



Rules for the Classification of Steel Ships

PART B – Hull and Stability

NR 467.B1 DT R13 E

July 2021

Marine & Offshore
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1. INDEPENDENCE OF THE SOCIETY AND APPLICABLE TERMS

- 1.1** The Society shall remain at all times an independent contractor and neither the Society nor any of its officers, employees, servants, agents or subcontractors shall be or act as an employee, servant or agent of any other party hereto in the performance of the Services.
- 1.2** The operations of the Society in providing its Services are exclusively conducted by way of random inspections and do not, in any circumstances, involve monitoring or exhaustive verification.
- 1.3** The Society acts as a services provider. This cannot be construed as an obligation bearing on the Society to obtain a result or as a warranty. The Society is not and may not be considered as an underwriter, broker in Unit's sale or chartering, expert in Unit's valuation, consulting engineer, controller, naval architect, designer, manufacturer, shipbuilder, repair or conversion yard, charterer or shipowner; none of the above listed being relieved from any of their expressed or implied obligations as a result of the interventions of the Society.
- 1.4** Only the Society is qualified to apply and interpret its Rules.
- 1.5** The Client acknowledges the latest versions of the Conditions and of the applicable Rules applying to the Services' performance.
- 1.6** Unless an express written agreement is made between the Parties on the applicable Rules, the applicable Rules shall be the Rules applicable at the time of entering into the relevant contract for the performance of the Services.
- 1.7** The Services' performance is solely based on the Conditions. No other terms shall apply whether express or implied.

2. DEFINITIONS

- 2.1** "Certificate(s)" means classification or statutory certificates, attestations and reports following the Society's intervention.
- 2.2** "Certification" means the activity of certification in application of national and international regulations or standards ("Applicable Referential"), in particular by delegation from different governments that can result in the issuance of a Certificate.
- 2.3** "Classification" means the classification of a Unit that can result or not in the issuance of a classification Certificate with reference to the Rules. Classification (or Certification as defined in clause 2.2) is an appraisalment given by the Society to the Client, at a certain date, following surveys by its surveyors on the level of compliance of the Unit to the Society's Rules and/or to Applicable Referential for the Services provided. They cannot be construed as an implied or express warranty of safety, fitness for the purpose, seaworthiness of the Unit or of its value for sale, insurance or chartering.
- 2.4** "Client" means the Party and/or its representative requesting the Services.
- 2.5** "Conditions" means the terms and conditions set out in the present document.
- 2.6** "Industry Practice" means international maritime and/or offshore industry practices.
- 2.7** "Intellectual Property" means all patents, rights to inventions, utility models, copyright and related rights, trade marks, logos, service marks, trade dress, business and domain names, rights in trade dress or get-up, rights in goodwill or to sue for passing off, unfair competition rights, rights in designs, rights in computer software, database rights, topography rights, moral rights, rights in confidential information (including know-how and trade secrets), methods and protocols for Services, and any other intellectual property rights, in each case whether capable of registration, registered or unregistered and including all applications for and renewals, reversions or extensions of such rights, and all similar or equivalent rights or forms of protection in any part of the world.
- 2.8** "Parties" means the Society and Client together.
- 2.9** "Party" means the Society or the Client.
- 2.10** "Register" means the public electronic register of ships updated regularly by the Society.
- 2.11** "Rules" means the Society's classification rules (available online on veristar.com), guidance notes and other documents. The Society's Rules take into account at the date of their preparation the state of currently available and proven technical minimum requirements but are not a standard or a code of construction neither a guide for maintenance, a safety handbook or a guide of professional practices, all of which are assumed to be known in detail and carefully followed at all times by the Client.
- 2.12** "Services" means the services set out in clauses 2.2 and 2.3 but also other services related to Classification and Certification such as, but not limited to: ship and company safety management certification, ship and port security certification, maritime labour certification, training activities, all activities and duties incidental thereto such as documentation on any supporting means, software, instrumentation, measurements, tests and trials on board. The Services are carried out by the Society according to the Rules and/or the Applicable Referential and to the Bureau Veritas' Code of Ethics. The Society shall perform the Services according to the applicable national and international standards and Industry Practice and always on the assumption that the Client is aware of such standards and Industry Practice.
- 2.13** "Society" means the classification society 'Bureau Veritas Marine & Offshore SAS', a company organized and existing under the laws of France, registered in Nanterre under number 821 131 844, or any other legal entity of Bureau Veritas Group as may be specified in the relevant contract, and whose main activities are Classification and Certification of ships or offshore units.
- 2.14** "Unit" means any ship or vessel or offshore unit or structure of any type or part of it or system whether linked to shore, river bed or sea bed or not, whether operated or located at sea or in inland waters or partly on land, including submarines, hovercrafts, drilling rigs, offshore installations of any type and of any purpose, their related and ancillary equipment, subsea or not, such as well head and pipelines, mooring legs and mooring points or otherwise as decided by the Society.

