RULES FOR THE SURVEY AND CONSTRUCTION OF INLAND WATERWAY SHIPS

GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF INLAND WATERWAY SHIPS

Rules for the Survey and Construction of Inland Waterway Ships
2018 AMENDMENT NO.2
Guidance for the Survey and Construction of Inland Waterway Ships
2018 AMENDMENT NO.1

Rule No.105 / Notice No.58 29 June 2018
Resolved by Technical Committee on 31 January 2018

ClassNK
NIPPON KAIJI KYOKAI

An asterisk (*) after the title of a requirement indicates that there is also relevant information in the corresponding Guidance.

RULES FOR THE SURVEY AND CONSTRUCTION OF INLAND WATERWAY SHIPS

RULES

2018 AMENDMENT NO.2

Rule No.105 29 June 2018

Resolved by Technical Committee on 31 January 2018

An asterisk (*) after the title of a requirement indicates that there is also relevant information in the corresponding Guidance.

Rule No.105 29 June 2018
AMENDMENT TO THE RULES FOR THE SURVEY AND CONSTRUCTION OF INLAND WATERWAY SHIPS

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

Amendment 2-1

Part 7 MACHINERY INSTALLATIONS

Chapter 14 AUTOMATIC AND REMOTE CONTROL

14.1 General

14.1.1 Scope*

Sub-paragraph -3 has been amended as follows.

3 ~~In cases where machinery and equipment which are deemed necessary by the Society use computer based systems for the proper achievement of their functions, the design, construction, commissioning and maintenance of such computer~~ Computer based systems, including the hardware and software which constitute such systems, are to be in accordance with requirements specified otherwise by the Society in addition to those specified in **-1** and **-2** above and throughout the rest of this chapter for design, construction, commissioning, maintenance, etc.

Sub-paragraph -4 has been added as follows.

4 The requirement in **-3** above is not applicable to equipment mentioned below:
(1) navigating equipment specified in the **Rules for Safety Equipment**,
(2) radio installations specified in the **Rules for Radio Installations**,
(3) stability instruments, and
(4) loading computers.

Paragraph 14.1.2 has been amended as follows.

14.1.2 Terminology*

Terms used in this Chapter are defined as follows:
((1) to (9) are omitted.)
(10) A system is defined as a combination of interacting programmable devices and/or sub-systems organized to achieve one or more specified purposes.
(11) A computer based system is defined as a system which provides control, alarm, monitoring, safety or internal communication functions and depends upon software for the proper achievement of these functions.
(12) A sub-system is defined as an identifiable part of a system, which may perform a specific function or set of functions.

(13) A programmable device is defined as a physical component where software is installed.

(~~10~~14) A safety system is defined as a system which operates automatically, in order to prevent damage to machinery and equipment in cases where serious impediments to functioning should occur during their operation so that one of the following actions ~~in (a) to (c)~~ will take place:

(a) Starting of stand-by machinery or equipment

(b) Reduction of output of machinery or equipment

(c) Shutting off fuel or power supplies, thereby stopping the machinery or equipment

14.2 System Design

14.2.6 Safety Systems*

Sub-paragraph -1 has been amended as follows.

1 ~~Constitution of~~ Independence of safety systems

~~Constitution~~ Independence of safety systems is to comply with the following requirements:

((1) and (2) are omitted.)

Paragraph 14.2.7 has been added as follows.

14.2.7 Use of Computers*

1 The reliability and maintainability of computer based systems are not to be inferior to those of systems not relying upon computers.

2 Control systems, alarm systems and safety systems which constitute computer based systems are to comply with the following **(1)** to **(3)**:

(1) Requirements for computers

(a) The composition of computers is to be so planned that the extent of impact on the system as a whole of any failure in any part of a circuit or component is to be minimized as far as possible.

(b) Each component is to be protected against any possibility of overvoltage (electronic noise) which may originate from input or output terminals.

(c) Central processing units and important peripheral devices are to have self-monitoring functions.

(d) Important programs and data are to be ensured against loss in cases where an external electrical power supply may be temporarily interrupted.

(e) Computers are to be set up so they can be quickly re-started following planned procedures within a short period of time after electrical power has been restored after a power failure.

(f) Spare parts for all important elements which require special techniques for repair work are to be kept in ample supply for easy replacement.

(g) Change-over to back-up means is to be able to be performed easily and soundly.

(2) Back-up means

(a) In cases where one computer simultaneously performs fuel control (governor control, electronic injection control, etc.) and remote control of main propulsion machinery in diesel or turbine ships, or output control (rotational speed control, load control, etc.) and remote control of main propulsion machinery in electric propulsion ships, one of the following systems is to be provided in the case of computer failure. However, where this requirement is impracticable, relevant systems are to comply with requirements deemed

appropriate by the Society.

i) Stand-by computer

ii) Governor-controlled back-up systems operated at the main control station

(b) Safety systems are to be provided with back-up means which can be used in a timely manner in the event of the failure of the computer in service.

i) Stand-by computer

ii) Safety systems that do not rely on computers

(c) In cases where visual display units (VDU) are adopted as indicators for the alarm systems stipulated in this chapter, at least two VDUs are to be installed, or other arrangements deemed appropriate by the Society are to be considered.

(3) Independence

Independence of computerized control systems and safety systems is to comply with the requirements in **14.2.4-1** and **14.2.6-1** respectively, except in cases where their constitution are comply with requirements specified below.

(a) In cases where secondary control systems or stand-by computers are installed for those control systems, the independence of such control systems may not be required for individual machinery or equipment. In such cases, local control equipment fitted to main propulsion machinery in accordance with the requirements given in **14.3.2-3(2)** are not regarded as secondary control systems.

(b) In cases where safety systems conform to the requirement given in **(2)(b)** above, the independence of individual machinery and equipment in systems, and their independence from other systems may not be required, notwithstanding the requirements in **14.2.6-1**.

(c) In cases where secondary systems or stand-by computers are installed in both control systems and safety systems, the independence of individual machinery and equipment in their systems including alarm systems, and their independence from the other systems may not be required.

14.3 Automatic and Remote Control of Main Propulsion Machinery or Controllable Pitch Propellers

Paragraph 14.3.3 has been amended as follows.

14.3.3 Bridge Control Devices*

Bridge control devices are to comply with the following **(1)** through **(4)** as well as requirements in **14.3.2**.

((1) and (2) are omitted.)

(3) Bridge control devices are to be provided with visual and audible alarms which give the officer in charge of the navigational watch enough time to assess navigational circumstances in an emergency before the safety systems of main propulsion machinery specified in **14.1.2(~~10~~14)(b)** or **(c)** go into effect.

(4) Bridge control devices are to be provided with an override arrangement specified in **14.2.6-3** for the following safety systems of main propulsion machinery:

(a) Safety systems ~~Systems~~ which perform as specified in **14.1.2(~~10~~14)(b)**

(b) Safety systems ~~Systems~~ which perform as specified in **14.1.2(~~10~~14)(c)** (except in cases where the total failure of main propulsion machinery will occur within a short period of time)

EFFECTIVE DATE AND APPLICATION (Amendment 2-1)

1. The effective date of the amendments is 29 June 2018.

2. Notwithstanding the amendments to the Rules, the current requirements apply to ships for which the date of contract for construction is before the effective date.

