

Specification for

Sockets for wire ropes —

Part 2: Metric units

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The Government departments and scientific and industrial organizations marked with an asterisk in the above list, together with the following, were directly represented on the committee entrusted with the preparation of this British Standard:

Association of Crane Makers	Institution of Mining Engineers
Bureau Veritas	Lifting Equipment Manufacturers' Association
Federation of Wire Rope Manufacturers of Great Britain	Lloyd's Register of Shipping
Honourable Company of Master Mariners	Ministry of Defence, Navy Department
Institution of Mining and Metallurgy	Individual companies

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Contents

	Page
Co-operating organizations	Inside front cover
Foreword	ii
1 Scope	1
2 Size	1
3 Quality of material	1
4 Form and dimensions	1
5 Tolerances on dimensions	1
6 Workmanship	2
7 Heat treatment	2
8 Proof loading	2
9 Freedom from defect	2
10 Condition	3
11 Galvanizing	3
12 Inspection	3
13 Identification marking	3
14 Testing facilities	3
15 Manufacturer's records of material	3
16 Manufacturer's certificate	3
Appendix A Proof loading attachments	7
Appendix B Recommended method of white metal socketing	8
Appendix C Recommended method of socketing with zinc cone and tail strand units	10
Appendix D Design criteria	11
Appendix E Information to be given with an enquiry or order	12
Figure 1 — Sockets for wire rope	4
Figure 2 — Split cone and eyebolt for testing sockets	7
Figure 3 — Solid cone and bolt for testing sockets	8
Table 1 — Sockets for wire rope	5
Table 2 — Details of the rope end of sockets for various rope sizes	6

Foreword

This standard makes reference to the following British Standards:

- BS 219, *Soft solders*.
- BS 302, *Wire ropes for cranes, excavators and general engineering purposes*.
- BS 329, *Steel wire ropes for electric lifts*.
- BS 330, *Stranded wire ropes for haulage purposes*.
- BS 365, *Galvanized steel wire ropes for ships*.
- BS 643, *White metal ingots for capping steel wire ropes*.
- BS 729, *Zinc coatings on iron and steel articles — Part 1: Hot-dip galvanized coatings*.
- BS 970:1955, *Wrought steels in the form of bars, billets, and forgings, up to 6 in. ruling section, for automobile and general engineering purposes. En series*.
- BS 970, *Wrought steels in the form of blooms, billets, bars and forgings — Part 1: Carbon and carbon manganese steels*¹⁾.
- BS 1574, *Split cotter pins*.
- BS 2763, *Round steel wire for ropes*.
- BS 2772, *Iron and steel for colliery cage suspension gear, tub and mine car drawgear and couplings and rope sockets — Part 2: Wrought steel*.
- BS 3436, *Ingot zinc*.
- BS 4114, *Dimensional and quantity tolerances for steel drop and press forgings and for upset forgings made on horizontal forging machines*.
- BS 4190, *ISO metric black hexagon bolts, screws and nuts*.

This Part of this British Standard, which is intended eventually to supersede BS 463:1958 (now BS 463, Part 1, “*Imperial units*”) has been prepared under the authority of the Mechanical Engineering Industry Standards Committee. It forms one of a series of specifications which deal with terminal fittings for wire ropes.

The sockets specified are for general engineering purposes; they are also suitable for mine haulages. When using them on mine haulage ropes in the United Kingdom, users should take account of the appropriate statutory mining regulations. It is recognized that sockets for special applications such as mine hoisting (winding), aerial ropeways, suspension bridges and guys for large radio masts will normally require special and individual design.

The sockets are suitable for use principally with wire ropes covered by BS 302²⁾, BS 329³⁾, BS 330⁴⁾ and BS 365⁵⁾. The range of socket sizes has been extended to accommodate ropes up to 56 mm (2¼ in) diameter; the basic design sizes in the range are related to the R20 preferred number series.

Each basic design size provides a basic size of socket for one or more individual sizes of rope, e.g. the basic design size 10 mm is suitable for use with ropes of 8 mm, 9 mm and 10 mm diameter. The difference in the three individual sockets is the throat diameter *E*, and the consequential changes to the *X* and *Y* dimensions.

In this Part of BS 463, only open type sockets are specified. The closed type of socket has been excluded because the demand no longer warrants inclusion. (BS 463, Part 1, however, which includes the closed type of socket, will remain available for a period of approximately two years.)

¹⁾ In course of preparation.

²⁾ BS 302, “*Wire ropes for cranes, excavators and general engineering purposes*”.

³⁾ BS 329, “*Steel wire ropes for electric lifts*”.

⁴⁾ BS 330, “*Stranded wire ropes for haulage purposes*”.

⁵⁾ BS 365, “*Galvanised steel wire ropes for ships*”.

In this Part a complete re-design of the sockets has been effected, and advantage has been taken of the good mechanical properties and the resistance to strain age embrittlement of the materials specified, when in the hardened and tempered condition. It should be noted that sockets should not be heated during re-socketing to a temperature which will destroy the hardened and tempered condition. It is therefore recommended that the maximum temperature to which the fittings are heated during “melting out” should be 400 °C.

NOTE Special consideration should be given to socketed ropes where the socket is to be worked at temperatures significantly higher than normal ambient temperature.

In so far as the proof load is a basic design parameter each socket is required to be proof loaded, and Table 1 lists the working loads for the general case of socketed ropes working at a nominal factor of safety of 5 : 1, expressed in the R10 preferred number series. It is recognized that these sockets may also be used in varied applications and that in certain cases the safe working load required of the wire rope assembly may be higher than that obtaining in the general case. For this reason it is important that the designer responsible for an assembly is fully aware of the design basis. (See Appendix D.)

The socket design is such that alternative methods of socketing may be used throughout the range, and suitable methods are given in Appendix B and Appendix C (and see Note below).

In connection with this type of socket, it is important to note that whereas the taper of the interior of the basket of sockets to BS 463, Part 1, varies in a random manner throughout the range of sizes, the total taper of the interior of the sockets in this Part is constant at 1 in 6.

The cones and tail strands for a given rope size are, therefore, not interchangeable between the two types of socket.

The committee responsible for the preparation of this Part of this British Standard expresses its thanks to The Safety in Mines Research Division, Ministry of Technology, and also to the National Physical Laboratory, Ministry of Technology, for assistance in the design and testing of the sockets.

Information to be given in an enquiry or order is listed in Appendix E.

NOTE A novel way has been developed for socketing a wire rope by means of a cold-curing polyester resin mixed with a filler. This method has been successfully tested in the laboratory and in limited field trials. Tests have shown that sockets in this Part of this British Standard are suitable for use with resin cappings.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 12, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

