

# TRACTATENBLAD

VAN HET

KONINKRIJK DER NEDERLANDEN

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JAARGANG 1966 Nr. 223

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A. TITEL

*Verdrag nopens een eenvormig stelsel voor de meting  
van zeeschepen, met Slotprotocol en Bijlage;  
Oslo, 10 juni 1947*

B. TEKST

De Engelse tekst van Verdrag en Slotprotocol is afgedrukt in *Stb.* J 370. De Engelse tekst van de Bijlage is in *Trb.* 1955, 52 geplaatst. Zie ook rubriek J van *Trb.* 1955, 52, van *Trb.* 1961, 23 en van *Trb.* 1964, 47 en rubriek J hieronder.

C. VERTALING

Zie *Stb.* J 370 en rubriek J van *Trb.* 1955, 52.

D. GOEDKEURING

Zie *Trb.* 1955, 52.

E. BEKRACHTIGING

Zie *Trb.* 1955, 52 en *Trb.* 1961, 23.

F. TOETREDING

Zie *Trb.* 1961, 23 en *Trb.* 1964, 47.

### *Verklaring van voortgezette gebondenheid*

De Regering van Ivoorkust heeft op 6 november 1965 medege-deeld, dat zij zich gebonden acht aan het Verdrag dat op haar grond-gebied toepasselijk was verklaard voordat Ivoorkust de onafhanke-lijkheid verwierf.

#### G. INWERKINGTREDING

Zie *Trb.* 1955, 52, *Trb.* 1961, 23 en *Trb.* 1964, 47.

De bepalingen van het Verdrag zullen voor de in rubriek I ge-noemde Staten op 1 januari 1967 buiten werking treden, indien deze opzeggingen inmiddels niet zijn ingetrokken of als ingetrokken kun-nen worden beschouwd.

#### H. TOEPASSELIJKVERKLARING

Zie *Trb.* 1961, 23.

#### I. OPZEGGING

Zie *Trb.* 1964, 47.

De volgende Staten hebben het Verdrag in overeenstemming met artikel 17 opgezegd:

Denemarken <sup>1)</sup> .....	23 december 1965
IJsland <sup>1)</sup> <sup>2)</sup> .....	30 december 1965
Zweden <sup>1)</sup> .....	24 januari 1966
Finland <sup>1)</sup> .....	26 februari 1966

<sup>1)</sup> Onder de mededeling dat de opzegging zal worden ingetrokken in het geval alle Partijen bij het Verdrag de wijzigingen aangenomen tijdens de in mei 1965 te Oslo gehouden Conferentie (zie rubriek J hieronder) voor 1 januari 1967 aan-vaardden.

De Franse Regering heeft medegedeeld de aan een voorwaarde verbonden op-zegging niet te kunnen aanvaarden.

<sup>2)</sup> De opzegging werd op 20 mei 1966 ingetrokken.

#### J. GEGEVENS

Zie *Trb.* 1955, 52, *Trb.* 1961, 23 en *Trb.* 1964, 47.

Op een van 10 t/m 20 mei 1965 te Oslo gehouden Conferentie der Verdragsluitende Partijen zijn in overeenstemming met artikel 12 van het Verdrag wijzigingen tot stand gebracht in de artikelen 5, 8 en 12 van het Verdrag en in de Bijlage bij het Verdrag.

De wijzigingen in de artikelen 5, 8 en 12 van het Verdrag behoeven ingevolge artikel 60, lid 2, van de Grondwet de goedkeuring der Staten-Generaal alvorens te kunnen worden aanvaard.

De wijzigingen van het Verdrag en in de Bijlage bij het Verdrag zullen in werking treden, wanneer zij door alle Partijen bij het Verdrag zijn aanvaard.

De volgende Staten hebben de Noorse Regering medegedeeld de wijzigingen te aanvaarden:

Israël .....	5 januari 1966
het Koninkrijk der Nederlanden (voor Nederland) <sup>1)</sup> .....	14 maart 1966
Denemarken .....	24 maart 1966
Ivoorkust .....	27 april 1966
IJsland .....	26 mei 1966
Noorwegen .....	10 juni 1966

1) Uitsluitend de wijzigingen van de Bijlage van het Verdrag.

De Engelse tekst van de Slotakte van deze Conferentie, in de bijlagen van welke akte de wijzigingen van het Verdrag en zijn bijlagen zijn opgenomen, luidt als volgt <sup>1)</sup>:

### **Final Act of the Conference of Contracting Governments to the Convention for a Uniform System of Tonnage Measurement of Ships**

**Oslo 21 May 1965**

I. Upon the invitation of the Norwegian Government a Conference was held in Oslo from 10 May to 21 May 1965 for the purpose of revising the International Regulations for Tonnage Measurement of Ships annexed to the Convention for a Uniform System of Tonnage Measurement of Ships, mainly on account of implementing the Recommendations on the Treatment of Shelter-Deck and other "Open" Spaces adopted by the Third Assembly of the Inter-Governmental Maritime Consultative Organization (IMCO) on 18 October 1963 (Resolution A 48 (III)), as well as for the purpose of considering a revision of Article 12 (1) of the said Convention, a proposal for such a revision having been made by the Norwegian Government.

II. The invitation to the above mentioned Conference was issued according to Article 12 (2), last paragraph, of the Convention upon the request of the Governments of the following countries:

Denmark

1) De Franse tekst is niet afgedrukt.

Federal Republic of Germany  
Finland  
Iceland  
Sweden

The Governments of the following countries were represented by Delegations at the Conference:

Denmark  
Federal Republic of Germany  
Finland  
France  
Iceland  
Israel  
Netherlands  
Norway  
Poland  
Sweden

The Malagasy Republic had notified the Norwegian Government of its intention not to take part in the Conference.

From the following Member-states no answers were received concerning the invitation:

Cambodja  
Central African Republic  
Republic of Gabon  
Republic of Senegal

The Governments of the following countries were represented at the Conference by observers:

Italy  
Japan  
United Kingdom  
United States of America

The Inter-Governmental Maritime Consultative Organization was represented by an observer.

The following organizations were also represented by observers:

American Bureau of Shipping  
Bureau Veritas  
Det norske Veritas  
Germanischer Lloyd  
Lloyd's Register of Shipping  
The Panama Canal Company

III. Mr. Per Christiansen, the Leader of the Norwegian Delegation, was elected chairman of the Conference.

Dr. P. Muench, Israel, was elected vice-chairman.

For the purpose of its work, the Conference set up the following Committees, of which the under-mentioned were chairmen:

Credentials Committee: Mr. G. A. Bull, Norway;

Drafting Committee: Dr. P. Muench, Israel;

Legal Committee: Mr. B. E. van Bruggen, Netherlands.

During its work the Conference also found it necessary to set up small working-panels to get clarification upon certain problems.

IV. The Conference had before it and used as a basis for discussion the Convention for a Uniform System of Tonnage Measurement of Ships done in Oslo the 10th of June 1947, with its annexed regulations as later amended, a proposal by the Norwegian Government concerning a revision of Article 12 of the above mentioned Convention, the Recommendations on the Treatment of Shelter-Deck and other "Open" Spaces adopted by the IMCO-Assembly on 18 October 1963 and a proposal for amendment of the above mentioned regulations, this proposal being issued by the chief tonnage measurement surveyors of Denmark, Netherlands, Norway and Sweden (the so called "Study Group").

V. The Conference agreed upon the amended Articles 5, 8 and 12 of the Convention and the amended Articles of the International Regulations (including certificates, figures and recommendations) and requested the Norwegian Government to communicate those amendments to the Contracting Governments for their acceptance.

The said amendments are appended thereto as Annexes A (for the Convention) and B (for the Regulations etc.).

VI. In view of the great economic consequences for the shipping industry of having the said IMCO recommendations implemented and, consequently, the urgency of having the modifications of the Convention and its Annexes adopted, the Conference unanimously agreed to request the Norwegian Government to recommend to the Contracting Governments that the above mentioned amendments be accepted without any loss of time, and, preferably, not later than 1 July 1966.

VII. In witness whereof the respective representatives have signed this Final Act.

Done in Oslo this twenty first day of May 1965 in a single copy, in English and French, each text being equally authoritative, and which copy shall remain deposited in the archives of the Government of Norway which shall transmit certified true copies thereof to all Contracting Governments.

(Sd.) PER CHRISTIANSEN

*President*

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## ANNEX A

## Proposed amendments to the Convention

## Article 5

The International Tonnage Certificate shall be drawn up in the official language of the country by which it is issued. If that language is not English, the text should be rendered in English, in part or in full, as may be considered appropriate.

The form of the Tonnage Certificate shall be that of the appropriate model, given in Appendices 1, 1A, 1B and 2 of the Annex B.

## Article 8

1. A ship, provided with an International Tonnage Certificate, when in a port of a country to which it does not belong, but to which this Convention applies, is subject to control with respect to Tonnage Measurement. Such control shall be limited to the purpose of securing:

(a) that the Tonnage Certificate on board is appropriate to the ship; and

(b) that the ship has not been altered as mentioned in Article 6 of this Convention.

2. Only officers possessing the necessary qualifications shall be authorized to exercise control as aforesaid.

3. In no case must the exercise of such control cause any expense or delay to the ship.

4. Should the control reveal that the actual conditions on the ship differ from those entered on the Tonnage Certificate, the Government of the country to which the ship belongs shall be informed, without delay, with a view to resolving the question.

As soon as correction has been made, the Government of the country where the observations were made shall be notified by the Government, the flag of which the ship is flying.

## Article 12

1. a) Modifications of this Convention and of the annexed Regulations which may be deemed to be useful or necessary, may at any time be proposed by any Contracting Government to the Government of Norway, and such proposals shall be communicated by the latter to all the other Contracting Governments, for their acceptance.

b) If any such modifications are accepted by all Contracting Governments (including Governments which have deposited ratifications or accessions which have not yet become effective) within a

delay of three to six months, (delay to be fixed by the Norwegian Government according to the importance of the proposed modifications) this Convention and/or Regulations shall be modified accordingly. The modifications shall come into force 12 months after the last acceptance has been received by the Norwegian Government.

c) The Norwegian Government shall inform all Contracting Governments of the outcome.

2. a) A conference to consider modifications to the present Convention or the Annexed Regulations, proposed by any Contracting Government shall at any time be convened by the Government of Norway upon the request of one third of the Contracting Governments.

b) Every modification adopted by a two-thirds majority at such a conference shall be communicated by the Government of Norway to all Contracting Governments for their acceptance.

c) Any modification communicated to the Contracting Governments for their acceptance under sub-paragraph b) of this paragraph shall come into force for all Contracting Governments, except those which before it comes into force make a declaration that they do not accept the modification, twelve months after the date on which the modification is accepted by two-thirds of the Contracting Governments.

d) A conference convened under sub-paragraph a) of this paragraph may determine, by a two-thirds majority vote, at the time of its adoption that the modification is of such an important nature that any Contracting Government which makes a declaration under sub-paragraph c) of this paragraph, and which does not accept the modification within a period of twelve months after the modification comes into force, shall, upon expiry of this period, cease to be a party to the present Convention.

e) The two-thirds majority referred to in sub-paragraphs c) and d) of this paragraph must represent not less than two-thirds of the total gross tonnage represented by the Contracting Governments.

3. As a transitory measure, in order to apply modifications as mentioned in paragraphs 1 and 2 of this Article:

- a) (i) an owner of a ship, in possession of a valid tonnage certificate will not be required to have his ship remeasured at the time of coming into force of a modification of this kind,
- (ii) an owner of a ship under construction or for the construction of which a contract has been signed at the time of coming into force of such modification, will not, subject to the provisions under b), be required to have such modifications taken into account when the ship is to be measured,

b) contracts as mentioned under a) (ii) for individual ships or for a series of identical ships will only entitle their owners to privileges as under 3 a), provided the ships have been measured within 2 years from the time of coming into force of the relevant modifications,

c) subsequent alterations affecting measurement as mentioned in Article 6 will necessitate remeasurement of the spaces in question only.

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## ANNEX B

### International Regulations for Tonnage Measurements of Ships (Edition 1959 and as later amended)

#### *Tonnage Certificates*

##### Article 4

The measurement having been checked and, if necessary, completed, the national central tonnage measurement authority shall arrange for the tonnage certificate to be issued under Rule I or Rule II, as the case may be.

The tonnage certificates shall be of the types reproduced in Appendices 1, 1A, 1B and 2 and shall contain particulars indicated therein.

Certificates of the types 1A (with two sets of tonnage) and 1B shall be issued only on a special application in writing by the owner and subject to the provisions for a tonnage mark, and is not to be delivered to the ship until a surveyor of the assigning authority has verified that a tonnage mark is correctly and permanently indicated on the ship's sides.

Tonnage certificates of the type 1A and 1B shall show the vertical distance from the upper edge of the deck line to the upper edge of the basic line of the tonnage mark (see Article 5).

#### *Marking*

##### Article 5

###### 1. *Deducted Spaces*

The spaces indicated in Articles 61 to 63 and 66 to 70, if deducted from the gross tonnage referred to in Article 7, must be duly marked, their proper designation being stated in each case.

###### 2. *Tonnage Mark*

(a) The tonnage mark shall be a horizontal line (basic line) 15 inches or 380 mm long and one inch or 25 mm wide, upon which



is placed an inverted equilateral triangle, each side 12 inches or 300 mm long and one inch or 25 mm wide, with its apex on the midpoint of the basic line (see Figure 1).

The upper edge of the basic line shall indicate the maximum draught to which the ship may be loaded when the tonnage related to the exemption of certain spaces in the 'tween-deck space according to Article 57, II, is applicable.

(b) To the tonnage mark an additional line may be assigned indicating similarly the permissible draught in fresh water and in tropical waters. This line shall be a horizontal line, 9 inches or 230 mm long and one inch or 25 mm wide, measured from a vertical line, the latter one inch or 25 mm wide, being marked at the after end of the basic line (see Figure 1).

The allowance to be used in fixing this additional line shall be  $1/48$  of the moulded draught to the upper edge of the basic line.

(c) In cases where the tonnage mark is placed on a level with the uppermost part of the appropriate statutory load line (see Article 57) there shall be no additional line for fresh water and tropical waters.

### 3. *Longitudinal Position of Tonnage Mark*

The tonnage mark shall be placed abaft the vertical centre line of the load line disc but as near thereto as practicable, and in no case shall the apex of the triangle be nearer than 21 inches or 540 mm to the centre of the load line disc nor farther than 6 feet and 6 inches or 2000 mm from the vertical centre line of the load line disc.

Where a load line is not assigned the apex of the triangle shall be at the middle of the length  $L_1$  referred to in Article 57, III, 2.

### 4. *Vertical Position of the Tonnage Mark*

The vertical position of the tonnage mark shall be ascertained in accordance with Article 57 (see Figures 2 and 3).

### 5. *Deck Line*

The deck line referred to in Article 4 shall be the line marked at the upper deck level used in connection with the load line assignment; if a load line is not assigned the deck line shall be 12 inches or 300 mm long and one inch or 25 mm wide having its upper edge level with the upper surface of the upper deck at side or as near thereto as possible and with its centre vertically above the apex of the tonnage mark triangle.

### 6. *Details of Marking*

The tonnage mark and its associated lines are to be painted in white or yellow on a dark ground or black on a light ground.

They are also to be carefully cut in, centrepunched or welded on the sides of the ship.

The marks are to be plainly visible, and, if necessary, special arrangements are to be made for this purpose.

## PART II

### Determination and definition of tonnage

#### *Units of Measurement, Degree of Exactitude; Definition of Length and Breadth*

#### Article 6

In ascertaining the tonnage of a ship, the cubic capacity of all spaces shall be calculated in English cubic feet, or in cubic metres. If English cubic feet are employed, these shall be converted into register tons, each of 100 cubic feet, corresponding to  $\frac{1}{0.353}$  cubic metres. If the English foot is used, it will be divided decimally.

If not otherwise stated in the present Regulations:

I. Measurements shall be taken with the exactitude of the nearest twentieth part of an English foot, or of the nearest centimetre.

II. Calculations shall be carried out with the following degree of accuracy:

(a) When determining:

	If using feet	If using metres
(1) The common interval between the transverse sections (see Article 21);	With three decimals without taking account of the fourth.	With three decimals, the third being increased by one if the fourth is 5 or more.
(2) The common interval between the breadths in each transverse section (see Article 33);	"	"
(3) The common interval between the breadths in double-bottom tanks (see Article 45), in the 'tween-deck space (see Article 48) and in super-structures (see Article 53);	"	"

	If using feet	If using metres
(4) One-third of the common interval between the transverse sections (see Article 41);	With two decimals, the second being increased by one if the third is 5 or more.	With three decimals, the third being increased by one if the fourth is 5 or more.
(5) One-third of the common interval between the breadths in each transverse section (see Article 39);	”	”
(6) One-third of the common interval between breadths in the 'tween-deck space (see Article 48) and in superstructures (see Article 54);	”	”
(7) The area of transverse sections (see Article 39);	”	With two decimals, the second being increased by one if the third is 5 or more.
(8) One-third of the common interval between breadths in double-bottom tanks (see Article 45);	”	”
(9) The mean height of a double-bottom tank (see Article 45);	”	”
(10) The mean height of the 'tween-deck space (see Article 49);	”	”
(11) The mean breadth of the propelling machinery space;	”	”
(12) The mean height of the propelling machinery space;	”	”
(13) One-third of the round of beam.	”	”

(b) When determining:

*The under-deck tonnage and the cubic capacity of all other spaces (e.g. double-bottom tanks, 'tween-decks, superstructures, hatchways, exempted or deducted spaces), both in register tons and in cubic metres, with two decimals, the second being increased by one if the third is 5 or more.*

Before proceeding with measurement, all instruments used must be carefully checked.

Measurements taken in the longitudinal direction are termed *lengths*, and measurements taken in the transverse direction are termed *breadths*, irrespective of the shape of the measured space.

### *Gross Tonnage and Net Tonnage*

#### Article 7

The tonnage is determined as gross tonnage and as net tonnage.

*The gross tonnage* consists of the sum of the following items, subject to the exceptions mentioned in the relevant subsequent articles.

1. The cubic capacity of the space below the tonnage deck or its line of continuation as defined in Articles 9 and 15 respectively (under-deck tonnage).
2. The cubic capacity of the space between the tonnage deck and the upper deck or their lines of continuation as defined in Articles 9 and 15 respectively ('tween deck tonnage).
3. The cubic capacity of superstructures, whether extending from side to side or not.
4. The "excess of hatchways".

*The net tonnage* is obtained by applying to the gross tonnage the deductions provided for in the present Regulations with regard to:

- (1) Master's and crew spaces (see Articles 61 to 64);
  - (2) Spaces for navigation and working of the ship (see Articles 65 to 71);
- and, for ships propelled by machinery:
- (3) Propelling-machinery spaces (see Articles 74 to 81).

### *Upper Deck and Tonnage Deck*

#### Article 9

(a) When measuring decked ships, the upper deck must first be determined.

*The upper deck* is the uppermost complete deck exposed to weather and sea, which has permanent means of closing all openings in the weather portions thereof, provided that all openings in the sides of the ship below that deck are fitted with permanent means of watertight closing, other than any openings situated abaft a transverse watertight bulkhead placed aft of the rudder stock.

*The tonnage deck* is the upper deck in ships with not more than one complete deck and the complete deck next below the upper deck in ships with two complete decks or more.

(b) When measuring open ships (ships without decks) the method of measurement shall be determined by the national central tonnage measurement authorities.

### *Complete decks*

#### Article 10

A deck is considered complete only if it is continuous in a fore and aft direction at least between peak bulkheads, is continuous athwartships and is fitted as an integral and permanent part of the vessel's structure, with proper covers fitted to all main hatchways.

Interruptions in way of propelling machinery space openings, ladder and stairway openings, trunks, chain lockers or cofferdams shall not be deemed to break the continuity of a deck (see Figure 4).

Steps of any height in the upper deck and steps not exceeding a total height of 4 feet, or 1.22 metre, in other decks shall not be deemed to break the continuity of these decks (see Figures 5 and 6).

The term "trunks" as used in this Article means hatch trunks and ventilation trunks which do not extend longitudinally completely between main transverse bulkheads.

#### Article 11

When measuring the space below the tonnage deck, the cubic capacity is to be limited by the under side of the tonnage deck, or its line of continuation as defined in Article 15, the top of floors, or of the double bottom and the inner edge of frames, or the ceiling, as the case may be, irrespective of beams, pillars, stringers, keelsons or other projecting parts, but subject to the restrictions mentioned in the relevant subsequent articles.

### *Ceiling (continuous or sparred)*

#### Article 12

Unless otherwise stated in the present regulations, the measurements are to be taken to the inner edge of frames and to the top of floors or double bottom, deducting from these measurements the average thickness of continuous ceiling, if any, fitted directly on to the frames, floors or double bottom. If batten or spar ceiling is fitted on the inner edge of the frames, and the ceiling on the floors or double bottom is fitted on grounds and not laid directly on to the top of the floors or of the double bottom, the following provisions will apply.

When the ceiling on the bottom is laid on grounds and not fitted directly on the floors or double bottom, no allowance is to be made for the thickness of the grounds when measuring the depth of transverse sections. If a batten or spar ceiling (wood or steel) is fitted

directly on to the inner edge of frames and the spacing between the battens or bars is not more than 1 foot or 0.30 metre, the thickness of the spar ceiling shall be deducted from the breadth measurements limited to a maximum of 0.25 foot or 0.08 metre on each side of the ship. If, however, the spacing exceeds 1 foot or 0.30 metre, the breadths must be taken to the inner edge of frames. In ships with beam brackets of ordinary size, the uppermost spacing counted from the under side of the deck beam may exceed 1 foot or 0.30 metre provided the uppermost batten is fitted close up to the beam bracket. Side stringers are counted as spar ceiling when determining the spacing of the battens or bars.

When the holds are insulated (e.g. for refrigerating purposes) and the casing extends beyond the inner edge of the frames, or above the top of the floors or double bottom, a maximum allowance of 0.25 foot or 0.08 metre may be made when measuring the horizontal breadths and depths of transverse sections, but if the projection is less than 0.25 foot or 0.08 metre, only the actual projection is to be allowed.

In cases where ceiling is laid on floors or a double bottom tank top which are restricted in height for measurement, according to the provisions of Article 26, such ceiling shall still be allowed for when measuring the tonnage depth.

### *Tonnage Length*

#### Article 15

The tonnage length is the distance between two points, of which the foremost is the point where the under side of the tonnage deck, at the stem, meets the inner surface of ceiling or frames, and the aftermost is the point where the under side of the tonnage deck meets the inner surface of ceiling or frames in the middle plane, at the stern.

Should the tonnage deck beam at the extreme points of the tonnage length have a round of beam (camber), in case of a ship with a square bow or stern, or rise in a straight line from the sides of the ship towards the middle plane, then the points are situated respectively at one-third of the round of the beam or one-half of the rise below the under side of the tonnage deck in the middle plane (see Figure 12).

Where the tonnage deck is the upper deck and has one or more steps, the tonnage length shall be measured on an imaginary line in continuation of the lowest part of the deck exposed to weather and sea parallel to the raised part of the deck (see Figures 7 and 8).

Where the tonnage deck is the complete deck next below the upper deck and has one or more steps, the tonnage length shall be measured on an imaginary line in continuation of the lowest part of the deck between peak bulkheads, taking no consideration of

any sunken parts in way of propelling machinery space openings, ladder and stairway openings, chain lockers or cofferdams (see Figure 9).

*Determination of the Extreme Points of the Tonnage Length*

Article 16

When determining the extreme points of the tonnage length according to the principles laid down in Article 15, the following procedure should be observed:

1. In the case of ships having a vertical bow (or stem) and a vertical stern both below and above the tonnage deck, measure horizontally the depth of frames and the thickness of the ceiling (if fitted) forward and aft, immediately below the tonnage deck. Set off these measurements on the upper side of the deck from the shell plating in the direction in which the frames have been measured and draw through the points thus obtained lines parallel to the shell. The points of intersection of these lines fore and aft are the extreme points of the tonnage length (see Figures 10 and 11).

