RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

Part D Machinery Installations

Rules for the Survey and Construction of Steel Ships
Part D 2015 AMENDMENT NO.2
Guidance for the Survey and Construction of Steel Ships
Part D 2015 AMENDMENT NO.2

Rule No.63 / Notice No.82 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 THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

RULES

Part D Machinery Installations

2015 AMENDMENT NO.2

Rule No.63 25th December 2015

Resolved by Technical Committee on 28th July 2015

Approved by Board of Directors on 14th September 2015

Rule No.63 25th December 2015
AMENDMENT TO THE RULES FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

"Rules for the survey and construction of steel ships" has been partly amended as follows:

Part D MACHINERY INSTALLATIONS

Chapter 6 SHAFTINGS

6.2 Materials, Construction and Strength

Paragraph 6.2.7 has been amended as follows.

6.2.7 Corrosion Protection of Propeller Shafts and Stern Tube Shafts

1 Propeller shafts Kind 1 and stern tube shafts Kind 1 are to be effectively protected against corrosion by water (sea water, outboard freshwater and inboard freshwater. The same is referred to hereinafter in this Chapter) with ~~one of~~ the means specified ~~below~~in the following **(1)** to **(3)**, as applicable.

(1) ~~T~~to effectively protect the propeller shafts and stern tube shafts against any contact with ~~sea~~ water by the means approved by the Society~~.~~

(2) ~~T~~to use *KSUSF*316, *KSUSF*316*L*, *KSUS*316-*SU* or *KSUS*316*L*-*SU* specified in **Part K** for shafts with diameter not exceeding 200 *mm*~~.~~

(3) ~~T~~to use corrosion resistant materials approved by the Society other than those specified in **(2)** above~~.~~

2 Effective means are to be provided to prevent ~~sea~~ water from having access to the part between the aft end of propeller shaft sleeve or the aft end of the aftermost stern tube bearing and the propeller boss.

3 Spaces between the propeller cap or propeller boss and the propeller shaft are to be filled up with tallow, or provided with other effective means to protect the shaft against corrosion by ~~sea~~ water.

Paragraph 6.2.10 has been amended as follows.

6.2.10 Stern Tube Bearings and Shaft Bracket Bearings

1 The aftermost stern tube bearing or shaft bracket bearing which supports the weight of propeller is to comply with the following requirements **(1)**, **(2)** and **(3)**:

(1) In the case of water~~-~~ lubricated bearings of lignumvitae.
  (a) The bearing length is not to be less than ~~four~~4 times the required diameter of the propeller shaft given by the formula in **6.2.4-1** or **-2**, or ~~three~~3 times the actual shaft diameter, whichever is greater.
  (b) Adequate means are to be provided to supply ample amount of clean water for lubrication and cooling.

(2) In the case of oil~~-~~ lubricated bearings of white metal.
  (a) The length of the bearing is not to be less than ~~2 times~~twice the required diameter of the propeller shaft given by the formulae in either **6.2.4-1** or **-2**, or 1.5 times the actual diameter, whichever is greater. However, where special consideration is given on the

construction and arrangement in accordance with provisions specified elsewhere and specially approved by the Society, the length of the bearing may be fairly shorter than that specified above.

(b) The stern tube is to be always filled with oil. Adequate means are to be provided to measure the temperature of oil in the stern tube.

(c) In cases where a gravity tank supplying lubricating oil to the stern tube bearing is fitted, it is to be located above the load water line and provided with a low level alarm device. However, in cases where the lubricating system is designed to be used under the condition that the static oil pressure of the gravity tank is lower than the water pressure, the tank is not required to be above the load water line.

(d) The lubricating oil is to be cooled by submerging the stern tube in the water of the after peak tank or by some other suitable means.

(3) In cases where bearing materials other than **(1)** and **(2)** above are intended to be used, the materials, construction and arrangement are to be approved by the Society. The length of these bearings is to comply with the following requirements in **(a)** and **(b)**:

(a) In the case of oil~~-~~ lubricated bearing of synthetic materials;
For bearings of synthetic rubber, reinforced resin or plastics materials which are approved for use as oil~~-~~ lubricated stern tube bearings, the length of the bearing is to be not less than ~~2 times~~twice the required diameter of the propeller shaft given by the formulae in either **6.2.4-1** or **-2**, or 1.5 times the actual diameter, whichever is greater. However, for bearings having a construction and arrangement specially approved by the Society, the length of the bearing may be fairly shorter than that specified above.

