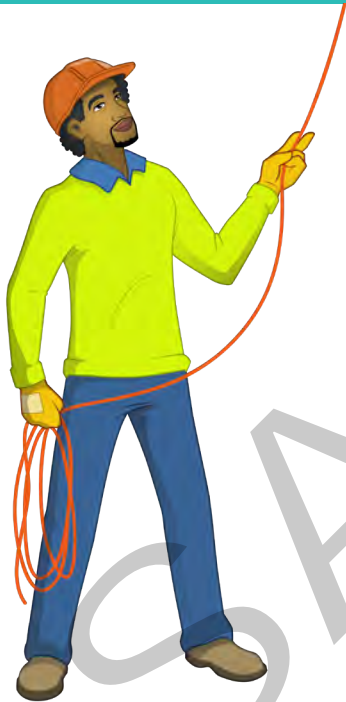


DOGGING INFORMATION BOOK



Training support material for:

CPCCLDG3001 Licence to perform dogging

Produced by:

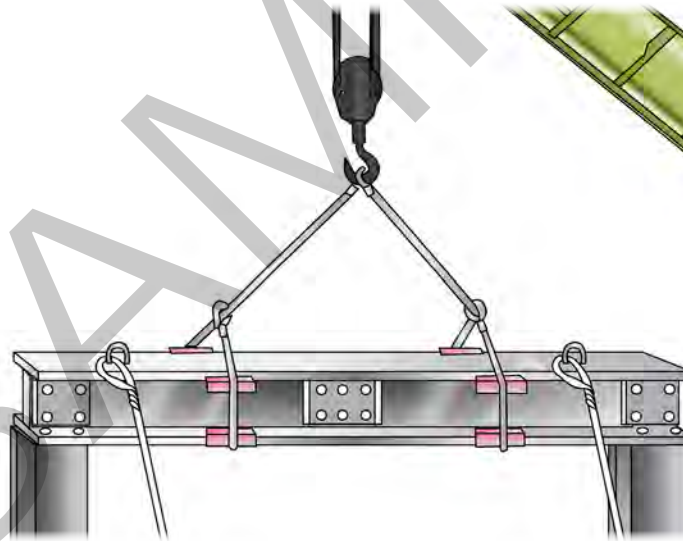


**EASY
GUIDES**
Australia Pty Ltd

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INTRODUCTION TO DOGGING



What is dogging?

A dogman is responsible for:

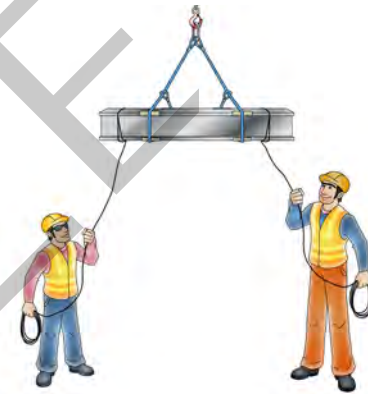
- Selecting the correct lifting equipment for the job and inspecting it for damage and defects
- Working out the weight of loads
- Determining and using the correct technique to sling loads
- Communicating with the crane operator about the crane and the load
- Guiding the crane operator in the lifting, movement and placement (landing) of loads.

When selecting the correct slings and slinging technique, inspecting slings and directing the crane operator in the load movement (particularly when it is out of view to them) you **must**:

- **hold a dogging licence**

or

- **be enrolled in a dogging course with an RTO and under the supervision of a licenced dogman.**



PLAN TASK

Element 1



Apart from the hazards on site, there is other important information that you will need to know about and consider before starting the job. These things include:

The safest and most appropriate communication method



Where is the task (job) located and can you get in and out easily



What safe work procedures do you need to follow? Are licences or permits needed to do the work?



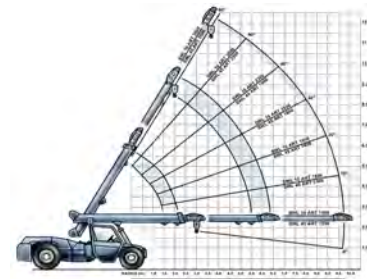
Exactly what is the job that needs to be done. For example what is the condition of the load, how is it configured?



What equipment will be needed to do the job? Is the equipment available?



What type of crane is needed for the job? What capacity and capabilities does it need to have?



Identifying workplace hazards

Workplace hazards need to be notified **before** you start work.

Take a good look at your workplace and decide if anything could possibly cause injury to you or anyone else in the area.

Zones/areas to check for hazards:



Above eye level

You should check above eye level for:

- Powerlines
- Buildings
- Trees
- Clearance heights
- Other obstructions
- Other overhead services
- Bridges.

Ground to eye level

You should check around eye height for:

- Other equipment
- Machinery
- People
- Pedestrians
- Things in the path of travel
- Other obstructions
- Facilities.

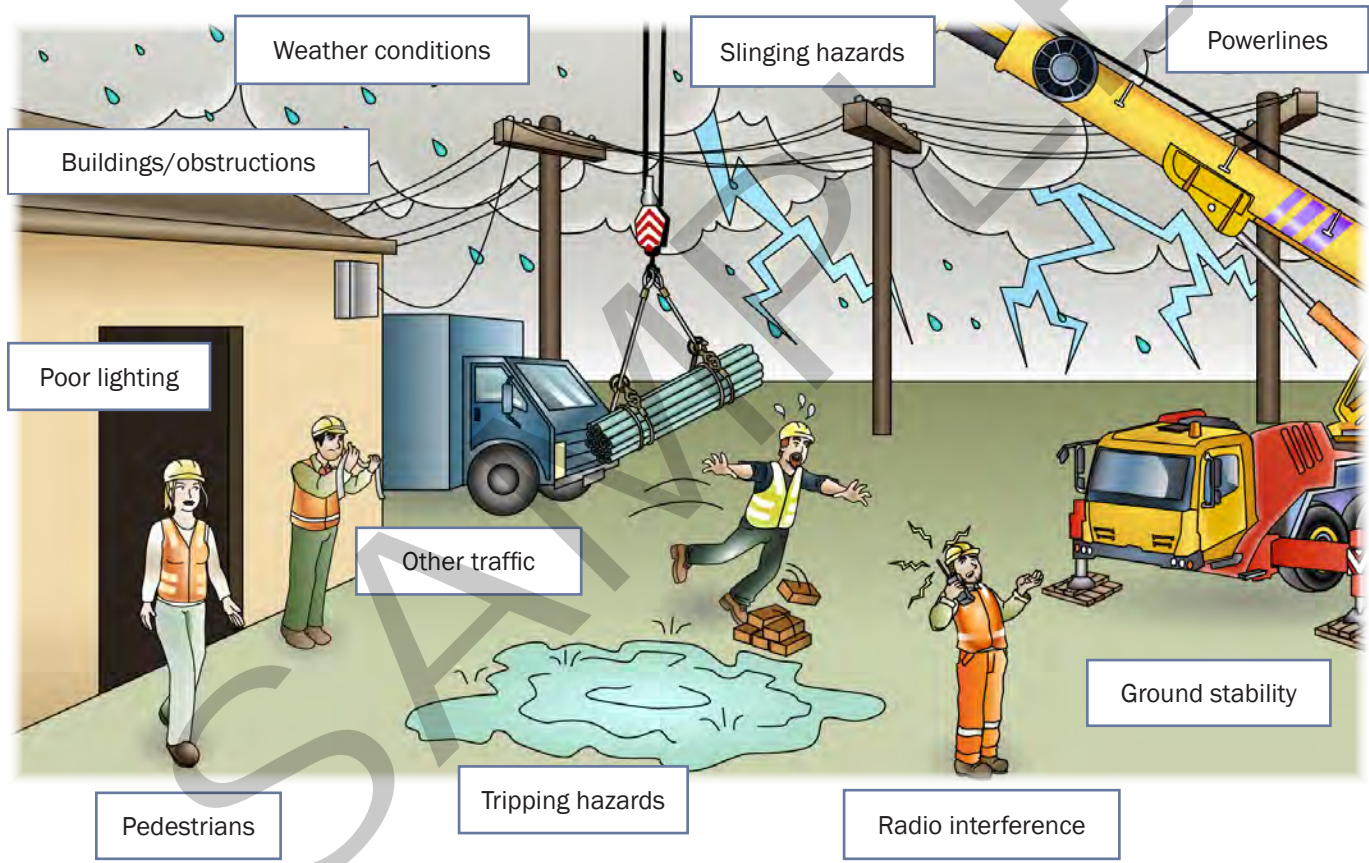
Ground level (and below)

