

Code of practice for

The safe use of wire rope slings for general lifting purposes

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Federation of Wire Rope Manufacturers in Great Britain	National Association of Port Employers

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Foreword

This code of practice, prepared under the direction of the Mechanical Engineering Standards Committee, is intended to complement BS 1290.

Its aim is to prevent accidents due to the misuse of slings and bad slinging techniques, by giving guidance on good practice and on the safe use of wire rope slings. The code restricts itself to the use of slings for general lifting purposes as covered by BS 1290. It is suggested however, that many other slinging operations, not specifically covered here, can be resolved by reference to the general principles applied in this code.

BS 6166 gives additional assistance on rating with respect to clause 4 of this code.

Throughout this code it has been assumed that essentially balanced loads are being lifted and that the load in each leg of a multi-leg sling is broadly equal.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 20, 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.

1 Scope

This code of practice provides guidance on the safe use of slings manufactured in accordance with BS 1290.

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

2 Definition

For the purposes of this code the following definition applies.

2.1

safe working load (SWL)

the value marked on the sling in mass units.
BS 1290 explains the method by which the safe working load is calculated

3 Marking, control and issue of slings

Facilities and procedures should be established to ensure that the following is carried out.

- Each sling, before being issued for use, is marked in accordance with BS 1290.
- The statutory test certificate stating the SWL and the statutory record of thorough examinations are kept readily available for inspection.
- All persons using slings and all supervisors of slinging operations are adequately trained in the methods of slinging and the safe use of slings appropriate to their duties¹⁾. This should include the identification of obvious defects likely to affect the safe use of the sling.
- Suitable facilities exist for the storage of slings.
- A visual inspection of the sling is carried out during use at intervals whose frequency will be governed by the conditions of use (see 6.2).
- Routine thorough examinations are carried out by a competent person (see 6.3).

4 Methods of slinging

4.1 General. A number of methods of slinging are shown in Figure 1 to Figure 14 using single-leg slings, two single-leg slings used together and multi-legged slings, complying with BS 1290. The methods and loads shown are intended to be typical examples and the methods of lifting are not intended to be exhaustive.

4.2 Single-leg slings. Figure 1 to Figure 5 show basic methods of using a single-leg sling.

In Figure 3 and Figure 4 a noose is formed in the rope which tightens as the load is lifted. This does not grip the load completely and should be used only when the load is easily stabilized or cannot slip out of the sling. Stability can be improved by slinging from a position away from the point of balance (see Figure 5).

The same general limitations apply to Figure 6 as to the simple choke hitch shown in Figure 3, except that with the double wrapped choke hitch the load is gripped more fully, and hence is secured more effectively.

A choke hitch should not, however, be used for handling composite loads such as loose bundles of tubes or bars, unless the friction grip between the parts is sufficient to prevent them slipping from the sling. In such circumstances, two single-leg slings, of the type shown in Figure 10 and Figure 11, should be used.

4.3 Two single-leg slings used together²⁾. Two single-leg slings used at an angle (or a multi-leg sling having two legs similarly used) provide a more stable lifting arrangement than a single-leg sling.

When using two single-leg slings, as shown in Figure 7 to Figure 11, the included angle α between the legs should be restricted to 90° maximum to avoid the risk of displacing one of the slings from the hook or distorting the hook.

Whilst the multi-leg slings in BS 1290 are designed for the uniform load method of rating (see clause 1 and 6.1 of BS 1290:1983), when two single-leg slings are used together they may be rated by the trigonometrical method, in which case the load that may be lifted is given by the following formula.

$$2 \times \text{SWL of single leg} \times \cos \frac{\alpha}{2}$$

Included angle	30°	60°	90°
$\cos \frac{\alpha}{2}$	0.97	0.87	0.71

When using two single-leg slings together, care should be taken to ensure that:

- the slings are of the same length;
- where the slings have different SWL ratings then the load that can be lifted is related to the lesser SWL;

¹⁾ Guidance is given in clause 16 and Appendix A of BS 5744:1979.

