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Working Party on Inland Water Transport

Working Party on the Standardization of Technical and Safety Requirements in Inland Navigation

Forty-fourth session
Geneva, 12–14 February 2014
Item 7 (b) of the provisional agenda
Recommendations on Harmonized Europe-Wide Technical Requirements for Inland Navigation Vessels (Resolution No. 61, revised)

Amendment proposals to Chapter 4 "Safety clearance, freeboard and draught marks"

Transmitted by the Group of Volunteer Experts on Resolution No. 61[1]

I. Mandate

1. At its forty-third session, the Working Party on the Standardization of Technical and Safety Requirements in Inland Navigation (SC.3/WP.3) invited Governments to consider the draft amendments to Chapter 4, prepared by the Group of Volunteer Experts on Resolution No. 61 with due regard to EU Directive 2006/87/EC laying down technical requirements for inland waterway vessels (ECE/TRANS/SC.3/WP.3/86, para. 32). The proposal of the Group was presented in Informal document SC.3/WP.3 No. 11 (2013).

2. The request for the comments on the draft proposal was circulated by the secretariat in the questionnaire for the forty-fourth session of SC.3/WP.3. The official draft proposal, based on the text, submitted by the group of Volunteer Experts, together with explanatory footnotes, is presented below. Additions to the original text of the Resolution are indicated in bold, while text to be deleted has been struck out.

[1] This document is submitted in line with the output/activities of cluster 2:6: Inland water transport, paragraph 1B(c) of the work plan 2012–2016 (ECE/TRANS/2012/12) adopted by the Inland Transport Committee on 1 March 2012 (ECE/TRANS/224, para. 94). Paragraph 1B(c) provides a mandate for updating of Resolution No. 61 in order to ensure a high level of safety of navigation.

3. The Working Party may wish to consider and finalize the draft proposal so that it can be transmitted for the adoption at the fifty-eighth session of the Working Party on Inland Water Transport.

II. Draft amendment proposal for Chapter 4, "Safety clearance, freeboard and draught marks"

4. It is proposed to amend chapter 4 as follows:

4–1 GENERAL

4–1.1 This chapter specifies the minimum freeboard for inland waterway vessels. It also contains requirements concerning the indication of the freeboard mark **and draught marks.**

4–1.2 This chapter assumes that the nature and stowage of the cargo, ballast, etc., are such as to ensure adequate stability and as to obviate any excessive structural fatigue.

4–1.3 Freeboards as prescribed in this chapter shall be assigned on the assumption, first, that navigation will cease when weather conditions are such that the maximum wave height defining the zone or zones in which a vessel is to navigate may be exceeded, and second that in such conditions vessels already under way will seek shelter as quickly as possible.

4–1.4 The Administration may consider it sufficient if the vessel has been built and maintained in conformity with the rules of a recognized Classification Society.

4–2 TYPES OF VESSELS

For the purpose of this chapter, vessels shall be divided into three types:

(i) ~~Type A –~~ Decked vessels;

(ii) ~~Type B –~~ Tankers;

(iii) ~~Type C –~~ Open vessels.

~~Type A~~ Decked vessels: Decked vessels are vessels whose hatch covers are satisfactorily strong, rigid, watertight for zone 1 and sprayproof for zones 2 and 3.

~~Type B~~ Tankers and similar vessels: These vessels have only small openings giving access to the tanks, the openings being closed by steel or equivalent covers with watertight fittings. Such vessels have the following characteristics:

(i) Very high watertight integrity of the exposed deck;

(ii) Very high resistance to flooding, through low permeability of the loaded compartments and through the degree of subdivision applied in general.

~~Type C~~ Open vessels: Open vessels are either vessels whose hatch covers are not satisfactorily strong, rigid, sprayproof or vessels whose cargo hatchways are open.