You should check the ground to see if:

- There is debris or rubbish in the way
- The surface is strong enough to support the weight of any equipment or materials
- If there are any open trenches or recently filled trenches
- Underground services.

Common workplace hazards

Some common workplace hazards to look for are:



Assess the risk (risk assessment) – (continued)

Frequency

When assessing risk the frequency of the task also needs to be considered.

For example:

If the exposure to the risk is constant (all the time) a control measure must be permanently in place.

A control measure should be put in place and remain there for the duration of the exposure if the task is done:

- Daily
- Frequently
- Weekly
- Infrequently
- Occasionally.

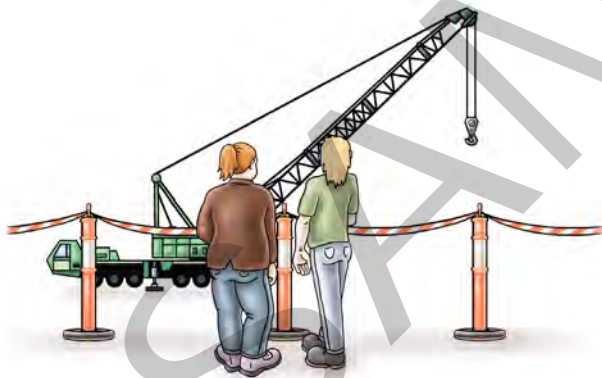


Hierarchy of Hazard Control details (continued)

3. Isolation

Lower the risk of damage or harm by **restricting or preventing access** to the hazard.

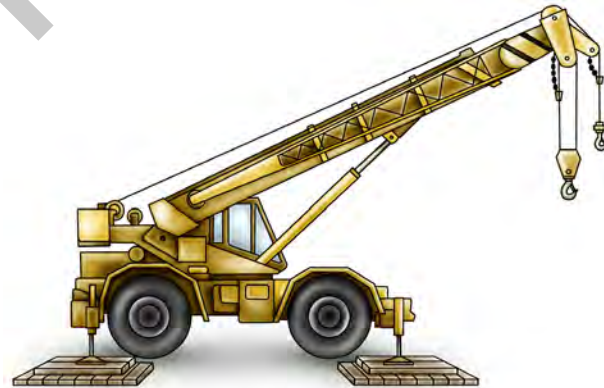
For example, putting up barriers or fencing, restricting access to the area for an amount of time or putting a distance restriction in place.



4. Engineering control measures

This is where equipment and work processes are improved through engineering solutions to reduce risk.

For example, using packing boards or steel plates to ensure there is adequate weight distribution and stability.



Wind

Wind is a common hazard when performing dogging work.

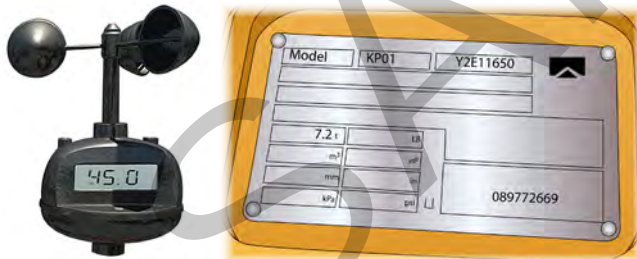
It can cause the load to move uncontrollably, make objects fall from the load or even cause the load to fall from the sling.



If you are working and the wind speed exceeds the limit of the crane or the site rules for windy conditions you should **stop** work immediately.



Check the crane data plate for information about the wind limits for the crane. Listen and look for any other warning systems the crane might have for windy conditions.



A tag line can be used to help control loads in windy conditions.

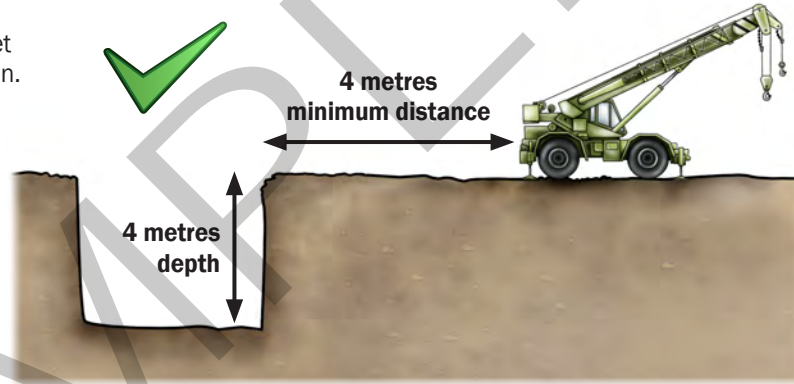


Excavation

If a crane is being set up near an excavation or trench then the general principle of a 1:1 ratio between the depth of the excavation and the minimum distance for the nearest load bearing part of the crane.

For example:

For an excavation of 4 metres depth you would set up the crane at least 4 metres from the excavation.



Trenches

Barricades, guardrails or fencing should be used to prevent access to excavations and to stop people accidentally falling in.

Signs should also be put in place warning of the dangers.



Pedestrians and traffic control

When the crane is operating it is a **hazard** to pedestrians.

You need to control the hazard by **warning** and **directing** pedestrians or workmates.

Some ways to do this are:

Barricades and safety fences



A flag person to direct people



Warning signs

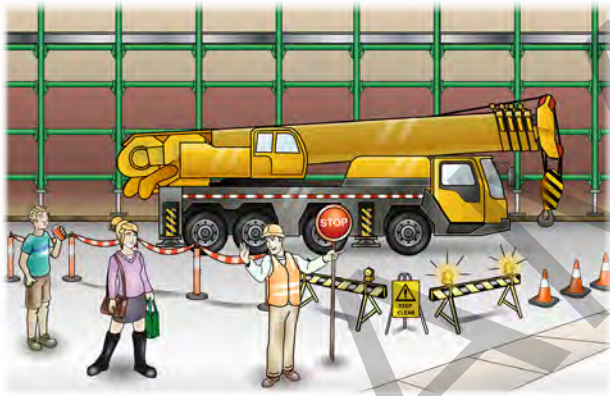


Flashing yellow hazard lights



Pedestrians and traffic control (continued)

Using a scaffold, hoarding or gantry



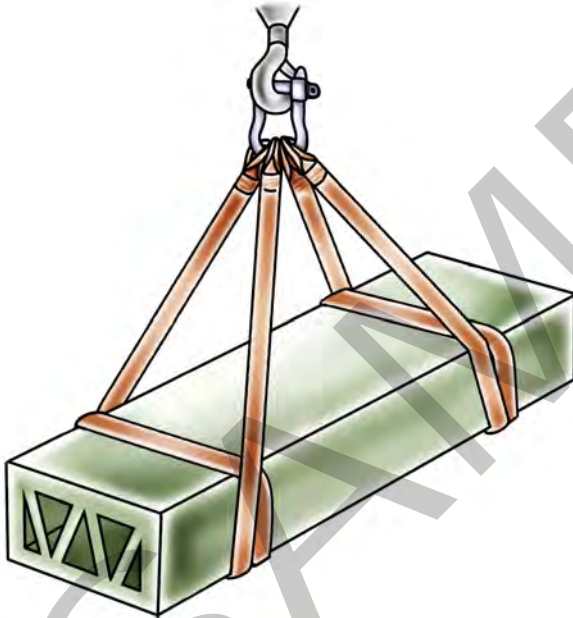
Never move a load while someone is within the operating radius of the crane as they may be hit by the boom or the load.



