DOGGING
SAFETY & LICENCE GUIDE

LLN READY

Dogging
LICENCE

Training support material for:

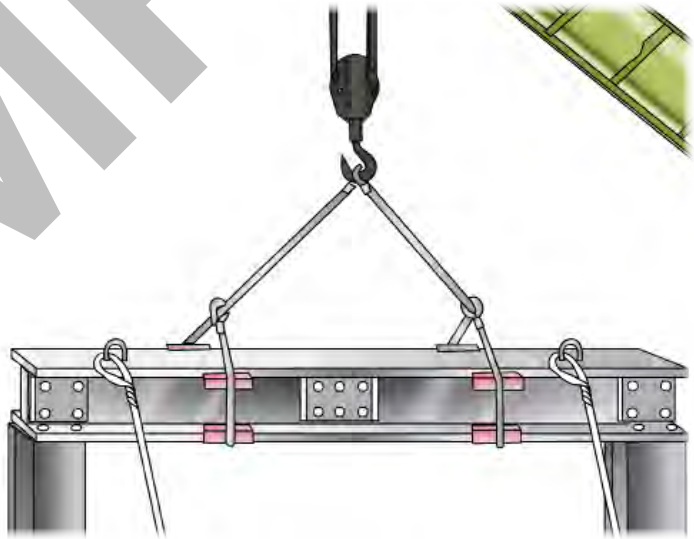
CPCCLDG3001 –
Licence to perform dogging

Produced by:

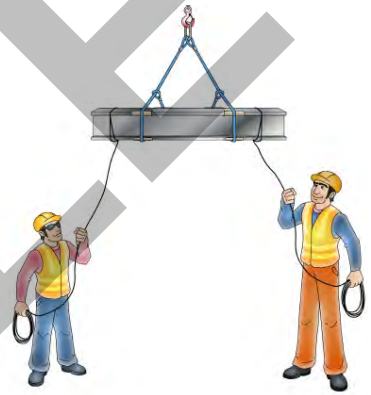
EASY GUIDES
Australia Pty Ltd

Contents

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.**

Types of cranes

As a dogger it is likely that you will work with many different **types of cranes**.

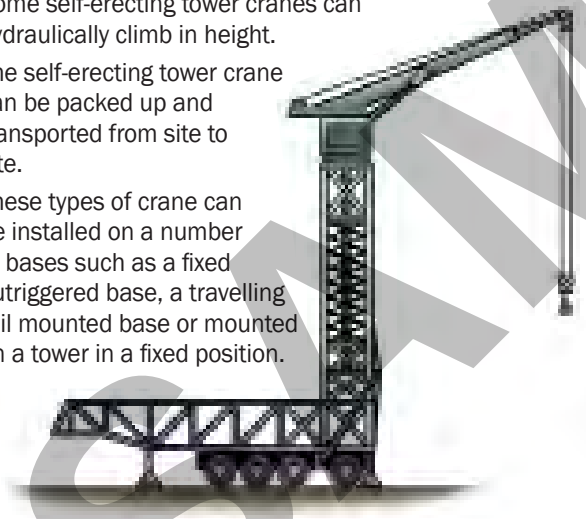
The dogger must talk with the crane operator to find out the cranes rated capacities under all configurations.

These are some examples of the types of cranes that you may work with.

Self-erecting tower crane

The self-erecting tower crane is commonly used on building construction sites for lifting a wide range of construction materials to elevated locations on the jobsite.

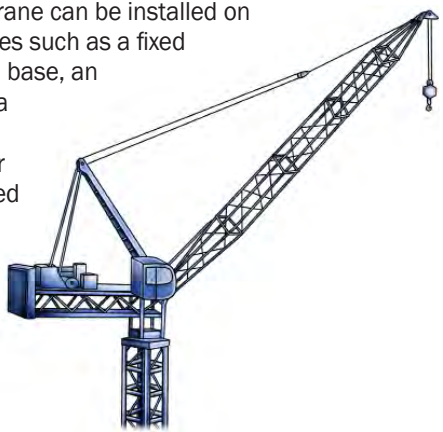
- Some self-erecting tower cranes can hydraulically climb in height.
- The self-erecting tower crane can be packed up and transported from site to site.
- These types of crane can be installed on a number of bases such as a fixed outriggered base, a travelling rail mounted base or mounted on a tower in a fixed position.



Luffing boom tower crane

The luffing boom tower crane is commonly used on building construction sites for lifting a wide range of construction materials to high-elevated locations on the jobsite.

