

# Amendments of Rules / Guidance

(External Review)

## Pt. 10 Hull Structure and Equipment of Small Ships



2019. 8.

Hull Rule Development Team

Present	Amendment	Note
<p style="text-align: center;"><b>Pt 10 &lt;Rules&gt;</b></p> <p style="text-align: center;"><b>CHAPTER 1 GENERAL</b></p> <p style="text-align: center;"><b>Section 1 Definitions</b></p> <p>101. &lt;omit&gt;</p> <p><b>102. Length [See Guidance]</b>  The length of ship (<math>L</math>) is the distance in <i>metres</i> on the <u>load line</u> defined in <b>110.</b>, from the fore side of stem to the after side of rudder post in case of a ship with rudder post, or to the axis of rudder stock in case of a ship without rudder post or stern post. <math>L</math> is not to be less than 96 % and need not be greater than 97 % of the extreme length on the <u>load line</u>.</p> <p><b>104. Breadth [See Guidance]</b>  The breadth of ship (<math>B</math>) is the horizontal distance in <i>metres</i> from the outside of frame to the outside of frame measured <u>at the broadest part of the hull</u>.</p> <p><b>111. Block coefficient</b>  The block coefficient (<math>C_b</math>) is the coefficient obtained by dividing the moulded volume corresponding to <math>\Delta</math> by <math>L \times B \times d</math>.</p>	<p style="text-align: center;"><b>Pt 10 &lt;Rules&gt;</b></p> <p style="text-align: center;"><b>CHAPTER 1 GENERAL</b></p> <p style="text-align: center;"><b>Section 1 Definitions</b></p> <p>101. &lt;omit&gt;</p> <p><b>102. Rule Length [See Guidance]</b>  The <u>rule length</u> (<math>L</math>) is the distance in <i>metres</i> <u>measured on the waterline at the scantling draught</u> from the fore side of stem to the after side of rudder post in case of a ship with rudder post, or to the axis of rudder stock in case of a ship without rudder post or stern post. <math>L</math> is not to be less than 96 % and need not be greater than 97 % of the extreme length on the <u>waterline at the scantling draught</u>. <u>In ships without rudder stock (e.g. ships fitted with azimuth thrusters), <math>L</math> is to be taken equal to 97% of the extreme length on the waterline at the scantling draught. In ships with unusual stern and bow arrangement the rule length, <math>L</math> will be specially considered.</u></p> <p><b>104. Breadth [See Guidance]</b>  The breadth of ship (<math>B</math>) is the horizontal distance in <i>metres</i> from the outside of frame to the outside of frame measured <u>amidships at the scantling draught, <math>d_s</math></u>.</p> <p><b>111. Block coefficient</b>  The block coefficient (<math>C_b</math>) is the <u>moulded coefficient corresponding to waterline at the scantling draught, <math>d_s</math>, based on rule length, <math>L</math> and moulded breadth, <math>B</math>.</u></p> $C_b = \frac{\text{Moulded displacement}[m^3] \text{ at scantling draught } d_s}{L \times B \times d_s}.$	<p>- IACS UR S2 (R2)</p>

Present	Amendment	Note
<p>112. ~ 114 &lt;omit&gt;</p> <p style="text-align: right;">&lt;newly added&gt;</p> <p style="text-align: center;"><b>Section 2 ~ Section 3 &lt;omit&gt;</b></p> <p style="text-align: right;">↓</p>	<p>112. ~ 114 &lt;same as current&gt;</p> <p><b>115. Scantlig draught</b></p> <p><u>Scantling draught, <math>d_s</math>, at which the strength requirements for the scantlings of the ship are met and represents the full load condition. The scantling draught is to be not less than that corresponding to the assigned freeboard.</u></p> <p style="text-align: center;"><b>Section 2 ~ Section 3 &lt;same as current&gt;</b></p> <p style="text-align: right;">↓</p>	<p>- IACS UR S2 (R2)</p>

Present	Amendment	Note
<p style="text-align: center;"><b>Part 3 &lt;Rules&gt;</b></p> <p style="text-align: center;"><b>CHAPTER 15 DEEP TANKS</b></p> <p style="text-align: center;"><b>Section 1 General &lt;omit&gt;</b></p> <p style="text-align: center;"><b>Section 2 Bulkheads of Deep Tank</b></p> <p><b>201. &lt;omit&gt;</b></p> <p><b>202. Bulkhead plates [See Guidance]</b></p> <p>The thickness of deep tank bulkhead plating is not to be less than that obtained from the following formula:</p> $t_1 = C_1 C_2 S \sqrt{h} + 2.5 \quad (\text{mm})$ <p>where:</p> <p><math>S</math> = spacing of stiffeners. (m).</p> <p><math>h</math> = distance given below, whichever is the greater:</p> <p><math>h_1</math>: &lt;omit&gt;</p> <p><math>h_2</math>: &lt;omit&gt;</p> <p><math>h_3</math>: &lt;omit&gt;</p> <p><math>C_1</math> = &lt;omit&gt;</p> <p><math>C_2</math> = &lt;omit&gt;</p>	<p style="text-align: center;"><b>Part 3 &lt;Rules&gt;</b></p> <p style="text-align: center;"><b>CHAPTER 15 DEEP TANKS</b></p> <p style="text-align: center;"><b>Section 1 General &lt;same as current&gt;</b></p> <p style="text-align: center;"><b>Section 2 Bulkheads of Deep Tank</b></p> <p><b>201. &lt;same as current&gt;</b></p> <p><b>202. Bulkhead plates (2020) [See Guidance]</b></p> <p>&lt;same as current&gt;</p> <p><math>h</math> = distance given below, whichever is the greater:</p> <p><math>h_1</math>: &lt;same as current&gt;</p> <p><math>h_2</math>: &lt;same as current&gt;</p> <p><math>h_3</math>: &lt;same as current&gt;</p> <p><u>When the ship use the flow-through ballast water exchange operations method, the following water heads, <math>h_4</math> and <math>h_5</math> are to be additionally considered.</u></p> <p><math>h_4</math>: <u>Vertical distance from the lower edge of the bulkhead plating under consideration to the top of the overflow pipe (or air pipe) to the point where the overpressure is added (m). (Overpressure : due to sustained liquid flow through overflow pipe in case of overfilling or filling during flow through ballast water exchange. It is to be defined by the designer, but not to be less than 2.5.)</u></p> <p><math>h_5</math>: <u><math>0.85 (h_4 + \Delta h)</math></u></p> <p><u><math>\Delta h</math> : as specified in <b>105.</b></u></p> <p><math>C_1</math> = &lt;same as current&gt;</p> <p><math>C_2</math> = &lt;same as current&gt;</p>	

Present	Amendment	Note
<p><b>203. Bulkhead stiffeners [See Guidance]</b></p> <p>1. Section modulus of stiffeners is not to be less than that obtained from the following formula :</p> $Z = 125 C_1 C_2 C_3 S h l^2 \quad (\text{cm}^3)$ <p>Where:</p> <p><math>h</math> = water head <math>h_1</math>, <math>h_2</math> or <math>h_3</math> as specified in <b>202</b>. Where, however, "the lower edge of the bulkhead plating under consideration" is to be construed as "the mid-point of the stiffener under consideration" for vertical stiffeners and as "the stiffener under consideration" for horizontal stiffeners. And "side shell plating" is to be construed as "stiffener attached to side shell plating".</p> <p><math>C_2</math> = value obtained from following formula. The value <math>C_2</math> for <math>h_1</math>, however, is to be as obtained from the formula in <b>Table 3.15.3</b></p> $C_2 = \frac{K}{18}$ <p><math>C_3</math> = as determined from <b>Table 3.15.4</b> according to the fixity condition of stiffener ends;</p> <p><math>C_1</math> = as specified in <b>202</b>.</p> <p><math>S</math> and <math>l</math> = as specified in <b>Ch 14, 303</b>.</p> <p>2. &lt;omit&gt;</p> <p>204. ~ 209. &lt;omit&gt;</p>	<p><b>203. Bulkhead stiffeners (2020) [See Guidance]</b></p> <p>1. Section modulus of stiffeners is not to be less than that obtained from the following formula :</p> $Z = 125 C_1 C_2 C_3 S h l^2 \quad (\text{cm}^3)$ <p>Where:</p> <p><math>h</math> = water head <math>h_1</math>, <math>h_2</math> or <math>h_3</math> as specified in <b>202.</b>, <u>whichever is the greater</u>. Where, however, "the lower edge of the bulkhead plating under consideration" is to be construed as "the mid-point of the stiffener under consideration" for vertical stiffeners and as "the stiffener under consideration" for horizontal stiffeners. And "side shell plating" is to be construed as "stiffener attached to side shell plating". <u>When the ship use the flow-through ballast water exchange operations method, <math>h_4</math> and <math>h_5</math> as specified in <b>202</b>. are to be additionally considered.</u></p> <p><math>C_2</math> = &lt;same as current&gt;</p> <p><math>C_3</math> = &lt;same as current&gt;</p> <p><math>C_1</math> = &lt;same as current&gt;</p> <p><math>S</math> and <math>l</math> = as specified in <b>Ch 14, 303</b>.</p> <p>2. &lt;same as current&gt;</p> <p>204. ~ 209. &lt;same as current&gt;</p>	<p style="text-align: right;">↓</p>