3. SCOPE AND PERFORMANCE

- 3.1** Subject to the Services requested and always by reference to the Rules, and/or to the Applicable Referential, the Society shall:
- review the construction arrangements of the Unit as shown on the documents provided by the Client;
 - conduct the Unit surveys at the place of the Unit construction;
 - class the Unit and enter the Unit's class in the Society's Register;
 - survey the Unit periodically in service to note whether the requirements for the maintenance of class are met.
- The Client shall inform the Society without delay of any circumstances which may cause any changes on the conducted surveys or Services.
- 3.2** The Society will not:
- declare the acceptance or commissioning of a Unit, nor its construction in conformity with its design, such activities remaining under the exclusive responsibility of the Unit's owner or builder;
 - engage in any work relating to the design, construction, production or repair checks, neither in the operation of the Unit or the Unit's trade, neither in any advisory services, and cannot be held liable on those accounts.

4. RESERVATION CLAUSE

- 4.1** The Client shall always: (i) maintain the Unit in good safety condition after surveys; (ii) present the Unit for surveys; and (iii) inform the Society in due time of any circumstances that may affect the given appraisalment of the Unit or cause to modify the scope of the Services.
- 4.2** Certificates are only valid if issued by the Society.
- 4.3** The Society has entire control over the Certificates issued and may at any time withdraw a Certificate at its entire discretion including, but not limited to, in the following situations: where the Client fails to comply in due time with instructions of the Society or where the Client fails to pay in accordance with clause 6.2 hereunder.
- 4.4** The Society may at times and at its sole discretion give an opinion on a design or any technical element that would 'in principle' be acceptable to the Society. This opinion shall not presume on the final issuance of any Certificate nor on its content in the event of the actual issuance of a Certificate. This opinion shall only be an appraisalment made by the Society which shall not be held liable for it.

5. ACCESS AND SAFETY

- 5.1** The Client shall give to the Society all access and information necessary for the efficient performance of the requested Services. The Client shall be the sole responsible for the conditions of presentation of the Unit for tests, trials and surveys and the conditions under which tests and trials are carried out. Any information, drawing, etc. required for the performance of the Services must be made available in due time.
- 5.2** The Client shall notify the Society of any relevant safety issue and shall take all necessary safety-related measures to ensure a safe work environment for the Society or any of its officers, employees, servants, agents or subcontractors and shall comply with all applicable safety regulations.

6. PAYMENT OF INVOICES

- 6.1** The provision of the Services by the Society, whether complete or not, involves, for the part carried out, the payment of fees thirty (30) days upon issuance of the invoice.
- 6.2** Without prejudice to any other rights hereunder, in case of Client's payment default, the Society shall be entitled to charge, in addition to the amount not properly paid, interest equal to twelve (12) months LIBOR plus two (2)

per-cent as of due date calculated on the number of days such payment is delinquent. The Society shall also have the right to withhold Certificates and other documents and/or to suspend or revoke the validity of Certificates.

- 6.3** In case of dispute on the invoice amount, the undisputed portion of the invoice shall be paid and an explanation on the dispute shall accompany payment so that action can be taken to resolve the dispute.

7. LIABILITY

- 7.1** The Society bears no liability for consequential loss. For the purpose of this clause consequential loss shall include, without limitation:
- Indirect or consequential loss;
 - Any loss and/or deferral of production, loss of product, loss of use, loss of bargain, loss of revenue, loss of profit or anticipated profit, loss of business and business interruption, in each case whether direct or indirect.
- The Client shall defend, release, save, indemnify, defend and hold harmless the Society from the Client's own consequential loss regardless of cause.
- 7.2** Except in case of wilful misconduct of the Society, death or bodily injury caused by the Society's negligence and any other liability that could not be, by law, limited, the Society's maximum liability towards the Client is limited to one hundred and fifty per-cent (150%) of the price paid by the Client to the Society for the Services having caused the damage. This limit applies to any liability of whatsoever nature and howsoever arising, including fault by the Society, breach of contract, breach of warranty, tort, strict liability, breach of statute.
- 7.3** All claims shall be presented to the Society in writing within three (3) months of the completion of Services' performance or (if later) the date when the events which are relied on were first discovered by the Client. Any claim not so presented as defined above shall be deemed waived and absolutely time barred.

