RULES FOR CLASSIFICATION OF

Ships

PART 5 CHAPTER 6

NEWBUILDINGS
SPECIAL SERVICE AND TYPE – ADDITIONAL CLASS

Fishing Vessels

JULY 2011

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CHANGES

General

The present edition of the rules includes amendments and additions approved by the Executive Committee as of June 2011 and supersedes the January 2011 edition of the same chapter.

The rule changes come into force as described below.

Text affected by the main rule changes is highlighted in red colour in the electronic pdf version. However, where the changes involve a whole chapter, section or sub-section, only the title may be in red colour.

This chapter is valid until superseded by a revised chapter.

Main changes coming into force 1 January 2012

- **Sec.1 General Requirements**

— F101: Added length limitation.
— The sub-section G Fire Safety has been re-written with new sub-section elements G200 and G800 added.

Corrections and Clarifications

In addition to the above stated rule requirements, a number of corrections and clarifications have been made to the existing rule text.

CONTENTS

SECTION 1
GENERAL REQUIREMENTS

A. Classification

A 100 Application

101 The rules in this chapter apply to vessels intended for fishing and should be regarded as supplementary requirements to those given for the assignment of main class.

A 200 Class notations

201 Vessels complying with relevant additional requirements of this Chapter may be assigned one of the following class notations:

Fishing Vessel (See Sec.2 B)

Stern Trawler (See Sec.2 C)

202 Vessels with arrangement in cargo holds for fish in bulk in compliance with the requirements given in Sec.4 may have the notation **S** added to the class notations mentioned in 201.

203 Vessels which satisfy the additional requirements in Sec.7 may have the notation **(N)** added to the class notations in 201.

B. Definitions

B 100 Symbols

101

Loa = length over all in m
L = Rule length in m [1)]
B = Rule breadth in m [1)]
D = Rule depth in m [1)]
T = Rule draught in m [1)]
s = stiffener spacing in m [1)]
In fore and aft body the spacing is to be measured along the plating
s_s = standard frame spacing in m
= 0.48 + 0.002L
maximum 0.61 m forward of collision bulkhead and aft of the after peak bulkhead
l = stiffener span in m
f_1 = material factor depending on material strength group [1)]

1) For details see Pt.3 Ch.1 or 2

102 The term freeboard deck used in this Chapter is generally defined as in the International Convention on Load Lines, 1966.

103 The freeboard may be taken equal to zero provided a closed superstructure of length not less than 0.45 L is fitted.

C. Documentation

C 100 General

101 Details related to additional classes regarding design, arrangement and strength are in general to be included in the plans specified for the main class.

102 Additional plans and particulars for the following are to be submitted for approval:

— Winch and crane foundations with winch capacities and wire forces.

103 The monitoring system for the bilge wells shall be approved by the Society.

For requirements for documentation, see Pt.4 Ch.9.

D. Signboards

D 100 References

101 Signboards are required by the rules in:

— Sec.5 A102 concerning side doors.

E. Hull Arrangement

E 100 Arrangement on deck

101 Masts, rigging, superstructures, deckhouses and other items on deck on vessels intended for service in Arctic waters are to be so designed and arranged that excessive accumulation of ice is avoided.

The rigging is to be kept at a minimum, and the surfaces of superstructures and other erections are to be as even as possible and free from projections and irregularities.

102 Air pipes from fuel oil tanks are to extend to a deck above freeboard deck or otherwise be protected to prevent seawater from entering the tanks.

Guidance note:

The term *be protected* is meant as arrangement utilising common venting through an overflow tank, or a drain pot in the air pipe with automatic drainage to a suitable tank.

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E 200 Forecastle

201 Fishing vessels are to have a forecastle if the sheer in the forebody is less than 1.5 times standard sheer according to the International Convention on Load Lines, 1966.

202 The length of the forecastle is not to be less than 0.07 L metres, and the mean height is not to be less than 1.5 m.

203 The forecastle is to be closed. When the length of the forecastle is greater than 0.07 L, the surplus part may be open if fitted with freeing ports according to the International Convention on Load Lines, 1966.

204 The required bow height is defined as the vertical distance at the forward perpendicular from the loaded waterline to the top of the exposed deck at side and given by

$$H_B = 56\,L\left(1 - \frac{L}{500}\right)\frac{1.36}{C_B + 0.68} \qquad \text{(mm)}$$

C_B = Block coefficient at loaded waterline or 0.5 if C_B is not known.

E 300 Fish RSW Tanks

301 Refrigerated Sea Water (RSW) tanks for transportation of fish are to be designed for relevant pressure heads in accordance with the rules.

302 Where an internal skin is fitted and welded continuously to every other frame/stiffener and slot-welded to the rest, and the gap between skin and hull structure is filled with insulation of an approved type an effective flange, b = 40 t (where t = skin thickness, minimum 5 mm) may be included, when calculating the section modulus of strength members. The skin plate is to be made continuous with good end connections and should not be terminated abruptly.

303 The insulation material is to have good adhesion to steel and suitable strength characteristics (e.g. polyurethane foam, density of 45 kg/m^3). The steel surface is to be corrosion protected before it is insulated.

304 Corrugated bulkheads are to be supported along both bulkhead flanges in the bottom structure with sufficient connections to crossing members. Carlings are to be fitted in way of corners in corrugations and ends of unstiffened plate panels.

F. Stability

F 100 Application

101 Vessels with class notations **Fishing Vessel** or **Stern Trawler** with a length L_F of 24 m and above are to comply with the requirements of Pt.3 Ch.3 Sec.9 (as far as applicable), as well as the requirements

of this subsection. The rules cover IMO 2008 Intact Stability Code as applicable for fishing vessels, and Chapter III of the Torremolinos International Conference for the Safety of Fishing Vessels, as modified by the Torremolinos Protocol of 1993, with the exception of Regulation 14.

F 200 Documentation

201 Stability information in a simplified form may be accepted as an alternative or supplement to the stability booklet.

Guidance note:

A diagram showing the necessary amount of cargo in hold to comply with the criteria as a function of the percentage of fuel remaining, may be used as simplified stability information.

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202 Operational information is to be given such as general precautions against capsizing and procedures related to severe weather conditions, including precautions to prevent unintentional flooding. This should also include information on safe use of cranes and fishing gear, if relevant.

203 A sketch of buoyant volumes with their openings and closing appliances is to be included. This sketch is to include instructions on operation of the closing appliances (example: “To be kept closed at sea”).

204 If any of the closing appliances referred to in 203 have to be left open periodically during fishing, the opening(s) are to be considered as flooding points in the stability calculations. If the angle of flooding is less than 30°, 702 of this subsection applies.