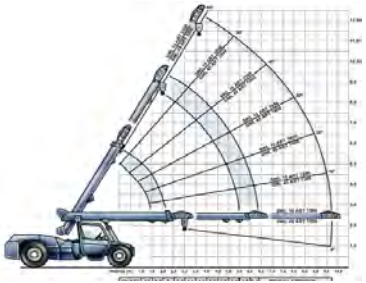
- These tower cranes can hydraulically climb in height.
- Erection of the tower crane is performed by an auxiliary crane.
- These types of crane can be installed on a number of bases such as a fixed counterweighted base, an anchored base, a travelling rail mounted base or mounted in a fixed position.



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.

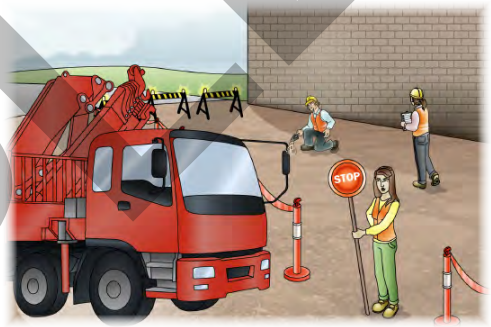
QUESTION 10

You are planning for a lift. You will plan for site hazards later.

What other things should you plan for?

What are some problems or challenges at this site?

How will you get in and out of the site?



Do you have the job details?

Where is the job?

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QUESTION 10

...CONTINUED FROM PREVIOUS PAGE

You are planning for a lift. You will plan for site hazards later.

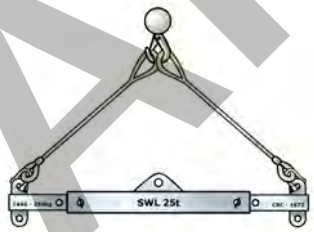
What other things should you plan for?

What is the best and safest way to communicate?

Do you need any permits?

Is the equipment available?

Does the crane and equipment have enough capacity to carry the load? Check the SWL.



Type of crane

Type of load

Five steps to fall prevention– Prevention of falls hierarchy of control measures

The pyramid shows the five steps in the 'Prevention of falls hierarchy' in order from the best choice of control to the last choice. - The Prevention of falls hierarchy is a control system that can be used to prevent falls in the work place.

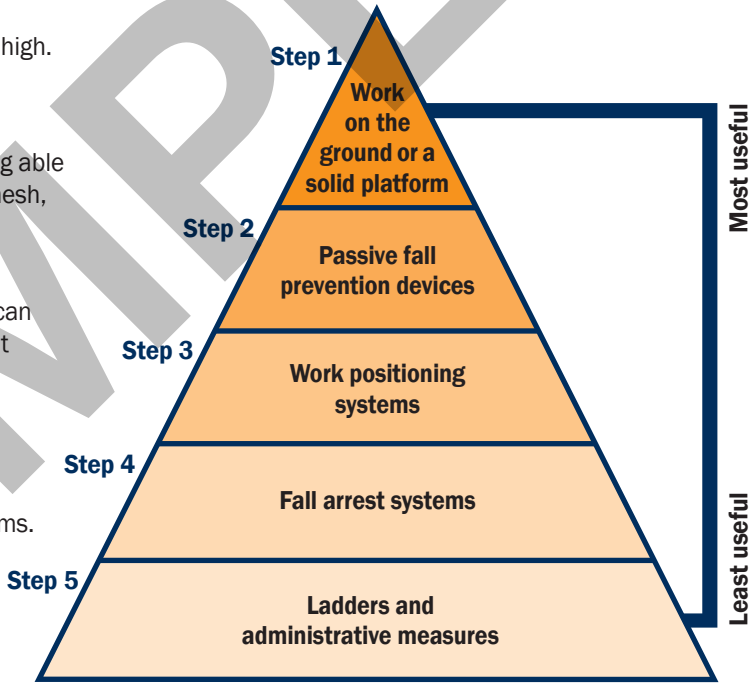
Step 1: Work on the ground or a solid platform.
Think of ways to do the job without working up high. This eliminates the chance of falling.

Step 2: Passive fall prevention devices.
Use equipment that totally stops you from being able to fall. For example, guard railing, roof safety mesh, edge protection and work platforms.

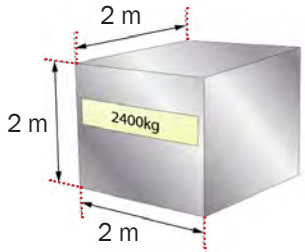
Step 3: Work positioning systems
Use equipment to position the person so they can do the work safely. This includes travel restraint systems and industrial rope access systems.

Step 4: Fall arrest systems
These systems are designed to 'catch' or stop you if you fall. They include catch platforms, industrial safety nets and safety harness systems.

Step 5: Ladders and administrative measures
Working from ladders, or using different ways to do the work are last on the list of controls.



