

## National Standards for Inland Waterway New Vessels (As agreed to date)

### CHAPTER 1 – DEFINITIONS

#### Types of Craft.

1. 'Craft' a vessel or other item of floating equipment
2. 'Vessel' an inland waterways vessel or sea-going ship
3. 'Inland waterways vessel' a vessel intended solely or mainly for use on inland waterways.
4. 'Sea-going ship' a vessel certificated for deep sea or coastal use.
5. 'Self propelled vessel' a vessel intended to carry cargo and built to navigate independently under its own power.
6. 'Tug' a vessel specially built to tow other vessels.
7. 'Pusher-tug' a vessel specially built or adapted to push a push-tow formation.
8. 'Lighter' a vessel intended to carry cargo and built to be towed, either having no motive power or having only sufficient motive power to perform restricted manoeuvres.
9. 'Push barge' a vessel intended to carry cargo, built or specially modified to be pushed. Either having no motive power of its own or having only sufficient motive power to perform restricted manoeuvres when not part of a push-tow formation.
10. 'Ship-mounted lighter' a non powered lighter or a push barge built to be carried in or onboard a sea-going ship and to navigate inland waterways.

#### Specific areas on board

11. 'Engine space' Those spaces and trunks to such spaces which contain:
  - a) internal combustion machinery used for main propulsion; or
  - b) internal combustion machinery used for purposes other than main propulsion where such machinery has in the aggregate a total power output of not less than 375 kW; or
  - c) any oil-fired boiler or oil fuel unit designed to produce steam or a thermal fluid with a pressure greater than 0.18N/mm<sup>2</sup>. Oil fuel unit includes any equipment used for the preparation and delivery of oil fuel, heated or not, to boilers (including inert gas generators) and engines (including gas turbines) at a pressure of more than 0.18 N/mm<sup>2</sup>; **or**
  - d) inert gas generators, incinerators greater than 75kW, waste disposal units; **or**
  - e) oil fuel pumps with pressure greater than 0.98 N/mm<sup>2</sup>.
12. 'Main engine room' the space containing the main propulsion machinery.

13. 'Superstructure' a watertight permanent structure with rigid boundaries joined to the deck in a permanent and watertight manner.
14. 'Wheelhouse' the space containing the controls and instruments necessary for manoeuvring the craft.
15. 'Accommodation' the space intended for the use of persons normally on board including galley, food store, toilet, bathroom, passageways and stairwell but not including the wheelhouse.
16. 'Hold' the part of the vessel, with a bulkhead at either end, intended to contain the cargo, either open topped or closed by means of hatches.
17. 'Tank' a tank permanently part of the vessel, the boundaries of the tank being either the hull itself or a separate 'skin'.

#### Technical marine terms

18. 'Plane of maximum draught' the plane corresponding to the maximum draught at which the craft is permitted to operate.
19. 'Safety clearance' the distance between the plane of maximum draught and a parallel plane passing through the lowest point at which the vessel is no longer deemed to be watertight.
20. 'Freeboard (F)' the distance between the plane of maximum draught and the parallel plane through the lowest point of the deck-side or, where there is no deck-side, the lowest point of the top of the hull side.
21. 'Bulkhead deck' the deck to which the required watertight bulkheads join and from which the freeboard is measured.
22. 'Bulkhead' a division of a given height, usually vertical, that separates areas of the ship and delimited by the vessel's bottom, side plating or other bulkheads.
23. 'Transverse bulkhead' a bulkhead extending from the side plating on one side to the side plating on the other.
24. 'Load line length' means either 96% of the total length on a waterline at 85% of the least moulded depth measured from the top of the keel, or the length from the fore side of the stem to the axis of the rudder stock on that waterline, whichever is the greater. In a vessel designed with a rake of keel, the waterline on which this length is measured should be parallel to the design waterline.
25. 'Length (L)' the maximum length of the hull in metres, excluding rudder and bowsprit.
26. 'Breadth (B)' the greatest width of the vessels hull in metres, measured on the outside of the hull plating (excluding paddle wheels, fixed fenders etc.).
27. 'Depth (D)' the smallest vertical distance in metres between the bottom of the hull bottom plating or keel and the lowest point of the deck at side.
28. 'Draught (T)' the vertical distance in metres between the deepest part of the hull bottom plating or keel and the plane of maximum draught.

29. 'Fore perpendicular' an imaginary vertical line where the bow of the vessel meets the plane of maximum draught.

**Steering system**

30. 'Steering system' all the equipment required to steer the vessel so as to comply with the manoeuvrability requirements of Chapter 5.
31. 'Rudder' the rudder blade or blades including all rudder shafts, rudder quadrants and all components connecting to the steering gear.
32. 'Steering gear' the equipment, including powered drive unit if any, and the means of applying torque to the rudder stock necessary for effecting movement of the rudder stock for the purpose of steering the vessel.
33. 'Drive unit' the steering gear drive, between the power source and the steering gear.
34. 'Power source' the power supply for the steering gear drive and the control system. Either from batteries, internal combustion engine or the vessels electrical system.
35. 'Steering Control' the components and circuitry to control power driven steering drive unit(s).
36. 'Hand steering' a system where a manual operation of a steering wheel or tiller operates the rudder by mechanical linkage without any additional power supply.
37. 'Hand-hydraulic drive' a form of steering with manual hydraulic transmission.
38. 'Rate-of-turn regulator' equipment which automatically monitors and maintains a given rate-of-turn of the vessel in accordance with the values entered into it.

**Properties of components and materials**

39. 'Weathertight' a component, device or a closing appliance is considered weathertight if it is designed to prevent the passage of water into the vessel in any normal operating conditions.
40. 'Watertight' a structural component or device fitted out in such a manner as to prevent any ingress of water.
41. 'Gastight' a component or device built or fitted so as to prevent the passage of gas or vapour.

**Other definitions**

42. 'Approved classification society' a classification society approved by the Maritime and Coastguard Agency.
43. 'Certifying Authority' the Maritime and Coastguard Agency (MCA) or any organisation authorised by the MCA to act as a Certifying Authority for the purposes of these regulations.

**CHAPTER 2 – SURVEY AND INSPECTION** (for statutory public consultation in 2008/09)**CHAPTER 3 SHIPBUILDING REQUIREMENTS****Article 3.01 Basic requirement**

New vessels should be constructed in accordance with the Rules for Inland Waterway vessels of an approved classification society. Where standards are not specified herewith reference should be made to harmonised inland navigation vessel standards (CEN - BS/EN/ISO). Where vessels are to be constructed that are not in accordance with approved classification society rules, and use separate scantling and strength calculations as suitable for the area of operations by the designing naval architect, the drawings and calculations will be submitted to certifying authority for approval.

**Article 3.02 Strength and stability**

1. The hull shall be sufficiently strong to withstand all of the stresses to which it is normally subjected;
  - (a) in the case of newly built vessels or major conversions affecting vessel strength, adequate strength shall be demonstrated by presenting design calculation proof. That proof is not required where a classification certificate from an approved classification society is submitted;
  - (b) Vessels shall be designed with a diminution limit of 25%. Where greater limits are applied the minimum permissible thicknesses are to be clearly marked on the vessels plans.

Greater limits, up to 30%, will be considered acceptable at localised points, to the satisfaction of the attending surveyor.

- (c) Where a vessel is built and maintained to an approved classification society rules and regulations the classification society diminution limits shall be applied.

All these diminution limits are only applicable to steel vessels.

- (d) Plates shall be renewed if bottom, bilge or side plates are below the permissible value laid down in this way. Although the use of "doubling" is permitted as sacrificial wear/rubbing strips they may not be used as a permanent repair method for diminished structure.

(NOTE: THE WORDING FOR NON-STEEL VESSELS IS STILL UNDER CONSIDERATION BY EC).

2. The stability of vessels shall correspond to their intended use.

**Article 3.03 Hull**

1. Bulkheads rising up to the deck or, where there is no deck, up to the gunwale, shall be installed at the following points:
  - a) A collision bulkhead at a suitable distance from the bow in such a way that the buoyancy of the laden vessel is ensured, with a residual safety clearance of 100 mm if water enters the watertight compartment ahead of the collision bulkhead. As a general rule, this requirement shall be considered to have been met if the collision bulkhead has been installed at a distance of between  $0.04 L$  and  $0.04 L + 2$  m measured from the fore perpendicular line in the plane of maximum draught. If this distance exceeds  $0.04 L + 2$  m this requirement shall be proved by calculation.
  - (b) An aft-peak bulkhead at a suitable distance from the stern where the vessels' length exceeds 24 m.
2. No accommodation or equipment needed for vessel safety or operation may be located ahead of the plane of the collision bulkhead. This requirement shall not apply to anchor gear.<sup>1</sup>

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<sup>1</sup> Safety equipment includes Life Saving Apparatus and Firefighting Equipment but not bowthrusters

3. The accommodation, engine spaces, and the workspaces forming part of these, shall be separated from the holds by watertight transverse bulkheads that extend up to the deck.
4. The accommodation shall be separated from the engine spaces, and from the holds, by gas tight divisions and shall be directly accessible from the deck. If no such access has been provided an emergency exit shall also lead directly to the deck.
5. The bulkheads specified in sections 1 and 3 and the separation of areas specified in section 4 shall not contain any openings.  
However, doors in the aft peak bulkhead and penetrations, in particular for shafts and pipework, shall be permitted where they are so designed that the effectiveness of those bulkheads and of the separation of areas is not impaired. The doors in the aft peak bulkhead shall bear the following legible instruction on both sides:  
'Door to be closed immediately after use`.
6. The water inlets and discharges, and the pipework connected to these, shall be such that no unintentional ingress of water into the vessel is possible.
7. Anchors when stowed should not protrude beyond the side plating of the vessel or should otherwise be in a protected position so that they do not pose any risk of damage to other vessels or waterway infrastructure.

#### **Article 3.04 Engine Spaces and bunkers**

1. Engine spaces shall be arranged in such a way that the equipment therein can be operated, serviced and maintained easily and safely.
2. The liquid-fuel or lubricant bunkers and accommodation, may not have any common surfaces which are under the static pressure of the liquid when in normal service. This requirement does not apply to vessel under 24metres load line length.
3. Engine spaces and bunker bulkheads, ceilings and doors shall be made of steel or another equivalent non-combustible material. Bulkhead or plating forming a boundary between engine spaces, accommodation and fire control station, shall be gastight. On vessels operating in category C and D waters this plating shall also be fitted with fire insulation to A15 standard (or equivalent). This requirement for installation does not apply to vessel under 24metres load line length, except where the vessel can carry freight in hold(s).
4. Engine spaces and other spaces in which flammable or toxic gases are likely to escape shall be capable of being adequately ventilated.
5. Stairways and ladders providing access to engine spaces and bunkers shall be firmly attached and be made of steel (unless otherwise agreed by the Certifying Authority for vessels under 24 metres load line length) or another shock-resistant and non-combustible material.
6. Engine spaces shall have two exits of which one may be an emergency exit.<sup>2</sup>  
The second exit may be dispensed with if:
  - (a) the total floor area (average length × average width at the level of the floor plating) of the engine space does not exceed 35 m<sup>2</sup> and
  - (b) the path between each point where servicing or maintenance operations are to be carried out and the exit, or foot of the stairway near the exit providing access to the outside, is not longer than five metres and that
  - (c) a fire extinguisher is located at the servicing point that is furthest removed from the exit door notwithstanding the requirements of 10.03.
7. The maximum permissible sound pressure level in the engine spaces shall be 110 dB(A). The measuring points shall be selected as a function of the maintenance work needed during normal operation of the plant located therein.

