



Eyebolts

Instructions for Safe Use



This information should be made available to the user of the equipment.

This document is issued in accordance with the requirements of the Health and Safety at Work etc Act 1974, amended March 1988. It outlines the care and safe use of EYEBOLTS and is based on section 20 of the LEEA Code of Practice for the Safe Use of Lifting Equipment. It should be read in conjunction with the requirements for general purpose slinging detailed in this document, the principles of which may be applied to the use of eyebolts either with or without slings.

The information is of a general nature only covering the main points for the safe use of eyebolts which comply with BS4278. Although obsolescent, many eyebolts are still manufactured to this standard and are likely to remain in use for many years. It may be necessary to supplement this information for specific applications.

ALWAYS

- Store and handle eyebolts correctly.
- Inspect eyebolts before use and before placing into storage.
- Select the correct eyebolt for the application.
- Ensure that the eyebolt and tapped hole threads are compatible and strong enough for the load.
- Correctly align the plane of the eye using shims where necessary.
- Ensure that the collar is fully seated when hand tight.

NEVER

- Use tommy bars, grips or wrenches to tighten eyebolts.
- Use dynamo eyebolts for angular loading.
- Use a single eyebolt to lift a load which can rotate.
- Reeve slings through the eyes, links or shackles fitted to pairs of eyebolts.
- Force hooks or other fittings into the eye; they must fit freely.
- Shock load eyebolts.

Selecting the correct eyebolt

Eyebolts to BS4278 are available in three standard types, eyebolt with link, collar eyebolt and dynamo eyebolt. Select the eyebolt to be used and plan the lift taking the following into account:

Type of eyebolt

1. Eyebolt with link for all general-purpose applications.



2. Collar eyebolt for most general duties.



3. Dynamo eyebolt – **only where a truly axial load can be guaranteed. (i.e. Vertical Lift Only!)**



Capacity- (rating eyebolts for angular loading)

It is necessary to reduce the SWL by the following factors when using eyebolts with two leg slings:

Type of eyebolt	Included angle of sling legs		
	0 to 30°	30 to 60°	60 to 90°
Eyebolt with link	1.0	0.8	0.63
Collar eyebolt	0.63	0.4	0.25

Storing and Handling Eyebolts

Never return damaged eyebolts to storage. They should be dry, clean and protected from corrosion. Care must be taken to protect threads from damage during storage.

Where possible use removable plugs to exclude debris from tapped holes.

Using Eyebolts Safely

Do not attempt lifting operations unless you understand the use and limitations to use of the equipment, the slinging procedures and the mode factors to be applied.

Do not use defective eyebolts. Check the thread of both the eyebolt and the tapped hole, ensure they are compatible, fully formed, of sufficient length, undamaged and clear of any debris which may prevent proper engagement.

Ensure the contact surface around the hole is flat, clean and perpendicular to the thread axis. Tighten the eyebolt down firmly by hand. The eye must be in the correct plane and the collar must sit evenly on the contact surface. Use shims but do not machine the collar, shorten the thread or over tighten to achieve this.

A hook may be engaged directly into the eye of a dynamo eyebolt or the link of an eyebolt with link. Collar eyebolts must be fitted with a shackle or link to accept hooks. The hooks must fit freely so do not wedge or force them into position.

Never reeve a sling through the eyes, links or shackles fitted to eyebolts used in pairs as this will impose a severe resultant load onto the eyebolts.

Dynamo eyebolts **must only** be used for axial loading. When using eyebolts with multi-leg slings use eyebolts with links or collar eyebolts taking care to derate them correctly for angular loading conditions.

Where a single eyebolt is used, use a swivel hook or swivel to prevent the eyebolt unscrewing.

In Service Inspection and Maintenance

Maintenance requirements are minimal. Keep eyebolts clean, protect from corrosion and protect threads from damage. Do not attempt to straighten bent eyebolts or re-cut threads.

Regularly inspect eyebolts and in the event of any of the following defects refer to a competent person for thorough examination:

- Illegible markings.
- Distortion.
- Worn or bent shanks or threads.
- Incomplete or incorrectly formed threads
- Damaged eyes.
- Nicks, gouges or cracks.
- Corrosion or other defects.

