



CHINA CLASSIFICATION SOCIETY

CCS Rule Change Notice For:

**Rules for Construction of Ocean-going
Steel Fishing Vessels**

2018

Version: December 2019

Effective date: 1 July, 2020

Beijing

Brief Introduction

1、 The latest revisions of UR S2 Rev.2 are incorporated and will enter into force on 1 July 2020.

2、 The requirements of UR M80 are incorporated and will enter into force on 1 July 2020.

3、 The latest revisions of IACS UR S10 Rev.6 are incorporated and will enter into force on 1 Jan 2021.

4、 The latest revisions of UR M52 Rev.2 are incorporated and will enter into force on 1 Jan 2021.

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PART 2 HULL

CHAPTER 1 GENERAL

Section 1 GENERAL PROVISIONS

1.1.2 Definition¹

1.1.2.1 *Length of vessel L* (in m), [i.e. the Rule length](#), means the distance on the ~~summer load~~ waterline [at the scantling draught](#) from the fore side of the stem to the after side of the rudder post, or the center of the rudder stock if there is no rudder post; but *L* is not to be less than 96% and need not to be greater than 97% of the extreme length on the ~~summer load~~ waterline [at the scantling draught](#).

For vessels without a rudder stock (such as a fishing vessel designed with a full-revolving propulsor), *L* is to be 97% of the total length on the ~~summer load~~ waterline [at the scantling draught](#).

1.1.2.2 *Breadth of vessel B* (in m) means the molded breadth of a vessel ~~Unless expressly provided otherwise, namely the maximum horizontal distance between the molded frame lines measured at the middle of the length L.~~ [measured amidships at the scantling draught](#).

1.1.2.4 *Draught d* (in m), [i.e. the scantling draught](#), means the vertical distance measured at the middle of the length *L* from top of keel to the ~~summer load~~ waterline [at the scantling draught](#). [Scantling draught means 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.](#)

1.1.2.18 *Block coefficient C_b* [is the moulded block coefficient corresponding to the waterline at the scantling draught](#), and to be determined by the following formula:

$$C_b = \frac{\nabla}{(LBd)}$$

Where, ∇ ——— moulded displacement corresponding to the ~~summer load~~ waterline [scantling draught](#), in m³;

L, B, d ——— see 1.1.2.1, 1.1.2.2 and 1.1.2.4 of this section, in m.

¹ [Changes introduced in this revision are to be uniformly implemented from 1 July 2020](#)

CHAPTER 3 OUTFITS

Section 1 RUDDERS²

3.1.1.3 Materials

(1) Welded parts of rudders are to be made of materials complying with relevant requirements for hull structural steel in CCS Rules for Materials and Welding.

(2) Material factor k for normal and high tensile steel plating may be taken into account when specified in each individual rule requirement. The material factor k is to be taken as defined in Section 3, Chapter 1 of this PART, unless otherwise specified.

(3) Steel grade of plating materials for rudders and rudder horns are to be in accordance with Section 3, Chapter 1 of this PART.

(4) Rudder stocks, pintles, coupling bolts, keys and cast parts of rudders are to be made of rolled, forged or cast carbon manganese steel in accordance with CCS Rules for Materials and Welding.

(5) For rudder stocks, pintles, keys and bolts the minimum yield stress is not to be less than 200 N/mm^2 . The requirements of this Section are based on a material's yield stress of 235 N/mm^2 . If material is used having a yield stress differing from 235 N/mm^2 the material factor K is to be determined as follows:

$$K = \left(\frac{235}{R_{eH}} \right)^e$$

where: $e = 0.75$ for $R_{eH} > 235 \text{ N/mm}^2$;

$e = 1.00$ for $R_{eH} \leq 235 \text{ N/mm}^2$;

R_{eH} ——[specified minimum](#) yield stress (N/mm^2) of material used, and is not to be taken greater than $0.7R_m$ or 450 N/mm^2 , whichever is the smaller value;

R_m ——tensile strength (N/mm^2) of material used.

3.1.1.4 Welding and design details

(1) Slot-welding is to be limited as far as possible. Slot welding is not to be used in areas with large in- plane stresses transversely to the slots or in way of cut-out areas of semi-spade rudders.

