RUSSIAN MARITIME REGISTER OF SHIPPING

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RULES

FOR THE EQUIPMENT OF SEA-GOING SHIPS

PART III

SIGNAL MEANS

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St. Petersburg
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RULES FOR THE EQUIPMENT OF SEA-GOING SHIPS

Rules for the Equipment of Sea-Going Ships of Russian Maritime Register of Shipping (RS, the Register) have been approved in accordance with the established approval procedure and come into force on 1 March 2023.

The Rules are published in the following parts:

Part I "General";

Part II "Life-Saving Appliances";

Part III "Signal Means";

Part IV "Radio Equipment";

Part V "Navigational Equipment".

All parts of the Rules are published in electronic format in Russian and English.

The requirements of these Rules apply to ships contracted for construction or conversion on or after 01.03.2023, and to which SOLAS-74 as amended is not applicable.

For ships to which SOLAS-74 as amended is applicable, it is recommended to apply the Guidelines on the application of provisions of chapters III, IV and V of the International Convention for the Safety of Life at Sea (SOLAS-74) developed by RS, available in the "RS Publications" section of the official RS website (https://lk.rs-class.org/regbook/rules), in addition to the mandatory and applicable provisions of SOLAS-74 as amended.

The requirements of Part III "Signal Means" apply to the ships as defined in the International Regulations for Preventing Collisions at Sea, 1972.

REVISION HISTORY[1]
(purely editorial amendments are not included in the Revision History)

Amended paras/chapters/ sections	Information on amendments	Number and date of the Circular Letter	Entry-into-force date
Annotation	The entry-into-force date of the Rules for the Equipment of Sea-Going Ships, 2023 has been postponed till 01 of March 2023	312-09-1879c of 26.12.2022	01.01.2023
Para 3.1.6.7	New para 3.1.6.7 containing requirements for colour range vertices for blue light has been introduced	314-10-1886c of 24.01.2023	01.03.2023

[1] Amendments and additions introduced at re-publication or by new versions based on circular letters or editorial amendments.

1 GENERAL

1.1 APPLICATION

1.1.1 The requirements of this Part of the Rules for the Equipment of Sea-Going Ships[1] apply to the ships as defined in the International Regulations for Preventing Collisions at Sea of 20 October 1972[2] operating in the open seas and waters connected herewith, where Sea-Going ships can navigate, as well as in the in-land waterways, to berth-connected ships, a well as to the products included in the composition of signal means and intended for installation on the above ships.

The equipment of the above ships with signal means is subject to survey by the Register.

1.1.2 The requirements of the present Part of the Rules applies to ships under construction and to ships in service.

[1] Hereinafter refers to as the Rules.

[2] Hereinafter refers to as COLREGs-72.

1.2 DEFINITIONS AND EXPLANATIONS

1.2.1 The definitions and explanations concerning the general terminology of the Rules are given in Part I "Classification" of the Rules for the Classification and Construction of Sea-Going Ships[1].

For the purpose of the present Part of the Rules the following definitions are adopted.

COLREGs-72 are the International Regulations for Preventing Collisions at Sea of 20 October 1972, as amended;

Daylight signalling lamps are fixed or portable lamps suitable for transmitting white light signals by focused light beams, which can be clearly distinguished visually as separate signals by an observer.

Flashing light is a light flashing at regular intervals at a frequency of 120 flashes or more per minute.

Height above the hull is the height above the uppermost continuous deck. This height shall be measured from the position vertically beneath the location of the light.

Hoisted appliance is a device, which is lifted to the place of its use.

Length and breadth of ship are her overall length and greatest breadth.

Power-driven ship is a ship propelled by machinery.

Prolonged blast is a blast of 4 — 6 s duration.

Sailing ship is a ship under sail provided that propelling machinery, if fitted, is not being used.

Ship constrained by her draught is a power-driven ship, which because of her draught in relation to the available depth and width of navigable water is severely restricted in her ability to deviate from the course she is following.

Ship engaged in fishing is a ship fishing with nets, lines, trawls or other fishing apparatus, which restrict manoeuvrability; it does not refer to a ship fishing with trolling lines or other fishing apparatus, which do not restrict manoeuvrability.

Ship engaged in trawling is a ship dragging a dredge net or other trawling fishing gear through the water.

Ship not under command is a ship, which is unable to keep out of the way of another ship because through some exceptional circumstance she is unable to manoeuvre as required.

Ship restricted in her ability to manoeuvre is a ship, which from the nature of her work is restricted in her ability to manoeuvre and is therefore unable to keep out of the way of another ship. At least the following ships shall be regarded as ships restricted in their ability to manoeuvre:

a ship engaged in laying, servicing and/or picking up a navigation mark, submarine cable or pipeline; a ship engaged in dredging, oceanographic, surveying or underwater operations;

a ship engaged in replenishment or transferring persons, provisions or cargo while underway;

a ship engaged in the launching or recovery of aircraft;

a ship engaged in a towing operation such as renders her unable to deviate from her course.

