PART 3

HULL INTEGRITY AND ARRANGEMENT

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HULL INTEGRITY AND ARRANGEMENT

Section 3.1 - Doors, hatchways, and coamings

3.1.1 All openings through which water may enter and endanger the vessel should be kept to a minimum and be provided with effective closing arrangements.

3.1.2 Weathertight doors and hatch covers should be of efficient construction, adequately framed, and fitted with gaskets and securing arrangements.

3.1.3 Entrance doors to deckhouses and other superstructures giving access to openings in the working deck should be constructed weathertight.

3.1.4 Doorways giving direct access to spaces located below the working deck are to be fitted with a permanent coaming 300mm in height above the deck. Doorways should be located as close as practicable to the centreline of the vessel, and hinged out or forward against the weather. It is recommended that a minimum coaming height of 460mm should be maintained for all vessels over 10m where practicable.

3.1.5 Hatchways should be fitted with substantial coamings, complete with all necessary fittings and covers to ensure weathertight closure. Hatch covers and coamings are to be of strength equivalent to that of the surrounding deck or structure.

3.1.6 To prevent seizure, hinge pins, bushes, screw clips and securing nuts of doors, hatch covers, ventilator and air pipe closures, should be of stainless steel or other corrosion-resistant material and fitted with adequate lubricating points.

3.1.7 The height of hatch coamings above the working deck is not to be less than 300mm, excepting that where essential for fishing operations, such as warp leads to winches, etc., and for safe working on restricted decks, the coamings may be reduced in height or omitted, subject to the requirements for flush deck hatches and to the approval of the Surveyor. However it is recommended that a minimum coaming height of 460mm should be maintained for all vessels over 10m where practicable.

3.1.8 Main access hatch and escape openings should normally be 600mm x 600mm clear opening. Hatches and openings designed exclusively as a means of escape may have a minimum clear opening 500mm x 500mm, where space is restricted, and at the discretion of the Surveyor. Escape hatches are to be operable from both sides.

3.1.9 Hatch covers should preferably be secured by hinges on the forward side or otherwise permanently attached to the structure of the vessel.

3.1.10 Flush deck hatches over engine spaces and holds etc., are to be rigid in construction and secured by positive means such as recessed dog clips,

and fitted with drainage arrangements from recessed channels. Drain pipes are to be led to discharge at ship sides and are to be fitted with automatic non-return valves. The hatch should have a permanently affixed notice stating **"Not to be opened at sea".**

3.1.11 Flush type hatches and ice scuttles are to have the covers permanently attached to the hull structure and are to be capable of being closed weathertight.

3.1.12 It is recommended that access, loading, and discharge hatches on the working deck that are likely to be opened at sea, should be positioned on the centreline where practicable.

3.1.13 In open vessels where water coming on board normally drains to the bilge, the following provisions should apply:-

(i) The height of any door sill above the fixed sole level in open type vessels should be as high as practical, but no less than 200mm. If hinged, the door should open outwards.

(ii) Air pipes and ventilators leading from below the level of the sole should have the open end as high as practical and be protected against mechanical damage.

(iii) Sole drainage on open vessels is to be given careful consideration. The level of the floor should not be positioned at such a height that it would have an adverse effect on the stability of the vessel. If the sole is positioned above the waterline of the vessel when it is in a light condition and constructed weathertight so that water may accumulate on the sole, the following guidance is given to ensure improved stability characteristics:-

(a) There should be effective drain openings fitted on each side of the sole to enable any water to drain directly to the bottom of the vessel.

(b) It is recommended that the drainage area be at least 75% of the requirement for freeing ports for draining from a deck directly overboard.

(c) Open vessels are not to be fitted with freeing ports.

(d) Any barrier or coaming which may be fitted to the sole to prevent the entry of rain water to the bottom of the vessel should not be at a height any greater than 25mm above the level of the sole.

(e) The bilge pumping intake should be at a readily accessible position.

(f) Sole support structures that form buoyancy spaces are to be well sealed and surfaces that may come into contact with water are to be sealed with gel coat or similar.

Section 3.2 - Air pipes

3.2.1 The lowest point at which water might gain access through an air pipe should be not less than 760mm above the exposed freeboard deck or less than 450mm above the exposed superstructure deck. The exposed portion of the air pipes should be of substantial construction.

3.2.2 A reduced height may be accepted if it can be shown that the rule air pipe height would interfere with essential operations and provided that an adequate height above the deck is maintained and an effective automatic means of closure is fitted.

3.2.3 Air pipes used as tank vent pipes should have a cross-sectional area not less than 1.25 times that of the filling pipes.

3.2.4 Air pipes should be provided with an efficient means of watertight closure and provision should be made to prevent overpressure or vacuum occurring when the tanks are filled or emptied.

3.2.5 The air pipe/deck connection is to be by a welded through socket or welded pad of adequate thickness.

3.2.6 The open ends of tank air pipes are to be provided with a proprietary type ball float fitting or a gooseneck fitted with a means of closure.

