



# LIFTING SAFETY

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**LIFTING EQUIPMENT AND HEIGHT SAFETY SPECIALISTS**

## Instructions for the safe use of: Vertical Plate Clamps

The information in this leaflet should be passed to the user of the equipment

This document is issued in accordance with the requirements of Section 6 of the Health and Safety at Work etc Act 1974, amended March 1988. It outlines the care and safe use of VERTICAL PLATE CLAMPS and is based on Section 21 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 practice, given overleaf, which form an integral part of these instructions.

This information is of a general nature only covering the main points for the safe use of vertical plate lifting clamps. It may be necessary to supplement this information for specific applications.

### ALWAYS:

- Store and handle plate clamps correctly.
- Inspect plate clamps and accessories before use and before placing into storage.
- Put the clamp onto the plate as far as it will go.
- Check that the clamp is directly over the centre of gravity of the load.
- Ensure the clamp is fully locked or tightened onto the plate before lifting.
- Take great care to ensure the plate is fully supported before attempting to release the clamp.

### NEVER:

- Use plate clamps on hard or polished plate unless they have been specifically designed for that purpose.
- Put packing between the plate and the jaws of the clamp.
- Attempt to lift more than one plate in the clamp.
- Lower from the vertical to horizontal or vice-versa unless the clamps have been designed for that purpose.
- Obliquely load vertical plate clamps.
- Force or wedge the hook of the lifting appliance into the eye of the clamp.

### Selecting the Correct Plate Clamp

Vertical plate lifting clamps are available in a range of capacities and designs. They may utilise a lever, cam mechanism, roller or screw to provide friction grip to the plate. Select the plate clamp to be used and plan the lift taking the following into account:

Type of clamp - lever, cam, roller or screw action.

Capacity and plate thickness.

If a pendant chain sling is required.

*NOTE 1: Some designs of clamp, particularly those with a moving cam action jaw where the initial grip is provided by a spring, have a minimum load and minimum plate thickness they can safely lift. Wherever possible refer to the manufacturer's instructions but in the absence of specific guidance the load should not be less than 20% of the SWL and the plate thickness not less than 20% of the maximum.*

*NOTE 2: Some designs of plate clamp are suitable for lifting plates from the horizontal to the vertical and the inclusion of a pendant chain to provide articulation between the clamp and lifting hook is essential. However the use of pendant chains should always be considered to prevent the hook weight being imposed on the clamp as this might cause the clamp to be released.*

### Storing and Handling Plate Clamps

Never return damaged or dirty plate clamps to storage. They should be dry, clean and protected from corrosion.

Plate clamps should not be dropped or thrown down.

### Using Plate Clamps Safely

Do not use defective plate clamps, or accessories.

Do not use the clamp to lift a load less than 20% of the SWL or with a thickness less than 20% of the maximum unless the manufacturer's instructions permit otherwise.

Position the clamp correctly. Place the clamp over the load centre of the plate. If the plate is long and has a tendency to bend, use two clamps equally disposed about the centre of gravity in conjunction with a spreader beam. Care must be taken to ensure no one clamp takes more than its SWL.

Put the clamp onto the plate as far as it will go.

Under no circumstances should packing be placed between the plate and the jaws nor any attempt made to lift more than one plate in the clamp.

Do not use clamps at an angle to the edge of the plate or for lowering from vertical to horizontal, or vice-versa, unless they are designed for the purpose.

Keep oil, grease and similar contaminants away from jaws which use a friction grip material to hold the plate.

### In-service Inspection and Maintenance

Vertical plate clamps should be cleaned and any moving parts lubricated at appropriate intervals, unless the suppliers specific instructions indicate otherwise.

In the case of clamps with smooth jaws lined with a friction material, care must be taken to ensure no lubricant comes into contact with the friction material.

Regularly inspect the plate clamp and, in the event of the following defects, refer the clamp to a Competent Person for thorough examination: wear, damage or distortion to fixed and moving jaws; frame opening out or cracked; insecure, worn or bent pins, bolts etc; worn friction grip material; damaged, bent or unsatisfactory acting locking lever; tight, bent or damaged clamping threads etc; corrosion; illegible marking.

WARNING: Teeth of jaws must not be re-sharpened or re-cut unless this has been specifically approved by the maker.

## 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 overleaf, 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 that 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 tensioning slings and when landing loads.
- Ensure that 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.

## 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 whilst roundslings are only supplied in endless form. The maximum load that 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 be under utilised although this is unlikely to hinder the user unduly. Where the maximum utilisation is required reference should be made to a Competent Person who understands the factors involved and who 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 ie reduce the safe working load by 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 in use. Simply multiply the marked SWL by the number of legs in use expressed as a fraction of the total thus: one leg of a two leg sling =  $\frac{1}{2}$  marked SWL, three legs of a four leg sling =  $\frac{3}{4}$  marked SWL and so on.

## Operative Training

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

## Safe use of Slings

- o 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.
- o Establish the weight of the load, ensure the lifting method is suitable and inspect the sling 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.
- o Ensure the lifting point is over the centre of gravity. Any loose parts of the load should be removed or secured. Secure the sling firmly to the load by hooks onto lifting points or shackles etc. The sling must not be twisted, knotted or kinked in any way.
- o Use packing to prevent damage to the sling from corners or edges and to protect the load.
- o Do not exceed the SWL or rated angle. Any choke angle must not exceed 120° and any basket 90°.
- o Do not hammer, force or wedge slings or accessories into position; they must fit freely.
- o When attaching more than one sling to the hook of the appliance use a shackle to join the slings and avoid overcrowding the hook.
- o Use an established code of signals to instruct the crane driver.
- o Ensure the load is free to be lifted and not, for example, bolted down.
- o Check that there are no overhead obstacles such as power lines.
- o Keep fingers, toes etc clear ensuring they do not become trapped when lifting, lowering or controlling loads.
- o Make a trial lift by raising the load a little to ensure it is balanced, stable and secure and if not lower it and adjust the slinging arrangement.
- o Where appropriate use tag lines to control the load.
- o Except where special provision is made, do not allow anyone to pass under or ride upon the load. The area should be kept clear.
- o Make a trial set down, ensure the sling will not become trapped and the load will not tip when the slings are released. Use supports which are strong enough to sustain the load without crushing.
- o Never drag slings over floors etc or attempt to drag a trapped sling from under a load.
- o Never use a sling to drag a load.
- o Place the hooks of free legs back onto the master link and take care to ensure that empty hooks do not become accidentally engaged.
- o Never use slings in contact with chemicals or heat without the manufacturers approval.
- o Never use damaged or contaminated slings.
- o On completion of the lift return all equipment to proper storage.

Further information is given in:

\* LEEA Code of Practice for the Safe Use of Lifting Equipment.

\*\* BS 6166 Part 1 - Lifting Slings, Methods of Rating.

\*\*\* BS 6166 Part 3 - Selection and Safe Use of Lifting Slings for Multi-purposes.

\*\*\*\* HSE Guidance Note GS39 - Training of Crane Drivers and Slingers.

Various British Standards covering individual products.