8. INDEMNITY CLAUSE

- 8.1** The Client shall defend, release, save, indemnify and hold harmless the Society from and against any and all claims, demands, lawsuits or actions for damages, including legal fees, for harm or loss to persons and/or property tangible, intangible or otherwise which may be brought against the Society, incidental to, arising out of or in connection with the performance of the Services (including for damages arising out of or in connection with opinions delivered according to clause 4.4 above) except for those claims caused solely and completely by the gross negligence of the Society, its officers, employees, servants, agents or subcontractors.

9. TERMINATION

- 9.1** The Parties shall have the right to terminate the Services (and the relevant contract) for convenience after giving the other Party thirty (30) days' written notice, and without prejudice to clause 6 above.
- 9.2** The Services shall be automatically and immediately terminated in the event the Client can no longer establish any form of interest in the Unit (e.g. sale, scrapping).
- 9.3** The Classification granted to the concerned Unit and the previously issued Certificates shall remain valid until the date of effect of the termination notice issued, or immediately in the event of termination under clause 9.2, subject to compliance with clause 4.1 and 6 above.
- 9.4** In the event where, in the reasonable opinion of the Society, the Client is in breach, or is suspected to be in breach of clause 16 of the Conditions, the Society shall have the right to terminate the Services (and the relevant contracts associated) with immediate effect.

10. FORCE MAJEURE

- 10.1** Neither Party shall be responsible or liable for any failure to fulfil any term or provision of the Conditions if and to the extent that fulfilment has been delayed or temporarily prevented by a force majeure occurrence without the fault or negligence of the Party affected and which, by the exercise of reasonable diligence, the said Party is unable to provide against.
- 10.2** For the purpose of this clause, force majeure shall mean any circumstance not being within a Party's reasonable control including, but not limited to: acts of God, natural disasters, epidemics or pandemics, wars, terrorist attacks, riots, sabotages, impositions of sanctions, embargoes, nuclear, chemical or biological contaminations, laws or action taken by a government or public authority, quotas or prohibition, expropriations, destructions of the worksite, explosions, fires, accidents, any labour or trade disputes, strikes or lockouts.

11. CONFIDENTIALITY

- 11.1** The documents and data provided to or prepared by the Society in performing the Services, and the information made available to the Society, will be treated as confidential except where the information:
- is properly and lawfully in the possession of the Society;
 - is already in possession of the public or has entered the public domain, other than through a breach of this obligation;
 - is acquired or received independently from a third party that has the right to disseminate such information;
 - is required to be disclosed under applicable law or by a governmental order, decree, regulation or rule or by a stock exchange authority (provided that the receiving Party shall make all reasonable efforts to give prompt written notice to the disclosing Party prior to such disclosure).
- 11.2** The Parties shall use the confidential information exclusively within the framework of their activity underlying these Conditions.
- 11.3** Confidential information shall only be provided to third parties with the prior written consent of the other Party. However, such prior consent shall not be required when the Society provides the confidential information to a subsidiary.
- 11.4** Without prejudice to sub-clause 11.1, the Society shall have the right to disclose the confidential information if required to do so under regulations of the International Association of Classifications Societies (IACS) or any statutory obligations.

12. INTELLECTUAL PROPERTY

- 12.1** Each Party exclusively owns all rights to its Intellectual Property created before or after the commencement date of the Conditions and whether or not associated with any contract between the Parties.
- 12.2** The Intellectual Property developed by the Society for the performance of the Services including, but not limited to drawings, calculations, and reports shall remain the exclusive property of the Society.

13. ASSIGNMENT

- 13.1** The contract resulting from the Conditions cannot be assigned or transferred by any means by a Party to any third party without the prior written consent of the other Party.
- 13.2** The Society shall however have the right to assign or transfer by any means the said contract to a subsidiary of the Bureau Veritas Group.

14. SEVERABILITY

- 14.1** Invalidity of one or more provisions does not affect the remaining provisions.
- 14.2** Definitions herein take precedence over other definitions which may appear in other documents issued by the Society.
- 14.3** In case of doubt as to the interpretation of the Conditions, the English text shall prevail.

