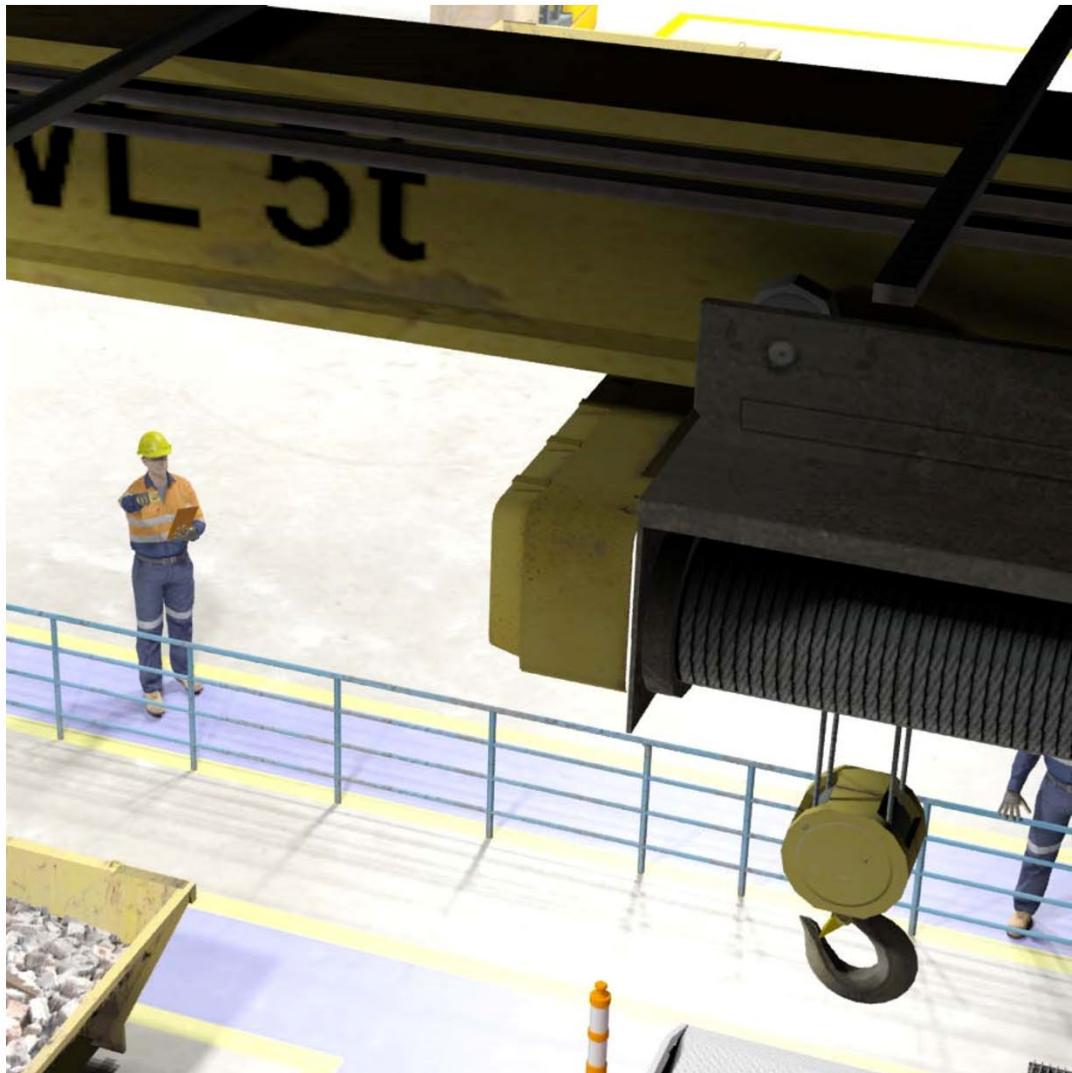




RIIHAN305D

Operate a Gantry or Overhead Crane



LEARNER GUIDE

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1.1 Introduction

These training materials are based on the national unit of competency **RIIHAN305D Operate a Gantry or Overhead Crane**.

You will learn about:

- ◆ Planning and preparing for operations.
- ◆ Operating the crane to move loads.
- ◆ Carrying out maintenance.
- ◆ Cleaning up.



This training qualifies you to operate a gantry or overhead crane with 3 or less powered operations, where hoist/raise and lower is one operation.

1.1.1 National High Risk Work Licence

A National High Risk Work Licence is required to operate a bridge or gantry crane if it is:

Controlled from a permanent cabin or control station on the crane.

OR

Remotely controlled and has more than 3 powered operations.

1.1.2 Overhead and Gantry Cranes

An **Overhead Crane** (also called a **bridge crane**) is a crane comprising a bridge beam mounted at each end to an end carriage, capable of travelling along elevated runways and having one or more hoisting mechanisms arranged to traverse across the bridge.



A **Gantry Crane** is a crane comprising a bridge beam, supported at each end by legs, mounted on end carriages, capable of travelling along runways at surface or deck level, and which has a crab with one or more hoisting units arranged to travel across the bridge. Gantry cranes may have fixed runways with or without rails.



Overhead and gantry cranes commonly include the following components:

- ◆ The hook block.
- ◆ The hoist.
- ◆ The carriage.
- ◆ The bridge.
- ◆ The runway.
- ◆ The main isolator switch.
- ◆ Safety devices.
- ◆ Remote controls.



To make sure you know the specific details for the crane you are operating you should access the technical information. This will be found in the operator's manual or manufacturers' specifications.

1.1.2.1 The Hook Block



The hook block is used to raise and lower the hook.

It consists of:

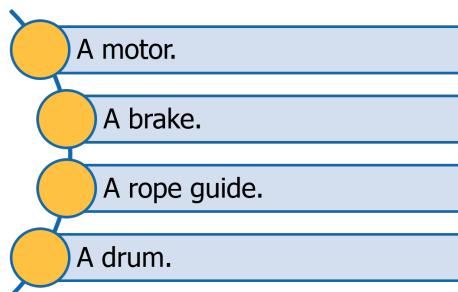
- ◆ Sheaves or pulley wheels.
- ◆ A hook.
- ◆ A safety latch.

Running through the pulley of the hook block is the hoist rope. The hoist rope consists of many small wires formed into a flexible and strong rope. To reduce wear on the hoist rope it should be lubricated.

1.1.2.2 The Hoist

The **hoist rope** is wound up and down by the **hoist**.

The hoist consists of:



The hoist travels on the **crane bridge**. The motor that drives the hoist from one side of the bridge to the other is called the **cross travel motor**. The **cross travel brakes** are part of the cross travel motor.

A **serial hoist** is an all in one hoist and cross travel unit. The other kind of cross travel unit is the **crab hoist** where the hoist is mounted onto a trolley with wheels. On a crab hoist, the cross travel brakes may be separate from the cross travel motor.

The **hoist brake** operates when the hoist is not being raised or lowered. When you press the "raise" or "lower" button, the brake is released.

The **hoist drum** is usually grooved so that the rope does not wear quickly or become tangled.



The **over-hoisting limit switch** stops the hook block from being raised too high by stopping the power. Do not use the over hoisting limit switch as a convenient method of stopping the hoisting motion. Continual over-hoisting will wear the limit switch and cause the hoist drum and rope guide to be damaged.

1.1.2.3 The Carriage

The carriage is the main unit of the crane comprising the hook block, hoist, bridge and motors.



1.1.2.4 The Bridge

The bridge extends across the crane structure from rail to rail. It sits on an end carriage that has track wheels.

The bridge of the crane should show the Safe Working Load (SWL). This tells you the maximum load that the crane can lift.

DO NOT operate a crane without a Safe Working Load notice.



1.1.2.5 The Runway



When the carriage travels the length of an area it is called **long travelling**. For this a crane needs a **runway**.

On a gantry crane the runway would be the concrete floor.

On an overhead crane the runway is two strong steel beams supported from the columns of the building.

The **long travel motors** drive the crane along the long travel rails. They usually have internal brakes.

There are usually two long travel motors, one for each end carriage. Older cranes may have only one motor with long shafts that drive the wheels on both sides of the crane.

Once a crane has reached the limit switch position, it will automatically shut off. It can be reactivated at a slow speed.

Electricity is supplied through bus bars and contact is made through collector shoes. Only maintenance personnel are authorised to work in this area.

1.1.2.6 The Main Isolator Switch

The **main isolator switch** controls the electric power to the **bus bars** and any crane using them. There may be one switch to each crane or a number of cranes may share a switch.

Some switches have a **key lock** so that the bus bars and crane can be made safe when they are not being used, or when they are being worked on.



1.1.2.7 Safety Devices



Most cranes are fitted with **emergency stop buttons**, which are provided so that other people can stop the crane if they see any danger.