## **CHAPTER 4 SAFETY CLEARANCE, FREEBOARD AND DRAUGHT MARKS**

### **Article 4.01 Safety clearance**

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<sup>2</sup> Applies to propulsion machinery space only, aux. machinery spaces require a safe means of access and fire fighting appliance.

1. The safety clearance shall be at least 250 mm in category A waters, 300 mm in category B, 500mm in category C and 750 mm in category D waters.
2. The safety clearance in the case of vessels whose openings cannot be closed by weather tight devices, and for vessels sailing with their holds uncovered, shall be increased in such a way that each of those openings shall be at least 500 mm from the plane of maximum draught.
3. Vessels operating in category D waters shall have weathertight hatches. Vessels designed to operate in D waters with no hatch covers to be specially considered by the MCA.

#### Article 4.02 Freeboard

1. The minimum freeboard of vessels with a continuous deck, without sheer and superstructures shall be 150 mm.
2. In category A, B and C waters the minimum freeboard of vessels with sheer and superstructures may be reduced in accordance with the following formula:

$$F = 150 (1 - \alpha) - \frac{\beta_v \cdot Se_v + \beta_a \cdot Se_a}{15} \text{ [mm]}$$

where:

- $\alpha$  is a correction coefficient that takes account of all the superstructures involved
- $\beta_v$  is a coefficient for correcting the effect of the forward sheer resulting from the presence of superstructures in the forward quarter length L of the vessel;
- $\beta_a$  is a coefficient for correcting the effect of the aft sheer resulting from the presence of superstructures in the aft quarter of length L of the vessel;
- $Se_v$  is the effective forward sheer in mm;
- $Se_a$  is the effective aft sheer in mm.

3. The coefficient  $\alpha$  is calculated via the following formula:

$$\alpha = \frac{\sum le_a + \sum le_m + \sum le_v}{L}$$

where:

- $le_m$  is the effective length in m of the superstructures located in the median part corresponding to half of length L of the vessel;
- $le_v$  is the effective length in m of a superstructure in the forward quarter of vessel length L;
- $le_a$  is the effective length in m of a superstructure in the aft quarter of vessel length L;

The effective length of a superstructure is calculated via the following formulae:

$$le_m = l \left( 2.5 \cdot \frac{b}{B} - 1.5 \right) \cdot \frac{h}{0.36} \text{ [m]}$$

$$le_v \text{ and } le_a = l \left( 2.5 \cdot \frac{b}{B_1} - 1.5 \right) \cdot \frac{h}{0.36} \text{ [m]}$$

where:

$l$  is the effective length, in m, of the superstructure involved;  
 $b$  is the width, in m, of the superstructure involved;  
 $B_1$  is the width of the vessel, in m, measured on the outside of the vertical sideplates at deck level halfway along the superstructure involved.  
 $h$  is the height, in m, of the superstructure involved. However, in the case of hatches,  $h$  is obtained by reducing the height of the coamings by half the safety distance referred to in Article 4.01. In no case will a value exceeding 0.36m be taken for  $h$ .

If  $\frac{b}{B}$  or  $\frac{b}{B_1}$  is less than 0.6 the effective length  $l_e$  of the superstructure will be zero.

4. Coefficients  $\beta_v$  and  $\beta_a$  are calculated via the following formulae:

$$\beta_v = 1 - \frac{3 \cdot l_{e_v}}{L}$$

$$\beta_a = 1 - \frac{3 \cdot l_{e_a}}{L}$$

5. The effective aft/forward sheers  $Se_v/Se_a$  are calculated via the following formulae:

$$Se_v = S_v \cdot p$$

$$Se_a = S_a \cdot p$$

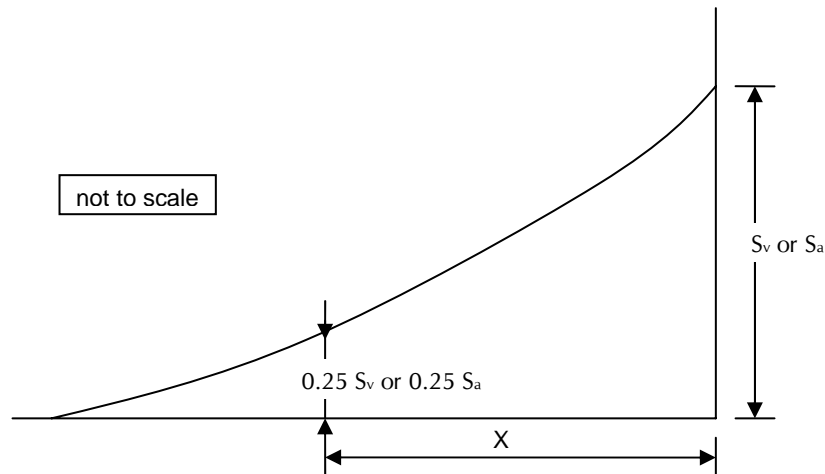
where:

$S_v$  is the actual forward sheer, in mm; however  $S_v$  shall not be taken to be more than 1 000mm;  
 $S_a$  is the actual aft sheer at the rear, in mm; however  $S_a$  may not be taken to be more than 500mm.  
 $p$  is a coefficient calculated by the following formula.

$$p = 4 \cdot \frac{X}{L}$$

$X$  is the abscissa measured from the extremity of the point where the sheer is 0.25  $S_v$  or 0.25  $S_a$  respectively (see drawing).

However, coefficient  $p$  will not be taken to be more than 1.



6. If  $\beta_a \cdot S_{ea}$  is greater than  $\beta_v \cdot S_{ev}$ , the value of  $\beta_v \cdot S_{ev}$  will be taken as being the value for  $\beta_a \cdot S_{ea}$ .

#### Article 4.03 Minimum freeboard

In view of the reductions referred to in Article 4.02 the minimum freeboard shall not be less than 80 mm.

#### Article 4.04 Draught marks

1. The plane of maximum draught shall be determined in such a way that the specifications concerning minimum freeboard and minimum safety clearance are both met at the same time. However, for safety reasons, the certifying authority may lay down a greater value for the safety clearance or freeboard.
2. The plane of maximum draught shall be indicated by means of highly visible, indelible draught marks on each side of the vessel.
  - 3.1 The basic pair of draught marks, for a vessel certificated to operate in only one category of water, shall be horizontal lines 450 millimetres long and 25 millimetres wide. The top of the line shall be horizontal and coincide with the plane of maximum authorised draught. The centre of the line to be positioned amidships.
  - 3.2 For vessels certificated to operate in more than one category of water, the draught marks referred to in 3.1 shall be supplemented by the addition of a 25 millimetre wide vertical line to which one, or in the case of more categories certificated, several lines shall be affixed. These affixed lines shall be positioned at the forward end of basic marks and shall be 150 millimetres long by 25 millimetres wide. (For example of multi-category draught mark, together with typical examples (including a basic draft mark), - see figure 1. Note that the examples are all based upon category B waters basic marks. If the waters for which the vessel is certificated do not start at category B then similar principles to be followed).
  - 3.3 Letter(s) marking the water categories for which the vessel is certified shall be marked at the forward ends of the line(s). The lettering shall be 60 mm high by 40mm wide.
4. Additionally, where the line of the deck is not immediately discernable, a vessel should be provided with a deck line. The deck line positioned and centred above the basic draught marks, should be permanent and be painted on a contrasting background and be a bar of 300 millimetres in length and 25 millimetres wide.
5. Draught marks may only be altered with the approval, and under the supervision of, the certifying authority.
6. Draught marks shall only be marked for the categories of water in which a vessel is authorised by its certificate to operate.  
(Note: Amidships relates to half way along length (L))

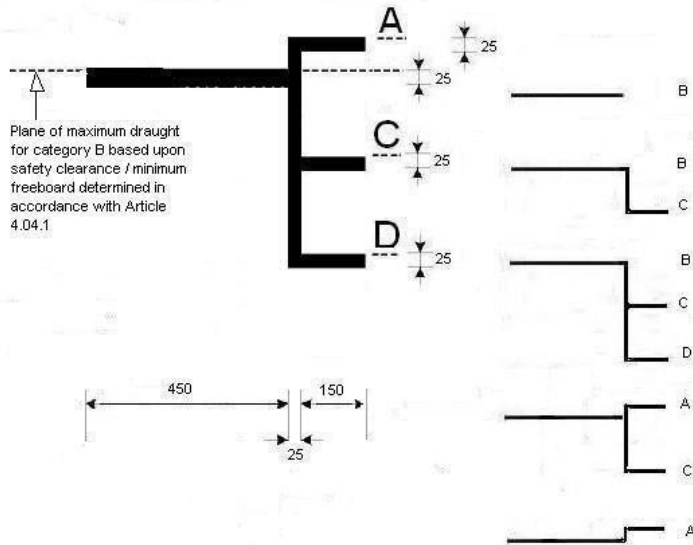


Figure 1. DRAUGHT MARKS (Dimensions and Examples)

**Article 4.05 Maximum loaded draught of craft whose hulls are not always closed so as to be sprayproofed and weathertight.**

1. If the plane of maximum draught is determined by assuming that the holds may be closed in such a way as to make them weathertight and the safety clearance is less than the 500 mm prescribed by Article 4.0.1.2 then the maximum draught for sailing with uncovered holds shall be determined and indicated by 2 pairs of additional basic draught marks. One pair shall be placed not further forward than one sixth (L) from the after end of the vessel and the other pair at a similar distance from the forward end.

The marking of the additional basic draught marks shall follow the same principles described in Article 4.04 but as the safety clearance is the same for more than one category, as per Article 4.01.2 then additional letters indicating the other categories for which the vessel is certificated will need to be marked at the forward end of the draught mark line. I.e. AB, or ABC, or BC.

2. If the vessel operates only with uncovered holds and the above draught marks are affixed then the amidships marks may be omitted.

3. Also, to make clear that the additional draught marks relate to when operating with uncovered holds, the letter 'O' to be marked at the after end of the draught mark line(s).