Short blast is a blast of about 1 s duration.

Stationary appliance is a device which is kept fixed in its regular position.

Switch off time is the period of time required for luminous intensity to decrease to 5 % of the required luminous intensity after the daylight signalling lamp has been switched off.

Switch-on time is the period of time required for reaching 95 % of the required luminous intensity after the daylight signalling lamp has been switched on.

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[1] Hereinafter refers to as the Rules for the Classification.

W h i s t l e is any sound signalling appliance capable of producing the prescribed short and prolonged blasts.

2 EQUIPMENT OF SHIPS WITH SIGNAL MEANS

2.1 GENERAL

2.1.1 The ships shall be equipped by signal means in compliance with these Rules and COLREGs- 72.

2.1.2 The equipment of lifeboats, rescue boats and liferafts with all kinds of signal means shall meet the requirements of Part II "Life-Saving Appliances" of the Rules.

2.1.3 The technical requirements for radar reflectors are specified in 3.7.8 and 5.8, Part V "Navigational Equipment" of the Rules.

2.1.4 Equipment of the objects operated with no crew board and being towed with sound and pyrotechnic signal means, daylight signalling lamp and radar reflectors is not required.

2.2 EQUIPMENT OF SHIPS

2.2.1 The basic set of signal means of ships shall comply with COLREGs-72.

2.2.2 Ships may be provided with electric or oil navigation lights. If a set of navigation lights comprises electric lights, provision shall be made for an additional set of spare lights, the number of which is given under 2.2.4. The spare set may be either electric or oil lights.

In power-driven ships spare masthead lights, sidelights and stern lights shall be installed in regular positions or duplicated electric lights (navigation lights with two light sources one of which is supplied from the ship's mains and the other from an emergency source of power) shall be used.

Power supply of electric lights shall comply with the requirements of 6.8.2, 9.3.1 and 19.1.2.1, Part XI "Electrical Equipment" of the Rules for the Classification.

.2.3 Oil tankers and other ships intended for carrying petroleum products or other flammable cargoes as well as ships intended for towing and servicing the above ships shall be provided with electric lights only.

2.2.4 A set of spare lights comprises:

.1 masthead, side, stern, except for the use of lights as the main duplicated electric lights, white and red all-round lights ("Ship not under command" signal and anchor);

.2 all-round white, red and green lights indicating the occupation of the ship (trawling, fishing, pilot), "Ship restricted in her ability to manoeuvre" signal, towing (white) and towing (yellow) lights.

A set of spare lights may not be required when the above-mentioned lights are duplicated.

2.2.5 Every ship shall be provided with the following spare parts and materials for the lights depending on the set of basic and spare navigation lights installed:

.1 one light filter for each light ("Ship not under command" and "Ship restricted in her ability to manoeuvre" signals, side, towing (yellow), fishing and air-cushion) unless a coloured lens is fitted in the light;

.2 two electric lamps for each electric light of the basic set;

.3 six chimneys, provided that all oil lights have chimneys of the same size. If not, two chimneys shall be provided for each light;

.4 one wick for each oil light;

.5 fuel mixture for spare oil lights in a quantity sufficient to ensure burning of the whole set of lights during at least 32 h;

.6 for electric lights with LED light sources, depending on their structure, provision shall be made for spare parts and materials for replacement in case of the light failure or malfunction in accordance with the manufacturer's recommendations.

2.2.6 Power-driven ships of less than 20 m in length as well as sailing and non-self-propelled ships of less than 12 m in length are not required to have a set of spare lights (except for a spare oil anchor light, in case of no emergency source of power on board the ship, as well as the masthead, side and stern lights on board power-driven ships). In power- driven ships spare masthead lights, sidelights and stern lights shall be installed in regular positions or duplicated electric lights (navigation lights with two light sources one of which is supplied from the ship's mains and the other from an emergency source of power) shall be used.

Spare masthead lights, sidelights and stern lights of the ships, which operation is restricted by harbor water areas, may be stored ashore.

2.3 BERTH-CONNECTED SHIPS

2.3.1 A berth-connected ship shall be equipped with all-around white lights:

if the length of the ship is less than 50 m — one light on either side;

if the length of the ship is 50 m and over but less than 100 m — two lights on either side, spaced 50 m apart;

if the length of the ship is 100 m and over, the number of lights shall be such that one light is provided for each 50 m of the ship length. Where more than two lights are fitted on either side of a berth-connected ship, they are recommended to be equally spaced.

If a berth-connected ship is designed so that she can be moored one side only, all-around lights may be fitted only on the offshore side.

2.3.2 A berth-connected ship when towed in open seas and waters connected therewith, shall be equipped with side and stern lights.

2.3.3 A berth-connected ship, when towed through in-land waterways, shall be equipped with lights in accordance with Inland Navigation Rules of the state to which the inland waterways belong.