Example — Calculating Load Volume and Weight



Job:

Lift a solid concrete block

Specifications:

Size: 2 m Length (L) × 2 m Width (W) × 2 m Height (H)
Weight of material: 2400 kg per cubic metre

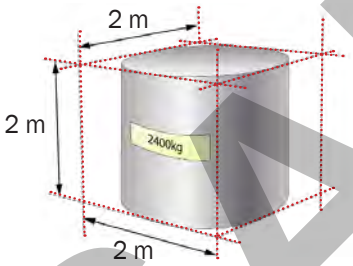
First you calculate the volume of the block in cubic metres (L × W × H)

2 m × 2 m × 2 m = 8 cubic metres

Then multiply the cubic metres by the weight of material

8 cubic metres × 2400 kg = 19200 kg (19.2 t)

Example — Calculating Load Volume and Weight



Job:

Lift a solid concrete cylinder

Specifications:

Size: 2 m Diameter (D) × 2 m Height (H)
Weight of material: 2400 kg per cubic metre

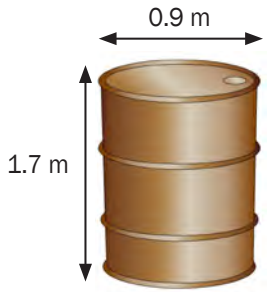
First you calculate the volume of the cylinder in cubic metres: D in **(m) × D** in **(m) × 0.79 × H** in **(m)**

2 m × 2 m × 0.79 × 2 m = 6.32 cubic metres

Then multiply the cubic metres by the weight of material

6.32 cubic metres × 2400 kg = 15168 kg (15.2 t)

Example — Drum filled with water



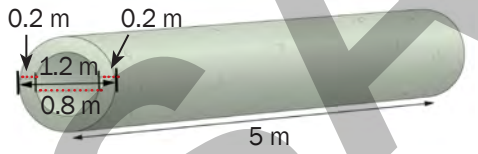
Job:
Move a drum filled with water

Specifications:
Weight of water: 1000 kg per cubic metre
Drum diameter (D): 0.9 m (900 mm)
Drum height (H): 1.7 m (1700 mm)
Drum tare weight: 260 kg (Weight of empty drum)

Formula to calculate volume of water: Diameter in **(m) × Diameter** in **(m) × 0.79 × H** in **(m) drum height**
D × D × 0.79 × 1.7
0.9 × 0.9 × 0.79 × 1.7 = 1.08783 m^3

Final drum weight with water:
Volume × weight of water (1000 kg per cubic metre) + drum tare weight
1.08783 × 1000 + 260 = 1347.83 kg (Round up = 1.35 t)

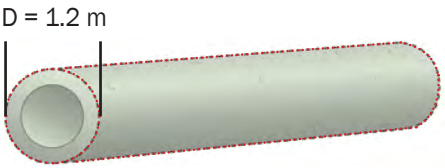
Example — Calculating weight of a pipe

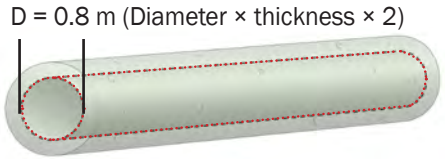


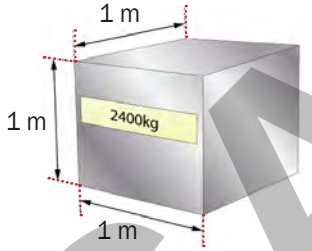
Job:
Lift a concrete pipe

Specifications:
Diameter (D): 1.2 m
Length (L): 5 m
Thickness: 0.2 m (200 mm)
Weight of material:
2400 kg per cubic metre

Calculate the weight of a pipe







Concrete 2400 kg per cubic metres (m^3)

To work out the weight of a pipe you must do 4 steps:

1. Work out the volume of the outer pipe.
2. Work out the volume of the inner pipe.
3. Take the inner pipe volume away from the outer volume.
4. Multiply the volume by the weight of the material.

---

1. Work out the volume of the outer pipe.

D in **(m)** × **D** in **(m)** × **0.79** × **L** in **(m)**

1.2 m × 1.2 m × 0.79 × 5 m = 5.688 cubic metres

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2. Work out the volume of the inner pipe.

D in **(m)** × **D** in **(m)** × **0.79** × **L** in **(m)**

0.8 m × 0.8 m × 0.79 × 5 m = 2.528 cubic metres

---

3. Take the inner pipe volume away from the outer pipe volume.

5.688 − 2.528 = 3.16 cubic metres

---

4. Multiply the volume by the weight of material.

3.16 cubic metres × 2400 kg = 7584 kg (7.6 t)

Working out how much weight a sling can lift

FSWR

Where D = Rope diameter (mm)
Safety factor = 8
WLL (kg) = D × D × 8
Example: 10 mm FSWR
10 × 10 × 8 = 800 kg (0.8 t)

Chain

Where D = Chain diameter (mm) G = Grade of chain; S = Safety factor
WLL (kg) = D × D × G × S