4. Letters shall be positioned in a similar way as shown in **Figure 1**, and shall be 60mm high by 40mm wide.

**Article 4.06 Draught scales**

1. Vessels shall bear a draught scale fore and aft.

2. The zero points on each draught scale shall be taken from the plane running parallel to the plane of maximum draught passing through the lowest point of the hull or of the keel where such exists. The scale of decimetres, or metres and decimetres, denoting a draught of water shall be marked on the vessel on each side of its stem and stern as follows:-

(a) in figures in two-decimetres intervals, if the scale is in decimetres; and

(b) in figures at each metre interval and at intervening two-decimetres intervals, if the scale is in metres and decimetres;

the capital letter 'M' being placed after each metre figure; the top figure of the scale showing both the metre and (except where it marks a full metre interval) the decimetre figure; the lower line of the

figures, or figures and letters (as the case may be), coinciding with the draught line denoted thereby; the figures and letters being not less than 1 decimetre in length and being marked by being cut in and painted white or yellow on a dark ground, or in such a way as the MCA approves.

## CHAPTER 5 MANOEUVRABILITY

### Article 5.01 General

Vessels shall display adequate navigability and manoeuvrability<sup>3</sup>. A vessel shall be able to manoeuvre safely in the category of waters for which it is to be certified. Trials should be carried out in conditions representative of typical loaded operations.

### Article 5.02 Navigation tests

1. Navigability and manoeuvrability shall be checked by means of navigation tests. The following, in particular, shall be examined:

|                                   |                |
|-----------------------------------|----------------|
| Minimum specified (forward) speed | (Article 5.05) |
| Stopping capacity                 | (Article 5.06) |
| Navigability when going astern    | (Article 5.07) |
| Capacity for evasive action       | (Article 5.08) |
| Turning capacity                  | (Article 5.09) |

2. The certifying authority may dispense with all or part of the tests where compliance with the navigability and manoeuvrability requirements is proven in another manner.

### Article 5.03 Degree of loading of vessels during navigation tests

1. During navigation tests vessels intended to carry goods shall be loaded to at least 70 % of their cargo capacity, distributed in such a way as to ensure a horizontal attitude as far as possible. If the tests are carried out with a lesser load the approval for downstream navigation shall be restricted to that loading.

### Article 5.04 Use of on-board facilities for navigation test

1. During the navigation test all of the equipment which may be normally actuated from the wheelhouse may be used, apart from any anchor.
2. However, during the test involving turning into the current referred to in Article 5.09, where permitted in the area of operation, the anchors may be used.

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<sup>3</sup> This includes self propelled vessels and combinations of vessels such as push-tows and traditional tows.

**Article 5.05 Prescribed minimum (forward) speed**

1. Vessels shall achieve a speed in relation to the water sufficient to maintain proper control of the vessel in all operational circumstances.
2. The certifying authority may grant exemptions to vessels operating solely in estuaries and ports.

**Article 5.06 Stopping capacity**

1. Vessels shall be able to stop facing downstream in good time while remaining adequately manoeuvrable.
2. The stopping capacity mentioned above may be replaced by turning capacity providing this is practicable within the operational environment.

**Article 5.07 Navigability while going astern**

1. Where the stopping manoeuvre required by Article 5.06 is carried out in still water it shall be followed by a navigation test while going astern.

**Article 5.08 Capacity for taking evasive action**

1. Vessels shall be able to take evasive action in good time.

**Article 5.09 Turning capacity**

1. Vessels shall be able to turn in good time. That turning capacity may be replaced by the stopping capacity referred to in Article 5.06. The turning capacity shall be proven by means of turning manoeuvres against the current.

**CHAPTER 6 STEERING SYSTEM****Article 6.01 General requirements**

1. Vessels shall be fitted with a steering system providing at least the manoeuvrability required by Chapter 5 of this standard.
2. Powered steering systems shall be designed in such a way that the rudder cannot change position unintentionally.
3. The steering system as a whole shall be designed for *static* lists of up to 15 ° and ambient temperatures from - 20° C to + 50° C.
4. The component parts of the steering system shall be robust enough to be able to withstand the stresses to which they may be subjected during normal operation.
5. The steering system shall incorporate a powered drive unit if so required by the forces needed to actuate the rudder.
6. A steering gear with powered drive unit shall be protected against overloads by means of a system that restricts the torque applied by the drive unit.
7. The penetrations for the rudder stock(s) shall be so designed as to prevent the escape of water-polluting lubricants.

**Article 6.02 Steering-gear control system**

1. If the steering gear has a powered drive unit, it shall be possible to bring a second control system or manual control into use quickly if the steering-control system fails or malfunctions, in order to maintain control of the vessels.
2. If the second drive unit or manual drive unit is not placed in service automatically it shall possible for the helmsman to readily engage it by a simple operation.
3. The second drive unit or manual drive unit shall ensure the manoeuvrability required by Chapter 5 of this regulation to be ensured.

**Article 6.03 Steering-system hydraulic drive**

1. Where a hydraulic drive unit is fitted for the steering system, it shall be a dedicated system that does not supply any other equipment. Where there are two independent drive units such a

connection to one of the two systems is however acceptable if the consumers are connected to the return line and may be disconnected from the drive unit by means of an isolating device.

2. Where there are two hydraulic systems a separate hydraulic reservoir is needed for each of the two systems. Double reservoirs are acceptable, providing in the event of a loss of hydraulic oil from one system it is possible to isolate the damaged system in such a way that the second control system remains fully serviceable. Hydraulic reservoirs shall be fitted with a warning system that monitors any drop in the oil level below the lowest content level needed for reliable operation.

3. The steering actuation does not have to be duplicated if this can be actuated manually or by hand hydraulic drive from the wheelhouse.

4. The dimensions, design and arrangement of the pipework shall as far as possible exclude mechanical damage or damage resulting from fire.

5. As far as hydraulic drive units are concerned no separate pipework system is required for the second unit if independent operation of the two units is guaranteed and if the pipework system is able to withstand a pressure of at least 1.5 times that of the maximum service pressure.

6. Flexible piping is only permitted where its use is essential in order to damp vibrations or to allow freedom of movement of components. It shall be designed to withstand a pressure at least 1.5 times that of the maximum service pressure.

#### **Article 6.04 Power source**

1. Steering systems fitted with two powered drive units shall have at least two power sources.

2. If the second power source for the powered drive units is not constantly available while the vessel is under way a buffer device carrying adequate capacity shall provide back up during the period needed for start up.

3. The main electrical power sources for steering gear shall not supply any other equipment, i.e. it shall have a separate safety device.

#### **Article 6.05 Manual actuation**

1. The hand-operated wheel shall not be driven by a powered drive unit.

2. Regardless of rudder position a kick-back of the wheel shall be prevented when the manual drive unit is engaged automatically.

#### **Article 6.06 Rudder-propeller, water-jet, cycloidal-propeller, and bow-thruster systems**

1. Where the thrust vectoring of rudder-propeller, water-jet, cycloidal-propeller or bow-thruster installations is remotely actuated by electric, hydraulic or pneumatic means, there shall be two actuation systems, each independent of the other, between the wheelhouse and the propeller or thrusters installation which shall meet the requirements of Articles 6.01 to 6.05.

Such systems are not subject to this section if they are not needed in order to achieve the manoeuvrability required by Chapter 5 of this regulation or if they are only needed for the stopping test.

2. Where there are two or more rudder-propeller, water-jet, cycloidal-propeller or bow-thruster installations that are independent of each other the second actuation system is not necessary if the vessel retains the manoeuvrability required by Chapter 5 of this regulation if one of the systems fails.

#### **Article 6.07 Indicators and monitoring devices**

1. The rudder position shall be evident from or clearly displayed at the steering position. If the rudder-position indicator is electric it shall have its own power supply, i.e. to be the only item on that fused distribution circuit.

2. The following indicators and monitoring devices shall be provided at the steering position: where the equipment referred to is fitted on the vessel-

(a) oil level in the hydraulic reservoirs in accordance with Article 6.03, section 2, and service pressure of the hydraulic system;

(b) failure of the electrical supply for the steering control;

(c) failure of the electrical supply for the drive units;

(d) failure of the rate-of-turn regulator;

(e) failure of the required buffer devices.

**Article 6.08 Rate-of-turn regulators**

1. If fitted the rate-of-turn regulators and their components shall meet the requirements laid down in the appropriate IEC standard.
2. The proper functioning of the rate-of-turn regulator shall be displayed at the steering position by means of a green indicating light.  
Any lack of or unacceptable variations in the supply voltage and an unacceptable decrease in the speed of rotation of the gyroscope shall be monitored.
3. Where, in addition to the rate-of-turn regulator, there are other steering systems, it shall be possible to distinguish clearly at the steering position which of these systems has been activated. It shall be possible to shift from one system to another immediately. The rate-of-turn regulator shall not have any influence on these other steering systems.
4. The electricity supply to the rate-of-turn regulator shall be independent of that for the other power consumers, i.e. it shall have a separate safety device.
5. The gyroscopes, detectors and turn displays used in the rate-of-turn regulators shall meet the minimum requirements of the minimum specifications and test conditions concerning rate-of-turn displays for inland waterways as laid down in *annex VIII of the EU Directive 82/714/EEC*.

**Article 6.09 Acceptance procedure**

1. The compliance of the installed steering system shall be checked by the certifying authority. They may, for this purpose, request the following documents, which shall be retained by the owner:
  - (a) description of the steering system;
  - (b) drawings and information on the drive units and steering controls;
  - (c) information concerning the steering gear;
  - (d) electrical wiring diagram;
  - (e) description of the rate-of-turn regulator;
  - (f) operating instructions for the steering system.
2. Operation of the entire steering system shall be checked by means of a navigation test. If a rate of turn regulator is installed, it shall be checked that a predetermined course can be reliably maintained by the rate-of-turn regulators and that bends can be negotiated safely.

**CHAPTER 7 WHEELHOUSE****Article 7.01 General**

1. Wheelhouses shall be arranged in such a way that the helmsman may at all times perform his task while the vessel is under way.
2. Under normal operating conditions sound pressure generated by the vessel itself and measured at the steering position shall not exceed 70 dB(A).

**Article 7.02 Unobstructed view**

- [1. There shall be an adequately unobstructed view in all directions from the steering position.
2. The area of obstructed vision for the helmsman ahead of the vessel in an unladen state with half of its supplies but without ballast shall not exceed two vessel lengths or 250 m, whichever is less, to the surface of the water over an arc from abeam on either side through right ahead of the vessel. Optical and electronic means for reducing the area of restricted vision may not be taken into account during the inspection.  
To further reduce any area of obstructed vision, only suitable electronic devices shall be used.
3. The helmsman's field of unobstructed vision at his normal position shall be at least 240° of the horizon and at least 140° within the forward semicircle.  
No window frame, post or superstructure shall lie within the helmsman's usual axis of view. Even in the case where a field of unobstructed vision of 240° of the horizon is provided the inspection body may require other measures and in particular the installation of suitable auxiliary optical or electronic devices if no sufficiently unobstructed view is provided towards the rear.

