

RULES FOR HIGH SPEED CRAFT

GUIDANCE FOR HIGH SPEED CRAFT

Rules for High Speed Craft
Guidance for High Speed Craft

2021 AMENDMENT NO.1
2021 AMENDMENT NO.1

Rule No.35 / Notice No.35 30 June 2021
Resolved by Technical Committee on 27 January 2021

ClassNK
NIPPON KAIJI KYOKAI

An asterisk (*) after the title of a requirement indicates that there is also relevant information in the corresponding Guidance.

RULES FOR HIGH SPEED CRAFT

RULES

2021 AMENDMENT NO.1

Rule No.35 30 June 2021

Resolved by Technical Committee on 27 January 2021

An asterisk (*) after the title of a requirement indicates that there is also relevant information in the corresponding Guidance.

“Rules for high speed craft” has been partly amended as follows:

Amendment 1-1

Part 6 SCANTLING DETERMINATION OF HULL CONSTRUCTION

**Chapter 1 HULL CONSTRUCTION FOR STEEL OR ALUMINIUM ALLOYS
CRAFT**

1.2 Definition

1.2.2 Yield Point or Proof Stress of the Material Used

Sub-paragraph -2 has been amended as follows.

- 1** Yield point or proof stress (σ_y) of rolled steels for hull structure specified in this Chapter is to be given in **Table 6.1.1**.
- 2** Proof stress (σ_y) of aluminium alloys for hull structure is not to be ~~given~~ less than the minimum ultimate proof stress specified for the base metal except when specified in **Table 6.1.2**.

Table 6.1.2 has been amended as follows.

Table 6.1.2 Grades and Proof Stress of Aluminium Alloys for Hull Structures

Grades and symbols of aluminium alloys		Temper condition	Thickness t (mm)	Proof stress (N/mm ²)
5000 series	5083P	Ø, H112	$t \leq 50$	125
		H116, H321	$t \leq 50$	190
	5083S	Ø, H112	$t \leq 50$	110
		H111	$t \leq 50$	165
	5086P	Ø	$t \leq 50$	95
		H112	$t \leq 12.5$	125
			$12.5 < t \leq 50$	105
		H116	$t \leq 50$	165
	5086S	Ø, H111, H112	$t \leq 50$	95
6000 series	5754P	Ø	$t \leq 50$	80
	6005AS	T5, T6	$t \leq 50$	115
	6061P	T6	$t \leq 6.5$	115
	6061S	T6	$t \leq 50$	115
	6082S	T5, T6	$t \leq 50$	115

Grades and symbols of aluminium alloys		Temper condition	Thickness t (mm)	Proof stress (N/mm ²)
5000 series	5083P	<u>H116, H321</u>	<u>$t \leq 50$</u>	<u>125 min.</u>
	5383P	<u>H116, H321</u>	<u>$t \leq 50$</u>	<u>145 min.</u>
	5059P	<u>H116, H321</u>	<u>$t \leq 50$</u>	<u>160 min.</u>
	5086P	<u>H112, H116</u>	<u>$t \leq 50$</u>	<u>95 min.</u>
	5456P	<u>H116, H321</u>	<u>$t \leq 6.3$</u>	<u>130 min.</u>
			<u>$6.3 < t \leq 50$</u>	<u>125 min.</u>
	5083S	<u>H111</u>	<u>$t \leq 50$</u>	<u>110 min.</u>
	5383S	<u>H112</u>	<u>$t \leq 50$</u>	<u>145 min.</u>
	5086S	<u>H111</u>	<u>$t \leq 50$</u>	<u>95 min.</u>
6000 series	6005AS	<u>T5, T6</u>	<u>$t \leq 50$</u>	<u>115 min.</u>
	6061P	<u>T6</u>	<u>$t \leq 6.5$</u>	<u>115 min.</u>
	6061S	<u>T6</u>	<u>$t \leq 50$</u>	<u>115 min.</u>
	6082S	<u>T5, T6</u>	<u>$t \leq 50$</u>	<u>115 min.</u>

EFFECTIVE DATE AND APPLICATION (Amendment 1-1)

1. The effective date of the amendments is 30 June 2021.
2. Notwithstanding the amendments to the Rules, the current requirements apply to ships for which the date of contract for construction is before the effective date.

Part 9 MACHINERY INSTALLATIONS

Chapter 8 PIPING SYSTEMS

Section 8.5 has been amended as follows.

8.5 Air Pipes

Air pipes for tanks, cofferdams and similar spaces are to comply with the requirements specified in 13.6, Part D of the Rules for the Survey and Construction of Steel Ships.

8.7 Sounding Pipes

8.7.1 General

Sub-paragraph -1 has been amended as follows.

1 All the tanks, cofferdams and ~~areas the access to which is difficult~~ similar spaces are to be provided with a sounding pipe or a liquid level indicator. These devices are to be capable of checking the liquid level in such spaces at readily accessible positions at all times.

EFFECTIVE DATE AND APPLICATION (Amendment 1-2)

1. The effective date of the amendments is 30 June 2021.
2. Notwithstanding the amendments to the Rules, the current requirements apply to ships for which the date of contract for construction is before the effective date.
3. Notwithstanding the provision of preceding 2., the amendments to the Rules may apply to ships for which the date of contract for construction is before the effective date upon request by the owner.

Part 2 CLASS SURVEYS

Chapter 2 CLASSIFICATION SURVEYS

2.1 Classification Survey during Construction

2.1.4 Presence of Surveyor*

Sub-paragraphs -1 to -3 have been amended as follows.