~~4-3 APPLICATION AND DEROGATIONS~~

~~4-3.1 The maximum draught level shall be so determined that both the freeboard requirements and the safety distance requirements are observed. For safety reasons, however, the Administration may prescribe a higher figure for the freeboard.~~

~~4-3.2 Vessels so constructed that application of the provisions of this chapter is unwarranted or impracticable shall be assigned freeboards by the Administration in such a way that the safety conditions are equivalent to those of this chapter.~~

~~4-3.3 In the case of zone 1, derogations from the conditions of assignment of freeboard may be allowed to vessels to which a freeboard in excess of the minimum freeboard is assigned, provided that the safety conditions are deemed satisfactory by the Administration.~~

~~4-4 DETERMINATION OF FREEBOARDS~~

~~4-4.1 General~~

~~4-4.1.1 Deck line~~

~~The deck line is the upper edge of a horizontal rectangle 300 mm long and 25 mm wide. This rectangle shall be marked amidships on each side of the hull, and its upper edge shall normally pass through the point where the continuation outwards of the upper surface of the freeboard deck intersects the outer surface of the shell amidships. However, the deck line may also be marked at a different height provided that the freeboard is corrected accordingly.~~

4–3 DRAUGHT MARKS AND FREEBOARD MARK

4–3.1 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. However, for safety reasons, the competent authority may lay down a greater value for the safety clearance or freeboard. The plane of maximum draught shall be determined at least for zone 3.[2]

4–3.2 The plane of maximum draught shall be indicated by means of highly visible, indelible draught marks.[3]

4–3.3 Vessels shall have at least three pairs of draught marks, of which one pair shall be centrally located and the two others located, respectively, at a distance from the bow and stern that is equal to roughly one-sixth of the length.

However,

(i) where a vessel is less than 40 m in length it will suffice to affix two pairs of marks at a distance from the bow and stern, respectively, that is equal to a quarter of the length;

(ii) where vessels are not intended for the carriage of goods, a pair of marks located roughly halfway along the vessel will suffice.[4]

4–3.4 The draught marks for Zone 3 shall consist of a rectangle 300 mm long and 40 mm deep, the base of which is horizontal and coincides with the plane of the maximum authorized draught. Any differing draught marks shall include such a rectangle.[5]

4–3.5 Marks or indications which cease to be valid following a further inspection shall be deleted or marked as being no longer valid under the supervision of the Administration. Draught marks may only be replaced under the supervision of the Administration.[6]

[2] Based on Article 4.04(1) of Directive 2006/87/EC. Here and hereafter, the term “the inspection body” is replaced by “the competent authority”, used in Resolution No. 61.

[3] Based on Article 4.04(2) of Directive 2006/87/EC.

[4] Based on Article 4.04(4) of Directive 2006/87/EC.

[5] Based on Article 4.04(3) of Directive 2006/87/EC.

[6] Based on Article 4.04(5) of Directive 2006/87/EC. Instead of “If a draught marks should disappear, it may only be replaced” it is proposed to write down “Draught mark**s** may only be replaced”.

4–3.6 Where a vessel has been measured in implementation of the 1966 Convention on the Measurement of Inland Navigation Vessels and the plane of the measurement marks meets the requirements of this Resolution, those measurement marks shall take the place of the draught marks; this shall be mentioned in the Ship's certificate.[7]

4–3.7 For vessels operating on zones of inland waterways other than Zone 3 (Zones 1, 2 or 4)[8] **the bow and stern pairs of draught marks provided for in 4.3.3 shall be supplemented by adding a vertical line to which one or, in the case of several zones, several additional draught lines 150 mm long shall be affixed towards the bow, in relation to the draught mark for Zone 3.**[9]

This vertical line and the horizontal line shall be 30 mm thick. In addition to the draught mark towards the bow of the vessel, the relevant zone numbers shall be indicated in lettering 60 mm high × 40 mm deep (see Figure 4–3.7).[10]

The lower edge of each ~~freeboard~~ **draught** line shall correspond to the ~~freeboard prescribed~~ **plane of maximum authorised draught** for the navigation zone concerned.[11]