The height of the lower edge of the side windows shall be kept as low as possible, the height of the upper edge of the side and rear windows shall be kept as high as possible.

In determining whether the requirements in this Article for visibility from the wheelhouse are met the helmsman shall be assumed to have a height of eye of 1650 mm above the deck at the steering position.

5. The upper edge of the forward facing windows of the wheelhouse shall be high enough to allow a person at the steering position with height of eye of 1800 mm a clear forward view to at least 10 degrees above the horizontal at height of eye level.

6. There shall in all weathers be suitable means of providing a clear view through the windscreen.

7. The glazing used in wheelhouses shall be made of safety glass and have a light transmission of at least 75%.

To avoid reflections, the bridge front windows shall be glare-free and inclined from the vertical plane, top out at an angle of not less than 10° and not more than 25°].

(NOTE: THIS ARTICLE IS IN SQUARE BRACKETS BECAUSE IT IS FROM THE CURRENT VERSION OF THE PROPOSED AMENDED EU DIRECTIVE 82/714/EEC. HOWEVER, THE UK HAS SUBMITTED A DISCUSSION PAPER ON THIS SUBJECT TO THE RHINE COMMISSION).

#### **Article 7.03 General requirements concerning control, display and monitoring equipment**

1. Control equipment needed to operate the vessel shall be brought into its operating position easily. That position shall be unambiguously clear.

2. Monitoring instruments shall be easily legible. It shall be possible to adjust their lighting steplessly down to their extinction. Light sources shall be neither intrusive nor impair the legibility of the monitoring instruments.

3. There shall be a system for testing the warning and indicating lights.

4. It shall be possible to establish clearly whether a system is in operation. If its functioning is indicated by means of an indicating light this shall be green.

5. Any malfunctioning or failure of systems that requires monitoring shall be indicated by means of red warning lights.

6. An audible warning shall sound at the same time that a red warning light lights up. Audible warnings may consist of a single, common signal. The sound pressure level of that signal shall exceed the maximum sound pressure level of the ambient noise at the steering position by at least 3 dB(A).

7. The audible warning system may be switched off after a malfunction or failure has been acknowledged. This shall not prevent the alarm signal from being triggered by other malfunctions. The red warning lights shall only go out when the malfunction has been corrected.

8. The monitoring and indicating devices shall be automatically switched to an alternative power supply if their own power supply fails.

#### **Article 7.04 Specific requirements concerning control, indicating and monitoring equipment of main engines and steering systems**

1. It shall be possible to control and monitor the main engines and steering systems from the steering position. The main engine fitted with a clutch which can be actuated from the steering position, or driving a controllable pitch - propeller which can be controlled from the steering position, need only be capable of being started up and shut down from the engine room.

2. The control for each main engine shall be unambiguous and intuitive in operation (actuation of the control in a forward direction shall cause forward motion of the vessel; similarly actuation of the control towards the stern shall cause the vessel to move astern).

3. The indicating and monitoring devices required by Article 6.07, section 2, Article 8.03, section 2, and Article 8.05, section 11, shall be located at this steering position.

4. The remote-control equipment for the entire steering system shall be installed in a permanent manner and be arranged in such a way that the course selected is clearly visible. If the remote control equipment can be disengaged it shall be equipped with an indicator displaying the respective operational conditions 'in service' or 'out of service'. The disposition and manipulation of the controls shall be unambiguous and functional.

For systems that are subsidiary to the steering system, such as active bow thrusters, remote control equipment not permanently installed shall be acceptable provided that such a subsidiary installation can be activated by means of an override at any time within the wheelhouse.

5. In the case of rudder-propeller-, water-jet, cycloidal-propeller and bow-rudder systems, equivalent devices shall be acceptable as control, indicating and monitoring devices.

6. The requirements set out in sections 1 to 5 shall apply in view of the specific characteristics and arrangements selected for the above mentioned active steering and propulsion units. The position of the indicating device shall clearly show, for each installation, the direction of the thrust acting on the vessel or the direction of the jet.

#### **Article 7.05 Navigation lights, light signals and sound signals - control and monitoring**

1. Lights, Shapes and Signals are to be fitted in compliance with *the Distress Signals and Prevention of Collision Regulations*. See also Article 10.02.1(b)

2. Current indicating lights or any other equivalent devices, like indicating lights for monitoring the navigation lights shall be installed in the wheelhouse unless that monitoring can be performed direct from the wheelhouse.

#### **Article 7.06 Internal communications systems on board**

1. There shall be reliable means of internal communication appropriate to the vessel – e.g. with bow and stern of the vessel, crew accommodation and boatmaster's cabin.

#### **Article 7.07 Alarm system**

1. There shall be a dedicated general alarm system enabling the accommodation, engine spaces and, where appropriate, the separate pump rooms to be reached.

2. The helmsman shall have within reach an on/off switch controlling the alarm signal; switches which automatically return to the off position when released are not acceptable.

3. The sound pressure level for the alarm signal shall be at least 75 dB(A) within the accommodation area. In engine spaces and pump rooms the alarm signal shall, in addition to the sound signal, take the form of a flashing light that is visible on all sides and clearly perceptible at all points.

#### **Article 7.08 Heating and ventilation**

1. Wheelhouses shall be equipped with an effective heating and ventilation system that can be regulated.

#### **Article 7.09 Retractable wheelhouses**

1. Variable-height wheelhouses shall be fitted with an emergency lowering system.

All lowering operations shall automatically trigger a clearly audible warning signal. This requirement shall not apply if the risk of corporal injury which may result from the lowering is prevented by appropriate design features. It shall be possible to enter and leave the wheelhouse safely whatever its position. Facility shall be provided to be able to lock the mechanism during maintenance.

#### **Article 7.10 Compass and navigation publications**

1. A magnetic compass shall be provided for use at the steering position in vessels that operate in category C and D waters. A deviation card shall be provided. A fluxgate compass may be used as an alternative, providing it is connected to the emergency power supply.

2. Publications are to be carried sufficient to plan, monitor and display the ship's route for the intended trip, and where appropriate to plot positions throughout. The publications will include appropriate charts or waterway maps for the area of operation and, depending on availability, tide tables as appropriate and local notices to shipping from statutory navigation authorities. A consolidated nautical almanac may be used for coastal areas. An electronic chart display and information system (ECDIS) may be accepted, provided that an appropriate folio of paper charts is carried as a back-up.

### **CHAPTER 7a Additional requirements for wheelhouses that have been configured for radar navigation by a single person.**

**Article 7.01a General**

1. Where a wheelhouse has been configured for radar navigation by a single person the helmsman shall be able to accomplish his task while seated. All of the display or monitoring instruments and all of the controls needed for operation of the vessel shall be arranged in such a way that the helmsman may use them comfortably while the vessel is under way without leaving his position or losing sight of the radar screen.

**Article 7.02a Equipment for controlling, displaying and monitoring the operation of the power plants and steering system**

1. The direction of the power-plant thrust imparted to the vessel and the rotational speed of the propeller or drive engines shall be displayed inside wheelhouses that have been designed for radar navigation by one person.
2. The steering system for the vessel shall be controlled by means of a lever (or equivalent) in wheelhouses that have been designed for radar navigation by one person. It shall be possible to move that lever easily by hand. The position of the lever in relation to the longitudinal axis of the vessel shall correspond precisely to the position of the rudder blades. It shall be possible to release hold of the lever (or equivalent mechanism) in any given position without that of the rudder blades changing. The neutral position of the lever shall be clearly perceptible
3. Where, in wheelhouses arranged for radar navigation by one person the vessel is fitted with bow rudders or special rudders, particularly for going astern, these shall be actuated by special levers which, meet the requirements set out in paragraph 2. That requirement shall also apply where, in combinations of craft, the steering system fitted to craft other than those powering the combination is used.

**Article 7.03a Control and monitoring of navigation lights, light signals and sound signals**

1. In wheelhouses designed for radar navigation by one person indicating lights shall be installed on the control panel in order to monitor the navigation lights. The layout and colour of the warning lights for the navigation lights shall correspond to the actual position and colour of those lights. The failure of navigation light to function shall cause the corresponding indicating light either to go out or to provide a signal in another manner.
2. In wheelhouses that have been designed for radar navigation by one person. it shall be possible to activate the sound signals by a foot operated switch.

**Article 7.04a Radio telephony systems for vessels with wheelhouses designed for radar navigation by one person**

1. Where vessel wheelhouses have been designed for radar navigation by one person reception from the vessel-vessel networks and that of nautical information shall be via a loudspeaker, and outgoing communications via a fixed microphone. Send/receive shall be selected by means of a push-button. It shall not be possible to use the microphones of those networks for the public correspondence network.
2. Where vessel wheelhouses that have been designed for radar navigation by one person are equipped with a radio telephone system for the public correspondence network, reception shall be possible from the helmsman's seat.

**Article 7.05a Radar installations and rate-of-turn indicators**

1. If fitted, the radar equipment and rate-of-turn indicators shall be of a type that meets EU standards for inland waterway vessels. The requirements concerning installation and operational monitoring of radar equipment and rate-of-turn indicators, as laid down in the appropriate standard, shall be met. The rate-of-turn indicator shall be located ahead of the helmsman and within his field of vision.
2. In wheelhouses designed for radar navigation by one person:
  - (a) the radar screen shall not be shifted significantly out of the helmsman's axis of view in its normal position;
  - (b) the radar image shall continue to be perfectly visible, without a mask or screen, whatever the lighting conditions outside the wheelhouse;

(c) the rate-of-turn indicator shall be installed directly above or below the radar image or be incorporated into this.

3. Where rate of turn regulators are used it shall be possible for the rate of turn control to be released in any given position without altering the speed selected. The control shall turn through a wide enough arc to guarantee adequately precise positioning. The neutral position shall be clearly distinguished from the other position. It shall be possible to set the scale illumination so as to be infinitely variable.

#### **Article 7.06a Entry in the inspection certificate of vessels that have been designed for radar navigation by one person**

Where a vessel complies with chapter 7a in respect of wheelhouses that have been designed for radar navigation by one person, the following statement shall be entered in the certificate:

'The vessel has special wheelhouse arrangements for steering on radar by one person`.

### **CHAPTER 8 ENGINE DESIGN**

#### **Article 8.01 General**

1. Engines and their auxiliaries shall be designed, built and installed in accordance with best practice/current standards. Reconditioned or rebuilt engines are to comply with current requirements including those for exhaust and noise emissions.

