

Specification for

Wire rope slings and sling legs for general lifting purposes

UDC 621.86.065:677.72

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The organizations marked with an asterisk in the above list, together with the following, were directly represented on the Technical Committee entrusted with the preparation of this British Standard:

Association of Supervisory and Executive Engineers	Federation of Wire Rope Manufacturers of Great Britain
British Ports Association	Honourable Company of Master Mariners
British Steel industry (Wire Section)	Institution of Mining and Metallurgy
Bureau Veritas	Institution of Mining Engineers
Chain Testers' Association of Great Britain	National Association of Lift Makers
	National Association of Port Employers

This British Standard, having been prepared under the direction of the Mechanical Engineering Standards Committee, was published under the authority of the Board of BSI and comes into effect on 31 March 1983

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First published January 1946
First revision March 1958
Second revision March 1983

The following BSI references relate to the work on this standard:
Committee reference MEE/18
Draft for comment 76/75868 DC

ISBN 0 580 12432 0

Amendments issued since publication

Amd. No.	Date of issue	Comments

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Foreword

This revised British Standard has been prepared under the direction of the Mechanical Engineering Standards Committee and supersedes the 1958 edition of BS 1290, which is withdrawn.

This revision introduces a certain degree of rationalization, including the restriction of wire ropes to a limited range of sizes, constructions and tensile grades. The appendices giving details of sling terminations have been replaced by suitable cross-references. In accordance with modern international practice, links have been adopted in this standard in preference to rings. Dimensions of master and intermediate links may be obtained from BS 2902 and BS 3458. Advice on the design of these links in other grades of material is given in Appendix D, which is identical with the annex of ISO 4778:1981 published by the International Organization for Standardization (ISO).

This revision covers slings with both hand-spliced and ferrule-secured eye terminations. Depending on the type of sling required, the ends of the sling legs may be formed with a thimble eye, a soft eye or a soft eye with stirrup or half thimble.

This standard covers only those multi-leg slings that have legs of equal nominal length, construction and diameter. Slings with legs of unequal length may be constructed generally in accordance with the requirements of this standard, but it is emphasized that their rating requires special consideration by a competent person.

Size for size, the SWLs of slings constructed from general engineering ropes (section 2) are approximately 50 % greater than those of slings constructed from galvanized marine ropes (section 3).

Appendix B gives information on the method of calculating SWLs. This method is known as the uniform load method and has been adopted internationally as an alternative to the trigonometric method. It is therefore the preferred method for general purpose multi-leg slings as well as for single-leg slings.

A code of practice for the safe use of wire rope slings for general lifting purposes (BS 6210) is published concurrently with this standard.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 14, 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.

Section 1. General requirements

1 Scope

This British Standard specifies the dimensions, constructions, safe working loads, testing and marking of wire rope slings for general lifting purposes.

Sections 1 and 2 deal with slings having one, two, three or four legs of general engineering wire rope of tensile grade 1 770 N/mm² complying with the requirements of BS 302 or BS 3530, with fibre or independent steel wire main core. The legs are constructed in ordinary lay wire rope, in the sizes and constructions specified in clause 12 and in one of the following forms:

- a) single-part terminated by hand-spliced or ferrule-secured eyes;
- b) double-part hand-spliced or ferrule-secured endless;
- c) double-part grommet.

Sections 1 and 3 deal with slings having one or two single-part legs of 6 × 24 construction galvanized wire rope of tensile grade 1 420 N/mm² complying with the requirements of BS 365. The legs are terminated by hand-spliced or ferrule-secured eyes.

This standard deals with only those multi-leg slings that have legs of equal nominal length, construction and diameter and that are designed for use with the uniform load method of rating. Such slings are not intended to withstand greater loads at smaller included angles than those specified (see 7.1).

This standard does not cover slings made from multistrand or triangular strand ropes.

2 References

The titles of the publications referred to in this standard are listed on the inside back cover.

3 Definitions

For the purposes of this British Standard the following definitions apply.