²⁾ Attention is drawn to the requirements of the Construction (Lifting Operations) Regulations 1961. Regulation 37(2) relates to the use of two single-leg slings.

c) the attachment points of the slings to the load are far enough apart to give stability without exceeding 90° . In the case of two single-legs used in basket hitch, the angle between any two diagonally opposite legs should not exceed 90° (see Figure 9 and Figure 11);

d) when lifting unbalanced loads the individual legs are not overloaded (see Appendix A).

Where loose bundles or smooth objects are to be lifted, double wrap choke hitch or double wrap basket hitch is preferable.

4.4 Multi-leg sling. A multi-leg sling may have two, three or four legs (see Figure 12 to Figure 14). A two-leg and four-leg sling should not be used at an included angle greater than 90° unless the sling is so marked. In no circumstances should the included angle exceed 120° .

A three-leg sling should not be used if any one leg makes an angle to the vertical greater than 45° .

5 Use of wire rope slings by persons responsible for lifting loads

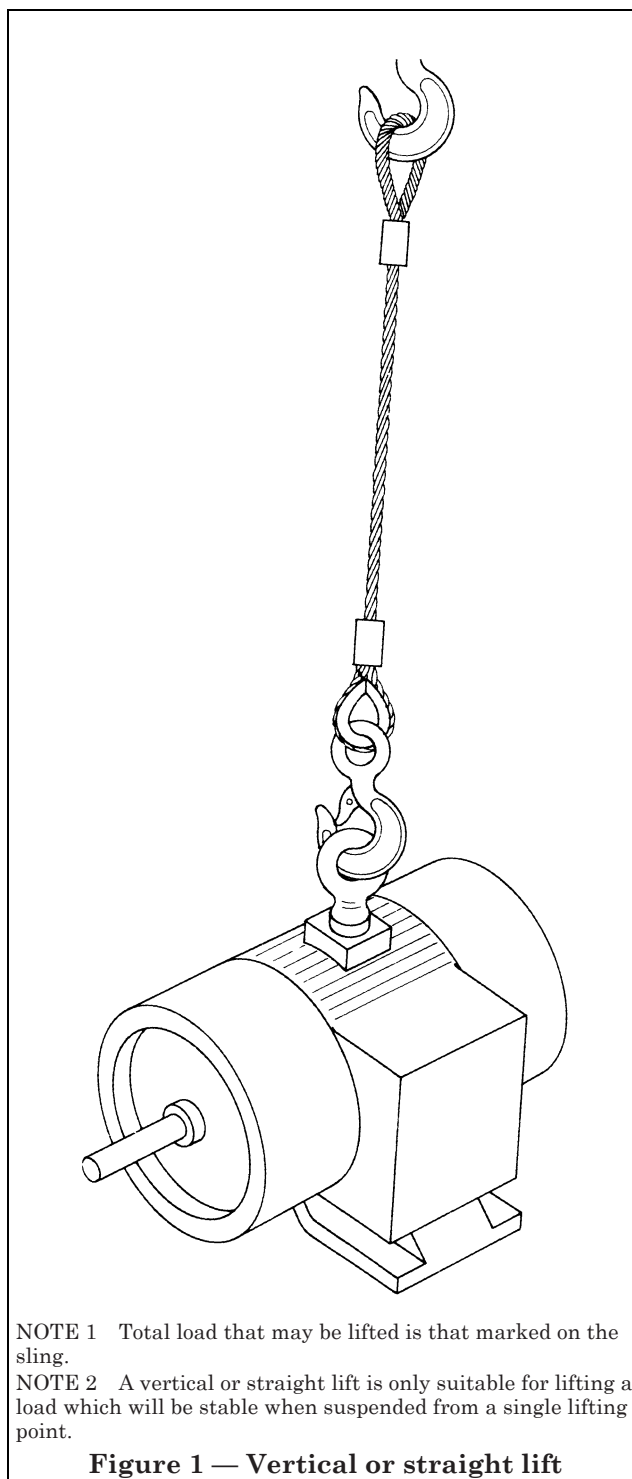
5.1 Before lifting a load

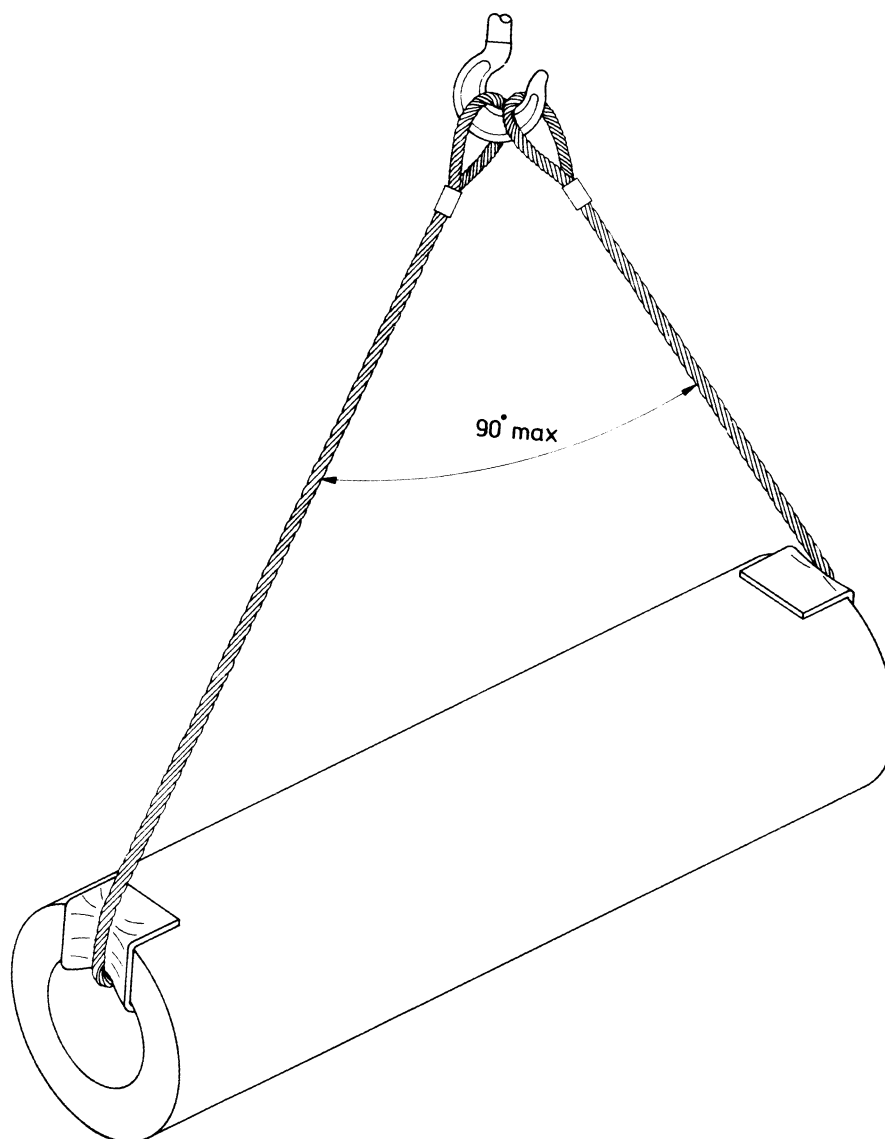
5.1.1 Ensure that the load is suitable for lifting with a wire rope sling. The sling should not be allowed to damage the load, nor should the sling itself be damaged. If the sling is to be attached to the load, the points used for attachment, e.g. lugs and eyebolts, should be suitable and adequate for the purpose of lifting the whole load.

