

**PART II RULES FOR THE CONSTRUCTION
AND CLASSIFICATION OF SHIPS
IDENTIFIED BY THEIR MISSIONS**

TITLE 12 CONTAINER SHIPS

SECTION 1 NAVAL ARCHITECTURE

CHAPTERS

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- B DOCUMENTS, REGULATIONS AND
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- C NAVIGATION ENVIRONMENT
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CHAPTER A SCOPE

CHAPTER CONTENTS

A1. APPLICATION

A2. DEFINITIONS

A1. APPLICATION

100. Application

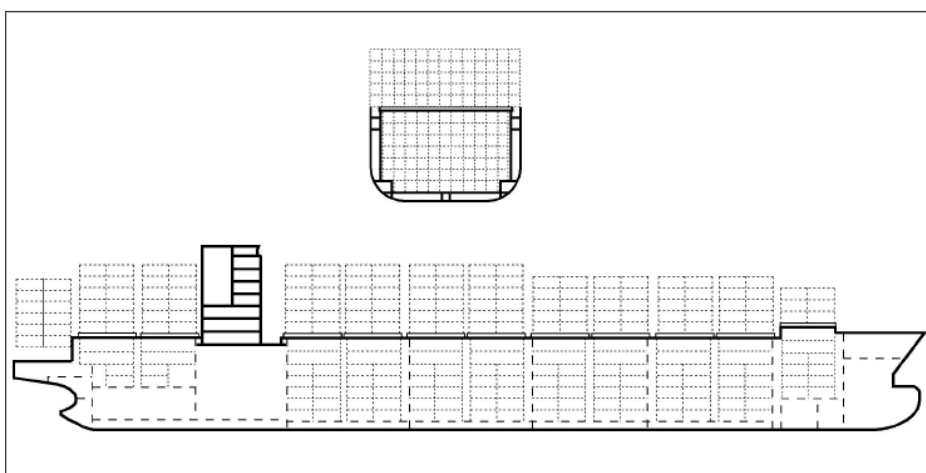
101. Ships complying with this Chapter are eligible for the assignment of the Class Notation “**Container Ship**”.

102. The requirements of this Chapter are additional to those of Part II, Title 11, Section 2.

200. Configuration

201. A container ship is typically constructed with a single deck, double side skin tanks, passageways and double bottom in the cargo space area, and is intended exclusively to carry cargo in containers in the cargo holds, on deck and on hatch covers. Figures F.A1.201.1 shows the general view of a typical container ship.

FIGURE F.A1.201.1 – TYPICAL ARRANGMENT OF A CONTAINER SHIP



CHAPTER E CONFIGURATIONS

CHAPTER CONTENTS

E1. HULL ADEQUACY

E2. BASIC ARRANGEMENT

E1. ADEQUACY OF THE HULL

See Part II, Title 11, Section 1

E2. BASIC ARRANGEMENT

100. Location of the cargo space

101. On vessels for the carriage of goods or people, the space designed to them may be inside the hull or on the hull, safeguarded the buoyancy considerations and preservation of tightness up to the freeboard deck. See Chapter of Compartmenting.

102. The containers can be carried either inside the hull or on the deck or hatch covers. In the case of vessels without hatch covers see specific requirements in the following chapters and sections.

200. Location of the machinery space
- See Part II, Title 11, Section 1

300. Location of the accommodations
- See Part II, Title 11, Section 1

CHAPTER G CAPACITIES AND SUBDIVISION

CHAPTER CONTENTS

G1. HULL SUBDIVISION

G2. CAPACITIES – See Part II, Title 11, Section 1

G1. HULL SUBDIVISION

100. Main transverse bulkheads

101. to 104. - See Part II, Title 11, Section 1

105. In the case of ship without hatch covers, the watertight bulkheads of the hull subdivision are to have height up to continuous watertight deck, which has to be the freeboard deck.

CHAPTER H LOADING CONDITIONS, BUOYANCY AND STABILITY

CHAPTER CONTENTS

H1. FREEBOARD

H2. LIGHTWEIGHT

H3. LOADING CONDITIONS

H4. BUOYANCY

H5. INTACT STABILITY

HT6. DAMAGED STABILITY

H1. FREEBOARD

100. Freeboard for open-top container ships [IMO MSC/Circ.608/Rev.1101. a 103. – See Part II, Title 11, Section 1]

101. Minimum freeboard for open-top containers ships should be determined by seakeeping characteristics and stability. Model tests and calculations should be carried out to provide Administrations with:

- a. measured data for the maximum hourly rate of ingress of green water likely to be shipped into each cargo hold;

- b. evaluation of the adequacy of the discharge rates from cargo hold freeing ports (if they are fitted).