2. In the case of ships having no vertical bow (or stem) or no vertical stern at the level of the tonnage deck, the extreme points of the tonnage length are, when practicable, to be determined at the under side of the tonnage deck. The distance from these points to a hatch-coaming, bulkhead, etc., should be measured and transferred to the upper side of the tonnage deck as indicated in Figure 12.

Should it not be practicable to determine the extreme points of the tonnage length at the under side of the tonnage deck, and should the thickness of this deck be considerable (e.g. a wooden deck) the rake of the bow (or stem) or stern in the thickness of the deck is to be taken into account. This is done after having first proceeded as indicated in paragraph 1 and as is shown in Figures 10 and 11, by measuring the thickness of the tonnage deck and determining by means of a hinged rule the angle of the rake which the bow (or stem) or the stern forms with the tonnage deck. Transfer thereafter this angle on to a plane (e.g. bulkhead or the top of the deck) by drawing the lines a, b, c (see Figure 13), and proceed as stated in the explanatory note.

It should be borne in mind that the condition for applying the method of setting out the angles on the upper side of the tonnage deck is that the stem and the stern have the same angle of rake above and immediately below the tonnage deck. If, for instance, the angle of rake at or immediately below the tonnage deck is a different one, then this last angle must be used.

3. Should a ship as referred to in paragraph 2 have a square bow or stern, it will be necessary to make a correction for round of beam (camber) where such exists. This should be done by increasing the thickness of the deck in Figure 13 by one-third of the round of beam at the extreme point of the tonnage length.

4. In a ship fitted with a round stem, the extreme forward point of the tonnage length shall be ascertained in a similar manner to that shown in Figure 11.

#### Article 18

*Deleted.*

#### *Transverse Sections*

#### Article 21

The tonnage length is to be divided into a number of equal parts, as given in the following table (see also Article 42):

	Tonnage length	Number of equal parts
	50 feet = 15.24 metres, or less .....	4
Above	50 feet = 15.24 metres, but not more than 120 feet = 36.58 metres .....	6
Above	120 feet = 36.58 metres, but not more than 180 feet = 54.86 metres .....	8
Above	180 feet = 54.86 metres, but not more than 225 feet = 68.58 metres .....	10
Above	225 feet = 68.58 metres .....	12

The common interval between the sections is ascertained by dividing the tonnage length by the divisor thus determined.

Vertical sections are taken through the points of division, and through the extreme points of the tonnage length, at right angles to the middle plane of the ship. They are numbered 1, 2, 3, etc., in such a manner that No. 1 is the section at the foremost and the last number is the section at the aftermost point of the tonnage length.

#### Article 22

The position of the middle transverse section, as determined on the tonnage deck, is now to be transferred into the hold (machinery spaces, bunkers, etc.) perpendicularly to the keel line of the ship, by using the distance from a bulkhead, hatch-coaming, etc., as measured in accordance with Article 20.



By setting off forward and aft from the position of the middle section, as determined in the hold, the common interval between the various sections, the positions of the other sections are determined and marked off on the bottom ceiling, the tunnel, the keelson or whatever may be found suitable. The common interval is to be set off parallel to the keel line, and in the middle plane of the ship, or parallel to it. The correctness of the positions of the various transverse sections is to be verified by measuring distances to bulkheads, hatch-coaming, etc., and checking such distances on top of the tonnage deck.

When it is not possible to measure a transverse section at its correct position, it should be measured as close thereto as possible. It should be very accurately ascertained how far forward or aft of the correct position the section is being measured, and full particulars as to this should, if necessary, be given in the formulae of measurement. If necessary two subsidiary transverse sections situated respectively forward and aft of the correct position should be measured (see Article 44).

In ships propelled by machinery, the distance from the machinery bulkhead to the correct position of the nearest section should be ascertained, both as regards the foremost and aftermost bulkheads, and stated on the formulae of measurement.

### Article 23

Before commencing the measurement of the transverse sections it is necessary, at the positions where these sections are to be measured, to examine, if the surface to which the tonnage depths are to be taken, whether the top of ordinary floors, longitudinals, double bottom, or the top of bottom ceiling in a wooden ship, is horizontal athwartships or rises or falls from the middle plane to the wings.

### *Definition of Tonnage Depth*

### Article 25

The tonnage depth of a transverse section is the distance from the under side of the tonnage deck to the top of the main floors or the top of the double bottom, as defined in Article 26, minus the thickness of the bottom ceiling, if fitted, (see Article 12), and one-third of the round of beam, this depth being, if necessary, corrected as indicated in Article 28 where the top of the double bottom is not horizontal.

Should the tonnage deck beams rise in a straight line from the sides towards the middle plane, the correction for the rise of beam will be one-half instead of one-third of the rise of the beam. Such rise is determined and applied in the same manner as indicated in Articles 24, 25, 30 and 43 for the round of beam.

Where the rise of beam is partly straight and partly horizontal, the allowance for rise of beam may be calculated in accordance with the following formula:

$$\text{Correction} = a \frac{B - b}{2 B}$$

where  $a$  = rise,  $B$  = upper tonnage breadth at the transverse section and  $b$  = breadth of the horizontal portion (see Figure 15).

If a transverse section is situated at a place where the deck is interrupted or stepped the depth is the distance from the line of continuation of the tonnage deck to the top of the floor or the double bottom, with the deductions and correction mentioned above.

### *Main Floors and Top of Double Bottom*

#### Article 26

In determining the main floors of the ship or the top of double bottom, as referred to in Article 25, the indications given below shall be followed:

(a) With regard to the part of the ship situated between the collision bulkhead and the after peak bulkhead:

#### *I. Single-bottom ships*

(1) The bottom construction with solid transverse floors on every frame is to be considered as a standard construction and, whenever such floors are fitted, they shall be regarded as the main floors (see Figure 16).

(2) If the bottom construction consists of solid floors two or more frame spaces apart and skeleton floors of the same depth on the intermediate frames, such floors constitute the main floors (see Figures 17 and 18).

(3) If the bottom construction consists of solid floors on alternate frames and intermediate lower floors or frames, the tonnage depth should be measured to the higher floors (see Figure 19).

(4) If the bottom construction consists of floors of different depths, it must be determined whether the higher or the lower floors should be considered as the main floors. As a general indication, it should be noted that the lower floors are to be considered as the main floors when the higher floors are more than two frame spaces apart (see Figure 20).

(5) In the case of a bottom construction with longitudinal framing of a uniform depth, the upper edge of the longitudinals should be considered as the top of the main floors (see Figure 21).

(6) Should the longitudinal system consist of elements of different depths, the same provisions as given in paragraphs (3) and (4) will apply (see Figures 22 and 23).

(7) Mixed constructions of transverse and longitudinal framing are to be compared with the various systems referred to in the preceding paragraphs for the purpose of determining the main floors.

Notwithstanding what is prescribed above, that part of a floor other than a floor in spaces which are referred to in Article 76 (a) which is above a horizontal line passing through a point on the middle line at a height above that given by column A in the following table by a distance equal to the rise of the moulded frame lines at one quarter of the breadth between moulded frame lines at the height given by column A shall be disregarded (see Figures 24 and 25).

The foregoing shall apply also to ships with longitudinal floors and/or frames.

In special circumstances the above restrictions relating to depth of floors need not be fully complied with if the national central tonnage measurement authority is satisfied that such deviation is essential in the interests of safety or strength.

If in parts of a ship referred to in Article 76 (a) the floors at the sides of the main propelling machinery are raised to unreasonable height above the top of seating under the main engines, the height of floors shall be limited to that given by table A or to the top of the main engine seating whichever is the greater.

## II. *Double-bottom ships*

If a double bottom is fitted in spaces referred to in Article 76 (a) the tonnage depths shall be measured to the top of the double bottom.

In all other spaces the tonnage depths shall be measured to the top of a double bottom if the height of the tank is not greater than that given in column B in the following table.

In cases where the height of the bottom tank is greater than the table value, the tank shall be regarded as a deep tank and that part of the ship shall be measured as in a single bottom ship (see Figure 26) unless there is an acceptable line in continuation of the tanktop in an adjacent main part of the ship when the depths shall be taken to that line.

In special circumstances the above restrictions relating to depth of double bottom need not be fully complied with if the national central tonnage measurement authority is satisfied that such deviation is essential in the interests of safety or strength.

If in parts of a ship referred to in Article 76 (a) the tanktop at the sides of the main propelling machinery is raised above the top of seating under the main engines, the depths shall be measured to the height given by column B of the table or to the top of the main engine seating, whichever is the greater.

(b) With regard to the parts of the ship situated forward of the collision bulkhead and aft of the after peak bulkhead:

(1) If the floors are equal in height or lower than the floors or double bottom immediately contiguous to the collision bulkhead or after peak bulkhead, as the case may be, such floors constitute the main floors (see Figure 27).

(2) If the floors are higher than the floors or double bottom immediately contiguous to the collision bulkhead or the after peak bulkhead, as the case may be, the tonnage depth must be measured to an imaginary line drawn parallel to the keel at a level corresponding to the height of such floors or double bottom (see Figures 28<sup>1)</sup> and 29).

If the intersection of the inner edges of the frames is situated at a higher level than an imaginary line drawn parallel to the keel at a level corresponding to the height of the floors or double bottom immediately contiguous to the collision bulkhead or after peak bulkhead, as the case may be, the tonnage depth shall be measured to the point of such intersection (see Figure 30).

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<sup>1)</sup> Peak tanks are not to be regarded as double-bottom tanks, even when the floors extend to the tank-top.

Tonnage length of the ship		A Height of floors <sup>1)</sup>		B Height of double bottom <sup>1)</sup>	
in feet	in metres	in inches	in cm	in inches	in cm
60	18.29	23	58	34.5	88
80	24.38	24	61	36	91
100	30.48	25	64	37.5	95
120	36.58	26	66	39	99
140	42.67	27	69	40.5	103
160	48.77	28	71	42	107
180	54.86	29	74	43.5	110
200	60.96	30	76	45	114
220	67.06	31	79	46.5	118
240	73.15	32	81	48	122
260	79.25	33	84	49.5	126
280	85.34	34	86	51	130
300	91.44	35	89	52.5	133
320	97.54	36	91	54	137
340	103.63	37	94	55.5	141
360	109.73	38	97	57	145
380	115.82	39	99	58.5	149
400	121.92	40	102	60	152
420	128.02	41	104	61.5	156
440	134.11	42	107	63	160
460	140.21	43	109	64.5	164
480	146.30	44	112	66	168
500	152.40	45	114	67.5	171
520	158.50	46	117	69	175
540	164.59	47	119	70.5	179
560	170.69	48	122	72	183
580	176.78	49	124	73.5	187
600	182.88	50	127	75	191
620	188.98	51	130	76.5	194
640	195.07	52	132	78	198
660	201.17	53	135	79.5	202
680	207.26	54	137	81	206
700	213.36	55	140	82.5	210

<sup>1)</sup> For intermediate lengths the height shall be obtained by interpolation.

#### Note 1 (Columns A & B)

For the forward twenty-five per cent of the tonnage length of the ship and for the aftermost fifteen per cent of the same length the heights in Tables A and B may be increased by fifty per cent.

The increased values A and B may also relate to breadths of brackets if found necessary (see Article 38).

*Spaces to be included in or excluded from the Under-Deck Tonnage*

Article 29

1. Should there be any recesses or projections not extending from side to side of the ship in the double bottom or in the ordinary floors, the recess or projection is to be measured separately and its cubic capacity respectively included in or excluded from the under-deck tonnage, provided that in the latter case the projection forms an integral part of the bottom construction of the ship, and subject to the limitations of Article 26. The depth of the transverse section is to be measured from the line of continuation of the tank-top or top of floors (see Figures 36 and 37).

2. Should a bottom ceiling exist under the hatchways only, such ceiling should, however, be measured separately and its cubic capacity excluded from the under-deck tonnage. No deduction for thickness of ceiling is to be made when ascertaining the tonnage depths of the various transverse sections in way of a hatchway (see Figure 38).

3. Should there be any bulges on the ship's sides such as propeller bossings, the breadths which may fall in way of the bulges are to be measured to the normal frame-line. The cubic capacity of the bulges should be ascertained and added to the under-deck tonnage.

4. In cruiser stern ships in which the projection beyond the extreme point of the tonnage length and below the tonnage deck is appreciable, the capacity of this space is to be ascertained and added to the tonnage below the tonnage deck (see Figure 39).

Article 31

If there exists below the tonnage deck a recessed portion entirely open to the sea, and therefor not liable to inclusion in the gross tonnage (e.g., the slipway in a whaling ship), such portion should be calculated separately and its cubic capacity excluded from the under-deck tonnage.

A space within a perforated bottom or a perforated side, e.g. in ships carrying live fish, shall not be considered to be "entirely open to the sea".

*Measurements of Breadths*

Article 34

The breadths of each transverse section are numbered from the top downwards, the upper breadth, at the level of the upper extreme point of the tonnage depth, being No. 1, the lowest breadth No. 5 or No. 7, as the case may be.

The breadths are measured perpendicularly to the middle plane

through the points of division and the extreme points of the tonnage depth from ceiling to ceiling, if fitted, and if not, between the inner edge of the frames. The thickness of the ceiling is also ascertained. The projecting parts of stringers, shelves, or other projecting constructions for strengthening are not to be regarded as ceiling (see Figures 41 and 42).

When spar ceiling in steel ships is not fitted directly against the edge of the frames, it is advisable to measure to the frames, and from the breadth thus obtained deduct the thickness of the ceiling measured horizontally.

Should there be no frame at the place where a breadth is to be taken, such breadth shall be measured to the shell, and the horizontal depth of the nearest frame deducted therefrom at each side.

If it is impossible to measure a breadth at its proper level, it should be measured as close thereto as possible. It should be very accurately ascertained how far above or below the proper level the breadth is being measured, and, if necessary, full particulars as to this should be given in the formulae of measurement.

That part of a frame which is more remote from the shell than the depth given by the following table shall not be regarded as a frame.

Identification Breadth		Depth of Frame	
Feet	Metres	Inches	Centimetres
not exceeding	not exceeding		
20	6.10	14	35.6
30	9.14	16	40.6
40	12.19	18	45.7
50	15.24	20	50.8
60	18.29	22	55.9
70	21.34	25	63.5
80	24.38	28	71.1
90	27.43	31	78.7
100	30.48	34	86.4
and above	and above		

The table shall apply equally to ships with longitudinal or transverse frames, and depths of frames for breadths intermediate between tabular values shall be obtained by interpolation.

Additional local frames such as strengthening for navigation in ice shall not be taken into account provided that the national central tonnage measurement authority is satisfied they are bona fide ice stiffening bars.

When measuring the upper and lowest breadths, the provisions of Articles 37 and 38 are to be observed.

*Frames of Different Depths*

## Article 35

In ships with frames of different depths (see Figures 43 and 44), the breadths are to be taken to the shallower frames when the deeper frames are fitted more than two frame spaces apart. Should there be a ceiling, its thickness is to be deducted from the breadths thus ascertained, or the breadths are to be measured from ceiling to ceiling, as indicated in Article 34.

The above rule does not apply to ships with longitudinal frames of depths decreasing upwards towards the tonnage deck (see Figure 45). In such a case the provisions of the fourth paragraph of Article 34 are to be applied. Should there, however, be a ceiling, its thickness is to be deducted.

That part of a deeper frame which is more remote from the shell than twice the depth of the shallower frame or the depth given by the table in Article 34, whichever is the less, shall not be regarded as a frame.

*Lowest Breadth*

## Article 38

The lowest breadth situated at the level of the lowest point of the tonnage depth must be measured on top of floors, or ceiling if fitted, or on the tank-top, as the case may be, in accordance with the following rules:

1. In ships with a double bottom the top of which is horizontal or falls or rises from the middle plane to the wings, the breadth is to be measured between the knuckle line of the margin plates (see Figures 49, 50, 51 and 52). If, however, the upper edge of the knees connecting the double bottom with the frames continues in line with or below the line of the tank-top (see Figure 53), the breadth is to be measured to the inner edge of frames, or of the ceiling thereon if fitted. This last method shall also be used when the tank-top extends to the sides of the ship, and the knees are fitted more than two frame spaces apart (see Figure 54); but if the knees are spaced closer, the breadth should be measured to the points of intersection of the knees with the tank-top (see Figure 55).

2. If bilge brackets of abnormal size are fitted in ships with a double bottom the horizontal distance from the shell at the height of the tank top to the points between which the lowest breadth is to be measured shall not be more than the height given by column B of the table in Article 26.

3. In ships with a single bottom, the lowest breadth shall be taken between the points up to which the transverse line of the top



of floors or ceiling is horizontal (see Figures 56, 57, 58, 59 and 60), or to the toe of the side brackets, where applicable (see Figure 58).

4. In cases where the height of floors or double bottom is restricted according to the table the lowest breadth shall be measured between assumed side brackets having a horizontal breadth from the shell not more than the heights given by column A of the table (see Figures 24, 25 and 26).

### *Cubic Capacity of the Space below the Tonnage Deck*

#### Article 41

Having determined the area of each transverse section at its correct position, the cubic capacity of the space below the tonnage deck is ascertained as follows:

The areas of the first and last transverse sections are multiplied by 1.

The areas of even-numbered transverse sections are multiplied by 4.

The areas of odd-numbered transverse sections (other than first and last) are multiplied by 2.

The sum of these products is to be multiplied by one-third of the common interval between the transverse sections. This last product gives the cubic capacity of the space below the tonnage deck in cubic feet or in cubic metres. The underdeck tonnage in register tons is obtained by dividing the number of cubic feet by 100. If cubic metres are employed, these shall be converted into register tons by multiplying by 0.353.

After having calculated the cubic capacity of the space below the tonnage deck, the cubic capacity of the spaces referred to in Article 29 or Article 31, paragraph 1, will be added thereto or deducted therefrom, as the case may be, and the result will constitute the underdeck tonnage of the ship.

### *Breaks in the Double Bottom*

#### Article 42

Should there be a break or breaks in the double bottom, the space below the tonnage deck is to be measured in parts. Each part is to be measured as if it were a separate ship of a tonnage length equal to the length of the part; and, therefor, the length of each part should be divided as stated in Article 21, with the exception that, if the length is not more than 30 feet or 9.14 metres, it is only divided into two.

A break which is not more than 0.25 foot or 0.08 metre should not be taken into account.

Within the meaning of this Article, the word "break" shall apply to cases (a) where there is an abrupt change in the depth of the double bottom, (b) where the double bottom continues at a lower level, and (c) where, at the end of a partial double bottom, the adjoining floors are of a depth different from that of the double bottom. The latter provision shall not apply to floors in peaks if such floors are deeper than the adjoining part of the double bottom (see Figures 61, 62 and 63).

At the ends and at the points of division of each portion, transverse sections are measured, the tonnage depth measured at the middle of the tonnage length of the ship being the factor which determines if the other tonnage depths are to be divided into four or six equal parts, in accordance with Article 32.

The area of each transverse section and the cubic capacity of each part of the space below the tonnage deck are to be calculated in accordance with the rules given in Articles 39, 40 and 41, and the sum of the different parts will constitute the under-deck tonnage of the ship.

Subject to the provisions of (c) in the second paragraph, the procedure set forth in the present article shall not apply in the case of a change in the depth of floors in a ship with single bottom or partial double bottom (see Figure 64).

#### Article 43

In ships with one or more decks below the tonnage deck, the tonnage depth of each transverse section shall be the sum of the depth taken in the lower hold, the depths taken between the relevant decks and the thickness of those decks, after applying the necessary corrections (see Article 25).

This tonnage depth is divided in the usual way in order to ascertain the points of division at which the breadths are taken.

#### *Tween-deck Space*

#### Article 46

The space between the tonnage deck and the upper deck (tween-deck space) shall be measured and included in the gross tonnage, subject to the exception mentioned in Article 57, II.

In case of steps in the upper deck the measurement shall be carried out to the line of continuation defined in Article 15.

In case of steps in the tonnage deck the measurement shall be carried out to the line of continuation defined in Article 15 (see Figures 7, 8 and 9).

### Article 47

The provisions of Articles 11, 12, 13 and 31 shall apply with necessary changes to the measurement of 'tween-deck spaces.

### *Cubic Capacity of a 'Tween-deck Space*

### Article 49

The cubic capacity of a 'tween-deck space is determined as follows:

1. In case Method 1, mentioned in Article 48, has been used, the breadths of the fore part of the space are numbered, No. 1 being at the stem, and the last number at the foreside of the stern post. The first- and last-numbered breadths are then multiplied by one, the other odd-numbered breadths by two, and the even-numbered breadths by four. The sum of these products shall be multiplied by one-third of the common interval between the breadths, after which the area thus obtained is multiplied by the mean height (i.e., the arithmetic mean of the heights measured at each point of division of length 1, not taking into account the heights at the fore and aft extreme points of this length). This last product gives the cubic capacity of the fore part of the space in cubic feet or in cubic metres. The provisions of Article 41 shall apply with regard to the conversion into register tons.

The breadths of the after part of the space are then numbered, No. 1 being the breadth at the foreside of the stern post and No. 5 the breadth at the after extreme point of length 2. The sum of the first and last breadths, plus four times the second and fourth breadths, and plus twice the middle breadth shall be multiplied by one-third of the common interval between the breadths. The area thus obtained shall then be multiplied by the mean height, as defined above, and this last product gives the cubic capacity of the after part of the 'tween-deck space in cubic feet or in cubic metres<sup>1)</sup>.

The sum of the cubic capacity of the fore and after part constitutes the cubic capacity of the whole 'tween-deck space.

2. In case Method 2, mentioned in Article 48, has been used, the breadths of the whole space shall be numbered from fore to aft, No. 1 being the breadth at the stem. The cubic capacity of the whole 'tween-deck space is ascertained as indicated in the first explanatory note to Figure 72.

As an alternative method, it is also permissible to calculate the aftermost breadth by determining the area extending aft of the penultimate point of division of the whole length by means of a planimeter as shown in Figure 72. Once the correct aftermost breadth has thus been determined, the cubic capacity of the whole 'tween-

1) Zie noot blz. 28.

deck space is ascertained as indicated in the second explanatory note to Figure 72. <sup>1)</sup>

3. In case Method 3, mentioned in Article 48, has been used, the breadths shall be numbered in the usual way from fore to aft. The cubic capacity of the whole space is then ascertained by applying the provisions given in paragraph 1 of the present article for the determination of the cubic capacity of the fore part of a 'tween-deck space. <sup>1)</sup>

### *Superstructures*

#### Article 50

The spaces of a permanent character situated on or above the upper deck or its line of continuation as defined in Article 15 for the tonnage deck, and which are hereinafter designated as superstructures, shall be measured and, subject to the conditions laid down in Article 51 and to the exceptions provided for in Articles 57 and 58, shall be included in the gross tonnage.

#### Article 51

Subject to the exceptions provided for in Article 57, any closed superstructure (e.g., forecabin, poop, bridge, deck-houses, etc.) available for cargo or stores or for the berthing or accommodation of passengers or crew shall be included in the gross tonnage.

If the enclosures (coverings, bulkheads, etc.) of a superstructure are constructed in such a way (for example, by jamming or wedging) that doubt may arise whether such superstructure should be considered to be of a permanent character, a sketch of the superstructure, with detailed description of its construction, shall be attached to the formulae of measurement, and the national central tonnage measurement authority shall decide whether that space is to be included or not.

#### Article 52

The provisions of Articles 11, 12, 13, 31 and 46 shall apply with necessary changes to the measurement of superstructures.

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<sup>1)</sup> When the decks have not the same sheer, the cubic capacity shall be obtained as follows:

At each point of division the height is multiplied by the breadth. The first and the last-numbered areas thus obtained are then multiplied by one, the other odd-numbered areas by two, and the even-numbered areas by four. The sum of these products is to be multiplied by one-third of the common interval between the points of division. This last product gives the cubic capacity of the space in question.

This footnote may be applied with necessary changes in case Method 2, mentioned in Article 48, has been used.