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<p style="text-align: center;"><b>Part 10 &lt;Rules&gt;</b></p> <p style="text-align: center;"><b>CHAPTER 15 DEEP TANK</b></p> <p style="text-align: center;"><b>Section 1 &lt;omit&gt;</b></p> <p style="text-align: center;"><b>Section 2 Bulkheads of Deep Tanks</b></p> <p>201. &lt;omit&gt;</p> <p><b>202. Bulkhead plates [See Guidance]</b></p> <p>The thickness of deep tank bulkhead plating is not to be less than that obtained from the following formula:</p> $t = 3.6S\sqrt{h} + 2.5 \text{ (mm)}$ <p>where :</p> <p><math>S</math> = spacing of stiffeners (m)</p> <p><math>h</math> = distance given below, whichever is the greater:</p> <p>(1) Vertical distance measured from the lower edge of plate to the midpoint of the distance between the top of tanks and the top of overflow pipes (m). For bulkheads of large tanks, additional water pressure is to be considered.</p> <p>(2) 0.7 times the vertical distance measured from the lower edge of plate to the point of 2.0 m above the top of overflow pipes (m)</p>	<p style="text-align: center;"><b>Part 10 &lt;Rules&gt;</b></p> <p style="text-align: center;"><b>CHAPTER 15 DEEP TANK</b></p> <p style="text-align: center;"><b>Section 1 &lt;omit&gt;</b></p> <p style="text-align: center;"><b>Section 2 Bulkheads of Deep Tanks</b></p> <p>201. &lt;omit&gt;</p> <p><b>202. Bulkhead plates (2020) [See Guidance]</b></p> <p>The thickness of deep tank bulkhead plating is not to be less than that obtained from the following formula:</p> $t = 3.6S\sqrt{h} + 2.5 \text{ (mm)}$ <p>where :</p> <p><math>S</math> = spacing of stiffeners (m)</p> <p><math>h</math> = distance given below, whichever is the greater:</p> <p><u><math>h_1</math></u>: Vertical distance measured from the lower edge of plate to the midpoint of the distance between the top of tanks and the top of overflow pipes (m). For bulkheads of large tanks, additional water pressure is to be considered.</p> <p><u><math>h_3</math></u>: 0.7 times the vertical distance measured from the lower edge of plate to the point of 2.0 m above the top of overflow pipes (m)</p>	

Present	Amendment	Note
<p><b>203. Bulkhead stiffeners [See Guidance]</b></p> <p>The section modulus of bulkhead stiffeners is not to be less than that obtained from the following formula:</p> $Z = CShl^2 \text{ (cm}^3\text{)}$ <p>where:</p> <p><math>S, l</math> = as specified in <b>Ch 14, 203.</b></p> <p><math>h</math> = <u>vertical distance given below, whichever is the greater, the lower end being regarded as the midpoint of <math>l</math> for vertical stiffeners and as the midpoint of distance between the adjacent stiffeners for horizontal stiffeners</u></p> <p>(1) <u>Vertical distance measured from the lower end to the mid-point of the distance between the top of tanks and the top of overflow pipes (m)</u></p> <p style="padding-left: 40px;">For bulkhead stiffeners of large tanks, additional water pressure is to be considered.</p> <p>(2) <u>0.7 times the vertical distance measured from the lower end to the point of 2.0 m above the top of overflow pipes (m)</u></p> <p><math>C</math> = &lt;omit&gt;</p>	<p><u>When the ship use the flow-through ballast water exchange operations method, the following water heads, <math>h_4</math> is to be additionally considered.</u></p> <p><u><math>h_4</math>: Vertical distance from the lower edge of the bulkhead plating under consideration to the top of the overflow pipe (or air pipe) to the point where the overpressure is added (m). (Overpressure : due to sustained liquid flow through overflow pipe in case of overfilling or filling during flow through ballast water exchange. It is to be defined by the designer, but not to be less than 2.5.) For bulkheads of large tanks, additional water pressure is to be considered.</u></p> <p><b>203. Bulkhead stiffeners [See Guidance]</b></p> <p>&lt;same as current&gt;</p> <p><math>h</math> = <u>water head <math>h_1</math> or <math>h_3</math> as specified in <b>202.</b>, whichever is the greater, the lower end being regarded as the midpoint of <math>l</math> for vertical stiffeners and as the midpoint of distance between the adjacent stiffeners for horizontal stiffeners. When the ship use the flow-through ballast water exchange operations method, <math>h_4</math> as specified in <b>202.</b> are to be additionally considered.</u></p> <p><math>C</math> = &lt;same as current&gt;</p>	

Present

Amendment

Note

## CHAPTER 24 DOUBLE HULL TANKERS

### Section 1 General <omit>

### Section 2 Bulkheads Plating

#### 201. Bulkhead plating of cargo oil tanks and deep tanks

1. Thickness of bulkhead plating is not to be less than that obtained from the following formula when  $h$  is substituted with  $h_1$  or  $h_2$  :

$$t = 3.6S\sqrt{h} + 2.5 \quad (\text{mm})$$

where :

$S$  = spacing of stiffeners (m)

$h$  = a head of water  $h_1$  or  $h_2$  as given in **Table 10.24.1** which is the greater

**Table 10.24.1 A head of water**

	Cargo Oil Tank	Deep Tank
$h_1$	Vertical distance from the lower edge of the bulkhead plating under consideration to the top of hatchway. For bulkheads of large tanks, a suitable water head given in <b>Pt 3, Ch 15</b> is to be considered.	Vertical distance from the lower edge of the bulkhead plating under consideration to the midpoint between the point on tank top and the upper end of the overflow pipe. For bulkheads of large tanks, suitable water head given in <b>Pt 3, Ch 15</b> is to be considered,
$h_2$	$h_2 = 0.3\sqrt{L}$ (m)	0.7 times the vertical distance from the lower edge of the bulkhead plating under consideration to the point 2.0 m above the top of overflow pipe