3.1

safe working load (SWL)

the maximum mass, as certified by a competent person, that an item of lifting gear may raise, lower or suspend under particular service conditions

3.2

minimum breaking load (MBL)

the load below which a rope will not fracture when tested to destruction in the prescribed manner (see ISO 3108:1974). The MBL is calculated from the square of the nominal rope diameter (in mm²), the nominal tensile strength of all the wires (in N/mm²) and a coefficient appropriate to the construction of the rope

3.3

load

encompasses the concept of either mass or force and is expressed in the appropriate units

NOTE In SWL, for example, the term "load" denotes a mass quantity, whereas in MBL it denotes a force quantity.

4 Forms of sling assembly

Sling legs and terminal fittings shall be of one of the forms shown in Figure 1.

NOTE 1 Some typical sling assemblies are illustrated in Figure 2 for two-, three- and four-leg slings. The lower terminal fittings may be any of those shown in Figure 1 except soft eyes.

The nominal length of sling assemblies shall be measured between the bearing points.

A thimble shall be used when the sling leg is terminated with a permanently attached link, hook or shackle.

Any welding and/or heat treatment of links shall be completed before the wire rope leg or legs are attached. The legs of two- or three-leg slings shall be joined at their upper ends by a suitable link (see 7.1).

Each pair of legs of a four-leg sling shall be joined by a suitable intermediate link and the two intermediate links shall be joined by a suitable master link.

The nominal length of slings and sling legs shall be the length between the bearing points of their terminal fittings, whether soft eye, soft eye with stirrup or half thimble, thimble, shackle, hook or link (see Figure 1 and Figure 2). This length shall be measured under no load. In the case of two-, three- and four-leg slings, the discrepancy in length between any of the legs, in millimetres, shall not exceed that given by the equation:

$$\text{Maximum discrepancy} = 9 + \left(\frac{d + 9L}{3} \right)$$

where

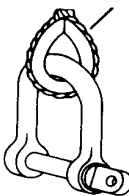
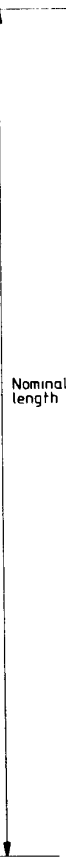
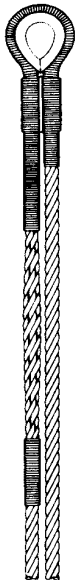
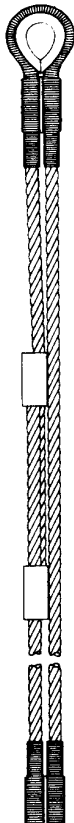
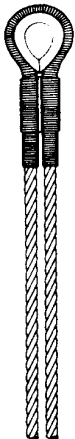
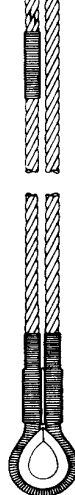
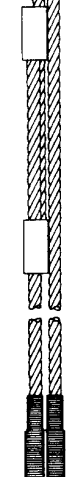
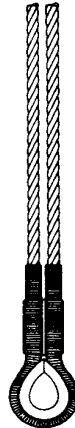
d is the nominal rope diameter, in millimetres, and

L is the nominal length of sling leg, in metres.

NOTE 2 This formula is not applicable to spliced endless slings and grommet sling legs.

5 Formation of sling legs

Sling legs shall be formed by one of the methods given in Appendix A. Depending on the type of sling required, the ends of sling legs shall be formed with a thimble eye (which may be attached to other terminal fittings), a soft eye or a soft eye with stirrup or half thimble.

Form of sling leg					Type of eye hand-spliced or ferrule-secured	Terminal fittings		Method of determining nominal length of sling legs (bearing to bearing)
Single-part		Double-part				At upper end	At lower end	
Ferrule-secured	Hand-spliced	Spliced endless	Ferrule-secured endless	Grommet	 Soft eye*	None or	None or Thimble eye 	
					 Soft eye with stirrup or half thimble*	None or	Shackle 	
					 Ordinary thimble	 Link	Link 	
					 Reeving thimble		Safety hook 	
							'C' Hook 	

* For use only with single-leg slings

Figure 1 — Single-leg slings, sling legs and terminal fittings