Guidance note:

The internal opening of garbage chute which is operated in such a way that only one of the two required closing devices is open at a time need not be considered as a flooding point. (See Sec.5 A105 for arrangement of garbage chutes)

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F 300 Stability criteria

301 The following general criteria apply:

— The area under the righting lever curve (GZ curve) is not to be less than 0.055 metre-radians up to $\theta = 30°$ angle of heel and not less than 0.09 metre-radians up to $\theta = 40°$ or the angle of flooding θ_f if this angle is less than 40°. Additionally, the area under the righting lever curve (GZ curve) between the angles of heel of 30° and 40° or between 30° and θ_f, if this angle is less than 40°, should not be less than 0.03 metre-radians.
— The righting lever GZ is to be at least 0.20 m at an angle of heel equal to or greater than 30°.
— The maximum righting arm should occur at an angle of heel not less than 25°.

Guidance note:

In case the vessel's characteristics render compliance with the above criterion impracticable, the alternative criteria as given in Pt.3 Ch.3 Sec.9 D102 may be applied upon special consideration.

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— The initial metacentric height is not to be less than 0.35 meters in any operating condition.

302 The metacentric height GM in light ship condition is to be positive.

303 Fishing vessels of 45 m in length and over are to comply with the weather criterion of Pt.3 Ch.3 Sec.9 D201.

304 Fishing vessels in the length range between 24 m and 45 m are to comply with the weather criterion of Pt.3 Ch.3 Sec.9 D201, but the values of wind pressure are to be taken from Table F1.

Table F1 Wind pressure

h(m)	*1*	*2*	*3*	*4*	*5*	*6 and over*
P (N/m^2)	316	386	429	460	485	504

where h is the vertical distance from the centre of the projected vertical area of the ship above waterline, to the waterline.

F 400 Loading conditions

401 Compliance with the stability criteria shall be documented for the following standard loading conditions:

— departure for the fishing grounds with full fuel, fresh water, stores, ice, fishing gear, etc.

— departure from the fishing grounds with full catch, at maximum draught and no more than 30% fuel, fresh water and stores
— arrival at home port with full catch and 10% fuel, fresh water and stores remaining
— arrival at home port with 20% of full catch and 10% fuel, fresh water and stores remaining
— at fishing grounds with maximum catch on deck, hold empty and 50% fuel, fresh water and stores remaining (if consistent with fishing method)

402 Special loading conditions associated with a change in the vessel's mode or area of operation which affect the stability, are to be considered.

403 If water ballast must be filled between departure and arrival in order to meet the stability criteria, a loading condition is to be included showing when the water ballast must be taken on board. The condition is to show the situation just before ballasting, with the maximum free surface moments of the ballast tank(s) included.

404 Allowance for the weight of wet fishing net and tackle on deck, is to be included if applicable.

405 Allowance for ice accretion according to 501 must be shown in the worst operating condition in the stability booklet, if consistent with area of operation.

406 Homogeneous distribution of catch in all holds, hatch coamings and trunks is to be assumed, unless this is inconsistent with practice. (Volumetric centre of gravity and identical specific gravity for all holds available for catch.)

407 Catch on deck is to be included in the loading conditions showing departure from fishing grounds and arrival at port, if this is consistent with practice.

408 Free surface effect of catch is to be included, if relevant.

409 Free surface effect of water in fish bins is to be included in loading condition at fishing grounds, if relevant.

410 Free surface effect of RSW tanks is to be included, if this is consistent with practice.

411 In all loading conditions, full fishing gear and equipment is to be assumed.

F 500 Icing considerations

501 The calculation of weight and centre of gravity of the ice accretion, is to be based on the following assumptions:

— 30 kg per square metre on exposed weather decks and gangways
— 7.5 kg per square metre for projected lateral area of each side of the vessel above the water plane
— the projected lateral area of discontinuous surfaces of rail, sundry booms, spars (except masts) and rigging of vessels having no sails and the projected lateral area of other small objects should be computed by increasing the total projected area of continuous surfaces by 5% and the static moments of this area by 10%.

F 600 Roll reduction tanks

601 When equipped with roll reduction tanks, the reduction in stability due to the effect of these tanks must be allowed for in the loading conditions.

602 If the roll reduction tanks can not be used in all conditions of loading, an instruction on the use of these tanks and corresponding limit conditions must be included in the stability booklet. These limit conditions must show the stability of the vessel just before emptying the roll reduction tanks.

F 700 Water on deck and in compartments temporarily open to the sea

701 Accumulation of water on deck is to be assumed if the requirements on freeing port area (See Sec.6 B) are not fully met, or if the design of the weather deck is such that water may be trapped. The stability calculations shall take the effect of this water into account according to the requirements of 703 to 705.

702 If hatches or similar openings have to be left periodically open during operation, the stability calculations shall take the effect of water in the open compartment(s) into account according to the requirements of 703 to 705, provided that the angle of downflooding for the critical opening is less than 30°.

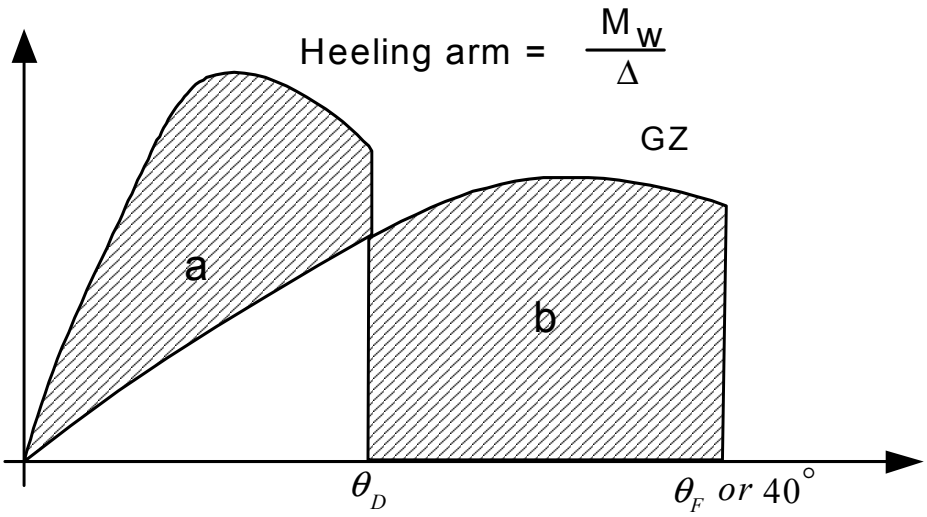

Fig. 1
Water on deck criterion

703 The ability of the vessel to withstand the heeling effect due to the presence of water on deck, is to be demonstrated by a quasi-static method. With reference to Fig. 1, the following criterion is to be satisfied with the vessel in the worst operating condition:

— area «b» shall be equal to or greater than area «a».

The angle that limits area «b» shall be taken as the angle of downflooding (θ_f) or 40°, whichever is less.

704 The value of the heeling moment M_W (or the corresponding heeling arm), due to the presence of water on deck shall be determined assuming that the deck well is filled to the top of the bulwark at its lowest point (or the flooding point of the open compartment). The vessel is to be heeled up to the angle at which this point is immersed (θ_D), where the heeling moment M_W (or the corresponding heeling arm), shall be terminated.