1 The presence of the Surveyor is required at the following stages of the work in relation to hull and equipment~~s~~. To implement surveys specified otherwise by the Society, in lieu of traditional ordinary surveys where the Surveyor is in attendance, the Society may approve other survey methods which it considers to be appropriate in the following cases.

((1) to (17) are omitted.)

2 The presence of the Surveyor is required at the following stages of the work in relation to machinery~~s~~. To implement surveys specified otherwise by the Society, in lieu of traditional ordinary surveys where the Surveyor is in attendance, the Society may approve other survey methods which it considers to be appropriate in the following cases.

((1) to (6) are omitted.)

3 For crafts using low-flashpoint fuels, the presence of the Surveyor is required for tests specified in **Part GF of the Rules for the Survey and Construction of Steel Ships**, in addition to the tests specified in -1 and -2. To implement surveys, in lieu of traditional ordinary surveys where the Surveyor is in attendance, the Society may approve other survey methods which it considers to be appropriate.

4 (Omitted)

5 (Omitted)

Chapter 3 PERIODICAL SURVEYS AND PLANNED MACHINERY SURVEYS

3.2 Intervals of Periodical Surveys and Planned Machinery Surveys

Paragraph 3.2.6 has been amended as follows.

3.2.6 Planned Machinery Surveys

Planned Machinery Surveys are to be carried out at intervals specified in ~~3.10.1-1~~ 1.1.2-2.(2), Part B of the Rules for the Survey and Construction of Steel Ships.

Section 3.10 has been amended as follows.

3.10 Planned Machinery Surveys

At Planned Machinery Surveys, the examinations specified in Chapter 9, Part B of the Rules for the Survey and Construction of Steel Ships are to be carried out.

~~3.10.1 Survey Intervals etc.*~~

~~1 Planned Machinery Surveys are to be carried out at times as specified in (1) and (2) below.~~

~~(1) In a Continuous Machinery Survey, each survey item or part is to be examined so that the survey interval does not exceed five years.~~

~~(2) In a Planned Machinery Maintenance Scheme, each survey item or part is to be examined according to the survey schedule table specified in 3.10.3 and general examination including review of the maintenance records is to be carried out yearly.~~

~~2 At a Planned Machinery Survey, surveys in accordance with any of the requirements prescribed in 3.10.2 to 3.10.4 are to be carried out.~~

~~3.10.2 Continuous Machinery Surveys (CMS)*~~

~~In a Continuous Machinery Survey (hereinafter referred to as “CMS” in this Chapter), every item specified in Table 3.10.1 is to be surveyed systematically, continuously and sequentially in accordance with the survey schedule table approved by the Society so that each survey interval for all CMS items may not exceed 5 years. During the CMS, when any defect or damage is found, similar machinery and equipment, or a part of them, are required to be opened up for further examination and the defective items or failures found to be all repaired to the Surveyor’s satisfaction. Survey items deemed appropriate by the Society may be delegated to overhaul inspections by the shipowner (or the ship management company). In this case, the records of the overhaul inspections of the machinery and equipment concerned are to be ascertained as soon as possible. When it is regarded that satisfactory maintenance has not been carried out, an open up examination in the presence of the Surveyor is required.~~

~~3.10.3 Planned Machinery Maintenance Scheme (PMS)*~~

~~A shipowner (or ship management company) that has an established maintenance system may apply to adopt the planned maintenance method in which the shipowner is permitted to carry out planned overhaul inspections and maintenance as specified in (1) in place of the open up surveys specified in Table 3.10.1. In addition to (1), the shipowner (or ship management company) may apply to adopt the condition monitoring maintenance method specified in (2) which is based on the results of condition monitoring and diagnoses for the machinery and equipment.~~

~~(1) The planned overhaul inspections and maintenance method is to be implemented in accordance with the machinery maintenance scheme approved by the Society. The Society will perform a general examination yearly on every item including review of the~~

~~maintenance records in order to ascertain that the machinery and equipment covered are placed in good order. Where it is regarded that satisfactory maintenance has not been carried out for any of the machinery and equipment, an open-up examination of the item in the presence of the Surveyor may be required. For machinery and equipment deemed necessary by the Society, open-up examinations in the presence of the Surveyor are to be performed according to the survey schedule table based on the machinery maintenance scheme.~~

- ~~(2) The condition monitoring maintenance method is to be implemented in accordance with the machinery maintenance scheme approved by the Society. The machinery maintenance scheme is also to include the maintenance management of machinery and equipment not covered by the condition monitoring maintenance method. When any abnormalities are found through the condition monitoring data or diagnoses, the shipowner (or a ship management company) is to request an examination in the presence of the Surveyor as soon as possible in accordance with the survey schedule table based on the machinery maintenance scheme. The Society will perform a general examination yearly on every item including review of the condition monitoring data and the maintenance records in order to ascertain that the machinery and equipment covered are placed in good order. Where it is regarded that satisfactory maintenance has not been carried out for any of the machinery and equipment, an open-up examination of the item in the presence of the Surveyor may be required. The planned overhaul inspections and maintenance method is to be required where the condition monitoring maintenance method is not applied.~~

~~3.10.4 Periodical Surveys~~

~~In place of the Planned Machinery Surveys prescribed in 3.10.2 and 3.10.3, the surveys specified in Table 3.10.1 may be carried out at Special Surveys prescribed in 3.2.4 to ascertain that all the machinery is placed in good order. However, gas turbines may be replaced with spare sets that are to be overhauled and stored at shore in rotation in place of undergoing open-up examinations provided that the survey schedule table including the overhaul procedures and storing method of the spare sets at shore are submitted for approval by the Society in advance.~~

Table 3.10.1 has been deleted.