When slot welding is applied, the length of slots is to be minimum 75 mm with breadth of $2t$, where t is the rudder plate thickness, in mm . The distance between ends of slots is not to be more than 125 mm . The slots are to be fillet welded around the edges and filled with a suitable compound, e.g. epoxy putty. Slots are not to be filled with weld.

² [Changes introduced in this revision are to be uniformly implemented from 1 Jan 2021.](#)

Continuous slot welds are to be used in lieu of slot welds. When continuous slot welding is applied, the root gap is to be between 6-10 mm. The bevel angle is to be at least 15°.

(2) In way of the rudder horn recess of semi-spade rudders, the radii in the rudder plating except in way of solid part in cast steel are not to be less than 5 times the plate thickness, but in no case less than 100 mm. Welding in side plate is to be avoided in or at the end of the radii. Edges of side plate and weld adjacent to radii are to be ground smooth.

(3) Welds between plates and heavy pieces (solid parts in forged or cast steel or very thick plating) are to be made as full penetration welds. In way of highly stressed areas e.g. cut-out of semi-spade rudder and upper part of spade rudder, cast or welding on ribs is to be arranged. Two sided full penetration welding is normally to be arranged. Where back welding is impossible welding is to be performed against ceramic backing bars or equivalent. Steel backing bars may be used and are to be continuously welded on one side to the heavy piece.

(4) Requirements for welding and design details of rudder trunks are described in 3.1.9.2 of this Section.

(5) Requirements for welding and design details when the rudder stock is connected to the rudder by horizontal flange coupling are described in 3.1.6.1(4) of this Section.

(6) Requirements for welding and design details of rudder horns are described in 3.1.9.1(3).

3.1.2 Rudder force and rudder torque

3.1.2.2 Rudder blades with cut-outs (semi-spade rudders)

The total rudder force C_R is to be calculated according to 3.1.2.1(1) of this Section. The pressure distribution over the rudder area, upon which the determination of rudder torque and rudder blade strength is to be based, is to be derived as follows:

The rudder area may be divided into two rectangular or trapezoidal parts with areas A_1 and A_2 , so that $A=A_1+A_2$ (see Figure 3.1.2.2).

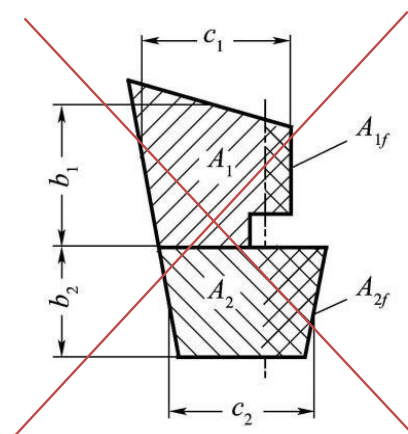


Figure 3.1.2.2 Areas A1 and A2

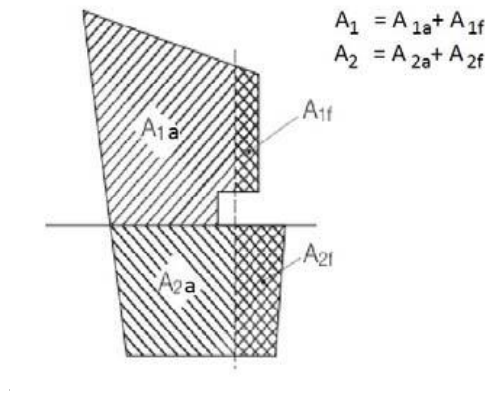


Figure 3.1.2.2

The levers r_1 and r_2 are to be determined as follows:

$$r_1 = c_1 (\alpha - k_1) \text{ , m;}$$

$$r_2 = c_2 (\alpha - k_2) \text{ , m;}$$

where: c_1, c_2 — mean breadth of partial areas A_1, A_2 determined, where applicable, in accordance with Figure 3.1.2.1;

$$k_1 = A_{1f} / A_1;$$

$$k_2 = A_{2f} / A_2;$$

A_{1a} — portion of A_1 situated aft of the centre line of the rudder stock, in m^2 ;

A_{1f} — portion of A_1 situated ahead of the centre line of the rudder stock, in m^2 ;

