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STATUTORY INSTRUMENTS

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**1990 No. 892**

**The Merchant Shipping (Passenger Ship Construction and Survey) (Amendment) Regulations 1990**

**PART C**

**REQUIREMENTS FOR POST 1992 SHIPS WHICH  
COME INTO FORCE ON 1st FEBRUARY 1992**

**Amendments to 1984 Regulations—Post 1992**

**5.** The Merchant Shipping (Passenger Ship Construction and Survey) Regulations 1984 as amended by Part B of these Regulations shall be further amended in accordance with the following:—

(1) In regulation 1(2) the following definition shall be inserted in the appropriate alphabetical order:

““Post 1992 ship” means a passenger ship the keel of which is laid, or which is at a similar stage of construction, on or after 1st February 1992 or a cargo ship which is converted to a passenger ship on or after that date.”.

(2) Regulation 14(1) shall be renumbered regulation 14(1)(b).

(3) A new regulation 14(1)(a) shall be added before regulation 14(1)(b) as follows:—

(a) “**14.** (1) This regulation applies to every United Kingdom passenger ship to which these Regulations apply except post 1992 ships.”.

(4) Regulation 15(1) shall be renumbered regulation 15(1)(b).

(5) A new regulation 15(1)(a) shall be added before regulation 15(1)(b) as follows:—

(a) “**15.** (1) This regulation applies to every United Kingdom passenger ship to which these Regulations apply except post 1992 ships.”.

(6) After regulation 15 there shall be inserted a new regulation 15A as follows:—

**“OPENINGS IN WATERTIGHT BULKHEADS IN PASSENGER SHIPS**

**15A.**—(1) This regulation shall only apply to post 1992 ships.

(2) In every ship of Classes I, II and II(A) the number of openings in watertight bulkheads shall be reduced to the minimum compatible with the design and proper working of the ship; satisfactory means shall be provided for closing these openings.

(a) (3) Where pipes, scuppers, electric cables, etc, are carried through watertight subdivision bulkheads, arrangements shall be made to ensure the watertight integrity of the bulkheads.

(b) Valves not forming part of a piping system shall not be permitted in watertight subdivision bulkheads.

- (c) Lead or other heat sensitive materials shall not be used in systems which penetrate watertight subdivision bulkheads, where deterioration of such systems in the event of fire would impair the watertight integrity of the bulkheads.
- (a) (4) No doors, manholes, or access openings are permitted:
  - (i) in the collision bulkhead below the margin line;
  - (ii) in watertight transverse bulkheads dividing a cargo space from an adjoining cargo space or from a permanent or reserve bunker, except as provided in paragraph (11)(a) and in regulation 19 of these Regulations.
- (b) Except as provided in paragraph (4)(c), the collision bulkhead may be pierced below the margin line by not more than one pipe for dealing with fluid in the forepeak tank, provided that the pipe is fitted with a screwdown valve capable of being operated from above the bulkhead deck, the valve chest being secured inside the forepeak to the collision bulkhead. This valve may be fitted on the after side of the collision bulkhead provided that the valve is readily accessible under all service conditions and the space in which it is located is not a cargo space.
- (c) If the forepeak is divided to hold two different kinds of liquids the collision bulkhead may be pierced below the margin line by two pipes, each of which is fitted as required by paragraph (4)(b), provided there is no practical alternative to the fitting of such a second pipe and that, having regard to the additional subdivision provided in the forepeak, the safety of the ship is maintained.
- (a) (5) Watertight doors fitted in bulkheads between permanent and reserve bunkers shall always be accessible, except as provided in paragraph (10)(d) for between-deck bunker doors.
- (b) Satisfactory arrangements shall be made by means of screens or otherwise to prevent coal from interfering with the closing of watertight bunker doors.
- (6) Subject to paragraph (12), not more than one door, apart from the doors to bunkers and shaft tunnels, may be fitted in each main transverse bulkhead within spaces containing the main and auxiliary propulsion machinery including boilers serving the needs of propulsion and all permanent bunkers. Where two or more shafts are fitted, the tunnels shall be connected by an intercommunicating passage. There shall be only one door between the machinery space and the tunnel spaces where two shafts are fitted and only two doors where there are more than two shafts. All these doors shall be of the sliding type and shall be so located as to have their sills as high as practicable. The hand gear for operating these doors from above the bulkhead deck shall be situated outside the spaces containing the machinery.
  - (a) (7) Watertight doors shall be power-operated sliding doors complying with the requirements of paragraph (8) capable of being closed simultaneously from the central operating console at the navigating bridge in not more than 60 seconds with the ship in the upright position.
  - (b) The means of operation, whether by power or by hand, of any power-operated sliding watertight door shall be capable of closing the door with the ship listed to 15 degrees either way taking into account the forces which may act on either side of the door as may be experienced when water is flowing through the opening applying a static head equivalent to a water height of at least 1 m above the sill on the centreline of the door.
  - (c) Watertight door controls, including hydraulic piping and electric cables, shall be kept as close as practicable to the bulkhead in which the doors are fitted, in order to minimise the likelihood of them being involved in any damage which the ship may sustain. The positioning of watertight doors and their controls shall be such that if the ship sustains damage within one fifth of the breadth of the ship, such distance

