

RULES FOR HIGH SPEED CRAFT

GUIDANCE FOR HIGH SPEED CRAFT

Rules for High Speed Craft
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2015 AMENDMENT NO.1
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Rule No.68 / Notice No.86 25th December 2015
Resolved by Technical Committee on 28th July 2015
Approved by Board of Directors on 14th September 2015

ClassNK
NIPPON KAIJI KYOKAI

RULES FOR HIGH SPEED CRAFT

RULES

2015 AMENDMENT NO.1

Rule No.68 25th December 2015

Resolved by Technical Committee on 28th July 2015

Approved by Board of Directors on 14th September 2015

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

Amendment 1-1

Part 1 GENERAL RULES

Chapter 1 GENERAL

1.2 Class Notations

Paragraph 1.2.1 has been amended as follows.

1.2.1 General

For craft complying with additional requirements and/or those exempted from any requirements related to the subjects specified in the following paragraphs in accordance with the provisions of this Rules, an appropriate notation is affixed to the Classification Characters in accordance with the provisions of **Chapter 2 of the Regulation for the Classification and Registry of Ships** as follows;

NS* ~~((1)) ((2), (3)) ((4)) ((5))~~

(1) Restricted services specified in **1.2.2**

(2) Structural materials for main hull specified in **1.2.3**

(3) Hull construction and equipment specified in **1.2.4**

(4) Compliance with the special requirements for international voyages specified in **1.2.5**

(5) Application of special survey scheme specified in **1.2.6**

Paragraph 1.2.6 has been added as follows.

1.2.6 Application of Special Survey Scheme

1 The notation “*Alternative Propeller Shaft Survey • Oil*” (abbreviated as *APSS • O*) is affixed to the classification characters of ships having oil lubricated stern tube bearings whose propeller shaft surveys use the alternative survey methods specified in **3.9.2-5, Part 2**.

2 The notation of “*Alternative Propeller Shaft Survey • Water*” (abbreviated as *APSS • W*) is affixed to the classification characters, of ships having freshwater lubricated stern tube bearings utilising inboard freshwater whose propeller shaft surveys use the alternative surveys methods specified in **3.9.2-5, Part 2**.

Chapter 2 DEFINITIONS

2.1 General

Paragraph 2.1.24 has been amended as follows.

2.1.24 Propeller Shaft Kind 1 and Propeller Shaft Kind 2

1 Propeller shaft Kind 1 is a propeller shaft which is effectively protected against corrosion by water (sea water, outboard freshwater and inboard freshwater) with a means approved by the Society or which is made of corrosion resistant materials approved by the Society. ~~In this case, such~~ The shafts which comply with the following (1), (2), (3) or (4) are categorized respectively as propeller shaft Kind 1A, propeller shaft Kind 1B, ~~or~~ propeller shaft Kind 1C or propeller shaft Kind 1W respectively.

- (1) Propeller shaft Kind 1A is a propeller shaft, at the after end, with a keyed propeller attachment (hereinafter referred to “keyed connection”), with a keyless propeller attachment (hereinafter referred to “keyless connection”) or having with a coupling flange (hereinafter referred to “flanged connection”) at the after end and; to which a seawater- lubricated stern tube bearing (which includes shaft bracket bearing, the same being referred to hereinafter the same in this Chapter) or stern tube bearing, utilising outboard freshwater, is attached adopted.
 - (2) Propeller shaft Kind 1B is a propeller shaft of keyed connection, keyless connection or flanged connection; with a keyed propeller attachment, with a keyless propeller attachment or having a coupling flange at the after end and to which an oil- lubricated stern tube bearing is attached adopted except for the shafts complying with (3).
 - (3) Propeller shaft Kind 1C is a propeller shaft satisfying the conditions in (2) and the requirements in **6.2.11, Part D of Rules for the Survey and Construction of Steel Ships.**
 - (4) Propeller shaft Kind 1W is a propeller shaft of keyed connection, keyless connection or flanged connection; to which a freshwater lubricated stern tube bearing, utilising inboard freshwater, is attached.
- 2 Propeller shaft Kind 2 is a propeller shaft other than those specified in -1.

Paragraph 2.1.26 has been amended as follows.