~~Table 3.10.1 Open-up Surveys of Machinery and Equipment~~

Survey items	Particulars of survey
1 Reciprocating internal combustion engines (main engine)	Cylinder covers, cylinder liners, pistons (including piston pins and piston rods), crosshead pins and bearings, connecting rods, crank pins and their bearings, crank journals and their bearings, camshafts and their driving gears, turbo-chargers, scavenge air pumps or blowers, air intercoolers, attached essential pumps (bilge, lubricating oil, fuel oil, cooling water) are to be opened up.
2 Gas turbines (main engine)	The essential parts of gas turbines together with their associated equipment are to be opened up and examined.
3 Power transmission systems and shafting systems	 <p>→ Reduction gears, reversing gears and clutch gears are to be opened up to the Surveyor's satisfaction, and the gears, shafts, bearings, couplings, etc. are to be examined.</p> <p>→ The essential parts of flexible couplings are to be opened up and examined.</p> <p>→ For thrust shafts, intermediate shafts and their bearings (excluding the stern tube bearings, the shaft bracket bearings and the main bearings of waterjet propulsion systems), the upper bearing halves or their bearing metals and thrust pads are to be removed and examined, turning the shaft.</p> <p>→ The essential parts of other power transmission gears are to be subjected to open up examinations to the Surveyor's satisfaction.</p>
4 Auxiliary engines	Auxiliary engines driving generators (including emergency generators), auxiliary machinery essential for main propulsion and auxiliary machinery for manoeuvring and the safety are to be handled in accordance with the requirements applicable to main engines.
5 Auxiliary machinery	 <p>The essential parts of the following auxiliary machinery are to be subjected to open up examinations:</p> <p>(a) Air compressors, blowers</p> <p>(b) Cooling pumps</p> <p>(c) Fuel oil pumps</p> <p>(d) Lubricating oil pumps</p> <p>(e) Feed pumps, condensing pumps, drain pumps</p> <p>(f) Bilge pumps, ballast pumps, fire pumps (excluding those for emergency use)</p> <p>(g) Condensers, feed water heaters</p> <p>(h) Coolers</p> <p>(i) Oil heaters</p> <p>(j) Fuel oil tanks</p> <p>(k) Air reservoirs (including those for main, auxiliary, control, general service and emergency use)</p> <p>(l) Cargo piping systems (including bulk liquid cargo handling appliances as necessary)</p> <p>(m) Deck machinery</p> <p>(n) Other items considered to be applicable under the Planned Machinery Survey by the Society</p>

EFFECTIVE DATE AND APPLICATION (Amendment 1-3)

1. The effective date of the amendments is 1 July 2021.

Part 10 ELECTRICAL INSTALLATIONS

Chapter 1 GENERAL

1.2 Testing

1.2.1 Shop Tests*

Sub-paragraph -1 has been amended as follows.

1 Electrical equipment specified below is to be tested in accordance with the respective requirements in **Chapter 2, Part H of the Rules for the Survey and Construction of Steel Ships** at the manufacturer's works or at other works which provide with the adequate apparatus for testings and inspections.

- (1) Rotating machines for propulsion and their control equipment
 - (2) Craft service generators of not less than 50 *kVA*
 - (3) Switchboards with input power of not less than 50 *kVA*
 - (4) Motors of not less than 50 *kW* for auxiliary machinery specified in **1.1.6-1(1) to (3), Part D of the Rules for the Survey and Construction of Steel Ships**, and their control gears
 - (5) Transformers of single phase not less than 30 *kVA* and three phase not less than 50 *kVA* excluding those for special services such as one for a Suez Canal Search Light
 - ~~(6) Power semiconductor converters of not less than 50 *kW* and their accessories used for supplying power to electrical equipment specified in (1) to (4)~~
 - (7) Other electrical equipment as deemed necessary by the Society
- (-2 to -4 are omitted.)

Chapter 2 ELECTRICAL INSTALLATIONS AND SYSTEM DESIGN

2.5 Switchboards, Section Boards and Distribution Boards

2.5.3 Construction and Materials*

Sub-paragraphs -2 and -7 have been amended as follows.

1 (Omitted)

2 In cases ~~Where~~ where the main sources of electrical power ~~is~~ are necessary for ship propulsion ~~of the ship, the main switchboards~~ are to comply with the following requirements or are to be ~~of the performance equivalent in performance~~ thereto:

- (1) ~~A~~ Generator switchboards ~~is~~ are to be provided for each generator, and ~~the~~ those switchboards adjoining each other are to be partitioned by the walls of steel or flame-retardant material.
- (2) ~~The~~ Main busbars are to be subdivided into at least two parts which are to be normally connected by ~~removable links~~ circuit breakers or other approved means. So far as it is practicable, ~~the~~ any connection of generating sets and other duplicated equipment are to be equally divided ~~between the~~ among such parts.

(-3 to -6 are omitted.)

7 Wiring materials are to conform to the following requirements.

- (1) Insulated wires for switchboards are to be ~~those of~~ flame-retardant and non-hygroscopic ~~having a~~ which have appropriate maximum permissible conductor temperatures of not less than 75 °C.

((2) and (3) are omitted.)

8 (Omitted)

EFFECTIVE DATE AND APPLICATION (Amendment 1-4)

1. The effective date of the amendments is 1 July 2021.
2. Notwithstanding the amendments to the Rules, the current requirements apply to ships for which the date of contract for construction is before the effective date.