705 When calculating M_W the following assumptions shall be made:

— at the beginning the vessel is in the upright condition
— during heeling, trim and displacement are constant and equal to the values for the vessel without the water on deck
— the effect of freeing ports shall be ignored.

F 800 Onboard cranes

801 The effect on the stability of cranes when used for fishing operations, is to be considered in the stability calculations in accordance with the requirements given in 802 to 804.

802 The maximum possible crane heeling moment is to be assumed. The following shall be considered in the calculation of this moment:

— combination of safe working load on hooks and crane radius
— weight and position of boom relative to crane axis
— two cranes (or more) working in combination (if consistent with practise).

803 When the effect of the crane heeling moment is checked, the vertical centre of gravity of the loading condition shall be calculated with load on crane hooks. When the static heeling angle exceeds 5°, the heeling lever is to be drawn in the GZ diagram for the critical loading condition(s). Cranes are not to be used at sea, unless it can be demonstrated that the residual stability is sufficient.

804 Information on operational limitations on use of cranes, if any, is to be included in the stability booklet. This could include limitations on allowable load on hooks for certain conditions of loading. The maximum heeling moment calculated according to 802 shall be stated in the stability booklet.

F 900 Forces from fishing gear

901 When special arrangement of the fishing gear (e.g. trawls or purse seines) result in significant forces on the vessel with impact on the stability, this is to be considered in the stability calculations.

G. Fire Safety

G 100 Application

101 Fishing vessels of less than 500 gross tonnage or less than 45 m length (L) are to comply with the requirements for cargo ships given in Pt.4 Ch.10 Sec.2 and to 603 and 604.

102 Fishing vessels of 500 gross tonnage and above, or 45 m length (L) and above are to comply with the requirements specified in 200 to 800.

103 Vessels complying with the fire safety requirements applicable for a "new vessel" in "Torremolinos International Convention for the Safety Of Fishing Vessels" 1977, as modified by the "Torremolinos Protocol" of 1993, or an equivalent standard such as the Council Directive 97/70/EC of 11 December 1997 as amended, (setting up a harmonised safety regime for fishing vessels of 24 meters in length and over), need not comply with the requirements referred to in G101 and G102 above.

G 200 Documentation

201 Documentation shall be submitted as required by Table G1.

Table G1 Documentation requirements

Object	*Documentation type*	*Additional description*	*Info*
Structural fire protection	G060 - Structural fire protection drawing		AP
	V060 – Penetration drawings		AP
Fire water system	S010 - Piping diagram		AP
	S030 - Capacity		AP
	Z030 - System arrangement plan		AP
Machinery spaces fixed fire fighting system	G200 - Fixed fire extinguishing system documentation		AP
Fire detection and alarm system	I200 - Control and monitoring system documentation	If E0 notation is requested:	AP
	Z030 - System arrangement plan	If E0 notation is requested:	AP
Safety, general	G040 - Fire control plan		AP

202 For general requirements to documentation, see Pt.0 Ch.3 Sec.1.

203 For a full definition of the documentation types, see Pt.0 Ch.3 Sec.2.

G 300 Fire pumps and water distribution system

301 Fire pumps and water distribution systems shall comply with the requirements in SOLAS Ch. II-2 Reg. 10.2 as applicable for cargo ships.

G 400 Fire safety arrangement in machinery spaces

401 The arrangement of fixed total flooding extinguishing system and fire-extinguishing appliances in machinery spaces shall comply with the requirements in SOLAS Ch. II-2 Reg. 10.5 as applicable for cargo ships. Local application system according to Reg. 10.5.6 will not be required.

402 Escape arrangements in machinery spaces shall comply with the requirements of SOLAS Ch. II-2 Reg. 13.4.2. This will be reviewed in connection with approval of the structural fire protection plan.

403 Detection in periodically unattended machinery spaces will only be reviewed if notation E0 is requested.

G 500 Firefighter's outfits

501 Fishing vessels shall be provided with at least two sets of firefighter's outfits complying with SOLAS Ch. II-2 Reg. 10.10.

G 600 Fire protection of bulkheads and decks

601 Structural fire protection shall comply with the requirements in SOLAS Ch. II-2 Reg. 9.2 as applicable for cargo ships. Method of protection as defined in Reg. 2.3.1 should be IC.

602 Materials shall comply with the requirements in SOLAS Ch. II-2 Reg. 5.3 and 6 as applicable for cargo vessels.

603 Combustible insulation materials are accepted in compartments for stowage of fish provided low ignitability and low flame spread properties are documented.

Testing is to be carried out in accordance with a recognized standard, e.g. DIN 4102.1 B2 or equivalent.

The test method chosen is to be suitable for the type of foam in question.

604 Combustible insulation as accepted by 603 is to be protected by close-fitting cladding. Acceptable cladding is steel sheet and marine plywood. Surface coatings are to have low flame spread properties.

G 700 Portable fire extinguishers

701 Portable fire extinguishers shall be provided in accordance with the requirements in SOLAS Ch. II-2 Reg. 10.3 as applicable for cargo ships.

G 800 Fire Control Plan

801 Fire control plans shall be provided as to comply with the requirements in SOLAS Ch. II-2 Reg.15.2.4.

SECTION 2
DESIGN REQUIREMENTS

A. General

A 100 Draught for scantlings

101 For fishing vessels for which the draught is not limited by any freeboard mark, the moulded depth D instead of draught T is to be used when calculating the scantlings of strength members.

A 200 Cargo hold bulkheads

201 The cargo hold bulkheads may be classified as follows:

Type A: Bulkheads in cargo holds intended for dry cargo.

Type B: Bulkheads in cargo holds intended for fish in bulk.

Type C: Bulkheads in cargo holds intended for liquids
(for instance RSW-tanks, sludge etc.)

202 The strength of the different bulkhead types is to comply with the requirements given in:

For **Type A:** Pt.3 Ch.2 Sec.8 - Watertight bulkheads

For **Type B:** Sec.4

For **Type C:** Pt.3 Ch.2 Sec.8 - Tank bulkheads.

A 300 Pillars

301 Pillars acting as supports for deck loadings are to be permanently connected at top or bottom. If the connections are arranged with bolts these bolts are to be secured by welding.

302 Pillars acting as supports for shifting boards only may have ordinary bolt connections.

A 400 Bulwarks

401 The thickness of bulwark plating is not to be less than 80% of Rule thickness of side shell plating, and minimum 6 mm.

402 Bulwark stays are to be fitted at every 2nd frame.

A 500 Internal communications

501 A general emergency alarm system shall be provided on all fishing vessels and stern trawlers.

502 If the 'tweendeck is fitted with side openings, two-way voice communication, fixed or portable, shall be provided between the bridge and in way of the doors in the vessel's side and stern. Alternatively, TV monitoring may be provided.

503 For electrical requirements refer to Pt.4 Ch.8 Sec.2.

B. Fishing Vessel

B 100 Additional requirements

101 Vessels built for fishing may be given the additional class notation **Fishing Vessel** provided the additional requirements in 102-105 are also complied with.