2.1.26 Stern Tube Shaft Kind 1 and Stern Tube Shaft Kind 2

1 Stern tube shaft Kind 1 is a stern tube shaft which is effectively protected against corrosion by sea water with a means approved by the Society or which is made of corrosion resistant materials approved by the Society. ~~In this case, such~~ The shafts to which are listed in the following (1), (2) or (3) the water lubricated bearing is adopted are categorized respectively as in stern tube shaft Kind 1A and such shaft to which the oil lubricated bearing is adopted is categorized in, stern tube shaft Kind 1B or stern tube shaft Kind 1W:

- (1) Stern tube shafts to which a seawater lubricated stern tube bearing or freshwater lubricated stern tube bearing, utilising outboard freshwater, is adopted;
 - (2) Stern tube shafts to which an oil lubricated stern tube bearing is adopted; or
 - (3) Stern tube shafts to which a freshwater lubricated stern tube bearing, utilising inboard freshwater, is adopted.
- 2 Stern tube shaft Kind 2 is a stern tube shaft other than those specified in -1.

Part 2 CLASS SURVEYS

Chapter 3 PERIODICAL SURVEYS AND PLANNED MACHINERY SURVEYS

3.9 Propeller Shaft and Stern Tube Shaft Surveys

Paragraph 3.9.1 has been amended as follows.

3.9.1 General

1 At each Propeller Shaft and Stern Tube Shaft Survey, corresponding to the type and kind of shafts, the requirements which are specified in this section, are to be complied with.

2 The terminology used in the application of propeller shaft and stern tube shaft surveys is as specified in the following (1) to (8):

- (1) “Shafts” mean propeller shafts as specified in the following (2) and stern tube shafts as specified in the following (3).
- (2) “Propeller shaft” is the part of the propulsion shaft to which the propeller is fitted.
- (3) “Stern tube shaft” is a shaft placed between the intermediate shaft and propeller shaft, normally arranged within a stern tube or running in open water.
- (4) “Stern tube” is a tube or pipe fitted in the shell of a ship at the stern (or rear part of the ship), through which passes the stern tube shaft or aftermost section of the propeller shaft. “Stern tube” is the housing of the shaft bearings that sustain the shaft and also accommodates the shaft sealing arrangement.
- (5) “Stern tube sealing system” means the equipment installed on the inboard extremity and, for oil or freshwater lubricated bearings, at outboard extremity of the stern tube. An “inboard seal” is the device fitted on the fore part of the stern tube that achieves the sealing against the possible leakage of the lubricant media into the ship internal. An “outboard seal” is the device fitted on the aft part of the stern tube that achieves the sealing against the possible sea water ingress and the leakage of the lubricant media.
- (6) “Oil lubricated” means closed loop oil lubricating systems which use oil to lubricate the bearings and are sealed against the environment by adequate sealing or gland devices.
- (7) “Freshwater lubricated” means closed loop water lubricating systems which use fresh water to lubricate the bearings and are sealed against the environment by adequate sealing or gland devices.
- (8) “Water lubricated” means open water lubricating systems where bearings are cooled and lubricated by water (salt or fresh) which are exposed to the environment.

Paragraph 3.9.2 has been amended as follows.

3.9.2 Survey Intervals

1 Ordinary Surveys of propeller shafts and stern tube shafts prescribed in 3.9.3 are to be carried out at intervals specified in (1) or (2) below corresponding to the type and kind of shafts in accordance with 3.9.3.

- (1) Ordinary Surveys for Propeller shafts Kind 1 specified in **2.1.24, Part 1** or stern tube shafts Kind 1 specified in **2.1.26, Part 1** (hereinafter referred to as “shafts Kind 1” in this Chapter) are to be carried out within 5 years from the date of completion of the Classification Survey or the previous Ordinary Survey (survey due date). However, Ordinary Surveys for crafts fitted with oil-lubricated stern tube bearings, may be postponed for not more than 3 years or 5 years from the date of completion of the Partial Survey provided that the Partial Survey

specified in **3.9.4-1** or **-2** is carried out respectively at a time prescribed above.

