



2022

---

# Introduction to the Classification Technical Rules

---

# CONTENTS

<b>1. LIST OF CLASSIFICATION TECHNICAL RULES .....</b>	<b>1</b>
<b>2. USER'S GUIDE TO CLASSIFICATION TECHNICAL RULES .....</b>	<b>5</b>
2.1 General .....	5
2.2 User's Guide .....	5
2.3 Numbering System .....	5
2.4 Cross-Reference to Articles and Paragraphs .....	6
2.5 Cross-Reference to Figures and Tables .....	6
2.6 Units .....	7
<b>3. CONTENTS OF CLASSIFICATION TECHNICAL RULES .....</b>	<b>9</b>
3.1 Contents of Rules for the Classification of Steel Ships .....	9
3.2 Contents of Guidance Relating to the Rules for the Classification of Steel Ships .....	33
3.3 Contents of Rules for Offshore Structure .....	47
3.4 Contents of Guidance for Offshore Structures .....	51
3.5 Contents of Other Rules .....	57
3.6 Contents of Other Guidance .....	71
<b>4. CONVERSION TABLE OF SI UNITS .....</b>	<b>97</b>
<b>5. LOAD LINE MARKS .....</b>	<b>99</b>

# 1. LIST OF CLASSIFICATION TECHNICAL RULES

Rules for the Classification of Steel Ships	Guidance Relating to the Rules for the Classification of Steel Ships
<ul style="list-style-type: none"> <li>- Pt 1 Classification and Surveys (K/E) (2022)</li> <li>- Pt 2 Materials and Welding (K/E) (2022)</li> <li>- Pt 3 Hull Structures (K/E) (2022)</li> <li>- Pt 4 Hull Equipment (K/E) (2022)</li> <li>- Pt 5 Machinery Installations (K/E) (2022)</li> <li>- Pt 6 Electrical Equipment and Control Systems (K/E) (2022)</li> <li>- Pt 7 Ships of Special Service (Ch1–Ch4, Ch7–Ch10) (K/E) (2022)</li> <li>- Pt 7 Ships of Special Service (Ch5, Ch6) (K/E) (2022)</li> <li>- Pt 8 Fire Protection and Fire Extinction (K/E) (2022)</li> <li>- Pt 9 Additional Installations (K/E) (2022)</li> <li>- Pt 10 Hull Structure and Equipment of Small Steel Ships (K/E) (2022)</li> <li>- Pt 11 Common Structural Rules for Bulk Carriers (K/E) (2014)</li> <li>- Pt 12 Common Structural Rules for Double Hull Oil Tankers (K/E) (2014)</li> <li>- Pt 13 Common Structural Rules for Bulk Carriers and Tankers (K/E) (2022)</li> <li>- Pt 14 Structural Rules for Container Ships (K/E) (2022)</li> <li>- Pt 15 Structural Rules for Membrane Type Liquefied Natural Gas Carriers (E) (2022)</li> </ul>	<ul style="list-style-type: none"> <li>- Pt 1 Classification and Surveys (K/E) (2022)</li> <li>- Pt 2 Materials and Welding (K/E) (2022)</li> <li>- Pt 3 Hull Structures (K/E) (2022)</li> <li>- Pt 4 Hull Equipment (K/E) (2022)</li> <li>- Pt 5 Machinery Installations (K/E) (2022)</li> <li>- Pt 6 Electrical Equipment and Control Systems (K/E) (2022)</li> <li>- Pt 7 Ships of Special Service (Ch1–Ch4, Ch7–Ch10) (K/E) (2022)</li> <li>- Pt 7 Ships of Special Service (Ch5, Ch6) (K/E) (2022)</li> <li>- Pt 8 Fire Protection and Fire Extinction (K/E) (2022)</li> <li>- Pt 9 Additional Installations (K/E) (2022)</li> <li>- Pt 10 Hull Structure and Equipment of Small Steel Ships (K/E) (2022)</li> <li>- Pt 13 Common Structural Rules for Bulk Carriers and Tankers (K/E) (2022)</li> <li>- Pt 14 Structural Rules for Container Ships (K/E) (2022)</li> </ul>

Rules for Offshore Structures	Guidance for Offshore Structures
<ul style="list-style-type: none"> <li>- Rules for the Classification of Mobile Offshore Units (K/E) (2022)</li> <li>- Rules for the Classification of Mobile Offshore Drilling Units (K/E) (2022)</li> <li>- Rules for the Classification of Fixed Offshore Structures (K/E) (2014)</li> </ul>	<ul style="list-style-type: none"> <li>- Guidance Relating to the Rules for the Classification of Mobile Offshore Units (K/E) (2022)</li> <li>- Guidance Relating to the Rules for the Classification of Mobile Offshore Drilling Units (K/E) (2022)</li> <li>- Guidance for Floating Offshore Production Units (K/E) (2015)</li> <li>- Guidance for Floating Liquefied Gas Storage and Regasification Units (K/E) (2019)</li> <li>- Guidance for Floating Liquefied Gas Production Units (K/E) (2019)</li> <li>- Guidance for OSV (K/E) (2019)</li> </ul>

Other Rules	Other Guidances
<ul style="list-style-type: none"> <li>- Rules for the Classification of Steel Barges (K/E) (2022)</li> <li>- Rules for the Classification of Underwater Vehicles (K/E) (2021)</li> <li>- Rules for the Classification of FRP Ships (K/E) (2014)</li> <li>- Rules for the Classification of Floating Docks (K/E) (2020)</li> <li>- Rules for the Classification of High Speed and Light Crafts (K/E) (2022)</li> <li>- Rules for the Classification of Ships Using Low-flashpoint Fuels (K/E) (2022)</li> <li>- Rules for the Towing Survey of Barges and Tugboats (K/E) (2022)</li> <li>- Rules for the Classification of Dredgers (K/E) (2020)</li> </ul>	<ul style="list-style-type: none"> <li>- Guidance Relating to the Rules for the Classification of Steel Barges (K/E) (2022)</li> <li>- Guidance Relating to the Rules for the Classification of Underwater Vehicles (K/E) (2021)</li> <li>- Guidance Relating to the Rules for the Classification of FRP Ships (K/E) (2014)</li> <li>- Guidance Relating to the Rules for the Classification of Floating Docks (K/E) (2020)</li> <li>- Guidance Relating to the Rules for the Classification of High Speed and Light Craft (K/E) (2022)</li> <li>- Guidance Relating to the Rules for the Classification of Ships Using Low-flashpoint Fuels (K/E) (2022)</li> </ul>

	<b>Other Guidances</b>
	<ul style="list-style-type: none"> <li>- Guidance for Approval of Manufacturing Process and Type Approval, Etc. (K/E) (2022)</li> <li>- Guidance for Floating Structures (K/E) (2010)</li> <li>- Guidance for Freight Containers (K/E) (2022)</li> <li>- Guidance for Single Point Mooring (K/E) (2017)</li> <li>- Guidance for Ships Carrying CNG in Bulk (K/E) (2011)</li> <li>- Guidance for WIG Craft (Wing-In-Ground Effect Craft) (K/E) (2019)</li> <li>- Guidance for Recreational Crafts (K/E) (2018)</li> <li>- Guidance for Large Yachts (K/E) (2014)</li> <li>- Guidance for Fuel Cell Systems on Board of Ships (K/E) (2022)</li> <li>- Guidance for Ships for Navigation in Ice (K/E) (2022)</li> <li>- Guidance for Approval of Risk-based Ship Design (K/E) (2015)</li> <li>- Guidance for Strength Assessment of Membrane-Type LNG Tanks under Sloshing Loads (E) (2022)</li> <li>- Guidance for LNG Fuel Ready Ships (K/E) (2017)</li> <li>- Guidance on Strength Assessment of Containerships Considering the Whipping Effect (K/E) (2022)</li> <li>- Guidance for Structural Strength Assessment of Pump Tower of LNG Carrier (K/E) (2017)</li> <li>- Guidance for Noise and Vibration (K/E) (2020)</li> <li>- Guidance for Shiplift and Transfer Systems (K/E) (2017)</li> <li>- Guidance for Battery Systems on Board of Ships (K/E) (2022)</li> <li>- Guidance for Maritime Cyber Security System (K/E) (2021)</li> <li>- Guidance for Floating LNG Bunkering Terminal (K/E) (2018)</li> <li>- Guidance for approval of Service Suppliers (K/E) (2022)</li> <li>- Guidance for Autonomous Ships (K/E) (2022)</li> <li>- Guidance for DC Distribution Systems (K/E) (2022)</li> </ul>

Other Rules	Other Guidances
	<ul style="list-style-type: none"> <li>- Guidance for Type Approval of Maritime Cyber security (K/E) (2021)</li> <li>- Guidance for Composite Propellers (K/E) (2021)</li> <li>- Guidance for Software Conformity Certification (K/E) (2022)</li> <li>- Guidance for Integrated Software Process Management (K/E) (2021)</li> <li>- Guidance of Heat Transfer Analysis for Ships Carrying Liquefied Gases in Bulk/Ships Using Liquefied Gases as Fuels) (K/E) (2021)</li> <li>- Guidance for Prevention System of Pollution from Ships (K/E) (2022)</li> <li>- Guidance for Remote Inspection Techniques (K/E) (2021)</li> <li>- Guidance for Remote Survey (K/E) (2021)</li> <li>- Guidance for Ships designed to Prevent the spread of Infectious Disease (K/E) (2022)</li> </ul>

## 2. USER'S GUIDE TO CLASSIFICATION TECHNICAL RULES

### 2.1 General

- 2.1.1 The purpose of this General has been prepared to introduce kinds, contents and user's guide for Classification Technical Rules published by Korean Register of Shipping (hereinafter called "the Society") to users.
- 2.1.2 Classification Technical Rules published by the Society are grouped into "Rules" and "Guidances" which mean all rules for the classification of ships, offshore installations and related equipment, etc., and "Guidance Relating to the Rules", which is prepared with the intent of giving details as to the treatment of the various provisions for items required the unified interpretations and items not specified in the Rules. The list of Classification Technical Rules is given in 1.
- 2.1.3 Amendments to the Classification Technical Rules that need to be implemented prior to publishing the Classification Technical Rules are issued without a printed copy of the entire Rules or the Guidances.

### 2.2 User's Guide

#### 2.2.1 Enforcement

Classification Technical Rules, in principle, shall come into force after 3 months from the approved date and "Amendments and Effective Date" is recorded at the beginning of each Classification Technical Rules for ready use.

#### 2.2.2 Format

"Rules for Steel Ships" are composed of 15 kinds and "Guidances for Steel Ships" are composed of 12 kinds.

"Rules for Offshore Structures" are composed of 3 kinds and "Guidances for Offshore Structures" are composed of 6 kinds.

"Other Rules" are composed of 8 kinds and "Other Guidances" are composed of 6 kinds.

"Other Guidance" is composed of 33 kinds

### 2.3 Numbering System

#### 2.3.1 "Rules for the Classification of Steel Ships" and "Guidance Relating to the Rules for the Classification of Steel Ships"

- (1) In principle, the text consists of Part, Chapter, Section, Article, Paragraph, Sub-paragraph, (A), (a) and (i).
- (2) An article consists of a section number and serial number, and the hundred means section number and the rest means serial number.  
(e.g.) For eleventh article in **Section 2 ; 211.**



- (3) The number of a figure or a table consists of part, chapter and serial number in each chapter.

The figure number is placed in the center under the figure, and the table number is placed in the top left hand corner of the table.

(e.g.) For eighth figure in **Chapter 7 of Part 3; Fig 3.7.8**

For second table in **Chapter 1 of Part 5; Table 5.1.2**

### 2.3.2 Other Rules and Other Guidance

The same as 2.3.1

### 2.3.3 Classification Rules other than 2.3.1 and 2.3.2

- (1) In principle, the text consists of Chapter, Section, Article, Paragraph, Sub-paragraph, (A), (a) and (i).

- (2) The remainder are the same as those specified in 2.3.1. The number of a figure or of a table consists of chapter and serial number in each chapter.

(e.g.) For ninth figure in **Chapter 3; Fig 3.9**

For tenth table in **Chapter 3; Table 3.10.**

## 2.4 Cross-Reference to Articles and Paragraphs

### 2.4.1 "Rules for the Classification of Steel Ships" and "Guidance Relating to the Rules for the Classification of Steel Ships"

- (1) Where a paragraph in any chapter is quoted from an other chapter in the same part, the chapter, relevant article and paragraph are written in sequence.

(e.g.) For rules: in **Ch 1, 201. 1 (1)**, or in **Ch 1, 201. 1 (1)** of the Guidance.

For guidances: in **Ch 1, 201.1(1)** of the Rules, or in **Ch 1, 201.1(1)** of the Guidance.

- (2) Where a paragraph in any part is quoted from an other part, the part, chapter, relevant article and paragraph are written in sequence.

(e.g.) For rules: in **Pt 1, Ch 1, 201. 1 (1)**, or in **Pt 1, Ch 1, 201. 1 (1)** of the Guidance.

For guidances: in **Pt 1, Ch 1, 201. 1 (1)** of the Rules, or in **Pt 1, Ch 1, 201. 1 (1)** of the Guidance.

### 2.4.2 Classification Rules other than 2.4.1

Where the contents of any rules are quoted in the rules other than 2.4.1, the names of the rules, part, chapter, relevant article and paragraph are written.

(e.g.) Where **Pt 1, Ch 2, 202.** of "Rules for the Classification of Steel Ships" is quoted in "Rules for the Classification of Steel Barges"; **Pt 1, Ch 2, 202.** of **Rules for the Classification of Steel Ships.**

## 2.5 Cross-Reference to Figures and Tables

### 2.5.1 "Rules for the Classification of Steel Ships" and "Guidance relating to the Rules for the Classification of Steel Ships"

- (1) Where a figure or a table in any chapter is quoted from an other chapter in the same part, the number of the figure (or the table) is written.

(e.g.) For rules: in **Fig 2.1.1** (or **Table 2.1.1**), or in **Fig 2.1.1** (or **Table 2.1.1**) of the Guidance.  
 For guidances: in **Fig 2.1.1** (or **Table 2.1.1**) of the Rules, or in **Fig 2.1.1** (or **Table 2.1.1**) of the Guidance.

(2) Where a figure or a table is quoted from an other part, the part and the number of the figure (or the table) are written.

(e.g.) For rules: in **Pt 2, Fig 2.1.1** (or **Table 2.1.1**), or in **Pt 2, Fig 2.1.1** (or **Table 2.1.1**) of the Guidance.

For guidances: in **Pt 2, Fig 2.1.1** (or **Table 2.1.1**) of the Rules, or in **Pt 2, Fig 2.1.1** (or **Table 2.1.1**) of the Guidance.

### 2.5.2 Classification Rules other than 2.5.1

Where a figure or a table of any rules is quoted in the rules other than **2.5.1**, the name of the rules, the part and the number of the figure (or the table) are written.

(e.g.) Where **Pt 3, Fig 3.3.1** (or **Table 3.3.1**) of "Rules for the Classification of Steel Ships" is quoted in "Rules for the Classification of Steel Barges": in **Pt 3, Fig 3.3.1** (or **Table 3.3.1**) of **Rules for the Classification of Steel Ships**.

## 2.6 Units

The SI-units (International System of Units) shown in **4.** are generally used in Classification Rules. However, the MKS-units (Metric System of Units) may be used together with SI-units, at the discretion of the Society. ↓

## 3. CONTENTS OF CLASSIFICATION TECHNICAL RULES

### 3.1 Contents of Rules for the Classification of Steel Ships

#### PART 1 CLASSIFICATION AND SURVEYS

##### CHAPTER 1 CLASSIFICATION

- Section 1 General
- Section 2 Character of Classification
- Section 3 Classification Survey during Construction
- Section 4 Classification Survey after Construction
- Section 5 Certificates and Reports
- Section 6 Application for Survey
- Section 7 Cooperation Duties of Owners
- Section 8 Competence, Duties of Surveyors and Responsibility and Scope of Classification
- Section 9 Suspension/Withdrawal of Class and Reclassification
- Section 10 Fees
- Section 11 Appeal on Disagreement
- Section 12 Related Regulations and Surveys
- Section 13 Classification of Other Installations or Equipment
- Section 14 External Audit
- Section 15 Miscellaneous

##### CHAPTER 2 PERIODICAL AND OTHER SURVEYS

- Section 1 General
- Section 2 Annual Survey
- Section 3 Intermediate Survey
- Section 4 Special Survey(Hull, Equipment and Fire-extinguishing Appliances)
- Section 5-1 Special Survey(Machinery, Electrical Installations and Additional Installations)
- Section 5-2 Special Survey(Additional Requirements to Ship Types)
- Section 6 Docking Survey
- Section 7 Surveys of Propeller Shaft and Stern Tube Shaft, Etc.
- Section 8 Boiler Survey
- Section 9 Continuous Survey of Machinery
- Section 10 Occasional Survey
- Section 11 Remote Survey
- Section 12 Alteration Survey
- Section 13 Survey of Ships Carrying Dangerous Goods and Other Special Cargoes
- Section 14 Additional Installations Survey
- Section 15 Hull Surveys for General Dry Cargo Ships
- Section 16 Hull Surveys for Liquefied Gas Carriers
- Section 17 Survey Requirements for Shell and Inner Doors, Etc. of RoRo Ships
- Section 18 Additional Requirements
- Section 19 Special Requirements for Ships Subject to Korean Ship Safety Act or Fishing Vessels Act

##### CHAPTER 3 HULL SURVEYS OF SHIPS SUBJECT TO THE ENHANCED SURVEY PROGRAMME

- Section 1 General
- Section 2 Bulk Carriers
- Section 3 Oil Tankers
- Section 4 Chemical Tankers
- Section 5 Double Hull Oil Tankers
- Section 6 Double Skin Bulk Carriers

## PART 2 MATERIALS AND WELDING

### CHAPTER 1 MATERIALS

- Section 1 General
- Section 2 Test Specimens and Testing Procedures
- Section 3 Rolled Steels
- Section 4 Steel Tubes and Pipes
- Section 5 Castings
- Section 6 Steel Forgings
- Section 7 Copper and Copper Alloy
- Section 8 Aluminium Alloys

### CHAPTER 2 WELDING

- Section 1 General
- Section 2 Test Specimens and Testing Procedures
- Section 3 Welding work and Inspection
- Section 4 Welding Procedure Qualification Tests
- Section 5 Welders and Welder Performance Qualification Scheme
- Section 6 Welding Consumables

## PART 3 HULL STRUCTURES

### CHAPTER 1 GENERAL

- Section 1 Definitions
- Section 2 General
- Section 3 Approval of Plans and Documents
- Section 4 Materials
- Section 5 Weldings
- Section 6 Scantlings
- Section 7 Workmanship
- Section 8 Corrosion Protection Coating

### CHAPTER 2 STEMS AND STERN FRAMES

- Section 1 Stems
- Section 2 Stern Frames

### CHAPTER 3 LONGITUDINAL STRENGTH

- Section 1 General
- Section 2 Bending Strength
- Section 3 Shear Strength
- Section 4 Buckling Strength

### CHAPTER 4 PLATE KEELS AND SHELL PLATINGS

- Section 1 General
- Section 2 Plate Keels
- Section 3 Shell Plating below Strength Deck
- Section 4 Special Requirements for Shell Plating
- Section 5 Side Plating in way of Superstructure
- Section 6 Compensation at ends of Superstructure
- Section 7 Local Compensation of Shell Plating

### CHAPTER 5 DECKS

- Section 1 General
- Section 2 Effective Sectional Area of Strength Deck
- Section 3 Deck Plating
- Section 4 Wood Decks and Deck Compositions

**CHAPTER 6 SINGLE BOTTOMS**

- Section 1 General
- Section 2 Centre Keelsons
- Section 3 Side Keelsons
- Section 4 Floor Plates

**CHAPTER 7 DOUBLE BOTTOMS**

- Section 1 General
- Section 2 Centre Girders and Side Girders
- Section 3 Solid Floors
- Section 4 Bottom Longitudinals
- Section 5 Inner Bottom Plating, Margin Plates and Bottom Shell Plating
- Section 6 Hold Frame Brackets
- Section 7 Open Floors
- Section 8 Construction of Strengthened Bottom Forward

**CHAPTER 8 FRAMES**

- Section 1 General
- Section 2 Frame Spacing
- Section 3 Hold Frames
- Section 4 Side Longitudinals
- Section 5 Tween Deck Frames

**CHAPTER 9 WEB FRAMES AND SIDE STRINGERS**

- Section 1 General
- Section 2 Web Frames
- Section 3 Side Stringers
- Section 4 Side Transverse
- Section 5 Cantilever Beams

**CHAPTER 10 BEAMS**

- Section 1 General
- Section 2 Deck Load
- Section 3 Longitudinal Beams
- Section 4 Transverse Beams

**CHAPTER 11 DECK GIRDERS**

- Section 1 General
- Section 2 Longitudinal Deck Girders
- Section 3 Transverse Deck Girders
- Section 4 Deck Girders in Tanks
- Section 5 Hatch Side Girders
- Section 6 Hatch End Girders

**CHAPTER 12 PILLARS**

- Section 1 General
- Section 2 Scantling of Pillars

**CHAPTER 13 ARRANGEMENTS TO RESIST PANTING**

- Section 1 General
- Section 2 Arrangements to Resist Panting forward the Collision Bulkhead
- Section 3 Arrangements to Resist Panting abaft Aft-peak Bulkhead
- Section 4 Arrangements to Resist Panting between Both Peaks

**CHAPTER 14 WATERTIGHT BULKHEADS**

- Section 1 General
- Section 2 Arrangement of Watertight Bulkheads
- Section 3 Construction of Watertight Bulkheads
- Section 4 Watertight Doors

**CHAPTER 15 DEEP TANKS**

- Section 1 General
- Section 2 Bulkheads of Deep Tanks
- Section 3 Fittings of Deep Tanks
- Section 4 Welding of Corrugated Bulkheads

**CHAPTER 16 SUPERSTRUCTURES**

- Section 1 General
- Section 2 Superstructure End Bulkheads
- Section 3 Access Openings in Superstructure End Bulkheads

**CHAPTER 17 DECKHOUSES**

- Section 1 General
- Section 2 Construction

**CHAPTER 18 MACHINERY SPACES AND ENGINE CASINGS**

- Section 1 General
- Section 2 Main Engine Foundation
- Section 3 Construction of Boiler Rooms
- Section 4 Thrust Blocks and Foundations
- Section 5 Engine Casings

**CHAPTER 19 TUNNELS AND TUNNEL RECESSES**

- Section 1 General

**PART 4 HULL EQUIPMENT**

**CHAPTER 1 RUDDERS**

- Section 1 General
- Section 2 Rudder Force
- Section 3 Rudder Torque
- Section 4 Rudder Strength Calculation
- Section 5 Rudder Stocks
- Section 6 Rudder Plates, Rudder Frames and Rudder Main Pieces
- Section 7 Couplings between Rudder Stocks and Main Pieces
- Section 8 Pintles
- Section 9 Bearings of Rudder Stocks and Pintles
- Section 10 Rudder Accessories
- Section 11 Propeller Nozzles

**CHAPTER 2 HATCHWAYS AND OTHER DECK OPENINGS**

- Section 1 General
- Section 2 Design Load
- Section 3 Hatch cover strength criteria
- Section 4 Hatch Coamings strength criteria
- Section 5 Hatch cover details – Closing Arrangement, Securing Devices and Stoppers
- Section 6 Hatch ways closed by Portable Hatch Cover and weathertightened by Tarpaulins and Battens
- Section 7 Miscellaneous Openings

**CHAPTER 3 BOW DOORS, SIDE AND STERN DOORS**

- Section 1 Bow Doors and Inner Doors
- Section 2 Side and Stern Doors

**CHAPTER 4 BULWARKS, FREEING PORTS, SIDE SCUTTLES, RECTANGULAR WINDOWS, SKYLIGHTS, VENTILATORS AND PERMANENT GANGWAYS**

- Section 1 Bulwarks and Guardrails
- Section 2 Freeing Ports
- Section 3 Side Scuttles, Rectangular Windows and Skylights
- Section 4 Ventilators
- Section 5 Permanent Gangways

**CHAPTER 5 MASTS AND DERRICK POSTS – Void**

**CHAPTER 6 CEILINGS AND SPARRINGS – Void**

**CHAPTER 7 CEMENTING AND PAINTING – Void**

**CHAPTER 8 EQUIPMENT NUMBER AND EQUIPMENT**

- Section 1 General
- Section 2 Equipment Number
- Section 3 Anchors
- Section 4 Chains
- Section 5 Steel Wire Ropes
- Section 6 Fibre Ropes
- Section 7 Hatch Tarpaulins
- Section 8 Side Scuttles
- Section 9 Rectangular Windows

**CHAPTER 9 STRENGTH AND SECURING OF SMALL HATCHES, FITTINGS AND EQUIPMENT ON THE FORE DECK**

- Section 1 Application and Implementation
- Section 2 Strength and Securing of Small Hatches on the Exposed Fore Deck
- Section 3 Strength Requirements for Fore Deck Fittings and Equipment

**CHAPTER 10 SHIPBOARD EQUIPMENT, FITTINGS AND SUPPORTING HULL STRUCTURES ASSOCIATED WITH TOWING AND MOORING**

- Section 1 Definitions and Scope of Application
- Section 2 Towing and Mooring

**CHAPTER 11 ACCESS TO AND WITHIN SPACES IN, AND FORWARD OF, THE CARGO AREA OF OIL TANKERS AND BULK CARRIERS**

- Section 1 General
- Section 2 Technical Provisions for Means of Access for Inspections

**PART 5 MACHINERY INSTALLATIONS**

**CHAPTER 1 GENERAL**

- Section 1 General
- Section 2 Plans and Documents
- Section 3 Tests and Inspections
- Section 4 Spare Parts and Tools

**CHAPTER 2 MAIN AND AUXILIARY ENGINES**

- Section 1 General
- Section 2 Internal Combustion Engines
- Section 3 Steam Turbines
- Section 4 Gas Turbines

