CIRCULAR

36 Myeongji ocean city 9-ro,
Gangseo-gu, Busan, 46762
Republic of Korea

Phone : +82-70-8799-8799
Fax : +82-70-8799-8419
E-mail: heoej@krs.co.kr
Person in charge : Heo Eun-jung

No : 2019-10-E
Date : 23.Dec.2019

To : All Surveyors and whom it may concern

Subject	**9.128 Notice for Amendment to the KR Technical Rules (Rules/Guidance for the Classification of Steel Ships Pt 1 ~ Pt 14, Rules/Guidance for the Classification of FRP Ships, Rules for the Classification of Mobile Offshore Units and etc.)**
Application	**Refer to Effective date for each KR Technical Rules specified in Attachment**

1. Please be informed that the amendments have been made to the following KR Technical Rules 2020 as attachment to reflect IACS Resolutions which are to be applied on or after 1 January 2019 and Requests for Establishment/Revision of Classification Technical Rules. And you are kindly requested to apply the amendments on the relevant works according to effective date.

Amended KR Technical Rules	Effective Date	Reflected IACS Res.
Rules/Guidance for the Classification of Steel Ships Pt 1	The application date for survey on or after 1.Jan. 2020	IACS UR Z1(Rev. 7, May 2019), IACS UR Z7 (Rev. 27, Oct 2018), IACS UR Z7/Z7.1/Z7.2/Z10.1/Z10.2/ Z10.3/Z10.4/Z10.5 (Rev. 28/15/8/24/ 36/19/16/19 May or Jun 2019), PR1A/1B/1C/20/35(Rev7/4/6/3/1, Apr or May 2019), To reflect result of internal review
	The contract date for ship construction or the application date for a periodical or occasional machinery survey after the retrofit of harmonic filters on or after 1.Jan. 2020	IACS UR E24 (Rev.1 Dec 2018)
	The contract date for ship construction on or after 1.Jan. 2020	To reflect result of internal review
Guidance for the Classification of Steel Ships Pt 2	Date of application for certification of material & welding or the contract date for ship construction on or after 1.Jan. 2020	MSC.1/Circ.1599 Annex (Interim Guidelines on High Mn Steel) Part I, II.
Rules/Guidance for the Classification of Steel Ships Pt 3	The contract date for ship construction or the application date for survey on or after 1.Jan. 2020	IACS UI SC156(Rev.1, Oct 2018), To reflect result of internal review

Rules/Guidance for the Classification of Steel Ships Pt 5	The contract date for ship construction or the application date for survey on or after 1.Jan. 2020	IACS UR M46(Rev.2 Dec 2018) IACS UR M52(Rev.1 Jan 2019) IACS UR P2.13(New Oct 2018) MSC.1/Circ.1567(June 2017) IACS UR M72(Rev.2 Jan 2019) IACS UR P2.7.4(Rev.9 Oct 2018) IACS UR P4(Rev.5 Dec 2018)
Rules/Guidance for the Classification of Steel Ships Pt 6	The contract date for ship construction or the application date for a periodical or occasional machinery survey after the retrofit of harmonic filters on or after 1.Jan. 2020	IACS UR E24 (Rev.1 Dec 2018)
	The contract date for ship construction or the application date for certification of the device on or after 1.Jan. 2020	IACS UR M3 (Rev.6 Nov 2018)
	The contract date for ship construction on or after 1.Jan. 2020	To reflect result of internal review
Guidance for the Classification of Steel Ships Pt 7	The contract date for ship construction on or after 1.Jan. 2020	IACS UR M79(New Oct 2018)
Guidance for the Classification of Steel Ships Pt 7 (Ch 5)	The keels of which are laid or which are at a similar stage of construction on or after 1.Jan. 2020	IACS UI GC 25(Rev.1, April 2019), IACS UI GC27 (New Dec 2018), IACS UI GC 28(New, Dec. 2018)
	The contract date for ship construction on or after 1.Jan. 2020	MSC.1/Circ.1599 Annex Part I, III.
Rules/Guidance for the Classification of Steel Ships Pt 8	The keels of which are laid or which are at a similar stage of construction on or after 1.Jan. 2020	Res.MSC.409(97), Res.MSC.404(96), Res.MSC.421(98))
	The contract date for ship construction on or after 1.Jan. 2020	IACS UI SC 288, IACS UI SC 289 (withdrawal)
Rules/Guidance for the Classification of Steel Ships Pt 9	The contract date for ship construction or an application date for certification of an engine on or after 1.Jan. 2020	IACS UR M35 (Rev.8 Jan 2019) IACS UR M36 (Rev.6 Dec 2018)
	The contract date for ship construction on or after 1.Jan. 2020	To reflect result of internal review
Rules/Guidance for the Classification of Steel Ships Pt 10	The contract date for ship construction on or after 1.Jan. 2020	IACS UI SC156(Rev.1, Oct 2018)
Rules/Guidance for the Classification of Steel Ships Pt 14	The contract date for ship construction on or after 1.Jan. 2020	To reflect result of internal review
Rules for the Classification of FRP Ships	The contract date for ship construction on or after 1.Jan. 2020	To reflect result of internal review
Rules for the Classification of Mobile Offshore Units	The keels of which are laid or which are at a similar stage of construction or the application date for survey on or after 1.Jan. 2020	MSC Res.407(96), To reflect result of internal review
Rules/Guidance for the Classification of Mobile Offshore Drilling Units	The keels of which are laid or which are at a similar stage of construction or the application date for survey on or after 1.Jan. 2020	MSC Res.407(96), Res.MSC.435(98) IACS UR Z15(Rev.3, May 2019), To reflect result of internal review
	The contract date for ship construction on or after 1.Jan. 2020	IACS UI MODU3 (New Dec 2018)
Guidance for the Classification of Ships Using Low-flashpoint Fuels	The contract date for ship construction on or after 1.Jan. 2020	MSC.1/Circ.1599 Annex Part I, III.

Guidance for Approval of Manufacturing Process and Type Approval, Etc.	Date of application for certification of material & welding or the contract date for ship construction on or after 1.Jan. 2020	MSC.1/Circ.1599 Annex Appendix
	The keels of which are laid or which are at a similar stage of construction on or after 1.Jan. 2020	IACS UR GC 24(Rev.1, Feb 2019)
	Equipment for which the date of application for type approval certification is dated on or after 1.Jan. 2020	IACS UR E10 (Rev.7 Oct 2018)
	Equipment intended to be installed on ships contracted for construction on or after 1.Jan. 2022	
	The date of application for approval on or after 1.Jan. 2020 and The date of which the contract for ship construction on or after 1.Jul. 2021	IACS UR P4(Rev. 5 Dec 2018)
Guidance for Battery Systems on Board of Ships	The contract date for ship construction on or after 1.Jan. 2020	Equivalency
Guidance for Software Conformity Certification	The contract date for ship construction on or after 1.Jan. 2020	Equivalency
Guidance for Autonomous Ships	The contract date for ship construction on or after 1.Jan. 2020	Equivalency
Guidance for DC Distribution Systems	The contract date for ship construction on or after 1.Jan. 2020	Equivalency
Guidance for Maritime Cyber Security System	The contract date for ship construction on or after 1.Jan. 2020	Equivalency
Guidance for Type Approval of Maritime Cyber Security	The contract date for ship construction on or after 1.Jan. 2020	Equivalency
Guidance for Approval of Service Suppliers	The application date for survey on or after 1.Jan. 2020	IACS UR Z17(Rev.13 Jan 2018), To reflect result of internal review

2. Furthermore, please be informed that the establishment will be included in 2020 edition on KR Technical Rules which will be published in the first half of 2020.

Attachments: Amended KR Technical Rules (K/E) --- each 1 copy. (The End)

Amended Rules for the Classification of Steel Ships

(Part 1 Classification and Surveys)

Dec. 2019

KR

- Main Amendments -

(1) Effective date : 1 Jan. 2020 (Date of which the application for survey is submitted)

- ◉ Reflected IACS UR Z1(Rev. 7, May 2019) & UR Z7(Rev. 27, Oct 2018)
- ◉ Reflected IACS UR E24(Rev. 1, Dec 2018)
- ◉ Reflected IACS QS(Quality Secretory)'s comment
- ◉ Bench Marking to other IACS members
- ◉ Reflected the requests by the internal customers
- ◉ Amended unreasonable contents disclosed while implementing the Rules etc.
- ◉ Reflected IACS UR Z7(Rev. 28, May 2019), Z7.1(Rev.15, Jun 2019), Z7.2(Rev. 8, May 2019), Z10.1(Rev.24)/10.2(Rev.36),/Z10.3(Rev.19)/Z10.4(Rev.16)/Z10.5(Rev.19, May 2019)

(2) Effective date : 1 Jan. 2020 (Date of which application for survey in submitted) for COC

- ◉ reflected IACS PR1A(Rev.7 May 2019), PR1B(Rev. 4 May 2019), UR Z20(Rev.2 May 2019)

(3) The contract date for ship construction or the application date for a periodical or occasional machinery survey after the retrofit of harmonic filters)

- ◉ Reflected IACS UR E24(Rev.1 Dec 2018)
  - The requirements have been amended to clarify the application range of harmonic distortion for on-board distribution systems where harmonic filters are installed on main busbars.

(1) Effective date : 1 Jan 2020

(Date of which the application for survey is submitted)

Present	Amendment
CHAPTER 1 CLASSIFICATION	**CHAPTER 1 CLASSIFICATION**
Section 1 General	**Section 1 General**
101. to 103. 〈omitted〉	**101. to 103. 〈same as the present〉**
104. Equivalence 【See Guidance】 The Society may consider the acceptance of alternatives to the Rules, provided that they are deemed to be equivalent to the Rules to the satisfaction to the Society.	**104. Equivalence *(2020)* 【See Guidance】** The Society may consider the acceptance of alternatives and novel features which deviate from or are not directly applicable to the Rules, provided that they are deemed to be equivalent to the Rules to the satisfaction to the Society.
105. Novel features 【See Guidance】 The Society may consider the classification of ships based on or applying novel design principles or features, to which the Rules are not directly applicable, on the basis of experiments, calculations or other supporting information provided to the Society.	
Section 2 ~ Section 6 〈omitted〉	**Section 2 ~ Section 6 〈same as the current Rules〉**

Present	Amendments
Section 7 Cooperation Duties of Owners	**Section 7 Responsibilities and Cooperation Duties of the Owners**
〈newly added〉	**701. General *(2020)***
	1. The classification of a ship is based on the understanding that the ship is loaded, operated and maintained in a proper manner by competent and qualified seafarers or operating personnel in accordance with the environmental, loading, operating and other criteria on which classification is based.
	2. It is the responsibility to ensure that the *International Convention for Load Lines*, *Safety of Life at Sea,* other related Conventions and other related governmental regulations are maintained in an appropriate state including ensuring the validity of all relevant and applicable statutory certificates.
	3. It is the responsibility to ensure proper maintenance of the ship until the next survey required by the Rules, including ensuring the validity of the all relevant and applicable class certificates.
701. Report items	**702. Report items**
When any of the following cases occurs, the Owner is to report to the Society without delay:	When any of the following cases occurs, the Owner is to report to the Society:
(1) When the ship is sustained with a sea casualty by which her present class is deemed affected.	(1) When the ship is sustained with a sea casualty by which her present class is deemed affected.
〈newly added〉	(2) When any areas which is to be "promptly and thoroughly repaired" specified in Ch 2, 107. para 2. are found (in association with wastage over the allowable limits).
	(3) When hull structural damage that may affect the integrity of watertight or weathertight is found.
(2) When the ship is placed in drydock or on a slipway.	(4) When the ship is placed in drydock or on a slipway.
(3) When the ship is laid up or dismantled.	(5) When the ship is laid up or dismantled.
(4) When the Owner is changed.	(6) When the Owner is changed.
(5) When the ship is withdrawn.	(7) When the ship is withdrawn.
(6) When any items which may affect her class are changed.	(8) When any items which may affect her class are changed.
702 ~ 703. 〈omitted〉	**703. ~ 704. 〈same as the current Rules〉 *(2020)***
〈hereafter, omitted〉	〈hereafter, same as the current Rules〉

Present	Amendments
Section 9 Suspension/Withdrawal of Class and Reclassification	**Section 9 Suspension/Withdrawal of Class and Reclassification**
901. Suspension/Reinstatement of class	**901. Suspension/Reinstatement of class**
1. 〈omitted〉	**1. 〈same as the current Rules〉**
2. The classification may be suspended in accordance with the Society's suspension procedure. (1) ~ (5) 〈omitted〉 (6) When the Continuous Survey item(s) due or overdue at the time of Annual Survey is not surveyed, or postponed by agreement. 〈newly added〉 (7) in the event of non-payment of fees Classification will be reinstated if the cause of such suspension are removed, or upon verification that the overdue survey has been satisfactorily dealt with. Suspension of class decided by the Society takes effect from the date when the condition for suspension of class are met and will remain in effect until such time as the class is reinstated once the due items and/or surveys have been dealt with.	**2.** The classification may be suspended in accordance with the Society's suspension procedure. (1) ~ (5) 〈same as the current Rules〉 (6) When the Continuous Survey item(s) due or overdue at the time of Annual Survey is not surveyed, or postponed by agreement. (7) When failure to report to the Society on the "Reports items" of the Responsibilities and Cooperation Duties of the owner specified in **Ch 1, 702.** *(2020)* (8) in the event of non-payment of fees *(2020)* Classification will be reinstated if the cause of such suspension are removed, or upon verification that the overdue survey has been satisfactorily dealt with. Suspension of class decided by the Society takes effect from the date when the condition for suspension of class are met and will remain in effect until such time as the class is reinstated once the due items and/or surveys have been dealt with.
〈omitted〉	〈same as the current Rules〉
7. When a vessel is intended for a single voyage from laid-up position to repair yard with any periodical survey overdue, the vessel's class suspension may be held in abeyance and consideration may be given to allow the vessel to proceed on a single direct ballast voyage from the site of lay up to the repair yard, provided the Society finds the vessel in satisfactory condition after surveys, the extent of which are to be based on surveys overdue and duration of lay-up. An Interim Certificate of Classification with conditions for the intended voyage may be issued. This is not applicable to vessels whose class was already suspended prior to being laid-up.	**7.** When a vessel is intended for a single voyage from laid-up position to a repair yard or another place of laid-up with any periodical survey overdue, the vessel's class suspension may be held in abeyance and consideration may be given to allow the vessel to proceed on a single direct ballast voyage from the site of lay up to a repair yard or another place of laid-up, provided the Society finds the vessel in satisfactory condition after surveys, the extent of which are to be based on surveys overdue and duration of lay-up. An Interim Certificate of Classification with conditions for the intended voyage may be issued. This is not applicable to vessels whose class was already suspended prior to being laid-up. *(2020)*
〈hereafter, omitted〉	〈hereafter, same as the current Rules〉

Present	Amendments
CHAPTER 2 PERIODICAL AND OTHER SURVEYS	**CHAPTER 2 PERIODICAL AND OTHER SURVEYS**
Section 1 General	**Section 1 General**
101. Definitions The definitions of terms used in Ch 2 and Ch 3 are to be as specified in the followings, unless otherwise specified elsewhere. **1.~15. 〈omitted〉** **16. Coating condition is defined as follows:** (1) GOOD condition with only minor spot rusting (2) FAIR condition with local breakdown at edges of stiffeners and weld connections and/or light rusting over 20% or more of areas under consideration, but less than as defined for POOR condition (3) POOR condition with general breakdown of coating over 20% or more, or hard scale at 10% or more, of areas under consideration 〈newly added〉 〈omitted〉	**101. Definitions** The definitions of terms used in Ch 2 and Ch 3 are to be as specified in the followings, unless otherwise specified elsewhere. **1.~15. 〈same as the current Rules〉** **16. Coating condition[1] is defined as follows:** *(2020)* (1) GOOD condition with only minor spot rusting (2) FAIR condition with local breakdown at edges of stiffeners and weld connections and/or light rusting over 20% or more of areas under consideration, but less than as defined for POOR condition (3) POOR condition with general breakdown of coating over 20% or more, or hard scale at 10% or more, of areas under consideration (Note) [1] : Reference is made to IACS Recommendation 87 - "Guidelines for Coating Maintenance & Repairs for Ballast Tanks and Combined Cargo/Ballast Tanks on Oil Tankers" *(2020)* 〈same as the current Rules〉
113. Preparations for survey **1.~3. 〈omitted〉** **4. Survey at sea or at anchorage** (1) ~ (3) 〈omitted〉 (4) Surveys of tanks by means of boats or rafts may only be undertaken at the sole discretion of the Surveyor, who is to take into account the safety arrangements provided, including weather forecasting and ship response under foreseeable conditions. **【See Guidance】** 〈newly added〉 〈hereafter, omitted〉	**113. Preparations for survey** **1.~3. 〈same as the current Rules〉** **4. Survey[1] at sea or at anchorage *(2020)*** (1) ~ (3) 〈same as the current Rules〉 (4) Surveys of tanks by means of boats or rafts may only be undertaken at the sole discretion of the Surveyor, who is to take into account the safety arrangements provided, including weather forecasting and ship response under foreseeable conditions. **【See Guidance】** (Note) **1)** : Reference is made to IACS Recommendation 39 - "Safe Use of Rafts or Boats for Survey" *(2020)* 〈hereafter, same as the current Rules〉

Present	Amendments
Section 2 Annual Survey	**Section 2 Annual Survey**
201. Due range 〈omitted〉	**201. Due range 〈same as the current Rules〉**
202. Hull, equipment and fire-extinguishing appliances	**202. Hull, equipment and fire-extinguishing appliances**
1. The survey is to consist of an examination for the purpose of ensuring, as far as practicable, that the hull, hatch covers, hatch coamings, closing appliances, and equipment are maintained in a satisfactory condition. (1) ~ (29) 〈omitted〉 (30) Examining the fire protection arrangements in cargo, vehicle and ro-ro spaces and confirming, as far as practicable and as appropriate, the operation of the means of control provided for closing the various openings. (2017) 〈hereafter, omitted〉	**1.** The survey is to consist of an examination for the purpose of ensuring, as far as practicable, that the hull, hatch covers, hatch coamings, closing appliances, and equipment are maintained in a satisfactory condition. (1) ~ (29) 〈same as the current Rules〉 (30) Examining the fire protection arrangements in cargo, vehicle and ro-ro spaces, including the fire safety arrangements for vehicle carriers carrying motor vehicles with compressed hydrogen or natural gas in their tanks for their own propulsion as cargo, as applicable, and confirming, as far as practicable and as appropriate, the operation of the means of control provided for closing the various openings *(2020)* 〈hereafter, same as the current Rules〉

Present	Amendment
204. Additional requirements to ship types	**204. Additional requirements to ship types**
1. Oil tankers(including tankers) : 【See Guidance】	**1. Oil tankers(including tankers) : 【See Guidance】**
The additional requirements are to apply to Annual Survey as follows, as far as practicable. Where considered necessary by the Surveyor, the performance test and overhauling may be required.	The additional requirements are to apply to Annual Survey as follows, as far as practicable. Where considered necessary by the Surveyor, the performance test and overhauling may be required.
(1) 〈omitted〉	(1) 〈same as the present〉
(2) Examining the inert gas system, and in particular:	(2) Examining the inert gas system, and in particular:
(A) to (C) 〈omitted〉	(A) to (C) 〈same as the present〉
(D) Examining externally deck seals or double block and bleed assemblies, and non-return valves, and checking automatic filling and draining of the deck seal or operation of double block and bleed assemblies, and operation of non-return valves. *(2019)*	(D) Non-return devices as the followings; *(2020)* (a) examining externally deck seals and checking the deck seal for automatic filling and draining, and the arrangements for protecting the system against freezing; (b) where a double block and bleed valve is installed, checking the automatic operations of the block and the bleed valves upon loss of power; (c) where two shut-off valves in series with a venting valve in between are used as non-return devices, checking the automatic operation of the venting valve, and the alarm for faulty operation of the valves;
(E) to (H) 〈omitted〉	(E) to (H) 〈same as the present〉
〈newly added〉	(I) Checking the means for separating the cargo tank not being inerted from the inert gas main; *(2020)* (J) Checking the alarms of the two oxygen sensors positioned in the space or spaces containing the inert gas system; *(2020)*
〈hereafter, omitted〉	〈hereafter, same as the present〉

Present	Amendment
2. Chemical tankers : 【See Guidance】 The additional requirements are to apply to Annual Survey as follows, as far as practicable. Where considered necessary by the Surveyor, the performance test and overhauling may be required. (1) to (18) 〈omitted〉 (19) Examining, as far as practicable, the cargo tank vent systems, including the pressure/vacuum valves and secondary means to prevent over or under pressure and flame screens. (20) to (44) 〈omitted〉	**2. Chemical tankers : 【See Guidance】** The additional requirements are to apply to Annual Survey as follows, as far as practicable. Where considered necessary by the Surveyor, the performance test and overhauling may be required. (1) to (18) 〈same as the current Rules〉 (19) examining, as far as practicable, the cargo tank vent system, including the pressure/vacuum valves and secondary means to prevent over- or under-pressure and flame screens and the arrangements of cargo tank purging with inert gas, as applicable. *(2020)* (20) to (44) 〈same as the present〉
3. Liquefied gas carriers : 【See Guidance】 The additional requirements are to apply to Annual Survey as follows, as far as practicable, during a loading or discharging operation. Access for cargo tanks or inerted hold spaces, however, need not be surveyed unless otherwise specially required by the Surveyor. Where considered necessary by the Surveyor, the performance test and overhauling may be required. (1) to (10) 〈omitted〉 (11) Confirming that special arrangements to survive conditions of damage are in order. 〈newly added〉 (12) Confirming that wheelhouse doors and windows, sidescuttles and windows in superstructure and deckhouse ends in the cargo area are in a satisfactory condition. (13) Examining the cargo pump rooms and cargo compressor rooms (14) to (53) 〈omitted〉 〈hereafter, omitted〉	**3. Liquefied gas carriers : 【See Guidance】** The additional requirements are to apply to Annual Survey as follows, as far as practicable, during a loading or discharging operation. Access for cargo tanks or inerted hold spaces, however, need not be surveyed unless otherwise specially required by the Surveyor. Where considered necessary by the Surveyor, the performance test and overhauling may be required. (1) to (10) 〈omitted〉 (11) Confirming that special arrangements to survive conditions of damage are in order. (12) Examining, where applicable, the alternative design and arrangements for the segregation of the cargo area, in accordance with the test, inspection and maintenance requirements, if any, specified in the approved documentation. *(2020)* (13) Confirming that wheelhouse doors and windows, sidescuttles and windows in superstructure and deckhouse ends in the cargo area are in a satisfactory condition. *(2020)* (14) Examining the cargo machinery spaces and turret compartments, including their escape routes. *(2020)* (15) to (54) *(2020)* 〈same as the present〉 〈hereafter, same as the present〉

Present	Amendments
Section 3 Intermediate Survey	**Section 3 Intermediate Survey**
301. ~ 303. 〈omitted〉	**301. ~ 303. 〈omitted〉**
304. Additional requirements to ship types 【See Guidance】 At each Intermediate Survey, in addition to all the requirements of Annual Survey, the following requirements are to be complied with.	**304. Additional requirements to ship types 【See Guidance】** At each Intermediate Survey, in addition to all the requirements of Annual Survey, the following requirements are to be complied with.
1. Oil tankers(including tankers) : The additional requirements are to apply to Intermediate Survey as follows, as far as practicable. (1) 〈omitted〉 (2) For ships over ten years of age an internal examination of selected cargo spaces; (3) 〈omitted〉 〈omitted〉	**1. Oil tankers(including tankers) :** The additional requirements are to apply to Intermediate Survey as follows, as far as practicable. (1) 〈omitted〉 ~~(2) For ships over ten years of age an internal examination of selected cargo spaces;~~ (2) 〈same as the current Rules〉 *(2020)* 〈same as the current Rules〉
3. Liquefied gas carriers : 〈omitted〉 (1) Confirmation, where applicable, that pipelines and independent cargo tanks are electrically bonded to the hull. (2) Generally examining the electrical equipment and cables in dangerous zones such as cargo pump rooms and areas adjacent to cargo tanks to check for defective equipment, fixtures and wiring. The insulation resistance of the circuits should be tested and in cases where a proper record of testing is maintained, consideration should be given to accepting recent readings. 〈newly added〉 (3) Confirming that the heating arrangements, if any, for steel structures are satisfactory. (4) ~ (9) 〈omitted〉 〈hereafter, omitted〉	**3. Liquefied gas carriers :** 〈same as the current Rules〉 (1) Confirmation, where applicable, that pipelines and independent cargo tanks are electrically bonded to the hull. (2) Generally examining the electrical equipment and cables in dangerous zones such as cargo machinery spaces and areas adjacent to cargo tanks to check for defective equipment, fixtures and wiring. The insulation resistance of the circuits should be tested and in cases where a proper record of testing is maintained, consideration should be given to accepting recent readings. *(2020)* (3) Blown through testing with dry air to the distribution piping of the dry chemical powder fire extinguishing systems. *(2020)* (4) Confirming that the heating arrangements, if any, for steel structures are satisfactory. *(2020)* (5) ~ (10) *(2020)* 〈same as the current Rules〉 〈hereafter, same as the current Rules〉

Present

Section 4 Special Survey (Hull, Equipment and Fire-extinguishing Appliances)

401. ~ 402. 〈omitted〉

403. Requirements of survey *(2018)*

1. 〈omitted〉

(1) ~ (6) 〈omitted〉

(7) Internal examination of tanks and spaces

(a) All spaces including tanks and spaces in accordance with Table 1.2.3 are to be internally examined.

(b) ~ (d) 〈omitted〉

Table 1.2.3 Minimum requirements for Internal examination of tanks and spaces at each Special Survey *(2017)*

No. of Special Survey / Tanks or Spaces	Special Survey No. 1	Special Survey No. 2	Special Survey No. 3	Special Survey No. 4 and Subsequent
Cargo holds(and their 'tween decks where fitted), cargo tanks	○	○	○	○
〈omitted〉				
Fuel oil tanks△	〈omitted〉			
Lubrication oil tanks△	-	-	-	1
Fresh water tanks△	-	1	○	○

(NOTES)

1. Purpose of tank has a priority in application.

○ : All tanks and spaces are to be internally examined.

△ : As follows:

1) These requirements apply to tanks of integral (structural) type.

2) ~ 3)

4) At Special Survey No. 3 and subsequent surveys, one deep tank for fuel oil in the cargo length area is to be included, if fitted.

〈newly added〉

2. 〈omitted〉

Amendments

Section 4 Special Survey (Hull, Equipment and Fire-extinguishing Appliances)

401. ~ 402. 〈same as the current Rules〉

403. Requirements of survey *(2018)*

1. 〈same as the current Rules〉

(1) ~ (6) 〈same as the current Rules〉

(7) Internal examination of spaces

(a) All spaces within the hull and superstructure in accordance with Table 1.2.3 are to be internally examined. *(2020)*

(b) ~ (d) 〈same as the current Rules〉

Table 1.2.3 Minimum requirements for Internal examination of spaces at each Special Survey *(2020)*

No. of Special Survey / Spaces	〈same as the current Rules〉
〈same as the current Rules〉	

(NOTES)

1. Purpose of tank has a priority in application.

○ : All spaces are to be internally examined.

△ : As follows:

1) These requirements apply to tanks of integral (structural) type.

2) ~ 3)

4) At Special Survey No. 3 and subsequent surveys, one deep tank for fuel oil in the cargo length area is to be included, if fitted.

2. Fuel oil tanks which don not form part of the ship's structures are to be examined in accordance with **502. 2.** (9), (c). *(2020)*

3. 〈same as the current Rules〉 *(2020)*

Present

Table 1.2.4 Minimum requirements for Thickness Measurements at Special Survey

1. General Ships

Special Survey No. 1 & 2	Special Survey No. 3	Special Survey No. 4 and Subsequent
〈omitted〉	1. Suspect areas throughout the vessel 2. Two transverse sections within the amidships $0.5L$ in way of two different cargo spaces[4), 5), 6), 7)] 3. All cargo hold hatch covers and coamings(plating and stiffeners)[9)] 4. Internals in forepeak and afterpeak tanks 5. ~ 6. 〈omitted〉	1. Suspect areas throughout the vessel 2. A minimum of three transverse sections in way of cargo spaces within the amidships $0.5L$[5), 6), 7)] 3. All cargo hold hatch covers and coamings (plating and stiffeners)[9)] 4. Internals in forepeak and aftpeak tanks 5. All exposed main deck plating full length 6. ~ 12. 〈omitted〉
(NOTES) 1) ~ 9) 〈omitted〉		

Amendments

Table 1.2.4 Minimum requirements for Thickness Measurements at Special Survey

1. General Ships (2020)

Special Survey No. 1 & 2	Special Survey No. 3	Special Survey No. 4 and Subsequent
〈same as the current Rules〉	1. Suspect areas throughout the vessel 2. Two transverse sections within the amidships $0.5L$ in way of two different cargo spaces[4), 5), 6), 7)] 3. All cargo hold hatch covers and coamings(plating and stiffeners)[9)] 4. Internals in forepeak and afterpeak water ballast tanks *(2020)* 5. ~ 6. 〈same as the current Rules〉	1. Suspect areas throughout the vessel 2. A minimum of three transverse sections in way of cargo spaces within the amidships $0.5L$[5), 6), 7)] 3. All cargo hold hatch covers and coamings (plating and stiffeners)[9)] 4. Internals in forepeak and aftpeak water ballast tanks *(2020)* 5. All exposed main deck plating full length 6. ~ 12. 〈same as the current Rules〉
(NOTES) 1) ~ 9) 〈same as the current Rules〉		

Present

Table 1.2.4 Minimum requirements for Thickness Measurements at Special Survey (continued)

2. Other Ships

Special Survey No. 1 & 2	Special Survey No. 3	Special Survey No. 4 and Subsequent
〈omitted〉	1. Suspect areas throughout the vessel 2. Two transverse sections of deck plating5), side shell plating and bottom plating within the amidships $0.5L$ 3. Internals in <u>forepeak and afterpeak tanks</u>	1. Suspect areas throughout the vessel 2. Two transverse sections of side shell plating within the amidships $0.5L$ 3. Full length, 1) All exposed main deck plating[5)] 2) Representative exposed superstructure deck plating(poop, bridge and forecastle deck) 3) Selected wind and water strakes 4) Bottom plating 5) Flat keel plating 4. Internals in <u>forepeak and aftpeak tanks</u>
(NOTES) 1) ~ 5) 〈omitted〉		

〈hereafter, omitted〉

Amendments

Table 1.2.4 Minimum requirements for Thickness Measurements at Special Survey (continued)

2. Other Ships

Special Survey No. 1 & 2	Special Survey No. 3	Special Survey No. 4 and Subsequent
〈same as the current Rules〉	1. Suspect areas throughout the vessel 2. Two transverse sections of deck plating5), side shell plating and bottom plating within the amidships $0.5L$ 3. Internals in forepeak and afterpeak <u>water ballast</u> tanks *<u>(2020)</u>*	1. Suspect areas throughout the vessel 2. Two transverse sections of side shell plating within the amidships $0.5L$ 3. Full length, 1) All exposed main deck plating[5)] 2) Representative exposed superstructure deck plating(poop, bridge and forecastle deck) 3) Selected wind and water strakes 4) Bottom plating 5) Flat keel plating 4. Internals in forepeak and afterpeak <u>water ballast</u> tanks *<u>(2020)</u>*
(NOTES) 1) ~ 5) 〈same as the current Rules〉		

〈hereafter, same as the current Rules〉

Present

Table 1.2.6 Minimum requirements for tank testing

No. of Special Survey / Tanks	Special Survey No. 1 ~ 3	Special Survey No. 4 and Subsequent
All water tanks (including cargo holds used for ballast and excluding fresh water tank) and all cargo tanks *(2018)*	○	○
Fuel oil tank, lubrication oil tank, fresh water tank	△	△

(NOTES)

1. Purpose of tank has a priority in application.
2. Boundaries of tanks are to be tested with a head of liquid to the top of air pipes or to near the top of hatches for ballast/cargo holds. Boundaries of fuel oil, lube oil and fresh water tanks are to be tested with a head of liquid to the highest point that liquid will rise under service conditions.
3. ○ : All tanks are to be tested.
   △ : Tank testing of fuel oil, lube oil and fresh water tanks may be specially considered based on a satisfactory external examination of the tank boundaries, and a confirmation from the Master stating that the pressure testing has been carried out according to the requirements with satisfactory results.
4. For the cargo tanks(except cargo tanks for the liquefied natural gas), tests may be dispensed with, provided after an external and internal examination of the tanks, the Surveyor is satisfied with the condition of the tanks.
5. The Surveyor may extend the testing as deemed necessary. 【See Guidance】

〈hereafter, omitted〉

Amendments

Table 1.2.6 Minimum requirements for tank testing

No. of Special Survey / Tanks	Special Survey No. 1 ~ 3	Special Survey No. 4 and Subsequent
All water tanks (including cargo holds used for ballast and excluding fresh water tank) and all cargo tanks *(2018)*	○	○
Fuel oil tank, lubrication oil tank, fresh water tank	△	△

(NOTES)

1. Purpose of tank has a priority in application.
2. Boundaries of tanks are to be tested with a head of liquid to the top of air pipes or to near the top of hatches for ballast/cargo holds. Boundaries of fuel oil, lube oil and fresh water tanks are to be tested with a head of liquid to the highest point that liquid will rise under service conditions.
3. ○ : All tanks are to be tested.
   △ : *(2020)*
   1) These requirements apply to tanks of integral (structural) type.
   2) Tank testing of fuel oil, lube oil and fresh water tanks may be specially considered based on a satisfactory external examination of the tank boundaries, and a confirmation from the Master stating that the pressure testing has been carried out according to the requirements with satisfactory results.
   3) Fuel oil tanks which don not form part of the ship's structures are to be examined in accordance with **502. 2.** (9), (c).
4. For the cargo tanks(except cargo tanks for the liquefied natural gas), tests may be dispensed with, provided after an external and internal examination of the tanks, the Surveyor is satisfied with the condition of the tanks.
5. The Surveyor may extend the testing as deemed necessary. 【See Guidance】

〈hereafter, same as current Rules〉

Present	Amendments
# CHAPTER 3 HULL SURVEYS OF SHIPS SUBJECT TO THE ENHANCED SURVEY PROGRAMME	# CHAPTER 3 HULL SURVEYS OF SHIPS SUBJECT TO THE ENHANCED SURVEY PROGRAMME
## Section 1 General	## Section 1 General
101. Application	**101. Application**
1. In addition to the requirements specified in Ch 2, these requirements apply to hull surveys of ships subject to the enhanced survey programme such as bulk carriers, oil tankers and chemical tankers, etc.	**1.** In addition to the requirements specified in Ch 2, these requirements apply to hull surveys of ships subject to the enhanced survey programme such as bulk carriers, oil tankers and chemical tankers, etc.
2. Procedural requirements for certain ESP surveys	**2. Procedural requirements for certain ESP surveys**
〈omitted〉	〈same as the current Rules〉
(1) On ships 20,000 DWT and above, subject to ESP, starting with Special Survey No. 3, at special and intermediate hull classification surveys, the survey of hull structure and piping systems to which these requirements applies is to be carried out by at least two exclusive Surveyors. On bulk carriers 100,000 DWT and above of single side skin construction at the intermediate hull classification survey between 10 and 15 years of age, the survey of hull structure and piping systems to which these requirements applies is to be performed by two at least exclusive Surveyors. (2017)	(1) On ships 20,000 DWT and above, subject to ESP, starting with Special Survey No. 3, at special and intermediate hull classification surveys, the survey of hull structure and piping systems to which these requirements applies is to be carried out by at least two exclusive Surveyors. On bulk carriers 100,000 DWT and above of single side skin construction at the intermediate hull classification survey between 10 and 15 years of age, the survey of hull structure and piping systems to which these requirements applies is to be performed by two at least exclusive Surveyors. (2017)
(2) This requires that at least two exclusive Surveyors attend on board at the same time to perform the required survey. Where compatible with relevant laws and regulations, on dual class vessels, the requirement for two Surveyors may be fulfilled by having one Surveyor attend from each Society.	(2) This requires that at least two exclusive Surveyors attend on board at the same time to perform the required survey(this also applies to voyage surveys). Where compatible with relevant laws and regulations, on dual class vessels, the requirement for two Surveyors may be fulfilled by having one Surveyor attend from each Society. *(2020)*
〈hereafter, omitted〉	〈hereafter, same as the current Rules〉

Present	Amendments
107. Repairs	**107. Repairs**
1.~ 4. 〈omitted〉	**1.~ 4. 〈same as the current Rules〉**
5. Where the damage found on structure mentioned in **Par 2** is isolated and of a localized nature which does not affect the ship's structural integrity(as for example a minor hole in a cross-deck strip), consideration may be given by the Surveyor to allow an appropriate temporary repair to restore watertight or weather tight integrity after evaluation of the surrounding structure and impose an associated Recommendation/Condition of Class in accordance with IACS PR No.35(Procedure for Imposing and Clearing Recommendation/Condition of Class), with a specific time limit in order to complete the permanent repair and retain classification.	**5.** Where the damage found on structure mentioned in **Par 2** is isolated and of a localized nature which does not affect the ship's structural integrity(as for example a minor hole in a cross-deck strip), consideration may be given by the Surveyor to allow an appropriate temporary repair to restore watertight or weather tight integrity after evaluation of the surrounding structure and impose an associated Condition of Class in accordance with IACS PR No.35(Procedure for Imposing and Clearing Condition of Class), with a specific time limit in order to complete the permanent repair and retain classification. *(2020)*
Section 4 Special Survey (Hull, Equipment and Fire-extinguishing Appliances)	**Section 4 Special Survey (Hull, Equipment and Fire-extinguishing Appliances)**
401. Due range	**401. Due range**
1. The first Special Survey is to be completed within 5 years from the date of the initial Classification Survey and thereafter within 5 years from the credited date of the previous Special Survey. Under 'exceptional circumstances', the Society may grant an extension not exceeding three(3) months to allow for completion of the Special Survey provided that the vessel is attended and the attending Surveyor(s) so recommend(s) after the following has been carried out: Where 'exceptional circumstance' means unavailability of dry-docking facilities; unavailability of repair facilities; unavailability of essential materials, equipment or spare parts; or delays incurred by action taken to avoid severe weather conditions. (1) Annual Survey; (2) re-examination of Recommendations/Conditions of Class; (3) progression of the Special Survey as far as practicable; (4) in the case where dry docking is due prior to the end of the class extension, an underwater examination is to be carried out by an approved diving company. An underwater examination by an approved company may be dispensed with in the case of extension of dry-docking survey not exceeding 36 months interval provided the ship is without outstanding Recommendation/ Condition of Class regarding underwater parts. 〈hereafter, omitted〉	**1.** The first Special Survey is to be completed within 5 years from the date of the initial Classification Survey and thereafter within 5 years from the credited date of the previous Special Survey. Under 'exceptional circumstances', the Society may grant an extension not exceeding three(3) months to allow for completion of the Special Survey provided that the vessel is attended and the attending Surveyor(s) so recommend(s) after the following has been carried out: Where 'exceptional circumstance' means unavailability of dry-docking facilities; unavailability of repair facilities; unavailability of essential materials, equipment or spare parts; or delays incurred by action taken to avoid severe weather conditions. *(2020)* (1) Annual Survey; (2) re-examination of Conditions of Class; (3) progression of the Special Survey as far as practicable; (4) in the case where dry docking is due prior to the end of the class extension, an underwater examination is to be carried out by an approved diving company. An underwater examination by an approved company may be dispensed with in the case of extension of dry-docking survey not exceeding 36 months interval provided the ship is without outstanding Condition of Class regarding underwater parts. 〈hereafter, same as the current Rules〉

Present	Amendments
Section 6 Docking Survey	**Section 6 Docking Survey**
601.~603. 〈omitted〉	**601.~603. 〈same as the current Rules〉**
604. In-water Survey	**604. In-water Survey**
1. 〈omitted〉	**1. 〈same as the current Rules〉**
2. In-water Survey in lieu of the Docking Survey may be restricted at the discretion of the Society if there are record or indication of abnormal deterioration, existing outstanding recommendation for repairs, or damage to underwater part of the shell plating, the rudder, the propeller, the propeller shaft, sea connections or overboard discharge valves.	**2.** In-water Survey in lieu of the Docking Survey may be restricted at the discretion of the Society if there are record or indication of abnormal deterioration, existing outstanding Condition of Class for repairs, or damage to underwater part of the shell plating, the rudder, the propeller, the propeller shaft, sea connections or overboard discharge valves. *(2020)*
〈omitted〉	〈same as the current Rules〉
605. Extended Dry-docking Interval System	**605. Extended Dry-docking Interval System**
1. 〈omitted〉	**1. 〈same as the current Rules〉**
2. Necessary requirements	**2. Necessary requirements**
The necessary requirements for implementation of the "Extended Dry-docking Interval System" are as followings. (1) ~ (6) 〈omitted〉 (7) The hull below load waterline is to be free of any recommendation.	The necessary requirements for implementation of the "Extended Dry-docking Interval System" are as followings. (1) ~ (6) 〈same as the current Rules〉 (7) The hull below load waterline is to be free of any Condition of Class. *(2020)*
〈hereafter, omitted〉	〈hereafter, same as the current Rules〉

Present	Amendments
CHAPTER 3 HULL SURVEYS OF SHIPS SUBJECT TO THE ENHANCED SURVEY PROGRAMME	**CHAPTER 3 HULL SURVEYS OF SHIPS SUBJECT TO THE ENHANCED SURVEY PROGRAMME**
Section 1 General	**Section 1 General**
101. Application	**101. Application**
1. 〈omitted〉	**1. 〈same as the current Rules〉**
2. Procedural requirements for certain ESP surveys The objective of these requirements are to improve the quality of surveys. These requirements apply to surveys of hull structures and piping systems in way of cargo holds and/or cargo tanks, cofferdams, cargo pump rooms, pipe tunnels, void spaces, within the cargo length area and all ballast tanks. In the case of Bulk Carriers, selected fuel oil tanks within the cargo length area might be part of the areas to be surveyed according to the applicable provisions of the Ch 3, Sec. 2 Bulk Carriers or Ch 3, Sec. 6 Double Skin Bulk Carriers. Taking in to consideration, the size of vessels and scope of surveys for vessels noted below, it is more effective to have more than one Surveyor examine the required spaces, holds or tanks and to provide mutual support and consultation during the surveys in recommending repairs and actions required for conditions of class/recommendations. *(2017)*	**2. Procedural requirements for certain ESP surveys** The objective of these requirements are to improve the quality of surveys. These requirements apply to surveys of hull structures and piping systems in way of cargo holds and/or cargo tanks, cofferdams, cargo pump rooms, pipe tunnels, void spaces, within the cargo length area and all ballast tanks. In the case of Bulk Carriers, selected fuel oil tanks within the cargo length area might be part of the areas to be surveyed according to the applicable provisions of the Ch 3, Sec. 2 Bulk Carriers or Ch 3, Sec. 6 Double Skin Bulk Carriers. Taking in to consideration, the size of vessels and scope of surveys for vessels noted below, it is more effective to have more than one Surveyor examine the required spaces, holds or tanks and to provide mutual support and consultation during the surveys in recommending repairs and actions required for Conditions of Class. *(2020)*
(1) ~ (2) 〈omitted〉 (3) Though each attending Surveyor is not required to perform all aspects of the required survey, they are required to consult with each other and to do joint Overall and Close-up Surveys to the extent necessary to determine the condition of the vessel areas to which these requirements applies. The extent of these surveys should be sufficient for the Surveyors to agree on actions required to complete the survey with respect to renewals, repairs, and other recommendations or conditions of class. Each Surveyor is required to co-sign the survey report or indicate their concurrence in an equivalent manner. *(2017)*	(1) ~ (2) 〈same as the current Rules〉 (3) Though each attending Surveyor is not required to perform all aspects of the required survey, they are required to consult with each other and to do joint Overall and Close-up Surveys to the extent necessary to determine the condition of the vessel areas to which these requirements applies. The extent of these surveys should be sufficient for the Surveyors to agree on actions required to complete the survey with respect to renewals, repairs, and other Conditions of Class. Each Surveyor is required to co-sign the survey report or indicate their concurrence in an equivalent manner. *(2020)*
〈hereafter, omitted〉	〈hereafter, same as the current Rules〉

(2) Effective date : 1 Jan 2020

(Date of which the application for survey is submitted for CoC)

Present	Amendments
CHAPTER 1 CLASSIFICATION	**CHAPTER 1 CLASSIFICATION**
Section 1 ~ Section 8 〈omitted〉	**Section 1 ~ Section 8 〈same as the current Rules〉**
Section 9 Suspension/Withdrawal of Class and Reclassification	**Section 9 Suspension/Withdrawal of Class and Reclassification**
901. Suspension/Reinstatement of class	**901. Suspension/Reinstatement of class**
1.~ 5. <omitted>	**1.~ 5. <same as the current Rules>**
6. If, due to circumstances reasonably beyond the owner's or the Society's control, the vessel is not in a port where the overdue surveys can be completed at the expiry of the periods allowed, the Society may allow the vessel to sail, in class, directly to an agreed discharge port, and if necessary, hence, in ballast, to an agreed port at which the survey will be completed, provided the Society: **【See Guidance】** (1) exams the ship's records; (2) carries out the due and/or overdue surveys and examination of Recommendations/Conditions of Class at the first port of call when there is an unforeseen inability of the Society to attend the vessel in the present port, and	6. If, due to circumstances reasonably beyond the owner's or the Society's control, the vessel is not in a port where the overdue surveys can be completed at the expiry of the periods allowed, the Society may allow the vessel to sail, in class, directly to an agreed discharge port, and if necessary, hence, in ballast, to an agreed port at which the survey will be completed, provided the Society: **【See Guidance】** (1) exams the ship's records; (2) carries out the due and/or overdue surveys and examination of Conditions of Class at the first port of call when there is an unforeseen inability of the Society to attend the vessel in the present port, and *(2020)*
〈omitted〉	〈same as the current Rules〉
CHAPTER 2 PERIODICAL AND OTHER SURVEYS	**CHAPTER 2 PERIODICAL AND OTHER SURVEYS**
Section 1 General	**Section 1 General**
101. Definitions	**101. Definitions**
The definitions of terms used in **Ch 2** and **Ch 3** are to be as specified in the followings, unless otherwise specified elsewhere.	The definitions of terms used in **Ch 2** and **Ch 3** are to be as specified in the followings, unless otherwise specified elsewhere.
1.~ 16. <omitted>	**1.~ 16. <same as the current Rules>**
17. A **prompt and thorough repair** is a permanent repair completed at the time of survey to the satisfaction of the Surveyor, therein removing the need for the imposition of any associated condition of classification, or recommendation.	**17.** A **prompt and thorough repair** is a permanent repair completed at the time of survey to the satisfaction of the Surveyor, therein removing the need for the imposition of any associated Condition of Class. *(2020)*
〈hereafter, omitted〉	〈hereafter, same as the current Rules〉