2. Installations requiring regular inspection such as steam boilers, other pressure vessels and their accessories, together with lifts, shall meet current EU regulations.

3. Only internal-combustion engines burning fuels having a flashpoint of more than 55 °C may be installed.

#### **Article 8.02 Safety equipment**

1. Engines shall be installed and fitted in such a way as to be adequately accessible for operation and maintenance and shall not endanger the persons assigned to those tasks. It shall be possible to make them secure against unintentional starting.

2. Main engines, auxiliaries, boilers and pressure vessels, and their accessories, shall be fitted with safety devices.

3. In case of emergency, it shall also be possible, to shut down the motors driving the blower and suction fans from outside the space in which they are located, and from outside the engine room.

4. It shall be possible to close all engine room vents from outside the space.

#### **Article 8.03 Main Propulsion**

1. It shall be possible to start, stop and reverse the ship's propulsion safely and quickly.

2. The following shall be monitored by suitable devices which trigger an alarm once a critical level has been reached:

(a) the temperature of the main-engine cooling water;

(b) the lubricating-oil pressure for the main engines and transmissions;

(c) the oil and air pressure of the main engine reversing units, reversible transmissions or propellers.

These main propulsion monitoring devices requirements do not apply to vessels under 24 metres load line length.

3. Where vessels have only one main engine that engine shall not be shut down automatically except in order to protect against over-speed.

4. Shaft seals shall be designed in such a way as to prevent the escape of water-polluting lubricants.

#### **Article 8.04 Engine exhaust system**

1. The exhaust gases shall be completely ducted out of the vessel.

2. All suitable measures shall be taken to avoid ingress of the exhaust gases into the various compartments. Dry exhaust pipes passing through accommodation or the wheelhouse shall, within these, be covered by protective gas-tight sheathing. The gap between the exhaust pipe and this

sheathing shall be open to the outside air. Other types of exhaust shall have equivalent arrangements.

3. The exhaust pipes shall be arranged and protected in such a way that they cannot cause a fire.

4. The exhaust pipes shall be suitably insulated or cooled in the engine rooms. Protection against physical contact may suffice outside the engine rooms.

#### **Article 8.05 Fuel tanks, pipes and accessories**

1. Liquid fuels shall be stored in steel tanks which are either an integral part of the hull or which are firmly attached to the hull. If so required by the design of the vessel, an equivalent material in terms of fire-resistance may be used. These requirements shall not apply to tanks having a capacity of no more than 12 litres that have been incorporated in auxiliaries during their manufacture. Fuel tanks shall not have common partitions with drinking-water tanks.

2. Tanks and their pipework and other accessories shall be laid out and arranged in such a way that neither fuel nor fuel vapours may accidentally reach the inside of the vessel. Tank valves intended for fuel sampling or water drainage shall close automatically.

3. No fuel tanks may be located forward of the collision bulkhead.

4. Fuel tanks and their fittings shall not be located directly above engines or exhaust pipes.

5. The filler orifices for fuel tanks shall be marked distinctly.

6. The orifice for the fuel tank filler necks shall be outside on the deck, except for the small tanks referred to in paragraph one of this article. The filler neck shall have an effective closing device. Such tanks shall be fitted with a breather pipe terminating in the open air above the deck and arranged in such a way that no water ingress is possible; such vents shall be fitted with flame arresting screen. The section of the breather pipe shall be at least 1.25 times the cross section of the filler neck. Also the area of the clear opening of the flame arresting screen shall not be less than the cross sectional area of the breather pipe.

If tanks are interconnected, the section of the connecting pipe shall be at least 1.25 times the cross section of the filler neck.

7. Directly at tank outlets the pipework for the distribution of fuels shall be fitted with a shutoff device that can be operated from the deck.

This requirement shall not apply to tanks mounted directly on the engine.

8. Fuel pipes, their connections, seals and fittings shall be made of materials that are able to withstand the mechanical, chemical and thermal stresses to which they are likely to be subjected. The fuel pipes shall not be subjected to any adverse influence of heat and it shall be possible to inspect them throughout their length. Flexible hoses carrying flammable liquids are to be fire rated to half hour / 800 °C standards where fitted to fuel systems.

9. Where necessary, connections of pipes which carry fuel oil shall be screened or otherwise suitably protected to avoid oil spray or leakages onto hot surfaces, into machinery air intakes, or other sources of ignition. The number of connections in such piping systems shall be kept to a minimum.

10. Vessels with engine spaces containing main engines or main generators having an aggregate power output of 375 kW and over, operating in category C and D waters, shall comply with MSN 1699 (M) page 27, paragraphs 11-14. Vessels with engine spaces containing main engines or main generators having an aggregate power output of less than 375 kW operating on category C and D waters shall comply with MSN 1699 (M) page 27, paragraphs 11-14 as reasonably practicable; derogation from MSN 1699 (M) shall be supported by a risk assessment and appropriate risk control measures. Risk control measures may include fitting shrouds or shields (enclosure) over high pressure lines to deflect fuel leaks from high temperature components and insulating any high temperature areas (> 220 degrees C). These requirements do not apply to vessels under 24 metres load line length.

11. Fuel tanks shall be provided with a suitable means for checking tank content level.

Capacity-gauging devices shall be legible right up to the maximum filling level. Sight gauges shall be effectively protected against impacts, shall be fitted with an automatic closing device at their base and their upper end shall be connected to the tanks above their maximum filling level. The material used for sight gauge tubes shall not deform under normal ambient temperatures. Sounding pipes

shall not terminate in accommodation spaces. Sounding pipes terminating in an engine or boiler room shall be fitted with suitable self-closing devices.

12. Fuel tanks shall be safeguarded against fuel spills during bunkering by means of appropriate measures.

13. If fuel tanks are fitted with an automatic shut-off device, the sensors shall stop fuelling when the tank is 97% full; this equipment shall meet the "failsafe" requirements.

If the sensor activates an electrical contact, which can break the circuit provided by the bunkering station by a binary signal, it shall be possible to transmit the signal to the bunkering station by means of a watertight connection plug meeting the requirements of IEC publication 60309-1:1999 for 40 to 50 V DC, housing colour white, grounding contact position ten o'clock.

14. Fuel tanks shall be provided with openings having leak-proof closures that are intended to permit cleaning and inspection.

15. Fuel tanks directly supplying the main engines and engines needed for safe operation of the vessel shall be fitted with a device emitting both visual and audible signals in the wheelhouse if their level of filling is not sufficient to ensure further safe operation. This requirement does not apply to vessels under 24 metres load line length.

#### **Article 8.06 Storage of lubricating oil, pipes and accessories**

1. Lubricating oil shall be stored in steel tanks which are either an integral part of the hull or which are firmly attached to the hull. If so required by the design of the vessel, an equivalent material in terms of fire-resistance may be used. These requirements shall not apply to tanks having a capacity of no more than 25 litres. Lubricating oil tanks shall not have common partitions with drinking-water tanks.

2. Lubricating oil tanks and their pipework and other accessories shall be laid out and arranged in such a way that neither lubricating oil nor lubricating oil vapour may accidentally reach the inside of the vessel.

3. No lubricating oil tanks may be located forward of the collision bulkhead.

4. Lubricating oil tanks and their fittings shall not be located directly above engines or exhaust pipes.

5. The filler orifices for lubricating oil tanks shall be marked distinctly.

6. Lubricating oil pipes, their connections, seals and fittings shall be made of materials that are able to withstand the mechanical, chemical and thermal stresses to which they are likely to be subjected. The pipes shall not be subjected to any adverse influence of heat and it shall be possible to inspect them throughout their length.

7. Lubricating oil tanks shall be provided with a suitable means for checking tank capacity. Capacity-gauging devices shall be legible right up to the maximum filling level. Sight gauges shall be effectively protected against impacts, shall be fitted with an automatic closing device at their base and their upper end shall be connected to the tanks above their maximum filling level. The material used for the sight gauge tubes shall not deform under normal ambient temperatures. Sounding pipes shall not terminate in accommodation spaces. Sounding pipes terminating in an engine or boiler room shall be fitted with suitable self-closing devices.

#### **Article 8.07**

##### **Storage of oils used in power transmission systems, control and activating systems and heating systems, pipes and accessories**

1. Oils used in power transmission systems, control and activating systems and heating systems shall be stored in steel tanks which are either an integral part of the hull or which are firmly attached to the hull. If so required by the design of the vessel, an equivalent material in terms of fire-resistance may be used. These requirements shall not apply to tanks having a capacity of no more than 25 litres. Such oil tanks shall not have common partitions with drinking-water tanks.

2. Such oil tanks and their pipework and other accessories shall be laid out and arranged in such a way that neither such oil nor such oil vapour may accidentally reach the inside of the vessel.

3. No such oil tanks may be located forward of the collision bulkhead.

4. Such oil tanks and their fittings shall not be located directly above engines or exhaust pipes.

5. The filler orifices for such oil tanks shall be marked distinctly.

6. Such oil pipes, their connections, seals and fittings shall be made of materials that are able to withstand the mechanical, chemical and thermal stresses to which they are likely to be subjected. The pipes shall not be subjected to any adverse influence of heat and it shall be possible to inspect them throughout their length.

7. Such oil tanks shall be provided with a suitable means for checking tank capacity. Capacity-gauging devices shall be legible right up to the maximum filling level. Sight gauges shall be effectively protected against impacts, shall be fitted with an automatic closing device at their base and their upper end shall be connected to the tanks above their maximum filling level. The material used for the sight gauge tubes shall not deform under normal ambient temperatures. Sounding pipes shall not terminate in accommodation spaces. Sounding pipes terminating in an engine or boiler room shall be fitted with suitable self-closing devices.

## Article 8.08 Bilge pumping and drainage systems

### 8.08.01 General System Requirements

1. Every vessel should have an efficient bilge pumping system, such that any compartment (other than a tank permanently used for the carriage of liquids which is provided with efficient means of pumping or drainage) can be drained.
2. Provided the safety of a vessel is not impaired, the Certifying Authority may permit dispensation from the means of pumping or drainage of particular compartments.
3. When considered necessary, to prevent back flooding, bilge suction valves should be of non return type.
4. Means of providing efficient bilge pumping other than those described in this text may be considered provided that full information is submitted to and approved by the Certifying Authority.
5. Reference should be made to byelaws which contain requirements for prevention of pollution of the waterways.