### *Cubic Capacity of a Superstructure*

#### Article 54

The cubic capacity of a superstructure is to be determined as follows:

1. The breadths having been numbered from fore to aft, the provisions of Article 49 (with footnote) relating to the determination of the cubic capacity of 'tween-deck spaces shall apply for the purpose of ascertaining the cubic capacity of a superstructure. Should the length, however, have only been divided into two equal parts, the sum of the two end breadths, plus four times the middle breadth, shall be multiplied by one-third of the common interval between the breadths. The area so obtained is multiplied by the mean height and this last product gives the cubic capacity of the superstructure in cubic feet or in cubic metres.

2. In the case of the superstructures referred to in footnote 2 to paragraph 3 of Article 53 and in paragraph 4 of the said Article, the length is multiplied by the breadth, and the area thus obtained is multiplied by the mean height. This last product gives the cubic capacity of the superstructure in cubic feet or in cubic metres.

### *Hatchways*

#### Article 55

The cubic capacity of a hatchway is obtained by multiplying the inside length by the mean inside breadth, and the product by the mean height (i.e., the arithmetic mean of the heights measured from the under side of the deck to the under side of the hatch covers).

The relevant provisions of Article 53 shall apply, however, the maximum height to be used is the height of the coaming.

#### Article 56

Hatchways and hatchway trunks leading to exempted spaces shall be exempt from inclusion in the gross tonnage.

From the tonnage of all hatchways leading to spaces included in the gross tonnage deduct one-half per cent of the gross tonnage excluding the hatchways, and the remainder, if any, is to be added to the gross tonnage as "excess of hatchways".

### *Closed Spaces not included in Gross Tonnage*

#### Article 57

##### *I. Spaces on or above the Upper Deck*

The spaces mentioned below under paragraphs 1 to 10 situated on or above the actual upper deck shall not be included in the gross tonnage, nor shall spaces mentioned below under paragraphs 1 to 9,

situated between the line of continuation of the upper deck, as defined in Article 15 for the tonnage deck, and the actual deck if it is stepped, provided that they are solely appropriated to, adapted and used entirely for the purpose mentioned:

1. Spaces which may be regarded as forming part of the propelling-machinery space, or as serving for the admission of light and air thereto. The provisions of Article 77 shall apply with regard to the treatment of such spaces.

2. Spaces fitted with any sort of machinery, not forming part of the propelling machinery. Within the meaning of the present Article, the following shall be regarded as machinery: anchor gear, capstan, steering gear, pumps, refrigerating apparatus and distilling plant, lifts, laundry machinery, boilers and machinery for the preparation of whale oil, fish oil or guano, fish processing machinery, dynamos, storage batteries, fire-extinguishing apparatus, etc. The same provision shall apply with regard to the donkey-boiler which, in accordance with Articles 78 and 79, is not to be regarded as forming part of the propelling machinery.

Small engines, apparatus etc. should, however, be treated as part of the room in which they are situated provided their cubic capacity is not more than 20 cubic feet, or 0.57 cubic metre, each, if not arranged in groups.

3. The wheel-house, chart room, radio spaces, chain locker, and spaces for navigational aids.

4. Spaces serving as galleys or bakeries fitted with ranges or ovens, without regard to the category of persons which these spaces serve. If a space is serving partly as a galley and is partly used for other purposes, only the portion that is serving as a galley shall be exempted from inclusion in gross tonnage.

5. Spaces such as skylights, domes and trunks, affording ventilation or light to spaces thereunder. None of the space below the roof or covering of a superstructure shall, however, be exempted from inclusion in the gross tonnage, except when there is an opening left in the floor of the superstructure under the skylight, dome or trunk to give ventilation or light to spaces below such floor.

6. Spaces such as companions and booby-hatches serving as a protection for companion-ways, stairways or ladderways leading to spaces below. Should a companion-way not bulkheaded off be situated within a space used for other purposes, such as a smoking-room, only the portion of the space directly above the companion-way shall be exempted. Companion-ways (stairways or ladderways) directly situated below companions or booby-hatches shall also be exempted from inclusion in gross tonnage (see Figure 74).

7. Washrooms, bathrooms, showers, water closets and urinals for master and crew.

8. Water-ballast spaces complying with the conditions laid down in Article 71, including peak tanks adapted for fresh water.

9. Workshops and store-rooms for engineers, electricians, pumpmen, carpenters and boatswains, including the lamp room.

10. Cargo spaces if not used or appropriated for carrying liqued cargo or gas in bulk.

Spaces for carrying vehicles shall be regarded as cargo spaces.

All the spaces enumerated in the present Article shall be measured and entered on the formulae of measurement. The relevant provisions of Articles 53 and 54 shall apply as regards the measurements and the calculation of the cubic capacity. Stiffeners and ceiling on bulkheads between such spaces shall, however, not be taken into consideration.

If such spaces are situated within a superstructure, the whole superstructure shall first be measured and then the said spaces which are not to be included in the gross tonnage shall be measured separately and subtracted from the cubic capacity of the whole superstructure. The remainder shall be included in the gross tonnage.

Insulation and air channels serving a refrigerated space in the same tier shall be regarded as part of that space.

## II. *Spaces Between Decks*

If a tonnage mark as described in Articles 4 and 5 is marked on the ship, such spaces as mentioned above under I, paragraphs 1 to 10, situated between the actual tonnage deck and the actual upper deck shall not be included in the gross tonnage when calculating the tonnages for a certificate of the type 1A or 1B, nor shall spaces mentioned above under I, paragraphs 1 to 9, situated between the line of continuation of the tonnage deck as defined in Article 15 and the actual tonnage deck, if this deck is stepped.

The relevant provisions of Articles 11, 12, 13, 48, 49, 53 and 54 shall apply as regards the measurements and the calculation of the cubic capacity. Stiffeners and ceiling on bulkheads between different parts of such spaces shall, however, not be taken into consideration (see Figure 77).

Insulation and air channels serving a refrigerated space in the same tier shall be regarded as part of that space.

## III. *Determination of Tonnage Mark*

1. The minimum vertical distance from the moulded line of the tonnage deck in way of the centre of the load line disc or — in case of steps — of its equivalent deck to the basic line of the tonnage mark (table distance) shall be derived from the following tonnage mark table (see Figures 2 and 3):

## TONNAGE MARK TABLE

(a) In inches

Minimum vertical distance from the moulded line of the tonnage deck in way of the centre of the load line disc to the upper edge of the tonnage mark

Length L <sub>t</sub> in feet	L <sub>t</sub> /D <sub>t</sub>	12	13	14	15	16	17	18	19	20
220 and under		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
230		3.2	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
240		4.7	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
250		6.3	3.3	2.0	2.0	2.0	2.0	2.0	2.0	2.0
260		8.0	4.8	2.1	2.0	2.0	2.0	2.0	2.0	2.0
270		9.9	6.4	3.5	2.0	2.0	2.0	2.0	2.0	2.0
280		11.8	8.1	4.9	2.1	2.0	2.0	2.0	2.0	2.0
290		13.9	9.9	6.5	3.5	2.0	2.0	2.0	2.0	2.0
300		16.0	11.7	8.1	4.9	2.1	2.0	2.0	2.0	2.0
310		18.3	13.7	9.8	6.4	3.5	2.0	2.0	2.0	2.0
320		20.7	15.8	11.7	8.1	4.9	2.1	2.0	2.0	2.0
330		23.2	18.0	13.6	9.8	6.4	3.5	2.0	2.0	2.0
340		25.9	20.4	15.7	11.6	8.1	4.9	2.1	2.0	2.0
350		28.7	22.9	17.9	13.6	9.8	6.5	3.6	2.0	2.0
360		31.7	25.5	20.2	15.7	11.7	8.2	5.0	2.2	2.0
370		34.7	28.3	22.7	17.9	13.6	9.9	6.6	3.7	2.0
380		38.0	31.1	25.3	20.2	15.7	11.8	8.3	5.2	2.4
390		41.3	34.1	27.9	22.6	17.9	13.8	10.1	6.8	3.8
400		44.8	37.2	30.7	25.0	20.1	15.8	11.9	8.4	5.3



Length $L_t$ in feet	$L_t/D_t$								
	12	13	14	15	16	17	18	19	20
410	48.2	40.3	33.5	27.7	22.6	18.1	14.0	10.4	7.2
420	51.5	43.4	36.4	30.4	25.2	20.6	16.4	12.7	9.4
430	54.8	46.5	39.4	33.3	27.9	23.2	19.0	15.2	11.8
440	58.4	49.9	42.6	36.4	30.9	26.0	21.7	17.8	14.4
450	62.1	53.4	46.0	39.6	33.9	29.0	24.6	20.6	17.1
460	65.9	57.0	49.5	42.9	37.1	32.1	27.6	23.5	19.9
470	69.8	60.7	53.0	46.3	40.4	35.2	30.6	26.5	22.8
480	73.7	64.4	56.5	49.7	43.7	38.4	33.7	29.5	25.7
490	77.5	68.1	60.0	53.0	46.9	41.5	36.7	32.4	28.5
500	81.2	71.6	63.4	56.2	50.0	44.5	39.6	35.2	31.2
510	84.9	75.1	66.7	59.4	53.0	47.4	42.4	37.9	33.9
520	88.4	78.4	69.9	62.4	55.9	50.2	45.1	40.5	36.4
530	91.8	81.6	72.9	65.3	58.7	52.9	47.7	43.0	38.8
540	95.2	84.8	75.9	68.1	61.4	55.5	50.2	45.1	41.2
550	98.4	87.8	78.8	70.9	64.0	58.0	52.6	47.8	43.4
560	101.6	90.8	81.6	73.6	66.6	60.5	55.0	50.1	45.6
570	104.8	93.8	84.4	76.3	69.2	62.9	57.3	52.3	47.8
580	107.9	96.8	87.2	78.9	71.7	65.3	59.6	54.5	49.9
590	111.0	99.7	90.0	81.5	74.2	67.7	61.9	56.7	52.0
600	114.0	102.5	92.6	84.0	76.5	69.9	64.0	58.8	54.0
610	117.0	105.3	95.2	86.5	78.9	72.1	66.2	60.8	56.0
620	120.0	108.0	97.8	88.9	81.2	74.4	68.3	62.8	58.0
630	122.9	110.7	100.4	91.3	83.5	76.6	70.4	64.8	59.9
640	125.7	113.4	102.9	93.7	85.8	78.7	72.4	66.8	61.7

Length L <sub>t</sub> in feet	L <sub>t</sub> /D <sub>t</sub>									
	12	13	14	15	16	17	18	19	20	
650	128.6	116.1	105.4	96.1	88.0	80.8	74.4	68.7	63.6	
660	131.4	118.7	107.8	98.3	90.1	82.8	76.3	70.6	65.3	
670	134.2	121.2	110.2	100.6	92.2	84.8	78.3	72.4	67.1	
680	136.9	123.8	112.6	102.9	94.3	86.8	80.2	74.2	68.9	
690	139.6	126.3	115.0	105.1	96.4	88.8	82.1	76.0	70.6	
700	142.3	128.8	117.3	107.3	98.5	90.8	83.9	77.8	72.3	
710	144.9	131.3	119.6	109.4	100.5	92.7	85.7	79.5	73.9	
720	147.5	133.7	121.8	111.5	102.5	94.6	87.5	81.2	75.5	
730	150.1	136.1	124.0	113.6	104.5	96.5	89.3	82.9	77.1	
740	152.7	138.5	126.2	115.7	106.5	98.3	91.1	84.5	78.7	
750	155.3	140.8	128.5	117.8	108.4	100.1	92.8	86.1	80.3	
760	157.8	143.1	130.6	119.7	110.3	101.9	94.4	87.8	81.7	
770	160.2	145.4	132.7	121.7	112.1	103.6	96.0	89.3	83.2	
780	162.6	147.6	134.8	123.7	113.9	105.3	97.6	90.8	84.7	
790	165.1	149.9	136.9	125.6	115.7	107.0	99.2	92.3	86.1	
800	167.5	152.1	138.9	127.4	117.4	108.6	100.8	93.8	87.4	

## TONNAGE MARK TABLE

(b) In millimetres

*Minimum vertical distance from the moulded line of the tonnage deck in way of the centre of the load line disc to the upper edge of the tonnage mark*

Length in metres	$L_t/D_t$									
	12	13	14	15	16	17	18	19	20	
67 and under	51	51	51	51	51	51	51	51	51	51
70	81	51	51	51	51	51	51	51	51	51
73	118	51	51	51	51	51	51	51	51	51
76	157	82	51	51	51	51	51	51	51	51
79	201	119	51	51	51	51	51	51	51	51
82	246	159	84	51	51	51	51	51	51	51
85	294	200	120	51	51	51	51	51	51	51
88	344	244	158	83	51	51	51	51	51	51
91	398	291	199	119	51	51	51	51	51	51
94	455	341	243	158	83	51	51	51	51	51
97	515	393	288	198	119	51	51	51	51	51
100	577	447	336	240	155	81	51	51	51	51
103	643	506	388	286	196	117	51	51	51	51
106	713	567	442	334	239	156	82	51	51	51
109	785	631	499	385	285	196	118	51	51	51
112	862	699	559	438	333	240	157	83	51	51
115	943	772	624	497	386	288	200	122	52	52
118	1026	845	690	556	439	336	243	161	87	87
121	1111	921	758	617	494	385	288	202	124	124
124	1199	1000	829	682	553	439	338	247	165	165

Length $L_t$ in metres	$L_t/D_t$	12	13	14	15	16	17	18	19	20
127		1279	1075	900	749	617	500	397	304	220
130		1362	1154	975	820	685	566	460	365	279
133		1450	1237	1054	896	757	635	527	429	342
136		1541	1323	1135	974	832	707	596	496	407
139		1636	1413	1222	1057	912	784	671	569	478
142		1732	1504	1309	1140	992	862	746	642	548
145		1829	1597	1397	1225	1074	941	823	717	621
148		1926	1688	1485	1309	1155	1019	898	790	692
151		2020	1778	1570	1390	1233	1095	971	861	761
154		2112	1865	1653	1470	1309	1168	1042	930	828
157		2203	1951	1735	1548	1384	1241	1112	998	894
160		2288	2032	1812	1622	1455	1308	1177	1061	955
163		2374	2112	1888	1694	1525	1375	1241	1122	1015
166		2455	2189	1961	1763	1591	1438	1302	1181	1072
169		2537	2266	2033	1832	1656	1501	1363	1239	1128
172		2616	2340	2103	1899	1720	1562	1421	1295	1182
175		2694	2414	2173	1965	1783	1622	1479	1351	1236
178		2772	2487	2242	2030	1845	1682	1536	1406	1289
181		2850	2560	2312	2096	1907	1741	1593	1461	1342
184		2924	2629	2376	2157	1965	1797	1646	1512	1391
187		2999	2699	2441	2219	2024	1853	1700	1563	1440
190		3072	2768	2506	2280	2083	1909	1753	1614	1489
193		3144	2835	2569	2340	2139	1962	1804	1663	1536
196		3215	2901	2632	2398	2195	2015	1855	1711	1582

Length $L_t$ in metres \ $L_t/D_t$	12	13	14	15	16	17	18	19	20
199	3286	2967	2694	2456	2250	2067	1905	1759	1628
202	3356	3032	2754	2513	2304	2118	1953	1805	1672
205	3425	3096	2814	2570	2357	2169	2001	1851	1716
208	3493	3160	2874	2626	2410	2219	2049	1897	1760
211	3561	3223	2933	2682	2462	2268	2096	1942	1803
214	3628	3285	2991	2736	2513	2317	2142	1986	1845
217	3694	3346	3048	2790	2562	2365	2187	2029	1886
220	3760	3407	3105	2843	2613	2412	2232	2072	1927
223	3825	3467	3161	2895	2662	2458	2276	2113	1966
226	3889	3526	3216	2947	2710	2504	2319	2154	2005
229	3951	3584	3270	2998	2758	2549	2361	2194	2043
232	4013	3642	3323	3047	2805	2593	2402	2233	2080
235	4075	3699	3376	3096	2851	2636	2443	2272	2117
238	4136	3755	3428	3144	2897	2678	2483	2310	2153
241	4197	3810	3479	3192	2941	2720	2523	2347	2188
244	4257	3865	3530	3240	2986	2762	2562	2384	2223

2. The table length ( $L_t$ ) used in the tonnage mark table shall be the distance on the tonnage deck between two points, of which the foremost is the point where the under side of that deck or the line thereof at the stem, meets the inner surface of the ceiling, sparring or frames and the aftermost is the point where the under side of that deck, or the line thereof, meets the inner surface of the ceiling, sparring or frames in the middle plane at the stern. Where the tonnage deck is stepped an equivalent length shall be used. Figures 75 and 76 illustrate how the equivalent tonnage deck shall be determined; the determination being based on equal longitudinal areas.

3. The table *depth* ( $D_t$ ) to be used in the tonnage mark table is the moulded depth to the tonnage deck. Where the tonnage deck is stepped the equivalent depth shall be used (see Figures 75 and 76).

4. For intermediate lengths and  $\frac{(L_t)}{(D_t)}$  ratios the corresponding distance shall be obtained by linear interpolation. For other cases table distances must be obtained by extrapolation.

5. Notwithstanding the provisions given above, the tonnage mark may be marked on a line level with the uppermost part of the load line grid of the statutory load line mark assigned and marked under the assumption that the tonnage deck is the freeboard deck.

6. The details of the calculations required by paragraphs 2, 3 and 4 above shall be shown on the tonnage formula.

#### IV. *Exempted Spaces to be stated on the Tonnage Certificate*

The length, as indicated in Figure 77, and the cubic capacity of each cargo space which has been exempted from inclusion in the gross tonnage in accordance with the provisions of paragraph 10 under part I and under part II of this Article shall be entered on the tonnage certificate.

#### *Open Spaces not included in Gross Tonnage*

##### Article 58

Spaces situated on or above the upper deck shall not be included in the gross tonnage when they are entirely open to weather and sea in conformity with one of the following conditions.

#### I. Superstructures from side to side.

##### a) If it is open in an athwartship direction:

1) from deck to deck for at least half of the breadth of the ship at the section concerned. The open part must be undivided, stanchions are not to be considered as dividing up the opening (see Figure 78),

2) not less than  $\frac{1}{4}$  of the breadth of the ship at the section concerned, when it is fitted with a coaming not more than 2 feet in height.

b) If the covering has an entirely open part for at least half of the total area of the covering of this space.

c) If the length of the opening or openings, in at least one side of the ship between a normal bulwark and a curtain plate is not less than  $\frac{1}{4}$  of the total length of the inside space provided the height of the opening is at least 2.5 feet or 0.76 metre and that there are no means of closing the openings (see Figure 79).

d) When a portion of a deck, reasonable in extent, not used for any purpose except as a promenade, and entirely open at either end, is glassed in for protection against the weather, this space shall not be included in the gross tonnage.

## II. Deckhouses.

a) If at least one-fourth of the total length of all surrounding bulkheads is entirely open from deck to deck, under the condition that this opening is not divided up in several parts. Stanchions shall not be considered as dividing up the opening.

b) If the covering has a part entirely open to weather and sea for at least half of the total area of the covering of the space.

## III. Recesses in superstructures or deckhouses.

If entirely open to weather and sea from deck to deck with no means of closing provided its interior width is no greater than the width of the entrance (see Figure 80).

## Article 59

Open spaces, as defined in Article 58, shall always be measured and entered on the formulae of measurement. An exact description indicating the dimensions of the openings shall be provided. The measurement shall be carried out in accordance with the provisions of Article 53.

The calculation will be carried out as indicated in Article 54.

Should there be superstructures within an open space liable to inclusion in gross tonnage, or hatchways, or spaces as referred to in Article 57, or spaces that may be regarded as forming part of the propelling-machinery space (casings, etc.), all such spaces shall be measured separately and entered on the formulae of measurement. Each of these spaces shall be treated, with regard to its inclusion or non-inclusion in gross tonnage, as indicated in the relevant articles.

## *Shelter for Deck Passengers*

## Article 60

Notwithstanding the provisions of the first paragraph of Article 51, closed superstructures exclusively used for the shelter, without extra charge, of deck passengers in ships employed on short voyages may be exempted from inclusion in the gross tonnage, on decision of the national central tonnage measurement authority concerned.

The measurement and calculation shall be carried out as indicated in Articles 53 and 54, and the cubic capacity shall be stated under a special heading in the tonnage certificate.

## PART IV

**Measurement and Calculation of Deductions under Rule I***Master's Spaces*

## Article 61

Any space appropriated to and used exclusively for the accommodation of the master, and certified as such, shall be deducted from the gross tonnage.

The deductible master's spaces may include a sleeping-room, an office, a day-room, a dining-room and wardrobes.

Office, day-room and dining-room furnished with berths and so located that they can serve as spare rooms shall not be deducted.

In case the master's quarters are not adjacent to the wheel-house or chartroom, a master's watch-room, if existing adjacent to the wheel-house or chartroom, may also be included in the deductible spaces.

*Crew Spaces*

## Article 62

Any space occupied by the crew, appropriated exclusively to their use, and certified as such, shall be deducted from the gross tonnage.

The expression "crew" shall include every person (except master and pilots) employed or engaged in any capacity on board the ship during her voyage. In a pilot-ship, only the pilots required for the ordinary navigation of the pilot-ship may be regarded as members of the crew.

The deductible crew spaces may consist of sleeping-rooms, offices and day-rooms, wardrobes, drying-rooms, mess-rooms, smoke-rooms, recreation-rooms, libraries etc.

Spaces other than sleeping-rooms fitted with berths and so located that they can serve as spare rooms shall not be deducted.

On a passenger-ship as defined in Article 64 neither offices for pursers or officers acting as such and stewards nor the doctor's consulting-room shall be deducted.

*Passage-ways and Other Spaces used by Master and Crew*

## Article 63

Washrooms, bathrooms, showers, water-closets, urinals, galleys, bakeries, laundries, spaces occupied by drinking-water filtration or distilling plant, heating and ventilating units, pressure-water system (hydrophore), refrigerating machinery, etc. for the exclusive use of the master and crew shall be deducted, if such spaces have not been exempted from the gross tonnage.



Pantries, hospitals, dispensary-rooms, medicine-lockers, spaces for linen, oilskin and dirty clothes, galley, and mess equipment, etc. used exclusively for the master and crew, may also be deducted.

Spaces properly constructed, strictly necessary and used for the storage of provisions exclusively for the master and crew, shall also be deducted. The deduction thus allowed shall, however, not exceed 15 per cent of the other deducted master's and crew spaces.

Food-lockers may be deducted without any restriction in ships where the master and crew provide their own food, but no deduction for a provision-room shall be made in such cases.

Passage-ways and stairways designed primarily for serving as access for the master and crew to any exempted and/or deducted space, shall be deducted. Such passage-ways and stairways shall also be deducted when they serve at the same time as access to:

(a) Non-deductible spaces where the access to these spaces only consists of ordinary manholes.

(b) Non-deductible spaces such as special rooms provided for pilots, watchmen, tallymen, customs officers, etc.

(c) Non-deductible passage-ways and stairways provided these are separately closed.

(d) Spare-rooms on a non-passenger-ship.

A portion of a passage-way not bulk-headed off shall not be deducted. Arch-openings or doors of not more than half the area of the openings are not considered as dividing-devices.

A passage-way serving conjointly deductible and non-deductible spaces such as staterooms reached only by such passage-way cannot be considered as designed primarily to serve deductible spaces under the meaning of this Article and is not deductible. However, if access to the non-deductible space or spaces by such a passage-way is only incidental and there is access thereto otherwise, especially by a more direct route such a passage-way should not be disqualified as a deduction.

#### Article 64

Spare rooms shall not be deducted. The existence, however, of two spare rooms, for the use of the owner, or other persons not being members of the crew will not be considered as rendering the ship a passenger-ship, on condition that the said spare rooms are fitted with not more than four berths in all, including sofa-berths. Special rooms provided for pilots, watchmen, tallymen, customs-officers, etc. are not to be regarded as spare rooms but they shall not be deducted.