Present	Amendments
107. Repairs	**107. Repairs**
1.~ 4. <omitted>	**1.~ 4. <same as the current Rules>**
5. Where the damage found on structure mentioned in **Par 2** is isolated and of a localized nature which does not affect the ship's structural integrity(as for example a minor hole in a cross-deck strip), consideration may be given by the Surveyor to allow an appropriate temporary repair to restore watertight or weather tight integrity after evaluation of the surrounding structure and impose an associated Recommendation/Condition of Class in accordance with IACS PR No.35(Procedure for Imposing and Clearing Recommendation/Condition of Class), with a specific time limit in order to complete the permanent repair and retain classification.	**5.** Where the damage found on structure mentioned in **Par 2** is isolated and of a localized nature which does not affect the ship's structural integrity(as for example a minor hole in a cross-deck strip), consideration may be given by the Surveyor to allow an appropriate temporary repair to restore watertight or weather tight integrity after evaluation of the surrounding structure and impose an associated Condition of Class in accordance with IACS PR No.35(Procedure for Imposing and Clearing Condition of Class), with a specific time limit in order to complete the permanent repair and retain classification. *(2020)*
Section 4 Special Survey (Hull, Equipment and Fire-extinguishing Appliances)	**Section 4 Special Survey (Hull, Equipment and Fire-extinguishing Appliances)**
401. Due range	**401. Due range**
1. The first Special Survey is to be completed within 5 years from the date of the initial Classification Survey and thereafter within 5 years from the credited date of the previous Special Survey. Under 'exceptional circumstances', the Society may grant an extension not exceeding three(3) months to allow for completion of the Special Survey provided that the vessel is attended and the attending Surveyor(s) so recommend(s) after the following has been carried out: Where 'exceptional circumstance' means unavailability of dry-docking facilities; unavailability of repair facilities; unavailability of essential materials, equipment or spare parts; or delays incurred by action taken to avoid severe weather conditions. (1) Annual Survey; (2) re-examination of Recommendations/Conditions of Class; (3) progression of the Special Survey as far as practicable; (4) in the case where dry docking is due prior to the end of the class extension, an underwater examination is to be carried out by an approved diving company. An underwater examination by an approved company may be dispensed with in the case of extension of dry-docking survey not exceeding 36 months interval provided the ship is without outstanding Recommendation/ Condition of Class regarding underwater parts. 〈hereafter, omitted〉	**1.** The first Special Survey is to be completed within 5 years from the date of the initial Classification Survey and thereafter within 5 years from the credited date of the previous Special Survey. Under 'exceptional circumstances', the Society may grant an extension not exceeding three(3) months to allow for completion of the Special Survey provided that the vessel is attended and the attending Surveyor(s) so recommend(s) after the following has been carried out: Where 'exceptional circumstance' means unavailability of dry-docking facilities; unavailability of repair facilities; unavailability of essential materials, equipment or spare parts; or delays incurred by action taken to avoid severe weather conditions. *(2020)* (1) Annual Survey; (2) re-examination of Conditions of Class; (3) progression of the Special Survey as far as practicable; (4) in the case where dry docking is due prior to the end of the class extension, an underwater examination is to be carried out by an approved diving company. An underwater examination by an approved company may be dispensed with in the case of extension of dry-docking survey not exceeding 36 months interval provided the ship is without outstanding Condition of Class regarding underwater parts. 〈hereafter, same as the current Rules〉

Present	Amendments
Section 6 Docking Survey	**Section 6 Docking Survey**
601.~603. 〈omitted〉	**601.~603. 〈same as the current Rules〉**
604. In-water Survey	**604. In-water Survey**
1. 〈omitted〉	**1. <same as the current Rules>**
2. In-water Survey in lieu of the Docking Survey may be restricted at the discretion of the Society if there are record or indication of abnormal deterioration, existing outstanding recommendation for repairs, or damage to underwater part of the shell plating, the rudder, the propeller, the propeller shaft, sea connections or overboard discharge valves.	**2.** In-water Survey in lieu of the Docking Survey may be restricted at the discretion of the Society if there are record or indication of abnormal deterioration, existing outstanding Condition of Class for repairs, or damage to underwater part of the shell plating, the rudder, the propeller, the propeller shaft, sea connections or overboard discharge valves. *(2020)*
〈omitted〉	〈same as the current Rules〉
605. Extended Dry-docking Interval System	**605. Extended Dry-docking Interval System**
1. 〈omitted〉	**1. 〈same as the current Rules〉**
2. Necessary requirements	**2. Necessary requirements**
The necessary requirements for implementation of the "Extended Dry-docking Interval System" are as followings. (1) ~ (6) 〈omitted〉 (7) The hull below load waterline is to be free of any recommendation.	The necessary requirements for implementation of the "Extended Dry-docking Interval System" are as followings. (1) ~ (6) 〈same as the current Rules〉 (7) The hull below load waterline is to be free of any Condition of Class. *(2020)*
〈hereafter, omitted〉	〈hereafter, same as the current Rules〉

Present	Amendments
# CHAPTER 3 HULL SURVEYS OF SHIPS SUBJECT TO THE ENHANCED SURVEY PROGRAMME	# CHAPTER 3 HULL SURVEYS OF SHIPS SUBJECT TO THE ENHANCED SURVEY PROGRAMME
## Section 1 General	## Section 1 General
101. Application	**101. Application**
1. 〈omitted〉	**1. 〈same as the current Rules〉**
2. Procedural requirements for certain ESP surveys The objective of these requirements are to improve the quality of surveys. These requirements apply to surveys of hull structures and piping systems in way of cargo holds and/or cargo tanks, cofferdams, cargo pump rooms, pipe tunnels, void spaces, within the cargo length area and all ballast tanks. In the case of Bulk Carriers, selected fuel oil tanks within the cargo length area might be part of the areas to be surveyed according to the applicable provisions of the **Ch 3, Sec. 2** Bulk Carriers or **Ch 3, Sec. 6** Double Skin Bulk Carriers. Taking in to consideration, the size of vessels and scope of surveys for vessels noted below, it is more effective to have more than one Surveyor examine the required spaces, holds or tanks and to provide mutual support and consultation during the surveys in recommending repairs and actions required for conditions of class/recommendations. *(2017)*	**2. Procedural requirements for certain ESP surveys** The objective of these requirements are to improve the quality of surveys. These requirements apply to surveys of hull structures and piping systems in way of cargo holds and/or cargo tanks, cofferdams, cargo pump rooms, pipe tunnels, void spaces, within the cargo length area and all ballast tanks. In the case of Bulk Carriers, selected fuel oil tanks within the cargo length area might be part of the areas to be surveyed according to the applicable provisions of the **Ch 3, Sec. 2** Bulk Carriers or **Ch 3, Sec. 6** Double Skin Bulk Carriers. Taking in to consideration, the size of vessels and scope of surveys for vessels noted below, it is more effective to have more than one Surveyor examine the required spaces, holds or tanks and to provide mutual support and consultation during the surveys in recommending repairs and actions required for Conditions of Class. *(2020)*
(1) ~ (2) 〈omitted〉 (3) Though each attending Surveyor is not required to perform all aspects of the required survey, they are required to consult with each other and to do joint Overall and Close-up Surveys to the extent necessary to determine the condition of the vessel areas to which these requirements applies. The extent of these surveys should be sufficient for the Surveyors to agree on actions required to complete the survey with respect to renewals, repairs, and other recommendations or conditions of class. Each Surveyor is required to co-sign the survey report or indicate their concurrence in an equivalent manner. *(2017)*	(1) ~ (2) 〈same as the current Rules〉 (3) Though each attending Surveyor is not required to perform all aspects of the required survey, they are required to consult with each other and to do joint Overall and Close-up Surveys to the extent necessary to determine the condition of the vessel areas to which these requirements applies. The extent of these surveys should be sufficient for the Surveyors to agree on actions required to complete the survey with respect to renewals, repairs, and other Conditions of Class. Each Surveyor is required to co-sign the survey report or indicate their concurrence in an equivalent manner. *(2020)*
〈hereafter, omitted〉	〈hereafter, same as the current Rules〉

(3) Effective date : 1 Jan 2020

(The contract date for ship construction or the application date for a periodical or occasional machinery survey after the retrofit of harmonic filters)

Present	Amendments
CHAPTER 2 PERIODICAL AND OTHER SURVEYS	**CHAPTER 2 PERIODICAL AND OTHER SURVEYS**
Section 1 〈omitted〉	**Section 1 〈same as the current Rules〉**
Section 2 Annual Survey	**Section 2 Annual Survey**
201. ~ 202. 〈omitted〉	**201. ~ 202. 〈same as the current Rules〉**
203. Machinery, electrical installations and additional installations	**203. Machinery, electrical installations and additional installations**
1. ~ 26. <same as the present Rules>	**1. - 26. <same as the present Rules>**
27. Where the electrical distribution system on board a ship includes harmonic filters, confirming the measurement records for harmonic distortion levels experienced on the main busbar. However, harmonic filters installed for single application frequency drives such as pump motors may be excluded from this requirement. (2017) **【See Guidance】**	**27.** Where harmonic filters are installed on main busbars of electrical distribution system, other than those installed for single application frequency drives such as pump motors, confirming the measurement records for harmonic distortion levels experienced on the main busbar. *(2020)* **【See Guidance】**
〈hereafter, omitted〉	〈hereafter, same as the current Rules〉

Amended Guidances for the Classification of Steel Ships

(Part 1 Classification and Surveys)

Dec. 2019

KR

Effective date : 1 Jan. 2020

(1) Date of which application for survey in submitted

- ◉ reflected IACS UR Z1(Rev.7 May 2019)
- ◉ reflected the requests by the internal customers
- ◉ amended unreasonable contents disclosed while implementing the Rules etc.
- ◉ To reflect of the request for revision of Rules by Internal customers
  - Amendments have been made so that auxiliary machinery can be considered for inspection by the chief engineer during continuous inspection of machinery.

(2) Date of which application for survey in submitted

- ◉ reflected IACS PR1A(Rev.7 May 2019), PR1B(Rev. 4 May 2019), UR Z20(Rev.2 May 2019) for CoC

(3) Effective date : 1 Jan. 2020 (Contracted for construction)

- ◉ reflected the amendment of related Pt 7.

(1) Effective date : 1 Jan. 2020

(Date of which the application for survey is submitted)

Present	Amendments
# CHAPTER 1 CLASSIFICATION	# CHAPTER 1 CLASSIFICATION
## Section 1 General	## Section 1 General
Tests and Inspections specified in the Rules of the Society are to be carried out under attendance of the Surveyor, unless expressly specified otherwise.	Tests and Inspections specified in the Rules of the Society are to be carried out under attendance of the Surveyor, unless expressly specified otherwise.
104. Equivalence **【See Rule】** In application to **104.** of the Rules, the term "deemed to be equivalent to the Rules to the satisfaction to the Society" includes the following cases. (1) Where complying with a standard deemed appropriate by the Society(ISO, KS, ASME, JIS, etc.). (2) Where approved in accordance with **Guidance for Approval of Risk-based Ship Design**. (3) Where having proven service experience deemed appropriate by the Society. For the purposes of this paragraph, proven in-service experience means having a service record of maintaining the performance without any damage for sufficient period. 〈newly added〉	**104. Equivalence** **【See Rule】** In application to **104.** of the Rules, the term "deemed to be equivalent to the Rules to the satisfaction to the Society" includes the following cases. (1) Where complying with a standard deemed appropriate by the Society(ISO, KS, ASME, JIS, etc.). (2) Where approved in accordance with **Guidance for Approval of Risk-based Ship Design**. (3) Where having proven service experience deemed appropriate by the Society. For the purposes of this paragraph, proven in-service experience means having a service record of maintaining the performance without any damage for sufficient period. (4) Where there are records of vessel approved by any Society which is subject to verification of compliance with QSCS(Quality System Certification Scheme) of IACS. *(2020)*
105. Novel features **【See Rule】** In application to **105.** of the Rules, **Guidance for Approval of Risk-based Ship Design** may apply to validity verification of experiments, calculations or other supporting information provided to the Society.	
〈hereafter, omitted〉	〈hereafter, same as the current Guidances〉

Present	Amendments
CHAPTER 2 PERIODICAL AND OTHER SURVEYS	**CHAPTER 2 PERIODICAL AND OTHER SURVEYS**
Section 1 General	**Section 1 General**
101., 104., 106., 107., 108. 109., & 110. **〈omitted〉**	**101., 104., 106., 107., 108,. 109., & 110.** **〈same as the current Guidances〉**
113. Preparations for survey **1. <omitted>** **2.** In application to **113. 1** (7) of the Rules, "insulations in way" means the extent of insulations to determine the extent of the poor coating condition behind the insulation. *(2018)* [see rule] 〈hereafter, omitted〉	**113. Preparations for survey** **1. <Same as the current Guidances>** **2.** In application to **113. 1** (7) of the Rules, "to be extended as deemed necessary by the Surveyor" means the extent of insulations to determine the extent of the poor coating condition behind the insulation. *(2020)* [see rule] 〈hereafter, same as the current Guidances〉
For reference(Koran language) 2. **규칙** 111.의 1항 (7)호에서 "검사원이 필요하다고 인정하는 범위"라 함은 방열재 뒤 불량한 상태인 도장의 범위를 결정하기 위하여 필요한 방열재의 범위를 말한다. *(2018)*	

Present	Amendments
Section 2 Annual Survey	**Section 2 Annual Survey**
201. Due range 〈omitted〉	**201. Due range 〈same as the current Guidances〉**
202. Hull, equipment and fire-extinguishing appliances	**202. Hull, equipment and fire-extinguishing appliances**
1. ~ 2. <omitted>	**1. ~ 2. <same as the current Guidances>**
3. In application to **202. 2** of the Rules, the following items are to be surveyed. **【See Rule】** *(2017)* (1) ~ (12) (13) Examining, where applicable, the alternative design and arrangements for fire safety appliances and arrangements, in accordance with the test, inspection and maintenance requirements, if any, specified in the approved documentation. *(2017)* (14) Examining, when appropriate, the special arrangements for carrying dangerous goods, including checking the electrical equipment and wiring, the ventilation, the provision of protective clothing and portable appliances and the testing of the water supply, bilge pumping and any water spray system. *(2017)*	**3.** In application to **202. 2** of the Rules, the following items are to be surveyed. **【See Rule】** *(2017)* (1) ~ (12) (13) Examining, where applicable, the alternative design and arrangements for fire safety appliances and arrangements, in accordance with the test, inspection and maintenance requirements, if any, specified in the approved documentation. *(2017)* (14) Examining, when appropriate, the special arrangements for carrying dangerous goods, including checking the electrical equipment and wiring, the ventilation, the provision of protective clothing and portable appliances and the testing of the water supply, bilge pumping and any water spray system. *(2017)*
〈Newly added〉	(15) For ships designed to carry containers on or above the weather deck, as applicable, examining the water mist lance, and as appropriate, the mobile water monitors and all necessary hoses, fittings and required fixing hardware. *(2020)* (16) Examining and testing the portable gas detectors suitable for the detection of the gas fuel, for vehicle carriers carrying motor vehicles with compressed hydrogen or natural gas in their tanks for their own propulsion as cargo. *(2020)*
〈hereafter, omitted〉	〈hereafter, same as the current Guidances〉

Present

Annex 1-1 Character of Classification

1. Class Notation

1.1 Ship Type and Special Feature Notations

Ship Types	Special Feature Notations	Remarks
〈omitted〉		
4. Oil/Chemical Tanker (Double Hull)[2-2] 〈Newly added〉 'ESP'[2-1)(7-1] (FAC)[1] (FAO)[1] (FBC)[1] (CSR)[2-4]	Special Feature Notations given in row 1 and row 3[9]	[9] : See examples given in **2.2.**

〈hereafter, omitted〉

Amendments

Annex 1-1 Character of Classification

1. Class Notation

1.1 Ship Type and Special Feature Notations

Ship Types	Special Feature Notations	Remarks
〈same as the current Guidances〉		
4. Oil/Chemical Tanker (Double Hull)[2-2] (Double Hull)(EXP)[2-3] 'ESP'[2-1)(7-1] (FAC)[1] (FAO)[1] (FBC)[1] (CSR)[2-4]	Special Feature Notations given in row 1 and row 3[9]	[9] : See examples given in **2.2.**

〈hereafter, same as the current Guidances〉

Present

(Remarks) [35] : The following Additional Special Feature Notations are to be appended to ships complying with the relevant requirements. The Additional Special Feature Notations are to be located under Service Restriction Notations of Hull after Special Feature Notations regardless whether they are hull items or machinery items.

Additional Special Feature Notations	Relevant Requirements
〈omitted〉	
WS	to ships where cargo holds are protected with sparrings in accordance with the requirements specified in **Pt 4, Ch 6, 201.** of the Rules.
〈omitted〉	

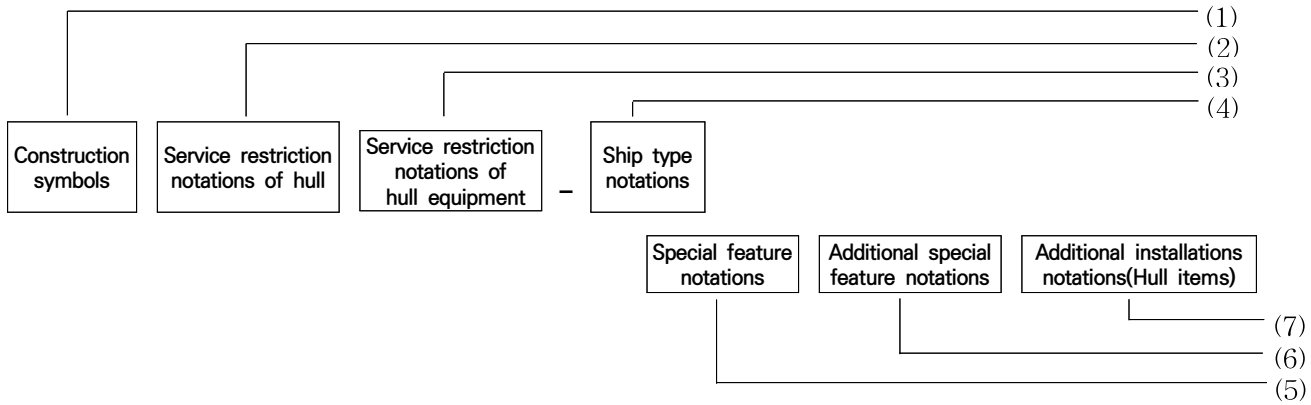
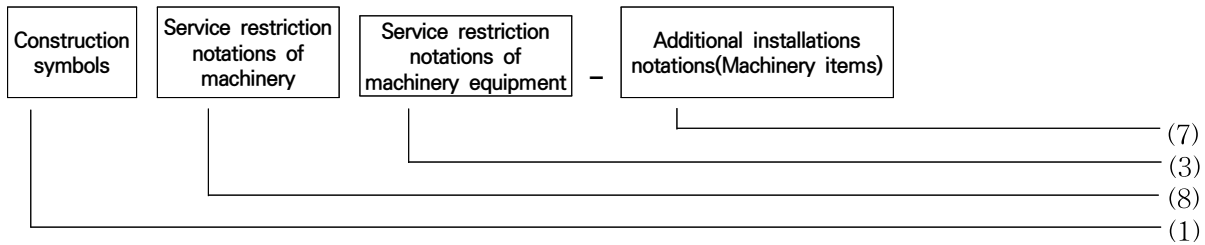
〈hereafter, omitted〉

Amendments

(Remarks) [35] : The following Additional Special Feature Notations are to be appended to ships complying with the relevant requirements. The Additional Special Feature Notations are to be located under Service Restriction Notations of Hull after Special Feature Notations regardless whether they are hull items or machinery items.

Additional Special Feature Notations	Relevant Requirements
〈same as the current Guidances〉	
-	-
〈same as the current Guidances〉	

〈hereafter, same as the current Guidances〉

Present	Amendments
2. Written Examples of Class Notations A typical arrangement of Class Notations will consist of the following structure. 〈Hull〉  〈Machinery〉  (1) Construction symbols specified in Ch 1, 201. (1) of the Rules. (2) Service restriction notations of hull specified in Ch 1, 201. (2) of the Rules. (3) Service restriction notations of hull and machinery equipment specified in Ch 1, 201. (4) of the Rules. (4) Ship type notations specified in Ch 1, 201. (6) of the Rules and 1.1 above. (5) Special feature notations specified in Ch 1, 201. (7) of the Rules and 1.1 above. (6) Additional special feature notations specified in Ch 1, 201. (7) of the Rules and 1.1 Remarks (32) above. (7) Additional installations notations(Hull and Machinery items) specified in Ch 1, 201. (5) of the Rules and 1.2 above. (8) Service restriction notations of machinery specified in Ch 1, 201. (3) of the Rules. 〈hereafter, omitted〉	~~2. Written Examples of Class Notations~~ – totally deleted and moved to Notation Guide

Present	Amendments
3.0 Special feature Example : In cases where the ship is applied to the reduced scantling as the restriction of navigation area and condition : ✠ KRS 0 - Barge Service between Korea and Sakhalin during May and June ※ Comparison of Ice Class of the Society with Finnish-Swedish Ice Class Rules 2010 and Arctic Shipping Pollution Prevention Regulations	~~3.0 Special feature~~ - totally deleted and moved to Notation Guide

Ice Class of the Society	Ice Class of Finish-Swedish Ice Class Rules 2010
IA Super	IA Super
IA	IA
IB	IB
IC	IC
*	II

(NOTES)
*) ID class of the Society is not equal to II class of the Finnish-Swedish Ice Class Rule, because ID class requires strengthening of forward region.

Ice Class of the Society	Ice Class of Arctic Shipping Pollution Prevention Regulations
IA Super	Type A
IA	Type B
IB	Type C
IC	Type D
ID	Type D

〈hereafter, omitted〉

〈hereafter, same as the current Guidances〉

Present

Annex 1-12 Hull Survey for Classification Survey during Construction

Table 1 Surveyable Items Activities Table

Reference	Shipbuilding function	Survey Requirements for Classification	Survey Method required for Classification	IACS reference*	Statutory requirements and relevant reference	Documentation available to classification Surveyor during construction	Documentation for ship construction file	Specific activities	Classification Society proposals for the project
	〈omitted〉								
2.5 *(2018)*	**Conformity for critical areas [1], when defined, with alignment/fit up or weld configuration**	Check alignment /fit up/gap against approved drawings	Witness and review	Rec 47		Shipbuilders and recognised standards and Rules as applicable, approved plan or standard, builder's records	Approved plans of critical areas if applicable	Verify that the information relevant to the latest approved drawings is available at the workstations	
								Verify the processes to ensure satisfactory fit up and alignment at all workstations	
								Verify that edge preparations are re-instated where lost during fitting operations	
								Verify remedial procedures are in place to compensate for wide gaps and alignment deviations	

(Remarks)

[1] For the critical areas, the following information are available:

a) The approved Hull Construction Monitoring Plan, in case the ship assigned with "Sea Trust(HCM)" notation as Hull Construction Monitoring Procedure or,

b) Ship structure access manual, if applicable or,

c) Representative critical areas by ship type(refer to Annex 1-12-4) or,

d) The following publications for critical structural areas, where applicable:

i) Oil Tankers : Guidance Manual for Tanker Structures by TSCF or Guidelines for Surveys, Assessment and Repair of Hull Structures By IACS(Rec 96) or A.1047(27) (2011 ESP Code), as amended.

ii) Bulk Carriers : Bulk Carriers Guidelines for Surveys, Assessment and Repair of Hull Structure by IACS(Rec 76) or A.1047(27)(2011 ESP Code) as mended.

iii) General Dry Cargo Ships : Guidelines for Surveys, Assessment and Repair of Hull Structure By IACS(Rec. 55)

iv) Container Ship : Guidelines for Surveys, Assessment and Repair of Hull Structure By IACS(Rec. 84) etc.

	<omitted>

Annex 1-12 Hull Survey for Classification Survey during Construction

Table 1 Surveyable Items Activities Table

Reference	Shipbuilding function	Survey Requirements for Classification	Survey Method required for Classification	IACS reference*	Statutory requirements and relevant reference	Documentation available to classification Surveyor during construction	Documentation for ship construction file	Specific activities	Classification Society proposals for the project
	〈same as the current Guidances〉								
2.5 *(2018)*	**Conformity for critical areas [1], when defined, with alignment/fit up or weld configuration**	Check alignment/ fit up/gap against approved drawings	Witness and review	Rec 47		Shipbuilders and recognised standards and Rules as applicable, approved plan or standard, builder's records	Approved plans of critical areas if applicable	Verify that the information relevant to the latest approved drawings is available at the workstations	
								Verify the processes to ensure satisfactory fit up and alignment at all workstations	
								Verify that edge preparations are re-instated where lost during fitting operations	
								Verify remedial procedures are in place to compensate for wide gaps and alignment deviations	

(Remarks)

[1] For the critical areas, the following information are available:

a) The approved Hull Construction Monitoring Plan, in case the ship assigned with "Sea Trust(HCM)" notation as Hull Construction Monitoring Procedure or,

b) Ship structure access manual, if applicable or,

c) other references *(2020)*

i) Representative critical areas by ship type(refer to Annex 1-12-4) or,

ii) The following publications for critical structural areas, where applicable:

- Oil Tankers : Guidance Manual for Tanker Structures by TSCF or Guidelines for Surveys, Assessment and Repair of Hull Structures By IACS(Rec 96) or A.1047(27) (2011 ESP Code), as amended.
- Bulk Carriers : Bulk Carriers Guidelines for Surveys, Assessment and Repair of Hull Structure by IACS(Rec 76) or A.1047(27)(2011 ESP Code) as mended.
- General Dry Cargo Ships : Guidelines for Surveys, Assessment and Repair of Hull Structure By IACS(Rec. 55)
- Container Ship : Guidelines for Surveys, Assessment and Repair of Hull Structure By IACS(Rec. 84) etc.

	〈same as the current Guidances〉

Present	Amendment
CHAPTER 2 PERIODICAL AND OTHER SURVEYS	**CHAPTER 2 PERIODICAL AND OTHER SURVEYS**
<omitted>	<same as present>
Section 9 Continuous Survey of Machinery	**Section 9 Continuous Survey of Machinery**
902. Survey items [See Rule]	**902. Survey items** [See Rule]
1. In application to **902. 1** and **2** of the Rules, "the Guidance" means the requirements specified in **Annex 1-7** of the Guidance.	**1.** In application to **902. 1** and **2** of the Rules, "the Guidance" means the requirements specified in **Annex 1-7** of the Guidance.
2. In application to **902. 3** of the Rules, the term "deemed necessary by the Surveyor" means the cases as specified in **Ch 1, 801. 6** of the Guidance.	**2.** In application to **902. 3** of the Rules, the term "deemed necessary by the Surveyor" means the cases as specified in **Ch 1, 801. 6** of the Guidance.
3. In application to **902. 4** of the Rules, in case of passenger ships, the CMS should be complied with the followings.	**3.** In application to **902. 4** of the Rules, in case of passenger ships, the CMS should be complied with the followings.
(1) In applying **Table 2** in **Annex 1-7**, inspections by chief engineers are not allowed and inspections are to be conducted in the presence of the Surveyor. *(2019)*	(1) In applying **Table 2** in **Annex 1-7**, inspections by chief engineers are not allowed for main and auxiliary engines, and inspections are to be conducted in the presence of the Surveyor. *(2020)*
(2) Nevertheless the main and auxiliary engines for passenger ships may be overhauled(or opened up) in accordance with the following tables. However, opened up survey for high-rotating-speed internal combustion engines may be carried out in accordance with the requirements specified in **303. 2** (2) and **502. 1** (1) (b) of the Rules.	(2) Nevertheless the main and auxiliary engines for passenger ships may be overhauled(or opened up) in accordance with the following tables. However, opened up survey for high-rotating-speed internal combustion engines may be carried out in accordance with the requirements specified in **303. 2** (2) and **502. 1** (1) (b) of the Rules.
<omitted>	<same as present>

(2) Effective date : 1 Jan. 2020

(Date of which the application for survey is submitted for CoC)

Present	Amendments
# CHAPTER 1 CLASSIFICATION ## Section 4 Classification Survey after Construction **401.~402. 〈omitted〉** **403. Classification Survey of ships classed by other classes or TOC(Transfer of Classification)** ***(2017)*** **【See Rule】** 〈omitted〉 **1.~ 3. 〈omitted〉** **4. Classification Survey** Classification Surveys may be, but are not required to be, credited as periodical surveys for maintenance of classification. Recommendations and/or conditions of class due for compliance at a specified periodical survey for maintenance of classification need not be carried out/complied with at a Classification Survey unless the Classification Survey is credited as the specified periodical survey for maintenance of classification or the recommendation/condition of classification is overdue. (1) When a ship is classed by the Society as a results of transfer of class (A) 〈omitted〉 (B) For vessels less than 15 years of age, an Interim Certificate of Class, or other documents enabling the vessel to trade are not to be issued, until all relevant surveys specified in (A) above have been satisfactorily completed; until all overdue surveys and all overdue recommendations/conditions of class previously issued against the subject vessel as specified to the Owner by the losing Society, have been completed and rectified by the Society. For vessels 15 years of age and above, an Interim Certificate of Class, or other documents enabling the vessel to trade are not to be issued, until all relevant surveys specified in (A) above have been satisfactorily completed; until all overdue surveys and all overdue recommendations/conditions of class previously issued against the subject vessel as specified to the Owner by the losing Society, have been completed and rectified by the losing Society. 〈hereafter, omitted〉	# CHAPTER 1 CLASSIFICATION ## Section 4 Classification Survey after Construction **401.~402. 〈same as the current Guidances〉** **403. Classification Survey of ships classed by other classes or TOC(Transfer of Classification)** ***(2017)*** **【See Rule】** 〈same as the current Guidances〉 **1.~ 3. 〈same as the current Guidances〉** **4. Classification Survey** Classification Surveys may be, but are not required to be, credited as periodical surveys for maintenance of classification. Conditions of Class due for compliance at a specified periodical survey for maintenance of classification need not be carried out/complied with at a Classification Survey unless the Classification Survey is credited as the specified periodical survey for maintenance of classification or the Condition of Class is overdue. *(2020)* (1) When a ship is classed by the Society as a results of transfer of class (A) 〈same as the current Guidances〉 (B) For vessels less than 15 years of age, an Interim Certificate of Class, or other documents enabling the vessel to trade are not to be issued, until all relevant surveys specified in (A) above have been satisfactorily completed; until all overdue surveys and all overdue Conditions of Class previously issued against the subject vessel as specified to the Owner by the losing Society, have been completed and rectified by the Society. For vessels 15 years of age and above, an Interim Certificate of Class, or other documents enabling the vessel to trade are not to be issued, until all relevant surveys specified in (A) above have been satisfactorily completed; until all overdue surveys and all overdue Conditions of Class previously issued against the subject vessel as specified to the Owner by the losing Society, have been completed and rectified by the losing Society. *(2020)* 〈hereafter, same as current Guidances〉

Present	Amendments
(C) The validity of the Interim Certificate of Class and the subsequent Certificate of Class is subject to any outstanding recommendations/conditions of class previously issued against the vessel being completed by the due and as specified by the losing Society. Any outstanding recommendations/conditions of class with their due dates are to be clearly stated on the: (a)~ (b) 〈omitted〉	(C) The validity of the Interim Certificate of Class and the subsequent Certificate of Class is subject to any outstanding Conditions of Class previously issued against the vessel being completed by the due and as specified by the losing Society. Any outstanding Conditions of Class with their due dates are to be clearly stated on the: *(2020)* (a)~ (b) 〈same as the current Guidances〉
(D) Any additional information regarding outstanding surveys or recommendations/conditions of class received from the losing Society is to be dealt with in accordance with above (B) and (C) as applicable. If this additional information is received after the Interim Certificate of Classification has been issued, any surveys or recommendations/conditions of class which are overdue are to be dealt with at the first port of call: (a) ~ (b) 〈omitted〉	(D) Any additional information regarding outstanding surveys or Conditions of Class received from the losing Society is to be dealt with in accordance with above (B) and (C) as applicable. If this additional information is received after the Interim Certificate of Classification has been issued, any surveys or Conditions of Class which are overdue are to be dealt with at the first port of call: *(2020)* (a) ~ (b) 〈same as the current Guidances〉
(2) When a vessel is classed by the Society as a double classed vessel (A) 〈omitted〉 (B) Classification Survey is to be carried out in accordance with the requirements of (1) (A) above taking account of the recommendations /conditions of class of in the status provided by the first Society. (3) ~ (4) 〈omitted〉	(2) When a vessel is classed by the Society as a double classed vessel (A) 〈same as the current Guidances〉 (B) Classification Survey is to be carried out in accordance with the requirements of (1) (A) above taking account of the Conditions of Class of in the status provided by the first Society. *(2020)* (3) ~ (4) 〈same as the current Guidances〉
5. When a vessel is withdrawing class of the other Society from a double class arrangement with the Society (A) For vessels less than 15 years of age, all overdue recommendations/conditions of class of the withdrawing Society are to be completed at the first port of call at which surveys can be carried out and all outstanding recommendations /conditions of class of the withdrawing Society are to be completed by the due date of the withdrawing Society. For vessels of 15 years of age and over, all overdue recommendations/conditions of class of the withdrawing Society are to be completed by the withdrawing Society and all outstanding recommendations/conditions of class of the withdrawing Society are to be completed by the due date of the withdrawing Society. 〈hereafter, omitted〉	**5.** When a vessel is withdrawing class of the other Society from a double class arrangement with the Society (A) For vessels less than 15 years of age, all overdue Conditions of Class of the withdrawing Society are to be completed at the first port of call at which surveys can be carried out and all outstanding Conditions of Class of the withdrawing Society are to be completed by the due date of the withdrawing Society. For vessels of 15 years of age and over, all overdue Conditions of Class of the withdrawing Society are to be completed by the withdrawing Society and all outstanding Conditions of Class of the withdrawing Society are to be completed by the due date of the withdrawing Society. *(2020)* 〈hereafter, same as current Guidances〉

Present	Amendments
(B) The validity of the Certificate of Classification is subject to any outstanding recommendations/conditions of class previously issued against the vessel by the withdrawing Society being completed by the due date and as specified by the withdrawing Society. Any outstanding recommendations/conditions of class with their due dates are to be clearly stated on the: (a) class survey record if available on board; and (b) survey status	(B) The validity of the Certificate of Classification is subject to any outstanding Conditions of Class previously issued against the vessel by the withdrawing Society being completed by the due date and as specified by the withdrawing Society. Any outstanding Conditions of Class with their due dates are to be clearly stated on the: *(2020)* (a) class survey record if available on board; and (b) survey status
(C) Any additional information regarding recommendations/conditions of class received from the withdrawing Society is to be dealt with in accordance with above (A) and (B) as applicable. If this additional information is received from the withdrawing Society after the Interim Certificate of Classification has been issued or the confirmation of the validation of the Certificate of Classification has been done, any recommendations/conditions of class which are overdue are to be dealt with at the first port of call at which surveys can be carried out by the relevant Society, depending on the age of the vessel.	(C) Any additional information regarding Conditions of Class received from the withdrawing Society is to be dealt with in accordance with above (A) and (B) as applicable. If this additional information is received from the withdrawing Society after the Interim Certificate of Classification has been issued or the confirmation of the validation of the Certificate of Classification has been done, any Conditions of Class which are overdue are to be dealt with at the first port of call at which surveys can be carried out by the relevant Society, depending on the age of the vessel. *(2020)*
(D) When facilities are not available in the first port of survey, a direct voyage to a port where facilities are available may be accepted to complete surveys for overdue recommendations/ conditions of class of the withdrawing Society.	(D) When facilities are not available in the first port of survey, a direct voyage to a port where facilities are available may be accepted to complete surveys for overdue Conditions of Class of the withdrawing Society. *(2020)*
〈hereafter, omitted〉	〈hereafter, same as the current Guidances〉

Present	Amendments
CHAPTER 2 PERIODICAL AND OTHER SURVEYS	**CHAPTER 2 PERIODICAL AND OTHER SURVEYS**
Section 1 ~ Section 8 〈omitted〉	**Section 1 ~ Section 8 〈same as current Guidances〉**
Section 9 Continuous Survey of Machinery	**Section 9 Continuous Survey of Machinery**
902. Survey items 【See Rule】 <omitted>	**902. Survey items 【See Rule】 <same as the current Guidances>**
903. Planned Maintenance System	**903. Planned Maintenance System**
1.~3. <omitted>	**1.~3. <same as the current Guidances>**
4. In application to **903. 4** of the Rules, the damage and repairs for PMS should be complied with the following requirements. **【See Rule】**	**4.** In application to **903. 4** of the Rules, the damage and repairs for PMS should be complied with the following requirements. **【See Rule】**
(1) ~ (2) 〈omitted〉	(1) ~ (2) 〈same as the current Guidances〉
(3) In the case of overdue outstanding recommendations or a record of unrepaired damage which would affect the PMS, the relevant items shall be kept out the PMS until the recommendation is fulfilled or the repair is carried out.	(3) In the case of overdue outstanding Conditions of Class or a record of unrepaired damage which would affect the PMS, the relevant items shall be kept out the PMS until the Conditions of Class is fulfilled or the repair is carried out. *(2020)*
〈hereafter, omitted〉	〈hereafter, same as current Guidances〉

Present	Amendments
Annex 1-13 Owner's Hull Inspection and Maintenance Program	**Annex 1-13 Owner's Hull Inspection and Maintenance Program**
1. General 〈omitted〉	**1. General** 〈same as the current Guidances〉
2. Requirements (1) Outstanding recommendations/conditions of class related to the hull, should be completed prior to the ship being able to participate in this program. (2) Surveys to maintain the classification are to be up-to-date, and without outstanding recommendations/conditions of class related to the hull structure and corrosion prevention system which would affect this program. 〈omitted〉	**2. Requirements** (1) Outstanding Conditions of Class related to the hull, should be completed prior to the ship being able to participate in this program. (2) Surveys to maintain the classification are to be up-to-date, and without outstanding Conditions of Class related to the hull structure and corrosion prevention system which would affect this program. 〈same as the current Guidances〉
Annex 1-17 Laid-up and recommissioning of ships *(2018)*	**Annex 1-17 Laid-up and recommissioning of ships *(2018)***
Section 1 General 〈omitted〉 **Section 2 Surveys**	**Section 1 General 〈same as the current Guidances〉** **Section 2 Surveys**
201. Laid-up survey **1.** At the beginning of the laid-up period, a laid-up survey is to be carried out as the followings; (1) General condition of hull above the waterline (2) Laid-up condition and anchoring arrangement. In particular, the recommendation which is affected her laid-up directly is to be surveyed with special attention. (3) ~ (9)	**201. Laid-up survey** **1.** At the beginning of the laid-up period, a laid-up survey is to be carried out as the followings; (1) General condition of hull above the waterline (2) Laid-up condition and anchoring arrangement. In particular, the Condition of Class which is affected her laid-up directly is to be surveyed with special attention. (3) ~ (9)
202. Re-commissioning survey **1. <omitted>** **2.** The scope of the re-commissioning survey is to include: (1) ~ (2) 〈omitted〉 (3) dealing with the recommendations due at the date of recommissioning or which became due during the laid-up period. 〈hereafter, omitted〉	**202. Re-commissioning survey** **1. <same as the current Guidances>** **2.** The scope of the re-commissioning survey is to include: (1) ~ (2) 〈same as the current Guidances〉 (3) dealing with the Conditions of Class due at the date of recommissioning or which became due during the laid-up period. 〈hereafter, same as the current Guidances〉

(3) Effective date : 1 Jan. 2020

(Contracted for construction)

Present	Amendments
CHAPTER 2 PERIODICAL AND OTHER SURVEYS **Section 1 ~ 3 〈omitted〉** **Section 4 Special Survey (Hull, Equipment and Fire-extinguishing Appliances)** **401. ~ 402. 〈omitted〉** **403. Requirements of survey** **1.~ 8. <omitted>** **9.** In application to **403. 1** of the Rules, for ships which are to be comply with **Annex 7-8, 3** of the Guidance as a safety measure for container ships incorporating extremely thick steel plates, NDT is to be carried out in accordance with **Annex 7-8, 3** and **Table 1** of the Guidance at No. 2 Special Survey and every even Special Survey after that(e.g. No.4, No. 6 Special Survey, etc.). **【See Rule】** 〈hereafter, omitted〉	**CHAPTER 2 PERIODICAL AND OTHER SURVEYS** **Section 1 ~ 3 〈omitted〉** **Section 4 Special Survey (Hull, Equipment and Fire-extinguishing Appliances)** **401. ~ 402. 〈omitted〉** **403. Requirements of survey** **1.~ 8. <omitted>** **9.** In application to **403. 1** of the Rules, for ships which are to be comply with **Annex 7-8, 3** of the Guidance as a safety measure for container ships incorporating extremely thick steel plates, NDT is to be carried out in accordance with **Annex 7-8, 3** and **Table 1** of the Guidance at No. 2 Special Survey and every even Special Survey after that(e.g. No.4, No. 6 Special Survey, etc.). However, for ships contracted for construction on or after 1 January 2020, above requirement is not applied. *(2020)* **【See Rule】** 〈hereafter, same as current Guidances〉

Amended Guidances for the Classification of Steel Ships

(Part 2 Materials and Welding)

Dec. 2019

KR

Effective date : 1 Jan. 2020

(1) Date of application for certification of material & welding or the contract date for ship construction

◉ To reflect Request for Establishment/Revision of Classification Technical Rules (MSC.1/Circ. 1599)

Present	Amendment
CHAPTER 1 MATERIALS **Section 1 General** **101. Application** [See Rule] **1. ~ 4. <Omitted>** **5. <New>** **102. ~ 109. <Omitted>** **Section 2 ~ Section 8 <Omitted>** **CHAPTER 2 WELDING <Omitted>**	**CHAPTER 1 MATERIALS** **Section 1 General** **101. Application** [See Rule] **1. ~ 4. <Sames as the present guidance>** **5.** The high manganese austenitic steel for cargo tank in ships carrying liquefied natural gases in bulk or for fuel tank in ships using liquefied natural gases as fuels is to comply with **Annex 2-11**. *(2020)* **102. ~ 109. <Sames as the present guidance>** **Section 2 ~ Section 8 <Sames as the present guidance>** **CHAPTER 2 WELDING <Sames as the present guidance>**

Present	Amendment
Annex 2-1 ~ Annex 2-10 <Omitted>	**Annex 2-1 ~ Annex 2-10** <Omitted>
Annex 2-11 High manganese austenitic steel <New>	**Annex 2-11 High manganese austenitic steel *(2020)***

1. Application

(1) This Guidance applies to the high manganese austenitic steel plate(herein-after referred to as "high manganese austenitic steel") for cargo tank in ships carrying liquefied natural gases in bulk or for fuel tank in ships using liquefied natural gases as fuels.

(2) The high manganese austenitic steel used for purposes other than (1) may be applied this Guidance with the approval of the Society.

(3) The requirements other than those specified in this Guidance are comply with the requirements specified in **Pt 2, Ch 1, 301.** of the Rules.

2. Definitions

(1) High manganese austenitic steel is the steel with a high amount of manganese in order to retain austenite as its primary phase at atmospheric and service temperature.

(2) Controlled cooling is a method of cooling from high temperature in accordance with designed cooling rate.

3. Manufacturing process

(1) Where the high manganese austenitic steel plates are manufactured from the continuous casting slabs, the maximum thickness for approval is to be determined, as a rule, with the roll ratio of 6 as standard. However, upon consideration of the manufacturing process, the roll ratio may be reduced to 4.

(2) The grade, thickness, deoxidation practice and chemical composition are to comply with the requirements given in **Table 1**.

Table 1 Grade, Thickness, Deoxidation Practice and Chemical Composition

Grade	Thickness, t(mm)	Deoxidation Practice	Chemical Composition (%)								
			C	*Si*(1)	*Mn*	*P*	*S*	*Cu*	*Cr*	*N*	*B*
HMN40	$6 \le t \le 30$	Killed and Fine grain treated	0.35 ~ 0.55	0.10 ~ 0.50	22.50 ~ 25.50	0.030 max.	0.010 max.	0.30 ~ 0.70	3.00 ~ 4.00	0.050 max.	0.005 max.

NOTES:

(1) Silicon(Si) may be less than 0.10 %, provided total aluminum is 0.03 % or higher, or provided acid soluble aluminum is 0.025 % or higher.

Present	Amendment
	4. Heat treatment (1) The heat treatment for high manganese austenitic steel is to be hot rolled and subsequent controlled cooling as necessary. (2) Heat treatment following the final rolling process is not permitted. **5. Selection of test samples** (1) One test sample is to be taken from every similarly heat treated piece as rolled directly from one slab or ingot. (2) The requirements specified in **Pt 2**, **Ch 1**, **301. 6** (4) of the Rules are to be applied to the selection of the test samples. **6. Selection of test specimens** (1) Tensile test specimens are to comply with the requirements shown in (a) to (c) below: (a) Tensile test specimens are to be taken according to the requirements specified in **Pt 2**, **Ch 1**, **301. 7** (2) of the Rules. (b) Normally flat tensile test specimens are to be prepared in such a manner as to maintain the rolling scale at least at one side. (c) When instead a machined round tensile test specimen is used then the axis must be located at a position lying at a distance of t/4 from the surface or as near as possible to this position. (2) Impact test specimens are to be taken according to the requirements specified in **Pt 2**, **Ch 1**, **301. 7** (3) of the Rules. **7. Mechanical properties** The mechanical properties of high manganese austenitic steel plates are classified as specified in **Table 2**.