3 CONSTRUCTION OF SIGNAL MEANS

3.1 NAVIGATION LIGHTS

3.1.1 Categories of lights.

This Part of the Rules specifies requirements for three basic categories of navigation lights:

.1 lights of Category I intended for ships of 50 m in length and more;

.2 lights of Category II intended for ships of 12 m in length and more but under 50 m;

.3 lights of Category III intended for ships of less than 12 m in length.

3.1.2 Main characteristics of lights. Main characteristics of various navigation lights are given in COLREGs-72.

3.1.3 General technical requirements.

3.1.3.1 The navigation lights may be fitted with electric or LED source of light (refer to 3.1.7).

3.1.3.2 Lights shall be so constructed as to prevent water from getting into contact with current-carrying parts in the electric and LED lights.

3.1.3.3 The light shall reliably operate at variations of ambient temperature from –30 to +45 °C. Lights intended for icebreakers of ice classes **Icebreaker7** to **Icebreaker9** and ships of ice classes **Arc5** to **Arc9** (refer to 2.2.3, Part I "Classification" of Rules for the Classification) shall be adapted to operate at a negative temperature down to – 40 °C.

3.1.3.4 The lights shall be reliable in operation under vibration and shaking such as may occur in the ship, at a trim of not less than 10° and periodic heeling up to 45°.

3.1.3.5 To prevent lack of light intensity of LED lights:

.1 there shall be an alarm function to notify the Officer in charge of the Watch when the luminous intensity of the light falls below the level required by the COLREGs;

or

.2 to ensure the required luminous intensity, there shall be used only LED lights the service life of which specified by the manufacturer has not expired yet (useful life). The service life of LED lights shall be determined and clearly stated by the manufacturer based on the results of relevant tests on the dimming of LED lights under various temperature conditions and on the temperature state of the LED light source inside the light during operation, taking into account the necessary margin.

3.1.3.6 The electric navigation lights shall maintain lighting characteristics under variations from the rated supply voltage for long periods as specified in 2.1.3.1, Part XI "Electrical Equipment" of the Rules for the Classification.

3.1.4 Light case.

3.1.4.1 The light case and its parts shall be manufactured of materials resistant to sea water, or materials with an adequate anticorrosive protective coating. The electric light shall be of watertight design (IP56).

3.1.4.2 The electric lights shall be so constructed as to prevent such heating of the optical parts and of the light case which would result in damage to optical parts or deformation of the case, owing to temperature variations which may be encountered in any climatic conditions.

3.1.4.3 The light case shall be of such a design as to allow rapid change of electric lamps.

3.1.4.4 The lights shall be of such a design as to ensure drainage of condensate and fresh air inflow to the extent related to the required degree of protection.

3.1.4.5 The cases of basic and spare lights shall be so constructed as to provide for their efficient securing in the working position as well as rapid removal and fitting in the regular places.

3.1.5 Lenses and plain glasses.

3.1.5.1 The navigation lights may be fitted with lenses or plain glasses provided the minimum range of visibility and the curve of vertical light distribution of the lightshall meet the requirements of COLREGs-72.

3.1.6 Coloured light filters.

3.1.6.1 The colouring of the navigation lights may be obtained with the use of appropriate light filters or coloured lenses. Plain coloured glasses may be used provided that the chromaticity of the filter is ensured over their whole surface.

3.1.6.2 The coloured light filters used in the navigation lights may be manufactured of glass coloured throughout its entire thickness or over the surface only (cover plates).

The light filters may be manufactured of plastics provided all their characteristics are in all cases not inferior to those of the glass filters.

3.1.6.3 The height and the length of the arc of a coloured light filter shall be such as to cover the whole inside surface of the lens.

3.1.6.4 The inner and outer surfaces of the light filters shall be free from notches and indentations, and the filter glass shall be free from blisters, foreign inclusions and drops which impair the characteristics of the lights.

3.1.6.5 The light filters shall be fixed in the lights in such a way as to preclude their spontaneous shifting in the course of their use on board the ship.

3.1.6.6 The fastening arrangements of the light filters in the side and combined two-colour and three-colour navigation lights shall be so constructed as to prevent the possibility of placing the red filter instead of the green one, and vice versa.

3.1.6.7 Corner coordinates x, y of the allowable zones for blue colour are given in Table 3.1.6.7.

Table 3.1.6.7

Corner coordinates of chromaticity zones

Light colour	Coordinates	Points					
		1	2	3	4	5	6
Blue	x	0,136	0,218	0,185	0,102	—	—
	y	0,040	0,142	0,175	0,105	—	—

3.1.7 Sources of light.

3.1.7.1 The source of light in the electric lights shall be an electric lamp or light - emitting diode (LED). **3.1.7.2** The sources of light shall be fitted in the lights in a vertical position, so that the horizontal plane of symmetry of the lens shall divide the luminous part of the light source into two nearly equal parts.

3.1.7.3 The fixing arrangement for the source of light in the light shall be so constructed as to permit the placing of this in only one fixed position, so that no spontaneous change in this position can occur during the use of the light on board the ship, and suitable provisions shall be made for ready replacement of the source of light in the light.