2. <omit>

202., 203. <omit>



Present	Amendment	Note												
	<p style="text-align: center;"><b>CHAPTER 24 DOUBLE HULL TANKERS</b></p> <p style="text-align: center;"><b>Section 2 Bulkheads Plating</b></p> <p><b>201. Bulkhead plating of cargo oil tanks and deep tanks</b></p> <p>1. Thickness of bulkhead plating is not to be less than that obtained from the following formula :</p> <p style="padding-left: 40px;">&lt;same as current&gt;</p> <p style="padding-left: 40px;"><math>h</math> = a head of water <math>h_1</math> or <math>h_3</math> as given in <b>Table 10.24.1</b> which is the greater. <u>When the ship use the flow-through ballast water exchange operations method, <math>h_4</math> is to be additionally considered.</u></p> <p><b>Table 10.24.1 A head of water</b></p> <table border="1" data-bbox="504 683 1803 1396"> <thead> <tr> <th></th> <th>Cargo Oil Tank</th> <th>Deep Tank</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;"><math>h_1</math></td> <td>Vertical distance from the lower edge of the bulkhead plating under consideration to the top of hatchway. For bulkheads of large tanks, a suitable water head given in <b>Pt 3, Ch 15</b> is to be considered.</td> <td>Vertical distance from the lower edge of the bulkhead plating under consideration to the midpoint between the point on tank top and the upper end of the overflow pipe. For bulkheads of large tanks, suitable water head given in <b>Pt 3, Ch 15</b> is to be considered,</td> </tr> <tr> <td style="text-align: center;"><math>h_3</math></td> <td style="text-align: center;"><math>0.3\sqrt{L}</math> (m)</td> <td>0.7 times the vertical distance from the lower edge of the bulkhead plating under consideration to the point 2.0 m above the top of overflow pipe</td> </tr> <tr> <td style="text-align: center;"><math>h_4</math></td> <td style="text-align: center;">-</td> <td><u>Vertical distance from the lower edge of the bulkhead plating under consideration to the top of the overflow pipe (or air pipe) to the point where the overpressure is added (m). (Overpressure : due to sustained liquid flow through overflow pipe in case of overfilling or filling during flow through ballast water exchange. It is to be defined by the designer, but not to be less than 2.5.) For bulkheads of large tanks, suitable water head given in <b>Pt 3, Ch 15</b> is to be considered,</u></td> </tr> </tbody> </table>		Cargo Oil Tank	Deep Tank	$h_1$	Vertical distance from the lower edge of the bulkhead plating under consideration to the top of hatchway. For bulkheads of large tanks, a suitable water head given in <b>Pt 3, Ch 15</b> is to be considered.	Vertical distance from the lower edge of the bulkhead plating under consideration to the midpoint between the point on tank top and the upper end of the overflow pipe. For bulkheads of large tanks, suitable water head given in <b>Pt 3, Ch 15</b> is to be considered,	$h_3$	$0.3\sqrt{L}$ (m)	0.7 times the vertical distance from the lower edge of the bulkhead plating under consideration to the point 2.0 m above the top of overflow pipe	$h_4$	-	<u>Vertical distance from the lower edge of the bulkhead plating under consideration to the top of the overflow pipe (or air pipe) to the point where the overpressure is added (m). (Overpressure : due to sustained liquid flow through overflow pipe in case of overfilling or filling during flow through ballast water exchange. It is to be defined by the designer, but not to be less than 2.5.) For bulkheads of large tanks, suitable water head given in <b>Pt 3, Ch 15</b> is to be considered,</u>	
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Present	Amendment	Note
<p><b>Section 3 Frames, Stiffeners and Longitudinal Beams</b></p> <p>301. &lt;omit&gt;</p> <p><b>302. Bulkhead stiffeners in cargo oil tanks and deep tanks</b></p> <p>1. The section modulus of stiffeners is not to be less than that obtained from the following formula:</p> $Z = 7CS hl^2 \text{ (cm}^3\text{)}$ <p>where:</p> <p><math>S</math> = spacing of stiffeners (m)</p> <p><math>l</math> = overall length between supporting points of stiffeners (m) including the length of connected parts at ends. However, in case where stiffening girders are provided, the distance to the nearest stiffening girder from the connected heel end or the distance between stiffening girders is to be taken.</p> <p><math>h</math> = a head of water <math>h_1</math> or <math>h_2</math> as specified in <b>Table 10.24.1</b> whichever is the greater. Where, however, "from the lower edge of the bulkhead plating under consideration" is to be construed as "from the mid-point of <math>l</math>" for vertical stiffeners, and as "from the mid-point of the upper and lower stiffeners" for horizontal stiffeners.</p> <p><math>C</math> &lt;omit&gt;</p> <p>303. &lt;omit&gt;</p> <p><b>Section 4 ~ Section 5 &lt;omit&gt;</b></p>	<p><b>Section 3 Frames, Stiffeners and Longitudinal Beams</b></p> <p>301. &lt;same as current&gt;</p> <p><b>302. Bulkhead stiffeners in cargo oil tanks and deep tanks</b></p> <p>1. The section modulus of stiffeners is not to be less than that obtained from the following formula:</p> $Z = 7CS hl^2 \text{ (cm}^3\text{)}$ <p>where:</p> <p><math>S</math> = spacing of stiffeners (m)</p> <p><math>l</math> = overall length between supporting points of stiffeners (m) including the length of connected parts at ends. However, in case where stiffening girders are provided, the distance to the nearest stiffening girder from the connected heel end or the distance between stiffening girders is to be taken.</p> <p><math>h</math> = a head of water <math>h_1</math> or <math>h_3</math> as specified in <b>Table 10.24.1</b> whichever is the greater. Where, however, "from the lower edge of the bulkhead plating under consideration" is to be construed as "from the mid-point of <math>l</math>" for vertical stiffeners, and as "from the mid-point of the upper and lower stiffeners" for horizontal stiffeners. <u>When the ship use the flow-through ballast water exchange operations method, <math>h_4</math> as specified in 201. 1. are to be additionally considered.</u></p> <p><math>C</math> &lt;same as current&gt;</p> <p>303. &lt;same as current&gt;</p> <p><b>Section 4 ~ Section 5 &lt;same as current&gt;</b></p>	

Present	Amendment	Note
<p style="text-align: center;"><b>Section 6 Girders and Transverses in Cargo Oil Tanks and Deep Tanks</b></p> <p><b>601. Scantlings</b></p> <p>1. The section modulus of girders is not to be less than that obtained from the following formula:</p> $Z = 7.13 S h l^2 \text{ (cm}^3\text{)}$ <p>where:</p> <p><i>S</i> = breadth of area supported by girders (m)</p> <p><i>l</i> = overall length of girder (m), which is equal to the distance between the inner surfaces of face plates of girders</p> <p><i>h</i> = a head of water <i>h</i><sub>1</sub> or <i>h</i><sub>2</sub> as specified in <b>Table 10.24.1</b> whichever is the greater. Where, however, "from the lower edge of the bulkhead Plating under consideration" is to be construed as "from the mid-point of <i>S</i>" for horizontal girders, and as "from the mid-point of <i>l</i>" for vertical girders.</p> <p>2. ~ 5. &lt;omit&gt;</p> <p>602. &lt;omit&gt;</p> <p style="text-align: center;"><b>Section 7 ~ Section 10 &lt;omit&gt;</b></p> <p style="text-align: right;">↓</p>	<p style="text-align: center;"><b>Section 6 Girders and Transverses in Cargo Oil Tanks and Deep Tanks</b></p> <p><b>601. Scantlings</b></p> <p>1. The section modulus of girders is not to be less than that obtained from the following formula:</p> $Z = 7.13 S h l^2 \text{ (cm}^3\text{)}$ <p>where:</p> <p><i>S</i> = breadth of area supported by girders (m)</p> <p><i>l</i> = overall length of girder (m), which is equal to the distance between the inner surfaces of face plates of girders</p> <p><i>h</i> = a head of water <i>h</i><sub>1</sub> or <i>h</i><sub>3</sub> as specified in <b>Table 10.24.1</b> whichever is the greater. Where, however, "from the lower edge of the bulkhead Plating under consideration" is to be construed as "from the mid-point of <i>S</i>" for horizontal girders, and as "from the mid-point of <i>l</i>" for vertical girders. <u>When the ship use the flow-through ballast water exchange operations method, <i>h</i><sub>4</sub> as specified in <b>201. 1.</b> are to be additionally considered.</u></p> <p>2. ~ 5. &lt;same as current&gt;</p> <p>602. &lt;same as current&gt;</p> <p style="text-align: center;"><b>Section 7 ~ Section 10 &lt;same as current&gt;</b></p> <p style="text-align: right;">↓</p>	