Amendment 2-2

Part 4 HULL CONSTRUCTION AND EQUIPMENT OF TUGS AND PUSHERS

Chapter 16 EQUIPMENT

16.1 Anchors, Chain Cables and Ropes

16.1.1 General*

Sub-paragraph -1 has been amended as follows.

1 Ships, according to their equipment numbers, are to be provided with anchors, chain cables and ropes which are not less than that given in **Table 4.16.1**. All ships are to be provided with suitable appliances for handling the anchors and the lines.

Table 4.16.1 has been amended as follows.

Table 4.16.1 Anchors, Chain Cables and Ropes

Equipment letter	Equipment number		Anchor		Chain cable (stud link chain)				Mooring line		
			Number	Mass per anchor (stock less anchor)	Total length	Diameter			Number	Length of each line	Breaking load
						Grade 1	Grade 2	Grade 3			
	over	Up to		*kg*	*m*	*mm*	*mm*	*mm*		*m*	*kN*
R A 2	70	90	2	180	220	14	12.5		3	80	~~34~~37
R A 3	90	110	2	240	220	16	14		3	100	~~37~~40
R A 4	110	130	2	300	247.5	17.5	16		3	110	~~39~~42
R A 5	130	150	2	360	247.5	19	17.5		3	110	~~44~~48
R B 1	150	175	2	420	275	20.5	17.5		3	120	~~49~~53
R B 2	175	205	2	480	275	22	19		3	120	~~54~~59
R B 3	205	240	2	570	302.5	24	20.5		3	120	~~59~~64
R B 4	240	280	2	660	302.5	26	22	20.5	4	120	~~64~~69
R B 5	280	320	2	780	330	28	24	22	4	120	~~69~~75
R C 1	320	360	2	900	357.5	30	26	24	4	140	~~74~~80
R C 2	360	400	2	1,020	357.5	32	28	24	4	140	~~78~~85
R C 3	400	450	2	1,140	385	34	30	26	4	140	~~88~~96
R C 4	450	500	2	1,290	385	36	32	28	4	140	~~98~~107
R C 5	500	550	2	1,440	412.5	38	34	30	4	140	~~108~~117
R D 1	550	600	2	1,590	412.5	40	34	32	4	160	~~123~~134
R D 2	600	660	2	1,740	440	42	36	34	4	160	~~132~~143
R D 3	660	720	2	1,920	440	44	38	36	4	160	~~147~~160

R D 4	720	780	2	2,100	440	46	40	36	4	160	~~●~~ ~~157~~171
R D 5	780	840	2	2,280	467.5	48	42	38	4	170	~~●~~ ~~172~~187
R E 1	840	910	2	2,460	467.5	50	44	40	4	170	~~●~~ ~~186~~202
R E 2	910	980	2	2,640	467.5	52	46	40	4	170	~~●~~ ~~201~~218
R E 3	980	1,060	2	2,850	495	54	48	42	4	170	~~●~~ ~~216~~235
R E 4	1,060	1,140	2	3,060	495	56	50	44	4	180	~~⊕ 230~~ 250
R E 5	1,140	1,220	2	3,300	495	58	50	46	4	180	~~⊕ 250~~ 272
R F 1	1,220	1,300	2	3,540	522.5	60	52	46	4	180	~~⊕ 270~~ 293
R F 2	1,300	1,390	2	3,780	522.5	62	54	48	4	180	~~⊕~~ ~~84~~309
R F 3	1,390	1,480	2	4,050	522.5	64	56	50	4	180	~~⊕ 309~~ 336
R F 4	1,480	1,570	2	4,320	550	66	58	50	4	180	~~⊕ 324~~ 352
R F 5	1,570	1,670	2	4,590	550	68	60	52	5	190	~~⊕ 324~~ 352

Notes:

~~1. In cases where wire ropes are used, the following wire ropes corresponding to the marks shown in the Table, ●(6×12), ⊕ (6×24), are to be provided as standards.~~

~~2~~1. Length of chain cables may be that including shackles for connection.

~~2~~2. In cases where equipment other than that complying with **Chapter 2**, **3.1 of Chapter 3**, **Chapter 4** and **Chapter 5, Part L of Rules for the Survey and Construction of Steel Ships** is provided in accordance with **16.1.1-4**, diameters of chain cables are to be to the satisfaction of the Society.

~~4~~3. Wire ropes may be used in lieu of chain cables.

Paragraph 16.1.6 has been amended as follows.

16.1.6 ~~Miscellaneous~~Chain Locker

1 ~~Ships are to be provided with suitable appliances for handling anchors.~~ Chain lockers are to be of capacities and depths adequate to provide an easy direct lead of the cables through the chain pipes and a self-stowing of the cables.

2 ~~The inboard end of the chain cable is to be secured to the hull through a strong eye plate by means of a shackle or by other equivalent means.~~ Chain lockers including spurling pipes are to be watertight up to the weather deck and to be provided with a means for drainage.

3 Chain lockers are to be subdivided by centre line screen walls.

4 Where a means of access is provided, it is to be closed by a substantial cover and secured by closely spaced bolts.

5 Where a means of access to spurling pipes or cable lockers is located below the weather deck, the access cover and its securing arrangements are to be to the satisfaction of the Society. Butterfly nuts and/or hinged bolts are prohibited as the securing mechanism for the access cover.

6 Spurling pipes through which anchor cables are led are to be provided with permanently attached closing appliances to minimize water ingress.

7 The inboard ends of the chain cables are to be secured to the structures by fasteners able to withstand a force not less than 15% and not more than 30% breaking load of the chain cable.

8 Fasteners are to be provided with a means suitable to permit, in case of emergency, an easy slipping of chain cables to the sea, operable from an accessible position outside the chain locker.

Paragraph 16.1.7 has been added as follows.

16.1.7 Supporting Hull Structures of Anchor Windlasses and Chain Stoppers

1 The supporting hull structures of anchor windlasses and chain stoppers are to be sufficient to accommodate operating loads and sea loads

(1) Operating loads are to be taken as not less than the following:

(a) For chain stoppers, 80% of the chain cable breaking load

(b) For windlasses, where no chain stopper is fitted or a chain stopper is attached to the windlass, 80% of the chain cable breaking load

(c) For windlasses, where chain stoppers are fitted but not attached to the windlass, 45% of the chain cable breaking load

(2) Sea loads are to be taken according to **2.1.6, Section 4, Chapter 11, Part 1 of Part CSR-B&T**

2 The permissible stresses for supporting hull structures of windlasses and chain stoppers, based on gross thicknesses, are not to be greater than the following permissible values:

(1) Normal stress: 1.00 R_{eH}

(2) Shear stress: 0.60 R_{eH}

R_{eH}: The specified minimum yield stress of the material

Part 5 HULL CONSTRUCTION AND EQUIPMENT OF BARGES

Chapter 14 EQUIPMENT

14.1 Anchors, Chain Cables and Ropes

Paragraph 14.1.1 has been amended as follows.

