



CIRCULAR

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To : All Surveyors and whom it may concern

No : 2023-1-E

Date : 2024. 3. 6

Subject	9.188 Notice for Amendments to KR Classification Technical Rules
Application	Refer to Effective date for each KR Classification Technical Rules specified in Par.1 and the attachments

1. Please be informed that 2023 Classification Technical Rules have been amended as below/attachments, and you are kindly requested to apply these amendments on the relevant works.

= Below =

Classification Technical Rules	Effective date	Amendments
Rules for the Classification of Steel Ships, Pt 1 (Classification and Surveys)	On or after 1st July 2024 (For Ships contracted for construction)	IACS UI SC299(New July 2023) reflected : New requirements of any penetration used for the passage of heat-sensitive piping systems through a watertight bulkhead or deck on a passenger ship newly added.
	On or after 1st Jan. 2025 (For Ships contracted for construction)	IACS UR L2(Rev.3 Nov 2023) reflected : UR L2 of 2013 was updated with respect to the amendments made to 2008 INTACT Stability Code.
Rules for the Classification of Steel Ships, Pt 4	On or after 1st Jan. 2024 (For Ships contracted for construction)	MSC.1/Circ.1619, MSC.1/Circ.1362 Rev.2 and ISO 1969/KS K ISO 1346 reflected : Nylon rope and polyethylene/polypropylene rope breaking test revised
Guidance for Approval of Manufacturing Process(MP) and Type	On or after 1st Jan. 2024 (For Ships contracted for construction)	MSC.1/Circ.1619 and KS K ISO1140 reflected : The acceptance criteria for vinylon and nylon ropes has been amended to comply with Part 4, Chapter 8 of the Rules.

Approval(TA), etc.	On or after 1st July 2024 (For Ships contracted for construction)	IACS UI SC299(New July 2023) reflected : Requirements for type approval of watertightness test where materials readily rendered ineffective by heat used for pipe penetrations through watertight bulkheads or decks on passenger ships newly added.
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2. Furthermore, please be informed that these amendments will be included in 2024 edition for the "Guidance for Approval of MP and TA, etc." and 2025 edition for the "Rule Pt 1 and Pt 4" on KR Classification Technical Rules which will be published in the first half of 2024 and 2025 respectively.

Attachments: Circular_ 9.188(K/E) ----- each 1 copy. (The End)

Amendments of the Rules for the Classification of Steel Ships

(Part 1 Classification and Surveys)



Mar. 2024

- Main Amendments -

(1) Effective date : 1 July 2024 (For ships contracted for construction)

● Reflection and follow-up of IACS UI SC299(New July 2023)

- New requirements of any penetration used for the passage of heat-sensitive piping systems through a watertight bulkhead or deck on a passenger ship have been added.

(2) Effective date : 1 Jan. 2025 (For ships contracted for construction)

● IACS UR L2(Rev.3 Nov 2023) reflected

- The UR L2 of 2013 was updated with respect to the amendments made to 2008 INTACT Stability Code.

(1) Effective date : 1 July 2024

(For ships contracted for construction)