In passenger-ships having no dining-saloon, smoke-room, pantry, galley, bakery, provision-room, drinking-water filtration or distilling plant, bathroom, washroom, shower, water-closet or urinal intended for the exclusive use of passengers, the deduction for the corres-

poning master's or crew spaces shall be cancelled. In the case, however, of ships carrying unberthed passengers, such as pilgrims, and not having any accommodation for berthing passengers, this rule shall not apply, except in respect of water-closets or urinals.

Within the meaning of the present Article, the expression "passenger-ship" shall include any ship carrying more than four fare-paying passengers, or any ship having more than two spare rooms, fitted as described above.

#### Article 65

The spaces referred to in Articles 66 to 71 shall, within the meaning of the present Regulations, be deemed "spaces, for navigation and working of the ship", indicated in Article 7 under No. 2, and shall be deducted subject to the conditions laid down in those articles, provided they have not been exempted.

The spaces for navigation and working of the ship consist of:

- (a) Navigation spaces (except donkey-boilers and main pumps) (Article 66).
- (b) Spaces for donkey-boilers and for main pumps (Article 67).
- (c) Spaces for pumping installations in ships carrying liqued cargo in bulk (Article 68).
- (d) Spaces for boatswain's stores (Article 69).
- (e) Sail-room spaces (Article 70).
- (f) Water-ballast spaces (Article 71).

#### *Spaces for Navigation*

*(except Donkey-Boilers and Main Pumps)*

#### Article 66

Spaces used exclusively for the navigation of the ship shall be deducted, to the extent of what is considered reasonable, if such spaces have not been exempted from the gross tonnage.

The deductible navigation spaces will generally include rooms for keeping and using charts and navigational aids, radio spaces (but not the waiting room for passengers), rooms for keeping navigation lamps, flags, rockets, etc., spaces for submarine signalling and sounding apparatus, rooms for automatic-steering compasses, gyro-stabilisers or similar apparatus and spaces for the helm, steering-gear, capstan and anchor-gear with chain lockers.

Deductible under this Article are also spaces used for air compressors and air storage tanks designed to supply air used in general upkeep of the ship, or for the navigation or the safety of the ship, spaces exclusively used for the storage of firefighting and life-saving equipment and spaces exclusively used for appliances for preventing oil pollution of the sea (except residue tanks).

In cases where the helm, steering-gear, capstan, anchor-gear or similar appliances are situated in rooms larger than is necessary for the purpose, the actual space occupied by each of these appliances shall be deducted; and, in addition, an allowance will be made on every side of the apparatus for the space necessary for its working (in general, not more than 2 feet or 0.61 metre on all sides). The total height to be allowed should, as a rule, not exceed that of an ordinary 'tween-deck space.

### *Donkey-Boilers and Main Pumps*

#### Article 67

Subject to the provisions of Article 79 relating to the treatment of donkey-boiler spaces which may be regarded as part of the propelling-machinery space, the space actually occupied by donkey-boilers, if connected with the main pumps of the ship, shall be deducted, even if the donkey-boilers may be used at the same time for working the cargo winches or for similar purposes.

If the donkey-boilers are not connected with the main pumps, but serve exclusively for the working of the capstan, anchor-gear, steering-gear or similar appliances for navigation purposes, the space occupied may be regarded as navigation space, and therefor shall be deducted as such.

Spaces occupied by and necessary for the working of bilge pumps and for exclusive access to same shall be deducted. The same provision shall apply to pumps for water ballast, if available for pumping out the ship.

If a donkey-boiler, a bilge pump or a water-ballast pump, fulfilling the above conditions, is situated within the boundaries of the propelling-machinery space and is not to be regarded as part of the propelling-machinery, only the spaces strictly occupied by the said appliances shall be deducted and stated on the formulae of measurement under navigation spaces.

### *Pumping Installations in Ships carrying Liqued Cargo in Bulk*

#### Article 68

In ships carrying liqued cargo in bulk, deduction shall be made for spaces occupied by and strictly necessary for access to and for working pumps serving as cargo pumps, or, subject to the provisions of Article 78 under A (6) (n), transfer pumps for liqued fuel situated outside the boundaries of the propelling-machinery space, provided all such pumps are at the same time available for pumping out the ship.

The deductible pump-room space shall be determined as follows:

The space occupied by and necessary for working of a pump shall have a height equal to that of the pump, or of 7 feet, or 2.13 metres, whichever is the larger, and a horizontal area consisting of the floor space occupied, with sufficient space around for efficient working. Normally the whole floor space of a pump room containing only cargo and transfer pumps shall be used; the height of that space shall be taken from the bottom of the pump seating (i.e. normally to the top of the longitudinals or floors or double bottom plating, as the case may be).

The space necessary for access extending from the top of the space here-above-mentioned shall have a horizontal area having one dimension equal to 2 feet or 0.61 metre and the other of 3 feet, or 0.91 metre.

The total deduction allowed for pump-rooms shall be limited according to the following table:

Gross tonnage				Maximum deduction allowed		
Over		But not over		Per cent of gross tonnage	Register tons	Cubic metres
Register tons	Cubic metres	Register tons	Cubic metres			
3000	8498.58			0.9		
2250	6373.94	3000	8498.58		27	76.49
1500	4249.29	2250	6373.94	1.2		
900	2549.58	1500	4249.29		18	50.99
500	1416.43	900	2549.58	2.0		
250	708.22	500	1416.43		10	28.33
		250	708.22	4.0		

*Workshops and Store-rooms necessary for working and upkeep of the Ship*

#### Article 69

Subject to the restrictions stated below workshops and store-rooms for pumpmen, carpenters and boatswains shall be deducted from the gross tonnage if such spaces have not been exempted from the gross tonnage.

The total deduction shall be limited according to the following table:

Gross tonnage				Maximum deduction allowed		
Over		But not over		Per cent of gross tonnage	Register tons	Cubic metres
Register tons	Cubic metres	Register tons	Cubic metres			
25000	70821.53				125	354.11
20000	56657.22	25000	70821.53	0.5		
13333.33	37771.47	20000	56657.2		100	283.29
10000	28328.61	13333.33	37771.47	0.75		
7500	21246.46	10000	28328.61		75	212.46
2000	5665.72	7500	21246.46	1.0		
1333.33	3777.14	2000	5665.72		20	56.66
1000	2832.86	1333.33	3777.14	1.5		
750	2124.65	1000	2832.86		15	42.49
500	1416.43	750	2124.65	2.0		
400	1133.14	500	1416.43		10	28.33
150	424.93	400	1133.14	2.5		
		150	424.93		3	8.50

If in ships having a gross tonnage not exceeding 150 register tons, or 424.93 cubic metres, boatswain's stores are kept in a space not solely appropriated for such purpose, the deduction for boatswain's stores according to the above scale shall still be granted.

In fishing and hunting ships (e.g. whalers and sealers) having a gross tonnage exceeding 150 register tons, or 424.93 cubic metres, where there is no separate boatswain's store-room, a suitable deduction not exceeding 3 tons, or 8.50 cubic metres, shall be made for the boatswain's stores carried in the room for fishing and catching gear.

### *Water-ballast Spaces*

#### Article 71

On an application in writing from the owner, and subject to the limitations indicated hereafter, spaces included in the gross tonnage and which are appropriated to and exclusively used for water-ballast shall be deducted from the gross tonnage, provided that they fulfil the following conditions:

(a) That they are certified as properly constructed and tested ballast tanks;

(b) That they are solely adapted for water-ballast, however, a peak-tank shall also be deducted when adapted for carrying fresh water for the ship's own use even if not connected with the water-ballast system;

(c) That their only means of entrance shall be ordinary-size manholes.

Ad (a). The expression "properly constructed and tested ballast tanks" indicates that the tanks are able to stand pressure under a head of water. The filling of the openings in the tank-top around the frames at the sides with cement is not permissible.

Ad (b). The means for filling and emptying water-ballast tanks (e.g., pumps, pipes, etc.) must be of a permanent and satisfactory character and independent of the installations for water or oil for motor cooling, water for feed or domestic purposes, fuel oil or cargo. Pumping installations must be of suitable type and dimensions for dealing efficiently with the water-ballast. The suction and delivery pipes shall, in general, not be less than  $2\frac{1}{2}$  inches, or 64 mm, inside diameter. Hand pumps, portable pumps, or hose connections are not to be regarded as permanent and satisfactory means for filling and emptying. In all ships not exceeding 200 tons, or 566.57 cubic metres gross, and in ships over 200 tons, or 566.57 cubic metres, having sails as principal means of propulsion, hand pumps, constituting the only means for filling or emptying water-ballast spaces, will not be objected to, provided that the installation is of a permanent character.

A peak-tank is a tank contiguous to the ship's side and to the stern contour or stem situated forward of the collision bulkhead or aft of the after peak bulkhead.

Ad (c). The manholes shall have an area not exceeding 4.91 square feet, or 0.46 square metre.

Coffer-dams shall be considered as water-ballast spaces, provided that they fulfil the foregoing conditions.

Double bottom tanks connected with the ballast-pumping system, or available for water or oil for motor cooling, water for boiler feeding, or domestic purposes or for carrying fuel oil, lubricating oil or cargo, shall be considered as water-ballast spaces when determining the allowance for same.

For the purpose of calculating the cubic capacity of the deductible water-ballast spaces, it should be noted that the total cubic capacity of water-ballast spaces which has been included in the gross tonnage and of exempted double bottom tanks shall not exceed 19 per cent of the gross tonnage. In case the cubic capacity of double bottom tanks equals or exceeds 19 per cent of the gross tonnage, no deduction for water-ballast spaces may be granted.

A part of a tank may be allowed as a deduction, provided that the whole tank is fitted, constructed and tested for carrying water-ballast.

### Article 72

No deduction shall be allowed in respect of any of the spaces dealt with in Articles 61 to 71 which have not first been included in the gross tonnage.

### Article 73

The measurement and the calculation of the cubic capacity of the spaces dealt with in Articles 61 to 63 and 66 to 70 shall be carried out as indicated in Articles 53 and 54. Consequently, the heights are to be measured to the under side of the deck overhead through panelling, if any. The horizontal measurements of these spaces are to be taken between the partitions and linings, if any, or to the inner edge of frames, or to the inner edge of the normally spaced bulkhead stiffeners to which the measurements have been taken when ascertaining the gross tonnage. Each space is to be measured separately, and the formulae of measurement should indicate the purpose for which the space is intended. If only parts of a space have been deducted, the dimensions of the whole space, along with those of the space deducted, shall be shown in the formulae of measurement.

The measurement of peak-tanks and other water-ballast spaces extending to the side of the ship, and situated outside the double bottom and below the tonnage deck or its line of continuation, shall be carried out in conformity with the rules for the measurement of the space below the tonnage deck. The length shall be measured at the top of the tank (see Figure 81). Transverse sections shall be measured in the usual way at the middle of the length and at its extreme points, but only five breadths are to be taken in each section. If a water-ballast space is situated partly below and partly above the tonnage deck or its line of continuation (e.g., a peak-tank aft extending to the under side of a raised quarter-deck), the part situated below the tonnage deck or its line of continuation shall be measured as indicated above and the remaining part shall be measured separately.

For all tanks extending from side to side of the ship, the distance from the end bulkhead or bulkheads to the correct position of the nearest transverse section of the space below the tonnage deck is to be ascertained and stated in the formulae of measurement.

The measurement of water-ballast spaces not extending to the side of the ship and situated below the tonnage deck and outside the double bottom shall be carried out as follows. First measure the length of the tank; this length shall be divided as indicated in Article 21, but, in case this length does not exceed 30 feet, or 9.14 metres, it shall only be divided into two equal parts. Transverse sections are then measured at the extreme points of the length and at its points of division. When the spaces referred to in the present paragraph are of relatively small height, they may also be measured as provided in Article 53, if they are bounded by approximately

straight planes. If a tank is irregular in shape, it shall be measured in parts.

Water-ballast spaces situated above the tonnage deck or its line of continuation shall be measured as indicated in Article 53.

The cubic capacity of each water-ballast space shall be ascertained by applying the relevant provisions given in the present regulations for the determination of the cubic capacity of the space below the tonnage deck and of superstructures.

### *Deduction for Propelling-machinery Space*

#### Article 74

In the case of any ship propelled by machinery for which space is required, an allowance shall be made for propelling-power in accordance with the provisions of Article 75, and the amount so allowed shall be deducted from the ship's gross tonnage.

The space occupied by and necessary for the proper working of the main propelling-machinery and the auxiliary machinery necessary for the proper working of the main machinery, as specified in Articles 78 and 79, with or without, as the case may be, light and air spaces referred to in Article 77, shall, within the meaning of the present Regulations, be regarded as propelling-machinery space.

Apart from the differences in method for obtaining the cubic capacity of the space below the tonnage deck and that of the propelling-machinery spaces, as provided for in Articles 41, 80 (1) and 82, no space shall be included in the cubic capacity of the propelling-machinery space when determining the propelling-power allowance, unless it has first been included in the ship's gross tonnage.

The method of measurement of the height of a shaft-tunnel when the tonnage depths in way of same are measured to the top of the ceiling supposed to be situated directly on the top of the double bottom as indicated in Figure 82.

All propelling-machinery spaces shall be measured and their cubic capacity be ascertained in accordance with the provisions of Articles 80, 81 and 82.

### *Items of Propelling-machinery Space*

#### Article 76

The propelling-machinery space shall include the following:

(a) spaces enumerated in Articles 78 and 79 below the tonnage deck or its line of continuation as defined in Articles 9 and 15,

(b) spaces enumerated in Articles 78 and 79 between the tonnage deck and the upper deck or their lines of continuation as defined in Articles 9 and 15; and may include



(c) spaces enumerated in Article 77 on or above the upper deck.

When calculating the tonnage related to the exemption of certain 'tween-deck spaces according to Article 57 II, the propelling-machinery space shall include (a) above and, subject to the restrictions of Article 77, may include (b) and (c) above (see Figure 83).

### *Light and Air Spaces*

#### Article 77

Spaces or parts of spaces referred to under item (c) of Article 76, shall be designated light and air spaces, and, on an application by the owner, be added to the ship's gross tonnage and to the propelling-machinery space on which the allowance for propelling-power is to be based, provided that they are:

- (a) reasonable in extent;
- (b) certified as safe and seaworthy;

(c) so constructed, that they cannot be used for any purpose other than the admission of light and air to the machinery space or for such machinery, appliances or apparatus as may be regarded as forming part of the propelling-machinery, in conformity with the provisions of Articles 78 and 79.

The formulae of measurement should indicate whether the spaces in question fulfil the conditions mentioned above.

### *Particulars as to the Spaces which may be regarded as Propelling-machinery Spaces*

#### Article 78

A. The following spaces shall be regarded as propelling-machinery spaces:

- (1) Spaces for the *main boilers*;
- (2) Spaces for the *main machinery*;
- (3) Spaces for *auxiliary machinery* necessary for the working of main boilers or main machinery;
- (4) *Shaft tunnels or trunks, escape trunks and lifts* serving primarily the machinery space;
- (5) *Engineer's store-rooms and workshops* up to a maximum of three-quarters of one per cent of gross tonnage, if such spaces have not been exempted from the gross tonnage.
- (6) Spaces for the following machinery, appliances or apparatus:
  - (a) *Settling tanks and daily supply tanks* in oilburning ships (tanks included in gross tonnage and/or exempted from gross tonnage) up to a maximum volume of a two-day supply of fuel oil if

situated within the boundaries of the machinery space, in the casings above, or directly adjacent to such space or casings.

A tank shall be considered a settling tank only if it is provided with water-drainage and forming part of the fuel oil service system, so that under normal running conditions all fuel oil withdrawn from storage tanks must pass through the settling tank before being delivered to the main engines and/or the main and/or auxiliary boilers or before being discharged into daily supply tank;

(b) *Dynamos, switchboards and control-panels*, with the exception of those indicated under B (4) (f) of the present article;

(c) *Silencers* (including silencers in funnels);

(d) *Hot-wells*, if situated within the boundaries of the machinery space below the upper deck;

(e) *Ash-ejectors*;

(f) *Apparatus for forced-draft to boilers*;

(g) *Oil-refiners and oil-coolers for fuel oil and lubricating oil* (including rectifying and purifying tanks);

(h) *Feed-water heating apparatus* and other similar plant necessary for the working of the main machinery;

(i) *Evaporators primarily for boiler feed-water*;

(j) *Pumps for lubricating oil*;

(k) *Ventilating plant* primarily for the ventilation of the machinery space;

(l) *Storage batteries*, used primarily in connection with the propelling-machinery;

(m) *Compressors and air-reservoirs* used in connection with the propelling-machinery;

(n) *Fuel oil pumps*, used solely for fuel oil purposes if situated within the boundaries of the machinery space, in the casings above, or directly adjacent to such space or casings.

B. The following spaces shall not be regarded as propelling-machinery spaces:

(1) *Fuel spaces*.

(2) *Feed-water spaces*.

(3) *Storage tanks for lubricating oil*.

Lubricating oil tanks forming part of the circulating system are not to be considered as storage tanks if situated within the confines of the machinery space or the casings above (see Figure 84).

(4) Spaces occupied by the following machinery, appliances or apparatus:

(a) *Auxiliary condenser plant* not used in connection with propelling-machinery;

- (b) *Fire-extinguishing plant*;
- (c) *Refrigerating machinery*;
- (d) *Machinery for ventilation and for heating of crew's and passengers' quarters*;
- (e) *Sanitary and other pumps* not used in connection with the propelling-machinery;
- (f) *Dynamos, switchboards and control-panels*, exclusively used for lighting or navigating purposes, cargo work, etc., quite independent of the ship's propelling-machinery;
- (g) *Donkey-boilers* other than those referred to in Article 79.

### *Donkey-boiler Space*

#### Article 79

Donkey-boilers which, to the satisfaction of the national central tonnage measurement authority concerned, are necessary for and are used in connection with the main propelling-machinery or auxiliary machinery considered as part of same, shall be regarded as forming part of the propelling-machinery.

### *Measurement of Propelling-machinery Spaces*

#### Article 80

The measurement of propelling-machinery spaces shall be carried out as follows:

- (1) *Spaces* referred to in Article 76 under item (a), are measured by ascertaining:
  - (i) the length;
  - (ii) three, five or, if necessary, seven depths;
  - (iii) three, five or, if necessary, seven breadths.

The *length* of the space between its end bulkheads is measured; this length is then divided into two, four or six equal parts, according to whether three, five or seven depths are to be measured.

The *depth* is measured in the middle plane to the top of the double bottom (or top of the ordinary floors or top of ceiling, as the case may be) at the extreme points of the length and at its points of division. Each depth is to be corrected, if necessary, on account of the rise or fall of double bottom, as indicated in Article 28.

At the middle of each depth, the *breadth* is then measured between the side bulkhead (or between the inner edges of the frames at the ship's sides or the ceiling thereon, as the case may be).

The length of a space and its situation will serve as guidance with regard to the number of depths and breadths to be taken. A large engine-room situated aft and extending from side to side of the ship will

require the measurement of five or seven depths and five or seven breadths. If situated amidships, however, three depths and three breadths will, as a rule, be sufficient.

When there exist in the machinery space a break or breaks in the double bottom or, in the case of a ship with single bottom, an abrupt change in the depth of floors, or when the side bulkheads of the machinery space have a curved or broken outline (e.g., side bulkheads of fuel spaces) or in general when the machinery space is irregular in shape, it shall be measured in parts, each part being dealt with as prescribed for the measurement of the whole space. When the space is a rectangular parallelepipedon, the measurement of one depth and one breadth will be sufficient.

All the measured depths and breadths shall be entered on the formulae of measurement with an indication as to whether they have been taken to top of double bottom or to top of ordinary floors, to inner edge of frames or to ceiling.

When carrying out measurement of spaces below the tonnage deck, due regard must be given to existing recesses or projections in double bottom or floors as mentioned in paragraph (1) of Article 29.

Figures 85 to 90 show details of measurement of propelling-machinery spaces.

(2) *Spaces referred to in Article 76 under Items (b) and (c)* are measured as regards length, height and breadth as indicated under paragraph (1) of the present article. In most cases, however, the measurement of one height and one breadth will be sufficient unless the space concerned extends from side to side of the ship (e.g., a shaft recess), in which case three or five breadths should be measured.

Spaces situated above the tonnage deck or its line of continuation shall be measured tier by tier. Each space is measured separately and the measurements are taken between their partitions without regard to stiffeners.

(3) When ascertaining the cubic capacity of the spaces dealt with in the present article, it should be noted that spaces not to be regarded as propelling-machinery spaces or spaces referred to in Article 78 A (5), the total or partial incorporation of which cannot take place until the gross tonnage of the ship has been determined, should not be included. With a view to attaining this object it will, in most cases, be found practical to measure separately by their extreme outside dimensions the spaces occupied by such machinery, appliances and apparatus as are not to be regarded as propelling-machinery and then subtract their cubic capacity from the cubic capacity of the whole space (see Figures 86 and 90).

If such machinery, appliances, apparatus, etc., are bulkheaded off, the cubic capacity of the space bulkheaded off is ascertained.

The measurements of spaces occupied by machinery, appliances,

apparatus, etc., not to be regarded as propelling-machinery whether bulkheaded off or not, should be entered on the formulae of measurement.

If it is necessary to apply restrictions to the measurements of the propelling-machinery space, in conformity with the provisions of Article 81, the restricted measurements as well as the full measurements of the space shall be entered on the formulae of measurement.

### *Restrictions of Propelling-machinery Spaces*

#### Article 81

(a) *Length of the spaces* referred to in Article 78 A (1), (2) and (3).

(1) If, in carrying out the measurement of the propelling-machinery space, it is found that the length of such space exceeds what is necessary for the proper working of the main propelling-machinery and for the auxiliary machinery necessary for the main machinery, such length shall be restricted, subject to the provisions of paragraph (4).

(2) In the case of steamships, the following procedure shall be observed:

(i) If the fire-grates are in a fore- and aft direction, the length equal to that of the fire-grates increased by about 1 foot or 0.30 metre shall be allowed in front of the fire-grates for the stoking or working of the fires, but no additional length is required when the boilers are placed with the fire-grates athwartships.

The same restriction would apply if the main boilers were situated wholly or partly above the tonnage deck.

(ii) In the case of ships propelled by reciprocating engines, the point to which the after boundary of the length of the machinery space is to be measured should be no further aft of the after cylinder, its valve-casing or other part of the main propelling-machinery than is necessary for safe working, but in no case without special instructions from the national central tonnage measurement authority should the actual point of measurement be more than 4 feet or 1.22 metre aft of such cylinder, etc., indicated above.

(3) In the case of turbine ships, the restrictions laid down in paragraph (2) of section (a) of the present Article shall apply to the measurement of boiler spaces.

(4) The restrictions referred to in paragraphs (1), (2) and (3) of section (a) of the present Article shall only apply in cases where the cubic capacity of the propelling-machinery spaces upon which the propelling-power allowance is based is 20% or more of the gross tonnage in the case of screw ships, or 30% or more of the gross tonnage in the case of paddle ships, but whatever be the size of the

machinery space these restrictions shall in no case be applied to fishing and hunting ships, tugs as defined in Article 75, ships constructed and intended exclusively for icebreaking, or yachts.

(5) If a departure from either of the above provisions as to length appears to be necessary owing to the high power of the engines or any peculiarity in the arrangement of the machinery, the national central tonnage measurement authority concerned, to which all necessary particulars and plans should be forwarded, will have to decide as to the length to be used for the purpose of calculating the cubic capacity.

*(b) Shaft trunks in screw ships, escape trunks.*

(1) Thrust-block space. When the thrust-block is not situated within an ordinary thrust-block recess and when, according to the present Article, a limitation has to be applied to the length of the main machinery space, the thrust-block being situated within the main space outside the restricted part, the height of such thrust-block space to be allowed for shall in no case exceed what is considered necessary for the purpose of overhauling (see Figure 91).