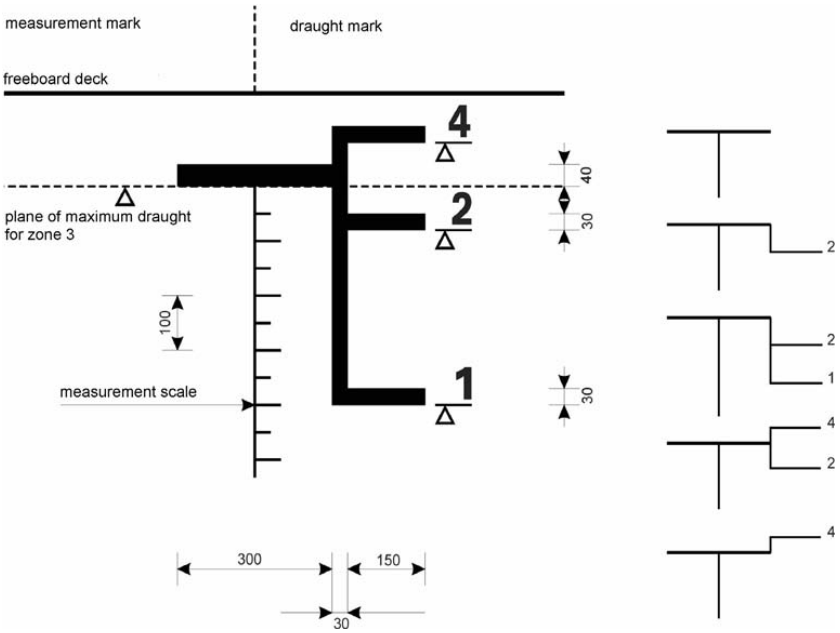

Figure 4–3.7 Measurement/draught scale

~~4-4.1.2 Freeboard mark~~

~~4-4.1.2~~ **4–3.8** ~~The freeboard mark for vessels for zone 3 consists of a horizontal band of 300 mm long and 40 mm width~~. **The centrally located measurement/draught scale for zones 1 and 2 may be replaced by a freeboard mark.**

[7] Based on Article 4.04(6) of Directive 2006/87/EC.

[8] This reference to zone 4 implies all inland waterways not belonging to zones 1, 2 and 3, as referred to in paragraph 1–1.5 of these Recommendations.

[9] Based on Article 4.04(7) of Directive 2006/87/EC, first paragraph.

[10] Based on Article 4.04(7) of Directive 2006/87/EC, second paragraph.

[11] Former provision 4–4.1.2 of the Resolution, sixth paragraph.

The freeboard mark ~~for zones 1 and 2~~ ~~shall~~ consist**s** of a ring intersected through its centre by a horizontal line which shall be supplemented if necessary by additional freeboard lines.

The width of the ring and of all the other lines of the freeboard mark shall be 30 mm; the outer diameter of the ring shall be 200 mm; the length of the horizontal line intersecting the ring shall be 300 mm; and the size of the numerals designating the zones shall be 60 x 40 mm (Figure ~~1~~ **4–3.8**).