Present	Amendment
<p style="text-align: center;">CHAPTER 1 CLASSIFICATION</p> <p style="text-align: center;">Section 1 ~ Section 2 <omitted></p> <p style="text-align: center;">Section 3 Classification Survey during Construction <i>(2022)</i></p> <p>301. ~ 305. <omitted></p> <p>306. Tests [See Guidance]</p> <p>In the Classification Survey during Construction, hydrostatic, watertight and performance tests are to be carried out in accordance with the relevant part of the Rules. Also the control systems and measuring device after installation are to receive the necessary tests, as deemed necessary by the Society. <u>In addition, the survey of watertight cable penetrations(bulkheads and decks) is to be in accordance with the following. <i>(2021)</i></u></p> <p>1. Surveys of Watertight Cable Transits <i>(2021)</i> <omitted> <newly added></p>	<p style="text-align: center;">CHAPTER 1 CLASSIFICATION</p> <p style="text-align: center;">Section 1 ~ Section 2 <same as the current Rule></p> <p style="text-align: center;">Section 3 Classification Survey during Construction <i>(2022)</i></p> <p>301. ~ 305. <same as the current Rules></p> <p>306. Tests [See Guidance]</p> <p>In the Classification Survey during Construction, hydrostatic, watertight and performance tests are to be carried out in accordance with the relevant part of the Rules. Also the control systems and measuring device after installation are to receive the necessary tests, as deemed necessary by the Society. In addition, the survey of watertight cable penetrations(bulkheads and decks) <u>and watertight pipe penetrations(bulkheads or decks) are</u> to be in accordance with the following. <i>(2024)</i></p> <p>1. Surveys of Watertight Cable Transits <i>(2021)</i> <same as the current Rules></p> <p>2. <u>Any penetration used for the passage of heat-sensitive piping systems through a watertight bulkhead or deck on a passenger ship <i>(2024)</i></u></p> <p><u>(1) Any penetration used for the passage of heat-sensitive piping systems through a watertight bulkhead or deck on a passenger ship under SOLAS Ch. II-1 Reg. 13.2.3 shall be tested with the heat-sensitive piping and shall be type approved for watertight integrity specified in Ch 3, Sec 41 of Guidance for Approval of Manufacturing Process and Type Approval, Etc. after fire test specified in Ch 3, Sec 26 Table 3.26.3 “Pipe and duct penetrations” of the same Guidance.</u></p> <p><u>In addition, prototype testing for fire test and watertightness test need not be carried out if the pipe penetration is made of steel or equivalent material having a thickness of 3 mm or greater and a length of not less than 900 mm (preferably 450 mm on each side of the division), and there are no openings. Such penetrations shall be suitably insulated by extension of the insulation at the same level of the division.</u></p> <p><u>See also SOLAS Ch. II-2 Reg. 9.3.1 with respect to piping. However, the penetration must still comply with the watertight integrity requirement in SOLAS Ch. II-1 Reg. 2.17.</u></p>

Present	Amendment
<p data-bbox="129 272 300 300"><u><newly added></u></p> <p data-bbox="159 517 405 544"><hereinafter, omitted></p>	<p data-bbox="1144 280 2145 339"><u>(2) SOLAS Ch. II-1 Reg. 13.2.3 shall be applicable to heat-sensitive piping systems and shall not be applied to cable penetrations in watertight bulkheads and decks.</u></p> <p data-bbox="1144 384 2145 475"><u>(3) Above piping penetrations have been installed, and where disrupted have been re-instated, in accordance with the manufacturer's requirements and in accordance with the requirements of Type Approval.</u></p> <p data-bbox="1144 507 1615 534"><hereinafter, same as the current Rules></p>

