



LAING O'ROURKE

Guide to Safe Slings and Signalling



**Let's all get home
safely. Every day.**

Introduction

Laing O'Rourke holds Health and Safety as a core business value and is committed to achieving our vision; 'Let's all get home safely. Every day'.

Our aspiration is that we will strive to create a health and safety culture where:

- Clients choose to work with us because of our relentless commitment to health and safety
- All our sites have a consistent look and feel and are of the highest possible health and safety standard
- Our stakeholders feel proud, empowered and recognised for their contribution to health and safety
- We feel happy for family and friends to work with us or visit our sites to see how we mitigate risk to ensure no one gets hurt and we all get home safely every day
- We are recognised as having a world class approach to health and safety.

Ray O'Rourke




**Let's all get home
safely. Every day.**

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The procedures and methods outlined in this booklet are mandatory on all Laing O'Rourke sites and must be followed by all Laing O'Rourke businesses and their subcontractors. Additional procedures may apply when working with different Principal Contractors.

Only authorised persons holding a valid CPCS slinger / signaller card are allowed to attach or detach slings and give signals to the crane operator.

Their authorisation must be recorded by the appointed person responsible for lifting on the site. Slingers/signallers must know who their crane supervisor is, and supervisors must ensure that slinger/signallers are working to agreed methods.

The appointed person must ensure that everyone in the crane team has studied this booklet.

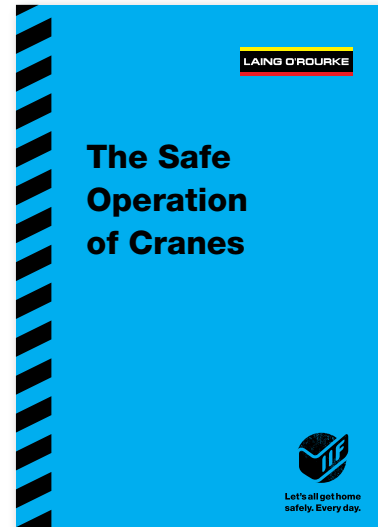
The purpose of the booklet is to give guidance on the correct, efficient and safe way to lift, move and place everyday items on construction sites. Where the circumstances of the lift are not covered by this booklet, additional procedures must be developed by the appointed person (lifting) and the crane team must be properly briefed in those procedures.

For simplicity, this booklet will refer to all lifting equipment as cranes, but this will cover all lifting equipment where the load is suspended including:

- Tower cranes
- Mobile and crawler cranes
- Lorry loaders
- Runway beam hoists
- Fork lift trucks fitted with a hook
- Excavators fitted with a lifting hook/eye
- Scaffold cranes.

The Laing O'Rourke A4 booklet 'The Safe Operation of Cranes' (below) contains the arrangements for the overall management of lifting operations.

Those arrangements are mandatory for all Laing O'Rourke crane operations and a copy of the booklet is held by the appointed person.

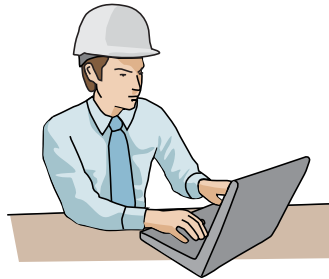


Appointed Person (CPCS Card)

The competent person appointed to have overall control of all lifting operations on site.

Their responsibilities will include:

- The overall planning of lifting operations
- The production of method statements
- The completion of the “Lifting Operations Assessment Form”
- Authorisation of slingers/signallers
- Maintaining records of tests and inspections of lifting accessories and equipment.



Crane Supervisor (CPCS Card)

- The crane supervisor will direct and supervise lifting operations on a day to day basis to ensure compliance with the agreed and planned methods and correct practice.



Crane Co-ordinator

The Crane Co-ordinator will plan the sequence of operations of cranes where there is more than one crane to ensure components and cranes will not collide.



Crane Driver/Operator (CPCS Card)

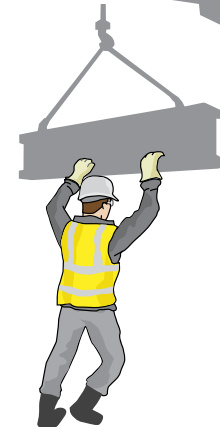
This is the person who will operate the crane to position loads or to rig the crane.



Slinger/Signaller (CPCS Card)

The person responsible for:

- Attaching and detaching the load to and from the crane
- The use of correct lifting accessories
- Initiating and directing the safe movement of the crane and load.