Usually the crane operator presses the stop button on the remote control in an emergency situation.

A warning device warns people away from the crane while it is working. The warning device fitted to your crane could be a bell, buzzer or siren.

1.1.2.8 Remote Controls

Remote controls can be pendant, infrared or radio controlled. Both infrared and radio controlled remote controls have a limited range.



Infrared controls must be pointed towards the crane during operation or the crane will stop.

Pendant controls are connected directly to the crane and the operator must walk with the crane as it travels.

When using a remote control it is important to be in a position to review the load and the travel path.

A **direction notice** tells you which way the crane will move when you push each remote control button.

1.1.3 Working with Doggers/Riggers

You will often need to work with doggers (or riggers) during your crane operations.

It is important to know what doggers are responsible for and what you need to do to assist them so that you can safely carry out lifting operations.



1.1.3.1 What is a Dogger

A dogger (or rigger) is someone who is qualified and holds a High Risk Work Licence to carry out dogging work.



Dogging work includes:

- ◆ Assessing the weight of a load.
- ◆ The selection and/or inspection of lifting gear.
- ◆ The application of slinging techniques.
- ◆ The directing of a crane/hoist operator in the movement of a load when the load is out of the operator's view.
- ◆ Communicating with the crane operator in regards to the capabilities of the crane.

Dogging Duty of Care

It is the Duty of Care of a person who is involved with the slinging of a load to ensure they have their dogging licence in the following situations:

- ◆ When selecting/inspecting slings and the selection of a slinging technique.
- ◆ When directing the crane operator in the movement of the load, particularly when the load is out of view of the crane operator.

It is the responsibility of the person who can legally sling the load, generally the dogger, to determine the weight of the load to be lifted.



1.1.3.2 Crane Operators and Dogging

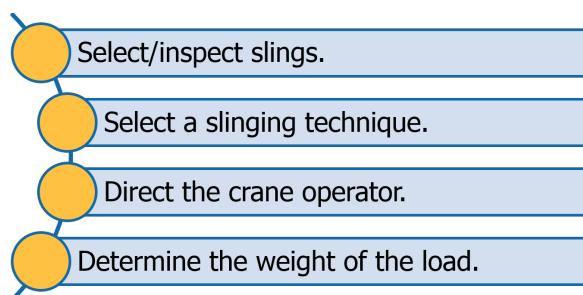
In some situations you may be able to sling the load without a dogging licence. This is only in cases where there is no decision required specific to any of the following:

- ◆ The selection of slinging equipment.
- ◆ The inspection of slinging equipment.
- ◆ The lift points (as they are clearly defined).
- ◆ Directing the crane operator in the movement of the load.
- ◆ Determining the weight of the load.



For example, you may move the same type of load regularly that always has the same weight, shape and size. In some workplaces crane operators will be instructed on the correct equipment and technique to use with that particular load by a dogger, and must always sling the load as instructed.

You **must** have a dogging licence, or be supervised by a person with a dogging/rigging licence, as soon as you need to do **ANY** of the following:



The crane operator is responsible for communicating with the person who is slinging the load (the dogger) and providing information on the crane capacity.

If you are not sure if you are allowed to sling a load or not, speak to your supervisor.

1.2 Site Policies and Procedures

You must follow all safety rules and instructions when performing any work. If you are not sure about what you should do, ask your boss or supervisor. They will tell you what you need to do and how to do it in a safe way.



1.2.1 Load Handling and Crane Operation Documentation

Before starting your work you need to make sure you have access to all load handling and crane operation documentation for the job. This will help you to do your work in the safest way and make sure all work is compliant.

Load handling and crane operation documentation may include:

Site Details

The information and safety requirements of the workplace environment (where you will be working).

Hazard Details

Any hazards in the work area or related to the work. This could also include instructions on how to handle dangerous or hazardous materials.

Task Details

Instructions of what the work is or what you will be doing (this can include diagrams or plans). Also instructions on how to safely do the job.

Faulty Equipment Procedures

Isolation procedures to follow or forms to fill out.

Signage

Site signage tells you what equipment you need to have, or areas that are not safe to be in.

Emergency Procedures

Instructions on what to do in emergency situations, for example if there is a fire, accident or emergency where evacuation or first aid is needed.

Equipment and Work Instructions

Details of how to operate plant and equipment and the sequence of work to be done.

All work needs to follow worksite, environment and company safety procedures.

Procedures help to make sure that all work is done in a safe way, without damaging equipment or putting people in unsafe situations. They also help to make sure that work is done in the correct order and doesn't interrupt or get in the way of other work that is happening on the site.

1.3 Work Instructions

You need to be clear about what work you will be doing. Make sure you have everything about the job written down before you start. This includes what you will be doing, how you will be doing it and what equipment you will be using.



1.3.1 Work Instructions and Details

Make sure you have all of the details about where you will be working. For example:

- ◆ **The Site** – Is there clear access for all equipment? Are there obstructions in the way? Is there a safe place for the load to be moved to?
- ◆ **The Weather** – Is there wind, rain or other bad weather? Is it too dark?
- ◆ **Facilities and Services** – Are there power lines or other overhead or underground services to think about?
- ◆ **Traffic** – Are there people, vehicles or other equipment in the area that you need to think about? Do you need to get them moved out of the area? Do you need to set up barriers or signs?
- ◆ **Hazards** – Are there dangerous materials to work around or think about? Will you be working close to power lines or other people?



You also need to make sure you have all of the details about the kind of work you will be doing:



- ◆ **The Task** – What load is being moved? How big is it? How much does it weigh?
- ◆ **Plant and Equipment** – What type of plant or equipment will be used? How big is it? How much room does it need?
- ◆ **Communications** – How are you going to communicate with other workers?
- ◆ **Procedures and Rules** – Do you need any special permits or licences? Are there site rules that affect the way you will do the work?

All work needs to follow worksite, environment and company safety procedures.

Procedures help to make sure that all work is done in a safe way, without damaging equipment or putting people in unsafe situations. They also help to make sure that work is done in the correct order and doesn't interrupt or get in the way of other work that is happening on the site.

Your work instructions will tell you the safest way to do the job, and the equipment that you will need to use. It is a good idea to check your work instructions with your boss or supervisor to make sure you know exactly what you need to do.

If you don't know where to get your instructions or you can't understand them, you can ask your boss or supervisor. They will tell you where to find your work instructions and explain what they mean.



1.3.2 Worksite Communications

It is important to coordinate your activities with other workers when you are planning for and carrying out the work to make sure everyone knows:

- ◆ The work being completed.
- ◆ How, when and where you will be operating.
- ◆ What they need to do.

All workers on site must understand their own role and the roles of others before starting work. It helps to make sure work is done safely and efficiently.



You will also need to alert personnel to any hazards you notice during your work activities, including changing work environments.

1.4 Hazard Identification and Control

Before you start work, you need to check for any hazards or dangers in the area. If you find a hazard or danger you need to do something to control it. This will help to make the workplace safer.



1.4.1 Identify Hazards

Part of your job is to look around to see if you can find any hazards before you start any work.

A **hazard** is the thing or situation with the potential to cause injury, harm or damage.

When you start checking for hazards, make sure you look everywhere. A good way to do this is to check:

- ◆ Up high above your head.
- ◆ All around you at eye level.
- ◆ Down low on the ground (and also think about what is under the ground).



Some hazards you should check for in the work area:

Environment	e.g. wind, lightning, storms.
Dangerous Materials	e.g. fuels, chemicals.
Traffic and People	e.g. pedestrians, vehicles.
Facilities	e.g. insufficient lighting, obstructions.
Other Equipment	e.g. plant, other cranes on the runway.

1.4.2 Control Hazards

After you have found hazards or dangers you need to work out how bad they are:



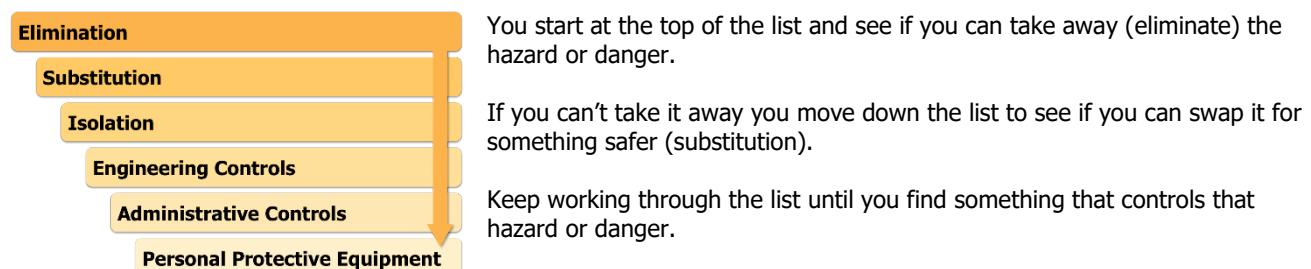
- 1. What is the chance that the hazard will hurt someone or cause damage?**
- 2. If it does happen, how bad will the injury or damage be?**

Thinking about these things will help you to choose how to control the hazards. Hazards controls need to follow:

- ◆ Legislation (laws).
- ◆ Australian Standards.
- ◆ Codes of Practice.
- ◆ Manufacturers' specifications.
- ◆ Industry standards.



