5.* The space between the bow door and the inner door forming part of the collision bulkhead shall be fitted with a TV surveillance system with a monitor located on the navigation bridge and in the control room of the machinery space. The TV surveillance system shall survey the position of the doors and a sufficient number of the locking devices. The items to be surveyed shall be well illuminated and painted in contrasting colours so that it is easy to observe them on the TV monitor.

## **Chapter 6**

### *Operational conditions in connection with the closing of doors, manuals and periodic control, etc.*

**Section 23.** A procedure shall have been established for any opening and closing of the doors. The procedure shall have been affixed on the navigation bridge in the vicinity of the indicator system for the closing of the doors as well as at the control stations for the doors.

**Section 24.** If a full view of the door is not provided at the control station, a person shall be placed at this who can interrupt any on-going opening or closing operation.

**Section 25.** Ro-ro passenger ships shall be provided with an operating and maintenance manual for bow doors, inner doors and all other doors in the ship's side approved by the Danish Maritime Authority. The manual shall contain a separate record of inspections, maintenance and repairs.

*Subsection 2.* If defects or functional failures are found during the ship's operation or during a control on board, this shall be recorded in the operating and maintenance manual. Furthermore, the time when the defects and failures found have been remedied shall be recorded in the manual. The record shall be presented in connection with class surveys and other inspections on board.

**Section 26.** As a part of the general maintenance programme on board, a regular monthly systematic control of the doors shall be carried out, including the doors' hinges, packings, locks, battening down and hydraulic systems as well as the indicator and alarm systems.

*Subsection 2.* The control shall include a visual control of weldings and materials in connection with hinges, locking and securing devices as well as supports, etc. associated herewith.

*Subsection 3.* The control shall also include a functional test of the doors' manoeuvring, closing and locking systems as well as surveillance systems, indicators and alarms, and the result shall be recorded in the ship's operating and maintenance manual.

## Chapter 7

### *Special requirements for ro-ro cargo ships*

**Section 27.** The master of the ship shall ensure that an effective surveillance and reporting system concerning the closing and opening of doors is carried out.

**Section 28.** If any door is accessible during navigation, it shall be fitted with a device preventing it from being opened without permission.

**Section 29.** The navigation bridge shall be fitted with indicators for all doors in the ship's side, hatches and other closing devices that could, if left open or not sufficiently secured, lead to great water ingress into ro-ro cargo spaces.

*Subsection 2.* The indicator system shall be designed in accordance with the fail-safe principle and shall show whether the door has been completely closed and secured. The supply of power to the indicator system shall be separate from that for the opening/closing and securing of the doors.

**Section 30.** Doors shall be closed and secured before the ship proceeds to sea and shall remain closed and secured until the ship arrives at the next place of call.

*Subsection 2.* If it is not possible to open or close a door while a ship is at a place of call, it may be permitted that such a door be opened or kept open while the ship approaches, respectively moves away from the place of call. However, the door may be opened only as much as is required for immediate operation. The inner bow door shall be kept closed under all circumstances.

*Subsection 3.* Notwithstanding the provisions of subsection 1, the Danish Maritime Authority may permit that certain doors be opened if the master of the ship considers this necessary for the ship's operation or for departure or landing provided that the safety of the ship is not thereby impaired.

*Subsection 4.* Doors as stipulated in subsection 3 shall be fitted with a device preventing unauthorised opening.



## Chapter 8

### *Exemptions, penalty provisions and entry into force, etc.*

**Section 31.** In special cases, the Danish Maritime Authority may grant exemptions from compliance with the requirements of this technical regulation when special conditions in connection with the ship's design, the ferry berths used, navigation in particularly sheltered waters, the duration of the crossing or the special design of the doors make this reasonable.

*Subsection 2.* Ships with weather restrictions to their navigation in the form of a more specifically indicated maximum wind force or wave height that operate on a particular route may be exempted in full or part from complying with the requirements of this technical regulation by the Danish Maritime Authority.

**Section 32.** Contraventions of this technical regulation shall be punishable by fine, simple detention or imprisonment for a term not exceeding one year.

