



# RUSSIAN MARITIME REGISTER OF SHIPPING

**CIRCULAR LETTER**

**No. 328-04-1720c**

dated 17.03.2022

Re:

amendments to the Rules for the Classification and Construction of Ships Carrying Liquefied Gases in Bulk, 2022, ND No. 2-020101-157-E in connection with introduction of the requirements for loading arms

Item(s) of supervision:

ships under construction, loading arms

Entry-into-force date:

**15.04.2022**

Cancels / amends / adds Circular Letter No.

dated

Number of pages: 1 + 4

Appendices:

Appendix 1: information on amendments introduced by the Circular Letter

Appendix 2: text of amendments to Parts I "Classification" and VI "Systems and Piping"

Director General

Konstantin G. Palnikov

Text of CL:

We hereby inform that the Rules for the Classification and Construction of Ships Carrying Liquefied Gases in Bulk 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 the provisions of the Circular Letter during review and approval of the technical documentation on ships contracted for construction or conversion on or after 15.04.2022, in the absence of a contract, on ships requested for review of technical documentation on or after 15.04.2022.

List of the amended and/or introduced paras/chapters/sections:

Part I: paras 1.2.1 and 4.4 — 4.6

Part VI: paras 3.14 — 3.24

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

| Nos. | Amended<br>paras/chapters/<br>sections | Information on amendments                                                                                                                                                                           | Number and date<br>of the Circular<br>Letter | Entry-into-force<br>date |
|------|----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|--------------------------|
| 1    | Part I, para 1.2.1                     | New definitions "Loading arm" and "Loading hose" have been introduced                                                                                                                               | 328-04-1720c<br>of 17.03.2022                | 15.04.2022               |
| 2    | Part I, paras 4.4 — 4.6                | New para 4.4 containing the list of technical documentation necessary for confirmation of loading arms compliance with the RS requirements has been introduced.<br>Para 4.5 has been renumbered 4.6 | 328-04-1720c<br>of 17.03.2022                | 15.04.2022               |
| 3    | Part VI, para 3.14                     | New para has been introduced containing requirements for loading arms                                                                                                                               | 328-04-1720c<br>of 17.03.2022                | 15.04.2022               |
| 4    | Part VI, para 3.15                     | New para has been introduced containing requirements for loading hoses                                                                                                                              | 328-04-1720c<br>of 17.03.2022                | 15.04.2022               |
| 5    | Part VI, para 3.16.7                   | Para has been deleted                                                                                                                                                                               | 328-04-1720c<br>of 17.03.2022                | 15.04.2022               |
| 6    | Part VI,<br>paras 3.14 — 3.24          | Existing paras 3.14 — 3.22 have been renumbered 3.16 — 3.24 accordingly.<br>References, tables, formulae and figures in existing paras 3.14 — 3.22 are renumbered 3.16 — 3.24 accordingly           | 328-04-1720c<br>of 17.03.2022                | 15.04.2022               |

## **RULES FOR THE CLASSIFICATION AND CONSTRUCTION OF SHIPS CARRYING LIQUEFIED GASES IN BULK, 2022,**

**ND No. 2-020101-157-E**

### **PART I. CLASSIFICATION**

#### **1 GENERAL**

1 **Para 1.2.1.** After the definition "Cargo area" the definitions "Loading arm" and "Loading hose" are introduced reading as follows:

"Loading arm is an articulated transfer system used for loading and/or unloading liquefied gas to or from LG carrier and capable of withstanding various external aspects of cargo handling operations such as ship's motions, ship's freeboard, changes in water depth (tides).

Loading hose is a part of cargo system used for loading and/or unloading liquefied gas to or from LG carrier and composed of flexible pipes and relevant fitting."

#### **4 PLAN APPROVAL DOCUMENTATION**

2 New **para 4.4** is introduced reading as follows:

"**4.4** In addition to technical documentation specified in 4.1, the following technical documentation confirming that loading arms comply with the Register requirements shall be submitted to the Register prior to commencement of a ship's construction<sup>1</sup>:

- .1 arrangement plan of loading arms including their operating envelope scheme (\*);
- .2 structural drawings including platforms, foundations and reinforcements (\*);
- .3 drawing and diagram of piping with fittings including the drawing of cargo swivel (\*);
- .4 drawing of quick connect/disconnect coupler (QCDC) (\*);
- .5 drawing of emergency release coupling (ERC) (\*);
- .6 drawings of swivel joints, ropes, blocks and counterweights (\*);
- .7 diagram of purge and drain system (\*);
- .8 plan of arrangement and connection of electrical equipment (components of arm constant position monitoring system, components of automation, alarm and protection systems including local control panels, earthing, etc.) (\*);
- .9 pattern of insulating coating application (\*);
- .10 justification of material selection for structures and piping with loading arm fitting (\*\*);
- .11 strength calculation for structures and piping with loading arm fitting (\*\*);
- .12 bollard pull calculation when choosing the rope (\*\*).