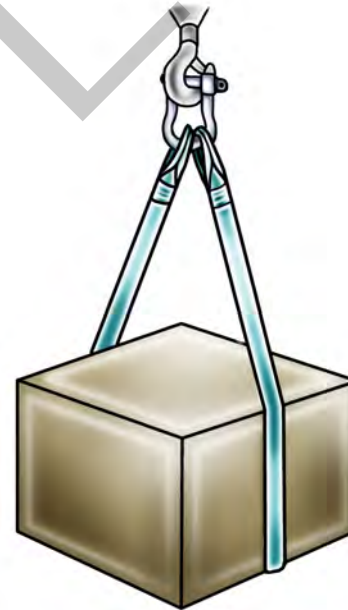
Decide on an appropriate slinging method (continued)

Basket hitch

The sling is wrapped around the load and the two ends attached vertically to a lifting/spreader beam or brought together and attached to a hook or shackle.



Double wrapped basket hitch



Single basket hitch

Chain slings

A chain sling must have a metal tag attached, stating the chain grade and chain size.

It must also show the Safe working load (SWL) when using the sling in different configurations such as a straight lift, angled lift, or hitched.

Note:

Slings with missing or unreadable load tags **should not be used**.
Tag out and remove the sling from the work area.



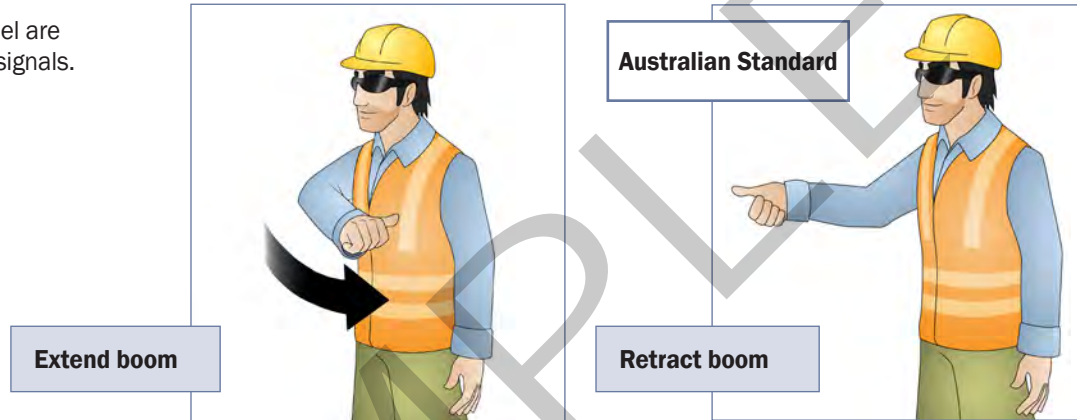
Types of chain

Non lifting chains	Description
Stud link chain	A special purpose chain with a stud across the centre of each link to prevent the chain from getting jammed when coming out of chain lockers.
Roller chain	Is a drive chain used on machines and bicycles.
Proof coil chain	Is not made to any standard and is used as load binder chain or as a hand chain on a chain block. Grade 65/70/75 chain is branded 65,70,7, HI-FRT or HiLite and is sometimes a gold colour and should not be used in any lifting operations.
Long link chain	Is used on conveyers or as ships cargo chain and is available in grades from mild steel to Grade 80 and must not be used for any lifting applications.

Select appropriate communication methods (continued)

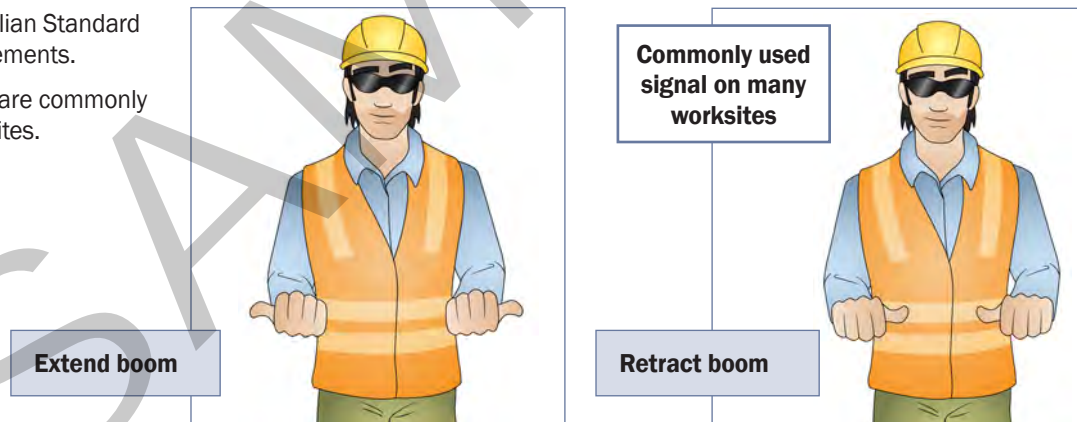
Make sure all personnel are using the **same** hand signals.

For example:



Above are the Australian Standard for these crane movements.

But the signals here are commonly used on many worksites.



Communication

When planning a job, you will need to think about how you are going to communicate with the crane operator during the lift. There are a number of ways that you can communicate directions or instructions to the driver.

Sometimes the type of communication method depends on the crane that you will be working with and the worksite.

Make sure you listen to information and ask questions if you do not understand what you have been told.



Crane operators and doggers can communicate by two way radio, whistles, horns or hooters when they are out of sight from the person dogging the load.



Doggers can use hand signals if they are in plain view of the crane operator.



SELECT AND INSPECT EQUIPMENT

Element 2



Finding the WLL of lifting gear

You can find out the WLL of lifting gear by:

- Checking the tag
- Checking colour alone is **not** enough. You **must** check the WLL tag on the sling.
- Checking to see if it is marked on the sling
- Calculating the load yourself.



A sling tag must show

- WLL
- Reeve factors
- Angle factors



If you cannot find the SWL/WLL tag, separate and report it. DO NOT USE.