*Subsection 2.* The penalty may be increased to simple detention or imprisonment for a term not exceeding two years if the transgressor has acted intentionally or shown gross negligence and if

- 1) the violation has resulted in damage to young persons below the age of 18, or risk of such damage,
- 2) the violation has given or has been intended to give financial benefits, including savings, to the transgressor or others.

*Subsection 3.* If the financial benefit achieved is not confiscated, special consideration shall be given to the size of the achieved or intended financial benefit when determining the size of the fine, including supplementary fine, cf. subsection 2(2).

*Subsection 4.* If the contravener is a company, an association, a self-governing institution, a fund or the like, the legal personality as such may be liable to punishment by fine. If the contravener is the State, a municipality, an inter-municipal enterprise, cf. section 60 of the Act on Municipal Governing, the state, municipality or inter-municipal enterprise shall be liable to punishment by fine.

**Section 33.** This technical regulation enters into force on 1 November 1995.

*Subsection 2.* Existing ro-ro passenger ships shall meet the requirements before 1 August 1996.

*Subsection 3.* Existing ro-ro cargo ships with a tonnage of or above 500 shall meet the requirements no later than at the first survey for renewal of the safety construction certificate after 1 August 1996.

*Subsection 4.* This technical regulation shall not apply to the Faroe Islands.

*Subsection 5.* Technical regulation no. 9 of 2 December 1994 on supplementary requirements for the closing and securing of doors in the shell plating as well as weathertight ramps, etc. on ro-ro ships shall be repealed on 1 August 1996, however not for the Faroe Islands.

The Danish Maritime Authority, 12 October 1995  
J. Rasmussen / S. Kildevang Jensen

## **Annex 1**

### ***Sea area 1: Unsheltered waters***

*(Above 4 metres significant wave height for more than 3 hours/year)*

*The North Sea and the Skagerrak limited by the coast line of Jutland, the Wadden Sea and the line Frederikshavn – Maloe.*

*The Baltic limited by the line Arkona – Smygehuk as well as the coasts of Sweden, Germany and Poland.*

### ***Sea area 2: Sheltered waters***

*(2-4 metres significant wave height for more than 3 hours/year)*

*The Kattegat limited by the lines Frederikshavn – Maloe, Kullen – Kullen, Roesnaes – Lyshage, Issehage – Sletterhage as well as the coast lines.*

### ***Sea area 3: Coastal waters***

*(Significant wave height maximum 2 metres, except from 3 hours/year)*

*The internal Danish waters limited by the lines Gilleleje – Kullen, Roesnaes – Lyshage, Issehage – Sletterhage, Gedser Odde – Grossenbrode, Falsterbo – Moens Klint (Store Stejlebjerger), Arkona – Smygehuk as well as the coast lines. Furthermore, Limfjorden, Isefjorden, the Wadden Sea, Ringkoebing Fjord, etc.*

## **Remarks to technical regulation on special requirements for the location, strength and securing of doors in the shell plating as well as weathertight ramps, etc. on ro-ro ships**

### **General**

The technical regulation is based on the joint Nordic rules that were laid down by the maritime administrations of Norway, Sweden, Finland and Denmark in early 1995 after the loss of the ESTONIA on 28 September 1994. Furthermore, the application of the technical regulation is based on the application of the rules on doors UR-S8 and UR-S9 drawn up and revised by IACS.

Technical regulation no. 9 of 2 December 1994 issued by the Danish Maritime Authority on supplementary requirements for the closing and securing of doors in the shell plating as well as weathertight ramps, etc. on ro-ro ships is also contained in this technical regulation. Hence, technical regulation no. 9 is repealed from the date when it enters into force for existing ships, except on the Faroe Islands.

On the Faroe Islands, studies are being made at present of wave heights in order to determine sea areas in accordance with section 1. Consequently, the technical regulation shall not apply on the Faroe Islands at present.

When approving and controlling indicators for the closing of doors and for water on deck, attention shall be paid to the rules of Notice B from the Danish Maritime Authority, chapter II-1, regulations 20-1 and 23-2 as well as Notice D from the Danish Maritime Authority, chapter II-1, regulation 19-1.

### **Re section 2:**

#### **Application**

When assessing whether a ship is an open or enclosed ship, it shall be considered whether the shell plating has been included in the intact stability.