(2) When there is no built tunnel:

(i) In the case of single-screw ships, the space allowed as a tunnel shall be of ordinary dimensions suitable for the ship; if the after machinery bulkhead is recessed, the height of the space allowed for shall not exceed, above the shaft, what is necessary for working and overhauling (see Figure 91 and 92).

(ii) In the case of ships with two or more screws, the same provisions shall, in general, apply, but when there exists a large space or recess open from side to side immediately aft of the main space, the space included in the propelling-machinery space shall not be larger than would have been necessary in the case of ordinary-sized shaft tunnels for each shaft line (see Figure 93).

(3) In ships with two or more screws and built shaft-tunnels, the recessed part immediately forward of the stern tubes shall not be larger than is reasonable for the purpose of overhauling or shafting, due account being taken of the general construction of that part of the ship (see Figure 94).

(4) Escape trunks shall be regarded as part of the propelling-machinery space, provided that they are not larger than is necessary for the purpose of access to and escape from the tunnel.

*(c) Spaces between the tonnage deck and the upper deck.* In general, the only restrictions to be applied are those indicated under (a), but in case exemption has been granted as per Article 57, II, the provisions under (d) below shall apply.

(d) *Spaces on or above the upper deck.* For the purpose of determining whether these spaces are "reasonable in extent", it should be noted that:

1) In the case of spaces situated outside the boundaries of the propelling-machinery space or the casings above same, and fitted with machinery which in accordance with the provisions of Articles 78 and 79 may be regarded as part of the propelling-machinery, such spaces are not to be larger than is necessary for the proper working of the said machinery.

(2) In the case of spaces serving for the admission of light and air to the propelling-machinery space:

- (i) Their total length should not exceed the length of the machinery space underneath (see Figure 95).
- (ii) The breadth to be allowed should not exceed half of the extreme tonnage breadth.

(e) Doubtful cases shall be submitted, together with the necessary particulars, to the national central tonnage measurement authority concerned, for their decision.

## PART V

### Measurement and Calculation of Tonnage under Rule II

#### *Measurement of the Space below the Uppermost Deck*

##### Article 84

When, according to the second paragraph of Article 2, Rule II is to be applied, the measurement of the space below the *uppermost deck* shall be carried out by ascertaining in the following manner the ship's length, the extreme outside breadth and the girth:

(1) The length is measured on the uppermost deck from the aft side of the stem to the aft side of the sternpost. Should no sternpost exist or should the sternpost not extend up to the uppermost deck, the length shall be taken to the fore side of the rudder-stock, the latter being, if necessary, imagined to extend up to the uppermost deck (see Figure 96).

(2) The extreme outside breadth is determined by measuring the greatest breadth of the uppermost deck to the outside of the ship's sides, where the level of the upper side of the deck is to be marked off. The tumble-home, if any, is then measured by means of a lead or otherwise. The sum of the breadth and the tumble-home at both sides constitutes the extreme outside breadth (see Figure 97). Rubbing-pieces should not be included in this breadth.

In cases where it is possible to determine the extreme outside breadth by inside measurement (e.g., in the machinery space of a steel ship) the greatest breadth to the inside of the plating is measured and to this breadth is added the thickness of the plating at both sides.

(3) The girth should preferably be measured by means of a curb chain passed round the ship outboard at the place where the extreme breadth has been measured (see Figures 98 and 99). The chain must be hauled tight perpendicularly to the keel line, and the upper side of the uppermost deck on both sides shall be marked on it. The girth is then found when measuring on the chain the distance between the points marked off on the chain.

### *Measurement and Calculation of Cubic Capacity of Superstructures*

#### Article 88

The measurement of all superstructures and hatchways on or above the uppermost deck shall be carried out by ascertaining their mean breadth, mean length and mean height, if practicable in accordance with the provisions contained in Part III. When it is impracticable to ascertain internal measurements, external measurements shall be taken.

The cubic capacity of such spaces is ascertained by multiplying the length by the breadth, and the area thus obtained, by the height. This last product shall be deemed to be the cubic capacity in cubic feet or in cubic metres.

## PART VI

### Identification Dimensions

#### *Identification Dimensions when applying Rule I*

#### Article 90

(1) The identification *length* is the length from the fore side of the uppermost end of the stem (see Figure 100) to the aft side of the uppermost end of the sternpost.

Should no sternpost exist, the length is taken to the point of intersection of the fore side of the rudder-stock (or its line of continuation) with the uppermost deck.

When the tonnage length has been ascertained, the identification length will easily be found by adding to or deducting from the tonnage length, as the case may be, the length of the horizontal distances measured in the middle plane between the extreme points of the tonnage length and the points mentioned above (see Figure 96).



(2) The identification *breadth* is the extreme outside breadth which is ascertained in the same manner as indicated under Article 84 for the breadth under Rule II (see Figure 97).

Rubbing-pieces should not be included in this breadth.

(3) The identification *depth* is the vertical distance measured in the middle plane at half the identification length between the under side of the upper deck and the upper side of the double-bottom plating or floors (see Figure 101).

When the identification depth falls in way of a recess or a projection in the double bottom, the depth should be measured to the bottom of the recess or to the top of the projection, as the case may be (see Figure 102).

#### Article 92

The overall length should also be ascertained. It is to be measured from the fore side of the foremost permanent structure to the after side of the aftermost permanent structure of the ship (see Figure 103).

**FIGURE 1**  
(ARTICLE 5)

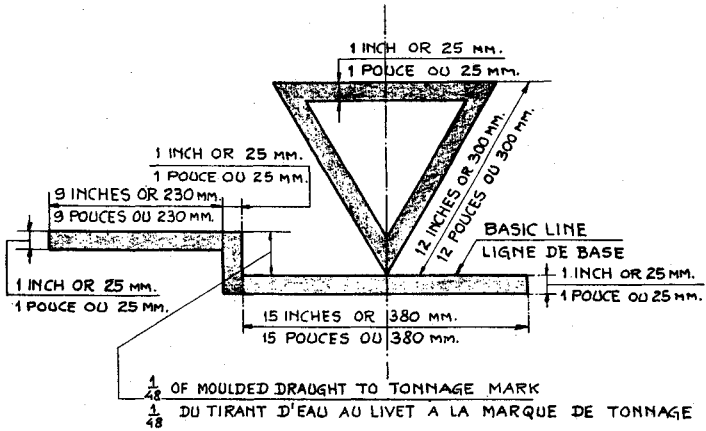
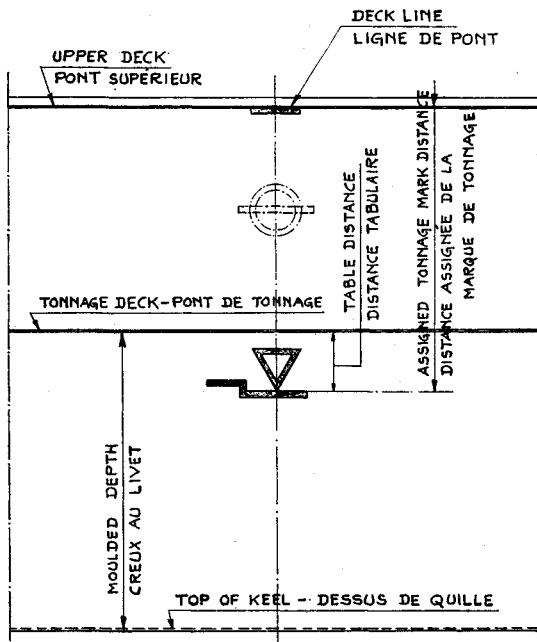


FIGURE 2  
(ARTICLE 5, ARTICLE 57-III)



ASSIGNED TONNAGE MARK DISTANCE IS THE TABLE DISTANCE IN ADDITION TO THE VERTICAL DISTANCE FROM TOP OF MOULDED DEPTH TO UPPER EDGE OF DECK LINE.  
LA DISTANCE ASSIGNEE DE LA MARQUE DE TONNAGE EST LA DISTANCE TABULAIRE, AJOUTEE A LA DISTANCE VERTICALE DU DESSUS DU CREUX AU LIVET AU DESSUS DE LA LIGNE DE PONT.



FIGURE 4  
(ARTICLE 10)

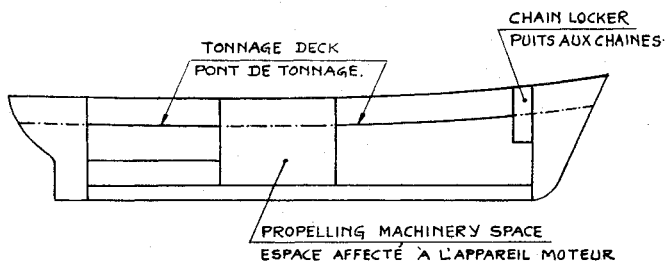


FIGURE 5  
(ARTICLE 10)

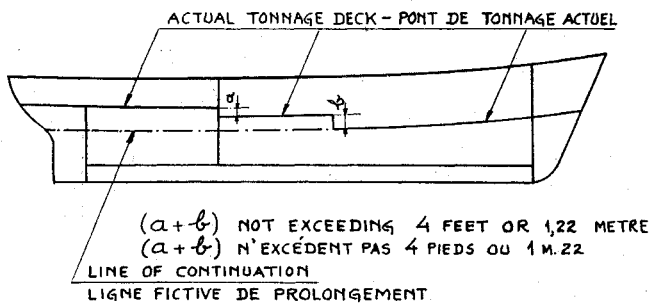


FIGURE 6  
(ARTICLE 10)

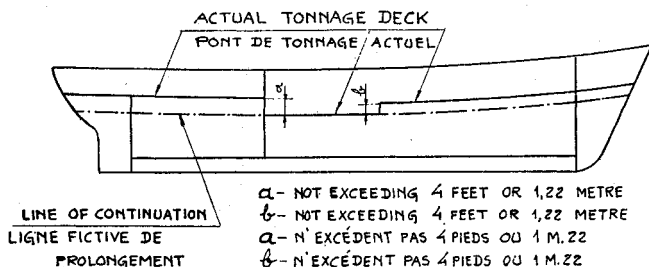
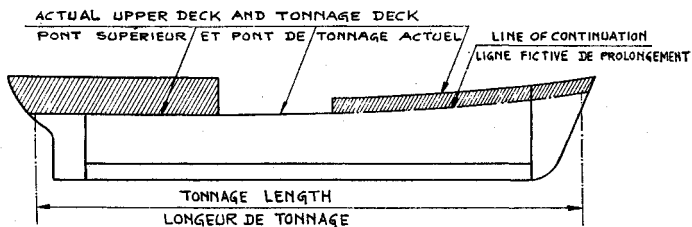


FIGURE 7  
(ARTICLE 15-ARTICLE 46)



TO BE INCLUDED IN THE GROSS TONNAGE (SUBJECT TO EXEMPTIONS ACCORDING TO ARTICLE 57)  
 À AJOUTER AU VOLUME DE TONNAGE BRUT (SOUS RÉSERVE DES DISPOSITIONS CONTENUES DANS L'ARTICLE 57)

FIGURE 8  
(ARTICLE 15, ARTICLE 46)

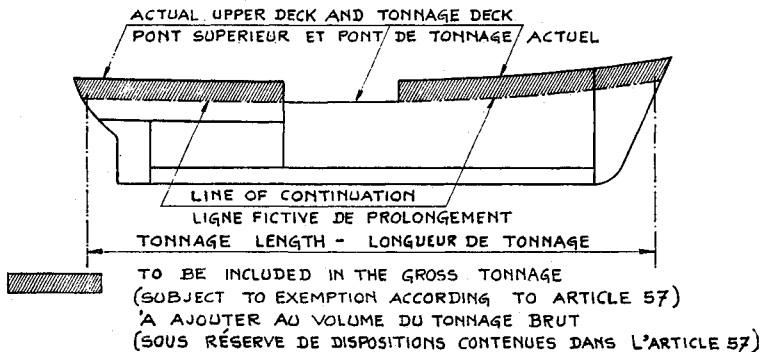
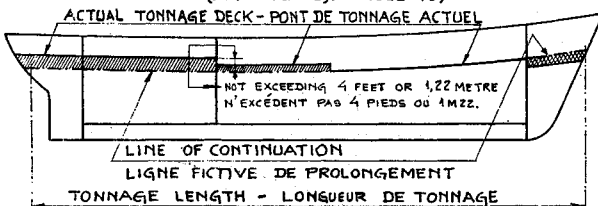


FIGURE 9  
(ARTICLE 15, ARTICLE 46)



SUNKEN PART OF THE DECK FORWARD OF THE FOREPEAK BULKHEAD NOT TO BE TAKEN INTO CONSIDERATION WHEN DETERMINING THE TONNAGE LENGTH.

LA PARTIE ABAISSÉE DU PONT ÊTRE SITUÉE À L'AVANT DE LA CLOISON D'ABORDAGE NE DOIT PAS ÊTRE PRISE EN CONSIDÉRATION LORS DE LA DÉTERMINATION DE LA LONGUEUR DE TONNAGE

TO BE INCLUDED IN THE UNDER-DECK TONNAGE  
À AJOUTER AU VOLUME DE L'ESPACE SITUÉ SOUS  
LE PONT DE TONNAGE

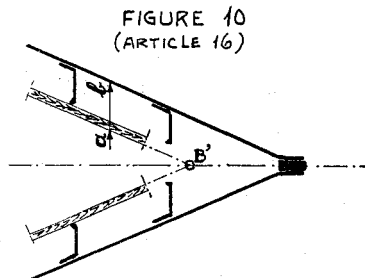


Figure 10

$B^1$  = Extreme point forward situated on the upper side of the tonnage deck.

$a b$  = Thickness of frame + thickness of ceiling measured horizontally.

$B^1$  = Point avant extrême sur la face supérieure du pont de tonnage.

$a b$  = Épaisseur de la membrure + épaisseur du vaigrage, mesurées horizontalement.

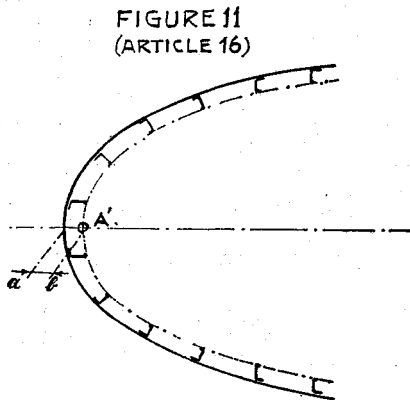


Figure 11

$A^1$  = Extreme point aft situated on the upper side of the tonnage deck.

$a b$  = Thickness of frame, measured horizontally (no ceiling fitted).

$A^1$  = Point arrière extrême sur la face supérieure du pont de tonnage.

$a b$  = Épaisseur de la membrure mesurée horizontalement (il n'y a pas de vaigrage).



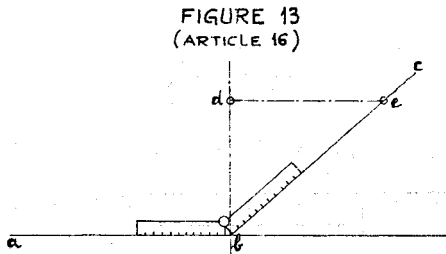
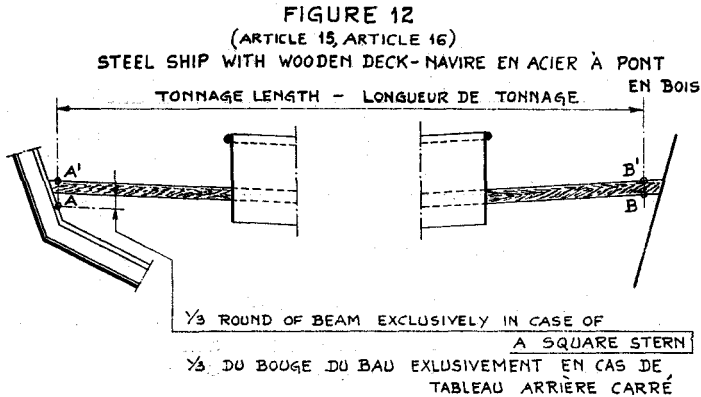


Figure 13

a b c represents the angle of rake of the bow (or stem) or the stern, b c the aft side of the stem or the inside of the shell-plating at the stern of the hull; a b represents the upper side of the tonnage deck, and b d the thickness of that deck. The points B<sup>1</sup> or A<sup>1</sup> as shown in Figures 10 and 11 are then to be moved aft or forward for a distance equal to d e, representing the rake of the bow (or stem) or the stern in the thickness of the deck.

a b c représente soit l'angle d'élançement soit celui de la quète, b c soit la face arrière de l'étrave soit la face intérieure des tôles de la coque à l'arrière. a b représente la face supérieure du pont de tonnage et b d l'épaisseur dudit pont. Les points B<sup>1</sup> ou A<sup>1</sup> des figures 10 et 11 doivent alors être déplacés vers l'arrière ou vers l'avant d'une distance égale à d e représentant l'élançement ou la quète dans l'épaisseur du pont.

FIGURE 14  
(ARTICLE 17, ARTICLE 24)

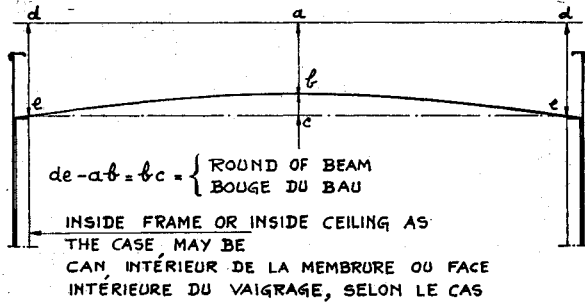


FIGURE 15  
(ARTICLE 25)

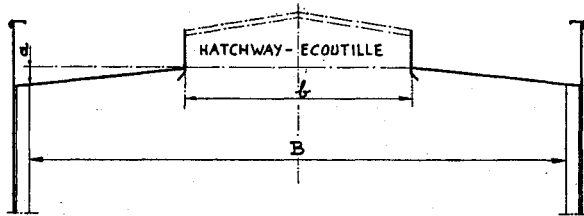
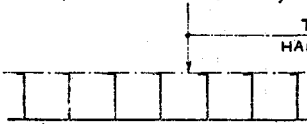


FIGURE 16  
(ARTICLE 26-(a)-I-(1))



SINGLE BOTTOM- FOND SIMPLE  
SOLID FLOORS ON EVERY FRAME  
VARANQUES PLEINES A CHAQUE  
MEMBRURE

FIGURE 17  
(ARTICLE 26-(a)-I-(2))



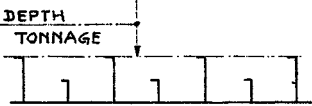
SOLID FLOORS ON EVERY 2<sup>nd</sup> FRAME  
VARANQUES PLEINES TOUS LES  
DEUX COUPLES

FIGURE 18  
(ARTICLE 26-(a)-I-(2))



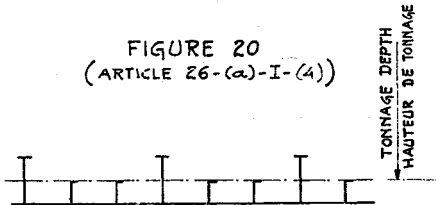
SOLID FLOORS ON EVERY 3<sup>rd</sup> FRAME  
VARANQUES PLEINES TOUS LES  
TROIS COUPLES

FIGURE 19  
(ARTICLE 26-(a)-I-(3))



DEEPER FLOORS ON ALTERNATE  
FRAMES  
HAUTES ET BASSES VARANQUES  
ALTERNÉES

FIGURE 20  
(ARTICLE 26-(a)-I-(4))



DEEPER FLOORS MORE THAN 2 FRAME SPACES APART  
HAUTES VARANQUES A UNE DISTANCE DE PLUS DE DEUX  
ECARTEMENTS DES COUPLES

FIGURE 21  
(ARTICLE 26-(a)-I-(5))

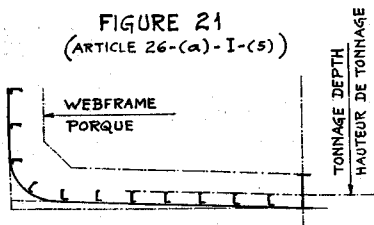


FIGURE 22  
(ARTICLE 26-(a)-I-(6))

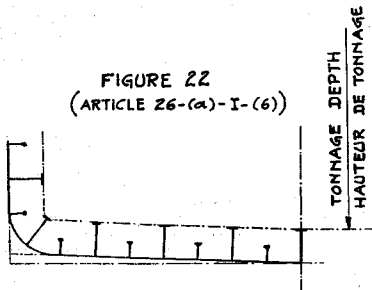


FIGURE 23  
(ARTICLE 26-(a)-I-(6))

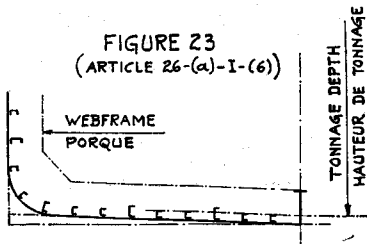


FIGURE 24  
(ARTICLE 26-(a)-I-(f), ARTICLE 38-4)

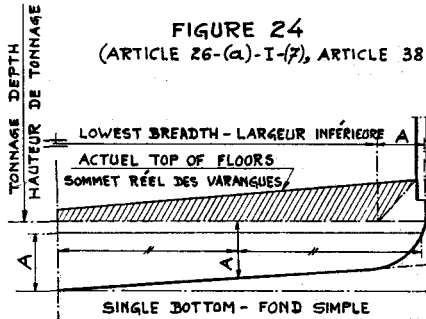


FIGURE 25  
(ARTICLE 26-(a)-I-(g), ARTICLE 38-4)

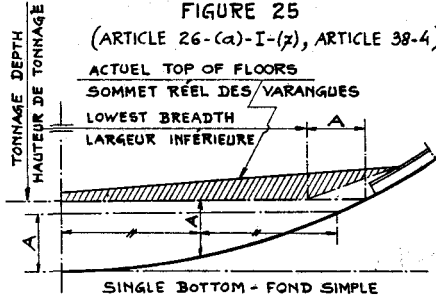


FIGURE 26  
(ARTICLE 26-(a)-II, ARTICLE 38-4)

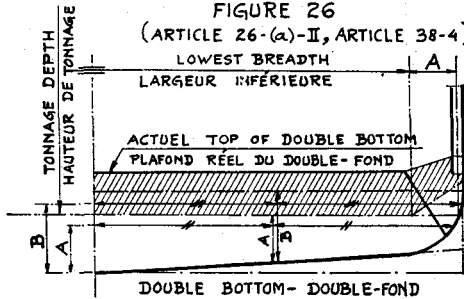


FIGURE 27  
(ARTICLE 26-(b)-(1))

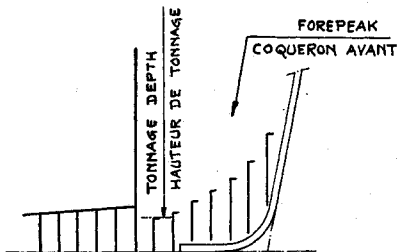
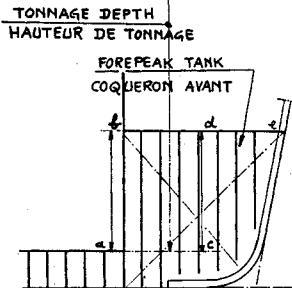


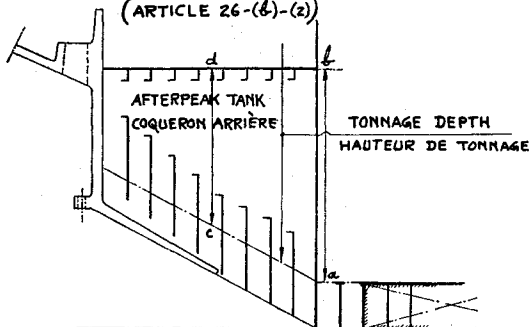
FIGURE 28  
(ARTICLE 26-(b)-(2))



$ab, cd$  = HEIGHT OF PEAK TANK  
WHEN MEASURING THIS SPACE  
AS A DEDUCTION.