Present	Amendment
	Table 2 Mechanical properties for high manganese austenitic steel plates

Grade	Tensile test			Impact test	
	Yield Strength (N/mm^2)	Tensile Strength (N/mm^2)	Elongation ($L=5.65\sqrt{A}$) (%)	Test Temp. (℃)	Average Impact Energy(J) min.(1) T(2)
HMN40	min. 400	800～970	22	-196	27

NOTE:
(1) When the absorbed energy of two or more test specimens among a set of test specimens is less in value than the specified average absorbed energy or when the absorbed energy of a single test specimen is less in value than 70 % of the specified average absorbed energy, the test is considered to be failed.
(2) T denotes that the longitudinal axis of the test specimen is arranged transverse to the final direction of rolling.

8. Welding consumables for high manganese austenitic steel

(1) Where no special requirements are given in **8**, those as specified in **Pt 2, Ch 2, 607.** of the Rules apply in analogous manner.
(2) Welding consumables are classified as specified in **Table 3**.

Table 3 Grades and Marks of Welding Consumables

Material for TIG welding	Flux cored wire welding	Consumables for submerged welding
RY HMN	*RW HMN*	*RU HMN*

(3) Submerged arc welding consumables which have passed the tests for each welding process are to be appended with the suffixes shown in **Table 4** at the end of their marks.

Present	Amendment

Table 4 Marks

Welding technique	Marks
Multi-run technique	*M*
Two-run technique	*T*
Multi-run and Two-run technique	*TM*

(4) Deposited metal test

(A) Chemical composition

(a) Deposited metals of welding consumables for flux cored wire welding and submerged arc welding are to have the chemical composition given in **Table 5** and **Table 6** respectively.

(b) TIG welding consumables are to have the chemical composition of ladle analysis value complied with the requirements as given in **Table 7**.

Table 5 Chemical Composition of Deposited Metal for Flux Cored Wire Welding

Grade	Chemical composition (%)									
	C	*Si*	*Mn*	*P*	*S*	*Ni*	*Cr*	*Mo*	*N*	Others
RW HMN	0.2～0.5	0.2～1.0	18.0～26.0	0.02 max.	0.015 max.	5.0 max.	5.0 max.	2.5 max.	0.1 max.	–

Table 6 Chemical Composition of Deposited Metal for Submerged Arc Welding

Grade	Chemical composition (%)									
	C	*Si*	*Mn*	*P*	*S*	*Ni*	*Cr*	*Mo*	*N*	Others
RU HMN	0.2～0.6	1.5 max.	18.0～26.0	0.020 max.	0.015 max.	3.0 max.	5.0 max.	2.5 max.	0.10 max.	–

Present	Amendment
	Table 7 Chemical Composition of Deposited Metal for TIG Electrodes

Grade	Chemical composition (%)									
	C	*Si*	*Mn*	*P*	*S*	*Ni*	*Cr*	*Mo*	*N*	Others
RY HMN	0.2～0.5	0.1～1.0	18.0～26.0	0.020 max.	0.015 max.	5.0 max.	5.0 max.	2.5 max.	0.10 max.	—

(B) Mechanical properties for deposited metal are to comply with the requirements in **Table 8**.

Table 8 Mechanical properties for Deposited Metal

Tensile test			Charpy V notch Impact test	
Yield strength (N/mm^2)	Tensile strength (N/mm^2)	Elongation (%)	Test temp. (℃)	Average absorbed energy (J)
400 min.	660 min.	22 min.	-196	27 min.

(5) Butt weld test

Mechanical properties for butt weld test are to comply with the requirements in **Table 9**.

Table 9 Mechanical properties for butt weld test

Yield strength (N/mm^2)	Bend test	Charpy V notch Impact test	
		Test temp. (℃)	Average absorbed energy (J)
660 min.	The test specimens are to be capable of withstanding, without crack exceeding 3 mm long on the outer surface of the specimen or other defects.	-196	27 min.

Present	Amendment
	(6) Fillet weld test Fillet weld test is to be in accordance with the requirements in **Pt 2, Ch 2, 602. 7** of the Rules. **9. Welder** (1) Welders for high manganese austenitic steel are to have a qualification by welder qualification test with high manganese austenitic steel specimen in accordance with **Pt 2, Ch 2, Sec. 5** of the Rules. (2) Welders who engage in welding for high manganese austenitic steel is to have passed qualification test with high manganese austenitic steel. **10. Welding procedure qualification tests** (1) Welding procedure qualification tests for high manganese austenitic steel is to be in accordance with the requirements in **Pt 7, Ch 5, Sec 6** of Rules and **Rules/Guidances for the Classification of Ships Using Low-flashpoint Fuels**.

Present	Amendment
	(2) The kinds of test and the number of test for butt welded joints is to be as shown in **Table 10**.

Table 10 Kinds of Test for Plates with Butt Welded Joints

Grades and material symbols of test specimens		Kinds and number of specimens for test(1)(2)						
		Visual insp.	Tensile test	Bend test	Impact test	Macro-structure insp.	Hard. test (6)	Non-destructive insp. (7)
High manganese austenitic steel	*HMN40*	Welding positions of whole length	3(3)	2(4)	(5)	1	1	Welding positions of whole length

NOTES:

(1) Where found necessary by the Society, microscopic test, hardness test and tests other than these may be required.

(2) Welding procedure test assembly is in accordance with **Fig 2.2.6**(*RL9N490*) of the Rules.

(3) Two specimens are to be taken transversely and one specimen is to be taken longitudinally.(See **Fig 2.2.6** of the Rules)

(4) Face bend and root bend specimens are used in accordance with **Pt 2, Ch 2, 404. 5** of the Rules.

(5) No. of test sets and position of notch are in accordance with **Pt 7, Ch 5, Sec 6** of Rules and **Rules/Guidances for the Classification of Ships Using Low-flashpoint Fuels**.

(6) For reference

(7) Non-destructive inspection for detection of internal imperfections is, in principle, to be radiographic inspection. Surface inspections by penetrant examination are to be carried out.

(3) The hardness test of fillet welding is for the reference.

Present	Amendment
	(4) The welding procedure qualification test is carried out considering the following points. (A) Special attention is to be given to the first root pass when applying flux-cored arc welding (FCAW); reduced amperage is to be considered. And weld gas composition of FCAW may be normally an 80/20 mix of argon and carbon dioxide. (B) Welding heat input is to be controlled equal to maximum 30 kJ/cm or below. **11. Welding practice** (1) Distance between the weld and nozzle is to be kept to a minimum to reduce the oxygen content at the vicinity of the weld pool. (2) Appropriate ventilation is to be provided to reduce exposure to hazardous welding fumes. (3) The edges to be welded are to be smooth, uniform and free from moisture, grease, rust and paint which may cause injurious defects in welded joints. **12. Marking** (1) Steel plates which have satisfactorily complied with the required tests are to be marked with the identification mark in accordance with **Pt 2, Ch 1, 301. 11** of the Rules. (2) Where the plates are controlled cooling : *CC* (e.g. : *HMN40 CC*)

Amended Rules for the Classification of Steel Ships

(Pt. 3 Hull Structures)

Dec. 2019

KR

- Main Amendments -

(1) 01 Jan. 2020 (date of construction contract) or

in the absence of a building contract, the keel of which is laid or which are at a similar stage of construction on or after 01 July 2020 or

delivered on or after 01 Jan. 2024

◉ Reflected IACS UI SC156 (R. 1)

Present	Amendment
CHAPTER 14 WATERTIGHT BULKHEADS **Section 1 ~ 3 <omit>** **Section 4 Watertight Doors** **401. General [See Guidance]** **1.** Any access openings, doors, manholes or ducts for ventilation, etc. are not to be cut in the collision bulkhead below freeboard deck. The number of openings in collision bulkheads above the freeboard deck is to be kept to a minimum as possible and all such openings are to be provided with weathertight means of closing. **2.** Watertight doors(or access hatch cover) are to be provided for all access openings in the watertight bulkheads or openings to ensure the watertight integrity of the inner decks in accordance with the requirements in the following **402.** to **405.**	**CHAPTER 14 WATERTIGHT BULKHEADS** **Section 1 ~ 3 <same as current>** **Section 4 Watertight Doors** **401. General (2020) [See Guidance]** **1.** Any access openings, doors, manholes or ducts for ventilation, etc. are not to be cut in the collision bulkhead below freeboard deck. The number of openings in collision bulkheads above the freeboard deck is to be kept to a minimum as possible and all such openings are to be provided with weathertight means of closing. **2.** The design and testing requirements for watertight doors vary according to their location relative to the 1) equilibrium waterplane or intermediate waterplane at any stage of assumed flooding and or 2) bulkhead deck or freeboard deck. **3.** Definitions (1) Watertight: Capable of preventing the passage of water in any direction under a design head. The design head for any part of a structure shall be determined by reference to its location relative to the bulkhead deck or freeboard deck, as applicable, or to the most unfavourable equilibrium/intermediate waterplane, in accordance with the applicable subdivision and damage stability regulations, whichever is the greater. A watertight door is thus one that will maintain the watertight integrity of the subdivision bulkhead in which it is located. (2) Equilibrium Waterplane: The waterplane in still water when, taking account of flooding due to an assumed damage, the weight and buoyancy forces acting on a vessel are in balance. This relates to the final condition when no further flooding takes place or after cross flooding is completed.

Present	Amendment
	(3) Intermediate Waterplane: The waterplane in still water, which represents the instantaneous floating position of a vessel at some intermediate stage between commencement and completion of flooding when, taking account of the assumed instantaneous state of flooding, the weight and buoyancy forces acting on a vessel are in balance. (4) Sliding Door or Rolling Door: A door having a horizontal or vertical motion generally parallel to the plane of the door. (5) Hinged Door: A door having a pivoting motion about one vertical or horizontal edge.
402. Type of watertight doors **[See Guidance]**	**402. Type of watertight doors** **[See Guidance]**
1. Watertight doors are to be of sliding type. Hinged or rolling type may, however, be accepted having regard to the position or the service condition of the door.	**1. <same as current>**
2. Notwithstanding the provisions in **1** above, where watertight door is as small as crew can pass, the watertight door may be of hinged type or rolling type, except where the doors are required to be capable of being closed remotely in accordance with **404. 2.**	**2.** ~ in accordance with **404. 3.**
3. Notwithstanding the provisions in **1** above, watertight doors in large cargo hold division may be of a type other than sliding type provided that such doors are permanently closed at sea.	**3. 4. <same as current>**
4. Doors which are closed by dropping or by the action of a dropping weight are not permitted.	
	5. Doors should be fitted in accordance with all requirements regarding their operation mode, location and outfitting, i.e. provision of controls, means of indication, etc., as shown in **Table 3.14.5** below. *(2020)*
403. <omit>	**403. <same as current>**

Present	Amendment
404. Control **[See Guidance]**	**404. Control** *<2020>* **[See Guidance]**
	1. Watertight doors are categorized as the following (1) to (4) corresponding to its purpose and frequency of use. (1) Normally Closed at sea : Kept closed at sea but may be used if authorised. To be closed again after use. (2) Permanently Closed at sea : The time of opening such doors in port and of closing them before the ship leaves port shall be entered in the log-book. (3) Normally Open at sea : May be left open provided it is always ready to be immediately closed. (4) Used at sea : In regular use, may be left open provided it is ready to be immediately closed.
1. All watertight doors, except those which are to be permanently closed at sea, are to be capable of being opened and closed by hand locally, from both sides of the doors, with the ship listed of 30 degrees to either side.	**2.** All watertight doors, except those which are to be permanently closed at sea, are to be capable of being opened and closed by hand (and by power, where applicable) locally, from both sides of the doors, with the ship listed of 30 degrees to either side.
2. In addition to the requirements of **1** above, watertight doors which are used at sea or normally open at sea, are to be capable of being remotely closed by power from the navigation bridge.	**3.** Where indicated in **Table 3.14.5**, the doors are to be capable of being remotely closed by power from the bridge for all ships.
3. It is not to be possible to remotely open any watertight door. In addition, watertight doors which are applying to the provisions of **402. 3** are not to be remotely controlled.	**4.** It is not to be possible to remotely open any watertight door. In addition, watertight doors which are applying to the provisions of **402. 3** are not to be remotely controlled.

Present	Amendment
405. Indication **【See Guidance】** **1.** Watertight doors, except those permanently closed at sea, are to be provided with position indicators showing whether the doors are open or closed at all operating positions. **2.** In addition to the requirements of **1** above for watertight doors which are to be capable of being remotely closed, an indication is to be placed locally showing that the door is in remote control mode.	**405. Indication** *<2020>* **【See Guidance】** **1.** Where shown in **Table 3.14.5,** position indicators are to be provided at all remote operating positions (5), for all ships and provided locally on both sides of the internal doors (6) for cargo ships, to show whether the doors are open or closed and, if applicable, with all dogs/cleats fully and properly engaged. **2.** <same as current> **3.** The door position indicating system is to be of self-monitoring type and the means for testing of the indicating system are to be provided at the position where the indicators are fitted. **4.** Signboard/instructions should be placed in way of the door advising how to act when the door is in "doors closed" mode.
406. Alarms **【See Guidance】** Watertight doors which are capable of being remotely closed are to be provided with an audible alarm which will sound at the door position whenever such a door is remotely closed.	**406. <same as current>**
407. Source of power **1.** The remote controls, indications and alarms required in **404.** to **406.** are to be operable in the event of main power failure. **2.** Where Electrical installations specified in **1** are situated below the freeboard deck, they are to be provided with a degree of protection appropriate for flooding. **【See Guidance】** **3.** Cables for devices specified in 1. are to comply with the requirements of **Pt 6, Ch 1, Sec 5** of the Rules.	**407. Source of power** **1.** The remote controls, indications and alarms required in **404.** to **406.** are to be operable in the event of main power failure. Failure of the normal power supply of the required alarms shall be indicated by an audible and visual alarm. *(2020)* **2.~ 3.** <same as current>

Present	Amendment
408. Notices	**408. Notices**
1. Watertight doors which are to be normally closed at sea are to have notices fixed to both sides of the doors stating "**To be kept closed at sea**".	**1.** Watertight doors which are to be normally closed at sea but not provided with means of remote closure, are to have notices fixed to both sides of the doors stating "**To be kept closed at sea**".
2. Watertight doors which are to be permanently closed at sea are to have notices fixed to both sides stating "**Not to be opened at sea**". Such doors which are accessible during the voyage are to be fitted with a device which prevents opening. **[See Guidance]**	**2.** <same as current>
409. Sliding doors [See Guidance]	**409. <same as current>**
1. Sliding watertight doors are to be capable of being operated from an accessible position above the bulkhead deck and are to have an index at the operating positon showing whether the door is open or closed. This remote control of the door may, however, be omitted where the Society is satisfied with such an arrangement having regard to the service condition of the door.	
2. Where the above control means is operated by rods, the lead of operating rods is to be as direct as possible and the screw is to work in a nut of gun-metal or other approved material.	
3. Sliding doors controlled from remote positions are also to be capable of being operated at the position of the door.	
4. The frames of vertically sliding watertight doors are to have no groove at the bottom in which dirt might lodge and prevent the door from closing.	
410. Hinged and rolling doors	**410. <same as current>**
1. For hinged and rolling watertight doors, the hinge pins and the wheel axle of these doors are to be of gun-metal or other approved materials.	
2. Hinged and rolling watertight doors except those are to be permanently closed at sea, are to be of quick acting or single acting type which is capable of being closed and secured from both sides of the doors.	

Present	Amendment
411. Others For fitting of valves or cocks to a watertight bulkhead, see **Pt 5, Ch 6, 107. 11.** For pipes passing through bulkheads, see **Pt 5, Ch 6, 107. 8** and **10.** For electric cables passing through bulkhead, see **Pt 6, Ch 1, 508. 1** to **3.** ⚓	**411. <same as current>** **412. Test** ***(2020)*** **[See Guidance]** **1.** Doors which become immersed by an equilibrium or intermediate waterplane, are to be subjected to a hydrostatic pressure test. **2.** For large doors intended for use in the watertight subdivision boundaries of cargo spaces, structural analysis may be accepted in lieu of pressure testing. Where such doors utilise gasket seals, a prototype pressure test to confirm that the compression of the gasket material is capable of accommodating any deflection, revealed by the structural analysis, is to be carried out. ⚓

Table 3.14.5 : Doors in Internal Watertight Bulkheads and External Watertight Boundaries in Cargo Ships *(2020)*

A. Door in Internal Watertight Bulkheads

Position relative to bulkhead or freeboard deck	1. Frequency of Use while at sea	2. Type	3. Remote Closure	4. Remote Indication	5. Audible or Visual Alarm	6. Notice	7. Regulation	8. Comments
(1) Below	Used	POS	Yes	Yes	Yes (local)	No	SOLAS II-1/13-1.2 and 22.3 MARPOL I/28.3 ICLL66+A.320 1988 Protocol to ICLL66 IBC, and IGC	
	Norm. Closed	S, H	No	Yes	No	Yes	SOLAS II-1/13-1.3, 22.3 and 24.4	See Note 1
	Perm. Closed	S, H	No	No	No	Yes	24.3, and 24.4 Perm. SOLAS II-1/ 13-1.4, Closed S, H No No No Yes See Notes 3 + 4 13-1.5, 22.2, 24.3 and 24.4	See Notes 3 + 4
(2) At or above	Used	POS	Yes	Yes	Yes (local)	No	SOLAS II-1/13-1.2 and 22.3 MARPOL I/28.3 ICLL66+A.320 1988 Protocol to ICLL66 IBC, and IGC	See Notes 2 + 5
	Norm. Closed	S, H	No	Yes	No	Yes	SOLAS II-1/13-1.3, 22.3 and 24.4	See Note 1
	Perm. Closed	S, H	No	No	No	Yes	SOLAS II-1/13-1.4, 13-1.5, 24.3 and 24.4	See Notes 3 + 4

Notes:

Type

- Power operated, sliding or rolling POS
- Power operated, hinged POH
- Sliding or Rolling S
- Hinged H

1. If hinged, this door shall be of quick acting or single action type.
2. Under ICLL66, doors separating a main machinery space from a steering gear compartment may be hinged quick acting type provided the lower sill of such doors is above the Summer Load Line and the doors remain closed at sea whilst not in use.
3. The time of opening such doors in port and closing them before the ship leaves port shall be entered in the logbook, in case of doors in watertight bulkheads subdividing cargo spaces.
4. Doors shall be fitted with a device which prevents unauthorized opening.
5. Under MARPOL, hinged watertight doors may be acceptable in watertight bulkhead in the superstructure.
6. Passenger ships which have to comply with SOLAS II-1/14.2 require an indicator on the navigation bridge to show automatically when each door is closed and all door fastenings are secured.
7. Refer to the Explanatory Note to Regulation 17.1 of Res.MSC.429(98) regarding sliding watertight doors with a reduced pressure head and sliding semi-watertight doors.

B. Door in External Watertight Boundaries below equilibrium or intermediate waterplane

Position relative to bulkhead or freeboard deck	1. Frequency of Use while at sea	2. Type	3. Remote Closure	4. Remote Indication	5. Audible or Visual Alarm	6. Notice	7. Regulation	8. Comments
(1) Below	Perm. Closed	S, H	No	Yes	No	Yes	SOLAS II-1/15.9, 15-1.2, 15-1.3, 15- 1.4, 22.6, 22.12 and 24.1	See Notes 2 + 3
(2) At or above	Norm. Closed	S, H	No	Yes	No	Yes	SOLAS II-1/15-1.2	See Note 1
	Perm. Closed	S, H	No	Yes	No	Yes	SOLAS II-1/15-1.2 and 15-1.4	See Notes 2 +3

Notes:

Type

- Power operated, sliding or rolling POS
- Power operated, hinged POH
- Sliding or Rolling S
- Hinged H

1. If hinged, this door shall be of quick acting or single action type.
2. The time of opening such doors in port and closing them before the ship leaves port shall be entered in the logbook.
3. Doors shall be fitted with a device which prevents unauthorized opening.

Amended Guidance for the Classification of Steel Ships

(Pt. 3 Hull Structures)

Dec. 2019

KR

- Main Amendments -

(1) 01 Jan. 2020 (date of construction contract) or
in the absence of a building contract, the keel of which is laid or which are at a similar stage of construction on or after 01 July 2020 or
delivered on or after 01 Jan. 2024

◉ Reflected IACS UI SC156 (R. 1)

(2) 01 Jan. 2020 (date of which application for survey is submitted)

◉ IACS Recommendation 47 / Customer complaint
- repair standard of tee joint and cruciform joint (Annex 3-4)

Present	Amendment
CHAPTER 14 WATERTIGHT BULKHEADS	**CHAPTER 14 WATERTIGHT BULKHEADS**
Section 1 ~ 3 <omit>	**Section 1 ~ 3 <same as current>**
Section 4 Watertight Doors	**Section 4 Watertight Doors**
401. General [See Rule] **1.** Watertight doors are categorized as the following (1) to (4) corresponding to its purpose and frequency of use. (1) Watertight doors which are to be Permanently Closed at Sea: Such doors are open in port and closed before the ship leaves port. The time of opening/closing such doors is to be entered in the log-book. (e.g. Bulkhead doors for loading /unloading) (2) Watertight doors which are to be Normally Closed at Sea: Such doors are kept closed at sea but may be used if authorized by the officer of the watch and to be closed again after use. (3) Watertight doors which are Normally Open at Sea: Such doors may be left open provided those are always ready to be immediately closed. (4) Watertight doors which are Used at Sea: Such doors are normally used and may be left open provided those are ready to be immediately closed.	<move to Rule>
402. Type of watertight doors [See Rule] Watertight doors provided in watertight bulkheads are to be sliding type as far as practicable. If hinged doors are used, they are to be accessible at any time and, further, to be protected against damages due to cargoes, etc. by suitable means.	**402. Type of watertight doors** [See Rule] **1.** Watertight doors provided in watertight bulkheads are to be sliding type as far as practicable. If hinged doors are used, they are to be accessible at any time and, further, to be protected against damages due to cargoes, etc. by suitable means. **2.** For passenger ships the watertight doors and their controls are to be located in compliance with **SOLAS II-1/13.5.3** and **II-1/13.7.1.2.2.** *(2020)*
403. <omit>	**403. <same as current>**

Present	Amendment
404. Control **[See Rule]**	**404. Control** ***(2020)*** **[See Rule]**
1. Where it is necessary to operate the power unit for remote operation of the watertight door required by **404.** of the Rules, means to operate the power unit are also to be provided at remote control stations.	**1.** Where it is necessary to operate the power unit for remote operation of the watertight door required by **404.** of the Rules, means to operate the power unit are also to be provided at remote control stations. The operation of such remote control is to be in accordance with **SOLAS II-1/13.8.1** to **13.8.3.** For tankers, where there is a permanent access from a pipe tunnel to the main pump room, the watertight door shall be capable of being manually closed from outside the main pump room entrance in addition to the requirements above.
	2. With respect to the provisions of **404. 2** of the Rules, for passenger ships, the angle of list at which operation by hand is to be possible is 15 degrees or the maximum angle of heel during intermediate stages of flooding, whichever is the greater.
	3. Where indicated in **Table 3.14.3**, the doors are to be capable of being remotely closed by power from the bridge and by hand also from a position above the bulkhead deck for passenger ships as required by **SOLAS II-1/13 7.1.4.**
2. Remote controls required by **404.** of the Rules, are to be in accordance with the followings. (1) <omit> (2) The operating console at the navigation bridge is to be provided with a diagram showing the location of each door, with visual indicators to show whether each door is opened or closed. A red light is to indicate a door is fully opened and a green light is to indicate a door is fully closed. When the door is being closed remotely, the red light is to indicate the intermediate position by flashing. The indicating circuit is to be independent of the control circuit for each door.	**4.** Remote controls required by **404.** of the Rules, are to be in accordance with the followings. (1) <same as current> (2) The operating console at the navigation bridge is to be provided with a diagram showing the location of each door, with visual indicators to show whether each door is opened or closed. A red light is to indicate a door is fully opened and a green light is to indicate a door is fully closed. When the door is being closed remotely, the red light is to indicate the intermediate position by flashing. The indicating circuit is to be independent of the control circuit for each door. This applies to cargo ships and passenger ships.
3. <omit>	**5.** <same as current>

Present	Amendment
4. With respect to the provisions of **404.** of the Rules, where a watertight door is located adjacent to a fire door, both doors are to be capable of independent operation, remotely if required and from both sides of the each door.	**6.** With respect to the provisions of **404.** of the Rules, where a watertight door is located adjacent to a fire door, both doors are to be capable of independent operation, remotely if required and from both sides of the each door. Watertight doors may also serve as fire doors but need not be fire-tested notwithstanding the fire resistance of the division in which the watertight doors are fitted. However, such doors fitted above the bulkhead deck on passenger ships shall be tested to the FTP Code in accordance with the division they are fitted. If it is not practicable to ensure self-closing, means of indication on the bridge showing whether these doors are open or closed and a notice stating 'To be kept closed at sea' can be alternative of the self-closing.
5. The wording "navigation bridge" stated in **404.** of the Rules means the place always served by a watch officer and it normally represents the navigation bridge deckhouse.	**7.** <same as current>
6. With respect to the provisions of **404. 1** of the Rules, an operation capability of the ship listed of 30 degrees to either side is to be verified by prototype tests, etc.	**8.** <same as current>
7. With respect to the provisions of **404. 1** of the Rules, power operated doors are also to be capable of being opened and closed by power, as well as to by manual.	**9.** <same as current>
405. <omit>	**405. <same as current>**

Present	Amendment
406. Alarm [See Rule] An audible alarm required by **406.** of the Rules is to sound from the door begins to move and continue to sound until the door is completely closed.	**406. Alarm *(2020)* [See Rule]** **1.** An audible alarm required by **406.** of the Rules is to sound from the door begins to move and continue to sound until the door is completely closed. Other audible alarms shall be provided that are distinct from those in the area. For passenger ships the alarm shall sound for at least 5 s but not more than 10 s before the door begins to move and shall continue sounding until the door is completely closed. **2.** In the case of remote closure by hand operation, an alarm is required to sound only while the door is actually moving. In passenger areas and areas of high ambient noise, the audible alarms are to be supplemented by visual signals at both sides of the doors. **3.** All watertight doors, including sliding doors, operated by hydraulic door actuators, either a central hydraulic unit or independent for each door is to be provided with a low fluid level alarm or low gas pressure alarm, as applicable or some other means of monitoring loss of stored energy in the hydraulic accumulators. This alarm is to be both audible and visible and shall be located on the central operating console at the navigation bridge.
407.~ 408. <omit>	**407.~ 408. <same as current>**
409. Sliding doors [See Rule] **1.** <omit> **2.** ~~In application to **409. 1** of the Rules, the term "where the Society is satisfied" means the cases as specified in **401. 1** (1) and (2) of the Guidance.~~	**409. Sliding doors [See Rule]** **1.** <same as current>
	412. Test *(2020)* **1.** Doors which are not immersed by an equilibrium or intermediate waterplane but become intermittently immersed at angles of heel in the required range of positive stability beyond the equilibrium position are to be hose tested.

Present	Amendment
⚓	**2.** Pressure Testing (1) The head of water used for the pressure test shall correspond at least to the head measured from the lower edge of the door opening, at the location in which the door is to be fitted in the vessel, to the bulkhead deck or freeboard deck, as applicable, or to the most unfavourable damage waterplane, if that be greater. Testing may be carried out at the factory or other shore based testing facility prior to installation in the ship. (2) The following acceptable leakage criteria should apply to - Doors with gaskets No leakage - Doors with metallic sealing Max leakage 1 liter/min. (3) Limited leakage may be accepted for pressure tests on large doors located in cargo spaces employing gasket seals or guillotine doors located in conveyor tunnels, in accordance with the following Leakage rate(liter/min.) = $\frac{(P+4.572)\times h^3}{6,568}$ where P = perimeter of door opening (m) h = test head of water (m) (4) However, in the case of doors where the water head taken for the determination of the scantling does not exceed 6.10 m, the leakage rate may be taken equal to 0.375 liter/min if this value is greater than that calculated by the above-mentioned formula. (5) For doors on passenger ships which are normally open and used at sea or which become submerged by the equilibrium or intermediate waterplane, a prototype test shall be conducted, on each side of the door, to check the satisfactory closing of the door against a force equivalent to a water height of at least 1 m above the sill on the centre line of the door. **3.** All watertight doors shall be subject to a hose test in accordance with **Annex 1-16 of Guidance Pt 1.** after installation in a ship. Hose testing is to be carried out from each side of a door unless, for a specific application, exposure to floodwater is anticipated only from one side. Where a hose test is not practicable because of possible damage to machinery, electrical equipment insulation or outfitting items, it may be replaced by means such as an ultrasonic leak test or an equivalent test. ⚓

Table 3.14.3 : Doors in Internal Watertight Bulkheads and External Watertight Boundaries in Passenger Ships *(2020)*

A. Door in Internal Watertight Bulkheads

Position relative to bulkhead or freeboard deck	1. Frequency of Use while at sea	2. Type	3. Remote Closure	4. Remote Indication	5. Audible or Visual Alarm	6. Notice	7. Regulation	8. Comments
(1) Below	Norm. Closed	POS	Yes	Yes	Yes (local)	No	SOLAS II-1/13.4, 13.5.1, 13.5.2,13.6, 13.7.1,13.8.1, 13.8.2, 22.1, 22.3 and 22.4	Certain doors may be left open, see SOLAS II-1/22.3 and IMO MSC. 1/Circ.1564
	Perm. Closed	S, H	No	No	No	Yes	SOLAS II-1/13.9.1, 13.9.2, 14.2, 22.2 and 22.5	See Notes 3 + 4 + 6
(2) At or above	Norm. Closed	POS, POH	Yes	Yes	Yes (local)	No	SOLAS II-1/17.1 and 22.3	See Note 7
		S, H	No	Yes	Yes (remote)	Yes	SOLAS II-1/17-1.1, 17-1.2, 17-1.3, 23.6 and 23.8	See Note 1
		S, H	No	Yes	Yes (remote)	Yes	SOLAS II-1/17-1.1, 17-1.2, 17-1.3, 22.7 and 23.3 to 23.5	Doors giving access to below Ro-Ro Deck
	Perm. Closed	S, H	No	Yes	Yes (remote)	Yes		See Notes 1 + 3 + 4

Notes:

Type

- Power operated, sliding or rolling POS
- Power operated, hinged POH
- Sliding or Rolling S
- Hinged H

1. If hinged, this door shall be of quick acting or single action type.
2. Under ICLL66, doors separating a main machinery space from a steering gear compartment may be hinged quick acting type provided the lower sill of such doors is above the Summer Load Line and the doors remain closed at sea whilst not in use.
3. The time of opening such doors in port and closing them before the ship leaves port shall be entered in the logbook, in case of doors in watertight bulkheads subdividing cargo spaces.
4. Doors shall be fitted with a device which prevents unauthorized opening.
5. Under MARPOL, hinged watertight doors may be acceptable in watertight bulkhead in the superstructure.
6. Passenger ships which have to comply with SOLAS II-1/14.2 require an indicator on the navigation bridge to show automatically when each door is closed and all door fastenings are secured.
7. Refer to the Explanatory Note to Regulation 17.1 of Res.MSC.429(98) regarding sliding watertight doors with a reduced pressure head and sliding semi-watertight doors.

B. Door in External Watertight Boundaries below equilibrium or intermediate wate6rplane

Position relative to bulkhead or freeboard deck	1. Frequency of Use while at sea	2. Type	3. Remote Closure	4. Remote Indication	5. Audible or Visual Alarm	6. Notice	7. Regulation	8. Comments
(1) Below	Perm. Closed	S, H	No	No	No	Yes	SOLAS II-1/15.9, 22.6 and 22.12	See Notes 2 + 3
(2) At or above	Norm. Closed	S, H	No	Yes	No	Yes	SOLAS II-1/17.1 and 22.3 MSC.Circ.541	See Note 1
		S, H	No	Yes	Yes (Remote)	Yes	SOLAS II-1/17-1.1, 17-1.2, 17-1.3, 23.6 and 23.8	Doors giving access to below Ro-Ro Deck
	Perm. Closed	S, H	No	Yes	Yes (Remote)	Yes	SOLAS II-1/17-1.1, 17-1.2, 17-1.3, 23.3 and 23.5	See Notes 2 + 3

Notes:

Type

- Power operated, sliding or rolling POS
- Power operated, hinged POH
- Sliding or Rolling S
- Hinged H

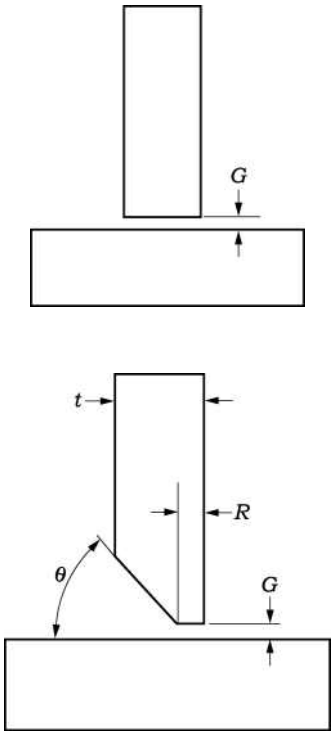
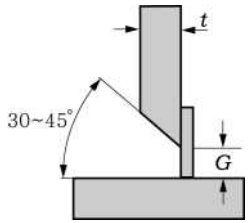
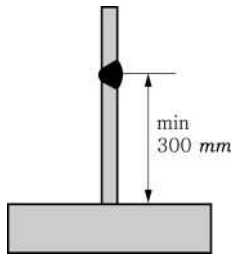
1. If hinged, this door shall be of quick acting or single action type.
2. The time of opening such doors in port and closing them before the ship leaves port shall be entered in the logbook.
3. Doors shall be fitted with a device which prevents unauthorized opening.

Present

Annex 3-4 Guidance for the Hull Construction Monitoring Procedure

1. ~ 6. <omit>

Table 5 Fillet weld fit-up repair

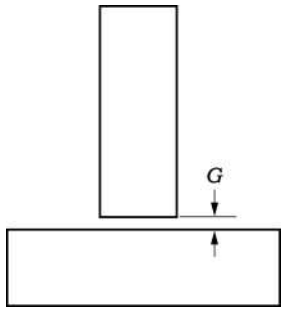
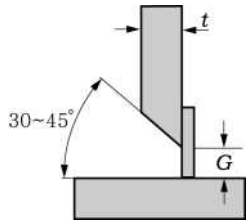
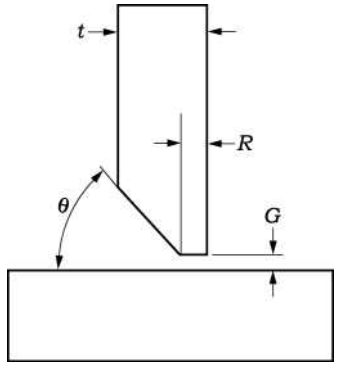
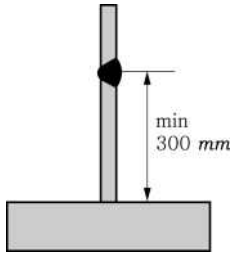
Detail	Repair Standard	Note
	2 mm $<$ G $\leq$ 5 mm : length of weld to Rule leg by + ($G-2$)	~~For cruciform joints :~~ ~~1) 3 mm $<$ G $\leq$ 6 mm~~ ~~The weld should be full penetration and subject to additional ultrasonic NDE using both 45° and 70° probes, to the satisfaction of the surveyor.~~ ~~2) G $>$ 6 mm~~ ~~The joint is to be adjusted until compliance is reached or an insert plate is to be fitted to the satisfaction of the surveyor.~~
	5 mm $<$ G $\leq$ 16 mm : champer to 30°- 45°, build up with welding on one side, with or without backing bar, remove backing strip if used, back gouge and seal with weld. 	
	G $\leq$ 16 mm or G $>$ 1.5t Insert plate of min width 300 mm to be used 	

Amendment

Annex 3-4 Guidance for the Hull Construction Monitoring Procedure

1. ~ 6. <same as current>

Table 5 Fillet weld fit-up repair

Detail	Repair Standard	Note
	3 mm $<$ G $\leq$ 5 mm : length of weld to Rule leg by + ($G-2$)	-
	5 mm $<$ G $\leq$ 16 mm : champer to 30°- 45°, build up with welding on one side, with or without backing bar, remove backing strip if used, back gouge and seal with weld. 	
	G $\leq$ 16 mm or G $>$ 1.5t Insert plate of min width 300 mm to be used 	

Amended Rules for the Classification of Steel Ships

(Part 5 Machinery Installations)

Dec. 2019

KR

- Main Amendments -

(1) Effective date : 1 Jan. 2020 (Date of which contracts for construction are signed)

- ◉ Clarify the meaning of alternative and novel features.
- ◉ The word "up to an angle of inclination of 45 degree" has been deleted regarding switching operation or operational changes in the inclined condition reflecting the amendment of IACS UR M46(Rev.2 Dec 2018).
- ◉ Lignum vitae in sea water lubricated bearings has been deleted reflecting the amendment of IACS UR M52(Rev.1 Jan 2019).
- ◉ Newly added content of IACS UR P2.13(New Oct 2018) has been reflected.
- ◉ MSC.1/Circ.1567(June 2017) has been reflected.(Criteria for pipes passing through collision bulkheads are classified as cargo ships and passenger ships, and the use of butterfly valves is permitted only for cargo ships.)

(2) Effective date : 1 Jan. 2020(Date of application for approval)

- ◉ The amendments in IACS UR M72(Rev.2 Jan 2019) regarding engine components have been reflected.

- ◉ Amendments of IACS UR P2.7.4(Rev.9 Oct 2018) has been reflected.(examples and adaptations of mechanical joints in common compression formats are added).

(1) Effective date : 1 Jan 2020

(Date of which contracts for construction are signed)

Present	Amendment
# CHAPTER 1 GENERAL ## Section 1 General **101. Application** **1.** The requirements of this Part apply to the machinery installations intended for the ships which have no special limitations for their service area and purpose. For machinery installations intended for the ships having any limitations for their service area or intended for the small ships, the requirements in this Part may be modified. Special consideration is to be given to the ships with any limitations for their purpose. **【See Guidance】** **2.** The machinery installations which do not comply with the requirements of this Part may be accepted, provided that they are considered acceptable by the Society. **【See Guidance】** **3. ~ 8. <omitted>**	# CHAPTER 1 GENERAL ## Section 1 General **101. Application** **1.** The requirements of this Part apply to the machinery installations intended for the ships which have no special limitations for their service area and purpose. For machinery installations intended for the ships having any limitations for their service area or intended for the small ships, the requirements in this Part may be modified. Special consideration is to be given to the ships with any limitations for their purpose. **【See Guidance】** **2.** The equivalence of alternative and novel features which deviate from or are not directly applicable to the Rules is to be in accordance with **Pt 1, Ch 1 of Rules**. **3. ~ 8. <same as the present>**

Present

103. Construction, materials and installation

1. <omitted>

Table 5.1.2 Angle of inclination

Type of machinery installations	Angle of inclination (deg)(2)			
	Athwart-ships		Fore-and-aft	
	Static	Dynamic	Static	Dynamic
Main and auxiliary machinery	15	22.5	5(4)	7.5
Safety equipment (emergency power installations, emergency fire pumps and their devices) Switch gear(1) (electrical and electronic appliances and remote control systems)	22.5(3)	22.5(3)	10	10

NOTES:

(1) Up to an angle of inclination of 45° no undesired switching operation or operational changes may occur.

(2) Athwartships and fore-and-aft inclinations may occur simultaneously.

(3) In ships for the carriage of liquefied gases and of chemicals the emergency power supply must also remain operable with the ship flooded to a final athwartships inclination up to a maximum of 30 degrees.

(4) Where the length of the ship exceeds 100 m, the fore-and-aft static angle of inclination may be taken as $500/L$ degrees. (L : Length of the ship as defined in **Part 3, Ch 1, 102.** of the Rules, m)

(hereafter, omitted)

Amendment

103. Construction, materials and installation

1. <same as the present>

Table 5.1.2 Angle of inclination

Type of machinery installations	Angle of inclination (deg)(2)			
	Athwart-ships		Fore-and-aft	
	Static	Dynamic	Static	Dynamic
Main and auxiliary machinery	15	22.5	5(4)	7.5
Safety equipment (emergency power installations, emergency fire pumps and their devices) Switch gear(1) (electrical and electronic appliances and remote control systems)	22.5(3)	22.5(3)	10	10

NOTES:

(1) ~~Up to an angle of inclination of 45°~~ No undesired switching operation or operational changes are to occur.

(2) Athwartships and fore-and-aft inclinations may occur simultaneously.

(3) In ships for the carriage of liquefied gases and of chemicals the emergency power supply must also remain operable with the ship flooded to a final athwartships inclination up to a maximum of 30 degrees.