Present	Amendment
<p style="text-align: center;">CHAPTER 2 PERIODICAL AND OTHER SURVEYS</p> <p style="text-align: center;">Section 1 General <omitted></p> <p style="text-align: center;">Section 2 Annual Survey</p> <p>201. Due range <omitted></p> <p>202. Hull, equipment and fire-extinguishing appliances</p> <p>1. The survey is to consist of an examination for the purpose of ensuring, as far as practicable, that the hull, hatch covers, hatch coamings, closing appliances, and equipment are maintained in a satisfactory condition.</p> <p>(1) ~ (35) <omitted></p> <p><newly added></p> <p>(36) For ships provided with the equipment employed in the mooring of ships at single point mooring specified in Pt 4, Ch 10, 101. 7 and assigned the additional class notation "EQ-SPM", the general function and deformation condition of this equipment employed in the mooring of ships at single point mooring and hull supporting structures are to be checked. <i>(2017)</i></p> <p><hereinafter, omitted></p>	<p style="text-align: center;">CHAPTER 2 PERIODICAL AND OTHER SURVEYS</p> <p style="text-align: center;">Section 1 General <same as the current Rules></p> <p style="text-align: center;">Section 2 Annual Survey</p> <p>201. Due range <same as the current Rules></p> <p>202. Hull, equipment and fire-extinguishing appliances</p> <p>1. The survey is to consist of an examination for the purpose of ensuring, as far as practicable, that the hull, hatch covers, hatch coamings, closing appliances, and equipment are maintained in a satisfactory condition.</p> <p>(1) ~ (35) <same as the current Rules></p> <p>(36) <u>Any penetration used for the passage of heat-sensitive piping systems through a watertight bulkhead or deck on a passenger ship (2024)</u></p> <p>(A) <u>Watertight piping penetrations are to be installed and maintained in accordance with the manufacturer's requirements and in accordance with the requirements of the relevant Type Approval certification.</u></p> <p>(B) <u>Watertight piping penetrations have been installed, and where disrupted have been reinstated, in accordance with the manufacturer's requirements and in accordance with the requirements of Type Approval.</u></p> <p>(37) (36) For ships provided with the equipment employed in the mooring of ships at single point mooring specified in Pt 4, Ch 10, 101. 7 and assigned the additional class notation "EQ-SPM", the general function and deformation condition of this equipment employed in the mooring of ships at single point mooring and hull supporting structures are to be checked. <i>(2017)</i></p> <p><hereinafter, same as the current Rules></p>

(2) Effective date : 1 Jan. 2025

(For ships contracted for construction)

Present	Amendment
<p style="text-align: center;">CHAPTER 1 CLASSIFICATION</p> <p style="text-align: center;">Section 1 ~ Section 2 <omitted></p> <p style="text-align: center;">Section 3 Classification Survey during Construction <i>(2022)</i></p> <p>301. ~ 306. <omitted></p> <p>307. Stability <i>(2023)</i></p> <p>1. <omitted></p> <p>2. The preparation and approval of stability booklets in above Par 1 are to demonstrate that their intact stability is adequate for the service intended. Adequate intact stability means compliance with standards laid down by the relevant Administration or those of the Society taking into account the ship's size and type. The level of intact stability for ships with a length of 24 m and above should not be less than that provided by Part A of IMO Res. <u>MSC.267(85)(Adoption of the international code on intact stability, 2008)</u> as applicable to the type of ship being considered.</p> <p>Where other criteria are accepted by the Administration concerned, these criteria may be used for the purpose of classification. Evidence of approval by the Administration concerned may be accepted for the purpose of classification. <i>(2020)</i></p> <p><hereinafter, omitted></p>	<p style="text-align: center;">CHAPTER 1 CLASSIFICATION</p> <p style="text-align: center;">Section 1 ~ Section 2 <same as the current Rules></p> <p style="text-align: center;">Section 3 Classification Survey during Construction <i>(2022)</i></p> <p>301. ~ 306. <same as the current Rules></p> <p>307. Stability <i>(2023)</i></p> <p>1. <same as the current Rules></p> <p>2. The preparation and approval of stability booklets in above Par 1 are to demonstrate that their intact stability is adequate for the service intended. Adequate intact stability means compliance with standards laid down by the relevant Administration or those of the Society taking into account the ship's size and type. The level of intact stability for ships with a length of 24 m and above should not be less than that provided by Part A of IMO Res. MSC.267(85)(Adoption of the international code on intact stability, 2008) <u>as amended by MSC.319(89), MSC.398(95), MSC.413(97), MSC.414(97), MSC.415(97), MSC.443(99) and MSC.444(99)</u> as applicable to the type of ship being considered.</p> <p>Where other criteria are accepted by the Administration concerned, these criteria may be used for the purpose of classification. Evidence of approval by the Administration concerned may be accepted for the purpose of classification. <u><i>(2025)</i></u></p> <p><hereinafter, same as the current Rules></p>

Amendments of the Rules

(Circular)

Part 4 Hull Equipment



2024.03.