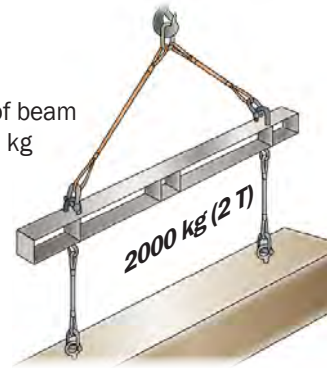
Grade 80 chain
WLL (kg) = D × D × 80 × 0.4
Example: 10 mm Grade 80 chain
10 × 10 × 80 × 0.4 = 3200 kg (3.2 t)

or D × D × 32
10 mm Grade 80 chain
10 × 10 × 32 = 3200 kg (3.2 t)

Grade 100 chain
WLL (kg) = D × D × 100 × 0.4
Example: 10 mm Grade 100 chain
10 × 10 × 100 × 0.4 = 4000 kg (4 t)

Other Grade chain
L = 30 M = 40 P = 50
WLL (kg) = D × D × G × 0.3
Example: 10 mm Grade 40 chain
10 × 10 × 40 × 0.3 = 1200 kg (1.2 t)

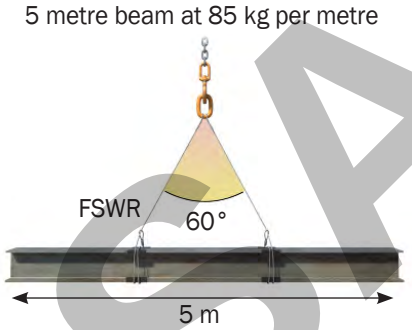
Calculate



Formula = √ Load ÷ Number of slings ÷ 8
2000 kg ÷ 2 = 1000 kg
1000 kg ÷ 8 = 125 kg
√ 125 = 11.180 mm
(Rounded up to 12 mm)

Using this total load – Calculate

What is the minimum diameter FSWR required for the slings?



Part 1

Calculate the weight of the beam

5 m × 85 kg per metre = 425 kg

Calculate the minimum slings required to lift the beam

425 kgs ÷ 8 ÷ 0.5 ÷ 1.73 = √ 61.416 = 7.83 mm
(Rounded up to 8 mm)

Using this total load – Calculate (continued)

Part 2

Calculate the weight of timber beams

Number of beams = 18

Length of beam = 3.6 metres

Weight of beam = 9 kgs per L/M

18 × 3.6 m × 9 kgs = 583.2 kgs

Part 3

Calculate the weight of steel beams

Number of beams = 4

Length of beam = 6 metres

Weight of beam = 145 kgs per L/M

4 × 6 m × 145 kgs = 3480 kgs

Part 4

Calculate the weight of mild steel plates

2 mild steel plates are 5 metres long and 0.75 metres wide

1 square metre of steel plate weighs 135 kgs

2 × 5 m × 0.75 m × 135 kgs = 1012.5 kgs

QUESTION 26

What are some ways you can find out the weight of a load?

You can find the weight by:

Checking the weighbridge certificate, consignment note or other information.

Weighing the load

Calculating the weight of the load.

For example:

50 kg × 6

= 300 kg + 15 kg pallet

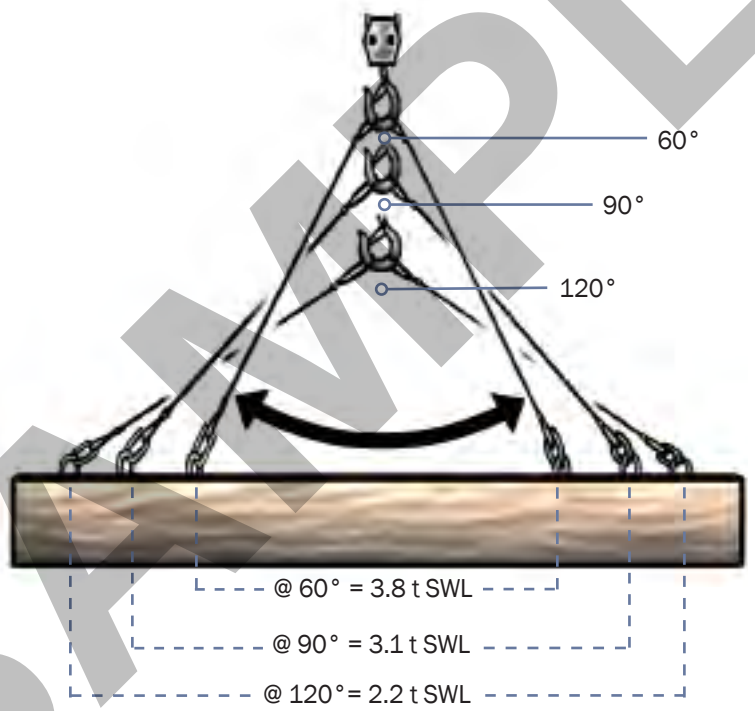
= 315 kg

Reading the weight marked on the load.