14.1.1 General*

1 Ships, according to their equipment numbers, are to be provided with anchors, chain cables and ropes which are not less than that given in **Table 5.14.1**, and **Table 5.14.2** or **14.1.5**. All ships are to be provided with suitable appliances for handling the anchors and the lines.

(-2 and -3 are omitted.)

4 Notwithstanding the provisions specified in **-1** to **-2** above, in cases where the owner of ships request modification of requirements with its reasons, the Society may permit equipment which is less than that given in **Table 5.14.1**, and **Table 5.14.2** or **14.1.5** to be provided or permit omission of a part or all equipment specified in **Chapter 14** of this Part.

Paragraph 14.1.2 has been amended as follows.

14.1.2 Unmanned Barges

Notwithstanding the provisions in **-1** to **-3** of **14.1.1**, for the unmanned barges the following requirements are applied:

(1) The number of anchors may be one of the unit weight in **Table 5.14.1**.

(2) The length of chain cables may be half of length in **Table 5.14.1**.

(3) Except where specified in **(1)** and **(2)**, the **Table 5.14.1**, and **Table 5.14.2** or **14.1.5** is applied.

Table 5.14.1 has been amended as follows.

Table 5.14.1 Anchors, Chain Cables and Ropes

Equipment letter	Equipment number		Anchor		Chain cable (stud link chain)				~~Mooring line~~		
			Number	Mass per anchor (stock less anchor)	Total length	Diameter			~~Number~~	~~Length of each line~~	~~Breaking load~~
						Grade 1	Grade 2	Grade 3			
	over	Up to		*kg*	*m*	*mm*	*mm*	*mm*		~~*m*~~	~~*kN*~~
RB A 2	70	90	2	180	220	14	12.5		~~3~~	~~80~~	~~● 34~~
RB A 3	90	110	2	240	220	16	14		~~3~~	~~100~~	~~● 37~~
RB A 4	110	130	2	300	247.5	17.5	16		~~3~~	~~110~~	~~● 39~~
RB A 5	130	150	2	360	247.5	19	17.5		~~3~~	~~110~~	~~● 44~~
RB B 1	150	175	2	420	275	20.5	17.5		~~3~~	~~120~~	~~● 49~~
RB B 2	175	205	2	480	275	22	19		~~3~~	~~120~~	~~● 54~~
RB B 3	205	240	2	570	302.5	24	20.5		~~3~~	~~120~~	~~● 59~~
RB B 4	240	280	2	660	302.5	26	22		~~4~~	~~120~~	~~● 64~~
RB B 5	280	320	2	780	330	28	24		~~4~~	~~120~~	~~● 69~~
RB C 1	320	360	2	900	357.5	30	26		~~4~~	~~140~~	~~● 74~~
RB C 2	360	400	2	1,020	357.5	32	28		~~4~~	~~140~~	~~● 78~~
RB C 3	400	450	2	1,140	385	34	30		~~4~~	~~140~~	~~● 88~~
RB C 4	450	500	2	1,290	385	36	32		~~4~~	~~140~~	~~● 98~~
RB C 5	500	550	2	1,440	412.5	38	34		~~4~~	~~140~~	~~● 108~~
RB D 1	550	600	2	1,590	412.5	40	34		~~4~~	~~160~~	~~● 123~~
RB D 2	600	660	2	1,740	440	42	36		~~4~~	~~160~~	~~● 132~~
RB D 3	660	720	2	1,920	440	44	38		~~4~~	~~160~~	~~● 147~~
RB D 4	720	780	2	2,100	440	46	40		~~4~~	~~160~~	~~● 157~~
RB D 5	780	840	2	2,280	467.5	48	42		~~4~~	~~170~~	~~● 172~~
RB E 1	840	910	2	2,460	467.5	50	44		~~4~~	~~170~~	~~● 186~~
RB E 2	910	980	2	2,640	467.5	52	46	40	~~4~~	~~170~~	~~● 201~~
RB E 3	980	1,060	2	2,850	495	54	48	42	~~4~~	~~170~~	~~● 216~~
RB E 4	1,060	1,140	2	3,060	495	56	50	44	~~4~~	~~180~~	~~⊕ 230~~
RB E 5	1,140	1,220	2	3,300	495	58	50	46	~~4~~	~~180~~	~~⊕ 250~~
RB F 1	1,220	1,300	2	3,540	522.5	60	52	46	~~4~~	~~180~~	~~⊕ 270~~
RB F 2	1,300	1,390	2	3,780	522.5	62	54	48	~~4~~	~~180~~	~~⊕ 284~~
RB F 3	1,390	1,480	2	4,050	522.5	64	56	50	~~4~~	~~180~~	~~⊕ 309~~
RB F 4	1,480	1,570	2	4,320	550	66	58	50	~~4~~	~~180~~	~~⊕ 324~~
RB F 5	1,570	1,670	2	4,590	550	68	60	52	~~5~~	~~190~~	~~⊕ 324~~
RB G 1	1,670	1,790	2	4,890	550	70	62	54	~~5~~	~~190~~	~~⊕ 333~~
RB G 2	1,790	1,930	2	5,250	577.5	73	64	56	~~5~~	~~190~~	~~⊕ 353~~
RB G 3	1,930	2,080	2	5,610	577.5	76	66	58	~~5~~	~~190~~	~~⊕ 378~~
RB G 4	2,080	2,230	2	6,000	577.5	78	68	60	~~5~~	~~190~~	~~⊕ 402~~
RB G 5	2,230	2,380	2	6,450	605	81	70	62	~~5~~	~~200~~	~~⊕ 422~~
RB H 1	2,380	2,530	2	6,900	605	84	73	64	~~5~~	~~200~~	~~⊕ 451~~
RB H 2	2,530	2,700	2	7,350	605	87	76	66	~~5~~	~~200~~	~~⊕ 480~~
RB H 3	2,700	2,870	2	7,800	632.5	90	78	68	~~6~~	~~200~~	~~⊕ 480~~
RB H 4	2,870	3,040	2	8,300	632.5	92	81	70	~~6~~	~~200~~	~~◎490~~
RB H 5	3,040	3,210	2	8,700	632.5	95	84	73	~~6~~	~~200~~	~~◎500~~

Notes:

~~1. In cases where wire ropes are used, the following wire ropes corresponding to the marks shown in the Table, ●(6×12), ⊕ (6×24) and ◎(6×37) are to be provided as standards.~~

~~2~~1. Length of chain cables may be that including shackles for connection.

~~3~~2. In cases where equipment other than that complying with **Chapter 2**, **3.1 of Chapter 3**, **Chapter 4** and **Chapter 5, Part L of Rules for the Survey and Construction of Steel Ships** is provided in accordance with **14.1.1-3**, diameters

of chain cables are to be to the satisfaction of the Society.