Hull Rule Development Team

Main Amendments

(1) Background of Amendment

- 1) Breaking test for Nylon ropes has been amended to reflect IACS Rec.10 2.1(Rev.5) and MSC.1/Circ.1619 5.2.8.1.
- 2) Breaking test for polyethylene rope and polypropylene rope has been amended to reflect industrial standards(ISO 1969/KS K ISO 1346).

(2) Effective date (circular will be issued)

- 1) for which the building contract is placed on or after 1 January 2024; or
- 2) in the absence of a building contract, the keel of which is laid or which is at a similar stage of construction on or after 1 July 2024; or
- 3) the delivery of which is on or after 1 January 2027.

Present	Amendment	Note
<p style="text-align: center;">CHAPTER 8 EQUIPMENT NUMBER AND EQUIPMENT</p> <p style="text-align: center;">Section 1 ~ Section 5 <omitted> Section 6 Fibre Ropes</p> <p>601. ~ 606. <omitted></p> <p>607. Breaking tests [See Guidance] (2023)</p> <p>Breaking tests for fibre ropes are to be carried out in accordance with the following requirements. However, relevant industry standards may be followed if the breaking test required by industry standard is different from these requirements. Industry standard means international standard(ISO etc.) or standards issued by national association(KS, DIN, JMSA etc.) which are recognized in the country where the ship is built.</p> <p>(1) One specimen is to be taken from each coil of the fibre ropes. Where fibre ropes are continuously manufactured by the same machine with the yarns of the same type and divided into several coils, one specimen may be taken from one coil of the ropes selected by the Surveyor at random.</p> <p>(2) The length of the specimen is not to be less than 30 times the diameter of the hemp rope, but need not exceed one <i>metre</i>.</p> <p>(3) <u>Specimens for polyethylene and polypropylene ropes are to be subjected to breaking tests in as wet condition immediately after having been immersed in warm water at 35±2 °C for more than 30 minutes. For other fibre ropes than the above ropes, specimens are to be subjected to breaking tests in as dry condition at room temperature.</u></p> <p>(4) The load at the time of breaking is not to be less than given in industry standard. And breaking test loads of different from industry standards are to be specially considered by the Society.</p> <p><omitted below></p>	<p style="text-align: center;">CHAPTER 8 EQUIPMENT NUMBER AND EQUIPMENT</p> <p style="text-align: center;">Section 1 ~ Section 5 <same as the present> Section 6 Fibre Ropes</p> <p>601. ~ 606. <omitted></p> <p>607. Breaking tests [See Guidance] (2023)</p> <p>Breaking tests for fibre ropes are to be carried out in accordance with the following requirements. However, relevant industry standards may be followed if the breaking test required by industry standard is different from these requirements. Industry standard means international standard(ISO etc.) or standards issued by national association(KS, DIN, JMSA etc.) which are recognized in the country where the ship is built.</p> <p>(1) One specimen is to be taken from each coil of the fibre ropes. Where fibre ropes are continuously manufactured by the same machine with the yarns of the same type and divided into several coils, one specimen may be taken from one coil of the ropes selected by the Surveyor at random.</p> <p>(2) The length of the specimen is not to be less than 30 times the diameter of the hemp rope, but need not exceed one <i>metre</i>.</p> <p>(3) <u>Nylon(polyamide) ropes are to be subjected to breaking tests in as wet condition. For other fibre ropes than the above ropes, to be subjected to breaking tests in as dry condition at room temperature.</u></p> <p>(4) The load at the time of breaking is not to be less than given in industry standard. And breaking test loads of different from industry standards are to be specially considered by the Society.</p> <p><same as the present below></p>	<p>- Breaking test for Nylon ropes has been amended to reflect IACS Rec.10 2.1(Rev.5) and MSC.1/Circ.1619 5.2.8.1</p> <p>- Breaking test for polyethylene rope and polypropylene rope has been amended to reflect industrial standards(ISO 1969/KS K ISO 1346).</p> <p>- Amend wording inconsistencies</p>

Amendments of the Rules

(Circular)

Guidance for Approval of Manufacturing Process and Type Approval, Etc.