Calculating the WLL of unmarked lifting gear

Flexible steel wire rope (FSWR)

The formula for calculating the WLL of FSWR is:

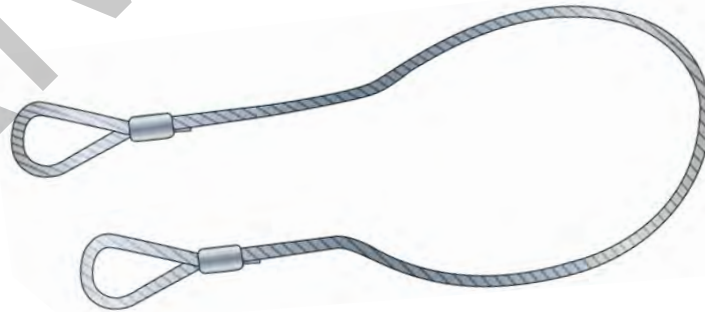
$$\text{Diameter} \times \text{Diameter} \times 8$$

$$(D^2 \times 8)$$

For example,

25 mm diameter FSWR

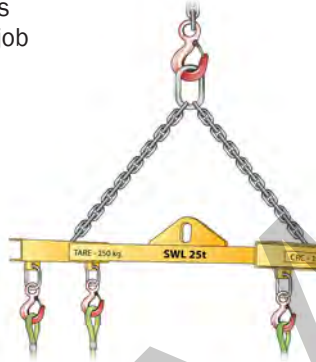
$$25 \text{ mm} = 25 \times 25 \times 8 = 5000 \text{ kg WLL}$$



Selecting lifting equipment

Depending on the type, weight and dimensions of the load, different lifting equipment may be needed to move it safely. For example, synthetic slings or FSWR for timber trusses. A pallet car for a pallet of loose objects.

Check that all the equipment is available **before** you start the job



The dogger is responsible for **inspecting** the lifting equipment



All lifting gear that you are using **under** the hook needs to be added to the weight of the load and checked against the hook and crane that will be used.



All lifting gear you are using **below** the head of the crane boom is part of load the crane has to lift.

Most cranes have multiple hook blocks; each hook block will have its own mass and safe working load.



Selecting lifting equipment (continued)

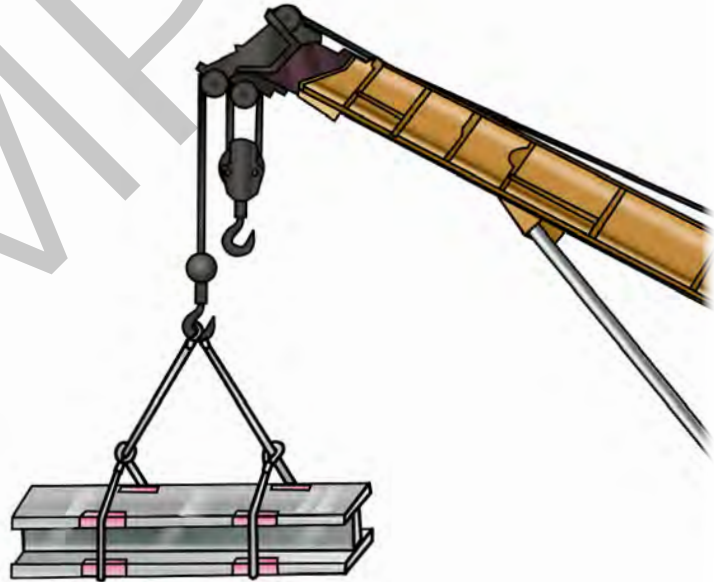
The load chart on the crane will show the mass of each hook block and the safe working load of the crane without hook blocks. The weight of all hook blocks fitted to the crane must be added to the load to be lifted.

Example:

The crane is to lift a steel beam weighing 750 kg using 2 chain slings each weighing 20 kg.

The crane has a 4 sheave hook block with a WLL of 4 tonnes weighing 120 kg and a single line hook with a WLL of 1 tonne and weighing 30 kg.

Main hook block	$1 \times 120 = 120$ kg
Single line hook	$1 \times 30 = 30$ kg
Slings	$2 \times 20 = 40$ kg
Steel beam	$= 750$ kg
Total load for the crane	$= 940$ kg

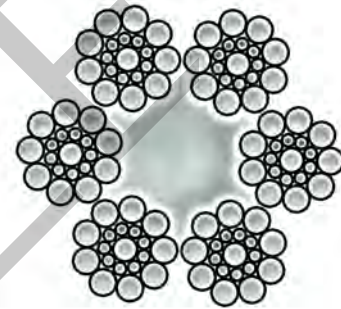


Selecting the right equipment (continued)

Flexible steel wire rope (FSWR)

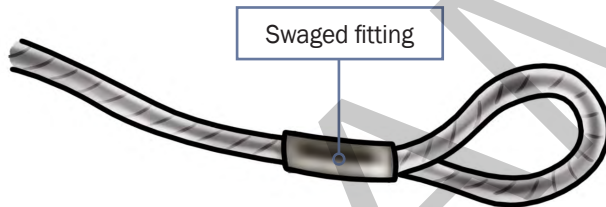
For FSWR to be used as a sling it should have a minimum construction of 6 strands with 19 wires in each strand (6×19 or 6/19).

The smallest diameter FSWR is 6 mm.



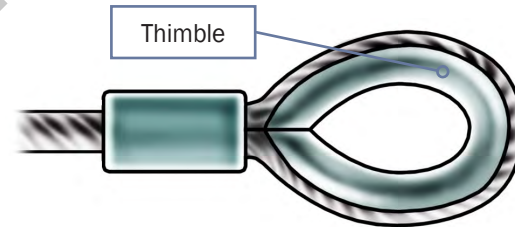
Swaged fitting

Swaged fittings are machine pressed to form a soft eye in a FSWR. A thimble can be inserted to make a hard eye in the FSWR.



Thimble

A thimble is a fitting used in the formed eye of a rope and is designed to protect the eye of the sling from chafing and distortion.










Remember to check the lay if you are using FSWR to lift a load as the lay will affect the rope's spin.

**Lang's lay is used where both ends are fixed to prevent rotation such as luffing.
It must not be used for lifting.**

Lifting equipment

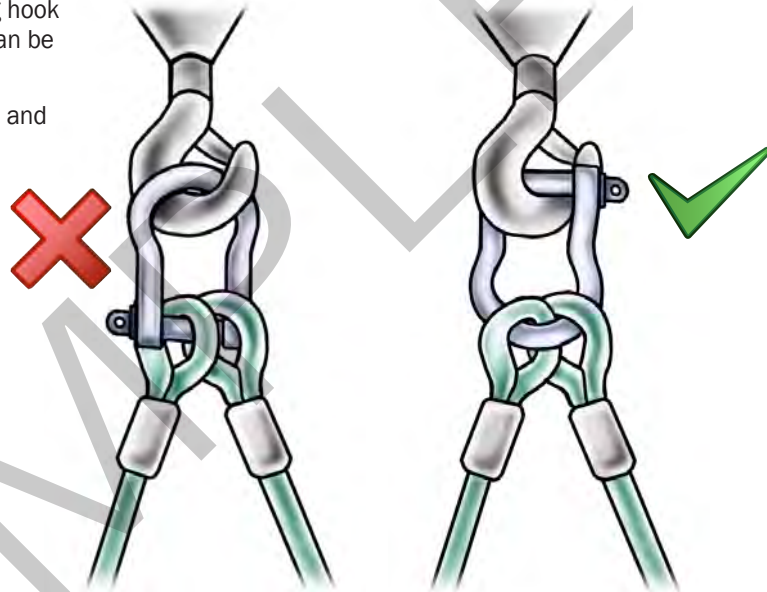
Different loads will need different lifting equipment to lift it safely. Types of lifting equipment are as follows:

<p>Fibre or synthetic rope</p> 	<p>Wire rope</p> 	
<p>Chain</p> 	<p>Synthetic webbing sling</p> 	
<p>Shackle</p> 	<p>Eyebolt</p> 	<p>Lifting ring</p> 

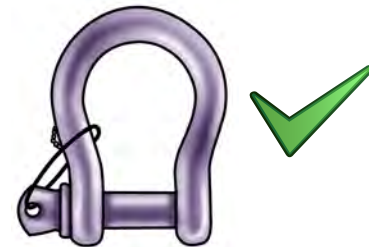
Shackles (continued)

Where multiple sling eyes are connected to a lifting hook use a large bow shackle so that all the sling eyes can be safely accommodated.