102. The maximum hourly rate of ingress of green water in any one open hold determined from model testing should not exceed the hatch opening area multiplied by 400 mm/hour.

103. A conventional geometrical freeboard and minimum bow height should be calculated assuming that hatch covers are fitted. Under no circumstances should a freeboard and bow height be assigned to an open-top containership which is less than the equivalent geometrical freeboard determined from the LL 1966.

104. All seasonal freeboards should be omitted unless the minimum geometrical freeboard and corresponding seasonal freeboards for which the ship is eligible (assuming hatch covers fitted) are greater than the freeboard for which the model tests were satisfactorily carried out. In that case, the minimum geometrical freeboard and the corresponding seasonal freeboards greater than the freeboard for which the model tests were carried out should be assigned.

105. The minimum freeboard and minimum bow height assigned to the ship should not be less than those corresponding to the model test conditions.

H2. LIGHTWEIGHT

See Part II, Title 11, Section 1, H2.

H3. LOADING CONDITIONS

See Part II, Title 11, Section 1, H5.200

H4. BUOYANCY

100. Principles

101. See Part II, Title 11, Section 1

102. Hatches and other openings to holds or cargo tanks on the main deck which will provide access the inside of the shell are to have covers or building doors indicated in Section 3 of these Rules. The event of ship without hatch covers shall be specially considered by the RBNA

103. See Part II, Title 11, Section 1

104. See Part II, Title 11, Section 1

200. Hull subdivision bulkheads to restrain flooding - See Part II, Title 11, Section 1

300. Vertical subdivision - See Part II, Title 11, Section 1

400. Hull openings and means of closure

401. and 402. - See Part II, Title 11, Section 1

403. The event of ship without hatch covers shall be specially considered by the RBNA, taking into account the course, freeboard and means of hull drainage.

500. Angle of flooding

- See Part II, Title 11, Section 1

600. Minimizing the effect of flooding

- See Part II, Title 11, Section 1

H5. STABILITY

100. Distributions of weights

- See Part II, Title 11, Section 1

200. Free surface

- See Part II, Title 11, Section 1

300. Measuring stability

301. The intact stability for the loading conditions defined in Part II, Title 11, Section 1, Subchapter H5, item 203 is to be in compliance with the requirements of Part II, Title 11, Section 1, H5.100 (IMO IS Stability Code, Chapters 4.9, 3.2 as amended).

400. Alternative criteria for ships greater than 100 m in length IMO Intact Stability Code

401. For ships greater than 100 m in length, the Society may apply the following criteria instead of those in Part II, Title 11, Section 1, H5.100:

- the area under the righting lever curve (GZ curve), in m.rad, is to be not less than $0,009/C$ up to an angle of heel of 30° , and not less than $0,016/C$ up to 40° or the angle of flooding θ_f if this angle is less than 40°
- the area under the righting lever curve (GZ curve), in m.rad, between the angles of heel of 30° and 40° or between 30° and θ_f , if this angle is less than 40° , is to be not less than $0,006/C$
- the righting lever GZ, in m, is to be at least $0,033/C$ at an angle of heel equal to or greater than 30°
- the maximum righting lever GZ, in m, is to be at least $0,042/C$
- the total area under the righting lever curve (GZ curve), in m.rad, up to the angle of flooding θ_f is not to be less than $0,029/C$

where:

C: Coefficient defined by:

$$C = \sqrt{\frac{T}{KG}} \sqrt{\frac{100}{L}} \left(\frac{C_B}{C_W} \right)^2 \frac{TD}{B_m^2}$$

IMO quotation

T : Mean draught, in m

KG : Height of the centre of mass above base, in m, corrected for free surface effect, not be taken as less than T

C_B : Block coefficient

C_W : Waterplane coefficient

D' : Moulded depth, in m, corrected for defined parts of volumes within the hatch coamings obtained from the following formula:

$$D' = D + \left(\frac{2b - B_D}{B_D} \right) \left(\frac{2\sum \ell_H}{L} \right) h$$

IMO quotation

h : Mean height, in m, of hatch coamings within L/4 forward and aft from amidships (see Figure F.H5.401.1)

b : Mean width, in m, of hatch coamings within L/4 forward and aft from amidships (see Figure F.H5.401.1)

B_m, B_D : Breadths, in m, defined in see Figure F.H5.401.1

ℓ_H : Length, in m, of each hatch coaming within L/4 forward and aft from amidships (see Figure F.H5.401.2).