2024.03.

Hull Rule Development Team

Main Amendments

(1) Background of Amendment

- 1) The acceptance criteria for approval of manufacturing process for synthetic fibre ropes has been amended to comply with Part 4, Chapter 8 of the Rules.
 - The breaking load of vinylon and nylon ropes is recognized as 80~90% of the standard value in accordance with current Guidance, but the industrial standards contains the same provisions in the Guidance, resulting in a double deduction, so revision is necessary.
(Nylon rope requires breaking load in wet condition in accordance with IACS Rec.10(Rev.5) and MSC.1/Circ.1619)

(2) Effective date (circular will be issued)

- 1) for which the building contract is placed on or after 1 January 2024; or
- 2) in the absence of a building contract, the keel of which is laid or which is at a similar stage of construction on or after 1 July 2024; or
- 3) the delivery of which is on or after 1 January 2027.

Present	Amendment	Note
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CHAPTER 2 APPROVAL OF MANUFACTURING PROCESS

Section 1 ~ Section 11 <omitted> Section 12 Synthetic Fibre Ropes

1201. ~ 1202. <omitted>

1203. Approval tests

Table 2.12.1 Approval Test Items and Acceptance Criteria for synthetic fibre ropes

Test item	Test method	Acceptance criteria									
Construction & Diameter	Construction and diameter of synthetic fibre ropes are to be measured in accordance with Pt 4, Ch 8, Sec 6 of the Rule.	To comply with the Pt 4, Ch 8, Sec 6 of the Rule.									
Tensile tests in wet and dry conditions	(1) Tensile tests on three each test specimens are to, in principle, be carried out for each of the test conditions given in Table below and breaking strength and elongation are to be measured. For rope having diameter higher than 60mm, one additional tensile test specimen is to be taken from the rope of maximum diameter. (2) The gauge length of the test specimen is to be 30 times or more of the rope diameter, however it needs not to exceed 1 meter.	(1) <u>Except on cases with vinylon and nylon in wet condition</u> , respective breaking loads are to satisfy the requirements specified in Pt 4, Ch 8, Sec 6 , of the Rules. (2) <u>The breaking loads of vinylon and nylon in wet conditions are to be 80% or more and 90% or more respectively of the values specified in above (1)</u> (3) Values with respect to elongation are to be for reference only.									
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Kind of rope Diameter of test rope</th> <th style="text-align: center;">Vinylon rope polyester rope nylon rope</th> <th style="text-align: center;">Polyethylene rope polypropylene rope</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">12 ~ 24 mm</td> <td style="text-align: center;">Wet condition⁽¹⁾ Dry condition⁽²⁾</td> <td style="text-align: center;">Wet condition⁽³⁾ Dry condition⁽²⁾</td> </tr> <tr> <td style="text-align: center;">40 ~ 60 mm</td> <td style="text-align: center;">Wet condition⁽¹⁾ Dry condition⁽²⁾</td> <td style="text-align: center;">Wet condition⁽³⁾ Dry condition⁽²⁾</td> </tr> </tbody> </table>	Kind of rope Diameter of test rope	Vinylon rope polyester rope nylon rope	Polyethylene rope polypropylene rope	12 ~ 24 mm	Wet condition ⁽¹⁾ Dry condition ⁽²⁾	Wet condition ⁽³⁾ Dry condition ⁽²⁾	40 ~ 60 mm	Wet condition ⁽¹⁾ Dry condition ⁽²⁾	Wet condition ⁽³⁾ Dry condition ⁽²⁾	
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NOTES: (1) The test specimen is to be soaked in water at normal temperature for a period of 30 <i>minutes</i> or more, then taken out and subjected to tensile test at room temperature. (2) The test specimen in dry condition is to be subjected to tensile test at room temperature. (3) The test specimen is to be soaked in warm water at temperature of 35 ± 2°C for a period of 30 <i>minutes</i> or more, then taken out and immediately subjected to tensile test at room temperature.											