3.2.7 The air pipes to oil fuel, hydraulic and lubricating oil tanks are to be led to the open deck, and are to be fitted with spark arresting gauze in addition to any method of closure.

Section 3.3 - Ventilators

3.3.1 Ventilators should be of substantial and efficient construction and be provided with a permanently attached means of weathertight closure.

3.3.2 For vessels between 10m to 15m LOA, the height above deck of each ventilator should not be less than 600mm to the lowest point where water might gain access. For all other vessels less than 10m LOA, the height should be as high as practical but in no case less than 450mm depending on its position. Ventilators which must be kept open, e.g. for the supply of air to machinery or for the discharge of noxious or flammable gases, should be specially considered with respect to its location and height above deck.

Section 3.4 - Portlights

3.4.1 All portlights where fitted to superstructures, deckhouses and other weathertight structures, are to be fitted with hinged deadlights capable of being closed weathertight.

3.4.2 Portlights should not be fitted in the hull below the working (freeboard) deck, nor in engine casings.

3.4.3 Portlights fitted in weathertight shelter sides should not be of the opening type.

3.4.4 Where deckhouses containing unprotected openings leading below main deck, opening type port lights are not to be fitted, any fixed port lights fitted are to be equivalent in strength to the surrounding structure.

3.4.5 Portlights fitted within an enclosed superstructure are to be fitted at a minimum height of 1.50m to the lower edge above the working deck, except those used for escape which may be lower subject to Surveyors approval.

3.4.6 Any opening portlight should not exceed 250mm diameter or equivalent area, except where the portlight has been approved as a means of escape.

3.4.7 Glazing thicknesses should meet the requirements of ISO 12216 or other equivalent standard.

Section 3.5 - Skylights

3.5.1 Skylights leading to spaces below the working deck are to be of substantial construction and capable of being closed weathertight, operable from both sides, positioned clear of deck working areas, and fitted on or as near to the centreline as possible, and are to be mounted on substantial coamings of equivalent strength to the surrounding deck and as high as practicable.

3.5.2 Skylight glazing should meet the requirements of ISO 12216 or an equivalent standard.

3.5.3 Glass inserts, where fitted, are to have the framing material and fastenings of equivalent strength to the surrounding structure, and are to be protected against damage from warps and gear.

3.5.4 Skylights should not be fitted in way of machinery spaces, or other vulnerable positions. Where skylights are provided as a means of escape, they should be positioned clear of obstructions to enable rapid and easy access and be clearly marked “EMERGENCY EXIT”.

Section 3.6 - Windows

3.6.1 Windows are not to be fitted in the hull of any vessel.

3.6.2 Windows fitted in superstructures of decked or partially decked vessels of 7m LOA and over, are to be to ISO 12216 and fitted in metal frames, or frames of equivalent strength to that of surrounding material. Metal frames are to be efficiently connected to the surrounding structure.

3.6.3 Where the wheelhouse entrance does not open to the outside deck, at least one window fitted in the wheelhouse is to be of the opening type arranged to permit a means of escape, with 500mm x 500mm minimum clear opening.

3.6.4 Opening windows may be hinged, vertically or horizontally sliding types, provided that the window can be readily and efficiently secured in the closed position.

3.6.5 Vertical sliding windows are to be fitted with adequate drainage arrangements discharging to the open deck, where practicable.

3.6.6 Polarised or tinted glass or glazing material susceptible to scratching must not be fitted at the helm or control position, where required for navigational visibility.

Section 3.7 - Exhaust outlets (through hull)

3.7.1 Exhaust pipes that penetrate the hull below the freeboard deck are to be fitted with a non-return valve, device, or flap to prevent the ingress of water at the outlet position.

3.7.2 The lower edge of the discharge is to be a minimum of 100mm above the deepest load waterline.

3.7.3 The non-return device referred to in Paragraph 3.7.1 may be a proprietary fitting, water trap, built in valve, or an inverted “U” bend, fitted in the exhaust line.

3.7.4 For materials for exhaust systems see Part 9, Paragraph 9.1.9. also see figures 4.19.13 and 4.19.14.

Section 3.8 - Sea inlets and discharges

3.8.1 All sea inlets and overboard discharges penetrating the hull below the working or freeboard deck are to be provided with a shut-off valve or cock. Those fitted within machinery spaces or below the waterline are to be of metal or other approved type. If valves are used other than metal, a certificate attesting to their classification must be supplied from a recognised body.

3.8.2 In addition to the requirements of Paragraph 3.8.1, overboard discharges below the weathertight or freeboard deck, are to be fitted with a non-return valve, which may be incorporated within the shut-off valve by means of a screw down non-return valve.

3.8.3 Valves and cocks fitted in metal hulls are to be connected to substantial pads welded to the hull plating, or to a welded-in short distance piece, to clear side or bottom stiffeners. Distance pieces, where fitted, are to have a wall thickness of at least the thickness of the connecting hull plating.