How sling angles changes the sling capacity (continued)

When you use two slings at an angle, each sling has more force on it.

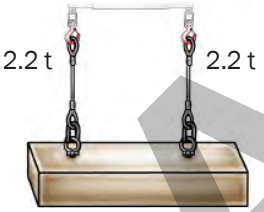
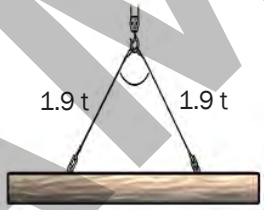
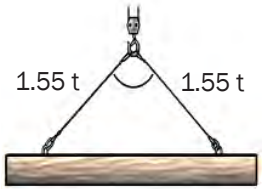
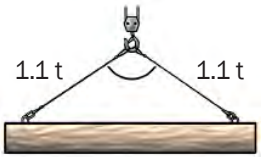
This means the slings cannot lift as much weight. As the angle goes up, the amount you can lift goes down.



Common angles for lifting

This chart shows you some common angles for lifting. We call the angles the **included angle**.

Each included angle has an angle factor. The angle factor is the number you use to work out how much you can safely lift. This is called the Safe Working Load (SWL).

Included Angle	Straight Lift (2 Slings)	60°	90°	120°
Angle Factor	**2**	**1.73**	**1.41**	**1.0**
Example: 16 mm FSWR WLL 2.2 tonne	2.2 × 2 = 4.4 t	2.2 × 1.73 = 3.8 t	2.2 × 1.41 = 3.1 t	2.2 × 1 = 2.2 t
				
	4.4 tonne	3.8 tonne	3.1 tonne	2.2 tonne

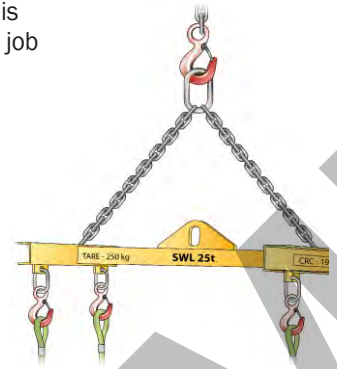
Select and inspect equipment

Element 2

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 cage 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)

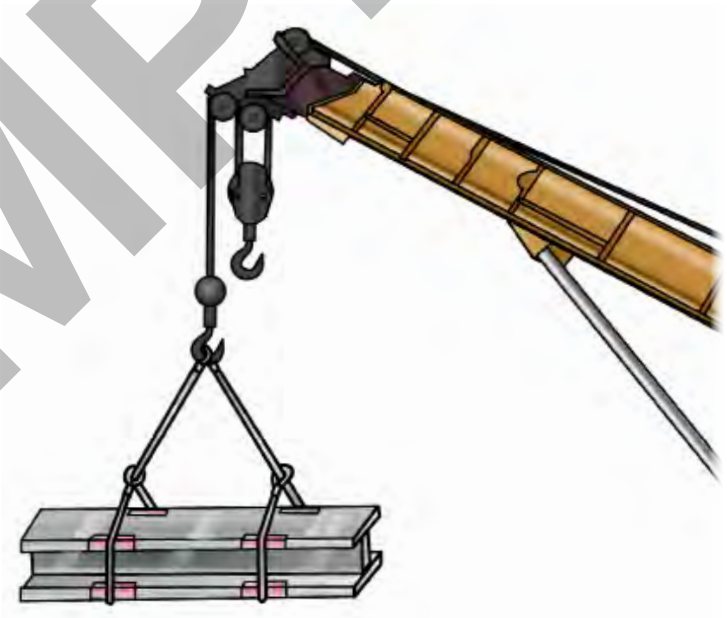
The load chart on the crane will show the mass of each hook block and the safe working load of the crane without hook blocks. The weight of all hook blocks fitted to the crane must be added to the load to be lifted.

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 × 120	=	120 kg
Single line hook	1 × 30	=	30 kg
Slings	2 × 20	=	40 kg
Steel beam	= 750 kg		
Total load for the crane	**= 940 kg**		



Set up task

Element 3

Communication

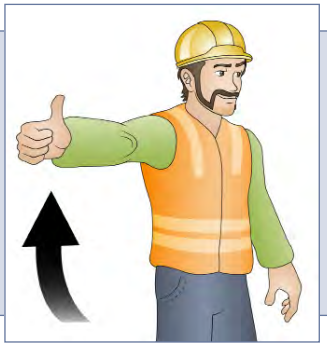
When planning a job, you will need to think about how you are going to communicate with the crane operator during the lift. There are a number of ways that you can communicate directions or instructions to the driver.