GUIDANCE FOR HIGH SPEED CRAFT

GUIDANCE

2021 AMENDMENT NO.1

Notice No.35 30 June 2021

Resolved by Technical Committee on 27 January 2021

Notice No.35 30 June 2021

AMENDMENT TO THE GUIDANCE FOR HIGH SPEED CRAFT

“Guidance for high speed craft” has been partly amended as follows:

Amendment 1-1

Part 9 MACHINERY INSTALLATIONS

Chapter 8 has been added as follows.

Chapter 8 PIPING SYSTEMS

8.7 Sounding Pipes

8.7.1 General

With respect to the sounding pipes and liquid level indicators required by 8.7.1-1, Part 9 of the Rules, the Society may accept the other measures described in the following (1) and (2).

- (1) For small spaces (i.e. the spaces specified in D13.5.1-1(2), Part D of the Guidance for the Survey and Construction of Steel Ships), the omission of sounding pipes and liquid level indicators may be allowed.
- (2) For small spaces which are not covered by D13.5.1-1(2), Part D of the Guidance for the Survey and Construction of Steel Ships that comply with the following (a) and (b), the omission of sounding pipes and liquid level indicators may be allowed.
 - (a) The spaces are readily accessible.
 - (b) Other means of checking for the presence of liquid inside the space are provided.

EFFECTIVE DATE AND APPLICATION (Amendment 1-1)

1. The effective date of the amendments is 30 June 2021.
2. Notwithstanding the amendments to the Guidance, the current requirements apply to ships for which the date of contract for construction is before the effective date.
3. Notwithstanding the provision of preceding 2., the amendments to the Guidance may apply to ships for which the date of contract for construction is before the effective date upon request by the owner.

Part 2 CLASS SURVEYS

Chapter 2 CLASSIFICATION SURVEYS

2.1 Classification Survey during Construction

Paragraph 2.1.4 has been amended as follows.

2.1.4 Presence of Surveyor

1 The wording “items specified otherwise by the Society” and the wording “survey methods which it considers to be appropriate” in **2.1.4-1, Part 2 of the Rules** mean to be in accordance with the following (1) and (2) respectively:

- (1) The wording “items specified otherwise by the Society” means surveys of the tests specified in **2.1.4-1(1), (3), and (15), Part 2 of the Rules**.
- (2) The wording “the Society may approve other survey methods which it considers to be appropriate” means survey methods which it considers to be able to obtain information equivalent to that obtained through traditional ordinary surveys where the Surveyor is in attendance.

2 The wording “items specified otherwise by the Society” in **2.1.4-2, Part 2 of the Rules** means surveys of the tests specified in **-2(1) and (2)(a)**, and the wording “survey methods which it considers to be appropriate” means to be in accordance with **-1(2)**.

3 The wording “the Society may approve other survey methods which it considers to be appropriate” means to be in accordance with **-1(2)**.

4 In applying **2.1.4-5, Part 2 of the Rules**, the test plan related to the astern test specified in **2.3.1(2)** is to be provided by the yard. If specific operational characteristics have been defined by the manufacturer, these are to be included in the test plan.

2.5 Alterations

2.5.1 Requirements of Surveys

Sub-paragraph -4 has been amended as follows.

4 In applying **2.5.1, Part 2 of the Rules**, the astern response characteristics of ships considered by the Society to have undergone significant repairs which impact the response characteristics of their propulsion systems are to be verified after such repairs are carried out by correspondingly applying the requirements for the astern tests carried out at Classification Surveys during Construction (See **2.3.1, Part 2 of the Rules** and **2.1.4-4** of this Chapter). The tests are to demonstrate the satisfactory operation of the equipment or system under realistic service conditions at least over the manoeuvring range of the propulsion plant, for both ahead and astern directions. Depending on the actual extent of the repair, the Society may accept a reduction of the test plan.

Chapter 3 PERIODICAL SURVEYS AND PLANNED MACHINERY SURVEYS

Section 3.10 has been amended as follows.

3.10 Planned Machinery Surveys

Planned Machinery Surveys are to be subject to the provisions specified in Chapter B9, Part B of the Guidance for the Survey and Construction of Steel Ships. However, provision B9.1.1(4) is to be applied as follows.

- (4) Machinery and equipment (cargo handling appliances, refrigerating installations, bilge separators, pumps for bilge separators, etc.) that comply with Society rules other than the Rules for High Speed Craft, and that are required to have open-up surveys.

~~3.10.1 Survey Intervals, etc.~~

~~The Planned Machinery Survey, in principle, applies to surveys of machinery and equipment of well experience. However, it does not apply to the following machinery, equipment and survey items:~~

- ~~(1) Propellers and propeller shafts~~
- ~~(2) Sea valves below load water line~~
- ~~(3) Boilers~~
- ~~(4) Machinery and equipment (cargo handling appliances, refrigerating installations, bilge separators and pumps for bilge separators, etc.) to which another rules other than the Rules for High Speed Craft apply, and open-up examinations are required under the rules.~~
- ~~(5) Measurement of crankshaft deflections of reciprocating internal combustion engines used as main propulsion machinery and clearances of stern tubes or shaft bracket bearings at their aft ends.~~
- ~~(6) Machinery and equipment (electrical installations, spare parts, etc.) for which open-up examinations are not required, performance tests, pressure tests, etc.~~
- ~~(7) In addition to the above, machinery, equipment, and survey items which are considered by the Society to be outside the application of the Planned Machinery Survey for the following reasons:~~
 - ~~(a) Newly developed machinery and equipment that are not considered to be proper for application of the Planned Machinery Survey.~~
 - ~~(b) Machinery and equipment to which the Planned Machinery Survey has been applied, but are not considered to be proper due to its frequent occurrence of damages for application of the Planned Machinery Survey any longer.~~