102 The thickness of bottom and side shell plating up to a height 2 m above loaded waterline is not to be less than

$$t = \frac{4 + 0.06L}{\sqrt{f_1}} + 2 \quad \text{(mm)}$$

t need not be taken more than 10 mm.

However, for ship with L > 125 m t is also to comply with requirements given in Pt.3 Ch.1 Sec.7.

103 The thickness of side shell plating above 2 m above loaded water line is not to be less than given in Pt.3 Ch.2 Sec.6

104 For frame spacings exceeding the rule values given in Sec.1 the plate thicknesses in 102 and 103 are to

be increased in direct proportion.

105 The thickness of bottom plating is also to comply with the requirements to buckling strength as given in Pt.3 Ch.1 Sec.14 or Pt.3 Ch.2 Sec.13.

C. Stern Trawler

C 100 Additional requirements

101 Vessels built for stern trawling may be given the additional class notation **Stern Trawler** provided the additional requirements in 102-109 are also complied with.

102 The thickness of bottom and side shell plating up to a height 2 m above loaded waterline is not to be less than

$$t = \frac{4 + 0.04L}{\sqrt{f_1}} + 2 \quad \text{(mm)}$$

t need not be taken more than 10 mm.

However, for ships with L > 125m t is also to comply with requirements given in Pt.3 Ch.1 Sec.7.

103 The thickness of side shell plating above the limit given in 102 is not to be less than given in Pt.3 Ch.2 Sec.6.

104 For frame spacings exceeding the rule values given in Sec.1 the plate thickness is to be increased in direct proportion.

105 The thickness of bottom plating is also to comply with the requirements to buckling strength as given in Pt.3 Ch.1 Sec.14 or Pt.3 Ch.2 Sec.13.

106 The thickness of trawl ramp and adjacent side plating, stern and side plating abaft the point where the trawling boards are normally taken on board, is not to be less than:

$$t = \frac{5 + 0.12L}{\sqrt{f_1}} + 2 \quad \text{(mm), min. 12 mm}$$

107 Between gallows the bulwark plating is to have the same thickness as the side shell plating, and bulwark stays are to be fitted at every frame.

108 Where bulwarks, sheer strake, side shell and transom plating are particularly exposed to blows and chafing, steel rubbing pieces are to be fitted, consisting of minimum 75x37 mm half-round bars or equivalent.

109 The section modulus of stiffeners in the trawl ramp is not to be less than

$$Z = \frac{15\, l^2 s}{f_1} \quad (\text{cm}^3)$$

SECTION 3
BILGE AND DRAINAGE ARRANGEMENT

A. Arrangement

A 100 Cargo holds for fish in bulk

101 There is to be good drainage for water, oil or brine from the cargo. Trunks and gutters are to be located such that they at all times will provide good drainage from all layers of the cargo, throughout the hold.

102 In each bin there is to be drainage to bilge well through vertical drainage trunks of perforated plates, grating, etc. as specified in Table A1.

The minimum acceptable perforated circumference per trunk is 0.3 m. The perforations are to consist of 4-8 mm holes or equivalent.

Table A1 Drainage arrangement.

Area in m^2 of bin below deck	*Minimum number of drainage trunks per bin*	*Total length in m of trunk perforated circumference per bin*
A < 10	2	0.8
10 ≤ A < 15	3	1.0
15 ≤ A < 20	3	1.2
20 ≤ A < 25	4	1.4
25 ≤ A < 30	4	1.6
30 ≤ A < 35	5	1.8

103 Each cargo hold is to have a bilge well at its after end. If the length of the watertight compartment exceeds 9 m, there is to be a bilge well also at the forward end.

Each bilge well is to have a volume not less than 0.15 m^3.

104 From each bilge well, a separate branch suction line is to be led to the engine room. The bilge distribution chest valves are to be of screw-down non-return type. All valves are to be fitted in readily accessible positions.

105 The valve chest collecting branch suction lines from cargo holds for fish in bulk are to have no connections from dry compartments. The valve chest is to be directly connected to the largest bilge pump. In addition, a connection is to be provided to another bilge pump.

106 The internal diameter of the branch suction lines is to be as required in Pt.4 Ch.6 for main bilge lines. Minimum diameter 50 mm.

107 Means for back-flushing bilge suctions is to be provided. The connecting of water supply for back-flushing is to be by portable means, e.g. hose.

A 200 Tanks for fish in refrigerated sea water tanks (RSW-tanks)

201 The RSW-tanks are to have a pumping system for filling and emptying of seawater. The system is to have pipe dimensions complying with the requirements for ballast systems.

202 If the tanks are to be used also for carrying dry cargo, the tanks are to be arranged with bilge system. If the tanks are to be used for carrying fish in bulk, the requirements given in 103 and 104 are also to be complied with.

203 Where RSW-tanks are also arranged for carrying dry cargo, blank flanging or two closeable valves in series to avoid ingress of water from RSW system to the bilge system are required.

A 300 'Tween deck for fish in bulk

301 Fishing vessels intended for carrying fish loose on tween deck are to have a satisfactory arrangement for drainage of tween deck. The drainage may be led to bilge well in the hold below or arranged as given in 104-107.

302 For tween deck compartments having no openings where sea may penetrate and where no processing requiring supply of water is taking place, drainage to bilge will in the engine room may be accepted. The drainage pipes are normally not to exceed 50 mm in diameter and are to have a self-closing valve at the engine room side.

303 For combination vessels, i.e. longline, net fishing, etc. an efficient drainage system is to be provided for all weathertight divisions/compartments in addition to the drainage from tween deck.

A 400 Engine room bilge water monitoring

401 Alarm for high level in bilge wells in engine room is to be installed on the bridge.

SECTION 4
CARGO HOLDS FOR FISH IN BULK

A. General

A 100 Classification

101 If the requirements in this Section are complied with the notation **S** may be added to the class notation assigned in accordance with Sec.1 and 2 for fishing vessels intended for carrying fish in bulk.

A 200 Assumptions

201 The rules in this section are based on the assumptions that:

— during loading in vessels having one longitudinal bulkhead, the level of cargo at any time will be approximately the same on both sides of the bulkhead
— cargo not carried in tanks, is drained before loading
— cargo holds fully loaded with fish treated with preserving agent, are checked regarding swelling.

B. Bulkhead Arrangement and Strength

B 100 Location of bulkheads

101 Longitudinal bulkheads are normally to be arranged as follows:

B ≤ 6 m : One centre line

B > 6 m : Two bulkheads

B = internal ship breadth measured between shell or ceiling.

102 Longitudinal bulkheads are to be positioned symmetrically about the ship's centre line.

103 Transverse bulkheads in cargo holds are normally not to be spaced more than 0.15 L apart. The spacing need not be taken less than 9 m and is not to exceed 12 m.