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.



Other personnel

It is important that you include any other people who will be working with you during the lift or who are responsible for the work happening on the worksite.

When planning the job and the methods of communication you are going to use you may need to talk to:

- Other doggers
- Riggers
- Crane operator
- Site supervisor
- Authorised managers
- Other personnel working in the area who may be affected by the crane movement
- Any other personnel shown on the Safe work method statement.

Signage

Signage can be used to warn of danger and give instructions or directions.

Perform task

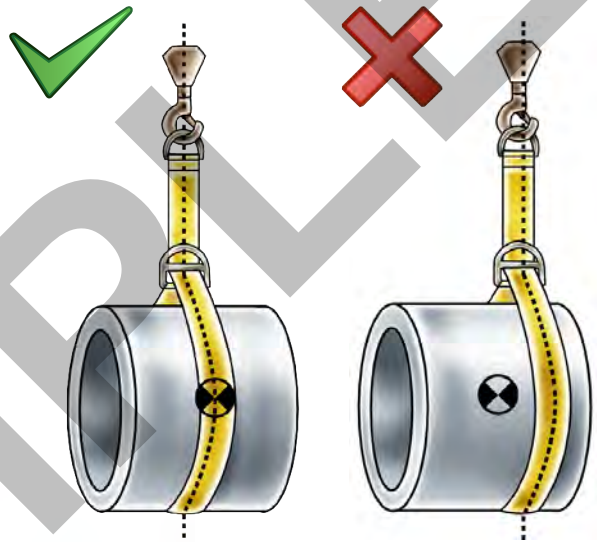
Element 4

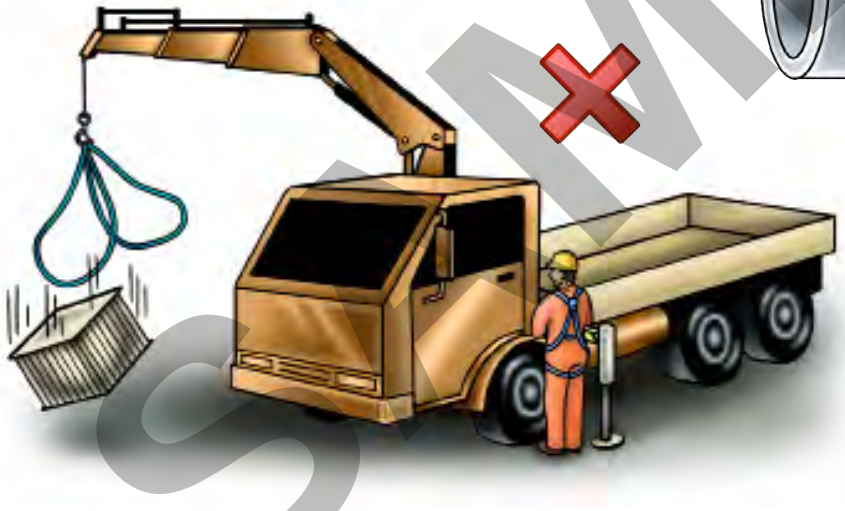
Position the hook above the load

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 snigged (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.





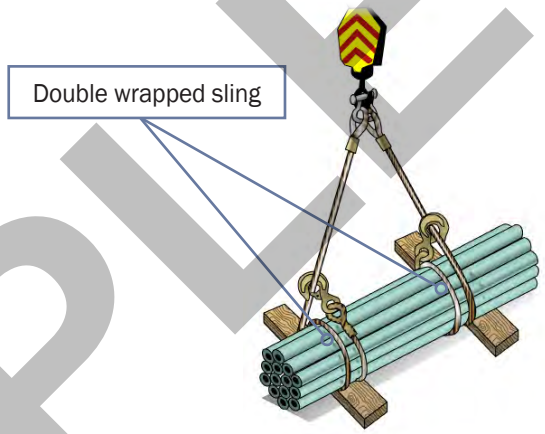
Lifting loads

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

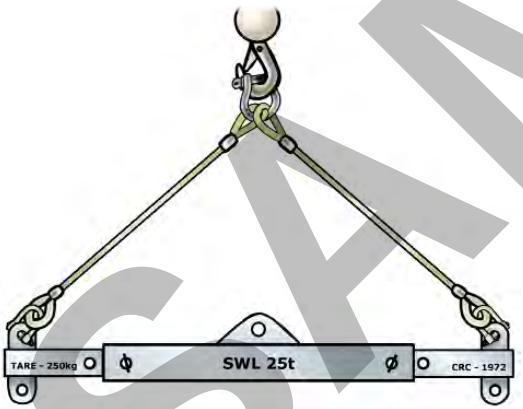
A load which has parts that can slip should be double wrapped with the sling.

