



RUSSIAN MARITIME REGISTER OF SHIPPING

CIRCULAR LETTER

No. 313-67-1383c

dated 24.04.2020

Re:

amendments to the Rules for the Classification and Construction of Sea-Going Ships, 2020, ND No.2- 020101-124-E

Item(s) of supervision:

propeller shaft bearings, active means of the ship's steering and internal combustion engines

Entry-into-force date:

~~Valid till:~~

~~Validity period extended till:~~

refer to Appendix 1

~~Cancels / amends / adds Circular Letter No.~~

~~dated~~

Number of pages: 1 + 5

Appendices:

Appendix 1: information on amendments introduced by the Circular Letter

Appendix 2: text of amendments to Part VII "Machinery installations" and Part IX "Machinery"

Director General

Konstantin G. Palnikov

Text of CL:

We hereby inform that the Rules for the Classification and Construction of Sea-Going Ships shall be amended as specified in the Appendices to the Circular Letter.

It is necessary to do the following:

1. Bring the content of the Circular Letter to the notice of the RS surveyors, interested organizations and persons in the area of the RS Branch Offices' activity.
 2. Apply provisions of the Circular Letter during review and approval of the technical documentation on propeller shaft bearings, active means of the ship's steering and internal combustion engines intended for application on ships contracted for construction or conversion on or after 01.07.2020, and in the absence of a contract – on ships the keels of which are laid, or which are at a similar stage of construction on or after 01.07.2020.
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List of the amended and/or introduced paras/chapters/sections:

Part VII: Table 5.6.1, paras 7.1.5, 7.2.2 – 7.2.7, 7.2.11 and 7.2.14, and Chapters 7.4 and 7.5

Part IX: paras 2.3.3 and 2.12.1.23

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**Information on amendments introduced by the Circular Letter
(for inclusion in the Revision History to the RS Publication)**

Nos.	Amended paras/chapters/sections	Information on amendments	Number and date of the Circular Letter	Entry-into-force date
1	Part VII, Table 5.6.1	The requirements for propeller shaft bearings have been specified	313-67-1383c of 24.04.2020	01.07.2020
2	Part VII, para 7.1.5	The requirements for the AMSS construction have been specified	313-67-1383c of 24.04.2020	01.07.2020
3	Part VII, Chapter 7.2	Chapter 7.2 has been replaced by a new text considering the requirements for the AMSS construction	313-67-1383c of 24.04.2020	01.07.2020
4	Part VII, Chapters 7.4 and 7.5	New Chapter 7.4 has been introduced considering IACS UI SC242 (Rev.2 Jan 2020). Existing Chapter 7.4 has been renumbered 7.5	313-67-1383c of 24.04.2020	01.07.2020
5	Part IX, Para 2.3.3	Para 2.3.3 has been deleted	313-67-1383c of 24.04.2020	01.07.2020
6	Part IX, Para 2.12.1.23	The requirements for the ICE alarm devices have been specified	313-67-1383c of 24.04.2020	01.07.2020

RULES FOR THE CLASSIFICATION AND CONSTRUCTION OF SEA-GOING SHIPS

ND No. 2-020101-124-E

PART VII. MACHINERY INSTALLATIONS

5 SHAFTING

- 1 **Table 5.6.1.** Footnote "4" shall be replaced by the following text:

"⁴ Length of the bearing of synthetic material may be reduced to twice the design shaft diameter in way of the aft bearing and contact pressure may be increased, provided the results of the operational check (of the bearing design and material) are satisfactory. Synthetic materials for application as water lubricated stern tube bearings shall be Type Approved."

7 ACTIVE MEANS OF THE SHIP'S STEERING

- 2 **Para 7.1.5** is replaced by the following text:

"**7.1.5** For AMSS intended for the main propulsion and for the dynamic positioning, size and materials of shafts, couplings, connection bolts, propellers, gearing as well as electrical equipment shall meet the requirements of relevant parts and sections of the Rules."

- 3 **Chapter 7.2** is replaced by the following text:

"7.2 CONSTRUCTION REQUIREMENTS

7.2.1 Steerable propellers shall be capable to be locked in all angular positions.

7.2.2 The main AMSS shall be provided with an emergency turning mechanism. The main AMSS angle indicator shall be provided. The difference between the indicated and actual positions shall comply with 2.9.16, Part III "Equipment, Arrangements and Outfit". The requirements of 6.1.4, Part IX "Machinery" shall be carried out.

7.2.3 For a ship fitted with multiple main AMSS, each of them shall be equipped with its own dedicated steering gear or other device to change the propeller angle.

7.2.4 Main AMSS of icebreakers and ships with ice categories **Arc4 – Arc9** shall be provided with a device to prevent the ice overload of turning mechanism.