(b) In the case of water~~-~~ lubricated bearings of synthetic materials;
For bearings of synthetic materials which are approved for use as water~~-~~ lubricated stern tube bearings such as rubber or plastics, the length of the bearing is to be not less than 4 times the required diameter of the propeller shaft given by the formulae in either **6.2.4-1** or **-2**, or 3 times the actual diameter, whichever is greater. However, for bearings having a construction and arrangement specially approved by the Society, the length of the bearing may be fairly shorter than that specified above.

2 Sealing devices, other than gland packing type ~~sea-~~water sealing devices, are to be approved by the Society with regards to materials, construction and arrangement.

6.3 Tests

Paragraph 6.3.2 has been amended as follows.

6.3.2 Tests after Installation on Board

1 The sealing devices specified in **6.2.10-2** are to be tested for leakage under ~~working~~ lubricating oil or lubricating freshwater supply pressure after installation on board.

2 For the main propulsion shafting (excluding those of waterjet propulsion systems or azimuth thrusters), confirmation tests relating to shaft alignment are to be carried out in accordance with the requirements specified otherwise by the Society.

EFFECTIVE DATE AND APPLICATION

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.

GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

GUIDANCE

Part D Machinery Installations

2015 AMENDMENT NO.2

Notice No.82 25th December 2015

Resolved by Technical Committee on 28th July 2015

Notice No.82 25th December 2015
AMENDMENT TO THE GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF STEEL SHIPS

"Guidance for the survey and construction of steel ships" has been partly amended as follows:

Part D MACHINERY INSTALLATIONS

Amendment 2-1

D6 SHAFTINGS

D6.2 Materials, Construction and Strength

Paragraph D6.2.7 has been amended as follows.

D6.2.7 Corrosion Protection of Propeller Shafts and Stern Tube Shafts

1 Shafts effectively protected against corrosion caused by ~~sea~~ water using a means approved by the Society in **6.2.7-1(1), Part D of the Rules** are to be either of the following **(1)** to **(4)**:

(1) Shafts effectively protected from any contact with ~~sea~~ water in ships having oil lubricated stern tube bearings (including shaft bracket bearings when used) equipped with approved sealing devices.

(2) Shafts effectively protected from any contact with ~~sea~~ water by continuous copper alloy sleeves fitted onto the shafts by shrinkage fit in ships having ~~sea~~ water lubricated stern tube bearings (including shaft bracket bearings when used).

(3) Shafts fitted with shrunk-on copper alloy sleeves in cases where they are supported by stern tube bearings (including shaft bracket bearings when used) and covered with rubber or other synthetic resin materials so that they may be effectively protected from any contact with ~~sea~~ water in ships having ~~sea~~ water lubricated stern tube bearings.

(4) Shafts of other designs specially approved by the Society.

(-2 is omitted.)

D6.2.10 Stern Tube Bearings and Shaft Bracket Bearings

Sub-paragraph -3 has been amended as follows.

3 The wording "construction and arrangement specially approved by the Society" in **6.2.10-1(3)(b)**, **Part D of the Rules** means the following:

The length of a bearing may be less than that required by **6.2.10-1(3)(b)**, **Part D of the Rules**; however, the minimum length of a bearing is not to be less than ~~2 times~~twice the required diameter of the propeller shaft given by the formula in **6.2.4-1**, **Part D of the Rules** or 1.5 times the actual diameter, whichever is greater.

(1) Nominal bearing pressure, under the assumption that the weight of shaft and propeller are loaded solely on the aftermost bearing, is to be within the allowable limit specified in the Type Approval Certificate.

(2) Forced lubrication using ~~sea~~ water pumps is to be adopted and a non-flow alarm is to be provided at the lubricating water inlet.

Annex D1.1.3-3 GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF AZIMUTH THRUSTERS

1.2 Class Surveys

1.2.2 Periodical Surveys

Sub-paragraph -5 has been amended as follows.