- (2) Ordinary Surveys for Propeller shafts Kind 2 specified in **2.1.24, Part 1** or stern tube shafts Kind 2 specified in **2.1.26, Part 1** (hereinafter referred to as “shafts Kind 2” in this Chapter) are to be carried out at the following times;
- (a) Concurrently with Special Surveys
 - (b) Within 36 *months* from the date of completion of the Classification Survey or the previous Ordinary Survey (survey due date)

However, the part of the construction of the shaft in the stern tube bearing corresponds to the shaft Kind 1 and the construction of the shaft between the stern tube and the shaft bracket bearing corresponds to the shaft Kind 2, the shaft may be surveyed at the intervals prescribed in **-1(1)**, provided that examination for the construction part corresponding to the Kind 2 is carried out at times prescribed in (a) and (b).

2 In applying **-1(1)** and (2) above, for Ordinary Surveys completed within 3 *months* before the survey due date, the survey due date will be regarded as the date of completion of this survey.

3 In applying **-1(1)** above, for Partial Surveys completed within 1 month before the survey due date, the survey due date will be regarded as the date of completion of this survey.

4 For keyless connection shafts lubricated with water lubricated bearings, two consecutive dismantling and verifications of the shaft cone by means of non-destructive examination (*NDE*) is not to exceed 15 *years*. *NDE* generally refers to the magnetic particle method.

5 Regardless of **-1** above, Ordinary Surveys of the propeller shafts and stern tube shafts of ships affixed with the notation “*APSS · O*” or “*APSS · W*” (excluding the main shaft of water jet propulsion systems) are to be carried out as specified separately by the Society.

Paragraph 3.9.3 has been amended as follows.

3.9.3 Ordinary Surveys

1 The Ordinary Survey of propeller shafts and stern tube shafts (excluding main shafts of waterjet propulsion systems) consists of the examinations in (1) to ~~(913)~~ below ~~under the condition of their propellers being removed from shaft.~~

- (1) Drawing out of the propeller shaft and the stern tube shaft
- (a) For shafts with oil or freshwater lubricated bearings, the propeller shaft and the stern tube shaft are to be drawn and the entire shafts, seals system and bearings are to be examined.
 - (b) For shafts with water lubricated bearings, the propeller shaft and the stern tube shaft are to be drawn and the entire shaft (including liners, corrosion protection system and stress reducing features, where provided), inboard seal system and bearings are to be examined.
- ~~(2)~~ The shaft in way of the propeller fitting area is to be examined as follows:
- (a) ~~For shafts having keyed propeller connections/attachments, are to be examined by an efficient crack detection method from the end of the cylindrical part of the shaft (or from the aft edge of the liner, if any) for one third of the length of the aft shaft taper. The propeller is to be removed to expose the forward end of the taper; and a non-destructive examination (NDE) by an approved surface crack-detection method (generally referring to the magnetic particle method) is to be performed all around the shaft in way of the forward portion of the taper section, including the keyway. For shaft provided with liners, the NDE is to be extended to the after edge of the liner except as required by 3.9.4-1(1).~~
 - (b) ~~For shafts having keyless propeller connections/attachments, are to be examined by an efficient crack detection method for the forward portion of the aft shaft taper. The propeller is to be removed to expose the forward end of the taper; and a non-destructive examination (NDE) by an approved surface crack-detection method (generally referring to the magnetic particle method) is to be performed all around the shaft in way of the~~

forward portion of the taper section. For shaft provided with liners the NDE is to be extended to the after edge of the liner except as required by 3.9.4-1(1). For shafts with water lubricated bearings, it is recommended that the survey specified in 3.9.2-4 also be carried out in cases where the next survey due date is less than 15 years after the date of completion of the previous survey specified in 3.9.2-4. When the propeller is force fitted to the shaft, it is to be ascertained that the pull-up length is within the upper and lower limits given by 5.2.5-1, Part 9.