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<sup>1</sup> Stamp types following the documentation (marked with (\*) and (\*\*)) review results are chosen according to 3.1.5 of Part I "Classification" of the Rules for the Classification."

3 **Para 4.5** is renumbered **4.6**.

## PART VI. SYSTEMS AND PIPING

### 3 CARGO SYSTEM

4 New **paras 3.14** and **3.15** are introduced reading as follows:

#### **"3.14 Loading arms.**

**3.14.1** The loading arm shall be designed, manufactured and installed on board the ship to provide its reliable and safe work under all possible operating conditions.

The arrangement and number of loading arms on board the ship shall be determined by the designer proceeding from safe operation conditions and particulars of cargo handling operations. Transfer of liquefied gas and return of its vapours shall be performed simultaneously unless combustion or reliquefaction of evaporated gas is provided. Loading arms of combined type may be used.

**3.14.2** Materials used for manufacture of pipelines and fitting of the loading arm shall comply with the requirements of 2.1, Part IX "Materials and Welding".

When choosing material for structures of the loading arm, design loads according to 3.14.3 as well as the design temperature of the inner medium and design pressure in piping system of the loading arm shall be taken into account.

#### **3.14.3 Stress and movement analysis in components of the loading arm.**

The analysis of stress and movements in components of the loading arm shall include but not limited to the following:

- .1 determination of the design loads for various load cases;
- .2 determination of the allowable stresses and movements;
- .3 determination of the acting stresses and movements and their comparison with allowable values.

When making calculations, dead loads, including the weight of the pipeline with fitting and weight of transferred liquefied gas, pressure and transfer velocity of liquefied gas, icing and wind pressure, shall be taken into account. For pipelines the requirements of 2.2.3 shall be taken into account.

The calculations shall be made according to the procedure agreed with the Register.

**3.14.4** Piping components of the loading arm, such as cargo swivel, quick connect/disconnect coupler (QCDC), emergency release coupling (ERC), etc. shall have a Type Approval Certificate.

**3.14.5** Electrical equipment required for operation of the loading arm shall meet the requirements of Part VII "Electrical Equipment".

#### **3.14.6 Testing.**

Prior to installation on board the ship the fully assembled loading arms shall be tested and surveyed in accordance with the test program approved by the Register. The test program shall include, as a minimum, demonstration and operational testing of cargo swivel, QCDC, ERC, arm constant position monitoring system, automation, alarm and protection systems.

Pipelines with fitting shall be tested under pressure equal to 1,5 of design pressure in the piping system of the loading arm and shall stand the indicated pressure at least 30 min without any residual deformations.

Swivel joints shall be leak tested by rotation of pressurized movable joints at the working temperature.

The survey and testing plan of the loading arm shall be approved by the Register.

Testing on board the ship shall be performed in the presence of the RS surveyor in accordance with 12.2 according to the gas testing program provided by the shipyard.

#### **3.14.7 Marking.**

Upon satisfactory results of testing and survey, the loading arm shall be marked. The marking shall be legible, reliable and durable and shall contain the following particulars:

- .1 manufacturer;
- .2 type, designation (inner medium);
- .3 serial (identification) number;
- .4 year of manufacture;
- .5 capacity, l;
- .6 diameter (DN) and material of the pipeline;

- .7 design cargo temperature, °C;
- .8 design pressure in piping system, MPa;
- .9 test pressure, MPa;
- .10 date of testing.

**3.15 Loading hoses.**

**3.15.1** The loading hose shall comply with the requirements of 5.11.7 of the IGC Code and applicable requirements of Section 6, Part VIII "Systems and Piping" of the Rules for the Classification and shall have a Type Approval Certificate."

5 **Para 3.16.7** is deleted.

6 **Existing paras 3.14 — 3.22** are renumbered **3.16 — 3.24** accordingly.

7 References, tables, formulae and figures in the **existing paras 3.14 — 3.22** are renumbered **3.16 — 3.24** accordingly.