The pin of the shackle must rest on the crane hook and the sling eyes in the bow section.



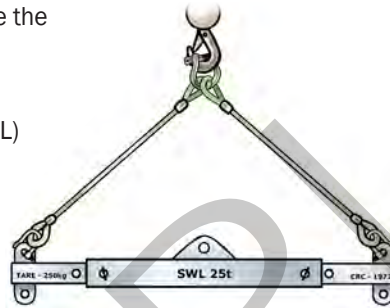
When using a screw shackle where the pin can roll and unscrew whilst supporting a load, the shackle **must** be moused through the hole in the pin and back around the clevis; this stops the pin from **unscrewing**.



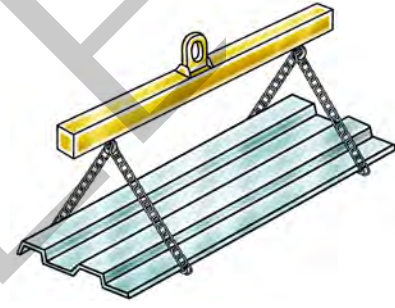
Lifting beams and spreader bars

Lifting beams and spreader bars are required to have the following information displayed on the beam:

- Tare weight of the beam
- Safe working load (SWL) or Working load limit (WLL)
- Compliance plate with serial number.



Spreader bar



Lifting beam

Personnel box

Make sure you **do not exceed** the safe working load when using a personnel box.

You need to include the weight of all tools, materials and equipment as well as the weight of the workers when checking the SWL.



+



+



Less than

= **SWL**

of personnel box

SET UP TASK

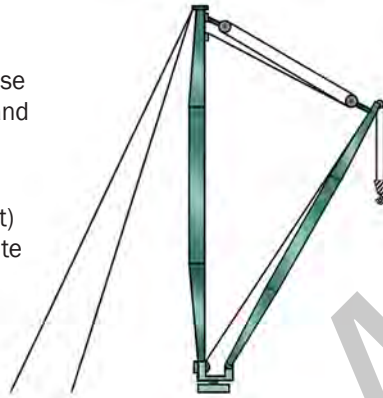
Element 3



*Cranes (continued)***Derrick crane**

Derrick cranes are now generally restricted to use in quarries, on barges and as recovery cranes.

Derrick cranes can be dismantled (taken apart) and transported from site to site.

**Portal boom crane**

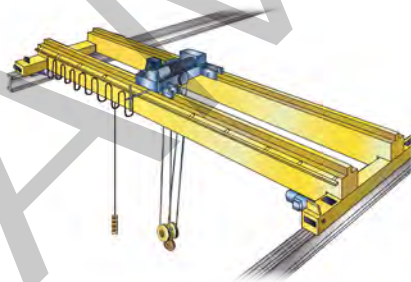
The portal crane is used on wharves and on ship repair docks for lifting a wide range of materials for repair of ships.

Most portal cranes are of the lattice boom variety.

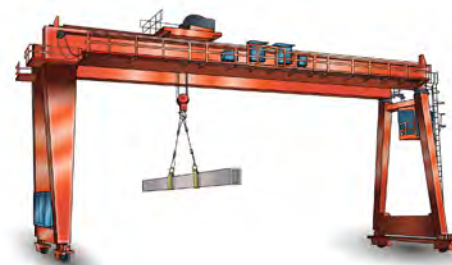
Portal cranes are designed to travel along rails built into the dock.

**Bridge and gantry cranes**

The overhead travelling crane or gantry crane is used on wharves and in power stations, large foundries, smelters, factories and workshops for lifting a wide range of materials.



Bridge crane



Gantry crane

Cranes (continued)

Non-slewing mobile crane

The non-slewing mobile crane is used on general sites for lifting and moving a wide range of constructional materials.

Most non-slewing mobile cranes have hydraulic booms and power is supplied from an onboard diesel engine.



Vehicle loading crane/truck mounted crane

The vehicle loading crane is mainly used for self loading and unloading of the truck.

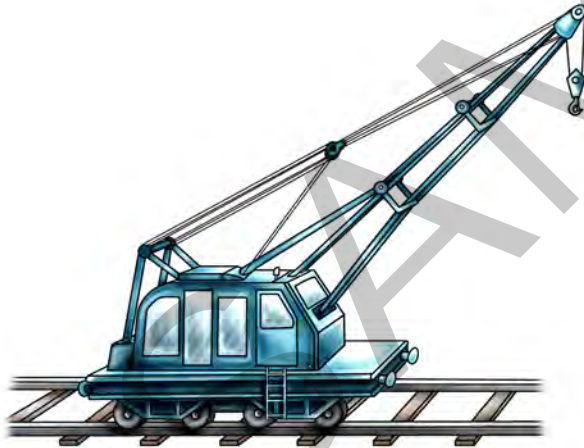
All vehicle loading cranes have hydraulic booms with power supplied from the truck's diesel engine through a PTO (power take off).



*Cranes (continued)***Locomotive crane**

The locomotive crane is mainly used for recovery purposes on major railway operations. Locomotive cranes may have either a hydraulic boom or lattice boom.

- When lifting a load on a locomotive crane always use outriggers
- Do not use rail clamps when lifting a load on a locomotive crane

**Telescopic materials handler crane**

The telescopic materials handler (Telehandler) is used on many projects that require a crane that can mobile loads. Some telehandlers can be set-up on outriggers to increase lifting capacities.

Telehandlers can be fitted with different attachments like:

- Forks
- Crane hook
- Work basket
- Loader bucket.



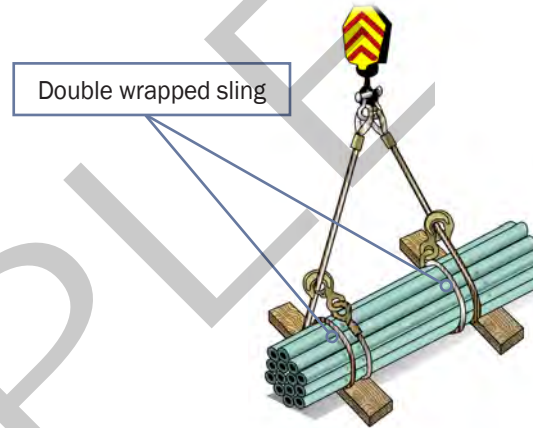
Lifting loads

When lifting loads that can slip or be damaged if not correctly lifted, special equipment or slinging methods should be used.

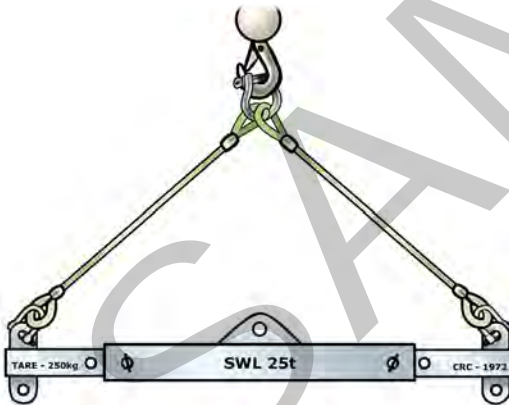
A load which has parts that can slip should be double wrapped with the sling.

Loads such as roof trusses or air conditioning duct work can be easily damaged by compression forces or unsupported sections bending.