15. GOVERNING LAW AND DISPUTE RESOLUTION

- 15.1** These Conditions shall be construed in accordance with and governed by the laws of England and Wales.
- 15.2** Any dispute shall be finally settled under the Rules of Arbitration of the Maritime Arbitration Chamber of Paris ("CAMP"), which rules are deemed to be incorporated by reference into this clause. The number of arbitrators shall be three (3). The place of arbitration shall be Paris (France). The Parties agree to keep the arbitration proceedings confidential.
- 15.3** Notwithstanding clause 15.2, disputes relating to the payment of the Society's invoices may be submitted by the Society to the *Tribunal de Commerce de Nanterre*, France, or to any other competent local Court, at the Society's entire discretion.

16. PROFESSIONAL ETHICS

- 16.1** Each Party shall conduct all activities in compliance with all laws, statutes, rules, economic and trade sanctions (including but not limited to US sanctions and EU sanctions) and regulations applicable to such Party including but not limited to: child labour, forced labour, collective bargaining, discrimination, abuse, working hours and minimum wages, anti-bribery, anti-corruption, copyright and trademark protection, personal data protection (<https://personal.dataprotection.bureauveritas.com/privacypolicy>).
- Each of the Parties warrants that neither it, nor its affiliates, has made or will make, with respect to the matters provided for hereunder, any offer, payment, gift or authorization of the payment of any money directly or indirectly, to or for the use or benefit of any official or employee of the government, political party, official, or candidate.
- 16.2** In addition, the Client shall act consistently with the Bureau Veritas' Code of Ethics and, when applicable, Business Partner Code of Conduct both available at <https://group.bureauveritas.com/group/corporate-social-responsibility/operational-excellence>.





RULES FOR THE CLASSIFICATION OF SHIPS

Part B Hull and Stability

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The English wording of these rules take precedence over editions in other languages.

Unless otherwise specified, these rules apply to ships for which contracts are signed after July 1st, 2021. The Society may refer to the contents hereof before July 1st, 2021, as and when deemed necessary or appropriate.

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Part B

Hull and Stability

Chapter 1

GENERAL

- SECTION 1 APPLICATION**
- SECTION 2 SYMBOLS AND DEFINITIONS**
- SECTION 3 DOCUMENTATION TO BE SUBMITTED**
- SECTION 4 CALCULATION PROGRAMMES**

SECTION 1 APPLICATION

1 General

1.1 Structural requirements

1.1.1 Part B of the Rules contains the requirements for determination of the minimum hull scantlings, applicable to all types of seagoing monohull displacement ships of normal form, speed and proportions, made in welded steel construction, excluding ships covered by NR600 "Hull Structure and Arrangement for the Classification of Cargo Ships less than 65 m and Non Cargo Ships less than 90 m".

These requirements are to be integrated with those specified in Part D or Part E, for any individual ship type, and in Part F, as applicable, depending on the additional class notations assigned to the ships.

Note 1: NR600 is applicable for:

- cargo ships with length less than 65 m, and
- non cargo ships with length less than 90 m.

The wording "cargo ships" and "non-cargo ships" used in NR600 means:

- Cargo ships: ships liable to carry cargoes and having a dead-weight greater than 30% of the total displacement. As a general rule, these ships are fitted with cargo holds, tanks and ballast tanks (i.e bulk or ore carriers, oil or chemical tanker, container ship, general cargo ship, ...) and the value of the block coefficient is greater than 0,75.
- Non-cargo ships: type of ships other than cargo ships defined here above.

Note 2: NR600 is not applicable for liquefied gas carriers, ships for dredging activities and any cargo ships with alternate light and heavy cargo loading conditions.

1.1.2 The requirements of Part B, Part D, Part E and Part F apply also to those steel ships in which parts of the hull, e.g. superstructures or movable decks, are built in aluminium alloys.

1.1.3 Ships whose hull materials are different than those given in [1.1.2] and ships with novel features or unusual hull design are to be individually considered by the Society, on the basis of the principles and criteria adopted in the Rules.

1.1.4 The strength of ships constructed and maintained according to the Rules is sufficient for the draught corresponding to the assigned freeboard. The scantling draught considered when applying the Rules is to be not less than that corresponding to the assigned freeboard.

1.1.5 Where scantlings are obtained from direct calculation procedures which are different from those specified in Part B, Chapter 7, adequate supporting documentation is to be submitted to the Society, as detailed in Ch 1, Sec 3.