~~4~~3. Wire ropes may be used in lieu of chain cables.

Table 5.14.2 has been added as follows.

Table 5.14.2 Mooring Lines for Ships whose Equipment Number ≦ 2,000

Equipment letter	Equipment number		Mooring line		
			Number	Length of each line	Breaking load
	Over	Up to		*m*	*kN*
*RB A*2	70	90	3	80	37
*RB A*3	90	110	3	100	40
*RB A*4	110	130	3	110	42
*RB A*5	130	150	3	110	48
*RB B*1	150	175	3	120	53
*RB B*2	175	205	3	120	59
*RB B*3	205	240	3	120	64
*RB B*4	240	280	4	120	69
*RB B*5	280	320	4	120	75
*RB C*1	320	360	4	140	80
*RB C*2	360	400	4	140	85
*RB C*3	400	450	4	140	96
*RB C*4	450	500	4	140	107
*RB C*5	500	550	4	140	117
*RB D*1	550	600	4	160	134
*RB D*2	600	660	4	160	143
*RB D*3	660	720	4	160	160
*RB D*4	720	780	4	160	171
*RB D*5	780	840	4	170	187
*RB E*1	840	910	4	170	202
*RB E*2	910	980	4	170	218
*RB E*3	980	1060	4	170	235
*RB E*4	1060	1140	4	180	250
*RB E*5	1140	1220	4	180	272
*RB F*1	1220	1300	4	180	293
*RB F*2	1300	1390	4	180	309
*RB F*3	1390	1480	4	180	336
*RB F*4	1480	1570	4	180	352
*RB F*5	1570	1670	5	190	352
*RB G*1	1670	1790	5	190	362
*RB G*2	1790	1930	5	190	384
-	1930	2000	5	190	411

Paragraphs 14.1.5 to 14.1.7 have been added as follows.

14.1.5 Tow Lines and Mooring Lines*

1 As for wire ropes and fibre ropes used as tow lines and mooring lines, the breaking test load specified in **Chapter 4** or **5, Part L** is not to be less than the breaking load given in **Table 5.14.1**, and **Table 5.14.2** or **14.1.5-3** respectively.

2 The number of mooring lines for ships whose equipment numbers do not exceed 2,000 are to be in accordance with **Table 5.14.2.** However, for ships having the ratio *A/EN* above 0.9, the following number of ropes should be added to the number required by **Table 5.14.2** for mooring

lines.

Where A/EN is above 0.9 up to 1.1 : 1

Where A/EN is above 1.1 up to 1.2 : 2

Where A/EN is above 1.2 : 3

EN : Equipment number

A : Value specified in **14.1.3(2)**

3 The number and strength of mooring lines whose equipment numbers exceed 2,000 are to be in accordance with the following **(1)** to **(4)**;

(1) Minimum breaking strength (*MBL*) is not to be less than that obtained from the following formula:

$MBL = 0.1A_1 + 350$ (*kN*)

A_1: Ship side-projected area specified in **-5**.

(2) Head lines, stern lines, breast lines or spring lines in the same service are to be of the same characteristics in terms of strength and elasticity. The strength of spring lines is to be the same as that of the head, stern and breast lines.

(3) The total number of head, stern and breast lines is to be obtained from the following formula and rounded to the nearest whole number:

$n = 8.3 \times 10^{-4} A_1 + 6$

(4) The total number of spring lines is to be not less than two.

4 Notwithstanding the requirement in **-3**, the number of head, stern and breast lines may be increased or decreased in conjunction with an adjustment to the strength of the lines. The adjusted strength, MBL^*, is to be taken as:

$MBL^* = 1.2MBL \cdot n/n^* \le MBL$ (*kN*) for an increased number of lines

$MBL^* = MBL \cdot n/n^*$ (*kN*) for a reduced number of lines

n^*: The increased or decreased total number of head, stern and breast lines

n: The number of lines for the considered ship type as calculated by the formulae specified in **-3(3)** without rounding.

In the same manner, the strength of head, stern and breast lines may be increased or decreased in conjunction with an adjustment to the number of lines. If the number of head, stern and breast lines is increased in conjunction with an adjustment to the strength of the lines, the number of spring lines is to be likewise increased, but rounded up to the nearest even number.

5 The ship side-projected area A_1 is to be obtained from the same formula specified in **14.1.3(2)**. However, following **(1)** to **(3)** are to be considered.

(1) The lightest draft of usual loading conditions is to be considered if the ratio of the freeboard in the lightest draft and the full load condition is equal to or above two.

(2) Wind shielding of the pier can be considered for the calculation of the side-projected area A_1 unless the ship is intended to be regularly moored to jetty-type piers. A height of the pier surface of 3 *m* over waterline may be assumed; in other word, the lower part of the side-projected area with a height of 3 *m* above the waterline for the considered loading condition may be disregarded for the calculation of the side-projected area A_1.

(3) Deck cargo is to be included for the determination of side-projected area A_1. Deck cargo may not need to be considered if a usual light draft condition without cargo on deck generates a larger side-projected area A_1 than the full load condition with cargo on deck. The larger of both side-projected areas is to be chosen as side-projected area A_1.

6 The mooring lines specified in **-3** and **-4** are based on the following environmental conditions:

(1) Maximum current speed: 1.0 *m/s*

(2) Maximum wind speed v_w: 25.0 *m/s*

7 Among the environmental conditions specified in **-6**, the maximum wind speed v_w may be increased and decreased in conjunction with an adjustment to the strength of the lines as the acceptable wind speed v_w^*. In this case, the acceptable wind speed v_w^* is to be obtained from the following formula:

$$v_w^* = v_w \sqrt{\frac{MBL^*}{MBL}}$$

MBL^*: The adjusted strength of mooring lines (*kN*)

However, the maximum wind speed v_w can be decreased where maximum breaking strength, *MBL*, specified in **-3(1)** is more than 1,275 *kN*. The acceptable wind speed v_w^* is to be not less than 21 *m/s*.

8 The length of mooring lines for ships whose equipment numbers are less than or equal to 2,000 is to be in accordance with **Table 5.14.2**. For ships whose equipment numbers exceed 2,000, the length of mooring lines is to be taken as 200 *m*.

9 Application of fibre ropes for tow lines or mooring lines is to be as deemed appropriate by the Society.

10 For mooring lines connected with powered winches where the rope is stored on the drum, steel cored wire ropes of suitable flexible construction may be used instead of fibre cored wire ropes subject to the approval by the Society.

11 The length of individual mooring lines may be reduced by up to 7% of the lengths given in **-8**, provided that the total length of the stipulated number of mooring lines is not less than that obtained from multiplying the length by the number given in **-2** or **-3**.

14.1.6 Chain Lockers

1 Chain lockers are to be of capacities and depths adequate to provide an easy direct lead of the cables through the chain pipes and a self-stowing of the cables.

2 Chain lockers including spurling pipes are to be watertight up to the weather deck and to be provided with a means for drainage.