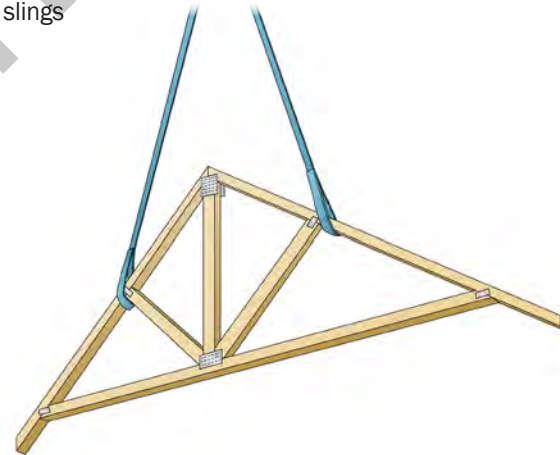
These should be lifted using special equipment such as spreader bars or long slings to reduce the compression forces as slings try to move to directly under the hook.



Spreader bar



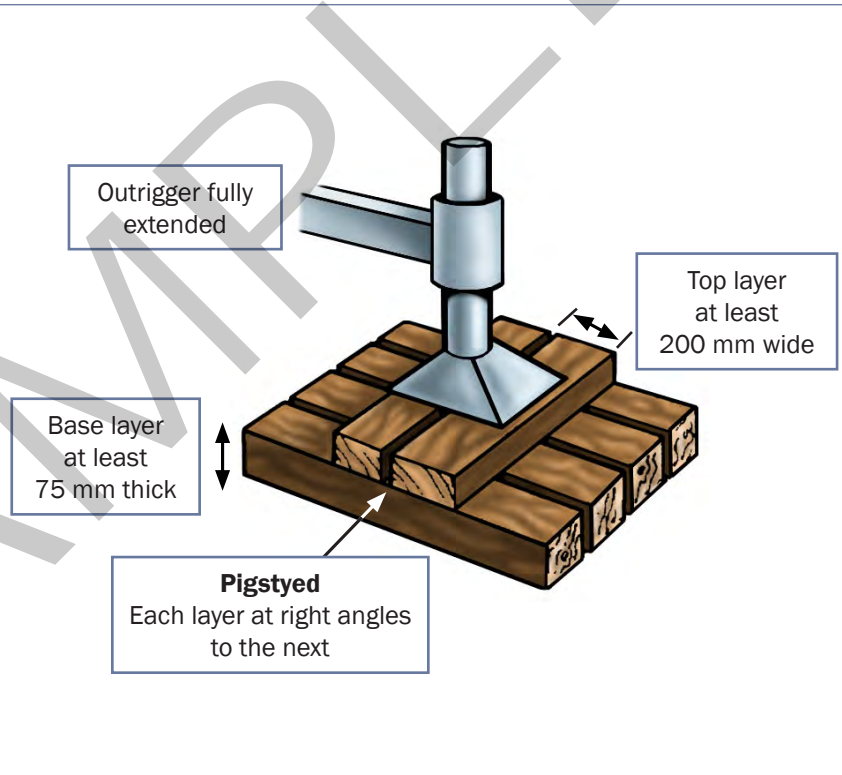
Long slings



Outriggers and packing

Outriggers are beams or legs that extend out from a crane, helping to keep it stable. Packing is placed under the outriggers to distribute the weight of the crane and load over a greater area of the surface. The bearing pressure of the soil will be needed to work out the size of the outrigger pads of packing.

- Outriggers should be fully extended (if possible)
- Make sure the ground is firm and can bear the load
- Packing must cover as much area as possible to distribute load
- The base layer of packing should be closely laid and at least 75 mm thick
- The top layer of packing should be at right angles to the direction of the outrigger beam and be at least 200 mm wide
- The packing should be made of hardwood that is free from defects
- The packing should be pigstyed (each layer at right angles to the next)
- Packing and jacks should be checked regularly during operation.



PERFORM TASK

Element 4



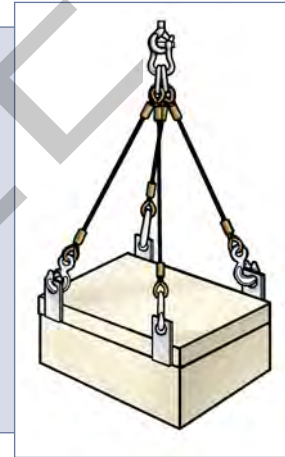
Attach the lifting gear to hook

The hook should be positioned at a suitable height to connect the lifting gear. Direct plant design lifting point /hook, over the load's centre of gravity.

Use shackles or lifting rings to secure the slings to the hook.



If you are using multiple slings you should use a bow shackle to allow more room for the slings.



Make sure the lifting gear you have selected fits the hook of the crane properly. If you are attaching the lifting gear to the hook with a shackle make sure that the pin rests on the bite of the hook.

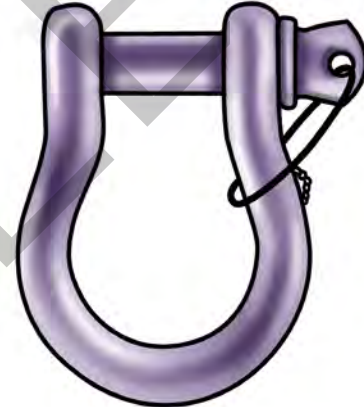


Attach the lifting gear to hook (continued)

The lifting gear should fit over the hook without being too tight.



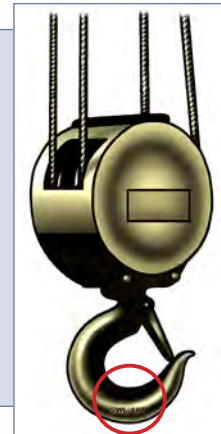
You may need to mouse the shackle to stop the pin from coming loose during the lift.



Check that the hook has a safety catch to stop the slings from coming off the hook while the load is being shifted.



Always check that the hook is stamped with the SWL and make sure that the load is not too heavy for the hook to support it.

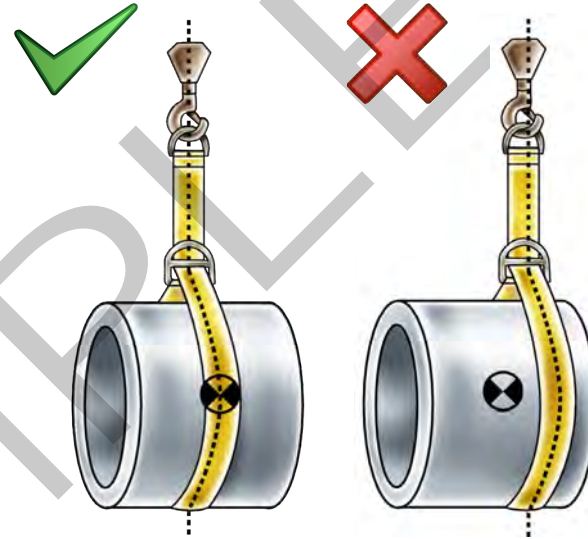
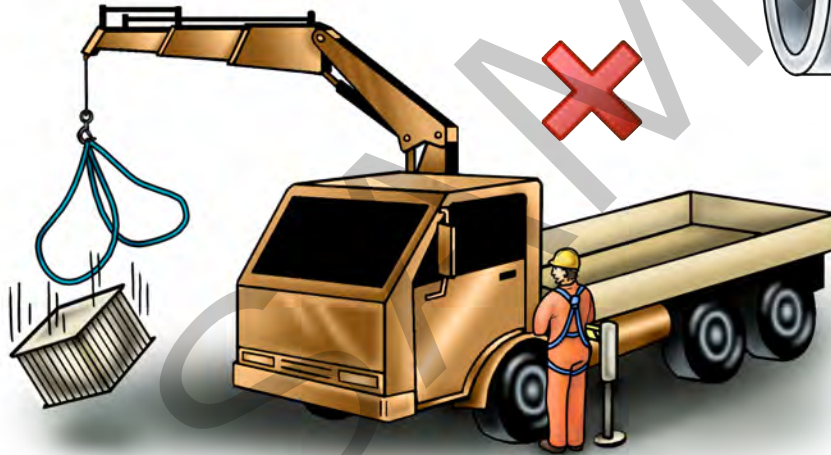


Position the hook above the load

The crane hook needs to be positioned directly above the load centre of gravity and the lifting gear connected.