**CHAPTER 3 PROPULSION SHAFTING AND POWER TRANSMISSION SYSTEMS**

- Section 1 General
- Section 2 Shaftings
- Section 3 Propellers
- Section 4 Power Transmission Systems

**CHAPTER 4 TORSIONAL VIBRATION OF SHAFTINGS**

- Section 1 General
- Section 2 Allowable Limit of Vibration Stresses

**CHAPTER 5 BOILERS AND PRESSURE VESSELS**

- Section 1 Boilers
- Section 2 Thermal Oil Heaters
- Section 3 Pressure Vessels
- Section 4 Welding for Boilers and Pressure Vessels

**CHAPTER 6 AUXILIARIES AND PIPING ARRANGEMENT**

- Section 1 General
- Section 2 Air Pipes, Overflow Pipes and Sounding Devices
- Section 3 Ship-side Valves and Overboard Discharge
- Section 4 Bilge and Ballast System
- Section 5 Feed Water and Condensate System for Boiler
- Section 6 Steam and Exhaust Gas Piping
- Section 7 Cooling System
- Section 8 Lubricating Oil System
- Section 9 Fuel Oil System
- Section 10 Thermal Oil System
- Section 11 Compressed Air System
- Section 12 Refrigerating Machinery
- Section 13 Hydraulic System
- Section 14 Tests and Inspections

**CHAPTER 7 STEERING GEARS**

- Section 1 General
- Section 2 Performance and Arrangement
- Section 3 Controls
- Section 4 Materials, Constructions and Strength
- Section 5 Testing
- Section 6 Additional Requirements Concerning Tankers of 10,000 Gross Tonnage and Upwards and Other Ships of 70,000 Gross Tonnage and Upwards

**CHAPTER 8 WINDLASSES AND MOORING WINCHES**

- Section 1 General
- Section 2 Windlasses
- Section 3 Mooring Winches

**PART 6 ELECTRICAL EQUIPMENT AND CONTROL SYSTEMS**

**CHAPTER 1 ELECTRICAL EQUIPMENT**

- Section 1 General
- Section 2 System Design



- Section 3 Rotating Machinery
- Section 4 Switchboards, Section Boards and Distribution Boards
- Section 5 Cables
- Section 6 Transformers for Power and Lighting
- Section 7 Controlgears for Motors and Magnetic Brakes
- Section 8 Fuses, Circuit-breakers and Electromagnetic Contactors
- Section 9 Explosion-protected Electrical Equipment
- Section 10 Lighting Fittings, Heating Appliances, Wiring Accessories and Miscellaneous Equipment
- Section 11 Internal Communications
- Section 12 Semi-Conductor Converters
- Section 13 Accumulator Batteries
- Section 14 Lightning Conductors
- Section 15 High Voltage Electrical Installations
- Section 16 Electric Propulsion Unit
- Section 17 Tests after Installation on Board
- Section 18 Spare Parts, Tools and Instruments

## CHAPTER 2 CONTROL SYSTEMS

- Section 1 General
- Section 2 System and Control
- Section 3 Tests
- Section 4 Computer Based Systems

## PART 7 SHIPS OF SPECIAL SERVICE

### CHAPTER 1 OIL TANKERS

- Section 1 General
- Section 2 Hatchways, Gangways and Freeing Arrangements
- Section 3 Longitudinal Frames and Beams in Cargo Oil Spaces
- Section 4 Girders, Transverses and Cross Ties in Cargo Oil Spaces
- Section 5 Bulkheads in Cargo Oil Spaces
- Section 6 Relative Deformation of Wing Tanks
- Section 7 Welding
- Section 8 Supplementary Provisions for Tankers Having Longitudinal Bulkhead at Centre Line Only
- Section 9 Special Requirements for Wing Tanks at Fore Parts
- Section 10 Piping Systems and Venting Systems for Oil Tankers
- Section 11 Electrical Equipment

### CHAPTER 2 ORE CARRIERS

- Section 1 General
- Section 2 Double bottoms
- Section 3 Wing Tanks or Void Spaces
- Section 4 Transverse Bulkheads and Stools in Ore Holds
- Section 5 Relative deformation of wing tanks
- Section 6 Decks and Miscellaneous
- Section 7 Ore/Oil Carriers

### CHAPTER 3 BULK CARRIERS

- Section 1 General
- Section 2 Harmonized Notations and Corresponding Design Loading Conditions
- Section 3 Double Bottoms
- Section 4 Hopper Tanks
- Section 5 Topside Tanks
- Section 6 Transverse Bulkheads and Stools
- Section 7 Hold Frames
- Section 8 Decks and Shell Platings

- Section 9 Hatch Covers and Hatch Coamings of Cargo Holds
- Section 10 Longitudinal Strength of Hull Girder in Flooded Condition for Bulk Carriers
- Section 11 Evaluation of Allowable Hold Loading for Bulk Carriers Considering Hold Flooding
- Section 12 Evaluation of Scantlings of Corrugated Transverse Watertight Bulkheads in Bulk Carriers Considering Hold Flooding
- Section 13 Requirements for the Fitting of a Forecastle for Bulk Carriers, Ore Carriers and Combination Carriers
- Section 14 Water Level Detection & Alarm and Drainage & Pumping Systems for Bulk Carriers and Single Hold Cargo Ships
- Section 15 Supplementary Provisions for Carriage of Liquid in Holds
- Section 16 Electrical Equipment of Coal Carriers
- Section 17 Renewal Criteria for Side Shell Frames and Brackets in Single Side Skin Bulk Carriers and Single Side Skin OBO Carriers
- Section 18 Cargo Hatch Cover Securing Arrangements

### CHAPTER 4 CONTAINER SHIPS

- Section 1 General
- Section 2 Longitudinal Strength
- Section 3 Double Bottoms
- Section 4 Double Side Construction
- Section 5 Transverse Bulkheads
- Section 6 Deck Construction
- Section 7 Breakwater
- Section 8 Tug Pushing Area
- Section 9 Strength at Large Flare Location
- Section 10 Freight Container Securing Arrangement
- Section 11 Welding

### CHAPTER 5 SHIPS CARRYING LIQUEFIED GASES IN BULK (Separate Publication)

- Section 1 General
- Section 2 Ship Survival Capability and Location of Cargo Tanks
- Section 3 Ship Arrangements
- Section 4 Cargo Containment
- Section 5 Process Pressure Vessels and Liquid, Vapour and Pressure Piping Systems
- Section 6 Materials of Construction and Quality Control
- Section 7 Cargo Pressure/Temperature Control
- Section 8 Vent Systems for Cargo Containment
- Section 9 Cargo Containment System Atmosphere Control
- Section 10 Electrical Installations
- Section 11 Fire Protection and Fire Extinction
- Section 12 Mechanical Ventilation in the Cargo Area
- Section 13 Instrumentation and Automation Systems
- Section 14 Personnel Protection
- Section 15 Filling Limits for Cargo Tanks
- Section 16 Use of Cargo as Fuel
- Section 17 Special Requirements
- Section 18 Operating Requirements
- Section 19 Summary of Minimum Requirements

### CHAPTER 6 SHIPS CARRYING DANGEROUS CHEMICALS IN BULK (Separate Publication)

- Section 1 General
- Section 2 Ship Survival Capability and Location of Cargo Tanks
- Section 3 Ship Arrangements
- Section 4 Cargo Containment
- Section 5 Cargo Transfer
- Section 6 Materials of Construction
- Section 7 Cargo Temperature Control
- Section 8 Cargo Tank Venting and Gas-freeing Arrangements

- Section 9 Environmental Control
- Section 10 Electrical Installations
- Section 11 Fire Protection and Fire Extinction
- Section 12 Mechanical Ventilation in the Cargo Area
- Section 13 Instrumentation
- Section 14 Personnel Protection
- Section 15 Special Requirements
- Section 16 Operational Requirements
- Section 17 Summary of Minimum Requirements
- Section 18 List of Chemicals to which this Chapter does not apply
- Section 19 Index of Products Carried in Bulk
- Section 20 Transport of Liquid Chemical Wastes
- Section 21 Criteria for assigning carriage requirements for products subject to the IBC Code

#### **CHAPTER 7 CAR FERRIES AND ROLL-ON/ROLL-OFF SHIPS**

- Section 1 General
- Section 2 Longitudinal Strength
- Section 3 Deck Structure
- Section 4 Electrical Equipment of Automobile Carriers

#### **CHAPTER 8 OFFSHORE SUPPLY SHIPS**

- Section 1 General
- Section 2 Longitudinal Strength
- Section 3 Shell Plating
- Section 4 Deck Plating
- Section 5 Framing
- Section 6 Superstructures and Deckhouses
- Section 7 Watertight Bulkhead Doors
- Section 8 Engine Exhaust Outlets

#### **CHAPTER 9 TUGS**

- Section 1 General
- Section 2 Longitudinal Strength
- Section 3 Single Bottoms
- Section 4 Panting and Strengthening of Bottom Forward
- Section 5 Machinery Casings
- Section 6 Towing Arrangements
- Section 7 Fenders
- Section 8 Towing Winch Emergency Release Systems

#### **CHAPTER 10 DOUBLE HULL TANKER**

- Section 1 General
- Section 2 Bulkhead Plating
- Section 3 Longitudinals and Stiffeners
- Section 4 Girders
- Section 5 Structural Details
- Section 6 Special Requirements for Corrosion
- Section 7 Special Requirements for Forward Wing Tanks
- Section 8 Special Requirements for Tankers with Mid-deck
- Section 9 Special Requirements for Hatchways and Permanent Gangway
- Section 10 Welding

### **PART 8 FIRE PROTECTION AND FIRE EXTINCTION**

#### **CHAPTER 1 GENERAL**

- Section 1 General

**CHAPTER 2 PROBABILITY OF IGNITION**

- Section 1 Arrangements for Oil Fuel, Lubrication Oil and Other Flammable Oils
- Section 2 Arrangements for Gaseous Fuel for Domestic Purpose
- Section 3 Miscellaneous Items of Ignition Sources And Ignitability
- Section 4 Cargo Areas of Tankers

**CHAPTER 3 FIRE GROWTH POTENTIAL**

- Section 1 Control of Air Supply And Flammable Liquid to The Spaces
- Section 2 Fire Protection Materials

**CHAPTER 4 SMOKE GENERATION POTENTIAL AND TOXICITY**

- Section 1 Paints, Varnishes And Other Finishes
- Section 2 Primary Deck Coverings

**CHAPTER 5 DETECTION AND ALARM**

- Section 1 General
- Section 2 Protection of Machinery Spaces
- Section 3 Protection of Accommodation And Service Spaces And Control Stations
- Section 4 Protection of Cargo Spaces in Passenger Ships
- Section 5 Manually Operated Call Points
- Section 6 Fire Patrols in Passenger Ships
- Section 7 Fire Alarm Signalling Systems in Passenger Ships
- Section 8 Protection of cabin balconies on passenger ships

**CHAPTER 6 CONTROL OF SMOKE SPEED**

- Section 1 Protection of Control Stations Outside Machinery Space
- Section 2 Release of Smoke from Machinery Spaces
- Section 3 Draft Stops
- Section 4 Smoke Extraction Systems in Atriums of Passenger Ships

**CHAPTER 7 CONTAINMENT OF FIRE**

- Section 1 Thermal And Structural Boundaries
- Section 2 Penetration in Fire-resisting Divisions And Prevention of Heat Transmission
- Section 3 Protection of Openings in Fire-resisting Divisions
- Section 4 Protection of Openings In Machinery Space Boundaries
- Section 5 Protection of Cargo Space Boundaries
- Section 6 Ventilation Systems

**CHAPTER 8 FIRE FIGHTING**

- Section 1 Water Supply System
- Section 2 Portable Fire Extinguishers
- Section 3 Fixed Fire-extinguishing Systems
- Section 4 Fire Extinguishing Arrangements In Machinery Spaces
- Section 5 Fire-extinguishing Arrangements In Control Stations, Accommodation And Service Spaces
- Section 6 Fire-extinguishing Arrangements In Cargo Spaces
- Section 7 Cargo Tank Protection
- Section 8 Protection of Cargo Pump Room
- Section 9 Fire-fighter's Outfit

**CHAPTER 9 STRUCTURAL INTEGRITY**

- Section 1 Material
- Section 2 Structure of aluminium alloy
- Section 3 Machinery Spaces of Category A
- Section 4 Materials of Overboard Fittings
- Section 5 Protection of Cargo Tank Structure Against Pressure Or Vacuum In Tankers

**CHAPTER 10 ESCAPE**

- Section 1 Notification of crew and passengers
- Section 2 Means of escape

**CHAPTER 11 HELICOPTER FACILITIES**

- Section 1 Application
- Section 2 Structure
- Section 3 Means of Escape
- Section 4 Fire-fighting Appliances
- Section 5 Drainage Facilities
- Section 6 Helicopter Refueling And Hanger Facilities
- Section 7 Operations Manual And Fire-fighting Service

**CHAPTER 12 CARRIAGE OF DANGEROUS GOODS**

- Section 1 General Requirements
- Section 2 Special Requirements

**CHAPTER 13 PROTECTION OF VEHICLE, SPECIAL CATEGORY AND RO-RO SPACES**

- Section 1 General Requirements
- Section 2 Precaution against ignition of flammable vapours in closed vehicle spaces closed ro-ro spaces and special category spaces
- Section 3 Detection and alarm
- Section 4 Structure protection
- Section 5 Fire-extinction
- Section 6 Requirements for vehicle carriers carrying motor vehicles with compressed hydrogen or natural gas in their tanks for their own propulsion as cargo

**CHAPTER 14 SAFETY RETURN TO PORT SYSTEM ON PASSENGER SHIPS**

- Section 1 General

**PART 9 ADDITIONAL INSTALLATIONS**

**CHAPTER 1 CARGO REFRIGERATING INSTALLATIONS**

- Section 1 General
- Section 2 Surveys
- Section 3 Refrigerating Machinery
- Section 4 Special Requirements for Refrigerating Machinery Using Ammonia as Refrigerant
- Section 5 Refrigerated Chambers
- Section 6 Tests
- Section 7 Loading Port Surveys

**CHAPTER 2 CARGO HANDLING APPLIANCES**

- Section 1 General
- Section 2 Surveys
- Section 3 Derrick Systems
- Section 4 Cranes
- Section 5 Cargo Fittings
- Section 6 Loose Gear
- Section 7 Machinery, Electrical Installations and Control Engineering Systems
- Section 8 Cargo Lifts and Cargo Ramps
- Section 9 Certification, Marking and Documentation

**CHAPTER 3 AUTOMATIC AND REMOTE CONTROL SYSTEMS**

- Section 1 General
- Section 2 Surveys of Automatic and Remote Control Systems

- Section 3 Centralized Monitoring and Control Systems for Main Propulsion and Essential Auxiliary Machinery
- Section 4 Operating Systems for Periodically Unattended Machinery Spaces
- Section 5 Specific Automatic Equipment

**CHAPTER 4 DYNAMIC POSITIONING SYSTEMS(DP SYSTEMS)**

- Section 1 General
- Section 2 Requirements of Dynamic Positioning Systems
- Section 3 Testing and Inspection

**CHAPTER 5 NAVIGATION BRIDGE SYSTEMS**

- Section 1 General
- Section 2 Surveys of Navigation Bridge Systems
- Section 3 Bridge Layouts and Bridge Working Environments
- Section 4 Navigational Equipment
- Section 5 Accident Prevention Systems
- Section 6 Bridge Work Assist Systems

**CHAPTER 6 HULL MONITORING SYSTEMS**

- Section 1 General
- Section 2 System Requirements
- Section 3 Approval for Plans and Documents, Installation and Installation Survey
- Section 4 Periodical Survey

**CHAPTER 7 DIVING SYSTEMS**

- Section 1 General
- Section 2 Classification Survey
- Section 3 Inspection and Testing
- Section 4 Design and Construction
- Section 5 PVHO
- Section 6 Deck Decompression Chambers and divers transfer system
- Section 7 Life Support System
- Section 8 Electrical, Control and Communication Systems
- Section 9 Fire Protection, Extinction and Detection
- Section 10 Launch and Recovery System
- Section 11 Hyperbaric Rescue Unit

**CHAPTER 8 HIGH VOLTAGE SHORE CONNECTION SYSTEMS**

- Section 1 General
- Section 2 Requirements of High Voltage Shore Connection (HVSC) systems
- Section 3 Testing and Inspection

**CHAPTER 9 CARGO VAPOUR EMISSION CONTROL SYSTEMS**

- Section 1 General
- Section 2 Requirements for VEC1 Notation
- Section 3 Requirements for VEC2 Notation
- Section 4 Requirements for VECL Notation
- Section 5 Surveys

**CHAPTER 10 BALLAST WATER MANAGEMENT**

- Section 1 General
- Section 2 Ballast Water Exchange Systems
- Section 3 Ballast Water Management Systems
- Section 4 Installation of BWMS on-board ships

**PART 10 HULL STRUCTURE AND EQUIPMENT OF SMALL STEEL SHIPS**

**CHAPTER 1 GENERAL**

- Section 1 Definitions
- Section 2 General
- Section 3 Materials, Welding and Construction

**CHAPTER 2 STEMS AND STERN FRAMES**

- Section 1 Stems
- Section 2 Stern Frames

**CHAPTER 3 LONGITUDINAL STRENGTH**

- Section 1 General
- Section 2 Bending Strength
- Section 3 Buckling Strength

**CHAPTER 4 PLATE KEELS AND SHELL PLATINGS**

- Section 1 General
- Section 2 Plate Keels
- Section 3 Shell Plating for Midship Part of Ship
- Section 4 Shell Plating for End Parts
- Section 5 Side Plating in way of Superstructure
- Section 6 Local Compensation of Shell Plating

**CHAPTER 5 DECKS**

- Section 1 General
- Section 2 Effective Sectional Area of Strength Deck
- Section 3 Deck Plating

**CHAPTER 6 SINGLE BOTTOMS**

- Section 1 General
- Section 2 Centre Keelsons
- Section 3 Side Keelsons
- Section 4 Floor Plates
- Section 5 Longitudinals
- Section 6 Strengthened Bottom Forward

**CHAPTER 7 DOUBLE BOTTOMS**

- Section 1 General
- Section 2 Centre Girders
- Section 3 Side Girders
- Section 4 Solid Floors
- Section 5 Bottom Longitudinals
- Section 6 Inner Bottom Plating and Margin Plates
- Section 7 Hold Frame Brackets
- Section 8 Open Floors
- Section 9 Construction of Strengthened Bottom Forward

**CHAPTER 8 FRAMES**

- Section 1 General
- Section 2 Frame Spacing
- Section 3 Transverse Hold Frames
- Section 4 Side Longitudinals
- Section 5 Tween Deck Frames
- Section 6 Frames in Both Peaks

**CHAPTER 9 CANTILEVER BEAM CONSTRUCTION**

- Section 1 Cantilever Beams

- Section 2 Web Frames
- Section 3 Connection of Cantilever Beams to Web Frames

**CHAPTER 10 BEAMS**

- Section 1 General
- Section 2 Deck Load
- Section 3 Longitudinal Beams
- Section 4 Transverse Beams
- Section 5 Beams on Bulkhead Recesses and Others
- Section 6 Beams on the Top of Deep Tanks
- Section 7 Deck Beams Supporting Specially Heavy Loads
- Section 8 Beams on Deck Carrying Unusual Cargoes

**CHAPTER 11 DECK GIRDERS**

- Section 1 General
- Section 2 Longitudinal Deck Girders
- Section 3 Transverse Deck Girders
- Section 4 Deck Girders in Tanks
- Section 5 Hatch Side Girders
- Section 6 Hatch End Girders

**CHAPTER 12 PILLARS**

- Section 1 General
- Section 2 Scantling of Pillars

**CHAPTER 13 ARRANGEMENTS TO RESIST PANTING**

- Section 1 General
- Section 2 Arrangements to resist Panting Forward the Collision Bulkhead
- Section 3 Arrangements to resist Panting Aft Peak Bulkhead

**CHAPTER 14 WATERTIGHT BULKHEADS**

- Section 1 Arrangement
- Section 2 Construction
- Section 3 Watertight Doors

**CHAPTER 15 DEEP TANKS**

- Section 1 General
- Section 2 Bulkheads of Deep Tanks
- Section 3 Fittings of Deep Tanks
- Section 4 Welding of Corrugated bulkheads

**CHAPTER 16 SUPERSTRUCTURES AND DECKHOUSES**

- Section 1 General
- Section 2 Construction
- Section 3 Access Openings in Superstructure End Bulkheads

**CHAPTER 17 MACHINERY SPACES AND ENGINE CASINGS**

- Section 1 General
- Section 2 Main Engine Foundations
- Section 3 Construction of Boiler Rooms
- Section 4 Thrust Blocks and Foundations
- Section 5 Machinery Space Openings

**CHAPTER 18 TUNNELS AND TUNNEL RECESSES**

- Section 1 General



**CHAPTER 19 HATCHWAYS AND OTHER DECK OPENINGS**

- Section 1 General
- Section 2 Hatchways
- Section 3 Hatch Openings closed by Portable Covers and secured Weathertight by Tarpaulins and Battening Devices
- Section 4 Hatchways Closed by Weathertight Covers Fitted with Gaskets and Clamping Devices
- Section 5 Hatchway Covers for Sand Carrier and Dredger
- Section 6 Companion ways and Other Deck Openings

**CHAPTER 20 BOW DOORS, SIDE AND STERN DOORS**

- Section 1 Bow Doors and Inner Doors
- Section 2 Side and Stern Door

**CHAPTER 21 BULWARKS FREEING PORTS, SIDE SCUTTLES, VENTILATORS AND PERMANENT GANGWAYS**

- Section 1 Bulwarks
- Section 2 Freeing Ports
- Section 3 Side Scuttles
- Section 4 Ventilators
- Section 5 Permanent Gangways

**CHAPTER 22 EQUIPMENT NUMBER AND EQUIPMENT**

- Section 1 General
- Section 2 Equipment Number
- Section 3 Shipboard Fittings and Supporting Hull Structures associated with Towing and Mooring

**CHAPTER 23 OIL TANKERS**

- Section 1 General
- Section 2 Hatchways, Gangways and Freeing Arrangements
- Section 3 Longitudinal Frames and Beams in Cargo Oil Spaces
- Section 4 Girders and Transverses in Cargo Oil Spaces
- Section 5 Trunks
- Section 6 Bulkheads in Cargo Oil Space

**CHAPTER 24 DOUBLE HULL TANKERS**

- Section 1 General
- Section 2 Bulkhead Plating
- Section 3 Frames, Stiffeners and Longitudinal Beams
- Section 4 Structural Members in Double Bottoms
- Section 5 Structural Members in Double Side Hull
- Section 6 Girders and Transverses in Cargo Oil Tanks and Deep Tanks
- Section 7 Strengthened Bottom Forward
- Section 8 Structural Details
- Section 9 Special Requirements for Corrosion
- Section 10 Special Requirements for Hatchways and Permanent Gangways

**PART 11 COMMON STRUCTURAL RULES FOR BULK CARRIERS**

**CHAPTER 1 GENERAL PRINCIPLES**

- Section 1 Application
- Section 2 Verification of Compliance
- Section 3 Functional Requirements
- Section 4 Symbols and Definitions

**CHAPTER 2 GENERAL ARRANGEMENT DESIGN**

- Section 1 Subdivision Arrangement

- Section 2 Compartment Arrangement
- Section 3 Access Arrangement

**CHAPTER 3 STRUCTURAL DESIGN PRINCIPLES**

- Section 1 Material
- Section 2 Net Scantling Approach
- Section 3 Corrosion Additions
- Section 4 Limit States
- Section 5 Corrosion Protection
- Section 6 Structural Arrangement Principles

**CHAPTER 4 DESIGN LOADS**

- Section 1 General
- Section 2 Ship Motions and Accelerations
- Section 3 Hull Girder Loads
- Section 4 Load Cases
- Section 5 External Pressures
- Section 6 Internal Pressures and Forces
- Section 7 Loading Conditions
- Section 8 Loading Manual & Loading Instrument

**<Appendix>**

- Appendix 1 Hold Mass Curves
- Appendix 2 Standard Loading Conditions for Direct Strength Analysis
- Appendix 3 Standard Loading Condition for Fatigue Assessment

**CHAPTER 5 HULL GIRDER STRENGTH**

- Section 1 Yielding Check
- Section 2 Ultimate Strength Check

**<Appendix>**

- Appendix 1 Hull Girder Ultimate Strength

**CHAPTER 6 HULL SCANTLINGS**

- Section 1 Plating
- Section 2 Ordinary Stiffeners
- Section 3 Buckling & Ultimate Strength of Ordinary Stiffeners and Stiffened Panels
- Section 4 Primary Supporting Members

**<Appendix>**

- Appendix 1 Buckling & Ultimate Strength

**CHAPTER 7 DIRECT STRENGTH ANALYSIS**

- Section 1 Direct Strength Assessment of the Primary Supporting Members
- Section 2 Global Strength FE Analysis of Cargo Hold Structures
- Section 3 Detail Stress Assessment
- Section 4 Hot Spot Stress Analysis for Fatigue Strength Assessment

**<Appendix>**

- Appendix 1 Longitudinal Extent of the Finite Element Models
- Appendix 2 Displacement Based Buckling Assessment in Finite Element Analysis

**CHAPTER 8 FATIGUE CHECK OF STRUCTURAL DETAILS**

- Section 1 General Consideration
- Section 2 Fatigue Strength Assessment
- Section 3 Stress Assessment of Primary Members
- Section 4 Stress Assessment of Stiffeners

Section 5 Stress Assessment of Hatch Corners

**<Appendix>**

Appendix 1 Cross Sectional Properties for Torsion

**CHAPTER 9 OTHER STRUCTURES**

- Section 1 Fore Part
- Section 2 Aft Part
- Section 3 Machinery Space
- Section 4 Superstructures and Deckhouses
- Section 5 Hatch Covers
- Section 6 Arrangement of Hull and Superstructure Openings