Planning all Lifts

Lifting operations must be planned to ensure that lifts are carried out safely and efficiently. The following points must always be considered:

- Where loads are to be picked up
- Where loads are to be placed
- What areas are to be passed over
- Proximity of the public
- Any obstructions in the way
- How the load is to be slung
- How slings are to be removed and access to them
- How the crane driver will be directed
- The weight of the load
- The radius of the lift
- Any loads from a crane or outriggers and the capacity of the ground or slab to support them
- Weather conditions and light.

For all cranes the Laing O'Rourke "Lifting Operations Assessment Form" (LOAF) must be completed.

The Project Health and Safety Plan will record the overall project specific arrangements for the control of lifting operations.

The Project Lifting Plan will detail the specific arrangements for lifting.

The Schedule of Common Lifts will define and describe the 'common lifts' on the project. Depending on the nature and complexity of the lift these could be categorised as:

- Basic
- Standard
- Complex.

Basic lifts involve:

- Loads of established weight where there are no hazards or obstructions within the area of operation. Typical examples are pallets of bricks or blocks, bundles of rebar, scaffold tubes.

Standard lifts involve:

- The lifting of general, frequently handled items of established weight, with no special lifting accessories being required. This booklet describes the slinging of this type of load and the methods shown are to be used, unless stated otherwise by the appointed person.

Complex lifts may include:

- Large pre-cast units, plant such as air handling units, generators etc.

Complex lifts may require:

- Special lifting accessories such as spreader beams to ensure that the load is lifted safely and without damage
- Special connectors to connect to special built in lifting points.

Complex lifts may also involve:

- Turning loads over or standing them upright
- Using more than one crane to lift a load (tandem lifts).

Therefore, complex lift operations will require:

- Consultation with the manufacturer, supplier or designer regarding the correct way of slinging complex loads
- Careful planning
- The production of a specific method statement.

Note: Where businesses within Laing O'Rourke (i.e. Expanded, Select, Malling) are contractors working for Principal Contractors other than Laing O'Rourke, other procedures may apply. These will identify which lifting operations will require specific method statements.

Always ✓

- Ensure that only authorised slingers / signallers attach or detach loads or signal the crane operator.
- Discuss operations with the crane operator.
- Ensure capacity of crane is sufficient to land load before lifting.
- Include the weight of the slings etc in the load on the lifting hook.
- Seek expert advice when using eyebolts, plate clamps, bull dog grips, chain blocks etc.
- Obtain confirmation that pre-fabricated rebar assemblies such as pad foundations and beams have been fabricated to allow safe lifting.
- Ensure that scaffold towers you are asked to move are designed to be lifted safely.

Never ✗

- Wrap hand/tag lines around hand or body.
- Use tie wires or banding to lift loads.
- Leave a suspended load unattended.
- Pass loads over the public.
- Use lifting accessories for towing or pulling.
- Ride or climb on machines or suspended loads.
- Lift near power lines.
- Stand or walk beneath a load.
- Connect two or more independently slung loads at different levels on the same lift (sometimes known as chandelier lifts).



Chain Sling

Note that the allowable load is reduced when not using all legs. For further information refer to pages 16 to 19.

Chain Slings

Chains are generally the most versatile type of sling, as well as being the most robust. General purpose slings usually have one, two, three or four legs.

Shortening clutches

Shortening clutches enable a multi legged chain sling to have different length legs to adjust to the balance or required lifting angle of the load.

Clutches must be correctly fitted to avoid failure or shortening of the chain life.

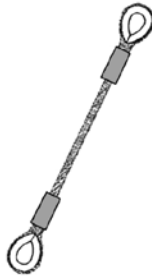


Shortening Clutch

Wire Rope Slings

Wire rope slings are normally used for specific items as they are cheaper than chain slings and can be made to exact lengths for loads requiring odd leg lengths.

They cannot be bent round sharp corners however and should be used primarily where shackles are used to attach the sling to the load.



Wire Rope Sling

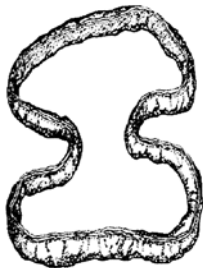
Round and Webbing Slings

Round slings and Webbing slings are used for easily damaged loads, and for their lightness and ease of handling when long lengths are required.

However, they are susceptible to damage and must be protected from sharp edges and from sliding along the load if used at an angle.

Refer to manufacturers' literature for colour coding and further information.

Slings must be visually checked before use and immediately removed and put beyond use if damaged.



Round Sling



Webbing Sling

End Fittings

The end fittings on chain slings (and occasionally rope slings) will generally be either sling hooks fitted with safety catches or C hooks.

These hooks are designed to minimise the risk of the load slipping out of the hook. In addition, the C hook is designed not to catch on obstructions and is more robust as it does not have an easily damaged safety catch.