1.2 Limits of application to lifting appliances

1.2.1 The fixed parts of lifting appliances, considered as an integral part of the hull, are the structures permanently connected by welding to the ship's hull (for instance crane pedestals, masts, king posts, derrick heel seatings, etc., excluding cranes, derrick booms, ropes, rigging accessories, and, generally, any dismountable parts). The shrouds of masts embedded in the ship's structure are considered as fixed parts.

1.2.2 The fixed parts of lifting appliances and their connections to the ship's structure are covered by the Rules, even when the certification (especially the issuance of the Cargo Gear Register) of lifting appliances is not required.

1.2.3 The foundations of lifting appliances intended to be used at sea are to comply with the requirements of Part E, Chapter 8.

2 Rule application

2.1 Ship parts

2.1.1 General

For the purpose of application of the Rules, the ship is considered as divided into the following three parts:

- fore part
- central part
- aft part.

2.1.2 Fore part

The fore part includes the structures located forward of the collision bulkhead, i.e.:

- the fore peak structures
- the stems.

In addition, it includes:

- the reinforcements of the flat bottom forward area
- the reinforcements of the bow flare area.

2.1.3 Central part

The central part includes the structures located between the collision bulkhead and the after peak bulkhead.

Where the flat bottom forward area or the bow flare area extend aft of the collision bulkhead, they are considered as belonging to the fore part.

2.1.4 Aft part

The aft part includes the structures located aft of the after peak bulkhead.

2.2 Rules applicable to various ship parts

2.2.1 The various Chapters and Sections of Part B are to be applied for the scantling and arrangement of ship parts according to Tab 1.

Table 1 : Part B Chapters and Sections applicable for the scantling of ship parts

Part		Applicable Chapters and Sections
All parts		Part B, Chapter 1 Part B, Chapter 2 Part B, Chapter 3 Part B, Chapter 4 Part B, Chapter 5 Part B, Chapter 6 Part B, Chapter 8 (1), excluding: - Ch 8, Sec 1 - Ch 8, Sec 2 Part B, Chapter 10 Part B, Chapter 11
Specific parts	Fore part	Ch 8, Sec 1
	Central part	Part B, Chapter 7
	Aft part	Ch 8, Sec 2
(1) See also [2.3].		

2.3 Rules applicable to other ship items

2.3.1 The various Chapters and Sections of Part B are to be applied for the scantling and arrangement of other ship items according to Tab 2.

Table 2 : Part B Chapters and Sections applicable for the scantling of other items

Item	Applicable Chapters and Sections
Machinery space	Ch 8, Sec 3
Superstructures and deckhouses	Ch 8, Sec 4
Bow doors and inner doors	Ch 8, Sec 5
Side shell doors and stern doors	Ch 8, Sec 6
Watertight and weathertight doors	Ch 8, Sec 12
Large hatch covers	Ch 8, Sec 7
Small hatches	Ch 8, Sec 8
Movable decks and inner ramp External ramps	Ch 8, Sec 9
Arrangement of hull and super-structures openings	Ch 8, Sec 10
Helicopter decks	Ch 8, Sec 11
Rudders	Ch 9, Sec 1
Other hull outfitting	Ch 9, Sec 2
	Ch 9, Sec 3
	Ch 9, Sec 4

3 Rounding off of scantlings

3.1

3.1.1 Plate thicknesses

The rounding off of plate thicknesses is to be obtained from the following procedure:

- a) the net thickness (see Ch 4, Sec 2) is calculated in accordance with the rule requirements
- b) corrosion addition t_c (see Ch 4, Sec 2) is added to the calculated net thickness, and this gross thickness is rounded off to the nearest half-millimetre
- c) the rounded net thickness is taken equal to the rounded gross thickness, obtained in b), minus the corrosion addition t_c .

3.1.2 Stiffener section moduli

Stiffener section moduli as calculated in accordance with the rule requirements are to be rounded off to the nearest standard value, however, no reduction may exceed 3%.