**CHAPTER 10 HULL OUTFITTING**

- Section 1 Rudder and Maneuvering Arrangement
- Section 2 Bulwarks and Guard Rails
- Section 3 Equipment

**CHAPTER 11 CONSTRUCTION AND TESTING**

- Section 1 Construction
- Section 2 Welding
- Section 3 Testing of Compartments

**CHAPTER 12 ADDITIONAL CLASS NOTATIONS**

- Section 1 GRAB Additional Class Notation

**CHAPTER 13 SHIPS IN OPERATION, RENEWAL CRITERIA**

- Section 1 Maintenance of Class
- Section 2 Thickness Measurements and Acceptance Criteria

**PART 12 COMMON STRUCTURAL RULES FOR DOUBLE HULL OIL TANKERS**

**CHAPTER 1 INTRODUCTION**

- Section 1 Introduction to Common Structural Rules for Oil Tankers

**CHAPTER 2 RULE PRINCIPLES**

- Section 1 Introduction
- Section 2 General Assumptions
- Section 3 Design Basis
- Section 4 Design Principles
- Section 5 Application of Principles

**CHAPTER 3 RULE APPLICATION**

- Section 1 Notations
- Section 2 Documentation, Plans and Data Requirements
- Section 3 Scope of Approval
- Section 4 Equivalence Procedure
- Section 5 Calculation and Evaluation of Scantling Requirements

**CHAPTER 4 BASIC INFORMATION**

- Section 1 Definitions
- Section 2 Structural Idealisation
- Section 3 Structure Design Details

**CHAPTER 5 STRUCTURAL ARRANGEMENT**

- Section 1 General

- Section 2 Watertight Subdivision
- Section 3 Double Hull Arrangement
- Section 4 Separation of Spaces
- Section 5 Access Arrangements

**CHAPTER 6 MATERIALS AND WELDING**

- Section 1 Steel Grades
- Section 2 Corrosion Protection Including Coatings
- Section 3 Corrosion Additions
- Section 4 Fabrication
- Section 5 Weld Design and Dimensions

**CHAPTER 7 LOADS**

- Section 1 Introduction
- Section 2 Static Load Components
- Section 3 Dynamic Load Components
- Section 4 Sloshing and Impact Loads
- Section 5 Accidental Loads
- Section 6 Combination of Loads

**CHAPTER 8 SCANTLING REQUIREMENTS**

- Section 1 Longitudinal Strength
- Section 2 Cargo Tank Region
- Section 3 Forward of the Forward Cargo Tank
- Section 4 Machinery Space
- Section 5 Aft End
- Section 6 Evaluation of Structure for Sloshing and Impact Loads
- Section 7 Application of Scantling Requirements to Other Structure

**CHAPTER 9 DESIGN VERIFICATION**

- Section 1 Hull Girder Ultimate Strength
- Section 2 Strength Assessment (FEM)
- Section 3 Fatigue Strength

**CHAPTER 10 BUCKLING AND ULTIMATE STRENGTH**

- Section 1 General
- Section 2 Stiffness and Proportions
- Section 3 Prescriptive Buckling Requirements
- Section 4 Advanced Buckling Analyses

**CHAPTER 11 GENERAL REQUIREMENTS**

- Section 1 Hull Openings and Closing Arrangements
- Section 2 Crew Protection
- Section 3 Support Structure and Structural Appendages
- Section 4 Equipment
- Section 5 Testing Procedures

**CHAPTER 12 SHIP IN OPERATION RENEWAL CRITERIA**

- Section 1 Allowable Thickness Diminution for Hull Structure

**⟨APPENDIX⟩**

**APPENDIX A HULL GIRDER ULTIMATE STRENGTH**

- Section 1 General
- Section 2 Calculation of Hull Girder Ultimate Capacity
- Section 3 Alternative Methods

**APPENDIX B STRUCTURAL STRENGTH ASSESSMENT**

- Section 1 General
- Section 2 Cargo Tank Structural Strength Analysis
- Section 3 Local Fine Mesh Structural Strength Analysis
- Section 4 Evaluation of Hot Spot Stress for Fatigue Analysis

**APPENDIX C FATIGUE STRENGTH ASSESSMENT**

- Section 1 Nominal Stress Approach
- Section 2 Hot Spot Stress (FE Based) Approach

**APPENDIX D BUCKLING STRENGTH ASSESSMENT**

- Section 1 Advanced Buckling Analysis
- Section 2 Advanced Buckling Analysis Method
- Section 3 Application and Structural Modelling Principles
- Section 4 Assessment Criteria
- Section 5 Strength Assessment (FEM) - Buckling Procedure
- Section 6 Ultimate Hull Girder Strength Assessments

**PART 13 COMMON STRUCTURAL RULES FOR BULK CARRIERS AND OIL TANKERS**

**SUB-PART 1 GENERAL HULL REQUIREMENTS**

**CHAPTER 1 RULE GENERAL PRINCIPLES**

- Section 1 Application
- Section 2 Rule Principles
- Section 3 Verification of Compliance
- Section 4 Symbols and Definitions
- Section 5 Loading Manual and Loading Instruments

**CHAPTER 2 GENERAL ARRANGEMENT DESIGN**

- Section 1 General
- Section 2 Subdivision Arrangement
- Section 3 Compartment Arrangement
- Section 4 Access Arrangement

**CHAPTER 3 STRUCTURAL DESIGN PRINCIPLES**

- Section 1 Materials
- Section 2 Net Scantling Approach
- Section 3 Corrosion Additions
- Section 4 Corrosion Protection
- Section 5 Limit States
- Section 6 Structural Detail Principles
- Section 7 Structural Idealisation

**CHAPTER 4 LOADS**

- Section 1 Introduction
- Section 2 Dynamic Load Cases
- Section 3 Ship Motions and Accelerations
- Section 4 Hull Girder Loads
- Section 5 External Loads
- Section 6 Internal Loads
- Section 7 Design Load Scenarios
- Section 8 Loading Conditions

<Appendix>

Appendix 1 Hold Mass Curves

**CHAPTER 5 HULL GIRDER STRENGTH**

Section 1 Hull Girder Strength  
Section 2 Hull Girder Yielding Strength  
Section 3 Hull Girder Ultimate Strength

**<Appendix>**

Appendix 1 Direct Calculation of Shear Flow  
Appendix 2 Hull Girder Ultimate Capacity

**CHAPTER 6 HULL LOCAL SCANTLING**

Section 1 General  
Section 2 Load Application  
Section 3 Minimum Thicknesses  
Section 4 Plating  
Section 5 Stiffeners  
Section 6 Primary Supporting Members and Pillars

**CHAPTER 7 DIRECT STRENGTH ANALYSIS**

Section 1 Strength Assessment  
Section 2 Cargo Hold Structural Strength Analysis  
Section 3 Local Structural Strength Analysis

**CHAPTER 8 BUCKLING**

Section 1 General  
Section 2 Slenderness Requirements  
Section 3 Prescriptive Buckling Requirements  
Section 4 Buckling Requirements for Direct Strength Analysis  
Section 5 Buckling Capacity

**<Appendix>**

Appendix 1 Stress Based Reference Stresses

**CHAPTER 9 FATIGUE**

Section 1 General Considerations  
Section 2 Structural Details to be Assessed  
Section 3 Fatigue Evaluation  
Section 4 Simplified Stress Analysis  
Section 5 Finite Element Stress Analysis  
Section 6 Detail Design Standard

**CHAPTER 10 OTHER STRUCTURES**

Section 1 Fore Part  
Section 2 Machinery Space  
Section 3 Aft Part  
Section 4 Tanks Subject to Sloshing

**CHAPTER 11 SUPERSTRUCTURE, DECKHOUSES AND HULL OUTFITTING**

Section 1 Superstructures, Deckhouses and Companionways  
Section 2 Bulwark and Guard Rails  
Section 3 Equipment  
Section 4 Supporting Structure for Deck Equipment and Fittings  
Section 5 Small Hatchways

**CHAPTER 12 CONSTRUCTION**

- Section 1 Construction and Fabrication
- Section 2 Fabrication by Welding
- Section 3 Design of Weld Joints

#### **CHAPTER 13 SHIP IN OPERATION – RENEWAL CRITERIA**

- Section 1 Principles and Survey Requirements
- Section 2 Acceptance Criteria

#### **SUB-PART 2 SHIP TYPES**

##### **CHAPTER 1 BULK CARRIERS**

- Section 1 General Arrangement Design
- Section 2 Structural Design Principles
- Section 3 Hull Local Scantlings
- Section 4 Hull Local Scantlings for Bulk Carriers  $L < 150$  m
- Section 5 Cargo Hatch Covers
- Section 6 Additional Class Notation Grab

##### **CHAPTER 2 OIL TANKERS**

- Section 1 General Arrangement Design
- Section 2 Structural Design Principles
- Section 3 Hull Local Scantling
- Section 4 Hull Outfitting

### **PART 14 STRUCTURAL RULES FOR CONTAINER SHIPS**

#### **CHAPTER 1 General Principles**

- Section 1 Application
- Section 2 Rule Principles
- Section 3 Verification of Compliance
- Section 4 Symbols and Definitions
- Section 5 Loading Manual and Loading Instrument

#### **CHAPTER 2 General Arrangement**

- Section 1 Application
- Section 2 Subdivision Arrangement
- Section 3 Compartment Arrangement
- Section 4 Access Arrangement

#### **CHAPTER 3 Structural Design Principles**

- Section 1 Materials
- Section 2 Net Scantling Approach
- Section 3 Corrosion Additions
- Section 4 Corrosion Protection
- Section 5 Limit States
- Section 6 Structural Detail Principles
- Section 7 Structural Idealisation

#### **CHAPTER 4 Loads**

- Section 1 Introduction
- Section 2 Dynamic Load Cases
- Section 3 Ship Motions and Accelerations
- Section 4 Hull Girder Loads
- Section 5 External Loads
- Section 6 Internal Loads
- Section 7 Design Load Scenarios

Section 8 Loading Conditions

**CHAPTER 5 Hull Girder Strength**

Section 1 Hull Girder Yielding Strength

Section 2 Hull Girder Ultimate Strength

**〈Appendix〉**

Appendix 1 Direct Calculation of Shear Flow

Appendix 2 Hull Girder Ultimate Capacity

Appendix 3 Definition of Hull Girder Torsional Properties

**CHAPTER 6 Hull Local Scantling**

Section 1 General

Section 2 Load Application

Section 3 Minimum Thicknesses

Section 4 Plating

Section 5 Stiffeners

Section 6 Primary Supporting Members and Pillars

**CHAPTER 7 Direct Strength Analysis**

Section 1 Strength Assessment

Section 2 Cargo Hold Structural Strength Analysis

Section 3 Local Structural Strength Analysis

**CHAPTER 8 Buckling**

Section 1 General

Section 2 Prescriptive Buckling Requirements

Section 3 Buckling Requirements for Direct Strength Analysis

Section 4 Buckling Capacity

Section 5 Stress Based Reference Stress

**CHAPTER 9 Fatigue**

Section 1 General Considerations

Section 2 Structural Details to be Assessed

Section 3 Fatigue Evaluation

Section 4 Simplified Stress Analysis

Section 5 Finite Element Stress Analysis

Section 6 Detail Design Standard

**CHAPTER 10 Other Structures**

Section 1 Fore Part

Section 2 Machinery Space

Section 3 Aft Part

Section 4 Tanks Subject to Sloshing

**CHAPTER 11 Superstructure, Deckhouses and Hull Outfitting**

Section 1 Superstructures, Deckhouses and Companionways

Section 2 Bulwark and Guard Rails

Section 3 Equipment

Section 4 Supporting Structure for Deck Equipment and Fittings

Section 5 Hatchways

**CHAPTER 12 Construction**

Section 1 Construction and Fabrication

Section 2 Fabrication by Welding

Section 3 Design of Weld Joints

Section 4 Use of Extremely Thick Steel



**CHAPTER 13 Ship in Operation – Renewal Criteria**

- Section 1 Principles and Survey Requirements
- Section 2 Acceptance Criteria

**CHAPTER 14 Lashing Equipment**

- Section 1 Lashing Equipment

**PART 15 STRUCTURAL RULES FOR MEMBRANE TYPE LIQUEFIED NATURAL GAS CARRIERS**

**CHAPTER 1 RULE GENERAL PRINCIPLES**

- Section 1 Application
- Section 2 Rule Principles
- Section 3 Verification of Compliance
- Section 4 Symbols and Definitions
- Section 5 Loading Manual and Loading Instruments

**CHAPTER 2 GENERAL ARRANGEMENT DESIGN**

- Section 1 General
- Section 2 Subdivision Arrangement
- Section 3 Compartment Arrangement
- Section 4 Access Arrangement

**CHAPTER 3 STRUCTURAL DESIGN PRINCIPLES**

- Section 1 Materials
- Section 2 Net Scantling Approach
- Section 3 Corrosion Additions
- Section 4 Corrosion Protection
- Section 5 Limit States
- Section 6 Structural Detail Principles
- Section 7 Structural Idealisation

**CHAPTER 4 LOADS**

- Section 1 Introduction
- Section 2 Dynamic Load Cases
- Section 3 Ship Motions and Accelerations
- Section 4 Hull Girder Loads
- Section 5 External Loads
- Section 6 Internal Loads
- Section 7 Design Load Scenarios

**CHAPTER 5 HULL GIRDER STRENGTH**

- Section 1 Hull Girder Yielding Strength

**<Appendix>**

- Appendix 1 Direct Calculation of Shear Flow

**CHAPTER 6 HULL LOCAL SCANTLING**

- Section 1 General
- Section 2 Load Application
- Section 3 Minimum Thicknesses
- Section 4 Plating
- Section 5 Stiffeners
- Section 6 Primary Supporting Members and Pillars

**CHAPTER 7 DIRECT STRENGTH ANALYSIS**

- Section 1 Strength Assessment
- Section 2 Cargo Hold Structural Strength Analysis
- Section 3 Local Structural Strength Analysis

**CHAPTER 8 BUCKLING**

- Section 1 General
- Section 2 Slenderness Requirements
- Section 3 Prescriptive Buckling Requirements
- Section 4 Buckling Requirements for Direct Strength Analysis
- Section 5 Buckling Capacity

**〈Appendix〉**

- Appendix 1 Stress Based Reference Stresses

**CHAPTER 9 FATIGUE**

- Section 1 General Considerations
- Section 2 Structural Details to be Assessed
- Section 3 Fatigue Evaluation
- Section 4 Simplified Stress Analysis
- Section 5 Finite Element Stress Analysis
- Section 6 Detail Design Standard

**CHAPTER 10 OTHER STRUCTURES**

- Section 1 Fore Part
- Section 2 Machinery Space
- Section 3 Aft Part

**CHAPTER 11 SUPERSTRUCTURE, DECKHOUSES AND HULL OUTFITTING**

- Section 1 Superstructures, Deckhouses and Companionways
- Section 2 Bulwark and Guard Rails
- Section 3 Equipment
- Section 4 Supporting Structure for Deck Equipment and Fittings

**CHAPTER 12 CONSTRUCTION**

- Section 1 Construction and Fabrication
- Section 2 Fabrication by Welding
- Section 3 Design of Weld Joints

**CHAPTER 13 SHIP IN OPERATION – RENEWAL CRITERIA**

- Section 1 Principles and Survey Requirements
- Section 2 Acceptance Criteria

## 3.2 Contents of Guidance Relating to the Rules for the Classification of Steel Ships

### PART 1 CLASSIFICATION AND SURVEYS

#### CHAPTER 1 CLASSIFICATION

- Section 1 General
- Section 2 Character of Classification
- Section 3 Classification Survey during Construction
- Section 4 Classification Survey after Construction
- Section 8 Competence, Duties of Surveyors and Responsibility and Scope of Classification
- Section 13 Classification of Other Installations or Equipment

#### CHAPTER 2 PERIODICAL AND OTHER SURVEYS

- Section 1 General
- Section 2 Annual Survey
- Section 3 Intermediate Survey
- Section 4 Special Survey(Hull, Equipment and Fire-extinguishing Appliances)
- Section 5-1 Special Survey(Machinery, Electrical Installations and Additional Installations)
- Section 5-2 Special Survey(Additional Requirements to Ships Types)
- Section 6 Docking Survey
- Section 7 Surveys of Propeller Shaft and Stern Tube Shaft, Etc.
- Section 8 Boiler Survey
- Section 9 Continuous Survey of Machinery
- Section 10 Occasional Survey
- Section 12 Alteration Survey
- Section 13 Survey of Ships Carrying Dangerous Goods and Other Special Cargoes
- Section 15 Hull Surveys for General Dry Cargo Ships
- Section 16 Hull Surveys for Liquefied Gas Carriers
- Section 17 Survey Requirements for Shell and Inner Doors, Etc. of RoRo Ships
- Section 19 Special Requirements for Ships Subject to Korean Ship Safety Act or Fishing Vessels Act

#### CHAPTER 3 HULL SURVEYS OF SHIPS SUBJECT TO THE ENHANCED SURVEY PROGRAMME

- Section 1 General
- Section 2 Bulk Carriers
- Section 3 Oil Tankers
- Section 4 Chemical Tankers
- Section 5 Double Hull Oil Tankers
- Section 6 Double Skin Bulk Carriers

#### 〈ANNEX〉

- Annex 1-1 Character of Classification
- Annex 1-2 Void
- Annex 1-3 Example of the Survey Programme and the Survey Planning Questionnaire
- Annex 1-4 Owners Inspection Report
- Annex 1-5 Thickness Measurement Method for Hull Structural Members
- Annex 1-6 Areas of Close-up Survey, etc.
- Annex 1-7 Continuous Machinery Survey Procedure(CMS)
- Annex 1-8 Planned Maintenance System Procedure(PMS)
- Annex 1-9 Guidance for Survey of Waterjet Propulsion Systems and Azimuth or Rotatable Thruster
- Annex 1-10 Loading Instrument on Stability
- Annex 1-11 Void
- Annex 1-12 Hull Survey for Classification Survey during Construction
- Annex 1-13 Owner's Hull Inspection and Maintenance Program
- Annex 1-14 Examples of Typical Bow, Inner, Side Shell and Stern Doors
- Annex 1-15 Void
- Annex 1-16 Procedures for Testing Tanks and Tight Boundaries

Annex 1-17 Laid-up and recommissioning of ships

Annex 1-18 In case of promptly and thoroughly repaired, Areas to be considered

## **PART 2 MATERIALS AND WELDING**

### **CHAPTER 1 MATERIALS**

- Section 1 General
- Section 2 Test Specimens and Testing Procedures
- Section 3 Rolled Steels
- Section 4 Steel Tubes and Pipes
- Section 5 Castings
- Section 6 Steel Forgings
- Section 7 Copper and Copper Alloys
- Section 8 Aluminium Alloys

### **CHAPTER 2 WELDING**

- Section 1 General
- Section 3 Welding Works and Inspection
- Section 4 Welding Procedure Qualification Tests(WPQT)
- Section 5 Welders and Welder Performance Qualification Scheme
- Section 6 Welding Consumables

### **〈ANNEX〉**

- Annex 2-1 Guidance for Seamless Forged Steel Drums
- Annex 2-2 Guidance for Non-destructive examination of Marine Steel Castings
- Annex 2-3 Guidance for Surface Inspection of Cast Steel Crankshafts
- Annex 2-4 Guidance for Repairs by welding for Cast steel Crank Throws
- Annex 2-5 Guidance for Non-destructive Examination of Hull and Machinery Steel Forgings
- Annex 2-6 Guidance for Liquid Penetrant Inspection and Repair of Defects of Copper Alloy Propeller Castings
- Annex 2-7 Guidance for Non-destructive testing of Ship Hull Steel Welds
- Annex 2-8 Reinforced plastic materials
- Annex 2-9 Offshore Mooring Chain
- Annex 2-10 Hull Structural Steels with Improved Fatigue Properties
- Annex 2-11 High Manganese Austenitic steels
- Annex 2-12 Guidance for advanced non-destructive testing of materials and welds

## **PART 3 HULL STRUCTURES**

### **CHAPTER 1 GENERAL**

- Section 1 Definitions
- Section 2 General
- Section 4 Materials
- Section 5 Welding
- Section 6 Scantlings
- Section 8 Corrosion Protection Coating

### **CHAPTER 2 STEMS AND STERN FRAMES**

- Section 1 Stems
- Section 2 Stern Frames

### **CHAPTER 3 LONGITUDINAL STRENGTH**

- Section 1 General
- Section 2 Bending Strength
- Section 3 Shear Strength

Section 4 Buckling Strength

**CHAPTER 4 PLATE KEELS AND SHELL PLATINGS**

Section 1 General  
 Section 3 Shell Plating below Strength Deck  
 Section 4 Special Requirements for Shell Plating  
 Section 6 Compensation at end of Superstructure  
 Section 7 Local Compensation of Shell Plating

**CHAPTER 5 DECKS**

Section 1 General  
 Section 2 Effective Sectional Area of Strength Deck  
 Section 3 Deck Plating

**CHAPTER 7 DOUBLE BOTTOMS**

Section 1 General  
 Section 2 Centre Girders and Side Girders  
 Section 3 Solid Floors  
 Section 4 Bottom Longitudinals  
 Section 5 Inner Bottom Plating, Margin Plates and Bottom Shell Plating  
 Section 8 Construction of Strengthened Bottom Forward

**CHAPTER 8 FRAMES**

Section 1 General  
 Section 3 Hold Frames  
 Section 5 Tween Deck Frames

**CHAPTER 9 WEB FRAMES AND SIDE STRINGERS**

Section 1 General  
 Section 4 Side Transverse  
 Section 5 Cantilever Beams

**CHAPTER 10 BEAMS**

Section 1 General  
 Section 2 Deck Load  
 Section 3 Longitudinal Beams  
 Section 4 Transverse Beams

**CHAPTER 11 DECK GIRDERS**

Section 1 General

**CHAPTER 12 PILLARS**

Section 1 General  
 Section 2 Scantling of Pillars

**CHAPTER 13 ARRANGEMENTS TO RESIST PANTING**

Section 1 General  
 Section 2 Arrangements to Resist Panting forward the Collision Bulkhead  
 Section 4 Arrangements to Resist Panting between Both Peaks

**CHAPTER 14 WATERTIGHT BULKHEAD**

Section 2 Arrangements of Watertight Bulkheads  
 Section 3 Construction of Watertight Bulkhead  
 Section 4 Watertight Door

**CHAPTER 15 DEEP TANKS**

- Section 1 General
- Section 2 Bulkheads of Deep Tank

**CHAPTER 16 SUPERSTRUCTURES**

- Section 1 General
- Section 3 Access Opening in Superstructure End Bulkheads

**CHAPTER 17 DECKHOUSES**

- Section 1 General

**CHAPTER 18 MACHINERY SPACES AND ENGINE CASING**

- Section 2 Main Engine Foundation
- Section 3 Construction of Boiler Rooms

**CHAPTER 19 TUNNELS AND TUNNEL RECESSES**

- Section 1 General

**〈ANNEX〉**

- Annex 3-1 Guidance for Survey and Composition of Loading Manuals
- Annex 3-2 Guidance for the Direct Strength Assessment
- Annex 3-3 Guidance for the Fatigue Strength Assessment of Ship Structures
- Annex 3-4 Guidance for the Hull Construction Monitoring Procedure
- Annex 3-5 Guidance for structural members for ships intended to carry out the steel coils

**PART 4 HULL EQUIPMENT**

**CHAPTER 1 RUDDERS**

- Section 1 General
- Section 4 Rudder Strength Calculation
- Section 5 Rudder Stocks
- Section 6 Rudder Plates, Rudder Frames and Rudder Main Pieces
- Section 7 Couplings between Rudder Stocks and Main Pieces
- Section 8 Pintles
- Section 9 Bearings of Rudders Stock and Pintles
- Section 10 Rudder Accessories
- Section 11 Propeller Nozzles

**CHAPTER 2 HATCHWAYS AND OTHER DECK OPENINGS**

- Section 1 General
- Section 2 Design Load
- Section 3 Hatch cover strength criteria
- Section 5 Hatch cover details – Closing Arrangement, Securing Devices and Stoppers
- Section 7 Miscellaneous Openings

**CHAPTER 3 BOW DOORS, SIDE AND STERN DOORS**

- Section 1 Bow Doors and Inner Doors
- Section 2 Side Shell Doors and Stern Doors

**CHAPTER 4 BULWARKS, FREEING PORTS, SIDE SCUTTLES, RECTANGULAR WINDOWS, SKYLIGHTS, VENTILATORS AND PERMANENT GANGWAYS**

- Section 1 Bulwarks and Guardrails
- Section 2 Freeing Ports
- Section 3 Side Scuttles, Rectangular Windows and Skylights
- Section 4 Ventilators
- Section 5 Permanent Gangways

**CHAPTER 8 EQUIPMENT NUMBER AND EQUIPMENT**

- Section 1 General
- Section 2 Equipment Number
- Section 3 Anchors
- Section 4 Chains
- Section 5 Steel Wire Ropes
- Section 7 Hatch Tarpaulins
- Section 9 Rectangular Windows

**CHAPTER 9 STRENGTH AND SECURING OF SMALL HATCHES, FITTINGS AND EQUIPMENT ON THE FORE DECK**

- Section 2 Strength and Securing of Small Hatches on the Exposed Fore Deck

**CHAPTER 10 SHIPBOARD EQUIPMENT, FITTINGS AND SUPPORTING HULL STRUCTURES ASSOCIATED WITH TOWING AND MOORING**

- Section 1 Definitions and Scope of Application
- Section 2 Towing and Mooring

**CHAPTER 11 ACCESS TO AND WITHIN SPACES IN, AND FORWARD OF, THE CARGO AREA OF OIL TANKERS AND BULK CARRIERS**

- Section 1 General
- Section 2 Technical Provisions for Means of Access for Inspections

**<ANNEX>**

- Annex 4-1 Means of Access for Ballast and Cargo Tanks of Oil Tankers
- Annex 4-2 Means of Access for Bulk Carriers
- Annex 4-3 Anchoring in Deep and Unsheltered Waters