Special purpose fittings are available for lifting drums, pipes, packing cases etc.



RIGHT

Sling Hook with Safety Catch



WRONG – Do not use

No Safety Catch



RIGHT

C Hook

Note: Primary hooks and single leg chains must be fitted with safety catches.

Select Plant Lifting Accessory Tagging System

Every Laing O'Rourke lifting accessory has its examination status and next inspection date indicated on a yellow tag.

Thorough Examination

Six monthly thorough examinations by a competent person are required for lifting accessories such as slings, rings, links, hooks, shackles, swivels, eye bolts and spreader beams.

Additional information is provided in the Select publication 'The Safe Operation of Cranes, App. 7 – Lifting Accessories Procedures'.

Choice of sling

The construction, length and end fittings will depend on:

- The load being lifted
- The weight of the load
- The size of the load, as larger loads will require longer slings
- Longer slender loads would generally be slung at the 1/3rd points of the load with appropriate leg lengths.
- The shape and orientation of the load
- Whether or not sling attachment points have been provided
- Whether the load could be easily damaged
- Whether the load is a single item or a bundle of loose items
- Whether the load is palletised
- Double wrapping of loose loads will use a long length of sling.

Sling Selection for Basic or Standard lifts - slinger/signallers should choose the appropriate type of sling or chain according to this booklet and the project specific 'Schedule of Common Lifts'.

Sling Selection for Complex / Special lifts – the slinger/signaller will use the equipment specified in the method statement.

Shackles must always be used on lifting hooks if more than one sling is to be connected to it and if the hook would be overcrowded. The angle between sling legs on a hook must never exceed 90°.



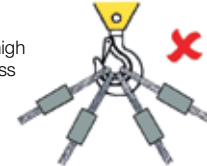
RIGHT
Maximum angle 120°



RIGHT
If angle less than 90°



WRONG
Angle too high (must be less than 90°)



WRONG
Overcrowded



Protecting the Load or Sling

You may need to protect the sling and/or load from damage.

If the sling passes round any sharp corners, then suitable packing should be used to protect the sling and/or the corners of the load.

Note the use of timber packing near the corners of the load and slip tubes over the beam flanges in the illustration.

Two-Legged Slings

For two-legged slings, the angle between the legs of the sling will determine its safe working load (SWL).



A two-legged sling will be marked with its SWL at 90°, which will apply for all angles from 0° to 90°.

Note also that it could possibly be marked with its SWL at 120°, in which case the SWL will apply for angles between 90° and 120°.

It is generally good practice to keep the angle to between 60° and 90°. With the slings at smaller angles the load is more likely to tip up, and may slide out of the slings where basket or choke hitch are used.

Do not use any two-legged sling not marked with the SWL for the angle being used, or for angles greater than 120°.

Note that the SWL quoted for a two-legged sling assumes both legs are equally loaded, and that each leg is straight.

Two Legged Slings Used as Single Length Slings

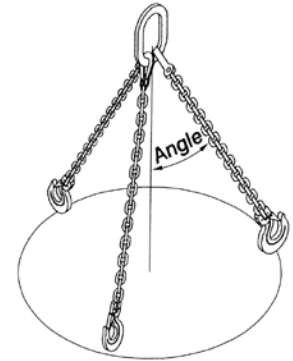
Beware that if used as a single-legged sling, the SWL will be half of the SWL marked on the sling.

For further SWL factors, see page 19.

Note: Hook back unused leg to the link or shackle at the top of the sling.

Three-Legged Slings

For three-legged slings, the maximum angle between the legs of the sling and the vertical will determine its safe working load (SWL).



A three-legged sling will be marked with its SWL at 45°, which will apply for all angles from 0° to 45°.

Note that the SWL for a three-legged sling assumes that all legs are equally loaded, and that each leg is at the same angle.

Do not use any three-legged sling not marked with the SWL for the angle being used, or for angles greater than 45°.

It is generally good practice to keep the angle to between 30° and 45°. With the slings at smaller angles the load is more likely to tip up.

If used with fewer than three legs, then multiply the SWL by the factor shown in the table below. For example, using two legs, take the SWL as being 2/3 of the SWL marked on the sling.

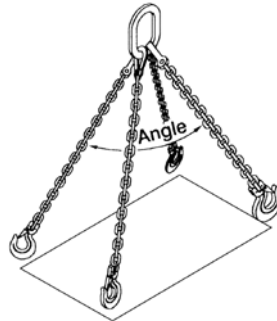
| Legs | SWL x |
|------|-------|
| 2 | 2/3 |
| 1 | 1/3 |

For further SWL factors see page 19.

Note: Hook back unused leg to the link or shackle at the top of the sling.