3 Chain lockers are to be subdivided by centre line screen walls.

4 Where a means of access is provided, it is to be closed by a substantial cover and secured by closely spaced bolts.

5 Where a means of access to spurling pipes or cable lockers is located below the weather deck, the access cover and its securing arrangements are to be to the satisfaction of the Society. Butterfly nuts and/or hinged bolts are prohibited as the securing mechanism for the access cover.

6 Spurling pipes through which anchor cables are led are to be provided with permanently attached closing appliances to minimize water ingress.

7 The inboard ends of the chain cables are to be secured to the structures by fasteners able to withstand a force not less than 15% and not more than 30% breaking load of the chain cable.

8 Fasteners are to be provided with a means suitable to permit, in case of emergency, an easy slipping of chain cables to the sea, operable from an accessible position outside the chain locker.

14.1.7 Supporting Hull Structure of Anchor Windlasses and Chain Stoppers

1 The supporting hull structures of anchor windlasses and chain stoppers are to be sufficient to accommodate operating loads and sea loads

(1) Operating loads are to be taken as not less than the following:

(a) For chain stoppers, 80% of the chain cable breaking load

(b) For windlasses, where no chain stopper is fitted or a chain stopper is attached to the windlass, 80% of the chain cable breaking load

(c) For windlasses, where chain stoppers are fitted but not attached to the windlass, 45% of

the chain cable breaking load

(2) Sea loads are to be taken according to **2.1.6, Section 4, Chapter 11, Part 1 of Part CSR-B&T**

2 The permissible stresses for supporting hull structures of windlasses and chain stoppers, based on gross thicknesses, are not to be greater than the following permissible values:

(1) Normal stress: 1.00 R_{eH}

(2) Shear stress: 0.60 R_{eH}

R_{eH}: The specified minimum yield stress of the material

EFFECTIVE DATE AND APPLICATION (Amendment 2-2)

1. The effective date of the amendments is 1 July 2018.

2. Notwithstanding the amendments to the Rules, the current requirements apply to ships for which the date of contract for construction* is before the effective date.

* "contract for construction" is defined in the latest version of IACS Procedural Requirement (PR) No.29.

IACS PR No.29 (Rev.0, July 2009)

1. The date of "contract for construction" of a vessel is the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. This date and the construction numbers (i.e. hull numbers) of all the vessels included in the contract are to be declared to the classification society by the party applying for the assignment of class to a newbuilding.

2. The date of "contract for construction" of a series of vessels, including specified optional vessels for which the option is ultimately exercised, is the date on which the contract to build the series is signed between the prospective owner and the shipbuilder.

For the purpose of this Procedural Requirement, vessels built under a single contract for construction are considered a "series of vessels" if they are built to the same approved plans for classification purposes. However, vessels within a series may have design alterations from the original design provided:

(1) such alterations do not affect matters related to classification, or

(2) If the alterations are subject to classification requirements, these alterations are to comply with the classification requirements in effect on the date on which the alterations are contracted between the prospective owner and the shipbuilder or, in the absence of the alteration contract, comply with the classification requirements in effect on the date on which the alterations are submitted to the Society for approval.

The optional vessels will be considered part of the same series of vessels if the option is exercised not later than 1 year after the contract to build the series was signed.

3. If a contract for construction is later amended to include additional vessels or additional options, the date of "contract for construction" for such vessels is the date on which the amendment to the contract, is signed between the prospective owner and the shipbuilder. The amendment to the contract is to be considered as a "new contract" to which **1.** and **2.** above apply.

4. If a contract for construction is amended to change the ship type, the date of "contract for construction" of this modified vessel, or vessels, is the date on which revised contract or new contract is signed between the Owner, or Owners, and the shipbuilder.

Note:
This Procedural Requirement applies from 1 July 2009.

GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF INLAND WATERWAY SHIPS

GUIDANCE

2018 AMENDMENT NO.1

Notice No.58 29 June 2018

Resolved by Technical Committee on 31 January 2018

Notice No.58 29 June 2018
AMENDMENT TO THE GUIDANCE FOR THE SURVEY AND CONSTRUCTION OF INLAND WATERWAY SHIPS

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

Amendment 1-1

Part 2 CLASS SURVEYS

Chapter 1 GENERAL

1.1 Surveys

1.1.4 Periodical Surveys Carried Out in Advance

Sub-paragraph -1 has been amended as follows.

1 Where an Annual Survey or Intermediate Survey was carried out in advance in accordance with **1.1.4-2, Part 2 of the Rules**, the anniversary date is to be amended to a ~~new date 3 *months* after~~ date which is not to be more than 3 *months* later than the date on which the Annual Survey or Intermediate Survey was completed. Subsequent Annual Surveys and Intermediate Surveys specified in **1.1.3-1(1)** and **1.1.3-1(2), Part 2 of the Rules** are to be carried out at the intervals using the new anniversary date. However, where the third Periodical Survey (determined using the intervals corresponding to the new anniversary date) after the previous Intermediate Survey is due before the expiry date of the Classification Certificate of the ship, the Intermediate Survey is to be carried out in lieu of the Annual Survey.

Chapter 9 PLANNED MACHINERY SURVEYS

9.1 Planned Machinery Surveys

9.1.2 Continuous Machinery Survey

Sub-paragraph -6 has been amended as follows.

6 Confirmatory Survey

In ships deemed by the Society as maintaining their machinery and equipment well, overhaul inspections according to the CMS Program specified in **-3** by the shipowner (or the ship management company) may forgo the open-up examination performed in the presence of Surveyors by conducting the following confirmatory surveys, provided that the machinery and equipment are overhauled as part of the ship's maintenance practices and the records from such overhauls are kept in good order. In this case, the due date of the next open-up examination is ~~to be within a 6-*year* period from~~ 6 *years* from the date of its last overhaul and inspection.

((1) and (2) are omitted.)

(3) Timing of the confirmatory survey

A confirmatory survey is to be carried out ~~by~~ no later than the completion date of the first periodical survey (excluding those specified in **(4)** to **(6)** of **1.1.3-1, Part 2 of the Rules**, hereinafter the same in this **(3)**) on or after the day the item of machinery and equipment intended for the confirmatory survey was overhauled and inspected. Notwithstanding the above, if the shipowner (or the ship management company) applies for a survey, it may be allowed to carry out a confirmatory survey no later than the completion date of the second periodical survey on or after the day the item of machinery and equipment intended for the confirmatory survey was overhauled and inspected, but on or before the due date of the open-up examination.

EFFECTIVE DATE AND APPLICATION (Amendment 1-1)

1. The effective date of the amendments is 29 June 2018.

Amendment 1-2

Part 7 MACHINERY INSTALLATIONS

Chapter 3 POWER TRANSMISSION SYSTEMS

3.3 Strength of Gears

Paragraph 3.3.1 has been amended as follows.

3.3.1 Application

In the case of bevel gear, the wording "deemed appropriate by the Society" in **3.3.1, Part 7 of the Rules** means as follows:

(1) The bending strength at the root sections of gear teeth and limiting tooth surface strength are to be according to *ISO*~~AGMA~~ standards or as deemed appropriate by the Society.