### Specific requirements

6. It shall be possible to pump each separate compartment dry, in the event of failure of any one bilge pump.
7. In vessels with engines up to 225kW at least one power bilge pump is to be provided which may be worked from the main engine. In addition, hand pump suction is to be fitted and a hand pump provided.
8. In vessels with engines exceeding 225 kW at least two power bilge pumps are to be provided, one of which may be worked from the main engine and the other is to be independently driven.
9. The pumping capacity shall be calculated via the formula:

$$Q1 = 0,1 \cdot d1^2 \text{ [l/min]}$$

d1 is the diameter of the main bilge line:

$$d1 = 1,5 \cdot \sqrt{(L (B + D)) + 25} \text{ [mm]}$$

the diameter of the branch bilge lines d2 shall be:

$$d2 = 2 \cdot \sqrt{(l (B + D)) + 25} \text{ [mm]}$$

However, the value d2 need not exceed value d1.

In these formulae:

L = the length of the vessel in metres

B = the breadth of the vessel in metres

D = depth of the vessel in metres

l = the length of the sealed compartment in metres;

10. In no case are d1 or d2 to be taken as less than 35 mm.
11. Only self-priming drainage pumps are acceptable.
12. When considered necessary to protect the bilge suction line from obstruction, an efficient strum box should be provided. There must be at least one strum box on both the starboard and port sides of all flat-bottomed, drainable compartments that are wider than 5 m.
13. The drainage spurs for the various compartments shall be linked to the main drain by means of a lockable non-return valve. The compartments or other spaces fitted out for ballast may only be linked to the drainage system by means of a single closing device. That requirement shall not apply to holds fitted out for ballast. Such holds shall be filled with ballast water by means of ballast piping that is permanently installed and independent of the drainage pipes.
14. The hold bottoms shall be fitted with a means of gauging.
15. The bilge-bottom drainage pipes intended to extract oily water shall be equipped with closures that have been sealed in position by the certifying authority. The number and position of those closures shall be entered on the certificate.
16. Bilge Alarms should be fitted in any watertight compartment containing propulsion machinery. The alarm should provide an audible warning and preferably a visual warning also, at the control position.

#### **8.08.02 Vessels under 24m load line length.**

1. The general and the specific requirements of 8.06.01 are applicable to all vessels, except that the specific provisions of paragraphs 7, 8, 9 and 10 do not apply to vessels under 24 metres load line length.
2. These vessels shall have at least one hand and one power driven bilge pump (may be main engine driven or independent power driven) situated in two separate spaces. Vessels less than 6 metres in overall length need only be provided with a hand powered bilge pump, in which case paragraph 8.06.1 (6) does not apply.
3. The capacities of the bilge pumps should be to the satisfaction of the certifying authority and be capable of pumping the spaces dry.

#### **Article 8.09 Oily-water and drained-oil stores**

1. It shall be possible to store on board oily water accumulated during operation .
2. In order to store used oils there shall be one or several tanks in the engine room,, whose capacity corresponds to at least 1,5 times the quantity of the used oils from the sumps of all of the internal combustion engines and transmissions installed, together with the hydraulic fluids from the hydraulic-fluid tanks.
3. For vessels under 24 metres load line length, where space constraints prevent the fitting of storage tanks for waste oils etc, provision must be made so that used oils can be safely stored on board until they can be properly disposed of ashore, taking account of the operating pattern of the vessel and the availability of disposal facilities. The procedures for storage and disposal arrangements must be documented, for auditing by the competent authority.

#### **Article 8.10 Noise emitted by vessels**

1. The noise produced by a vessel under way, and in particular the engine air intake and exhaust noises, shall be damped by using appropriate means.
2. The noise generated by machinery on a vessel under way shall not exceed [75 dB(A)] at lateral distance of 25 m from the ship's side.
3. Apart from transshipment operations the noise generated by the machinery on a stationary vessel shall not exceed [65 dB(A)] at a lateral distance of 25 m from the ship's side.

**CHAPTER 9 ELECTRICAL EQUIPMENT**

The electrical equipment and installation is to be in accordance with [*Regulation 13 of the Provision and Use of Work Equipment (PUWER) 2004 Regulations - soon to become Statutory Instrument*]. If the electrical installation complies with either *Chapter 9 of the revised EU Directive 82/714 or the relevant parts of IEC Standard 60092- 507 Electrical Installations in Ships – Small Vessels* [now at Committee draft version stage – nearing completion] it is deemed to comply with the PUWER 2004 Regulations. However, the IEC Standard does not apply to small vessels equipped with a battery, for engine starting and navigation lighting only, which is recharged from an inboard or outboard engine driven alternator. Guidance for such a craft may be found in the relevant parts of Section 8 of the Small Commercial Vessels (SCV) Code.

(NOTE: THE SQUARE BRACKETS RELATE RESPECTIVELY TO PENDING REGULATIONS AND IEC STANDARDS)

**CHAPTER 10 SAFETY EQUIPMENT****Article 10.01 Anchors, chains and anchor hawsers**

1. The bows of vessels intended for the carriage of goods operating in category B, C, & D waters (apart from ship-mounted lighters whose length L does not exceed 40 m) and tugs, shall be equipped with anchors. The type and size of anchors may be approved by a Classification Society or, if the vessel has a load line length of 24 metres and over, it may comply with the requirements of sections 2-4 below. A vessel of 24 metres load line length or over, operating in category B waters only, may comply with the reduced requirements in Chapter 8 of UNECE Guidance [Currently under development].

However a vessel of under 24 metres load line length may comply with the Small Commercial Vessel (SCV) Code - Section 20, assuming area of operation is Category 6. Due note is to be taken of 20.2.4 in respect of vessels of unusual or non-conventional forms, when the anchors and cables are to be of the satisfaction of the MCA.

2. The total mass P of the bow anchors is obtained from the following formula:

$$P = k \cdot B \cdot T \text{ [kg]}$$

Where

K is a coefficient that takes account of the relationship between length L and beam B, and of the type of vessel.

$$k = c \sqrt{L/(8.B)}$$

for pushed lighters, however,  $k=c$  will be taken.

c is an empirical coefficient given in the following table.

| Deadweight tonnage | Coefficient (c) |
|--------------------|-----------------|
| ≤ 400 t            | 45              |
| > 400 and ≤ 650 t  | 55              |
| > 650 and ≤ 1000 t | 65              |
| > 1000 t           | 70              |

On vessels whose deadweight is not greater than 400 t and which, owing to their design and intended purpose, are only used on predetermined short-haul sections, the Certifying Authority may accept that only two-thirds of total mass P is required for the bow anchors.

Pusher tugs shall have equipment suitable for their intended operation and will be specially considered by the certifying authority.

3. The anchor masses established in accordance with Sections 1 may be reduced for certain special anchors, in accordance with Classification Society Inland Waterway Rules.

4. Total mass P specified for bow anchors may be distributed among one or two anchors. It may be reduced by 15 % where the vessel is only equipped with a single bow anchor and the hawse pipe is located on the centre line. The mass of the lightest anchor should not be less than 45 % of that total mass.

5. Cast iron anchors shall not be permitted.

6. The mass of the anchors shall stand out in relief in a durable manner.

7. Anchors having a mass in excess of 30 kg shall be equipped with windlasses.

8. Each anchor chain shall have a minimum length of:

(a) at least 40 m for vessels not exceeding 30 m in length;

(b) at least 10 m longer than the vessel where it is between 30 and 50 m in length;

(c) at least 60 m where vessels are more than 50 m in length.

Vessels operating in tidal areas shall have equipment suitable for use with the tidal ranges encountered.

9. The minimum tensile strength of the anchor chains shall be calculated by means of the following formulae:

(a) anchors having a mass of 0-500 kg:  $R = 0.35 \cdot P'$  [kN];

(b) anchors having a mass of more than 500 kg and not exceeding 2 000 kg:

$$R = (0,35 - ((P' - 500)/15000)) \cdot P' \text{ [kN];}$$

(c) anchors having a mass of more than 2 000 kg:

$$R = 0.25 P' \text{ [kN].}$$

In these formulae  $P'$  is the theoretical mass of each anchor determined in accordance with sections 1 to 4 and 6.

Anchor chains shall be designed and tested in accordance EN 14330:2003.

Where the anchors have a mass greater than that required by sections 1, the tensile strength of the anchor chain shall be determined as a function of that highest anchor mass.

10. If the equipment of a vessel includes heavier anchors with correspondingly stronger anchor chains, the information to be entered in the certificate shall however not mention the masses and theoretical tensile strengths arising from meeting the requirements of sections 1 and 8.

11. The attachments between anchor and chain shall withstand a tensile load 20 % higher than the tensile strength of the corresponding chain.

12. The use of cables instead of anchor chains may be authorised. The cables shall have the same tensile strength as that required for chains, but shall be 20 % longer.

#### **Article 10.02 Other equipment**

1. The following shall be on board:

(a) A fixed VHF radio for operation in category B, C and D waters. Vessels transiting category B waters (i.e. normally operating in category A waters only) may use a portable (i.e. handheld) VHF radio.

(b) an appliance to provide sound signals, a basic set of shapes (not required on category A waters) and a searchlight (this need not be fixed);

(c) independent back-up lights for the prescribed mooring lights;

(d) a fire-proof, marked receptacle, with cover, to receive oily cleaning cloths;

(e) a fire-proof, marked receptacle, with cover, to receive other solid wastes,

(f) A heaving line;

(g) A boat hook;

(h) A first aid kit;

(i) A pair of binoculars, minimum  $7 \times 50$  (Category B, C & D waters only);

(j) A notice concerning the rescue of persons overboard shall be prominently displayed;

(k) A radar reflector, for non-metallic hulls on category B, C and D waters.

(l) Two red hand flares and two buoyant smoke signals (3 minute type) shall be provided for operation on category C and D waters; rocket flares are recommended for category D waters and may be required on the advice of the local navigation authority.

2. In addition, the equipment shall include at least:

(a) Mooring cables:

Vessels shall be fitted with three mooring cables. Their minimum lengths shall be appropriate for normal operational conditions.

These cables shall have a tensile strength  $R_s$  that is calculated in accordance with the following formulae;

For  $L \cdot B \cdot T$  up to  $1000 \text{ m}^3$   $R_s = 60 + (L \cdot B \cdot T) / 10$  [kN];

For  $L \cdot B \cdot T$  exceeding  $1000 \text{ m}^3$ :  $R_s = 150 + (L \cdot B \cdot T) / 100$  [kN].

These cables may be replaced by synthetic-fibre rope having the same length and tensile strength.

(b) Tugs, self propelled barges and pusher tugs shall be equipped with a number of towing cables that are suitable for their operation.