SECTION 2

SYMBOLS AND DEFINITIONS

1 Units

1.1

1.1.1 Unless otherwise specified, the units used in the Rules are those defined in Tab 1.

Table 1 : Units

Designation	Usual symbol	Units
Ship's dimensions	see [2]	m
Hull girder section modulus	Z	m ³
Density	ρ	t/m ³
Concentrated loads	P	kN
Linearly distributed loads	q	kN/m
Surface distributed loads (pressures)	p	kN/m ²
Thicknesses	t	mm
Span of ordinary stiffeners and primary supporting members	ℓ	m
Spacing of ordinary stiffeners and primary supporting members	s	m
Bending moment	M	kN·m
Shear force	Q	kN
Stresses	σ, τ	N/mm ²
Section modulus of ordinary stiffeners and primary supporting members	w	cm ³
Sectional area of ordinary stiffeners and primary supporting members	A	cm ²

2 Symbols

2.1

2.1.1

- L : Rule length, in m, defined in [3.1]
L₁ : L, but to be taken not greater than 200 m
L₂ : L, but to be taken not greater than 120 m
L_{LL} : Load line length, in m, defined in [3.2]
L_S : Subdivision length, in m, defined in [3.3]
B : Moulded breadth, in m, defined in [3.4]
D : Depth, in m, defined in [3.5]
T : Scantling draught, in m, defined in [3.7]
Δ : Moulded displacement, in tonnes, at draught T, in sea water (density ρ = 1,025 t/m³)
C_B : Total block coefficient:

$$C_B = \frac{\Delta}{1,025 L B T}$$

3 Definitions

3.1 Rule length

3.1.1 The rule length L is the distance, in m, measured on the waterline at the scantling draught, from the fore-side of the stem to the after side of the rudder post, or to the centre of the rudder stock where there is no rudder post. L is to be not less than 96% and need not exceed 97% of the extreme length on the waterline at the scantling draught.

3.1.2 In ships without rudder stock (e.g. ships fitted with azimuth thrusters), the rule length L is to be taken equal to 97% of the extreme length on the waterline at the scantling draught.

3.1.3 In ships with unusual stem or stern arrangements, the rule length L is considered on a case by case basis.

3.1.4 Ends of rule length

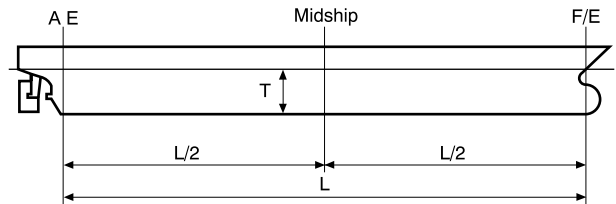
The fore end (FE) of the rule length L, see Fig 1, is the perpendicular to the summer load waterline at the forward side of the stem.

The aft end (AE) of the rule length L, see Fig 1, is the perpendicular to the summer load waterline at a distance L aft of the fore end.

3.1.5 Midship

The midship is the perpendicular to the scantling draught waterline at a distance 0,5L aft of the fore end.

Figure 1 : Ends and midship



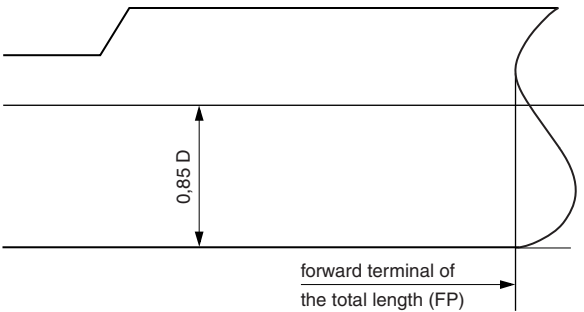
3.2 Load line length

3.2.1 The load line length L_{LL} shall be taken as 96% of the total length on a waterline at 85% of the least moulded depth measured from the top of the keel, or as the length from the fore side of the stem to the axis of the rudder stock on that waterline, if that be greater.

3.2.2 For ships without a rudder stock, the length L_{LL} is to be taken as 96% of the waterline at 85% of the least moulded depth.

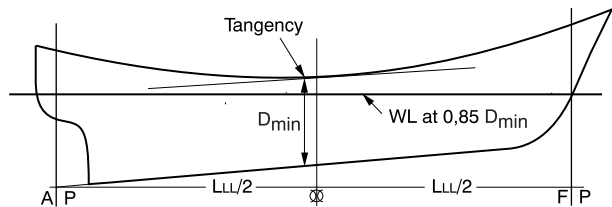
3.2.3 Where the stem contour is concave above the waterline at 85% of the least moulded depth, both the forward terminal of the total length and the fore-side of the stem respectively is taken at the vertical projection to that waterline of the aftermost point of the stem contour (see Fig 2).

