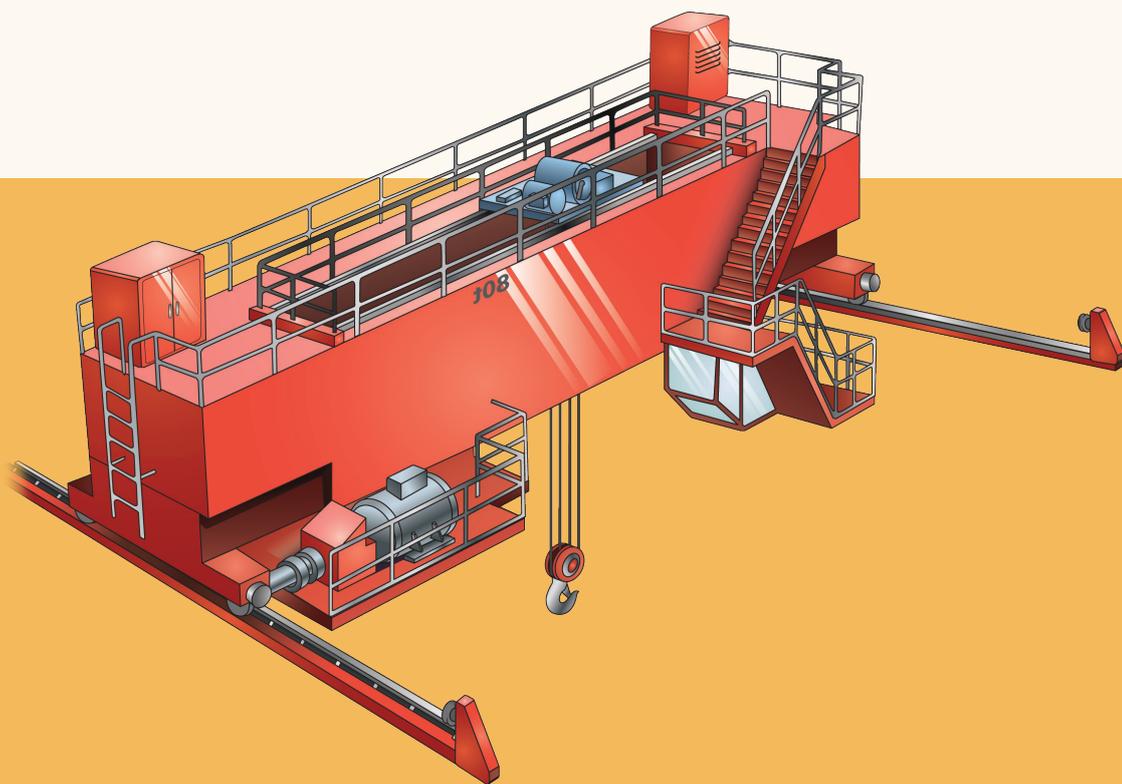


BRIDGE AND GANTRY CRANE LEARNER WORKBOOK

TRAINER'S MARKING GUIDE WITH MODEL ANSWERS

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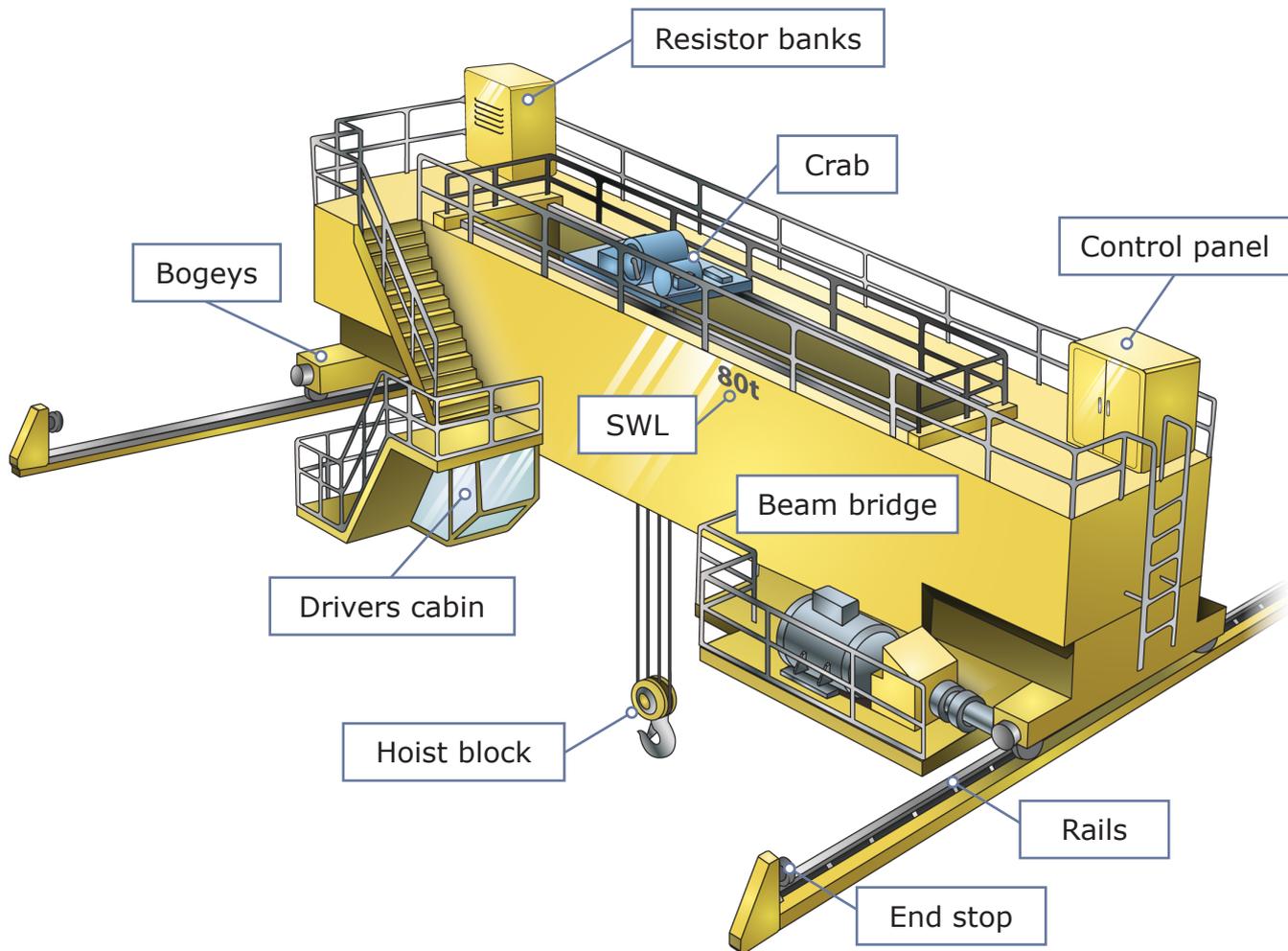