### Article 10.03 Fire-fighting equipment

1. There shall be on board at least:

- |     |  |                               |
|-----|--|-------------------------------|
| (a) | In the wheelhouse:   | 1 portable fire extinguisher; |
| (b) | Close to each means of access to the deck and accommodation;   | 1 portable fire extinguisher; |
| (c) | Close to each means of access to service premises that are not accessible from the accommodation, and which contain heating, cooking or refrigeration equipment using solid or liquid fuels: | 1 portable fire extinguisher; |
| (d) | At each entrance to the engine room and boiler rooms:  | 1 portable fire extinguisher; |
| (e) | At suitable points in engine rooms and boiler rooms such that no position in the space is more than 10 metres away from an extinguisher, unless this provision is met by (d).                | 1 portable fire extinguisher; |
| (f) | By the galley  | 1 fire blanket.               |

2. Portable fire extinguishers shall meet the following conditions:

(a) Portable fire extinguishers required by section 1 shall be of an approved type meeting the requirements of BS EN3 Series:1996 and have a rating of at least 13A/113B. If vessel is less than 15 metres in length, the rating shall be at least 5A/34B for (a), (b) and (c) requirements.

(b) The extinguishing substance used in the portable fire extinguishers required by section 1 shall be suitable for at least the fire category that is most likely to occur within the area for which the extinguishers is intended.

The extinguishing substance on board vessels whose electrical systems have a service voltage of more than 50 V shall also be suitable for fighting electrical fires. The instructions for use shall be clearly set out on each portable extinguisher.

(c) The extinguishing substance may be neither halon nor contain a product which is likely to release toxic gases during use, such as carbon tetrachloride. Portable fire extinguishers using CO<sub>2</sub> may only be used to fight fires at specific locations such as control panels, kitchens; the quantity of CO<sub>2</sub> should not constitute a health hazard.

(d) Extinguishers that are sensitive to freezing or to heat shall be installed or protected in such a way that their proper functioning is always guaranteed.

3. Fire extinguishers shall be serviced at the manufacturer's recommended service intervals by an approved service agent. A certificate to that effect signed by the person having carried out the service shall be kept on board.

4. If extinguishers are installed in such a way that they are out of sight the panel covering them shall be identified by an appropriate symbol accordance with MSN 1763 (M+F).
5. Provision shall be made for pumping water for fire-extinguishing on vessels operating in category C and D waters. Ballast, bilge or general service pumps may be used as fire pumps providing that they are not normally used for pumping oil. Means are to be provided such that at least one jet of water can reach any part of the vessel normally accessible during operation of the vessel.
6. Vessels with engine spaces containing main engines or main generators having an aggregate power output of 375 kW and over, operating on category C and D waters, shall have a fixed fire fighting system in such spaces. This system shall comply with the requirements of MSN 1666(M).<sup>4</sup>
7. Vessels with engine spaces containing main engines or main generators having an aggregate power output of 375 kW and over, operating on category C and D waters shall have a fire alarm fitted.

#### **Article 10.04 Means of recovering man over board**

1. Means shall be provided to recover a person from the water.

#### **Article 10.05 Lifebuoys, life jackets and liferafts.**

1. There shall be at least two lifebuoys on vessels of less than 24m in length and four lifebuoys on vessels of 24m or more in length, at least one of which shall be located by the wheelhouse.
2. Lifebuoys and holders shall comply with harmonized standards BS EN 14144:2003 'Lifebuoys Requirements & tests' and BS 14145:2003 'Holders for Lifebuoys'. For category C and D waters, at least one of the lifebuoys shall be fitted with a buoyant line and one with a battery powered light which will not be extinguished in water.
3. Quoits, or other suitable buoyant devices, may be used as an alternative to lifebuoys on category A and B waters.
4. In category B, C and D water there shall be one life jacket per crew member plus one spare; this requirement is recommended for category A waters. These may be inflatable lifejackets providing they are automatically inflating. Lifejackets shall comply with BS EN 396 and shall be maintained in accordance with manufacturer's instructions.
5. Vessels operating in Category D waters shall have a liferaft (open reversible inflatable type (ORIL)); this requirement is recommended for category C waters.

## **CHAPTER 11 SAFETY AT WORK STATIONS**

#### **Article 11.01 Dimensions of working spaces**

Working spaces shall be large enough to provide every person working at them with adequate freedom of movement.

#### **Article 11.02 Side deck**

1. The clear width of the side deck shall be at least 0,60 m.  
That figure may be reduced to 0,5 m at certain points that have been designed for safety of operations such as deck-swabbing cocks. It may be reduced to 0,4 m at bollard emplacements.
2. Up to a clear height of 0,90 m above the side deck, the clear width of the side deck may be reduced to 0,54 m provided that the clear width above, between the outer edge of the hull and the inner edge of the hold, is not less than 0,65 m. In this case, the clear width of the side deck may be reduced to 0,50 m if the outer edge of the side deck is fitted with a guard rail in accordance with European Standard EN 711 to prevent falling. On craft 55 m or less in length with only aft accommodation, the guard rail may be dispensed with.
3. The requirements of sections 1 and 2 shall apply up to a height of 2.00 m above the side deck.

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<sup>4</sup> The use of CO<sub>2</sub> is not safe for tunnels, where a vessel is to normally operate in tunnels advice must be sought from the local navigation authority.

4. For vessels under 24m in length or designed for operation on narrow canals, where it is not possible to comply with the requirements of paragraphs 1 to 3 above, alternative measures shall be taken to ensure safe means of access to all working decks.

#### **Article 11.03 Access to working spaces**

1. Points of access and passageways for the movement of persons and objects shall be of sufficient size and so arranged that:
  - (a) in front of the access opening, there is sufficient room not to impede movement;
  - (b) the clear width of the passageway shall be appropriate for the intended use of the working space and shall be not less than 0,60 m, except in the case of craft less than 8 m wide, where it may be reduced to 0,50 m;
  - (c) the combined height of the passageway and the coaming is not less than 1,90 m.
2. Doors shall be so arranged that they can be opened and closed safely from either side. They shall be protected against accidental opening or closing.
3. Stairs, ladders or steps shall be installed in accesses, exits and passageways where there is more than a 0,50 m difference in floor level.
4. Working spaces which are manned continuously shall be fitted with stairs if there is a difference in floor level of more than one metre. This requirement shall not apply to emergency exits.
5. Craft equipped with holds shall have at least two movable hold ladders which can be used to enter and leave the hold in complete safety. Ladders should have a positive means of fixing when in use. This requirement shall not apply where an equivalent ladder is fixed permanently in each hold.
6. A safe means of access to the vessel shall be provided. Gangways shall comply with EN526.

#### **Article 11.04 Exits and emergency exits**

1. The number, arrangement and dimensions of exits, including emergency exits, shall be in keeping with the use and dimensions of the relevant space. Where one of the exits is an emergency exit, it shall be clearly marked as such.
2. Emergency exits or windows or the covers of skylights to be used as emergency exits shall have a clear opening of not less than 0,36 m<sup>2</sup>, and the smallest dimension shall be not less than 0,50 m.

#### **Article 11.05 Winches**

1. Winches shall comply with *BS EN 13711 Inland Navigation Vessels - Winches for Ship Operation – Safety Requirements*.

### **CHAPTER 12 ACCOMMODATION**

#### **Article 12.01 General**

1. Accommodation shall be so designed, arranged and fitted out as to meet the health, safety and comfort needs of those on board. It shall be of safe and easy to access and insulated against heat and cold.
2. The certifying authority may authorise derogations to the prescriptions of this chapter if the health and safety of those on board are ensured by other means.
3. The certifying authority shall indicate on the certificate the number of persons permitted to overnight or habitually live on board. Any restrictions to the vessel's operating mode/entry into service resulting from the derogations referred to in paragraph 2 above shall also be indicated on the certificate.

#### **Article 12.02 All vessels**

1. It shall be possible to ventilate accommodation adequately even when the doors are closed; in addition, accommodation shall receive adequate daylight and, as far as possible, provide a view out.
2. Where there is no deck-level access to the accommodation and the difference in level is 0,30 m or more the accommodation shall be accessible by means of stairways.
3. Headroom in the accommodation shall be not less than two metres.
4. Stairways shall be permanently fixed and safely negotiable. They shall be deemed to be so when:

- (a) they are at least 0,60 m wide;
  - (b) the tread is at least 0,15 m deep;
  - (c) the steps are non-slip;
  - (d) Stairways with more than three steps are fitted with at least a handrail or handle.
5. Doors shall have a total height, coamings included, of at least 1,90 m and a clear width of at least 0,60 m. The prescribed height may be achieved by means of sliding or hinged covers or flaps. It shall be possible to open doors from either side. Coamings shall not be more than 0,40 m high, but shall nonetheless comply with the provisions of other safety regulations.
6. Pipes carrying dangerous gases or liquids, and particularly those under high pressure in which the slightest leak could pose a danger to human beings, shall not be located in the accommodation or in corridors leading to the accommodation. An exception to this rule is made for steam pipes and hydraulic system pipes, provided they are fitted in metal sleeves, and for the pipes of liquefied gas installations for domestic purposes.
7. Furnishings shall meet the requirements of domestic fire retardant materials.
8. All accommodation areas shall be fitted with electric lighting.
9. Heating and ventilation
- 9.1. It shall be possible to heat accommodation in accordance with its intended use. Heating installations shall be appropriate for the weather conditions which may arise.
- 9.2. The accommodation shall be so designed and arranged as to prevent as far as possible the penetration of foul air from other areas of the vessel such as engine rooms or holds; where forced-air ventilation is used the intake vents shall be so placed as to satisfy the above requirements.

### 12.03 Over-night accommodation

1. Where people are to stay overnight on a vessel the following additional requirements shall be met.
2. In the fore section of the vessel no floor shall be more than 1,20 m below the plane of maximum draught.
3. Living and sleeping quarters shall have at least two exits which are as far apart from each other as possible and which serve as escape routes; one exit may be designed as an emergency exit. This does not apply to areas with an exit giving directly onto the deck or onto a corridor which serves as an escape route, provided the corridor has two exits at a distance from each other and giving onto port and starboard. Emergency exits, which may include skylights and glazing, shall have a clear opening of at least 0,36 m<sup>2</sup> and a shortest side no less than 0,50 m and permit rapid evacuation in an emergency. Escape routes shall be faced and insulated with fire-resistant materials and their usability guaranteed at all times by appropriate means such as ladders or rungs.
4. Accommodation shall be protected against noise and vibration. Smoke alarms shall be fitted.
5. It shall be possible to ventilate the living and sleeping quarters adequately even when the doors are closed. The inflow and evacuation of air shall ensure adequate air circulation in all climatic conditions.
6. The volume of air per person shall be at least 3,5 m<sup>3</sup> in the accommodation. In the sleeping quarters it shall be at least 5 m<sup>3</sup> for the first occupant and at least 3 m<sup>3</sup> for each additional occupant (not counting volume of furniture). Sleeping cabins shall, as far as possible, be intended for no more than two persons. Berths shall be not less than 0,30 m above the floor. Where one berth is placed over another, the headroom above each berth shall be not less than 0,60 m.
7. Sanitary installations
- 7.1. The following sanitary installations at least shall be provided in vessels with accommodation:
- (a) one toilet per accommodation unit or per six crew members, which it shall be possible to ventilate with fresh air;
  - (b) one wash basin with waste pipe and connected up to hot and cold potable water per accommodation unit;
  - (c) one shower or bath connected up to hot and cold potable water per accommodation unit
- 7.2. The sanitary installations shall be in close proximity to the accommodation. Toilets shall not have direct access to galleys, mess rooms or combined day-rooms/galleys. However, on vessels of less than 24m in load line length, or designed for use on narrow canals, where this requirement

cannot be complied with because of space constraints on board, the toilet may open directly off a mess/galley room or day rooms, provided that a hand basin is available, in the toilet.