The best way to control hazards is to use the Hierarchy of Hazard Control. The Hierarchy of Hazard Control is the name given to a range of control methods used to eliminate or control hazards and risks in the workplace.



This table shows you the 6 different types of controls in order from best to worst:

Hierarchy Level	Action
1. Elimination	Completely remove the hazard. This is the best kind of hazard control.
2. Substitution	Swap a dangerous work method or situation for one that is less dangerous.
3. Isolation	Isolate or restrict access to the hazard.
4. Engineering Controls	Use equipment to lower the risk level.
5. Administrative Controls	Site rules and policies attempt to control a hazard.
6. Personal Protective Equipment	The least effective control. Use PPE while you carry out your work.

Hazard control measures need to be put in place before you start your work, or as soon as you see a hazard while you are doing your work. Hazard controls can sometimes be listed in your work instructions or you can ask your boss or supervisor for help.

Once a hazard control is in place you will need to check to make sure it is working well to control the hazard or danger.

Talk to your supervisor or safety officer if you are not sure if it is safe enough to carry out your work. If you think the hazard is still too dangerous you should not try to do the work.



1.4.2.1 Personal Protective Equipment

Personal Protective Equipment (PPE) is clothing and equipment designed to lower the chance of you being hurt on the job. It is required to enter most work sites.



It includes:

- ◆ **Head protection** – hard hats and helmets.
- ◆ **Foot protection** – non-slip work boots.
- ◆ **Hand protection** – gloves.
- ◆ **Eye protection** – goggles, visors or glasses.
- ◆ **Ear protection** – plugs or muffs.
- ◆ **Breathing protection** – masks or respirators.
- ◆ **Hi-visibility clothing** – clothing that makes you stand out and lets other people know where you are.
- ◆ **Weather protection** – clothing that protects you from the sun or from the cold.

Make sure any PPE you are wearing is in good condition, fits well and is right for the job.

If you find any PPE that is not in good condition, tag it and remove it from service. Then tell your supervisor about the problem and they will organise to repair or replace the PPE.

1.4.3 Environmental Protection Requirements

Environmental protection requirements are part of every worksite. Make sure you check with your supervisor about what environmental issues need to be managed during your work.

All environmental details should be listed in an 'Environmental Management Plan' for the site. It can include details for:

- ◆ Waste management.
- ◆ Water quality protection.
- ◆ Noise control.
- ◆ Vibration control.
- ◆ Dust management.



The plan will outline the steps and processes needed to prevent or minimise damage to the environment through the use of machinery and equipment.

1.4.4 Reporting Hazards

Any hazard or environmental issue that you identify will need to be reported. If you have taken any action you will also need to report those details.

This could include written or verbal reports. Your worksite may have standard paperwork that needs to be filled out, for example:

- ◆ Hazard report forms.
- ◆ Work method statements.
- ◆ Other documents.

Your report may need to be given to a safety officer, supervisor or a member of the management team.



2.1 Choose and Check Equipment

Once you have confirmed your job requirements you need to choose the right equipment and attachments to get the job done.



2.1.1 Selecting the Correct Equipment

When choosing equipment and attachments you need to think about:

- ◆ The task requirements, specifications and goals.
- ◆ The appropriateness of the equipment for the completion of the task.
- ◆ The characteristics, correct use, operating capacity and limitations of each item.
- ◆ The potential risks to yourself and others in the intended use of the equipment.



As overhead and gantry cranes are fixed items you will usually not have any choice as to the crane you use. You will still need to check the crane and select any other equipment you will use to make sure they are safe and able to move the loads involved in the work.

Information about technical capabilities and limits can be found in the operator manuals supplied by the manufacturer of each item.

It is not safe to operate plant, equipment or attachments outside site procedures and the manufacturer's specifications. This may cause the machinery to break and could also cause an accident or injury.

2.1.2 Select and Check Attachments

When selecting an attachment you have to work out if it is suitable for the tasks you need to complete by confirming:

-  What the attachment is designed for.
-  If it is an approved attachment that can be used with the crane you are operating.
-  The manufacturer's requirements for the attachment.
-  That you know how to use the attachment properly.

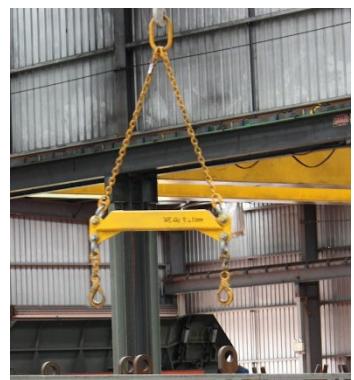
You will find this information in the operator's manual for the crane and the operator's manual for the attachment. Otherwise you may need to check the workplace equipment procedures for your site.

Once you have decided that the attachment is right, you need to attach it securely using approved methods.

Once again, the operator's manual for the specific crane you are operating will have exact instructions on the connection process which must be followed at all times.

Inspect all lifting attachments for damage including:

- ◆ Deformations.
- ◆ Weld fractures.
- ◆ Worn lifting points.



The most common attachments used are:

- ◆ Lifting beams.
- ◆ Spreader beams.

2.1.2.1 Lifting Beams

Lifting beams are devices that spread the load evenly for a given lift. They are generally made to suit a particular job. Most have a central lifting point for the crane or lifting medium, and have two or more lugs underneath to take the load slings.

Lifting beams have a centre lifting lug at the top to accommodate a crane hook and has a bottom lug at each end for connecting slings. Headroom for the lift is reduced as no top slings are required.

All lifting beams must be suitable to lift the particular load and must be branded with the Working Load Limit. The Working Load Limit must include the weight of the load plus all lifting gear (slings, shackles etc.).

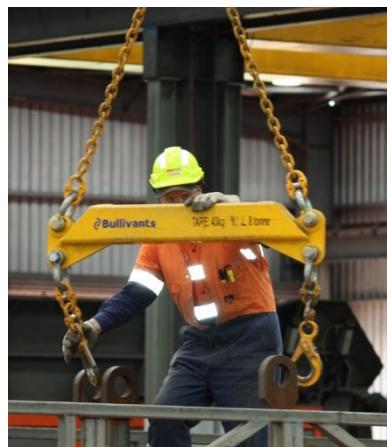


2.1.2.2 Spreader Beams

Spreader beams literally "spread" a two-legged top sling. A spreader beam has better stability than a lifting beam and a higher potential capacity for a given size of steel section used. Spreader beams require more headroom than lifting beams due to the two legged sling arrangement at the top.

Check that spreader and lifting beams display the following details:

- ◆ Tare weight of the beam.
- ◆ Safe Working Load/Working Load Limit.
- ◆ Approval plate.
- ◆ Registration number.



2.1.2.3 Other Lifting Attachments

Other lifting attachments include:



'H' Frames.



Pallet Lifters.



'C' Hooks.



Buckets and Kibbles.

2.1.3 Choose Lifting Gear



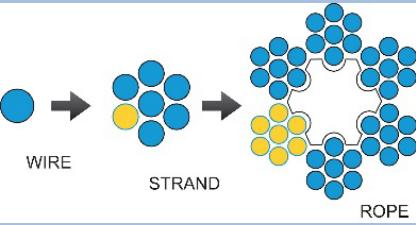
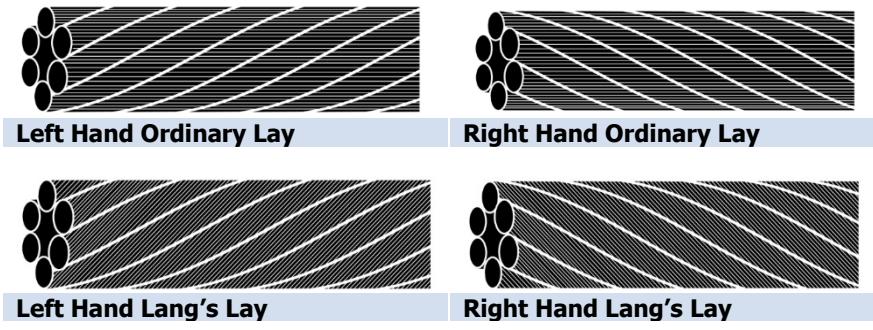
Lifting gear needs to be selected based on the type, size, weight and shape of the load to be lifted.