7.2.5 The strength of the parts of the main AMSS turning mechanism, casing components and securing items of the component parts, shafts, gearings, CPP components shall be so calculated that they can withstand without damage a load, which may cause breakdown of the propeller blade.

7.2.6 Strength of the parts of main AMSS turning mechanism, components for securing to ship's hull shall be so calculated that they can withstand hydrodynamic and ice loads acting upon the propeller, nozzle and AMSS casing without damage. It is permitted to determine hydrodynamic and ice loads on the AMSS components according to the results of hydrodynamic tests and testing of self-propelled models in the ice model basin according to the procedures approved by the Register.

7.2.7 The ability of the machinery to change the thrust direction for stopping the ship making a full ahead speed on an agreeable distance shall be proven and recorded.

The steerable propeller designed for reversing the thrust by turning the unit shall provide an acceptable reversing time depending on the purpose of the ship. The time required for turning the unit through 180° shall not then exceed 20 s for the units with a propeller of 2 m and less in diameter and shall not exceed 30 s for the units with a propeller of more than 2 m in diameter.

7.2.8 Sealing boxes of a type approved by the Register shall be installed to prevent seawater from gaining access to internal parts of the AMSS. For the main and for the dynamic positioning AMSS such sealing arrangement shall contain at least two separate, closely effective sealing elements.

7.2.9 An easy access shall be provided to component parts of the AMSS to allow their maintenance within the scope stipulated by the Service Manual.

7.2.10 Where the design of the main AMSS does not insure against free rotation of the propeller and shafting in case of failure of the prime mover, provision shall be made for a braking device in accordance with the requirements of 5.8 (refer also to 17.3.4, Part XI "Electrical Equipment").

On agreement with the Register, braking devices for the AMSS intended for the dynamic positioning and for the auxiliary AMSS may be dispensed with.

7.2.11 For technical condition monitoring of the main AMSS in service, they may be fitted with control facilities considering the requirements of Section 9 and Section 10.

The technical condition monitoring system shall combine functions of built-in (fixed) systems and portable control facilities.

A list of the technical condition monitoring system equipment, controlled parameters and frequency of their measurements, as well as standards of technical condition of the AMSS control items are developed by manufacturers and/or suppliers of the equipment.

Technical substantiation of required control of the main AMSS shall be agreed upon with the Register in each particular case."

4 **New Chapter 7.4** is introduced reading as follows:

"7.4 ARRANGEMENTS FOR STEERING CAPABILITY

7.4.1 The stopping times, ship headings and distances recorded on trials, together with the results of trials to determine the ability of ships having multiple propulsion/steering arrangements to navigate and manoeuvre with one or more propellers inoperative, shall be available on board for the use of the master or designated personnel.

7.4.2 For ship fitted with main multiple steering propulsion units, such as but not limited to azimuthing propulsors or water jet propulsion systems, each of steering propulsion units shall be equipped with the following:

either main and auxiliary steering gear;

or with two or more identical steering actuating systems capable of satisfying the requirements of 7.4.8.

The main steering gear and the auxiliary steering gear shall be so arranged that the failure of one of them will not render the other one inoperative.

7.4.3 For ship fitted with a single steering propulsion unit, it shall be equipped with two or more steering actuating systems capable of satisfying the requirements of 7.4.7.

A detailed risk assessment is to be submitted in order to demonstrate that in the case of any single failure in the steering gear, control system and power supply the ship steering is maintained.

7.4.4 All components used in the steerable propeller or other devices of the main steering arrangements provided for changing the propeller angle for ship directional control shall be of adequate strength as required by relevant calculations considering 7.1.5.

All essential components used in steering arrangements for ship directional control shall be duplicated.

When not duplicated or when the Rules contain no requirements for particular AMSS components, possibility of using them shall be agreed upon with the Register.

All essential component shall, where appropriate, utilize anti-friction bearings such as ball bearings, roller bearings or sleeve bearings which shall permanently lubricated or provided with lubrication fittings.

7.4.5 The main steering arrangements for ship directional control shall be:

.1 of adequate strength and capable of steering the ship at maximum ahead service speed which shall be demonstrated;

.2 capable of changing direction of the ship's directional control system from one side to the other at declared steering angle limits at an average rotational speed of not less than 2,3 °/s with the ship running ahead at maximum ahead service speed;

- .3** for all ships, operated by power;
- .4** so designed that they will not be damaged at maximum astern speed.