~~**Zones 1 and 2** Figure 1~~

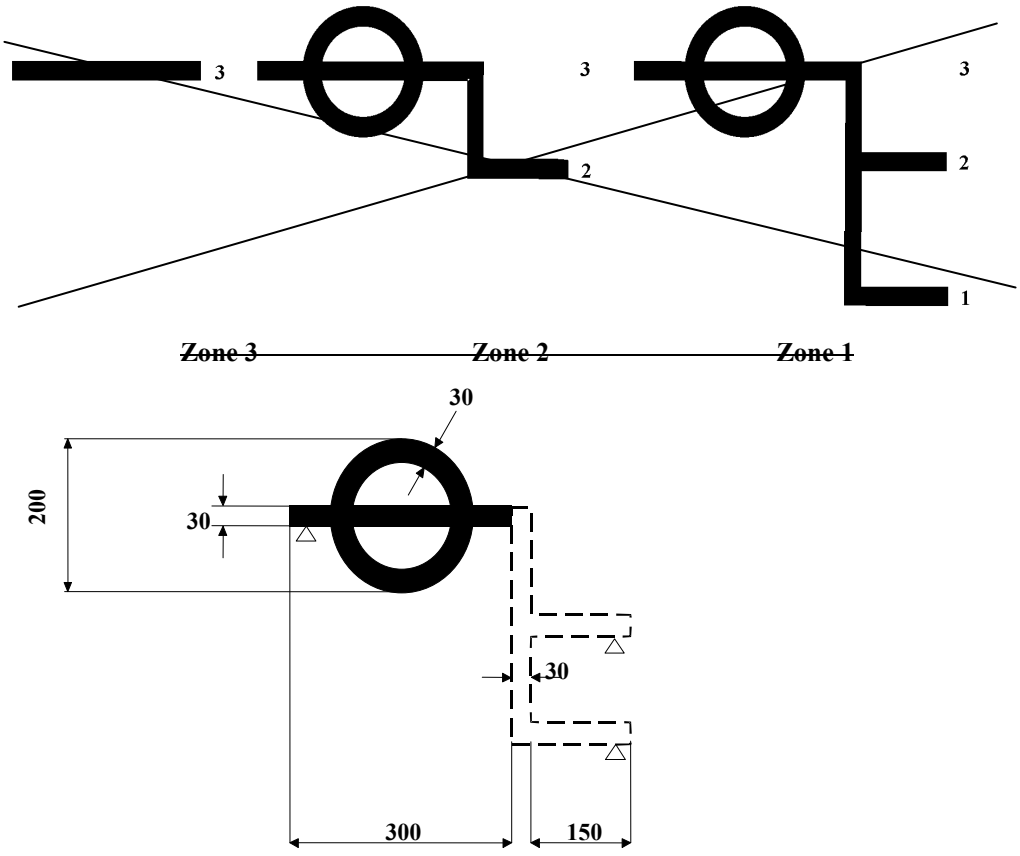

Figure 4–3.8 Freeboard mark

The centre of the ring shall be placed amidships. The lower edge of the horizontal line which intersects the ring shall pass through the centre of the ring and shall constitute the freeboard line

If the vessel is intended to navigate in several navigation zones, a vertical line and additional freeboard lines 150 mm in length shall be applied forward of the centre of the ring.

~~The lower edge of each freeboard line shall correspond to the freeboard prescribed for the navigation zone concerned.~~[12]

~~If the vessel is measured in accordance with the Convention on the Measurement of Inland Navigation Vessels, it shall bear, in addition to the freeboard mark, a measurement mark in accordance with the requirements of this Convention.~~

[12] See new provision 4–3.7, third paragraph.

~~The freeboard mark and the measurement draught mark may be combined. In this case, the width of the freeboard mark line rectangle (the width of the upper line if there are a number of freeboard marks) must be 40 mm.~~

4–3.9 Deck line and freeboard mark

~~The deck line is the upper edge of a horizontal rectangle 300 mm long and 25 mm wide.~~ **When the centrally located measurement/draught scale has been replaced by a freeboard mark, the deck line must be indicated by the upper edge of a horizontal rectangle 300 mm long and 25 mm wide.** This rectangle shall be marked amidships on each side of the hull, and its upper edge shall normally pass through the point where the continuation outwards of the upper surface of the freeboard deck intersects the outer surface of the shell amidships. However, the deck line may also be marked at a different height provided that the freeboard is corrected accordingly**. The distance between the upper edge of the deck line and the freeboard mark constitutes the freeboard as mentioned in section 4–4.1.**[13]

4–4 FREEBOARD

~~4-4.2~~ 4–4.1 Minimum freeboard in zones 1 and 2

~~4-4.2.1~~ **4–4.1.1** Minimum freeboard (F) for ~~vessels of~~ ~~Type A~~ **decked vessels**

	Minimum freeboard (F) [mm]	
Length of the vessel [m]	*Zone 1*	*Zone 2*
≤ 30	250	250
40	340	300
50	440	340
≥ 60	570	340
~~70~~	~~570~~	~~340~~
~~≥ 80~~	~~570~~	~~340~~

Note: In this and all subsequent tables, the values for the intermediate lengths of vessels shall be obtained by linear interpolation.