**Figure 2 : Concave stem contour
Forward terminal of length**



3.2.4 In ship design with a rake of keel, the waterline on which this length is measured is parallel to the designed waterline at 85% of the least moulded depth D_{min} found by drawing a line parallel to the keel line of the ship (including skeg) tangent to the moulded sheer line of the freeboard deck. The least moulded depth is the vertical distance measured from the top of the keel to the top of the freeboard deck beam at side at the point of tangency (see Fig 3).

Figure 3 : Length of ships with a rake of keel



3.3 Subdivision length

3.3.1 The subdivision L_s of the ship is the greatest projected moulded length of that part of the ship at or below deck or decks limiting the vertical extent of flooding with the ship at the deepest subdivision draught.

3.4 Moulded breadth

3.4.1 The moulded breadth B is the greatest moulded breadth, in m, measured amidships at the scantling draught T .

3.5 Depth

3.5.1 The depth D is the distance, in m, measured vertically on the midship transverse section, from the moulded base line to the top of the deck beam at side on the uppermost continuous deck.

In the case of a ship with a solid bar keel, the moulded base line is to be taken at the intersection between the upper face of the bottom plating with the solid bar keel at the middle of length L .

3.6 Moulded depth

3.6.1 The moulded depth D_1 is the vertical distance measured from the top of the keel to the top of the freeboard deck beam at side. Where the form at the lower part of the midship section is of a hollow character or where thick garboards are fitted, the distance is measured from the point where the line of the flat of the bottom continued inwards cuts the side of the keel.

In ships having rounded gunwales, the moulded depth is to be measured to the point of intersection of the moulded lines of deck and sides, the lines extending as though the gunwales were of angular design.

Where the freeboard deck is stepped and the raised part of the deck extends over the point at which the moulded depth is to be determined, the moulded depth is to be measured to a line of reference extending from the lower part of the deck along a line parallel with the raised part.

3.7 Scantling draught

3.7.1 The scantling draught T is the distance, in m, measured vertically on the midship transverse section, from the moulded base line to the waterline at which the strength requirements for the scantlings of the ships are met. It represents the full load condition and is to be not less than that corresponding the assigned freeboard.

In the case of ships with a solid bar keel, the moulded base line is to be taken as defined in [3.5.1].

3.8 Lightweight

3.8.1 The lightweight is the displacement, in t, without cargo, fuel, lubricating oil, ballast water, fresh water and feed water, consumable stores and passengers and crew and their effects, but including liquids in piping and mediums required for the fixed fire-fighting systems (e.g. fresh water, CO_2 , dry chemical powder, foam concentrate, etc.).

3.9 Deadweight

3.9.1 The deadweight is the difference, in t, between the displacement, at the summer draught in sea water of density $\rho = 1,025 \text{ t/m}^3$, and the lightweight.

3.10 Freeboard deck

3.10.1 The freeboard deck is defined in Regulation 3 of the 1966 International Convention on Load Lines, as amended.

3.11 Bulkhead deck

3.11.1 The bulkhead deck in a passenger ship means the uppermost deck to which the main bulkheads and the ship's shell are carried watertight.

The bulkhead deck may be a stepped deck.

In a cargo ship, the freeboard deck may be taken as the bulkhead deck.

3.12 Inner side

3.12.1 The inner side is the longitudinal bulkhead which limits the inner hull for ships fitted with double hull.

3.13 Superstructure

3.13.1 General

A superstructure is a decked structure connected to the freeboard deck, extending from side to side of the ship or with the side plating not being inboard of the shell plating more than 0,04 B.

3.13.2 Enclosed and open superstructure

A superstructure may be:

- enclosed, where:
 - it is enclosed by front, side and aft bulkheads complying with the requirements of Ch 8, Sec 4
 - all front, side and aft openings are fitted with efficient weathertight means of closing.
- open, where it is not enclosed.

3.13.3 Bridge

A bridge is a superstructure which does not extend to either the forward or after perpendicular.

3.13.4 Poop

A poop is a superstructure which extends from the after perpendicular forward to a point which is aft of the forward perpendicular. The poop may originate from a point aft of the aft perpendicular.

3.13.5 Forecastle

A forecastle is a superstructure which extends from the forward perpendicular aft to a point which is forward of the after perpendicular. The forecastle may originate from a point forward of the forward perpendicular.

3.13.6 Full superstructure

A full superstructure is a superstructure which, as a minimum, extends from the forward to the after perpendicular.