Remember: Only a licensed dogger or rigger is authorised to select and inspect lifting gear, determine the weight of loads and select and apply slinging techniques.

Each piece of lifting gear is rated to a specific capacity known as a Working Load Limit (WLL). This WLL can change depending on how the lifting gear is connected and arranged. This is why a licensed dogger or rigger needs to decide what lifting gear is being used and how it will be used.

Lifting gear that may be used with the crane includes:

Lifting Gear	Description and Use	
Fibre Rope	Fibre rope is used extensively for taglines, whips, tackles and lashings.	
Natural Fibre Rope	<p>Natural or vegetable fibre ropes are grouped into those made from hard fibres and those made from soft fibres.</p> <ul style="list-style-type: none">◆ Manila and sisal are the only types of natural fibre rope that can be used for dogging and rigging purposes.◆ Other natural fibre ropes such as cotton, jute, flax and hemp can only be used for lashing and tying.◆ A 16mm dry natural fibre rope is usually used as a tagline as it is non-conductive.	
Synthetic Fibre Rope	<p>Generally made from filaments twisted into yarns, the yarns twisted into a strand then three strands into the rope similar to natural fibre ropes.</p> <p>Synthetic ropes can be much thinner and yet have a greater WLL than natural fibre rope because they do not have overlapping fibres and because some filaments are stronger than natural fibres of the same thickness.</p> <p>Synthetic fibre ropes have a smooth slippery surface which can cause slip and failure of most bends and hitches and are not suitable for hand haulage. Prevent this with additional half hitches or seize the tail with yarn, twine or marline.</p> <p>Under some conditions synthetic fibre rope can conduct electricity and therefore should not be used as taglines near powerlines.</p>	

Lifting Gear	Description and Use
Flexible Steel Wire Rope (FSWR)	<p>Rope constructed of steel wires and strands laid around a central core.</p> <p>The core of a FSWR can be:</p> <ul style="list-style-type: none"> ◆ Fibre Core (FC). ◆ Independent Wire Rope Core (IWRC). ◆ Plastic Core (PC).  <p>WIRE → STRAND → ROPE</p>
FSWR Lays	<p>Lay is the direction the wires are formed into strands and the strands are formed into the finished rope.</p> <p>The strands can be laid either left or right around the core. In left hand lay the strands are laid anti-clockwise and in right hand lay they are laid clockwise.</p> <p>Ordinary lay is where the wires are laid in the opposite direction to the strands. Most general purpose ropes are right hand ordinary lay. Ordinary lay ropes are used extensively for slinging.</p> <p>Lang's lay is where the wires are laid in the same direction as the strands. Lang's lay is used where both ends are fixed to prevent rotation such as for luffing. It must not be used for lifting.</p> <p>Therefore there are 4 main types of Flexible Steel Wire Rope lays:</p> 
FSWR Uses	<p>FSWR has many uses, including:</p> <ul style="list-style-type: none"> ◆ Slings for lifting. ◆ For hoist drum ropes. ◆ For excavator, dragline, and pile driving ropes.
Chain	<p>Lifting chain is proof tested short link chain. The barrel of short link chain requires a greater force to bend, provides greater strength, reduces the tendency to twist and provides better reeving performance.</p> <p>There are various grades of lifting chains, with Grade 80 (or T grade chain) used extensively for all load lifting tasks.</p>
Chain Shorteners	<p>There are 2 main types of chain shorteners:</p> <p>Grab Hooks – Look like normal sling hooks but are designed so that the throat of the hook will securely hold a link of the chain without twisting the chain.</p> <p>Clutch Hooks – Are designed to hold a chain link without damaging the link. When using clutch hooks to shorten chain the Safe Working Load (SWL) is not reduced.</p> 
Chain Joiners or Hammerlock	<p>A chain joiner or hammerlock is very much like a chain link that can be taken apart.</p> <p>Chain joiners may be used:</p> <ul style="list-style-type: none"> ◆ To join pieces of chain together to make a longer chain. ◆ To hold different parts of a chain together. ◆ To connect the chain to the master link. 

Lifting Gear	Description and Use	
Slings	Slings are used to connect loads to the crane hook. They can be connected in different arrangements and may use hooks and shackles as part of the connection and slinging arrangement.	
Synthetic Webbing Slings	Flat webbing and round synthetic slings are used for lifting where it is necessary to protect the load from damage and for protection from electrical hazards. They are made from nylon, polyester, polypropylene or aramid polyamide. Each sling must be labelled with the Working Load Limit.	
Flexible Steel Wire Rope Slings	Flexible Steel Wire Rope slings are available in a number of different configurations including: <ul style="list-style-type: none"> ◆ Soft eye. ◆ Thimble eye. ◆ 2-leg sling. ◆ 4-leg sling. ◆ Open swage socket. ◆ Closed swage socket. ◆ Hook captive. ◆ Master link captive. 	
Chain Slings	Chain slings should be made up to AS 3775 <i>Chain slings—Grade T</i> or the manufacturer's recommendations. The working load limit tag must be fixed on all chain assemblies. The tag must detail the SWL under all conditions of loading. If a tag is missing the sling should be taken out of service, unless the necessary information is marked on the master link. Once the tag is replaced, the sling can immediately be returned to service. A competent person should replace the tag.	
Associated Equipment		
Shackles	Shackles are a portable link, used for joining various pieces of lifting equipment. The two main shapes for load lifting are the 'Dee' and 'Bow' shackles.	

Lifting Gear	Description and Use
Hooks	<p>There are many different shapes and sizes of hooks. They range from mild steel to very high grade alloy steel.</p> <p>Safety hooks are fitted with a safety latch or device across the mouth of the hook. Some hooks come with a swivel fitting which prevents a chain, rope or tackle from twisting and will allow any twists to unwind.</p> <p>DO NOT use a hook without a safety latch.</p> <p>Hooks used with chain to make chain assemblies are usually Grade T or Grade 80 strength.</p> <p>The lifting capacity of a hook should be stamped or marked on the hook. Do not use a hook if the Safe Working Load is not marked, or has worn away and is unreadable.</p>
Eyebolts	<p>Often used as lifting lugs on set pieces of equipment. The safest eyebolt is a collared eyebolt. Uncollared eyebolts should only be used where the pull on the eyebolt is vertical.</p> <p>Only collared eyebolts should be used where the pull is at an angle.</p> <p>The eyebolt should be tightened so that both faces meet in a neat tight fit. If both faces are apart the collar is of no use. Where two eyebolts are used to lift a load, a pair of slings should be shackled into them. Do not reeve a single sling through two eyebolts and then put both eyes on the hook.</p> <p>Loads can spin when lifted with a single eyebolt, causing the eyebolt to unscrew from the load. Mouse or lash the eyebolt to the load to stop it unscrewing.</p>



The dogger/rigger will inspect and check the lifting gear before it is used to make sure that it is safe to use.

DO NOT use any lifting gear that is damaged or in poor condition. Any equipment that is not safe to use should be labelled, rejected and segregated from other equipment. If you notice any lifting gear that appears to be damaged or in poor condition speak to the dogger or your supervisor, so the defective equipment can be disposed of, repaired or replaced.

2.1.4 Conduct Routine Checks

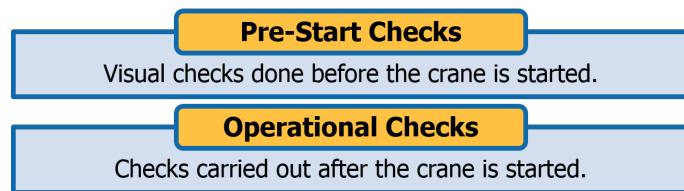
Before starting work you will need to make sure all equipment is in safe working order.

Before you use any piece of plant or equipment, you need to conduct routine checks to make sure it is safe to use. Check the machine logbook before you start your inspection to see if there are any faults that still need to be fixed before you can use the crane.

Also make sure you are wearing the correct PPE before you start checking the machine.



Routine checks are made up of:



Generally, routine checks are performed at the start of each day or shift.

You may be required to use an inspection checklist to make sure all parts and components have been checked and to record the results for the checks.

2.1.4.1 Crane Pre-Start Checks

Pre-start checks are done before the engine is started. Walk around the crane and look for anything that is out of the ordinary.

All crane equipment should be checked for damage and defects before any operations are carried out.