**PART 5 MACHINERY INSTALLATIONS**

**CHAPTER 1 GENERAL**

- Section 1 General
- Section 2 Plans and Documents
- Section 3 Tests and Inspections
- Section 4 Spare Parts and Tools

**CHAPTER 2 MAIN AND AUXILIARY ENGINES**

- Section 1 General
- Section 2 Internal Combustion Engines
- Section 3 Steam Turbines

**CHAPTER 3 PROPULSION SHAFTING AND POWER TRANSMISSION SYSTEMS**

- Section 1 General
- Section 2 Shafting
- Section 3 Propellers
- Section 4 Power Transmission Systems

**CHAPTER 4 TORSIONAL VIBRATION OF SHAFTING**

- Section 2 Allowable Limit of Vibration Stresses

**CHAPTER 5 BOILERS AND PRESSURE VESSELS**

- Section 1 Boilers
- Section 2 Thermal Oil Heaters
- Section 3 Pressure Vessels
- Section 4 Welding for Boilers and Pressure Vessels

**CHAPTER 6 AUXILIARIES AND PIPING ARRANGEMENT**

- Section 1 General
- Section 2 Air Pipes, Overflow Pipes and Sounding Devices
- Section 3 Sea Inlet and Overboard Discharge
- Section 4 Bilge and Ballast System
- Section 5 Feed Water and Condensate System for Boiler
- Section 6 Steam and Exhaust Gas Piping
- Section 7 Cooling Water System
- Section 8 Lubricating Oil System
- Section 9 Fuel Oil System
- Section 10 Thermal Oil System
- Section 11 Compressed Air System
- Section 12 Refrigerating Machinery
- Section 13 Hydraulic System
- Section 14 Tests and Inspections

**CHAPTER 7 STEERING GEARS**

- Section 1 General
- Section 2 Performance and Arrangement
- Section 3 Controls
- Section 4 Materials, Constructions and Strength
- Section 5 Testing
- Section 6 Additional Requirements Concerning Tankers of 10,000 Gross Tonnage and Upwards and Other Ships of 70,000 Gross Tonnage and Upwards

**CHAPTER 8 WINDLASSES AND MOORING WINCHES**

- Section 1 General
- Section 2 Windlasses

**<ANNEX>**

- Annex 5-1 Guidance for the Water-jet Propulsion Systems and Azimuth or Rotatable Thrusters
- Annex 5-2 Guidance for Calculation of Crankshaft Stress (1)
- Annex 5-3 Guidance for Calculation of Crankshaft Stress (2)
- Annex 5-4 Strength Calculation for Gears of Power Transmission Systems
- Annex 5-5 Requirements of Equipment for Gas welding
- Annex 5-6 Plastic Pipes
- Annex 5-7 Internal Combustion Engines Supplied with Low Pressure Gas
- Annex 5-8 Guidance for the Additional Requirements on Electronically-Controlled Diesel Engines
- Annex 5-9 Flexible Pipes
- Annex 5-10 Redundant propulsion and steering system
- Annex 5-11 Documents for the approval of diesel engines
- Annex 5-12 Shaft Alignment
- Annex 5-12-1 Enhanced Shaft Alignment
- Annex 5-13 Fuel oil Treatment System

**PART 6 ELECTRICAL EQUIPMENT AND CONTROL SYSTEMS**

**CHAPTER 1 ELECTRICAL EQUIPMENT**

- Section 1 General
- Section 2 System Design
- Section 3 Rotating Machinery
- Section 4 Switchboards, Section Boards and Distribution Boards
- Section 5 Cables
- Section 6 Transformers for Power and Lighting
- Section 7 Control-gears for Motors and Magnetic Brakes



- Section 8 Fuses, Circuit-breakers and Electromagnetic Contactors
- Section 9 Explosion-protected Electrical Equipment
- Section 10 Lighting Fittings, Heating Appliances, Wiring Accessories and Miscellaneous Equipment
- Section 11 Internal Communications
- Section 12 Semi-Conductor Converters
- Section 13 Accumulator Batteries
- Section 15 High Voltage Electrical Installations
- Section 16 Electric Propulsion Unit
- Section 18 Spare Parts, Tools and Instruments

## CHAPTER 2 CONTROL SYSTEMS

- Section 1 General
- Section 2 System and Control
- Section 3 Tests

## PART 7 SHIPS OF SPECIAL SERVICE

### CHAPTER 1 OIL TANKERS

- Section 1 General
- Section 2 Hatchways, Gangways and Freeing Arrangement
- Section 3 Longitudinal Frames and Beams in Cargo Oil Spaces
- Section 4 Girders, Transverses and Cross Ties in Cargo Oil Spaces
- Section 5 Bulkheads in Cargo Oil Spaces
- Section 6 Relative Deformation of Wing Tanks
- Section 10 Piping Systems and Venting Systems for Oil Tankers
- Section 11 Electrical Equipment of Oil Tankers

### CHAPTER 2 ORE CARRIERS

- Section 1 General
- Section 3 Wing Tanks or Void Spaces
- Section 5 Relative deformation of wing tanks
- Section 7 Ore/oil carriers

### CHAPTER 3 BULK CARRIERS

- Section 1 General
- Section 3 Double Bottoms
- Section 4 Hopper Tanks
- Section 5 Topside Tanks
- Section 6 Transverse Bulkhead and Stools
- Section 7 Hold Frame
- Section 8 Decks and Shell Platings
- Section 9 Hatch Covers and Hatch Coamings of Cargo Holds
- Section 11 Evaluation of Allowable Hold Loading for Bulk Carriers Considering Hold Flooding
- Section 14 Water Level Detection & Alarm and Drainage & Pumping Systems for Bulk Carriers and Single Hold Cargo Ships
- Section 15 Supplementary Provisions for Carriage of Liquid in Holds
- Section 16 Electrical Equipment in Coal Carriers
- Section 17 Renewal Criteria for Side Shell Frames and Brackets in Single Side Skin Bulk Carriers and Single Side Skin OBO Carriers

### CHAPTER 4 CONTAINER CARRIERS

- Section 1 General
- Section 2 Longitudinal Strength
- Section 3 Double Bottom Construction
- Section 4 Double Side Construction
- Section 6 Deck Construction
- Section 9 Strength at Large Flare Location

Section 10 Freight Container Securing Arrangement

**CHAPTER 5 SHIPS CARRYING LIQUEFIED GASES IN BULK (Separate Publication)**

- Section 1 General
- Section 2 Ship Survival Capability and Location of Cargo Tanks
- Section 3 Ship Arrangements
- Section 4 Cargo Containment
- Section 5 Process Pressure Vessels and Liquid, Vapour and Pressure Piping Systems
- Section 6 Materials of Construction and Quality Control
- Section 7 Cargo Pressure/Temperature Control
- Section 8 Vent Systems for Cargo Containment
- Section 9 Cargo Containment System Atmosphere Control
- Section 10 Electrical Installations
- Section 11 Fire Protection and Fire Extinction
- Section 12 Mechanical Ventilation in the Cargo Area
- Section 13 Instrumentation and Automation Systems
- Section 15 Filling Limits for Cargo Tanks
- Section 16 Use of Cargo as Fuel
- Section 17 Special Requirements
- Section 18 Operating Requirements
- Section 19 Summary of Minimum Requirements

**CHAPTER 6 SHIPS CARRYING DANGEROUS CHEMICALS IN BULK (Separate Publication)**

- Section 1 General
- Section 2 Ship Survival Capability and Location of Cargo Tanks
- Section 3 Ship Arrangements
- Section 5 Cargo Transfer
- Section 7 Cargo Temperature Control
- Section 8 Cargo Tank Venting and Gas-freeing Arrangements
- Section 9 Environmental Control
- Section 10 Electrical Installations
- Section 11 Fire Protection and Fire Extinction
- Section 12 Mechanical Ventilation in the Cargo Area
- Section 13 Instrumentation
- Section 14 Personnel Protection
- Section 15 Special Requirements
- Section 16 Operational Requirements
- Section 17 Summary of Minimum Requirements

**⟨Annex⟩**

**Annex 7A-1 Requirements for Ships not having the International Certificate of Fitness for the Carriage of Liquefied Gases in Bulk**

**Annex 7A-2 Guidelines for the Evaluation of the Adequacy of Type C Tank Vent Systems**

**Annex 7A-3 LNG Bunkering Systems**

**Annex 7A-4 High manganese austenitic steel for cryogenic service**

**Annex 7A-5 Use of LPG Cargo as Fuel**

**Annex 7A-6 Non-Metallic Materials**

**Annex 7A-7 Standard for the Use of Limit State Methodologies in the Design of Cargo Containment Systems of Novel Configuration**

**Annex 7A-8 Guidelines for Safety Containment of Cargo Containment Facilities**

**Annex 7B-1 Table of Summary of Minimum Requirements**

**Annex 7B-2 List of Products to which the Code does not apply**

**Annex 7B-3 Index of Products Carried in Bulk**

**Annex 7B-4 Criteria for assigning carriage requirements for products subject to the IBC Code**

## **CHAPTER 7 CAR FERRIES AND ROLL-ON/ROLL-OFF SHIPS**

Section 3 Deck Structure

## **CHAPTER 10 DOUBLE HULL TANKER**

Section 1 General

Section 2 Bulkhead Plating

Section 3 Longitudinals and Stiffeners

Section 4 Girders

Section 5 Structural Details

Section 6 Special Requirements for Corrosion

Section 8 Special Requirements for Tankers with Mid-deck

Section 9 Special Requirements for Hatchways and Freeing Arrangements

Section 10 Welding

## **<ANNEX>**

Annex 7-1 Additional Requirements for Oil Tankers Using Oil as a Fuel for Boilers

Annex 7-2 Guidance for the Container Securing Arrangements

Annex 7-3 Guidance for Car Ferries

Annex 7-4 Guidance for Calculating the Maximum Allowable and Minimum Required Mass of Cargo and Double Bottom Contents with Bulk Carriers

Annex 7-5 Additional Requirements for Existing Bulk Carriers

Annex 7-6 Water Level Detection & Alarm and Drainage & Pumping Arrangements for Bulk Carriers and Single Hold Cargo Ships

Annex 7-7 Unified Interpretation of Convention

Annex 7-8 Instruction for Use of Extremely Thick Steel Plates in Container Ships

Annex 7-9 Guidance for the Longitudinal Strength of Container Ships

Annex 7-10 Guidance for the Direct Strength Assessment for Ore Carriers

Annex 7-11 Guidance on Providing Safe Working Conditions for Securing of Container on Deck

## **PART 8 FIRE PROTECTION AND FIRE EXTINCTION**

### **CHAPTER 1 GENERAL**

Section 1 General

### **CHAPTER 2 PROBABILITY OF IGNITION**

Section 1 Arrangements for Oil Fuel, Lubrication Oil and Other Flammable Oils

Section 2 Arrangements for Gaseous Fuel for Domestic Purpose

Section 3 Miscellaneous Items of Ignition Sources And Ignitability

Section 4 Cargo Areas of Tankers

### **CHAPTER 3 FIRE GROWTH POTENTIAL**

Section 1 Control of Air Supply And Flammable Liquid to The Spaces

Section 2 Fire Protection Materials

**CHAPTER 4 SMOKE GENERATION POTENTIAL AND TOXICITY**

- Section 1 Paints, Varnishes And Other Finishes
- Section 2 Primary Deck Coverings

**CHAPTER 5 DETECTION AND ALARM**

- Section 1 General
- Section 2 Protection of Machinery Spaces
- Section 3 Protection of Accommodation And Service Spaces And Control Stations
- Section 5 Manually Operated Call Points
- Section 8 Protection of cabin balconies on passenger ships

**CHAPTER 6 CONTROL OF SMOKE SPEED**

- Section 1 Protection of Control Stations Outside Machinery Space
- Section 3 Draft Stops

**CHAPTER 7 CONTAINMENT OF FIRE**

- Section 1 Thermal And Structural Boundaries
- Section 2 Penetration in Fire-resisting Divisions And Prevention of Heat Transmission
- Section 3 Protection of Openings in Fire-resisting Divisions
- Section 5 Protection of Cargo Space Boundaries
- Section 6 Ventilation Systems

**CHAPTER 8 FIRE FIGHTING**

- Section 1 Water Supply System
- Section 2 Portable Fire Extinguishers
- Section 3 Fixed Fire-extinguishing Systems
- Section 4 Fire Extinguishing Arrangements In Machinery Spaces
- Section 5 Fire-extinguishing Arrangements In Control Stations, Accommodation And Service Spaces
- Section 6 Fire-extinguishing Arrangements In Cargo Spaces
- Section 7 Cargo Tank Protection
- Section 8 Protection of Cargo Pump Room
- Section 9 Fire-fighter's Outfit

**CHAPTER 9 STRUCTURAL INTEGRITY**

- Section 1 Material
- Section 2 Structure of aluminium alloy
- Section 3 Machinery Spaces of Category A
- Section 4 Materials of Overboard Fittings
- Section 5 Protection of Cargo Tank Structure Against Pressure Or Vacuum In Tankers

**CHAPTER 10 ESCAPE**

- Section 2 Means of escape

**CHAPTER 11 HELICOPTER FACILITIES**

- Section 1 Application
- Section 4 Fire-fighting Appliances

**CHAPTER 12 CARRIAGE OF DANGEROUS GOODS**

- Section 1 General Requirements
- Section 2 Special Requirements

**CHAPTER 13 PROTECTION OF VEHICLE, SPECIAL CATEGORY AND RO-RO SPACES**

- Section 1 General Requirements
- Section 2 Precaution against ignition of flammable vapours in closed vehicle spaces closed ro-ro spaces and special category spaces

- Section 3 Detection and alarm
- Section 5 Fire-extinction

**<ANNEX>**

- Annex 8-1 Fire Protection Materials
- Annex 8-2 Penetrations through Divisions
- Annex 8-3 Alleviation Requirements for Ships which are not engaged in international voyage and Ships of less than 500 gross tonnage
- Annex 8-4 Alleviation Requirements for Fishing Vessels
- Annex 8-5 Inert Gas Systems
- Annex 8-6 Other Operation Requirements, etc.
- Annex 8-7 Safe Return to Port System on Passenger Ships
- Annex 8-8 Qualitative Failure Analysis for Propulsion and Steering on Passenger Ships
- Annex 8-9 Special Requirements of Fire Protection and Fire Extinction for Cargo Ships

**PART 9 ADDITIONAL INSTALLATIONS**

**CHAPTER 1 CARGO REFRIGERATING INSTALLATIONS**

- Section 1 General
- Section 2 Surveys
- Section 3 Refrigerating Machinery
- Section 4 Special Requirements for Refrigerating Machinery Using Ammonia as Refrigerant
- Annex 9-1 Spare Parts (for Reference)

**CHAPTER 2 CARGO HANDLING APPLIANCES**

- Section 1 General
- Section 2 Surveys
- Section 3 Derrick Systems
- Section 4 Cranes
- Section 5 Cargo Fittings
- Section 6 Loose Gear
- Section 7 Machinery, Electrical Installations and Control Engineering Systems
- Section 8 Cargo Lifts and Cargo Ramps
- Annex 9-2 Personnel Lifting

**CHAPTER 3 AUTOMATIC AND REMOTE CONTROL SYSTEMS**

- Section 2 Surveys of Automatic and Remote Control Systems
- Section 3 Centralized Monitoring and Control Systems for Main Propulsion and Essential Auxiliary Machinery
- Section 5 Specific Automatic Equipment

**CHAPTER 4 DYNAMIC POSITIONING SYSTEMS(DP SYSTEMS)**

- Section 2 Requirements of DP Systems

**CHAPTER 5 NAVIGATION BRIDGE SYSTEMS**

- Section 2 Surveys of Navigation Bridge Systems
- Section 5 Accident Prevention Systems
- Section 6 Bridge Work Assist Systems

**CHAPTER 7 DIVING SYSTEMS**

- Section 1 General
- Section 2 Classification Survey
- Section 3 Inspection and Testing
- Section 5 PVHO
- Section 6 Deck Decompression Chambers and divers transfer system
- Section 7 Life Support System

- Section 10 Launch and Recovery System
- Section 11 Hyperbaric Rescue Unit

**CHAPTER 8 HIGH VOLTAGE SHORE CONNECTION SYSTEMS**

- Section 1 General

**CHAPTER 9 CARGO VAPOUR EMISSION CONTROL SYSTEMS**

- Section 3 Requirements for VEC2 Notation

**CHAPTER 10 BALLAST WATER MANAGEMENT**

- Section 3 Ballast Water Management Systems
- Annex 9-3 BWMS Technologies categorization

**PART 10 HULL STRUCTURE AND EQUIPMENT OF SMALL STEEL SHIPS**

**CHAPTER 1 GENERAL**

- Section 1 Definitions
- Section 2 General
- Section 3 Materials, Welding and Construction

**CHAPTER 2 STEMS AND STERN FRAMES**

- Section 1 Stems
- Section 2 Stern Frames

**CHAPTER 3 LONGITUDINAL STRENGTH**

- Section 1 General
- Section 2 Bending Strength

**CHAPTER 4 PLATE KEELS AND SHELL PLATINGS**

- Section 3 Shell Plating for Midship Part of Ship
- Section 4 Shell Plating for End Parts
- Section 5 Side Plating in way of Superstructure
- Section 6 Local Compensation of Shell Plating

**CHAPTER 5 DECKS**

- Section 1 General
- Section 2 Effective Sectional Area of Strength Deck

**CHAPTER 7 DOUBLE BOTTOMS**

- Section 1 General
- Section 5 Bottom Longitudinals
- Section 6 Inner Bottom Plating and Margin Plates
- Section 9 Construction of Strengthened Bottom Forward

**CHAPTER 8 FRAMES**

- Section 1 General
- Section 3 Transverse Hold Frames
- Section 5 Tween Deck Frames

**CHAPTER 9 CANTILEVER BEAM CONSTRUCTION**

- Section 3 Connection of Cantilever Beams to Web Frames

**CHAPTER 10 BEAMS**

- Section 1 General
- Section 2 Deck Load

- Section 3 Longitudinal Beams
- Section 4 Transverse Beams

**CHAPTER 11 DECK GIRDERS**

- Section 1 General
- Section 2 Longitudinal Deck Girders

**CHAPTER 12 PILLARS**

- Section 1 General
- Section 2 Scantling of Pillars

**CHAPTER 13 ARRANGEMENTS TO RESIST PANTING**

- Section 1 General
- Section 2 Arrangements to resist Panting Forward the Collision Bulkhead

**CHAPTER 14 WATERTIGHT BULKHEADS**

- Section 1 Arrangement
- Section 2 Construction
- Section 3 Watertight Doors

**CHAPTER 15 DEEP TANKS**

- Section 1 General
- Section 2 Bulkheads of Deep Tanks

**CHAPTER 16 SUPERSTRUCTURES AND DECKHOUSES**

- Section 1 General
- Section 3 Access Openings in Superstructure End Bulkheads

**CHAPTER 17 MACHINERY SPACES AND ENGINE CASINGS**

- Section 1 General
- Section 2 Main Engine Foundations

**CHAPTER 19 HATCHWAYS AND OTHER DECK OPENINGS**

- Section 1 General
- Section 2 Hatchways
- Section 4 Hatchways Closed by Weathertight Covers fitted with Gaskets and Clamping Devices
- Section 6 Companion Ways and Other Deck Openings

**CHAPTER 21 BULWARKS, FREEING PORTS, SIDE SCUTTLES, VENTILATORS AND PERMANENT GANGWAYS**

- Section 2 Freeing Ports
- Section 3 Side Scuttles

**CHAPTER 22 EQUIPMENT NUMBER AND EQUIPMENT**

- Section 1 General

**CHAPTER 23 OIL TANKERS**

- Section 1 General
- Section 2 Hatchways, Gangways and Freeing Arrangements
- Section 6 Bulkheads in Cargo Oil Space

**CHAPTER 24 DOUBLE HULL TANKERS**

- Section 1 General
- Section 2 Bulkhead Plating
- Section 10 Special Requirements for Hatchways and Permanent Gangways

**PART 13 COMMON STRUCTURAL RULES FOR BULK CARRIERS AND OIL TANKERS**

**SUB-PART 1 GENERAL HULL REQUIREMENTS**

**CHAPTER 1 RULE GENERAL PRINCIPLES**

Section 2 Rule Principles

**CHAPTER 3 STRUCTURAL DESIGN PRINCIPLES**

Section 1 Materials

**CHAPTER 4 LOADS**

Section 6 Internal Loads

**CHAPTER 10 OTHER STRUCTURES**

Section 4 Tanks Subject to Sloshing

**⟨ANNEX⟩**

Annex 13-1 Wave Load Analysis Procedure

**PART 14 STRUCTURAL RULES FOR CONTAINER SHIPS**

**⟨ANNEX⟩**

Annex 14-1 Strength assessment of flooded condition for fire-fighting



### 3.3 Contents of Rules for Offshore Structure

#### RULES FOR THE CLASSIFICATION OF MOBILE OFFSHORE UNITS

#### CHAPTER 1 GENERAL

- Section 1 General
- Section 2 Definitions

#### CHAPTER 2 CLASSIFICATION AND SURVEYS

- Section 1 General
- Section 2 Classification
- Section 3 Surveys

#### CHAPTER 3 HULL CONSTRUCTION AND EQUIPMENT

- Section 1 General
- Section 2 Materials
- Section 3 Welding
- Section 4 Ice Strengthening
- Section 5 Corrosion Control
- Section 6 Fire Protection, Means of Escape and Fire Detection & Extinction
- Section 7 Guardrails and Bulwarks
- Section 8 Temporary or Emergency Mooring Equipment
- Section 9 Access
- Section 10 Towing Arrangements
- Section 11 Protective Coatings of Dedicated Seawater Ballast Tanks
- Section 12 Anti-fouling Systems
- Section 13 Drainage and Sediment Control

#### CHAPTER 4 DESIGN CONDITION

- Section 1 Design Loads
- Section 2 Calculation of Strength
- Section 3 Analysis of Overall Strength
- Section 4 Scantlings of Structural Members
- Section 5 Helicopter Deck
- Section 6 Position Keeping Systems and Components

#### CHAPTER 5 TYPE OF UNITS

- Section 1 Self-elevating Units
- Section 2 Column-Stabilized Units
- Section 3 Surface Type Units

#### CHAPTER 6 WATERTIGHT INTEGRITY

- Section 1 Watertight Bulkheads
- Section 2 Closing Appliances

#### CHAPTER 7 STABILITY

- Section 1 General Requirements of Stability
- Section 2 Stability Criterion under Wind Force

#### CHAPTER 8 HAZARDOUS AREA

- Section 1 General
- Section 2 Extent of Hazardous Area
- Section 3 Ventilation

#### CHAPTER 9 FIRE PROTECTION, MEANS OF ESCAPE AND FIRE EXTINCTION

- Section 1 General
- Section 2 Fire Protection and Means of Escape

- Section 3 Fire Detection and Extinction
- Section 4 Fire Extinguishing Systems for Helicopter Facilities
- Section 5 Gas Cylinders
- Section 6 Offshore Accommodation Units

**CHAPTER 10 MACHINERY INSTALLATIONS AND ELECTRICAL EQUIPMENT**

- Section 1 Machinery Installations and Electrical Equipment for Units
- Section 2 Machinery Installations and Electrical Equipment for Self-propelled Units

**CHAPTER 11 SPECIFIC OFFSHORE UNIT TYPES**

- Section 1 Offshore Work Units
- Section 2 Offshore Accommodation Units
- Section 3 Floating Piers
- Section 4 Offshore Plant Units

**RULES FOR THE CLASSIFICATION OF FIXED OFFSHORE STRUCTURES**

**CHAPTER 1 GENERAL**

- Section 1 General

**CHAPTER 1 CLASSIFICATION AND SURVEYS**

- Section 1 General
- Section 2 Classification
- Section 3 Surveys
- Section 4 Extension of Use and Reuse

**CHAPTER 3 MATERIALS AND WELDING**

- Section 1 Materials
- Section 2 Welding

**CHAPTER 4 DESIGN OF STRUCTURES**

- Section 1 Definition and Design Documentation
- Section 2 Environmental Condition
- Section 3 Loads
- Section 4 General Design Requirements
- Section 5 Steel Structures
- Section 6 Concrete Structure
- Section 7 Foundation
- Section 8 Installation
- Section 9 Marine Operation

**CHAPTER 5 MACHINERY INSTALLATIONS**

- Section 1 General
- Section 2 Engines, Boilers and Pressure Vessels
- Section 3 Auxiliaries and Piping Arrangement

**CHAPTER 5 ELECTRICAL INSTALLATIONS, SAFETY FEATURES AND FIRE PROTECTION**

- Section 1 Electrical Installation
- Section 2 Safety Features and Fire Protection

**RULES FOR THE CLASSIFICATION OF MOBILE OFFSHORE DRILLING UNITS**

**CHAPTER 1 GENERAL**

- Section 1 General
- Section 2 Definitions

**CHAPTER 2 CLASSIFICATION AND SURVEYS**

- Section 1 General
- Section 2 Classification
- Section 3 Surveys

**CHAPTER 3 CONSTRUCTION, STRENGTH AND MATERIALS**

- Section 1 General
- Section 2 Access
- Section 3 Design Loads
- Section 4 Calculation of Strength
- Section 5 Surface Type Units
- Section 6 Self-elevating Units
- Section 7 Column-stabilized Units
- Section 8 Towing Arrangements
- Section 9 Fatigue Analysis
- Section 10 Materials
- Section 11 Anti-fouling Systems
- Section 12 Protective Coatings of Dedicated Seawater Ballast Tanks
- Section 13 Construction Portfolio
- Section 14 Welding
- Section 15 Drainage and Sediment Control
- Section 16 Ice Strengthening
- Section 17 Corrosion Control
- Section 18 Guardrails and Bulwarks
- Section 19 Temporary or Emergency Mooring Equipment