### **Re sections 5-6:**

#### **Existing ships**

Since the age, design and arrangement of the ferries in Denmark vary quite a lot and since they operate in different types of waters, the ship surveyor on the spot will, in many cases, have to make a number of assessments and decisions on the basis of the technical regulation.

## **Re section 7:**

### **High-speed craft (HSC)**

The application of the technical regulation to ro-ro passenger ships constructed in accordance with IMO Resolution MSC.36(63) may be assessed separately in each individual case on the basis of the ship's stability, freeboard and weather-related limitations to its operation.

## **Re section 8:**

### **Extra weathertight doors where the inner ramp has been located too far ahead**

Where an extra inner door is installed due to a lack of a ramp as an extension of the forepeak bulkhead or the location of the ramp outside the acceptable limits, there is a risk of persons being jammed in the space between the two doors. The extra doors that have been installed until now are double, weathertight doors that open towards a longitudinal bulkhead or side of a house and could cause mortal jamming of a person in front of the door. The control station for existing doors is often located in this areas.

An operational procedure ensuring that persons are not jammed when the new doors are opened shall be drawn up and agreed.

Only the required bow door and inner ramp or inner door shall be fitted with alarms. A redundant ramp need not be included.

## **Re section 10:**

### **Coaming heights on car decks**

On some existing passenger ships, it may be difficult to meet this requirement while ensuring acceptable means of access at doors and lifts.

Where equivalent solutions are accepted in relation to a fixed coaming, it is presupposed that the coaming is in place during operation, i.e. when the change-over for the ship's indicator alarm is in the position "at sea".

## **Re section 11:**

### **Extra mechanical securing system**

The "extra mechanical securing system mentioned, capable of keeping the ramp/door closed weathertight in case of failure in the primary locking and battening down system", shall be considered a possibility of establishing an extra mechanical connection with, for example, sliding bolts, fixed pad eyes with rigging screws or similar simple measures.

This mechanical securing system shall be capable of keeping the door/ramp closed and in place in case of failure in the normal locking system, whereafter any hydrostatic pressure from the outside would press the door against the packings since the door must seal at the after side.

It is recommended that, during the dimensioning, consideration is also paid to an internal pressure equivalent to about 1.0 metre water on deck.

The extra securing system is not required to be fitted with indicators.

#### **Re section 19:**

##### **Subsection 2. Doors not used in daily operation**

Rather small doors or hatches that are not used for loading and not used in daily operation, such as shipyard doors, may be exempted from the requirement for indicators and surveillance on a remote monitor if they have been firmly bolted/secured and locked, and if notices have been affixed stating that they must be kept closed and that they may be opened, when the ship is in port, only by permission from the master. The key for the lock shall be kept on the navigation bridge. The time when such doors are being opened and the time when they are being closed shall be recorded in the ship's logbook before the ship departs from the port.

#### **Re section 21:**

##### **Subsection 6. Change-over for the "in port/at sea" function**

Where the change-over is connected to the propeller shaft, the log or similar, which applies in particular to ferries that cannot open/close the doors while lying at the ferry berth, the limit for the connection/disconnection of the alarm shall be adjusted individually for each ferry in cooperation with the ship surveyor on the spot, based on the ferry being within the port's pier-head.

The change-over may be connected to various speed or manoeuvring functions on board and may be arranged such that the acoustic alarm for the opening of the bow door stops automatically when the door and the ramp have been opened completely and is connected again when the ship leaves the port again.

Various systems are already available, and the change-over function may be made with connections to functions indicating that the ship is leaving the port.

This may, for example, consist in the change-over function being connected to the lever for the regulation of the adjustable propeller, the engine-room telegraph, to the starting of the main engine or the like. Each individual arrangement shall be assessed and approved on the spot.

A connection to the steering machinery, bow propeller or the like shall not be considered an acceptable solution.

## **Re section 21:**

### **Indicators on closing and locking devices**

Subsection 2 stipulates that a sensor shall be fitted on each individual locking and securing device to indicate whether all locking or battening down devices are in the open or closed position. The sensors shall be connected in a series to a joint indicator lamp as well as the acoustic alarm.

Fittings permanently coupled with, for example, pull or push rods need have a sensor only on each of the coupled systems which is activated by a hydraulic cylinder.