being measured at right angles to the centreline of the ship at the level of the deepest subdivision load line, the operation of the watertight doors clear of the damaged portion of the ship is not impaired.

- (d) All power-operated sliding watertight doors shall be provided with means of indication which will show at all remote operating positions whether the doors are open or closed. Remote operating positions shall only be at the navigating bridge as required by paragraph (8)(a)(v) and, at the location where hand operation above the bulkhead deck is required by paragraph (8)(a)(iv).
  - (a) (8) Each power-operated sliding watertight door:
    - (i) shall have a vertical or horizontal motion;
    - (ii) shall, subject to paragraph (12), be normally limited to a maximum clear opening width of 1.2 m. If approved by the Secretary of State larger doors may be permitted only to the extent considered necessary for the effective operation of the ship provided that other safety measures, including the following, are taken into consideration:
      - (aa) special consideration shall be given to the strength of the door and its closing appliances in order to prevent leakages;
      - (bb) the door shall be located inboard of the B/5 line;
      - (cc) the door shall be kept closed when the ship is at sea, except for limited periods when absolutely necessary as determined by the Secretary of State;
    - (iii) shall be fitted with the necessary equipment to open and close the door using electric power, hydraulic power, or any other form of power that is approved by the Secretary of State;
    - (iv) shall be provided with an individual hand-operated mechanism. It shall be possible to open and close the door by hand at the door itself from either side, and in addition, close the door from an accessible position above the bulkhead deck with an all round crank motion or some other movement providing the same degree of safety acceptable to the Secretary of State. Direction of rotation or other movement is to be clearly indicated at all operating positions. The time necessary for the complete closure of the door, when operating by hand gear, shall not exceed 90 seconds with the ship in the upright position;
    - (v) shall be provided with controls for opening and closing the door by power from both sides of the door and also for closing the door by power from the central operating console at the navigating bridge;
    - (vi) shall be provided with an audible alarm, distinct from any other alarm in the area, which will sound whenever the door is closed remotely by power and which shall sound for at least five seconds but no more than ten seconds before the door begins to move and shall continue sounding until the door is completely closed. In the case of remote hand operation it is sufficient for the audible alarm to sound only when the door is moving. Additionally, in passenger areas and areas of high ambient noise an audible alarm may be required to be supplemented by an intermittent visual signal at the door; and
    - (vii) shall have an approximately uniform rate of closure under power. The closure time, from the time the door begins to move to the time it reaches the completely closed position, shall in no case be less than 20 seconds or more than 40 seconds with the ship in the upright position.