5 Propeller shaft surveys

Examinations specified in **Chapter 8**, **Part B of the Rules** are to be carried out. When roller bearings are used for the propeller shaft bearings and where either a propeller shaft Kind *1C* or a Propeller Shaft Condition Monitoring System (*PSCM* or *PSCM・A*) is being used, the system specified in the following **(1)** or **(2)** may be used instead of the temperature sensors and the temperature recorder specified in **D6.2.11(2)(a)** and **B8.1.3-~~1~~1~~(2)~~** or **-5**. However, where the system is used, the following requirements specified in **(3)** are to be satisfied.

When using propeller shaft Kind *1C*, lubricating oil sampling and analysis are to be regularly carried out as specified in **8.1.3(1)**, **Part B of the Rules**.

((1) to (3) are omitted.)

EFFECTIVE DATE AND APPLICATION (Amendment 2-1)

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.

Amendment 2-2

D14 PIPING SYSTEMS FOR TANKERS

D14.2 Cargo Oil Pumps, Cargo Oil Piping Systems, Piping in Cargo Oil Tanks, etc.

D14.2.4 Separation of Cargo Oil Pumps and Cargo Oil Pipes

Sub-paragraph (2)(a) has been amended as follows.

(2) In cases where cargo oil piping systems are connected to the following piping systems:
  (a) Tank vent pipes
  The requirements in ~~**35.2.7-7** and **8**~~**35.2.2-3(2)(g)** and **(h)**, **Part R of the Rules** are to be complied with. In addition, ventilating fans, except for inert gas blowers, are to be installed within hazardous area (as for the definition of "hazardous area," *see* **4.2.3-1, Part H of the Rules**).

D17 REFRIGERATING MACHINERY AND CONTROLLED ATMOSPHERE SYSTEMS

D17.1 General

D17.1.1 Scope

Sub-paragraph -10 has been amended as follows.

10 Gas expulsion system

Gas expulsion systems consisting of ventilation systems, gas absorption systems, water screening systems and gas absorption water tanks are to be installed in refrigerating machinery compartments, in accordance with **(1)** to **(5)** below so that any accidentally leaked gas can be quickly expelled from the such compartments.

(1) Mechanical ventilation systems which comply with the following requirements are, as a rule, to be installed in refrigerating machinery compartments so that these spaces can be ventilated all times.
  (a) Such ventilation systems are to have enough capacity to ensure at least 30 air changes per hour in refrigerating machinery compartments.
  (b) Such ventilation systems are to be independent of other ventilation systems on board ship, and are to be capable of being operated from outside refrigerating machinery compartments.
  (c) Exhaust outlets are to be installed at horizontal distances of more than 10 *m* from the nearest air intake openings, openings of accommodation spaces, service spaces and control stations, and at vertical distances of more than 4 *m* from weather decks.

(d) Air intake openings are to be provided at low positions and exhaust openings are to be provided at high positions in refrigerating machinery compartments so that no gas accumulates inside compartments and exhaust ducts.

(e) Exhaust fans ~~and those exhaust ducts in which such fans are installed,~~ are to be of a construction that does not allow any sparks to be generated ~~according to any of the followings:~~ complying with **R4.5.4-1(2)**. Protection screens of not more than 13*mm* square mesh are to be fitted in the inlet and outlet ventilation openings of the ducts fitted with such fans on the open deck. For the purpose of this requirement, as a rule, motors for driving the fans are to be of the exterior mounted type.

~~Impellers or Casings, or both, are to be made of non-electrostatic, nonmetallic materials; or;~~

~~Non-ferrous metallic material is to be used for impellers and casings; or,~~

~~In cases where ferrous materials are used in the impeller and the casing, and the tip clearance is greater than 13 *mm*. However, if a combination of aluminum or magnesium alloy with ferrous material is used, then the possibility of spark generation exists regardless of tip clearance. Therefore, such materials are not to be used in refrigerating machinery compartments. As a rule, motors for driving the fans are to be of the exterior mounted type.~~

((2) to (5) are omitted.)

EFFECTIVE DATE AND APPLICATION (Amendment 2-2)

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 1%* of the estimated mass of all structural material, whichever is the less.

* For high speed craft, "1%" is to be read as "3%".