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Date: 12th October 2017

Directive (15/2017)

National Standard for Maximum Wear Down of Anchoring Equipment in Service

Applicable to: Ship owners, Recognized Organizations, Shipping Companies, Flag State Surveyors

1. The Department of Marine Administration circulated this directive in the exercise of the power of Section 294(B), paragraph (b) of Myanmar Merchant Shipping Act.

2. Pursuant to the provision of Section 213(A) of Myanmar Merchant Shipping Act and the International Convention for the Safety of Life at Sea, 1974, the Department of Marine Administration circulated this guidance for National standard for anchoring equipment in service of Myanmar vessels engaged on International Voyage.

3. The purpose of this directive is to ensure National standard for anchoring equipment in service of Myanmar vessels engaged on International Voyage to be complied with the requirements of the International Convention for the Safety of Life at Sea, 1974 as amended.

Maung Maung Oo
Director-General
Department of Marine Administration

THE REPUBLIC OF THE UNION OF MYANMAR

MINISTRY OF TRANSPORT AND COMMUNICATIONS

DEPARTMENT OF MARINE ADMINISTRATION

National Standard for Maximum Wear Down of Anchoring Equipment in Service

Date 17.1.2018 **Resvise-00**

National Standard for Maximum Wear Down of Anchoring Equipment in Service

1. Scope

1.1 This national standard is established by Department of Marine Administration of the Government of the Republic of the Union of Myanmar, under the provision International Convention for the Safety of Life at Sea (SOLAS), 1974, as amended for the Myanmar ships engaged on international voyage.

2. Purpose

2.1 The purpose of this National Standard is to provide the guidelines for maximum weardown of anchor cable fittings, joining shackles, the looseness of studs within anchor cable and the securing by welding of studs found loose during survey of chain cables links in service.

3. Anchor Cable Fittings

3.1 Where considered necessary, joining shackles, D-shackles and other cable fittings shall be gauged at their point of greatest weardown. Consideration shall be given to replacement when the wear down equates to 12% loss of diameter over original.

3.2 When a Kenter joining shackle is opened, care shall be taken to ensure that the tapered locking pin is in good condition. The steel securing pin is to be held in position by lead plugs, hammered in place to maintain a good fit.

3.3 In the case of swivel eyelet axle wear down, consideration should be given to replacement where the maximum lateral movement equates to 5% of the eyelet axle diameter.

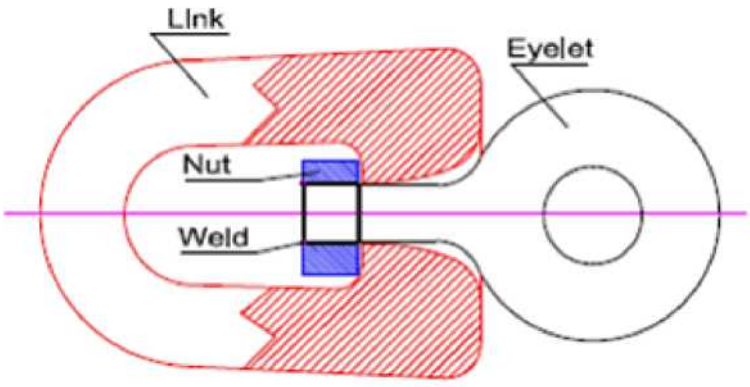


Figure 1: Swivel eyelet

4. Anchor Pin Weardown

4.1 All anchor pins shall be closely examined for weardown. Where the weardown of the pin equates to 12% loss of diameter, consideration shall be given to pin replacement.

4.2 Where the pin housing retains strength and if there is excessive clearance, consideration

may be given to a sleeved connection between pin and housing in order to constrain the relative movement of pin and anchor.

5. The Looseness of Studs in Anchor Chain Cable

5.1 During the Special Survey Hull (SSH) when the anchor chains are ranged, gauged and examined, there shall be no looseness of studs within links of the anchor cable. Where loose studs exist, the affected cable shall be replaced, or where considered feasible, welded in accordance with the procedure specification below.