Licence to operate a bridge and gantry crane



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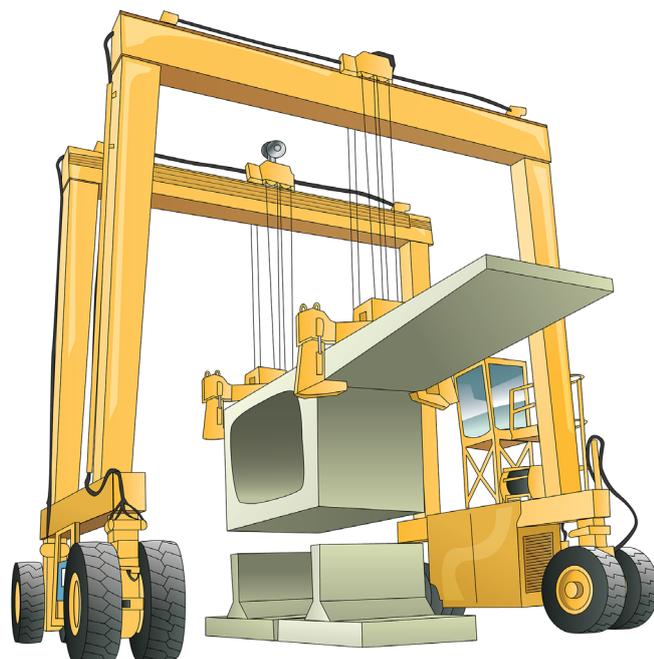
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Parts of a bridge crane



What is a gantry crane?

- A gantry crane has a bridge beam which is supported by legs
- The legs are mounted on carriages which move along supporting surfaces or deck levels
- They have a crab with at least one hoisting mechanism which moves from side to side across the bridge
- Gantry cranes are used in factories and outdoor areas including railway and shipping yards.



Part 1

Identify and control hazards



Trainers please note:

The answers in this book are in no way conclusive and are to be used as a guide only. Use your own knowledge and experience to correct the variation of answers that may be given by learners.



Theory Training Task 1

Performance Criteria: 1.3, 1.5, 2.2

Identify (know) workplace hazards. A hazard is anything that can harm you or others while you work. You need to identify (know) workplace hazards before you start work. Look for hazards. Look above you, look around you and check the ground below you.

a) Give examples of hazards you should look for before you begin work

Answers may include but not limited to:

Above head height

- powerlines and overhead service lines
- trees
- buildings
- other obstructions

Ground level to eye level

- other equipment
- machinery/plant
- people and pedestrians
- things in the path of travel
- environmental conditions
- surrounding structures
- facilities
- dangerous materials
- other obstructions
- insufficient lighting

Ground level (and below)

- stable/level surface
- spills or wet surfaces
- debris and rubbish
- trenches or recently filled trenches
- unstable ground
- underground services
- surface is strong enough to support the weight of any equipment/materials



b) Tick any of these hazards you may have come across in past or present workplaces.

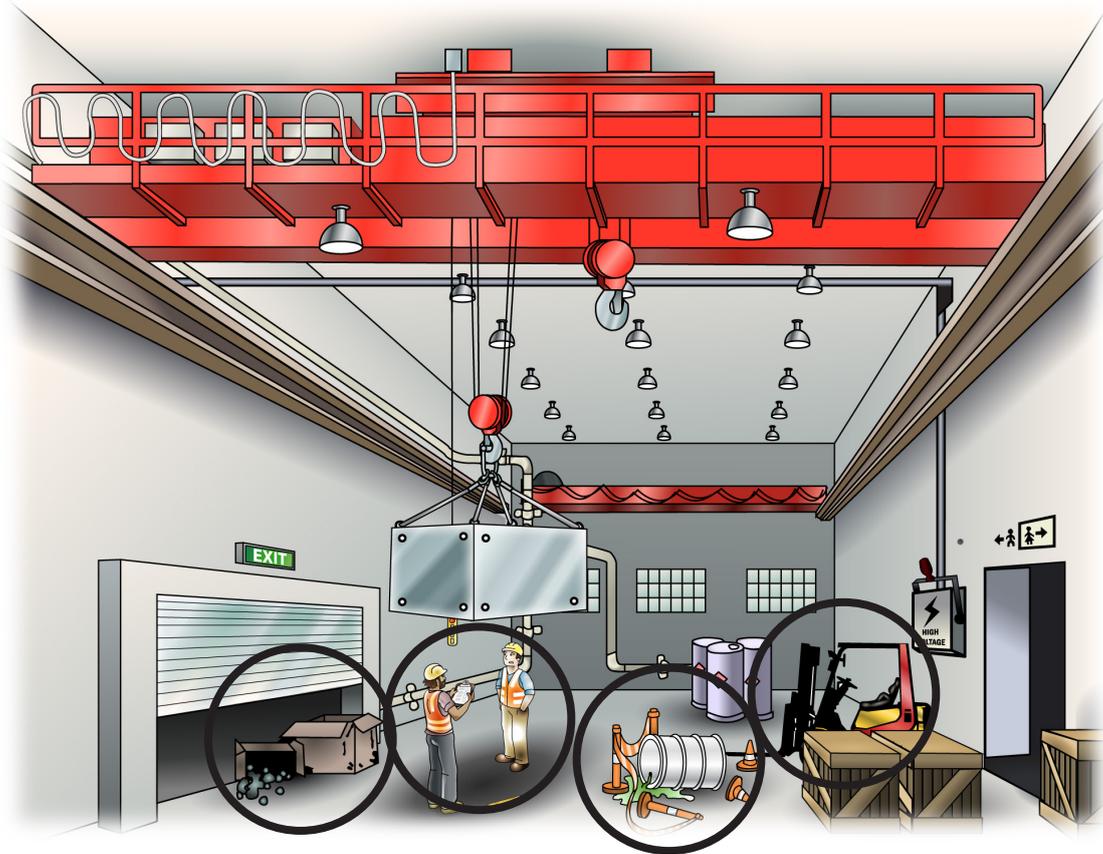
Trainers: encourage your learners to place a tick beside hazards they have seen in their past or present places of employment.



Theory Training Task 2

Performance Criteria: 1.5, 1.8, 2.2

a) **Circle** all the hazards you can find in the picture below.



b) Can you explain why the people in this picture might be a hazard if you were to operate a crane nearby?

They could get in the way of the crane/load and be injured.



c) Can you think of ways to make sure these people do not get in the way of the crane?

- **You could use barricades/fencing to keep them out of the work area.**
- **Signage could also be used to warn them of the crane at work.**
- **Another person (spotter) could be used to warn people to keep away.**



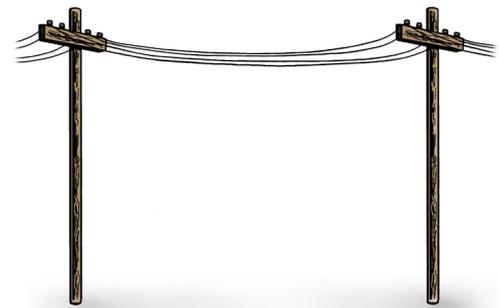
Theory Training Task 3

Performance Criteria: 1.5

Check the safe working distances for powerlines in your state or territory. How many metres is the NO GO zone for **distribution lines on poles in your state or territory**?

The NO GO zone for (state/territory)
is metres.

* Trainers please check YOUR state/territory.



PC: 1.5, 2.2

Control hazards

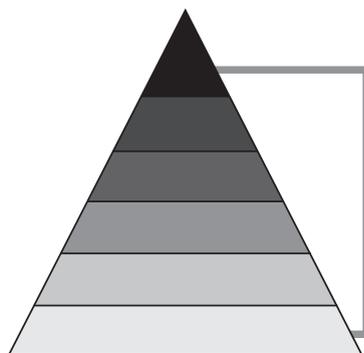
Hazard control measures are actions you take to control or prevent a danger that can injure or hurt you. You use the actions to lower the risk to people and property. Set up the hazard controls before you start work.



Theory Training Task 4

Performance Criteria: 1.5, 2.2

a) List the **six** levels of the Hierarchy of Hazard Control.



1. **Elimination**
2. **Substitution**
3. **Isolation**
4. **Engineering Control Measures**
5. **Administrative Controls**
6. **PPE**

b) What is the first thing you should try if you find a hazard?

Elimination — you should try to remove the hazard entirely.



Theory Training Task 5

Performance Criteria: 1.5, 2.2



Tick the **hazard control measures** you may need to put in place when using a bridge and gantry crane.

- Warning signs and barriers
- Flag person
- Traffic control
- Flashing hazard lights
- Wash the crane so it looks nice
- Pedestrian exclusion zone
- A hoarding, gantry or scaffolding
- Recharge the battery so it works



Theory Training Task 5

Performance Criteria: 1.8



- Check the lux level with a lux meter.
- The lux level should be at least 80 lux in a warehouse or 160 lux in a general work area.
- Set up extra lighting if it's too dark.





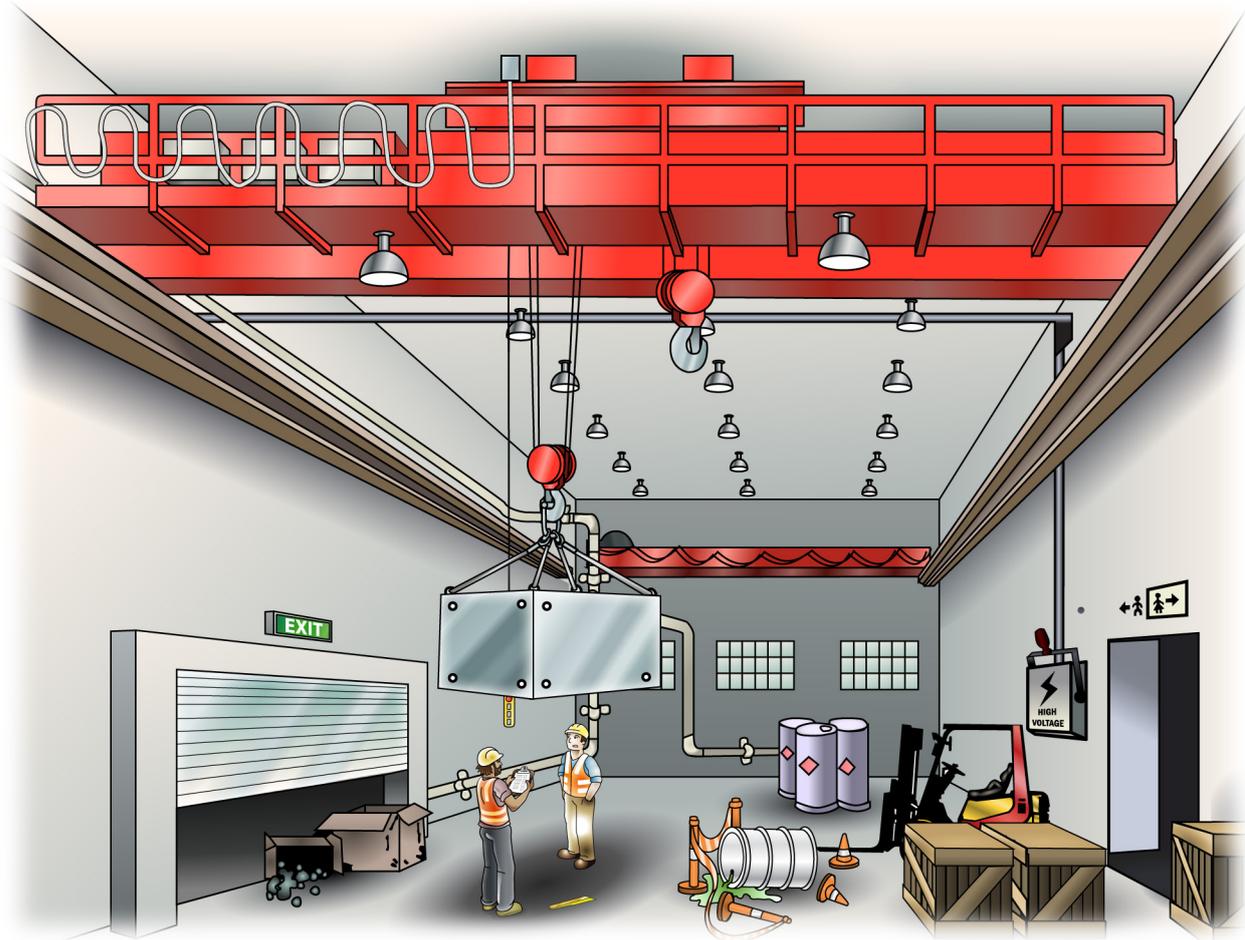
Theory Training Task 6

Performance Criteria: 1.5, 2.2



a) Look at the picture below.

List the hazard controls you would use to make this job safer.



- Use 'caution' tape to warn people
- Use flashing lights to warn people
- Use safety chains to keep unauthorised people out
- Clean up tripping hazards
- Move hazardous barrels

b) What does a Safety data sheet (SDS) tell you?

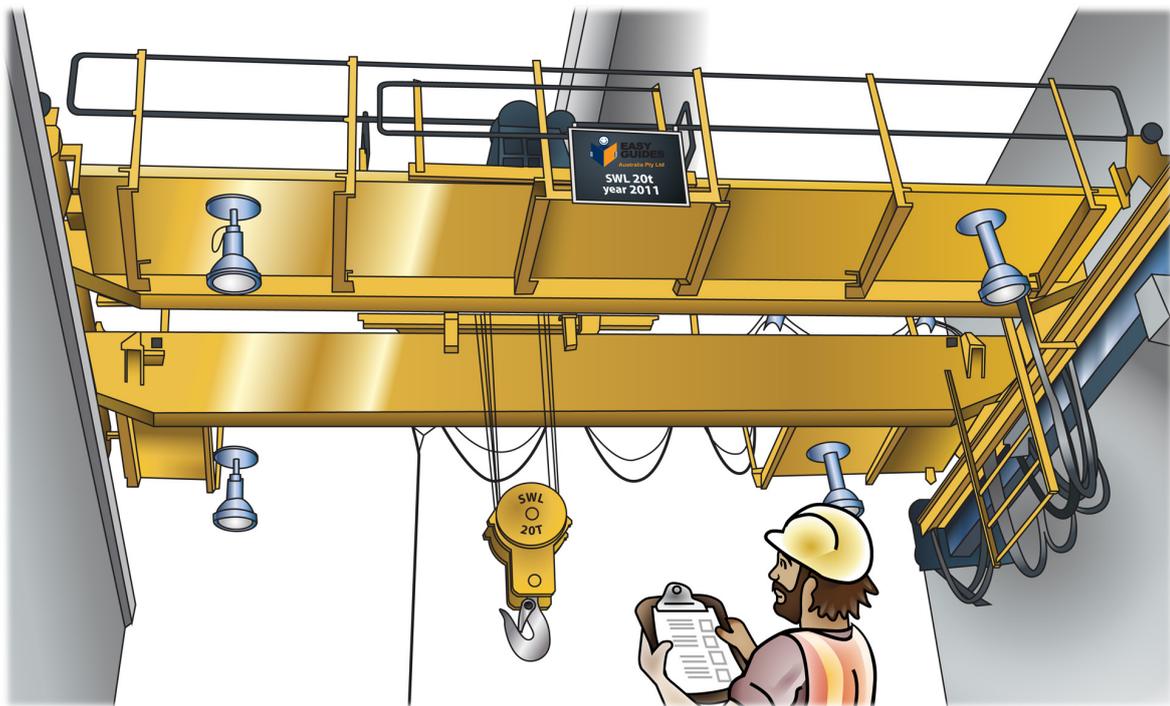
The SDS tells you:

- What the materials are and why they are hazardous
- How to handle them safely
- What to do if there is a spill.



Part 3

Check the crane



Trainers please note:

The answers in this book are in no way conclusive and are to be used as a guide only. Use your own knowledge and experience to correct the variation of answers that may be given by learners.

PC: 2.4

Do visual checks

Before you start working, there are important safety checks you need to do first.

Start with the visual check. Look around the crane and see if there are any obvious problems.



Theory Training Task 12

Performance Criteria: 2.4

a) What are some visual checks you should do before using the crane?

Answer may include:

- Look for leaks
- Look for tampering or vandalism
- Look for damage and wear
- Look for obstructions
- Look for danger tags



b) Why do you need to do the visual check?

To make sure the crane is safe to use.





Theory Training Task 13

Performance Criteria: 2.4

a) The crane has a danger tag on it. What does it mean?

The danger tag means the crane is not safe to use.

b) Are you allowed to remove the danger tag?

No, only the person who put the tag on can remove it.

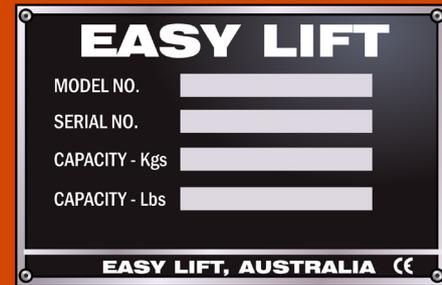
Some worksites might allow a supervisor to remove the tag.



PC: 2.4

Check signs and labels

Check the signs, labels and decals on the crane. These will tell you the crane's load limits and what it can and can't do. All signs and labels must be clear and readable.



Theory Training Task 14

Performance Criteria: 2.4



What information does the crane's data plate give you?