3.8.4 Valves and cocks in wood or GRP hulls are to be fitted and spigotted into a suitable pad and secured with an external non-corrodible ring under the bolts. Fittings up to 50mm diameter may be attached with threaded spigot pieces having an external collar and internal nut, provided that suitable hull reinforcement is provided where necessary.

3.8.5 Sea inlet and discharge valves are to be accessible for operation at all times, if necessary, by extended spindles to above the floor plating or above deck. See Part 10, Paragraph 10.1.4.

3.8.6 Sea inlet and overboard discharge valves are to be permanently labelled, indicating function, and open and closed position.

Section 3.9 - Freeing ports

3.9.1 On decked or partially decked vessels, where the fixed bulwarks, ends or sides of superstructures etc., form enclosed wells, means to clear entrapped water are to be provided and may comprise any, or any combination, of the following:-

(i) Freeing ports with an attached means of closing (provided that the freeing port is closed only during fishing operations and that the closing device is easily operable and accessible, subject to the approval of the Surveyor).

(ii) Permanent openings in the bulwarks such as slots.

(iii) Apertures in and under bulwark or stern ramp doors.

(iv) Deck scuppers where the discharge is above the load waterline.

3.9.2 The means of clearing water must not provide easy access for water to enter the enclosed deck space.

3.9.3 Any freeing port or slot in the bulwark is to have the bottom edge as close to the deck as possible. Freeing ports greater than 230mm in depth and wider than 350mm are to be fitted with bars.

3.9.4 Where freeing ports are fitted with hinged flaps or shutters, sufficient clearance to prevent jamming is to be provided and hinges are to be fitted with pins of non-corrodible material. Greasing points or nipples are to be provided where practicable.

3.9.5 Freeing ports are to be arranged throughout the length of the bulwark or well to provide maximum drainage under all normal conditions of trim.

3.9.6 Care is to be taken that deck pounds, machinery and net or gear stowage will not impede the free flow of trapped water to the freeing ports or slots.

3.9.7 Lift-up closing appliances fitted to freeing ports are to be so arranged that they are secure in the open position. Lift-up closing appliances should be fitted to no more than 50% of ports.

3.9.8 The minimum area for freeing ports on each side of the well or deck is to be not less than 3% of the total bulwark area each side. See figure 4.19.16.

3.9.9 Open type vessels are to be fitted with pumps as required by section 10.3 of these Standards and the MCA Code of Practice.

3.9.10 Every vessel should be provided with efficient means of draining any compartment, other than a compartment appropriated for the storage of oil or fresh water when the vessel is upright or is listed not more than 5° either way. Suction(s) should be provided in the engine room and the fish hold to the lowest drainage level of the compartment.

3.9.11 Where vessels are fitted with full or partial shelters which are left open at the stern, and where the passage of water forward is not restricted by watertight bulkheads, the freeing port area is to be increased by 1% over the requirement stated in section 3.9.8.

Section 3.10 - Watertight subdivision

3.10.1 All vessels below 7m LOA are to be fitted with at least one watertight bulkhead positioned according to the vessel's arrangement where it will be the most effective to prevent flooding when in a damaged condition. In open type vessels the bulkhead should be positioned at approximately mid length, and extend from the keel to as high above the normal operating waterline as practicable. To suit particular vessel arrangements, consideration may be given to the provision of intact buoyancy spaces below deck or floor areas in lieu of the provision of watertight bulkheads. See figure 4.19.15.

3.10.2 All decked vessels between 7m and 10m LOA are to be fitted with at least two watertight bulkheads. A collision bulkhead is to be positioned at a minimum of 0.50m and a maximum of 1m from the stem at the freeboard deck. The bulkhead should extend from the keel or forefoot to at least the first weathertight deck or flat above the deepest operational waterline. A second bulkhead is to be positioned to separate the machinery space from the fish hold or accommodation spaces and is to extend full height from keel to the deck. For bulkheads that are to be fitted further aft than maximum stated, details are to be submitted for consideration. See figure 4.19.15.

3.10.3 All decked vessels between 10m to 15m LOA are to be fitted with at least three watertight bulkheads, extending from keel to underside of deck. The collision bulkhead should be positioned forward at a minimum of 0.75m and a maximum of 2m from the stem at the freeboard deck. The second and third watertight bulkheads should be positioned at each end of the engine room and be full height. Vessels with engines mounted forward where the collision bulkhead is the forward engine room bulkhead, should have a bulkhead positioned aft of engine space and aft of the fish hold (aft peak bulkhead). For bulkheads that are to be fitted further aft than maximum stated, details are to be submitted for consideration. See figure 4.19.15.

3.10.4 Access to the compartment forward of the collision bulkhead may be by a bolted watertight cover or hatch normally closed at sea.

3.10.5 Doors should not normally be fitted in watertight bulkheads, but where these are necessary for the safe operation of the vessel, the doors are to be permanently attached to the bulkhead and are to be of equivalent strength to the unpierced bulkhead. Doors are to be capable of operation from both sides.

3.10.6 Where pipes and electrical cables are carried through a watertight bulkhead, the method of penetration must maintain the watertight integrity of the bulkhead.