~~3.10.2 Continuous Machinery Surveys (CMS)~~

~~1 Application of CMS~~

- ~~(1) The survey items to be covered by CMS are the open-up surveys of the equipment and machinery specified in 3.10.2, Part 2 of the Rules.~~
- ~~(2) Auxiliary machinery prescribed in item 5 of Table 3.10.1 in Part 2 of the Rules are as follows:~~
 - ~~(a) Air compressors, air reservoirs, blowers~~

~~Main and auxiliary starting air compressors (excluding those for emergency use), air compressors for control system, air reservoirs (main, auxiliary, control, general services and emergency air reservoirs) and their essential valves, forced draught fans for boilers (excluding those with a maximum evaporation rate of 3 tons/hr or less).~~
 - ~~(b) Cooling pumps~~

~~Piston cooling fresh water/oil pumps, cylinder jacket cooling fresh water/sea water pumps, turbocharger cooling fresh water/ sea water pumps, fuel valve cooling fresh water/oil pumps, cooling sea water pumps for L.O. cooler, cooling sea water pumps for fresh water cooler, cooling fresh water /sea water pumps for generator engines~~

~~(c) Fuel oil pumps~~

~~F.O. supply pumps, F.O. service pumps, boiler burning pumps (excluding those with a maximum evaporation rate of 3 tons/hr or less), F.O. transfer pumps~~

~~(d) Lubricating oil pumps~~

~~L.O. pumps for main engine, L.O. pumps for camshaft, L.O. pumps for reduction gear, L.O. pumps for controllable pitch propeller (C.P.P.), stern tube L.O. pumps (excluding the case in which the lubricating oil can be supplied and circulated under the gravity tank system), thermal oil circulating pumps, system oil pumps (pumps for feeding oil to hydraulic systems for control and adjustment of essential auxiliaries for propulsion)~~

~~(e) Feed water pumps, boiler water circulating pumps~~

~~(f) Bilge pumps, ballast pumps, fire pumps~~

~~Bilge pumps, ballast pumps, general service pumps, fire pumps (excluding those for emergency use)~~

~~(g) Coolers~~

~~Main fresh water coolers (for cylinder jackets and pistons), F.O. valve cooling fresh water/oil coolers, fresh water coolers for turbochargers, cooling fresh water coolers for generator engines, F.O. coolers, main L.O. coolers, turbocharger L.O. coolers, camshaft L.O. coolers, reduction gear L.O. coolers, hydraulic oil coolers, coolers for C.P.P., stern tube L.O. coolers~~

~~(h) Oil heaters~~

~~F.O. heaters, L.O. heaters (excluding electric heaters with a capacity of 10 kW or less)~~

~~(i) F.O. tanks (having a capacity of more than 1 m³ which do not form part of the hull structure), F.O. settling tanks and service tanks (for main and auxiliary machinery), F.O. tanks for boilers~~

~~(j) Cargo handling appliances (including cargo handling appliances, cooling and reliquefaction equipment for bulk liquid cargoes as necessary)~~

~~Cargo pumps (including chemical pumps, liquefied gas pumps), stripping pumps, tank cleaning pumps, gas compressors, gas blowers, heat exchangers, pressure vessels, vaporizers, tank cleaning heaters and drain coolers, drain coolers for cargo oil heaters, refrigerating equipment (refrigerant pumps and compressors), inert gas systems~~

~~(k) Deck machinery~~

~~Steering gears, windlasses and mooring winches (including their hydraulic pumps)~~

~~(l) Other machinery and equipment which the Society considers to be covered by the Planned Machinery Survey~~

~~2 Application for CMS~~

~~(1) For an application of CMS, the shipowner or its agent is to submit three copies of the document (one each for the Society's file, and for returning to the ship and the shipowner) to the Society in the format prescribed by the Society covering the following particulars before the first survey after the Classification Survey or the previous Special Survey, in principle:~~

~~(a) Application for CMS~~

~~(b) CMS Program~~

~~(2) For existing ships (in such case as being subjected to the Classification Survey of ships not built under the Society's Survey), the survey items to be examined as the Planned Machinery Survey are to be selected from among those surveyed by another Classification Society at the Classification Survey of ships not built under the Society's Survey, and items to be subjected~~

~~to the Planned Machinery Survey thereafter are to be determined. The procedures to be adopted after the Classification Survey are to be the same as in (1) above.~~

~~3 CMS Program~~

~~The CMS Program is to be prepared referring to the following (1) to (3). Each survey interval for all items covered by the Planned Machinery Survey is not to exceed five years, and the Program is to be retained on board the ship so that it can be presented to the Surveyor whenever so requested.~~

- ~~(1) In principle, all items for CMS are to be included.~~
- ~~(2) The interval between open up examinations of each identical item is not to exceed five years.~~
- ~~(3) The survey schedule for each item of the machinery and equipment is to preferably be planned in such a way that the conditions of other machinery and equipment can be assumed from the results of an open up examination of the machinery and equipment. In this connection, when machinery or equipment is provided in duplicate or more, the open up schedule of the machinery or equipment is to be such that they are subjected to open up examinations alternately as far as practicable.~~

~~4 Procedures for CMS~~

- ~~(1) Surveys under CMS are to be carried out in accordance with the CMS Program prescribed in 3 above. However, when partial changes are made to the maintenance plan of machinery and equipment in the execution process of the CMS Program, the Program retained on board is to be corrected, and surveys may be carried out according to the corrected Program.~~
- ~~(2) When defects or failures are found on areas surveyed, a thorough examination may be required on the similar parts despite the CMS Program prescribed in 3 above.~~