B 200 Design load conditions

201 If there is one longitudinal centre line bulkhead a loading condition as defined in A 201 is assumed.

202 If there are two or more longitudinal bulkheads, these are to be designed for one-sided loading.

203 Transverse bulkheads are to be designed for one-sided loading.

B 300 Longitudinal bulkheads with vertical wooden boards

301 In hatch openings in which vertical wooden boards are used, a steel stiffener is to be fitted at each side of the bulkhead top, and if necessary also half way up the bulkhead.

The section modulus of the longitudinal stiffeners in accordance with 302 is given on the assumption that stiffeners on each side of the bulkhead are connected to each other at 1/4 and 1/2 span. For area of connection, see 609. If the stiffeners are not connected to each other, the section modulus according to 302 is doubled.

302 The section modulus of each steel stiffener is to be at least:

$$Z = \frac{s+3}{6 f_1} k\, h^2\, l^2 \qquad (cm^3)$$

k = 1.2 for one longitudinal bulkhead
k = 1.6 for two or more longitudinal bulkheads
h = height of bulkhead in m
l = distance between supports of steel stiffeners in m
s = greatest transverse distance between bulkheads or between bulkhead and ceiling at side in m.

The minimum section modulus is 40 cm^3.

303 When steel stiffeners are fitted at both the top and half height of the bulkhead, the section modulus of the steel stiffeners is decided as follows:

Upper stiffeners:

$$Z = \frac{0.4 h^2 l^2}{f_1} \quad (cm^3)$$

Middle stiffener:

$$Z = \frac{s+3}{6 f_1} k h^2 l^2 \quad (cm^3)$$

k = 1.6 for one longitudinal bulkhead
k = 2.2 for two or more longitudinal bulkheads.

Remaining symbols as given in 302.

304 When there is one longitudinal bulkhead, the wooden board thickness is to be at least:

— Without steel stiffener at mid-height:

$$t = 31\ h \quad (mm)$$

— With steel stiffener at mid-height and at bulkhead top:

$$t = 10\ h + 35 \quad (mm), \text{ min. } 63 \text{ mm}$$

h = bulkhead height in m.

305 When there are two or more longitudinal bulkheads, the thickness of wooden boards is to be at least:

$$t = 22 l \sqrt{h} \quad (mm), \quad \text{min } 76 \text{ mm}$$

l = greatest span between supports in m
h = bulkhead height in m.

306 In hatch openings a channel section or similar is to be fitted over the top of the bulkhead to prevent the boards from floating away from the bulkhead. If the channel section is supported by the hatchway beams, these are to be secured to the hatch coamings.

307 The depth of guides for vertical boards is to be at least 100 mm below the deck and at the bottom. The minimum thickness of the section or plate which forms the guide is to be 10 mm. The clearance in the longitudinal direction of the boards is to be as small as possible.

308 Guide bars are to have a continuous weld connection to the deck and bottom structure, see 604. In way of hatches the bottom guides are to be stiffened with tripping brackets maximum 2 frame spaces apart. Guide bars bedded in concrete are to be fastened to the ship's bottom structure. If this is not feasible, the guide bars are to be securely fastened in the concrete.

B 400 Longitudinal bulkheads with horizontal wooden boards

401 The distance between vertical uprights, or permanent transverse bulkheads and uprights is normally not to be greater than 2.0 m and is in no case to exceed 2.25 m.

402 If there is one longitudinal bulkhead, the section modulus of uprights is to be at least:

$$Z = \frac{0.5(s+3)h^3 b}{f_1} \quad (cm^3), \text{ min. } 40 \text{ cm}^3$$

h = free span of upright in m
b = distance between uprights in m
s = greatest transverse distance between bulkheads or between bulkhead and ceiling at side in m.

403 If there are two or more longitudinal bulkheads, the section modulus of uprights is to be at least:

$$Z = \frac{5.0\ h^3 b}{f_1} \quad (cm^3), \text{ min. } 40 \text{ cm}^3$$

h = free span of upright in m
b = distance between uprights in m

404 The uprights are to be secured at top and bottom so that the reaction forces are distributed to adjacent

structures.

405 If openings are cut in the uprights for the entering of the upper boards, the boards in the opening are to be locked in position to prevent their slipping out of the guide.

406 Permanent pillars for hatch end beams or transverses which also serve as guides for shifting boards or removable bulkheads in steel ships are to have extra stiffening with brackets at the top. For scantlings of pillars, see 402 and 403.

407 The wooden board thickness is to be at least:

$$t = k\, l \sqrt{h} \quad \text{(mm)}$$

k = 20 for one longitudinal bulkhead
k = 24 for two or more longitudinal bulkheads
h = bulkhead height in m
l = distance between uprights in m.

Minimum board thickness is 76 mm for bulkhead heights over 1.9 m and 63 mm for lower heights.

408 Supporting guides for wooden boards in stiffeners or uprights are to be at least 75 mm deep and made of plates or sections of at least 10 mm thickness. If the sections do not comply with the requirements to groove depth or breadth for bulkhead boards, a flat bar (or similar) is to be welded to the flange of the section and the breadth may be adjusted by inserting a lining into the groove.

409 Bulkheads are to extend to the deck. Between beams, the spaces above bulkheads are to be packed with filling pieces such as steel plates which are to run down the side of the uppermost board and be fastened to this.

B 500 Transverse bulkheads with vertical wooden boards

501 When horizontal steel stiffeners are fitted at half height of the bulkhead, the section modulus of the steel stiffener is to be at least:

$$Z = \frac{2.6\, h^2 l^2}{f_1} \ (cm^3), \ \text{min. } 40\ cm^3$$

h = bulkhead height in m
l = distance between supports in m.

502 In exceptional cases the horizontal stiffener may be fitted on the hold side. A 100 x 12 mm flat bar is then to be fitted on the other side of the bulkhead. The bar is bolted to the horizontal stiffener with bolts spaced not more than 200 mm. The sectional area of the bolts at bottom of threads is not to be less than:

$$A = 1.2\, h^2\, b \quad (cm^2)$$

h = bulkhead height in m
b = bolt spacing in m.

Minimum bolt diameter 16 mm.

503 The horizontal stiffener is fastened to frames etc. with bolts of which at least 2 on each side are to be through bolts. The total sectional area of the bolts at bottom of threads at each end is not to be less than:

$$A = 0.6\, h\, l \quad (cm^2)$$

h = bulkhead height in m
l = span of stiffeners in m.

Minimum bolt diameter 16 mm.

504 The wooden board thickness is to be at least:

$$t = 25\, l \sqrt{h} \quad \text{(mm)}$$

l = greatest span between supports in m
h = bulkhead height in m.

Minimum board thickness in 76 mm and 63 mm, respectively, when the bulkhead height is, more or less than 1.8 m.

505 For details, see 404, 405, 406, 408 and 409.

B 600 Transverse bulkheads with horizontal wooden boards

601 The section modulus of uprights is to be at least:

$$Z = \frac{5.3\ h^3 b}{f_1}\ (cm^3),\ \text{min. } 40\ cm^3$$

h = free span of upright in m
b = distance between uprights in m.