- (c) For shaft having coupling flanges connections at the after end, the flange fillet and coupling bolts are to be examined by an efficient crack detection method whenever the coupling bolts of any type of flange-connected shaft are removed or the flange radius is made accessible in connection with overhaul, repairs or when deemed necessary by the surveyor, the coupling bolts and flange radius are to be examined by means of an approved surface crack detection method (generally referring to the magnetic particle method).
- ~~(23)~~ Other parts of the shaft (anti-corrosion covers are to be removed for the shafts Kind 2) than required by (1), ~~(1)~~ The sleeves, the fillet of the coupling flange to the intermediate shaft or to the stern tube shaft and the coupling bolts are to be examined with the shaft drawn from the stern tube bearings. However, coupling bolts are to be examined by an efficient crack detection method, in cases where Surveyors consider such testing necessary based on the external examination results. In addition, anti-corrosion covers are to be removed for shafts of Kind 2.
- ~~(34)~~ The stern tube bearings (including the shaft bracket bearings, if any. The same is referred to hereinafter in this section.) are to be examined.
- ~~(45)~~ The bearing wear down (including one for shaft bracket bearings, if any) are to be measured. Clearances between the propeller shaft or the stern tube shaft and the after bearing of the stern tube are to be checked and recorded.
- ~~(6)~~ It is to be verified that the propeller is free of damages which may cause the propeller to be out of balance.
- ~~(57)~~ Major parts of the stern tube sealing devices. The satisfactory conditions of inboard and outboard seals (including shaft bracket sealing devices, if any) are to be verified during the re-installation of the shaft and propeller are to be opened and examined.
- ~~(8)~~ For oil or freshwater lubricated bearings, the measurements of wear down of the propeller shaft or the stern tube shaft at the after bearing of the stern tube (after re-installation) are to be recorded.
- ~~(69)~~ Propeller boss surfaces in contact with the propeller shaft taper bore in way of the propeller shaft taper section is are to be examined.
- ~~(10)~~ For a controllable pitch propeller connections, the principal part of pitch control gear and working parts are to be opened and examined, and the propeller blade fixing bolts are to be examined by an efficient crack detection method.
- ~~(711)~~ Where water- lubricated stern tube bearings are adopted, the sea water piping for lubrication is to be examined.
- ~~(812)~~ Where oil- or freshwater lubricated stern tube bearings are adopted, the low oil level alarms of the lubricating oil or lubricating freshwater tanks, lubricating oil or lubricating freshwater temperature measuring devices, oil or freshwater lubrication lines and as well as lubricating oil circulating or lubricating freshwater pumps are to be examined.
- ~~(913)~~ Where oil- or freshwater lubricated stern tube bearings are adopted, the lubricating oil or lubricating freshwater record book is to be examined.
- 2 Where waterjet propulsion systems are adopted, examinations specified in (1) to (6) below are to be carried out, the main shaft being drawn out from the forward main shaft bearing tube or

sealing device tube.

- (1) General examination of the main shaft and coupling bolts. However, coupling bolts are to be examined by an efficient crack detection method, in cases where Surveyors consider such testing necessary based on the external examination results.
- (2) General examination of the main parts of the forward and after main shaft bearings
- (3) General examination of the main parts of the forward main shaft sealing assembly
- (4) Open-up examination of the thrust bearings
- (5) Examination of the contacting faces of the impeller boss and the main shaft (when installed with a key or spline)
- (6) General examination of the impeller

Paragraph 3.9.4 has been amended as follows.

3.9.4 Partial Surveys

1 At a Partial Survey for propeller shafts Kind 1, the examinations specified in the following **(1)** through **(3)** are to be carried out.

- (1) Examinations as specified in **3.9.3-1(12)**, ~~(4)~~, ~~(6)~~, ~~(5)~~, ~~(9)~~, ~~(812)~~ and ~~(913)~~ as well as the following (a) to (d):
 - (a) Checking and recording measurements of the bearing wear down of the propeller shaft or the stern tube shaft at the after bearing of the stern tube
 - (b) Verification that the propeller is free of damages which may cause the propeller to be out of balance
 - (c) Seal liner found to be or placed in a satisfactory condition
 - (d) Verification of the satisfactory conditions of inboard and outboard seals
- (2) ~~A general examination for the part of propeller shafts exposed in the engine room~~ Visual inspection of all accessible parts of the shafting system
- (3) ~~It is to be ascertained that the operation in the barred speed range for torsional vibration is avoided.~~ Verification that the main engines have not been operated within the barred speed range for torsional vibration.

2 At a Partial Survey for propeller shafts Kind 1C, the “Record for Monitoring System of Stern Tube Bearing and Oil Sealing Devices” is to be examined in addition to the examinations specified in **-1**.