(2) Evaluation of the strength of the interior of gear teeth may be required where deemed necessary by the Society. In such cases, the Vickers hardness (*HV*) of the interior of gear teeth is not to be less than the value obtained from the following formula. However, this requirement does not apply to bevel gears for which the tip diameter (outer end) is smaller than 1,100 *mm*:

If $\frac{z}{w} < 0.79$ then $\frac{z}{w}$ is to be taken as 0.79.

$$HV = 1.11 S_H p \left[\frac{z}{w} - \frac{\left(\frac{z}{w}\right)^2}{\sqrt{1+\left(\frac{z}{w}\right)^2}} \right]$$

HV : Vickers hardness

S_H : Safety factor for contact stress is to comply with the requirements in **Annex D5.3.5 "GUIDANCE FOR CALCULATION OF STRENGTH OF GEARS" 1.6.3-9, Part D of the Guidance for the Survey and Construction of Steel Ships**.

p : Real hertzian stress (*MPa*). The upper limit of the value of p used in this calculation is to be 1,500 *MPa.*

$p = AS_c$

S_c: Contact stress (*MPa*), to be calculated according to *ISO 10300*~~*ANSI/AGMA 2003*~~ standards.

A : If S_c is calculated according to *ISO 10300*~~*ANSI/AGMA 2003*~~ standards, then the coefficients are to be determined, in consideration of analysis results, by the Society on a case by case basis. In addition, if S_c is calculated according to *ISO 10300*~~*ANSI/AGMA 2003-A86*~~ standards, A is to be taken as 1.32~~1.7~~

w: Half the hertzian contact width (*mm*), to be calcula ted by the following formula:

$$w = \frac{p\rho_C}{56300}$$

$$\rho_C = \frac{\rho_1 \rho_2}{\rho_1 + \rho_2}$$

$$\rho_1 = 0.5 d_{vn1} \sin\alpha_n$$

$$\rho_2 = 0.5 d_{vn2} \sin\alpha_n$$

$$d_{vn1} = d_{m1} \frac{\sqrt{1+u^2}}{u} \frac{1}{\cos^2\beta_{vb}}$$

d_{m1} :Mean pitch diameter of pinion （mm）

u : Gear ratio

$\beta_{vb} = \arcsin(\sin\beta_m \cos\alpha_n)$

β_m : Mean spiral angle

α_n : Normal pressure angle

$$d_{vn2} = u^2 d_{vn1}$$

z : Depth from teeth surface to evaluation point (mm)

EFFECTIVE DATE AND APPLICATION (Amendment 1-2)

1. The effective date of the amendments is 29 June 2018.

2. Notwithstanding the amendments to the Guidance, the current requirements apply to bevel gears for which the date of application for approval is before the effective date.

Amendment 1-3

Part 7 MACHINERY INSTALLATIONS

Chapter 14 AUTOMATIC AND REMOTE CONTROL

14.1 General

Paragraph 14.1.1 has been amended as follows.

14.1.1 Scope

1 (Omitted)

~~**2** The "machinery and equipment which are deemed necessary by the Society" referred to in **14.1.1-3, Part 7 of the Rules** means machinery and equipment used for the purposes specified in **(1)** to **(4)** given below and includes programmable controllers such as sequencers.~~

~~(1) Control systems for the machinery and equipment specified in **14.1.1-1, Part 7 of the Rules**.~~

~~(2) Alarm systems specified in **14.2.5, Part 7 of the Rules**.~~

~~(3) Safety systems for the machinery and equipment specified in **14.1.1-1, Part 7 of the Rules**.~~

~~(4) Control, alarm, and safety systems related to **Table 2.1 of Annex D18.1.1** "**COMPUTER BASED SYSTEMS**", **Part D of the Guidance for the Survey and Construction of Steel Ships**.~~

~~**3** Notwithstanding the requirements in **-2** above, the "machinery and equipment which are deemed necessary by the Society" referred to in **14.1.1-3, Part 7 of the Rules** is not to include the machinery and equipment specified in the following **(1)** to **(4)**:~~

~~(1) navigating equipment specified in the **Rules for Safety Equipment,**~~

~~(2) radio installations specified in the **Rules for Radio Installations,**~~

~~(3) stability instruments, and~~

~~(4) loading computers.~~

~~4~~**2** The "requirements specified otherwise by the Society" referred to in **14.1.1-3, Part 7 of the Rules** means **Annex D18.1.1** "**COMPUTER BASED SYSTEMS**", **Part D of the Guidance for the Survey and Construction of Steel Ships**.

Paragraph 14.1.2 has been added as follows.

14.1.2 Terminology

The computer based system referred to in **14.1.2(11), Part 7 of the Rules** includes a system which contains programmable controllers such as sequencers.

14.2 System Design

Paragraph 14.2.7 has been added as follows.

14.2.7 Use of Computers

1 "The extent of impact on the system as a whole of any failure in any part of a circuit or component is to be minimized as far as possible" specified in **14.2.7-2(1)(a), Part 7 of the Rules** means, for example, that in a system always controlled by two or more computers, the system is able to cope with the failure of one computer without hindering overall performance.

2 "Deemed appropriate by the Society" specified in **14.2.7-2(2)(a), Part 7 of the Rules** means that the results of a failure analysis such as FMEA on the system are satisfactory and approved by the Society.

3 "Other arrangements deemed appropriate by the Society" specified in **14.2.7-2(2)(c), Part 7 of the Rules** means, for example, the combination of a VDU and an alarm printer.

EFFECTIVE DATE AND APPLICATION (Amendment 1-3)

1. The effective date of the amendments is 29 June 2018.

2. Notwithstanding the amendments to the Guidance, the current requirements apply to ships for which the date of contract for construction is before the effective date.

Amendment 1-4

Part 4 HULL CONSTRUCTION AND EQUIPMENT OF TUGS AND PUSHERS

Chapter 16 EQUIPMENT

16.1 Anchors, Chain Cables and Ropes

Paragraph 16.1.1 has been amended as follows.

16.1.1 General

1 In applying **16.1.1-5, Part 4 of the Rules**, where equipment which is less than that given in **Table 4.16.1** is provided, the request stating rational reasons taking into account environmental conditions in which the ship will operate, etc. is to be submitted to the Society.

2 In applying **16.1.1-5, Part 4 of the Rules**, where omission of equipment is requested the following are to be complied with.

(1) In case of omission of anchors, the request of omission of anchors together with such statement that the ~~barge~~ship is intended to be moored only on quay, is to be submitted to the Society.

(2) In case of omission of mooring lines, the request of omission of mooring lines together with such statement that the mooring lines have been arranged on the shore where the ~~barge~~ship is intended to be moored, is to be submitted to the Society.

Paragraph 16.1.5 has been amended as follows.