(4) Where the length of the ship exceeds 100 m, the fore-and-aft static angle of inclination may be taken as $500/L$ degrees. (L : Length of the ship as defined in **Part 3, Ch 1, 102.** of the Rules, m)

(hereafter, same as the present Rules)

Present	Amendment
CHAPTER 3 PROPULSION SHAFTING AND POWER TRANSMISSION SYSTEMS	**CHAPTER 3 PROPULSION SHAFTING AND POWER TRANSMISSION SYSTEMS**
Section 2 Shaftings	**Section 2 Shaftings**
201. ~ 205. <omitted>	**201. ~ 205. <same as the present>**
206. Stern tube bearing and sealing device	**206. Stern tube bearing and sealing device**
1. The length of stern bearing in the stern tube or of strut bearing supporting the weight of propeller is to comply with the following requirements. (1) The bearings are to be type approved by the Society in their materials, construction and lubricating arrangements when rubber or synthetic materials are used. (2) For sea water lubricated bearings of lignum vitae, rubber or synthetic materials, the length of the bearing is to be not less than 4 times the required diameter of the shaft in way of the bearing. However when rubber or synthetic materials are used, where the material has been proven satisfaction of society through testing and operating experience, consideration may be given to an increased bearing pressure or a lessened bearing length. In this case, the length of the bearing is to be not less than 2 times the required diameter of the shaft in way of the bearing.	**1.** The length of stern bearing in the stern tube or of strut bearing supporting the weight of propeller is to comply with the following requirements. (1) The bearings are to be type approved by the Society in their materials, construction and lubricating arrangements when rubber or synthetic materials are used. (2) For sea water lubricated bearings ~~of lignum vitae, rubber or synthetic materials~~, the length of the bearing is to be not less than 4 times the required diameter of the shaft in way of the bearing. However when rubber or synthetic materials are used, where the material has been proven satisfaction of society through testing and operating experience, consideration may be given to an increased bearing pressure or a lessened bearing length. In this case, the length of the bearing is to be not less than 2 times the required diameter of the shaft in way of the bearing.
(hereafter, omitted)	(hereafter, same as the present Rules)

Present	Amendment
CHAPTER 6 AUXILIARIES AND PIPING ARRANGEMENT	**CHAPTER 6 AUXILIARIES AND PIPING ARRANGEMENT**
Section 1 General	**Section 1 General**
<omitted>	<same as present>
107. General requirements for piping arrangement	**107. General requirements for piping arrangement**
<omitted>	<same as present>
2. Protection of pipes and fittings	**2. Protection of pipes and fittings**
<omitted>	<same as present>
(4) <Added>	(4) Seawater pipes located in cargo holds and in other spaces where pipes may be subject to impacts (e.g. fish holds, chain lockers), are to be protected from mechanical damage. *(2020)*

Present	Amendment
<omitted>	<same as present>
8. Watertight bulkheads **[See Guidance]** (1) Valves or cocks such as drain valves, which do not constitute a part of any pipe line are not to be fitted on the collision bulkhead. (2) Except as provided in para. (3), the collision bulkhead may be pierced below the bulkhead deck by not more than one(1) pipe for dealing with fluid in the forepeak tank in principle and the pipe is to be fitted with a screw-down valve capable of being operated from above the bulkhead deck, the valve chest being secured inside the forepeak to the collision bulkhead. The valve, however, may be fitted on the after side of the collision bulkhead provide that the valves are readily accessible under all service conditions and the space in which they are located is not a cargo space.	**8. Watertight bulkheads** **[See Guidance]** (1) Valves or cocks such as drain valves, which do not constitute a part of any pipe line are not to be fitted on the collision bulkhead. (2) Except as provided in para. (3), the collision bulkhead may be pierced below the bulkhead deck of passenger ships and the freeboard deck of cargo ships by not more than one pipe for dealing with fluid in the forepeak tank, provided that the pipe is fitted with a screw-down valve capable of being operated from above the bulkhead deck of passenger ships and the freeboard deck of cargo ships, the valve being located inside the forepeak at the collision bulkhead. The valve, however, may be the fitted on the after side of the collision bulkhead provided that the valve is readily accessible under all service conditions and the space in which it is located is not a cargo space. Alternatively, for cargo ships, the pipe may be fitted with a butterfly valve suitably supported by a seat or flanges and capable of being operated from above the freeboard deck. All valves shall be of steel, bronze or other approved ductile material. Valves of ordinary cast iron or similar material are not acceptable. *(2020)*
<omitted>	<same as present>

(2) Effective date : 1 Jan 2020

(Date of application for approval)

Present	Amendment
CHAPTER 1 GENERAL	**CHAPTER 1 GENERAL**
Section 1 General	**Section 1 General**
102. Definitions	**102. Definitions**
1. ~ 25. <omitted>	**1. ~ 25. <same as the present>**
26. KR Certificate (KRC) is a document issued by the Society stating below. (1) Conformity with the requirements of the Rules (2) The tests and inspections have been carried out on the certified product itself, or on samples taken from the certified product itself. (3) The inspection and tests were performed in the presence of the Surveyor or in accordance with quality assurance system.	**26. KR Certificate (KRC)** is a document issued by the Society stating below. (1) Conformity with the requirements of the Rules (2) The tests and inspections have been carried out on the finished certified component itself; or on samples taken from earlier stages in the production of the component, when applicable. *(2020)* (3) The inspection and tests were performed in the presence of the Surveyor or in accordance with quality assurance system.
27. Work's Certificate (W) is a document signed by the manufacturer stating below. (1) Conformity with the requirements (2) The tests and inspections have been carried out on the certified product itself, or on samples taken from the raw material, used for the product to be certified. (3) The tests were witnessed and signed by a qualified representative of the applicable department of the manufacturer.	**27. Work's Certificate (W)** is a document signed by the manufacturer stating below. (1) Conformity with the requirements (2) The tests and inspections have been carried out on the finished certified component itself; or on samples taken from earlier stages in the production of the component, when applicable. *(2020)* (3) The tests were witnessed and signed by a qualified representative of the applicable department of the manufacturer.
28. Test Report (TR) is a document signed by the manufacturer stating below. (1) Conformity with the requirements (2) The tests and inspections have been carried out on samples from the current production.	**28. Test Report (TR)** is a document signed by the manufacturer stating below. (1) Conformity with the requirements (2) The tests and inspections have been carried out on samples from the current production batch.
(hereafter, omitted)	(hereafter, same as the present Rules)

Present	Amendment
CHAPTER 2 MAIN AND AUXILIARY ENGINES	**CHAPTER 2 MAIN AND AUXILIARY ENGINES**
Section 2 Internal Combustion Engines	**Section 2 Internal Combustion Engines**
201. ~ 210. <omitted>	**201. ~ 210. <same as the present>**
211. Tests and Inspections **1. Test of engine components** (1) <omitted> (2) The manufacturer is not exempted from responsibility for any relevant tests and inspections of those parts for which documentation is not explicitly requested by the Society. Manufacturing works is to be equipped in such a way that all materials and components can be consistently produced to the required standard. This includes production and assembly lines, machining units, special tools and devices, assembly and testing rigs as well as all lifting and transportation devices. *(2017)* (hereafter, omitted)	**211. Tests and Inspections** **1. Test of engine components** (1) <same as the present> (2) The manufacturer is not exempted from responsibility for any relevant tests and inspections of those parts for which documentation is not explicitly requested by the Society. The manufacturing process and equipment is to be set up and maintained in such a way that all materials and components can be consistently produced to the required standard. This includes production and assembly lines, machining units, special tools and devices, assembly and testing rigs as well as all lifting and transportation devices. *(2020)* (hereafter, same as the present Rules)

<Present>

Table 5.2.4 Test and inspection of engine components *(2017)*

Component		Material properties(1)	Non-destructive examination(2)	Hydraulic testing(3)	Dimensional inspection, including surface condition	Visual inspection (surveyor)	Applicable to engines(6)	Component certificate
Welded bedplate		W(C+M)	W(UT+CD)			fit-up + post-welding	All	KRC
Bearing transverse girders GS		W(C+M)	W(UT+CD)			X	All	KRC
Welded frame box		W(C+M)	W(UT+CD)			fit-up + post-welding	All	KRC
Cylinder block GJL				W(5)			CH	
Cylinder block GJS				W(5)			CH	
Welded cylinder frames		W(C+M)	W(UT+CD)			fit-up + post-welding	CH	KRC
Engine block GJL				W(5)			>400 kW/cyl.	
Engine block GJS		W(M)		W(5)			>400 kW/cyl.	
Cylinder liner		W(C+M)		W(5)			D>300 mm	
Cylinder head GJL				W			D>300 mm	
Cylinder head GJS				W			D>300 mm	
Cylinder head GS		W(C+M)	W(UT+CD)	W		X	D>300 mm	KRC
Forged cylinder head		W(C+M)	W(UT+CD)	W		X	D>300 mm	KRC
Piston crown GS		W(C+M)	W(UT+CD)			X	D>400 mm	KRC
Forged piston crown		W(C+M)	W(UT+CD)			X	D>400 mm	KRC
Crankshaft: made in one piece		KRC(C+M)	W(UT+CD)		W	Random, of fillets and oil bores	All	KRC
Semi-built crankshaft	Crank throw	KRC(C+M)	W(UT+CD)		W	Random, of fillets and shrink fittings	All	KRC
	Forged main journal and journals with flange	KRC(C+M)	W(UT+CD)		W	Random, of shrink fittings	All	
Exhaust gas valve cage				W			CH	
Piston rod, if applicable		KRC(C+M)	W(UT+CD) CD again after final machining (grinding)			Random	D>400 mm	KRC

<Present>

Table 5.2.4 Test and inspection of engine components (continued)

Component	Material properties(1)	Non-destructive examination(2)	Hydraulic testing(3)	Dimensional inspection, including surface condition	Visual inspection (surveyor)	Applicable to engines	Component certificate
Cross head	KRC(C+M)	W(UT+CD) CD again after final machining (grinding and polishing)			Random	CH	KRC
Connecting rod with cap	KRC(C+M)	W(UT+CD)		W	Random, of all surfaces, in particular those shot peened	All	KRC
Coupling bolts for crankshaft	KRC(C+M)	W(UT+CD)		W	Random, of interference fit	All	KRC
Bolts and studs for main bearings	W(C+M)	W(UT+CD)				D>300 mm	
Bolts and studs for cylinder heads	W(C+M)	W(UT+CD)				D>300 mm	
Bolts and studs for connecting rods	W(C+M)	W(UT+CD)		TR of thread making		D>300 mm	
Tie rod	W(C+M)	W(UT+CD)		TR of thread making	Random	CH	KRC
High pressure fuel injection pump body			W			D>300 mm	
			TR			D≤300 mm	
High pressure fuel injection valves (only for those not autofretted(7))			W			D>300 mm	
			TR			D≤300 mm	
High pressure fuel injection pipes including common fuel rail	W(C+M)		W for those that are not autofretted(7)			D>300 mm	
			TR for those that are not autofretted(7)			D≤300 mm	
High pressure common servo oil system	W(C+M)		W			D>300 mm	
			TR			D≤300 mm	
Cooler, both sides(4)	W(C+M)		W			D>300 mm	

<Present>

Table 5.2.4 Test and inspection of engine components (continued)

Component	Material properties(1)	Non-destructive examination(2)	Hydraulic testing(3)	Dimensional inspection, including surface condition	Visual inspection (surveyor)	Applicable to engines(6)	Component certificate
Accumulator of common rail fuel or servo oil system	W(C+M)		W			All engines with accumulators with a capacity of >0.5 l	
Piping, pumps, actuators, etc. for hydraulic drive of valves, if applicable	W(C+M)		W			>800 kW/cyl.	
Engine driven pumps (oil, water, fuel, bilge)			W			>800 kW/cyl.	
Bearings for main, crosshead, and crankpin	TR(C)	TR (UT for full contact between basic material and bearing metal)		W		>800 kW/cyl.	

NOTES:
C : Chemical composition
M : Mechanical properties
CD : Crack detection by Magnetic particle test or liquid penetrant test
UT : Ultrasonic testing
CH : Crosshead engines
GJL : Grey iron casting
GJS : Spheroidal graphite iron casting
GS : Steel casting
D : Cylinder bore diameter
KRC : KR Certificate
W : Work's certificate (refer to **Ch 1, 301. 2**)
TR : Test report
X : Visual examination of accessible surfaces by the Surveyor

(1) Material properties include chemical composition and mechanical properties, and also surface treatment such as surface hardening (hardness, depth and extent), peening and rolling (extent and applied force).
(2) Non-destructive examination means e.g. ultrasonic testing, crack detection by magnetic particle tests or liquid penetrant tests.
(3) Hydraulic testing is applied on the water/oil side of the component. Items are to be tested by hydraulic pressure at the pressure equal to 1.5 times the maximum working pressure. High pressure parts of the fuel injection system are to be tested by hydraulic pressure at the pressure equal to 1.5 maximum working pressure or maximum working pressure plus 300 bar, whichever is the less. Where design or testing features may require modification of these test requirements, special consideration may be given.
(4) Charge air coolers need only be tested on the water side.
(5) Hydraulic testing is also required for those parts filled with cooling water and having the function of containing the water which is in contact with the cylinder or cylinder liner.
(6) For the small auxiliary engines at discretion of the Society, **Ch 2, 101. 1** is to be applied.
(7) Manufacturers using autofretted method are to obtain the manufacturer approval by the Society. *(2018)*

<New>

Table 5.2.4 Test and inspection of engine components *(2017)*

Component	Material properties[1]	Non-destructive examination[2]	Hydraulic testing[3]	Dimensional inspection, including surface condition	Visual inspection (surveyor)	Applicable to engines[6]	Component certificate
Welded bedplate	W(C+M)	W(UT+CD)			fit-up + post-welding	All	KRC
Bearing transverse girders GS	W(C+M)	W(UT+CD)			X	All	KRC
Welded frame box	W(C+M)	W(UT+CD)			fit-up + post-welding	All	KRC
Cylinder block GJL			W[5]			>400 kW/cyl.	
Cylinder block GJS			W[5]			>400 kW/cyl.	
Welded cylinder frames	W(C+M)	W(UT+CD)			fit-up + post-welding	CH	KRC
Engine block GJL			W[5]			>400 kW/cyl.	
Engine block GJS	W(M)		W[5]			>400 kW/cyl.	
Cylinder liner	W(C+M)		W[5]			D>300 mm	
Cylinder head GJL			W			D>300 mm	
Cylinder head GJS			W			D>300 mm	
Cylinder head GS	W(C+M)	W(UT+CD)	W		X	D>300 mm	KRC
Forged cylinder head	W(C+M)	W(UT+CD)	W		X	D>300 mm	KRC
Piston crown GS	W(C+M)	W(UT+CD)			X	D>400 mm	KRC
Forged piston crown	W(C+M)	W(UT+CD)			X	D>400 mm	KRC
Crankshaft: made in one piece	KRC(C+M)	W(UT+CD)		W	Random, of fillets and oil bores	All	KRC
Semi-built crankshaft (Crank throw, forged main journal and journals with flange)	KRC(C+M)	W(UT+CD)		W	Random, of fillets and shrink fittings	All	KRC
Exhaust gas valve cage			W			CH	
Piston rod, ~~if applicable~~	KRC(C+M)	W(UT+CD) ~~CD again after final machining (grinding)~~			Random	D>400 mm CH	KRC

<New>

Table 5.2.4 Test and inspection of engine components (continued)

Component	Material properties[1]	Non-destructive examination[2]	Hydraulic testing[3]	Dimensional inspection, including surface condition	Visual inspection (surveyor)	Applicable to engines	Component certificate
Cross head	KRC(C+M)	W(UT+CD) ~~CD again after final machining (grinding and polishing)~~			Random	CH	KRC
Connecting rod with cap	KRC(C+M)	W(UT+CD)		W	Random, of all surfaces, in particular those shot peened	All	KRC
Coupling bolts for crankshaft	KRC(C+M)	W(UT+CD)		W	Random, of interference fit	All	KRC
Bolts and studs for main bearings	W(C+M)	W(UT+CD)				D>300 mm	
Bolts and studs for cylinder heads	W(C+M)	W(UT+CD)				D>300 mm	
Bolts and studs for connecting rods	W(C+M)	W(UT+CD)		TR of thread making		D>300 mm	
Tie rod	W(C+M)	W(UT+CD)		TR of thread making	Random	CH	KRC
High pressure fuel injection pump body	W(C+M)[8]		W			D>300 mm	
	W(C+M)[8]		TR			D≤300 mm	
High pressure fuel injection valves (only for those not autofretted[7])			W			D>300 mm	
			TR			D≤300 mm	
High pressure fuel injection pipes including common fuel rail	W(C+M)[8]		W for those that are not autofretted[7]			D>300 mm	
	W(C+M)[8]		TR for those that are not autofretted[7]			D≤300 mm	
High pressure common servo oil system	W(C+M)[8]		W			D>300 mm	
	W(C+M)[8]		TR			D≤300 mm	
Cooler, both sides[4]	W(C+M)[9]		W			D>300 mm	

<New>

Table 5.2.4 Test and inspection of engine components (continued)

Component	Material properties(1)	Non-destructive examination(2)	Hydraulic testing(3)	Dimensional inspection, including surface condition	Visual inspection (surveyor)	Applicable to engines(6)	Component certificate
Accumulator ~~of common rail fuel or servo oil system~~	W(C+M)(8)		W			All engines with accumulators with a capacity of >0.5 *l*	
Piping, pumps, actuators, etc. for hydraulic drive of valves, if applicable	W(C+M)(8)		W			>800 kW/cyl.	
Engine driven pumps (oil, water, fuel, bilge) other than high pressure fuel injection pump body and pump for hydraulic drive of valve above			W			>800 kW/cyl.	
Bearings for main, crosshead, and crankpin	TR(C)	TR (UT for full contact between base material and bearing metal)		W(8)		>800 kW/cyl.	

NOTES:

C : Chemical composition
M : Mechanical properties
CD : Crack detection by Magnetic particle test or liquid penetrant test
UT : Ultrasonic testing
CH : Crosshead engines
GJL : Grey iron casting
GJS : Spheroidal graphite iron casting
GS : Steel casting
D : Cylinder bore diameter
KRC : KR Certificate
W : Work's certificate (refer to **Ch 1, 301. 2**)
TR : Test report
X : Visual examination of accessible surfaces by the Surveyor

(1) Material properties include chemical composition and mechanical properties, and also surface treatment such as surface hardening (hardness, depth and extent), peening and rolling (extent and applied force).
(2) Non-destructive examination means e.g. ultrasonic testing, crack detection by magnetic particle tests or liquid penetrant tests.
(3) Hydraulic testing is applied on the water/oil side of the component. Items are to be tested by hydraulic pressure at the pressure equal to 1.5 times the maximum working pressure. High pressure parts of the fuel injection system are to be tested by hydraulic pressure at the pressure equal to 1.5 maximum working pressure or maximum working pressure plus 300 bar, whichever is the less. Where design or testing features may require modification of these test requirements, special consideration may be given.
(4) Charge air coolers need only be tested on the water side.
(5) Hydraulic testing is also required for those parts filled with cooling water and having the function of containing the water which is in contact with the cylinder or cylinder liner.
(6) For the small auxiliary engines at discretion of the Society, **Ch 2, 101. 1** is to be applied.
(7) Manufacturers using autofretted method are to obtain the manufacturer approval by the Society. *(2018)*
(8) The manufacturer approval in accordance with **Ch 1, 301. 2** may be omitted. *(2020)*
(9) The application of classification for pressure vessels given in **Ch 5, 303. 1** is to be complied with. *(2020)*

Present

CHAPTER 6 AUXILIARIES AND PIPING ARRANGEMENT

Section 1 General

<omitted>

104. Type of connections

<omitted>

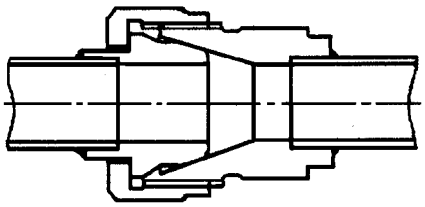
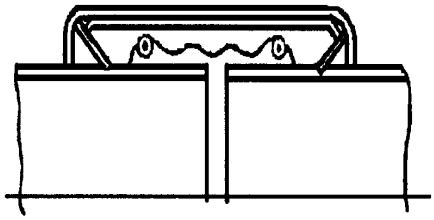
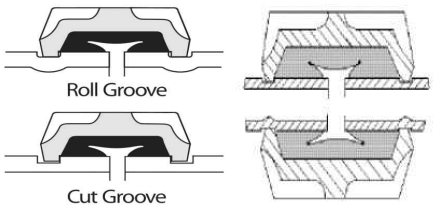
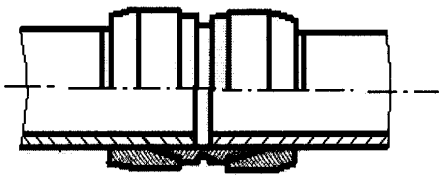
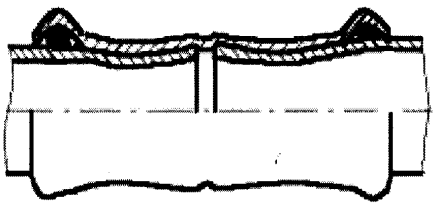
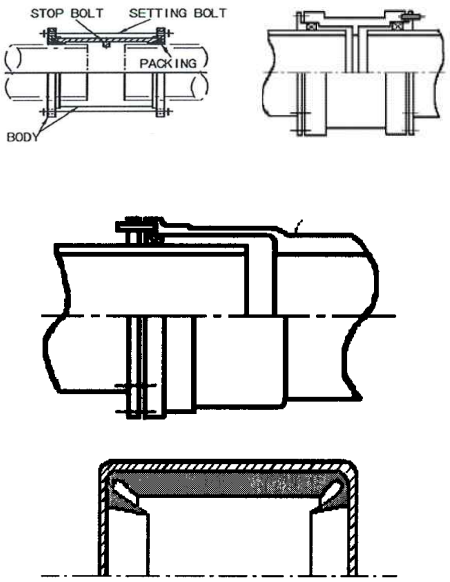
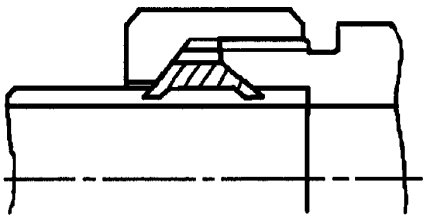
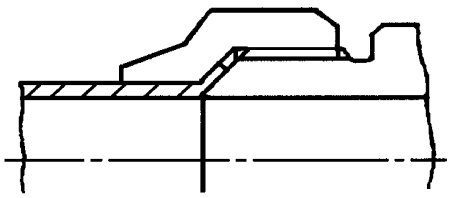
<table>
<tr><th>Type of mechanical joints</th><th>Examples of mechanical joints</th><th>Type of mechanical joints</th><th>Examples of mechanical joints</th></tr>
<tr><td colspan="2">Pipe union</td><td colspan="2">Slip-on joints</td></tr>
<tr><td>Welded and brazed types</td><td>  </td><td>Grip type</td><td>  </td></tr>
<tr><td colspan="2">Compression couplings</td><td rowspan="2">Machine grooved type</td><td rowspan="2">  </td></tr>
<tr><td>Swage type</td><td>  </td></tr>
<tr><td>Press type</td><td>  </td><td rowspan="3">Slip type</td><td rowspan="3">  </td></tr>
<tr><td>Bite type</td><td>  </td></tr>
<tr><td>Flared type</td><td>  </td></tr>
</table>

Fig 5.6.2 Examples of Mechanical Joints

Present

<omitted>

Table 5.6.10 Application of Mechanical Joints

Systems		Kind of connections		
		Pipe Unions	Compression Couplings	Slip-on joints
Flammable fluids (Flash point ≤ 60 °C)				
1	Cargo oil lines(4)	○	○	○
2	Crude oil washing lines(4)	○	○	○
3	Vent lines(3)	○	○	○
4	Water seal effluent lines	○	○	○
5	Scrubber effluent lines	○	○	○
6	Main lines(2)(4)	○	○	○
7	Distributions lines(4)	○	○	○
Flammable fluids (Flash point 〉 60 °C)				
8	Cargo oil lines(4)	○	○	○
9	Fuel oil lines(3)(2)	○	○	○
10	Lubricating oil lines(2)(3)	○	○	○
11	Hydraulic oil(2)(3)	○	○	○
12	Thermal oil(2)(3)	○	○	○
Sea water				
13	Bilge lines(1)	○	○	○
14	Water filled fire extinguishing systems, e.g. sprinkler systems(3)	○	○	○
15	Non water filled fire extinguishing systems, e.g. foam, drencher systems(3)	○	○	○
16	Fire main (not permanently filled)(3)	○	○	○
17	Ballast system(1)	○	○	○
18	Cooling water system(1)	○	○	○
19	Tank cleaning services	○	○	○
20	Non-essential systems	○	○	○

Present

Table 5.6.10 Application of Mechanical Joints (continued)

	Systems	Kind of connections		
		Pipe Unions	Compression Couplings[6]	Slip-on joints
	Fresh water			
21	Cooling water system[(1)]	○	○	○
22	Condensate return[(1)]	○	○	○
23	Non-essential system	○	○	○
	Sanitary/Drains/Scuppers			
24	Deck drains (internal)[(6)]	○	○	○[4]
25	Sanitary drains	○	○	○
26	Scuppers and discharge (overboard)	○	○	-
	Sounding/Vent			
27	Water tanks/Dry spaces	○	○	○
28	Oil tanks (f.p. 〉 60 °C)[(2)(3)]	○	○	○
	Miscellaneous			
29	Starting/Control air[1]	○	○	-
30	Service air (non-essential)	○	○	○
31	Brine	○	○	○
32	CO_2 system[1]	○	○	-
33	Steam	○	○	○[(5)]

Abbreviations ○ : Application is allowed, - : Application is not allowed

NOTES - Fire resistance capability

If mechanical joints include any components which readily deteriorate in case of fire, they are to be of an approved fire resistant type under consideration of the following footnotes:

1) Inside machinery spaces of category A - only approved fire resistant types.
2) Not inside machinery spaces of category A or accommodation spaces. May be accepted in other machinery spaces
   provided the joints are located in easily visible and accessible positions.
3) Approved fire resistant types except in cases where such mechanical joints are installed on exposed open decks, as
   defined in SOLAS II-2/Reg. 9.2.3.3.2.2(10) and not used for fuel oil lines.
4) Only in pump rooms and open decks - only approved fire resistant types.

NOTES - General

5) Slip type slip-on joints as shown in Fig 5.6.2. May be used for pipes on deck with a design pressure of 10 bar or less.
6) Only above bulkhead deck of passenger ships and freeboard deck of cargo ships.

Present

Table 5.6.11 Application of mechanical joints depending upon the class of piping

Type of joints	Classes of piping systems		
	Class Ⅰ	Class Ⅱ	Class Ⅲ
Pipe Unions			
Welded and brazed type	○(OD≤60.3 mm)	○(OD≤60.3 mm)	○
Compression Couplings			
Swage type	○	○	○
Bite type	○(OD≤60.3 mm)	○(OD≤60.3 mm)	○
Flared type	○(OD≤60.3 mm)	○(OD≤60.3 mm)	○
Press type	-	-	○
Slip-on joints			
Machine grooved type	○	○	○
Grip type	-	○	○
Slip type	-	○	○
Abbreviations ○ : Application is allowed - : Application is not allowed			

<omitted>

Amendment

CHAPTER 6 AUXILIARIES AND PIPING ARRANGEMENT

Section 1 General

<same as present>

104. Type of connections

<same as present>

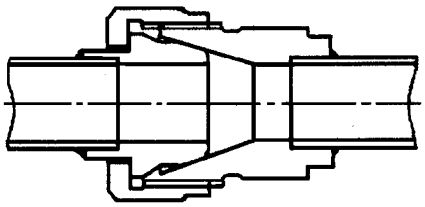
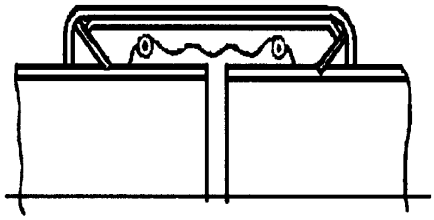
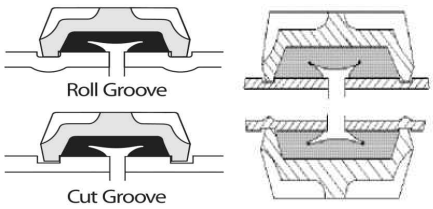
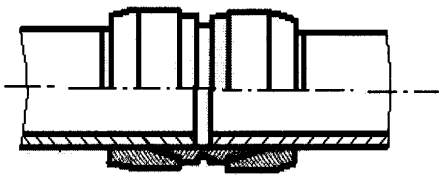
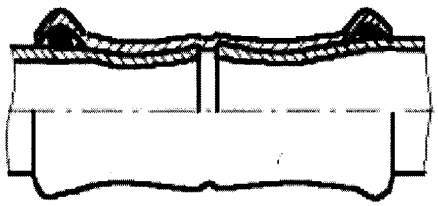
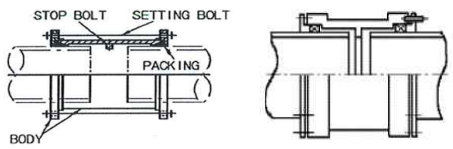
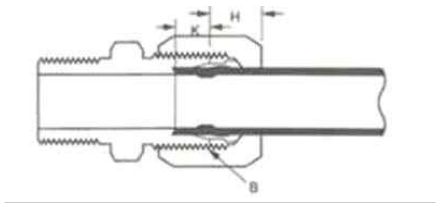
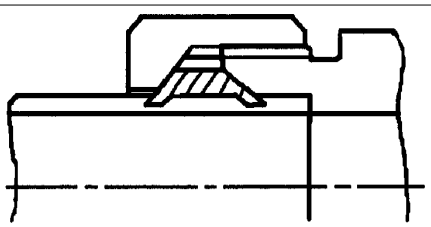
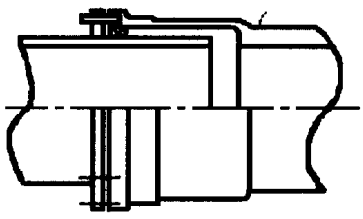
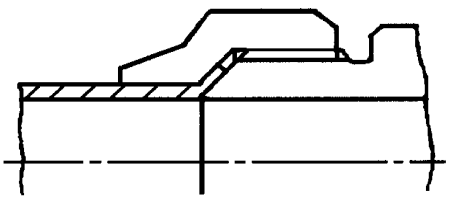
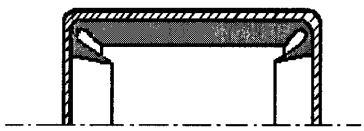
Type of mechanical joints	Examples of mechanical joints	Type of mechanical joints	Examples of mechanical joints
Pipe union		Slip-on joints	
Welded and brazed types		Grip type	
Compression couplings		Machine grooved type	
Swage type			
Press type		Slip type	
Typical compression type			
Bite type			
Flared type			

Fig 5.6.2 Examples of Mechanical Joints

Amendment

<same as present>

Table 5.6.10 Application of Mechanical Joints

Systems		Kind of connections		
		Pipe Unions	Compression Couplings	Slip-on joints
Flammable fluids (Flash point ≤ 60 °C)				
1	Cargo oil lines(4)	○	○	○
2	Crude oil washing lines(4)	○	○	○
3	Vent lines(3)	○	○	○
Inert Gas				
4	Water seal effluent lines	○	○	○
5	Scrubber effluent lines	○	○	○
6	Main lines(2)(4)	○	○	○
7	Distributions lines(4)	○	○	○
Flammable fluids (Flash point 〉 60 °C)				
8	Cargo oil lines(4)	○	○	○
9	Fuel oil lines(3)(2)	○	○	○
10	Lubricating oil lines(2)(3)	○	○	○
11	Hydraulic oil(2)(3)	○	○	○
12	Thermal oil(2)(3)	○	○	○
Sea water				
13	Bilge lines(1)	○	○	○
14	Water filled fire extinguishing systems, e.g. sprinkler systems(3)	○	○	○
15	Non water filled fire extinguishing systems, e.g. foam, drencher systems(3)	○	○	○
16	Fire main (not permanently filled)(3)	○	○	○
17	Ballast system(1)	○	○	○
18	Cooling water system(1)	○	○	○
19	Tank cleaning services	○	○	○
20	Non-essential systems	○	○	○

Table 5.6.10 Application of Mechanical Joints (continued)

Systems		Kind of connections		
		Pipe Unions	Compression Couplings[6]	Slip-on joints
Fresh water				
21	Cooling water system[1]	○	○	○
22	Condensate return[1]	○	○	○
23	Non-essential system	○	○	○
Sanitary/Drains/Scuppers				
24	Deck drains (internal)[6]	○	○	○[4]
25	Sanitary drains	○	○	○
26	Scuppers and discharge (overboard)	○	○	-
Sounding/Vent				
27	Water tanks/Dry spaces	○	○	○
28	Oil tanks (f.p. 〉 60 °C)[2][3]	○	○	○
Miscellaneous				
29	Starting/Control air[1]	○	○	-
30	Service air (non-essential)	○	○	○
31	Brine	○	○	○
32	CO_2 system[1]	○	○	-
33	Steam	○	○	○[5]

Abbreviations ○ : Application is allowed, - : Application is not allowed

NOTES - Fire resistance capability

If mechanical joints include any components which readily deteriorate in case of fire, the following footnotes are to be observed:

1) Inside machinery spaces of category A - approved fire resistant types.
2) Slip on joints are not accepted Not inside machinery spaces of category A or accommodation spaces. May be accepted in other machinery spaces provided the joints are located in easily visible and accessible positions. provided the joints are located in easily visible and accessible positions.
3) Approved fire resistant types except in cases where such mechanical joints are installed on open decks, as defined in SOLAS II-2/Reg. 9.2.3.3.2.2(10) and not used for fuel oil lines.
4) In pump rooms and open decks - approved fire resistant types.

NOTES - General

5) Slip type slip-on joints as shown in Fig 5.6.2. May be used for pipes on deck with a design pressure of 10 bar or less.
6) Only above bulkhead deck of passenger ships and freeboard deck of cargo ships.

Amendment

Table 5.6.11 Application of mechanical joints depending upon the class of piping

Type of joints	Classes of piping systems		
	Class Ⅰ	Class Ⅱ	Class Ⅲ
Pipe Unions			
Welded and brazed type	○(OD≤60.3 mm)	○(OD≤60.3 mm)	○
Compression Couplings			
Swage type	○	○	○
Bite type	○(OD≤60.3 mm)	○(OD≤60.3 mm)	○
Typical compression type	○(OD≤60.3 mm)	○(OD≤60.3 mm)	○
Flared type	○(OD≤60.3 mm)	○(OD≤60.3 mm)	○
Press type	-	-	○
Slip-on joints			
Machine grooved type	○	○	○
Grip type	-	○	○
Slip type	-	○	○
Abbreviations ○ : Application is allowed - : Application is not allowed			

<same as presents>

Amended Guidances for the Classification of Steel Ships

(Part 5 Machinery Installation)

Dec. 2019

KR

- Main Amendments -

(1) Effective date : 1 Jan. 2020(Date of application for type approval) & 1 July 2021(Date of which the contract for construction is signed)

◉ To reflect IACS UR P4(Rev. 5 Dec 2018)

- It has been amended for requirements relating to the design and testing requirements of plastic piping.

(1) Effective date :

1 Jan 2020(Date of application for type approval) and

1 July 2021(Date of which the contract for construction is signed)

Present	Amendment
Annex 5-6 Plastic Piping System	**Annex 5-6 Plastic Piping System**
<omitted>	<same as present>
2. Definitions	**2. Definitions**
(1) Plastic(s) is both thermoplastic and thermosetting plastic materials with or without reinforcement, such as PVC and fibre reinforced plastics – FRP.	(1) Plastic(s) is both thermoplastic and thermosetting plastic materials with or without reinforcement, such as PVC and fibre reinforced plastics – FRP. Plastic includes synthetic rubber and materials of similar thermo/mechanical properties.
<omitted>	<same as present>
4. General requirements	**4. General requirements**
The specification of piping is to be in accordance with a recognised national or international standard approved by the Society. In addition, the following requirements apply:	The specification of piping is to be in accordance with a recognised national or international standard approved by the Society. In addition, the following requirements apply:
(1) Strength	(1) Strength
<omitted>	<same as present>
(E) External pressure External pressure is to be determined by the following. $P_{ext} \leq \frac{P_{col}}{3}$ P_{ext} : External pressure P_{col} : Pipe collapse pressure. In no case is the collapse pressure to be less than 0.3 MPa. The design external pressure is a sum of the vacuum inside the pipe and a head of liquid acting on the outside of the pipe.	(E) External pressure(for any installation which may be subject to vacuum conditions inside the pipe or a head of liquid acting on the outside of the pipe; and for any pipe installation required to remain operational in case of flooding damage, as per Regulation II-1/8-1 of SOLAS 1974 Convention, as amended, or for any pipes that would allow progressive flooding to other compartments through damaged piping or through open ended pipes in the compartments). External pressure is to be determined by the following. $Pn_{ext} \leq \frac{P_{col}}{3}$ P_{ext} : External pressure P_{col} : Pipe collapse pressure. In no case pipe is the collapse pressure to be less than 0.3 MPa. The maximum working external pressure is a sum of the vacuum inside the pipe and a head of liquid acting on the outside of the pipe. Notwithstanding the requirements of (D) or (E) above as applicable, the pipe or pipe layer minimum wall thickness is to follow recognized standards. In the absence of standards for pipes not subject to external pressure, the requirements of (E) above are to be met. The maximum permissible working pressure is to be specified with due regard for maximum possible working temperatures in accordance with Manufacturer's recommendations.
<omitted>	<same as present>

Present	Amendment
<omitted>	<same as present>
(4) Temperature (A) The design temperature depending on the working pressure is to be in accordance with Manufacturer's recommendations, but in each case it is to be at least 20 ℃ lower than the minimum heat distortion temperature of the pipe material, determined according to *ISO 75* method A, or equivalent. (B) The minimum heat distortion temperature is to be not less than 80 ℃.	(4) Temperature (A) The design temperature depending on the working pressure is to be in accordance with Manufacturer's recommendations, but in each case it is to be at least 20 ℃ lower than the minimum heat distortion/deflection temperature of the pipe material, determined according to *ISO 75* method A, or equivalent. (B) The minimum heat distortion/deflection temperature is to be not less than 80 ℃.
5. Requirements for pipes/piping systems depending on service and/or locations	**5. Requirements for pipes/piping systems depending on service and/or locations**
(1) Fire endurance (A) Pipes and their associated fittings whose integrity is essential to the safety of ships are required to meet the minimum fire endurance requirements of Appendix 1 or 2, as applicable, of IMO Res A.753 (18). (B) Depending on the capability of a piping system to maintain its strength and integrity, there exist three different levels of fire endurance for piping systems. (a) Level 1(L1) : Piping having passed the fire endurance test specified in Appendix 1 of IMO Res. A. 753 (18) for a duration of a minimum of one hour without loss of integrity in the dry condition is considered to meet level 1 fire endurance standard. (b) Level 2(L2) : Piping having passed the fire endurance test specified in Appendix 1 of IMO Res. A 753 (18) for a duration of a minimum of 30 *minutes* in the dry condition is considered to meet level 2 fire endurance standard.	(1) Fire endurance (A) Pipes and their associated fittings whose integrity is essential to the safety of ships are required to meet the minimum fire endurance requirements of Appendix 1 or 2, as applicable, of IMO Res A.753 (18). (B) Depending on the capability of a piping system to maintain its strength and integrity, there exist three different levels of fire endurance for piping systems. (a) Level 1(L1) : Piping having passed the fire endurance test specified in Appendix 1 of IMO Res. A.753(18), as amended by IMO Res. MSC. 313(88) and IMO Res. MSC. 399(95) for a duration of a minimum of one hour without loss of integrity in the dry condition is considered to meet level 1 fire endurance standard (L1). Level 1W – Piping systems similar to Level 1 systems except these systems do not carry flammable fluid or any gas and a maximum 5% flow loss in the system after exposure is acceptable (L1W). (b) Level 2(L2) : Piping having passed the fire endurance test specified in Appendix 1 of IMO Res. A.753(18), as amended by IMO Res. MSC. 313(88) and IMO Res. MSC. 399(95) for a duration of a minimum of 30 minutes in the dry condition is considered to meet level 2 fire endurance standard (L2). Level 2W – Piping systems similar to Level 2 systems except a maximum 5% flow loss in the system after exposure is acceptable (L2W).
<omitted>	<same as present>

Present	Amendment
(D_<Newly added>	(D) For Safe Return to Port purposes (SOLAS II-2, Reg.21.4), plastic piping can be considered to remain operational after a fire casualty if the plastic pipes and fittings have been tested to L1 standard.

Present

Table 1 Fire Endurance Requirements Matrix

Piping system	Location										
	A	B	C	D	E	F	G	H	I	J	K
	Machinery spaces of category A	Other machinery spaces & pump rooms	Cargo pump rooms	Ro/Ro cargo holds	Other dry cargo holds	Cargo tanks	Fuel oil tanks	Ballast water tanks	Cofferdams void spaces pipe tunnel & ducts	Accommodation service & control spaces	Open decks
Cargo (Flammable cargos, f.p ≤ 60 °C)											
1. Cargo lines	NA	NA	L1	NA	NA	O	NA	O^{10}	O	NA	$L1^{2}$
2. Crude oil washing lines	NA	NA	L1	NA	NA	O	NA	O^{10}	O	NA	$L1^{2}$
3. Vent lines	NA	NA	NA	NA	NA	O	NA	O^{10}	O	NA	X
Inert gas											
4. Water seal effluent lines	NA	NA	O^{1}	NA	NA	O^{1}	O^{1}	O^{1}	O^{1}	NA	O
5. Scrubber effluent lines	O^{1}	O^{1}	NA	NA	NA	NA	NA	O^{1}	O^{1}	NA	O
6. Main lines	O	O	L1	NA	NA	NA	NA	NA	O	NA	$L1^{6}$
7. Distribution lines	NA	NA	L1	NA	NA	O	NA	NA	O	NA	$L1^{2}$
Flammable liquids (f.p > 60 °C)											
8. Cargo lines	X	X	L1	X	X	NA^{3}	O	O^{10}	O	NA	L1
9. Fuel oil	X	X	L1	X	X	NA^{3}	O	O	O	L1	L1
10. Lubricating oil	X	X	L1	X	X	NA	NA	NA	O	L1	L1
11. Hydraulic oil	X	X	L1	X	X	O	O	O	O	L1	L1
Seawater[1]											
12. Bilge main & branches	$L1^{7}$	$L1^{7}$	L1	X	X	NA	O	O	O	NA	L1
13. Fire main water spray	L1	L1	L1	X	NA	NA	NA	O	O	NA	L1
14. Foam system	L1	L1	L1	NA	NA	NA	NA	NA	O	L1	L1
15. Sprinkler system	L1	L1	L3	X	NA	NA	NA	O	O	L3	L3
16. Ballast	L3	L3	L3	L3	X	O^{10}	O	O	O	L2	L2
17. Cooling water, essential services	L3	L3	NA	NA	NA	NA	NA	O	O	NA	L2
18. Tank cleaning services fixed machines	NA	NA	L3	NA	NA	O	NA	O	O	NA	$L3^{2}$
19. Non-essential system	O	O	O	O	O	NA	O	O	O	O	O
Freshwater											
20. Cooling water essential services	L3	L3	NA	NA	NA	NA	O	O	O	L3	L3
21. Condensate return	L3	L3	L3	O	O	NA	NA	NA	O	O	O
22. Non-essential system	O	O	O	O	O	NA	O	O	O	O	O
Sanitary/Drain/Scuppers											
23. Deck drains (internal)	$L1^{4}$	$L1^{4}$	NA	$L1^{4}$	O	NA	O	O	O	O	O
24. Sanitary drains (internal)	O	O	NA	O	O	NA	O	O	O	O	O

Table 1 Fire Endurance Requirements Matrix

Piping system	Location[13]										
	A	B	C	D	E	F	G	H	I	J	K
	Machinery spaces of category A	Other machinery spaces & pump rooms	Cargo pump rooms	Ro/Ro cargo holds	Other dry cargo holds	Cargo tanks	Fuel oil tanks	Ballast water tanks	Cofferdams void spaces pipe tunnel & ducts	Accommodation service & control spaces	Open decks
Cargo (Flammable cargos, f.p ≤ 60 °C)											
1. Cargo lines	NA	NA	L1	NA	NA	O	NA	O[10]	O	NA	L1[2]
2. Crude oil washing lines	NA	NA	L1	NA	NA	O	NA	O[10]	O	NA	L1[2]
3. Vent lines	NA	NA	NA	NA	NA	O	NA	O[10]	O	NA	X
Inert gas											
4. Water seal effluent lines	NA	NA	O[1]	NA	NA	O[1]	O[1]	O[1]	O[1]	NA	O
5. Scrubber effluent lines	O[1]	O[1]	NA	NA	NA	NA	NA	O[1]	O[1]	NA	O
6. Main lines	O	O	L1	NA	NA	NA	NA	NA	O	NA	L1[6]
7. Distribution lines	NA	NA	L1	NA	NA	O	NA	NA	O	NA	L1[2]
Flammable liquids (f.p > 60 °C)											
8. Cargo lines	X	X	L1	X	X	NA[3]	O	O[10]	O	NA	L1
9. Fuel oil	X	X	L1	X	X	NA[3]	O	O	O	L1	L1
10. Lubricating oil	X	X	L1	X	X	NA	NA	NA	O	L1	L1
11. Hydraulic oil	X	X	L1	X	X	O	O	O	O	L1	L1
Seawater[1]											
12. Bilge main & branches	L1[7]	L1[7]	L1	X	X	NA	O	O	O	NA	L1
13. Fire main water spray	L1	L1	L1	X	NA	NA	NA	NA	O	O	NA	L1
14. Foam system	L1W	L1W	L1W	NA	NA	NA	NA	NA	NA	O	L1W	L1W
15. Sprinkler system	L1W	L1W	L3	X	NA	NA	NA	NA	O	O	L3	L3
16. Ballast	L3	L3	L3	L3	X	O[10]	O	O	O	L2W	L2W
17. Cooling water, essential services	L3	L3	NA	NA	NA	NA	NA	NA	O	O	NA	L2W
18. Tank cleaning services fixed machines	NA	NA	L3	NA	NA	O	NA	NA	O	O	NA	L3[2]
19. Non-essential system	O	O	O	O	O	NA	O	O	O	O	O	O
Freshwater											
20. Cooling water essential services	L3	L3	NA	NA	NA	NA	NA	O	O	O	L3	L3
21. Condensate return	L3	L3	L3	O	O	NA	NA	NA	NA	O	O	O
22. Non-essential system	O	O	O	O	O	NA	O	O	O	O	O	O
Sanitary/Drain/Scuppers											
23. Deck drains (internal)	L1W[4]	L1W[4]	NA	L1W[4]	O	NA	O	O	O	O	O	O
24. Sanitary drains (internal)	O	O	NA	O	O	NA	O	O	O	O	O	O

Present

Table 1 Fire Endurance Requirements Matrix (continued)

Piping system	Location										
	A	B	C	D	E	F	G	H	I	J	K
	Machinery spaces of category A	Other machinery spaces & pump rooms	Cargo pump rooms	Ro/Ro cargo holds	Other dry cargo holds	Cargo tanks	Fuel oil tanks	Ballast water tanks	Cofferdams void spaces pipe tunnel & ducts	Accommodation service & control spaces	Open decks
25. Scuppers and discharges (overboard)	O[1,8]	O[1,8]	O[1,8]	O[1,8]	O[1,8]	O	O	O	O	O[1,8]	O
Sounding/Air											
26. Watertanks/ dry spaces	O	O	O	O	O	O[10]	O	O	O	O	O
27. Oil tanks (f.p > 60 °C)	X	X	X	X	X	X[3]	O	O[10]	O	X	X
Miscellaneous											
28. Control air	L1[5]	L1[5]	L1[5]	L1[5]	L1[5]	NA	O	O	O	L1[5]	L1[5]
29. Service air (non-essential)	O	O	O	O	O	NA	O	O	O	O	O
30. Brine	O	O	NA	O	O	NA	NA	NA	O	O	O
31. Auxiliary low pressure steam (≤ 7 MPa)	L[2]	L[2]	O[9]	O[9]	O[9]	O	O	O	O	O[9]	O[9]
32.~34. <Newly added>											

Abbreviations :

- L1 Fire endurance test (IMO Resolution A.753(18), Appendix 1) in dry conditions, 60 *min*.
- L2 Fire endurance test (IMO Resolution A.753(18), Appendix 1) in dry conditions, 30 *min*.
- L3 Fire endurance test (IMO Resolution A.753(18), Appendix 2) in wet conditions, 30 *min*.
- 0 No fire endurance test required
- NA Not applicable
- X Metallic materials having a melting point greater than 925 °C

Footnotes :

1. Where non-metallic piping is used, remotely controlled valves to be provided at ship's side (valve is to be controlled from outside space).
2. Remote closing valves to be provided at the cargo tanks.
3. When cargo tanks contain flammable liquids with f.p. > 60 °C, "O may replace "NA or "X".
4. For drains serving only the space concerned, "O may replace "L1"
5. When controlling functions are not required by statutory requirements or guidelines, "O may replace "L1"
6. For pipe between machinery space and deck water seal, "O may replace "L1"
7. For passenger vessels, "X is to replace "L1".

Table 1 Fire Endurance Requirements Matrix (continued)

Piping system	Location[13]										
	A	B	C	D	E	F	G	H	I	J	K
	Machinery spaces of category A	Other machinery spaces & pump rooms	Cargo pump rooms	Ro/Ro cargo holds	Other dry cargo holds	Cargo tanks	Fuel oil tanks	Ballast water tanks	Cofferdams void spaces pipe tunnel & ducts	Accommodation service & control spaces	Open decks
25. Scuppers and discharges (overboard)	O[1,8]	O[1,8]	O[1,8]	O[1,8]	O[1,8]	O	O	O	O	O[1,8]	O
Sounding/Air											
26. Watertanks/ dry spaces	O	O	O	O	O	O[10]	O	O	O	O	O
27. Oil tanks (f.p > 60 °C)	X	X	X	X	X	X[3]	O	O[10]	O	X	X
Miscellaneous											
28. Control air	L1[5]	L1[5]	L1[5]	L1[5]	L1[5]	NA	O	O	O	L1[5]	L1[5]
29. Service air (non-essential)	O	O	O	O	O	NA	O	O	O	O	O
30. Brine	O	O	NA	O	O	NA	NA	NA	O	O	O
31. Auxiliary low pressure steam (≤ 7 MPa)	L2W	L2W	O[9]	O[9]	O[9]	O	O	O	O	O[9]	O[9]
32. Central vacuum Cleaners	NA	NA	NA	O	NA	NA	NA	NA	O	O	O
33. Exhaust Gas Cleaning System Effluent line	L3[1]	L3[1]	NA	NA	NA	NA	NA	NA	NA	L3[1,11] NA	NA
34. Urea transfer/ Supply System (SCR installation)	L1[12]	L1[12]	NA	NA	NA	NA	NA	NA	O	L3[1,11] NA	NA

Abbreviations :

L1 Fire endurance test (IMO Resolution A.753(18), Appendix 1, as amended by IMO Res. MSC. 313(88) and IMO Res. MSC. 399(95)) in dry conditions, 60 *min*.