3.1.7.4 Electric lights shall be fitted with sockets and marine type lamps having devices for prevention of their spontaneous loosening.

3.1.7.5 The use in the electric lights, except for twin lights, of more than one lamp or of one two-filament lamp (one filament being for permanent service and the other for emergency use) is not permitted.

3.2 FLASHING LIGHTS

3.2.1 Manoeuvring lights.

3.2.1.1 Manoeuvring lights shall be all-round white ones.

3.2.1.2 The manoeuvring light shall be an electric one and shall send flashing light signals whilst the manoeuvre is being carried out. The duration of each flash and the interval between flashes shall be about 1 s, and the interval between successive signals shall not be less than 10 s.

3.2.2 Daylight signalling lamps.

3.2.2.1 The main characteristics of daylight signalling lamps shall comply with the following requirements:

.1 by day and with an atmospheric transmission of 0,8, the visibility of light signals emitted by daylight signalling lamps shall be at least 2 miles, equaling a required luminous intensity of 60000 cd;

.2 the axial luminous intensity of daylight signalling lamps shall reach at least 90 % of the maximum luminous intensity;

.3 the luminous intensity of daylight signalling lamps shall have its maximum in the centre of the luminous intensity distribution. It shall decrease evenly from the centre of luminous intensity distribution;

.4 the half angle of divergence a_h shall not exceed 9°, the tenth angle of divergence a_z shall not exceed 14°;

.5 the chromaticity of the white signal light shall lie within the corner coordinates, as specified in COLREGs-72;

.6 the effective light emission sectors of daylight signalling lamps shall be circular. The sum of switch-on and switch-off times shall not exceed 500 ms;

.7 daylight signalling lamps shall be provided with an indication of their operational status;

.8 daylight signalling lamps and any battery required for operation shall be designed in such a way that safe handling in the intended application is ensured. The daylight signalling lamp shall be capable of being operated be personnel wearing gloves.

3.2.2.2 Daylight signalling lamps shall comply with the following technical requirements:

.1 the illuminant shall be safely fitted in the daylight signalling lamp; use of screwed sockets shall be avoided;

.2 daylight signalling lamps shall be designed in such a way that the illuminant can be easily replaced also in the dark;

.3 the sighting mechanism shall be mounted in a fixed attitude, parallel to the optical axis;

.4 all parts of daylight signalling lamps shall be made of anti-magnetic material;

.5 daylight signalling lamps shall be so constructed that the accumulation of condensed water is avoided;

.6 the materials used shall withstand heat generation during operation;

.7 daylight signalling lamps shall be resistant to environmental conditions;

.8 each daylight signalling lamp shall be provided with at least three spare illuminants complying with the type-tested illuminant;

.9 the outer parts of daylight signalling lamps shall not reach temperatures during operation, which restrict their manual use;

.10 where applicable, daylight signalling lamps shall be protected against short circuit to prevent damage to the lamp or injury to the operator.

3.2.2.3 The power supply shall comply with the following requirements:

.1 daylight signalling lamps shall not be solely dependent upon the ship's main or emergency sources of electrical energy;

.2 daylight signalling lamps shall be provided with a portable battery with a complete weight of not more than 7,5 kg;

.3 the portable battery shall have sufficient capacity to operate the daylight signalling lamp for a period of not less than 2 h;

.4 daylight signalling lamps shall continue to operate satisfactorily in the presence of variations of power supply normally to be expected in a ship;

.5 means shall be incorporated for the protection from the effects of excessive current and voltage, transients and accidental reversal of the power supply polarity;

.6 if provision is made for operating daylight signalling lamps from more than one source of electrical power, arrangements for rapidly changing from one source to the other shall be provided but not necessarily incorporated in the equipment;

.7 daylight signalling lamps shall be reliable in operation, as specified in 5.1.41, Part IV "Radio Equipment" of the Rules.

3.2.2.4 Marking and identification.

3.2.2.4.1 Daylight signalling lamps shall be marked clearly and durably with the following data:

identification of the manufacturer;

equipment type number or model identification under which it was type tested;

serial number of the unit.

4 FITTING OF SIGNAL MEANS ON BOARD

4.1 GENERAL

4.1.1 The signal means shall be fitted or stored on board in such a manner as to be at all times ready for use.

4.1.2 In ships equipped with electric navigation lights supplied in accordance with 6.8.2, Part XI "Electrical Equipment" of the Rules for the Classification, provision shall be made in the wheelhouse for indication on switching of navigation lights and visual and sound alarms warning of a light failure.

In ships less than 50 m in length and in non-self-propelled ships, visual and sound alarms may not be provided if position of navigation lights is such that they are visible from the steering control station or, where there is no such station, from the watch-keeping position.

4.1.3 The placing of the electric signal means and protection of radio equipment from electrical interference produced by them shall comply with the requirements of 2.2, Part XI "Electrical Equipment" of the Rules for the Classification.