Figure F.H5.401.1 - Definition of dimensions

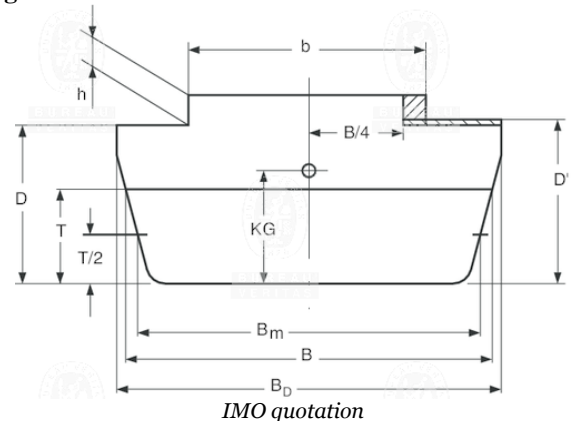
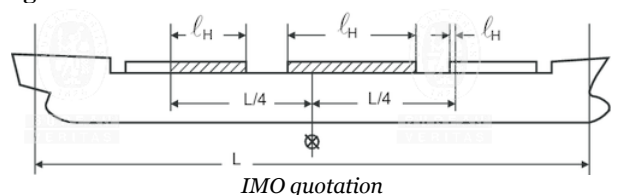


Figure F.H5.401.2 - Definition of dimensions



402. Additional requirements for open top container ships IMO MSC/Circ.608/Rev.1

403. "Open-top containership" means a containership especially designed so that one or more of the cargo holds need not be fitted with hatch covers.

404. "Freeboard" is the distance between the assigned load line and freeboard deck.

405. "Freeboard deck", for the purposes of chapters I and II of Annex I of the International Convention on Load Lines, 1966 (LL 1966), is the freeboard deck according to the LL 1966 as if hatch covers are fitted on top of the hatch coamings.

406. "Green water" is sea water other than spray shipped aboard the ship under normal operating conditions.

407. Intact stability calculations are to be investigated for the ship in the intact condition and considering the effect of the ingress of green water through the open hatchways in compliance with this Chapter.

408. The stability of the ship in all conditions of loading should meet the provisions of the Code of Intact Stability for All Types of Ships Covered by IMO Instruments.

409. Where cargo hold freeing ports are fitted, they should be considered closed for the purpose of determining the flooding angle, provided that the reliable and effective control of closing of these freeing ports is satisfactory to the Society.

410. With all open holds completely filled with water (permeability of 0,70 for container holds) to the level of the top of the hatch side or hatch coaming or, in the case of a ship fitted with cargo hold freeing ports, to the level of those ports, the stability of the fully laden ship in the intact condition should meet the survival criteria (with factor $s = 1$) of chapter II-1 part B-1 of SOLAS 1974, as amended.

411. For the condition with flooded holds and an intact ship the free surfaces may be determined as follows:

- a. The holds are fully loaded with containers
- b. The seawater enters the containers and will not pour out during heeling.
- c. This condition should be simulated by defining the amount of water in the containers as fixed weight items.
- d. The free space surrounding the containers is then flooded with seawater.
- e. This free space should be evenly distributed over the full length of the open cargo holds.

412. Intermediate conditions of hold flooding should be investigated.

500. Damage stability requirements for ships where the additional class "EAV" has been required

501. Open-top containerships should comply with the subdivision and damage stability criteria of chapter II-1 part B-1 of SOLAS 1974, as amended. The coamings of open-top holds should be considered as downflooding areas.

H6. DAMAGED STABILITY

100. Subdivision and Damage D Stability

101. Any type of container ship with a length equal to or greater than 80 metres is to comply with the subdivision and damage stability criteria of Part II, Title 11, Section 2, Subchapter H6 (SOLAS 74/88 Part B-1 Regulation II-1/B1/4 through II-1/B1/7-3).

102. For open top containers, the coaming of the open top holds is to be considered as a down-flooding area.

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