3.14 Raised quarterdeck

3.14.1 A raised quarterdeck is a partial superstructure of reduced height as defined in [3.19].

It extends forward from the after perpendicular and has an intact front bulkhead (sidescuttles of the non-opening type fitted with efficient deadlights and bolted man hole covers).

Where the forward bulkhead is not intact due to doors and access openings, the superstructure is then to be considered as a poop.

3.15 Superstructure deck

3.15.1 A superstructure deck is a deck forming the upper boundary of a superstructure.

3.16 Deckhouse

3.16.1 A deckhouse is a decked structure other than a superstructure, located on the freeboard deck or above.

3.17 Trunk

3.17.1 A trunk is a decked structure similar to a deckhouse, but not provided with a lower deck.

3.18 Well

3.18.1 A well is any area on the deck exposed to the weather, where water may be entrapped. Wells are considered to be deck areas bounded on two or more sides by deck structures.

3.19 Standard height of superstructure

3.19.1 The standard height of superstructure is defined in Tab 2.

Table 2 : Standard height of superstructure

Load line length L_{LL} , in m	Standard height h_s , in m	
	Raised quarter deck	All other superstructures
$L_{LL} \leq 30$	0,90	1,80
$30 < L_{LL} < 75$	$0,9 + 0,00667 (L_{LL} - 30)$	1,80
$75 \leq L_{LL} < 125$	$1,2 + 0,012 (L_{LL} - 75)$	$1,8 + 0,01 (L_{LL} - 75)$
$L_{LL} \geq 125$	1,80	2,30

3.20 Tiers of superstructures and deckhouses

3.20.1 The lowest tier is the tier located immediately above the freeboard deck.

The second tier is the tier located immediately above the lowest tier, and so on.

3.21 Type A and Type B ships

3.21.1 Type A ship

A Type A ship is one which:

- is designed to carry only liquid cargoes in bulk;
- has a high integrity of the exposed deck with only small access openings to cargo compartments, closed by watertight gasketed covers of steel or equivalent material; and
- has low permeability of loaded cargo compartments.

A Type A ship is to be assigned a freeboard following the requirements reported in the International Load Line Convention 1966, as amended.

3.21.2 Type B ship

All ships which do not come within the provisions regarding Type A ships stated in [3.21.1] are to be considered as Type B ships.

A Type B ship is to be assigned a freeboard following the requirements reported in the International Load Line Convention 1966, as amended.

3.21.3 Type B-60 ship

A Type B-60 ship is any Type B ship of over 100 metres in length which, fulfilling the requirements reported in Ch 3, App 4, [4.4], is assigned with a value of tabular freeboard which can be reduced up to 60 per cent of the difference between the “B” and “A” tabular values for the appropriate ship lengths.

3.21.4 Type B-100 ships

A Type B-100 ship is any Type B ship of over 100 metres in length which, fulfilling the requirements reported in Ch 3, App 4, [4.4], is assigned with a value of tabular freeboard which can be reduced up to 100 per cent of the difference between the “B” and “A” tabular values for the appropriate ship lengths.

3.22 Positions 1 and 2

3.22.1 Position 1

Position 1 includes:

- exposed freeboard and raised quarter decks,
- exposed superstructure decks situated forward of 0,25 L_{LL} from the perpendicular, at the forward side of the stem, to the waterline at 85% of the least moulded depth measured from the top of the keel.

3.22.2 Position 2

Position 2 includes:

- exposed superstructure decks situated aft of 0,25 L from the perpendicular, at the forward side of the stem, to the waterline at 85% of the least moulded depth measured from the top of the keel and located at least one stand-ard height of superstructure above the freeboard deck,

- exposed superstructure decks situated forward of 0,25 L_{LL} from the perpendicular, at the forward side of the stem, to the waterline at 85% of the least moulded depth measured from the top of the keel and located at least two standard heights of superstructure above the freeboard deck.

3.23 Sister ship

3.23.1 A sister ship is a ship built by the same yard from the same plans.

4 Reference co-ordinate system

4.1

4.1.1 The ship’s geometry, motions, accelerations and loads are defined with respect to the following right-hand co-ordinate system (see Fig 4):

- Origin: at the intersection among the longitudinal plane of symmetry of ship, the aft end of L and the baseline
- X axis: longitudinal axis, positive forwards
- Y axis: transverse axis, positive towards portside
- Z axis: vertical axis, positive upwards.

4.1.2 Positive rotations are oriented in anti-clockwise direction about the X, Y and Z axes.

Figure 4 : Reference co-ordinate system