Four-Legged Slings

For four-legged slings, the maximum angle between opposite legs of the sling will determine its safe working load (SWL).



A four-legged sling will be marked with its SWL at 90°, which will apply for all angles from 0° to 90°.

(Note also that it could possibly be marked with its SWL at 120°, in which case the SWL will apply for angles between 90° and 120°).

Do not use any four-legged sling not marked with the SWL for the angle being used, or for angles greater than 120°.

It is generally good practice to keep the angle to between 60° and 90°. With the slings at smaller angles the load is more likely to tip up.

Note that the SWL for a four-legged sling assumes that all legs are equally loaded, and that each leg is straight.

If used with fewer than four legs, then multiply the SWL by the factor shown in the table. For example, using three legs, take the SWL as being 3/4 of the SWL marked on the sling.

| Legs | SWL x |
|------|-------|
| 3 | 3/4 |
| 2 | 1/2 |
| 1 | 1/4 |

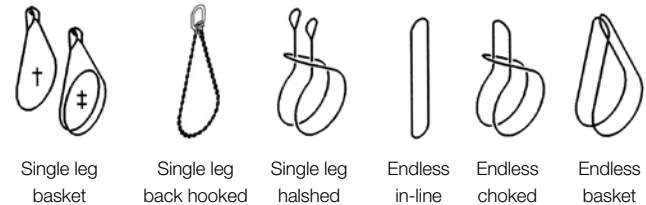
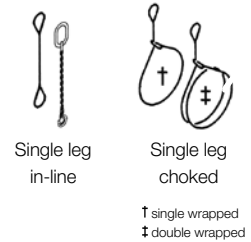
For further SWL factors, see page 19.

Note: Hook back unused legs to the link or shackle at the top of the sling.

Methods of Slings

SWL factors also apply according to the type of sling and how it is used.

Examples for various types of single-legged slings are shown here. The same principles also apply to multi-legged slings.



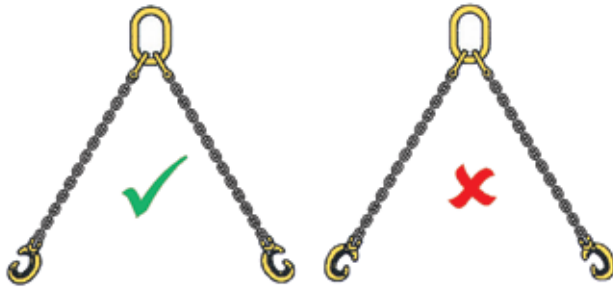
Safe Working Load (SWL) Factors

| | | METHOD OF USE | | | | | | | |
|----------------|------------|--------------------|-------------------|---------------------------|------------------------|--------------------|-----------------|----------------|------------------------|
| | | Single leg in-line | Single leg choked | Single leg basket 0 – 90° | Single leg back hooked | Single leg halshed | Endless in-line | Endless choked | Endless basket 0 – 90° |
| SLING MATERIAL | Chain | 1 | 0.8 | 1.4 | 1 | 1.5 | N/A | 1 | N/A |
| | Wire Rope | 1 | 1 | 1.4 | 1 | 2 | 1 | 1 | 1.4 |
| | Webbing | 1 | 0.8 | 1.4 | N/A | N/A | 1 | 0.8 | 1.4 |
| | Fibre Rope | 1 | 0.8 | 1.4 | 1 | N/A | 1 | 0.8 | 1.4 |
| | Round | N/A | N/A | N/A | N/A | N/A | 1 | 0.8 | 1.4 |

N/A = not applicable – do not use

Sling Hooks

When slinging, hooks must always face outwards from the crane hook.



Choke Hitch

Do not 'batter down' slings to increase the grip, allow the angle to form naturally.

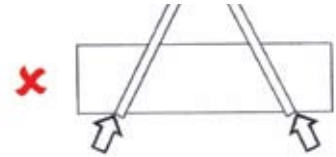
Maximum permitted angle is 120°.



Choke angle

Webbing Slings

Wide webbing slings cannot be used at any sideways angle where the sling would not be equally loaded across its width. This will usually apply where the sides of the load are flat. When lifting round pipes, for example, there would not be this problem.



Wrong
Wide webbing sling loaded on edge only

Hand/Tag Lines

In certain circumstances, hand/tag lines should be attached to the load. These will be used to prevent the load swinging or spinning and to help to position it.

Arrange the tag line length and position to avoid the line snagging when moving the load.



Using a hand/tag line

Vacuum Lifting Attachments

- Vacuum attachments are frequently used by specialist contractors
- Vacuum lifting attachments must be approved and certificated
- Dual circuit vacuum lifters are highly recommended with each circuit capable of carrying the full rated load
- Secondary Safety Device (SSDs) such as straps are essential with single circuit lifters but are also strongly advised on other lifts
- Operators must be competent and formally trained in their use.