$ab, cd$  = HAUTEUR DU COQUERON  
LORSQUE CET ESPACE EST  
MESURÉ POUR LA DÉDUCTION

FIGURE 29  
(ARTICLE 26-(b)-(2))



$ab, cd$  = HEIGHT OF PEAK TANK WHEN MEASURING  
THIS SPACE AS A DEDUCTION.

$ab, cd$  = HAUTEUR DU COQUERON LORSQUE CET ESPACE  
EST MESURÉ POUR LA DÉDUCTION.

FIGURE 30  
(ARTICLE 26-(b)-(2))

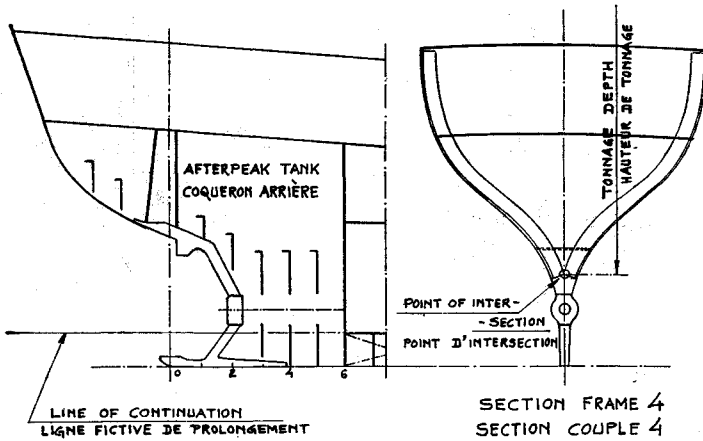
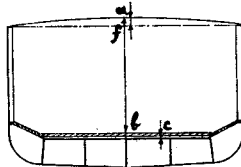


FIGURE 31  
(ARTICLE 27)



$$\left. \begin{array}{l} \text{TONNAGE DEPTH} \\ \text{HAUTEUR DE TONNAGE} \end{array} \right\} = ab + c - \frac{1}{3}af$$

$af$  = ROUND OF BEAM - BOUGE DU BAU.

$C$  = THICKNESS OF GROUNDS.

ÉPAISSEUR DES LAMBOURDES.

FIGURE 32  
(ARTICLE 27)

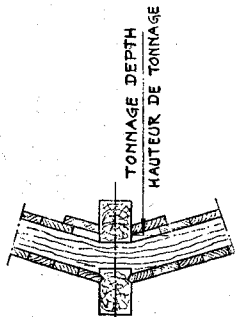


FIGURE 33  
(ARTICLE 27)

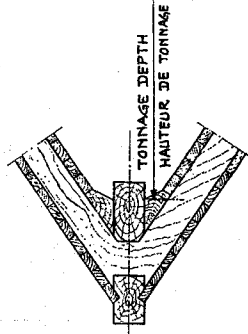
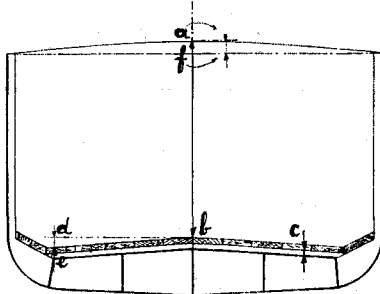


FIGURE 34  
(ARTICLE 28-1)



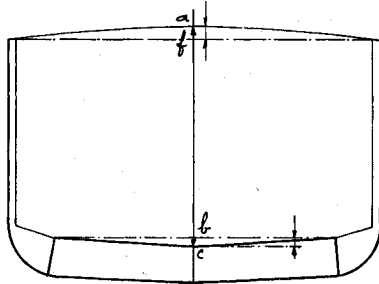
$$\left. \begin{array}{l} \text{TONNAGE DEPTH} \\ \text{HAUTEUR DE TONNAGE} \end{array} \right\} = ab + c + \frac{1}{2}de - \frac{1}{3}af$$

C = THICKNESS OF GROUND - ÉPAISSEUR DES LAMBOURDES  
 $d$  = FALL OF INNER BOTTOM. - DÉNIVELLATION DU FOND INTÉRIEUR.  
 $a$  = ROUND OF BEAM - BOUGE DU BAU.



FIGURE 35  
(ARTICLE 28-2)

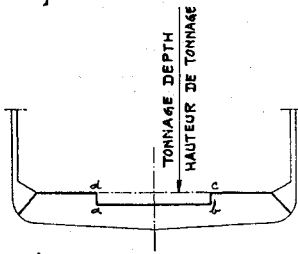
$$\left. \begin{array}{l} \text{TONNAGE DEPTH} \\ \text{HAUTEUR DE TONNAGE} \end{array} \right\} = ac - \left( \frac{1}{2} bc + \frac{1}{3} af \right)$$



$bc$  = { RISE OF INNER BOTTOM.  
DÉVELLATION DU FOND INTÉRIEUR.

$af$  = { ROUND OF BEAM.  
BOUGE DU BAU.

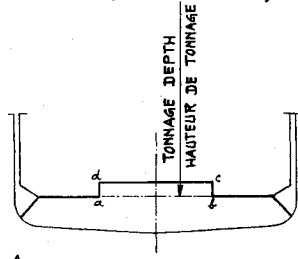
FIGURE 36  
(ARTICLE 29-1)



abcd TO BE MEASURED SEPARATELY AND TO BE ADDED TO THE UNDERDECK TONNAGE.

abcd À MESURER SÉPARÉMENT ET À AJOUTER AU VOLUME PRINCIPAL.

FIGURE 37  
(ARTICLE 29-1)

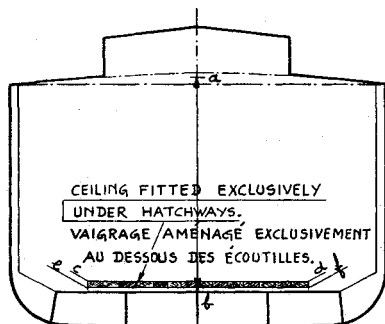


abcd TO BE MEASURED SEPARATELY AND TO BE DEDUCTED FROM THE UNDERDECK TONNAGE

abcd À MESURER SÉPARÉMENT ET À DÉDUIRE DU VOLUME PRINCIPAL.

FIGURE 38  
(ARTICLE 29-2)

at. { TONNAGE DEPTH  
HAUTEUR DE TONNAGE



- cdef - TO BE MEASURED SEPARATELY AND TO BE DEDUCTED FROM THE UNDERDECK TONNAGE.  
cdef - À MESURER SÉPARÉMENT ET À DÉDUIRE DU VOLUME PRINCIPAL.

FIGURE 39  
(ARTICLE 29-4)

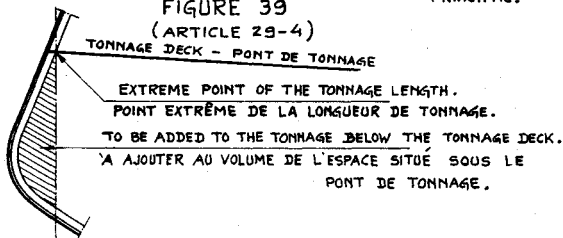
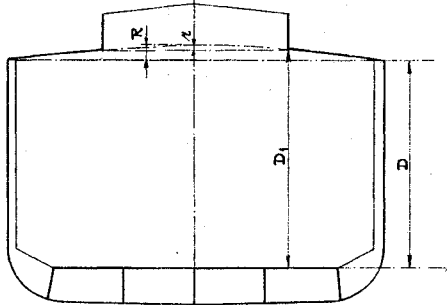


FIGURE 40  
(ARTICLE 30-(2))

SECTION IN WAY OF HATCHWAY - SECTION SITUÉE PAR LE  
TRAVERS D'UNE ÉCOUTILLE.

TONNAGE DEPTH } =  $D_1 + \lambda - \frac{1}{3}R$  OR  $D + R - \frac{1}{3}R$   
HAUTEUR DE TONNAGE } OU



R = TOTAL ROUND OF BEAM - BOUGE DU BAU TOTAL,  
 $\lambda$  = { ROUND OF BEAM DUE TO THE BREADTH OF THE HATCHWAY.  
 BOUGE DU BAU RELATIF À LA LARGEUR DE L'ÉCOUTILLE.

Figure 40

R or r are measured at both end coamings and, if the thus-obtained values are not equal, the round of beam used for ascertaining the tonnage depths is proportionate to the rounds of beam at the end coamings according to the distances of the sections to the end coamings.

On mesure R ou r aux hiloires avant et arrière et, si les deux valeurs ainsi obtenues ne sont pas égales, le bouge du bau utilisé pour la détermination de la hauteur de tonnage est proportionnel aux bouges du bau mesurés aux hiloires avant et arrière d'après les distances entre la section et chacune de ces hiloires.

FIGURE 41  
(ARTICLE 34)

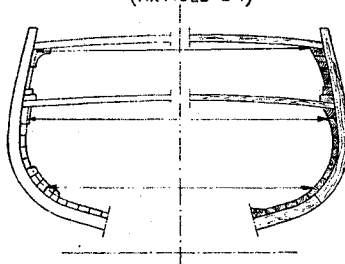


FIGURE 42  
(ARTICLE 34)

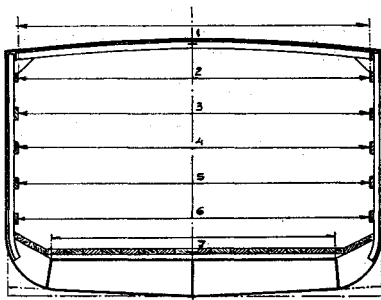


FIGURE 43  
(ARTICLE 35)



FIGURE 44  
(ARTICLE 35)

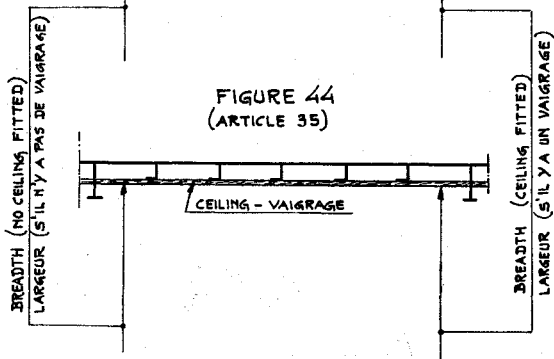


FIGURE 45  
(ARTICLE 35)

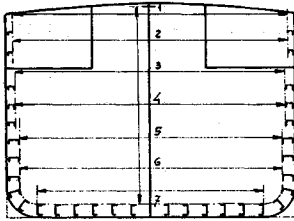


FIGURE 46  
(ARTICLE 36)

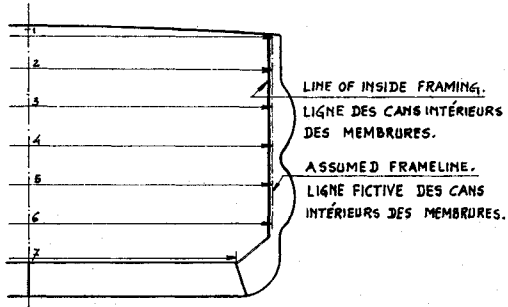
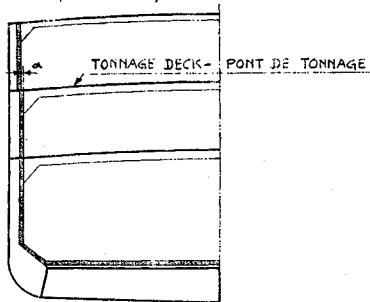
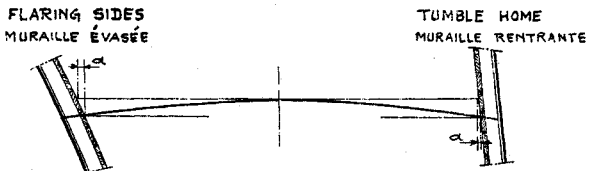


FIGURE 47  
(ARTICLE 37)



- $a$  = CORRECTION ON UPPER BREADTH WHEN THIS IS MEASURED ON TOP OF THE TONNAGE DECK TO THE CEILING IN 'TWEEN DECK.
- $a$  = RECTIFICATION À APPORTER À LA LARGEUR SUPÉRIEURE LORSQUE CELLE-CI EST MESURÉE SUR LA FACE SUPÉRIEURE DU PONT DE TONNAGE ET JUSQU'AU VAIGRAGE DE L'ENTRE-PONT.

FIGURE 48  
(ARTICLE 37)



- $a$  = CORRECTION ON UPPER BREADTH WHEN THIS IS MEASURED ON TOP OF THE TONNAGE DECK.
- $a$  = RECTIFICATION À APPORTER À LA LARGEUR SUPÉRIEURE LORSQUE CELLE-CI EST MESURÉE SUR LA FACE SUPÉRIEURE DU PONT DE TONNAGE.

FIGURE 49  
(ARTICLE 38-1)

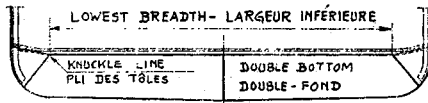


FIGURE 50  
(ARTICLE 38-1)

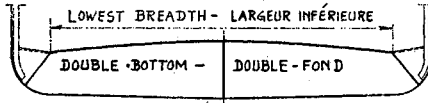


FIGURE 51  
(ARTICLE 38-1)

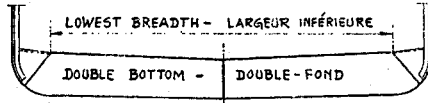


FIGURE 52  
(ARTICLE 38-1)

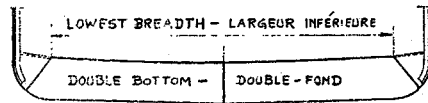


FIGURE 53  
(ARTICLE 38-1)

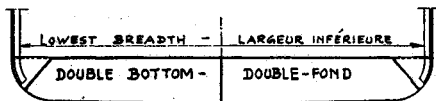


FIGURE 54  
(ARTICLE 38-1)

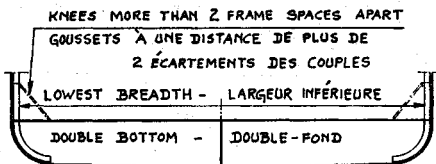


FIGURE 55  
(ARTICLE 38-1)

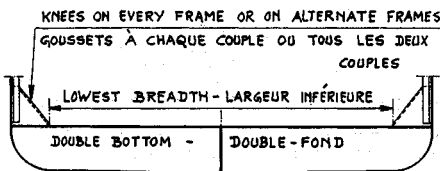




FIGURE 56  
(ARTICLE 38-3)

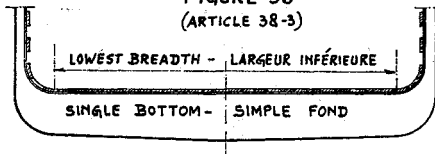


FIGURE 57  
(ARTICLE 38-3)

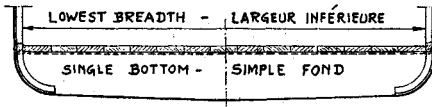


FIGURE 58  
(ARTICLE 38-3)

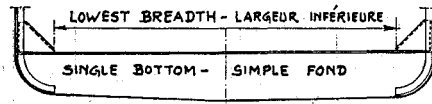


FIGURE 59  
(ARTICLE 38-3)

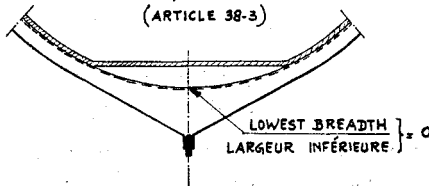


FIGURE 60  
(ARTICLE 38-3)

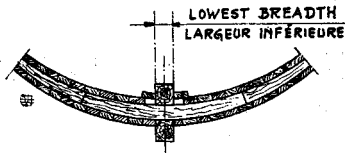


FIGURE 61  
(ARTICLE 42)

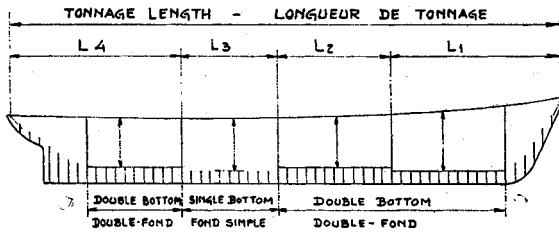


FIGURE 62  
(ARTICLE 42)

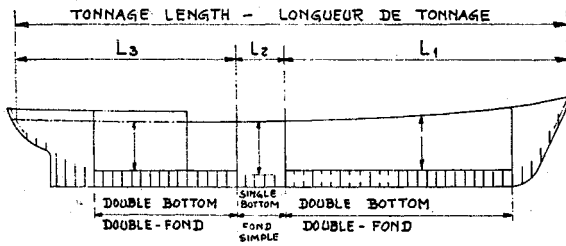


FIGURE 63  
(ARTICLE 42)

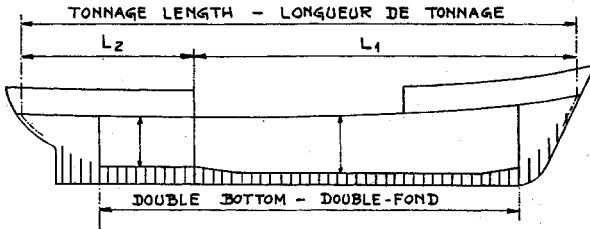


FIGURE 64  
(ARTICLE 42)

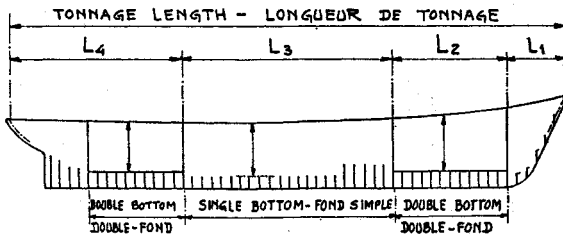


FIGURE 65  
 (ARTICLE 44)  
 DIAGRAM OF CONTROL CURVES.  
 GRAPHIQUE DES COURBES DE CONTRÔLE.

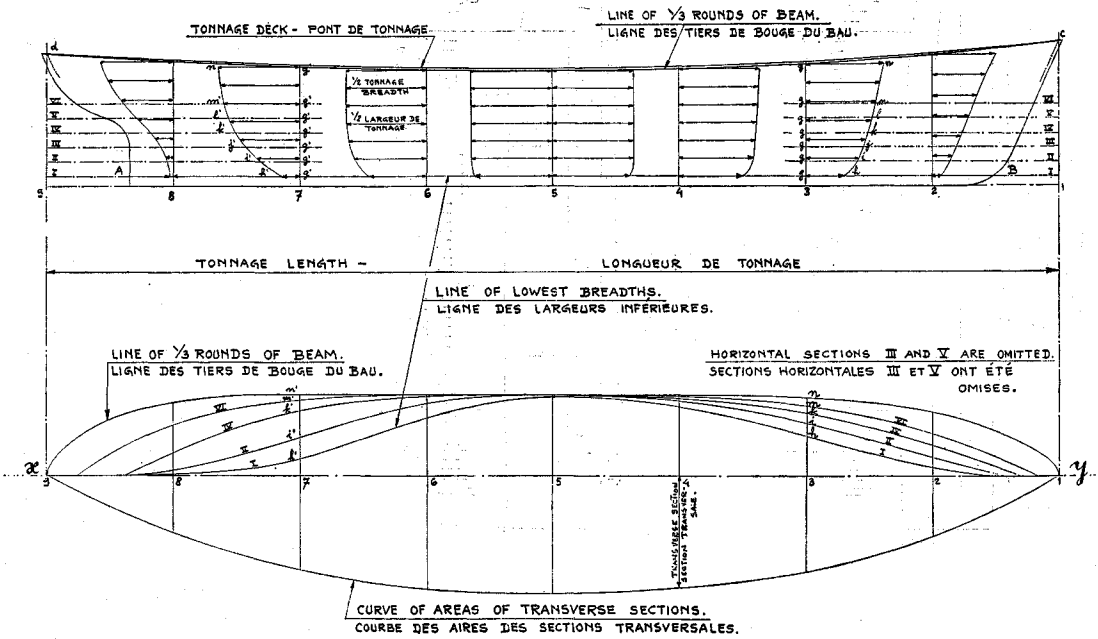


FIGURE 66  
(ARTICLE 45)

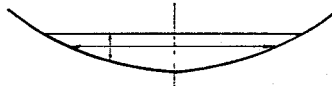


FIGURE 67  
(ARTICLE 45)

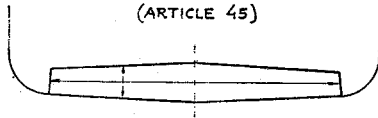


FIGURE 68  
(ARTICLE 45)

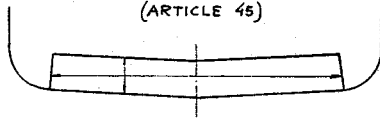
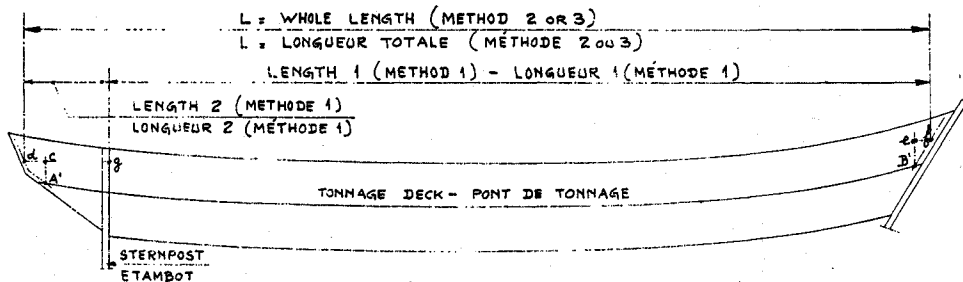


FIGURE 69  
(ARTICLE 45)

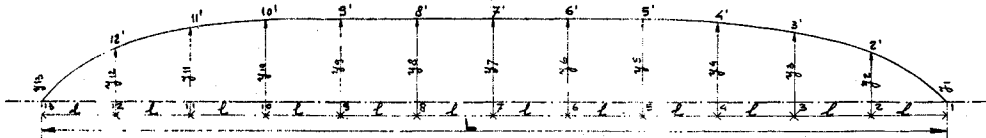


FIGURE 70  
(ARTICLE 48)



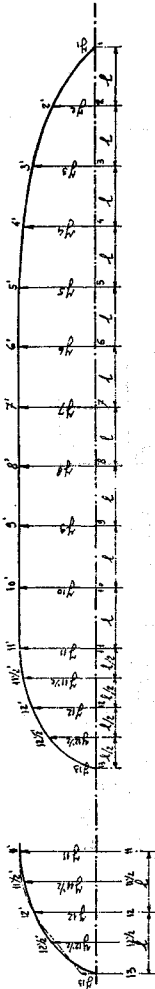
THE WHOLE LENGTH OF THE 'TWEEN-DECK =  $A'B' + cd + ef$ .  $A'B'$  = TONNAGE LENGTH.  $cd$  AND  $ef$  = ADDITIONS TO BE APPLIED TO THE TONNAGE LENGTH.  $fg$  = LENGTH 1.  $gd$  = LENGTH 2.  
 LA LONGUEUR TOTALE DE L'ENTREPONT =  $A'B' + cd + ef$ .  $A'B'$  = LONGUEUR DE TONNAGE.  $cd$  ET  $ef$  = ADDITIONS A APPORTER A LA LONGUEUR DE TONNAGE.  $fg$  = LONGUEUR 1.  $gd$  = LONGUEUR 2.