Feeds that are to be used only to increase the general weathertightness of the door and which are redundant strengthwise need not have indicators, but protections that must be tightened to maintain the strength of the door and to keep it in the closed position shall be fitted with sensors.

Normally, doors opening towards the inside shall have indicators on all feeds.

Manually operated systems in the form of feeds or rigging screws shall be fitted with sensors on as great a number of these as necessary to keep the door closed and secured. Where rigging screws or the like have been fitted, always on at least two of these.

Especially developed systems capable of indicating pressure are available as sensors on rigging screws.

Where fastening clamps have been accepted on certain doors leading to car decks in special cases, they shall be secured against opening while at sea.

The indicators may transmit to a special board on the navigation bridge or to a computer-based surveillance system which is in some cases a joint system. If such a system is used, an alarm from doors or water level alarms shall be capable of interfering with the system and overruling the screen picture though it is in another functional mode and immediately sound an acoustic alarm and indicate what is wrong.

### **Supply of power to the indicator system**

The supply of power to the indicator system shall be separate from that for operating and closing the doors, but it is not required to be connected to the emergency power supply.

This requirement shall be considered to have been met if two separate groups are used – one for indication and one for the manoeuvring of the equipment.

### **Suppression of an alarm**

Similarly to alarms from fire-detection systems, it may be accepted that an alarm is suppressed for a few minutes (about 2-3 minutes) while the reason for the alarm is examined. When this period has elapsed, the alarm shall automatically return to its full power.

### **Small openings from weather decks to spaces between the bow door and the inner ramp**

Some rather old ships are fitted with small hatches from the weather deck to the space between the bow doors or aft doors and the inner ramp. The hatches are used for obtaining access to the space to operate manual feeds on bow doors, etc. Such hatches may be fitted with indicators for an open/closed hatch, which will, when the hatch is being opened, sound an alarm on the navigation bridge for ten seconds, after which period a lamp is illuminated to indicate that the hatch has been opened.

### **Disconnection of alarms when passing through doors and hatches**

In connection with turns around the ship, the crew on some ships have wanted to do this without activating the acoustic alarm on the navigation bridge when passing doors/hatches with door alarms.

Free passage of doors and hatches for a period of up to about 30 seconds would be acceptable. When a door or hatch has been opened, the indicator light will be red and “mute” while the lamp flashes red. If the door or hatch has not been closed again within a period of 30 seconds, the acoustic alarm will sound.

## **Re section 22:**

### **Water level alarms**

The level meters for water level alarms shall be located in the “corners” of the ferry so that water can flow to the level meters in all actual conditions of trim or heel. The minimum number hereof will be four and, in many cases six or eight plus the inner bow door and ramp/inner door.

For ferries with a sheer of deck as well as deckhouses or the like subdividing the deck, the number will be increased.

If the water level meters on car decks are not located in bilge wells or the like, the height for location above deck shall be around 50 mm. However, local conditions may necessitate adjusting this height to a maximum of 100 mm in special cases.

However, level meters between bow doors and the inner ramp shall be located about 0.50-1.00 metres above deck.

The water level meters need not be type-approved; they shall be adjusted, tested and approved on the spot, but if the ship is to acquire/or keep a permit to carry dangerous goods, they shall be of an explosion-proof design.

It is essential for the assessment of the final location that false alarms are avoided, but an alarm shall sound when a certain (small) quantity of water occurs on deck. In other cases, this shall be assessed on the basis that there must be a maximum of 100 mm water in a triangle in the side when testing the car deck sprinklers.

## **Re section 23:**

**Procedure for opening and closing doors**

The procedure shall contain all activities to be considered when opening and closing doors, such as the location of stop bars, stop blocks or coamings that can be lowered, etc.

**Re section 24:****Operating and maintenance manual**

The manual shall contain the information necessary, including the following:

- Copies of drawings and details about doors and weathertight ramps, closing systems, locking systems, securing systems, hydraulic systems, indicators, diagrams, etc.
- Indication of the conditions for which the doors have been designed, including any restrictions in sea areas.
- Maximum acceptable tolerances, clearances as well as wear and tear of bearings, feeds and supports.
- Description of systematic maintenance and functional testing.
- Identification of defects.
- Record of inspections and any repairs.