7.3. Toilet compartments shall have a floor space of at least 1 m<sup>2</sup>, not less than 0,75 m wide and not less than 1,10 m long. Where a toilet contains a wash basin and/or shower, the surface area shall be increased at least by the surface area occupied by the wash basin and/or shower (or bath).

7.4 The toilet shall discharge into a black waste water holding tank.

#### 8. Galleys

8.1. Vessels with accommodation shall have a galley. This may be combined with day-rooms.

8.2. Galleys shall comprise:

- (a) a cooker;
- (b) a sink with waste connection;
- (c) a supply of potable water;
- (d) a refrigerator;
- (e) sufficient storage and working space.

8.3. The eating area of combined galleys/day-rooms shall be large enough to accommodate the number of crew normally using it at the same time. Seats shall be not less than 0,60 m wide.

#### 9. Potable water

9.1. Vessels with accommodation shall have one or more potable water tanks. Potable water tank filling apertures and potable water pipes shall be marked as being intended exclusively for potable water. Potable water filler pipes shall extend above the deck in order to avoid contamination.

9.2. Potable water tanks shall:

- (a) be protected against excessive heating;
- (b) have a capacity of at least 100 litres per person normally using the accommodation
- (c) be made of a material which resists corrosion and poses no physiological danger;
- (d) have a suitable, lockable opening to enable the inside to be cleaned;
- (e) have a water level indicator;
- (f) have breather pipes to the open air, fitted with appropriate filters.

For vessels under 24m in length, and designed to operate on waterways with ready access to potable water sources alongside, the capacity of the potable water tank may be reduced, provided that it is of an adequate capacity to supply potable water to the crew at all times when they are on board.

9.3. Potable water tanks shall not share boundaries with other tanks.

Potable water pipes shall not pass through tanks containing other liquids. Connections are not permitted between the potable water supply system and other pipes. Pipes carrying gas or liquids other than potable water shall not pass through potable water tanks.

9.4. Potable water pressure vessels shall operate only on uncontaminated compressed air. Where it is produced by means of compressors, appropriate air filters and oil separators shall be installed directly in front of the pressure vessel unless the water and the air are separated by a diaphragm.

10. Holding tanks shall be provided for black waste water.

#### 12.04 Living on board

1. Where persons are lodging habitually on board, vessels shall meet the following requirements in addition to the other provisions of this chapter.

2. Vessels shall have at least one day-room partitioned off from the sleeping quarters. For vessels under 24m in length, the certifying authority may authorise exceptions.

3. The cubic capacity of each unit in the living and sleeping quarters shall be not less than 7 m<sup>3</sup>.

4. The free floor area of the living quarters shall be not less than 2 m<sup>2</sup> per person, and in any event not less than 8 m<sup>2</sup> in total (not counting furniture, except tables and chairs).

5. Each crew member living on board shall have an individual berth and an individual clothes locker fitted with a lock. The internal measurements of the berth shall be not less than 2,00 × 0,90 m.

6. Suitable places for storing and drying work clothes shall be provided, but not in the sleeping quarters.

7. Sound pressure levels shall not exceed:

- (a) 70 dB(A) in the living quarters;
- (b) 60 dB(A) in the sleeping quarters.

8. The capacity of potable water tank shall be at least 150 litres per person normally living on board.

9. For vessels under 24m in length, and designed to operate on waterways with ready access to potable water sources alongside, the capacity of the potable water tank may be reduced, provided that it is of an adequate capacity to supply potable water to the crew at all times when they are on board.

## CHAPTER 13 FUEL-FIRED HEATING, COOKING AND REFRIGERATING EQUIPMENT

### Article 13.01 General

1. Heating, cooking and refrigeration equipment running on liquefied gas shall meet the requirements of Chapter 14 of this Standard.
2. Heating, cooking and refrigeration equipment, together with its accessories, shall be so designed and installed that it is not dangerous even in the event of overheating. It shall be so installed that it cannot overturn or be moved accidentally.
3. The equipment referred to in Section 2 shall not be installed in areas in which substances with a flash point below 55 °C are used or stored. No flues from these installations may pass through such areas.
4. The intake of air necessary for combustion shall be ensured.
5. Heating appliances shall be securely connected to flues, which shall be fitted with suitable cowls or devices affording protection against the wind. They shall be disposed in such a manner as to permit cleaning.

### Article 13.02 Use of liquid fuels, oil-fired equipment

1. Equipment which uses liquid fuel may be operated only with fuels whose flash point is above 55 °C.

### Article 13.03 Vaporising oil burner stoves and vaporising oil burner heating appliances

1. Vaporising oil burner stoves and vaporising oil burner heating appliances shall be built in accordance with the current recognised standard.
2. Where a vaporising oil burner stove or a vaporising oil burner heating appliance is installed in an engine room, the air supply to the heating appliance and the engines shall be so designed that the heating appliance and the engines can operate properly and safely independently of one another. Where necessary, there shall be a separate air supply. The equipment shall be installed in such a way that no flame from the burner can reach other parts of the engine room installations.

### Article 13.04 Vaporising oil burner stoves

1. It shall be possible to light vaporising oil burner stoves without the aid of another combustible liquid. They shall be fixed over a metal drip pan which encompasses all the fuel-carrying parts and is at least 20 mm high and has a capacity of at least two litres.
2. For vaporising oil burner stoves installed in an engine room, the metal drip pan prescribed in Section 1 shall be at least 200 mm deep. The lower edge of the vaporising burner shall be located above the edge of the drip pan. In addition, the drip pan shall extend at least 100 mm above the floor.
3. Vaporising oil burner stoves shall be fitted with a suitable regulator which, at all settings, ensures a virtually constant flow of fuel to the burner and which prevents any fuel leak should the flame go out. Regulators shall be considered suitable which function even when shaken or when tilted by up to 12 ° and which, in addition to a level-regulating float, have
  - (a) a second float which works safely and reliably to close off the fuel supply when the permitted level is exceeded, or
  - (b) an overflow pipe if the drip pan has sufficient capacity to accommodate the contents of the fuel tank.
4. Where the fuel tank of a vaporising oil burner stove is installed separately
  - (a) the drop between the tank and the burner feed may not exceed that laid down in the manufacturer's operating instructions;
  - (b) it shall be so installed as to be protected from unacceptable heating;

- (c) it shall be possible to interrupt the fuel supply from the deck.  
5. The flues of vaporising oil burner stoves shall be fitted with a device to prevent draught inversion.

**Article 13.05 Vaporising oil burner heating appliances**

Vaporising oil burner heating appliances shall in particular meet the following requirements:

- (a) adequate ventilation of the burner shall be ensured before the fuel is supplied;
- (b) the fuel supply shall be regulated by a thermostat;
- (c) the fuel shall be ignited by an electric device or by a pilot flame;
- (d) a flame monitoring device shall cut off the fuel supply when the flame goes out;
- (e) the main switch shall be placed at an easily accessible point outside the installation room.

**Article 13.06 Forced-air heating appliances**

Forced-air heating appliances consisting of a combustion chamber around which the heating air is conducted under pressure to a distribution system or to an area shall meet the following requirements:

- (a) If the fuel is vaporised under pressure the combustion air shall be supplied by a blower.
- (b) The combustion chamber shall be well ventilated before the burner may be lit. This ventilation may be considered complete when the combustion air blower continues to operate after the flame has gone out.
- (c) The fuel supply shall be automatically cut off:
  - the fire goes out,
  - the supply of combustion air is no longer adequate,
  - the heated air exceeds a previously set temperature, or
  - the electricity supply is no longer reaching the safety devices.

In the above cases the fuel supply shall not be reestablished automatically after being cut off.

- (d) It shall be possible to switch off the combustion air and heating air blowers from outside the areas to be heated.
- (e) Where heating air is drawn from outside, the intake vents shall as far as possible be located well above the deck. They shall be installed in such a manner that rain and spray cannot get in.
- (f) Heating air pipes shall be made of metal.
- (g) It shall not be possible to close the heating air outlet apertures completely.
- (h) It shall not be possible for any leaking fuel to reach the heating air pipes.
- (i) It shall not be possible for forced-air heating appliances to draw their heating air from an engine room.

**Article 13.07 Solid fuel heating**

1. Solid fuel heating appliances shall be placed on a metal plate with raised edges such that no burning fuel or hot cinders fall outside the plate.

This requirement does not apply to appliances installed in compartments built of non-combustible materials and intended solely to house boilers.

- 2. Solid fuel boilers shall be fitted with thermostatic controls to regulate the flow of combustion air.
- 3. A means by which cinders can be quickly doused shall be placed in the vicinity of each heating appliance.

**CHAPTER 14 LIQUEFIED PETROLEUM GAS INSTALLATIONS FOR DOMESTIC PURPOSES****[Article 14.01 Standards**

1. Liquefied gas petroleum installations shall comply fully with EN 10239:2000 (Small craft – Liquefied petroleum gas (LPG) systems) as if that standard applied to inland waterway vessels of 24 metres load line length or more as well as to vessels under 24m; except that the LPG supply-line system shall consist of fixed steel or copper tubing. However, pipes connecting with the receptacles shall be high-pressure flexible tubes or spiral tubes suitable for propane and butane. Gas-consuming appliances may, if not installed in a fixed manner, be connected by means of suitable flexible tubes not more than 1 m long].

THIS ARTICLE IS IN SQUARE BRACKETS BECAUSE IT IS SUBJECT TO CHANGE AS A RESULT OF THE UK'S SUBMISSION OF A DISCUSSION PAPER TO AN EU/CCNR JOINT WORKING GROUP.

**Article 14.02 Acceptance Test**

1. Before a liquefied petroleum gas installation is put into service, or after any modifications or repair to it, and then annually, the entire installation shall be accepted by a competent person. During the acceptance test the competent person shall verify whether the installation conforms to the requirements of this chapter. The acceptance reports issued by this competent person shall be available for viewing by the Certifying Authority at the vessels initial inspection and at renewal of National Standards Certification as well as at any General Inspections (by MCA).  
(NB: a competent person is defined under the Gas Safety Installation and Use Regulations (GSIUR)).

END