~~4-4.2.2~~ **4–4.1.2** Minimum freeboard (F) for ~~of type B~~ **tankers and flush deck vessels**

	Minimum freeboard (F) [mm]	
Length of the vessel [m]	***Zone 1***	***Zone 2***
≤ 30	180	160
40	250	220
50	330	220
≥ 60	420	220
~~70~~	~~420~~	~~220~~
~~≥ 80~~	~~420~~	~~220~~

~~4-4.2.3 The minimum freeboard of flush deck vessels should be obtained in the manner indicated for the vessel of tankers.~~

[13] Based on former provision 4–4.1.1 of the Resolution. This amendment, if adopted, will make it necessary to adjust the reference to paragraph 4–4.1.1 in the definition of Freeboard in Chapter 1 "General provision", paragraph 49.

~~4-4.2.4~~ **4–4.1.3** The minimum freeboard for **open** vessels ~~of Type C, regardless of length,~~ should be not less than:

For zone 1 – 1 000 mm

zone 2 – 600 mm.

Furthermore, the sum of the freeboard and the height of coamings for these vessels must be not less than:

For zone 1 – 1 200 mm

zone 2 – 1 000 mm.

~~4-4.2.5~~ **4–4.1.4** The Administration may authorize corrections for the freeboard for vessels with poop, sheer and forecastle, providing that such corrections are calculated in conformity with the rules of the Administration or of a recognized Classification Society.

4–4.2 Minimum freeboard in zone 3

4–4.2.1 The basic freeboard of vessels with a continuous deck without superstructures and sheer shall be 150 mm.[14]

4–4.2.2 The freeboard of vessels with sheer and superstructures shall be calculated using the following formula:

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

where:

α **is a correction coefficient that takes account of all of the superstructures involved;**

β_v **is a coefficient for correcting the effect of the forward sheer resulting from the presence of superstructures in the forward quarter of length L of the vessel;**

β_a **is a coefficient 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.**[15]

4–4.2.3 The coefficient a is calculated using 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 a superstructure 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;**

[14] Based on Article 4.02(1) of Directive 2006/87/EC. Here, the term “freeboard” is proposed to write down as “basic freeboard”.

[15] Based on Article 4.02(2) of Directive 2006/87/EC.

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 using the following formulae:

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

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

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 -y reducing the height of the coamings by half of the safety distance according to 4–5.2 and 4–5.3. In no case will a value exceeding 0.36 m be taken for *h*.**

If $\frac{b}{B}$ or $\frac{b}{B_1}$ is less than 0.6, the effective length le of the superstructure will be zero.[16]

4–4.2.4[17] **Coefficients β_v and β_a are calculated using the following formulae:**

$$\beta_V = I - \frac{3 \cdot le_V}{L}$$

$$\beta_a = I - \frac{3 \cdot le_a}{L}$$

4–4.2.5 The effective aft/forward sheers Se_v/Se_a are calculated using 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 1 000 mm;**

S_a **is the actual aft sheer, in mm; however S_a may not be taken to be more than 500 mm;**

p **is a coefficient calculated using the following formula:**

[16] Based on Article 4.02(3) of Directive 2006/87/EC.
[17] Based on Article 4.02(4) of Directive 2006/87/EC.

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

x **is the abscissa, measured from the extremity of the point where the sheer is 0.25 S_v or 0.25 S_a (see figure 4–3.9).**