Part or Component	What to Check
Crane Structure	<ul style="list-style-type: none">◆ Visible signs of damage such as evidence of structural weaknesses, paint separation and stressed welds.◆ The Safe Working Load (SWL) and directional compass is displayed on the crane.◆ Any approved modifications and/or attachments are fitted in accordance with manufacturer's specifications.◆ Check for adaptions/modifications outside of the manufacturer's specifications.
Crane Runways	Clear of obstacles.
Bridge, End Carriage, Crab/ Hoist Unit, Bus Bars	Signs of damage or wear.
Hook Block	<ul style="list-style-type: none">◆ Sheave covers showing signs of excessive wear.◆ Sheaves are worn, damaged or stiff to turn.◆ Hook does not have excessive wear, cracks, nicks and isn't twisted.◆ Hoist rope free of abrasion, wear or damage.
Crane Hook	<ul style="list-style-type: none">◆ Making sure the hook or "bight" is rounded so that it does not cut into or damage slings and fittings.◆ Turning the crane hook to check that it freely rotates at all times.
Hook Safety Latch	<ul style="list-style-type: none">◆ Serviceable.◆ Not bent or broken.

For exact details on the components for the crane you are operating, check the operator's manual as different makes and models may have different requirements.

2.1.4.2 Check the Service Logbook



The service logbook is used to record any service maintenance carried out on the crane as well as any reported faults and actions taken to return the crane to service.

Make sure any recorded faults have been addressed and fixed and the crane is fit for use.

There should also be a history record system where the service and maintenance history is kept.

2.1.4.3 Crane Operational Checks

Operational checks are made once the crane is started.

Before you start the crane you will need to locate the remote control. Before you begin using the crane or at the start of the shift you may need to change the battery and put the used battery in the charger.

Check that the remote control device is working properly, the casing is intact and that the control buttons are operational and clearly labelled.



Start up the crane according to manufacturer's specifications and operating requirements.

Check that the following are functioning properly:

- Crane movements.
- Safety and limiting devices.
- Emergency controls.
- Communication equipment.

Also check for any abnormal noises or movements.

Crane Movements

The hoist of the crane moves the hook block and crane hook UP or DOWN (raising and lowering).

The brake is released when raising or lowering the hook block.

The Limit Switch will prevent the hook block being raised too high.

The crane can also travel in a North, South, East or West direction.

Check the **cross travel** by moving the hoist across the bridge.

Check the **long travel** by moving the carriage along the rails.



Safety Devices

Check that all safety devices are located, identified and tested in accordance with manufacturer's specifications.



Make sure all safety and limiting devices are functioning correctly including:

- ◆ The upper hoist limit switch.
- ◆ The lower hoist limit switch.
- ◆ The anti-collision device (where fitted).
- ◆ Emergency stop button.
- ◆ Isolation pin (test the remote control does not function with the pin removed).
- ◆ Hazard warning systems such as lights and horns.
- ◆ Audible reversing alarms (where applicable).
- ◆ Beacon light (where fitted).

Check the movement of attachments (e.g. external lifters) are smooth and comply with operating requirements.

Check the emergency stop by pressing the red cap key on the remote control. To re-start the crane, turn the red cap key to the left (cap will spring up) and press the horn to activate the lifting functions.

Report and record all defects and damage according to site procedures.



2.1.5 Recording and Reporting Faults

Once all routine checks are finished, you will need to report any problems, faults, defects and damage that you found during the inspection so that they can be reported, repaired and the crane and equipment are safe for you or the next operator to use.

If you find any faults during the routine checks you must:



1. Immediately stop.
2. Isolate the equipment and attach an out of service tag to it so that nobody uses it by mistake.
3. Record the fault in the service logbook.
4. Report the fault to an authorised person for corrective action.

Do not use any faulty equipment until it has been fixed and returned to service.

2.2 Prepare the Load

Before you move the load you need to ensure that everything is ready and it is safe to carry out the load movement. To do this you should:

- ◆ Prepare the area where the load will be placed, including positioning trucks to be loaded.
- ◆ Make sure you are working within the limits of the crane.
- ◆ Position the crane hook above the load.
- ◆ Attach lifting gear to the crane hook.



2.2.1 Prepare the Load Placement Area

Check the necessary documentation (e.g. job sheet, delivery docket, load tag) to check where the load needs to be transported.



Check the placement area is an appropriate location, clear of obstacles, and the correct amount of dunnage is positioned as needed.

Dunnage, such as blocks or packing, is used to protect loads and to enable lifting gear to be removed easily from the load.

Chocks should be put in place for round loads to prevent the load from rolling or shifting once the lifting gear is removed.

Check dunnage is strong enough to support the weight of the load.

2.2.2 Crane Safe Working Load Limits

It is important to ensure that you do not lift a load that is above the capacity of the crane you are operating.

You will need to work with the dogger (or rigger) to ensure the load is within the crane capacity. The dogger is qualified to assess and determine the weight of the load.

You must assist the dogger by providing information on the crane capacity and they will work out if it is safe to lift the load and the best lifting equipment and slinging arrangement to use.

The crane capacity will often be labelled on the crane, or you can find this information in the operator's manual, manufacturer's specifications or crane load charts. You should always access and confirm the information so that you do not exceed the capacity of the crane.

If the dogger determines that the load is too heavy for the crane another crane or piece of equipment will need to be used, or if possible the load could be broken up into smaller parts which the crane can then safely move.



2.2.2.1 Load Calculations

While the dogger will work out the weight of the load it is helpful to know some basic calculations relating to safe working loads. Two common calculations relate to working out the volume and weight of a load.

Volume

Volume is the space that something takes up and is calculated using the formula:

$$\text{Volume} = \text{Length (L)} \times \text{Width (W)} \times \text{Height (H)}$$

For example:

A load is 10m long, 4m wide and 2.5m deep. The volume of the load would be calculated as:

$$\begin{aligned}\text{Volume} &= \text{L} \times \text{W} \times \text{H} \\ &= 10\text{m} \times 4\text{m} \times 2.5\text{m} \\ &= \mathbf{100\text{m}^3}\end{aligned}$$

Weight

It is important to know how to convert measurements of weight (e.g. kilograms to tonnes) and volume (litres to megalitres) when preparing to lift loads. This will help you to work out the weight of a load if it is in a different measurement to what the specifications or work instructions tell you.

Conversion Table			
1 tonne (t)	= 1,000 kilograms (kg)	1 megalitre (ML)	= 1,000,000 litres (L)
1 kilogram (k)	= 1,000 grams (g)	1 cubic metre (m³)	= 1000 litres (L)
1 gram (g)	= 1000 milligrams (mg)	1 litre (L)	= 1000 millilitres (mL)

There are conversion tables available for converting non-metric measurements (e.g. feet, inches, miles) and some calculators will do it for you.

2.2.3 Attaching Lifting Gear to the Crane Hook

After consulting with the dogger the lifting gear will need to be attached to the crane hook.

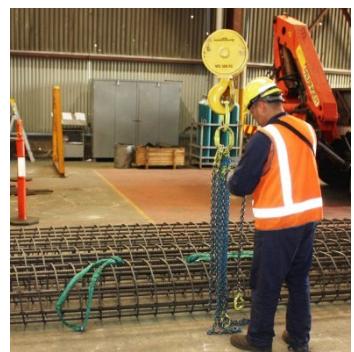
It is essential to the safety of everyone in the work area that lifting gear is correctly attached to the crane hook. This is to minimise the risk of equipment failure.

Inspect the crane hook for damage, wear, stretching or cracks. Make sure the safety latch is in place and working properly. If you suspect that the hook is not in a serviceable condition, report the defect to your supervisor.

Attach the lifting ring to the crane hook block and make sure the safety latch is correctly in place.

If you are using a spreader beam you will need to move the crane so that the hook is over the centre of the beam before attaching the beam lifting ring to the crane hook.

If you are using dual hoists you should attach the lifting beam rings to the crane hooks and check the safety latches are firmly engaged.

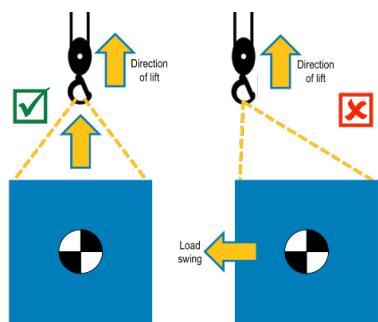


2.2.4 Position the Crane Hook Above the Load

Once the lifting gear has been attached to the crane hook you will need to position the hook and lifting gear above the load.

The crane hook should be positioned above the centre of gravity of the load to keep the load from swinging when it is lifted. The dogger will help you in determining the centre of gravity. Sometimes the only way of finding the centre of gravity of the load is by performing a test lift.

Lower the crane hook until it is low enough for the lifting gear to be attached to the load. There should be enough of the lifting gear to connect it safely and effectively to the load.