4.1.4 In floating cranes and similar ships where it is impracticable to fulfil all the requirements of this Chapter due to particular construction of deck equipment a different positioning of navigation lights may be accepted which shall, however, be as close as possible to the requirements laid down below.

4.1.5 Lights of all-round visibility (360°) in horizontal plane, except for anchor lights, shall be so located as not to be obscured by masts, topmasts or superstructures within sectors of more than 6°.

In this case, the light shall be considered as an all-round source of light with the diameter equal to the outside diameter of the source of light (filament of the lamp, flame of the burner).

4.1.6 When fulfilment of the requirements of 4.1.5 by means of fitting of one all-round light is not feasible, two all-round lights shall be installed. They shall be located or provided with shields in such a way as to be visible, as far as practicable, as one all-round light at a distance of 1 mile and over. The screening of each all-round light shall comply with the following requirement:

$$\theta_2 \leq 360 - \theta_1 \qquad (4.1.8)$$

where θ_1 = screened angle of one all-round light;
θ_2 = screened angle of the other all-round light.

4.1.7 The masthead light of high-speed craft may be placed at a height related to the breadth of the craft lower than that prescribed in COLREGs-72, provided that the base angle of the isosceles triangles formed by the sidelights and masthead light, when seen in end elevation, is not less than 27°.

4. 1.8 On high-speed craft of 50 m or more in length, the vertical separation between foremast and mainmast light of 4,5 m, required by 4.2.1.2, may be modified provided that such distance shall not be less than the value determined by the formula

$$Y = \frac{(a + 17\psi)C}{1000} + 2 \qquad (4.2.1.8)$$

where Y – is the height of the mainmast light above the foremast light, in m;
a – is the height of the foremast light above the water surface in service condition, in m;
ψ – is the trim in service condition, in deg.;
C – is the horizontal separation of masthead lights, in m.

4.1.9 On power-driven ships the sidelights shall be placed at a distance of not more than 10 % of the breadth of the vessel inboard from the side plating, up to a maximum of 1 m. Where application of the above requirement is impracticable, e.g. small ships with superstructure of reduced width, the sidelights may be placed at a distance of more than 10 % of the ship's breadth.

4.1.10 The sidelights shall be protected by inboard shields with two transverse screens (fore and aft) perpendicular to the shield.

For ships contracted for construction before 1 July 2019, the breadth of the fore and aft transverse screens shall be such that the light would practically fade within 1° — 3° beyond the sectors stipulated under rule 21(b) of COLREGs-72. In the forward direction, the minimal distance of the light visibility shall be ensured.

For ships contracted for construction on or after 1 July 2019 the breadth of the fore and aft transverse screens shall be such that the light would practically fade within 1° to 3° beyond the sectors stipulated under rule 21(b) of COLREGs-72.

The full intensity of the side lights to be maintained in the forward direction of 1° outside the prescribed sector (one-degree toe-in sector) with the practical cut-off between 1° and 3°. This is needed to enable other ships to determine a "head-on-situation" as per rule 14 of COLREG-72.

Where sidelights, installed in a position at or "near the side", are not fully visible at all angles from 5 degrees above to 5 degrees below the horizontal including the 1° toe-in sector (e.g., refer to Fig. 4.1.10 Example of the non-visible sector (Area A)), then that installation is acceptable provided the installed sidelights are visible, with the ship in all normal conditions of trim corresponding to the lightest seagoing draft in the approved T&S Booklet, at a minimum distance of 1000 m measured from the stem when viewed from sea level throughout the horizontal plane of 112.5° including the horizontal 1° toe-in sector in the forward direction.

It is recommended that shields of such a length shall be fitted that the distance from the outer edge of the light lens or plain glass to the after edge of the fore transverse screen will be 0,9 m at least, and that the breadth of the forward transverse screen shall be chosen such that a line connecting its outer edge to the inner edge of the filament or the light burner will be parallel to the ship centreline.

The height of the shield and of the screens shall not be less than that of the light case.

The shields shall be painted matt black on the inside.

4.1.11 In lieu of the shields, it is permitted to use side walls of the navigation bridge or wheelhouse provided all other requirements set forth in 4.1.9 — 4.1.10 are met.