~~5 Substitution for open up examinations~~

~~For the machinery and equipment listed below, open up examinations may be exempted by carrying out the following examinations, provided the satisfactory condition of these items is ascertained by examining records such as the logbooks. However, when defects are found during the examinations, or if the maintenance condition is judged to be questionable as a result of an examination of the logbooks or other records, open up examinations may be requested.~~

- ~~(1) Oil pumps (excluding cargo pumps) and hydraulic deck machinery
Visual examinations of general conditions by checking the fouling of the oil strainers, oil properties, etc. and also checking the operating conditions of the pumps.~~
- ~~(2) Oil tanks, F.O. coolers and oil heaters
Visual examinations of general conditions.~~
- ~~(3) Cooling fresh water pumps and blowers
Visual examinations under their operating conditions.~~
- ~~(4) Auxiliary reciprocating internal combustion engines that are not normally used at sea and those that the total running time is less than 7,000 hrs from the last open up examination
Visual examinations under their operating conditions. However, an open up examination is required when the total running hour becomes 7,000 hrs counting from the last open up examination.~~

~~6 Confirmatory Survey~~

~~In ships deemed by the Society as maintaining their machinery and equipment well, overhaul inspections according to the CMS Program specified in 3 by the shipowner (or the ship management company) may forgo the open up examination performed in the presence of Surveyors by conducting the following confirmatory surveys, provided that the machinery and equipment are overhauled as part of the ship's maintenance practices and the records from such overhauls are kept in good order. In this case, the due date of the next open up examination is 5 years from the date of its last overhaul and inspection.~~

~~(1) Procedure of the confirmatory survey~~

- ~~(a) In case of any machinery and equipment specified in (2) below overhauled and inspected~~

~~by the Chief Engineer as a routine maintenance work, one copy of the inspection report including the items mentioned below is to be submitted to, and reviewed by the attending Surveyor. Also, the Chief Engineer's profile is to be confirmed by the attending Surveyor.~~

- ~~i) Signature of the Chief Engineer and licence number~~
- ~~ii) Date and place of the inspection~~
- ~~iii) Inspection items and their results~~
- ~~iv) Operating conditions before and after the inspection~~
- ~~(b) Parts replaced with spares or repaired are to be verified by visual examinations on them or photographs of them.~~
- ~~(c) Visual examinations are to be carried out for main propulsion machinery, and examinations under operating conditions, as well as visual examinations are to be carried out for other machinery and auxiliary machinery, etc.~~
- ~~(d) Visual examinations of lubricating oil conditions are to be carried out through open up inspections, etc. of the lubricating oil filters of crankshafts, main bearings, crankpin bearings, crankpin bolts, as well as camshafts and camshaft driving devices of reciprocating internal combustion engines used as main propulsion machinery.~~
- ~~(e) Visual examinations to confirm the current conditions and lubricating oil maintenance conditions of intermediate shafts, thrust shafts and bearings are to be carried out as far as possible.~~
- ~~(f) Confirmation of the open up inspection and adjustment records of safety valves (excluding fusible plugs) is to be carried out for air reservoirs.~~
- ~~(g) As a result of the confirmatory survey stipulated in (a) to (f) above, open up examinations and/or re-examinations may be required when deemed necessary by the Surveyor.~~

~~(2) Items applicable to the confirmatory survey~~

~~Items of machinery and equipment applicable to the confirmatory surveys are as follows:~~

- ~~(a) Reciprocating internal combustion engines used as main propulsion machinery~~
- ~~(b) Reciprocating internal combustion engines used for driving generators, auxiliary machinery essential for main propulsion or auxiliary machinery for the manoeuvring and the safety of the ship~~
- ~~(c) Intermediate shafts, thrust shafts and bearings~~
- ~~(d) Auxiliary machinery (air compressors, pumps, heat exchangers, air reservoirs, deck machinery and distilling plants)~~

~~(3) Timing of the confirmatory survey~~

~~A confirmatory survey is to be carried out no later than the completion date of the first periodical survey (excluding those specified in 3.1.1-1(4), Part 2 of the Rules, hereinafter the same in this (3)) on or after the day the item of machinery and equipment intended for the confirmatory survey was overhauled and inspected. Notwithstanding the above, if the shipowner (or the ship management company) applies for a survey, it may be allowed to carry out a confirmatory survey no later than the completion date of the second periodical survey on or after the day the item of machinery and equipment intended for the confirmatory survey was overhauled and inspected, but on or before the due date of the open up examination.~~

~~7 Cancellation of CMS~~

- ~~(1) Where a shipowner or its representative requests termination of CMS, the machinery and equipment are to be subjected to all the surveys required for CMS at Special Surveys henceforth. If there are any items of machinery or equipment whose survey intervals from their last surveys will exceed five years before the due date of the next Special Survey, they are to be examined within five years of the last survey.~~

- ~~(2) When non-compliance with this Guidance is found for machinery or equipment to which CMS is applied, application of CMS may be cancelled by the Society. The procedures to be taken henceforth are to be in accordance with the requirements in (1) above.~~
- ~~(3) When the shipowner is changed, application of CMS is to, in principle, be cancelled. When application of CMS is intended to be continued, a new application proposal as prescribed in 3 above is to be made by the new shipowner.~~