Present	Amendment	Note
<p style="text-align: center;"><b>Part 10 &lt;Guidances&gt;</b></p> <p style="text-align: center;"><b>CHAPTER 24 DOUBLE HULL TANKERS</b></p> <p style="text-align: center;"><b>Section 2 Bulkheads Platings</b></p> <p><b>201. Bulkhead plating of cargo oil tanks and deep tanks</b></p> <p>1. When the flow-through ballast water exchange operations is used in applying the requirements in <b>202</b> of the Rules, the following water heads are to be additionally considered.</p> $h_3 = z_{\top} + h_{air} + h_{drop} - z$ <p><math>z_{top}</math> : height of highest point of tank (m)</p> <p><math>h_{air}</math> : height of air or overflow pipe above tank top (m)</p> <p><math>h_{drop}</math> : Overpressure due to sustained liquid flow through air pipe or overflow pipe in case of overfilling or filling during flow through ballast water exchange. It is to be defined by the designer, but not to be less than 2.5.</p> <p><math>z</math> : height to the considered location (m)</p> $h_4 = 0.85 (h_4 + \Delta h)$ <p><math>\Delta h</math> : as specified in <b>Pt 3 Ch.15 105.</b> of the Rules</p> <p><b>202. &lt;omit&gt;</b></p> <p style="text-align: center;"><b>Section 3 Frames, Stiffeners and Longitudinals Beams</b></p> <p><b>302. Bulkhead stiffeners in cargo oil tanks and deep tanks</b></p> <p>1. When the flow-through ballast water exchange operations is used in applying the requirements in <b>302.</b> of the Rules, the following water heads are to be additionally considered.</p> <p><math>h_3</math> and <math>h_4</math> = as specified in <b>201.1</b></p> <p style="text-align: right;">↓</p>	<p style="text-align: center;"><b>Part 10 &lt;Guidances&gt;</b></p> <p style="text-align: center;"><b>CHAPTER 24 DOUBLE HULL TANKERS</b></p> <p style="text-align: center;"><b>Section 2 Bulkheads Platings</b></p> <p><b>201. &lt;delete&gt;</b></p> <p><b>202. &lt;same as current&gt;</b></p> <p style="text-align: center;"><b>Section 3 &lt;delete&gt;</b></p> <p style="text-align: right;">↓</p>	

Present	Amendment	Note
<p style="text-align: center;"><b>Part 10 &lt;Rule&gt;</b></p> <p style="text-align: center;"><b>CHAPTER 14 WATERTIGHT BULKHEADS</b></p> <p style="text-align: center;">Section 1 ~ 2 &lt;omit&gt;</p> <p style="text-align: center;">Section 3 Watertight Doors</p> <p><b>301. General [See Guidance]</b></p> <p>1. <u>Any access openings, doors, manholes or ducts for ventilation, etc. are not to be cut in the collision bulkhead below freeboard deck. The number of openings in collision bulkheads above the freeboard deck is to be kept to a minimum as possible and all such openings are to be provided with weathertight means of closing.</u></p> <p>2. <u>Watertight doors(or access hatch cover) are to be provided for all access openings in the watertight bulkheads or openings to ensure the watertight integrity of the inner decks in accordance with the requirements in the following 302. to 305.</u></p> <p><b>302. Type of watertight doors [See Guidance]</b></p> <p>1. <u>Watertight doors are to be of sliding type. Hinged or rolling type may, however, be accepted having regard to the position or the service condition of the door.</u></p> <p>2. <u>Notwithstanding the provisions in 1 above, where watertight door is as small as crew can pass, the watertight door may be of hinged type or rolling type, except where the doors are required to be capable of being closed remotely in accordance with 404. 2.</u></p> <p>3. <u>Notwithstanding the provisions in 1 above, watertight doors in large cargo hold division may be of a type other than sliding type provided that such doors are permanently closed at sea.</u></p> <p>4. <u>Doors which are closed by dropping or by the action of a dropping weight are not permitted.</u></p>	<p style="text-align: center;"><b>Part 10 &lt;Rule&gt;</b></p> <p style="text-align: center;"><b>CHAPTER 14 WATERTIGHT BULKHEADS</b></p> <p style="text-align: center;">Section 1 ~ 2 &lt;same as current&gt;</p> <p style="text-align: center;">Section 3 Watertight Doors <i>(2020)</i></p> <p><b>301. General [See Guidance]</b></p> <p>1. <u>As specified in Pt 3, Ch 14, 401. of the Rules.</u></p> <p><b>302. Type of watertight doors [See Guidance]</b></p> <p>1. <u>As specified in Pt 3, Ch 14, 402. of the Rules.</u></p>	

Present	Amendment	Note
<p><b>303. Strength and watertightness</b></p> <p><u>1. Watertight doors are to be of ample strength and watertightness for water pressure to a head up to the bulkhead deck, and door frames are to be effectively secured to the bulkheads. Where deemed necessary by the Society, watertight doors are to be tested by water pressure before they are fitted. [See Guidance]</u></p> <p><u>2. Where watertight doors are provided in cargo spaces, such doors are to be protected against damages due to cargoes, etc. by suitable means.</u></p> <p><b>304. Control [See Guidance]</b></p> <p><u>1. All watertight doors, except those which are to be permanently closed at sea, are to be capable of being opened and closed by hand locally, from both sides of the doors, with the ship listed of 30 degrees to either side.</u></p> <p><u>2. In addition to the requirements of 1 above, watertight doors which are used at sea or normally open at sea, are to be capable of being remotely closed by power from the navigation bridge.</u></p> <p><u>3. It is not to be possible to remotely open any watertight door. In addition, watertight doors which are applying to the provisions of 302. 3 are not to be remotely controlled.</u></p> <p><b>305. Indication [See Guidance]</b></p> <p><u>1. Watertight doors, except those permanently closed at sea, are to be provided with position indicators showing whether the doors are open or closed at all operating positions.</u></p> <p><u>2. In addition to the requirements of 1 above for watertight doors which are to be capable of being remotely closed, an indication is to be placed locally showing that the door is in remote control mode.</u></p>	<p><b>303. Strength and watertightness</b></p> <p><u>1. As specified in Pt 3, Ch 14, 403. of the Rules.</u></p> <p><b>304. Control [See Guidance]</b></p> <p><u>1. As specified in Pt 3, Ch 14, 404. of the Rules.</u></p> <p><b>305. Indication [See Guidance]</b></p> <p><u>1. As specified in Pt 3, Ch 14, 405. of the Rules.</u></p>	

Present	Amendment	Note
<p><b>306. Alarms [See Guidance]</b>  <u>Watertight doors which are capable of being remotely closed are to be provided with an audible alarm which will sound at the door position whenever such a door is remotely closed.</u></p> <p><b>307. Source of power</b></p> <p><u>1. The remote controls, indications and alarms required in 304. to 306. are to be operable in the event of main power failure.</u></p> <p><u>2. Where Electrical installations specified in 1 are situated below the freeboard deck, they are to be provided with a degree of protection appropriate for flooding. [See Guidance]</u></p> <p><u>3. Cables for devices specified in 1. are to comply with the requirements of Pt 6, Ch 1, Sec 5 of the Rules.</u></p> <p><b>308. Notices</b></p> <p><u>1. Watertight doors which are to be normally closed at sea are to have notices fixed to both sides of the doors stating "To be kept closed at sea".</u></p> <p><u>2. Watertight doors which are to be permanently closed at sea are to have notices fixed to both sides stating "Not to be opened at sea". Such doors which are accessible during the voyage are to be fitted with a device which prevents opening. [See Guidance]</u></p>	<p><b>306. Alarms [See Guidance]</b>  <u>1. As specified in Pt 3, Ch 14, 406. of the Rules.</u></p> <p><b>307. Source of power</b>  <u>1. As specified in Pt 3, Ch 14, 407. of the Rules.</u></p> <p><b>308. Notices</b>  <u>1. As specified in Pt 3, Ch 14, 408. of the Rules.</u></p>	

Present	Amendment	Note
<p><b>309. Sliding doors [See Guidance]</b></p> <ol style="list-style-type: none"> <li>1. <u>Sliding watertight doors are to be capable of being operated from an accessible position above the bulkhead deck and are to have an index at the operating position showing whether the door is open or closed. This remote control of the door may, however, be omitted where the Society is satisfied with such an arrangement having regard to the service condition of the door.</u></li> <li>2. <u>Where the above control means is operated by rods, the lead of operating rods is to be as direct as possible and the screw is to work in a nut of gun-metal or other approved material.</u></li> <li>3. <u>Sliding doors controlled from remote positions are also to be capable of being operated at the position of the door.</u></li> <li>4. <u>The frames of vertically sliding watertight doors are to have no groove at the bottom in which dirt might lodge and prevent the door from closing.</u></li> </ol> <p><b>310. Hinged and rolling doors</b></p> <ol style="list-style-type: none"> <li>1. <u>For hinged and rolling watertight doors, the hinge pins and the wheel axle of these doors are to be of gun-metal or other approved materials.</u></li> <li>2. <u>Hinged and rolling watertight doors except those are to be permanently closed at sea, are to be of quick acting or single acting type which is capable of being closed and secured from both sides of the doors.</u> ↓</li> </ol>	<p><b>309. Sliding doors [See Guidance]</b></p> <ol style="list-style-type: none"> <li>1. <u>As specified in Pt 3, Ch 14, 409. of the Rules.</u></li> </ol> <p><b>310. Hinged and rolling doors</b></p> <ol style="list-style-type: none"> <li>1. <u>As specified in Pt 3, Ch 14, 410. of the Rules.</u></li> </ol> <p><b>311. Testing [See Guidance]</b></p> <ol style="list-style-type: none"> <li>1. <u>As specified in Pt 3, Ch 14, 412. of the Rules.</u> ↓</li> </ol>	<p>- SC156 3.6</p>