If the load is not over the centre of gravity the load may try to tip, be snagged (dragged) or swing when lifted clear of the ground.

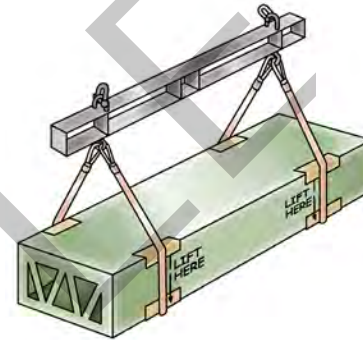
Do a test lift to make sure the load is balanced, the slings are connected correctly and the load is safe to lift.



Lifting or slinging points on a load

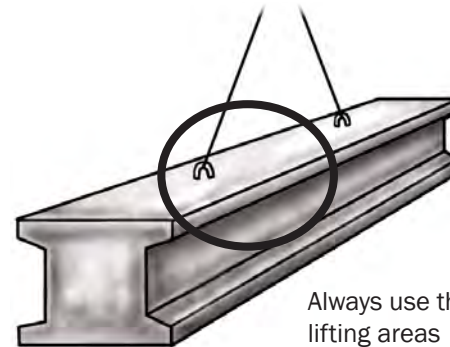
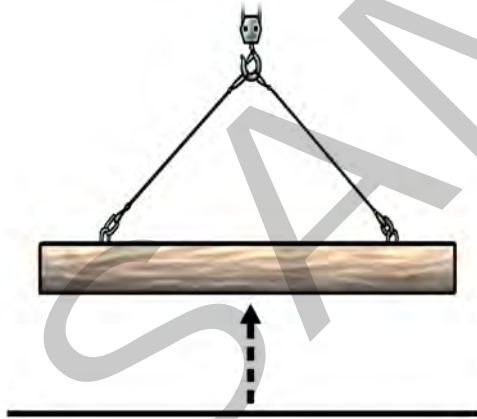
Some loads have specific areas they must be lifted by. These areas may be re-enforced to help distribute the weight evenly when it is being lifted.

Check for manufacturer's specifications/markings on the load. If the load has set points for lifting gear they will be marked by decals (symbols) or writing.



To work out the safe lifting/sling points you can:

1. Measure the distance from the centre out to the sling points. Make sure the weight is evenly distributed.



Always use the correct lifting areas

Tag line (continued)

<p>Be aware of other people working so as not to lift load over their heads</p>	<p>Tag line change over may be needed at some point in the lift.</p>	<p>Loose rope should not be coiled in the hand as the person dogging the load may be hoisted with the load.</p>

Releasing a heavy load from the crane hook

You need to control boom deflection when you are releasing a heavy load from the crane hook.

Cranes using a hoist rope

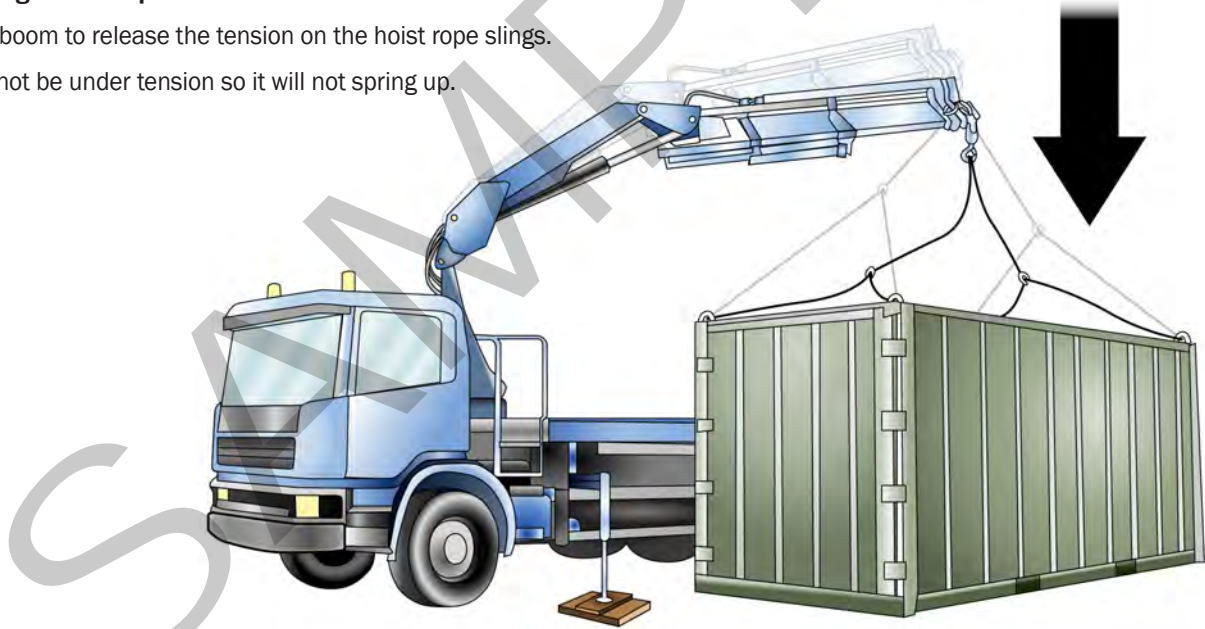
To release the tension from the boom and hoist rope:

1. Lower the load with the hoist rope until it is resting on the ground.
2. Lower the boom to release the tension on the hoist rope and sling.

Cranes not using a hoist rope

1. Lower the boom to release the tension on the hoist rope slings.

The boom will not be under tension so it will not spring up.



Move the load

The area should be clear before you start moving a load. A dogger should constantly observe the load and the surrounding area to make sure the area and the load remain safe during the movement.

NEVER pass a load over the top of people.



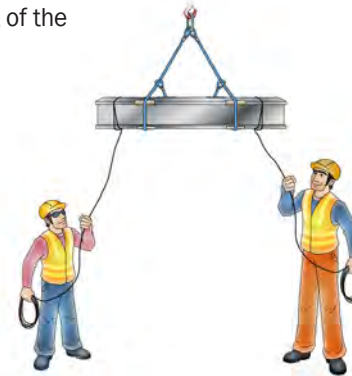
Do not ride upon the lifting hook, sling or suspended load.



Make sure you communicate effectively with the crane operator at all times and that **all hand signals** are understood correctly.




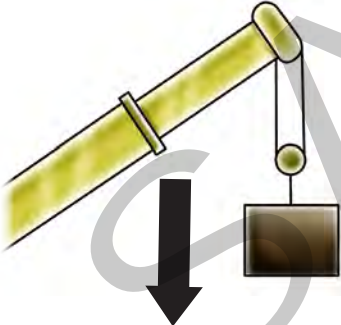





Control the movement of the load with a tagline.