Note. Declared steering angle limits (also refer to 2.9.2 — 2.9.3 of Part III "Equipment, Arrangements and Outfit") are the operational limits in terms of maximum steering angle, or equivalent, according to manufacturer's guidelines for safe operation, also taking into account the ship's speed or propeller torque/speed or other limitation. The declared steering angle limits shall be declared by the directional control system manufacturer for each AMSS. Ship's manoeuvrability tests (considering IMO resolution MSC.137(76)) shall be carried out with steering angles not exceeding the declared steering angle limits.

7.4.6 The auxiliary steering arrangements for ship directional control shall be:

- .1** of adequate strength and capable of steering the ship at navigable speed and of being brought speedily into action in an emergency;
- .2** capable of changing direction of the ship's directional control system from one side to the other at declared steering angle limits at an average rotational speed, of not less than 0.5 °/s; with the ship running ahead at one half of the maximum ahead service speed or 7 knots, (whichever is the greater);
- .3** for all ships, operated by power where necessary to meet the requirements of 7.4.6.2 and in any ship having power of more than 2,500 kW propulsion power per thruster unit.

Note. Declared steering angle limits (also refer to 2.9.2 — 2.9.3 of Part III "Equipment, Arrangements and Outfit") are the operational limits in terms of maximum steering angle, or equivalent, according to manufacturer's guidelines for safe operation, also taking into account the ship's speed or propeller torque/speed or other limitation. The declared steering angle limits shall be declared by the directional control system manufacturer for each AMSS. Ship's manoeuvrability tests (considering IMO resolution MSC.137(76)) shall be carried out with steering angles not exceeding the declared steering angle limits.

7.4.7 For a ship fitted with a single steering propulsion unit where the main steering gear comprises two or more identical power units, an auxiliary steering gear need not be fitted, provided that:

- .1** in a passenger ship, the main steering gear is capable of operating the rudder as required by 7.4.5 while any one of the power units is out of operation;
- .2** in a cargo ship, the main steering gear is capable of operating the rudder as required by 7.4.5 while operating with all power units;
- .3** the main steering gear is arranged so that after a single failure in its piping system or in one of the power units the defect can be isolated so that steering capability can be maintained or speedily regained.

Note. Steering gear power unit – for the purposes of non-electric (alternative) steering arrangements, the steering gear power unit shall be considered as defined in 1.2.9 of Part III "Equipment, Arrangements and Outfit". For electric steering gears refer to 1.2.9 of Part III "Equipment, Arrangements and Outfit", electric steering motors shall be considered as part of power unit and actuator.

7.4.8 For a ship fitted with multiple steering propulsion units, where each main steering system comprises two or more identical steering actuating systems, an auxiliary steering arrangements need not be fitted, provided that:

- .1** in a passenger ship, each steering gear is capable of operating the ship's directional control system as required by 7.4.5 while any one of the steering gear steering actuating systems is out of operation;
- .2** in a cargo ship, each steering gear is capable of operating the ship's directional control system as required by 7.4.5 while operating with all steering gear steering actuating systems;
- .3** each steering gear is arranged so that after a single failure in its piping or in one of the power units the defect can be isolated so that steering capability can be maintained or speedily regained. The above capacity requirements apply regardless whether the steering systems are arranged with common or dedicated power units.

Note. Steering gear power unit – for the purposes of non-electric (alternative) steering arrangements, the steering gear power unit shall be considered as defined in 1.2.9 of Part III "Equipment, Arrangements and Outfit". For electric steering gears refer to 1.2.9 of Part III "Equipment, Arrangements and Outfit", electric steering motors shall be considered as part of power unit and actuator.

7.4.9 The requirements of the present paragraph apply to the steering systems having a certain proven steering capability due to ship speed also in case propulsion power has failed.

Where the propulsion power exceeds 2500 kW per thruster unit, an alternative power supply, sufficient at least to supply the steering arrangements which complies with the requirements of 7.4.6.2 and also its associated control system and the steering system response indicator, shall be provided automatically, within 45 s, either from the emergency source of electrical power or from an independent source of power located in the steering gear compartment. This independent source of power shall be used only for this purpose.

In every ship of 10000 gross tonnage and upwards, the alternative power supply shall have a capacity for at least 30 min of continuous operation and in any other ship for at least 10 min.

7.4.10 For a ship fitted with multiple steering systems the requirements of 5.5.2 — 5.5.3 of Part XI "Electrical Equipment" shall be carried out for each AMSS."

5 **Existing Chapter 7.4** is renumbered **7.5**.

PART IX. MACHINERY

2 INTERNAL COMBUSTION ENGINES

6 **Para 2.3.3** is deleted.

7 New **Para 2.12.1.23** is introduced reading as follows:

.23 Engines with a cylinder bore in excess of 230 mm shall be fitted with alarm devices to give a signal indicating that the specified excess of the maximum combustion pressure in a cylinder has been reached."