4.1.12 A daytime signalling lamp shall be kept in the wheel-house or chartroom, always ready for immediate use.

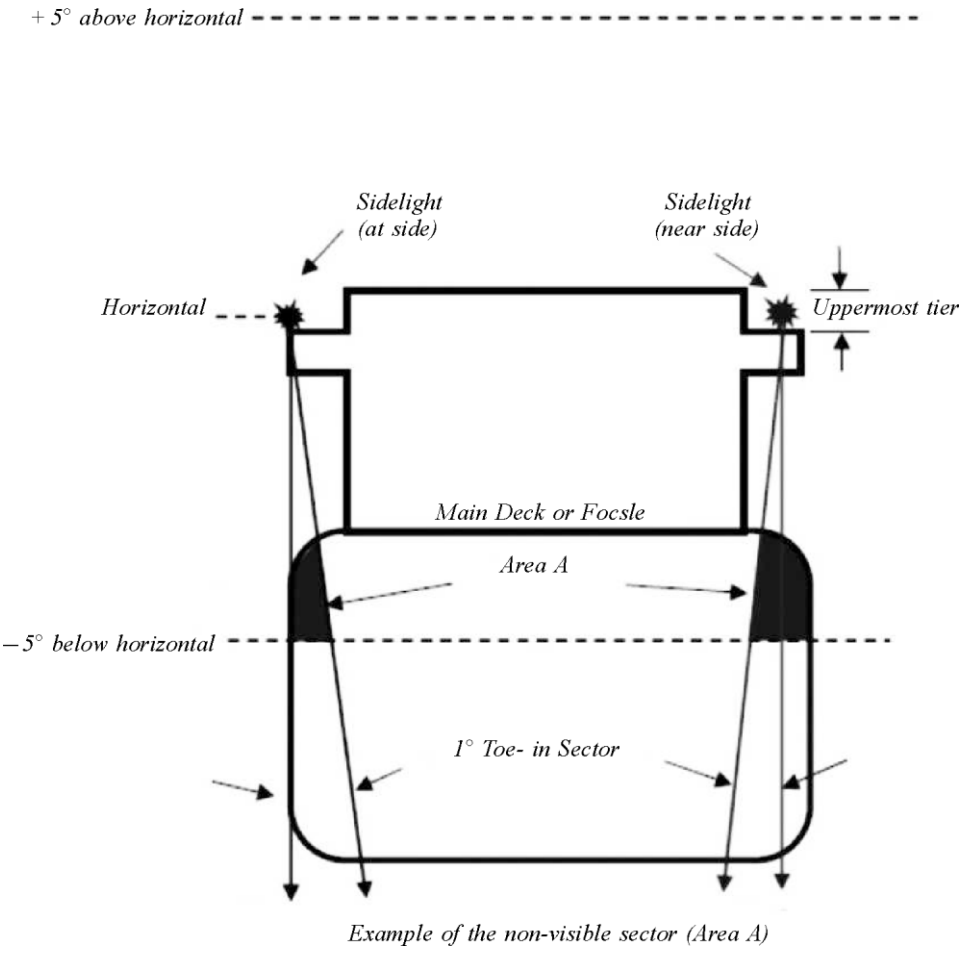

Fig. 4.1.10
Example of the non-visible sector (Area A)

4.2 SOUND SIGNAL MEANS

4.2.1 General.

4.2.1.1 The sound signal means shall be so placed that the sound they produce could not be intercepted or its intensity and clearness impaired by any parts of the structure or equipment of the ship.

4.2.1.2 Sound signal means drives shall be so constructed as to exclude their spontaneous sounding under the action of wind, snow, icing-up, etc.

4.2.2 Whistles.

4.2.2.1 The whistles shall be so fixed that the centre of the sound source is at the height of not less than 2,5 m above the uppermost deck extending from side to side and at least 0,5 m above the deckhouse and any other structures on this deck, which can obstruct the propagation of sound.

The sound pressure level of the ship's own signal measured at listening posts of the passing ship (navigating and top bridges, wheelhouse and bridge wings) shall not exceed 110 dB and, as far as it is practicable, be not more than 100 dB. The whistle installed on a ship shall meet the requirements of COLREs-72.

A single whistle shall be so installed on a ship that its maximum intensity is directed straight ahead.

In the horizontal plane within ±45° of the forward axis of the whistle (in the straight ahead direction) the sound pressure level of the whistle shall be not more than 4 dB below the prescribed sound pressure level on the forward axis. In any other direction in the horizontal plane the sound pressure level shall not be more than 10 dB below the prescribed sound pressure level on the forward axis, so that the audibility range in any direction will be at least half the range on the forward axis.

4.2.2.2 The system of conveying steam or air shall be so designed as to ensure the supply of these media without condensation at all times and under any weather conditions.

4.2.2.3 The control buttons or handles to actuate the whistle shall be located at the steering stations of the ship. In ships of unrestricted service and in ships of restricted area of navigation **R1** there shall be provided at least one button (handle) in the wheelhouse and one button (handle) on each of the bridge wings (if any), outside the wheelhouse. Other ships shall be provided with at least one button (handle) on each side of the bridge; ships of less than 20 m in length may have only one control button (handle).

4.2.2.4 If whistles are fitted at a distance of more than 100 m apart, they shall be so arranged that they are not sounded simultaneously. If due to the presence of obstructions the sound field of a single whistle or one of the whistles is likely to have a zone of greatly reduced signal level, it is recommended that a combined whistle system be fitted so as to overcome this reduction. A combined whistle system shall be regarded as a single whistle. The whistles of this system shall be located at a distance of not more than 100 m apart and arranged to be sounded simultaneously. The frequency of any one whistle shall differ from that of the others by at least 10 Hz.

4.2.2.5 In ships sailing in regions where icing of whistle might occur, provision shall be made for its heating.

4.2.3 Bell.

The bell shall be placed stationarily on the clear part of the forecastle deck, near the windlass or capstan and shall provide the sound pressure level not less than 110 dB at a distance of 1 m therefrom.