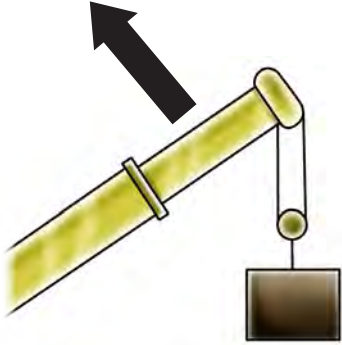


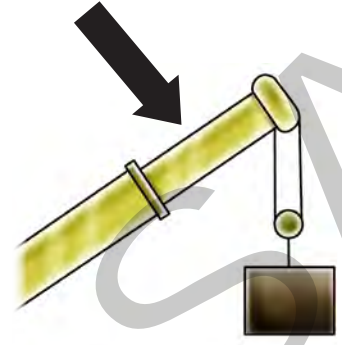




Hand and whistle signals

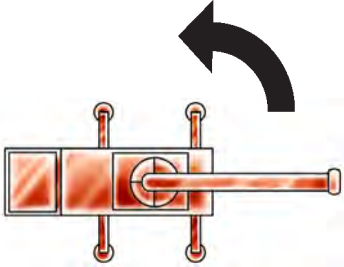


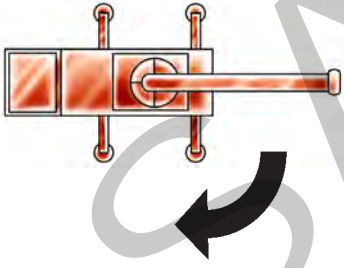


Here is a series of hand and whistle signals that fall under AS. 2550.1 - 2002 (Australian Standard). The dogger and the crane operator need to check that they understand the signals that are going to be used. **Signals can vary on different sites.** All hand signals indicate the direction the crane should move when viewed from the drivers seat.

Stop					
Motion		Hand signal		Whistle	 1 short
Hoisting lower/down					
Motion		Hand signal	<div data-bbox="684 744 826 863" style="border: 1px solid black; padding: 5px; width: fit-content;"> Commonly used signal (not Australian Standard) </div>  	Whistle	 1 long

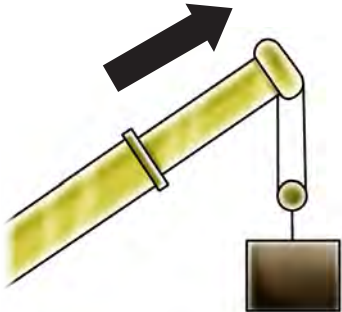


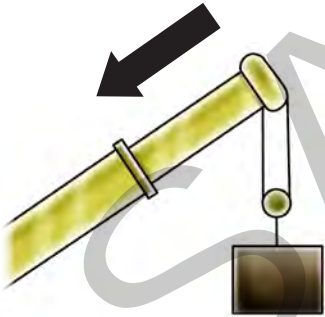


Hand and whistle signals (continued)

Luffing boom up					
Motion		Hand signal		Whistle	 ● ● ● 3 short
Luffing boom down					
Motion		Hand signal		Whistle	 ● ● ● ● 4 short

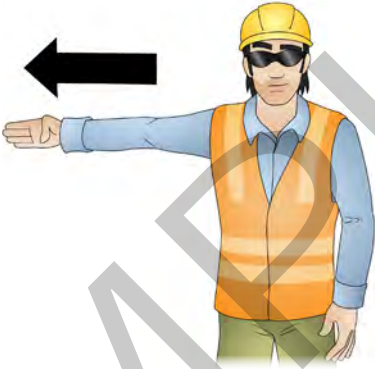

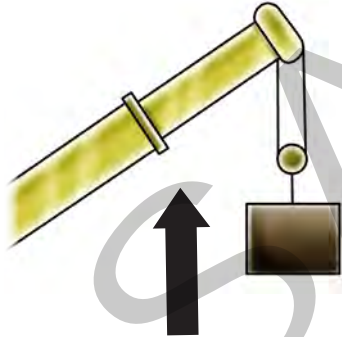


Hand and whistle signals (continued)

Slewing left/Travel left			
Motion		Hand signal	 Whistle  ■ ● 1 long, 1 short
Slewing right/Travel right			
Motion		Hand signal	 Whistle  ■ ● ● 1 long, 2 short

Hand and whistle signals (continued)

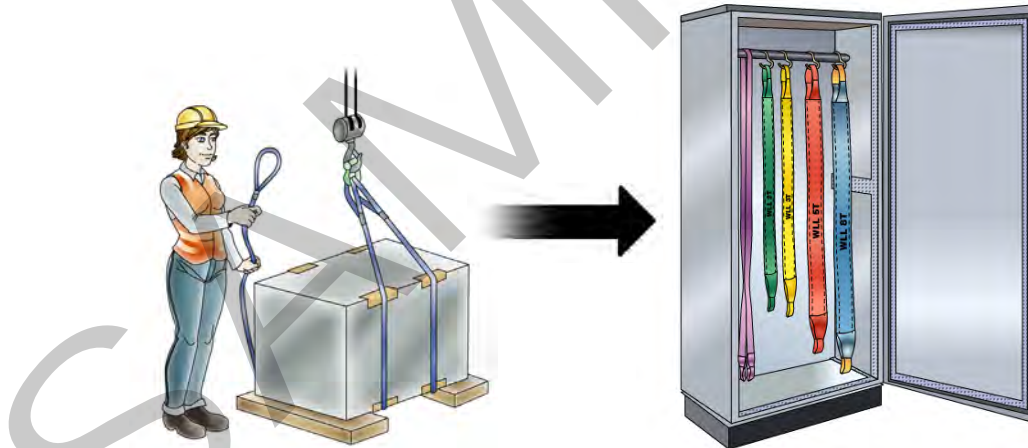
Telescoping boom extend /Jib out/Trolley out					
Motion		Hand signal		Whistle	 ■ ● ● ● 1 long, 3 short
Telescoping boom retract /Jib in /Trolley in					
Motion		Hand signal		Whistle	 ■ ● ● ● ● 1 long, 4 short

Hand and whistle signals (continued)

Travel and Traverse			
Motion	Indicate the direction you want the crane to go	Hand signal 	Whistle  Not applicable
Hoisting raise			
Motion		Hand signal 	Whistle  ● ● 2 short

PACK UP AND CLEAN UP

Element 5



Clean the work area

The work area should be left in a tidy and safe condition. This may include:

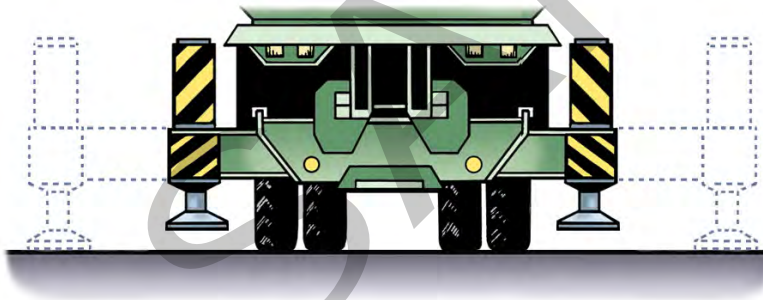
Packing up any extra equipment that was used during the lift



Packing up and cleaning any tools that were used for the lift



Packing up or dismantling the crane



Cleaning up any debris that may have been collected during the dogging work.



Inspect lifting equipment

All equipment should be **checked** after you have finished using it to make sure it was not damaged during the lift. Check that it is safe for the next operator to use.



If you find that any of the lifting equipment is damaged beyond safe limits make sure you tag it **out of service** so that nobody uses it.

- Report damage to your supervisor
- Arrange to have damaged equipment repaired.