~~3.10.3 Planned Machinery Maintenance Scheme (PMS)~~

~~1 Application of PMS~~

- ~~(1) In principle, PMS, applies to machinery and equipment installed in the following ships.~~
 - ~~(a) Ships with machinery and equipment less than 15 years old at the time of application.~~
 - ~~(b) Ships operated by a shipowner or ship management company that has an established maintenance system and organization.~~
- ~~(2) PMS applies to the open up examinations of machinery and equipment prescribed in 3.10.2 1.~~

~~2 Terms~~

~~The definitions of terms which appear in 3.10.3 are as specified in the following (1) and (2).~~

~~(1) Maintenance management system~~

~~A computer system for managing the maintenance and inspection plans of machinery and its components that are subject to the Planned Machinery Maintenance Scheme~~

~~(2) Condition monitoring system~~

~~A system which is composed of displays for diagnosing the deterioration trend of the machinery and its components from data continuously or periodically measured by sensors and computers for saving and maintaining this data~~

~~3 Application Procedure for PMS~~

~~To apply for PMS, the shipowner or ship management company or representative is to submit an Application for PMS accompanying the following documents to the Society.~~

- ~~(1) Documents for approval (3 sets: one for ship's file, one for shipowner's file and one for the Society's file)~~
 - ~~(a) Machinery maintenance scheme~~
 - ~~(b) Survey schedule table~~
 - ~~(c) Function descriptions for maintenance management system~~
 - ~~(d) The following documents in addition to (a) through (c) above, when applying for the condition monitoring maintenance method~~
 - ~~i) Function description for condition monitoring system~~
 - ~~ii) Condition monitoring procedures and sensor lists~~
 - ~~iii) Kinds and contents of output information~~
- ~~(2) Documents for reference (1 set)~~
 - ~~(a) Sample form of machinery maintenance records~~
 - ~~(b) Chief Engineer's profile~~
 - ~~(c) Organization chart identifying the section and the personnel responsibility for the machinery maintenance~~

~~4 Approval of PMS~~

~~Conditions for approval of PMS are as follows:~~

~~(1) Planned maintenance method~~

~~The machinery maintenance scheme for PMS made by the planned maintenance system is to cover the maintenance plans not only for survey items but for all machinery. It is to specify maintenance works such as overhaul inspection, replacement of parts and general inspection with their time schedule and/or running hours for each item of machinery and equipment including their parts. The scheme is to be prepared based on the inspection and maintenance intervals recommended by the manufacturers of the machinery and equipment with input from~~

~~the experiences and knowledge of the shipowner and ship management company. In principle, the inspection intervals for all items covered by PMS are to be planned not to exceed 5 years. However, for the items whose overhaul intervals are specified on the basis of their running hours, longer intervals may be accepted as long as the intervals are based on the manufacturer's recommendations. When the machinery maintenance scheme is changed, the amended scheme is to be submitted to the Society for approval.~~

~~(2) Condition monitoring maintenance method~~

~~The machinery maintenance scheme is to cover the maintenance plan for all the machinery as (1) above. For machinery, equipment and parts with a condition monitoring system which complies with the following requirements, the inspection intervals may be prolonged until an abnormal condition is observed. In this case, the machinery maintenance scheme for PMS is also to cover all condition monitoring functions, criteria for judgment and procedures for monitoring, analysis and handling (including reporting observed abnormal conditions to the Society) of the system.~~

~~(a) Condition monitoring systems are to be suitable to diagnose any deterioration of equipment or its components on the basis of the data from sensors or centralized machinery monitoring and control systems. The sensors are to be subject to the tests specified in 18.7.1, Part D of the Rules for the Survey and Construction of Steel Ships.~~

~~(b) Condition monitoring systems are to be suitable to diagnose the condition on the basis of independent or coalesced data or their trends.~~

~~(c) Back-ups of the data can be made.~~

~~(3) Survey Schedule Table~~

~~Survey intervals of the survey items are not to exceed those specified in the machinery maintenance scheme. The following items are, as a rule, to be opened and examined in the presence of the Surveyor. Where applied to the condition monitoring maintenance method, the items are to be opened and examined only when an abnormal condition is observed.~~

~~(a) Rotors, casings, main bearings, couplings between turbine and reduction gear, nozzle valves and manoeuvring valves for main steam turbine~~

~~(b) Auxiliary steam turbine for main generator~~

~~(c) Reduction gears for main propulsion~~

~~(d) Flexible couplings for main propulsion~~

~~(e) Other items deemed necessary by the Society.~~

~~When this survey schedule table is amended, the amended survey schedule table is to be submitted to the Society for approval.~~

~~(4) Machinery Maintenance Records~~

~~Machinery maintenance records are to include at least the following items, and are to be programmed and maintained by the Maintenance management system. These records are to be retained on board the ship at all times.~~

~~(a) Date of maintenance work~~

~~(b) Signature by the Chief Engineer~~

~~(c) Details of maintenance work and results~~

~~(d) Total running hours (parts replacement intervals and overhaul intervals)~~

~~(e) Names of parts replaced~~

~~(f) Measuring data (including original design dimensions and allowable tolerance)~~

~~(g) The condition of damage and repair method~~

~~(h) Results of visual examinations of lubricating oil conditions carried out through open up examinations of the lubricating oil filters, etc. of crankpins, crank journals, thrust shafts and bearings of reciprocating internal combustion engines used as main propulsion~~

~~machinery (in cases where the principle components of such engines were inspected through independent open-up surveys conducted by chief engineers)~~

~~(5) Condition monitoring records~~

~~Condition monitoring records are to include at least the following items:~~

- ~~(a) Date of condition monitoring and relevant content of survey~~
- ~~(b) Signature of the Chief Engineer at the condition monitoring~~
- ~~(c) Contents and results of condition monitoring (including criteria for judgment)~~