602 The board thickness is to be at least:

$$t = 27\ l\ \sqrt{h} \qquad (mm)$$

h = bulkhead height in m
l = distance between uprights in m, maximum 2.0 m.

Minimum board thickness is 76 mm and 63 mm respectively, for bulkheads over and under 1.8 m in height.

603 For details, see 404, 405, 406, 408 and 409.

604 Area of attachment (bolts, etc.). The area of attachment at the lower end of removable uprights is to be at least:

$$A = 0.9\ h^2\ b \quad (cm^2)$$

h = bulkhead height in m
b = distance between uprights in m.

Minimum bolt diameter 16 mm.

605 Sectional area at bottom of threads per bolt for bolted bulkheads is to be determined according to the formula in 604 when:

b = bolt spacing in m.

Minimum bolt diameter 16 mm.

606 The area of attachment at the top for single deck vessels can be 60% of the area stipulated in 604 and 605.

607 All welds for the securing of bulkheads and uprights are to be of the double continuous type.

608 If a U-shaped collar is fitted around beams and keelson and secured with horizontal through bolts, the area of these bolts can be 60% of the area stipulated in 604 and 605.

609 The total area of attachment between horizontal stiffeners mentioned in 301, is to be at least:

$$A = 1.05\ h^2\ l \quad (cm^2)$$

h = bulkhead height in m
l = distance in m between support of stiffeners.

B 700 Permanent steel bulkheads

701 The section modulus of stiffeners on permanent longitudinal or transverse bulkheads is to be at least:

$$Z = \frac{k l^2 s h}{f_1}\ (cm^3),\ \text{min. } 15\ cm^3$$

k = 3.75 for one longitudinal bulkhead
k = 4.5 for transverse bulkheads
k = 4.5 for 2 or more longitudinal bulkheads
l = stiffener span in m
s = stiffener spacing in m
h = height in metres from midpoint of stiffener span to top of bulkhead or hatch coaming.

702 The stiffener's moment of inertia is to be at least:

$$I = 2.2\ Z\ \sqrt[3]{Z} \qquad (cm^4)$$

Z = as given in 701, with f_1=1.0.

703 Permanent pillars which are welded to permanent bulkheads and also serve as guides for removable bulkheads in way of hatches are to have scantlings as given in 701 and 702, when s = breadth of load surface in m. Remaining symbols as under 701.

704 The plate thickness in permanent steel bulkheads is to be as given in 802.

705 Corrugated bulkheads will be accepted provided their strength is equivalent to that of plane bulkheads.

706 Stiffeners are to be fitted with brackets at both ends. The brackets are not to terminate on unstiffened plating or over a scallop.

When the corrugations are deep, care is to be taken, particularly at the bottom, that the corners of the corrugations do not end on unstiffened plating.

707 The various structural parts are to be connected by welding in accordance with the requirements for watertight bulkheads.

B 800 Removable bulkheads of steel or aluminium

801 Removable steel or aluminium bulkheads which are used in connection with hatches are to be double plated with the stiffeners placed horizontally. Internal surfaces of steel bulkheads are to be covered by a corrosion-resistant coating.

802 The plate thickness in removable bulkheads is to be at least:

Steel:

$$t = \frac{3.4s}{\sqrt{f_1}}\sqrt{h} + 1.5 \quad \text{(mm), min. 6 mm}$$

Aluminium:

$$t = 4.7s\sqrt{h} + 1.5 \quad \text{(mm), min. 6 mm}$$

s = stiffener spacing in m
h = height in m from upper edge of bulkhead to lower edge of plating.

803 The section modulus of horizontal stiffeners is not to be less than:

Steel:

$$Z = \frac{7.0\, l^2 sh}{f_1} \quad (cm^3)$$

Aluminium:

$$Z = 13.5\, l^2\, s\, h \quad (cm^3)$$

l, s and h = as given in 701.

804 For aluminium materials with a guaranteed 0.1% tensile proof stress ($\sigma_{0.1}$) which exceeds 12.5 kp/mm^2, the requirement to Z can be reduced in direct proportion.

If however, the material's guaranteed $\sigma_{0.2}$ value is greater than 70% of the guaranteed ultimate tensile strength, the lower value is to be used as a basis for scantlings.

805 The moment of inertia of stiffeners is not to be less than:

$$I = k\, Z\, \sqrt[3]{Z} \qquad (cm^4)$$

k = 2.2 for steel
= 5.75 for aluminium
Z = as given in 803 for steel, with $f_1 = 1.0$.

806 When welding aluminium, attention should be paid to the reduced strength of the material in the weld area, and the weld should, where practicable, be positioned in less stressed areas.

807 Guides for removable bulkheads are to have brackets at 1 m spacing. The depth of the support at the sides of removable bulkheads is to be at least equal to the bulkhead thickness, and not less than 65 mm. The minimum thickness of sections or plates which form the guides, is 10 mm.

808 In order to prevent galvanic corrosion, insulation is to be fitted at connections or contact surfaces between steel and aluminium.

809 If necessary, removable bulkheads are to be equipped with a securing arrangement for preventing the bulkhead from floating.

Slot welding is carried out against a 50 x 8 mm steel flat bar or equivalent.

Removable aluminium bulkheads are presumed constructed of a sea-water resistant alloy.

B 900 Corrugated aluminium sections

901 Corrugated aluminium shifting boards may be used instead of horizontal wooden boards. The maximum length between supports is not to be greater than:

$$l = \frac{k}{h}\left(\frac{I_A\, h\, \sqrt{h}}{b}\right)^{\frac{1}{3}} \quad \text{(m)}$$

k = 0.6 for one longitudinal bulkhead
k = 0.5 for 2 or more longitudinal bulkheads
k = 0.4 for transverse bulkheads
h = bulkhead height in m
b = board breadth in m
I_A = moment of inertia of board in cm^4.

902 In order to prevent galvanic corrosion, insulation is to be fitted at connections or contact surfaces between steel and aluminium.

903 The corrugated boards are to be made of seawater resistant aluminium.

904 For details the same rules apply as for bulkheads with horizontal wooden boards.

SECTION 5
PREVENTION OF 'TWEEN DECK FLOODING

A. 'Tween Deck with Side Openings

A 100 Arrangement of side openings leading to 'tween deck (working deck)

101 Arrangement and closing appliances of openings in side which will normally be open when the vessel is at the fishing grounds, are to be in accordance with 102-105.

102 Doors in vessel's side and stern shall be limited in size and number to the minimum possible. The sill height is normally not to be less than 1000 mm. The doors with securing devices are to be designed with a strength equivalent to the structure in which they are fitted, and are to be so arranged that weathertight quick closing (approximately 15 second for side doors), can be easily executed by one member of the crew without the use of tools. This shall be possible also during black-out.

If arranged with remote closing from the bridge, a signal light is to be fitted at the port(s), warning automatically when closing is executed. To avoid injury when closing, TV monitoring of the door(s) or means of communication according to Sec.2 A502 is to be arranged.