Present	Amendment	Note
<p style="text-align: center;"><b>Part 10 &lt;Guidance&gt;</b></p> <p style="text-align: center;"><b>CHAPTER 14 WATERTIGHT BULKHEADS</b></p> <p style="text-align: center;">Section 1 ~ 2 &lt;omit&gt;</p> <p style="text-align: center;">Section 3 Watertight Doors</p> <p><del>301. General (2017) [See Rule]</del></p> <p><del>Watertight doors are categorized as Pt 3, Ch 14, Sec. 4 401. of Guidance relating to rules for the classification of steel ships.</del></p> <p><b>302. Type of Watertight Doors [See Rule]</b> As specified in <b>Pt 3, Ch 14, 402.</b> of the Guidance.</p> <p><b>303. Strength and watertightness [See Rule]</b> <u>In application to 303. 1 of the Rules, the term "deemed necessary by the Society" means the cases as specified in Pt 3, Ch 14, 403. of the Guidance.</u></p>	<p style="text-align: center;"><b>Part 10 &lt;Guidance&gt;</b></p> <p style="text-align: center;"><b>CHAPTER 14 WATERTIGHT BULKHEADS</b></p> <p style="text-align: center;">Section 1 ~ 2 &lt;omit&gt;</p> <p style="text-align: center;">Section 3 Watertight Doors (2020)</p> <p>&lt;delete&gt;</p> <p><b>302. Type of Watertight Doors [See Rule]</b> As specified in <b>Pt 3, Ch 14, 402.</b> of the Guidance.</p> <p><b>303. Strength and watertightness [See Rule]</b> As specified in <b>Pt 3, Ch 14, 403.</b> of the Guidance.</p> <p><b>304. Strength and watertightness [See Rule]</b> As specified in <b>Pt 3, Ch 14, 404.</b> of the Guidance.</p> <p><b>305. Strength and watertightness [See Rule]</b> As specified in <b>Pt 3, Ch 14, 405.</b> of the Guidance.</p> <p><b>306. Strength and watertightness [See Rule]</b> As specified in <b>Pt 3, Ch 14, 406.</b> of the Guidance.</p> <p><b>307. Strength and watertightness [See Rule]</b> As specified in <b>Pt 3, Ch 14, 407.</b> of the Guidance.</p>	

Present	Amendment	Note
<p><b>309. Sliding Doors [See Rule]</b>  As specified in <b>Pt 3, Ch 14, 409.</b> of the Guidance. ↓</p>	<p><b>308. Strength and watertightness [See Rule]</b>  <u>As specified in <b>Pt 3, Ch 14, 408.</b> of the Guidance.</u></p> <p><b>309. Sliding Doors [See Rule]</b>  As specified in <b>Pt 3, Ch 14, 409.</b> of the Guidance.</p> <p><b>311. Test [See Rule]</b>  <u>As specified in <b>Pt 3, Ch 14, 412.</b> of the Guidance.</u> ↓</p>	

Present	Amendment	Note
<p style="text-align: center;"><b>Part 10 &lt;Guidance&gt;</b></p> <p style="text-align: center;"><b>CHAPTER 19 HATCHWAYS AND OTHER DECK OPENINGS</b></p> <p style="text-align: center;">Section 1 &lt;omit&gt;</p> <p style="text-align: center;">Section 2 Hatchways</p> <p>202. Height of hatchway coamings [See Rule]  <u>As specified in Pt 4, Ch 2, 201. of the Guidance.</u></p> <p>203. &lt;omit&gt;</p> <p style="text-align: center;">Section 4 &lt;omit&gt;</p> <p style="text-align: center;">Section 6 Companion Ways and Other Deck Openings</p> <p>602. Companion ways [See Rule]  <u>As specified in Pt 4, Ch 2, 901. of the Guidance. ↓</u></p>	<p style="text-align: center;"><b>Part 10 &lt;Guidance&gt;</b></p> <p style="text-align: center;"><b>CHAPTER 19 HATCHWAYS AND OTHER DECK OPENINGS</b></p> <p style="text-align: center;">Section 1 &lt;same as current&gt;</p> <p style="text-align: center;">Section 2 Hatchways</p> <p>202. Height of hatchway coamings [See Rule]  <u>For the ships classed for restricted service area, as specified in Ch 1, 201. 1. (4) of the Guidance. (2020)</u></p> <p>203. &lt;same as current&gt;</p> <p style="text-align: center;">Section 4 &lt;same as current&gt;</p> <p style="text-align: center;">Section 6 Companion Ways and Other Deck Openings</p> <p>602. Companion ways [See Rule]  <u>For the ships classed for restricted service area, as specified in Ch 1, 201. 1. (4) of the Guidance. (2020) ↓</u></p>	



Present	Amendment	Note
<p style="text-align: center;"><b>Pt. 3 &lt;Rule&gt;</b></p> <p style="text-align: center;"><b>CHAPTER 1 GENERAL</b></p> <p style="text-align: center;"><b>Section 2 General</b></p> <p><b>205. Equivalency</b></p> <p><u>Alternative hull construction, equipment, arrangement and scantlings will be accepted by the Society, provided that the Society is satisfied that such construction, equipment, arrangement and scantlings are equivalent to those required in the Rules.</u></p>	<p style="text-align: center;"><b>Pt. 3 &lt;Rule&gt;</b></p> <p style="text-align: center;"><b>CHAPTER 1 GENERAL</b></p> <p style="text-align: center;"><b>Section 2 General</b></p> <p><b>205. Equivalency</b></p> <p><u>The equivalence of alternative and novel features which deviate from or are not directly applicable to the Rules is to be in accordance with Pt 1, Ch 1 of Rules for the Classification of Steel Ships. (2020)</u></p>	
<p style="text-align: center;"><b>Pt. 10 &lt;Rule&gt;</b></p> <p style="text-align: center;"><b>CHAPTER 1 GENERAL</b></p> <p style="text-align: center;"><b>Section 2 General</b></p> <p><b>204. Equivalency</b></p> <p><u>Alternative hull construction, equipment, arrangement and scantlings will be accepted by the Society, provided that the Society is satisfied that such construction, equipment, arrangement and scantlings are equivalent to those required in the Rules.</u></p>	<p style="text-align: center;"><b>Pt. 10 &lt;Rule&gt;</b></p> <p style="text-align: center;"><b>CHAPTER 1 GENERAL</b></p> <p style="text-align: center;"><b>Section 2 General</b></p> <p><b>204. Equivalency</b></p> <p><u>The equivalence of alternative and novel features which deviate from or are not directly applicable to the Rules is to be in accordance with Pt 1, Ch 1 of Rules for the Classification of Steel Ships. (2020)</u></p>	

# Errata

(External Review)

Hull – Pt.3, Pt.7, Pt.10



2019. 8.

Hull Rule Development Team

Present	Amendment	Note
<p style="text-align: center;"><b>Pt. 10 &lt;Guidance&gt;</b></p> <p style="text-align: center;"><b>CHAPTER 21 BULWARKS, FREEING PORTS, SIDE SCUTTLES, ~</b></p> <p style="text-align: center;"><b>Section 2 Freeing Port</b></p> <p>202. &lt;omit&gt;</p> <p>203. Arrangement of freeing ports As specified in Pt 4, Ch 4, <u>204.</u> of the Guidance.</p>	<p style="text-align: center;"><b>Pt. 10 &lt;Guidance&gt;</b></p> <p style="text-align: center;"><b>CHAPTER 21 BULWARKS, FREEING PORTS, SIDE SCUTTLES, ~</b></p> <p style="text-align: center;"><b>Section 2 Freeing Port</b></p> <p>202. &lt;same as current&gt;</p> <p>203. Arrangement of freeing ports As specified in Pt 4, Ch 4, <u>203.</u> of the Guidance.</p>	<p>- errata</p>

# Amendments of the Rules

(External review)

## Pt. 10 Hull Structure and Equip. of Small Steel Ships



2019. 11.

