

International Standard



3189/1

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Sockets for wire ropes for general purposes — Part 1: General characteristics and conditions of acceptance

Douilles pour câbles en acier d'usages courants — Partie 1: Caractéristiques générales et conditions de réception

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Foreword

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International Standard ISO 3189/1 was prepared by Technical Committee ISO/TC 111, *Round steel link chains, lifting hooks and accessories*.

Sockets for wire ropes for general purposes — Part 1: General characteristics and conditions of acceptance

0 Introduction

Sockets complying with this International Standard are intended for use as terminal fittings for wire ropes in general engineering applications within a temperature range of -20 to $+60$ °C. They may be used for other purposes, such as mine haulage, and at other temperatures, but in all cases the user should ensure that the socket is suitable for the actual usage and temperature conditions and that it complies with any national regulations.

Sockets of the type specified in this International Standard may be re-used, provided that the temperature necessary to remove the rope does not affect the properties of the material used in its manufacture. Sockets may be heat-treated, if necessary.

Each design of socket should be used only with the method or methods of socketing which have proved satisfactory by prototype testing.

Generally, the prototype tests for sockets will relate to a particular design, material and method of manufacture. Any change in that design, material or method of manufacture may require further prototype testing. It is the responsibility of the manufacturer to ensure that the modified socket meets the requirements of this International Standard.

1 Scope and field of application

This part of ISO 3189 lays down the dimensions necessary for interchangeability and specifies prototype test requirements and quality control of steel sockets for use with steel wire ropes within the nominal diameter range of 8 to 60 mm.

These sockets are not suitable for use in conjunction with locked coil and spiral strands.

This part of ISO 3189 applies to sockets which are made by one of the following methods of manufacture:

- forged or machined from solid (see also ISO 3189/2),
- cast (see also ISO 3189/3),

and used as terminal attachments for steel wire ropes complying with ISO 2408 or other nationally or internationally

recognized specifications for steel wire ropes containing wires in tensile grades up to $1\,770$ N/mm²¹⁾ but excluding ropes with fibre strand cores.²⁾

2 References

ISO 643, *Steels — Micrographic determination of the ferritic or austenitic grain size.*

ISO 2408, *Steel wire ropes for general purposes — Characteristics.*³⁾

ISO 2859, *Sampling procedures and tables for inspection by attributes.*

ISO 3189/2, *Sockets for wire ropes for general purposes — Part 2: Special requirements for sockets produced by forging or machined from the solid.*

ISO 3189/3, *Sockets for wire ropes for general purposes — Part 3: Special requirements for sockets produced by casting.*

3 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1 socket type I: A fitting of the open type consisting of a body and pin (see figure 1).

3.2 socket type II: A fitting of the closed type consisting of a body only (see figure 2).

4 Socket manufacture

4.1 Form

Sockets complying with this International Standard shall be either of the (open) type I or of the (closed) type II, as shown in figures 1 and 2. Sockets shall be designed to allow for the removal of the cast cone, i.e. the maximum diameter of the conical bore of the basket of the type I socket shall not exceed the internal distance between the lugs.

1) 1 N/mm² = 1 MPa

2) If sockets complying with this part of ISO 3189 are to be attached to ropes using wire of higher tensile grade, prototype tests based on the specified minimum breaking force for the rope concerned should be carried out.

3) At present at the stage of draft. (Revision of ISO 2408-1973.)

4.2 Method of manufacture

Sockets complying with this part of ISO 3189 shall be manufactured in accordance with the appropriate methods specified in ISO 3189/2 and ISO 3189/3. At the time of placing the order, the user may nominate the method of manufacture. Sockets supplied shall be identical, within normal manufacturing tolerances, to those subjected to the prototype tests.

If requested by the purchaser, the supplier shall supply evidence that the design of socket has been prototype tested in accordance with this part of ISO 3189.

4.3 Materials

Sockets shall be made only from the steels specified for the particular method of manufacture (see ISO 3189/2 and ISO 3189/3).

4.4 Heat treatment

Sockets shall, if necessary after forging, gas cutting or casting, be subjected to a suitable heat treatment having regard to the material, the method of manufacture and the required mechanical properties.

4.5 Critical dimensions

The critical dimensions of sockets complying with this part of ISO 3189 shall be as specified in table 1 and illustrated in figures 1 and 2, unless otherwise specified in ISO 3189/2 and ISO 3189/3.

Table 1 – Dimensions of sockets

Dimensions in millimetres

| Basic design size <i>n</i> | Nominal rope diameter <i>d</i> | <i>A</i> | <i>B</i> | <i>C</i> | <i>D</i> | <i>F</i> | <i>X</i> | <i>L</i> [Type II (closed sockets)] |
|-------------------------------|-----------------------------------|----------|----------|----------|----------|----------|----------|---|
| | | max. | min. | max. | min. | min. | min. | min. |
| 10 | 8, 9 and 10 | 45 | 19 | 27 | 16 | 20 | 14 | 43 |
| 12 | 11 and 12 | 54 | 23 | 32 | 19 | 24 | 16 | 52 |
| 14 | 13 and 14 | 63 | 27 | 37 | 22 | 28 | 18 | 60 |
| 16 | 16 | 72 | 30 | 42 | 26 | 32 | 20 | 69 |
| 18 | 18 | 81 | 34 | 48 | 29 | 36 | 23 | 77 |
| 20 | 20 | 90 | 38 | 53 | 32 | 40 | 25 | 86 |
| 22 | 22 | 99 | 42 | 58 | 35 | 44 | 27 | 95 |
| 24 | 24 | 108 | 46 | 64 | 38 | 48 | 30 | 103 |
| 28 | 26 and 28 | 126 | 54 | 74 | 45 | 56 | 34 | 120 |
| 32 | 32 | 144 | 61 | 85 | 51 | 64 | 39 | 138 |
| 36 | 36 | 162 | 68 | 95 | 58 | 72 | 43 | 155 |
| 40 | 40 | 180 | 76 | 106 | 64 | 80 | 48 | 172 |
| 44 | 44 | 198 | 84 | 117 | 70 | 88 | 53 | 189 |
| 48 | 48 | 216 | 91 | 127 | 77 | 96 | 57 | 206 |
| 52 | 52 | 234 | 99 | 138 | 83 | 104 | 62 | 224 |
| 56 | 56 | 252 | 106 | 148 | 90 | 112 | 66 | 241 |
| 60 | 60 | 270 | 114 | 159 | 96 | 120 | 71 | 258 |

The dimensions in the above table are based on the following proportions:

- $A < 4,5 n$
- $B > 1,9 n$
- $C < 2,65 n$
- $\phi D > 1,6 n$
- $F > 2 n$
- $\phi X > 1,15 n + 2 \text{ mm}$
- $L > 4,3 n$

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