Further information can be found in the Code of Practice for the Safe Use of Lifting Equipment published by the Lifting Equipment Engineers Association and available as a free download on www.leeaint.com/downloads

GENERAL PURPOSE SLINGING PRACTICE

The following information is based on Section 1 – Appendix 1.5 of the LEEA Code of Practice for the Safe Use of Lifting Equipment. It should be read in conjunction with the instructions for the safe use given previously of which it forms an integral part and with any specific instructions issued by the supplier.

This information is of a general nature only covering the main points for the safe use of various types of slings for general lifting purposes.

ALWAYS

- Plan the lift, establish the weight of the load and prepare the landing area ensuring it will take the weight.
- Check slings and equipment are free of damage, use slings/slinging methods suitable for the load and protect slings from sharp edges and corners.
- Attach the sling securely to the load and appliance and position hooks to face outwards.
- Ensure the load is balanced and will not tilt or fall.
- Keep fingers, toes etc clear when positioning slings and landing loads.
- Ensure the load is free to be lifted.
- Make a trial lift and trial lower.

NEVER

- Use damaged slings or accessories.
 - Twist, knot or tie slings.
 - Hammer slings into position.
 - Overload slings due to the weight of the load or the mode of use.
 - Trap slings when landing the load.
 - Drag slings over floors etc or attempt to pull trapped slings from under loads.
 - Allow personnel to ride on loads.
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Sling Configurations and Rating

Slings are available in single, two, three and four leg or endless form. In practice it will be found that chain, wire rope and fibre rope slings are available in any of these configurations, but that flat woven webbing is limited to single leg and endless while roundslings are only supplied in endless form. The maximum load a sling may lift in use will be governed by the slinging arrangement (mode of use) and may vary from the marked SWL. In the case of textile slings the SWL for the various modes of use is usually given on the information label. In other cases, it is necessary to multiply the marked SWL by a mode factor.

The following three simple rules will ensure that the sling is not overloaded. In some cases, this will mean that the sling will appear under utilised although this should not hinder the user. Where the maximum utilisation is required, reference should be made to the competent person who understands the factors involved and can perform the necessary calculations.

1. For straight lift never exceed the marked SWL and in the case of multi-leg slings the specified angle or range of angles
2. When using slings in choke hitch multiply the marked SWL by 0.8 to obtain the reduced maximum load the sling may lift (i.e., SWL-20%)
3. With multi leg slings when using less than the full number of legs, reduce the maximum load in proportion to the number of legs being used. Simply multiply the SWL by the number of legs being used as a proportion of the whole (e.g., using three legs of four is $\frac{3}{4}$ SWL, one of two is $\frac{1}{2}$ SWL etc.)

Operator Training

Slings should only be used by trained operatives who understand the methods of rating and application of mode factors.

Safe Use of Slings

Good slinging practice must ensure that the load is as safe and secure in the air as it was on the ground and that no harm is done to the load, lifting equipment other property or persons.

Establish the weight of the load, ensure the lifting method is suitable and inspect the slings and attachments for obvious defects. Prepare the landing area making sure the floor is strong enough to take the load. Follow any specific instructions from the supplier.

Ensure the lifting point is over the centre of gravity. Any loose parts of the load should be removed or secured. Attach the slings firmly to the load onto lifting points or shackles etc. The sling must not be twisted, knotted or kinked in any way.

Use packing to protect the sling from damage and to protect the load.

Do not exceed the SWL or rated angle. Any choke angle must not exceed 120° and any basket 90°.

Do not hammer, force or wedge slings or accessories into position, they must fit freely.

When attaching more than one sling to the lifting appliance hook use a shackle to join the slings and avoid overcrowding the hook.

Use an established code of signals to instruct the crane driver.

Ensure the load is free to be lifted and not fixed down.

Check for overhead obstructions such as power lines.

Keep fingers, toes etc clear to ensure they do not get trapped.

Make a trial lift by raising the load a little to check for balance, stability and security., if not, lower and adjust the slinging arrangement.

Where appropriate use a tag line to control the load.

Except where special provision is made do not allow anyone to pass under or ride upon the load. Keep the area clear.

Make a trial set down, ensuring the slings will not become trapped and the load will not tip once the slings are released. Use supports which are strong enough to sustain the load without crushing.

Never drag slings across floors or attempt to a trapped sling from under a load.

Never use a sling to drag a load.

Place the hooks of free legs back onto the master link and take care to ensure that empty hooks do not become accidentally caught.

Never use slings in contact with chemicals or heat without the manufacturer's approval

Never use damaged or contaminated slings.

On completion of the lift return all equipment to proper storage.