FIGURE 71 (ARTICLE 48)



'TWEEN-DECK SPACE = { MEAN HEIGHT }  $\times \frac{1}{3} l (y_1 + 4y_2 + 2y_3 + 4y_4 + 2y_5 + 4y_6 + 2y_7 + 4y_8 + 2y_9 + 4y_{10} + 2y_{11} + 4y_{12} + y_{13})$   
 ESPACE D'ENTREPONT = { HAUTEUR MOYENNE }  $\times \frac{1}{3} l (y_1 + 4y_2 + 2y_3 + 4y_4 + 2y_5 + 4y_6 + 2y_7 + 4y_8 + 2y_9 + 4y_{10} + 2y_{11} + 4y_{12} + y_{13})$   
TO APPLY IN THE CASE OF A 'TWEEN-DECK, THE AFTER PART OF WHICH HAS A SHAPE SIMILAR TO THE FORE PART.  
A EMPLOYER DANS LE CAS D'UN ENTREPONT DONT LA PARTIE ARRIERE A UNE FORME SEMBLABLE A CELLE DE LA PARTIE AVANT.

Figure 72

FIGURE 72  
(ARTICLE 45-2)METHOD  
METHODE } 2

## NOTE I

By calculation: Tween-deck space = (mean height)  
Volume de l'espace d'entrepont = (hauteur moyenne)  
 $\times \frac{1}{3} l \times (y_1 + 4y_2 + 2y_3 + 4y_4 + 2y_5 + 4y_6 + 2y_7 +$   
 $4y_8 + 2y_9 + 4y_{10} + 1\frac{1}{2}y_{11} + 2y_{11/2} + y_{12} + 2y_{12 1/2} +$   
 $\frac{1}{2}y_{13})$

$y_1$  and  $y_{13}$  being in this case = 0

$y_1$  et  $y_{13}$  étant dans ce cas égal à zéro.

## NOTE II

Set off the half breadths  $y_{11}$ ,  $y_{11 1/2}$ ,  $y_{12}$  and  $y_{12 1/2}$  at the positions 11, 11 $\frac{1}{2}$ , 12 and 12 $\frac{1}{2}$  perpendicular to a base line  $\times x$  on a convenient scale and draw a curve connecting the points 11', 11 $\frac{1}{2}$ ', 12', 12 $\frac{1}{2}$ ' and 13. Ascertain thereafter the area 11 — 11' — 12' — 13 (= A) by means of a planimetre, then  $A = (y_{11} + 4y_{12} + y_{13}) \times \frac{1}{3} l$ . In this case  $y_{13}$  is calculated from the equation and its value should be filled in the formula of measurement.

Tween-deck space = mean height  $\times \frac{1}{3} l \times (y_1 + 4y_2 + 2y_3 + 4y_4 + 2y_5 + 4y_6 + 2y_7 + 4y_8 + 2y_9 + 4y_{10} + 2y_{11} + 4y_{12} + y_{13})$

## NOTE III

Reporter les demi-largeurs  $y_{11}$ ,  $y_{11 1/2}$ ,  $y_{12}$  et  $y_{12 1/2}$  aux points 11, 11 $\frac{1}{2}$ , 12 et 12 $\frac{1}{2}$  perpendiculairement à la ligne de base  $\times x$  à une échelle appropriée et tracer une courbe reliant les points 11', 11 $\frac{1}{2}$ ', 12', 12 $\frac{1}{2}$ ' et 13. Déterminer ensuite la superficie 11 — 11' — 12' — 13 (= A) au planimètre; en ce cas  $A = (y_{11} + 4y_{12} + y_{13}) \times \frac{1}{3} l$  on calcule  $y_{13}$  d'après l'équation et sa valeur est portée sur la formule de mesurage.

Espace d'entrepont = hauteur moyenne  $\times \frac{1}{3} l \times (y_1 + 4y_2 + 2y_3 + 4y_4 + 2y_5 + 4y_6 + 2y_7 + 4y_8 + 2y_9 + 4y_{10} + 2y_{11} + 4y_{12} + y_{13})$

FIGURE 73  
(ARTICLE 53-4)

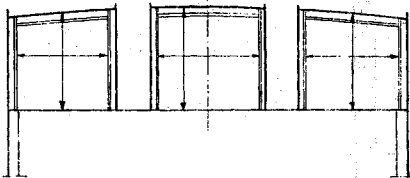
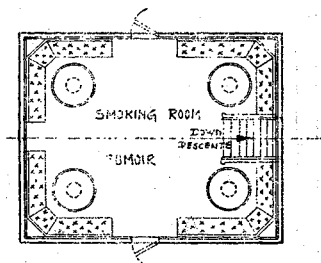
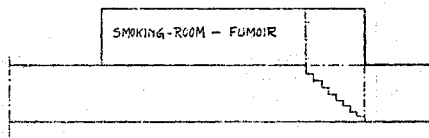


FIGURE 74  
(ARTICLE 57-6)



ONLY THE SHADED PORTIONS ARE TO BE  
EXEMPTED FROM THE GROSS TONNAGE.

SEULS LES ESPACES DE COULEUR FONCÉS  
DOIVENT ÊTRE EXCLUS DU TONNAGE BRUT.



FIGURE 75  
 (ARTICLE 57-III-2 AND 3)  
 (ARTICLE 57-III-2 ET 3)

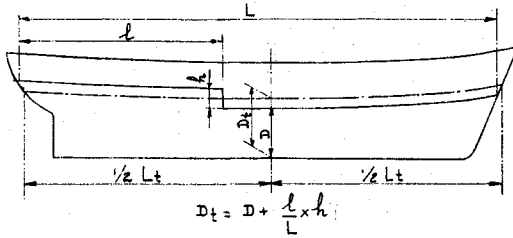


FIGURE 76  
 (ARTICLE 57-III-2 AND 3)  
 (ARTICLE 57-III-2 ET 3)

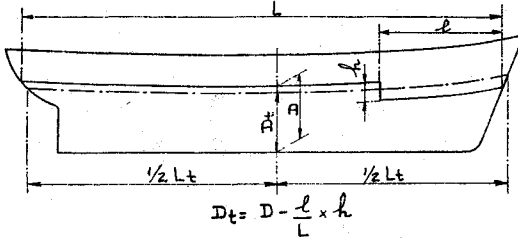
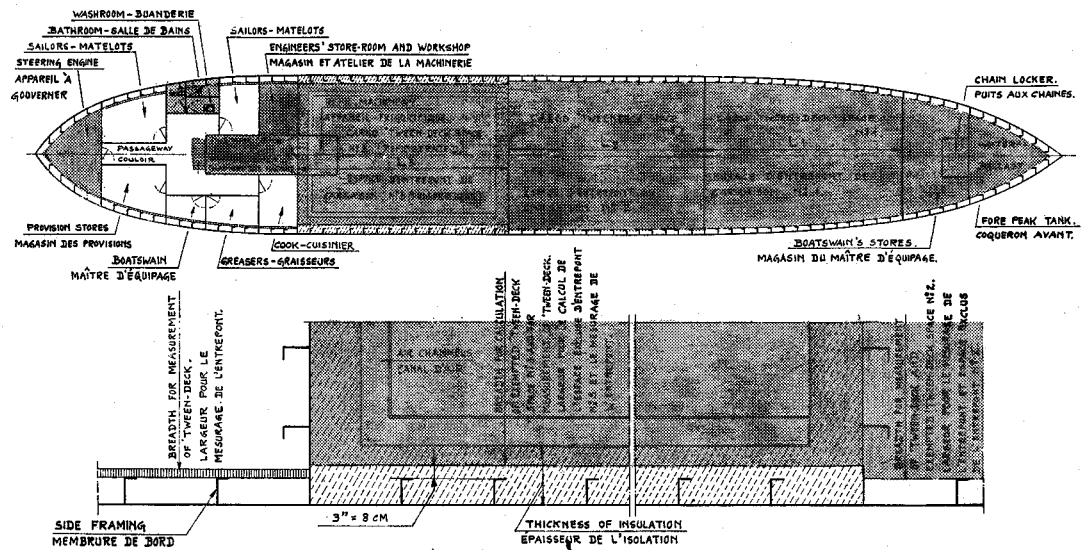





FIGURE 77  
(ARTICLE 57-II, ARTICLE 57-IV)



**DETAIL OF INSULATED PART - DÉTAIL DE LA PARTIE ISOLÉE.**

 SPACES EXEMPTED ACCORDING TO ARTICLE 57. ESPACES EXCLUSÉS SUIVANT L'ARTICLE 57.	 INSULATION ISOLATION	 CEILING VAIORAGE
---	--	--

L<sub>1</sub>, L<sub>2</sub> AND L<sub>3</sub> ARE THE LENGTHS OF THE SEPARATE TWEEN-DECK SPACES, TO BE ENTERED ON THE TONNAGE CERTIFICATE TOGETHER WITH THEIR RESPECTIVE CUBIC CAPACITIES ACCORDING TO ARTICLE 57-IV.  
L<sub>1</sub>, L<sub>2</sub> ET L<sub>3</sub> SONT LES LONGUEURS, DES ESPACES SÉPARÉS D'ENTREPONT, À INSÉRER DANS LE CERTIFICAT DE JAUGEAGE EN MÊME TEMPS QUE LEURS CAPACITÉS CUBIQUES SUIVANT L'ARTICLE 57-IV.

FIGURE 78  
(ARTICLE 58-I-(α)-1)

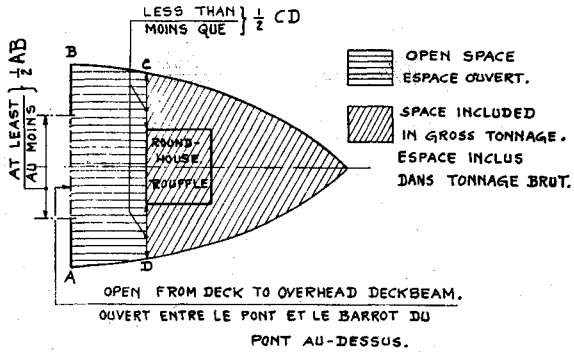


FIGURE 79  
(ARTICLE 58-I-(c))

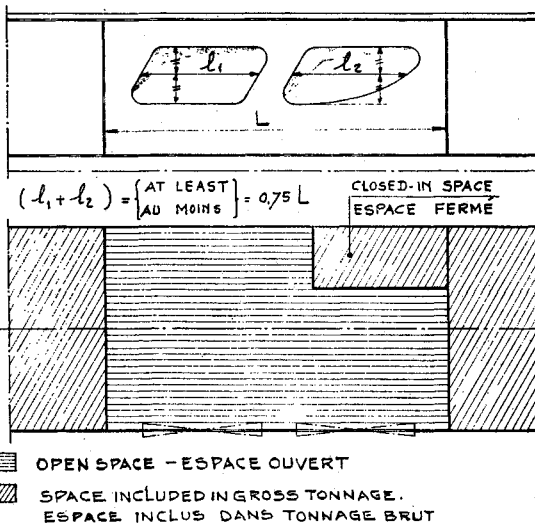


FIGURE 80  
(ARTICLE 58-III)

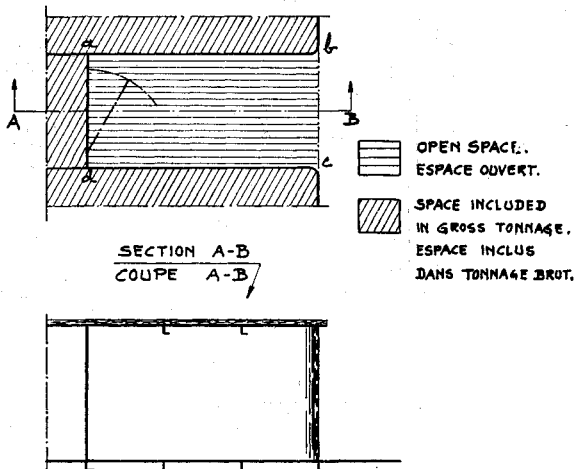


FIGURE 81  
(ARTICLE 73)

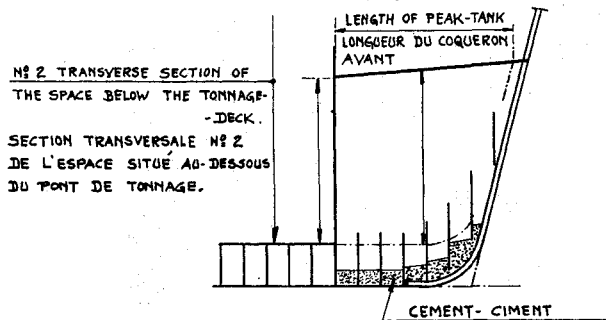


FIGURE 82  
(ARTICLE 74)

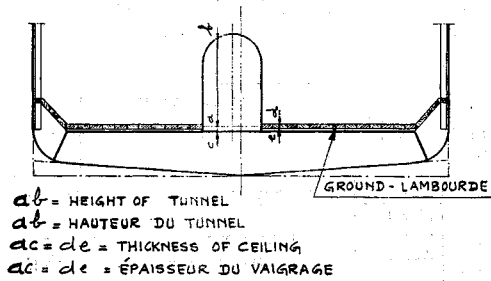


FIGURE 83  
(ARTICLE 76)

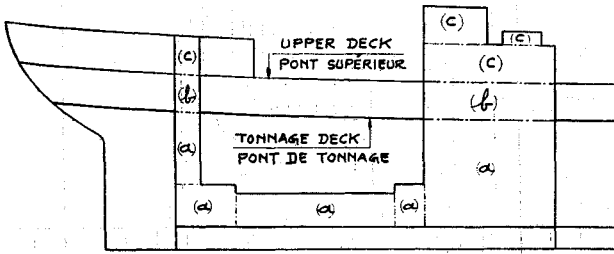


FIGURE 84  
(ARTICLE 78-B-(3))

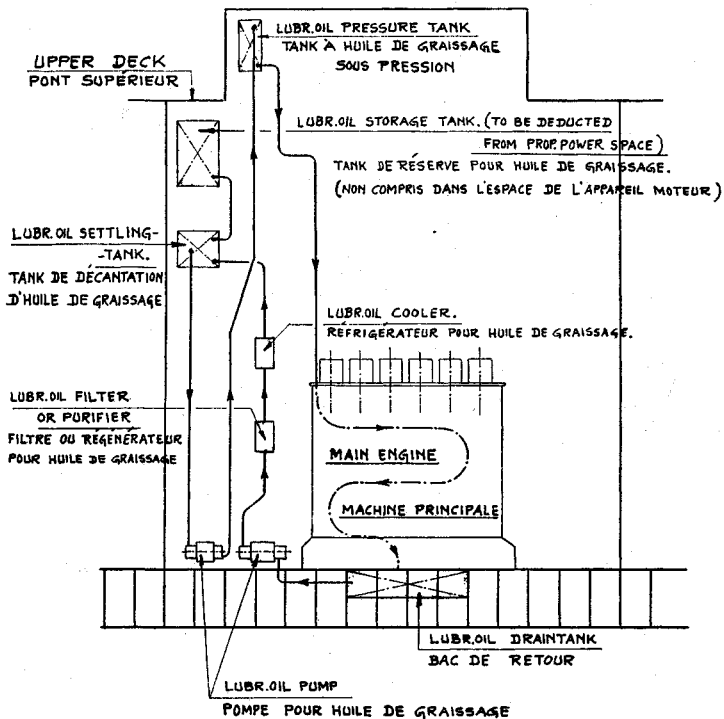


FIGURE 85  
(ARTICLE 80-(1))

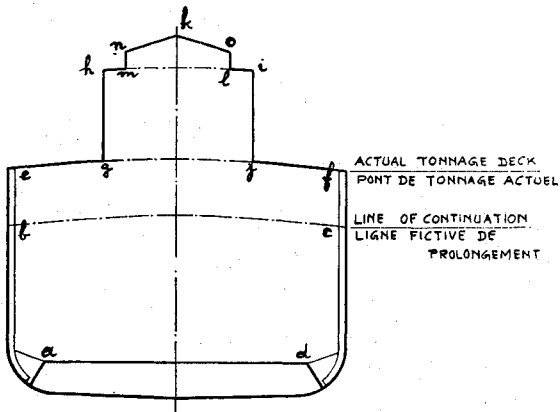


Figure 85

a b c d = Space below the line in continuation of the lowest part of the tonnage deck; to be dealt with under item (a) of Article 76.

b e f c, g h i j and m n k o l to be dealt with under item (c) of Article 76.

a b c d = Espace situé au-dessous de la ligne fictive tracée dans le prolongement de la partie inférieure du pont de tonnage; doit être traité conformément au paragraphe a) de l'article 76.

b e f c, g h i j et m n k o l sont à traiter conformément au paragraphe c) de l'article 76.

FIGURE 86  
 (ARTICLE 80-(1) AND (3))  
 (ARTICLE 80-(1) ET (3))

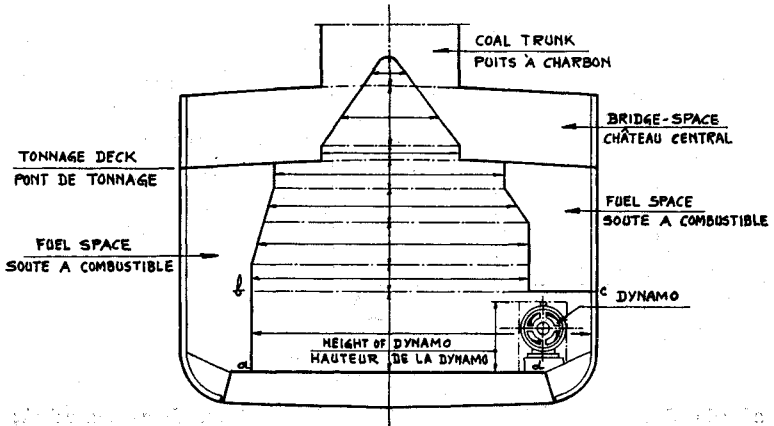


Figure 86

The dynamo, which is only available for lighting or navigation purposes, is not to be regarded as part of the propelling machinery and therefore is measured separately as shown with dotted lines and the space is subtracted from the space a b c d. (It is to be understood that a b c d extends over the full length.)

La dynamo qui ne sert que pour l'éclairage et la navigation ne fait pas partie de l'appareil moteur, elle doit donc être mesurée à part suivant le pointillé, et l'espace doit être défalqué de l'espace a b c d. (Il est entendu que a b c d s'étend sur toute la longueur.)



FIGURE 87  
(ARTICLE 80-(1))

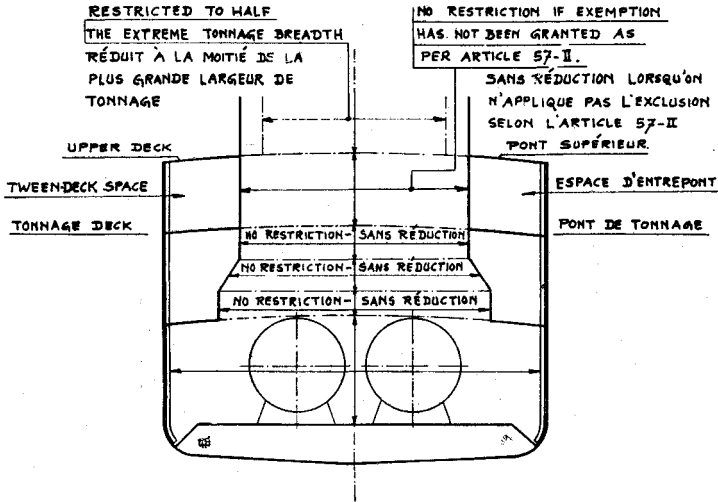


Figure 87

No restriction is to be applied to the casings situated below the upper deck. If exemption has been granted as per Article 57, II the breadths of light and air casings situated between the tonnage deck and the upper deck should, however, be restricted to half the extreme tonnage breadth.

Aucune réduction n'est à appliquer au tambour d'éclairage et de ventilation en dessous du pont supérieur.

Si on applique l'exclusion des espaces auxquels se rapportent l'article 57, II les largeurs des tambours d'éclairage et de ventilation situés entre le pont de tonnage et le pont supérieur doivent, toutefois, être réduites à la moitié de la plus grande largeur de tonnage.

FIGURE 88  
(ARTICLE 80-(1))

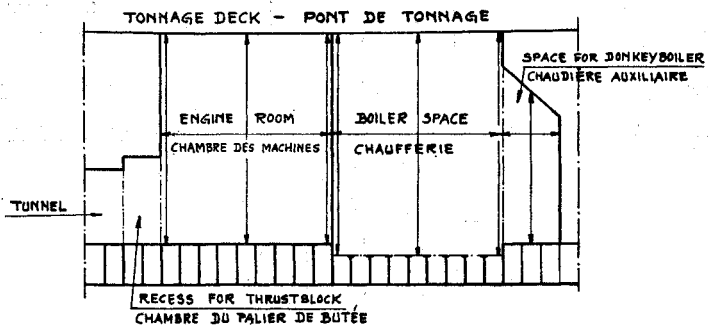


FIGURE 89  
(ARTICLE 80-(1))

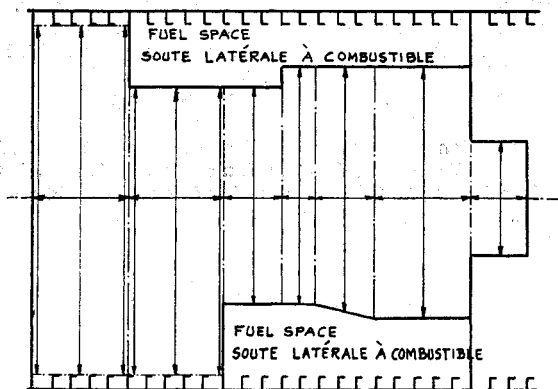


FIGURE 90  
 (ARTICLE 80-(1) AND (3))  
 (ARTICLE 80-(1) ET (3))

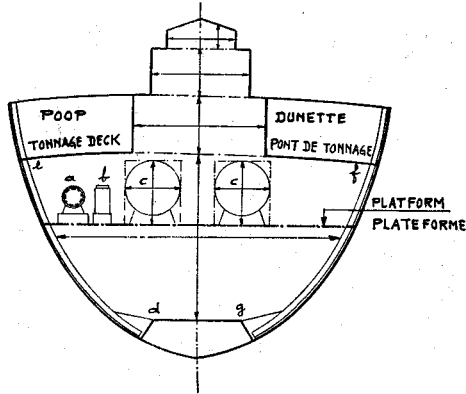


Figure 90

a and b = Refrigerating plant. c = Donkey-boilers not fulfilling the conditions for being regarded as propelling-machinery. The spaces strictly occupied by a, b and c are to be measured separately and subtracted from d e f g. Refrigerating plant and donkey-boilers are not bulkheaded off from the engine room.

a et b = Réfrigérateurs. c = Chaudière auxiliaire ne remplissant pas les conditions permettant de la considérer comme partie de l'appareil moteur. a, b, c doivent être défalqués de d e f g après évaluation distincte du volume strictement occupé par chacun de ces appareils, puisque aucun d'eux n'est séparé de la chambre des machines par des cloisons.

FIGURE 91  
 (ARTICLE 81-(6)-(1) AND (2))  
 (ARTICLE 81-(4)-(3) ET (2))

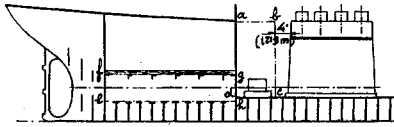


Figure 91

a b c d should be reasonable in extent; a d and b c should not be larger than is deemed reasonable for the purpose of overhauling, unless the upper part of a b c d is taken in by machinery or appliances as mentioned under Article 78 A. It is to be understood that the part e f g h is regarded as a shaft tunnel and that its volume is to be calculated, if necessary, taking into account the restricted breadth.

a b c d doit être de dimensions raisonnables; les dimensions de a d et b c ne doivent pas dépasser celles qui permettent d'assurer convenablement l'entretien et les réparations, à moins que l'espace a b c d, à sa partie supérieure, soit occupé par des machines ou appareils visés à l'article 78 A. Il est entendu que la partie e f g h doit être considérée comme un tunnel d'arbre d'hélice et que son volume est évalué, s'il y a lieu, en fonction d'une largeur limitée.