<see next page>

Present

Amendment

Note

CHAPTER 2 APPROVAL OF MANUFACTURING PROCESS

Section 1 ~ Section 11 <same as the present>
Section 12 Synthetic Fibre Ropes

1201. ~ 1202. <same as the present>

1203. Approval tests

Table 2.12.1 Approval Test Items and Acceptance Criteria for synthetic fibre ropes

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Tensile tests in wet and dry conditions	(1) Tensile tests on three each test specimens are to, in principle, be carried out for each of the test conditions given in Table below and breaking strength and elongation are to be measured. For rope having diameter higher than 60mm, one additional tensile test specimen is to be taken from the rope of maximum diameter.	<p>(1) <u>Respective breaking loads are to satisfy the requirements specified in Pt 4, Ch 8, Sec 6, of the Rules.</u></p> <p>(2) Values with respect to elongation are to be for reference only.</p>																		
	(2) The gauge length of the test specimen is to be 30 times or more of the rope diameter, however it needs not to exceed 1 meter.																			
	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 15%; text-align: center;">Kind of rope</th> <th style="width: 35%; text-align: center;">Vinylon rope polyester rope nylon rope</th> <th style="width: 50%; text-align: center;">Polyethylene rope polypropylene rope</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">Diameter of test rope</td> <td></td> <td></td> </tr> <tr> <td style="text-align: center;">12 ~ 24 mm</td> <td style="text-align: center;">Wet condition⁽¹⁾</td> <td style="text-align: center;">Wet condition⁽³⁾</td> </tr> <tr> <td></td> <td style="text-align: center;">Dry condition⁽²⁾</td> <td style="text-align: center;">Dry condition⁽²⁾</td> </tr> <tr> <td style="text-align: center;">40 ~ 60 mm</td> <td style="text-align: center;">Wet condition⁽¹⁾</td> <td style="text-align: center;">Wet condition⁽³⁾</td> </tr> <tr> <td></td> <td style="text-align: center;">Dry condition⁽²⁾</td> <td style="text-align: center;">Dry condition⁽²⁾</td> </tr> </tbody> </table>		Kind of rope	Vinylon rope polyester rope nylon rope	Polyethylene rope polypropylene rope	Diameter of test rope			12 ~ 24 mm	Wet condition ⁽¹⁾	Wet condition ⁽³⁾		Dry condition ⁽²⁾	Dry condition ⁽²⁾	40 ~ 60 mm	Wet condition ⁽¹⁾	Wet condition ⁽³⁾		Dry condition ⁽²⁾	Dry condition ⁽²⁾
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NOTES:																				
(1) The test specimen is to be soaked in water at normal temperature for a period of 30 <i>minutes</i> or more, then taken out and subjected to tensile test at room temperature.																				
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- The industrial standards contains the same provisions in the Guidance, resulting in a double deduction, so revision is necessary.

Amendments of the Guidance for Approval of Manufacturing Process and Type Approval, etc.



Mar. 2024

- Main Amendments -

(1) Effective date : 1 July 2024 (For ships contracted for construction)

● IACS UI SC299(New July 2023) reflected

- the requirements for type approval of watertightness test where materials readily rendered ineffective by heat used for pipe penetrations through watertight bulkheads or decks on passenger ships are newly added.