2.2.5 Attach Lifting Gear to the Load

The dogger is responsible for the application of slinging techniques, which means that they will be the one to attach lifting gear to the load.

You might be required to assist the dogger. Some things to remember in relation to connecting loads include:



- ◆ Make sure that any sharp corners are packed to prevent any unnecessary damage to slings or the load.
- ◆ Check the manufacturer's specifications for special loads to locate specially designed lifting points.
- ◆ **DO NOT** attach the load directly to the crane hook.
- ◆ The safety hook can be used to directly attach a load where a suitable shackle can be fitted, or a lug is available.

When using a pallet lifter attachment make sure that you:

- ◆ Always check the location of the lifting ring on the forks so as to maintain a balanced load. Without a load the lifting ring should be towards the back of the forks. With a load the lifting ring should be towards the front of the forks.
- ◆ Check that the forks are inserted properly before commencing the lift.



2.3 Prepare to Transfer the Load

Once everything is in place you can begin final preparations for the load transfer. Safety of personnel and equipment must be maintained so you will need to conduct some additional checks before carrying out the transfer.



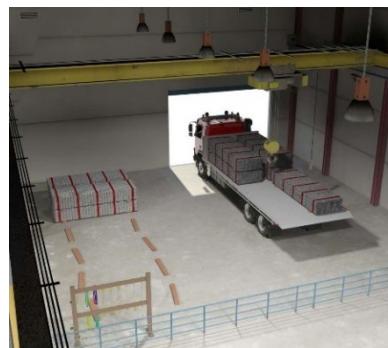
2.3.1 Check the Work Area Before Lifting

Before you commence with the lift you should check the work area and the path of movement to make sure that any hazards have been removed or controlled.

This will help to ensure that there are no new hazards that have occurred while getting the load and lifting gear ready.

Things you should check for before lifting a load may include:

- ◆ Oil leaks from the crane or equipment.
- ◆ Position of barriers and work area isolations.
- ◆ Position of other cranes if sharing the runway.
- ◆ If loading onto a truck, make sure it is in position and can safely leave the site or area once loaded.
- ◆ Other hazard controls are still in place.



You need to make sure that any hazard controls are in place before starting to lift the load. If you find a hazard that requires a control, do not commence the lift. Stop your work, speak with your supervisor and organise for controls to be put into place.

2.3.2 Conduct a Test Lift

Before moving the load it is important to conduct a test lift. A test lift is done by lifting the load just slightly off the lifting plane (e.g. ground) and is conducted to determine if the load is safe to move.

Test lifts can be used to ensure that:

- ◆ The load has been correctly slung.
- ◆ The load's centre of gravity has been correctly determined.
- ◆ Loads of unusual shape or weight distribution are correctly slung.
- ◆ Near capacity loads do not overload the crane.
- ◆ Load measuring equipment can be used to verify the calculated weight of the load.
- ◆ All crane equipment is functioning properly.
- ◆ Hydraulic or pneumatic systems (where relevant) are at the required operating pressure.
- ◆ Adjustments to the slinging can be made in a safe manner.



Conduct the test lift according to the following procedures:

1 Check the area before lifting the load to make sure it is free of obstructions and the lifting area is clear of other people.

2 Using the crane controls, hoist the hook block up slowly until the slings become tight.

3 Check that all lifting gear is properly attached.

4 Raise the hook block until the load is lifted slightly off the ground.

5 If the load is not evenly balanced (starts swinging) immediately lower the load.

6 Slings should be re-positioned.

7 Conduct another test lift.

Where load measuring devices are fitted, the estimated weight should be verified and load calculations revised as required.

You should only proceed with the load movement if the test lift indicates the load is stable and safe to proceed.

2.4 Transfer the Load

Once the load has been prepared and connected, and any required adjustments have been made after the test lift, you can transfer the load.

Make sure you follow the lifting plan for the task and continue to monitor the work area for any hazards that may arise. This includes making sure that any required hazard controls are in place.



2.4.1 Safe Load Transfer Techniques

There are a number of important points to consider to make sure that the load transfer is safe. These points and techniques include:

- ◆ To operate a remote bridge or gantry crane the person must be competent and qualified.
- ◆ Only use appropriate load shifting techniques and methods, including following relevant standards and workplace procedures.
- ◆ Take into account specific terrain, weather conditions and time of day or night when transferring loads.
- ◆ Consult with associated personnel, such as the dogger, to determine if a tagline or other method for controlling the load is required to prevent load swing or twisting during transfer.
- ◆ Make sure all required signals are correctly given and interpreted in accordance with the appropriate Australian Standard.
- ◆ Make sure all planned hazard controls are implemented including PPE.
- ◆ Avoid damage to product and the crane during handling.
- ◆ Sound warning devices prior to lifting and moving a load to let others know that a load is being moved.
- ◆ Before moving the load, check that there are no warning signs along the load path which indicate that cranes cannot be used in the area or at that time.
- ◆ When a maintenance technician or contractor has been brought in to perform maintenance on the crane, you MUST NOT operate the overhead crane until it has been formally handed back to you (returned to service).



2.4.1.1 Protect Personnel



Make sure that you and other personnel are not put in danger while carrying out your work.

- ◆ Never wear loose clothing or jewellery that could be drawn into a machine. Button long sleeves and tuck in your shirt to prevent such injuries.
- ◆ People can be seriously injured by falling loads. Never stand under a suspended load or lift a load over another person.
- ◆ If approaching another person or a person is in your path, stop and sound the horn. Proceed when the person is out of your path.
- ◆ Do not place yourself or any part of your body into an area where there is any likelihood of being caught or struck if things go wrong.
- ◆ Be careful of slip and trip hazards that may be present when operating the crane. Inspect the floor surface for oils, lubricants or other debris.

2.4.2 Lift the Load

When lifting a load you should:

- ◆ Stand clear of the load (in a designated position) and use the crane controls to raise the load up.
- ◆ Lift the load slowly.
- ◆ Check for any obstructions and people while lifting.
- ◆ Never lift a load over machinery or people.
- ◆ Stop the vertical lift of the crane before reaching the limit switch. Do not use the over hoisting limit switch as a convenient method of stopping the hoisting motion.



2.4.2.1 Using the Remote Control



All crane controls and movements should have been checked during the operational checks. However, it is a good idea to double check the direction of the crane against the direction indicated on the remote control.

The operator may depress the Down, Up, West, East, South and North buttons to the first position for slow operation and into the second position for faster operation. The operator then has to lift pressure from the buttons completely to stop the operation.

All crane movements should be as smooth as possible to prevent the load from swinging or twisting.

If the remote control will not respond check battery supply as the light will flash if the supply is low. Contact maintenance for a new battery if needed.

If the remote control fails to operate correctly in any way:

1. Press the emergency stop.
2. Remove the red key cap.
3. Hand in the control and report the incident. The remote control is not to be used if it is not working correctly.



For an Emergency Stop press the **Red Button**. Press the start/Aux to release.

2.4.3 Move the Load

When moving a load you should keep the following safe operating techniques in mind:

- ◆ Continue to monitor the area and load:
 - ◆ Check for obstructions and pedestrian traffic as you move the load. Ensure pedestrians are kept well clear of the load while it is moving.
 - ◆ If someone is in the path of the load, stop and sound the horn. Only proceed once the person is out of your path.
 - ◆ Check the load remains stable. Control the load balance and stability to avoid damage or potential injury.
- ◆ Keep the load under control by using a speed appropriate for the load weight.
- ◆ Avoid sudden stops or speed starts.
- ◆ DO NOT drag the load.
- ◆ Walk behind the load when moving.
- ◆ If the overload light or indicator comes on you should stop operating immediately – lower the load to the ground, report the incident to an authorised person and await instructions.
- ◆ If the load swings while the load has been moving, the operator may have to 'Chase the Hook':
 - ◆ Stop the horizontal movement of the hook before the final destination. This will cause the load to swing forward.
 - ◆ Move the Bridge or Crab quickly to the furthest extent of the load swing and stop again. This will remove the swing from the load.



Make sure your crane does not collide with others operating in the area. To prevent this kind of accident:

- Check the warning device.
- Carry out pre-operational checks.
- Check the automatic cut off devices.
- Know the location of other cranes.
- Maintain an appropriate distance between cranes.
- Use slow speeds to avoid collisions.
- Never use one crane to push another out of the way.

Report all crane accidents and any faults or malfunctions in machine operation to your supervisor immediately. Cranes must not be used after an accident. The supervisor, or authorised personnel, must make sure the machine is in a safe operating condition before letting the work continue.