5.2 Loose studs in anchors cable found prior to the Special Survey shall be permitted, subject to the following criteria:

Maximum Axial Stud movement_____	- 3% of cable diameter
Maximum Lateral Stud movement ____	- 5% of cable diameter
Maximum gap between Link and Stud	- 3mm

5.3 Where studs are missing from the anchor cable, the lengths of affected cable shall be replaced.

6. The Securing by Welding of Chain Cable Studs in Service

6.1 Where it is proposed to secure loose anchor cable studs by welding, the proposal for repair is to be submitted to the Surveyor for evaluation and approval. The approval shall be based on the conditions of the link to be repaired and of remaining links.

6.2 Any such repairs shall be carried out in a clean environment as far as practicable. The attachment of earthing straps to cable links shall be specially considered prior to welding.

7. Welding Procedure Specification

7.1 Welds are to be made in accordance with a qualified and approved welding procedure and accepted by the Surveyor.

7.2 Welding consumables used are to be approved with grading 3 or 3Y. For Grades 1 and 2 chain cables consumables shall have low hydrogen grading H15 or better and for Grade 3 chain cables a very low hydrogen grading of H5 or better.

7.3 A preheating temperature suitable to limit hardness and to prevent the risk of cold cracks is to be applied. In general the following applies:

-	Grade 1 and 2:	100°C
-	Grade 3:	175°C

7.4 The welding practice and the welding parameters are to be selected to permit a large single weld deposit to be made. A temper bead at the stud side is allowed and shall be advisable depending on the link grade.

7.5 After welding, links shall be wrapped to allow a slow cooling.

8. Welding Procedure Approval Tests

8.1 The approval test procedure should be representative of the actual welding conditions. The scope of testing of the test sample should include macrosection test specimens and hardness measurements.

8.2 The hardness of the weld metal and of the heat affected zone should not exceed:

- 380 Hv10 for Grade 1 and Grade 2 chain cables and for Grade 3 chain cables in the normalized and normalized and tempered conditions.

- 420 Hv10 for Grade 3 chain cables in the quenched and tempered condition.

9. Repair Procedure

9.1 The abutting surfaces of the link and stud to be welded are to be ground to produce a good fit with an acceptable root gap to prevent cracking. The surfaces are to be free from moisture, grease, rust etc., just prior to welding.

9.2 Magnetic particle examination to check that the link is free from cracks is to be performed before welding at Surveyor satisfaction.

9.3 Welding is to be performed by qualified welders.

9.4 Welding consumables are to be dried adequately prior to welding in accordance with manufacturer's recommendation.

9.5 In general, the stud shall be welded at the end opposite to the flash butt weld of the link and it should be welded completely around the circumference.

9.6 All weld stop-starts shall be grounded to remove any defects and to blend smoothly with the base material.

10. Examination

10.1 All welds are to be subjected to visual and magnetic or liquid particle examination. In the case of Grade 3 chain cables, inspection is recommended to be delayed for at least 48 hours after the weld has cooled to ambient temperature.