A_{2a} — portion of A_2 situated aft of the centre line of the rudder stock, in m^2 ;

A_{2f} — portion of A_2 situated ahead of the centre line of the rudder stock, in m^2 ;

α — coefficient, to be taken as:

$\alpha = 0.33$, for ahead condition;

$\alpha = 0.66$, 0.66 for astern condition;

For parts of a rudder behind a fixed structure such as the rudder horn:

$\alpha = 0.25$, for ahead condition;

$\alpha = 0.55$, for astern condition;

The resulting force of each part may be taken as:

$$C_{R1} = C_R A_1 / A \text{ N}$$

$$C_{R2} = C_R A_2 / A \text{ N}$$

The resulting torque of each part may be taken as:

$$Q_{R1} = C_{R1} r_1 \text{ N} \cdot \text{m}$$

$$Q_{R2} = C_{R2} r_2 \text{ N} \cdot \text{m}$$

The total rudder torque is to be calculated for both the ahead and astern condition as follows:

$$Q_R = Q_{R1} + Q_{R2} \quad \text{N}\cdot\text{m}$$

For ahead condition Q_R is not to be taken less than:

$$Q_{R\min} = 0.1 C_R (A_1 C_1 + A_2 C_2) / A \quad \text{N}\cdot\text{m}$$

3.1.4 Rudder stock scantlings

3.1.4.3 Before significant reductions in rudder stock diameter due to the application of steels with specified minimum yield stresses exceeding 235 N/mm² are granted, CCS may require the evaluation of the rudder stock deformations. Large deformations of the rudder stock are to be avoided in order to avoid excessive edge pressures in way of bearings.

3.1.5 Rudder blade

3.1.5.3 Connections of rudder blade structure with solid parts

(1) Solid parts in forged or cast steel, which house the rudder stock or the pintle, are to be provided with protrusions.

These protrusions are not required when the web plate thickness is less than:

-10 mm for web plates welded to the solid part on which the lower pintle of a semi-spade rudder is housed and for vertical web plates welded to the solid part of the rudder stock coupling of spade rudders;

-20 mm for other web plates.

(2) The solid parts are in general to be connected to the rudder structure by means of two horizontal web plates and two vertical web plates.

(3) Minimum section modulus of the connection with the rudder stock housing.

The section modulus of the cross-section of the structure of the rudder blade W_s , in cm³, formed by vertical web plates and rudder plating, which is connected with the solid part where the rudder stock is housed is to be not less than:

$$W_s = c_s d_c^3 \left(\frac{H_E - H_X}{H_E} \right) \frac{K}{K_s} 10^{-4} \quad \text{cm}^3$$

where: c_s —coefficient, to be taken equal to:

$c_s = 1.0$, if there is no opening in the rudder plating or if such openings are closed by a full penetration welded plate;

$c_s = 1.5$, if there is an opening in the considered cross-section of the rudder;

d_c —diameter of rudder stock in way of lower bearing, in mm, calculated according to 3.1.4 of this Section;

H_E —vertical distance between the lower edge of the rudder blade and the upper edge of

the solid part, in m;

H_X ———vertical distance between the considered cross-section and the upper edge of the solid part, in m;

K ——material factor for the rudder blade plating as given in 3.1.1.3(2);

K_s ——material factor for the rudder stock as given in 3.1.1.3(5).

The actual section modulus of the cross-section of the structure of the rudder blade is to be calculated with respect to the symmetrical axis of the rudder. The breadth of the rudder plating, in m, to be considered for the calculation of section modulus is to be not greater than:

$$b = s_v + 2H_x/3 \quad \text{m}$$

where: s_v ———spacing between the two vertical webs, in m (see Figure 3.1.5.3).

Where openings for access to the rudder stock nut are not closed by a full penetration welded plate, they are to be deducted.