- (b) The electrical power required for power-operated sliding watertight doors shall be supplied from the emergency switchboard either directly or by a dedicated distribution board situated above the bulkhead deck. The associated control, indication and alarm circuits shall be supplied from the emergency switchboard either directly or by a dedicated distribution board situated above the bulkhead deck and be capable of being automatically supplied by the transitional source of emergency electrical power required by regulation 46(7)(f) in the event of failure of either the main or emergency source of electrical power.
- (c) Power-operated sliding watertight doors shall have either:
  - (i) a centralised hydraulic system with two independent power sources each consisting of a motor and pump capable of simultaneously closing all doors. In addition, there shall be for the whole installation hydraulic accumulators of sufficient capacity to operate all the doors at least three times, ie closed-open-closed, against an adverse list of 15 degrees. This operating cycle shall be capable of being carried out when the accumulator is at the pump cut-in pressure. The fluid used shall be chosen considering the temperatures liable to be encountered by the installation during its service. The power operating system shall be designed to minimise the possibility of having a single failure in the hydraulic piping adversely affect the operation of more than one door. The hydraulic system shall be provided with a low-level alarm for hydraulic fluid reservoirs serving the power-operated system and a low gas pressure alarm or other effective means of monitoring loss of stored energy in hydraulic accumulators. These alarms are to be audible and visual and shall be situated on the central operating console at the navigating bridge; or
  - (ii) an independent hydraulic system for each door with each power source consisting of a motor and pump capable of opening and closing the door. In addition, there shall be a hydraulic accumulator of sufficient capacity to operate the door at least three times, ie closed-open-closed, against an adverse list of 15 degrees. This operating system shall be capable of being carried out when the accumulator is at the pump cut-in pressure. The fluid used shall be chosen considering the temperatures liable to be encountered by the installation during its service. A low gas pressure group alarm or other effective means of monitoring loss of stored energy in hydraulic accumulators shall be provided at the central operating console on the navigating bridge. Loss of stored energy indication at each local operating position shall also be provided; or
  - (iii) an independent electrical system and motor for each door with each power source consisting of a motor capable of opening and closing the door. The power source shall be capable of being automatically supplied by the transitional source of emergency electrical power as required by regulation 46(7)(f), in the event of failure of either the main or emergency source of electrical power and with sufficient capacity to operate the door at least three times, ie closed-open-closed against an adverse list of 15 degrees.
- (d) For the systems specified in (8)(c)(i), (8)(c)(ii) and (8)(c)(iii), power systems for power-operated watertight sliding doors shall be separate from any other power system and a single failure in the electric or hydraulic power-operated systems excluding the hydraulic actuator shall not prevent the hand operation of any door.
- (e) Control handles shall be provided at each side of the bulkhead at a minimum height of 1.6 m above the floor and shall be so arranged as to enable persons passing through the doorway to hold both handles in the open position without being able to set the power closing mechanism in operation accidentally. The direction of movement

of the handles in opening and closing the door shall be in the direction of door movement and shall be clearly indicated.

- (f) As far as practicable, electrical equipment and components for watertight doors shall be situated above the bulkhead deck and outside hazardous areas and spaces.
  - (g) The enclosures of electrical components necessarily situated below the bulkhead deck shall provide protection against the ingress of water to the extent laid down in Merchant Shipping Notice No. M 1412.
  - (h) Electric power, control, indication and alarm circuits shall be protected against fault in such a way that a failure in one door circuit will not cause a failure in any other door circuit. Short circuits or other faults in the alarm or indicator circuits of a door shall not result in a loss of power operation of that door. Arrangements shall be such that leakage of water into the electrical equipment located below the bulkhead deck will not cause the door to open.
  - (i) A single electrical failure in the power operating or control system of a power-operated sliding watertight door shall not result in a closed door opening. Availability of the power supply shall be continuously monitored at a point in the electrical circuit as near as practicable to each of the motors required by paragraph (8)(c). Loss of any such power supply shall activate an audible and visual alarm at the central operating console at the navigating bridge.
- (a) (9) The central operating console at the navigating bridge shall have a “master mode” switch with two modes of control: a “local control” mode which shall allow any door to be locally opened and locally closed after use without automatic closure, and a “doors closed” mode which shall automatically close any door that is open. The “doors closed” mode shall permit doors to be opened locally and shall automatically re-close the doors upon release of the local control mechanism. The “master mode” switch shall normally be in the “local control” mode. The “doors closed” mode shall only be used in an emergency or for testing purposes.
- (b) The central operating console at the navigating bridge shall be provided with a diagram showing the location of each door, with visual indicators to show whether each door is open or closed. A red light shall indicate a door is fully open and a green light shall indicate a door is fully closed. When the door is closed remotely the red light shall indicate the intermediate position by flashing. The indicating circuit shall be independent of the control circuit for each door.
- (c) It shall not be possible to remotely open any door from the central operating console.
- (a) (10) All watertight doors shall be kept closed during navigation except that they may be opened during navigation as specified in paragraphs (10)(b), (10)(c) and (10)(d). Watertight doors of width or more than 1.2 m permitted by paragraph (12) may only be opened in the circumstances detailed in that paragraph. Any door which is opened in accordance with this paragraph shall thereafter be kept in readiness for immediate closure.
- (b) A watertight door may be opened during navigation to permit the passage of passengers or crew, or when work in the immediate vicinity of the door necessitates it being opened. The door must be immediately closed when transit through the door is complete or when the task which necessitated it being open is finished.
- (c) Some watertight doors may be permitted to remain open during navigation only if considered absolutely necessary; that is, being open is determined essential to the safe and effective operation of the ship’s machinery or to permit passengers normally unrestricted access through out the passenger area. Such determination shall be made in accordance with Merchant Shipping Notice No. M.1283 only after