**CHAPTER 4 SUBDIVISION, STABILITY AND FREEBOARD**

- Section 1 Inclining Test
- Section 2 Righting Moment and Heeling Moment Curves
- Section 3 Intact Stability Criteria
- Section 4 Subdivision and Damage Stability
- Section 5 Extent of Damage
- Section 6 Watertight Integrity
- Section 7 Freeboard

**CHAPTER 5 MACHINERY INSTALLATIONS OF ALL TYPES OF UNITS**

- Section 1 General
- Section 2 Machinery Installations

**CHAPTER 6 ELECTRICAL INSTALLATIONS FOR ALL TYPES OF UNITS**

- Section 1 General
- Section 2 Electrical Installations
- Section 3 Alarms and Internal Communication

**CHAPTER 7 MACHINERY AND ELECTRICAL INSTALLATIONS IN HAZARDOUS AREAS**

- Section 1 General
- Section 2 Extent of Hazardous Area
- Section 3 Ventilation
- Section 4 Emergency Shutdown for Electrical Equipment
- Section 5 Electrical Installations in Hazardous Areas
- Section 6 Machinery Installations in Hazardous Areas

**CHAPTER 8 MACHINERY AND ELECTRICAL INSTALLATIONS FOR SELF-PROPELLED UNITS**

- Section 1 General
- Section 2 Means of Going Astern
- Section 3 Steam Boilers and Boiler Feed Systems

- Section 4 Machinery Controls
- Section 5 Steering
- Section 6 Communication between the Navigating Bridge and the Engine Room
- Section 7 Engineers' Alarm
- Section 8 Main Source of Electrical Power

**CHAPTER 9 PERIODICALLY UNATTENDED MACHINERY SPACES FOR ALL TYPES OF UNITS**

- Section 1 General
- Section 2 Fire Protection and Fire Fighting
- Section 3 Protection against Flooding
- Section 4 Bridge Control of Propulsion Machinery
- Section 5 Communication and Alarm System
- Section 6 Special Provisions for Machinery, Boiler and Electrical Installations
- Section 7 Safety Systems

**CHAPTER 10 FIRE PROTECTION, MEANS OF ESCAPE AND FIRE EXTINCTION**

- Section 1 General
- Section 2 Fire Protection and Means of Escape
- Section 3 Fire Extinction
- Section 4 Fire Extinguishing Systems for Helicopter Facilities
- Section 5 Gas Cylinders
- Section 6 Other Operational Requirements

**CHAPTER 11 LIFTING DEVICES, PERSONNEL AND PILOT TRANSFER**

- Section 1 Cranes
- Section 2 Lifting and Hoisting Equipment
- Section 3 Personnel Lifts
- Section 4 Personnel and Pilot Transfer
- Section 5 Drilling Derricks

**CHAPTER 12 HELICOPTER FACILITIES**

- Section 1 General
- Section 2 Definitions
- Section 3 Construction
- Section 4 Arrangements
- Section 5 Visual Aids
- Section 6 Motion Sensing System
- Section 7 Exemptions

### 3.4 Contents of Guidance for Offshore Structures

#### GUIDANCE RELATING TO THE RULES FOR THE CLASSIFICATION OF MOBILE OFFSHORE DRILLING UNITS

#### CHAPTER 1 GENERAL

Section 1 General

#### CHAPTER 3 CONSTRUCTION, STRENGTH AND MATERIALS

Section 2 Access

#### CHAPTER 7 MACHINERY AND ELECTRICAL INSTALLATIONS IN HAZARDOUS AREAS

Section 5 Electrical Installations in Hazardous

#### CHAPTER 11 LIFTING DEVICES, PERSONNEL AND PILOT TRANSFER

Section 5 Drilling Derricks

#### ⟨ANNEX⟩

Annex 1 Drilling Systems

Annex 2 Technical Provisions of Means of Access

#### GUIDANCE FOR MOBILE OFFSHORE UNITS

#### CHAPTER 7 STABILITY

Section 1 General Requirements of Stability

#### GUIDANCE FOR FLOATING PRODUCTION UNITS

#### CHAPTER 1 GENERAL

Section 1 General

Section 2 Definition

#### CHAPTER 2 CLASSIFICATION AND SURVEYS

Section 1 General

Section 2 Classification

Section 3 Surveys

#### CHAPTER 3 DESIGN CONDITIONS

Section 1 General

Section 2 Design Principles

Section 3 Corrosion Control Means and Corrosion Margins

Section 4 Design Loads

#### CHAPTER 4 MATERIALS AND WELDING

Section 1 General

#### CHAPTER 5 HULL CONSTRUCTION AND EQUIPMENT

Section 1 General

Section 2 Stability

Section 3 Longitudinal Strength

Section 4 Structural Design and Analysis of the Hull

Section 5 Design and Analysis of Other Major Hull Structural Features

Section 6 Structural Strength for Column-stabilized and Other Type Units

Section 7 Hull Equipment

**CHAPTER 6 POSITIONING SYSTEMS**

- Section 1 General
- Section 2 Mooring Analysis
- Section 3 Design of Mooring Lines, etc.
- Section 4 Mooring Equipment
- Section 5 Single Point Mooring Systems
- Section 6 Anchor Holding Power
- Section 7 Dynamic Positioning Systems

**CHAPTER 7 HAZARDOUS AREA**

- Section 1 General
- Section 2 Extent of Hazardous Area
- Section 3 Ventilation

**CHAPTER 8 FIRE PROTECTION, MEANS OF ESCAPE AND FIRE EXTINGUISHMENT**

- Section 1 General
- Section 2 Prevention of Fire and Explosion
- Section 3 Suppression of Fire
- Section 4 Means of Escape

**CHAPTER 9 MACHINERY INSTALLATIONS**

- Section 1 General
- Section 2 Piping Systems for Crude Oil Tanks
- Section 3 Use of Produced Gas as Fuel
- Section 4 Boilers Using Crude Oil

**CHAPTER 10 ELECTRICAL EQUIPMENT AND CONTROL SYSTEMS**

- Section 1 Electrical Equipment
- Section 2 Control Systems

**CHAPTER 11 PRODUCTION AND PROCESS SYSTEMS**

- Section 1 General
- Section 2 Design of Process Systems
- Section 3 Process System Equipment
- Section 4 Process Support Systems

**CHAPTER 12 IMPORT AND EXPORT SYSTEMS**

- Section 1 General
- Section 2 Design

**GUIDANCE FOR FLOATING LIQUEFIED GAS STORAGE AND REGASIFICATION UNITS**

**CHAPTER 1 GENERAL**

- Section 1 General
- Section 2 Definitions

**CHAPTER 2 CLASSIFICATION AND SURVEYS**

- Section 1 General
- Section 2 Classification Survey
- Section 3 Surveys

**CHAPTER 3 DESIGN CONDITION**

- Section 1 General
- Section 2 Design Principles
- Section 3 Corrosion Control Means and Corrosion Margins

Section 4 Design Loads

**CHAPTER 4 MATERIALS AND WELDING**

Section 1 General

**CHAPTER 5 HULL CONSTRUCTION AND EQUIPMENT**

- Section 1 General
- Section 2 Survival Capability and Location of Cargo Tanks
- Section 3 Longitudinal Strength
- Section 4 Structural Design and Analysis of the Hull
- Section 5 Design and Analysis of Other Major Hull Structural Features
- Section 6 Direct Strength Assessment
- Section 7 Fatigue Strength Assessment
- Section 8 Hull Arrangements
- Section 9 Cargo Containment
- Section 10 Hull Equipment

**CHAPTER 6 POSITIONING SYSTEMS**

Section 1 General

**CHAPTER 7 HAZARDOUS AREA**

- Section 1 Hazardous Area
- Section 2 Ventilation

**CHAPTER 8 FIRE PROTECTION, MEANS OF ESCAPE AND FIRE EXTINCTION**

- Section 1 General
- Section 2 Suppression of Fire
- Section 3 Means of Escape

**CHAPTER 9 MACHINERY INSTALLATIONS**

- Section 1 General
- Section 2 Piping Systems for Cargo Tanks
- Section 3 Use of Natural Gas as Fuel

**CHAPTER 10 ELECTRICAL EQUIPMENTS AND CONTROL SYSTEMS**

- Section 1 Electrical Equipments
- Section 2 Control Systems

**CHAPTER 11 PERSONNEL PROTECTION**

**CHAPTER 12 REGASIFICATION SYSTEM**

- Section 1 General
- Section 2 Design of Regasification Systems
- Section 3 Regasification System Equipments

**CHAPTER 13 LOADING SYSTEMS**

- Section 1 General
- Section 2 Cargo Transfer Connection
- Section 3 Transfer Arms
- Section 4 Transfer Hoses
- Section 5 Safety Systems
- Section 6 Communication Systems
- Section 7 Mooring Equipment

**CHAPTER 14 EXPORT SYSTEM**

Section 1 General

## GUIDANCE FOR FLOATING LIQUEFIED GAS PRODUCTION UNITS

### CHAPTER 1 GENERAL

- Section 1 General
- Section 2 Definitions

### CHAPTER 2 CLASSIFICATION AND SURVEYS

- Section 1 General
- Section 2 Classification Survey
- Section 3 Surveys

### CHAPTER 3 DESIGN CONDITION

- Section 1 General
- Section 2 Design Principles
- Section 3 Corrosion Control Means and Corrosion Margins
- Section 4 Design Loads

### CHAPTER 4 MATERIALS AND WELDING

- Section 1 General

### CHAPTER 5 HULL CONSTRUCTION AND EQUIPMENT

- Section 1 General
- Section 2 Survival Capability and Location of Cargo Tanks
- Section 3 Longitudinal Strength
- Section 4 Structural Design and Analysis of the Hull
- Section 5 Design and Analysis of Other Major Hull Structural Features
- Section 6 Direct Strength Assessment
- Section 7 Fatigue Strength Assessment
- Section 8 Hull Arrangements
- Section 9 Cargo Containment
- Section 10 Hull Equipment

### CHAPTER 6 POSITIONING SYSTEMS

- Section 1 General

### CHAPTER 7 HAZARDOUS AREA

- Section 1 Hazardous Area
- Section 2 Ventilation

### CHAPTER 8 FIRE PROTECTION, MEANS OF ESCAPE AND FIRE EXTINCTION

- Section 1 General
- Section 2 Prevention of Fire and Explosion
- Section 3 Suppression of Fire
- Section 4 Means of Escape

### CHAPTER 9 MACHINERY INSTALLATIONS

- Section 1 General
- Section 2 Piping Systems for Cargo Tanks
- Section 3 Use of Natural Gas as Fuel

### CHAPTER 10 ELECTRICAL EQUIPMENTS AND CONTROL SYSTEMS

- Section 1 Electrical Equipments
- Section 2 Control Systems

### CHAPTER 11 PERSONNEL PROTECTION



**CHAPTER 12 PROCESS SYSTEMS**

- Section 1 General
- Section 2 Design of Process Systems
- Section 3 Process System Equipment
- Section 4 Process Support Systems

**CHAPTER 13 OFFLOADING SYSTEMS**

- Section 1 General
- Section 2 Cargo Transfer Connection
- Section 3 Transfer Arms
- Section 4 Transfer Hoses
- Section 5 Safety Systems
- Section 6 Communication Systems
- Section 7 Mooring Equipment

**CHAPTER 14 IMPORT SYSTEM**

- Section 1 General

**GUIDANCE FOR OSV**

**CHAPTER 1 GENERAL**

- Section 1 General
- Section 2 Definitions

**CHAPTER 2 CLASSIFICATION AND SURVEYS**

- Section 1 General
- Section 2 Classification
- Section 3 Surveys

**CHAPTER 3 STRUCTURES AND EQUIPMENT**

- Section 1 Stability
- Section 2 Hull Structures
- Section 3 Hull Equipment
- Section 4 Machinery
- Section 5 Electrical Installations
- Section 6 Fire Protection and Fire Extinguishing Systems

**CHAPTER 4 OFFSHORE SUPPLY VESSELS**

- Section 1 General
- Section 2 Hull Structures
- Section 3 Cargo Piping Systems
- Section 4 Machinery

**CHAPTER 5 ANCHOR HANDLING AND TOWING VESSELS**

- Section 1 General
- Section 2 Stability
- Section 3 Hull Structures
- Section 4 Hull Equipment
- Section 5 Anchor Handling/Towing Winch and Accessories
- Section 6 Machinery
- Section 7 Fire Protection and Fire Extinguishing Systems

**CHAPTER 6 HEAVY LIFT VESSELS**

- Section 1 General
- Section 2 Stability

- Section 3 Hull Structures
- Section 4 Hull Equipment
- Section 5 Machinery
- Section 6 Positioning System

**CHAPTER 7 WIND TURBINE INSTALLATION VESSELS**

- Section 1 General
- Section 2 Stability
- Section 3 Hull Structures
- Section 4 Hull Equipment
- Section 5 Machinery
- Section 6 Positioning System

**CHAPTER 8 FIRE FIGHTING VESSELS**

- Section 1 General
- Section 2 Stability
- Section 3 Hull Structures
- Section 4 Fire Fighting Equipment for Other vessels
- Section 5 Machinery
- Section 6 Fire Protection and Fire Extinguishing Systems
- Section 7 Positioning System

**CHAPTER 9 OIL SPILL RECOVERY VESSELS**

- Section 1 General
- Section 2 Definitions
- Section 3 Hull Structures
- Section 4 Hull Equipment
- Section 5 Tank Arrangement
- Section 6 Machinery and Electrical Installations in Hazardous Areas
- Section 7 Fire Protection and Fire Extinguishing Systems

### 3.5 Contents of Other Rules

#### RULES FOR THE CLASSIFICATION OF STEEL BARGES

#### CHAPTER 1 GENERAL

- Section 1 Definitions
- Section 2 General
- Section 3 Materials, Welding and Construction

#### CHAPTER 2 CLASSIFICATION SURVEYS

- Section 1 General
- Section 2 Classification Survey during Construction
- Section 3 Periodical Surveys

#### CHAPTER 3 STEMS

- Section 1 Stems

#### CHAPTER 4 LONGITUDINAL STRENGTH

- Section 1 General
- Section 2 Bending Strength

#### CHAPTER 5 PLATE KEELS AND SHELL PLATINGS

- Section 1 General
- Section 2 Plate Keels
- Section 3 Shell Plating for Midship Part of Barge
- Section 4 Shell Plating for End Parts
- Section 5 Side Plating in way of Superstructure
- Section 6 Local Compensation of Shell Plating

#### CHAPTER 6 DECKS

- Section 1 General
- Section 2 Effective Sectional Area of Strength Deck
- Section 3 Deck Plating

#### CHAPTER 7 SINGLE BOTTOMS

- Section 1 General
- Section 2 Centre Keelsons
- Section 3 Side Keelsons
- Section 4 Floor Plates
- Section 5 Longitudinals
- Section 6 Strengthened Bottom Forward

#### CHAPTER 8 DOUBLE BOTTOMS

- Section 1 General
- Section 2 Centre Girders
- Section 3 Side Girders
- Section 4 Solid Floors
- Section 5 Longitudinals
- Section 6 Inner Bottom Plating and Margin Plates
- Section 7 Frame End Brackets
- Section 8 Open Floors
- Section 9 Construction of Strengthened Bottom Forward

#### CHAPTER 9 FRAMES

- Section 1 General
- Section 2 Frame Spacing
- Section 3 Transverse Hold Frames

- Section 4 Side Longitudinals
- Section 5 Superstructure Frames
- Section 6 Frames in Both Peaks

**CHAPTER 10 BEAMS**

- Section 1 General
- Section 2 Deck Load
- Section 3 Longitudinal Beams
- Section 4 Transverse Beams
- Section 5 Beams on Bulkhead Recess and Others
- Section 6 Beams on the Top of Deep Tanks
- Section 7 Deck Beams Supporting Specially Heavy Loads

**CHAPTER 11 DECK GIRDERS AND HATCH END BEAMS**

- Section 1 General
- Section 2 Longitudinal Deck Girders
- Section 3 Transverse Deck Girders
- Section 4 Deck Girders in Tanks
- Section 5 Hatch Side Girders
- Section 6 Hatch End Girders

**CHAPTER 12 PILLARS AND TRUSSES**

- Section 1 General
- Section 2 Scantling of Pillars
- Section 3 Trusses

**CHAPTER 13 PEAK CONSTRUCTION**

- Section 1 General
- Section 2 Arrangements of Construction Forward of the Collision Bulkhead
- Section 3 Arrangements of Construction Aft of Peak Bulkhead

**CHAPTER 14 WATERTIGHT BULKHEADS**

- Section 1 Arrangement
- Section 2 Construction

**CHAPTER 15 DEEP TANKS**

- Section 1 General
- Section 2 Bulkheads of Deep Tanks
- Section 3 Fittings of Deep Tanks

**CHAPTER 16 SUPERSTRUCTURE AND DECKHOUSE**

- Section 1 General
- Section 2 Construction and Scantlings
- Section 3 Access Openings in Superstructure End Bulkheads

**CHAPTER 17 HATCHWAYS AND OTHER DECK OPENINGS**

- Section 1 General
- Section 2 Hatchways
- Section 3 Hatch Covers
- Section 4 Companion-ways and Other Deck Openings

**CHAPTER 18 BULWARKS, FREEING PORTS, VENTILATORS AND PERMANENT GANGWAYS**

- Section 1 General
- Section 2 Bulwarks and Guardrails
- Section 3 Freeing Ports
- Section 4 Ventilators
- Section 5 Permanent Gangways

**CHAPTER 19 EQUIPMENT NUMBER AND EQUIPMENT**

- Section 1 General
- Section 2 Equipment Number

**CHAPTER 20 MACHINERY**

- Section 1 General
- Section 2 Internal Combustion Engines
- Section 3 Boiler and Pressure Vessels
- Section 4 Auxiliaries and Piping Arrangement
- Section 5 General Requirements of Electrical Equipment
- Section 6 Earthing
- Section 7 Protective Devices of Electrical Equipment
- Section 8 Source of Electrical Power
- Section 9 Cables
- Section 10 Distribution
- Section 11 Control Gears
- Section 12 Explosion-Protected Electrical Equipment
- Section 13 Emergency Stopping Device
- Section 14 Machinery and Electrical Equipment of Tank Barges
- Section 15 Spare Parts
- Section 16 Tests

**CHAPTER 21 PONTOON BARGES**

- Section 1 General
- Section 2 Construction
- Section 3 Peak Construction

**CHAPTER 22 TANK BARGES**

- Section 1 General
- Section 2 Structural Members in Cargo Oil Spaces

**CHAPTER 23 BARGES INTENDED TO BE CLASSIFIED AS RESTRICTED SERVICES**

- Section 1 General
- Section 2 Barges Intended to be Classified as Coasting Service
- Section 3 Barges Intended to be Classified as Smooth Water Service

**RULES FOR THE CLASSIFICATION OF DREDGERS**

**CHAPTER 1 GENERAL**

- Section 1 General
- Section 2 Classification
- Section 3 Definitions

**CHAPTER 2 REGISTRATION AND CLASSIFICATION SURVEYS**

- Section 1 General
- Section 2 Classification Survey During Construction
- Section 3 Periodical Survey

**CHAPTER 3 LONGITUDINAL STRENGTH**

- Section 1 Longitudinal Strength

**CHAPTER 4 SHELL PLATING AND DECKS**

- Section 1 Shell Plating
- Section 2 Decks

**CHAPTER 5 INTERNAL FRAMES**

- Section 1 Transverse Framing System
- Section 2 Longitudinal Framing System

**CHAPTER 6 PILLARS AND TRUSSES**

- Section 1 General
- Section 2 Scantling of Pillars
- Section 3 Trusses

**CHAPTER 7 WATERTIGHT BULKHEADS AND DEEP TANK**

- Section 1 Arrangement of Watertight Bulkheads
- Section 2 Construction of Watertight Bulkheads
- Section 3 Deep Tank Construction
- Section 4 Fittings of Deep Tanks

**CHAPTER 8 SUPERSTRUCTURE AND DECK HOUSE**

- Section 1 General
- Section 2 Superstructure End Bulkheads
- Section 3 Access Opening in Superstructure End Bulkheads
- Section 4 Deck House Construction

**CHAPTER 9 HATCHWAYS, DECK OPENINGS AND OTHER EQUIPMENT**

- Section 1 General
- Section 2 Hatchways
- Section 3 Companionway and Other Deck Openings
- Section 4 Bulwarks and Guardrails
- Section 5 Freeing Ports
- Section 6 Ventilators
- Section 7 Companion Way

**CHAPTER 10 HOPPER TYPE DREDGERS**

- Section 1 General
- Section 2 Construction and Arrangement
- Section 3 Longitudinal Strength
- Section 4 Shell Plating and Deck
- Section 5 Transverse Framing System
- Section 6 Longitudinal Framing System
- Section 7 Transverse Ring
- Section 8 Hopper Well Structure

**CHAPTER 11 EQUIPMENT**

- Section 1 Anchor, Chain and Rope

**CHAPTER 12 DREDGER REGISTERED WITH RESTRICTED SERVICES**

- Section 1 General
- Section 2 Vessel Registered with Coastal Service
- Section 3 Dredger Registered with Smooth Water Service

**CHAPTER 13 MACHINERY OF DREDGERS**

- Section 1 Machinery and Dredging Equipment of Non Self-propelled dredgers
- Section 2 Machinery Installations of Self-propelled dredgers

**(ANNEX)**

- Annex 1 Guidance for the Assignment of Reduced Freeboards for Dredgers

## RULES FOR THE CLASSIFICATION OF UNDERWATER VEHICLES

### PART 1 SUBMERSIBLES

#### CHAPTER 1 GENERAL

- Section 1 General
- Section 2 Drawings and Documents
- Section 3 Tests and Trials
- Section 4 Marking

#### CHAPTER 2 CLASSIFICATION OF SUBMERSIBLE

- Section 1 Classification Registry
- Section 2 Classification Survey during Construction
- Section 3 Classification Survey after Construction

#### CHAPTER 3 PERIODICAL AND OTHER SURVEY

- Section 1 Kinds of Surveys
- Section 2 Performance of Survey

#### CHAPTER 4 DESIGN REQUIREMENTS

- Section 1 General
- Section 2 Environmental Conditions
- Section 3 Hatches, Doors and Access Ports
- Section 4 Equipment
- Section 5 Corrosion Protection

#### CHAPTER 5 PRESSURE HULL

- Section 1 General
- Section 2 Design Principles
- Section 3 Materials and Weldings
- Section 4 Principles of Manufacture and Construction
- Section 5 Calculations

#### CHAPTER 6 EXTERNAL STRUCTURE

- Section 1 General

#### CHAPTER 7 DIVING AND BUOYANCY TANKS AND TRIMMING DEVICES

- Section 1 General
- Section 2 Principles of Design and Construction
- Section 3 Materials, Manufacture and Calculations

#### CHAPTER 8 PRESSURE VESSELS AND APPARATUS

- Section 1 General
- Section 2 Compression Chambers and Diving Bells
- Section 3 Pressure Vessels and Apparatus and Gas Bottles

#### CHAPTER 9 PIPING SYSTEMS, PUMPS AND COMPRESSORS

- Section 1 General
- Section 2 Principles of Design and Construction
- Section 3 Materials, Manufacture and Calculations

#### CHAPTER 10 CONTROL SYSTEMS FOR DEPTH, TRIM, POSITIVE AND NEGATIVE BUOYANCY

- Section 1 General
- Section 2 Principles of Design and Construction

#### CHAPTER 11 PROPULSION AND MANOEUVRING EQUIPMENT

- Section 1 General
- Section 2 Principles of Design and Construction

**CHAPTER 12 ELECTRIC EQUIPMENT**

- Section 1 General
- Section 2 Design Principles
- Section 3 Power Supply

**CHAPTER 13 AUTOMATION, COMMUNICATION, NAVIGATING AND LOCATING EQUIPMENT**

- Section 1 General
- Section 2 Automation Equipment
- Section 3 Control System
- Section 4 Communication Equipment
- Section 5 Navigating and Locating Equipment

**CHAPTER 14 LIFE SUPPORT SYSTEMS**

- Section 1 General
- Section 2 Design Principles
- Section 3 Air Supply
- Section 4 Monitoring Equipment
- Section 5 Emergency Thermal Protection

**CHAPTER 15 FIRE PROTECTION AND FIRE EXTINGUISHING**

- Section 1 General
- Section 2 Structural Fire Protection
- Section 3 Fire Surveillance
- Section 4 Fire Extinguishing Systems

**CHAPTER 16 RESCUE SYSTEM**

- Section 1 General
- Section 2 Design Principles

**CHAPTER 17 LAUNCH, RECOVERY AND MATING EQUIPMENT**

- Section 1 General
- Section 2 Design Principles
- Section 3 Materials
- Section 4 Principles of Manufacture and Construction
- Section 5 Calculations

**PART 2 UNDERWATER EQUIPMENTS**

**CHAPTER 1 REMOTE-OPERATED VEHICLES (ROVs)**

**PART 3 TOURIST SUBMERSIBLES**

**CHAPTER 1 TOURIST SUBMERSIBLES**



## RULES FOR THE CLASSIFICATION OF FRP SHIPS

### CHAPTER 1 GENERAL

- Section 1 General
- Section 2 Definitions
- Section 3 Hull Construction and Equipment

### CHAPTER 2 CLASS SURVEYS

- Section 1 General
- Section 2 Classification Survey during Construction
- Section 3 Classification Survey after Construction

### CHAPTER 3 MATERIALS

- Section 1 General
- Section 2 FRP Materials
- Section 3 FRP

### CHAPTER 4 MOULDING

- Section 1 General
- Section 2 Laminating and Moulding
- Section 3 Additional Procedure for Hand Lay-up Method
- Section 4 Additional Procedure for Spray Lay-up Method
- Section 5 Additional Procedure for Sandwich Construction
- Section 6 Bonding and Fastening
- Section 7 Bonded Connections
- Section 8 Coating

### CHAPTER 5 LONGITUDINAL STRENGTH

- Section 1 Longitudinal Strength

### CHAPTER 6 SHELL LAMINATES

- Section 1 General
- Section 2 Keels
- Section 3 Shell Laminates for Midship Part
- Section 4 Shell Laminates for End Parts
- Section 5 Side shell Laminates in way of Superstructures
- Section 6 Local Strength of Shell Laminates

### CHAPTER 7 DECKS

- Section 1 General
- Section 2 Minimum thickness of Deck Laminates
- Section 3 Local Compensation of Deck

### CHAPTER 8 FRAMES

- Section 1 General
- Section 2 Construction
- Section 3 Spacing of Frames
- Section 4 Frames

### CHAPTER 9 BOTTOM CONSTRUCTION

- Section 1 General
- Section 2 Centre Girders
- Section 3 Side Girders
- Section 4 Floors
- Section 5 Bottom Longitudinals, etc.
- Section 6 Double Bottoms

- Section 7 Construction of Strengthened Bottom Forward
- Section 8 Hat-type Construction

**CHAPTER 10 BEAMS**

- Section 1 Beams

**CHAPTER 11 UNDER-DECK GIRDERS AND PILLARS**

- Section 1 Under-deck Girders
- Section 2 Pillars

**CHAPTER 12 WATERTIGHT BULKHEADS**

- Section 1 Arrangement of Watertight Bulkheads
- Section 2 Construction of Watertight Bulkheads

**CHAPTER 13 DEEP TANKS**

- Section 1 General
- Section 2 Bulkhead Laminates of Deep Tanks
- Section 3 Provisions for Deep Tanks

**CHAPTER 14 MACHINERY SPACES**

- Section 1 General
- Section 2 Construction under Main Engines

**CHAPTER 15 SUPERSTRUCTURES AND DECKHOUSES**

- Section 1 General
- Section 2 Construction, etc.