Each project should have a 'Schedule of Common Lifts' document.

This schedule will detail the types and weights of the various loads it is anticipated will be encountered on the project, describe the lifting accessories that will be required and detail any particular limitations or controls on the lift.

The appointed person (lifting) will prepare this schedule before work commences and will regularly review and maintain it.

The schedule will also be used to brief the crane team on the correct practices and techniques for most of the common lifts that will be undertaken.

See example of typical schedule below


11b. Wall Cage

Method:

- x ton 2 leg chains onto ym long spreader beam with drop chains at 1m cc attached to T40 ? lifting bar.
- Lifting beams must be provided with feet to avoid stressing the drop eyes when stored on the ground.

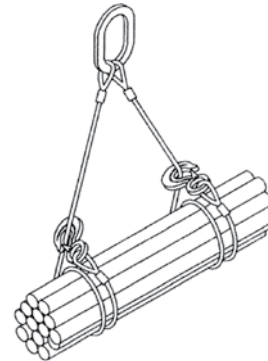
Precautions:

- 'Approval for lift' must be in place before lifting reinforcement.
- Refer to Project Task Sheet for fixing and lifting requirements.



Concrete and Muck Skips

Concrete and muck skips should not be lifted directly by the crane hook. A single-leg sling (commonly known as a drop or skip chain) should be used, as moving a heavy crane hook precisely into place can be difficult.



Scaffold Tubes

When lifting bundles of tubes, bars or other loose materials, whether banded or not, slings should be double wrapped.

The illustration shows slings in double wrap choke hitch. The SWL factor is 0.8 for chain slings used in this way.

Palletised Loads

An example of a frequently lifted load that requires special equipment is a pallet of bricks or blocks requiring crane forks with safety netting.

Note that the mesh size should be smaller than the smallest item to be lifted.

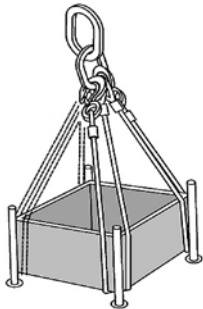
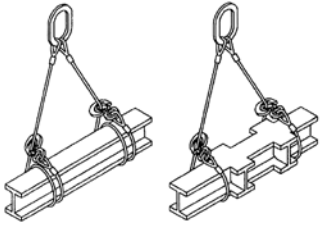


Steel Sections

Beams

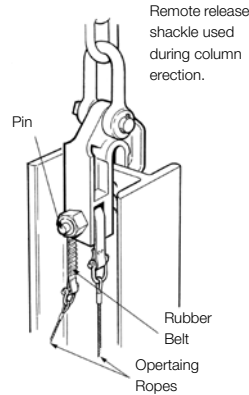
Use double wrapped slings when sling legs could slide together.

The SWL factor is 0.8 for chain slings used in this way.



Columns

Use purpose designed lifting point or bracket.



Stillages

Wrap slings round corner posts. Do not attempt to lift double stacked stillages. Beware of overloading scaffold boards if landing loaded stillages on a scaffold.

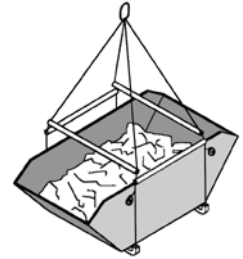
Rubbish Skips

Typical arrangement of special sling, with steel box sections under skip and steel tube spreaders to keep sling legs vertical.

Keyhole plates on skip lugs are for location purposes, not for lifting.

Skips with specially adapted lifting points are acceptable, providing there has been a thorough examination every 6 months.

Beware of rusted floors; they can fall out when the skip is lifted.



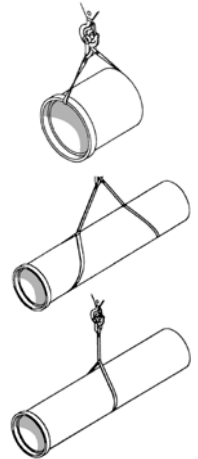
Pipes

For short pipes, pass sling through pipe. Use a 1.4 SWL factor for webbing slings used in this way.

For long pipes, use two slings in choke hitch, double wrapping if slings are likely to slide together. Provided that no angle exceeds 90°, then use the SWL for one sling for the SWL of this arrangement. Note that a shackle is required to connect the slings at the top.

Where a pipe is being placed into an adjacent trench, a single webbing sling can be used, which will make it easier to engage the spigot into the socket of the next pipe by allowing the pipe to be suitably angled.