A general process to follow to move loads involves:

1. Check the area before lifting the load to make sure it is free of obstructions and the lifting area is clear of other people.
2. Using the crane controls, hoist the hook block up slowly until the slings become tight.
3. Check that all lifting gear is properly attached.
4. Raise the hook block until the load is lifted off the ground. You shouldn't raise the load more than necessary as this can cause it to be less stable.
5. Mobile the load, following the lifting plan and any directions and signals from the dogger.
6. Monitor the work area for hazards, including people going into the path of travel.
7. Position the load over the landing area. Ensure smooth movements are used to prevent load swing.
8. Lower the load and secure as required.



Dual Hoists

If you are using dual hoists to lift a load you will need to engage hoist operating mode before operation:

1

The dual hoist crane is capable of single and dual hoist function. To operate a single hoist, press the relevant hoist selector button on the control once (e.g. 'HOIST A' or 'HOIST B').

2

To return to dual hoist operations press the hoist selector button again.

3

Check that the load is evenly distributed over both hoists.

4

Check that the correct lifting equipment is being used for the task.

5

Check that all lifting equipment is attached correctly and is secured.

6

Check that the load weight is evenly distributed when lifting.

7

Align both hoists directly over the lifting points and centre of the load as an off-centre lift will create load swing.

2.4.3.1 Follow Directions and Signals

There are different communication methods that can be used for directing the load movement.

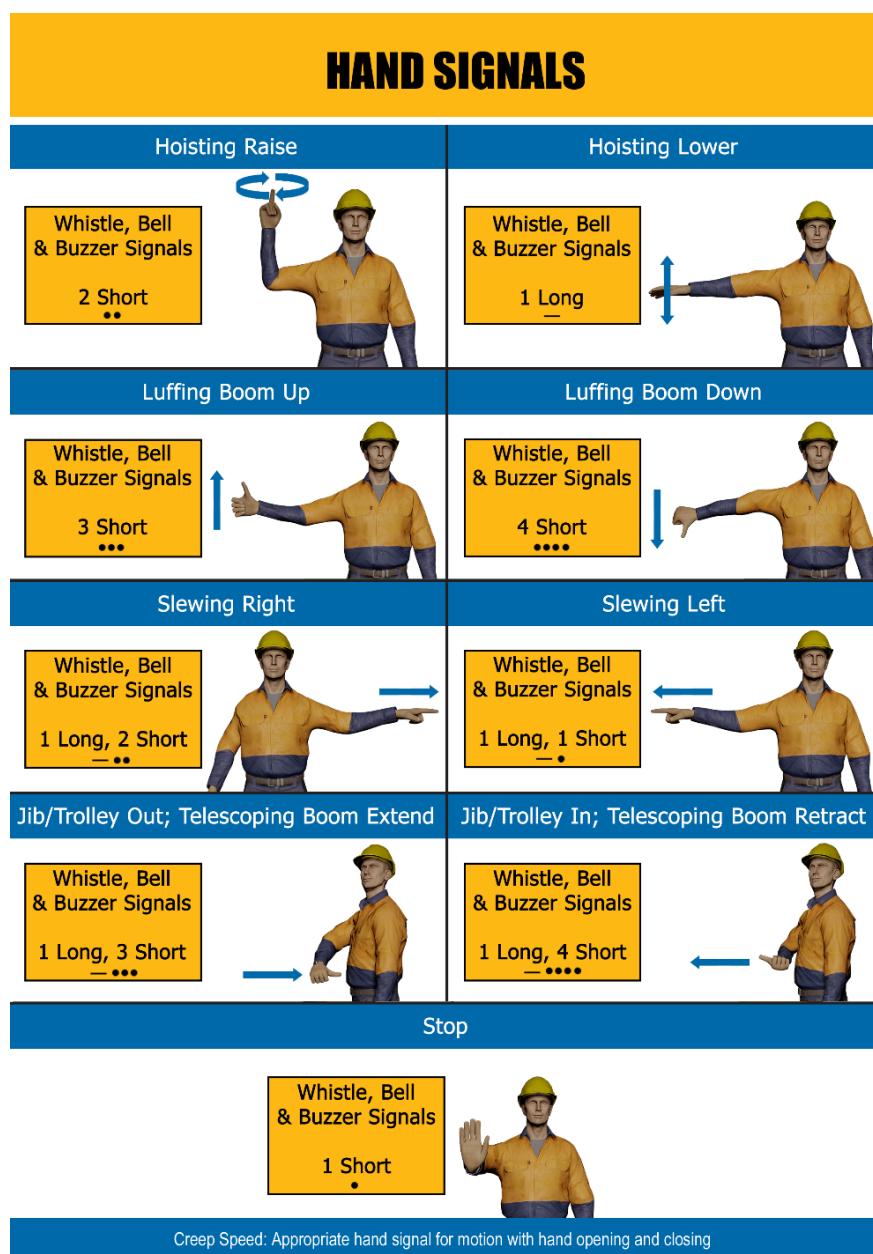
The most common communication methods are:

- ◆ Hand signals.
- ◆ Whistle signals.
- ◆ Two-way radio.
- ◆ Verbal directions.



Always follow the directions given to you by the person dogging the load. They may use hand/whistle signals or two-way radios to direct you. If at any point you are unsure of the directions being given to you, stop and confirm the instructions with the dogger/rigger.

Shown here are the hand and whistle signals commonly used in Australia:



2.4.3.2 Steadyng a Load

During the load movement the load maybe begin to sway, swing or twist and may need to be steadied.

If the load is well balanced and is lifted, moved and lowered at an appropriate speed, there should be very little twisting or swinging of the load.

If associated personnel are involved in the lift, such as the dogger, they may use a tagline to steady the load during the move and when landing the load. Some loads are too heavy to control by holding with your hand and the crane operator would be safer away from the load.

A tagline might also be used if there is a light wind which may act on the load causing it to swing.

Only a non-conductive rope can be used as a tagline.

At some sites a purpose built tool may be used to aid in load positioning.



2.4.4 Lower and Place the Load



Once the load has reached the landing spot you will need to safely bring the load to a halt over the landing spot.

You should never stop the load by 'plugging' the controls. This means continuously pushing and releasing the control button. This causes the motor to run too slowly to activate the cooling fan. This can cause the motor to burn out and the contacts to overheat.

A general process to follow to lower and place loads includes:

- 1. Position the load** – over the landing spot.
- 2. Slowly lower the load** – until it is on the ground or landing surface (such as tray of a truck). You may need to pause during the lowering to let the dogger or other personnel correctly position any dunnage or to adjust the load so it lands in the correct spot, particularly if it has twisted during the move.
- 3. Continue to lower the hook block** – slowly until the sling/lifting gear is slack.
- 4. Remove the lifting gear** – from the load or hook block.
- 5. Raise the crane hook** – to a safe height so it is not a danger to people and will not damage property or equipment.
- 6. Turn off the crane or move it to the next location** – this will depend on the requirements of the site and your work.



Other points to remember when lowering the load are:

- ◆ Always lower the load into the designated area.
- ◆ Smoothly and slowly lower the load. Fast or jerky movements could cause the load to swing, damaging the load or equipment or injuring personnel.
- ◆ Place the load correctly. This could include:
 - ◆ In a defined storage area to avoid product damage.
 - ◆ On the appropriate dunnage.
 - ◆ With sufficient clearance around it for easy access and removal of lifting gear.
 - ◆ Neatly stacking and aligning the load as required.
 - ◆ Making sure the load has sufficient support as needed (e.g. dunnage).
- ◆ Detach lifting gear and raise the crane hook to a safe height so that it is not a danger to people and will not damage property or equipment.
- ◆ The main hook should not be left to rest on the load or the ground. Resting the crane hook will make the wire loose, which could then double up on the drum and cause the rope guide on the hoist to break.

NEVER leave a load suspended. Stay with the load until the move is finished.



2.4.4.1 Remove Lifting Gear from the Load

Once the load has been safely lowered and placed the lifting gear will need to be removed from the load.

Depending on the type of load and where it has been placed the lifting gear will be removed in one of 2 ways:

From the crane hook, and then from the load.

OR

From the load and kept on the crane hook.



The procedure you should use could be detailed in the lifting plan or workplace procedures, or will be decided in consultation with the dogger.

A general procedure for removing lifting gear from the load includes:

1. Lower the crane hook block/attachment.
2. Remove the lifting gear from a load to prevent the hooks being snagged on the load when raising the crane hook up and out of the way.
3. Move the crane and lifting gear away from the load.

After unhooking the load make sure the lifting gear is clear of the load before moving the crane away.