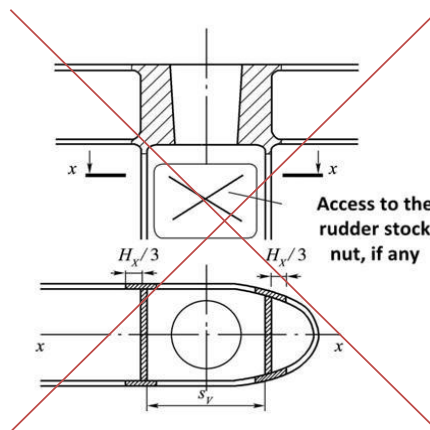


Figure 3.1.5.3 Cross-section of the connection between rudder blade structure and rudder stock housing

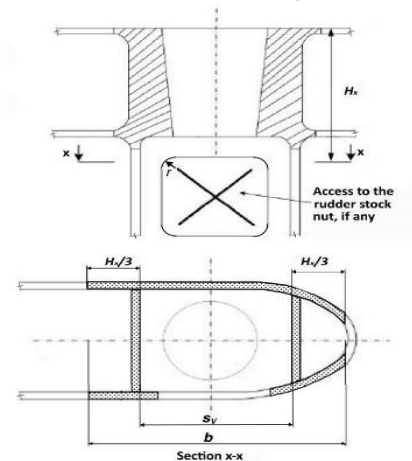


Figure 3.1.5.3 Cross-section of the connection between rudder blade structure and rudder stock housing, example with opening in only one side shown

(4) The thickness of the horizontal web plates connected to the solid parts, in mm, as well as that of the rudder blade plating between these webs, is to be not less than the greater of the following values:

$$t_H = 1.2t \quad \text{mm}$$

$$t_H = 0.045d_s^2/S_H \quad \text{mm}$$

where: t —defined in 3.1.5.2 of this Section;

d_s —diameter, in mm, to be taken equal to:

$d_s = d_c$, as per 3.1.4.2 of this Section, for the solid part housing the rudder stock;

$d_s = d_p$, as per 3.1.7.1 of this Section, for the solid part housing the pintle;

S_H —spacing between the two horizontal web plates, in mm.

The increased thickness of the horizontal webs is to extend fore and aft of the solid part at least to the next vertical web.

(5) The thickness of the vertical web plates welded to the solid part where the rudder stock is housed as well as the thickness of the rudder side plating under this solid part is to be not less than the values obtained, in mm, from Table 3.1.5.3.

Thickness of side plating and vertical web plates

Table 3.1.5.3

Type of rudder	Thickness of vertical web plates, in mm		Thickness of rudder plating, in mm	
	Rudder blade without opening	Rudder blade with opening	Rudder blade without opening	Rudder blade with opening
Rudder supported by sole piece	$1.2t$	$1.6t$	$1.2t$	$1.4t$
Semi-spade and spade rudders	$1.4t$	$2.0t$	$1.3t$	$1.6t$

where: t = thickness of the rudder plating, in mm, as defined in 3.1.5.2 of this Section.

The vertical web plates and rudder plating the thickness of which has been increased are to extend below the solid piece at least to the next horizontal web.

3.1.6 Rudder stock couplings

3.1.6.3 Cone couplings with key

(1) Tapering and coupling length

Cone couplings without hydraulic arrangements for mounting and dismounting the coupling are to have a taper c on diameter of 1:8 – 1:12.

Where, $e = (d_0 - d_u)/l_c$, see Figure 3.1.6.3(a) and Figure 3.1.6.3(c). The diameters d_0 and d_u are shown in Figure 3.1.6.3(a) and the cone length l_c is defined in Figure 3.1.6.3(c).

The cone coupling is to be secured by a slugging nut. The nut is to be secured, e.g. by a securing plate as shown in Figure 3.1.6.3(a).

The cone shapes are to fit exactly. The coupling length l is to be, in general, not less than

$1.5d_0$.

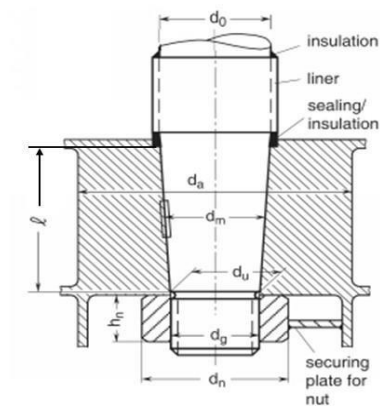
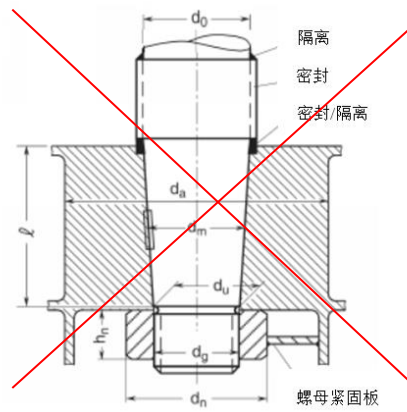