~~(6) Chief Engineer~~

~~The Chief Engineer in charge of PMS is to be a person recommended by the shipowner or ship management company and approved by the Society.~~

~~(7) Computer~~

~~Computers used for condition monitoring and diagnosis systems are to satisfy the following requirements specified in (a) through (f):~~

- ~~(a) Computers are to be configured so that the effects of a system failure in part of the circuits or devices can be limited to a certain range as far as possible.~~
- ~~(b) Each system component is to be protected against overvoltages (electrical noise) likely to enter through input/output terminals.~~
- ~~(c) Central processing units and important peripheral devices are to have a self-monitoring function.~~
- ~~(d) Important programmes and data are not to be deleted in the event of a temporary failure of the external source of power supply.~~
- ~~(e) Spare parts for important system components that require specialist services for repairs are to be supplied in readily replaceable part units.~~
- ~~(f) It is recommended that the software is approved in accordance with Annex B9.1.3-4 "PROCEDURES FOR APPROVAL OF PMS MANAGEMENT SOFTWARE", Part B of the Guidance for the Survey and Construction of Steel Ships.~~

~~5 Surveys for PMS~~

~~(1) Initial Survey~~

~~The initial survey is to be carried out by the Surveyor within one year from the date of approval for application of PMS, and it is to be verified that planned machinery maintenance is being carried out in accordance with the approval scheme.~~

~~(2) Annual Survey~~

~~General examinations (including review of maintenance records) are to be carried out yearly to confirm that the planned machinery maintenance is being carried out by the approved Chief Engineer in accordance with the approved scheme on relevant machinery, equipment, and parts, and that these items are in good condition. Where the condition monitoring maintenance method is provided, it is to be verified that condition monitoring has been properly carried out and as a result of which, machinery, equipment and parts are in good order. Confirmation that the condition monitoring system and maintenance management system are being operated effectively and is also in good order is to be made. Condition monitoring data and the results of the diagnosis are to be evaluated before the survey and are to be retained on board at all times.~~

~~(3) Special Survey~~

~~Where the condition monitoring maintenance method is applied, confirmation that the condition monitoring system and maintenance management system are being operated effectively and is also in good order is to be made. Condition monitoring data and the results of the diagnosis are to be evaluated before the survey and are to be retained on board at all times.~~

~~(4) Open-up Survey~~

~~The items prescribed in 4(3) above are to be opened and examined in the presence of the Surveyor in accordance with the survey schedule table.~~

~~(5) Occasional Survey~~

~~Any damage to items covered by PMS or any abnormal conditions observed by the condition monitoring system specified in 4(2) are to be reported to the Society immediately. Upon review of the reports, the Society may request an occasional survey when considered necessary.~~

~~6 Cancellation of PMS~~

~~The Society may cancel approval for PMS when it is considered difficult to continue PMS for any of the following reasons:~~

- ~~(1) It is found that PMS is not operated in accordance with the approved scheme~~
- ~~(2) Damage or deficiencies found on items covered by PMS has not been rectified by the date recommended~~
- ~~(3) When the shipowner or ship management company has changed~~
- ~~(4) When the class of the ship has been transferred~~

EFFECTIVE DATE AND APPLICATION (Amendment 1-2)

1. The effective date of the amendments is 1 July 2021.

Part 10 ELECTRICAL INSTALLATIONS

Chapter 2 ELECTRICAL INSTALLATION AND SYSTEM DESIGN

2.5 Switchboards, Section Boards and Distribution Boards

Paragraph 2.5.3 has been amended as follows.

2.5.3 Construction and Materials

1 The following may be regarded as the “~~removable links or~~ other approved means” specified in **2.5.3-2(2), Part 10 of the Rules**:

- (1) Circuit breakers without tripping elements
- (2) Disconnecting switches (including sliding type disconnecting devices)
- ~~(3) Removable copper links bolted to busbars~~

2 In applying 2.5.3-6, Part 10 of the Rules, flame-retardant tests for insulating materials are to be carried out in accordance with the following:

- (1) Such tests are to be carried out at normal ambient temperatures. The standard size of test specimens is to be 120 mm long, 10 mm wide and 3 mm thick.
- (2) Test specimens are to be fastened to thin metal wires so that their longitudinal axes are inclined to an angle of approximately 45 degrees to the horizontal and their transverse axes are horizontal.
- (3) Conventional Bunsen burners fed with town gas are to be used, the flames of which, when adjusted in still air and in vertical positions, are approximately 125 mm long with the blue part of these flames being about 35 mm long.
- (4) Burner axes are to be set vertically in such positions that the tips of the blue parts of these flames just touches the lower ends of any specimens.
- (5) Flames are to be applied five times for 15 second intervals for 15 seconds between each application, and materials are deemed to be flame-retardant if any burnt or damaged parts of specimens are not more than 60 mm long. During such tests, specimens are not to be allowed to burn themselves.

Paragraph 2.5.8 has been added as follows.

2.5.8 Instrument Scales

“Instrument scales” means the effective measuring range. When an extended scale is required for the starting current as in the case of ammeters for motors, it is not necessary to apply the requirements given in 2.5.8, Part 10 of the Rules to the extended part.

EFFECTIVE DATE AND APPLICATION (Amendment 1-3)

1. The effective date of the amendments is 1 July 2021.
2. Notwithstanding the amendments to the Guidance, the current requirements apply to ships for which the date of contract for construction is before the effective date.