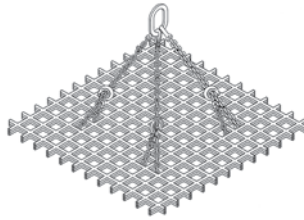
SWL factor for these webbing slings is 0.8.



Mesh and Rebar

Mesh

Pass each hook of a four-legged chain through the mesh and return to form a choke hitch. Lifting points must be positioned evenly to prevent undue bending on the mesh bundle. Tighten bite as necessary.



Prefabricated Rebar Assemblies

These assemblies rely on tying wire to hold them together.

Attachment points MUST be formally agreed with your appointed person and temporary works co-ordinator and noted in the method statement or 'Schedule of Common Lifts' document.



ISO Containers and Portable Offices

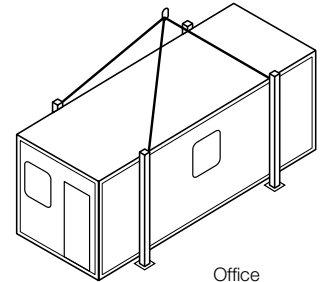
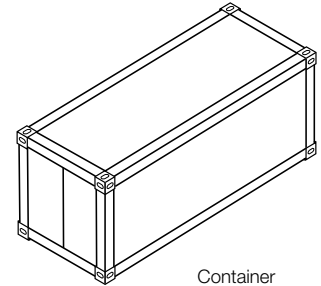
Special lifting gear must be used to lift containers unless otherwise assessed and agreed. This gear will be fitted with ISO Twistlocks which are designed to fit the sockets in the corners of the container.

Never use any type of hook, shackle or other device fitted directly into these sockets.

Always refer to the portable office manufacturer's literature for maximum weight (office and contents) and for minimum sling leg length.

Before lifting:

- Empty or assess weight of contents
- Secure loose items that may slide during lifting
- Secure jack legs to eliminate risk of fall
- Check the condition of floor of containers
- Access to attach and detach slings.



Before Lifting

Only authorised slingers/signallers are to sling loads.

After slinging, but before lifting, the following must be considered:

- Is there an exclusion zone required under the lift radius?
- Are the slings undamaged and properly attached to the load?
- Is the crane hoist rope vertical?
- Is the load free to be lifted i.e. not fixed to anything else?
- Are the legs of a multi legged sling equally loaded?
- Are the slings free of knots, tangles, etc?
- Are spare sling legs hooked up to the master link on the lifting hook?
- Is the safety catch on the lifting hook closed?
- Are there any obstructions above the load preventing a straight lift?
- Is the master link on the lifting hook free and in the centre of the bowl of the hook?
- Are all personnel clear of the load?
- Is there a slinger/signaller in position to receive the load?
- Is the landing site prepared to take the load?
- Are the weather conditions acceptable?
- If required, are hand/tag lines attached to the load?
- Are there sufficient slingers/signallers in position to keep an eye on the load at all times during the lift and to direct the crane operator?

If the above are addressed, then, and only then, may the load be lifted.

Taking the Weight

As the load comes onto the crane, the jib may deflect (especially telescopic jibs). The crane operator will correct this so the hoist rope remains vertical.

The slinger/signaller should also be aware that the load may swing.

Lifting the Load

Now slowly lift the load a short distance above the ground.

Then check that:

- The load is balanced and stable
- The legs of the sling are at the correct angles
- Any packing pieces are in place and sound
- The load itself is not over stressed, especially when lifting packing cases, timber, large pre-cast or pre-stressed concrete units etc, which could fail under the loads applied due to lifting.

Be aware that relatively large, light loads can be blown about by the wind.

Warning! For a 6m² shutter, with the wind blowing at a speed of 31mph (14 m/s), the sideways force on the ply is equal to the weight of an 11 stone (73 kg) man! An 8' x 4' sheet of ply would still be half this.

During the Lift

The load can now be lifted and moved to its landing area.

While in the air, avoid:

- Where possible, passing over personnel working on the site
- Lifting over or near members of the public
- Power lines
- Projecting scaffolding
- Air space violation.

Landing the Load

The load should be landed gently to ensure it is not damaged and that the crane does not receive any shock loading.

Before landing the load, check that:

The landing area will take the weight of the load

- There is sufficient space for the load
- There are strips of timber or similar on which to land the load such that the slings can be easily removed by hand.

The slinger / signaller must ensure they are in a place of safety when receiving the load, ensuring they cannot be crushed between the load and a fixed object or pushed over an open edge.

A safe means of access should be used to reach the slings on tall items.

After the Lift

Only trained and authorised slingers / signallers are permitted to detach slings from the load.

