

**RULES  
FOR THE CLASSIFICATION OF  
SHIPS**

*Part 3 – HULL EQUIPMENT  
July 2020*

*Amendments No. 1  
January 2021*

**CROATIAN REGISTER OF SHIPPING**

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By the decision of the General Committee of Croatian Register of Shipping,

Amendments No. 1 to the  
**RULES FOR THE CLASSIFICATION OF SHIPS**  
Part 3 – HULL EQUIPMENT

have been adopted on 22nd December 2020 and shall enter into force on 1st January 2021

## INTRODUCTORY NOTES

These amendments shall be read together with the requirements in the Rules for the Classification of Ships, Part 3 – Hull Equipment, edition July 2020.

Table 1 contains review of amendments, where items changed or added in relating to previous edition are given, with short description of each modification or addition. All major changes throughout the text are shaded.

This Part of the Rules includes the requirements of the following international Organisations:

**International Maritime Organization (IMO)**

**Conventions:** International Convention for the Safety of Life at Sea 1974 (SOLAS 1974) and all subsequent amendments up to and including the 2010 amendments (MSC.291(87))  
Protocol of 1988 relating to the International Convention for the Safety of Life at Sea 1974, as amended (SOLAS PROT 1988)  
International Convention for the Prevention of Pollution from Ships 1973, as modified by the Protocol of 1978 thereto (MARPOL 73/78) and all subsequent amendments up to and including the 2006 amendments (MEPC.141(54)).

**International Association of Classification Societies (IACS)**

**Unified Requirements (UR):**

A1 (Rev.6, Corr.2, Mar. 2017), A2 (Rev.4, Corr.2, Mar. 2017), A3 (Rev.1, Jun 2019), L4 (Rev.3, Corr.1 2011), M42 (Rev.4, 2011), S8 (Rev.4, 2010), S9 (Rev.6, 2010), S10 (Rev.6, Sep 2019), S21 (Rev.5, 2010), S21A (Rev.1, May 2015, Corr.2, Mar 2019), S26 (Rev.4, 2010), S27 (Rev.6, 2013)

**Unified Interpretations (UI):**

LL20 (Rev.1, 2008), LL21 (Rev.1, 2008), LL36 (Rev.2, 2008), LL50 (Rev.5, 2008), LL62 (Rev.1, Corr.1, 2010), LL70 (2005), SC113 (1996), SC138 (1998), SC153 (Corr.1, Dec 2019), SC156 (Rev.1, Oct 2018), SC190 (Rev.1, Apr 2019), SC191 (Rev. 8, Apr 2019), SC212 (Corr.3, Dec 2019), SC220 (Rev.1, Corr.2, Mar 2017)

**Recommendations (Rec.):**

Rec.10 (Rev.3, Corr.1, 2016), Rec.13 (Rev.2, Dec 2019), Rec.14 (Rev.2, Corr.1, 2005), ~~Rec.61 (2000)~~, Rec.79 (Rev.1, 2014), Rec.90 (Rev.1, Apr 2019), Rec.91 (Rev.3, Apr 2019)

**TABLE 1 – REVIEW OF AMENDMENTS**

This review comprises amendments in relation to the Rules for the Classification of Ships, Part 3 – Hull Equipment, edition January 2020.

<i>ITEM</i>	<i>DESCRIPTION OF THE AMENDMENTS</i>
<b>SECTION 2 – RUDDER</b>	
item 2.7.5	Item has been deleted as a consequence of deletion of IACS Rec. 61

## 2 RUDDER

■ **Head 2.7 PINTLES**, item 2.7.5 is deleted and should be read as follows:

### 2.7 PINTLES

#### 2.7.1 Scantlings

The pintle diameter, in [mm], is not to be less than:

$$d_p = 0.35\sqrt{B \cdot k_p}$$

where:

$B$  = relevant bearing force, in [N],

$k_p$  = material factor for pintle as given in 2.1.3.5

#### 2.7.2 Couplings

##### 2.7.2.1 Tapering

Pintles are to have a conical attachment to the gudgeons with a taper on diameter not greater than:

1:8 - 1:12, for keyed and other manually assembled pintles applying locking by slugging nut,

1:12 - 1:20, on diameter for pintles mounted with oil injection and hydraulic nut.

##### 2.7.2.2 Push-up pressure for pintle bearings

The required push-up pressure for pintle bearings, in [N/mm<sup>2</sup>], is to be determined by the following formula:

$$p_{req} = 0.4 \frac{B_l \cdot d_o}{d_m^2 \cdot \ell}, \quad [\text{N/mm}^2],$$

where:

$B_l$  = supporting force in the pintle bearing, in [N]

$d_o$  = pintle diameter, in [mm], see Fig. 2.6.3.1.

The push up length is to be calculated similarly as in 2.6.4.3, using required push-up pressure and properties for the pintle bearing.

**2.7.3** The minimum dimensions of threads and nuts are to be determined according to 2.6.3.3.

#### 2.7.4 Pintle housing

The length of the pintle housing in the gudgeon is not to be less than the pintle diameter  $d_p$ , with  $d_p$  to be measured on the outside of liners.

The thickness of the pintle housing is not to be less than 0.25  $d_p$ .