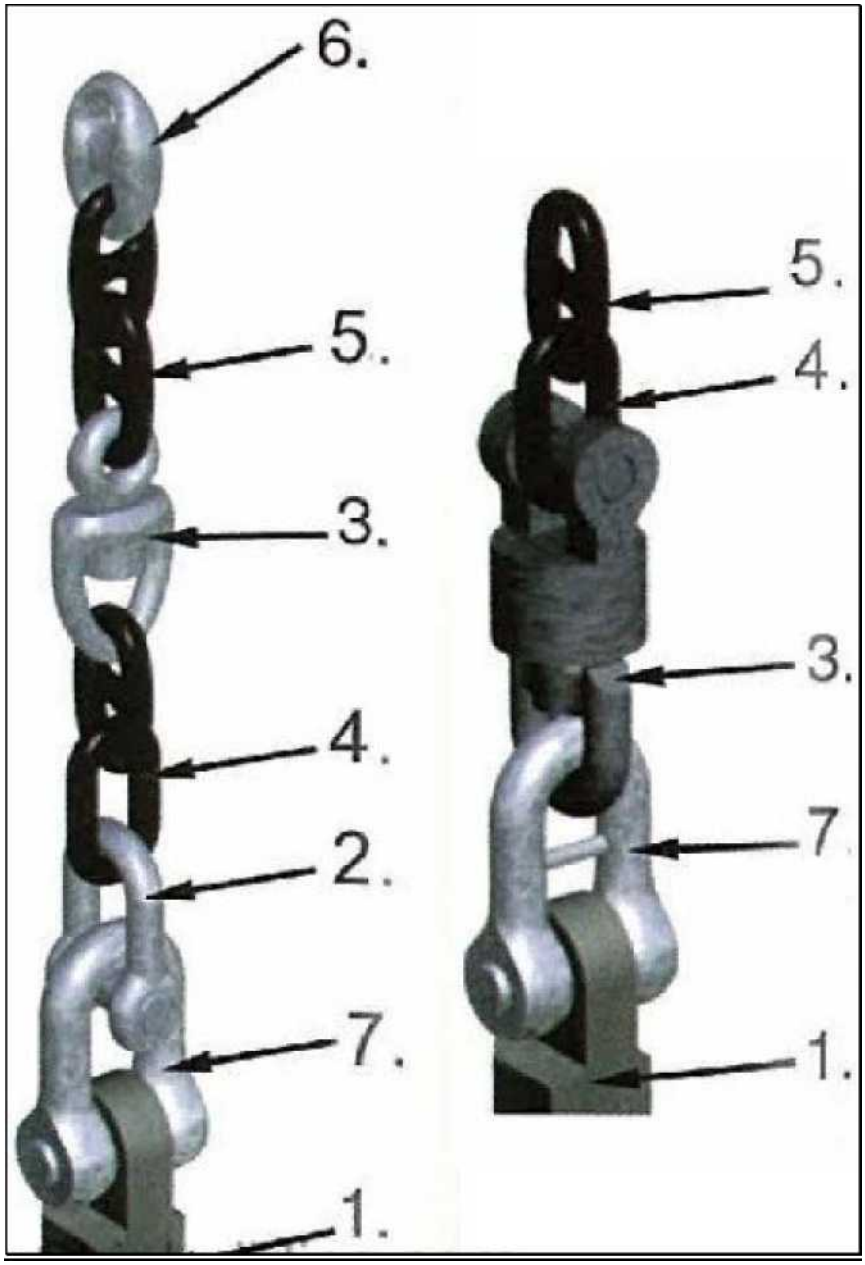
10.2 Studs should be located in the links centrally and at right angles to the sides of the link.