careful consideration of the impact on ship operations and survivability. A watertight door permitted to remain thus open shall be clearly indicated in the ship's stability information book and shall always thereafter be kept in readiness for immediate closure.

- (d) Sliding watertight doors fitted between bunkers in the between-decks below the bulkhead deck may be permitted to be open at sea for the purpose of trimming coal. The opening and closing of these doors shall be recorded in the log-book.

- (a) (11) If essential and approved by the Secretary of State, watertight doors of satisfactory construction may be fitted in watertight bulkheads dividing cargo between-deck spaces. Such doors may be hinged, rolling or sliding doors but shall not be remotely controlled. They shall be fitted at the highest level and as far from the shell plating as practicable, but in no case shall the outboard vertical edges be situated at a distance from the shell plating which is less than one-fifth of the breadth of the ship, such distance being measured at right angles to the centreline of the ship at the level of the deepest subdivision load line.

- (b) Such doors shall be closed before the voyage commences and shall be kept closed during navigation; the time of opening such doors in port and of closing them before the ship leaves port shall be entered in the log book. Should any of the doors be accessible during the voyage, they shall be fitted with a device which prevents unauthorised opening. When it is proposed to fit such doors, the number and arrangements shall be approved by the Secretary of State.

(12) Portable plates on bulkheads shall not be permitted except in machinery spaces. Such plates shall always be in place before the ship leaves port, and shall not be removed during navigation except in cases of urgent necessity at the discretion of the master. The times of removal and replacement of any such portable plates shall be recorded in the log-book, and the necessary precautions shall be taken in replacing them to ensure that the joints are watertight. The Secretary of State may approve the fitting of not more than one power-operated sliding watertight door in each main transverse bulkhead larger than those specified in paragraph (8) (a)(ii) to be substituted for these portable plates, provided these doors are closed before the ship leaves port and remain closed during navigation except in case of urgent necessity at the discretion of the master. These doors need not meet the requirements of paragraph (8)(a)(iv) regarding complete closure by hand-operated gear in 90 seconds. The time of opening and closing these doors, whether the ship is at sea or in port, shall be recorded in the log-book.

- (a) (13) Where trunkways or tunnels for access from crew accommodation to the stokehold, for piping, or for any other purposes are carried through main transverse watertight bulkheads, they shall be watertight. The access to at least one end of each such tunnel or trunkway, if used as a passage at sea, shall be through a trunk extending watertight to a height sufficient to permit access above the margin line. The access to the other end of the trunkway or tunnel may be through a watertight door of the type required by its location in the ship. Such trunkways or tunnels shall not extend through the first subdivision bulkhead abaft the collision bulkhead.

- (b) Where it is proposed to fit tunnels piercing main transverse watertight bulkheads, these will require the approval of the Secretary of State.

- (c) Where trunkways in connection with refrigerated cargo and ventilation or forced draught trunks are carried through more than one watertight bulkhead, the means of closure at such openings shall be operated by power and be capable of being closed from a central position situated above the bulkhead deck.