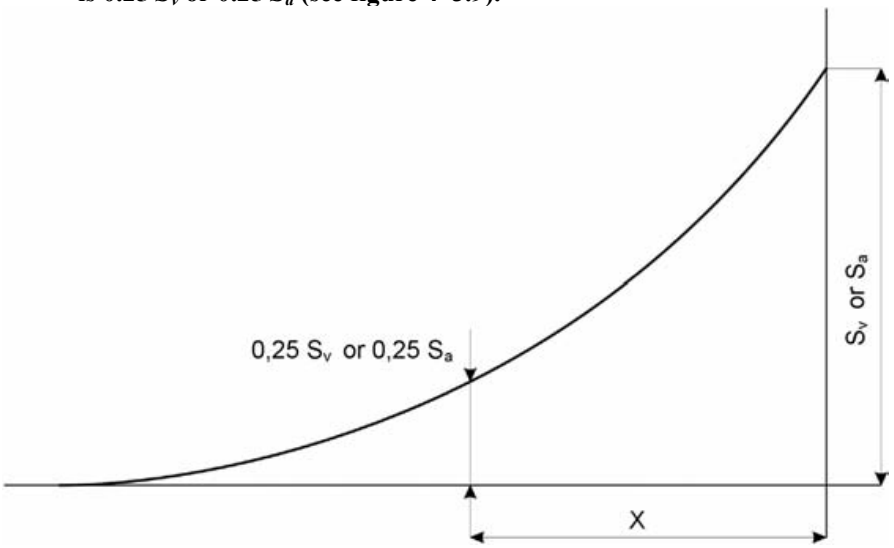

Figure 4–3.9

However, coefficient *p* will not be taken to be more than 1.[18]

4–4.2.6 **If $\beta a \cdot Se_a$ is greater than βv · Se_v, the value of $\beta a \cdot$ Sea will be taken as being the value for $\beta v \cdot Se_v$.**[19]

4–4.2.7 **In view of the reductions referred to in 4–4.2.2 – 4–4.2.6 the minimum freeboard shall not be less than 0 mm.**[20]

4–5 SAFETY CLEARANCE

~~4-4.3.11~~ **4–5.1** For ~~vessels of type A and type B~~ **decked vessels and tankers**, the safety clearance as defined in 1–2 must not be less than 600 mm for zone 2.

For ~~vessels of type C~~ **open vessels**, as well as other vessels navigating with open holds, this distance shall be increased ~~to~~ **by** 400 mm in zone 2. However, this increase applies only to the coamings of open holds.

~~4-4.4.1~~ **4–5.2** For **decked** vessels **and tankers** ~~of types A and B~~ **navigating in zone 3**, the safety clearance must not be less than 300 mm.

~~4-4.4.2~~ **4–5.3** For **open** vessels ~~of the type C~~ **navigating in zone 3**, the safety clearance **shall be increased in such a way that openings that cannot be closed by spray-proof and weathertight devices shall be at least 500 mm from the plane of maximum draught** ~~must not be less than 500 mm~~.[21]

[18] Based on Article 4.02(5) of Directive 2006/87/EC.

[19] Based on Article 4.02(6) of Directive 2006/87/EC.

[20] Based on Article 4.03 of Directive 2006/87/EC.

[21] Based on Article 4.01(2) of Directive 2006/87/EC and on former provision 4–4.4.2 of the Resolution; it is proposed to replace the text “vessels whose openings cannot be closed by spray-proof and weathertight devices, and for vessels sailing with their holds uncovered” with the term “open vessels”.

~~4-4.3~~ **4–6** ARRANGEMENT OF OPENINGS AND COAMINGS

~~4-4.3.1~~ **4–6.1** All outside doors of superstructure, deckhouses and companionways, situated on the freeboard deck shall be watertight on vessels in zone 1 and sprayproof on vessels in zones 2 and 3.

~~4-4.3.2~~ **4–6.2** The coamings of hatchways, companionways and access openings to superstructures shall be not less than 300 mm high on vessels in zone 1 and 150 mm on vessels in zone 2.

~~4-4.3.3~~ **4–6.3** If the height of the coamings is less than that required by this chapter, the minimum freeboard height shall be increased by the difference between the height required in ~~4-4.3.2~~ 4–**6**.2 and the actual height of the coamings.

~~4-4.3.4~~ **4–6.4** The freeboard height may not be reduced owing to an increase in the height of coamings below the figure indicated in ~~4-4.3.2~~ 4–**6**.2.

~~4-4.3.5 Exposed cargo hatchways and other hatchways on the freeboard deck shall be fitted with watertight closures on vessels in zone 1 and sprayproof closures on vessels in zones 2 and 3.~~

~~4-4.3.6~~ **4–6.5** Ventilator heads on the exposed parts of the freeboard deck shall be fitted with a strong steel coaming of a height not less than that required for hatchway coamings. Ventilator heads for vessels in zone 1 must have watertight closures.