The bell shall be hung up in such a manner as to permit its free swinging through an angle of not less than 50° each way without touching any part of the structure or equipment of the ship.

4.2.4 Gong.

The gong shall be such that its tone and sounding differ distinctly from those of the bell of the ship and shall provide the sound pressure level not less than 110 dB at a distance of 1 m therefrom.

The gong shall be placed as near the after end of the ship as possible and at such a place where nothing will intercept the propagation of sound, and shall be hung up so as to comply with the requirements of 4.2.3.

A gong of up to 5 kg in mass needs not be fixed in a stationary position, but a special storage place shall be provided in the after part of the ship.

The gong beetle shall be kept in a special pocket to be fitted close to the gong.

4.3 DEVICES FOR HOISTING AND STORING SIGNAL SHAPES

4.3.1 The ships shall be provided with proper devices (masts, stays with sufficient number of signal halyards) for hoisting the signal shapes.

4.3.2 The signal shapes shall be stored near the navigation bridge or the devices for hoisting them to their regular positions.

The signal shapes of the non-self-propelled ships operated with no crew on board may be stored in the towing or service ships.

4.4 ARRANGEMENTS FOR STORING PYROTECHNIC SIGNAL MEANS

4.4.1 Pyrotechnic signal means shall be stored on, or in the immediate vicinity, of the navigation bridge.

5 ADDITIONAL SIGNAL MEANS FOR SHIPS OF RIVER-SEA NAVIGATION

5.1 GENERAL

5.1.1 The river-sea ships shall, in addition to the signal means required by COLREGs- 72, be provided with signal means in accordance with the present Section.

5.1.2 The list, disposition and order of exhibiting the navigation lights and daytime signal means are specified in the Rules of Navigation in Inland Waters of the Russian Federation and in the regional navigation rules.

5.2 EQUIPMENT OF SHIPS WITH SIGNAL MEANS

5.2.1 Ships of river-sea navigation shall, in addition to signal means required by COLREGs-72, be provided with signal means required by Table 5.2.1.

Table 5.2.1

Ships	Navigation lights					Daytime signal means	
	Masthead	Sternlight [1]	Light impulsive flashing lamp[2]	All-round red [3]	Side anchorage lights[4]	Signal flag "b" (shield)[5]	White arm signal flag
Self-propelled	1	3	4	1	2	1	1

[1] Ships of 5 m in breadth and less are allowed to have one sternlight in the centreline.
[2] It is recommended to fit additionally electric flashing lamps with incandescent lamps.
[3] Required for ships carrying dangerous goods (explosives and noxious substances) or petroleum products.
[4] Required for ships of more than 5 m in breadth.
[5] Required for ships carrying petroleum products or dangerous goods.

5.2.2 Navigation lights shall be electric. They shall be supplied in compliance with 6.8.2, 9.3.1 and 19.1.2.1, Part XI "Electrical Equipment" of the Rules for the Classification.

5.2.3 Each ship shall be provided with spare parts for navigation lights:

.1 one light filter for each coloured light, provided no coloured lens is used in the light;

.2 one electric bulb for each electric light;

.3 for electric lights with LED light sources, depending on their structure, provision shall be made for spare parts and materials for replacement in case of the light failure or malfunction in accordance with the manufacturer's recommendations.

5.3 TECHNICAL REQUIREMENTS FOR SIGNAL MEANS

5.3.1 Main characteristics of navigation lights shall comply with the requirements of Table 5.3.1.

Table 5.3.1

Nos.	Light and colour	Range of visibility not less than, km	Arc of visibility in horizontal plane	
			Total angle, deg.	Position
1	Masthead, white	8	225	112,5° from right ahead on either side from the fore and aft centreline of the ship
2	Sidelight, green	3,7	112,5	From right ahead to 22,5° abaft the beam on starboard side
3	Sidelight, red	3,7	112,5	From right ahead to 22,5° abaft the beam on port side
4	Sternlight, white	3,7	135	67,5° from right aft on either side
5	All-round white	3,7	360	All round the horizon
6	All-round red	1,85		
7	Side anchorage light, white	3,7	180	90° from the beam to right ahead and right aft
8	Light-impulsive flashing lamp:			
	by day by night	2 4	112,5+112,5	From the beam to the bow with overlapping the fore and aft centreline by 22,5° and from the beam to the aft with overlapping the fore and aft centreline by 22,5°
9	Light flashing lamp	4	112,5 +112,5	From the beam to the bow with overlapping the fore and aft centreline by 22,5° and from the beam to the aft with overlapping the fore and aft centreline by 22,5°

5.3.2 Signal flags shall be manufactured of woolen flag cloth (bunting) of sufficient strength and fast colour. The flags may be of synthetic materials.

5.3.3 Signal flags shall be of square shape. The square side size shall not be less than 1000 mm, and square side size of arm signal flags shall not be less than 700 mm. For ships of less than 20 m in length, a square side size of a flag shall not be less than 500 mm.