16.1.5 Mooring Lines

~~**1 Table 4.16.1.5-1** indicates the equivalencies of Manila ropes and synthetic fibre ropes expressed in diameters. Special considerations will be given to a double braided rope.~~

~~**2** The manner of determining the diameter of synthetic fibre rope corresponding to the equipment number is as indicated in the following example.~~

~~Example~~

~~Breaking strength of mooring line for equipment number 660 - 720 ($RD2$): 147kN~~

~~Diameter of Manila rope corresponding to the breaking strength~~

~~50φ: 144 kN~~

~~55φ: 173 kN~~

~~As per **Table L5.1, Part L of Rules for the Survey and Construction of Steel Ships**~~

~~$50 + (55 - 50) \times \frac{147 - 144}{173 - 144} = 50.6$~~

~~(Rounded up to 1*st* decimal place)~~

~~A) Where Manila ropes are used, 50.6 → 51φ (Rounded up to a whole number)~~

~~B) Where synthetic fibre ropes are used:~~

~~To determine the diameter of Polyester rope corresponding to 50.6φ of Manila rope~~

~~50φ: 36~~

~~55φ: 39~~

~~As per **Table 4.16.1.5-1**~~

~~$36 + (39 - 36) \times \frac{50.6 - 50}{55 - 50} = 37\phi$~~

~~(Rounded up to a whole number)~~

~~**3** The correspondence of diameters determined as described above to the equipment numbers is indicated in **Table 4.16.1.5-2**.~~

1 With respect to the provisions of **16.1.5, Part 4 of the Rules**, deck cargo as given by the Loading Manual is to be included for the determination of side-projected area *A*.

2 Fibre ropes used for mooring lines are to be not less than 20 *mm* in diameter. The minimum breaking strength specified in **16.1.5, Part 4 of the Rules** is to be increased by 20% for polyamide ropes and by 10% for other synthetic ropes to account for any strength loss due to aging and wear, etc.

3 For synthetic fibre ropes, it is recommended to use lines which have a reduced risk of recoil (snap-back) to mitigate the risk of injuries or fatalities in the cases where the line may break.

Table 4.16.1.5-1 has been deleted.

~~Table 4.16.1.5-1 Comparison of Diameters of Manila Ropes and Synthetic Fibre Ropes (Unit: *mm*)~~

~~Manila rope~~	~~Vinylon rope~~		~~Polyethylene rope~~		~~Polyester rope~~	~~Polypropylene rope~~		~~Nylon rope~~
	~~Grade 1~~	~~Grade 2~~	~~Grade 1~~	~~Grade 2~~		~~Grade 1~~	~~Grade 2~~	
	~~Span, Mono-filament~~	~~Multi-filament~~	~~Ordinary yarn~~	~~Strong yarn~~		~~Span, Mono-filament~~	~~Multi, Special multi, Special monosplit~~	
~~20~~	~~18~~	~~16~~	~~18~~	~~15~~	~~14~~	~~16~~	~~15~~	~~14~~
~~22~~	~~19~~	~~18~~	~~19~~	~~17~~	~~16~~	~~18~~	~~17~~	~~16~~
~~24~~	~~21~~	~~19~~	~~21~~	~~18~~	~~17~~	~~19~~	~~18~~	~~18~~
~~26~~	~~23~~	~~21~~	~~23~~	~~20~~	~~19~~	~~21~~	~~20~~	~~19~~
~~28~~	~~24~~	~~23~~	~~24~~	~~21~~	~~20~~	~~23~~	~~21~~	~~20~~
~~30~~	~~26~~	~~24~~	~~26~~	~~23~~	~~22~~	~~24~~	~~23~~	~~22~~
~~32~~	~~28~~	~~26~~	~~28~~	~~24~~	~~23~~	~~26~~	~~24~~	~~24~~
~~35~~	~~30~~	~~28~~	~~30~~	~~26~~	~~25~~	~~28~~	~~26~~	~~26~~
~~40~~	~~35~~	~~32~~	~~35~~	~~30~~	~~29~~	~~33~~	~~30~~	~~29~~
~~45~~	~~40~~	~~36~~	~~40~~	~~34~~	~~32~~	~~37~~	~~34~~	~~32~~
~~50~~	~~44~~	~~40~~	~~44~~	~~38~~	~~36~~	~~41~~	~~38~~	~~35~~
~~55~~	~~48~~	~~45~~	~~48~~	~~41~~	~~39~~	~~45~~	~~41~~	~~39~~
~~60~~	~~53~~	~~50~~	~~53~~	~~45~~	~~42~~	~~49~~	~~45~~	~~42~~
~~65~~	~~58~~	~~55~~	~~58~~	~~49~~	~~46~~	~~53~~	~~49~~	~~45~~
~~70~~	~~62~~	~~60~~	~~62~~	~~53~~	~~49~~	~~57~~	~~53~~	~~49~~
~~75~~	~~67~~	~~65~~	~~67~~	~~56~~	~~53~~	~~61~~	~~57~~	~~53~~
~~80~~	~~71~~	~~70~~	~~71~~	~~60~~	~~57~~	~~65~~	~~60~~	~~56~~
~~85~~	~~75~~	~~74~~	~~75~~	~~64~~	~~61~~	~~69~~	~~64~~	~~60~~
~~90~~	~~80~~	~~78~~	~~80~~	~~68~~	~~65~~	~~73~~	~~68~~	~~64~~
~~95~~	~~84~~	~~82~~	~~84~~	~~72~~	~~70~~	~~78~~	~~72~~	~~67~~
~~100~~	~~89~~	~~87~~	~~89~~	~~75~~	~~75~~	~~82~~	~~75~~	~~70~~

Table 4.16.1.5-2 has been deleted.

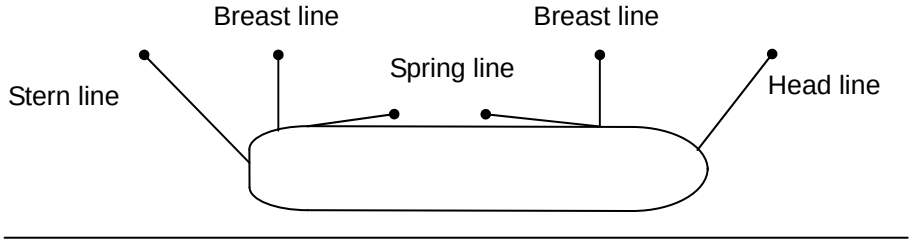
Table 4.16.1.5-2 Comparison of Sizes of Mooring Ropes

*:(6×12), ⊕:(6×24)