L1W Fire endurance test(**5**.(1))

L2 Fire endurance test (IMO Resolution A.753(18), Appendix 1, as amended by IMO Res. MSC. 313(88) and IMO Res. MSC. 399(95)) in dry conditions, 30 *min*.

L2W Fire endurance test(**5**.(1))

L3 Fire endurance test (IMO Resolution A.753(18), Appendix 2, as amended by IMO Res. MSC. 313(88) and IMO Res. MSC. 399(95)) in wet conditions, 30 *min*.

0 No fire endurance test required

NA Not applicable

X Metallic materials having a melting point greater than 925 °C

Footnotes :

1. Where non-metallic piping is used, remotely controlled valves to be provided at ship's side (valve is to be controlled from outside space).
2. Remote closing valves to be provided at the cargo tanks.
3. When cargo tanks contain flammable liquids with f.p. > 60 °C, "O may replace "NA or "X".
4. For drains serving only the space concerned, "O may replace "L1W"
5. When controlling functions are not required by statutory requirements or guidelines, "O may replace "L1"
6. For pipe between machinery space and deck water seal, "O may replace "L1"
7. For passenger vessels, "X is to replace "L1".

Present

Table 1 Fire Endurance Requirements Matrix (continued)

8. Scuppers serving open decks in positions 1 and 2, as defined in regulation 13 of the International Convention on Load Lines, 1966, are to be "X throughout unless fitted at the upper end with the means of closing capable of being operated from a position above the freeboard deck in order to prevent downflooding.
9. For essential services, such as fuel oil tank heating and ship's whistle, "X is to replace "O".
10. For tankers where compliance with paragraph 3 (f) of regulation 13F of Annex I of MARPOL 73/78 is required, "NA is to replace "O".
11.~13. <Newly added>

Location definitions

- A (Machinery spaces of category A) : Machinery spaces of category A as defined in SOLAS* regulation II-2/3.19.
- B (Other machinery spaces and pump rooms) : Spaces, other than category A machinery spaces and cargo pump rooms, containing propulsion machinery, boilers, steam and internal combustion engines, generators and major electrical machinery, pumps, oil filling stations, refrigerating, stabilizing, ventilation and air-conditioning machinery, and similar spaces, and trunks to such spaces.
- C (Cargo pump rooms) : Spaces containing cargo pumps and entrances and trunks to such spaces.
- D (Ro-ro cargo holds) : Ro-Ro cargo holds are Ro-Ro cargo spaces and special category spaces as defined in SOLAS* regulation II-2/3.14 and 3.18.
- E (Other dry cargo holds) : All spaces other than Ro-Ro cargo holds used for non-liquid cargo and trunks to such spaces.
- F (Cargo tanks) : All spaces used for liquid cargo and trunks to such spaces.
- G (Fuel oil tanks) : All spaces used for fuel oil (excluding cargo tanks) and trunks to such spaces.
- H (Ballast water tanks) : All spaces used for ballast water and trunks to such spaces.
- I (Cofferdams, voids, etc.) : Cofferdams and voids are those empty spaces between two bulkheads separating two adjacent compartments.
- J (Accommodation, service) : Accommodation spaces, service spaces and control stations as defined in SOLAS * regulation II-2/3.10, 3.12, 3.22.
- K (Open decks) : Open deck spaces as defined in SOLAS* regulation II-2/9.2.2.3.2.2.(5).

* SOLAS 74 as amended by the 1978 SOLAS Protocol and the 1981 and 1983 amendments (consolidated text).

Table 1 Fire Endurance Requirements Matrix (continued)

8. Scuppers serving open decks in positions 1 and 2, as defined in regulation 13 of the International Convention on Load Lines, 1966, are to be "X throughout unless fitted at the upper end with the means of closing capable of being operated from a position above the freeboard deck in order to prevent downflooding.
9. For essential services, such as fuel oil tank heating and ship's whistle, "X is to replace "O".
10. For tankers where compliance with paragraph 3.6 of regulation 19 of Annex I of MARPOL 73/78 as amended is required, "NA is to replace "O".
11. L3 in service spaces, NA in accommodation and control spaces.
12. Type Approved plastic piping without fire endurance test(0) is acceptable downstream of the tank valve, provided this valve is metal seated and arranged as fail-to-closed or with quick closing from a safe position outside the space in the event of fire.
13. For Passenger Ships subject to SOLAS II-2, Reg.21.4 (Safe return to Port), plastic pipes for services required to remain operative in the part of the ship not affected by the casualty thresholds, such as systems intended to support safe areas, are to be considered essential services. In accordance with MSC Circular MSC.1/Circ.1369, interpretation 12, for Safe Return to Port purposes, plastic piping can be considered to remain operational after a fire casualty if the plastic pipes and fittings have been tested to L1 standard.

Location definitions

- A (Machinery spaces of category A) : Machinery spaces of category A as defined in SOLAS* regulation II-2/3.31.
- B (Other machinery spaces and pump rooms) : Spaces, other than category A machinery spaces and cargo pump rooms, containing propulsion machinery, boilers, fuel oil unit, steam and internal combustion engines, generators and major electrical machinery, oil filling stations, refrigerating, stabilizing, ventilation and air-conditioning machinery, and similar spaces, and trunks to such spaces.
- C (Cargo pump rooms) : Spaces containing cargo pumps and entrances and trunks to such spaces.
- D (Ro-ro cargo holds) : Ro-Ro cargo holds are Ro-Ro cargo spaces and special category spaces as defined in SOLAS* regulation II-2/3.41 and 3.46.
- E (Other dry cargo holds) : All spaces other than Ro-Ro cargo holds used for non-liquid cargo and trunks to such spaces.
- F (Cargo tanks) : All spaces used for liquid cargo and trunks to such spaces.
- G (Fuel oil tanks) : All spaces used for fuel oil (excluding cargo tanks) and trunks to such spaces.
- H (Ballast water tanks) : All spaces used for ballast water and trunks to such spaces.
- I (Cofferdams, voids, etc.) : Cofferdams and voids are those empty spaces between two bulkheads separating two adjacent compartments.
- J (Accommodation, service) : Accommodation spaces, service spaces and control stations as defined in SOLAS * regulation II-2/3.1, 3.45, 3.18
- K (Open decks) : Open deck spaces as defined in SOLAS* regulation II-2/9.2.2.3.2.(5).

* SOLAS 1974 Convention, as amended.

Present	Amendment
(2) Flame spread (A) All pipes, except those fitted on open decks and within tanks, cofferdams, pipe tunnels and ducts are to have low surface flame spread characteristics not exceeding average values specified in **Ch 3, 2604. 3** of the **"Guidance for Approval of Manufacturing Process and Type Approval, etc.".**	(2) Flame spread (A) All pipes, except those fitted on open decks and within tanks, cofferdams, pipe tunnels and ducts if separated from accommodation, permanent manned areas and escape ways by means of an A class bulkhead are to have low surface flame spread characteristics not exceeding average values specified in **Ch 3, 2604. 3** of the **"Guidance for Approval of Manufacturing Process and Type Approval, etc.".**
<omitted>	<same as present>
6. Installation	**6. Installation**
(1) Supports (A) Selection and spacing of pipe supports in shipboard systems are to be determined as a function of allowable stresses and maximum deflection criteria. Support spacing is not to be greater than the pipe Manufacturer's recommended spacing. The selection and spacing of pipe supports are to take into account pipe dimensions, mechanical and physical properties of the pipe material, mass of pipe and contained fluid, external pressure, operating temperature, thermal expansion effects, loads due to external forces, thrust forces, water hammer, vibrations, maximum accelerations to which the system may be subjected. Combination of loads is to be considered.	(1) Supports (A) Selection and spacing of pipe supports in shipboard systems are to be determined as a function of allowable stresses and maximum deflection criteria. Support spacing is not to be greater than the pipe Manufacturer's recommended spacing. The selection and spacing of pipe supports are to take into account pipe dimensions, length of piping, mechanical and physical properties of the pipe material, mass of pipe and contained fluid, external pressure, operating temperature, thermal expansion effects, loads due to external forces, thrust forces, water hammer, vibrations, maximum accelerations to which the system may be subjected. Combination of loads is to be considered.
<omitted>	<same as present>
(7) Penetration of divisions	(7) Penetration of divisions
<omitted>	<same as present>
(B) When plastic pipes pass through watertight bulkheads or decks, the watertight integrity of the bulkhead or deck is to be maintained.	(B) When plastic pipes pass through watertight bulkheads or decks, the watertight integrity of the bulkhead or deck is to be maintained. For pipes not able to satisfy the requirements in **4**.(1).(E), a metallic shut-off valve operable from above the freeboard deck should be fitted at the bulkhead or deck.
<omitted>	<same as present>

Amended Rules for the Classification of Steel Ships

(Part 6 Electrical Equipment and Control Systems)

Dec. 2019

KR

Effective Date : 1 January 2020

(1) The contract date for ship construction or the application date for a periodical or occasional machinery survey after the retrofit of harmonic filters)

◉ Reflected IACS UR E24(Rev.1 Dec 2018)

- The requirements have been amended to clarify the application range of harmonic distortion for on-board distribution systems where harmonic filters are installed on main busbars.

(2) The contract date for ship construction or the application date for certification of the device)

◉ Reflected IACS UR M3(Rev.6 Nov 2018)

- In addition to governors, the requirements for overspeed protective device have been added. And the requirement to refer to Part 5 has been changed to refer to (5).

Present	Amendment
CHAPTER 1 ELECTRICAL EQUIPMENT	**CHAPTER 1 ELECTRICAL EQUIPMENT**
Section 1 <same as the present Rules>	**Section 1 <same as the present Rules>**
Section 2 System Design	**Section 2 System Design**
201. General	**201. General**
1. - 7. <same as the present Rules>	**1. - 7. <same as the present Rules>**
8. Harmonic distortion *(2017)*	**8. Harmonic distortion ~~*(2017)*~~*(2020)***
(1) **General** (A) <same as the present Rules> (B) This limit may be exceeded where all installed equipment and systems have been designed for a higher specified limit and this relaxation on limits is to be documented (harmonic distortion calculation report) and made available on board as a reference for the surveyor at each periodical survey. <Newly added>	(1) General (A) <same as the present Rules> (B) This limit may be exceeded where all installed equipment and systems have been designed for a higher specified limit and this relaxation on limits is ~~to be~~ documented (harmonic distortion calculation report) and made available on board as a reference for the surveyor at each periodical survey. (2) Harmonic distortion for ship electrical distribution system including harmonic filters (A) Application The these requirements apply to ships where harmonic filters are installed on main busbars of electrical distribution system, other than those installed for single application frequency drives such as pump motors.

Present	Amendment
(2) **Monitoring of harmonic distortion levels for a ship including harmonic filters** (A) Where the electrical distribution system on board a ship includes harmonic filters, such ships are to be fitted with facilities to continuously monitor the levels of harmonic distortion experienced on the main busbar as well as alerting the crew should the level of harmonic distortion exceed the acceptable limits. Where the engine room is provided with automation systems, this reading is to be logged electronically, otherwise it is to be recorded in the engine log book for future inspection by the surveyor. However, harmonic filters installed for single application frequency drives such as pump motors may be excluded from requirements in **8**.	(B) Monitoring of harmonic distortion levels for a ship ~~including~~ where harmonic filters are installed (a) ~~Where the electrical distribution system on board a ship includes harmonic filters, such~~ The ships are to be fitted with facilities to continuously monitor the levels of harmonic distortion experienced on the main busbar as well as alerting the crew should the level of harmonic distortion exceed the acceptable limits. Where the engine room is provided with automation systems, this reading is to be logged electronically, otherwise it is to be recorded in the engine log book for future inspection by the surveyor. ~~However, harmonic filters installed for single application frequency drives such as pump motors may be excluded from requirements in **8**.~~
(3) **Mitigation of the effects of harmonic filter failure on a ship's operation** (A) - (C) <same as the present Rules>	(C) Mitigation of the effects of harmonic filter failure on a ship's operation (a) - (c) <same as the present Rules>
(4) **Protection arrangements for harmonic filters** (A) - (C) <same as the present Rules>	(D) Protection arrangements for harmonic filters (a) - (c) <same as the present Rules>
Section 3 Rotating Machinery	**Section 3 Rotating Machinery**
301. <same as the present Rules>	**301. <same as the present Rules>**
302. Prime movers for generators **1. <same as the present Rules>**	**302. Prime movers for generators** **1. <same as the present Rules>**

Present	Amendment
2. Governors Governors on prime movers driving main or emergency electric generators are to be capable of automatically maintaining the speed within the following limits: (1) Prime movers for driving generators of the main and emergency sources of electrical power are to be fitted with a speed governor which will prevent transient frequency variations in the electrical network in excess of ±10% of the rated frequency with a recovery time to steady state conditions not exceeding 5 seconds, when the maximum electrical step load is switched on or off. In the case when a step load equivalent to the rated output of a generator is switched off, a transient speed variation in excess of 10% of the rated speed may be acceptable, provided this does not cause the intervention of the overspeed device specified in **Pt 5, Ch 2, 203. 1** (1). (2) - (4) <same as the present Rules> <Newly added>	**2. Governors** Governors on prime movers driving main or emergency electric generators are to be capable of automatically maintaining the speed within the following limits: (1) Prime movers for driving generators of the main and emergency sources of electrical power are to be fitted with a speed governor which will prevent transient frequency variations in the electrical network in excess of ±10% of the rated frequency with a recovery time to steady state conditions not exceeding 5 seconds, when the maximum electrical step load is switched on or off. In the case when a step load equivalent to the rated output of a generator is switched off, a transient speed variation in excess of 10% of the rated speed may be acceptable, provided this does not cause the intervention of the overspeed device specified in **~~Pt 5, Ch 2, 203. 1~~** ~~(1)~~ (5). (2) - (4) <same as the present Rules> (5) In addition to the speed governor, each prime mover driving an electric generator and having a rated power of 220 kW and above must be fitted with a separate overspeed protective device so adjusted that the speed cannot exceed the rated speed by more than 15%.
3. - 4. <same as the present Rules>	**3. - 4. <same as the present Rules>**
303. - 309. <same as the present Rules>	**303. - 309. <same as the present Rules>**
Section 4 - 18 <same as the present Rules>	**Section 4 - 18 <same as the present Rules>**
CHAPTER 2 <same as the present Rules>	**CHAPTER 2 <same as the present Rules>**

Amended Guidances for the Classification of Steel Ships

(Part 6 Electrical Equipment and Control Systems)

Dec. 2019

KR

Effective Date : 1 January 2020

(1) The contract date for ship construction

◉ The requirement for equivalence has been amended in accordance with the amendment to Part 1 of the Rules.

Present	Amendment
CHAPTER 1 ELECTRICAL EQUIPMENT	**CHAPTER 1 ELECTRICAL EQUIPMENT**
Section 1 General	**Section 1 General**
101. General	**101. General**
1. <same as the present Rules>	**1. <same as the present Rules>**
2. In application to **101. 2** of the Rules, the term "as deemed appropriate by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** or **105.** of the Guidance. **【See Rule】**	**2.** In application to **101. 2** of the Rules, the term "as deemed appropriate by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** ~~or **105.**~~ of the ~~Guidance.~~ Rules. **【See Rule】**
3. <same as the present Rules>	**3. <same as the present Rules>**
102. Drawings and data 【See Rule】	**102. Drawings and data 【See Rule】**
1. In application to **102. 1** (14) of the Rules, the term "Drawings and data as deemed necessary by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** or **105.** of the Guidance.	**1.** In application to **102. 1** (14) of the Rules, the term "Drawings and data as deemed necessary by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** ~~or **105.**~~ of the ~~Guidance.~~ Rules.
103. Testing and inspection	**103. Testing and inspection**
1. - 5. <same as the present Rules>	**1. - 5. <same as the present Rules>**
6. In application to **103. 4** of the Rules, the term “when it deems necessary" means the acceptance in accordance with **Pt 1, Ch 1, 104.** or **105.** of the Guidance. **【See Rule】**	**6.** In application to **103. 4** of the Rules, the term “when it deems necessary" means the acceptance in accordance with **Pt 1, Ch 1, 104.** ~~or **105.**~~ of the ~~Guidance.~~ Rules. **【See Rule】**
7. <same as the present Rules>	**7. <same as the present Rules>**
Section 2 - 18 <same as the present Rules>	**Section 2 - 18 <same as the present Rules>**

Present	Amendment
CHAPTER 2 CONTROL SYSTEMS	**CHAPTER 2 CONTROL SYSTEMS**
Section 1 <same as the present Rules>	**Section 1 <same as the present Rules>**
Section 2 System and Control	**Section 2 System and Control**
201. System design *(2017)* **[See Rule]**	**201. System design *(2017)*** **[See Rule]**
1. In application to **201. 4** (7) of the Rules, the term "other measures considered appropriate by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** or **105.** of the Guidance.	**1.** In application to **201. 4** (7) of the Rules, the term "other measures considered appropriate by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** ~~or **105.**~~ of the ~~Guidance.~~ Rules.
202. <same as the present Rules>	**202. <same as the present Rules>**
203. Automatic and remote control of boilers	**203. Automatic and remote control of boilers**
1. General **[See Rule]**	**1. General** **[See Rule]**
In application to **203. 1** (3) of the Rules, the term "considered in each case" means the acceptance in accordance with **Pt 1, Ch 1, 104.** or **105.** of the Guidance.	In application to **203. 1** (3) of the Rules, the term "considered in each case" means the acceptance in accordance with **Pt 1, Ch 1, 104.** ~~or **105.**~~ of the ~~Guidance.~~ Rules.
2. Automatic combustion control systems	**2. Automatic combustion control systems**
(1) In application to **203. 2** (2) (F) of the Rules, the term "where approved by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** or **105.** of the Guidance. **[See Rule]**	(1) In application to **203. 2** (2) (F) of the Rules, the term "where approved by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** ~~or **105.**~~ of the ~~Guidance.~~ Rules. **[See Rule]**
(2) In application to **203. 2** (4) of the Rules, the term "considered in each case by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** or **105.** of the Guidance. **[See Rule]**	(2) In application to **203. 2** (4) of the Rules, the term "considered in each case by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** ~~or **105.**~~ of the ~~Guidance.~~ Rules. **[See Rule]**

Present	Amendment
Section 3 Tests (2017)	**Section 3 Tests** (2017)
301. Shop tests [See Rule]	**301. Shop tests** [See Rule]
1. <same as the present Rules>	**1. <same as the present Rules>**
2. Shop tests of automation system	**2. Shop tests of automation system**
(1) - (2) <same as the present Rules> (3) In application to **301. 2** (1) (E) of the Rules, the term "other tests considered necessary by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** or **105.** of the Guidance.	(1) - (2) <same as the present Rules> (3) In application to **301. 2** (1) (E) of the Rules, the term "other tests considered necessary by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** ~~or **105.**~~ of the ~~Guidance.~~ Rules.
302. - 303. <same as the present Rules>	**302. - 303. <same as the present Rules>**

Effective Date : 1 January 2020

(2) The contract date for ship construction or the application date for certification of the device

◉ Reflected IACS UR M3(Rev.6 Nov 2018)
- The requirements for throwing-on method have been amended to apply up to 5 levels of throwing-on methods for prime movers.

Present	Amendment
CHAPTER 1 ELECTRICAL EQUIPMENT	**CHAPTER 1 ELECTRICAL EQUIPMENT**
Section 1 - 2 <same as the present Rules>	**Section 1 - 2 <same as the present Rules>**
Section 3 Rotating Machinery	**Section 3 Rotating Machinery**
302. Prime movers for generators [See Rule]	**302. Prime movers for generators [See Rule]**
For prime movers with a brake mean effective pressure of 1.35 MPa or more to which the application of the method of throwing on the rated load of a generator specified in **302. 2** (2) of the Rules is impossible, the throwing-on method in three or four steps in accordance with the formulae below is to be used notwithstanding the requirements of the Rules: Total throw-on load at the 1st step(%) = 80/BMEP Total throw-on load at the 2nd step(%) = 135/BMEP Total throw-on load at the 3rd step(%) = 180/BMEP Total throw-on load at the 4th step(%) = 100 Where, BMEP : Brake mean effective pressure(MPa)	~~For prime movers with a brake mean effective pressure of 1.35 MPa or more to which the application of the method of throwing on the rated load of a generator specified in **302. 2** (2) of the Rules is impossible, the throwing-on method in three or four steps in accordance with the formulae below is to be used notwithstanding the requirements of the Rules:~~ ~~Total throw-on load at the 1st step(%) = 80/BMEP~~ ~~Total throw-on load at the 2nd step(%) = 135/BMEP~~ ~~Total throw-on load at the 3rd step(%) = 180/BMEP~~ ~~Total throw-on load at the 4th step(%) = 100~~ ~~Where, BMEP : Brake mean effective pressure(MPa)~~ In application to **302. 2** (2) of the Rules Application of electrical load in more than 2 load steps can only be permitted, if the conditions within the ship's mains permit the use of such prime movers which can only be loaded in more than 2 load steps (see Fig. 1 for guidance on 4-stroke diesel engines expected maximum possible sudden power increase) and provided that this is already allowed for in the designing stage. This is to be verified in the form of system specifications to be approved and to be demonstrated at ship's trials. In this case, due consideration is to be given to the power required for the electrical equipment to be automatically switched on after black-out and to the sequence in which it is connected. This applies analogously also for generators to be operated in parallel and where the power has to be transferred from one generator to another in the event of any one generator has to be switched off.

Present	Amendment
<Newly added Fig 6.1.2>	Fig 6.1.2 Reference values for maximum possible sudden power increases as a function of brake mean effective pressure, Pme, at declared power (four-stroke diesel engines) <Refer to the next page>
However, in case where the above throwing-on method applies, the manufacturers or shipyards are requested to submit a throw-on power calculation sheet demonstrating that the thrown load and base load at each step of operation do not exceed the value determined by the formulae above under any circumstances, to the Society for approval. (1) - (4) <same as the present Rules>	However, in case where the above throwing-on method applies, the manufacturers or shipyards are requested to submit a throw-on power calculation sheet demonstrating that the thrown load and base load at each step of operation do not exceed the value determined by the formulae above under any circumstances, to the Society for approval. (1) - (4) <same as the present Rules>
303. - 309. <same as the present Rules>	**303. - 309. <same as the present Rules>**
Section 4 - 18 <same as the present Rules>	**Section 4 - 18 <same as the present Rules>**

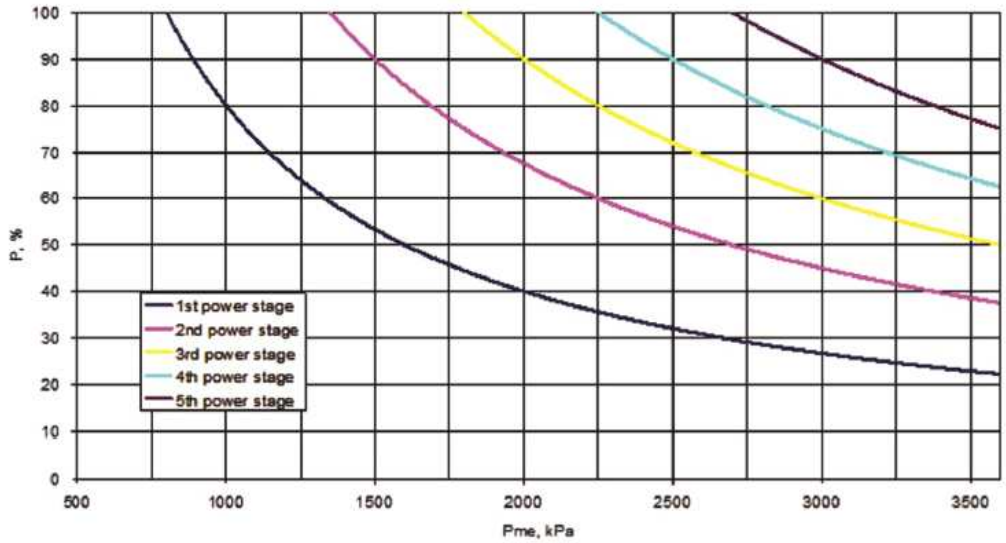


Fig 6.1.2 Reference values for maximum possible sudden power increases as a function of brake mean effective pressure, Pme, at declared power (four-stroke diesel engines)

Note)
P_{me} : declared power mean effective pressure
P : power increase referred to declared power at site conditions

Amended Guidances for the Classification of Steel Ships

(Part 7 Ships of Special Service)

Dec. 2019

KR

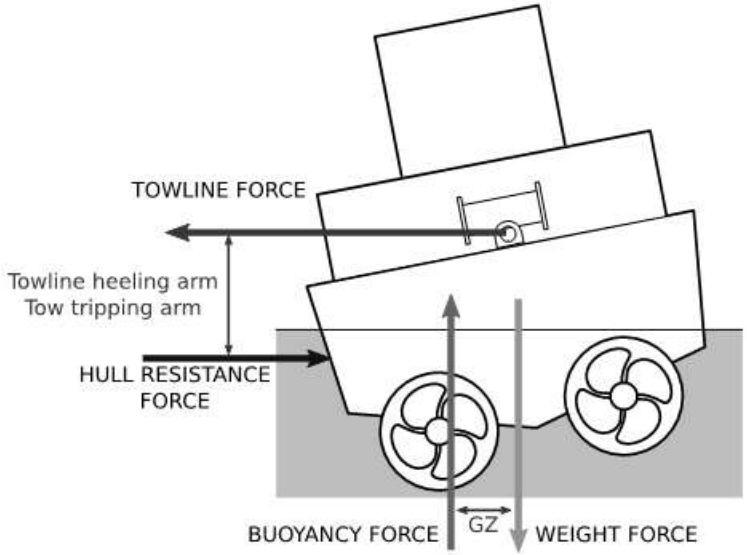
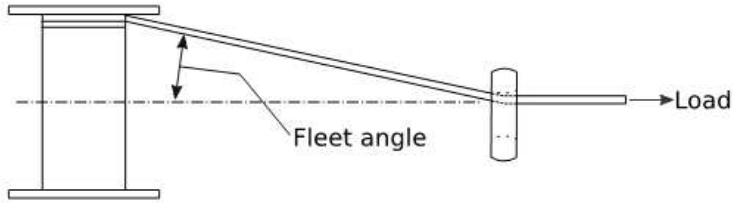
Effective date : 1 Jan. 2020

(1) Date of which the contract for construction is signed

◉ To reflect IACS UR M79(New Oct 2018)

- It has been reflected for requirements relating to towing winch's emergency release device.

Present	Amendment
<New>	**CHAPTER 9 TUGS** **Section 8 Towing Winch Emergency Release Systems** **801. General** **1.** Scope (1) This Section defines minimum safety standards for winch emergency release systems provided on towing winches that are used on towing ships within close quarters, ports or terminals. (2) This Section is not intended to cover towing winches on board ships used solely for long distance ocean towage, anchor handling or similar offshore activities. **2.** Definitions (1) Emergency release system refers to the mechanism and associated control arrangements that are used to release the load on the towline in a controlled manner under both normal and dead-ship conditions. (2) Maximum design load is the maximum load that can be held by the winch as defined by the manufacturer (the manufacturer's rating). (3) Girting means the capsize of a tug when in the act of towage as a result of the towline force acting transversely to the tug (in beam direction) as a consequence of an unexpected event (could be loss of propulsion/steering or otherwise), whereby the resulting couple generated by offset and opposing transverse forces (towline force is opposed by thrust or hull resistance force) causes the tug to heel and, ultimately, to capsize. This may also be referred to as 'girthing, 'girding' or 'tripping'. See **Fig 1** which shows the forces acting during towage operations. (4) Fleet angle is the angle between the applied load (towline force) and the towline as it is wound onto the winch drum, see **Fig 2**.

Present	Amendment
	 **Fig 1 Force during towing**  **Figure 2: Towline 'fleet angle'** **802. General requirements** **1.** The in-board end of the towline is to be attached to the winch drum with a weak link or similar arrangement that is designed to release the towline at low load. **2.** All towing winches are to be fitted with an emergency release system.

Present	Amendment
	803. Emergency release system requirements **1.** Performance requirements (1) The emergency release system is to operate across the full range of towline load, fleet angle and ship heel angle under all normal and reasonably foreseeable abnormal conditions (these may include, but are not limited to, the following: vessel electrical failure, variable towline load (for example due to heavy weather), etc.). (2) The emergency release system shall be capable of operating with towline loads up to at least 100 % of the maximum design load. (3) The emergency release system is to function as quickly as is reasonably practicable and within a maximum of three seconds after activation. (4) The emergency release system is to allow the winch drum to rotate and the towline to pay out in a controlled manner such that, when the emergency release system is activated, there is sufficient resistance to rotation to avoid uncontrolled unwinding of the towline from the drum. Spinning (free, uncontrolled rotation) of the winch drum is to be avoided, as this could cause the towline to get stuck and disable the release function of the winch. (5) Once the emergency release is activated, the towline load required to rotate the winch drum is to be no greater than: (A) the lesser of 5 tonnes or 5 % of the maximum design load when two layers of towline are on the drum, or (B) 15 % of the maximum design load where it is demonstrated that this resistance to rotation does not exceed 25 % of the force that will result in listing sufficient for the immersion of the lowest unprotected opening. (6) An alternative source of energy is to be provided such that normal operation of the emergency release system can be sustained under dead-ship conditions. (7) The alternative source of energy required by (6) is to be sufficient to achieve the most onerous of the following conditions (as applicable): (A) sufficient for at least three attempts to release the towline (i.e. three activations of the emergency release system). Where the system provides energy for more than one winch it is to be sufficient for three activations of the most demanding winch connected to it. (B) Where the winch design is such that the drum release mechanism requires continuous application of power (e.g. where the brake is applied by spring tension and released using hydraulic or pneumatic power) sufficient power is to be provided to operate the emergency release system (e.g. hold the brake open and allow release of the towline) in a dead-ship situation for a minimum of five minutes. This may be reduced to the time required for the full length of the towline to feed off the winch drum at the load specified in (5) if this is less than five minutes.

Present	Amendment
	2. Operational requirements (A) Emergency release operation must be possible from the bridge and from the winch control station on deck. The winch control station on deck is to be in a safe location. (2) The emergency release control is to be located in close proximity to the emergency stop button for winch operation and both should be clearly identifiable, clearly visible, easily accessible and positioned to allow safe operability. (3) The emergency release function is to take priority over any emergency stop function. Activation of the winch emergency stop from any location is not to inhibit operation of the emergency release system from any location. (4) Emergency release system control buttons are to require positive action to cancel, the positive action may be made at a different control position from the one where the emergency release was activated. It must always be possible to cancel the emergency release from the bridge regardless of the activation location and without manual intervention on the working deck. (5) Controls for emergency use are to be protected against accidental use. (6) Indications are to be provided on the bridge for all power supply and/or pressure levels related to the normal operation of the emergency release system. Alarms are to activate automatically if any level falls outside of the limits within which the emergency release system is fully operational. (7) Wherever practicable, control of the emergency release system is to be provided by a hard-wired system, fully independent of programmable electronic systems. (8) Computer based systems that operate or may affect the control of emergency release systems are to meet the requirements for Category III systems of **KR Rules Pt 6, Sec 4.** (9) Components critical for the safe operation of the emergency release system are to be identified by the manufacturer. (10) The method for annual survey of the winch is to be documented. (11) Where necessary for conducting the annual survey of the winch, adequately sized strong points are to be provided on deck.

Present	Amendment
	804. Test requirements **1.** General (1) All testing defined within this paragraph is to be witnessed by a Classification Society surveyor. (2) For each emergency release system or type thereof, the performance requirements of **803.1** are to be verified either at the manufacturer's works or as part of the commissioning of the towing winch when it is installed on board. Where verification solely through testing is impracticable (e.g. due to health and safety), testing may be combined with inspection, analysis or demonstration in agreement with the Society. (3) The performance capabilities and operating instructions of the emergency release system are to be documented and made available on board the ship on which the winch has been installed. **2.** Installation trials (1) The full functionality of the emergency release system is to be tested as part of the shipboard commissioning trials to the satisfaction of the surveyor. Testing may be conducted either during a bollard pull test or by applying the towline load against a strong point on the deck of the tug that is certified to the appropriate load. (2) Where the performance of the winch in accordance with **803.1** has previously been verified, the load applied for the installation trials is to be at least the lesser of 30 % of the maximum design load or 80 % of vessel bollard pull.

Amended Guidances for the Classification of Steel Ships

(Part 7 Chapter 5 Ships Carrying Liquefied Gas in Bulk)

Dec. 2019

KR

- Main Amendments -

(1) Effective date : 1 Jan 2020 (Date of Construction)

◉ To reflect IACS UI GC 25 (Rev.1, April 2019)
◉ To reflect IACS UI GC27(New Dec 2018)
◉ To reflect IACS UI GC 28 (New, Dec. 2018)

(1) Effective date : 1 Jan 2020

(Date of construction)

Present	Amendment
CHAPTER 5 Ships Carrying Liquefied Gas in Bulk	**CHAPTER 5 Ships Carrying Liquefied Gas in Bulk**
Section 5 Process Pressure Vessels and liquid, Vapour and Pressure Piping Systems	**Section 5 Process Pressure Vessels and liquid, Vapour and Pressure Piping Systems**
501. to 511. <omitted>	**501. to 511. <same as current Guidance>**
512. Materials [See Rule]	**512. Materials** [See Rule]
1. to **3.** <omitted>	**1.** to **3.** <same as current Guidance>
4. With reference to **3.** (1) of the Rules, the phrase 'a thermal insulation system as required to minimize heat leak into the cargo during transfer operations' means that the properties of the thermal insulation for cargo piping systems are to take into consideration the overall heat calculation undertaken for the tank containment system and the capacity of the proposed pressure/temperature control system (e.g. refrigeration plants) adopted on each ship in accordance with the requirements of **Ch.7** of the Rule. The phrase 'cargo piping systems are to be provided with a thermal insulation system as required ... to protect personnel from direct contact with cold surfaces' means that surfaces of cargo piping systems with which personnel is likely to contact under normal conditions are to be protected by a thermal insulation. with the exception for the following ones; (1) surfaces of cargo piping systems which are protected by physical screening measures to prevent such direct contact; (2) surfaces of manual valves, having extended spindles that protect the operator from the cargo temperature, (3) surfaces of cargo piping systems whose design temperature (to be determined from inner fluid temperature) is above minus 10 °C.	**4.** With reference to **3.** (1) of the Rules, the phrase 'a thermal insulation system as required to minimize heat leak into the cargo during transfer operations' means that properties of the piping insulation are to be taken into consideration when calculating the heat balance of the containment system and capacity of the pressure/temperature control system. The phrase 'cargo piping systems shall be provided with a thermal insulation system as required ... to protect personnel from direct contact with cold surfaces' means that surfaces of cargo piping systems with which personnel is likely to contact under normal conditions shall be protected by a thermal insulation, with the exception for the below examples: (1) surfaces of cargo piping systems which are protected by physical screening measures to prevent such direct contact; (2) surfaces of manual valves, having extended spindles that protect the operator from the cargo temperature, (3) surfaces of cargo piping systems whose design temperature (to be determined from inner fluid temperature) is above minus 10 °C.
<hereafter, omitted>	<hereafter, same as current Guidance>

Present	Amendment
Section 8 Vent System for Cargo Containment	**Section 8 Vent System for Cargo Containment**
801. General [See Rule] For the purpose of the requirements in **801.** of the Rules, the pressure relief system of hold spaces is to be in accordance with the following requirements : (1) to (3) <omitted>	**801. General** [See Rule] **1.** For the purpose of the requirements in **801.** of the Rules, the pressure relief system of hold spaces is to be in accordance with the following requirements : (1) to (3) <same as current Guidance> **2.** For the purpose of the requirements in **801.** of the Rules, the pressure relief system of interbarrier spaces is to be in accordance with **801. 1.**
802. Pressure relief systems **1. Pressure relief system for interbarrier spaces** (1) to (3) <omitted> (4) The relieving capacity of pressure relief devices for interbarrier spaces is to be determined as followings : (A) to (D) <omitted> (E) Interbarrier space pressure relief devices in the scope of this paragraph are emergency devices for protecting the hull structure from being unduly overstressed in case of a pressure rise in the interbarrier space due to primary barrier failure. Therefore, such devices need not comply with the requirements in **802. 10** and **802. 11** of the Rules.	**802. Pressure relief systems** **1. Pressure relief system for interbarrier spaces** (1) to (3) <same as current Guidance> (4) The relieving capacity of pressure relief devices for interbarrier spaces is to be determined as followings : (A) to (D) <same as the present Rules> ~~(E) Interbarrier space pressure relief devices in the scope of this paragraph are emergency devices for protecting the hull structure from being unduly overstressed in case of a pressure rise in the interbarrier space due to primary barrier failure. Therefore, such devices need not comply with the requirements in **802. 10** and **802. 11** of the Rules.~~
<hereafter, omitted>	<hereafter, same as current Guidance>

Present	Amendment
Section 9 – 12 <omitted>	**Section 9 – 12 <same as the present Rules>**
Section 13 Instrumentation and Automation Systems	**Section 13 Instrumentation and Automation Systems**
1301. <same as the present Rules>	**1301. <same as the present Rules>**
1302. Level indicators for cargo tanks [See Rule] **1. <same as the present Rules>** **<Newly added>** **2. <same as the present Rules>**	**1302. Level indicators for cargo tanks [See Rule]** **1. <same as the present Rules>** **2.** For the purpose of the requirements in **1302. 2** of the Rules, in order to assess whether or not only one level gauge is acceptable in relation to the aforesaid sentence, 'can be maintained' means that any part of the level gauge other than passive parts can be overhauled while the cargo tank is in service. However, passive parts are those parts assumed not subject to failures under normal service conditions. *(2020)* **2. 3. <same as the present Rules>**
1303. – 1307. <same as the present Rules>	**1303. – 1307. <same as the present Rules>**

- Main Amendments -

(1) Enter into force on 1 January 2020 (the contract date for ship construction)

◉ To reflect Request for Establishment/Revision of Classification Technical Rules

(1) Effective date : 1 Jan 2020

(the contract date for ship construction)

Present	Amendment
CHAPTER 1 SHIPS CARRYING LIQUEFIED GASES IN BULK	**CHAPTER 1 SHIPS CARRYING LIQUEFIED GASES IN BULK**
Section 1 ~ Section 3 <Omitted>	**Section 1 ~ Section 3 <Sames as the present guidance>**
Section 4 Cargo Containment	**Section 4 Cargo Containment**
401. ~ 418. <Omitted>	**401. ~ 418. <Sames as the present guidance>**
419. Materials [See Rule] **1. ~ 8. <Omitted>** **9. <New>**	**419. Materials [See Rule]** **1. ~ 8. <Sames as the present guidance>** **9. Materials of primary and secondary barriers** (1) The high manganese austenitic steel for cargo tank for the carriage of liquefied natural gases is to comply with **Annex 7A-4**. *(2020)*
Section 5 ~ Section 19 <Omitted>	**Section 5 ~ Section 19 <Sames as the present guidance>**

Present	Amendment
Annex 7A-1 ~ Annex 7A-3 <Omitted> **Annex 7A-4 High manganese austenitic steel for Cryogenic Service <New>**	**Annex 7A-1 ~ Annex 7A-3 <Omitted>** **Annex 7A-4 High manganese austenitic steel for Cryogenic Service** **Section 1 General** **101. Scope** **1.** This Annex provides the designer and manufacturer with practical information on the design and construction of cargo tanks using high manganese austenitic steel for cryogenic service to comply with the Design Conditions defined in **Pt7, Chapter 5, 418**. **102. Application** **1.** This Annex are not intended to replace any requirements of **Pt7, Chapter 5**. They are intended as complementary guidelines on how to utilize high manganese austenitic steel in the design and fabrication of cargo tanks complying with the **Pt7, Chapter 5**. **103. Definitions** **1. Under-matched welds** means for welded connections where the weld metal has lower yield- or tensile-strength than the parent metal. **Section 2 Application** **201. Design application** **1.** The relevant load conditions and design conditions should be established in accordance with **Pt7, Chapter 5, 418**. A guidance on special considerations to the high manganese austenitic steel is described beolw. **2.** For the selection of relevant safety factors for high manganese austenitic steels(see **Pt7, Chapter 5, 421 to 423**), the safety factors specified for "Austenitic Steels" should be applied both for base material and for as welded condition

Present	Amendment
	202. Ultimate design condition **1.** It should be noted that high manganese austenitic steels normally have under-matched welds and, therefore, it is of great importance that the design values of the yield strength and tensile strength are based on the "minimum mechanical properties" for the base material and as welded condition(see 6 Mechanical Properties). Note the limitation to under-matched welds defined in **Pt7, Chapter 5, 418.1.(3).(B)**. **203. Buckling strength** **1.** Buckling strength analysis should be carried out based on recognized standards. Functional loads as defined in **Pt7, Chapter 5, 403.4** should be considered. Note that design tolerances should be considered where relevant and be included in the strength assessment as required in **Pt7, Chapter 5, 606.2.(1)**. **204. Fatigue design condition** **1.** The fatigue design curves for base material and for butt weld joint should use S-N curve of D grade in IIW. **2.** The fatigue design curves for other weld joints except butt weld joint should be agreed with the Society. **3.** Design S-N curve given in Table 1 correspond to a probability of survival of 97.6%. Table 1 S-N curves in air | S-N curve | $N \leq 10^7$ cycles | | $N > 10^7$cycles | Fatigue limit at 10^7 cycle(MPa) | Thickness exponent k | | | m_1 | $\log \bar{a}_1$ | $\log \bar{a}_2$ $m_2 = 5.0$ | | | | D | 3.0 | 12.164 | 15.606 | 52.63 | 0.20 |

Present	Amendment
	205. Fracture mechanics analyses **1.** For a cargo tank where a reduced secondary barrier is applied, fracture mechanics analysis should be carried out in accordance with **Pt7, Chapter 5**. **2.** Fracture toughness properties should be expressed using recognized standards. Depending on the material, fracture toughness properties determined for loading rates similar to those expected in the tank system should be required. The fatigue crack propagation rate properties should be documented for the tank material and its welded joints for the relevant service conditions. These properties should be expressed using a recognized fracture mechanics practice relating the fatigue crack propagation rate to the variation in stress intensity, $\triangle K$, at the crack tip. The effect of stresses produced by static loads should be taken into account when establishing the choice of fatigue crack propagation rate parameters. **3.** Note that for the application where very high static load utilization is relevant, alternative methods such as ductile fracture mechanics analysis should be considered. **4.** A fracture mechanics analysis is required for type B tank(**Pt7, Chapter 5, 422.4**) where a reduced secondary barrier is applied. Fracture mechanics analysis may also be required for other tank types as found relevant to show compliance with fatigue and crack propagation properties. Note that CTOD values used in fracture mechanics analysis may in any case be an important property to analyze to ensure that materials are considered suitable for the application.

Present	Amendment
	206. Welding **1.** Welding should be carried out in accordance with **Pt7, Chapter 5, 605**. **2.** For welding the following points can be considered: (1) For reducing the heat input during production: (A) special attention should be given to the first root pass when applying flux-cored arc welding(FCAW); reduced amperage should be considered; (B) welding heat input is to be equal to 30 kJ/cm or below; (2) Distance between the weld and nozzle should be kept to a minimum to reduce the oxygen content at the vicinity of the weld pool; (3) Weld gas composition of FCAW should normally be an 80/20 mix of argon and carbon dioxide; and (4) Appropriate ventilation should be provided to reduce exposure to hazardous welding fumes. **207. Non-destructive testing(NDT)** **1.** The scope of non-destructive testing(NDT) should be as required by **Pt7, Chapter 5, 605.6**. NDT procedures should be in accordance with recognized standards to the satisfaction of the Society. For high manganese austenitic steel suitable NDT procedure normally applicable for austenitic steels should be used. **208. Corrosion resistance** **1.** High manganese austenitic steel is not considered a very strong corrosion resistant material in line with several similar materials such as 304 stainless steel Particularly for LNG cargo tanks that may not be in operation, appropriate environment should be maintained to prevent corrosion.