FIGURE 92  
 (ARTICLE 81-(6)-(2))

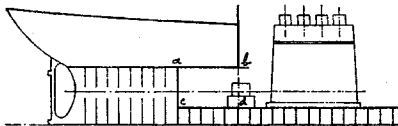


Figure 92

a b c d should be reasonable in extent; a c and b d should not be higher than is necessary for overhauling and repair of shafts.

a b c d doit être de dimensions raisonnables; a c et b d ne doivent pas être plus haut qu'il n'est indispensable pour pouvoir entretenir ou réparer les arbres d'hélice.

FIGURE 93  
(ARTICLE 81-(b)-2-(ii))

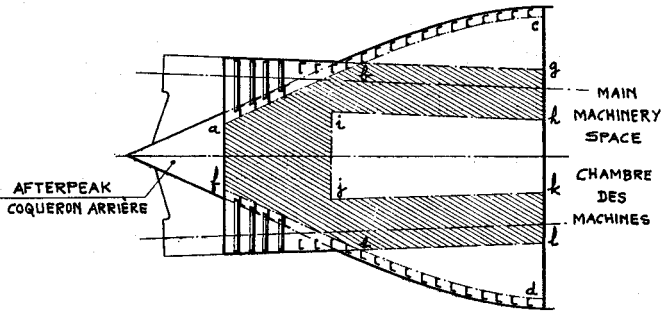


Figure 93

Space a b c d e f is a large space immediately aft of the machinery space. The space included in the propelling machinery space shall not be larger than would be taken in by the tunnels g b a f e l k j i h.

L'espace a b c d e f est un vaste espace situé immédiatement à l'arrière de la chambre des machines. L'espace inclus dans celui de l'appareil moteur ne doit pas dépasser celui qu'occuperaient les tunnels g b a f e l k j i h.

FIGURE 94  
(ARTICLE 81-(b)-(3))

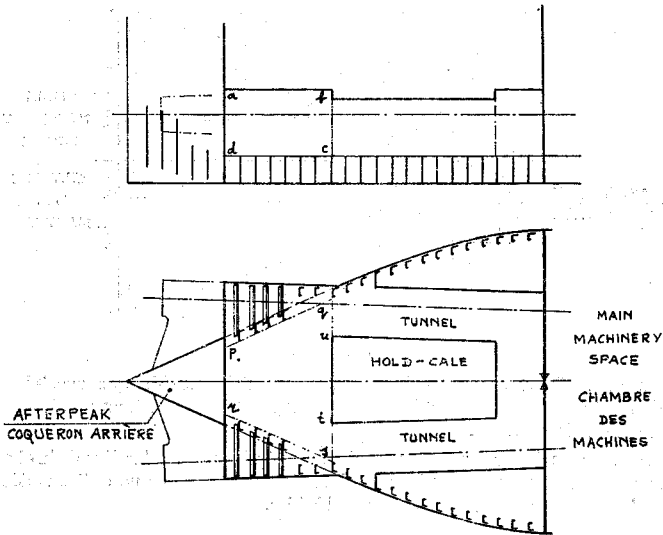


Figure 94

a b c d = p q u t s r shall not be larger than is reasonable for the purpose of overhauling and repairing the shafting, taking into account the general construction of this part of the ship.

a b c d = p q u t s r. Les dimensions de cet espace ne doivent pas dépasser celles qui permettent convenablement d'examiner et de réparer la ligne des arbres d'hélice, compte tenu de la construction générale du navire à cet endroit.

FIGURE 95  
(ARTICLE 81-(d)-2 (i))

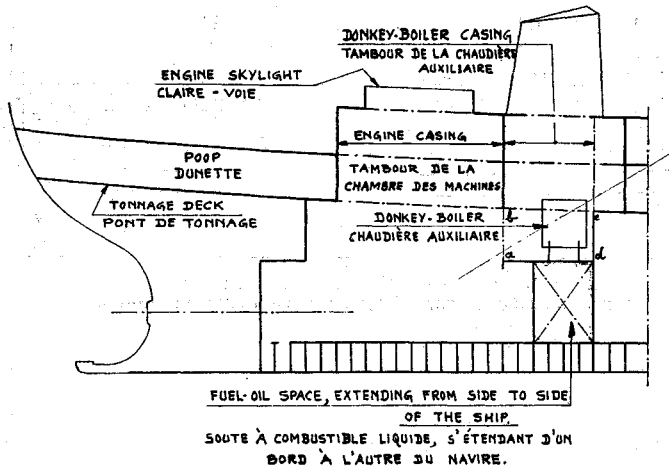
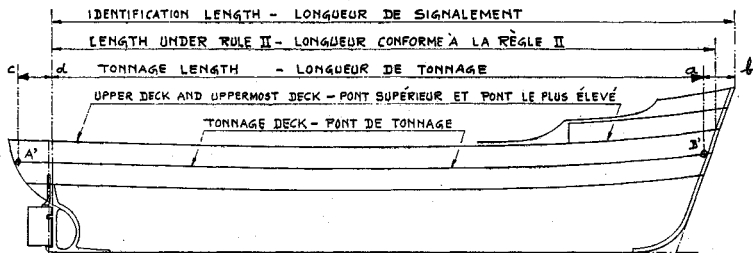


Figure 95

The donkey-boiler fulfils the conditions for being regarded as propelling machinery. Consequently, the space a b c d shall be included in the space below the top of the main space and the donkey-boiler casings shall be considered as actual light and air spaces. If, at the request of the owner, the donkey-boiler casings are to be included in the gross tonnage and in the cubic capacity of the spaces upon which the propelling power allowance is based, the length shall be counted as shown in the figure. If necessary, the breadth of both donkey-boiler casings shall also be restricted.

La chaudière auxiliaire pouvant être considérée comme faisant partie de l'appareil moteur. L'espace a b c d doit être inclus dans l'espace situé sous le pont limitant la partie principale, les tambours de la machine auxiliaire doivent être comptés comme espaces d'éclairage et de ventilation. Si, sur demande de l'armateur, ces tambours doivent être compris dans le tonnage brut et dans le volume des espaces qui servent à déterminer la déduction allouée au titre de l'appareil moteur, leur longueur sera réduite comme il est indiqué ci-dessus. S'il y a lieu, la largeur des deux tambours de la machine auxiliaire sera également réduite.

FIGURE 96  
(ARTICLE 84-(1), ARTICLE 90-(1))

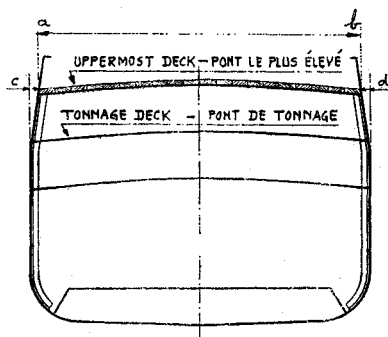


$$\text{IDENTIFICATION LENGTH} = B'A'(\text{TONNAGE LENGTH}) + a + b - cd$$

$$\text{LONGUEUR DE SIGNALEMENT} = B'A'(\text{LONGUEUR DE TONNAGE}) + a + b - cd$$

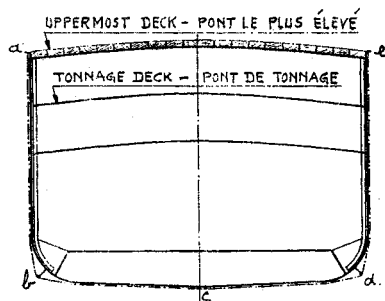


FIGURE 97  
(ARTICLE 84-(2), ARTICLE 90-(2))



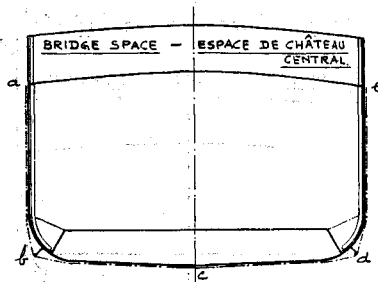
EXTREME OUTSIDE BREADTH =  $a + b + c + d$   
LARGEUR HORS TOUT =  $a + b + c + d$

FIGURE 98  
(ARTICLE 84-(3))



$abcde$  = GIRTH  
 $abcde$  = POURTOUR.

FIGURE 99  
(ARTICLE 84-(3))



abcde = GIRTH.  
abcde = POURTOUR.

FIGURE 100  
(ARTICLE 90-(1))

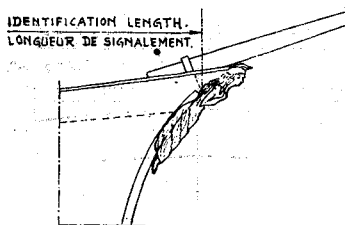


FIGURE 101  
(ARTICLE 30-(3))

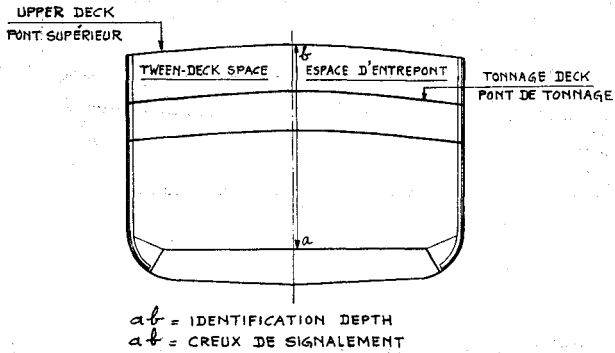


FIGURE 102  
(ARTICLE 30-(3))

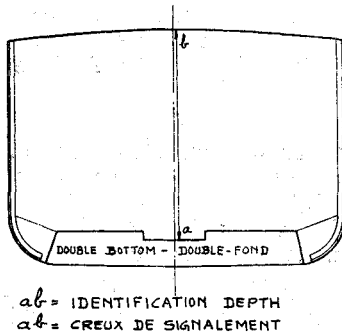
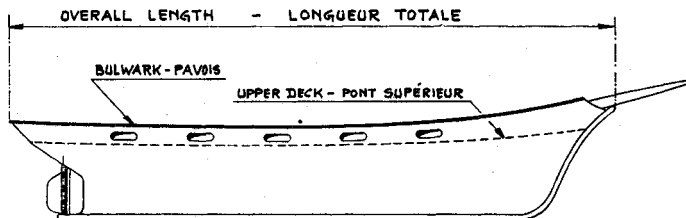


FIGURE 103.  
(ARTICLE 92)



De vertaling in het Nederlands van de gewijzigde artikelen 5, 8 en 12 van het Verdrag luidt als volgt:

#### Artikel 5

De Internationale Meetbrief wordt opgemaakt in de officiële taal van het land waar hij wordt afgegeven. Indien dit niet de Engelse taal is, wordt de tekst, geheel of gedeeltelijk al naar gelang zulks nodig voorkomt, in de Engelse taal weergegeven.

Het formulier van de Meetbrief is overeenkomstig het betreffende model, aangegeven in de aanhangsels 1, 1A, 1B en 2 van Bijlage B.

#### Artikel 8

1. Een schip, voorzien van een internationale meetbrief, is, wanneer het zich bevindt in een haven van een land, waar het niet thuisbehoort, maar waar dit Verdrag van toepassing is, onderworpen aan controle met betrekking tot de meting van zeeschepen. Een dergelijke controle zal uitsluitend ten doel hebben zekerheid te verkrijgen:

(a) dat de meetbrief aan boord de voor het schip vereiste is;

(b) dat het schip niet is veranderd als bedoeld in artikel 6 van dit Verdrag.

2. Slechts ambtenaren die hiertoe bevoegd zijn, zijn gerechtigd vermelde controle uit te oefenen.

3. In geen geval mag de uitoefening van zodanige controle kosten of vertraging voor het schip veroorzaken.

4. Indien uit de controle blijkt dat de werkelijke toestand op het schip verschilt van die, vermeld in de meetbrief, wordt aan de Regering van het land waar het schip thuisbehoort onverwijld hiervan

mededeling gedaan, ten einde tot een oplossing van de kwestie te komen.

Zodra verbetering is aangebracht, wordt de Regering van het land waar de waarnemingen werden gedaan hiervan door de Regering wier vlag het schip voert in kennis gesteld.

#### Artikel 12

1. a) Wijzigingen van dit Verdrag en van de hierbij gevoegde voorschriften, die nuttig of noodzakelijk worden geacht, kunnen te allen tijde door iedere Verdragsluitende Regering worden voorgesteld aan de Regering van Noorwegen; deze voorstellen worden door laatstgenoemde aan alle andere Verdragsluitende Regeringen medegedeeld ter fine van aanvaarding.

b) Indien dergelijke wijzigingen worden aangenomen door alle Verdragsluitende Regeringen (met inbegrip van de Regeringen die akten van bekrachtiging of toetreding hebben nedergelegd, zonder dat reeds het Verdrag te haren opzichte in werking is getreden) wordt dit Verdrag en/of worden de voorschriften dienovereenkomstig gewijzigd en wel binnen een termijn van 3 tot 6 maanden (deze termijn wordt vastgesteld door de Regering van Noorwegen naar gelang de belangrijkheid van de voorgestelde wijzigingen). De wijzigingen worden van kracht 12 maanden nadat de laatste aanvaarding door de Regering van Noorwegen is ontvangen.

c) De Regering van Noorwegen stelt alle Verdragsluitende Regeringen van het resultaat in kennis.

2. a) Een door een Verdragsluitende Regering voorgestelde conferentie ter bestudering van wijzigingen van dit Verdrag of van de bijgevoegde Voorschriften moet te allen tijde door de Regering van Noorwegen worden bijeengeroepen op verzoek van een derde der Verdragsluitende Regeringen.

b) Iedere wijziging die met een meerderheid van twee derde der stemmen op een zodanige conferentie wordt aangenomen, wordt door de Regering van Noorwegen ter aanvaarding aan alle Verdragsluitende Regeringen ter kennis gebracht.

c) Een wijziging die ter aanvaarding aan de Verdragsluitende Regeringen is medegedeeld ingevolge alinea b) van dit lid, treedt in werking voor alle Verdragsluitende Regeringen, met uitzondering van die Regeringen welke voordat de wijziging in werking treedt een verklaring afleggen dat zij de wijziging niet aanvaarden, en wel 12 maanden na het tijdstip waarop de wijziging door twee derde van de Verdragsluitende Regeringen is aangenomen.

d) Een ingevolge alinea a) van dit lid bijeengeroepen conferentie kan met een meerderheid van twee derde der stemmen op het tijdstip waarop de wijziging wordt aangenomen besluiten dat de wijziging van zo groot belang is dat iedere Verdragsluitende Regering die

een verklaring ingevolge alinea *c*) van dit lid aflegt en de wijziging niet binnen 12 maanden nadat deze van kracht wordt aanvaardt, na afloop van deze periode ophoudt partij bij dit Verdrag te zijn.

*e*) De in de alinea's *c*) en *d*) van dit lid genoemde meerderheid van twee derde der stemmen mag niet minder dan twee derde van het totale door de Verdragsluitende Regeringen vertegenwoordigde bruto tonnage omvatten.

3. Bij wijze van overgangsmaatregel en ten einde wijzigingen als genoemd in de leden 1 en 2 van dit artikel toe te passen:

*a*) (i) zal niet worden geëist dat de eigenaar van een schip, die in het bezit is van een geldige meetbrief, zijn schip opnieuw laat meten op het tijdstip waarop een wijziging van kracht wordt;

(ii) zal niet, behoudens het bepaalde onder *b*), worden geëist dat de eigenaar van een schip in aanbouw, of van een schip voor welks bouw reeds een contract is ondertekend op het tijdstip waarop die wijziging van kracht wordt, met een dergelijke wijziging rekening houdt wanneer het schip moet worden gemeten;

*b*) geven contracten als genoemd onder *a*) (ii) inzake een enkel schip of inzake een reeks identieke schepen hun eigenaars uitsluitend het recht op de onder 3 *a*) genoemde voorrechten, mits deze schepen binnen 2 jaar na het tijdstip waarop de desbetreffende wijzigingen in werking treden, zijn gemeten;

*c*) maken later aangebrachte wijzigingen, welke verband houden met de meting, als genoemd in artikel 6, uitsluitend hermeting van de betrokken ruimten noodzakelijk.

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Voorts zijn op genoemde Conferentie de volgende aanbevelingen aangenomen:

### **Recommendation No. 1**

#### *General*

Considering that undue and unfair profit may be gained by abnormal and disproportional features in ship's design and that the International Regulations for Tonnage Measurement of Ships should never be construed and practised to the effect of furthering such tendencies, a national central tonnage measurement authority which upon analysing the plans submitted and upon supplemental discussions with the shipowner or shipbuilder concerned is convinced that the constructional solution chosen could afford undue or unfair profit, shall give an interpretation of the Regulations as to prevent such profit.

**Recommendation No. 2***Ceiling (continuous or sparred)***Article 12**

If continuous ceiling is laid on grounds and the thickness of that ceiling is more than 0.25 foot (0.08 metre), it shall be restricted to 0.25 foot (0.08 metre). If continuous ceiling is laid directly on the tank-top or top of floors or inner edge of frames, such ceiling shall not be restricted in thickness if of wood or if of other material which is made integral with the ship's construction e.g. homogeneous cement or concrete.

Ceiling laid on top of wing tanks or the like shall be treated in the same manner as ceiling on top of double bottom or floors.

**Recommendation No. 3***Main Floors and Top of Double Bottom***Article 26**

Figure 1R shows a double bottom, having a tank-top falling from the centre in a straight line to the side plating above the bilges with a bracket floor construction above, the upper transverse members of which are situated above the tank-top and are available for use as bearers for ceiling; they also serve to connect the ship's side frames to the tanktop.

The tonnage depth and the lowest breadth in such a case shall be determined under Article 26, the portions of the bottom construction outside of the double bottom being considered as brackets of abnormal size.

**Recommendation No. 4***Methods for the Measurement of Tween-deck Spaces***Article 48****Method 1**

The breadths shall be measured at one half of the height, taken at one quarter of the width of the ship at each point of division, with the necessary allowance for sloping ship's sides and varying round of beams.

**Recommendation No. 5***Methods for the Measurement of Tween-deck Spaces***Article 48****Method 1**

Where difficulties may arise as to the measurement of the after part under Method 1, length 1 and length 2 may be measured to a convenient point forward of the stern post.

**Recommendation No. 6***Sheltered Spaces for Dancing and the like***Article 51**

1. In interpreting the second paragraph of Article 51 as to whether coverings, bulkheads, etc. of superstructures are constructed in such a way that the superstructures may be considered to be of a permanent character, it shall be noted that hinged, sliding or collapsible bulkheads and the like constructed of steel, wood or similar material shall be considered as of permanent character, except in the cases as mentioned hereinafter under 2. If made of canvas or the like they shall not be regarded as of permanent character.

2. Movable hinged, sliding or collapsible longitudinal bulkheads constructed of wood and glass or of similar light construction not capable of withstanding the full force of the sea, are hereinafter called "screens".

A screen shall not be considered of permanent character, when it fulfils the following conditions:

a) It is placed inboard not nearer to the ship's sides than the width of the waterway or, if no waterway is fitted, one foot or 0.30 metre.

b) It must extend at least 75% of the distance between the transverse bulkheads forming the adjoining boundaries of the exempted space, and in no case less than 4 feet or 1.22 metre.

3. If the breadth of such a deck space exceeds 50% of the moulded breadth of the ship, unless it is provided with a permanent opening at least 4 feet in length, both enclosing longitudinal bulkheads must consist of screens as defined in paragraph 2 to deem it an open space.

4. Deck spaces may be deemed open when provided with screens if only fitted with typical open deck furniture and natural ventilation.



**Recommendation No. 7***Shelter for Deck Passengers*

## Article 60

In an exempted shelter for deck passengers only seats and tables are allowed. Openings in the boundary bulkheads for serving meals will disqualify the exemption of such spaces.

### Recommendation No. 8

*Particulars as to the Spaces which may be regarded as Propelling-machinery Spaces*

Article 78, A (6) (a)

Settling tanks

For calculating the maximum allowance (corresponding to a two-day supply of fuel oil) the following formulae shall be used.

Installation	Reg. tons	Cubic metres
I. Steam reciprocating engines	$\frac{\text{I.H.P.} \times 42.3}{6000}$	$\text{I.H.P.} \times 0.0200$
(a) Geared steam turbines	$\frac{\text{S.H.P.} \times 31.7}{6000}$	$\text{S.H.P.} \times 0.0150$
(b) Turbine-electric machinery	$\frac{\text{S.H.P. (prop. m.)} \times 33.8}{6000}$	$\text{S.H.P. (prop. m.)} \times 0.0160$
(c) Geared gas turbines (with turbine compressor and combustion chamber)	$\frac{\text{S.H.P.} \times 31.7}{6000}$	$\text{S.H.P.} \times 0.0150$
(d) Gas turbines-electric drive	$\frac{\text{S.H.P. (prop. m.)} \times 33.8}{6000}$	$\text{S.H.P. (prop. m.)} \times 0.0160$
(e) Gas turbines with free piston gas generator	$\frac{\text{S.H.P.} \times 26.4}{6000}$	$\text{S.H.P.} \times 0.0125$
III. Diesel engines		
(a) Direct drive	$\frac{\text{E.H.P.} \times 22.0}{6000}$	$\text{E.H.P.} \times 0.0104$
(b) Geared	$\frac{\text{E.H.P.} \times 22.0}{6000}$ , or, if only S.H.P. is known: $\frac{\text{S.H.P.} \times 23.7}{6000}$	$\text{E.H.P.} \times 0.0104$ , or if only S.H.P. is known: $\text{S.H.P.} \times 0.0112$
(c) Diesel-electric machinery	$\frac{\text{S.H.P. (prop. m.)} \times 25.4}{6000}$ , or, if only E.H.P. is known: $\frac{\text{E.H.P.} \times 22.0}{6000}$	$\text{S.H.P. (prop. m.)} \times 0.0120$ or, if only E.H.P. is known $\text{E.H.P.} \times 0.0104$

I.H.P. = Indicated Horse Power.

S.H.P. = Shaft Horse Power (propeller-shaft).

E.H.P. = Effective or Brake Horse Power.

Prop. m. = Propelling-machinery.

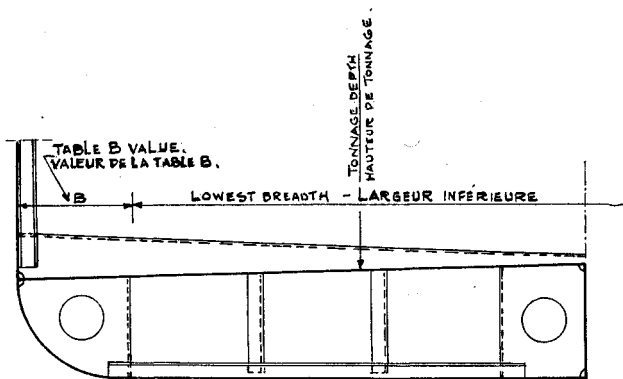
**Recommendation No. 9***Passage-ways and other Spaces used by Master and Crew***Article 63**

Provided no fixed gangway above deck is fitted allowance for one passage-way immediately under deck, leading from crew's quarters to spaces for working the ship, may be granted.

The deduction allowed for such a passage-way shall be limited to a clear breadth of 3 feet or 0.91 metre and a clear height of 7 feet or 2.13 metres.

**Recommendation No. 10***Particulars as to the Spaces which may be regarded as Propelling-machinery Spaces***Article 80**

No regard should be taken to apparatus and installations not regarded as propelling-machinery, however situated within spaces for propelling-machinery, provided their volume, without the space around necessary for their working, does not exceed 20 cubic feet or 0.57 cubic metre each, if not arranged in groups. This provision should apply also to a tank the volume of which does not exceed 100 cubic feet or 2.83 cubic metres.

**FIGURE 1R**

In *Stcrt.* nr. 29 is geplaatst de Ministeriële beschikking van 31 januari 1966 van de Minister van Verkeer en Waterstaat, houdende instructie voor de meting van zeeschepen.

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Uitgegeven de *negentiende* oktober 1966.

*De Minister van Buitenlandse Zaken a.i.,*  
J. CALS.