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



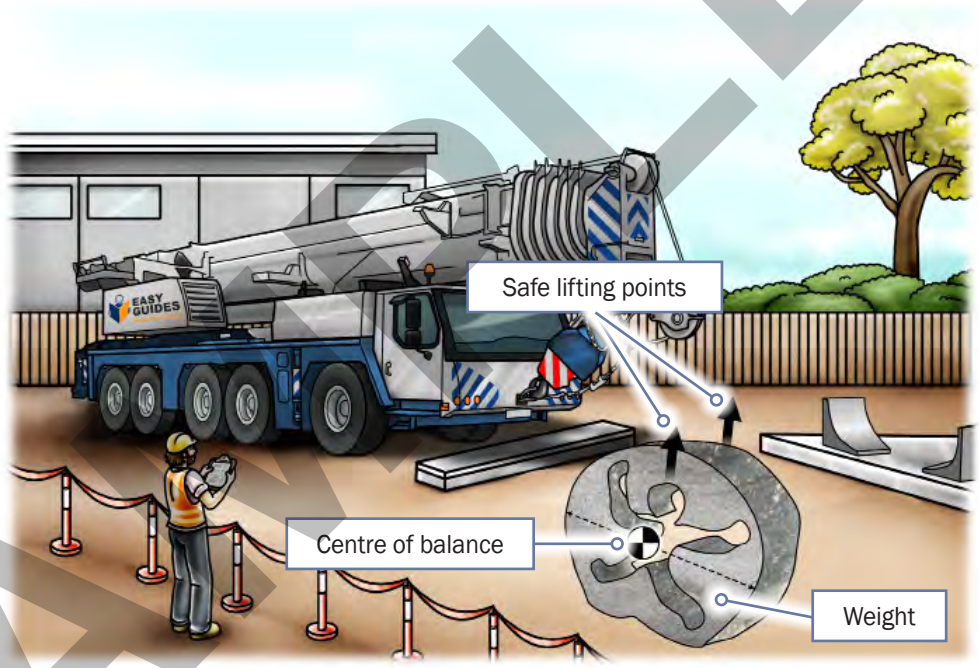
Long slings

QUESTION 86

You are going to lift a special or unusual load.

Why would you contact the manufacturer for information?

You need to know:



If there is something else that is making the load difficult to lift you may need to get advice from the manufacturer.

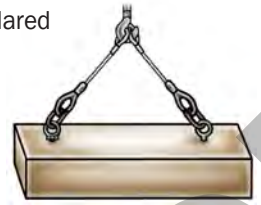
QUESTION 88

Look at the diagrams (pictures). You will use a two legged sling and need to choose the right sort of eye bolts.

Circle the right picture.

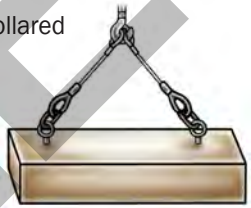
One eyebolt is not collared

A



Both eyebolts are uncollared

B

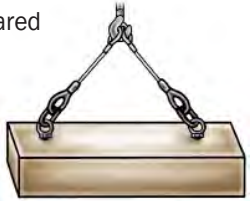


Eyebolts are not facing the same way

C

Both eyebolts are collared

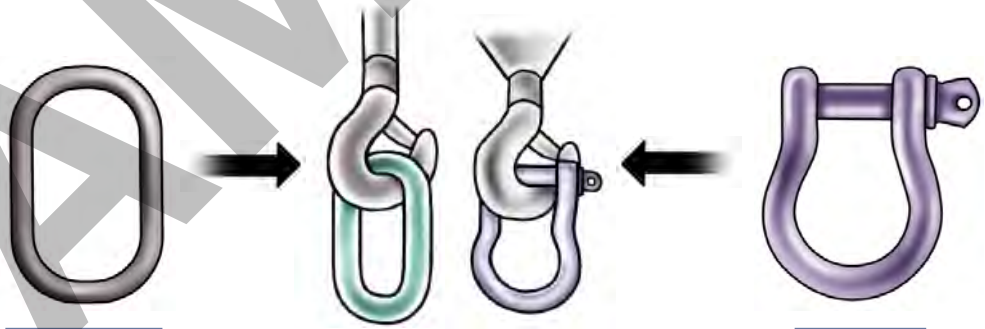
D



QUESTION 89

How do you secure slings to the crane hook?

You can use lifting rings or shackles.



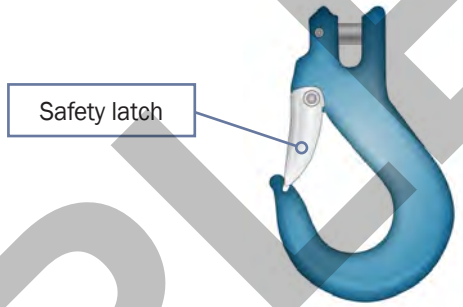
Lifting ring

Shackle

QUESTION 90

What safety device does a crane hook have which stops the slings slipping off?