5.1.2 Assess the weight of the load to be lifted. If the gross weight is not marked, the information may be obtainable from the consignment notes, manuals, plans, etc. If there is no information, the weight should be assessed by a person competent to do so.

5.1.3 Ensure that the sling is strong enough. Having regard to the method of slinging, make sure that SWL of the sling is adequate for the load to be lifted.

As far as is reasonably practicable the effective diameters of pins, hooks or other components over which soft eyes are used should not be less than twice the rope diameter for single part legs, and four times the rope diameter for double part legs (spliced endless or grommet).

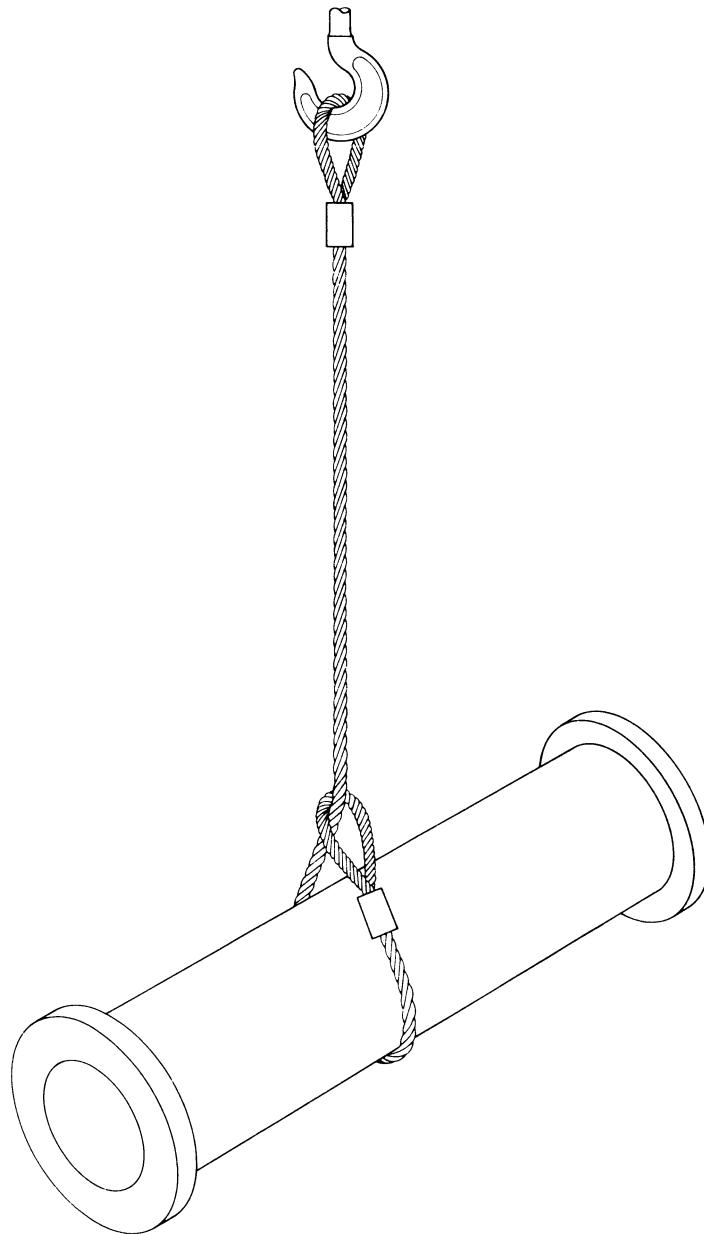




NOTE 1 The total load that may be lifted when the included angle does not exceed 90° is $1.4 \times$ that marked on the sling.

NOTE 2 A basket hitch should only be used when the sling is passed through part of the load and the load is balanced on the sling.

Figure 2 — Basket hitch



NOTE The total load that may be lifted is that marked on the sling.

Figure 3 — Simple choke hitch