Annex

Anchor and Anchor Chain Terminology

1. Crown / Shackle
2. Shank
3. Flukes
4. Crown pin
5. Crown plate
6. Anchor chain with swivel

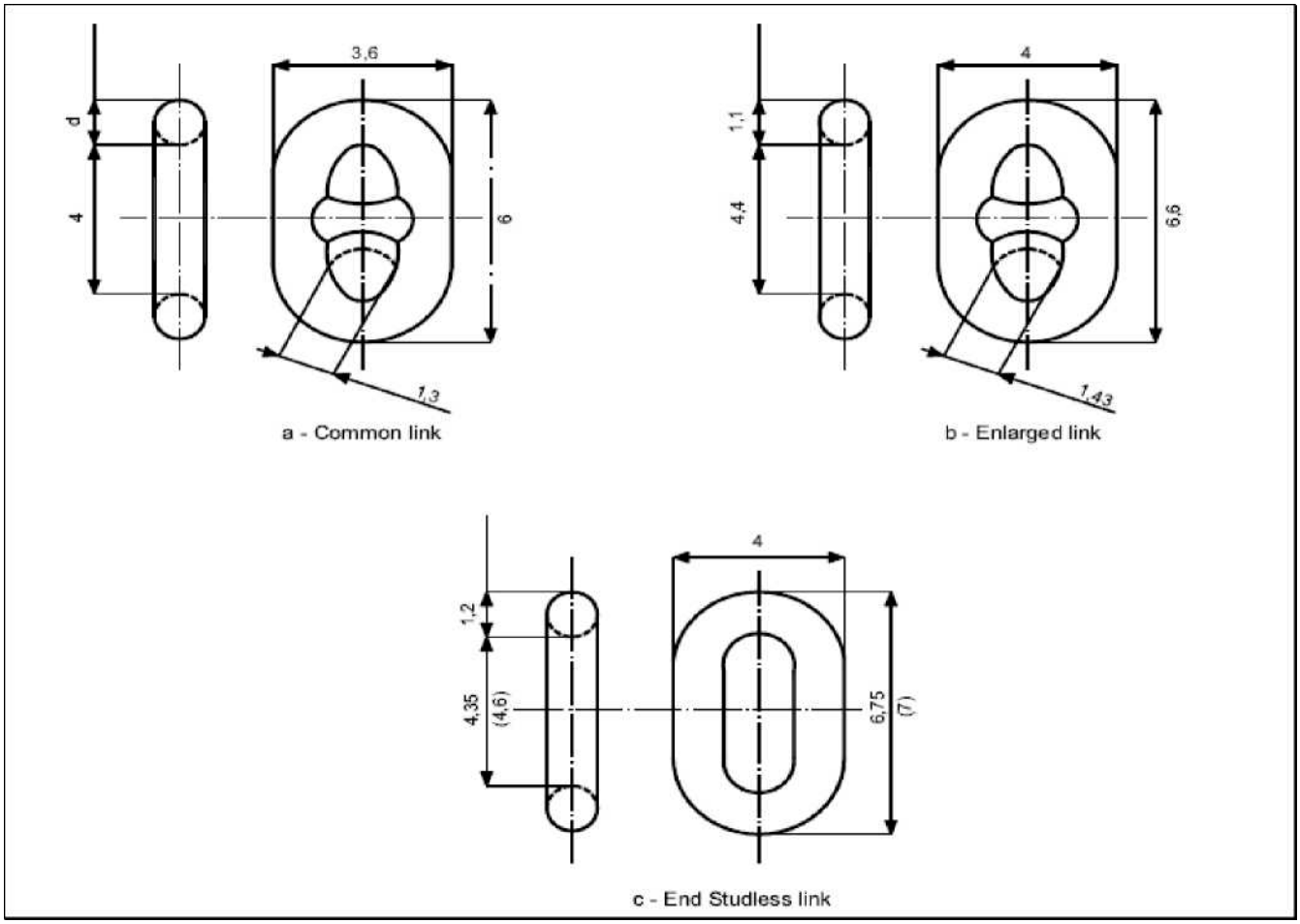
Fore Runner (End Length or Guy Pendant) Terminology



1. Anchor shank
2. Link shackle
3. Swivel
4. Open link
5. Enlarged link
6. Kenter shackle
7. Anchor shackle (Crown shackle)

Anchor Chain Links

Typical Design of Anchor Chain Links



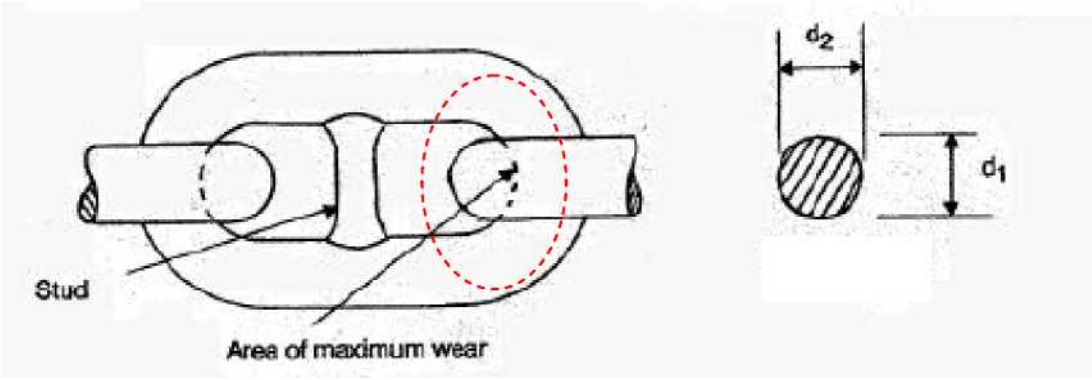
Note:

All dimensions are shown as multiples of the nominal diameter d of the common link. The dimensions in brackets may be chosen for end studless links in outboard end swivel pieces.

Anchor Chain Link and Shackles

Typical Measurements

1) Anchor chain calibration - location of the chain link measurements and wearing limits



D_1 = average of measured diameter (mm) = $(d_x + d_2)/ 2$ d_1 and d_2 measured diameters of the chain link in the area of maximum wear

$D_1 > 0{,}88\ D_O$

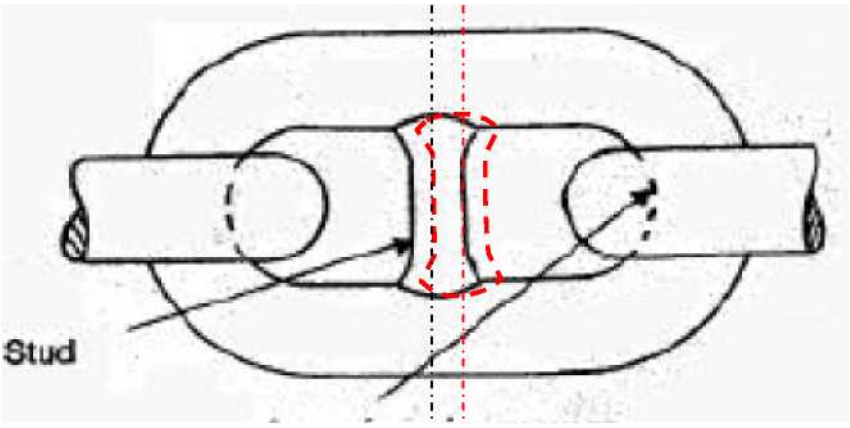
D_O = original diameter (mm)

2) Loose stud of anchor chain links location of the measurements

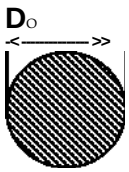
a) Maximum lateral stud movements

$< 0{,}05\ D_o$ where D_O = original diameter (mm)

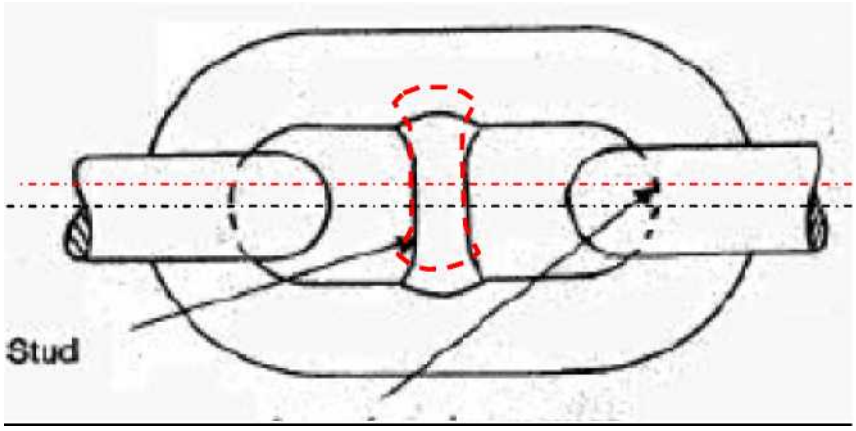
original
ter (mm)