A safety latch on the crane hook.

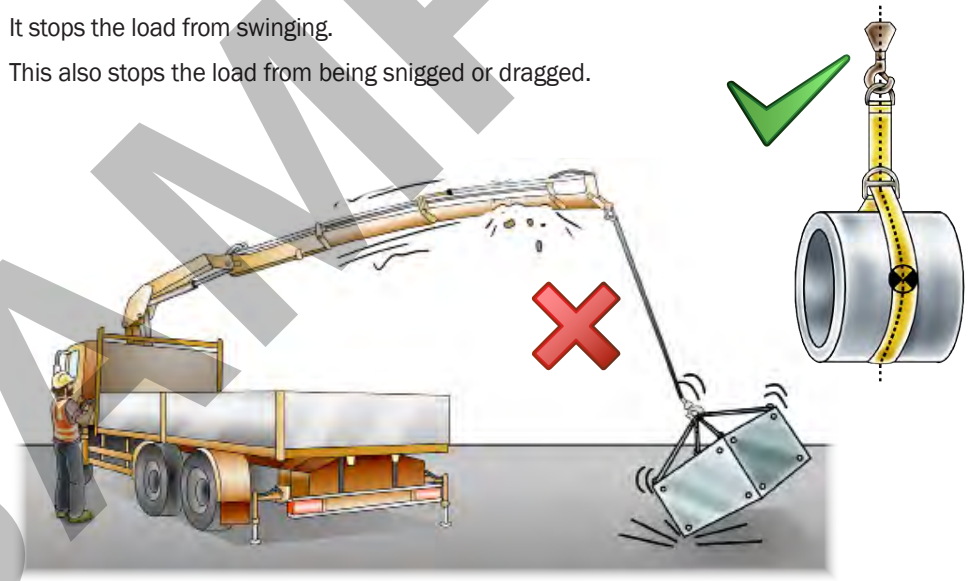


QUESTION 91

Why does the lifting hook need to be over the centre of gravity of the load?

It stops the load from swinging.

This also stops the load from being snigged or dragged.



QUESTION 92

What happens to the WLL if the synthetic slings get twisted or crossed over?

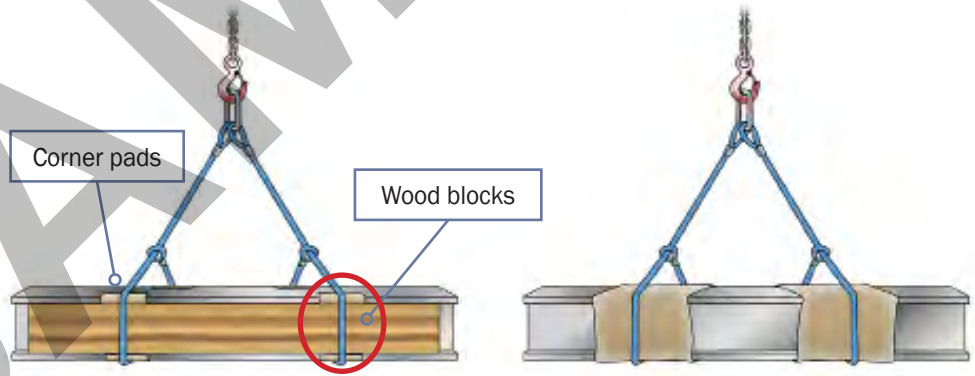
The SWL of the sling will be less. Avoid twisting the slings.

QUESTION 93

The load you will lift has sharp edges.

What can you do to make sure the sling and the load do not get damaged?

Edge protection is needed.

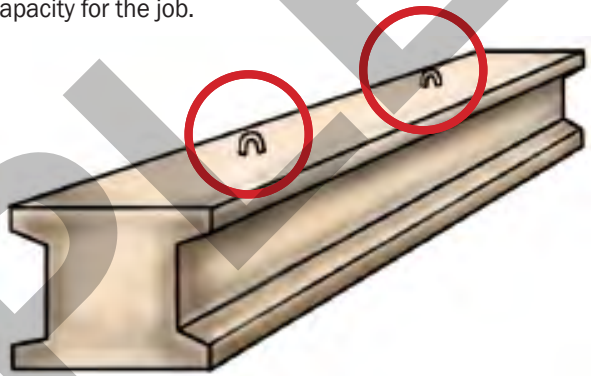


QUESTION 94

The load you will lift already has lifting lugs fitted.

What must you do before you lift with these lugs?

The lugs must be visually inspected to make sure they are in good condition and have the correct rated capacity for the job.



QUESTION 95

What do you need to think about and plan for when choosing lifting/slinging points?

You need to think about the: