



**2019**

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**Introduction to  
the Classification Technical Rules**

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## 1. LIST OF CLASSIFICATION TECHNICAL RULES

RULES	GUIDANCE
<p><b>Rules for the Classification of Steel Ships</b></p> <ul style="list-style-type: none"> <li>- Pt 1 Classification and Surveys (K/E) (2019)</li> <li>- Pt 2 Materials and Welding (K/E) (2019)</li> <li>- Pt 3 Hull Structures (K/E) (2019)</li> <li>- Pt 4 Hull Equipment (K/E) (2019)</li> <li>- Pt 5 Machinery Installations (K/E) (2019)</li> <li>- Pt 6 Electrical Equipment and Control Systems (K/E) (2019)</li> <li>- Pt 7 Ships of Special Service (Ch1-Ch4, Ch7-Ch10) (K/E) (2019)</li> <li>- Pt 7 Ships of Special Service (Ch5, Ch6) (K/E) (2019)</li> <li>- Pt 8 Fire Protection and Fire Extinction (K/E) (2019)</li> <li>- Pt 9 Additional Installations (K/E) (2019)</li> <li>- Pt 10 Hull Structure and Equipment of Small Steel Ships (K/E) (2019)</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) (2019)</li> <li>- Pt 14 Structural Rules for Container Ships (K/E) (2019)</li> </ul>	<p><b>Guidance Relating to the Rules for the Classification of Steel Ships</b></p> <ul style="list-style-type: none"> <li>- Pt 1 Classification and Surveys (K/E) (2019)</li> <li>- Pt 2 Materials and Welding (K/E) (2019)</li> <li>- Pt 3 Hull Structures (K/E) (2019)</li> <li>- Pt 4 Hull Equipment (K/E) (2019)</li> <li>- Pt 5 Machinery Installations (K/E) (2019)</li> <li>- Pt 6 Electrical Equipment and Control Systems (K/E) (2019)</li> <li>- Pt 7 Ships of Special Service (Ch1-Ch4, Ch7-Ch10) (K/E) (2019)</li> <li>- Pt 7 Ships of Special Service (Ch5, Ch6) (K/E) (2019)</li> <li>- Pt 8 Fire Protection and Fire Extinction (K/E) (2019)</li> <li>- Pt 9 Additional Installations (K/E) (2018) (2019)</li> <li>- Pt 10 Hull Structure and Equipment of Small Steel Ships (K/E) (2019)</li> <li>- Pt 13 Common Structural Rules for Bulk Carriers and Tankers (K/E) (2019)</li> </ul>
<p><b>Rules for Offshore Structures</b></p> <ul style="list-style-type: none"> <li>- Rules for the Classification of Mobile Offshore Units (K/E) (2019)</li> <li>- Rules for the Classification of Mobile Offshore Drilling Units (K/E) (2019)</li> <li>- Rules for the Classification of Fixed Offshore Structures (K/E) (2014)</li> </ul>	<p><b>Guidance for Offshore Structures</b></p> <ul style="list-style-type: none"> <li>- Guidance Relating to the Rules for the Classification of Mobile Offshore Units (K/E) (2018)</li> <li>- Guidance Relating to the Rules for the Classification of Mobile Offshore Drilling Units (K/E) (2019)</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>

**LIST OF CLASSIFICATION TECHNICAL RULES**

RULES	GUIDANCE
<p><b>Other Rules</b></p> <ul style="list-style-type: none"> <li>- Rules for the Classification of Steel Barges (K/E) (2016)</li> <li>- Rules for the Classification of Underwater Vehicles (K/E) (2015)</li> <li>- Rules for the Classification of FRP Ships (K/E) (2014)</li> <li>- Rules for the Classification of Floating Docks (K/E) (2018)</li> <li>- Rules for the Classification of High Speed and Light Crafts (K/E) (2019)</li> <li>- Rules for the Towing Survey of Barges and Tugboats (K/E) (2014)</li> <li>- Rules for the Classification of Ships Using Low-flashpoint Fuels (K/E) (2019)</li> <li>- Rules for the Classification of Dredgers (K) (2015)</li> </ul>	<p><b>Other Guidance</b></p> <ul style="list-style-type: none"> <li>- Guidance Relating to the Rules for the Classification of Steel Barges (K/E) (2016)</li> <li>- Guidance Relating to the Rules for the Classification of Underwater Vehicles (K/E) (2015)</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) (2015)</li> <li>- Guidance Relating to the Rules for the Classification of High Speed and Light Craft (K/E) (2018)</li> <li>- Guidance Relating to the Rules for the Classification of Ships Using Low-flashpoint Fuels (K/E) (2019)</li> <li>- Guidance for Approval of Manufacturing Process and Type Approval, Etc. (K/E) (2019)</li> <li>- Guidance for Floating Structures (K/E) (2010)</li> <li>- Guidance for Freight Containers (K/E) (2019)</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) (2015)</li> <li>- Guidance for Ships for Navigation in Ice (K/E) (2018)</li> <li>- Guidance for Approval of Risk-based Ship Design (K/E) (2015)</li> <li>- Guidance for Assessment of Sloshing Load and Structural Strength of Cargo Containment System (K/E) (2015)</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) (2017)</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) (2019)</li> <li>- Guidance for Shiplift and Transfer Systems (K/E) (2017)</li> <li>- Guidance for Battery Systems on Board of Ships (K/E) (2019)</li> <li>- Guidance for Maritime Cyber security Management System (K/E) (2018)</li> <li>- Guidance for Floating LNG Bunkering Terminal (K/E) (2018)</li> <li>- Guidance for approval of Service Suppliers (K/E) (2019)</li> <li>- Guidance for Autonomous Ships (K/E) (2019)</li> <li>- Guidance for DC Distribution Systems (K/E) (2019)</li> <li>- Guidance for Exhaust gas Emission Abatement System (K/E) (2019)</li> <li>- Guidance for Type Approval of Maritime Cyber security (K/E) (2019)</li> <li>- <a href="#">Guidance for Composite Propellers (K/E) (2019)</a></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** Where the formulated or revised contents of classification rules are not too voluminous, or it is anticipated that the revised contents will become effective early, Circular Letter shall be published for users to know its contents easily, instead of printing complete volumes.

### 2.2 User's Guide

#### 2.2.1 Enforcement

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

#### 2.2.2 Format

"Rules for Steel Ships" are composed of 14 kinds and "Guidances for Steel Ships" are composed of 11 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 31 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 and Duties of Surveyors
- 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 Alteration Survey
- Section 12 Survey of Ships Carrying Dangerous Goods and Other Special Cargoes
- Section 13 Additional Installations Survey
- Section 14 Hull Surveys for General Dry Cargo Ships
- Section 15 Hull Surveys for Liquefied Gas Carriers
- Section 16 Survey Requirements for Shell and Inner Doors, Etc. of RoRo Ships
- Section 17 Additional Requirements
- Section 18 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
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- Section 4 Chemical Tankers
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- Section 3 Rolled Steels
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- Section 7 Copper and Copper Alloy
- Section 8 Aluminium Alloys

### **CHAPTER 2 WELDING**

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- Section 2 Test Specimens and Testing Procedures
- Section 3 Welding work and Inspection
- Section 4 Welding Procedure Qualification Tests
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**CHAPTER 13 ARRANGEMENTS TO RESIST PANTING**

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- Section 5 Rudder Stocks
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- Section 1 Definitions and Scope of Application
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**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 ASSESSMENT OF SLOSHING LOAD AND STRUCTURAL STRENGTH OF CARGO CONTAINMENT SYSTEM**

### **I GENERAL**

1. Application
2. Definition
3. General
4. Equivalence
5. Documentation

### **II Assessment OF DESIGN SLOSHING LOAD**

1. Analysis of Ship Motion
2. Sloshing Model Test
3. Sloshing Simulation

### **III STRENGTH ASSESSMENT OF LNG CONTAINMENT SYSTEM**

1. Containment System Configuration
2. Comparative Method
3. Absolute Method
4. Acceptance Criteria
5. Material Properties

## **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 CLASSIFICATION SURVEYS**

- Section 1 General
- Section 2 Initial Surveys for the company

- Section 3 Initial Surveys for the ship
- Section 4 Surveys for certification maintenance)

**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 CS1 (CS1(C))
- Section 4 CS2 (CS2(C))
- Section 5 CS3 (CS3(C))

**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 EXTINCTION AND MEANS OF ESCAPE**

- Section 1 Fire Protection and Fire Extinction
- 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 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 1-16)
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)

**Appendix Part B Approval of Service Suppliers not listed in IACS 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)
3. Firms providing NDT(Non-destructive Testing) services on ship and offshore structure and component

**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 EXHAUST GAS EMISSION ABATEMENT SYSTEM**

- Section 1 Selective Catalytic Reduction system Using Ammonia Solutions or Urea Solutions as the Reductant Agents(SCR)
- Section 2 Exhaust Gas Recirculation system(EGR)
- Section 3 Exhaust Gas Cleaning system(EGC)
- Section 4 Exhaust Gas Cleaning system Ready ships

**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 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

## 4. CONVERSION TABLE OF SI UNITS

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



- (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.

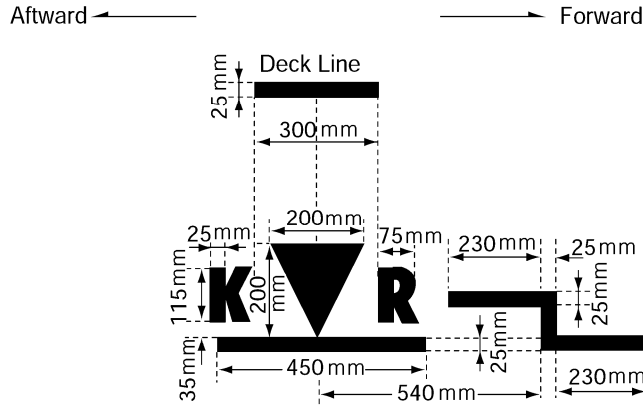


Fig 3

- (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).