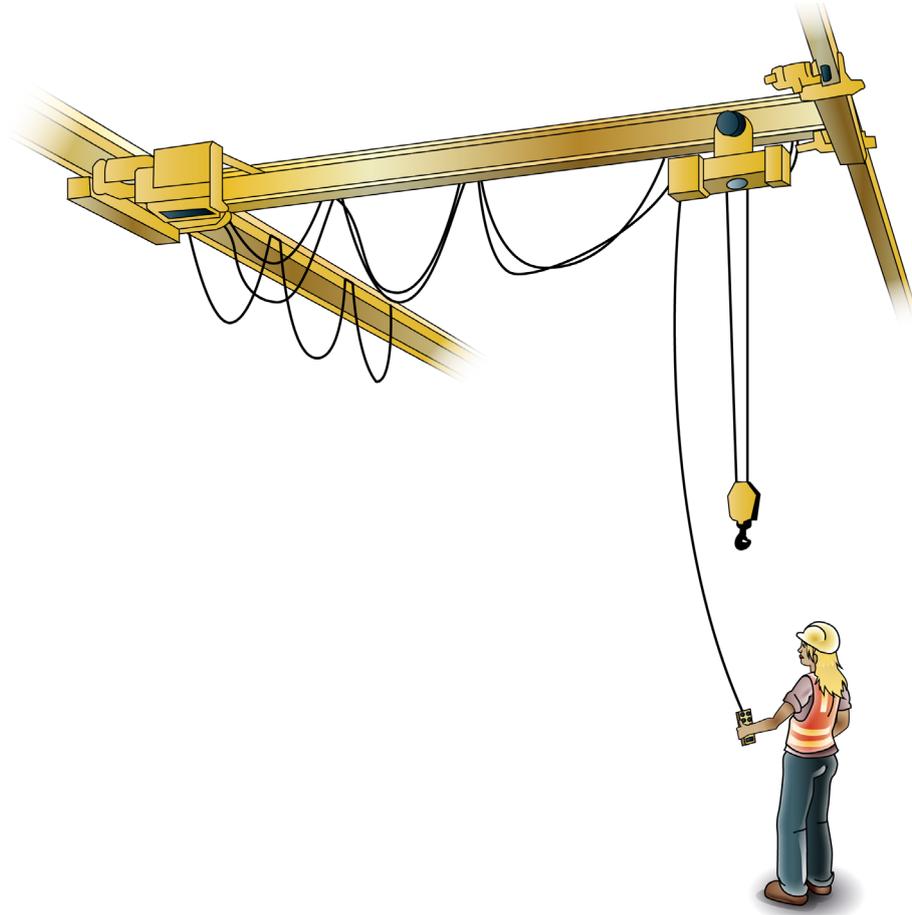
Answer may include:

- Model number
- Date of manufacture
- Dimensions
- Serial number
- GVM or weight



Part 4

Plan the lift



Trainers please note:

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PC: 1.4

Find out the weight of the load

You are planning the lift. Find out or calculate the weight and size of the load you are going to lift.



Theory Training Task 32

Performance Criteria: 1.4, 3.1

How can you find out the weight of an unmarked load?

Give three (3) examples.

Answer may include:

- Check the manufacturer's information about the load
- Check invoices or weighbridge certificates
- Ask workmates if the same load has been lifted before
- If the load is made up of multiple parts, weigh one and then multiply it by the number of parts
- Estimate by counting common weights
- Ask for help from doggers or riggers
- Weigh the whole load.





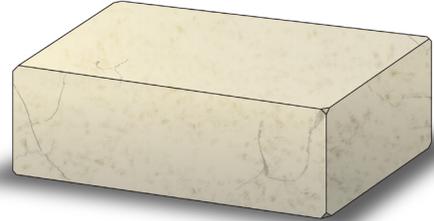
Theory Training Task 33

Performance Criteria: 1.4

a) You need to lift a solid block of concrete.

The dimensions of the concrete are:

- Length = 1.0 metres
- Height = 0.5 metres
- Width = 0.8 metres
- Solid concrete = 2400 kg per m³



How much does the concrete block weigh?

Concrete block = $1 \times 0.5 \times 0.8 \times 2400$

Concrete block = 960 kg

b) The crane has a capacity of 5 tonnes.

How many of these concrete blocks can you lift at once?

$5000 \text{ kg} \div 960 \text{ kg} = 5.2$

Round down the 5.2 to the nearest whole number.

You can lift 5 concrete blocks at once.



Theory Training Task 34

Performance Criteria: 1.4

a) You need to lift 46 kegs of beer.

The dimensions of each keg of beer are:

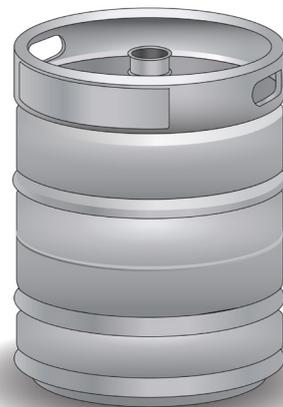
- Weight of 1 keg = 14 kg
- 1 keg holds 50 L of beer
- 1 L of beer = 1 kg

How much does the load weigh?

1 keg = 64 kg

Total weight = 46×64

Total weight = 2944 kg



b) The crane has a capacity of 3 tonnes. Can you lift this load?

Yes, 2944 kg is less than 3 tonnes.