Take care with bundles of tubes and similar items as they can collapse when landed. Pipes can roll, so make sure suitable chocks are used to prevent this from happening.

The legs of the sling should now be hooked back onto the master link, shackle etc on the crane hook, or removed and stored properly.

Positioning of mobile cranes

- The siting and positioning of mobile cranes must be carefully considered to identify risk from poor ground, local services, proximity of other hazards and access
- In some circumstances, special permits or consents may be required.

Outrigger, crawler and axle loads

- The temporary works co-ordinator must be consulted on the bearing capacity of the ground or floor slabs on which cranes may be positioned
- The temporary works co-ordinator must be consulted on or check the design of spreader beams or mats required under outriggers, axles or crane tracks.

Lifting with excavators

- Excavators lifting any suspended loads are cranes, so relevant crane assessments and documentation are required, including Lifting Operations Assessment Forms (LOAFs)
- Loads may only be suspended from approved lifting points, not the bucket
- Excavators are restricted to very basic lifting at or near ground level and should not 'travel' with a load, except over very short distances
- Only CPCS carded slinger signallers can attach or detach suspended loads unless the Health Safety & Environmental Director has previously approved in writing an alternative qualification for special circumstances.

Lorry loaders

- Lorry loader operators must hold a CPCS or ALLMI card
- Supplier's deliveries do not require a LOAF where ground conditions are good and there are no special hazards
- General site lifting duties using lorry loaders are subject to the same procedures as for conventional crane lifts and include planning, testing, supervising and executing the lift
- CPCS certificated slinger signallers must attach or detach loads (where this is not carried out by the trained delivery driver).

Lifting with forklifts & telescopic handlers

- Forklifts lifting suspended loads are defined as cranes so relevant crane assessments and documentation are required, including LOAFs
- Forklift operators require a CPCS Operators card and use CPCS Slinger Signallers to attach/detach loads
- Special certificated lifting adaptors must be used to centre the load
- Forklifts and telehandlers should avoid travelling with suspended loads due to the high risk of dynamic instability. The use of a crane is usually a better option.



Lifting accessories include slings, shackles, eye bolts, spreader beams etc.

All types of lifting accessories are highly stressed in service and their condition must be monitored to ensure that they will not fail when loaded.

Thorough examinations of all lifting accessories must be undertaken by a competent person every six months and a record issued. This will be arranged by the appointed person or crane supervisor.

Visual inspections must be carried out by the slinger/signaller at least daily. If any damage is seen, the item must not be used until examined by a competent person.

Webbing slings, or any sling made from synthetic fibres, should be examined before and after every lift as they are extremely vulnerable to being cut by sharp edges. If there is any sign of a cut or fraying in the fabric, they should be taken out of use and examined by a competent person.

Slings should be stored in dry conditions, preferably hanging on a rack where they will not get tangled, wet or contaminated by dirt, grease, cement, concrete etc. They must not be left hanging on the lifting hook where they could pose a hazard if blown about by the wind.

Never allow any item of lifting accessories to be used for towing or pulling.

Generally, signals will be given to the crane operator either by radio or by hand signals. This will be decided by the appointed person and detailed in the project lifting plan.

Radio Signals

If radios are chosen, then the following method of use must be followed:

- All instructions must be repeated continuously, for example “LOWER, LOWER, LOWER...” until the movement is complete
- If instructions stop getting through, the crane operator must immediately bring the load to a HALT to guard against failure of the radio system.



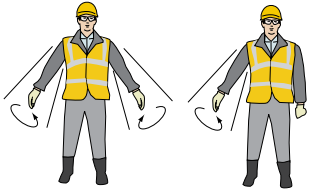
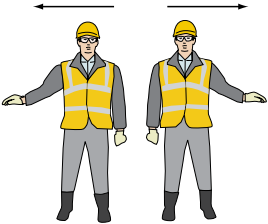
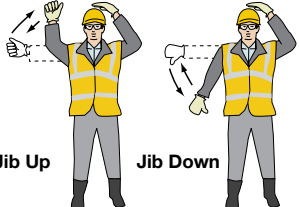
If there is more than one crane on site and more than one slinger / signaller / crane operator team using radios, then the appointed person must devise a safe system of work to ensure that there are no problems such as one crane operator following the instructions being given to another.





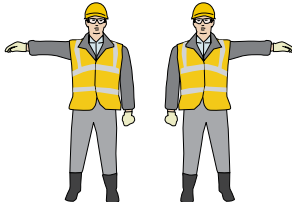
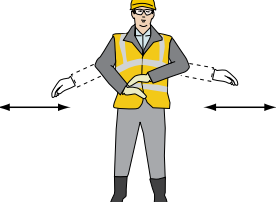
Hand Signals

If hand signals are chosen, ensure that:

- There is always a line of sight between signaller and crane operator
- If the line of sight is broken, there are intermediate signallers allocated
- There is no confusion as to which slinger / signaller is controlling the crane – there may be more than one signaller in the vicinity of the lift
- The signaller faces the crane operator whenever signalling
- Visiting crane operators understand the standard hand signals overleaf, taken from BS7121: part 1.