(14) In every ship of Classes III to VI, inclusive, bulkheads required by these Regulations to be watertight shall not be pierced by doorways, ventilation trunks or other similar openings.”.

- (7) Regulation 16(1) shall be renumbered regulation 16(1)(b).

- (8) A new regulation 16(1)(a) shall be added before regulation 16(1)(b) as follows:—
- (a) “(16)(1) This regulation applies to every United Kingdom passenger ship to which these Regulations apply except post 1992 ships.”.
- (9) Regulation 17(1) shall be renumbered regulation 17(1)(b).
- (10) A new regulation 17(1)(a) shall be added before regulation 17(1)(b) as follows:—
- (a) “**17.** (1) This regulation applies to every United Kingdom passenger ship to which these Regulations apply except post 1992 ships.”.
- (11) Regulation 18(2) shall be renumbered regulation 18(2)(a).
- (12) A new regulation 18(2)(b) shall be added after regulation 18(2)(a) as follows:—
- (b) “(2) In the case of post 1992 ships other methods of sealing sliding watertight doors shall be approved by the Secretary of State.”.
- (13) Regulation 20(4)(d) shall be renumbered regulation 20(4)(d)(ii).
- (14) A new sub-paragraph (d)(i) shall be added before regulation 20(4)(d)(ii) as follows:—
- “(d) (i) Regulation 20(4)(d) applies to every United Kingdom passenger ship to which these Regulations apply except post 1992 ships.”.
- (15) After regulation 20(4)(d) shall be inserted a new regulation 20(4)(d)A as follows:—
- “(d)A) In the case of post 1992 ships;
- (i) Provision shall be made for the drainage of enclosed cargo spaces on the bulkhead deck; however the means of discharge may be dispensed with in any particular compartment of any ship if by reason of size or internal subdivision of those spaces the safety of the ship is not thereby impaired.
- (ii) Where the freeboard to the bulkhead deck is such that the deck edge is immersed when the ship heels more than 5 degrees, the drainage shall be by means of a sufficient number of scuppers of suitable size discharging directly overboard. Every discharge shall be in compliance with the requirements of sub-paragraph (b)(i), (b)(ii) or (c)(iii) of this regulation.
- (iii) Where the freeboard is such that the edge of the bulkhead deck is immersed when the ship heels 5 degrees or less, the drainage of the enclosed cargo spaces on the bulkhead deck shall be led to a suitable space, or spaces, of adequate capacity, having a high water level alarm and provided with suitable arrangements for discharge overboard. In addition it shall be ensured that:—
- (aa) the number, size and disposition of the scuppers are such as to prevent unreasonable accumulation of free water;
- (bb) the pumping arrangements required by this regulation shall take account of the requirements for any fixed pressure water-spraying fire-extinguishing system;
- (cc) water contaminated with petrol or other dangerous substances is not drained to machinery spaces or other spaces where sources of ignition may be present; and
- (dd) where the enclosed cargo space is protected by a carbon dioxide fire-extinguishing system the deck scuppers are fitted with means to prevent the escape of the smothering gas.”.
- (16) The following shall be added at the end of regulation 37(1):—
- “For post 1992 ships the definition of “D” shall be as follows:

D = moulded depth of ship amidships at the bulkhead deck in metres; provided that, in a ship having an enclosed cargo space on the bulkhead deck which is internally drained in accordance with the requirements of regulation 20—(4)(d)A(iv) and which extends for the full length of the ship, D shall be measured to the next deck above the bulkhead deck. Where the enclosed cargo spaces cover a lesser length, D shall be taken as the moulded depth to the bulkhead deck plus  $1h/L$ , where  $l$  and  $h$  are the aggregate length and height respectively of the enclosed cargo space in metres.”.

(17) There shall be added after regulation 46(7)(e) the following:–

- “(f) (i) in the case of post 1992 ships supply power to operate the watertight doors, as required by regulation 15A(8)(c)(iii), but not necessarily all of them simultaneously, unless an independent temporary source of stored energy is provided, and supply power to the control, indication and alarm circuits as required by regulation 15A(8)(b) for half an hour.”.