Amended Rules for the Classification of Steel Ships

(Part 8 Fire Protection and Fire Extinction)

Dec. 2019

KR

Effective Date : 1 January 2020

(1) Date of which are constructed

◉ Reflected amendments of IMO Res. MSC. 409(97), Res. MSC. 404(96), Res. MSC. 421(98)

Present	Amendment
CHAPTER 8 FIRE FIGHTING	**CHAPTER 8 FIRE FIGHTING**
Section 4 Fire Extinguishing Arrangements In Machinery Spaces	**Section 4 Fire Extinguishing Arrangements In Machinery Spaces**
401. Machinery spaces containing oil-fired boilers or oil fuel units [See Guidance]	**401. Machinery spaces containing oil-fired boilers or oil fuel units** [See Guidance]
1. <omitted>	**1. <omitted>**
2. Additional fire-extinguishing arrangements	**2. Additional fire-extinguishing arrangements**
(1) <omitted> (2) There shall be at least two portable foam extinguishers or equivalent in each firing space in each boiler room and in each space in which a part of the oil fuel installation is situated. There shall be not less than one approved foam-type extinguisher of at least 135 liters capacity or equivalent in each boiler room. These extinguishers shall be provided with hoses on reels suitable for reaching any part of the boiler room. In the case of domestic boilers of less than 175 kW an approved foam-type extinguisher of at least 135 liters capacity is not required.	(1) <omitted> (2) There shall be at least two portable foam extinguishers or equivalent in each firing space in each boiler room and in each space in which a part of the oil fuel installation is situated. There shall be not less than one approved foam-type extinguisher of at least 135 l capacity or equivalent in each boiler room. These extinguishers shall be provided with hoses on reels suitable for reaching any part of the boiler room. In the case of domestic boilers of less than 175 kW, or boilers protected by fixed water-based local application fire-extinguishing systems as required by **406.**, an approved foam-type extinguisher of at least 135 l capacity is not required. *(2020)*
CHAPTER 11 HELICOPTER FACILITIES	**CHAPTER 11 HELICOPTER FACILITIES**
Section 1 Application	**Section 1 Application**
101. Application	**101. Application**
1. ~ 2. <omitted>	**1. ~ 2.** <omitted>
3. <newly added>	**3.** Notwithstanding the requirements of **2** above, having a helicopter landing area, shall be provided with foam firefighting appliances which comply with the relevant provisions of chapter 17 of the Fire Safety Systems Code. *(2020)*
3. Notwithstanding the requirements of **2** above, ro-ro passenger ships without helidecks shall comply with the relevant regulation of the Convention.	**4.** Notwithstanding the requirements of **2** or **3** above, ro-ro passenger ships without helidecks shall comply with SOLAS III/28. *(2020)*

Present

Section 4 Fire-fighting Appliances

401. Fire-fighting appliances

In close proximity to the helideck, the following fire-fighting appliances shall be provided and stored near the means of access to that helideck:
【See Guidance】

1. ~ **2.** <omitted>

3. a suitable foam application system consisting of monitors or foam making branch pipes capable of delivering foam to all parts of the helideck in all weather conditions in which helicopters can operate. The system shall be capable of delivering a discharge rate as required in table for at least five minutes;

Category	Helicopter overall length	Discharge rate foam solution(L/min)
H1	up to but not including 15 m	250
H2	from 15 m up to but not including 24 m	500
H3	from 24 m up to but not including 35 m	800

4. the principal agent shall be suitable for use with salt water and conform to performance standards not inferior to those acceptable to the IMO Organization;

5. at least two nozzles of an approved dual-purpose type (jet/spray) and hoses sufficient to reach any part of the helideck;

3. <newly added>

6. ~ **7.** <omitted>

Amendment

Section 4 Fire-fighting Appliances

401. Fire-fighting appliances

In close proximity to the helideck, the following fire-fighting appliances shall be provided and stored near the means of access to that helideck:
【See Guidance】

1. ~ **2.** <omitted>

3. ~~a suitable foam application system consisting of monitors or foam making branch pipes capable of delivering foam to all parts of the helideck in all weather conditions in which helicopters can operate. The system shall be capable of delivering a discharge rate as required in table for at least five minutes;~~

~~Category~~	~~Helicopter overall length~~	~~Discharge rate foam solution(L/min)~~
~~H1~~	~~up to but not including 15 m~~	~~250~~
~~H2~~	~~from 15 m up to but not including 24 m~~	~~500~~
~~H3~~	~~from 24 m up to but not including 35 m~~	~~800~~

4. ~~the principal agent shall be suitable for use with salt water and conform to performance standards not inferior to those acceptable to the IMO Organization;~~

5. ~~at least two nozzles of an approved dual-purpose type (jet/spray) and hoses sufficient to reach any part of the helideck;~~

3. In case of having a helideck, foam firefighting appliances which comply with the provisions of the Fire Safety Systems Code. *(2020)*

4. ~ **5.** <same as present>

Present	Amendment
CHAPTER 13 PROTECTION OF VEHICLE, SPECIAL CATEGORY AND RO-RO SPACES	**CHAPTER 13 PROTECTION OF VEHICLE, SPECIAL CATEGORY AND RO-RO SPACES**
Section 1 General Requirements	**Section 1 General Requirements**
101. Application	**101. Application**
In addition, as appropriate, vehicle, special category and ro-ro spaces shall comply with the requirements of this regulation.	**1.** ~~In addition,~~ As appropriate, vehicle, special category and ro-ro spaces shall comply with the requirements of this Rules. **2.** On all ships, vehicles with fuel in their tanks for their own propulsion may be carried in cargo spaces other than vehicle, special category or ro-ro spaces, provided that all the following conditions are met: *(2020)* (1) the vehicles do not use their own propulsion within the cargo spaces; (2) the cargo spaces are in compliance with the appropriate requirements of regulation 19; and (3) the vehicles are carried in accordance with the IMDG Code, as defined in SOLAS VII/1.1."

Amended Guidances for the Classification of Steel Ships

(Part 8 Fire Protection and Fire Extinction)

Dec. 2019

KR

Effective date : 1 Jan. 2020

(1) Date of which are ships contracted for construction

◉ Reflected IACS UI SC 288 New

◉ Reflected the withdrawal of IACS UI SC 288 New

Present	Amendment
CHAPTER 12 CARRIAGE OF DANGEROUS GOODS	**CHAPTER 12 CARRIAGE OF DANGEROUS GOODS**
Section 2 Special Requirements	**Section 2 Special Requirements**
201. Special requirements	**201. Special requirements**
1. ~ 3. <omitted>	**1. ~ 3.** <same as the present>
4. Ventilation arrangement **[See Rule]**	**4. Ventilation arrangement** **[See Rule]**
(1) ~ (3) <omitted> (4) <newly added>	(1) ~ (3) <omitted> (4) The reduced air changes per hour as per Note 1 of Table 8.12.1 apply equally to the ventilation air change requirements in **201. 4** (1) and in **201. 5** (4) of the Rules, when the bilge pump is located directly inside a container cargo space. In such a case, where several container cargo spaces are served by the same bilge pump, the bilge pump is to be installed in the container cargo space with the highest ventilation rate, compared to the other container cargo spaces. *(2020)*

Present	Amendment
Annex 8-5 Inert Gas Systems	**Annex 8-5 Inert Gas Systems**
2. General requirements	**2. General requirements**
(1) ~ (9) <omitted>	(1) ~ (9) <omitted>
(10) Inert gas lines	(10) Inert gas lines
(A)~ (C) <omitted>	(A)~ (C) <same as the present>
(a) ~ (b) <omitted>	(a) ~ (b) <same as the present>
(c) equivalent arrangements to the satisfaction of the Administration, providing at least the same level of protection. The following is considered as an equivalent arrangement. (See also **Fig 8-5.1** of the Guidance) (2019)	~~(c) equivalent arrangements to the satisfaction of the Administration, providing at least the same level of protection. The following is considered as an equivalent arrangement. (See also **Fig 8-5.1** of the Guidance) *(2019)*~~
(i) Two shut off valves in series with an arrangement to vent the space between the valves in a safe manner; or	~~(i) Two shut off valves in series with an arrangement to vent the space between the valves in a safe manner; or~~
(ii) A shut-off valve and a spectacle flange with an arrangement to vent the space between the valve and the spectacle flange in a safe manner; or	~~(ii) A shut-off valve and a spectacle flange with an arrangement to vent the space between the valve and the spectacle flange in a safe manner; or~~
(iii) The use of metallic flexible hoses is considered as equivalent to a spool piece referred to in (a), but in both cases a valve on the inert gas main side and a valve or a blank flange on the cargo tank side are to be fitted.	~~(iii) The use of metallic flexible hoses is considered as equivalent to a spool piece referred to in (a), but in both cases a valve on the inert gas main side and a valve or a blank flange on the cargo tank side are to be fitted.~~

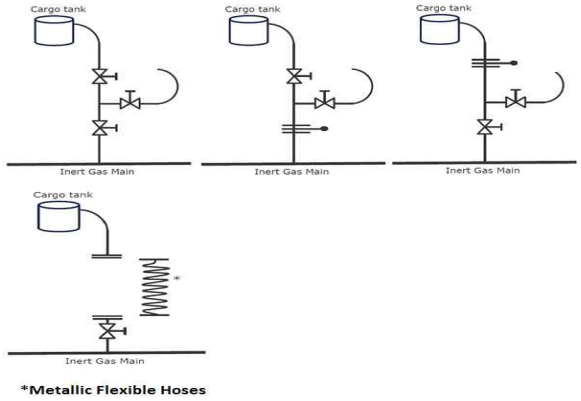
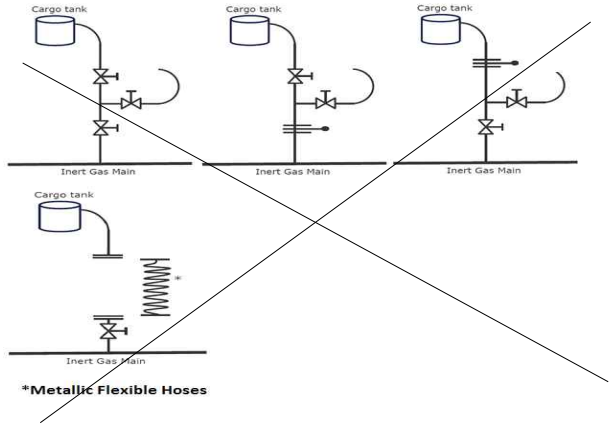

	

Fig 8-5.1	**Fig 8-5.1**

Amended Guidances for the Classification of Steel Ships

(Part 9 Additional Installations)

Dec. 2019

KR

Effective Date : 1 January 2020

(1) The contract date for ship construction or an application date for certification of an engine)

◉ reflected IACS UR M35(Rev.8 Jan 2019) and M36(Rev.6 Dec 2018)

- The requirements for alarm of high oil mist concentrations in the crankcase have been amended to alarm the operation of the oil mist detection device or the bearing lubricant outlet temperature or the operation of the bearing temperature monitoring device.

Present	Amendment
CHAPTER 3 AUTOMATIC AND REMOTE CONTROL SYSTEMS	**CHAPTER 3 AUTOMATIC AND REMOTE CONTROL SYSTEMS**
Section 1 – 2 <same as the present Rules>	**Section 1 – 2 <same as the present Rules>**
Section 3 Centralized Monitoring and Control Systems for Main Propulsion and Essential Auxiliary Machinery	**Section 3 Centralized Monitoring and Control Systems for Main Propulsion and Essential Auxiliary Machinery**
301. - 304. <same as the present Rules>	**301. - 304. <same as the present Rules>**
305. Automatic and remote control of main propulsion machinery or controllable pitch propellers 【See Guidance】	**305. Automatic and remote control of main propulsion machinery or controllable pitch propellers 【See Guidance】**
1. - 4. <same as the present Rules>	**1. - 4. <same as the present Rules>**
Table 9.3.1 Crosshead diesel engines *(2017)*	**Table 9.3.1 Crosshead diesel engines *(2020)***
Table 9.3.2 Trunk piston diesel engines *(2017)*	**Table 9.3.2 Trunk piston diesel engines *(2020)***
306. <same as the present Rules>	**306. <same as the present Rules>**

<Amendments>

Table 9.3.1 Crosshead diesel engines ~~(2017)~~(2020)

Systems	Monitored parameters [H: High L: Low O: Abnormal status]		AA	RI	Auto slow down with alarm	Auto start of Stand by pump with alarm	Auto shut down with alarm	Notes [AA = Alarm Activation RI = Remote Indication* ●=apply]
Sensors	Common or separate		c	c	c	s	s	c = common; s = separate
Lubri-cating oil	~~Oil mist concentration in crankcase - H or Main, crank, crosshead bearing temp. (or bearing oil outlet temp).- H~~ Activation of oil mist detection arrange-ments (or activation of the temperature monitoring systems or equivalent devices of: - the engine main, crank and crosshead bearing oil outlet; or - the engine main, crank and crosshead bearing)	~~H~~ O	●		●			For engines having power ≧ 2250 kW or cylinder bore > 300 mm (1)

<Amendments>

Table 9.3.2 Trunk piston diesel engines *(2017)(2020)*

Systems	Monitored parameters [H: High L: Low O: Abnormal status]		AA	RI	Auto slow down with alarm	Auto start of Stand by pump with alarm	Auto shut down with alarm	Notes [AA = Alarm Activation RI = Remote Indication* ●=apply]
Sensors	Common or separate		c	c	c	s	s	c = common; s = separate
Lubricating oil (Diesel engine)	~~Oil mist in crankcase, mist concentration(H) or main & connecting rod bearing temp. (or oil outlet temp.) (H) or an equivalent device~~ Activation of oil mist detection arrangements (or activation of the temperature monitoring systems or equivalent devices of: - the engine main and crank bearing oil outlet; or - the engine main and crank bearing)	H O	●				●	Only for medium speed engines having power ≧ 2250 kW or cylinder bore > 300 mm. ~~Single sensor~~ : for each engine, one oil mist detector (or engine bearing temperature monitoring system or equivalent device) having two independent outputs for initiating alarm and for shutdown will satisfy independence of alarm and shut-down systems. (1) An equivalent device could be interpreted as measures applied to high speed engines where specific design features to preclude the risk of crankcase explosions are incorporated.

Present	Amendment
307. Automatic and remote control of electric generating sets **1. - 4. <same as the present Rules>** **Table 9.3.8 Auxiliary diesel engines and auxiliary turbines *(2017)*** **308. - 310. <same as the present Rules>** **Section 4 - 5 <same as the present Rules>**	**307. Automatic and remote control of electric generating sets** **1. - 4. <same as the present Rules>** **Table 9.3.8 Auxiliary diesel engines and auxiliary turbines *(2020)*** **308. - 310. <same as the present Rules>** **Section 4 - 5 <same as the present Rules>**

<Amendments>

Table 9.3.8 Auxiliary diesel engines and auxiliary turbines *~~(2017)~~(2020)*

Engine	System	Monitored parameters [H: High L: Low O: Abnormal status]		AA	RI	Auto start of Stand by pump with alarm	Auto shut down with alarm	Notes [AA = Alarm Activation RI = Remote Indication* ●=apply]
Diesel Engine	Lubricating oil	~~Oil mist in crankcase, mist concentration(H) or main & connecting rod bearing temp. (or oil outlet temp.) (H) or an equivalent device.~~ Activation of oil mist detection arrangements (or activation of the temperature monitoring systems or equivalent devices of: - the engine main and crank bearing oil outlet; or - the engine main and crank bearing)	~~H~~ O	●			●	Only for medium speed engines having power ≧ 2250 kW or cylinder bore > 300 mm. ~~Single sensor~~ : for each engine, one oil mist detector (or engine bearing temperature monitoring system or equivalent device) having two independent outputs for initiating alarm and for shutdown will satisfy independence of alarm and shut-down systems.(1) An equivalent device could be interpreted as measures applied to high speed engines where specific design features to preclude the risk of crankcase explosions are incorporated.

Amended Guidances for the Classification of Steel Ships

(Part 9 Additional Installations)

Dec. 2019

KR

Effective Date : 1 January 2020

(1) The contract date for ship construction)

◉ The requirement for equivalence has been amended in accordance with the amendment to Part 1 of the Rules.

Present	Amendment
CHAPTER 3 AUTOMATIC AND REMOTE CONTROL SYSTEMS	**CHAPTER 3 AUTOMATIC AND REMOTE CONTROL SYSTEMS**
Section 2 Surveys of Automatic and Remote Control Systems	**Section 2 Surveys of Automatic and Remote Control Systems**
201. General	**201. General**
1. Preparation for surveys and others **[See Rule]** In application to **201. 3** (1) of the Rules, the term "a standard deemed appropriate by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** or **105.** of the Guidance.	**1. Preparation for surveys and others** **[See Rule]** In application to **201. 3** (1) of the Rules, the term "a standard deemed appropriate by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** ~~or **105.**~~ of the Rules.
202. <same as the present Rules>	**202. <same as the present Rules>**
203. Shop tests	**203. Shop tests**
1. <same as the present Rules>	**1. <same as the present Rules>**
2. Shop tests of automatic systems **[See Rule]** In application to **203. 2** (1) (E) of the Rules, the term "Other tests considered necessary by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** or **105.** of the Guidance.	**2. Shop tests of automatic systems** **[See Rule]** In application to **203. 2** (1) (E) of the Rules, the term "Other tests considered necessary by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** ~~or **105.**~~ of the Rules.
204. - 208. <same as the present Rules>	**204. - 208. <same as the present Rules>**

Present	Amendment
Section 3 Centralized Monitoring and Control Systems for Main Propulsion and Essential Auxiliary Machinery	**Section 3 Centralized Monitoring and Control Systems for Main Propulsion and Essential Auxiliary Machinery**
302. System design	**302. System design**
1. Control systems 【See Rule】 In application to **302. 4** (7) of the Rules, the term "other measures considered appropriate by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** or **105.** of the Guidance.	**1. Control systems** 【See Rule】 In application to **302. 4** (7) of the Rules, the term "other measures considered appropriate by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** ~~or **105.**~~ of the Rules.
2. <same as the present Rules>	**2. <same as the present Rules>**
303. - 305. <same as the present Rules>	**303. - 305. <same as the present Rules>**
306. Automatic and remote control of boilers	**306. Automatic and remote control of boilers**
1. General 【See Rule】 In application to **306. 1** (3) of the Rules, the term "deemed appropriate by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** or **105.** of the Guidance.	**1. General** 【See Rule】 In application to **306. 1** (3) of the Rules, the term "deemed appropriate by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** ~~or **105.**~~ of the Rules.
2. Automatic combustion control systems (1) In application to **306. 2** (2) (F) of the Rules, the term "as deemed appropriate by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** or **105.** of the Guidance. 【See Rule】 (2) In application to **306. 2** (4) of the Rules, the term "deemed appropriate by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** or **105.** of the Guidance. 【See Rule】	**2. Automatic combustion control systems** (1) In application to **306. 2** (2) (F) of the Rules, the term "as deemed appropriate by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** ~~or **105.**~~ of the Rules. 【See Rule】 (2) In application to **306. 2** (4) of the Rules, the term "deemed appropriate by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** ~~or **105.**~~ of the Rules. 【See Rule】

Present	Amendment
Section 5 Specific Automatic Equipment	**Section 5 Specific Automatic Equipment**
502. Class 1 specific automation equipment	**502. Class 1 specific automation equipment**
1. - 2. <same as the present Rules>	**1. - 2. <same as the present Rules>**
3. Automatic steering system 【See Rule】	**3. Automatic steering system** 【See Rule】
In application to **502. 2** (11) of the Rules, the term "Any other items considered necessary by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** or **105.** of the Guidance.	In application to **502. 2** (11) of the Rules, the term "Any other items considered necessary by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** ~~or **105.**~~ of the Rules.
4. - 7. <same as the present Rules>	**4. - 7. <same as the present Rules>**
503. - 504. <same as the present Rules>	**503. - 504. <same as the present Rules>**

Present	Amendment
CHAPTER 5 NAVIGATION BRIDGE SYSTEMS	**CHAPTER 5 NAVIGATION BRIDGE SYSTEMS**
Section 2 Surveys of Navigation Bridge Systems	**Section 2 Surveys of Navigation Bridge Systems**
202. Classification Survey	**202. Classification Survey**
1. Drawings and data [See Rule] In application to **202. 1** (1) (E) of the Rules, the term "Other drawings and data deemed necessary by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** or **105.** of the Guidance.	**1. Drawings and data** [See Rule] In application to **202. 1** (1) (E) of the Rules, the term "Other drawings and data deemed necessary by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** ~~or **105.**~~ of the Rules.
2. Shop tests [See Rule] In application to **202. 2** (J) of the Rules, the term "Other equipment deemed necessary by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** or **105.** of the Guidance.	**2. Shop tests** [See Rule] In application to **202. 2** (J) of the Rules, the term "Other equipment deemed necessary by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** ~~or **105.**~~ of the Rules.
203. Survey Assigned to Maintain Classification	**203. Survey Assigned to Maintain Classification**
1. Annual survey [See Rule] In application to **203. 2** (1) (B) (f) of the Rules, the term "Other equipment deemed necessary by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** or **105.** of the Guidance.	**1. Annual survey** [See Rule] In application to **203. 2** (1) (B) (f) of the Rules, the term "Other equipment deemed necessary by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** ~~or **105.**~~ of the Rules.
Section 5 <same as the present Rules>	**Section 5 <same as the present Rules>**

Present	Amendment
Section 6 Bridge Work Assist Systems	**Section 6 Bridge Work Assist Systems**
602. Bridge Work Assist Systems	**602. Bridge Work Assist Systems**
1. <same as the present Rules>	**1. <same as the present Rules>**
2. Bridge information system 【See Rule】 In application to **602. 2** (E) of the Rules, the term "Other functions deemed necessary by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** or **105.** of the Guidance.	**2. Bridge information system** 【See Rule】 In application to **602. 2** (E) of the Rules, the term "Other functions deemed necessary by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** ~~or **105.**~~ of the Rules.
3. <same as the present Rules>	**3. <same as the present Rules>**
4. Auto tracking system 【See Rule】 In application to **602. 4** (G) of the Rules, the term "Other functions deemed necessary by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** or **105.** of the Guidance.	**4. Auto tracking system** 【See Rule】 In application to **602. 4** (G) of the Rules, the term "Other functions deemed necessary by the Society" means the acceptance in accordance with **Pt 1, Ch 1, 104.** ~~or **105.**~~ of the Rules.

Amended Rules for the Classification of Steel Ships

(Pt. 10 Hull Structure and Equipment of Small Ships)

Dec. 2019

KR

- Main Amendments -

(1) 01 Jan. 2020 (date of construction contract) or

in the absence of a building contract, the keel of which is laid or which are at a similar stage of construction on or after 01 July 2020 or

delivered on or after 01 Jan. 2024

◉ Reflected IACS UI SC156 (R. 1)

Present	Amendment
CHAPTER 14 WATERTIGHT BULKHEADS	**CHAPTER 14 WATERTIGHT BULKHEADS**
Section 1 ~ 2 <omit>	**Section 1 ~ 2 <same as current>**
Section 3 Watertight Doors	**Section 3 Watertight Doors *(2020)***
301. General 【See Guidance】	**301. General** 【See Guidance】
1. Any access openings, doors, manholes or ducts for ventilation, etc. are not to be cut in the collision bulkhead below freeboard deck. The number of openings in collision bulkheads above the freeboard deck is to be kept to a minimum as possible and all such openings are to be provided with weathertight means of closing.	As specified in **Pt 3, Ch 14, 401.** of the Rules.
2. Watertight doors(or access hatch cover) are to be provided for all access openings in the watertight bulkheads or openings to ensure the watertight integrity of the inner decks in accordance with the requirements in the following **302.** to **305.**	
302. Type of watertight doors 【See Guidance】	**302. Type of watertight doors** 【See Guidance】
1. Watertight doors are to be of sliding type. Hinged or rolling type may, however, be accepted having regard to the position or the service condition of the door.	As specified in **Pt 3, Ch 14, 402.** of the Rules.
2. Notwithstanding the provisions in **1** above, where watertight door is as small as crew can pass, the watertight door may be of hinged type or rolling type, except where the doors are required to be capable of being closed remotely in accordance with **404. 2.**	
3. Notwithstanding the provisions in **1** above, watertight doors in large cargo hold division may be of a type other than sliding type provided that such doors are permanently closed at sea.	
4. Doors which are closed by dropping or by the action of a dropping weight are not permitted.	

Present	Amendment
303. Strength and watertightness **1.** Watertight doors are to be of ample strength and watertightness for water pressure to a head up to the bulkhead deck, and door frames are to be effectively secured to the bulkheads. Where deemed necessary by the Society, watertight doors are to be tested by water pressure before they are fitted. **【See Guidance】** **2.** Where watertight doors are provided in cargo spaces, such doors are to be protected against damages due to cargoes, etc. by suitable means.	**303. Strength and watertightness** **【See Guidance】** As specified in **Pt 3, Ch 14, 403.** of the Rules.
304. Control **【See Guidance】** **1.** All watertight doors, except those which are to be permanently closed at sea, are to be capable of being opened and closed by hand locally, from both sides of the doors, with the ship listed of 30 degrees to either side. **2.** In addition to the requirements of **1** above, watertight doors which are used at sea or normally open at sea, are to be capable of being remotely closed by power from the navigation bridge. **3.** It is not to be possible to remotely open any watertight door. In addition, watertight doors which are applying to the provisions of **302. 3** are not to be remotely controlled.	**304. Control** **【See Guidance】** As specified in **Pt 3, Ch 14, 404.** of the Rules.
305. Indication **【See Guidance】** **1.** Watertight doors, except those permanently closed at sea, are to be provided with position indicators showing whether the doors are open or closed at all operating positions. **2.** In addition to the requirements of **1** above for watertight doors which are to be capable of being remotely closed, an indication is to be placed locally showing that the door is in remote control mode.	**305. Indication** **【See Guidance】** As specified in **Pt 3, Ch 14, 405.** of the Rules.

Present	Amendment
306. Alarms 【See Guidance】 Watertight doors which are capable of being remotely closed are to be provided with an audible alarm which will sound at the door position whenever such a door is remotely closed.	**306. Alarms** 【See Guidance】 As specified in **Pt 3, Ch 14, 406.** of the Rules.
307. Source of power **1.** The remote controls, indications and alarms required in **304.** to **306.** are to be operable in the event of main power failure. **2.** Where Electrical installations specified in **1** are situated below the free-board deck, they are to be provided with a degree of protection appro-priate for flooding. 【See Guidance】 **3.** Cables for devices specified in 1. are to comply with the requirements of **Pt 6, Ch 1, Sec 5** of the Rules.	**307. Source of power** 【See Guidance】 As specified in **Pt 3, Ch 14, 407.** of the Rules.
308. Notices **1.** Watertight doors which are to be normally closed at sea are to have notices fixed to both sides of the doors stating "**To be kept closed at sea**". **2.** Watertight doors which are to be permanently closed at sea are to have notices fixed to both sides stating "**Not to be opened at sea**". Such doors which are accessible during the voyage are to be fitted with a device which prevents opening. 【See Guidance】	**308. Notices** 【See Guidance】 As specified in **Pt 3, Ch 14, 408.** of the Rules.

Present	Amendment
309. Sliding doors **[See Guidance]** **1.** Sliding watertight doors are to be capable of being operated from an accessible position above the bulkhead deck and are to have an index at the operating positon showing whether the door is open or closed. This remote control of the door may, however, be omitted where the Society is satisfied with such an arrangement having regard to the service condition of the door. **2.** Where the above control means is operated by rods, the lead of operating rods is to be as direct as possible and the screw is to work in a nut of gun-metal or other approved material. **3.** Sliding doors controlled from remote positions are also to be capable of being operated at the position of the door. **4.** The frames of vertically sliding watertight doors are to have no groove at the bottom in which dirt might lodge and prevent the door from closing.	**309. Sliding doors** **[See Guidance]** As specified in **Pt 3, Ch 14, 409.** of the Rules.
310. Hinged and rolling doors **1.** For hinged and rolling watertight doors, the hinge pins and the wheel axle of these doors are to be of gun-metal or other approved materials. **2.** Hinged and rolling watertight doors except those are to be permanently closed at sea, are to be of quick acting or single acting type which is capable of being closed and secured from both sides of the doors. ⚓	**310. Hinged and rolling doors** **[See Guidance]** As specified in **Pt 3, Ch 14, 410.** of the Rules.
	311. Testing **[See Guidance]** As specified in **Pt 3, Ch 14, 412.** of the Rules. ⚓

Amended Guidance for the Classification of Steel Ships

(Pt. 10 Hull Structure and Equipment of Small Ships)

Dec. 2019

KR

- Main Amendments -

(1) 01 Jan. 2020 (date of construction contract) or
in the absence of a building contract, the keel of which is laid or which are at a similar stage of construction on or after 01 July 2020 or
delivered on or after 01 Jan. 2024

◉ Reflected IACS UI SC156 (R. 1)

Present	Amendment
CHAPTER 14 WATERTIGHT BULKHEADS	**CHAPTER 14 WATERTIGHT BULKHEADS**
Section 1 ~ 2 <omit>	**Section 1 ~ 2 <omit>**
Section 3 Watertight Doors	**Section 3 Watertight Doors *(2020)***
~~**301. General** *(2017)*~~ **[See Rule]** ~~Watertight doors are categorized as **Pt 3, Ch 14, Sec. 4 401. of Guidance relating to rules for the classification of steel ships**.~~	**<delete>**
302. Type of Watertight Doors [See Rule] As specified in **Pt 3, Ch 14, 402.** of the Guidance.	**302. Type of Watertight Doors [See Rule]** As specified in **Pt 3, Ch 14, 402.** of the Guidance.
303. Strength and watertightness [See Rule] In application to **303. 1** of the Rules, the term "deemed necessary by the Society" means the cases as specified in **Pt 3, Ch 14, 403.** of the Guidance.	**303. Strength and watertightness [See Rule]** As specified in **Pt 3, Ch 14, 403.** of the Guidance.
	304. Strength and watertightness [See Rule] As specified in **Pt 3, Ch 14, 404.** of the Guidance.
	305. Strength and watertightness [See Rule] As specified in **Pt 3, Ch 14, 405.** of the Guidance.
	306. Strength and watertightness [See Rule] As specified in **Pt 3, Ch 14, 406.** of the Guidance.
	307. Strength and watertightness [See Rule] As specified in **Pt 3, Ch 14, 407.** of the Guidance.

Present	Amendment
309. Sliding Doors **【See Rule】** As specified in **Pt 3, Ch 14, 409.** of the Guidance. ⚓	**308. Strength and watertightness** **【See Rule】** As specified in **Pt 3, Ch 14, 408.** of the Guidance. **309. Sliding Doors** **【See Rule】** As specified in **Pt 3, Ch 14, 409.** of the Guidance. **311. Test** **【See Rule】** As specified in **Pt 3, Ch 14, 412.** of the Guidance. ⚓

Amended Rules for the Classification of Steel Ships

(Part 14 Structural Rules for Container Ships)

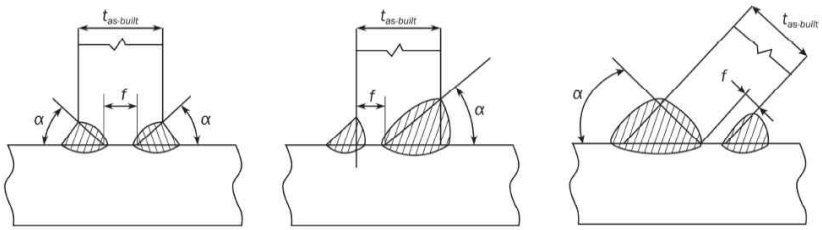
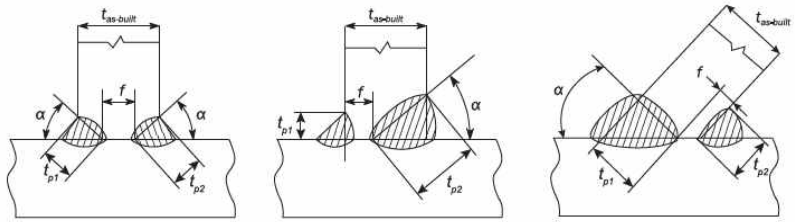
Dec. 2019

KR

- Main Amendments -

(1) Enter into force on 1 January 2020 (the contract date for ship construction)

◉ To reflect Request for Establishment/Revision of Classification Technical Rules

Present	Amendment
CHAPTER 12 CONSTRUCTION **Section 1 ~ Section 2 <Omitted>** **Section 3 Design of Weld Joints** 1. General 〈Omitted〉 2. Tee or Cross Joint 2.1~ 2.3 〈Omitted〉 2.4 Partial or full penetration welds 2.4.1 〈Omitted〉 2.4.2 Partial or full penetration welding 〈Omitted〉 The welding bead of the full/partial penetration welds is to cover root of the groove. Examples of partial penetration welds are given on **Figure 2.**  **Figure 2 : Partial penetration welds** 2.4.3~2.4.7 〈Omitted〉	**CHAPTER 12 CONSTRUCTION** **Section 1 ~ Section 2 <Same as the present Rules>** **Section 3 Design of Weld Joints** 1. General 〈Same as the present Rules〉 2. Tee or Cross Joint 2.1~ 2.3 〈Same as the present Rules〉 2.4 Partial or full penetration welds 2.4.1 〈Same as the present Rules〉 2.4.2 Partial or full penetration welding 〈Same as the present Rules〉 The welding bead of the full/partial penetration welds is to cover root of the groove. Examples of partial penetration welds are given on **Figure 2.** The weld size of partial penetration is to satisfy the following equation.  **Figure 2 : Partial penetration welds** $t_{p1}+t_{p2} \geq 2(f_{yd} \cdot f_c \cdot f_{ten} \cdot t_{as-built}+t_{gap})$ t_{p1}, t_{p2} : The weld size in **Figure 2** f_c : Position coefficient, which is 1.1 for ballast tank and bilge well and 1.0 for elsewhere f_{ten} : 0.44 as the welding factor 2.4.3~2.4.7 〈Same as the present Rules〉

Present	Amendment
2.5 Weld size criteria 2.5.1～2.5.2 〈Omitted〉	2.5 Weld size criteria 2.5.1～2.5.2 〈Same as the present Rules〉
Table 1 : Minimum leg size	Table 1 : Minimum leg size
Area / Minimum length, in mm Cargo hold region / 4.5 Other areas / 4.5	Area / Minimum length, in mm Cargo hold region / 4.5 Superstructures and deckhouses / 3.5 Other areas / 4.5
Table 2 : Weld factors for different structural members	**Table 2 : Weld factors for different structural members**
2.5.3～2.5.12 〈Omitted〉	2.5.3～2.5.12 〈Same as the present Rules〉
3. 〈Omitted〉	3. 〈Same as the present Rules〉
4. Other Types of Joints	4. Other Types of Joints
4.1 Lapped joints	4.1 Lapped joints
4.1.1～4.1.4 〈Omitted〉	4.1.1～4.1.4 〈Same as the present Rules〉
~~4.1.5 Overlapped seams~~ ~~Overlapped seams are to have continuous welds on both edges, of the sizes required by [2.5.2] for the boundaries of tank/hold or watertight bulkheads. Seams for plates with as-built thickness of 12.5mm or less, which are clear of tanks/holds, may have one edge with intermittent welds in accordance with [2.5.2] for watertight bulkhead boundaries.~~	
5. 〈Omitted〉	5. 〈Same as the present Rules〉

Present

Table 2 : Weld factors for different structural members

Hull area	Connection			f_{weld}
	of	to		
General, unless otherwise specified in the table	Watertight plate	Boundary plating		0.48
	~~Oil-tight plate~~	~~Boundary plating~~		~~0.51~~
	Brackets at ends of members			0.48
	Ordinary stiffener and collar plates	Deep tank bulkheads		0.24
		Web of primary supporting members and collar plates		0.38
	Web of stiffener	Plating (except deep tank bulkhead)		0.20
		Face plates of built-up stiffeners	At ends (15% of span)	0.38
			Elsewhere	0.2
Bottom and double bottom	Ordinary stiffener	Bottom and inner bottom plating		0.24
	Centre girder	Shell plates		0.38
		Inner bottom plate		0.38
	Side girder including intercostal plates	Bottom and inner bottom plating		0.24
	Floor	Shell plates and inner bottom plates	At ends, on a length equal to two frame spaces	0.38
		Centre girder and side girders in way of hopper tanks		0.38
		Elsewhere		0.24
	Bracket on centre girder	Centre girder, inner bottom, floors and shell plates		0.38
	Web stiffener	Floor and girder		0.2
Side and inner side in double side structure	Web of primary supporting members	Side plating		0.30
		Inner side plating and web of primary supporting members	in way of deck transverse and end connections	0.43
			~~in way of cross tie~~	~~0.36~~
			elsewhere	0.30

Present

Deck	Strength deck	$t_{as-built} \geq 13$	Side shell plating within 0.6L midship		PPW[3]
			Elsewhere		0.48
		$t_{as-built} < 13$	Side shell plating		0.48
	Other deck		Side shell plating		0.38
			Stiffeners		0.20
	Hatch coamings		Deck plating	Longitudinal hatch coaming corners of hatchways in a length of 15% of the hatch coaming heigth	FPW[1(4)] or PPW[3]
				Longitudinal hatch coaming on a length starting from 15% of the hatch coaming height from the corners of hatchways up to 15% of the hatch length	0.48 or PPW[3]
				Elsewhere	0.38 or PPW[3]
	Web stiffeners		Coaming webs		0.20[2]
Bulkheads	Non-watertight bulkhead structure		Boundaries	Swash bulkheads	~~0.24~~
	Stiffener		Bulkhead plating	At ends (25% of span), where no end brackets are fitted	0.48
Aft peak	Internal members		Boundaries and each other: below waterline		0.38
			Above waterline		0.20
Fore peak	Internal members		Boundaries and each other		0.20
Machinery space	Centre girder		Keel and inner bottom		0.48
	Floor		Centre girder		0.48
	Engine foundation girders		Top plate and primary hull structure		PPW[3]
	Floors and girders		Inner bottom and shell plate		0.38
Superstructure and deckhouse	External bulkhead (first and second tier erections)		Deck, external bulkhead		0.48
	External bulkheads and internal bulkheads		Elsewhere		0.2

Present

(1) f_{weld} =0.43 for hatch coaming other than in cargo holds.
(2) Continuous welding.
(3) PPW: Partial penetration welding in accordance with [2.4.2].
(4) FPW: Full penetration welding in accordance with [2.4.2].
(5) Bulkheads of superstructure and deckhouse are to be considered in the row corresponding to "Superstructure and deck house".

Amendment

Table 2 : Weld factors for different structural members

Hull area	Connection			f_{weld}
	of	to		
General, unless otherwise specified in the table	Watertight plate	Boundary plating		0.48
	Brackets at ends of members			0.48
	Ordinary stiffener and collar plates	Deep tank bulkheads		0.24
		Web of primary supporting members and collar plates		0.38
	Web of stiffener	Plating (except deep tank bulkhead)		0.20
		Face plates of built-up stiffeners	At ends (15% of span)	0.38
			Elsewhere	0.2
Bottom and double bottom	Ordinary stiffener	Bottom and inner bottom plating		0.24
	Centre girder	Shell plates		0.38
		Inner bottom plate		0.38
	Side girder including intercostal plates	Bottom and inner bottom plating		0.24
	Floor	Shell plates and inner bottom plates	At ends, on a length equal to two frame spaces	0.38
		Centre girder and side girders in way of hopper tanks		0.38
		Elsewhere		0.24
	Bracket on centre girder	Centre girder, inner bottom, floors and shell plates		0.38
	Web stiffener	Floor and girder		0.2
Side and inner side in double side structure	Web of primary supporting members	Side plating		0.30
		Inner side plating and web of primary supporting members	in way of deck transverse and end connections	0.43
			elsewhere	0.30

Deck	Strength deck	$t_{as-built} \geq 13$	Side shell plating within 0.6L midship		PPW[3]
			Elsewhere		0.48
		$t_{as-built} < 13$	Side shell plating		0.48
	Other deck		Side shell plating/bulkhead		0.38
			Stiffeners		0.20
	Hatch coamings		Deck plating	Longitudinal hatch coaming corners of hatchways in a length of 15% of the hatch coaming heigth	FPW[1(4)] or PPW[3]
				Longitudinal hatch coaming on a length starting from 15% of the hatch coaming height from the corners of hatchways up to 15% of the hatch length	0.48 or PPW[3]
				Elsewhere	0.38 or PPW[3]
	Web stiffeners		Coaming webs		0.20[2]
Bulkheads	Non-watertight bulkhead structure		Boundaries	Swash bulkheads	0.48
	Stiffener		Bulkhead plating	At ends (25% of span), where no end brackets are fitted	0.48
Aft peak	Internal members		Boundaries and each other: below waterline		0.38
			Above waterline		0.20
Fore peak	Internal members		Boundaries and each other		0.20
Machinery space	Centre girder		Keel and inner bottom		0.48
	Floor		Centre girder		0.48
	Engine foundation girders		Top plate and primary hull structure		PPW[3]
	Floors and girders		Inner bottom and shell plate		0.38
Superstructure and deckhouse	External bulkhead (first and second tier erections)		Deck, external bulkhead		0.48
	External bulkheads and internal bulkheads		Elsewhere		0.2

Amendment

(1) f_{weld} =0.43 for hatch coaming other than in cargo holds.
(2) Continuous welding.
(3) PPW: Partial penetration welding in accordance with [2.4.2].
(4) FPW: Full penetration welding in accordance with [2.4.2].
(5) Bulkheads of superstructure and deckhouse are to be considered in the row corresponding to "Superstructure and deck house".

Present

Section 4 Use of Extremely Thick Steel

1. ~ 2. <Omitted>

3. ~~Periodic NDT after delivery~~(Measure No.2 of [5])

~~3.1~~

~~Where periodic NDT after delivery is required as a safety measure option B of [5], the NDT is to be in accordance with Table 1.~~

~~Table 1 : Locations, extent and timing of UT~~

~~Locations~~	~~Extent~~	~~Timing~~
~~all block to block butt joints of all upper flange longitudinal structural members in the cargo hold region~~	~~100% UT~~	~~No. 2 Special Survey and every even Special Survey after that(e.g. No.4, No.6, etc.)~~

~~3.2~~

~~Testing procedure and acceptance criteria of UT not specified in this requirements are to comply with the requirements in [2.2].~~

4. <Omitted>

5. Measures for Extremely Thick Steel Plates

The thickness and the yield strength shown in the Table 2 apply to the hatch coaming top plating and side plating, and are the controlling parameters for the application of countermeasures. If the as built thickness of the hatch coaming top plating and side plating is below the values contained in the table, countermeasures are not necessary regardless of the thickness and yield strength of the upper deck.

Table 2 : Measures for extremely thick steel plates

6. <Omitted>

Amendment

Section 4 Use of Extremely Thick Steel

1. ~ 2. <Same as the present Rules>

3. Welding to increase toughness(Measure No.2 of [5])

3.1 Welding to increase toughness is to be carried out when B option in [5] is selected as a safety measure to identify and prevent brittle fracture.

3.2 Impact specimens are to be taken in accordance with 3.2.1.

3.2.1 Impact specimens are to be taken from the weld center "WM", fusion line "FL", heat affected zone of 2mm from fusion line, heat affected zone of 5mm from fusion line.

3.3 Impact specimens are to meet the criteria for absorbed energy of base material at impact test temperature of base material.

4. <Same as the present Rules>

5. Measures for Extremely Thick Steel Plates

The thickness and the yield strength shown in the Table 2 apply to the hatch coaming top plating and side plating, and are the controlling parameters for the application of countermeasures. If the as built thickness of the hatch coaming top plating and side plating is below the values contained in the table, countermeasures are not necessary regardless of the thickness and yield strength of the upper deck.

Table 2 : Measures for extremely thick steel plates

6. <Same as the present Rules>

Present

Table 2 : Measures for extremely thick steel plates

Yield Strength (kgf/mm2)	Thickness (mm)	Option	Measures			
			1	2	3+4	5
36	50<t≤85	-	NA	NA	NA	NA
	85<t≤100	-	O	NA	NA	NA
40	50<t≤85	-	O	NA	NA	NA
	85<t≤100	A	O	NA	O	O
		B	O*	O**	NA	O
47(FCAW)	50<t≤100	A	O	NA	O	O
		B	O*	O**	NA	O
47(EGW)	50<t≤100	-	O	NA	O	O

Measures:

No.	Measures
1	NDT other than visual inspection on all target block joints(during construction) **[2]**.
2	~~Periodic NDT other than visual inspection on all target block joints(after delivery)~~ **[3]**.
3	Brittle crack arrest design against straight propagation of brittle crack along weld line to be taken(during construction) See **[4.3.2]**, **[4.3.3]** or **[4.3.4]** of this requirements.
4	Brittle crack arrest design against deviation of brittle crack from weldline(during construction) See **[4.3.1]**.
5	Brittle crack arrest design against propagation of cracks from other weld areas such as fillets and attachment welds(during construction) See **[4.3.1]**.

Symbols:

(a) "O" means "To be applied".

(b) "N.A" means "Need not to be applied".

(c) Selectable from option "A" and "B".

Note:

*: See **[4.3.5]**

: See **[3].

Table 2 : Measures for extremely thick steel plates

Yield Strength (kgf/mm2)	Thickness (mm)	Option	Measures			
			1	2	3+4	5
36	50<t≤85	-	NA	NA	NA	NA
	85<t≤100	-	O	NA	NA	NA
40	50<t≤85	-	O	NA	NA	NA
	85<t≤100	A	O	NA	O	O
		B	O*	O**	NA	O
47(FCAW)	50<t≤100	A	O	NA	O	O
		B	O*	O**	NA	O
47(EGW)	50<t≤100	-	O	NA	O	O

Measures:

No.	Measures
1	NDT other than visual inspection on all target block joints(during construction) **[2]**.
2	Welding to increase toughness(during construction) See **[3]**.
3	Brittle crack arrest design against straight propagation of brittle crack along weld line to be taken(during construction) See **[4.3.2]**, **[4.3.3]** or **[4.3.4]** of this requirements.
4	Brittle crack arrest design against deviation of brittle crack from weldline(during construction) See **[4.3.1]**.
5	Brittle crack arrest design against propagation of cracks from other weld areas such as fillets and attachment welds(during construction) See **[4.3.1]**.

Symbols:

(a) "O" means "To be applied".

(b) "N.A" means "Need not to be applied".

(c) Selectable from option "A" and "B".

Note:

*: See **[4.3.5]**

: See **[3].