Signboard with the following text to be fitted: “To be kept closed when not in use during fishing”.

103 Each opening for drainage by pumps from drainage wells is to be fitted with a type approved automatic non-return flap with manual means of closing operable from 1.5 m above the deck. The inboard opening shall be situated not lower than 0.02 Loa, or minimum 0.7 m above the maximum loaded waterline.

104 Drainage flaps leading directly overboard from drainage wells are to be limited to the minimum possible in size and number, and shall be flush with hull to avoid damage. Drainage flaps are to have vulcanised surfaces and be easy to flush clean. Drainage flaps are to be easily accessible for cleaning and survey.

Remote closing from the bridge shall be arranged in addition to manual means of closing operable from 1.5 m above the deck. A panel on the bridge is to show which flaps are open/closed.

105 Inboard openings of garbage chutes for disposal of fish waste, are to be located minimum 0.7 m above the maximum loaded water line. The inboard end is to be fitted with a weathertight hinged cover and necessary number of securing devices. The outboard end is to be fitted with a watertight closeable non-return valve operable from 1.5 m above deck. The arrangement is to be easy to flush clean, and be easily accessible for survey.

106 The wall thickness of the steel plates between hull plating and closeable non-return valve is not to be less than 12.5 mm. However, if possible to get access for inspection and maintenance the thickness can be reduced to 10 mm.

A 200 Drainage of 'tween deck with openings in side

201 'Tween deck with openings according to 101 shall be arranged with a drainage system in accordance with 202-207.

202 Drainage is to be carried out using separate pumps in drainage wells at side at the lowest position of the working deck. For vessels with a working deck of length greater than 9 m, drainage wells are to be fitted forward and aft. For working decks of length greater than B/2, drainage wells are to be fitted on both sides.

203 The volume of each drainage well is to be at least:

$$V = 0.5\ A_S\ l\ B$$

V = volume of drainage well in dm^3
B = breadth of vessel in metres
A_S = area of the side port(s) in m^2
l = length of working deck in metres.

The volume shall in no case be less than 0.15 m^3, and the depth of each well is to be at least 0.35 metres.

204 The arrangement of drainage wells are to provide for effective drainage and avoidance of clogging by fishing hooks and fish waste of pump suction.

205 The capacity of each bilge pump is to be the greatest of:

$Q = 3\ B\ A_S$ (m^3/h) and

Q = 1.25 times available wash-down capacity in m^3/h, for each side.

206 Bilge pumps are to be fitted with manual start/stop, and be designed to pump fish waste together with

drainage water. Outlet shall be in accordance with 103.

207 Alarm for free water on 'tween (working) deck is to be installed on the bridge. The alarm is to be activated when the drainage wells are full.

208 In addition to the arrangement described in 202-207, drainage flaps according to 104 may be installed in the drainage wells if necessary. The freeboard shall not be less than to the lower edge of the drainage flap opening, or 0.35 m measured from the deck.

A 300 Arrangement of openings from 'tween deck to other spaces

301 Closing appliances for openings from 'tween deck to spaces below deck, or to closed superstructure which is considered buoyant in the stability calculations, are to be in accordance with Sec.6 B106 of this Chapter.

B. Enclosed 'Tween Deck

B 100 Enclosed 'tween deck where water is used in processing

101 Any arrangement of garbage chutes is to be in accordance with A105.

102 Drainage from drainage wells is to be carried out by pumps. If the arrangement is based on separate pumps situated in each drainage well as in A201-A207, the outlet shall be in accordance with A103. The number and location of drainage wells shall be arranged so that satisfactory drainage is achieved. The capacity of drainage pumps shall be at least 1.25 times available wash-down capacity in m^3/h, for each side.

SECTION 6
FREEBOARD, OPENING AND CLOSING APPLIANCES

A. Freeboard

A 100 Freeboard

101 A vessel is to have a draught mark on each side. Draught marks are to be fitted on the sides at midship corresponding to the approved draught with respect to strength and stability. The draught marks shall be in the form of horizontal lines (450 mm long, 25 mm in height) with the letters NV placed 25 mm above the lines (letter dimensions: height - 115 mm, breadth - 75 mm, thickness - 25 mm). The marks shall be permanent, and be painted in contrasting colour.

102 The freeboard measured from the loaded waterline to the surface of freeboard deck at side, shall in no circumstance be less than 0 mm.

103 If the freeboard deck surface outside of weathertight enclosed superstructure in any place is lower, measured to the design waterline, than at midship where the draught mark is placed, the minimum freeboard at midship shall be corrected accordingly, so that no part of exposed freeboard deck is lower than the loaded waterline.

104 Vessels with open connection to sea from fishing wells/tanks for live fish are to have the same freeboard for summer and winter. The freeboard is to be minimum 100 mm.

B. Openings and Closing Appliances

B 100 Coaming and sill height, closing appliances, freeing ports

101 Coaming and sill heights, closing appliances, freeing port areas, air pipes, ventilators, sanitary discharges etc. shall be in accordance with the requirements in Pt.3 Ch.3 Sec.6, except as otherwise specified in this subsection.

102 The height above deck of sills in those doorways, in companionways, erections and machinery casings which give direct access to parts of the deck exposed to the weather and sea shall be at least 600 mm on the freeboard deck and at least 300 mm on the superstructure deck subject to special consideration, where operating experience has shown justification, these heights, except in the doorways giving direct access to machinery spaces, may be reduced to not less than 380 mm and 150 mm, respectively.

103 Weathertight doors leading to spaces below freeboard deck and to enclosed superstructure included as buoyant in the stability calculations, are to be positioned as close to the vessel's centreline as possible. Weathertight doors are to have a standard equivalent to ISO 6042. Spraytight doors of a standard equivalent to ISO may be accepted as weathertight doors on vessels with service restriction **R2** and in general for doors in bulkheads which are facing aft and on doors on 'tween deck in enclosed superstructure.

104 The height above deck of hatchway coamings shall be at least 600 mm on exposed parts of the freeboard deck and at least 300 mm on the superstructure deck.

105 Where operating experience has shown justification, and subject to special consideration, the height of the hatchway coamings may be reduced, or the coamings omitted entirely, provided that the safety of the vessel is not thereby impaired. In this case, the hatchway openings shall be kept as small as practicable and the covers be permanently attached by hinges or equivalent means and be capable of being rapidly closed and battened down, or by equally effective arrangements.

106 Flush deck hatches used for catch of fish should normally be led to a tank or a watertight fish bin. The closing arrangement of the hatches are to be operated from deck.

107 Hatch covers are to be weather- or watertight, with gaskets and necessary securing devices. For hatch covers of more than 4 m^2, small hatch covers shall be installed as close to the vessel's centreline as possible for use during operation. Such hatch covers are to have securing devices also at the hinged side. Hinged hatch covers are to be securable in open position.

108 Coaming height and sill height for hatches and doors on working deck in enclosed superstructure and deckhouses where water are used in the working process are not to be less than 100 mm.