b) Maximum axial stud movements

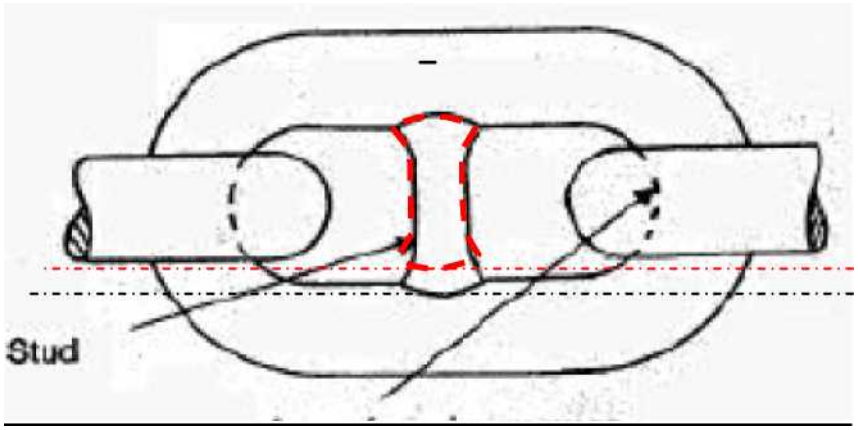


D_o = original diameter (mm)



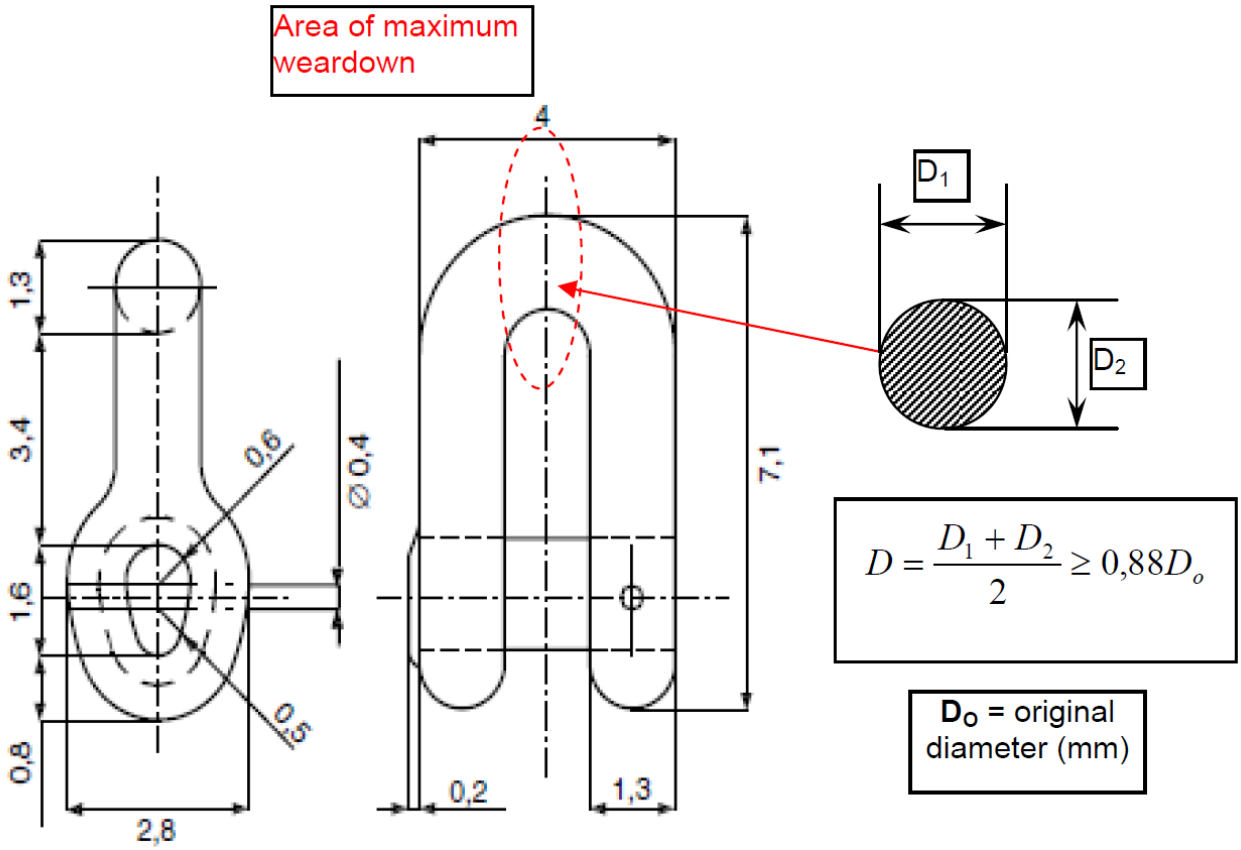
A < 0,03 D_o

c) Maximum gap between Link and Stud

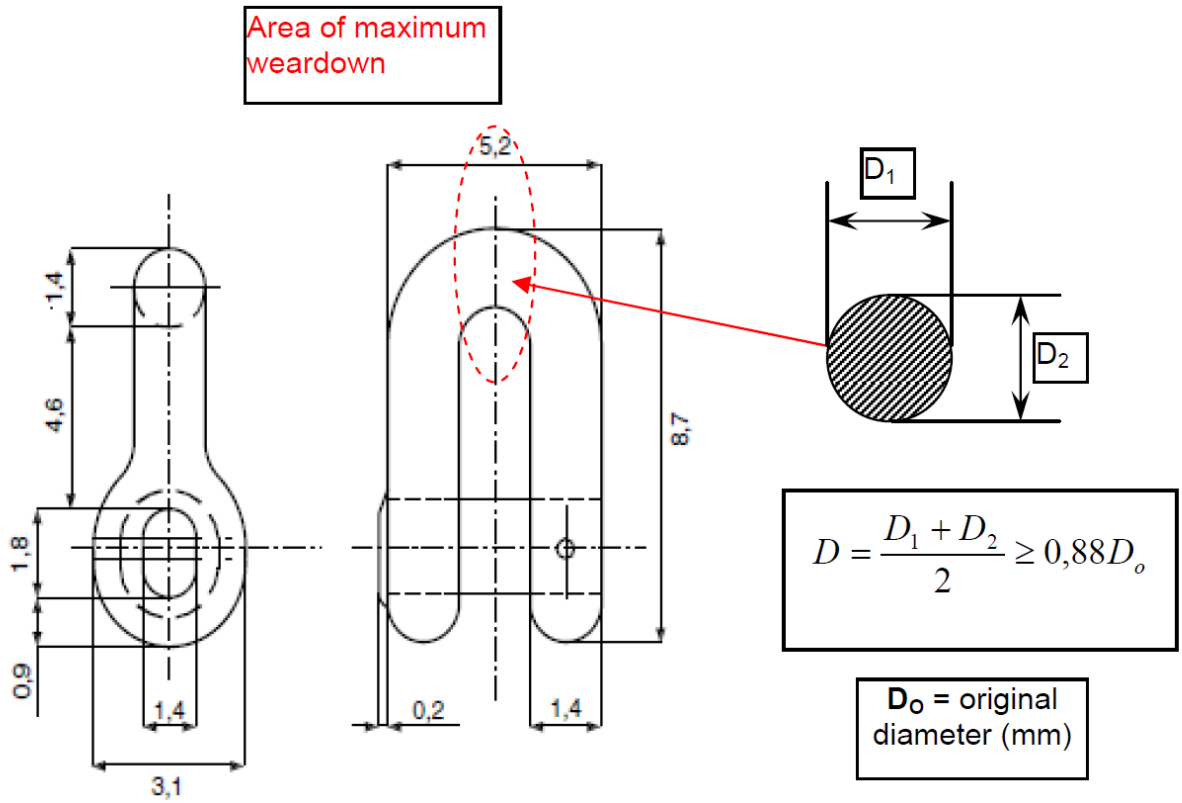


A < 3 mm

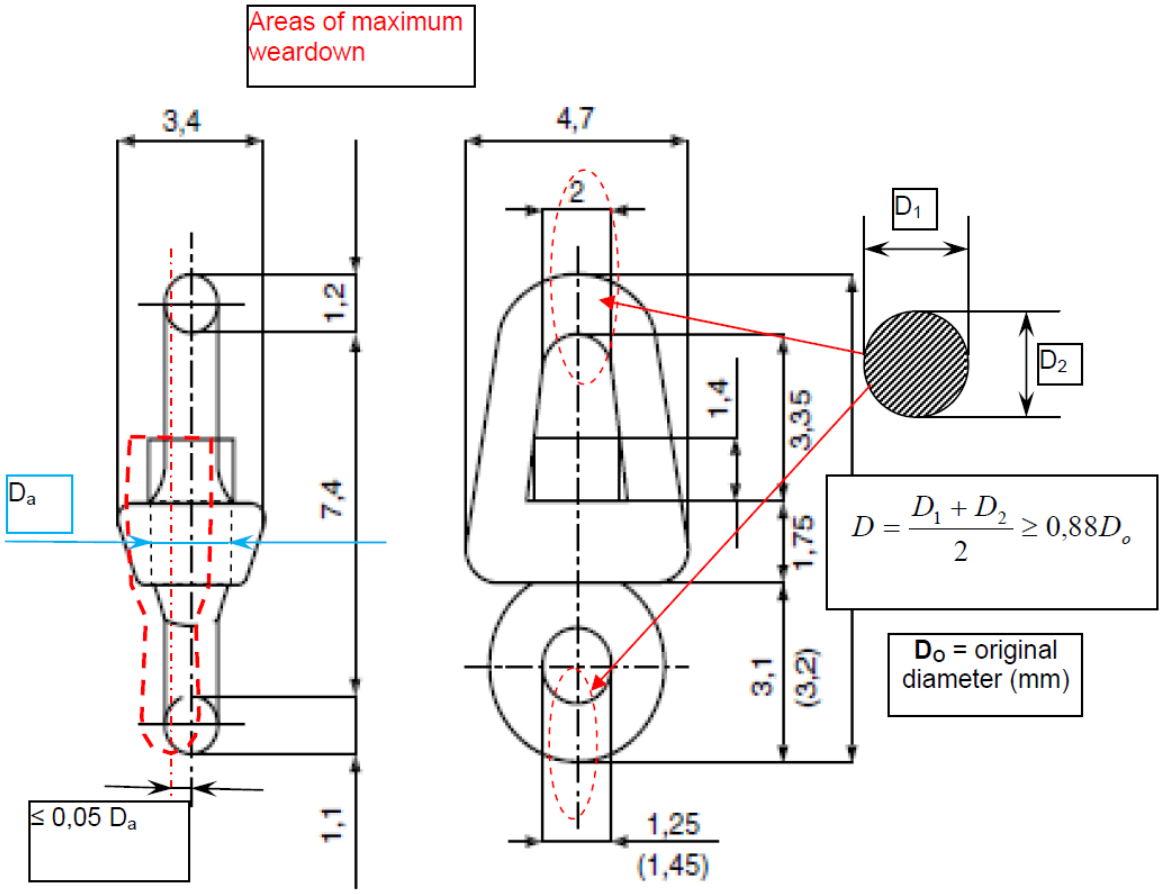
3) Joining shackle



4) End shackle



5) Swivel


Areas of maximum weardown
3,4
4,7
2
D1
D2
1,2
7,4
1,1
Da
≤ 0,05 Da
1,4
3,35
1,75
3,1
(3,2)
1,25
(1,45)
$D = \frac{D_1 + D_2}{2} \geq 0{,}88 D_o$
Do = original diameter (mm)