Hull Rule Development Team



Present	Amendment	Note
<p data-bbox="129 240 949 384"><b>Pt. 10 Hull Structure ~ Small Steel Ships CHAPTER 4 PLATE KEELS AND SHELL PLATINGS</b></p> <p data-bbox="282 443 792 475"><b>Section 1 ~ Section 5 &lt;omit&gt;</b></p> <p data-bbox="154 504 920 536"><b>Section 6 Local Compensation of Shell Plating</b></p> <p data-bbox="96 564 271 596">601. &lt;omit&gt;</p> <p data-bbox="96 655 696 687"><b>602. Thickness of sea chest [See Guidance]</b></p> <p data-bbox="159 699 981 815">In case where a sea chest is provided in the shell plating for sea suction or discharge, the thickness of sea chest is not to be less than obtained from the following formula and to be suitably stiffened so as to provide sufficient rigidity as necessary.</p> <p data-bbox="203 914 427 946"><math>t = 0.07L + 4.0</math> (mm)</p> <p data-bbox="96 995 376 1027">603. ~ 604. &lt;omit&gt;</p> <p data-bbox="913 1086 936 1114">↓</p>	<p data-bbox="1034 240 1854 384"><b>Pt. 10 Hull Structure ~ Small Steel Ships CHAPTER 4 PLATE KEELS AND SHELL PLATINGS</b></p> <p data-bbox="1095 443 1794 475"><b>Section 1 ~ Section 5 &lt;same as current&gt;</b></p> <p data-bbox="1064 504 1830 536"><b>Section 6 Local Compensation of Shell Plating</b></p> <p data-bbox="1001 564 1350 596">601. &lt;same as current&gt;</p> <p data-bbox="1001 655 1601 687"><b>602. Thickness of sea chest [See Guidance]</b></p> <p data-bbox="1064 699 1886 879">In case where a sea chest is provided in the shell plating for sea suction or discharge, the thickness of sea chest is not to be less than obtained from the following formula and to be suitably stiffened so as to provide sufficient rigidity as necessary. <u>The thickness, however, is not to be less than the thickness of shell plating where the sea chest is installed.</u></p> <p data-bbox="1108 946 1332 978"><math>t = 0.07L + 4.0</math> (mm)</p> <p data-bbox="1001 1027 1451 1059">603. ~ 604. &lt;same as current&gt;</p> <p data-bbox="1821 1082 1843 1109">↓</p>	<p data-bbox="1912 783 2096 810">- refer Pt 3 Ch 4</p>

# Amendments of the Guidance

(Internal review)

## Pt. 10 Hull Structure and Equipment of Small Steel Ships



2020. 02.

Hull Rule Development Team

Present	Amendment	Note
<p style="text-align: center;"><b>Pt. 10 ~ Small Steel Ship &lt;Rule&gt;</b></p> <p><b>Ch.4 PLATE KEELS AND SHELL PLATINGS</b></p> <p style="text-align: center;"><b>Section 1 General</b></p> <p>101. &lt;omit&gt;</p> <p>102. <b>Special consideration for contact with the quay, etc.</b>  In cases where the service condition of the ship is considered to be such that there is possibility of indent of shell plating due to contact with the quay, etc., special consideration is to be given to the thickness of shell plating.</p> <p>103. &lt;omit&gt;</p> <p style="text-align: center;"><b>Section 2 ~ Section 6 &lt;omit&gt;</b></p> <p style="text-align: right;">↓</p>	<p style="text-align: center;"><b>Pt. 10 ~ Small Steel Ship &lt;Guidance&gt;</b></p> <p><b>Ch.4 PLATE KEELS AND SHELL PLATINGS</b></p> <p style="text-align: center;"><b>Section 1 General</b></p> <p>102. <b>Special consideration for contact with the quay, etc.</b>  <u>[See Guidance]</u>  &lt;same as current&gt;</p>	<p style="text-align: center;">&lt;reference&gt;</p>
<p style="text-align: center;"><b>Pt. 10 ~ Small Steel Ship &lt;Guidance&gt;</b></p> <p><b>Ch.4 PLATE KEELS AND SHELL PLATINGS</b></p> <p style="text-align: right;">&lt;newly added&gt;</p> <p style="text-align: center;"><b>Section 3 ~ Section 6 &lt;omit&gt;</b></p> <p style="text-align: right;">↓</p>	<p style="text-align: center;"><b>Pt. 10 ~ Small Steel Ship &lt;Guidance&gt;</b></p> <p><b>Ch.4 PLATE KEELS AND SHELL PLATINGS</b></p> <p style="text-align: center;"><b>Section 1 General</b></p> <p>102. <b>Special consideration for contact with the fishing gear, etc.</b> <u>[See Rule]</u>  <u>In cases where the service condition of the ship is considered to be such that there is possibility of indent of shell plating due to contact with the fishing gear etc., special consideration is to be given to the thickness of shell plating. However, the Rules and Guidance 102. may not apply where the shell is protected by suitable accessories such as fenders.</u></p> <p style="text-align: center;"><b>Section 3 ~ Section 7 &lt;same as current&gt;</b></p> <p style="text-align: right;">↓</p>	

Present	Amendment	Note
<p style="text-align: center;"><b>Pt. 10 ~ Small Steel Ship &lt;Rule&gt;</b></p> <p style="text-align: center;"><b>Ch.23 OIL TANKERS</b></p> <p style="text-align: center;"><b>Section 1 General</b></p> <p>101. ~ 107. &lt;omit&gt;</p> <p>108. Thickness of structural members in cargo oil spaces</p> <p>(1) ~ (3) &lt;omit&gt;</p> <p>(4) The thickness of various girders, longitudinal, transverse, vertical or horizontal, the cross ties and end connecting brackets thereof and various bulkhead platings is not to be less than 8 mm.</p> <p>(5) &lt;omit&gt;</p> <p>(6) In no case is the thickness of structural members to be less than 7 mm.</p> <p style="text-align: center;"><b>Section 2 ~ Section 6 &lt;omit&gt;</b></p> <p style="text-align: right;">↓</p>	<p>108. Thickness of structural members in cargo oil spaces [See Guidance]</p> <p>&lt;same as current&gt;</p>	<p>&lt;reference&gt;</p>
<p style="text-align: center;"><b>Pt. 10 ~ Small Steel Ship &lt;Guidance&gt;</b></p> <p style="text-align: center;"><b>Ch.23 OIL TANKERS</b></p> <p style="text-align: center;"><b>Section 1 General</b></p> <p>101. ~ 104. &lt;omit&gt;</p> <p style="text-align: right;">&lt;newly added&gt;</p> <p style="text-align: center;"><b>Section 2, Section 6 &lt;omit&gt;</b></p> <p style="text-align: right;">↓</p>	<p style="text-align: center;"><b>Pt. 10 ~ Small Steel Ship &lt;Guidance&gt;</b></p> <p style="text-align: center;"><b>Ch.23 OIL TANKERS</b></p> <p style="text-align: center;"><b>Section 1 General</b></p> <p>101. ~ 104. &lt;same as current&gt;</p> <p>108. Thickness of structural members in cargo oil spaces [See Rule]</p> <p><u>With respect to the requirements of 108. (4) and (6) of the Rules, these requirements are applied to cargo oil tank and deep tank with longer length or width than <math>0.1L + 5.0</math> (m).</u></p> <p style="text-align: center;"><b>Section 2, Section 6 &lt;same as current&gt;</b></p> <p style="text-align: right;">↓</p>	

# Rules for the Classification of Steel Ships Revision

(Part 10 Hull Structure and Equipment of Small Steel Ships)