**CHAPTER 16 HATCHWAY OPENINGS, MACHINERY OPENINGS AND OTHER DECK OPENINGS**

- Section 1 General
- Section 2 Hatchway Openings
- Section 3 Machinery Openings
- Section 4 Companionway Openings and Other Deck Openings

**CHAPTER 17 BULWARKS, GUARDRAILS, FREEING ARRANGEMENT, SIDE OPENINGS, SCUTTLES, VENTILATORS AND GANGWAYS**

- Section 1 General

**CHAPTER 18 MACHINERY**

- Section 1 General
- Section 2 Installation of Propulsion Machinery, Fuel Oil Tank and Earthing

**RULES FOR THE CLASSIFICATION OF FLOATING DOCKS**

**CHAPTER 1 GENERAL**

- 1100 General
- 1200 Classification Registry
- 1300 Definition

**CHAPTER 2 CLASSIFICATION SURVEY**

- 2100 Classification Surveys during Construction
- 2200 Classification Survey after Construction
- 2300 Periodical Survey and Occasional Survey
- 2400 Cooperation for Surveys

**CHAPTER 3 GENERAL ARRANGEMENT**

- 3100 Safety Deck
- 3200 Top Deck
- 3300 Ventilation and Access
- 3400 Cofferdam

**CHAPTER 4 FREEBOARD AND STABILITY**

- 4100 Freeboard
- 4200 Stability

**CHAPTER 5 HULL STRUCTURES**

- 5100 General
- 5200 Longitudinal Strength
- 5300 Transverse Strength
- 5400 Structural Detail and Local Strength

**CHAPTER 6 MACHINERY AND INSTRUMENTATION**

- 6100 Machinery
- 6200 Indicator System

**CHAPTER 7 FIRE PROTECTION AND EXTINGUISHING**

- 7100 General
- 7200 Fire Protection
- 7300 Fire-Extinguishing

**RULES FOR THE CLASSIFICATION OF HIGH SPEED AND LIGHT CRAFTS**

**PART 1 CLASSIFICATION AND SURVEYS**

**CHAPTER 1 CLASSIFICATION**

- Section 1 General
- Section 2 Classification Survey during Construction
- Section 3 Classification Survey after Construction

**CHAPTER 2 PERIODICAL AND OTHER SURVEYS**

- Section 1 General

**PART 2 MATERIALS AND WELDING**

**CHAPTER 1 MATERIALS**

- Section 1 General

**CHAPTER 2 WELDING**

- Section 1 General
- Section 2 Welding of Aluminium Alloys

**PART 3 HULL STRUCTURES**

**CHAPTER 1 DESIGN PRINCIPLES**

- Section 1 Definitions
- Section 2 General
- Section 3 Approval of Plans and Documents
- Section 4 Subdivision and Arrangement

**CHAPTER 2 DESIGN LOADS**

- Section 1 General
- Section 2 Accelerations
- Section 3 Sea Pressures
- Section 4 Hull Girder Loads

**CHAPTER 3 STRUCTURE PRINCIPLES IN STEEL**

- Section 1 General
- Section 2 Materials and welding
- Section 3 Manufacturing and Inspection
- Section 4 Hull Girder Strength
- Section 5 Platings
- Section 6 Stiffeners
- Section 7 Transverses and Girders
- Section 8 Pillars

**CHAPTER 4 STRUCTURE PRINCIPLES IN ALUMINIUM ALLOY**

- Section 1 General
- Section 2 Materials and Welding
- Section 3 Material Protection
- Section 4 Hull Girder Strength
- Section 5 Platings
- Section 6 Stiffeners
- Section 7 Transverses and Girders
- Section 8 Pillars

**CHAPTER 5 STRUCTURE PRINCIPLES IN FRP**

- Section 1 General
- Section 2 Materials
- Section 3 Manufacturing
- Section 4 Hull Girder Strength
- Section 5 Sandwich Panels
- Section 6 Single Skin Construction
- Section 7 Transverses and Girders

**PART 4 HULL EQUIPMENT**

**CHAPTER 1 RUDDERS**

- Section 1 General
- Section 2 Rudder Force
- Section 3 Rudder Torque
- Section 4 Rudder Strength Calculation
- Section 5 Rudder Stocks
- Section 6 Rudder Plates, Rudder Frames and Rudder Main Pieces
- Section 7 Couplings between Rudder Stocks and Main Pieces
- Section 8 Bearings of Rudder Stocks
- Section 9 Rudder Accessories

**CHAPTER 2 HULL APPENDAGES**

- Section 1 General
- Section 2 Materials and Workmanship
- Section 3 Arrangement of Appendages
- Section 4 Design Loads and Supporting Structure
- Section 5 Rudder Posts
- Section 6 Shaft Brackets
- Section 7 Foils
- Section 8 Waterjets

**CHAPTER 3 EQUIPMENT NUMBER AND EQUIPMENT**

- Section 1 General
- Section 2 Structural Arrangement for Anchoring Equipment
- Section 3 Equipment Number
- Section 4 Anchors
- Section 5 Anchor Chain Cables
- Section 6 Wire Ropes

**CHAPTER 4 HATCHWAYS, WINDOWS AND OTHER OPENINGS**

- Section 1 Hatchways and Other Deck Openings
- Section 2 Bulwarks, Freeing Ports, Side Scuttles, Ventilators
- Section 3 Windows

**PART 5 MACHINERY INSTALLATIONS**

**CHAPTER 1 GENERAL**

- Section 1 General

**CHAPTER 2 AUXILIARIES AND PIPING ARRANGEMENT**

- Section 1 General
- Section 2 Bilge and Drainage Systems
- Section 3 Air, Sounding and Filling Pipes
- Section 4 Ship-side Valves and Overboard Discharges
- Section 5 Fuel Oil System
- Section 6 Lubricating Oil System
- Section 7 Cooling Water System
- Section 8 Ventilation Systems

**CHAPTER 3 PRIME MOVERS, POWER TRANSMISSION SYSTEMS AND LIFT DEVICES, ETC.**

- Section 1 General

**PART 6 ELECTRICAL EQUIPMENT AND CONTROL SYSTEMS**

**CHAPTER 1 ELECTRICAL EQUIPMENT**

- Section 1 General
- Section 2 Electrical Equipment

**CHAPTER 2 CONTROL SYSTEMS**

- Section 1 General
- Section 2 Automatic and Remote Control Systems

**PART 7 FIRE PROTECTION, DETECTION AND EXTINCTION**

**CHAPTER 1 FIRE PROTECTION**

- Section 1 General
- Section 2 Structural Fire Protection
- Section 3 Additional Requirements for High Speed Passenger Craft
- Section 4 Additional Requirements for High Speed Cargo Craft
- Section 5 Additional Requirements for Craft and Cargo Spaces intended for the Carriage of Dangerous Goods

**CHAPTER 2 FIRE DETECTION AND EXTINCTION**

- Section 1 General
- Section 2 Fire Detection and Extinction
- Section 3 Additional Requirements for High Speed Passenger Craft
- Section 4 Additional Requirements for High Speed Cargo Craft

Section 5 Additional Requirements for Craft and Cargo Spaces intended for the Carriage of Dangerous Goods

## **RULES FOR THE CLASSIFICATION OF TOWING SURVEY OF BARGES AND TUGBOATS**

### **CHAPTER 1 GENERAL**

Section 1 General

### **CHAPTER 2 STRUCTURE AND EQUIPMENT**

Section 1 Tugboats  
Section 2 Barges

### **CHAPTER 3 TOWING ARRANGEMENTS**

Section 1 Towing Arrangements and Resistances

### **CHAPTER 4 SURVEY OF TOWING**

Section 1 Survey of Towing

## **RULES FOR THE CLASSIFICATION OF SHIPS USING LOW-FLASHPOINT FUELS**

### **CHAPTER 1 GENERAL**

Section 1 General

### **CHAPTER 2 GOAL AND FUNCTIONAL REQUIREMENTS**

Section 1 Goal  
Section 2 Functional requirements

### **CHAPTER 3 GENERAL REQUIREMENTS**

Section 1 Goal  
Section 2 Risk assessment  
Section 3 Limitation of explosion consequences

### **CHAPTER 4 CLASSIFICATION SURVEYS**

Section 1 General  
Section 2 Classification  
Section 3 Periodical Surveys

### **CHAPTER 5 SHIP DESIGN AND ARRANGEMENT**

Section 1 Goal  
Section 2 Functional requirements  
Section 3 Arrangement of fuel tanks  
Section 4 Machinery space concepts  
Section 5 Gas safe machinery space  
Section 6 ESD-protected machinery space  
Section 7 Location and protection of fuel piping  
Section 8 Fuel preparation room  
Section 9 Bilge systems  
Section 10 Drip trays  
Section 11 Arrangement of entrances and other opening in enclosed spaces  
Section 12 Airlocks

### **CHAPTER 6 FUEL CONTAINMENT SYSTEM**

Section 1 Goal  
Section 2 Functional requirements  
Section 3 General requirements

- Section 4 Liquefied gas fuel containment
- Section 5 Portable liquefied gas fuel tanks
- Section 6 CNG fuel containment
- Section 7 Pressure relief system
- Section 8 Loading limit for liquefied gas fuel tanks
- Section 9 Maintaining of fuel storage condition
- Section 10 Atmosphere control within the fuel containment system
- Section 11 Atmosphere control within the fuel hold spaces systems other than Type C independent tanks
- Section 12 Environmental control of spaces surrounding type C independent tanks
- Section 13 Inerting
- Section 14 Inert gas production and storage on board

#### **CHAPTER 7 MATERIAL AND GENERAL PIPE DESIGN**

- Section 1 Goal
- Section 2 Functional requirements
- Section 3 Pipe design
- Section 4 Materials

#### **CHAPTER 8 BUNKERING AND FUEL SUPPLY**

- Section 1 Goal
- Section 2 Functional requirements
- Section 3 Bunkering station
- Section 4 Manifold
- Section 5 Bunkering system

#### **CHAPTER 9 FUEL SUPPLY TO CONSUMERS**

- Section 1 Goal
- Section 2 Functional requirements
- Section 3 Redundancy of fuel supply
- Section 4 Safety functions of gas supply system
- Section 5 Fuel distribution outside of machinery space
- Section 6 Fuel supply to consumers in gas-safe machinery spaces
- Section 7 Fuel supply to consumers in ESD-protected machinery spaces
- Section 8 Design of ventilated duct, outer pipe against inner pipe gas leakage
- Section 9 Compressors and pumps

#### **CHAPTER 10 POWER GENERATION INCLUDING PROPULSION AND OTHER GAS CONSUMER**

- Section 1 Goal
- Section 2 Functional requirements
- Section 3 Internal combustion engines of piston type
- Section 4 Main and auxiliary boilers, gas turbine
- Section 5 Gas turbines

#### **CHAPTER 11 FIRE SAFETY**

- Section 1 Goal
- Section 2 Functional requirements
- Section 3 Fire protection
- Section 4 Fire extinction
- Section 5 Water spray system
- Section 6 Dry chemical powder fire-extinguishing system
- Section 7 Fire detection and alarm system

#### **CHAPTER 12 EXPLOSION PREVENTION**

- Section 1 Goal
- Section 2 Functional requirements
- Section 3 General requirements

- Section 4 Area classification
- Section 5 Hazardous area zone

**CHAPTER 13 VENTILATION**

- Section 1 Goal
- Section 2 Functional requirements
- Section 3 General requirements
- Section 4 Tank connection space
- Section 5 Machinery space
- Section 6 Fuel preparation room
- Section 7 Bunkering station
- Section 8 Ducts and double pipes

**CHAPTER 14 ELECTRICAL INSTALLATIONS**

- Section 1 Goal
- Section 2 Functional requirements
- Section 3 General requirements

**CHAPTER 15 CONTROL, MONITORING AND SAFETY SYSTEMS**

- Section 1 Goal
- Section 2 Functional requirements
- Section 3 General requirements
- Section 4 Bunkering and liquefied gas fuel tank monitoring
- Section 5 Bunkering control
- Section 6 Gas compressor monitoring
- Section 7 Gas engine monitoring
- Section 8 Gas detection
- Section 9 Fire detection
- Section 10 Ventilation
- Section 11 Safety functions of fuel supply systems

**CHAPTER 16 MANUFACTURE, WORKMANSHIP AND TESTING**

- Section 1 General
- Section 2 General test regulations and specifications
- Section 3 Welding of metallic materials and non-destructive testing for the fuel containment system
- Section 4 Other regulations for construction in metallic materials
- Section 5 Testing
- Section 6 Welding, post-weld heat treatment and non-destructive testing
- Section 7 Testing regulations



### 3.6 Contents of Other Guidance

#### **GUIDANCE RELATING TO THE RULES FOR THE CLASSIFICATION OF STEEL BARGES**

##### **CHAPTER 1 GENERAL**

- Section 1 Definitions
- Section 2 General

##### **CHAPTER 4 LONGITUDINAL STRENGTH**

- Section 1 General

##### **CHAPTER 5 SHELL PLATING**

- Section 4 Shell Plating for End Parts
- Section 6 Local Compensation of Shell Plating

##### **CHAPTER 10 BEAMS**

- Section 2 Deck Load

##### **CHAPTER 14 WATERTIGHT BULKHEADS**

- Section 1 Arrangement

##### **CHAPTER 18 BULWARKS, FREEING PORTS, VENTILATORS AND PERMANENT GANGWAYS**

- Section 2 Bulwarks and Guardrails
- Section 3 Freeing Ports

##### **CHAPTER 20 MACHINERY**

- Section 2 Internal Combustion Engines
- Section 4 Auxiliaries and Piping Arrangement
- Section 5 General Requirements of Electrical Equipment
- Section 6 Earthing
- Section 7 Protective Devices of Electrical Equipment
- Section 8 Source of Electrical Power
- Section 9 Cables
- Section 11 Control Gears
- Section 16 Testing

##### **CHAPTER 23 BARGES INTENDED TO BE CLASSIFIED AS RESTRICTED SERVICES**

- Section 2 Barges Intended to be classified as Coastal Service
- Section 3 Barges Intended to be classified as Smooth Water Service

##### **<ANNEX>**

- Annex 1 Special Requirements for Pusher-Barges

#### **GUIDANCE RELATING TO THE RULES FOR THE CLASSIFICATION OF UNDERWATER VEHICLES**

##### **PART 1 SUBMERSIBLES**

##### **CHAPTER 1 GENERAL**

- Section 1 General
- Section 3 Tests and Trials

##### **CHAPTER 2 CLASSIFICATION OF SUBMERSIBLE**

- Section 1 Classification Registry
- Section 2 Classification Survey during Construction
- Section 3 Classification Survey after Construction

**CHAPTER 4 DESIGN REQUIREMENTS**

Section 2 Environmental Conditions

**CHAPTER 5 PRESSURE HULL**

Section 2 Design Principles  
Section 3 Materials and Weldings  
Section 4 Principles of Manufacture and Construction  
Section 5 Calculations

**CHAPTER 12 ELECTRIC EQUIPMENT**

Section 2 Design Principles

**CHAPTER 13 AUTOMATION, COMMUNICATION, NAVIGATING AND LOCATING EQUIPMENT**

Section 2 Automation Equipment

**CHAPTER 16 RESCUE SYSTEM**

Section 1 General

**PART 2 REMOTE-OPERATED VEHICLES**

**CHAPTER 1 REMOTE-OPERATED VEHICLES (ROVs)**

Section 1 Registry  
Section 2 Survey during Construction  
Section 3 Survey after Construction  
Section 4 Periodical and other surveys  
Section 5 Documents and drawings for approval  
Section 6 Design and Construction

**PART 3 TOURIST SUBMERSIBLES**

**CHAPTER 1 TOURIST SUBMERSIBLES**

Section 1 General  
Section 2 Classification Registry  
Section 3 Periodical and Other Survey

**⟨ANNEX⟩**

Annex 1 Calculation and Pressure Hulls under External Pressure  
Annex 2 Design and Construction for Submersible with GRP  
Annex 3 Stabilities of Submersibles

**GUIDANCE RELATING TO THE RULES FOR THE CLASSIFICATION OF FRP SHIPS**

**CHAPTER 1 GENERAL**

Section 1 General  
Section 2 Definitions  
Section 3 Hull Construction and Equipments

**CHAPTER 2 CLASS SURVEYS**

Section 1 General  
Section 2 Classification Survey during Construction

**CHAPTER 3 MATERIALS**

Section 1 General  
Section 2 FRP Materials  
Section 3 FRP

**CHAPTER 4 MOULDING**

- Section 6 Bonding and Fastening
- Section 7 Bonded Connections

**CHAPTER 5 LONGITUDINAL STRENGTH**

- Section 1 Longitudinal Strength

**CHAPTER 7 DECKS**

- Section 2 Minimum thickness of Deck Laminates

**CHAPTER 10 BEAMS**

- Section 1 Beams

**CHAPTER 12 WATERTIGHT BULKHEADS**

- Section 2 Construction of Watertight Bulkheads

**CHAPTER 13 DEEP TANKS**

- Section 2 Bulkhead Laminates of Deep Tanks

**CHAPTER 18 MACHINERY**

- Section 2 Installation of Propulsion Machinery, Fuel Oil Tank and Earthing

**<ANNEX>**

- Annex 1 Test and Inspections of Materials for Primary Structures
- Annex 2 Test and Inspection of Sandwich constructions Materials
- Annex 3 Banding Strength Test of Bulkhead Laminates of Structural Plywood

**GUIDANCE RELATING TO THE RULES FOR THE CLASSIFICATION OF FLOATING DOCKS**

**CHAPTER 1 GENERAL**

- 1100. General
- 1101. Application

**CHAPTER 4 FREEBOARD AND STABILITY**

- 4200. Stability

**<ANNEX> GUIDANCE FOR DOCK GATES**

1. General
2. Classification Surveys
3. Stability
4. Structure and Strength
5. Opening and Closing Equipment of Dock Gate

**GUIDANCE RELATING TO THE RULES FOR THE CLASSIFICATION OF  
HIGH SPEED AND LIGHT CRAFTS**

**PART 1 CLASSIFICATION AND SURVEYS**

**CHAPTER 1 CLASSIFICATION**

Section 1 General

**PART 3 HULL STRUCTURES**

**CHAPTER 1 DESIGN IN GENERAL**

Section 2 General

**〈ANNEX〉**

Annex 3-1 Guidance for the Direct Strength Assessment

Annex 3-2 Guidance for Buckling Strength Calculation

**CHAPTER 2 DESIGN LOADS**

Section 4 Hull Girder Loads

**CHAPTER 4 STRUCTURE PRINCIPLES IN ALUMINIUM ALLOY**

Section 4 Hull Girder Strength

**CHAPTER 5 STRUCTURE PRINCIPLES IN FRP**

Section 1 General

**PART 4 HULL EQUIPMENT**

**CHAPTER 3 EQUIPMENT NUMBER AND EQUIPMENT**

Section 1 General

**PART 5 MACHINERY SYSTEM**

**CHAPTER 1 GENERAL**

Section 1 General

**CHAPTER 2 AUXILIARIES AND PIPING ARRANGEMENT**

Section 1 General

Section 2 Bilge pumping system

Section 4 Ship-side Valves and Overboard Discharges

Section 7 Cooling Water System

**CHAPTER 3 PRIME MOVERS, POWER TRANSMISSION SYSTEMS AND LIFT DEVICES, ETC.**

Section 1 General

**PART 6 ELECTRICAL EQUIPMENT AND CONTROL SYSTEMS**

**CHAPTER 1 ELECTRICAL EQUIPMENT**

Section 1 General

Section 2 Electric Equipment

**CHAPTER 2 CONTROL SYSTEMS**

Section 1 General

**PART 7 FIRE PROTECTION, DETECTION AND EXTINCTION**

**CHAPTER 1 FIRE PROTECTION**

- Section 2 Structural Fire Protection
- Section 3 Additional Requirements for High Speed Passenger Craft

**CHAPTER 2 FIRE DETECTION AND EXTINCTION**

- Section 2 Fire Detection and Extinction
- Section 3 Additional Requirements for High Speed Passenger Craft
- Section 4 Additional Requirements for High Speed Cargo Craft

**GUIDANCE RELATING TO THE RULES FOR THE CLASSIFICATION OF SHIPS USING  
LOW-FLASHPOINT FUELS**

**CHAPTER 1 GENERAL**

- Section 1 General

**CHAPTER 2 GOAL AND FUNCTIONAL REQUIREMENTS**

- Section 2 Functional requirements

**CHAPTER 3 GENERAL REQUIREMENTS**

- Section 3 Limitation of explosion consequences

**CHAPTER 4 CLASSIFICATION SURVEYS**

- Section 3 Periodical Surveys

**CHAPTER 5 SHIP DESIGN AND ARRANGEMENT**

- Section 4 Machinery space concepts
- Section 7 Location and protection of fuel piping
- Section 8 Fuel preparation room

**CHAPTER 6 FUEL CONTAINMENT SYSTEM**

- Section 3 General requirements
- Section 4 Liquefied gas fuel containment
- Section 7 Pressure relief system
- Section 8 Loading limit for liquefied gas fuel tanks
- Section 9 Maintaining of fuel storage condition

**CHAPTER 7 MATERIAL AND GENERAL PIPE DESIGN**

- Section 3 Pipe design
- Section 4 Materials

**CHAPTER 8 BUNKERING AND FUEL SUPPLY**

- Section 3 Bunkering station

**CHAPTER 9 FUEL SUPPLY TO CONSUMERS**

- Section 4 Safety functions of gas supply system
- Section 5 Fuel distribution outside of machinery space
- Section 6 Fuel supply to consumers in gas-safe machinery spaces

**CHAPTER 10 POWER GENERATION INCLUDING PROPULSION AND OTHER GAS CONSUMER**

- Section 3 Internal combustion engines of piston type

**CHAPTER 11 FIRE SAFETY**

Section 3 Fire protection

**CHAPTER 12 EXPLOSION PREVENTION**

Section 4 Area classification

Section 5 Hazardous area zone

**CHAPTER 13 VENTILATION**

Section 3 General requirements

Section 5 Machinery space

Section 8 Ducts and double pipes

**CHAPTER 14 ELECTRICAL INSTALLATIONS**

Section 3 General requirements

**CHAPTER 15 CONTROL, MONITORING AND SAFETY SYSTEMS**

Section 3 General requirements

Section 4 Bunkering and liquefied gas fuel tank monitoring

Section 8 Gas detection

Section 10 Ventilation

**CHAPTER 16 MANUFACTURE, WORKMANSHIP AND TESTING**

Section 1 General

Section 2 General test regulations and specifications

Section 3 Welding of metallic materials and non-destructive testing for the fuel containment system

Section 4 Other regulations for construction in metallic materials

Section 5 Testing

Section 7 Testing regulations

**<ANNEX>**

Annex 1 Requirements for equipment used for low-flashpoint fuel supply systems

Annex 2 Standard for the use of limit state methodologies in the design of fuel containment systems of novel configuration

Annex 3 Risk assessment

Annex 4 High manganese austenitic steel for Cryogenic Service

Annex 4 Guidance for Ships Using Methyl/Ethyl Alcohol as Fuel

**GUIDANCE FOR APPROVAL OF MANUFACTURING PROCESS AND TYPE APPROVAL, ETC.**

**CHAPTER 1 GENERAL**

Section 1 General

Section 2 Definitions

**CHAPTER 2 APPROVAL OF MANUFACTURING PROCESS**

Section 1 General

Section 2-1 Rolled Steels

Section 2-2 Semi Finished Products for Rolled Steels

Section 2-3 Other Semi Finished Products

Section 2-4 Rolled Steels intended for welding with high heat input

Section 2-5 YP47 Steel Plates

Section 2-6 Hull Structural Steels with Improved Fatigue Properties

Section 2-7	High Strength Steels for Welded Structures
Section 2-8	Brittle Crack Arrest Steels
Section 3	Steel Tubes and Pipes
Section 4-1	Castings
Section 4-2	Steel Forgings
Section 5	Crankshafts under special requirements
Section 6	Aluminium Alloys
Section 7-1	Copper Alloy Castings
Section 7-2	Copper and Copper Alloy Tubes
Section 8	Special Cast Iron Valves
Section 9	Anchors
Section 10-1	Marine Chains
Section 10-2	Marine Chain Accessories
Section 10-3	Offshore Chains and Chain Accessories
Section 11	Wire Rope
Section 12	Synthetic Fibre Ropes
Section 13	FRP Ships
Section 14	Boiler and Pressure Vessel

### CHAPTER 3 TYPE APPROVAL

Section 1	General
Section 2	Welding Materials
Section 3-1	Anti-corrosive Paints
Section 3-2	Non-slip Paints
Section 4	Acid Resisting Paints
Section 5	Loading Instruments
Section 6	High Holding Power Anchors and Super High Holding Power Anchors
Section 7-1	Emergency Towing Arrangements
Section 7-2	Equipment for mooring at SPM
Section 8	Diesel Engines
Section 9	Crankcase Explosion Relief Valves
Section 10	Crankcase Oil Mist Detection Arrangements
Section 11	Exhaust Gas Turbochargers
Section 12	Hydraulic Motors and Hydraulic Pumps
Section 13	Air Compressors
Section 14	Safety Valves
Section 15	Machinery and Equipment for Ships
Section 16	Plastic Piping System
Section 17	Flexible Hose Assembly
Section 18	Mechanical Joints
Section 19	Air Pipe Automatic Closing Devices
Section 20	Level Indicators
Section 21	Electrical Equipment and Cables
Section 22	Cable Laying
Section 23	Automatic and Remote Control Systems
Section 24	Equipment related to Ventilation Systems in Oil Tankers
Section 25	Securing Devices
Section 26	Fire Protection Materials
Section 27	Materials for Refrigerated Chambers and Oil-impervious composition
Section 28	Materials of Reinforced Plastics
Section 29	Water Level Detection and Alarm System
Section 30	Protective Coating Systems
Section 31	LED lighting fitting
Section 32	Corrosion Resistant Steels
Section 33	Protective Coating Systems for Cargo Oil Tanks
Section 34	Fiber Reinforced Plastic Gratings
Section 35	Ballast Water Management System
Section 36	Acoustic Insulation Materials
Section 37	Busbar Trunking Systems

- Section 38 Cable Transit Seal Systems for watertight bulkhead and decks
- Section 39 Electric Power Converters
- Section 40 Composite Material Pressure Vessels for Fuel Containment of Compressed Hydrogen Gas

### **CHAPTER 4 DESIGN APPROVAL**

- Section 1 General
- Section 2 Loading Instrument Program
- Section 3 Container Lashing calculation program

### **CHAPTER 5 APPROVAL OF QUALITY ASSURANCE SYSTEM**

- Section 1 General
- Section 2 Assessment
- Section 3 Approval
- Section 4 Requirements of Quality Assurance System

### **CHAPTER 6 MANUFACTURER APPROVAL**

- Section 1 General
- Section 2 Assessment
- Section 3 Approval

### **〈ANNEX〉**

1. Approval Certificate for Manufacturing Process
2. Type Approval Certificate
3. Design Approval Certificate
4. Approval Certificate for Quality Assurance System
5. Approval Certificate for Manufacturer
6. Application Form for Approval

## **GUIDANCE FOR FLOATING STRUCTURES**

### **CHAPTER 1 GENERAL**

- Section 1 General

### **CHAPTER 2 CLASSIFICATION SURVEYS**

- Section 1 General
- Section 2 Periodical Surveys

### **CHAPTER 3 HULL STRUCTURES**

- Section 1 Materials and Structures

### **CHAPTER 4 MOORING AND ANCHORING, ETC.**

- Section 1 Standard for Ship's Facilities
- Section 2 Load Lines, etc.