Figure 3.1.6.3(a) Cone coupling with key

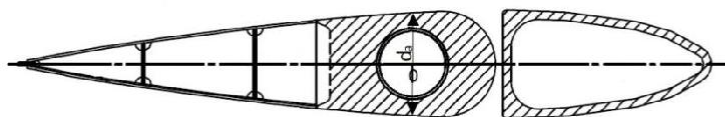


Figure 3.1.6.3(b) Gudgeon outer diameter d_o

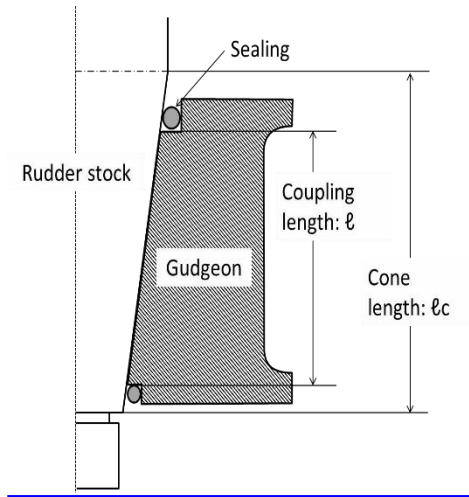


Figure 3.1.6.3(c) Cone length and coupling length

(2) Dimensions of key

For couplings between stock and rudder a key is to be provided, the shear area as of which, in cm^2 , is not to be less than:

$$a_s = \frac{17.55Q_F}{d_k R_{eH1}} \quad \text{cm}^2$$

where: Q_F —design yield moment of rudder stock, in $\text{N}\cdot\text{m}$;

$$Q_F = 0.02664 d_r^3 / K \quad \text{N}\cdot\text{m}$$

Where the actual diameter d_{ta} is greater than the calculated diameter d_t , the diameter d_{ta} is to be used. However, d_{ta} applied to the above formula need not be taken greater than $1.145 d_t$.

d_r —stock diameter, in mm, according to 3.1.4.1 of this Section;

K —material factor for stock as given in 3.1.1.3(5) of this Section;

d_k —mean diameter of the conical part of the rudder stock, in mm, at the key;

R_{eH1} —[specified](#) minimum yield stress of the key material, in N/mm^2 .

The effective surface area a_k , in cm^2 , of the key (without rounded edges) between key and rudder stock or cone coupling is not to be less than:

$$a_k = \frac{5Q_F}{d_k R_{eH2}} \quad \text{cm}^2$$

where: R_{eH2} —[specified](#) minimum yield stress of the key, stock or coupling material, in N/mm^2 .

(3) The dimensions of the slugging nut are to be as follows (see Figure 3.1.6.3(4a)):

external thread diameter: $d_g \geq 0.65 d_o$

height: $h_n \geq 0.6 d_g$;

outer diameter: $d_n \geq 1.2 d_u$ or $1.5 d_g$, whichever is the greater.

(4) It is to be proved that 50% of the design yield moment is solely transmitted by friction in the cone couplings. This can be done by calculating the required push-up pressure and push-up length according to 3.1.6.4(2) for a torsional moment $Q'_F = 0.5Q_F$;

(5) Notwithstanding the requirements of 3.1.6.3(2) and 3.1.6.3(4), where a key is fitted to the coupling between stock and rudder and it is considered that the entire rudder torque is transmitted by the key at the couplings, the scantlings of the key as well as the push-up force and push-up length are to be subject to special consideration.

3.1.6.4 Cone couplings with special arrangements for mounting and dismounting the couplings

(1) Where the stock diameter exceeds 200 mm, the press fit is recommended to be effected by a hydraulic pressure connection. In such cases the cone is to be more slender, $c \approx 1:12$ to $\approx 1:20$.

In case of hydraulic pressure connections the nut is to be effectively secured against the rudder stock or the pintle.