Present	Amendment	Reason
<p style="text-align: center;"><b>CHAPTER 22 EQUIPMENT NUMBER AND EQUIPMENT</b></p> <p style="text-align: center;"><b>Section 1 General</b></p> <p><b>101. General and application [See Guidance]</b></p> <p><del>1. All ships, according to their equipment number of provisions in <b>201</b>, are to be provided with anchors, chain cables, ropes, etc. which are not less than given in <b>Table 10.22.1</b>.</del></p> <p><del>2. Anchors, chain cables, ropes, etc. for ships having equipment number not more than 50 or more than 1,670 are to be at the discretion of the Society.</del></p> <p><del>3. The bower anchors given in <b>Table 10.22.1</b> are to be connected to their cables and stored on board ready for use.</del></p> <p><del>4. The anchors, chain cables and ropes, etc. which are required to be tested and inspected to be used for ships classed with the Society are to comply with the requirements in <b>Pt 4, Ch 8</b>. [See Guidance]</del></p> <p><del>5. All ships are to be provided with suitable appliances for handling of anchors.</del></p> <p><del>6. The inboard end of chain cable is to be secured to the hull through a strong eye plate by means of shackle or by other equivalent means.</del></p> <p style="text-align: center;"><b>Section 2 Equipment Number</b></p> <p><b>201. Equipment number [See Guidance]</b></p> <p>1. Equipment number is the value obtained from the following formula :</p> $E = \Delta^{\frac{2}{3}} + 2.0Bh + 0.1A$	<p style="text-align: center;"><b>CHAPTER 22 EQUIPMENT NUMBER AND EQUIPMENT</b></p> <p style="text-align: center;"><b>Section 1 General</b></p> <p><b>101. General and application <u>(2020)</u> [See Guidance]</b></p> <p>1. <u>Equipment number and Equipment are to be in accordance with the <b>Pt 4, Ch 8</b> of the rules.</u></p> <p>2. <u>The provision of anchors, chain cables, ropes, etc. having constructions of special shape and dimensions is to be in accordance with the discretion of the Society.</u></p> <p style="text-align: center;"><b>Section 2 Equipment Number</b></p> <p><b>201. Equipment number [See Guidance]</b> <u>As specified in <b>Pt 4, Ch 8, Sec 2</b> of the rules. <u>(2020)</u></u></p> <p><b>202. Mass of anchors <u>(2017)</u></b> <u>As specified in <b>Pt 4, Ch 8, Sec 2</b> of the rules. <u>(2020)</u></u></p> <p><b>203. Chain cables and stream lines</b> <u>As specified in <b>Pt 4, Ch 8, Sec 2</b> of the rules. <u>(2020)</u></u></p> <p><b>204. Tow lines and mooring lines <u>(2017)</u></b> <u>As specified in <b>Pt 4, Ch 8, Sec 2</b> of the rules. <u>(2020)</u></u></p>	<p>* Since the regulations related to the Equipment number and Equipment overlap with Pt 4, Ch 8, we have removed the regulations and follow Pt 4, Ch 8.</p>

Present	Amendment	Reason
<p>where:  <math>A</math> = molded displacement in tons to the summer load waterline  <math>h, A</math> = values specified in the following (1), (2) and (3)</p> <p>(1) <math>h</math> is the value obtained from the following formula :-</p> $h = f + h' \text{ (m)}$ <p>where:  <math>f</math> = vertical distance, at the midship, from the load line to the top of uppermost continuous deck beam at side (m).  <math>h'</math> = height from the uppermost continuous deck to the top of uppermost superstructures or deckhouses having a breadth greater than <math>B/4</math> (m). In the calculation of <math>h</math>, sheer and trim may be ignored. Where a deckhouse having a breadth greater than <math>B/4</math> is located above a deckhouse with a breadth of <math>B/4</math> or less, the narrow deckhouse may be ignored.</p> <p>(2) <math>A</math> is the value obtained from the following formula :-</p> $A = fL + \sum h''l \text{ (m}^3\text{)}$ <p>where:  <math>f</math> = value specified in (1)  <math>\sum h''l</math> = summing up of the products of the height <math>h''</math> (m) and length <math>l</math> (m) of superstructures, deckhouses or trunks which are located above the uppermost continuous deck within the length of ship and also have a breadth greater than <math>B/4</math> and a height greater than 1.5 m</p>	<p><b>Section 3 Shipboard Fittings and Supporting Hull Structures associated with Towing and Mooring</b></p> <p><b>301. Shipboard fittings and supporting hull structures (2017)</b></p> <p>Shipboard fittings and supporting hull structures associated with towing and <u>mooring</u>, where applicable, are to comply with the requirements specified in Pt 4, Ch 10. <u>(2020)</u> ↓</p>	<p>* revised to clarify application scope</p>

Present	Amendment	Reason
<p>(3) In the application of (1) and (2), screens and bulwarks more than 1.5 m in height are to be regarded as parts of superstructures or deckhouses.</p> <p>2. Notwithstanding <del>Par 1</del> above, for tugs the equipment number is to comply with the requirements in each Section and <del>Pt 4, Ch 8, 201</del>.</p> <p><b>202. Mass of anchors (2017)</b></p> <p>1. The mass of individual bower anchors may vary by <math>\pm 7\%</math> of the weight given in <del>Table 10.22.1</del>, provided that the total mass of stipulated number of bower anchors is not less than obtained from multiplying the mass per anchor by the number given in <del>Table 10.22.1</del>. Where, however, an approval by the Society is obtained, the anchors which are increased in mass by more than 7% may be used.</p> <p>2. Where stocked anchors are used, the mass excluding the stock, is not to be less than 0.80 times the mass specified in <del>Table 10.22.1</del> for ordinary stockless bower anchors.</p> <p>3. Where high holding power anchors are used, the mass of each anchor may be 0.75 times the mass specified in <del>Table 10.22.1</del>.</p> <p>4. Where super high holding power anchors are used, the mass of each anchor may be 0.5 times the mass specified in <del>Table 10.22.1</del>. However, super high holding power anchor mass is generally not to exceed 1,500 kg.</p> <p><b>203. Chain cables and stream lines</b></p> <p>Chain cables for bower anchors are to be stud link chains of Grade 1, 2 or 3 specified in <del>Pt 4, Ch 8, Sec 4</del>. However, Grade 1 chains made of Class 1 chains bars (RSBC 31) are not to be used in association with high holding power anchors.</p> <p><b>204. Tow lines and mooring lines</b></p> <p>1. As for wire ropes and hemp ropes used as tow lines and mooring lines, the breaking test load specified in <del>Pt 4, Ch 8, Sec 5 or Sec 6</del> is not to be less than the breaking load given in <del>Table 10.22.1</del> respectively.</p> <p>2. For ships having the ratio A/E above 0.9, the number of ropes given in <del>Table 10.22.2</del> should be added to the number required by <del>Table 10.22.1</del> for mooring lines.</p>		<p>* Since the regulations related to the Equipment number and Equipment overlap with Pt 4, Ch 8, we have removed the regulations and follow Pt 4, Ch 8.</p>



**Present**

**Amendment**

**Reason**

**Table 10.22.1 Bower anchors, chain cables and ropes**

Equipment letter	Equipment number		Stockless bower anchors		Stud link chain cables for bower anchors			Tow line		Mooring line			
	Exceeding	Not exceeding	Number	Mass per anchor (kg)	Total length (m)	Diameter (mm)			Length (m)	Breaking load (kg) (kN)	Number	Length of each line (m)	Breaking load (kg) (kN)
						Grade 1	Grade 2	Grade 3					
A1	50	70	2	180	220	14	12.5		180	—10000 (98)	3	80	—3500 (34)
A2	70	90	2	240	220	16	14		180	—10000 (98)	3	100	—3750 (37)
A3	90	110	2	300	247.5	17.5	16		180	—10000 (98)	3	110	—4000 (39)
A4	110	130	2	360	247.5	19	17.5		180	—10000 (98)	3	110	—4500 (44)
A5	130	150	2	420	275	20.5	17.5		180	—10000 (98)	3	120	—5000 (49)
B1	150	175	2	480	275	22	19		180	—10000 (98)	3	120	—5500 (54)
B2	175	205	2	570	302.5	24	20		180	—11400 (112)	3	120	—6000 (59)
B3	205	240	2	660	302.5	26	22	20.5	180	—13200 (129)	4	120	—6500 (64)
B4	240	280	2	780	330	28	24	22	180	—15300 (150)	4	120	—7000 (69)
B5	280	320	2	900	357.5	30	26	24	180	—17700 (174)	4	140	—7500 (74)
C1	320	360	2	1020	357.5	32	28	24	180	—21100 (207)	4	140	—8000 (78)
C2	360	400	2	1140	385	34	30	26	180	—22800 (224)	4	140	—9000 (88)
C3	400	450	2	1290	385	36	32	28	180	—25500 (250)	4	140	—10000 (98)
C4	450	500	2	1440	412.5	38	34	30	180	—28200 (277)	4	140	—11000 (108)
C5	500	550	2	1590	412.5	40	34	30	190	—31200 (306)	4	160	—12500 (123)
D1	550	600	2	1740	440	42	36	32	190	—34500 (338)	4	160	—13500 (132)
D2	600	660	2	1920	440	44	38	34	190	—37800 (371)	4	160	—15000 (147)
D3	660	720	2	2100	440	46	40	36	190	—41400 (406)	4	160	—16000 (157)
D4	720	780	2	2280	467.5	48	42	36	190	—45000 (441)	4	170	—17500 (172)
D5	780	840	2	2460	467.5	50	44	38	190	—48900 (480)	4	170	—19000 (186)

\* Since the regulations related to the Equipment number and Equipment overlap with Pt 4, Ch 8, we have removed the regulations and follow Pt 4, Ch 8.