Equipment number		Breaking strength of Manila rope	Length (m)	Number	Dia. of steel wire rope (mm)	Dia. of Manila rope (mm)	Dia. of synthetic fibre ropes (mm)							
							Vinylon		Polyethylene		Polyester	Polypropylene		Nylon
							1	2	1	2		1	2	
Over	Up to	kN												
70	90	34	80	3	*11	24	21	19	21	18	17	19	18	18
90	110	37	100	3	*11	25	22	20	22	19	18	20	19	19
110	130	39	110	3	*11	26	23	21	23	20	19	21	20	19
130	150	44	110	3	*12	27	24	22	24	21	20	22	21	20
150	175	49	120	3	*13	29	25	24	25	22	21	23	22	21
175	205	54	120	3	*13	30	26	24	26	23	22	24	23	22
205	240	59	120	3	*14	32	28	26	28	24	23	26	24	24
240	280	64	120	4	*14	33	29	27	29	25	24	27	25	25
280	320	69	120	4	*15	35	30	28	30	26	25	28	26	26
320	360	74	140	4	*16	36	31	20	31	27	26	29	27	27
360	400	78	140	4	*16	37	32	30	32	28	27	30	28	27
400	450	88	140	4	*17	39	34	31	34	29	28	32	29	28
450	500	98	140	4	*18	41	36	33	36	31	30	34	31	30
500	550	108	140	4	*18	43	38	34	38	32	31	35	32	31
550	600	123	160	4	*20	46	41	37	41	35	33	38	35	33
600	660	132	160	4	*20	48	42	38	42	36	34	39	36	34
660	720	147	160	4	*22	51	45	41	45	39	37	42	39	36
720	780	157	160	4	*23	53	46	43	46	40	38	43	40	37
780	840	172	170	4	*24	55	48	45	48	41	39	45	41	39
840	910	186	170	4	*25	58	51	48	51	43	41	47	43	41
910	980	201	170	4	*25	60	53	50	53	45	42	49	45	42
980	1060	216	170	4	*26	62	55	52	55	47	44	51	47	43
1060	1140	230	180	4	⊕23	65	58	55	58	49	46	53	49	45
1140	1220	250	180	4	⊕24	68	60	58	60	51	48	55	51	47
1220	1300	270	180	4	⊕25	70	62	60	62	53	49	57	53	49
1300	1390	284	180	4	⊕26	72	64	62	64	54	51	59	54	51
1390	1480	309	180	4	⊕27	76	68	66	68	57	54	62	57	54
1480	1570	324	180	4	⊕27	78	69	68	69	58	55	63	58	55
1570	1670	324	190	5	⊕27	78	69	68	69	58	55	63	58	55

Fig. 4.16.1.5-1 has been added as follows.

Fig. 4.16.1.5-1 Sample Arrangement of Mooring Lines



Part 5 HULL CONSTRUCTION AND EQUIPMENT OF BARGES

Chapter 14 EQUIPMENT

14.1 Anchors, Chain Cables and Ropes

Paragraph 14.1.5 has been added as follows.

14.1.5 Tow Lines and Mooring Lines

1 With respect to the provisions of **14.1.5-2, Part 5 of the Rules**, deck cargo as given by the loading manual is to be included for the determination of side-projected area *A*.

2 Fibre ropes used for mooring lines are not less than 20 *mm* in diameter. For polyamide ropes the minimum breaking strength specified in **14.1.5, Part 5 of the Rules** is to be increased by 20% and for other synthetic ropes by 10% to account for strength loss due to, among others, aging and wear.

3 For synthetic fibre ropes it is recommended to use lines with reduced risk of recoil (snap-back) to mitigate the risk of injuries or fatalities in the case of breaking mooring lines.

4 "Breast line", "head line", "stern line" and "spring line" referred to in **14.1.5**, **Part 5 of the Rules** are defined as follows.

(1) Breast line: A mooring line that is deployed perpendicular to the ship, restraining the ship in the off-berth direction.

(2) Spring line: A mooring line that is deployed almost parallel to the ship, restraining the ship in fore or aft direction.

(3) Head/Stern line: A mooring line that is oriented between the longitudinal and transverse directions, restraining the ship in the off-berth and in the fore or aft directions. The amount of restraint in the fore or aft and off-berth directions depends on the line angle relative to these directions.

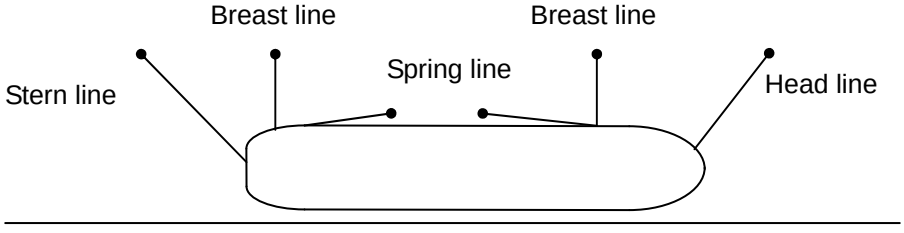
5 Maximum wind speed, acceptable wind speed and maximum current speed referred to in **14.1.5-6**, **Part 5 of the Rules** are based on the following **(1)** to **(2)**.

(1) The wind speed is considered representative of a 30 second mean speed from any direction and at a height of 10 *m* above the ground.

(2) The current speed is considered representative of the maximum current speed acting on bow or stern (±10°) and at a depth of one-half of the mean draft. Furthermore, it is considered that ships are moored to solid piers that provide shielding against cross currents.

Fig. 5.14.1.5-1 has been added as follows.

Fig. 5.14.1.5-1 Sample Arrangement of Mooring Lines



EFFECTIVE DATE AND APPLICATION (Amendment 1-4)

1. The effective date of the amendments is 1 July 2018.

2. Notwithstanding the amendments to the Guidance, the current requirements apply to ships for which the date of contract for construction* is before the effective date.

* "contract for construction" is defined in the latest version of IACS Procedural Requirement (PR) No.29.

IACS PR No.29 (Rev.0, July 2009)

1. The date of "contract for construction" of a vessel is the date on which the contract to build the vessel is signed between the prospective owner and the shipbuilder. This date and the construction numbers (i.e. hull numbers) of all the vessels included in the contract are to be declared to the classification society by the party applying for the assignment of class to a newbuilding.

2. The date of "contract for construction" of a series of vessels, including specified optional vessels for which the option is ultimately exercised, is the date on which the contract to build the series is signed between the prospective owner and the shipbuilder.

For the purpose of this Procedural Requirement, vessels built under a single contract for construction are considered a "series of vessels" if they are built to the same approved plans for classification purposes. However, vessels within a series may have design alterations from the original design provided:

(1) such alterations do not affect matters related to classification, or

(2) If the alterations are subject to classification requirements, these alterations are to comply with the classification requirements in effect on the date on which the alterations are contracted between the prospective owner and the shipbuilder or, in the absence of the alteration contract, comply with the classification requirements in effect on the date on which the alterations are submitted to the Society for approval.

The optional vessels will be considered part of the same series of vessels if the option is exercised not later than 1 year after the contract to build the series was signed.

3. If a contract for construction is later amended to include additional vessels or additional options, the date of "contract for construction" for such vessels is the date on which the amendment to the contract, is signed between the prospective owner and the shipbuilder. The amendment to the contract is to be considered as a "new contract" to which **1.** and **2.** above apply.

4. If a contract for construction is amended to change the ship type, the date of "contract for construction" of this modified vessel, or vessels, is the date on which revised contract or new contract is signed between the Owner, or Owners, and the shipbuilder.

Note:
This Procedural Requirement applies from 1 July 2009.