For the safe transmission of the torsional moment by the coupling between rudder stock and rudder body the push-up pressure and the push-up length are to be determined according to 3.1.6.4(2) and 3.1.6.4(3) respectively.

(2) Push-up pressure

The push-up pressure is not to be less than the greater of the two following values:

$$p_{req1} = \frac{2Q_F \times 10^3}{d_m^2 l \pi \mu_0} \quad \text{N/mm}^2$$

$$p_{req2} = \frac{6M_b \times 10^3}{l^2 d_m} \quad \text{N/mm}^2$$

where: Q_F — design yield moment of rudder stock, as defined in 3.6.3.2 of this Section, in N·m;

d_m — mean cone diameter, in mm, see Figure 3.1.6.3(a);

l — cone coupling length, in mm;

μ_0 — frictional coefficient, equal to 0.15;

M_b — bending moment in the cone coupling (e.g. in case of spade rudders), in N·m.

It has to be proved by the designer that the push-up pressure does not exceed the permissible surface pressure in the cone. The permissible surface pressure, in N/mm², is to be determined by the following formula:

$$p_{perm} = \frac{0.8R_{eH}(1-\alpha^2)}{\sqrt{3+\alpha^4}} \quad \text{N/mm}^2$$

where: R_{eH} — specified minimum yield stress of the material of the gudgeon, in N/mm²;

$\alpha = d_m / d_a$;

d_m — diameter, in mm, see Figure 3.1.6.3(a);

d_a — outer diameter of the gudgeon to be not less than 1.25 d_0 , in mm, see Figure

3.1.6.3 (a) and 3.1.6.3(b). (The least diameter is to be considered).

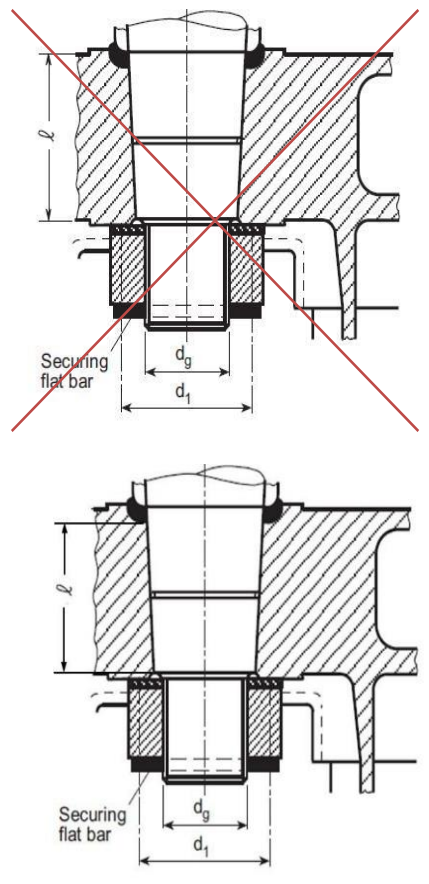


Figure 3.1.6.4 Cone couplings without key with special arrangements for mounting and dismantling the couplings

3.1.7 Couplings

(1) Tapering

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

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

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

(2) Push-up pressure for pintle

The required push-up pressure for pintle p_{req} , in N/mm², is to be determined by the following formula:

$$p_{req} = 0.4 \frac{B_1 d_0}{d_m^2 l} \quad \text{N/mm}^2$$

where: B_1 — Supporting force in the pintle, in N;

d_0 — Pintle diameter, in mm, see Figure 3.1.6.3(a).

The push up length is to be calculated similarly as in 3.1.6.4(3) of this Section, using required push-up pressure and properties for the pintle.

3.1.8 Rudder stock bearing, rudder shaft bearing and pintle bearing

3.1.8.1 Liners and bushes

(1) Rudder stock bearing

Liners and bushes are to be fitted in way of bearings. The minimum thickness of liners and bushes t_{min} is to be equal to:

$t_{min}=8\text{mm}$ for metallic materials and synthetic material;

$t_{min}=22\text{mm}$ for lignum material.

(2) Pintle bearing

The thickness of any liner or bush t , in mm, is not to be less than the minimum thickness defined in 3.1.8.1(1) and the following value:

$$t = 0.01\sqrt{P} \quad t = 0.01\sqrt{B} \quad \text{mm}$$

where: P — relevant bearing force, in N.