Part 9 MACHINERY INSTALLATIONS

Chapter 5 SHAFTINGS, PROPELLERS, WATERJET PROPULSION SYSTEMS AND TORSIONAL VIBRATION OF SHAFTINGS

5.1 Shaftings

Paragraph 5.1.8 has been amended as follows.

5.1.8 Stern Tube Sealing Devices

Stern tube sealing devices other than gland packing type ~~sea~~ water sealing devices are to be of the type approved by the Society in their materials, construction and arrangement.

EFFECTIVE DATE AND APPLICATION (Amendment 1-1)

- 1.** The effective date of the amendments is 1 January 2016.
- 2.** Notwithstanding the amendments to the Rules, the current requirements apply to ships other than ships the delivery of which is on or after 1 January 2016 (hereinafter, referred to as “existing ships”) until the first propeller shaft and stern tube shaft survey scheduled on or after 1 January 2016.
- 3.** Notwithstanding the provision of preceding **2.**, the amendments to the Rules may apply to existing ships upon request by the owner.

Part 2 CLASS SURVEYS

Chapter 1 GENERAL

1.2 Preparation for Surveys and Others

Paragraph 1.2.6 has been added as follows.

1.2.6 Firms Engaged in Surveys, Measurements and Maintenance

1 Unless otherwise specified, third parties engaged in thickness measurements, in-water surveys by divers or remote operated vehicles, or tightness testing of closing appliances such as hatches, doors, etc., with ultrasonic equipment are to be firms deemed appropriate by the Society.

2 Unless otherwise specified, third parties engaged in surveys and maintenance of fixed fire extinguishing systems, portable fire extinguishers, self-contained breathing apparatuses, emergency escape breathing devices or fire detection and alarm systems are to be firms deemed appropriate by the Society.

EFFECTIVE DATE AND APPLICATION (Amendment 1-2)

1. The effective date of the amendments is 1 January 2016.
2. Notwithstanding the amendments to the Rules, the current requirements may apply to manufacturing works and service suppliers approved by the Society before 1 January 2016 until 31 December 2018 or the expiry date of their certificate, whichever comes first.

GUIDANCE FOR HIGH SPEED CRAFT

GUIDANCE

2015 AMENDMENT NO.1

Notice No.86 25th December 2015

Resolved by Technical Committee on 28th July 2015

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

Amendment 1-1

Part 2 CLASS SURVEYS

Chapter 1 GENERAL

1.2 Preparation for Surveys and Others

Paragraph 1.2.6 has been added as follows.

1.2.6 Firms Engaged in Surveys, Measurements and Maintenance

1 The wording “firm deemed appropriate by the Society” in 1.2.6-1, Part 2 of the Rules refers to firms complying with the requirements of Chapter 2, 3 or 8, Part 3 of the Rules for Approval of Manufacturers and Service Suppliers and approved by the Society.

2 The wording “firm deemed appropriate by the Society” in 1.2.6-2 and -3, Part 2 of the Rules refers to any of the following: firms complying with the requirements of Chapter 6, Part 3 of the Rules for Approval of Manufacturers and Service Suppliers and approved by the Society; firms approved by the Administration; firms approved by duly authorized organizations acting on behalf of the Administration; or firms approved by other organizations which are acceptable to the Administration.

EFFECTIVE DATE AND APPLICATION (Amendment 1-1)

1. The effective date of the amendments is 1 January 2016.
2. Notwithstanding the amendments to the Guidance, the current requirements may apply to manufacturing works and service suppliers approved by the Society before 1 January 2016 until 31 December 2018 or the expiry date of their certificate, whichever comes first.

Part 2 CLASS SURVEYS

Chapter 3 PERIODICAL SURVEYS AND PLANNED MACHINERY SURVEYS

Section 3.9 has been added as follows.

3.9 Propeller Shaft and Stern Tube Shaft Surveys

3.9.2 Survey Intervals

The wording “specified separately by the Society” specified in 3.9.2-5, Part 2 of the Rules means that the surveys are to be carried out in accordance with Annex B1.1.3-7 “Alternative Propeller Shaft Survey Methods”, Part B of the Guidance for the Survey and Construction of Steel Ships. In applying said Annex, the reference to “7.3.1-1, Part D of the Rules for the Survey and Construction of Steel Ships” specified in note 2 of Tables 2.1 and 2.2 of the Annex is to be replaced by the reference to “5.2.5-1, Part 9 of the Rules for High Speed Craft”.