### **CHAPTER 5 FIRE PROTECTION**

- Section 1 General

### **CHAPTER 6 MACHINERY INSTALLATIONS**

- Section 1 General

### **CHAPTER 7 ELECTRICAL INSTALLATIONS**

- Section 1 General

### **CHAPTER 8 FIRE-FIGHTING APPLIANCES**



Section 1 General

## GUIDANCE FOR FREIGHT CONTAINERS

### CHAPTER 1 GENERAL

Section 1 General  
Section 2 Definitions

### CHAPTER 2 CONSTRUCTION AND CERTIFICATION OF FREIGHT CONTAINERS

Section 1 General  
Section 2 Approval of Manufacturing Process  
Section 3 Type Approval Inspection  
Section 4 Production Unit Inspection  
Section 5 Certificate and Identification  
Section 6 General Cargo Containers  
Section 7 Thermal Containers  
Section 8 Tank Containers

#### 〈Appendix〉

Appendix 2-1 Approval Certificate for Manufacturing Process  
Appendix 2-2 Certificate for Type Approval Test of Freight Container  
Appendix 2-3 Certificate of Inspection on Articles for Ship use of Approved Type

### CHAPTER 3 GUIDANCE FOR APPROVAL OF CONTAINER(TIR CONVENTION)

Section 1 General  
Section 2 Type Approval  
Section 3 Individual Approval  
Section 4 Production Unit Inspection

#### 〈Appendix〉

Appendix 3-1 Regulations on Technical Conditions  
Appendix 3-2 Application of Container Inspection for TIR  
Appendix 3-3 Certificate of Approval by Design Type  
Appendix 3-4 Certificate of Approval granted at a Stage subsequent to manufacturer  
Appendix 3-5 Approval Plate  
Appendix 3-6 Freight Container Production Certificate

## GUIDANCE FOR SINGLE POINT MOORING

### CHAPTER 1 CLASSIFICATION REGISTRY AND SURVEYS

Section 1 Classification Registry  
Section 2 Testing During Construction  
Section 3 Surveys After Construction

### CHAPTER 2 MATERIALS AND WELDING

Section 1 Materials  
Section 2 Welding and Fabrication  
Section 3 Weld Design

### CHAPTER 3 DESIGN OF MOORING SYSTEM

Section 1 Site and Environmental Conditions  
Section 2 Design Loads  
Section 3 Structural Design and Stability  
Section 4 Mooring and Anchoring

**CHAPTER 4 EQUIPMENT AND SYSTEMS**

- Section 1 Cargo or Product Transfer Systems
- Section 2 Ancillary Systems and Equipment
- Section 3 Hazardous Areas and Electrical Installations
- Section 4 Safety Provisions

**GUIDANCE FOR SHIPS CARRYING CNG IN BULK**

**CHAPTER 1 GENERAL**

- Section 1 General

**CHAPTER 2 CLASSIFICATION SURVEYS**

- Section 1 General
- Section 2 Periodical Surveys

**CHAPTER 3 STRUCTURES AND EQUIPMENTS**

- Section 1 General
- Section 2 Ship Survival Capability and Location of Cargo Tanks
- Section 3 Ship Arrangements
- Section 4 Cargo Containment
- Section 5 Process Pressure Vessels and Liquid, Vapour, and Pressure Piping Systems
- Section 6 Materials of Construction
- Section 7 Cargo Pressure/Temperature Control
- Section 8 Cargo Tank and Cargo Hold Vent Systems
- Section 9 Environmental Control
- Section 10 Electrical Installations
- Section 11 Fire Protection and Fire Extinction
- Section 12 Mechanical Ventilation in the Cargo Area
- Section 13 Instrumentation (Gauging, Gas Detection)
- Section 14 Filling Limits for Cargo Tanks
- Section 15 Use of Cargo as Fuel
- Section 16 Operating Requirements

**GUIDANCE FOR RECREATIONAL CRAFTS**

**CHAPTER 1 GENERAL**

- Section 1 General
- Section 2 Essential Requirements

**CHAPTER 2 CLASSIFICATION SURVEYS**

- Section 1 General
- Section 2 Kinds and Due Range of Surveys
- Section 3 Scope of Surveys

**CHAPTER 3 MATERIALS**

- Section 1 General
- Section 2 Metal Material and Welding
- Section 3 Wood

Section 4 FRP Material and Moulding

#### **CHAPTER 4 STRUCTURES**

Section 1 General  
 Section 2 Pressure Adjusting Factors  
 Section 3 Design Pressure  
 Section 4 Scantling of Plating  
 Section 5 Requirements for Stiffening  
 Section 6 Structural Arrangement

#### **CHAPTER 5 STABILITY AND BUOYANCY**

Section 1 General  
 Section 2 Non-sailing Crafts of Hull Length Greater than or Equal to 6 m  
 Section 3 Sailing Crafts of Hull Length Greater than or Equal to 6 m  
 Section 4 Crafts of Hull Length Less than 6 m  
 Section 5 Maximum Load Capacity

#### **CHAPTER 6 HULL EQUIPMENT**

Section 1 Protection against Falling Overboard and Reboarding  
 Section 2 Windows, Portlights, Hatches, Deadlights and Doors  
 Section 3 Watertight Cockpits and Quick-draining Cockpits  
 Section 4 Rudders  
 Section 5 Anchoring, Mooring and Towing – Strong Points

#### **CHAPTER 7 STEERING SYSTEM**

Section 1 General  
 Section 2 Hydraulic Steering System  
 Section 3 Field of Vision from Steering Position

#### **CHAPTER 8 MACHINERY INSTALLATIONS**

Section 1 Engine and Engine Spaces  
 Section 2 Propulsion System  
 Section 3 Starting System  
 Section 4 Sea Water and Drainage Piping Systems  
 Section 5 Discharge Prevention and Installations Facilitating the Delivery Ashore of Waste  
 Section 6 Fuel System  
 Section 7 Ventilation

#### **CHAPTER 9 ELECTRICAL EQUIPMENT**

Section 1 Direct Current System  
 Section 2 Alternating Current System  
 Section 3 Navigation Lights

#### **CHAPTER 10 LPG SYSTEM FOR DOMESTIC USE**

Section 1 General  
 Section 2 Pressure Reduction System  
 Section 3 Gas Supply Line System

- Section 4 Gas Appliances
- Section 5 Location and Installation of Gas Cylinders
- Section 6 Ventilation
- Section 7 Ducts and Flues for Air Intake and Combustion-product Discharge
- Section 8 Electrical Devices for Ignition Protection
- Section 9 Gas Installation System Tests
- Section 10 Owner's Manual

**CHAPTER 11 FIRE PROTECTION AND FIRE EXTINCTION**

- Section 1 Fire Protection
- Section 2 Fire Fighting Equipment
- Section 3 Others

**CHAPTER 12 ESSENTIAL REQUIREMENTS FOR EXHAUST EMISSIONS FROM PROPULSION ENGINES**

- Section 1 General
- Section 2 Essential Requirements

**CHAPTER 13 ESSENTIAL REQUIREMENTS FOR NOISE EMISSIONS**

- Section 1 General
- Section 2 Essential Requirements

**GUIDANCE FOR WIG CRAFT (WING-IN-GROUND EFFECT CRAFT)**

**Chapter 1 GENERAL**

**Chapter 2 CLASSIFICATION AND SURVEYS**

**Chapter 3 STRUCTURES**

**Chapter 4 EQUIPMENT**

**Chapter 5 STABILITY AND SUBDIVISION**

**Chapter 6 MACHINERY**

**Chapter 7 ELECTRICAL EQUIPMENT AND CONTROL SYSTEMS**

**Chapter 8 FIRE PROTECTION**

**Chapter 9 FIRE EXTINCTION**

**Chapter 10 EVACUATION INSTALLATIONS**

**Chapter 11 SPECIAL INSTALLATIONS**

**<Annex>**

**Annex 1 FIRE PROTECTION TEST PROCEDURE**

**Annex 2 EMERGENCY EVACUATION TEST PROCEDURE**

## GUIDANCE FOR LARGE YACHTS

### PART 1 CLASSIFICATION AND SURVEYS

#### CHAPTER 1 CLASSIFICATION

- Section 1 General
- Section 2 Classification Survey during Construction
- Section 3 Classification Survey after Construction

#### CHAPTER 2 PERIODICAL AND OTHER SURVEYS

- Section 1 General

### PART 2 MATERIALS AND WELDING

#### CHAPTER 1 MATERIALS

- Section 1 General

#### CHAPTER 2 WELDING

- Section 1 General
- Section 2 Welding of Aluminium Alloys

### PART 3 HULL STRUCTURES

#### CHAPTER 1 DESIGN PRINCIPLES

- Section 1 Definitions
- Section 2 General
- Section 3 Approval of Plans and Documents
- Section 4 Subdivision and Arrangement

#### CHAPTER 2 DESIGN LOADS

- Section 1 General
- Section 2 Accelerations
- Section 3 Sea Pressures
- Section 4 Hull Girder Loads

#### CHAPTER 3 STRUCTURE PRINCIPLES IN STEEL

- Section 1 General
- Section 2 Materials and Welding
- Section 3 Manufacturing and Inspection
- Section 4 Hull Girder Strength
- Section 5 Platings
- Section 6 Stiffeners
- Section 7 Transverses and Girders
- Section 8 Pillars

#### CHAPTER 4 STRUCTURE PRINCIPLES IN ALUMINIUM ALLOY

- Section 1 General
- Section 2 Materials and Welding
- Section 3 Material Protection
- Section 4 Hull Girder Strength
- Section 5 Platings
- Section 6 Stiffeners
- Section 7 Transverses and Girders
- Section 8 Pillars

**CHAPTER 5 STRUCTURE PRINCIPLES IN FRP**

- Section 1 General
- Section 2 Materials
- Section 3 Manufacturing
- Section 4 Hull Girder Strength
- Section 5 Sandwich Panels
- Section 6 Single Skin Construction
- Section 7 Transverses and Girders

**PART 4 HULL EQUIPMENT**

**CHAPTER 1 RUDDERS**

- Section 1 General
- Section 2 Rudder Force
- Section 3 Rudder Torque
- Section 4 Rudder Strength Calculation
- Section 5 Rudder Stocks
- Section 6 Rudder Plates, Rudder Frames and Rudder Main Pieces
- Section 7 Couplings between Rudder Stocks and Main Pieces
- Section 8 Bearings of Rudder Stock
- Section 9 Rudder Accessories

**CHAPTER 2 EQUIPMENT NUMBER AND EQUIPMENT**

- Section 1 General
- Section 2 Structural Arrangement for Anchoring Equipment
- Section 3 Equipment Number
- Section 4 Anchors
- Section 5 Anchor Chain Cables
- Section 6 Wire Ropes
- Section 7 Intact Stability

**CHAPTER 3 HATCHWAYS, WINDOWS AND OTHER OPENINGS**

- Section 1 Hatchways and Other Deck Openings
- Section 2 Bulwarks, Freeing Ports, Side Scuttles, Ventilators
- Section 3 Windows

**PART 5 MACHINERY INSTALLATIONS**

**CHAPTER 1 GENERAL**

- Section 1 General

**CHAPTER 2 AUXILIARIES AND PIPING ARRANGEMENT**

- Section 1 General
- Section 2 Bilge and Drainage Systems
- Section 3 Air, Sounding and Filling Pipes
- Section 4 Ship-side Valves and Overboard Discharges
- Section 5 Fuel Oil System
- Section 6 Lubricating Oil System
- Section 7 Cooling Water System
- Section 8 Ventilation Systems

**CHAPTER 3 PRIME MOVERS, POWER TRANSMISSION SYSTEMS, ETC.**

- Section 1 General

**PART 6 ELECTRICAL EQUIPMENT AND CONTROL SYSTEMS**

**CHAPTER 1 ELECTRICAL EQUIPMENT**

- Section 1 General
- Section 2 Electrical Equipment

**CHAPTER 2 CONTROL SYSTEMS**

- Section 1 General
- Section 2 Automatic and Remote Control Systems

**PART 7 FIRE PROTECTION AND EXTINCTION**

**CHAPTER 1 FIRE PROTECTION**

- Section 1 General
- Section 2 Structural Fire Protection
- Section 3 Ventilation System

**CHAPTER 2 FIRE DETECTION AND EXTINCTION**

- Section 1 General
- Section 2 Fire Detection and TV Monitoring System
- Section 3 Fire Extinction System

**GUIDANCE FOR FUEL CELL SYSTEMS ON BOARD OF SHIPS**

**CHAPTER 1 GENERAL**

- Section 1 General

**CHAPTER 3 STRUCTURES AND INSTALLATION**

- Section 1 General
- Section 2 Design Principles for Fuel Cell Power Installations
- Section 3 Fire Safety
- Section 4 Electrical System
- Section 5 Control, Monitoring and Safety System
- Section 6 Fuel Cells Associated Auxiliaries
- Section 7 Manufacture, Workmanship and Testing

**GUIDANCE FOR SHIPS FOR NAVIGATION IN ICE**

**CHAPTER 1 STRENGTHENING FOR NAVIGATION IN ICE**

- Section 1 General
- Section 2 Ice strengthening
- Section 3 Hull Structural Design
- Section 4 Rudder and Steering Arrangements
- Section 5 Engine Output
- Section 6 Propulsion Machinery
- Section 7 Miscellaneous Machinery Requirements

**CHAPTER 2 SHIPS FOR NAVIGATION IN POLAR WATERS**

- Section 1 Polar Class Descriptions and Application
- Section 2 Structural Requirements for Polar Class Ships
- Section 3 Machinery Requirements for Polar Class Ships

## CHAPTER 3 SHIPS FOR ICE BREAKING CAPABILITY FOR NAVIGATION IN POLAR WATERS

- Section 1 General
- Section 2 Strengthening of Arctic class ships and Icebreakers
- Section 3 Rudder
- Section 4 Machinery Installations
- Section 5 Subdivision and Stability

## CHAPTER 4 WINTERIZATION

- Section 1 General
- Section 2 Material for hull construction at low temperatures
- Section 3 Winterization M – Materials for equipment and components at low temperatures
- Section 4 Winterization E3(t) – Main component and sub-component
- Section 5 Winterization E2(t) – Main component and sub-component
- Section 6 Winterization E1(t) – Main component and sub-component
- Section 7 Winterization S – Stability due to ice accretion
- Section 8 Winterization D – Alternative design
- Section 9 Winterization IR – Ice removal arrangements
- Section 10 Ship specific requirements

## ⟨ANNEX⟩

- Annex 1 Strengthening for navigation in Ice.
- Annex 2 Ice Load cases for propeller and the shape of the propeller ice torque excitation for the ships strengthened for navigation in ice and polar class ships

## GUIDANCE FOR APPROVAL OF RISK-BASED SHIP DESIGN

### CHAPTER 1 GENERAL

- Section 1 General
- Section 2 Definitions

### CHAPTER 2 STAKEHOLDERS AND QUALIFICATION

- Section 1 General
- Section 2 Design Team
- Section 3 Approval Team

### CHAPTER 3 APPROVAL PROCESS

- Section 1 Approval Process
- Section 2 Preliminary approval
- Section 3 Final Approval

### CHAPTER 4 SURVEY REQUIREMENTS

- Section 1 Survey Requirements

### CHAPTER 5 RISK EVALUATION CRITERIA

- Section 1 General
- Section 2 Types of Risk

### CHAPTER 6 DOCUMENTATION REQUIREMENTS

- Section 1 General



- Section 2 Documentation to be Prepared and Exchanged
- Section 3 Documentation Form

**<ANNEX>**

- Annex 1 Risk Acceptance Criteria
- Annex 2 Form of Preliminary Approval Certificate

**GUIDANCE FOR STRENGTH ASSESSMENT OF MEMBRANE-TYPE LNG TANKS UNDER SLOSHING LOADS**

**CHAPTER 1 GENERAL**

- Section 1 Application
- Section 2 Symbols and definitions
- Section 3 Documentation

**CHAPTER 2 ASSESSMENT OF DESIGN SLOSHING LOAD**

- Section 1 Sloshing analysis condition
- Section 2 Sloshing analysis – Model test
- Section 4 Sloshing simulation using CFD

**CHAPTER 3 STRENGTH ASSESSMENT OF LNG CCS**

- Section 1 General
- Section 2 Configuration of CCS
- Section 3 Analysis based on static load
- Section 4 Methods of assessment
- Section 5 Acceptance criteria
- Section 6 Advanced dynamic analysis

**GUIDANCE FOR LNG FUEL READY SHIPS**

**CHAPTER 1 GENERAL**

- Section 1 General
- Section 2 Notation

**CHAPTER 2 REQUIREMENTS FOR LEVEL OF LNG FUEL READY**

- Section 1 General
- Section 2 Level of Preparing Generic Design
- Section 3 Level of Installing Parts of Systems
- Section 4 Survey

**GUIDANCE ON STRENGTH ASSESSMENT OF CONTAINERSHIPS CONSIDERING THE WHIPPING EFFECT**

**CHAPTER 1 GENERAL**

- Section 1 General
- Section 2 Analysis Procedure

**CHAPTER 2 SELECTION OF DESIGN WAVE AND DOMINANT SEA STATE**

- Section 1 General

- Section 2 Design Wave Selection
- Section 3 Dominant Sea State Selection

**CHAPTER 3 HYDRO-ELASTIC SIMULATION**

- Section 1 General
- Section 2 Hydro-Elastic Simulation In Time Domain

**CHAPTER 4 EVALUATION OF HULL GIRDER STRENGTH CONSIDERING THE WHIPPING EFFECT**

- Section 1 General
- Section 2 Estimation Of Whipping Contribution By Design Wave Method
- Section 3 Estimation Of Whipping Contribution By Design Sea State Method
- Section 4 Estimation Of Whipping Contribution And Ultimate Hull Girder Strength

**GUIDANCE FOR STRUCTURAL STRENGTH ASSESSMENT OF PUMP TOWER OF LNG CARRIERS**

**CHAPTER 1 GENERAL**

- Section 1 General
- Section 2 Introduction
- Section 3 Equivalency
- Section 4 Documents

**CHAPTER 2 LOADS ON PUMP TOWER**

- Section 1 General
- Section 2 Loads

**CHAPTER 3 STRUCTURAL STRENGTH ASSESSMENT**

- Section 1 Structure modeling
- Section 2 Boundary conditions
- Section 3 Strength assessment

**GUIDANCE FOR NOISE AND VIBRATION**

**CHAPTER 1 GENERAL**

- Section 1 General
- Section 2 Approval of plans and documents

**CHAPTER 2 CLASSIFICATION SURVEYS**

- Section 1 General
- Section 2 Classification Survey
- Section 3 Periodical Surveys
- Section 4 Occasional Surveys

**CHAPTER 3 NOISE**

- Section 1 General
- Section 2 Measurement Procedure
- Section 3 Measurement Location
- Section 4 Measurement Conditions
- Section 4 Criteria

**CHAPTER 4 VIBRATION**

- Section 1 General
- Section 2 Measurement Procedure
- Section 3 Measurement Location
- Section 4 Measurement Conditions
- Section 4 Criteria

**GUIDANCE FOR SHIPLIFT AND TRANSFER SYSTEMS**

**CHAPTER 1 GENERAL**

- Section 1 General
- Section 2 Classification Regulations
- Section 3 Certification requirements

**CHAPTER 2 STRUCTURAL DESIGN**

- Section 1 Structural design criteria

**CHAPTER 3 TESTING**

- Section 1 Test criteria

**GUIDANCE FOR BATTERY SYSTEMS ON BOARD OF SHIPS**

**CHAPTER 1 GENERAL**

- Section 1 General
- Section 2 Drawings and Data

**CHAPTER 2 CLASSIFICATION SURVEYS**

- Section 1 General
- Section 2 Periodical Surveys
- Section 3 Tests and inspections
- Section 4 Tests after installation

**CHAPTER 3 CONSTRUCTION AND EQUIPMENT**

- Section 1 General
- Section 2 System Design
- Section 3 Electric Power Converters
- Section 4 Fire Protection and Fire Extinction
- Section 5 Cooling
- Section 6 Monitoring and Safety Systems
- Section 7 Risk Assessment

**GUIDANCE FOR MARITIME CYBER SECURITY SYSTEM**

**CHAPTER 1 GENERAL**

- Section 1 General

**CHAPTER 2 SURVEYS**

- Section 1 General

- Section 2 Initial Surveys for Company
- Section 3 Initial Surveys for Ship
- Section 4 Surveys for Certification Maintenance
- Section 5 Remote Cyber Security Surveys

**CHAPTER 3 REQUIREMENTS FOR CS SYSTEM OF THE COMPANY**

- Section 1 General
- Section 2 Company Cyber Security Compliance 1
- Section 3 Company Cyber Security Compliance 2
- Section 4 Company Cyber Security Compliance 3

**CHAPTER 4 REQUIREMENTS FOR CS SYSTEM OF THE SHIP**

- Section 1 General
- Section 2 CS Ready
- Section 3 Ship Cyber Security Compliance 1 or CS1
- Section 4 Ship Cyber Security Compliance 2 or CS2
- Section 5 Ship Cyber Security Compliance 3 or CS3

**GUIDANCE FOR FLOATING LNG BUNKERING TERMINAL**

**CHAPTER 1 GENERAL**

- Section 1 General
- Section 2 Definitions

**CHAPTER 2 CLASSIFICATION AND SURVEYS**

- Section 1 General
- Section 2 Classification Survey
- Section 3 Surveys

**CHAPTER 3 DESIGN CONDITION**

- Section 1 General
- Section 2 Design Loads
- Section 3 Corrosion Control Means and Corrosion Margins
- Section 4 Risk Assessment

**CHAPTER 4 MATERIALS AND WELDING**

- Section 1 General

**CHAPTER 5 HULL CONSTRUCTION AND EQUIPMENT**

- Section 1 General
- Section 2 Survival Capability and Location of Cargo Tanks
- Section 3 Longitudinal Strength
- Section 4 Structural Design and Analysis of the Hull
- Section 5 Hull Arrangements
- Section 6 Hull Equipment

**CHAPTER 6 POSITIONING SYSTEM**

- Section 1 General

- Section 2 Mooring Analysis
- Section 3 Design of Mooring Lines, etc.
- Section 4 Mooring Equipment
- Section 5 Single Pint Mooring Systems
- Section 6 Anchor Holding Power

**CHAPTER 7 MACHINERY INSTALLATIONS**

- Section 1 General
- Section 2 Piping Systems for Cargo Tanks
- Section 3 Use of Natural Gas as Fuel

**CHAPTER 8 ELECTRICAL EQUIPMENT AND CONTROL SYSTEMS**

- Section 1 Hazardous Area
- Section 2 Electrical Equipment
- Section 3 Control Systems