Crane operators must be instructed to respond only to authorised slingers/ signallers wearing items of high visibility clothing which will uniquely identify them to the crane operator. This clothing, which will generally be orange high visibility helmets and jackets or vests, will be approved by the appointed person. The hand signals from BS 7121: Part 1 illustrated on next page are to be used as the standard hand signals to direct the crane operator.

| | |
|---|--|
|  | |
| <p>Operations Start Stop Emergency Stop</p> | |
|  |  |
| <p>Clench and unclench fingers to signal "inch the load"</p> <p>Hoist</p> | <p>Lower Slowly Lower</p> |
|  |  |
| <p>Slew in Direction Indicated</p> | <p>Jib Up Jib Down</p> <p>Signal with one hand, other hand on head Derricking or Luffing Jib</p> |

| | |
|---|---|
|  |  |
| <p>Extend Jib or Trolley Out</p> | <p>Retract Jib or Trolley In</p> |
| <p>Signal with one hand, other hand on head Telescopic Jib or Horizontal Jib</p> | |
|  |  |
| <p>Travel to me</p> | <p>Travel from me</p> |
|  |  |
| <p>Travel in Direction Indicated</p> | <p>Operations Cease</p> |

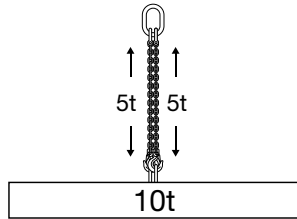
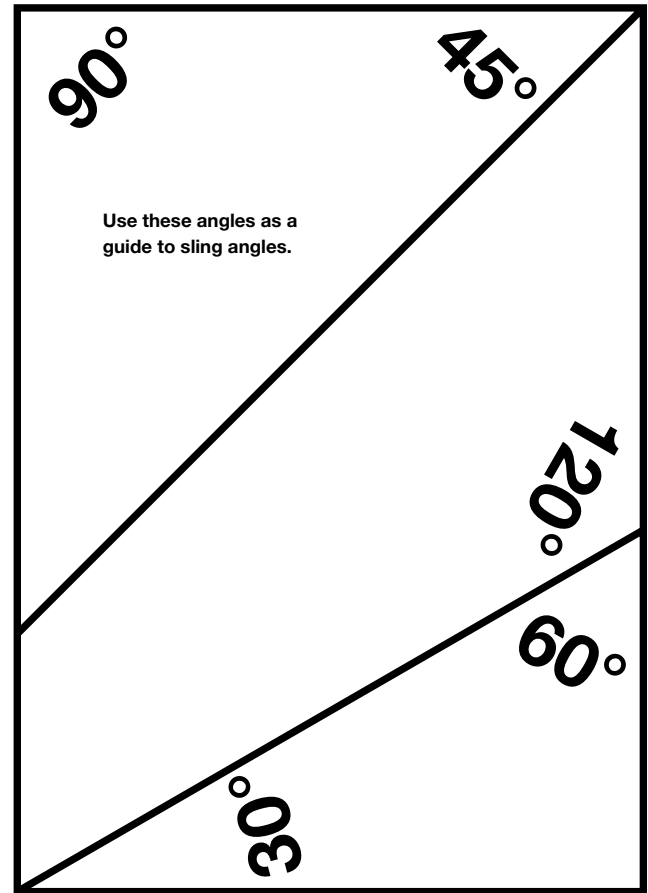
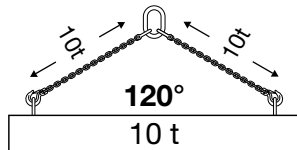
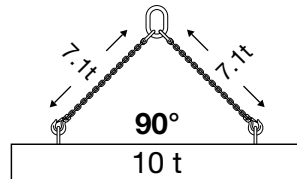
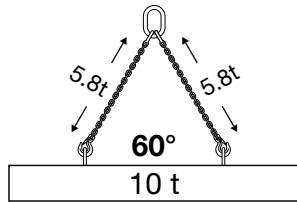
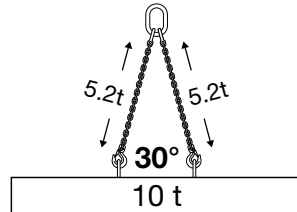


Illustration showing how the load in each leg of a sling increases as the angle increases.



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