5.4 FITTING OF SIGNAL MEANS ON BOARD

5.4.1 When several lights are fitted at the mast (one over the other), lighted simultaneously, the spacing of lights shall not be less than 1 m. In ships of less than 20 m in length they shall be spaced not less than 0,5 m apart.

5.4.2 Masthead lights.

5.4.2.1 The masthead lights shall be carried in the fore and aft centreline of the ship. The vertical separation of masthead light and sidelights shall not be less than 1 m (in ships of less than 20 m in length — 0,5 m).

5.4.2.2 In self-propelled ships of 50 m in length and more the masthead lights shall be placed in the after and fore parts of the ship at a distance of not less than 20 m from one another. The vertical separation of them shall be such that in all normal conditions of trim the forward light was carried at least 1 m lower than the after one; and the forward masthead light may be located below the sidelights, and the after one — behind the sidelights and at least 1 m higher.

5.4.2.3 In the ship which for passing under bridges shall have collapsible masts the reserve masthead light may be placed in the fore part of the ship and, in this case, it may be located below the sidelights. In ship of 50 m in length and more this light may be permanently used as a forward masthead light provided the requirements of 5.4.2.2 are satisfied.

5.4.2.4 All masthead lights shall have protective shields from below to prevent blinding the persons on the navigation bridge and deck.

5.4.3 Sidelights.

5.4.3.1 Sidelights (red light on port side, green light on starboard side) shall be visible for head-on ships and ships to be overtaken within the specified angles of visibility. Lights and their protective shields shall not extend outside the greatest breadth of the ship.

5.4.3.2 Sidelights shall be carried in a horizontal line symmetrically to the fore and aft centreline of the ship and shall be placed as follows:

.1 in undecked ship — at a height of not less than 0,5 m above the gunwale (in well-grounded cases, it is permitted to place them at the gunwale level);

.2 in ships with single-tier superstructure (deckhouse) — in its upper part;

.3 in ships with two- (or more) tier superstructure — not below the navigation bridge deck.

5.4.3.3 Every sidelight shall be protected by inboard shield with two transverse screens (fore and aft).

In ships of 20 m in length and more the distance from outer edge of the protective glass or lens of the light to the aft edge of the fore transverse screens shall not be less than 915 mm. The length of shield for these lights shall be not less than 1 m.

Fore transverse screen shall be of such breadth that a line joining its outer edge and the centre of light source is parallel to the fore and aft centreline of the ship. Aft transverse screen shall be of such breadth as to mask completely the light from being seen across the stern, but not hinder showing its light to 22,5° abaft the beam.

5.4.3.4 Sidelights may be placed in the recesses of superstructures and deckhouses. The dimensions of the recesses shall correspond to the dimensions of the light shields, and the recesses shall be fitted with the screens similar to those of light shield.

5.4.3.5 Inner surfaces of the light shields shall be painted matt black.

5.4.3.6 In ships of less than 20 m in length as well as in air-cushion ships and hydrofoil ships the dimensions of the shields may be reduced or the shields need not be installed in case the required angles of visibility are provided.

5.4.4 Sternlights and towing (yellow) light.

5.4.4.1 In ships which carry one sternlight this light shall be fitted behind the funnel or superstructure in the fore and aft centreline of the ship and if practicable, at the same height as the sidelights, but not higher. In well-grounded cases, in ships of less than 20 m in length it is permitted to place a sternlight higher than the sidelights.

5.4.4.2 In ships which carry three sternlights the highest light shall be placed as required by 5.4.4.1, and two lower lights shall be placed at bulwark or stern exposed bulkhead of superstructure as nearly as practicable to the sides in a horizontal line symmetrically to the fore and aft centreline of the ship.

5.4.5 All-round and side anchorage lights.

5.4.5.1 All-round white light on self-propelled ships used at anchorage shall be placed in the fore part of the ship. The light may be fitted at the mast, flagstaff or may be raised at stay.

5.4.5.2 All-round red light shall be placed above the all-round white light where it can best be seen and its all-round visibility is ensured. The light is not permitted to be fitted in a vertical line with anchorage lights.

5.4.5.3 Side anchorage lights shall be placed on sides along the edge of the navigation bridge.

5.4.6 Light-impulsive (light) flashing lamps.

5.4.6.1 Light-impulsive (light) flashing lamps shall be installed in a stationary position on each side of the ship in pairs (fore and aft) above the sidelights at a height of not less than 0,5 m from them.

5.4.6.2 Light-impulsive flashing lamps shall be switched on separately.

5.5 STORAGE OF SIGNAL FLAGS

5.5.1 For storage of signal flags, provision shall be made for special shelves with separate clearly indicated cell for each flag. The shelves shall be placed in the wheelhouse or at the navigation bridge in a position protected from precipitation and direct sunlight.

Russian Maritime Register of Shipping

Rules for the Equipment of Sea-Going Ships
Part III
General

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