**CHAPTER 9 VENTILATION**

- Section 1 General
- Section 2 Mechanical Ventilation in the Cargo Area

**CHAPTER 10 FIRE PROTECTION, FIRE EXTINGUISHMENT AND MEANS OF ESCAPE**

- Section 1 Fire Protection and Fire Extinguishment
- Section 2 Means of Escape

**CHAPTER 11 PERSONNEL PROTECTION**

- Section 1 Personnel Protection

**CHAPTER 12 BUNKERING SYSTEM**

- Section 1 General
- Section 2 Arrangement and Design of Bunkering Systems
- Section 3 Bunker Transfer Systems
- Section 4 Control, Monitoring and Safety Systems
- Section 5 Communication and Lighting Systems
- Section 6 Operation Requirements

**GUIDANCE FOR APPROVAL OF SERVICE SUPPLIERS**

**INTRODUCTION**

- Section 1 General
- Section 2 Objective
- Section 3 Definitions
- Section 4 Application
- Section 5 Procedure for Approval and Certification
- Section 6 Certification
- Section 7 Information Regarding Alterations to the Certified Service Operating System
- Section 8 Cancellation of Approval
- Section 9 Existing Approvals

**Appendix Part A Approval of Service Suppliers listed in IACS UR Z17**

1. Firms engaged in thickness measurements on ships or mobile offshore units (Z17 Annex1-1)
2. Firms engaged in tightness testing of closing appliances such as hatches, doors etc. with ultrasonic equipment(Z17 Annex 1-2)
3. Firms carrying out an in-water survey on ships and mobile offshore units by diver or Remotely Operated Vehicle(ROV)(Z17 Annex 1-3)
4. Firms engaged in inspection and maintenance of fire extinguishing equipment & systems and self contained breathing apparatus(Z17 Annex 1-4 & Annex 1-7)
5. Firms engaged in servicing life saving appliances(Z17 Annex 1-5 & Annex1-13)
6. Firms engaged in inspections and testing of radio communication equipment (Z17 Annex 1-6)
7. Firms engaged in examination of Ro-Ro ships bow, stern, side and inner doors (Z17 Annex 1-8)
8. Firms engaged in annual performance testing of Voyage Data Recorders(VDR) and simplified Voyage Data Recorders(S-VDR)(Z17 Annex 1-9)
9. Firms engaged in inspections of low location lighting systems using photo luminescent materials and evacuation guidance system used as an alternative to low-location lighting system(Z17 Annex 1-10)
10. Firms engaged in sound pressure level measurements of public address and general alarm systems on board ships(Z17 Annex 1-11)
11. Firms engaged in testing of coating system in accordance with IMO Res.MSC. 215(82) as amended and IACS UI SC223 and/or MSC. 288(87) as amended (Z17 Annex 1-12)
12. Firms engaged in measurements of Noise level Onboard Ships(Z17 Annex 1-14)
13. Firms engaged in tightness testing of primary and secondary barriers of gas carriers with membrane cargo containment systems for vessels in service (Z17 Annex 1-15)
14. Firms engaged in survey using Remote Inspection Techniques(RIT) as alternative means for Close-up Survey of the structure of ships and mobile offshore units(Z17 Annex 1-16)
15. Firms engaged in cable transit seal systems inspection of on ships and mobile offshore units(Z17 Annex 1-17)
16. Firms engaged in Commissioning Testing of Ballast Water Management Systems(BWMS) units (Z17 Annex 1-18)

### **Appendix Part B Approval of Service Suppliers listed in IACS UR W35**

1. Independent NDT company or NDT department/section that forms a part of a shipbuilding company providing NDT services on ship and/or offshore components/structures

### **Appendix Part C Approval of Service Suppliers not listed in IACS UR Z17**

1. Firms engaged in vibration measurement in relation to habitability of ship
2. Firms engaged in visual and/or sample checks for preparation of inventory of hazardous materials(IHM)

## **GUIDANCE FOR AUTONOMOUS SHIPS**

### **CHAPTER 1 GENERAL**

- Section 1 General
- Section 2 Operation Plan
- Section 3 Cybersecurity

**CHAPTER 2 AUTONOMOUS SYSTEMS AND AUTONOMOUS SHIPS**

- Section 1 Configuration and Function of Autonomous Systems
- Section 2 Requirements for Autonomous Systems and Autonomous Ships
- Section 3 Approval Procedure for Autonomous Systems and Autonomous Ships

**CHAPTER 3 RISK-BASED APPROVAL**

- Section 1 General
- Section 2 Considerations when Approving Risk-based Design
- Section 3 Measures to Reduce Risk

**GUIDANCE FOR DC DISTRIBUTION SYSTEMS**

**CHAPTER 1 GENERAL**

- Section 1 General
- Section 2 Drawings and Data

**CHAPTER 2 SYSTEM AND ELECTRICAL EQUIPMENT**

- Section 1 System Design
- Section 2 Electrical Equipment

**CHAPTER 3 CONTROL SYSTEMS**

- Section 1 General
- Section 2 System Design

**CHAPTER 4 CLASSIFICATION SURVEYS**

- Section 1 General
- Section 2 Testing and Inspection
- Section 3 Testing and Inspection of DC Circuit-breaker

**CHAPTER 5 RISK ASSESSMENT**

- Section 1 General
- Section 2 Risk Assessment

**GUIDANCE FOR TYPE APPROVAL OF MARITIME CYBER SECURITY**

**CHAPTER 1 GENERAL**

- Section 1 General

**CHAPTER 2 TYPE APPROVAL OF CYBER SECURITY**

- Section 1 General
- Section 2 Procedures for approval

**CHAPTER 3 REQUIREMENTS FOR CYBER SECURITY**

- Section 1 General
- Section 2 Identification and Authentication
- Section 3 Use Control
- Section 4 System Integrity
- Section 5 Data Confidentiality
- Section 6 Restricted Data Flow

- Section 7 Timely Response to Events
- Section 8 Resource Availability
- Section 9 Software Application Requirements
- Section 10 Embedded Device Requirements
- Section 11 Host Device Requirements
- Section 12 Network Device Requirements

**<Annex>**

- ANNEX 1 MAPPING THE REQUIREMENTS TO TYPES OF DEVICE

**GUIDANCE FOR COMPOSITE PROPELLERS**

**CHAPTER 1 GENERAL**

- Section 1 General
- Section 2 Approval procedure

**CHAPTER 2 APPROVAL OF MANUFACTURING PROCESS**

- Section 1 General
- Section 2 Plant audit
- Section 3 Approval test

**CHAPTER 3 INDIVIDUAL PRODUCT**

- Section 1 General
- Section 2 Drawing approval
- Section 3 Product inspection

**GUIDANCE FOR COMPUTER-BASED SYSTEM CONFORMITY ASSESSMENT**

**CHAPTER 1 GENERAL**

- Section 1 General
- Section 2 Assessment process

**CHAPTER 2 COMPUTER-BASED SYSTEM CONFORMITY ASSESSMENT**

- Section 1 General
- Section 2 Embedded software
- Section 3 Application software

**ANNEX**

- ANNEX 1 TEMPLATE



## GUIDANCE FOR INTEGRATED SOFTWARE PROCESS MANAGEMENT

### CHAPTER 1 GENERAL

Section 1 General

### CHAPTER 2 TEST AND SURVEY

Section 1 General

### CHAPTER 3 SOFTWARE PROCESS

Section 1 General

Section 2 Roles and Responsibility of Stakeholder

Section 3 ISPM Process

### CHAPTER 4 PROJECT PROCESS

Section 1 Management Process

Section 2 Support Process

### CHAPTER 5 SOFTWARE LIFE CYCLE PROCESS

Section 1 Planning Process

Section 2 Requirement and Development Process

Section 3 Implementation Process

Section 4 Transition Process

Section 5 Maintenance Process

## GUIDANCE OF HEAT TRANSFER ANALYSIS FOR SHIPS CARRYING LIQUEFIED GASES IN BULK/SHIPS USING LIQUEFIED GASES AS FUELS

### CHAPTER 1 GENERAL

Section 1 Application

Section 2 Definitions

Section 3 Summary of Guidances

Section 4 Documentation

### CHAPTER 2 HEAT TRANSFER ANALYSIS FOR MEMBRANE TYPE

Section 1 Analytical Heat Transfer Analysis

Section 2 FEM Heat Transfer Analysis

### CHAPTER 3 HEAT TRANSFER ANALYSIS FOR INDEPENDENT TYPE A TANK

Section 1 Analytical Heat Transfer Analysis

Section 2 FEM Heat Transfer Analysis

### CHAPTER 4 HEAT TRANSFER ANALYSIS FOR INDEPENDENT TYPE B TANK

Section 1 Analytical Heat Transfer Analysis

Section 2 FEM Heat Transfer Analysis

### CHAPTER 5 HEAT TRANSFER ANALYSIS FOR INDEPENDENT TYPE C TANK

Section 1 Analytical Heat Transfer Analysis

Section 2 FEM Heat Transfer Analysis

## GUIDANCE FOR FATIGUE STRENGTH ASSESSMENT INCLUDING SPRINGING

### CHAPTER 1 GENERAL

- Section 1 General
- Section 2 Assessment Procedure
- Section 3 Assessment conditions
- Section 4 Hydro-elastic simulation

### CHAPTER 2 LINEAR SPRINGING ASSESSMENT

- Section 1 Calculation of stress transfer function and response spectrum
- Section 2 Linear springing assessment by direct method
- Section 3 Linear springing assessment by comparative method

### CHAPTER 3 NONLINEAR SPRINGING ASSESSMENT

- Section 1 Nonlinear springing assessment by direct method
- Section 2 Nonlinear springing assessment by comparative method
- Section 3 Nonlinear springing assessment for low-speed blunt ships where vertical bending moment is significant

## GUIDANCE FOR UNDERWATER RADIATED NOISE

### CHAPTER 1 GENERAL

- Section 1 General
- Section 2 Plans and Documents

### CHAPTER 2 CLASSIFICATION SURVEYS

- Section 1 General
- Section 2 Test and Inspection
- Section 3 Periodical Surveys
- Section 4 Occasional Surveys

### CHAPTER 3 UNDERWATER RADIATED NOISE MEASUREMENT

- Section 1 General
- Section 2 Instrumentation
- Section 3 Measurement Procedure
- Section 4 Measurement Condition
- Section 5 Post-processing and Analysis of Data
- Section 6 Criteria

## GUIDANCE FOR REMOTE SURVEY

### CHAPTER 1 GENERAL

- Section 1 General

### CHAPTER 2 REMOTE SURVEY

- Section 1 General

### CHAPTER 3 PREPARATION

- Section 1 General

- Section 2 Technical Requirements for Remote Survey equipment
- Section 3 Remote Survey Supporter

**CHAPTER 4 REQUIREMENTS FOR REMOTE NOTATION**

- Section 1 Survey
- Section 2 Remote Survey equipment
- Section 3 Remote Survey Supporter

**CHAPTER 5 CONDUCT REMOTE SURVEY**

- Section 1 General
- Section 2 Remote Survey Procedure

**ANNEX**

- Annex 1 Declaration of Master

**GUIDANCE FOR ROMOTE INSPECTION TECHNIQUES**

**CHAPTER 1 GENERAL**

**CHAPTER 2 QUALIFICATION OF SERVICE SUPPLIERS**

**CHAPTER 3 SURVEY USING RIT**

**CHAPTER 4 DATA**

**GUIDANCE FOR PREVENTION SYSTEM OF POLLUTION FROM SHIPS**

**CHAPTER 1 ENVIRONMENTAL PROTECTION SYSTEM**

- Section 1 General
- Section 2 Environmental Protection System (Phase 1)
- Section 3 Environmental Protection System (Phase 2)
- Section 4 Environmental Protection System (Phase 3)

**CHAPTER 2 NITROGEN OXIDES EMISSION ABATEMENT SYSTEM**

- Section 1 General
- Section 2 Selective Catalytic Reduction system (SCR)
- Section 3 Exhaust Gas Recirculation system(EGR)

**CHAPTER 3 SULPHUR OXIDES EMISSION ABATEMENT SYSTEM**

- Section 1 General
- Section 2 Exhaust Gas Cleaning system(EGC)
- Section 3 Exhaust Gas Cleaning system Ready ships
- Section 4 Ships using low sulphur fuel

**CHAPTER 4 SHIPS SATISFYING ENERGY EFFICIENCY DESIGN INDEX(EEDI) PHASE 3**

- Section 1 General

**CHAPTER 5 WIND ASSISTED PROPULSION SYSTEMS**

- Section 1 General

Section 2 Survey

Section 3 Basic requirements for Wind Assisted Propulsion Systems

Section 4 Additional requirements for Wind Assisted Propulsion Systems

## **GUIDANCE FOR SHIPS DESIGNED TO PREVENT THE SPREAD OF INFECTIOUS DISEASE**

Section 1 General

Section 2 Classification Surveys

Section 3 Design Requirements

## 4. CONVERSION TABLE OF SI UNITS

Quantity	SI Unit	Other Unit	Remarks
mass	kg	t	1 t = 10 <sup>3</sup> kg
density (mass density)	kg/m <sup>3</sup>	-	-
moment of inertia	kg·m <sup>2</sup>	-	-
force	N	kgf	1 kgf = 9.81 N
moment (torque)	N·m	kgf·m	1 kgf·m = 9.81 N·m
stress	Pa or N/m <sup>2</sup>	kgf/mm <sup>2</sup>	1 kgf/mm <sup>2</sup> = 9.81 N/mm <sup>2</sup> = 9.81 MPa
pressure	Pa	kgf/cm <sup>2</sup> or bar	1 kgf/cm <sup>2</sup> = 0.981 bar = 98.1 kPa
work energy	J	kgf·m	1 kgf·m = 9.81 J
electric potential	J	kW·h	1 kW·h = 3.6 × 10 <sup>6</sup> J
power	W	PS	1 PS = 735.5 W
temperature	K or °C	C	x °C = (x + 273.15) K
quantity of heat	J	cal or kcal	1 kcal = 4.19 kJ
heat flow rate	W	kcal/h	1 kcal/h = 1.16 W
frequency	Hz	-	-
rotational frequency	s <sup>-1</sup>	min <sup>-1</sup> (rpm)	-
velocity	m/s	knot	rpm = 60 /s 1 knot = 1852 m/h
plane angle	rad	° , ' , "	1° = $\frac{\pi}{180}$ rad

## 5. LOAD LINE MARKS

(1) Assignment of Load Line

The Society is authorized to assign Load Lines to vessels registered by the Korean Government and other Governments.

(2) Load Line Mark for Ocean Going Vessels without Timber Load Line

The centre of the ring is to be placed on each side of the ship at the middle of the length as defined in the International Convention on Load Lines, 1966. The ring, lines and letters are to be painted in white or yellow on a dark ground or in black on a light ground. They are also to be permanently marked on the sides of the ship as shown in Fig 1.

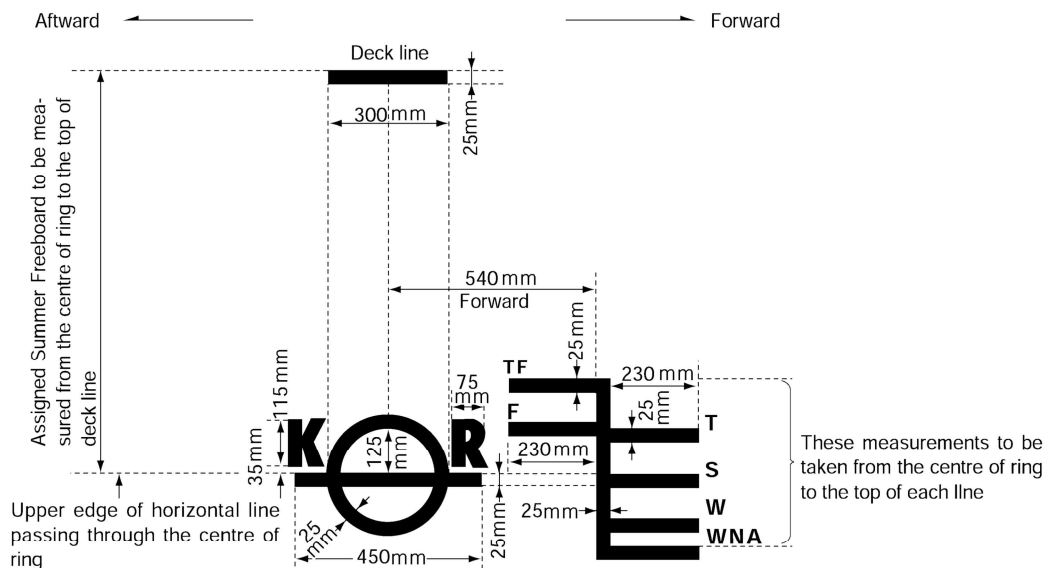
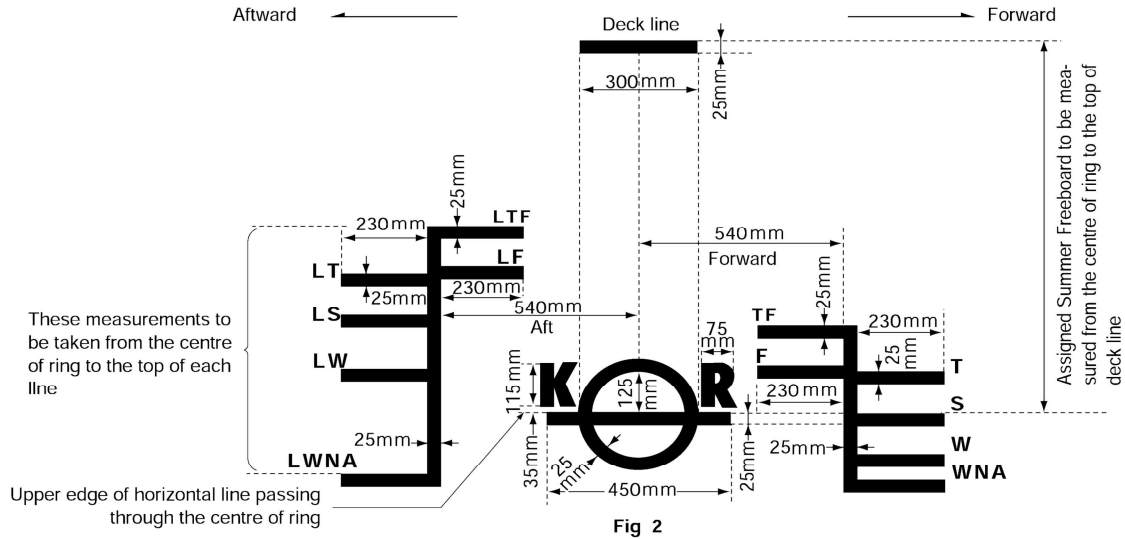


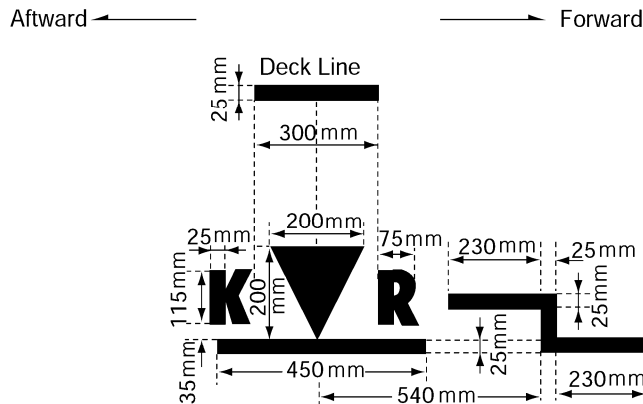
Fig 1

(3) Load Line Mark for Ocean Going Vessels with Timber Load Line

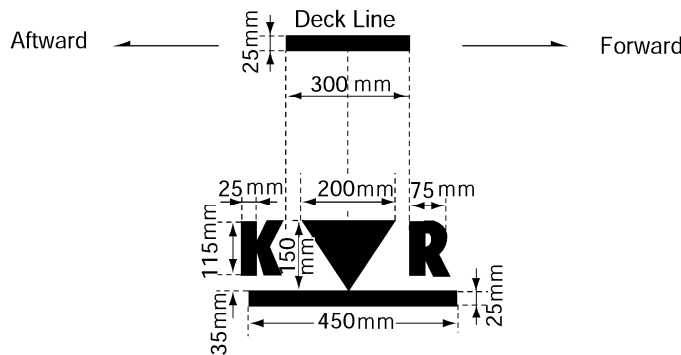
The centre of the ring is to be placed on each side of the ship at the middle of the length as defined in the International Convention on Load Lines, 1966. The ring, lines and letters are to be painted in white or yellow on a dark ground or in black on a light ground. They are also to be permanently marked on the sides of the ship as shown in Fig 2.



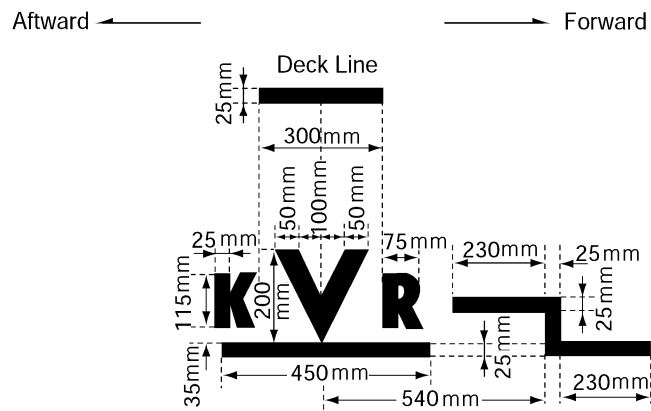
- (4) For Korean flagged vessels which are over 12 m and for domestic voyage, the load line mark is to be as shown in Fig 3 Marking method refers to (2). However, for the vessels navigating solely on lakes and rivers sub-paragraph (5) may be applied.



- (5) For Korean flagged passenger vessels and dangerous cargo carriers which are less than 12 m in length and for domestic voyage, the load line mark is to be as shown in Fig 4 Marking method refers to (2).



- (6) For Korean flagged fishing vessels, the load line mark is to be as shown in **Fig 5**. Marking method refers to (2).



**Fig 5**



- (7) For Korean flagged high speed crafts which are less than 12 m in length and for domestic voyage, the load line mark is to be as shown in Fig 6 Marking method refers to (2).

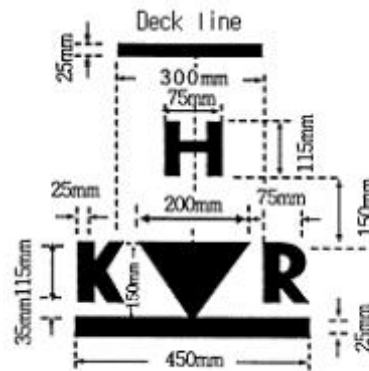


Fig 6

- (8) For Korean flagged high speed crafts which are over 12 m in length and for domestic voyage, the load line mark is to be as shown in Fig 7 Marking method refers to (2).

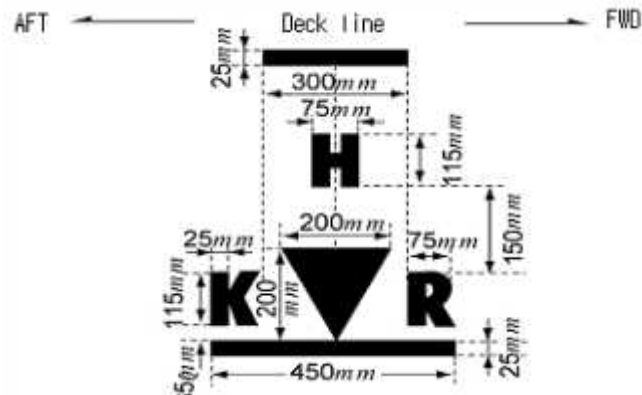


Fig 7

- (9) For high speed craft subject to 2000 HSC Code engaged in international voyage, the load line mark is to be as shown in Fig 8 Marking method refers to (2).

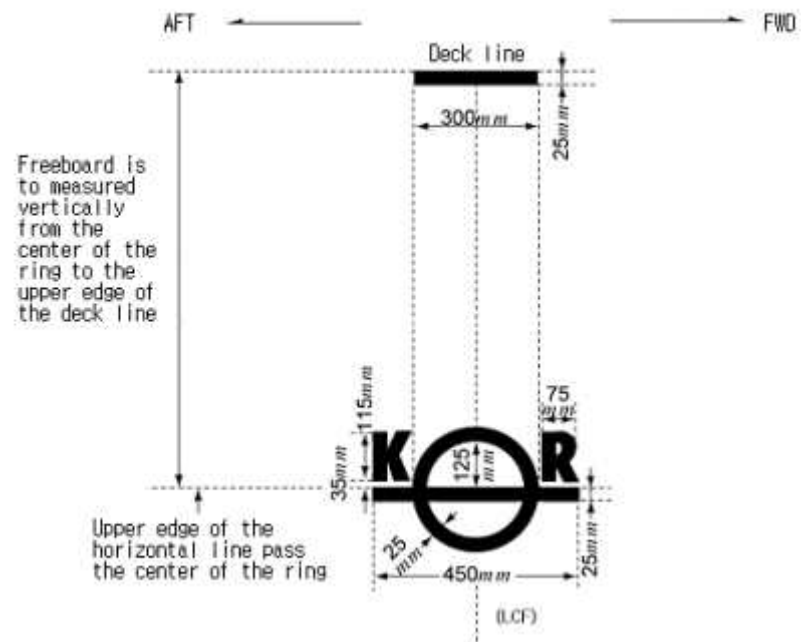


Fig 8

---

---

## INTRODUCTION TO THE CLASSIFICATION TECHNICAL RULES

Published by

**KR**

36, Myeongji ocean city 9-ro, Gangseo-gu,  
BUSAN, KOREA

TEL : +82 70 8799 7114

FAX : +82 70 8799 8999

Website : <http://www.krs.co.kr>

---

---

Copyright© 2022, KR

Reproduction of this Introduction in whole or in parts is  
prohibited without permission of the publisher.