EFFECTIVE DATE AND APPLICATION (Amendment 1-2)

1. The effective date of the amendments is 1 January 2016.
2. Notwithstanding the amendments to the Guidance, the current requirements apply to ships other than ships the delivery of which is on or after 1 January 2016 (hereinafter referred to as “existing ships”) until the first propeller shaft and stern tube shaft survey scheduled on or after 1 January 2016.
3. Notwithstanding the provision of preceding 2., the amendments to the Guidance may apply to existing ships upon request by the owner.

Part 10 ELECTRICAL INSTALLATIONS

Chapter 2 ELECTRICAL INSTALLATION AND SYSTEM DESIGN

2.8 Accumulator Batteries

2.8.5 Ventilation

Sub-paragraph -4 has been added as follows.

4 The ventilation fans which are of “such a material as to render sparking impossible” specified in 2.8.5-3, Part 10 of the Rules mean those ventilation fans complying with the requirements of R4.5.4-1(2) of the Guidance for the Survey and Construction of Steel Ships. For the purpose of this requirement, protection screens of not more than 13mm square mesh are to be fitted in the inlet and outlet ventilation openings of the ducts fitted with such fans on the open deck.

Paragraph 2.8.6 has been amended as follows.

2.8.6 Electrical Installations

Explosion-protected electrical equipment ~~grouped into~~ certified as Explosion Class *d3* and Ignition Group *G1* or higher as specified in ~~Technical Recommendation issued by National Institute of Industrial Safety, Independent Administrative Institution in Japan~~ the Recommended Practices for Explosion-Protected Electrical Installations in General Industries (NIIS-TR-NO.39 (2006)) issued by National Institute of Industrial Safety in Japan, may be treated as equivalent to those grouped into Apparatus Group *IIC* and Temperature Class *T1* or higher as specified in *IEC 60079*.

Chapter 4 ADDITIONAL REQUIREMENTS FOR CRAFT CARRYING SPECIAL CARGOES

4.1 Enclosed Cargo Holds for Carrying Motor Vehicles with Fuel in Their Tanks for Their Own Propulsion and Enclosed Compartments adjoining the Cargo Holds, etc.

4.1.1 Electrical Installations in Enclosed Cargo Holds, etc.

Sub-paragraph -1 has been amended as follows.

1 A wording “electrical equipment of a type suitable for use in explosive gas atmosphere concerned” in **4.1.1-2, Part 10 of the Rules** means those generally meeting the requirements in **2.9, Part 10 of the Rules** having an intrinsically safe, flameproof, pressurized, increased safety, encapsulation, powder filling or oil immersion construction ~~grouped into~~ certified as Apparatus Group IIA and Temperature Class T3 or higher as specified IEC 60079 or Explosion Class d1 and Ignition Group G3 or higher as specified in ~~Technical Recommendation issued by Independent Administrative Institution National Institute of Industrial Safety~~ the Recommended Practices for Explosion-Protected Electrical Installations in General Industries (NIIS-TR-NO.39 (2006)) issued by National Institute of Industrial Safety in Japan or equivalent thereto. Further, cables complying with the requirements in **4.2.4-5, Part H of Rules for the Survey and Construction of Steel Ships** may generally be regarded as wiring of a type suitable for use in explosive gas atmosphere concerned ~~a wording “cables of a type suitable for use in explosive gas atmosphere concerned” means general cables which comply with the requirements in **4.2.4-5, Part H of Rules for the Survey and Construction of Steel Ships**.~~

EFFECTIVE DATE AND APPLICATION (Amendment 1-3)

1. The effective date of the amendments is 1 January 2016.
2. Notwithstanding the amendments to the Guidance, the current requirements may apply to ships the keels of which were laid or which were at *a similar stage of construction* before the effective date.
(Note) The term “*a similar stage of construction*” means the stage at which the construction identifiable with a specific ship begins and the assembly of that ship has commenced comprising at least 50 tonnes or 3% of the estimated mass of all structural material, whichever is the less.