109 In vessels of 45 m in length and over, the height above deck of ventilator coamings, other than machinery space ventilator coamings, shall be at least 900 mm on the freeboard deck and at least 760 mm on the superstructure deck. In vessels of less than 45 m in length, the height of these coamings shall be 760 mm and 450 mm respectively.

110 Closing appliances in vessels of 45 m in length and over need not be fitted to ventilators the coamings of which extend to more than 4.5 m above the freeboard deck or more than 2.3 m above the superstructure. In vessels of less than 45 m in length, closing appliances need not be fitted to ventilators the coamings of which extend to more than 3.4 m above the freeboard deck or more than 1.7 m above the superstructure deck.

111 Below the freeboard deck and in enclosed superstructure on freeboard deck, side scuttles with hinged deadlights are to be used.

112 Sidescuttles and windows may be accepted without deadlights in side and aft bulkheads of deckhouses located on or above the freeboard deck if satisfied that the safety of the vessel will not be impaired.

113 Sidescuttles and windows prone to be damaged by fishing gear shall be suitably protected.

114 Side scuttles in ship sides, including outboard side of enclosed superstructure and deckhouses at ship sides, are not to be closer to the loaded waterline than 500 mm. Such side scuttles shall be equipped with hinged deadlights. Side scuttles closer to the loaded waterline than 1000 mm shall not be possible to open.

115 The freeing port area on each side of net bins and other short wells on deck with length less than 5 m, may be calculated using the following formula:

$$A = 0.175\, l$$

l = length of well

In short wells of less than 3 meters, the freeing port area may be specially considered.

Covers of freeing ports are to be non-closeable and hinged in upper edge.

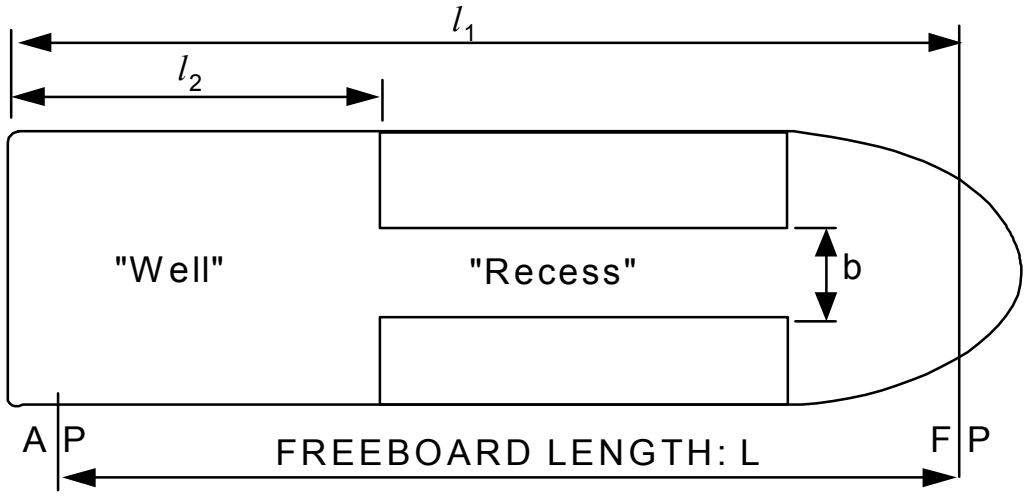

Fig. 1
Parameters used for calculation of freeing port area

116 For non-watertight fish bins, a drainage system is required in order to prevent flooding of the working deck area.

117 Ordinary freeing ports in high bulwarks (more than 1 meter in height), or in sides of open superstructure, are not considered as sufficient for drainage of exposed freeboard deck (may be accepted for vessel with service notation **RE**). Open superstructure such as open forecastle, separate walls at side or other similar constructions are therefore not acceptable, unless the stability requirements of Sec.1F for water on deck are complied with, or if sufficient drainage is provided according to 118.

118 For vessels where the sea may enter over the stern and flood the deck into a superstructure which is open in aft end, the freeing port area on each side is not to be less than required by the following formulas:

$$A_{Well} = \left((0.07\, l_2) + \frac{0.004(h - 1.2)l_2}{0.1}\right) y_1 y_2 \quad (m^2)$$

Where the length of the bulwark in the well is 20 metres or less

$$A_{Well} = \left((0.7 + 0.035 l_2) + \frac{0.004(h - 1.2) l_2}{0.1}\right) y_1 y_2 \quad (m^2)$$

$$A_{Recess} = \left[(0.07 l_1) \frac{b}{l_1} \left(1 - \left(\frac{l_2}{l_1}\right)^2\right)\right] y_1 y_2 \quad (m^2)$$

l_1 need in no case be taken as greater than 0.7 L.

y_1 = 0.5 for superstructure deck
= 1.0 for freeboard deck
y_2 = 1.5 for no shear
= 1.0 for suitable shear applied
h = average height of bulwark aft of the open superstructure.

Other parameters are defined by Fig. 1.

119 Freeing ports over 300 mm in depth shall be fitted with bars spaced not more than 230 mm nor less than 150 mm apart or provided with other suitable protective arrangements. Freeing port covers, if fitted, shall be of approved construction. If devices are considered necessary for locking freeing port covers during fishing operations they shall be easily operable from a readily accessible position.

120 Poundboards and means for stowage of the fishing gear shall be arranged so that the effectiveness of freeing ports will not be impaired. Poundboards shall be so constructed that they can be locked in position when in use and shall not hamper the discharge of shipped water.

121 In vessels intended to operate in areas subject to icing, covers and protective arrangements for freeing ports shall be capable of being easily removed to restrict ice accretion. The size of openings and means provided for removal of these protective arrangements are to be considered.

SECTION 7
STABILITY AND BOW HEIGHT FOR VESSELS WITH CLASS NOTATION (N)

A. General

A 100 General

101 Vessels complying with the requirements for stability in paragraph 11 of the 1993 regulations of the Norwegian Maritime Directorate for FISKE- OG FANGSTFARTØY and the bow height requirements in B, may have the additional class notation **(N)**.

B. Bow Height

B 100 Bow height

101 The bow height in mm measured vertically at the forward perpendicular from the loaded waterline to the exposed deck, is to be at least:

43 Loa + 310, for vessels up to Loa = 24 m

48 Loa + 190, for vessels with Loa = 24 m and above.

102 For vessels of 50 gross tonnage and above, the loaded waterline is the summer load line parallel to the design waterline.

103 For vessels below 50 gross tonnage, the loaded waterline is a waterline parallel with the design waterline corresponding to a freeboard of 100 mm at midship.

104 The required bow heights is considered as complied with, only when the height is measured from:

— the freeboard deck, having an approximately even sheer from midship to the forward perpendicular
— deck of weathertight enclosed forecastle with length of at least 0.1 Loa, and with sheer in forecastle deck (with this minimum forecastle length) not greater than the sheer of the freeboard deck.

With small or no sheer in freeboard deck, the length of weathertight enclosed forecastle may have to be increased.