~~4-4.3.7~~ **4–6.6** Pipe outlets in the ship's sides below the freeboard deck shall be fitted with efficient and accessible devices to prevent water from entering the vessel.

~~4-4.3.8~~ **4–6.7** On vessels in zone 1, side scuttles in spaces below the freeboard deck, windows in superstructures, deckhouses and companionways and windows in skylights on the freeboard deck ~~shall~~ **must** be watertight. In addition, side scuttles in spaces below the freeboard deck ~~shall~~ **must** be provided with permanently attached deadlights. The distance between side scuttles in the shell and the maximum draught level ~~shall~~ **must** not be less than 300 mm.

~~4-4.3.9~~ **4–6.8** Skylights and windows must be of sturdy construction.

~~4-4.3.10~~ **4–6.9** On vessels in zone 2, skylights and windows must be fitted with sprayproof covers which shall be permanently attached if the lowest part of the openings falls within the safety clearance ~~prescribed for the coamings of uncovered holds~~ (see ~~4-4.3.11~~ **4–5.1**). ~~In this case, the height (*h*) of the superstructures in which the openings are provided is limited to the lowest point of these openings.~~

~~4-4.3.11 For vessels of type A and type B, the safety clearance as defined in 1-2 must not be less than 600 mm for zone 2.~~

~~For vessels of type C, as well as other vessels navigating with open holds, this distance shall be increased to 400 mm in zone 2. However, this increase applies only to the coamings of open holds.~~ [22]

~~4-4.3.12~~ **4–6.10** The covers of Kingston valves and ice boxes must be watertight.

~~4-4.3.13~~ **4–6.11** The scuppers and freeing ports in bulwarks shall be of sufficient size to drain the decks of shipped water.

[22] See new provision 4–5.1.

4–7 SPECIAL REQUIREMENTS FOR SAFETY CLEARANCE AND FREEBOARD IN ZONE 4

4–7.1 By way of derogation from 4–5.2 and 4–5.3, the safety clearance of doors and openings other than hold hatches for vessels navigating on zone 4 waterways is reduced as follows:

(i) for openings which can be closed spray-proof and weathertight, to 150 mm;

(ii) for openings which cannot be closed spray-proof and weathertight, to 200 mm.[23]

4–7.2 By way of derogation from 4–4.2.1, the minimum freeboard of vessels navigating on zone 4 waterways is 0 mm, if the safety clearance according to 4–7.1 is respected.[24]

4–8[25] **MAXIMUM LOADED DRAUGHT OF VESSELS WHOSE HOLDS ARE NOT ALWAYS CLOSED SO AS TO BE SPRAY-PROOF AND WEATHERTIGHT**

If the plane of maximum draught for zone 3 of a vessel is determined by assuming that the holds may be closed in such a way as to make them spray-proof and weathertight, and if the distance between the plane of maximum draught and the upper edge of the coamings is less than 500 mm, the maximum draught for sailing with uncovered holds shall be determined.

The following statement shall be entered on the ship's certificate:

"Where the hold hatches are totally or partly uncovered the vessel may only be loaded up to ... mm below the draught marks for zone 3."

~~4-4.4 Special requirements for freeboard in zone 3~~

~~4-4.4.1 For vessels of types A and B, the safety clearance must not be less than 300 mm.~~[26]

~~4-4.4.2 For vessels of the type C, the safety clearance must not be less than 500 mm.~~ [27]

~~4-4.4.3 The basic freeboard of vessels with a continuous deck without superstructures and sheer shall be 150 mm.~~

~~4-4.4.4 The Administration may authorize a correction for the freeboard for vessels with superstructures and sheer providing that such correction is calculated in conformity with the rules of the Administration or of a recognized Classification Society.~~

~~In view of the reduction referred to above the minimum freeboard shall not be less then 0 mm.~~

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[23] Based on Article 19b.01(1) of Directive 2006/87/EC.
[24] Based on Article 19b.01(2) of Directive 2006/87/EC.
[25] Based on Article 4.05 of Directive 2006/87/EC.
[26] See new provision 4–5.2.
[27] See new provision 4–5.3.