3.1.8.2 Minimum bearing surface

An adequate lubrication is to be provided.

The bearing surface A_b (defined as the projected area: length $\times$ outer diameter of liner) is not to be less than:

$$A_b = P/q_a \quad \text{mm}^2$$

where: P — reaction force, in N, in bearing as determined in 3.1.3.2 of this Section;

q_a — allowable surface pressure according to Table 3.1.8.2.

The ~~maximum~~ allowable surface pressure q_a for the various combinations is to be taken as reported in the table below. Higher values than given in Table 3.1.8.2 may be taken in accordance with makers' specifications if they are verified by tests:

Maximum Allowable surface pressure q_a **Table 3.1.8.2**

Bearing material	q_a (N/mm ²)
Lignum vitae	2.5
White metal, oil lubricated	4.5
Synthetic material with hardness <u>greater than</u> between 60 and 70 Shore D ^①	5.5 ^②
Steel ^③ and bronze and hot-pressed bronze-graphite materials	7.0

Notes:

① Indentation hardness test at 23°C and with 50% moisture, are to be carried out according to a recognized standard. Synthetic bearing materials are to be of an approved type.

② Surface pressures exceeding 5.5 N/mm² may be accepted in accordance with bearing manufacturer's specification and tests, but in no case more than 10 N/mm².

③ Stainless and wear-resistant steel in an approved combination with stock liner.

3.1.9 Strength of rudder horns and rudder trunk

3.1.9.2 Rudder trunk

The requirements in this paragraph apply to trunk configurations which are extended below stern frame and arranged in such a way that the trunk is stressed by forces due to rudder action.

(1) Materials, welding and connection to hull

~~This requirement applies to both trunk configurations (extending or not below stern frame).~~

The steel used for the rudder trunk is to be of weldable quality, with a carbon content not exceeding 0.23% on ladle analysis or a carbon equivalent C_{EQ} not exceeding 0.41%.

Plating materials for rudder trunks are in general to meet the requirements in Section 3, Chapter 1 of this PART.

The weld at the connection between the rudder trunk and the shell or the bottom of the skeg is to be full penetration.

The fillet shoulder radius r , in mm (see Figure 3.1.9.2) is to be as large as practicable and to comply with the following formulae:

$r=0.1d_c$, without being less than:

$r=60$ mm, when $\sigma \geq 40/K$, N/mm²

~~$r=0.1d_c$ and not less than 30 mm~~ when $\sigma < 40/K$, N/mm²

where: d_c —rudder stock diameter axis as defined in 3.1.4.2;

σ —bending stress in the rudder trunk, in N/mm²;

K —material factor as given in 3.1.1.3(2) or 3.1.1.3(5) of this Section.

The radius may be obtained by grinding. If disk grinding is carried out, score marks are to be avoided in the direction of the weld. The radius is to be checked with a template for accuracy.

Four profiles at least are to be checked. A report is to be submitted to the Surveyor.

Rudder trunks comprising of materials other than steel are to be specially considered by CCS.

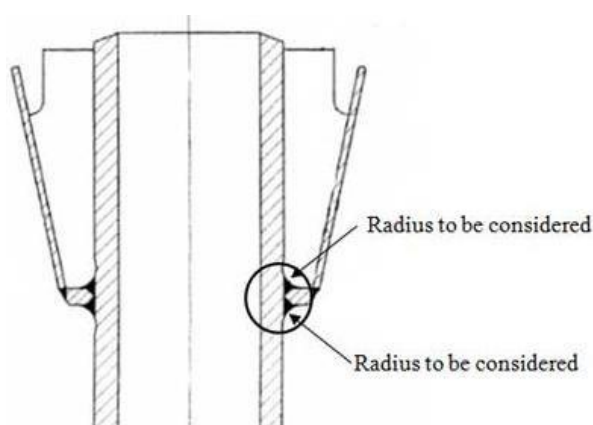


Figure 3.1.9.2

(2) Scantlings

~~Where the rudder stock is arranged in a trunk in such a way that the trunk is stressed by forces due to rudder action, t~~ The scantlings of the trunk are to be such that: the equivalent stress due to bending and shear does not exceed $0.35 R_{eH}$.