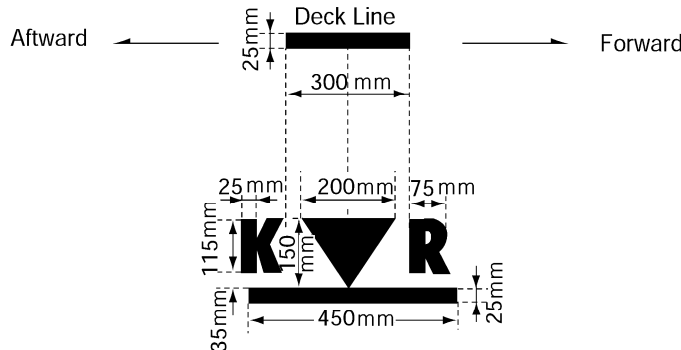


Fig 4

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

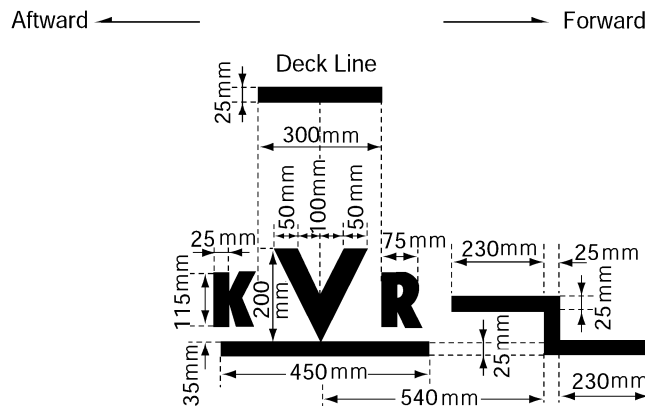


Fig 5

- (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).

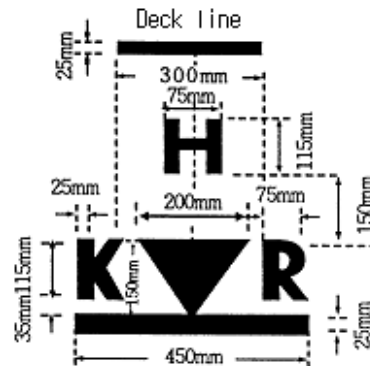


Fig 6

- (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).

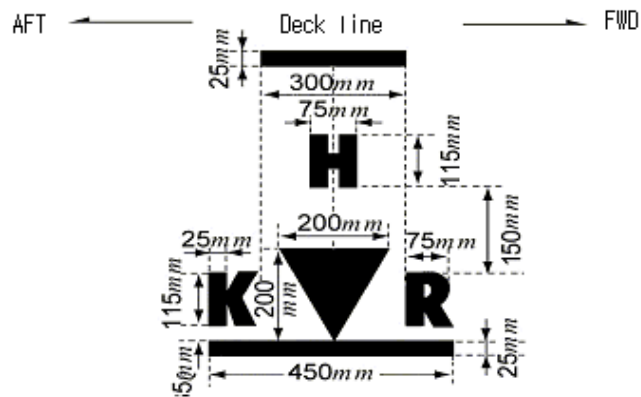


Fig 7

- (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).

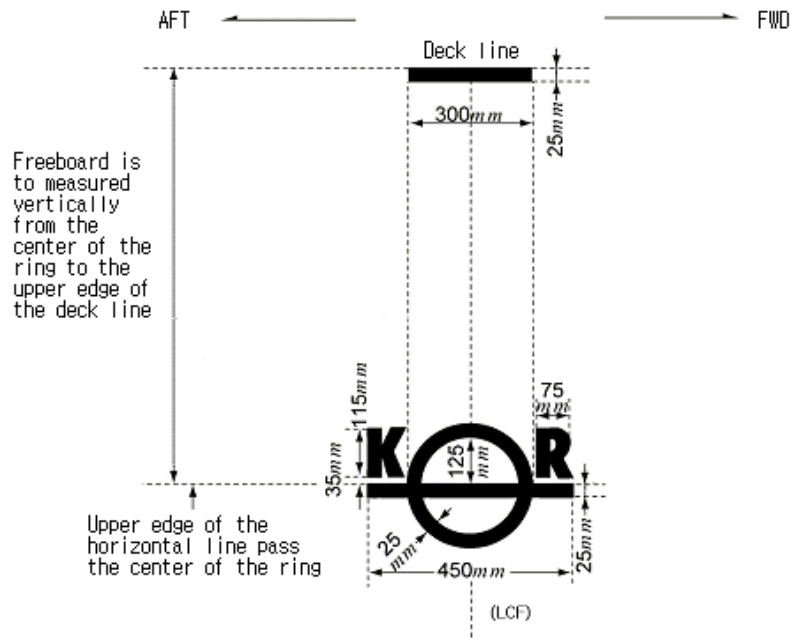


Fig 8

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## **INTRODUCTION TO THE CLASSIFICATION TECHNICAL RULES**

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