**Present**

**Amendment**

**Reason**

**Table 10.22.1 Bower anchors, chain cables and ropes (2017)**

Equipment letter	Equipment number		Stockless bower anchors		Stud link chain cables for bower anchors			Tow line		Mooring line			
			Number	Mass per anchor (kg)	Total length (m)	Diameter (mm)			Length (m)	Breaking load (kg) (kN)	Number	Length of each line (m)	Breaking load (kg) (kN)
	Grade 1	Grade 2				Grade 3							
E1	840	910	2	2640	467.5	52	46	40	190	-52800 (518)	4	170	-20500 (201)
E2	910	980	2	2850	495	54	48	42	190	-57000 (559)	4	170	-22000 (216)
E3	980	1060	2	3060	495	56	50	44	200	-61500 (603)	4	180	-23500 (230)
E4	1060	1140	2	3300	495	58	50	46	200	-66000 (647)	4	180	-25500 (250)
E5	1140	1220	2	3540	522.5	60	52	46	200	-70500 (691)	4	180	-27500 (270)
F1	1220	1300	2	3780	522.5	62	54	48	200	-75300 (738)	4	180	-29000 (284)
F2	1300	1390	2	4050	522.5	64	56	50	200	-80100 (786)	4	180	-31500 (309)
F3	1390	1480	2	4320	550	66	58	50	200	-85200 (836)	4	180	-33000 (324)
F4	1480	1570	2	4590	550	68	60	52	200	-90600 (888)	5	190	-33000 (324)
F5	1570	1670	2	4890	550	70	62	54	200	-96000 (941)	5	190	-34000 (333)

(NOTES)

1. Length of chain cables may be that including shackles for connection.
2. Tow line is not a condition of classification, but is listed in this table only for guidance.

\* Since the regulations related to the Equipment number and Equipment overlap with Pt 4, Ch 8, we have removed the regulations and follow Pt 4, Ch 8.

Present	Amendment	Reason								
<p>3. The requirements for synthetic fibre ropes used as tow lines or mooring lines are to be as deemed appropriate by the Society.</p> <p>4. The length of individual mooring lines may be reduced up to 7% of the length given in <b>Table 10.22.1</b>, provided that total length of the stipulated number of mooring lines is not less than obtained from multiplying the length by the number given in <b>Table 10.22.2</b>.</p> <p>5. 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.</p> <p><b>Table 10.22.2 – Number of ropes</b></p> <table border="1" data-bbox="147 673 1005 957"> <thead> <tr> <th><math>\frac{A}{E}</math></th> <th>Number of mooring line</th> </tr> </thead> <tbody> <tr> <td><math>0.9 &lt; \frac{A}{E} \leq 1.1</math></td> <td>1</td> </tr> <tr> <td><math>1.1 &lt; \frac{A}{E} \leq 1.2</math></td> <td>2</td> </tr> <tr> <td><math>\frac{A}{E} &gt; 1.2</math></td> <td>3</td> </tr> </tbody> </table> <p>(NOTES)  <i>A</i> = value specified in <b>201.1 (2)</b>  <i>E</i> = equipment number</p> <p><b>Section 3 Shipboard Fittings and Supporting Hull Structures associated with Towing and Mooring</b></p> <p><b>301. Shipboard fittings and supporting hull structures (2017)</b>  Shipboard fittings and supporting hull structures associated with towing and mooring are to comply with the requirements specified in Pt 4, Ch 10. ↓</p>	$\frac{A}{E}$	Number of mooring line	$0.9 < \frac{A}{E} \leq 1.1$	1	$1.1 < \frac{A}{E} \leq 1.2$	2	$\frac{A}{E} > 1.2$	3		<p>* Since the regulations related to the Equipment number and Equipment overlap with Pt 4, Ch 8, we have removed the regulations and follow Pt 4, Ch 8.</p>
$\frac{A}{E}$	Number of mooring line									
$0.9 < \frac{A}{E} \leq 1.1$	1									
$1.1 < \frac{A}{E} \leq 1.2$	2									
$\frac{A}{E} > 1.2$	3									

# Amended Guidance Relating to the Rules for the Classification of Steel Ships

(Part 10 Hull Structure and Equipment of Small Steel Ships)



Present	Amendment	Reason
<p style="text-align: center;"><b>CHAPTER 22 EQUIPMENT NUMBER AND EQUIPMENT</b></p> <p style="text-align: center;"><b>Section 1 General</b></p> <p><b>101. General and application</b></p> <ol style="list-style-type: none"> <li>1. Where Danforth anchors having constructions of special shape and dimensions are used,(provided with ships less than 30 m in length) drawings and data related to the anchor are to be submitted to the Society for obtaining approval prior to making it.</li> <li>2. Where the equipment number is to be calculated in accordance with the requirements of <b>57 of Regulation for Ships Equipment of Korean Ship Safety Act</b>, danforth anchor, anchor ropes and mooring ropes in specified <b>Table 10.22.1</b> may be provided with according to the equipment number.</li> <li>3. Dimensions of danforth anchor are to be in accordance with the <b>Table 10.22.2.</b> and other denforth anchors having dimensions not specified in above <b>Par 1</b> and <b>Par 2</b> are to be in accordance with the discretion of the Society.</li> <li>4. In application to <del>101. 4</del> of the Rules, the term "the discretion of the Society" means the acceptance in accordance with <del>Pt 1, Ch 1, 104. or 105.</del> of the Guidance.</li> </ol> <p>&lt;Table 10.22.1 &amp; Table 10.22.2. are same as the present Rules&gt;</p> <p style="text-align: center;"><del><b>Section 2 Equipment Number</b></del></p> <p><del><b>201. Equipment number</b></del> As specified in <del>Pt 4, Ch 8, 201.</del> of the Guidance.</p>	<p style="text-align: center;"><b>CHAPTER 22 EQUIPMENT NUMBER AND EQUIPMENT</b></p> <p style="text-align: center;"><b>Section 1 General</b></p> <p><b>101. General and application <i>(2020)</i></b></p> <ol style="list-style-type: none"> <li>1. Where Danforth anchors having constructions of special shape and dimensions are used,(provided with ships less than 30 m in length) drawings and data related to the anchor are to be submitted to the Society for obtaining approval prior to making it.</li> <li>2. Where the equipment number is to be calculated in accordance with the requirements of <b>57 of Regulation for Ships Equipment of Korean Ship Safety Act</b>, danforth anchor, anchor ropes and mooring ropes in specified <b>Table 10.22.1</b> may be provided with according to the equipment number.</li> <li>3. Dimensions of danforth anchor are to be in accordance with the <b>Table 10.22.2.</b> and other denforth anchors having dimensions not specified in above <b>Par 1</b> and <b>Par 2</b> are to be in accordance with the discretion of the Society. ↓</li> </ol> <p>&lt;Table 10.22.1 &amp; Table 10.22.2. are same as the present Rules&gt;</p>	<p>* related Rules in Pt 10 have been removed</p>

Present	Amendment	Reason
<p><del>202. Weight of anchors</del></p> <p><del>"High holding power anchors" in 202. 3 of the Rules means the anchors that have the holding power more than 2 times the holding power of stockless anchor with the same weight when the holding power test specified in Ch 3, Sec 14. of the Guidance for Approval of Manufacturing Process and Type Approval, Etc. is to be carried out. ↓</del></p>		<p>* related Rules in Pt 10 have been removed</p>