The bending stress on welded rudder trunk σ is to be in compliance with the following formula:

$$\sigma \leq 80/K \quad \text{N/mm}^2$$

式中: σ ——bending stress in the rudder trunk, as defined in 3.1.9.2(1);

K ——material factor for the rudder trunk as given in 3.1.1.3(2) or 3.1.1.3(5) of this Section, not to be taken as less than 0.7;

R_{eH} ——[specified minimum](#) yield stress, in N/mm^2 , of the material used.

For calculation of bending stress, the span to be considered is the distance between the mid-height of the lower rudder stock bearing and the point where the trunk is clamped into the shell or the bottom of the skeg.



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Steel Fishing Vessels**

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**PART 3 MACHINERY AND FISHING
MACHINERY EQUIPMENT**

CHAPTER 7 SHAFTING AND PROPELLERS

Section 2 SHAFTING³

7.2.5.3 The length of bearing next to and supporting the propellers is to be as follows:

.1 For water lubricated bearings which are lined with lignum vitae, synthetic materials (such as synthetic rubber or plastic material), the length of the bearing is not to be less than 4 times the rule diameter of the shaft in way of the bearing. For water lubricated synthetic materials, if the bearing design and materials are proven as complying with the requirements of CCS, the length of the bearings may be appropriately reduced, but not less than 2 times the rule diameter of the shaft in way of the bearing. Synthetic materials for application as water lubricated stern tube bearings are to be Type Approved;

.2 For bearings which are white-metal lined and oil lubricated, the length of the bearing is not to be less than twice the rule diameter of the shaft in way of the bearing. If the normal bearing pressure is less than 0.8 MPa as determined by static bearing reaction calculation taking into account shaft and propeller weight, the length of the bearings may be appropriately reduced. However, the minimum length is to be not less than 1.5 times the actual diameter;

.3 For bearings of synthetic rubber, reinforced resin or plastics materials which are approved for use as oil lubricated stern bush bearings, the length of the bearing is to be not less than twice the rule diameter of the shaft in way of the bearing. If the normal bearing pressure is less than 0.6 MPa as determined by static bearing reaction calculation taking into account shaft and propeller weight, the length of the bearings may be appropriately reduced. However, the minimum length is to be not less than 1.5 times the actual diameter. [Synthetic materials for application as oil lubricated stern tube bearings are to be Type Approved;](#)

Where the material has proven satisfactory testing and operating experience, consideration may be given to an increased bearing pressure.

[.4 The length of a grease lubricated bearing is to be not less than 4.0 times the rule diameter of the shaft in way of the bearing.](#)

Section 4 TORSIONAL VIBRATION

The new paragraph 7.4.4.3 is added as follows:

[7.4.4.3 The generating set shall show torsional vibration levels which are compatible with the allowable limits for the alternator, shafts, coupling and damper. The coupling selection for the generating set shall take into account the stresses and torques imposed on it by the torsional vibration of the system. The torsional vibration calculations are to be submitted to CCS for approval when the engine power is 110 kW or above\(except for those sets consisting of a propulsion engine which also drives power take off generators\).⁴](#)

³ [Changes introduced in this revision are to be uniformly implemented from 1 Jan 2021.](#)

⁴ [For AC generating sets: when an application for certification of the generating set is dated on or after 1 July 2020; or which are installed in new ships contracted for construction on or after 1 July 2020.](#)



CHINA CLASSIFICATION SOCIETY

CCS Rule Change Notice For:

**Rules for Construction of Ocean-going
Steel Fishing Vessels**

2018

PART 4 ELECTRICAL INSTALLATIONS

CHAPTER 1 GENERAL

Section 3 DESIGN, CONSTRUCTION AND INSTALLATION

1.3.1.12 Generating sets are to be installed with their shafts in parallel with the fore-and-aft direction of the ship, and horizontal motors are also to be installed, as far as practicable, with their shafts in parallel with the fore-and-aft direction of the ship. [The rated power shall be appropriate for the actual use of the generator set.](#)⁵

⁵ [For AC generating sets: when an application for certification of the generating set is dated on or after 1 July 2020; or which are installed in new ships contracted for construction on or after 1 July 2020.](#)