Present	Amendment
<p style="text-align: center;">CHAPTER 3 TYPE APPROVAL</p> <p>Section 1 ~ Section 40 <omitted></p> <p style="text-align: center;"><u><newly added></u></p>	<p style="text-align: center;">CHAPTER 3 TYPE APPROVAL</p> <p style="text-align: center;">Section 1 ~ Section 40 <same as the current Guidance></p> <p style="text-align: center;"><u>Section 41 Watertight bulkheads or deck pipe penetrations on passenger ships (2024)</u></p> <p>4101. Application</p> <p>1. <u>The requirements of this Section apply to tests and inspection for type approval of watertightness test where materials (PVC, FRP, aluminium alloy, lead, etc) readily rendered ineffective by heat specified in Pt 8, Annex 8-2 1.2 of the Guidance are used for pipe penetrations through watertight bulkheads or decks on passenger ships.</u></p> <p>2. <u>Where applying 1. above, fire test specified in Ch 3, Sec 26, Table 3.26.3 “Piping and Duct Penetrations” of this Guidance shall be conducted followed by watertightness test. Therefore, one of the two cases below may be applied.</u></p> <p style="padding-left: 40px;"><u>Case 1) Watertightness test on pipe penetrations that have already been type approved as fire test specified in Part 3 of Annex 1 to the 2010 FTP Code</u> : <u>Conduct fire test for the relevant fire rating with the same configuration as the already approved pipe penetration part + watertightness test</u></p> <p style="padding-left: 40px;"><u>Case 2) Pipe penetration that is not type approved as fire test</u> : <u>Conduct fire test with required fire protection level + watertightness test</u></p> <p>3. <u>It shall be applicable to heat-sensitive piping systems and shall not be applied to cable penetrations in watertight bulkheads and decks.</u></p> <p>4102. Data to be submitted</p> <p><u>The following reference data are to be submitted to the Society in addition to those specified in 102.</u></p> <p>(1) <u>Product details and scope of service</u> (2) <u>Detail drawing of penetration and test layout including type and cross-section of the pipes, etc.</u> (3) <u>Work and maintenance manual</u></p>

Present	Amendment
<p><u><newly added></u></p>	<p><u>4103. Type tests</u></p> <p><u>1. Approval of pipe penetrations fitted to ensure the watertight integrity of a bulkhead or deck where heat-sensitive materials are used should include a prototype test of watertightness after having undergone the standard fire test appropriate for the location in which the penetrations are to be installed*.</u></p> <p><u>1) The fire tested pipe penetration should then be tested to a test pressure of not less than 1.5 times the design pressure as defined in SOLAS Ch. II-1 Reg. 2.18. The pressure should be applied to the same side of the division as the fire test.</u></p> <p><u>2) The fire tested pipe penetration should be tested for a period of at least 30 minutes under hydraulic pressure equal to the test pressure, but minimum 1.0 bar. There should be no leakage during this test.</u></p> <p><u>3) The fire tested pipe penetration should continue to be tested for a further 30 minutes with the test pressure. The quantity of water leakage is not to exceed a total of 1 litre.</u></p> <p><u>4) The prototype test should be considered valid only for the pipe typology (e.g. thermoplastic and multilayer), pressure classes, the maximum/minimum dimensions tested, and the type and fire rating of the division tested.</u></p> <p><u>Note : * Refer to the requirements for A-class division set out in Part 3 of Annex 1 to the 2010 FTP Code</u></p> <p><u>2. The pressure test need not be carried out on the hot penetration arrangement. Ample time may be given to prepare for the pressure test, i.e. dismantling the fire testing equipment and rigging the pressure test equipment.</u></p> <p><u>1) The pressure test should be carried out with the pipe section used in the fire test still in place.</u></p> <p><u>2) Any pipe insulation fitted for the purpose of the fire test may be removed before the pressure test.</u></p> <p><u>3) Prototype testing for fire test and watertightness test need not be carried out if the pipe penetration is made of steel or equivalent material having a thickness of 3 mm or greater and a length of not less than 900 mm (preferably 450 mm on each side of the division), and there are no openings. Such penetrations shall be suitably insulated by extension of the insulation at the same level of the division.</u></p> <p><u>See also SOLAS Ch. II-2 Reg. 9.3.1 with respect to piping. However, the penetration must still comply with the watertight integrity requirement in SOLAS Ch. II-1 Reg. 2.17.</u></p>