Amended Rules for FRP Ships

Dec. 2019

KR

- Main Amendments -

(1) Enter into force on 1 January 2020 (the contract date for ship construction)

◉ To reflect Request for Establishment/Revision of Classification Technical Rules

Present	Amendment
CHAPTER 1 GENERAL **Section 1 General** **101. <Omitted>** **102. Equivalency** ~~Alternative hull construction, equipment, arrangement and scantlings will be accepted by the Society, provided that the Society is satisfied that such construction, equipment, arrangement and scantlings are equivalent to those required in these Rules.~~ **103. <Omitted>** **Section 2 ~ Section 3 <Omitted>**	**CHAPTER 1 GENERAL** **Section 1 General** **101. <Same as the present Rules>** **102. Equivalency** The equivalence of alternative and novel features which deviate from or are not directly applicable to the Rules is to be in accordance with Pt 1, Ch 1 of Rules for the Classification of Steel Ships. **103.<Same as the present Rules>** **Section 2 ~ Section 3 <Same as the present Rules>**

Present

CHAPTER 3 MATERIALS

Section 1 <Omitted>

Section 2 FRP Materials

201. General

1. Application <Omitted>

2. FRP materials testing

(1) ~ (3) <Omitted>

Table 3.3 Materials testing list and Acceptance Criteria for Fibre Reinforcements

Test item	Acceptance criteria
Tensile strength of fibre of glass roving cloth	Mean value : Not less than 0.35W(N) W : the stated weight(N) Test results of at least 4 test specimens in 5 test specimens of respective warp and weft directions are not to be less than 0.35W(N)
<Omitted>	<Omitted>
(Note) <Omitted>	

Amendment

CHAPTER 3 MATERIALS

Section 1 <Same as the present Rules>

Section 2 FRP Materials

201. General

1. Application <Same as the present Rules>

2. FRP materials testing

(1) ~ (3) <Same as the present Rules>

Table 3.3 Materials testing list and Acceptance Criteria for Fibre Reinforcements

Test item	Acceptance criteria
Tensile strength of fibre of glass roving cloth	Mean value : Not less than 0.35W (kg) W : the stated weight (g) Test results of at least 4 test specimens in 5 test specimens of respective warp and weft directions are not to be less than 0.35W (kg)
<Same as the present Rules>	<Same as the present Rules>
(Note) <Same as the present Rules>	

Amended Rules for Mobile Offshore Units

Dec. 2019

KR

- Main Amendments -

(1) Effective date : 1 Jan 2020 (date of construction)

- ◉ Requirements for equivalency have been harmonized with other Rules
- ◉ Reflected MSC Res.407(96) : Acceptance of foam firefighting appliances in FSS Code
- ◉ Editorial modification

(2) Effective date : 1 Jan. 2020 (Date of which application for survey is submitted)

- ◉ To reflect IACS UR Z15 (Rev.3 May 2019) for CoC

(3) Effective date : 1 Jan 2020 (Contracted date of construction)

- ◉ To reflect IACS UR D3(Rev. 6 Nov. 2018)

(1) Effective date : 1 Jan 2020

(Date of construction)

Present	Amendment
CHAPTER 1 GENERAL	**CHAPTER 1 GENERAL**
Section 1 General	**Section 1 General**
101. to 103. <omitted>	**101. to 103. <same as current Rules>**
104. Equivalency and novel features **1.** Alternative hull construction, equipment, machinery and their arrangement and scantlings will be accepted by the Society, provided that the Society is satisfied that such construction, equipment, machinery and their arrangement and scantlings are equivalent to those required in the Rules. **2.** Units which contain novel features of design, with respect to buoyancy, elevating arrangements, structural arrangements, machinery, etc., to which the Rules are not directly applicable, may be classed, when approved by the Society on the basis that the Rules, in so far as applicable, have been complied with and that special consideration has been given to the novel features based on the best information available at the time.	**104. Equivalency ~~and novel features~~** The equivalence of alternative and novel features which deviate from or are not directly applicable to the Rules is to be in accordance with **Pt1 Ch 1 104.** of **Rules for the Classification of Steel Ships**
<hereafter, omitted>	<hereafter, same as current Rules>

Present	Amendment
CHAPTER 10 FIRE PROTECTION, MEANS OF ESCAPE AND FIRE EXTINCTION	**CHAPTER 10 FIRE PROTECTION, MEANS OF ESCAPE AND FIRE EXTINCTION**
Section 1 to Section 3 <same as the present>	**Section 1 to Section 3 <same as current Rules>**
Section 4 Fire Extinguishing Systems for Helicopter Facilities	**Section 4 Fire Extinguishing Systems for Helicopter Facilities**
401. General	**401. General**
<omitted>	<same as current Rules>
402. Helicopter decks and refueling facilities	**402. Fire Extinguishing Systems**
1. Hoses and nozzles : at least two approved combination nozzle and applicators and hoses sufficient in length to reach any part of the helicopter deck are to be provided.	**1.** In close proximity to the helideck, the following fire-fighting appliances should be provided and stored near the means of access to that helideck: (1) Portable extinguishers (A) Primary extinguishers : At least two dry powder extinguishers of a total capacity of not less than 45 kg, but not less than 9 kg each, are to be provided. (B) Back-up extinguishers : A back-up fire fighting system is to be provided, consisting of CO2 extinguishers of a total capacity of not less than 18 kg or equivalent, one of these extinguishers being so equipped as to enable it to reach the engine area of any helicopter using the deck. The back-up system is to be located so that the equipment would not be vulnerable to the same damages as the primary extinguishing system.
2. Portable extinguishers : at least two dry powder extinguishers of a total capacity of not less than 45 kg, but not less than 9 kg each, are to be provided.	
3. Back-up fire fighting system : A back-up fire fighting system is to be provided, consisting of CO_2 extinguishers of a total capacity of not less than 18 kg or equivalent, one of these extinguishers being so equipped as to enable it to reach the engine area of any helicopter using the deck. The back-up system is to be located so that the equipment would not be vulnerable to the same damages as the primary extinguishing system.	

Present	Amendment
4. Fixed foam system : (1) A suitable foam application system, consisting of monitors or foam making branch pipes capable of delivering foam solution at a rate of not less than 6.0 ℓ/m^2-min((4.1 ℓ/m^2-min for Aqueous Film Forming Foam or Film-Forming Fluoroprotein Foam) of the areas protected(the area of a circle of diameter "D" where "D" is the distance across the main rotor and tail rotor in the fore and aft line of a helicopter) for at least 5 minutes, is to be provided. (2) Foam delivery at the minimum application rate is to start within 30 s of system activation. The operation of the foam system is not to interfere with simultaneous operation of the fire main. (3) The principal agent shall be suitable for use with salt water and conform to performance standards not inferior to those acceptable to the IMO Organization(Refer to the International Civil Aviation Organization Airport Services Manual, part 1, Rescue and Fire Fighting, chapter 8, Extinguishing Agent Characteristics, paragraph 8.1.5, Foam Specifications table 8-1, level 'B'). (3) <Newly added> **5. to 8.** <omitted> <hereafter, omitted>	(2) Fixed fire fighting systems : (A) Fixed foam system : (a) A suitable foam application system, consisting of monitors or foam making branch pipes capable of delivering foam solution at a rate of not less than 6.0 ℓ/m^2-min((4.1 ℓ/m^2-min for Aqueous Film Forming Foam or Film-Forming Fluoroprotein Foam) of the areas protected(the area of a circle of diameter "D" where "D" is the distance across the main rotor and tail rotor in the fore and aft line of a helicopter) for at least 5 minutes, is to be provided. (b) Foam delivery at the minimum application rate is to start within 30 s of system activation. The operation of the foam system is not to interfere with simultaneous operation of the fire main. (c) The principal agent shall be suitable for use with salt water and conform to performance standards not inferior to those acceptable to the IMO Organization(Refer to the International Civil Aviation Organization Airport Services Manual, part 1, Rescue and Fire Fighting, chapter 8, Extinguishing Agent Characteristics, paragraph 8.1.5, Foam Specifications table 8-1, level 'B'). (B) Fire water system: at least two approved nozzles of jet/spray type and hoses sufficient in length to reach any part of the helicopter deck. (3) In lieu of the requirements of (2) (A), foam firefighting appliances complying with the requirements of the FSS Code. **2. to 5.** <same as current Rules> <hereafter, same as current Rules>

(2) Effective date : 1 Jan 2020

(Date of which application for survey is submitted)

Present	Amendment
# CHAPTER 2 CLASSIFICATION AND SURVEYS ## Section 1 General	# CHAPTER 2 CLASSIFICATION AND SURVEYS ## Section 1 General
101. 〈omitted〉	**101. 〈same as the current Rules〉**
102. Definition	**102. Definition**
1.~ 12. <omitted>	**1.~ 12. 〈same as the current Rules〉**
13. Prompt and thorough repair A **prompt and thorough repair** is a permanent repair completed at the time of survey to the satisfaction of the Surveyor, therein removing the need for the imposition of any associated condition of classification, or recommendation.	**13. Prompt and thorough repair** A **prompt and thorough repair** is a permanent repair completed at the time of survey to the satisfaction of the Surveyor, therein removing the need for the imposition of any associated Condition of Class. *(2020)*
103. Repairs	**103. Repairs**
1. ~ 2. <omitted>	**1. ~ 2. 〈same as the current Rules〉**
3. Where the damage found on structure mentioned in **Par 1** is isolated and of a localised nature which does not affect the unit's structural integrity, consideration may be given by the Surveyor to allow an appropriate temporary repair to restore watertight or weather tight integrity and impose a Recommendation/Condition of Class in accordance with IACS PR No.35(Procedure for Imposing and Clearing Recommendation/Condition of Class), with a specific time limit.	**3.** Where the damage found on structure mentioned in **Par 1** is isolated and of a localised nature which does not affect the unit's structural integrity, consideration may be given by the Surveyor to allow an appropriate temporary repair to restore watertight or weather tight integrity and impose a Condition of Class in accordance with IACS PR No.35(Procedure for Imposing and Clearing Condition of Class), with a specific time limit. *(2020)*
〈omitted〉	〈same as the current Rules〉

(3) Effective date : 1 Jan 2020

(Contracted date of construction)

Present	Amendment
CHAPTER 1 GENERAL Section 1 General	CHAPTER 1 GENERAL Section 1 General
101.~ 104. 〈omitted〉	**101.~ 104.** 〈same as current Rules〉
105. Load line	**105. Load line**
1.~ 6. 〈omitted〉	1.~ 6. 〈same as current Rules〉
7. Self-elevating Units and Surface Type Units For self-elevating units and surface type units, the load line is to be accordance with not only **Par 1** through **6** but also following requirements. (1) Freeboard of the units is to be assigned in accordance with **ICLL** after confirming that the hull structure has a sufficient strength for the draft corresponding to the freeboard assigned. Freeboard of units which cannot be assigned in accordance with **ICLL** due to special forms of units, however, is to be assigned in accordance with the requirements in **Ch 4, 6** and **7** at floating condition. (2) Where moonpools are arranged within the hull in open communication with the sea, the volume of the moonpool should not be included in calculation of any hydrostatic properties. (3) Where the moonpool has a larger cross sectional area above the waterline at 85% of the depth for freeboard (depth for freeboard has the same meaning as defined in regulation 3 of the 1988 LL Protocol) than below, an addition is to be made to the geometric freeboard corresponding to the lost buoyancy. This addition of for the excess portion above the waterline at 85% of the depth for freeboard is to be dealt with the following (A) to (C) as below for wells and recesses. (A) Where an enclosed superstructure contains part of the moonpool, deduction is to be made for the effective length of the superstructure. (B) Where open wells or recesses are arranged in the freeboard deck, a corrosion equal to the volume of the well of recess to the freeboard deck divided by the waterplane area at 85% of the depth for freeboard is to be made to the freeboard obtained after all other corrections, except bow height correction, have been made. (C) In stability calculation, free surface effects of the flooded well or recess are to be taken into consideration. (4) Where small notches or relatively narrow cut-outs at the stern of the unit, the same procedure for correction described in (3) is to be carried out. (5) Narrow wing extensions at the stern of the unit are to be considered as appendage. The appendages are not to be included in the calculation of freeboard length.	7. Self-elevating Units and Surface Type Units For self-elevating units and surface type units, the load line is to be accordance with not only **Par 1** through **6** but also following requirements. (1) Freeboard of the units is to be assigned in accordance with **ICLL** after confirming that the hull structure has a sufficient strength for the draft corresponding to the freeboard assigned. Freeboard of units which cannot be assigned in accordance with **ICLL** due to special forms of units, however, is to be assigned in accordance with the requirements in **Ch 4, 6** and **7** at floating condition. (2) ~ (5) <Deleted>
〈hereafter, omitted〉	〈hereafter, same as current Rules〉

Amended Rules for Mobile Offshore Drilling Units

Dec. 2019

KR

- Main Amendments -

(1) Effective date : 1 Jan 2020 (Date of construction or which are at a similar stage of construction)

◉ Equivalency : Requirements for equivalency have been harmonized with other Rules

◉ Reference of Annex : Application of Annex has been indicated in Rules

◉ Reflected MSC Res.407(96) : Acceptance of foam firefighting appliances in FSS Code

◉ Editorial modification

◉ Reflected MSC Res.435(98) :

◉ reflected Res.MSC.435(98)

- The requirements have been amended:
  - fire extinguishing system on drilling floor
  - requirement for access
- The requirements have been amended to clarity what to consider when disconnection and shutdown (shutdown logic system and system independence).
- The requirements have been newly added:
  - qualification to perform repair, maintenance and overhaul of hazardous area certified equipment.
  - registration of electrical equipment installed in hazardous areas.

◉ The reference standards that apply to hazardous areas have been updated to the latest IEC international standards.

(2) Effective date : 1 Jan. 2020 (Date of which application for survey is submitted)

◉ To reflect IACS UR Z15 (Rev.3 May 2019) for CoC

(3) Effective date : 1 Jan 2020 (Contracted date of construction)

◉ To reflect IACS UR D3(Rev. 6 Nov. 2018)

(1) Effective date : 1 Jan 2020

(Date of construction)

Present	Amendment
CHAPTER 1 GENERAL	**CHAPTER 1 GENERAL**
Section 1 General	**Section 1 General**
101. Application	**101. Application**
1. to 5. <omitted>	**1. to 5.** <same as current Rules>
6. When drilling systems are classed by the Society upon request of the Owner, drilling systems are to be comply with the Guidance. **【See Guidance**	**6.** When drilling systems are classed by the Society upon request of the Owner, drilling systems are to be comply with the **Annex 1**. **【See Guidance】**
102. to 103. <omitted>	**102. to 103. <same as current Rules>**
104. Equivalency and novel features	**104. Equivalency ~~and novel features~~**
1. Alternative hull construction, equipment, machinery and their arrangement and scantlings will be accepted by the Society, provided that the Society is satisfied that such construction, equipment, machinery and their arrangement and scantlings are equivalent to those required in the Rules.	The equivalence of alternative and novel features which deviate from or are not directly applicable to the Rules is to be in accordance with **Pt1 Ch 1 104.** of **Rules for the Classification of Steel Ships**
2. Units which contain novel features of design, with respect to buoyancy, elevating arrangements, structural arrangements, machinery, etc., to which the Rules are not directly applicable, may be classed, when approved by the Society on the basis that the Rules, in so far as applicable, have been complied with and that special consideration has been given to the novel features based on the best information available at the time.	
<hereafter, omitted>	<hereafter, same as current Rules>

Present	Amendment
CHAPTER 3 CONSTRUCTION, STRENGTH AND MATERIALS Section 1 General 〈omitted〉 Section 2 Access 201. General **1.** Each space within the unit should be provided with at least one permanent means of access to enable, throughout the life of a unit, overall and close-up inspections and thickness measurements of the unit's structures to be carried out by the Administration, the company, and the unit's personnel and others as necessary. Such means of access should comply with the provisions of paragraph 204. and with the Technical provisions for means of access for inspections, adopted by the Maritime Safety Committee by resolution MSC.133(76), as may be amended by the Organization. 〈newly added〉 〈hereafter, omitted〉	CHAPTER 3 CONSTRUCTION, STRENGTH AND MATERIALS Section 1 General 〈same as current Rules〉 Section 2 Access 201. General **1.** Each space within the unit should be provided with at least one permanent means of access to enable, throughout the life of a unit, overall and close-up inspections and thickness measurements of the unit's structures to be carried out by the Administration, the company, and the unit's personnel and others as necessary. Such means of access should comply with the provisions of paragraph 204. and with the Technical provisions for means of access for inspections, adopted by the Maritime Safety Committee by resolution MSC.133(76), as may be amended by the Organization. Detail of access should be applied in accordance with Annex 2 in Guidance relating to this Rules. *[2019]* 〈hereafter, same as current Rules〉

Present	Amendment
CHAPTER 7 MACHINERY AND ELECTRICAL INSTALLATIONS IN HAZARDOUS AREAS	**CHAPTER 7 MACHINERY AND ELECTRICAL INSTALLATIONS IN HAZARDOUS AREAS**
Section 1 - 3 <same as the present Rules>	**Section 1 - 3 <same as the present Rules>**
Section 4 Emergency Shutdown for Electrical Equipment	**Section 4 Emergency Shutdown for Electrical Equipment**
401. Emergency conditions due to drilling operations	**401. Emergency conditions due to drilling operations**
1. <same as the present Rules>	**1.** <same as the present Rules>
2. In the case of units using dynamic positioning systems as a sole means of position keeping, special consideration may be given to the selective disconnection or shutdown of machinery and equipment associated with maintaining the operability of the dynamic positioning system in order to preserve the integrity of the well.	**2.** In the case of units using dynamic positioning(DP) systems disconnection or shutdown of machinery and equipment necessary for maintaining the operability of the dynamic positioning system should be based on a shutdown logic system designed to preserve the capability to maintain operational control over the integrity of the well and station keeping capability. Shutdown of generators and related power supply equipment needed for the operation of the dynamic positioning system should be divided into independent groups to allow response to gas detection alarms while maintaining position keeping.
3. - 5. <same as the present Rules>	**3. - 5.** <same as the present Rules>
402. <same as the present Rules>	**402. <same as the present Rules>**

Present	Amendment
Section 5 Electrical Installations in Hazardous Areas	**Section 5 Electrical Installations in Hazardous Areas**
501. Selection and installation of electrical equipment	**501. Selection and installation of electrical equipment**
1. Electrical equipment and wiring installed in hazardous areas are to be limited to that necessary for operational purposes. Only the cables and types of equipment described in this chapter may be installed. Selection and installation of equipment and cables in hazardous areas should be in accordance with following standards. (1) KS C IEC 61892-1: Mobile and fixed offshore units－Electrical installations－Part 1: General requirements and conditions. (2) KS C IEC 61892-2: Mobile and fixed offshore units－Electrical installations－Part 2: System design. (3) KS C IEC 61892-3: Mobile and fixed offshore units－Electrical installations－Part 3: Equipment. (4) IEC 61892-4: 2007 Mobile and fixed offshore units－Electrical installations－Part 4: Cables. (5) KS C IEC 61892-5: Mobile and fixed offshore units－Electrical Installations－Part 5: Mobile units. (6) KS C IEC 61892-6: Mobile and fixed offshore units－Electrical installations－Part 6: Installation. (7) KS C IEC 61892-7: Mobile and fixed offshore units－Electrical installations－Part 7: Hazardous areas.	**1.** Electrical equipment and wiring installed in hazardous areas are to be limited to that necessary for operational purposes. Only the cables and types of equipment described in this chapter may be installed. Selection and installation of equipment and cables in hazardous areas should be in accordance with following standards. (1) ~~KS C~~ IEC 61892-1, Mobile and fixed offshore units－Electrical installations－Part 1: General requirements and conditions. (2) ~~KS C~~ IEC 61892-2, Mobile and fixed offshore units－Electrical installations－Part 2: System design. (3) ~~KS C~~ IEC 61892-3, Mobile and fixed offshore units－Electrical installations－Part 3: Equipment. (4) ~~KS C~~ IEC 61892-4, Mobile and fixed offshore units－Electrical installations－Part 4: Cables. (5) ~~KS C~~ IEC 61892-5, Mobile and fixed offshore units－Electrical Installations－Part 5: Mobile units. (6) ~~KS C~~ IEC 61892-6, Mobile and fixed offshore units－Electrical installations－Part 6: Installation. (7) ~~KS C~~ IEC 61892-7, Mobile and fixed offshore units－Electrical installations－Part 7: Hazardous areas.
2. <same as the present Rules>	**2.** <same as the present Rules>
502. Protection of electrical installations	**502. Protection of electrical installations**
1. Electrical apparatus used in hazardous areas is to be manufactured, tested, marked and installed in accordance with following standards and certified by an independent testing laboratory recognized by the Society. ~~(1) KS C IEC 60079-4: Electrical apparatus for explosive gas atmospheres－Part 4: Method of test for ignition temperature.~~	**1.** Electrical apparatus used in hazardous areas is to be manufactured, tested, marked and installed in accordance with following standards and certified by an independent testing laboratory recognized by the Society. (1) ~ (4) <deleted>

Present	Amendment
~~(2) IEC 60079-4A: 1970 Electrical apparatus for explosive gas atmospheres—Part 4: Method of test for ignition temperature—First supplement.~~	(1) ~ (4) <deleted>
~~(3) KS C IEC 60079-10: Electrical apparatus for explosive gas atmospheres—Part 10: Classification of hazardous areas.~~	
~~(4) IEC/TR 60079-12: 1978 Electrical apparatus for explosive gas atmospheres—Part 12: Classification of mixtures of gases of vapours with air according to their maximum experimental safe gaps and minimum igniting currents.~~	(1) IEC 60079-10-1, Explosive atmospheres - Part 10-1: Classification of areas - Explosive gas atmospheres.
(5) IEC/TR 60079-13: 1982-01 Electrical apparatus for explosive gas atmosphere—Part 13: Construction and use of rooms or buildings protected by pressurization.	(2) IEC 60079-10-1, Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i".
	(3) IEC 60079-13, Explosive atmospheres - Part 13: Equipment protection by pressurized room "p" and artificially ventilated room "v".
(6) KS C IEC 60079-14: Explosive atmospheres—Part 14: Electrical installations design, selection and erection.	(4) ~~KS C~~ IEC 60079-14~~:~~, Explosive atmospheres—Part 14: Electrical installations design, selection and erection.
(7) IEC/TR 60079-16: 1990 Electrical apparatus for explosive gas atmospheres—Part 16: Artificial ventilation for the protection of analyser(s) houses.	(5) EC/TR 60079-16~~: 1990~~, Electrical apparatus for explosive gas atmospheres—Part 16: Artificial ventilation for the protection of analyser(s) houses.
(8) IEC 60079-17: 2007 Explosive atmospheres—Part 17: Electrical installations inspection and maintenance	(6) IEC 60079-17~~: 2007~~, Explosive atmospheres—Part 17: Electrical installations inspection and maintenance
(9) IEC 60079-19: 2006-10 Explosive atmospheres—Part 19: Equipment repair, overhaul and reclamation.	(7) IEC 60079-19~~: 2006-10~~, Explosive atmospheres—Part 19: Equipment repair, overhaul and reclamation.
~~(10) IEC/TR 60079-20: 1996 Electrical apparatus for explosive gas atmospheres—Part 20: Data for flammable gases and vapours, relating to the use of electrical apparatus.~~	
(11) IEC 60079-25: 2003 Electrical apparatus for explosive gas atmospheres—Part 25: Intrinsically safe systems.	(8) IEC 60079-25, Explosive atmospheres—Part 25: Intrinsically safe electrical systems.

Present	Amendment
~~(12) IEC 60079-27: 2008 Explosive atmospheres—Part 27: Fieldbus intrinsically safe concept (FISCO).~~	
(13) KS C IEC 60079-28: Explosive atmospheres—Part 28: Protection of equipment and transmission systems using optical radiation.	(9) IEC 60079-28, Explosive atmospheres—Part 28: Protection of equipment and transmission systems using optical radiation.
(14) IEC 60079-29-1: 2007 Explosive atmospheres—Part 291: Gas detectors—Performance requirements of detectors for flammable gases.	(10) IEC 60079-29-1, Explosive atmospheres—Part 29-1: Gas detectors—Performance requirements of detectors for flammable gases.
(15) IEC 60079-29-2: 2007 Explosive atmospheres—Part 292: Gas detectors—Selection, installation, use and maintenance of detectors for flammable gases and oxygen.	(11) IEC 60079-29-2, Explosive atmospheres—Part 29-2: Gas detectors—Selection, installation, use and maintenance of detectors for flammable gases and oxygen.
(16) KS C IEC 60079-30-1: Explosive atmospheres—Part 301: Electrical resistance trace heating—General and testing requirements.	(12) IEC/IEEE 60079-30-1, Explosive atmospheres—Part 30-1: Electrical resistance trace heating—General and testing requirements.
(17) KS C IEC 60079-30-2: Explosive atmospheres—Part 302: Electrical resistance trace heating—Application guide for design, installation and maintenance.	(13) IEC/IEEE 60079-30-2, Explosive atmospheres—Part 30-2: Electrical resistance trace heating—Application guide for design, installation and maintenance.
<Newly added>	(14) ISO/IEC 80079-20-1, Explosive atmospheres - Part 20-1: Material characteristics for gas and vapour classification - Test methods and data.
2. <same as the present Rules>	**2.** <same as the present Rules>
<Newly added>	**3.** Repairs, maintenance and overhaul of hazardous area certified equipment should be performed by suitably qualified personnel in accordance with appropriate international standards.
	4. There should be maintained a register of electrical equipment installed in the designated hazardous areas, including a description of the equipment, applicable degree of protection and ratings.
3. - 8. <same as the present Rules>	**5. - 10.** <same as the present Rules>
Section 6 <same as the present Rules>	**Section 6 <same as the present Rules>**

Present	Amendment
CHAPTER 10 FIRE PROTECTION, MEANS OF ESCAPE AND FIRE EXTINCTION	**CHAPTER 10 FIRE PROTECTION, MEANS OF ESCAPE AND FIRE EXTINCTION**
Section 1 to 2 <omitted>	**Section 1 to 2 <same as the present>**
Section 3 Fire Extinction	**Section 3 Fire Extinction**
301. to 303. <omitted>	**301. to 303. <same as current Rules>**
304. Fire extinguishing system on drilling floor	**304. Fire extinguishing system on drilling floor**
1. to 2. <omitted>	**1. to 2.** <same as current Rules>
3. A fixed water spray system is to be provided to protect drilling area. The minimum water application rate is not less than 20.4 ℓ/m^2-min, or	3. The drill floor is to be protected by a fixed pressure water-spraying system designed to provide a minimum water application rate of 20.4 L/m^2-min to the drill floor and related equipment, including emergency shutdown equipment, critical structural components, and enclosure fire barriers.
4. At least two dual-purpose (jet/spray) fire monitors are to be installed to cover drilling and well test areas. The minimum capacity of each monitor is not less than 100 m^3/h. The monitors may be operated either remotely or locally. Monitor arranged for local operation should be sited on an accessible protected position.	4. Alternatively, multiple fixed dual-purpose (jet/spray) monitors discharging at a minimum flow rate and pressure 1,900 L/min at 1 MPa may be provided and arranged such that all areas and equipment can be reached by at least two monitors which are widely separated.
	5. The system is to be designed for manual release from release stations located outside the protected area. Any section valves necessary for the operation of the system are to be located outside the protected area. Automatic release may be accepted by the Society.
	6. Nozzles, piping, fittings and related components should be designed to withstand exposure to temperatures up to 925°C.
	7. The main fire pumps may be used to supply the fixed pressure water-spraying system if they have sufficient capacity to simultaneously supply the fire main at the required flow and pressure.

Present	Amendment
Section 4 Fire Extinguishing Systems for Helicopter Facilities	**Section 4 Fire Extinguishing Systems for Helicopter Facilities**
401. General	**401. General**
<omitted>	<same as current Rules>
402. Helicopter decks and refueling facilities	**402. Fire Extinguishing Systems**
1. Hoses and nozzles : at least two approved combination nozzle and applicators and hoses sufficient in length to reach any part of the helicopter deck are to be provided.	**1.** In close proximity to the helideck, the following fire-fighting appliances should be provided and stored near the means of access to that helideck:
2. Portable extinguishers : at least two dry powder extinguishers of a total capacity of not less than 45 kg, but not less than 9 kg each, are to be provided.	(1) Portable extinguishers
3. Back-up fire fighting system : A back-up fire fighting system is to be provided, consisting of CO_2 extinguishers of a total capacity of not less than 18 kg or equivalent, one of these extinguishers being so equipped as to enable it to reach the engine area of any helicopter using the deck. The back-up system is to be located so that the equipment would not be vulnerable to the same damages as the primary extinguishing system.	(A) Primary extinguishers : At least two dry powder extinguishers of a total capacity of not less than 45 kg, but not less than 9 kg each, are to be provided.
	(B) Back-up extinguishers : A back-up fire fighting system is to be provided, consisting of CO2 extinguishers of a total capacity of not less than 18 kg or equivalent, one of these extinguishers being so equipped as to enable it to reach the engine area of any helicopter using the deck. The back-up system is to be located so that the equipment would not be vulnerable to the same damages as the primary extinguishing system.

Present	Amendment
4. Fixed foam system : (1) A suitable foam application system, consisting of monitors or foam making branch pipes capable of delivering foam solution at a rate of not less than 6.0 ℓ/m^2-min((4.1 ℓ/m^2-min for Aqueous Film Forming Foam or Film-Forming Fluoroprotein Foam) of the areas protected(the area of a circle of diameter "D" where "D" is the distance across the main rotor and tail rotor in the fore and aft line of a helicopter) for at least 5 minutes, is to be provided. (2) Foam delivery at the minimum application rate is to start within 30 s of system activation. The operation of the foam system is not to interfere with simultaneous operation of the fire main. (3) The principal agent shall be suitable for use with salt water and conform to performance standards not inferior to those acceptable to the IMO Organization(Refer to the International Civil Aviation Organization Airport Services Manual, part 1, Rescue and Fire Fighting, chapter 8, Extinguishing Agent Characteristics, paragraph 8.1.5, Foam Specifications table 8-1, level 'B'). **5. to 8.** <omitted> <hereafter, omitted>	(2) Fixed fire fighting systems : (A) Fixed foam system : (a) A suitable foam application system, consisting of monitors or foam making branch pipes capable of delivering foam solution at a rate of not less than 6.0 ℓ/m^2-min((4.1 ℓ/m^2-min for Aqueous Film Forming Foam or Film-Forming Fluoroprotein Foam) of the areas protected(the area of a circle of diameter "D" where "D" is the distance across the main rotor and tail rotor in the fore and aft line of a helicopter) for at least 5 minutes, is to be provided. (b) Foam delivery at the minimum application rate is to start within 30 s of system activation. The operation of the foam system is not to interfere with simultaneous operation of the fire main. (c) The principal agent shall be suitable for use with salt water and conform to performance standards not inferior to those acceptable to the IMO Organization(Refer to the International Civil Aviation Organization Airport Services Manual, part 1, Rescue and Fire Fighting, chapter 8, Extinguishing Agent Characteristics, paragraph 8.1.5, Foam Specifications table 8-1, level 'B'). (B) Fire water system: at least two approved nozzles of jet/spray type and hoses sufficient in length to reach any part of the helicopter deck. (3) In lieu of the requirements of (2) (A), foam firefighting appliances complying with the requirements of the FSS Code. **2. to 5.** <same as current Rules> <hereafter, same as current Rules>

(2) Effective date : 1 Jan 2020

(Date of which application for survey is submitted)

Present	Amendment
# CHAPTER 2 CLASSIFICATION AND SURVEYS ## Section 1 General **101. 〈omitted〉** **102. Definition** **1.~ 12. <omitted>** **13. Prompt and thorough repair** A **prompt and thorough repair** is a permanent repair completed at the time of survey to the satisfaction of the Surveyor, therein removing the need for the imposition of any associated condition of classification, or recommendation. **103. Repairs** **1. ~ 2. <omitted>** **3.** Where the damage found on structure mentioned in **Par 1** is isolated and of a localised nature which does not affect the unit's structural integrity, consideration may be given by the Surveyor to allow an appropriate temporary repair to restore watertight or weather tight integrity and impose a Recommendation/Condition of Class in accordance with IACS PR No.35(Procedure for Imposing and Clearing Recommendation/Condition of Class), with a specific time limit. 〈omitted〉	# CHAPTER 2 CLASSIFICATION AND SURVEYS ## Section 1 General **101. 〈same as the current Rules〉** **102. Definition** **1.~ 12. 〈same as the current Rules〉** **13. Prompt and thorough repair** A **prompt and thorough repair** is a permanent repair completed at the time of survey to the satisfaction of the Surveyor, therein removing the need for the imposition of any associated Condition of Class. *(2020)* **103. Repairs** **1. ~ 2. 〈same as the current Rules〉** **3.** Where the damage found on structure mentioned in **Par 1** is isolated and of a localised nature which does not affect the unit's structural integrity, consideration may be given by the Surveyor to allow an appropriate temporary repair to restore watertight or weather tight integrity and impose a Condition of Class in accordance with IACS PR No.35(Procedure for Imposing and Clearing Condition of Class), with a specific time limit. *(2020)* 〈same as the current Rules〉

(3) Effective date : 1 Jan 2020

(Contracted date of construction)

Present	Amendment
CHAPTER 4 SUBDIVISION, STABILITY AND FREEBOARD Section 1 ~ 6 〈omitted〉 Section 7 Freeboard **701.** 〈omitted〉 **702. Surface units** 1. ~ 2. 〈omitted〉 3. Where moonpools are arranged within the hull in open communication with the sea, the volume of the moonpool should not be included in the calculation of any hydrostatic properties. If the moonpool has a larger cross-sectional area above the waterline at 85% of the depth for freeboard than below, an addition should be made to the geometric freeboard corresponding to the lost buoyancy. This addition for the excess portion above the waterline at 85% of the depth for freeboard should be made as prescribed below for wells or recesses. If an enclosed superstructure contains part of the moonpool, deduction should be made for the effective length of the superstructure. Where open wells or recesses are arranged in the freeboard deck, a correction equal to the volume of the well or recess to the freeboard deck divided by the waterplane area at 85% of the depth for freeboard should be made to the freeboard obtained after all other corrections, except bow height correction, have been made. Free surface effects of the flooded well or recess should be taken into account in stability calculations. 4. The procedure described in Par 3 should also apply in cases of small notches or relatively narrow cut-outs at the stern of the unit. 5. Narrow wing extensions at the stern of the unit should be considered as appendages and excluded for the determination of length (L) and for the calculation of freeboards. The Society should determine the effect of such wing extensions with regard to the provisions relating to the strength of unit based upon length (L).	CHAPTER 4 SUBDIVISION, STABILITY AND FREEBOARD Section 1 ~ 6 〈same as current Rules〉 Section 7 Freeboard **701.** 〈same as current Rules〉 **702. Surface units** 1. ~ 2. 〈same as current Rules〉 3. ~ 5. 〈Deleted〉

Present	Amendment
703. Self-elevating units **1.** ~ **3. <omitted>** **4.** Where moonpools are arranged within the hull in open communication with the sea, the volume of the moonpool should not be included in the calculation of any hydrostatic properties. If the moonpool has a larger cross-sectional area above the waterline at 85% of the depth for freeboard than below, an addition should be made to the geometric freeboard corresponding to the lost buoyancy. This addition for the excess portion above the waterline at 85% of the depth for freeboard should be made as prescribed below for wells or recesses. If an enclosed superstructure contains part of the moonpool, deduction should be made for the effective length of the superstructure. Where open wells or recesses are arranged in the freeboard deck, a correction equal to the volume of the well or recess to the freeboard deck divided by the waterplane area at 85% of the depth for freeboard should be made to the freeboard obtained after all other corrections, except bow height correction, have been made. Free surface effects of the flooded well or recess should be taken into account in stability calculations. **5.** The procedure described in Par 3 should also apply in cases of small notches or relatively narrow cut-outs at the stern of the unit. **6.** Narrow wing extensions at the stern of the unit should be considered as appendages and excluded for the determination of length (L) and for the calculation of freeboards. The Society should determine the effect of such wing extensions with regard to the provisions relating to the strength of unit based upon length (L). **7.** 〈omitted〉 **8.** 〈omitted〉 〈hereafter, omitted〉	703. Self-elevating units **1.** ~ **3.** 〈same as current Rules〉 **4.** ~ **6. <deleted>** **4.** 〈same as current Rules〉 **5.** 〈same as current Rules〉 〈hereafter, same as current Rules〉
CHAPTER 10 FIRE PROTECTION, MEANS OF ESCAPE AND FIRE EXTINCTION Section 1 General	CHAPTER 10 FIRE PROTECTION, MEANS OF ESCAPE AND FIRE EXTINCTION Section 1 General
101. ~ 102. 〈omitted〉 〈newly added〉 〈hereafter, omitted〉	101. ~ 102. 〈same as current Rules〉 103. Definition of divisions "A", "B" and "C" class divisions are defined in SOLAS regulation II-2/3. "H" class divisions are those divisions which meet the same requirements as "A" class divisions except that, when tested according to the Fire Test Procedures Code, the furnace control temperature curve is replaced with the furnace control temperature curve for hydrocarbon fires defined in national or international standards. (Examples of national or international standards are BS EN 1363-2:1999, ASTM 1529-14a or ISO/DIS 20902-1). *[2019]* 〈hereafter, same as current Rules〉

Present	Amendment
Section 2 Fire Protection and Means of Escape 201. Fire protection **1.** ~ **8 <omitted>** **9.** Protection of accommodation spaces,....〈omitted〉 (1) In general, accommodation spaces, service spaces and control stations should not be located adjacent to hazardous areas. However, where this is not practicable, an engineering evaluation should be performed to ensure that the level of fire protection and blast resistance of the bulkheads and decks separating these spaces from the hazardous areas are adequate for the likely hazard. 〈hereafter, omitted〉 Table 9.1 Fire Integrity of Bulkheads Separating Adjacent Spaces 〈omitted〉 Notes : 1. 〈omitted〉 2. Explanation for the subscripts and the marks on the table (a) ~ (c) 〈omitted〉 (d) Bulkheads separating the navigating bridge, chartroom and radio room from each other may be an "B-0" rating. Where an asterisk " * " appears in the table, the division is required to be of steel or equivalent material but not required to be of "A" class standard. (e) An engineering evaluation should be conducted in accordance with 201. 9 (1). In no case should the bulkhead or deck rating be less than the value indicated in the tables. 〈hereafter, omitted〉	**Section 2 Fire Protection and Means of Escape** 201. Fire protection **1.** ~ **8** <same as current Rules> **9.** Protection of accommodation spaces,....〈same as current Rules〉 (1) In general, accommodation spaces, service spaces, control stations and spaces containing vital machinery and equipment[(i)] should not be located adjacent to hazardous areas. However, where this is not practicable, an engineering evaluation should be performed in accordance with national or international standards[(ii)] to ensure that the level of fire protection and blast resistance of the bulkheads and decks separating these spaces from the hazardous areas are adequate for the likely hazard. Where it is shown that these spaces may be exposed to a radiant heat flux in excess of 100 kw/m^2, the bulkhead or deck should be constructed to at least an "H-60" standard [(i)] Vital machinery and equipment are those that are essential to the safety of the MODU and all personnel on board. They include, but are not limited to, fire pumps, emergency sources of power, dynamic positioning systems, remote blowout preventer activation controls, and other operational or safety systems the sudden failure of which may result in hazardous situations. This does not include spaces (e.g. the driller's cabin) located on the drill floor. [(ii)] Refer to standards such as: ISO 13702:2015, or API RP 2 FB." *(2019)* 〈hereafter, same as current Rules〉 Table 9.1 Fire Integrity of Bulkheads Separating Adjacent Spaces 〈same as current Rules〉 Notes : 1. 〈same as current Rules〉 2. Explanation for the subscripts and the marks on the table (a) ~ (c) 〈same as current Rules〉 (d) Bulkheads separating the navigating bridge, chartroom and radio room from each other may be an "B-0" rating. (e) Additional provisions for fire boundaries should be assessed in accordance with paragraph 201. 9 (1). *(2019)* 〈hereafter, same as current Rules〉

Present	Amendment
202. Means of escape **1.** ~ **4. <omitted>** **5.** Consideration is to be given to the site of superstructures and deckhouses such that in the event of fire at the drill floor at least one escape route to the embarkation position and survival craft is protected against radiation effects of that fire as far as practicable. 〈hereafter, omitted〉	202. Means of escape **1.** ~ **4.** <same as current Rules> **5.** Superstructures and deckhouses should be sited such that, in the event of fire at the drill floor, at least one escape route to the embarkation position and survival craft is protected against radiant heat flux levels in excess of 2.5 kW/m^2 emanating from the drill floor. *(2019)* 〈hereafter, same as current Rules〉
Section 3 〈omitted〉	Section 3 〈same as current Rules〉
Section 4 Fire Extinguishing Systems for Helicopter Facilities	Section 4 Fire Extinguishing Systems for Helicopter Facilities
401. General (1) ~ (4) 〈omitted〉 (5) The fire fighting equipment as given in 402. are to be provided. 〈newly added〉	401. General (1) ~ (4) 〈same as current Rules〉 (5) The fire fighting equipment as given in 403. are to be provided. 402. Construction of the helidecks 1. The construction of the helidecks should be of steel or other equivalent materials. If the helideck forms the deckhead of a deckhouse or superstructure, it should be insulated to "A-60" class standard. If aluminium or other low melting point metal construction that is not made equivalent to steel is used, the following provisions should be satisfied: (1) if the helideck is cantilevered over the side of the unit, after each fire that may have an effect on the structural integrity of the helideck or its supporting structures, the helideck should undergo a structural analysis to determine its suitability for further use; and (2) if the helideck is located above the unit's deckhouse or similar structure, the following conditions should be satisfied: (a) the deckhouse top and bulkheads under the helideck should have no openings; (b) windows under the helideck should be provided with steel shutters; and (3) after each fire on the helideck or supporting structure the helideck should undergo a structural analysisto determine its suitability for further use. 2. A helideck should be provided with both a main and an emergency means of escape and access for fire fighting and rescue personnel. These should be located as far apart from each other as is practicable and preferably on opposite sides of the helideck.
402. Helicopter decks and refueling facilities 〈omitted〉 403. Alarm systems 〈omitted〉	403. Helicopter decks and refueling facilities 〈same as current Rules〉 404. Alarm systems 〈same as current Rules〉
〈hereafter, omitted〉	〈hereafter, same as current Rules〉

Amended Guidance for the Classification of Mobile Offshore Drilling Units

Dec. 2019

KR

- Main Amendments -

(1) Effective date : 1 Jan 2020 (Date of construction)

◉ Reference of Annex : Application of Annex has been indicated in Rules

◉ Reflected Res.MSC.435(98)

- IEC standards are specified to refer to the qualification crieria of personnel performing repair, maintenance and overhaul of hazardous area certified equipment.

(2) Effective date : 1 Jan 2020 (The contract date for ship construction)

◉ Reflected IACS UI MODU3(New Dec 2018)

- The requirements have been newly added to ensure that equipment that continues to operate after shutdown applies to all ESD levels.

(1) Effective date : 1 Jan 2020

(Date of construction)

Present	Amendment
CHAPTER 1 GENERAL	**CHAPTER 1 GENERAL**
Section 1 General	~~**Section 1 General**~~
101. Application	~~**101. Application**~~
1. In application to **101. 6** of the Rules, drilling systems are to comply with **Annex 1**.	~~**1.** In application to **101. 6** of the Rules, drilling systems are to comply with **Annex 1**.~~
<hereafter, omitted>	<hereafter, same as current Guidance>
CHAPTER 7 <Newly added>	**CHAPTER 7 MACHINERY AND ELECTRICAL INSTALLATIONS IN HAZARDOUS AREAS**
	Section 5 Electrical Installations in Hazardous Areas
	502. Protection of electrical installations
	1. In application of **502. 3** of the Rules, refer to the following International Electrotechnical Commission publications or equivalent for reference to appropriate personnel qualification criteria: (1) IEC 60079-14, Explosive atmospheres – Part 14: Electrical installations design, selection and erection (2) IEC 60079-17, Explosive atmospheres – Part 17: Electrical installations inspection and maintenance (3) IEC 60079-19, Explosive atmospheres – Part 19: Equipment repair, overhaul and reclamation

(2) Effective date : 1 Jan 2020

(The contract date for ship construction)

Amended Guidance for the Classification of Ships Using Low-flashpoint Fuels

Dec. 2019

KR

- Main Amendments -

(1) Enter into force on 1 January 2020 (the contract date for ship construction)

◉ To reflect Request for Establishment/Revision of Classification Technical Rules

Present	Amendment
CHAPTER 6 FUEL CONTAINMENT SYSTEM	**CHAPTER 6 FUEL CONTAINMENT SYSTEM**
Section 3 <Omitted>	**Section 3 <Sames as the present guidance>**
Section 4 Liquefied gas fuel containment	**Section 4 Liquefied gas fuel containment**
408. <Omitted>	**408. <Sames as the present guidance>**
413. Materials and construction	**413. Materials and construction**
1. ~ 5. <Omitted>	**1. ~ 5. <Same as the present guidance>**
6. <New>	**6.** The high manganese austenitic steel for fuel tank for the carriage of liquefied natural gases is to comply with **Annex 2**. *(2020)*

Present	Amendment
Annex 1 <Omitted>	**Annex 1** <Omitted>
Annex 2 High manganese austenitic steel for Cryogenic Service <New>	**Annex 2 High manganese austenitic steel for Cryogenic Service**
	Section 1 General
	101. Scope
	1. This Annex provides the designer and manufacturer with practical information on the design and construction of fuel tanks using high manganese austenitic steel for cryogenic service to comply with the Design Conditions defined in **Rules for Ships using low-flashpoint fuels, Chapter 6, 412**.
	102. Application
	1. This Annex are not intended to replace any requirements of **Rules for Ships using low-flashpoint fuels**. They are intended as complementary guidelines on how to utilize high manganese austenitic steel in the design and fabrication of fuel tanks complying with the **Rules for Ships using low-flashpoint fuels**.
	103. Definitions
	1. Under-matched welds means for welded connections where the weld metal has lower yield- or tensile-strength than the parent metal.
	Section 2 Application
	201. Design application
	1. The relevant load conditions and design conditions should be established in accordance with **Rules for Ships using low-flashpoint fuels, Chapter 6, 412**. A guidance on special considerations to the high manganese austenitic steel is described beolw.
	2. For the selection of relevant safety factors for high manganese austenitic steels(see **Rules for Ships using low-flashpoint fuels, Chapter 6, 415**), the safety factors specified for “Austenitic Steels“ should be applied both for base material and for as welded condition

Present	Amendment
	202. Ultimate design condition **1.** It should be noted that high manganese austenitic steels normally have under-matched welds and, therefore, it is of great importance that the design values of the yield strength and tensile strength are based on the "minimum mechanical properties" for the base material and as welded condition(see 6 Mechanical Properties). Note the limitation to under-matched welds defined in **Rules for Ships using low-flashpoint fuels, Chapter 16, 303.5.(1)**. **203. Buckling strength** **1.** Buckling strength analysis should be carried out based on recognized standards. Functional loads as defined in **Rules for Ships using low-flashpoint fuels, Chapter 6, 401.6** should be considered. Note that design tolerances should be considered where relevant and be included in the strength assessment as required in **Rules for Ships using low-flashpoint fuels, Chapter 16, 402**. **204. Fatigue design condition** **1.** The fatigue design curves for base material and for butt weld joint should use S-N curve of D grade in IIW. **2.** The fatigue design curves for other weld joints except butt weld joint should be agreed with the Society. **3.** Design S-N curve given in Table 1 correspond to a probability of survival of 97.6%. Table 1 S-N curves in air S-N curve: D; $N \leq 10^7$ cycles: m_1 = 3.0, $\log \bar{a}_1$ = 12.164; $N > 10^7$ cycles: $\log \bar{a}_2$ / $m_2 = 5.0$ = 15.606; Fatigue limit at 10^7 cycle(MPa) = 52.63; Thickness exponent k = 0.20

Present	Amendment
	205. Fracture mechanics analyses **1.** For a fuel tank where a reduced secondary barrier is applied, fracture mechanics analysis should be carried out in accordance with **Rules for Ships using low-flashpoint fuels**. **2.** Fracture toughness properties should be expressed using recognized standards. Depending on the material, fracture toughness properties determined for loading rates similar to those expected in the tank system should be required. The fatigue crack propagation rate properties should be documented for the tank material and its welded joints for the relevant service conditions. These properties should be expressed using a recognized fracture mechanics practice relating the fatigue crack propagation rate to the variation in stress intensity, $\triangle K$, at the crack tip. The effect of stresses produced by static loads should be taken into account when establishing the choice of fatigue crack propagation rate parameters. **3.** Note that for the application where very high static load utilization is relevant, alternative methods such as ductile fracture mechanics analysis should be considered. **4.** A fracture mechanics analysis is required for type B tank(**Rules for Ships using low-flashpoint fuels, Chapter 16, 415.2.(3).(C)**) where a reduced secondary barrier is applied. Fracture mechanics analysis may also be required for other tank types as found relevant to show compliance with fatigue and crack propagation properties. Note that CTOD values used in fracture mechanics analysis may in any case be an important property to analyze to ensure that materials are considered suitable for the application.