2.4.4.2 Load Destination

Make sure the load destination area is safe before leaving the area:

- ◆ Check the landed load is secure:
 - ◆ There is appropriate dunnage or chocks in place to prevent it from moving.
 - ◆ Any applicable access restrictions are put in place for items such as hazardous substances, according to workplace procedures, such as locks, gates or barriers.
- ◆ Inspect walkways to determine they are clear at all times.
 - ◆ Check that stacked loads and dunnage is clear of passageways.
 - ◆ Check that cages, trolleys and pallets etc. are clear of passageways.
- ◆ Access to fire equipment and emergency exits is maintained.



3.1 Shut Down the Crane

All shut down procedures should be done in accordance with manufacturer's instructions and safe operating procedures.



3.1.1 Partial Shut Down

If you leave the crane temporarily (for example to answer a phone call, have a tea break or go to the toilet) you MUST do a partial shutdown.

- 1** Remove the load and slings.
- 2** Raise the crane hook and slings to a safe height (above head height).
- 3** Park the crane in a safe area.
- 4** Apply motion locks and brakes (where applicable).
- 5** Turn off the crane isolator and leave the remote control in a safe place.

You **MUST** make sure that the crane is safe whenever it is left unattended, even for short periods. If an unattended crane becomes involved in an accident, the crane driver can still be held accountable if the crane was not properly shut down.

Each time you leave the crane, carry out the proper partial shutdown procedure.

3.1.2 Full Shut Down

The crane must be fully shut down:

- At the end of the day.
- If any maintenance is to be done.
- If there is an accident involving the crane or one near to the crane.



A typical shut down procedure would include the following:

1. Move crane to an appropriate and safe storage area.
2. Apply motion locks and brakes (where applicable).
3. Raise the hook block high enough so it is well above and away from machinery and pedestrian traffic.
4. Turn off the remote control by pressing the emergency stop button. Remove the red cap key and place it and the remote control locked away in a designated area.
5. Turn the crane off at the isolation switch.
6. Secure against unauthorised operation by locking the isolation switch with padlock if it is for an extended period of time as in the end of a shift or overnight.
7. Turn the main isolator switch off.
8. Apply storm brakes and rail clamps (if applicable).
9. Secure site in accordance with workplace procedures.

Always check the specific procedures for the crane you are operating as each crane can differ slightly and may have a different shut down procedure.

3.1.3 Conduct Post-Operational Checks

After you have finished your work and shut down the crane it should be checked and inspected to make sure it is ready for the next operator.

As part of your job as a crane operator, you need to inspect the crane to find and report any faults or damage that may have occurred during your work activities.



Your inspection should include:

Visual Inspection of the Crane

Physically looking for anything odd, wrong, broken or damaged.

Visual Inspection of the Environment

Is any fluid leaking?

Signals

Alarms, lights, electronic indicators showing that something may be wrong.

Post-operational checks should include all of the things you look for when conducting pre-start checks.

3.1.3.1 Reporting Faults

Once a fault has been found, it needs to be reported and fixed.

Most sites have a fault report form that will need to be filled in with the details. The form will generally need the crane details, such as the make and model, the site identification numbers, the type of fault and the person reporting the fault.

You also need to make sure the crane is tagged out (isolated from use) until the repairs have been made.

Some sites will have a verbal system of reporting where you speak with a supervisor who then documents the fault, while others may require the operator to organise repairs of the fault directly.

Do not use the crane until it has been fixed and approved for return to service.



3.2 Carry Out Routine Maintenance

After completing all shutdown procedures, it is important that routine maintenance and general housekeeping tasks are carried out to ensure both the crane and the worksite are kept in good working order.



3.2.1 Maintenance Tasks

You may be required to carry out servicing and lubrication of the crane to ensure the crane stays at its operating capacity for as long possible.

Servicing requirements will be outlined in the operator's manual as well as workplace procedures. You should only carry out servicing which you are approved to complete.

When conducting maintenance activities it is important to keep people in the area safe by using barricades or fences if necessary and locking out machines.

Routine maintenance tasks include:

- ◆ Replacement of minor parts.
- ◆ Running diagnostics on warning, safety and control systems.
- ◆ Lubrication tasks.



Appropriate hazard controls should be put in place before beginning any maintenance. These could include:

- ◆ Move the crane to a location where it will cause the least interference to other tasks on site. There could be a designated area or it may need to be coordinated with your supervisor and other operators.
- ◆ Place controllers/remotes in the "off" position.
- ◆ Place the main switch in the "off" or "open" position, depending on the crane, and lock out the crane, except where power is necessary for the maintenance tasks to be completed.
- ◆ Place appropriate warning signs on the controller or control station.
- ◆ Make sure the area is properly lit so that others can clearly see you.
- ◆ Inform others of what you are doing.

If any other crane uses the same runway:

- ◆ Use protective devices to prevent interference with the idle crane undergoing repairs.
- ◆ If protective devices are impracticable, place a signal person at a visual vantage point to warn operators of active cranes when they reach the safe distance limit from the idle crane.

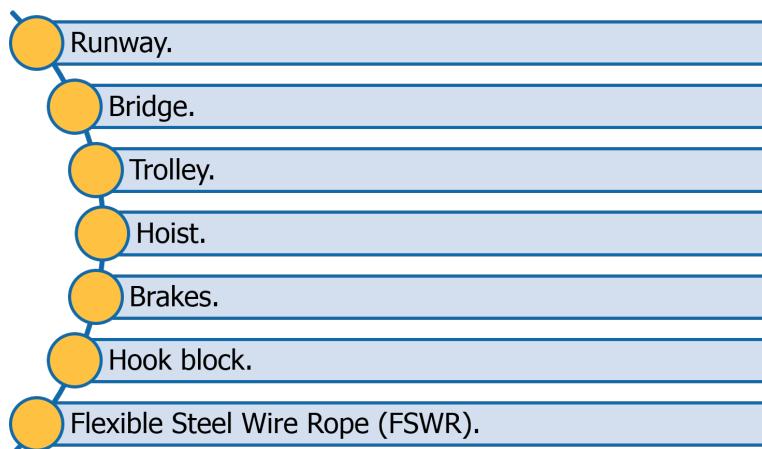
If there is anything that you are not trained to change or repair, or you are not sure how to safely maintain the crane, speak with your supervisor.



3.2.2 Carry Out Lubrication Tasks

Some parts of the crane may need to be regularly lubricated to keep it in safe working order. Check the operator's manual for details.

The common parts or items that may require lubrication include:



A component that will commonly require lubrication is the crane hoist rope. Without lubrication the friction on the rope will increase, causing it to wear faster.

3.2.3 Carry Out Housekeeping Tasks

Housekeeping tasks may include:

- ◆ Cleaning up work areas.
- ◆ Disposing of waste materials.
- ◆ Recycling materials.

All housekeeping activities should follow the procedures for the worksite.



3.2.3.1 Dispose of Environmentally Sensitive Fluids and Materials



You may be required to dispose of environmentally sensitive fluids or materials as part of your housekeeping tasks, such as oils used in lubrication activities.

The environmental management plan will detail the requirements for the disposal of environmentally sensitive fluids and materials. It is part of your role to ensure that you are familiar with these requirements.

You should also consult the Safety Data Sheet (SDS) for the fluid or material that you are working with for the best methods of disposal.

Your site will have specific areas or procedures for disposing of fluids and materials. The 2 most common procedures on site will include:

Using a Licensed Waste Contractor

This person will travel from site to site and will take care of all environmentally sensitive materials off site.

Treating the Waste at the Source

Some sites may have the ability to put sensitive fluids through treatment and recycling processes that will allow the waste to be reused elsewhere on site.

For any requirements that you are unsure of, you should check with your supervisor or other authorised personnel.

3.3 Process Records

Site record keeping procedures keep the site running smoothly.

Part of your role will include completing and processing records for your crane and the tasks that you have completed.



3.3.1 Records, Reports and Paperwork

As well as the maintenance records you have filled in, some other records, reports and paperwork that may be needed include:

- ◆ Computer readings – from process monitoring, test results, activity reports, and materials readings.
- ◆ Logs – supply logs, work activity logs, training logs, stockpile logs, usage or driver logs.
- ◆ Shift documents – end of shift, end of process, quality information.
- ◆ Fault reports.
- ◆ Hazard reports – including Take-5 forms.
- ◆ Incident reports – accident forms, incident reports, environmental incident reports, WHS investigation reports, quality assurance (QA) reports.



It is important that you keep detailed records of all your activities, especially any problems you had during your shift.



Make sure you keep notes about what happened and what you did to fix it. This includes faulty or broken equipment, operational issues (mistakes or not following procedures correctly for some reason) and any other unusual things.

As well as completing the required records you also need to make sure you process them properly, so that they get to the right person and any required actions can be taken.

Some sites will require you to report verbally to your supervisor or other authorized person, while others will require you to file or hand-over written records. Always make sure you process records according to your site requirements so that issues or problems can be followed up.