Present	Amendment
	206. Welding **1.** Welding should be carried out in accordance with **Rules for Ships using low-flashpoint fuels, Chapter 16, Section 3**. **2.** For welding the following points can be considered: (1) For reducing the heat input during production: (A) special attention should be given to the first root pass when applying flux-cored arc welding(FCAW); reduced amperage should be considered; (B) welding heat input is to be equal to 30 kJ/cm or below; (2) Distance between the weld and nozzle should be kept to a minimum to reduce the oxygen content at the vicinity of the weld pool; (3) Weld gas composition of FCAW should normally be an 80/20 mix of argon and carbon dioxide; and (4) Appropriate ventilation should be provided to reduce exposure to hazardous welding fumes. **207. Non-destructive testing(NDT)** **1.** The scope of non-destructive testing(NDT) should be as required by **Rules for Ships using low-flashpoint fuels, Chapter 16, 306**. NDT procedures should be in accordance with recognized standards to the satisfaction of the Society. For high manganese austenitic steel suitable NDT procedure normally applicable for austenitic steels should be used. **208. Corrosion resistance** **1.** High manganese austenitic steel is not considered a very strong corrosion resistant material in line with several similar materials such as 304 stainless steel. Particularly for LNG fuel tanks that may not be in operation, appropriate environment should be maintained to prevent corrosion.

Amended Guidance for Approval of Manufacturing Process and Type Approval, Etc.

Dec. 2019

KR

Effective date : 1 Jan. 2020

(1) The date of application for certification of material & welding or the contract date for ship construction

◉ To reflect Request for Establishment/Revision of Classification Technical Rules

Present	Amendment
CHAPTER 2 APPROVAL OF MANUFACTURING PROCESS	**CHAPTER 2 APPROVAL OF MANUFACTURING PROCESS**
Section 1 General<Omitted>	**Section 1 General**<Sames as the present guidance>
Section 2-1 Rolled Steels	**Section 2-1 Rolled Steels**
201. ~ 202. <Omitted>	201. ~ 202. <Sames as the present guidance>
203. Approval tests	203. Approval tests
1. ~ 5. <Omitted>	1. ~ 5. <Sames as the present guidance>
Table 2.2.1 Approval Test Items for Rolled Steels <Omitted>	Table 2.2.1 Approval Test Items for Rolled Steels
Table 2.2.2 Test Items and Selection of Test Specimens <Omitted>	Table 2.2.2 Test Items and Selection of Test Specimens
204. ~ 205. <Omitted>	204. ~ 205. <Sames as the present guidance>

Table 2.2.1 Approval Test Items for Rolled Steels (2017) (2018) *(2020)*

Kinds	grade	Base metal test													Brittle fracture test			Weldability test						Other test			
		(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)	(k)	(l)	(m)	(n)	(o)	(p)	(q)	(r)	(s)	(t)	(u)	(v)	(w)	(x)	(y)	(z)
Rolled steel for hull	*A, B*	○	○	○		○		○			○																
	D	○	○	○		○		○			○	○															
	E	○	○	○		○		○			○	○				○		○	○	○	○						
	AH32, AH36, AH40, DH32, DH36, DH40	○	○	○		○		○			○	○						○	○	○	○						
	EH32, EH36, EH40, FH32, FH36, FH40	○	○	○		○		○			○	○				○	○ (7)	○	○	○	○						
YP47 steel plates (**Sec. 2-4**)	*EH47-H*	○	○	○		○		○			○	○			○ (8)	○	○	○	○	○	○	○					
High strength steels for welded structures (**Sec. 2-6**)	*AH43~FH97, FH43~FH70*	○	○	○		○		○	○		○	○			○	○		○	○	○	○	○					
Rolled steels for low temp. service	*RL235A~RL9N490*	○	○	○		○		○	○		○	○			○	○		○	○	○	○						
Rolled steel for boilers	*RSP42~RSP49A*	○	○	○		○		○	○		○									○				○	○		
Rolled steels for pressure vessels	*RPV24~RPV50*	○	○	○		○		○	○		○	○				○				○							
Round bars for chain	*RSBC31~RSBC70*	○	○	○		○		○	○		○									○							
Round bars for offshore chains and accessories(6)	*RSBCR3, RSBCR3S, RSBCR4, RSBCR4S RSBCR5*	-																									
Rolled steels bar for boilers	*RSB42~RSB46*	○	○	○		○		○	○		○																
Rolled and forged steel carbon bars	*RSFB400 ~RSFB760*	○	○	○		○		○	○		○																
Rolled and forged steel low alloy steel bars	*RSFB600A ~RSFB1100A*	○	○	○		○		○	○		○																
Rolled stainless steels	*RSTS304~RSTS347 RSTS31803, RSTS32750*	○	○	○		○	○	○	○		○															○	
Stainless clad steel plates	Base metal: *A~E* / Clad metal: *RSTS304~RSTS347*	○	○	○	○	○	○	○	○	○	○															○	○
High manganese austenitic steel plates(9)	*HMN40*	○	○	○		○		○			○	○		○	○	○		○	○	○	○		○			○	

Notes

(1) Where thermo-mechanical controlled processing(TMCP) is performed, tensile test after stress relieving is required in addition to those tests given in table.

(2) For steel materials with consideration against through thickness properties as specified in **Pt 2, Ch 1.** of the Rules, the tensile test of through thickness direction, microscopic examination for non-metallic inclusions, ultrasonic test are required in addition to those tests given in table.

(3) For steels other than steel plates, the strain ageing Charpy impact test, NRL drop weight test and CTOD test are not required, unless otherwise specified. However, where cast piece from the continuous casting method is used, the macro-structure of the cast piece and sulphur print test may be required.

(4) The CTOD test, high temperature tension test and creep test as specified in the Table are performed for the purpose of evaluating low temperature toughness and high temperature characteristics, and these tests may be omitted in case appropriate records prepared by the manufacturer are available or in case the Society deems the test unnecessary.

Table 2.2.1 Approval Test Items for Rolled Steels (continued)

Notes

(5) Additional tests such as large scale brittle fracture tests (Double Tension test, ESSO test, Deep Notch test, etc.) or other tests may be required when deemed necessary by the Society.

(6) The approval test items of round bar for offshore chains and accessories are to be in accordance with **Sec. 10-3**.

(7) Brittle crack arrest steel is to be carried out standard ESSO test in accordance with **Pt 2**, **Ch 1**, **Sec. 2** of the Guidance.

(8) Instead of CTOD test, deep notch test may be carried out.

(9) Base metal test is to include corrosion test(general corrosion test, intergranular corrosion test and stress corrosion cracking test). Weldability test is to include micro structure, bend test and corrosion test(general corrosion test, intergranular corrosion test and stress corrosion cracking test).

(10) Kind of test

(a) Chemical analysis (b) Sulphur print (c) Micro structure (d) Macro structure (e) Ferrite grain size
(f) Hardness test (g) Tensile test (h) Bend test (i) Shearing strength test (j) Charpy impact test
(k) Strain charpy impact test (l) Hydrogen embrittlement test (m) Fatigue test
(n) CTOD test (o) NRL drop weight test (p) Esso test (q) Weldment tensile test
(r) Weldment impact test (s) Max. hardness test (t) Macro structure (u) Hydrogen crack test
(v) Fatigue test (w)High temp. tensile test (x)Creep test (y) Corrosion test (z) Ultrasonic test

Table 2.2.2 Test Items and Selection of Test Specimens (2018) (2019) *(2020)*

Approval test items		Position of the Sample[(0)]	Direction of the test specimens	Approval Testing method	acceptance criteria
Base metal test	Chemical analysis	T(Top)	-	**KS D 0228** or equivalent method. Ladle analysis and production analysis(from the tensile test specimens) are to be performed for C, Si, Mn, P, S and other elements as deemed necessary.	The chemical composition by ladle analysis is to comply with the requirements in **Pt2, Ch1, Sec3** of the Rules. Excess difference in the chemical compositions between melt analysis and product analysis is not to be accepted.
	Sulphur print	T	T (Transverse)	**KS D 0226** or equivalent method. Length is to be greater than 600 mm (cross section in the case of cast piece)	Segregation, etc, deemed to have negative effect are not to be present
	Microscopic exam. for non-metallic inclusion	T	T	**ISO 4969** or equivalent method.	Acceptance criteria is the reference.
	Macro structure	T	T	**KS D 0204** or equivalent method.	
	Micro structure	T	-	Microscopic photographs (approx. 100x) of base metal, joining part and cladding metal are to be taken	
	Ferrite grain size	T		**KS D 0205** or equivalent method. Magnification of microscopic photographs are to be as a rule 100x.[(2)]	
	Hardness test	T	-	In accordance with **Pt 2** of the Rules. Hardness distribution in the thickness direction is to be measured in the case of stainless clad steel.	To meet the requirements in **Pt 2, Ch 1, Sec 3** of the Rules, to be as appropriate by the Society.
	Tensile test	T	T[(3)]	In accordance with **Pt 2** of the Rules.[(4)(5)]	To meet the requirements in **Pt 2, Ch 1, Sec 3** of the Rules.
		B (Bottom)	T[(3)]		
	Tensile test of through thickness direction	T	thickness direction	In accordance with **Pt 2** of the Rules	To meet the requirements in **Pt 2, Ch 1, Sec 3** of the Rules
		B			
	Tensile test (stress relieved)[(6)]	T	T[(3)]	Tensile test after stress relieving at 600℃(2 min/mm with minimum 1 hour holding)	Acceptance criteria is the reference.
		B	T[(3)]		
	Bend test	B	T	In accordance with **Pt 2** of the Rules. However, in case of not being prescribed in the **Pt 2**, bend test is to be in accordance with recognized national or international standard which the Society considers appropriate.	Defects etc, deemed to have negative effect are not to be present
	Shearing strength test	T	-	In accordance with **Pt 2** of the Rules	To meet the requirements in **Pt 2, Ch 1, Sec 3** of the Rules
		B			
	V-notch Charpy impact test	T	P (Parallel)	Using R4 test specimen, the transition temperature curve of the absorbed energy and fracture surface ratio is to be determined by testing three pieces at each temperature.[(8)(9)] (also the lateral expansion to be reported.) Furthermore, the test temperature is to include the temperature as specified in **Pt 2** of the Rules, and its interval is to be 10~20°C[(10)] V-notch Charpy impact test specimens for stainless clad steels are to be taken from the base material.	To meet the requirements in **Pt 2** of the Rules. Others are the reference.
			T[(7)]		
		B	P		
	Strain ageing V-notch charpy impact test	T	P	Same as V-notch Charpy impact test. However The test specimens which have been maintained for one hour at 250°C after strain of 5 % have been applied is, as a rule, to be used.[(8)(9)(11)]	Acceptance criteria is the reference.
	Hydrogen embrittlement test	T	P	In accordance with **Pt 2, Ch 1, Sec 3** of the Rules	To meet the requirements in **Pt 2, Ch 1, Sec 3** of the Rules
		B	P		
	Fatigue test	T	-	Fatigue tests is to be carried out for butt welded joints and is in accordance with **Pt7, Chapter 5, 418.2.(4).(B).**	S-N curve should be equal to or above D curve in IIW.

Table 2.2.2 Test Items and Selection of Test Specimens (continued) *(2018) (2019)*

Approval test items		Position of the Sample	Direction of the test specimens	Approval Testing method	acceptance criteria
Brittle fracture test	CTOD test	T	P	**BS 7448** or equivalent. To be consulted with the Society the dimension of test specimen, test condition, etc, when newly performing tests at the time of approval.	Acceptance criteria is the reference.
	NRL drop weight test	T	P(7)	**ASTM E 208** or equivalent method. The NDTT(Non- Ductility transition temperature) is to be determined and photographs of the tested specimens are to be taken and enclosed with the test report.	Acceptance criteria is the reference. However, in case of rolled steels for hull structural, no fracture to be occurred at the impact test temperature specified in **Pt 2, Ch 1, 301.** of the Rules.
Weldability test	Weldment tensile test	T	T(to the welding direction)	in accordance with the test method described in below **203. 3**	in accordance with the test method described in below **203. 3**
	Weldment impact test	T			
	Maximum hardness test	T	-		
	Macro structure	T	-		
	Fatigue test	T	T(to the welding direction)	Fatigue tests is to be carried out for butt welded joints and is in accordance with **Pt7, Chapter 5, 418.2.(4).(B).**	S-N curve should be equal to or above D curve in IIW.
High temp. characteristics tests	High temp. tensile test	T	P	**KS D0026**(High temp. tensile test), **KS B 0814**(Creep test) or equivalent.. To be consulted with the Society on the dimension of test specimen, test condition etc, when newly performing tests at the time of Approval.	Acceptance criteria is the reference.
	Creep test	T	P		
Corrosion resistance test	Corrosion test	T	-	**ISO 3651-2**, **ISO 3651-1**, **KS D 0222** or equivalent method. For duplex stainless steel(*RSTS*31803, *RSTS*32750), corrosion test shall be carry out in accordance with ASTM G48 Method A or equivalent method. The test temperature shall be 20℃ (±2) for *RSTS*31803, 50℃(±2) for *RSTS*32750 and the exposure time shall be minimum 24h.	Acceptance criteria is the reference. For duplex stainless steel (*RSTS*31803, *RSTS*32750), no pitting is required at 20 X magnification. The weight loss is to be less than 4.0 g/m^2.
				For high manganese austenitic steel, general corrosion test shall be carried out in accordance with **ASTM NACE/ASTM G31-12a** or equivalent method. Intergranular corrosion test shall follow **ASTM A262** or equivalent method and stress corrosion cracking test shall be lined with **ASTM G36 and ASTM G123** or equivalent method.	Acceptance criteria is the reference.
Non-destructive test	Ultrasonic test	All surface	-	**KS D 0234**(Clad Steels), **KS D 0233**(Steels with through thickness property), **KS D 0248**(Bars for chains) or equivalent method.	Clad Steels to be met the requirements of class 1 of **KS D 0234.** Others to be free from any defects deemed to have negative effect.

Effective date : 1 Jan. 2020

(2) Date of construction

◉ IACS UI GC 24 (Rev.1, Feb 2019)
- exception of Fire Test for Emergency Shutdown Valves

Present

CHAPTER 3 TYPE APPROVAL

Section 15 Machinery and Equipment for Ships

1503. Type tests

1. <same as the present>

2. Details of Tests

<same as the present>

Table 3.15.1 Type test item of machinery and equipment of ship (continued) ***(2018)***

Kinds	Type test item
Cargo pipings, pumps and cargo hoses of ships carrying liquefied gases in bulk	Type tests specified in **Pt 7, Ch 5, 503.** and **507.** are to be carried out in accordance with following requirements. Type tests of other systems and equipment which the Society deems necessary are to be considered by the Society in each case. (A) **Valve** : <omitted> (a) <omitted> (b) <omitted> (c) <omitted> (d) For emergency shutdown valves, with materials having melting temperatures lower than 925 ℃, the type testing shall include a fire test to a standard acceptable to the Society. In applying this requirement, emergency shutdown valves, with materials having melting temperatures lower than 925 ℃ does not include emergency shutdown valves which use materials having melting temperatures lower than 925 ℃ in components such as rubber handle covers where failure would not cause deterioration of shell or seat tightness intrinsically.

<hereafter, omitted>

Amendment

CHAPTER 3 TYPE APPROVAL

Section 15 Machinery and Equipment for Ships

1503. Type tests

1. <same as current Guidance>

2. Details of Tests

<same as current Guidance>

Table 3.15.1 Type test item of machinery and equipment of ship (continued) ***(2018)***

Kinds	Type test item
Cargo pipings, pumps and cargo hoses of ships carrying liquefied gases in bulk	Type tests specified in **Pt 7, Ch 5, 503.** and **507.** are to be carried out in accordance with following requirements. Type tests of other systems and equipment which the Society deems necessary are to be considered by the Society in each case. (A) **Valve** : <same as current Guidance> (a) <same as current Guidance> (b) <same as current Guidance> (c) <same as current Guidance> (d) For emergency shutdown valves, with materials having melting temperatures lower than 925 ℃, the type testing shall include a fire test to a standard acceptable to the Society. In applying this requirement, Emergency shutdown valves, with materials having melting temperatures lower than 925°C does not include an emergency shutdown valves in which components made of use materials having melting temperatures lower than 925°C do not contribute to the shell or seat tightness intrinsically of the valve. *(2020)*

<hereafter, same as current Guidance>

Effective date

(3) Equipment for which the date of application for type approval certification is dated on or after 1 January 2020 or
equipment intended to be installed on ships contracted for construction on or after 1 January 2022.

◉ Reflected IACS UR E10(Rev.7 Oct 2018)

- The requirements(Table 3.23.1) for type test of automatic and remote control systems have been amended.

Present	Amendment
CHAPTER 3 TYPE APPROVAL	**CHAPTER 3 TYPE APPROVAL**
Section 1 – 22 <same as the present Rules>	**Section 1 – 20 <same as the present Rules>**
Section 23 Automatic and Remote Control Systems	**Section 23 Automatic and Remote Control Systems**
2301. – 2303. <same as the present Rules>	**2301. – 2303. <same as the present Rules>**
2304. Type test **1. Hardware** (1) <same as the present Rules> (2) **Test methods and criteria** (A) After the drawings and documents submitted in accordance with the requirements in **2302.** have been examined, tests are to be carried out in accordance with the testing condition and method of **Table 3.23.1** in the presence of the Society's surveyor, and they are to be proven to satisfy the criteria of **Table 3.23.1.** (B) - (D) <same as the present Rules> **2. – 3. <same as the present Rules>**	**2304. Type test** **1. Hardware** (1) <same as the present Rules> (2) **Test methods and criteria** (A) After the drawings and documents submitted in accordance with the requirements in **2302.** have been examined, tests are to be carried out in accordance with the testing condition and method of **Table 3.23.1** in the presence of the Society's surveyor, and they are to be proven to satisfy the criteria of **Table 3.23.1.** (B) - (D) <same as the present Rules> **2. – 3. <same as the present Rules>**
Table 3.23.1 Environmental Test Items, Testing Conditions and Methods, and Criteria *(2019)*	**Table 3.23.1 Environmental Test Items, Testing Conditions and Methods, and Criteria ~~*(2019)*~~*(2020)*** **<refer to the next page>**
Section 24 – 37 <same as the present Rules>	**Section 24 – 37 <same as the present Rules>**

< Amendment >

Table 3.23.1 Environmental Test Items, Testing Conditions and Methods, and Criteria *~~(2019)~~(2020)*

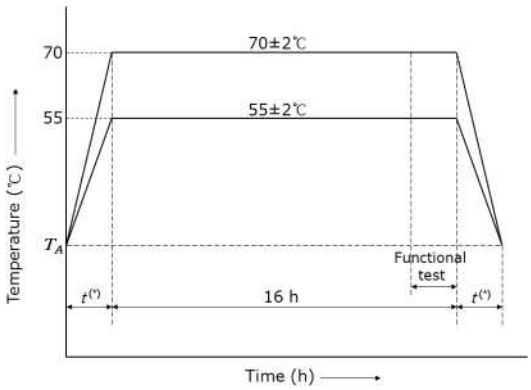
No.	Test item	testing condition and method	Criteria
6	Dry heat test	· The test shall be carried out at 25 ±2 ℃ in atmospheric temperature. · The absolute humidity shall not exceed 20 g of water vapor per cubic meter of air(corresponding approximately to 50 % relative humidity at 35℃). · Test A : The equipment is at an operating condition and apply the environmental condition of +70 ±2 ℃ for 16 hours. · Test B : For the equipment installed in air conditioned spaces, the environmental condition of +55 ±2 ℃ for 16 hours may be applied. Where the equipment is attached with other equipments in the console and housing, test A is to be performed. · Dry heat at 70 °C is to be carried out to automation, control and instrumentation equipment subject to high degree of heat, for example mounted in consoles, housings, etc. together with other heat dissipating power equipment. · The operation of the equipment during conditioning and testing is to be checked and functional test carry out during the last 1 hour at the test temperature. However, for heat dissipating equipment, the operation of the equipment during conditioning and testing with cooling system on if provided is to be checked. · For equipment specified for increased temperature, the dry heat test is to be conducted at the agreed test temperature and duration. · Detailed test methods are referred to ~~Test Bb or Test Bd of IEC 60068-2-2.~~ the follows. - For non-heat dissipating equipment: Test Bb of IEC 60068-2-2 - For heat dissipating equipment: Test Be of IEC 60068-2-2  Note (*) Raising and lowering rate of temperature is to be within 1°C/min.(mean value for a period within 5 minutes **Fig 3.23.1 Program of dry heat test**	· No abnormality is observed. · The equipment is comply with the requirements of performance test and functional test.

Table 3.23.1 Environmental Test Items, Testing Conditions and Methods, and Criteria (continued)

<table>
<tr><th>No.</th><th>Test item</th><th>Testing condition and method</th><th>Criteria</th></tr>
<tr><td>15</td><td>Radiated radio frequency immunity test</td><td>· Check the operation of the equipment when the radiated radio frequency immunity test is carried out according to the following condition.
<table><tr><td>Frequency range</td><td>80 MHz ~ 6 GHz</td></tr><tr><td>Modulation</td><td>80 % AM at 1,000 Hz</td></tr><tr><td>Field strength</td><td>10 V/m</td></tr><tr><td>Frequency sweep rate</td><td>$\leq 1.5 \times 10^{-3}$ decades/sec.
(or 1 %/3 sec.)</td></tr></table>· If for tests of equipment an input signal with a modulation frequency of 1,000 Hz is necessary, a modulation frequency(80 % AM) of 400 Hz may be chosen.
· The test is to be confined to the appliances exposed to direct radiation by transmitters at their place of installation.
· If an equipment is intended to receive radio signals for the purpose of radio communication (e.g. wifi router, remote radio controller), then the immunity limits at its communication frequency do not apply, subject to the requirements in Pt 6, Ch 2, 406. 2 of Rules for the Classification of Steel Ships.
· Detailed test methods are referred to Test level 3 of IEC 61000-4-3.</td><td>· Performance Criterion A(2)</td></tr>
</table>

Table 3.23.1 Environmental Test Items, Testing Conditions and Methods, and Criteria (continued)

<table>
<tr><th>No.</th><th>Test item</th><th>Testing condition and method</th><th>Criteria</th></tr>
<tr><td>20</td><td>Radiated emission test</td><td>· Radiated emission test is to be carried out according to the following.
<Limits below 1,000 Mhz>
<table>
<tr><td colspan="2">For equipment installed in the bridge and deck zone.</td></tr>
<tr><td>Frequency range</td><td>Quasi peak limits</td></tr>
<tr><td>150 kHz ~ 300 kHz</td><td>80 ~ 52 dBμV/m</td></tr>
<tr><td>300 kHz ~ 30 MHz</td><td>52 ~ 34 dBμV/m</td></tr>
<tr><td>30 MHz ~1,000 MHz</td><td>54 dBμV/m</td></tr>
<tr><td>156 MHz ~ 165 MHz</td><td>24 dBμV/m</td></tr>
<tr><td colspan="2">For equipment installed in a zone other than bridge and deck zone</td></tr>
<tr><td>150 kHz ~ 30 MHz</td><td>80 ~ 50 dBμV/m</td></tr>
<tr><td>30 MHz ~ 100 MHz</td><td>60 ~ 54 dBμV/m</td></tr>
<tr><td>100 MHz ~ 1,000 MHz</td><td>54 dBμV/m</td></tr>
<tr><td>156 MHz ~ 165 MHz</td><td>24 ddBμV/m</td></tr>
</table>
<Limits above 1,000 MHz>
<table>
<tr><td>Frequency range</td><td>Average limit</td></tr>
<tr><td>1,000 MHz ~ 6,000 MHz</td><td>54 dBμV/m</td></tr>
</table>
· Distance between equipment and antenna is to be 3 m.
· For the frequency band 156 MHz to 165 MHz the measurement shall be repeated with a receiver bandwidth of 9 kHz (as per IEC 60945).
· Alternatively the radiation limit at a distance of 3 m from the enclosure port over the frequency 156 MHz to 165 MHz is to be 30 dBμV/m peak (as per IEC 60945).
· Equipment intended to transmit radio signals for the purpose of radio communication (e.g. wifi router, remote radio controller) may be exempted from limit, within its communication frequency range, subject to the requirements in Pt 6, Ch 2, 406. 2 of Rules for the Classification of Steel Ships..
· Detailed test methods are referred to CISPR 16-2-3 and IEC 60945(for 156 ~ 165 MHz).</td><td>· Radiated emission is to be within limits in the table.</td></tr>
</table>

Effective date

(4) 1 Jan. 2020(Date of application for approval) & 1 July 2021(Date of which the contract for construction is signed)

◉ To reflect IACS UR P4(Rev. 5 Dec 2018)

- It has been amended for requirements relating to testing requirements of plastic piping.

Present	Amendment
CHAPTER 3 TYPE APPROVAL <omitted> **Section 16 Plastic Piping System** <omitted> **1602. Data to be submitted** <omitted> (3) Materials <omitted> (g) <Newly added> <omitted>	**CHAPTER 3 TYPE APPROVAL** <same as present> **Section 16 Plastic Piping System** <same as present> **1602. Data to be submitted** <same as present> (3) Materials(as applicable) <same as present> (g) Joint bonding procedures and qualification tests results, see **Pt 5, Annex 5-6 6.**(8).(E) of the Guidance. <same as present>

Amended Guidance for Autonomous Ships

Dec. 2019

KR

Effective Date : 1 January 2020

(1) The contract date for ship construction

◉ The requirement for equivalence has been amended in accordance with the amendment to Part 1 of the Rules.

Present	Amendment
CHAPTER 1 GENERAL	**CHAPTER 1 GENERAL**
Section 1 General	**Section 1 General**
101. - 106. <same as the present Rules>	**101. - 106. <same as the present Rules>**
107. Equivalency Special equipment, which is not appropriate to apply the requirements of this Guidance or not specified in this Guidance, may be accepted by the Society provided that the Society is satisfied that such equipment is equivalent to or above those complying with the requirements of this Guidance.	**107. Equivalency** The equivalence of alternative and novel features which deviate from or are not directly applicable to the Guidance is to be in accordance with **Pt 1**, **Ch 1**, **104**. of **Rules for the Classification of Steel Ships**.
108. <same as the present Rules>	**108. <same as the present Rules>**
Section 2 - 3 <same as the present Rules>	**Section 2 - 3 <same as the present Rules>**
CHAPTER 2 - 3 <same as the present Rules>	**CHAPTER 2 - 3 <same as the present Rules>**

Amended Guidance for Battery Systems on Board of Ships

Dec. 2019

KR

Effective Date : 1 January 2020

(1) The contract date for ship construction)

◉ The requirement for equivalence has been amended in accordance with the amendment to Part 1 of the Rules.

Present	Amendment
CHAPTER 1 GENERAL	**CHAPTER 1 GENERAL**
Section 1 General	**Section 1 General**
101. - 103. <same as the present Rules>	**101. - 103. <same as the present Rules>**
104. Equivalency Special equipment, which is not appropriate to apply the requirements of this Guidance or not specified in this Guidance, may be accepted by the Society provided that the Society is satisfied that such equipment is equivalent to or above those complying with the requirements of this Guidance.	**104. Equivalency** The equivalence of alternative and novel features which deviate from or are not directly applicable to the Guidance is to be in accordance with **Pt 1**, **Ch 1**, **104**. of **Rules for the Classification of Steel Ships**.
105. <same as the present Rules>	**105. <same as the present Rules>**
Section 2 <same as the present Rules>	**Section 2 <same as the present Rules>**
CHAPTER 2 - 3 <same as the present Rules>	**CHAPTER 2 - 3 <same as the present Rules>**

Amended Guidance for DC Distribution Systems

Dec. 2019

KR

Effective Date : 1 January 2020

(1) The contract date for ship construction)

◉ The requirement for equivalence has been amended in accordance with the amendment to Part 1 of the Rules.

Present	Amendment
CHAPTER 1 GENERAL	**CHAPTER 1 GENERAL**
Section 1 General	**Section 1 General**
101. - 102. <same as the present Rules>	**101. - 102. <same as the present Rules>**
103. Equivalency Special equipment, which is not appropriate to apply the requirements of this Guidance or not specified in this Guidance, may be accepted by the Society provided that the Society is satisfied that such equipment is equivalent to or above those complying with the requirements of this Guidance.	**103. Equivalency** The equivalence of alternative and novel features which deviate from or are not directly applicable to the Guidance is to be in accordance with **Pt 1**, **Ch 1**, **104**. of **Rules for the Classification of Steel Ships**.
104. <same as the present Rules>	**104. <same as the present Rules>**
Section 2 <same as the present Rules>	**Section 2 <same as the present Rules>**
CHAPTER 2 - 5 <same as the present Rules>	**CHAPTER 2 - 5 <same as the present Rules>**

Amended Guidance for Maritime Cyber Security System

Dec. 2019

KR

Effective Date : 1 January 2020

(1) The contract date for ship construction

◉ The requirement for equivalence has been amended in accordance with the amendment to Part 1 of the Rules.

Present	Amendment
CHAPTER 1 GENERAL	**CHAPTER 1 GENERAL**
Section 1 General	**Section 1 General**
101. - 103. <same as the present Rules>	**101. - 103. <same as the present Rules>**
104. Equivalence Special equipment, which is not appropriate to apply the requirements of this Guidance or not specified in this Guidance, may be accepted by the Society provided that the Society is satisfied that such equipment is equivalent to or above those complying with the requirements of this Guidance.	**104. Equivalence** The equivalence of alternative and novel features which deviate from or are not directly applicable to the Guidance is to be in accordance with **Pt 1**, **Ch 1**, **104**. of **Rules for the Classification of Steel Ships**.
105. <same as the present Rules>	**105. <same as the present Rules>**
CHAPTER 2 - 4 <same as the present Rules>	**CHAPTER 2 - 4 <same as the present Rules>**

Amended Guidance for Software Conformity Certification

Dec. 2019

KR

Effective Date : 1 January 2020

(1) The contract date for ship construction

◉ The requirement for equivalence has been amended in accordance with the amendment to Part 1 of the Rules.

Present	Amendment
CHAPTER 1 GENERAL	**CHAPTER 1 GENERAL**
Section 1 General	**Section 1 General**
101. - 102. <same as the present Rules>	**101. - 102. <same as the present Rules>**
103. Equivalency The Society may consider the acceptance of alternatives to this Guidance, provided that they are deemed to be equivalent or above to those complying with the requirements of the Guidance.	**103. Equivalency** The equivalence of alternative and novel features which deviate from or are not directly applicable to the Guidance is to be in accordance with **Pt 1**, **Ch 1**, **104**. of **Rules for the Classification of Steel Ships**.
104. <same as the present Rules>	**104. <same as the present Rules>**
CHAPTER 2 - 3 <same as the present Rules>	**CHAPTER 2 - 3 <same as the present Rules>**

Amended Guidance for
Type Approval of Maritime Cyber Security

Dec. 2019

KR

Effective Date : 1 January 2020

(1) The contract date for ship construction

◉ The requirement for equivalence has been amended in accordance with the amendment to Part 1 of the Rules.

Present	Amendment
CHAPTER 1 GENERAL	**CHAPTER 1 GENERAL**
Section 1 General	**Section 1 General**
101. - 102. <same as the present Rules>	**101. - 102. <same as the present Rules>**
103. Equivalence Special equipment, which is not appropriate to apply the requirements of this Guidance or not specified in this Guidance, may be accepted by the Society provided that the Society is satisfied that such equipment is equivalent to or above those complying with the requirements of this Guidance.	**103. Equivalence** The equivalence of alternative and novel features which deviate from or are not directly applicable to the Guidance is to be in accordance with **Pt 1**, **Ch 1**, **104**. of **Rules for the Classification of Steel Ships**.
104. <same as the present Rules>	**104. <same as the present Rules>**
CHAPTER 2 - 3 <same as the present Rules>	**CHAPTER 2 - 3 <same as the present Rules>**

Amended Guidance for Approval of Service Suppliers

Dec. 2019

KR

- Main Amendments -

(1) Effective date : 1 Jan. 2020 (Date of which the application for survey is submitted)

◉ Reflected IACS UR Z17(Rev.14 Mar 2019)

Present	Amendments
Appendix Part A - Approval of Service Suppliers listed in IACS Z17	**Appendix Part A - Approval of Service Suppliers listed in IACS Z17**
1.~ 4. 〈omitted〉	**1.~ 4. 〈omitted〉**
5. Firms engaged in servicing life saving appliances	**5. Firms engaged in servicing life saving appliances**
5.1 Firms engaged in servicing inflatable liferafts, inflatable lifejackets, hydrostatic release units, inflatable rescue boats, marine evacuation systems(Z17 Annex 1-5)	5.1 Firms engaged in servicing inflatable liferafts, inflatable lifejackets, hydrostatic release units, inflatable rescue boats, marine evacuation systems(Z17 Annex 1-5)
〈omitted〉	〈same as current Guidance〉
5.2. Firms engaged in the servicing and maintenance of lifeboats, launching appliances, on-load release gear and davit-launched liferaft automatic release hooks(Z17 Annex 1-13)	5.2. Firms engaged in maintenance, thorough examination, operational testing, overhaul and repair of lifeboats and rescue boats, launching appliances and release gear (Z17 Annex 1-13) *(2020)*
5.2.1 Extent of engagement Servicing and maintenance of lifeboats, launching appliances, on-load release gear and davit-launched liferaft automatic release hooks.	5.2.1 Extent of engagement Maintenance, thorough examination, operational testing, overhaul and repair of: .1 lifeboats (including free-fall lifeboats), rescue boats and fast rescue boats; and .2 launching appliances and on-load and off-load release gear for lifeboats (including primary and secondary means of launching appliances for free-fall lifeboats), rescue boats, fast rescue boats and davit-launched liferafts.
5.2.2 Extent of Approval (1) The contents of this procedure apply equally to manufacturers when they are acting as Service Suppliers. (2) Any Service Supplier engaged in the thorough examination, operational testing, repair and overhaul of lifeboats, launching appliances, on-load release gear and davit-launched liferaft automatic release hooks carried out in accordance with **SOLAS Reg. III/20** should be qualified in these operations for each make and type of equipment for which they provide the service, and provide manufacturers documentary evidence that they have been so authorized or they are certified in accordance with an established system for training and authorization in accordance with **MSC.1/Circ.1277**, as amended.	5.2.2 Extent of Approval (1) The contents of this procedure apply equally to manufacturers or ship's operator when they are acting as Service Suppliers. (2) Any Service Supplier engaged in maintenance, thorough examination, operational testing, overhaul and repair of lifeboats and rescue boats, launching appliances and release gear carried out in accordance with **SOLAS Reg. III/20** shall be approved for these operations for each make and type of equipment for which they provide the service in accordance with **IMO Res. MSC.402(96)/Corr.1** (annex, section7). (3) Such approval shall include, as a minimum: - employment and documentation of personnel certified in accordance with a recognized national, international or industry standard as applicable, or an equipment manufacturer's established certification program. In either case, the certification program shall be based on the paragraph 5.2.3 for each make and type of equipment for which service is to be provided; and, - compliance with provisions of paragraphs 5.2.4, 5.2.5 and 5.2.6
〈newly added〉	

Present	Amendments
(3) In cases where an equipment manufacturer is no longer in business or no longer provides technical support, Service Suppliers may be authorized for the equipment on the basis of prior authorization for the equipment and/or long term experience and demonstrated expertise as an authorized Service Supplier.	(4) In cases where an equipment manufacturer is no longer in business or no longer provides technical support, Service Suppliers may be approved for the equipment on the basis of prior approval for the equipment and/or long term experience and demonstrated expertise as an approved Service Supplier.
5.2.3 Qualifications and Training of Personnel Service Suppliers should be trained and qualified in the operations for which they are authorized, for each make and type of equipment for which they provide the service. Such training and qualification should include, as a minimum:	5.2.3 Certification of Personnel (1) Personnel for the work specified in 5.2.1 shall be certified by the manufacturer or the Service Supplier for each make and type of the equipment to be worked on. Approved Service Supplier is allowed to certify its own personnel (i.e. employed by the same Service Supplier) only.
(1) Employment and documentation of personnel certified in accordance with a recognized national, international or industry standard as applicable, or an equipment manufacturer's established certification program. In either case, the certification program should be based on the guidelines in the appendix for each make and type of equipment for which service is to be provided.	
(2) The education and training for initial certification of personnel should be documented and address, as a minimum: (A) Causes of lifeboat accidents (B) Relevant rules and regulations, including International Conventions (C) Design and construction of lifeboats, including on-load release gear and launching appliances	(2) The education for initial certification of personnel should be documented and address, as a minimum: (A) Causes of lifeboat and rescue boat accidents (B) Relevant rules and regulations, including International Conventions (C) Design and construction of lifeboats (including free-fall lifeboats), rescue boats and fast rescue boats, including on load release gear and launching appliances
(D) Education and practical training in the procedures specified in annex 1 of **MSC.1/Circ. 1206/ Rev.1** for which certification is sought	(D) Education and practical training in the procedures specified in section 6 of the annex to **IMO Res. MSC.402(96)/Corr.1** for which certification is sought
(E) Detailed procedures for thorough examination, operational testing, repair and overhaul of lifeboats, launching appliances and on-load release gear, as applicable; and	(E) Detailed procedures for thorough examination, operational testing, repair and overhaul of lifeboats (including free-fall lifeboats), rescue boats and fast rescue boats, launching appliances and on load release gear, as applicable;
(F) Procedures for issuing a report of service and statement of fitness for purpose based on **MSC.1/Circ.1206/Rev.1**(annex 1, paragraph 15)	(F) Procedures for issuing a report of service and statement of fitness for purpose based on **IMO Res. MSC.402(96)/Corr.1** (annex, paragraph 5.3); and
〈newly added〉	(G) Work, health and safety issues while conducting activities on board.

Present	Amendments
(3) The education and training for the personnel should include practical technical training on actual inspection and maintenance using the equipment (lifeboats, launching appliances and/or on-load release gear) for which the personnel are to be certified. The technical training should include disassembly, reassembly, correct operation and adjustment of the equipment. Classroom training should be supplemented by field experience in the operations for which certification is sought, under the supervision of an experienced senior certified person.	(3) The training for the personnel shall include practical technical training on thorough examination, operational testing, maintenance, repair and overhaul techniques using the equipment for which the personnel are to be certified. The technical training shall include disassembly, reassembly, correct operation and adjustment of the equipment. Classroom training shall be supplemented by field experience in the operations for which certification is sought, under the supervision of certified person.
(4) ~~At the time of initial certification and at each renewal of certification, the Service Supplier shall provide documentation to verify personnel's satisfactory completion of a competency assessment using the equipment for which the personnel are certified.~~ 〈newly added〉	(4) Prior to issuance of personnel certification, a competency assessment shall be satisfactorily completed, using the equipment for which the personnel are to be certified. (5) Upon completion of training and competency assessment, a certificate shall be issued defining the level of qualification and the scope of the certification (i.e. makes and types of equipment and specifically state which activities (annual thorough examination and operational tests; 5-year thorough examination, overhaul; overload operational tests; repairs) are covered by the certification). The expiry date shall clearly be written on the certificate and shall be three years from the date of issue. The validity of any certificate shall be suspended in the event of any shortfall in performance and only revalidated after a further competency assessment.
(5) The Service Supplier shall require refresher training as appropriate to renew the certification.	(6) A competency assessment shall be conducted to renew the certification. In cases where refresher training is found necessary a further assessment shall be carried out after completion.
5.2.4 Reference Documents The Service Supplier is to have access to the following documents:	5.2.4 Reference Documents *(2020)* The Service Supplier is to have access to the following documents:
(1) **MSC.1/Circ.1206/Rev.1**, as amended, Measures to Prevent Accidents with Lifeboats	(1) **IMO Res. MSC.402(96)/Corr.1,** Requirements for Maintenance, Thorough Examination, Operational Testing, Overhaul and Repair of Lifeboats and Rescue Boats, Launching Appliances and Release Gear
(2) MSC.1/Circ.1277, as amended, Interim Recommendation on Conditions for Authorization of Suppliers for Lifeboats, Launching Appliances and On-Load Release Gear	

Present	Amendments
(3) IMO Res.A.689(17), recommendation on testing of life-saving appliances and, for life-saving appliances installed on board on or after 1 July 1999, Res. MSC.81(70), revised recommendation on testing of life-saving appliances	(2) IMO Res.A.689(17), recommendation on testing of life-saving appliances and, for life-saving appliances installed on board on or after 1 July 1999,
	(3) IMO Res. MSC.81(70), as amended revised recommendation on testing of life-saving appliances
(4) For servicing and repair work involving disassembly or adjustment of on-load release mechanisms, availability of the equipment manufacturer's specifications and instructions	(4) Manufacturer's instructions (including updates, amendments and safety notices) for repair work involving disassembly or adjustment of on-load release mechanisms and davit winches.
(5) Type Approval certificate showing any conditions that may be appropriate during the servicing and/or maintenance of lifeboats, launching appliances and on-load release gear	(5) Type Approval certificate showing any conditions that may be appropriate during the servicing and/or maintenance of lifeboats, launching appliances and on-load release gear
5.2.5 Equipment and Facilities The Service Supplier is to have access to the following:	5.2.5 Equipment and Facilities *(2020)* The Service Supplier is to have the following:
(1) Sufficient tools, and in particular any specialized tools specified in the equipment manufacturer's instructions, including portable tools as needed for work to be carried out on board ship	(1) Sufficient tools, and in particular any specialized tools specified in the equipment manufacturer's instructions, including portable tools as needed for work to be carried out on board ship
(2) Access to sufficient materials, spare parts and accessories as specified by the equipment manufacturer for repairing lifeboats, launching appliances and on-load release gear, as applicable	(2) Access to appropriate parts and accessories as specified by the equipment manufacturer for maintenance and repair
(3) For servicing and repair work involving disassembly or adjustment of on-load release mechanisms, availability of genuine replacement parts as specified or supplied by the equipment manufacturer	(3) For servicing and repair work involving disassembly or adjustment of on-load release mechanisms, availability of genuine replacement parts as specified or supplied by the equipment manufacturer

Present	Amendments
5.2.6 Reporting The report should conform to the requirements of MSC.1/ Circ.1206/Rev.1 (annex 1, paragraph 15). When repairs, thorough examinations and annual servicing are completed, a statement confirming that the lifeboat arrangements remain fit for purpose should be promptly issued by the Service Supplier.	5.2.6 Reporting *(2020)* The report shall conform to the requirements of IMO Res. MSC.402(96)/Corr.1 (annex, paragraph 5.3). When repairs, thorough examinations and annual servicing are completed, a statement confirming that the lifeboat arrangements remain fit for purpose should be promptly issued by the Service Supplier that conducted the work. A copy of valid documents of certification and authorization as appropriate shall be included with the statement.
5.2.7 Other requirements (1) Procedures and instructions The Service Supplier shall have documented procedures and instructions for how to carry out service of equipment. The procedures should include requirements to record the nature and extent of damages to and defects found in equipment during servicing and repair work. This data shall be made available to the Society upon request. (2) The Service Supplier shall provide evidence that it has been authorized or licensed to service the particular makes and models of equipment for which approval is sought by the equipment's manufacturer.	
〈hereafter, omitted〉	〈hereafter, same as the current Guidance〉