SLEWING MOBILE CRANE LEARNER WORKBOOK

TRAINER'S MARKING GUIDE

TLILIC0021 Licence to operate a slewing mobile crane (up to 100 tonnes)

With load chart calculations similar to NAI

EASY GUIDES Australia Pty Ltd

www.easyguides.com.au

National Licence
RTO-VET Learning Materials

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Training support materials

Training package:	**TLI**	**Transport and Logistics**
Unit of competency:	TLILIC0021	Licence to operate a slewing mobile crane (up to 100 tonnes)

Application

TLILIC021

This unit specifies the outcomes required to operate a slewing mobile crane (up to 100 tonnes) for licensing purposes. It encompasses the requirement for non-slewing mobile crane licence and the vehicle loading crane licence.

Licensing/Regulatory Information

This unit requires the operator to plan the work, conduct routine checks, set up crane, transfer loads, mobile loads and shut down and secure the crane. This unit is based on the requirements of the National Standard for Licensing Persons Performing High Risk Work. This unit in its current form meets state and territory licensing requirements. Any alteration will result in a unit which is not acceptable to regulators for the purpose of licensing.

Contents

Language – Literacy – Numeracy (LLN) TAELLN411 Address adult language, literacy and numeracy skills

Why LLN matters?

The unit TAELLN411 Address adult language, literacy and numeracy skills describes the skills and knowledge a vocational trainer or assessor requires to identify language, literacy and numeracy (LLN) skill requirements for training in the work environment. The aim is to use resources and strategies that meet the needs of the learner group.

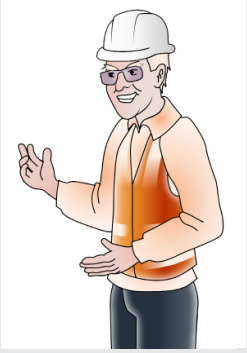
The LLN unit applies to individuals who teach, train, assess and develop resources.

Easy Guides training materials have been developed around LLN principles

James Tennant, Managing Director of Easy Guides Australia Pty Ltd has completed the LLN unit as well as a MA (TESOL) Masters of Arts degree in teaching speakers of other languages.

James taught as a Workplace language and literacy (WELL) teacher in industry where he gained knowledge and experience for adapting training to a wide range of learners.

James' qualifications and experience have been embedded into the Easy Guides training materials making them unique in their field.



LLN core skills – customising training

The Australian Core Skills Framework (ACSF) provides a detailed description of each of the five core skills which help people to participate effectively in our society.

The core skills are:

Learning	Reading	Writing	Oral Communication	Numeracy

Trainers can use knowledge of the core skills of their learners to adjust their training program. For example, a learner may be high in oral communication but low in writing.

For such learners, training materials could:

- be written in simple, plain English
- use pictures and diagrams to explain concepts
- use bullet points or tables instead of long paragraphs
- explain difficult words that students might need to know.

Easy Guides has built many of these LLN learning strategies into their training materials.

Finding LLN resources

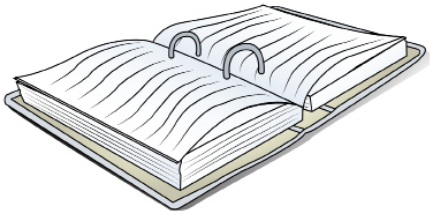
Check the Trainer's Resource CD for lots of helpful LLN information and resources to help you plan your training.

How to get the most out of this book

As a trainer you know there are many ways a learner can find information to complete the training tasks in these learning materials. Below are some examples.

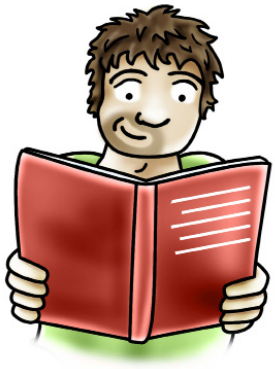
Licensed trainer:

- Can check your workbook answers
- Share knowledge and experience
- Demonstrate and check practical training activities.



Information book:

- Find information to help do training tasks



Other learners:

- Share knowledge
- Demonstrate skills
- Group training exercises.

Other resources:

- The internet
- User manuals
- WorkSafe.

Learner's own experience:

- On-the-job experience
- Other training.

Things to consider when learning

Repeatable competency

At Easy Guides we build repeatable competency into our learning support materials. Here's how we do it.

First, the learner gains the underpinning knowledge through theory/knowledge training tasks.

Second, the learner does a practical training exercise and a practical assessment exercise.

Third, the learner sits the assessment instrument (used by the RTO assessor).

The assessment gives the learner a final opportunity to demonstrate repeatable competency.

Learning styles

Learning styles are simply different ways of learning. You may notice that when you try to learn something new you have a preferred way to learn. You may prefer to listen to someone talk about the information or to read the information yourself. Or you may like to see a practical demonstration and then try it out for yourself.

Easy Guides cater for the three main learning styles:

1. Visual learners

These learners think in pictures. They learn best from diagrams, illustrations, DVDs, digital projections and handouts or a workbook. Visual learners like to take notes to help themselves remember the information.

2. Auditory learners

These learners study best through lectures, talking things through and listening to what others have to say. Written information may have very little meaning to these learners until they hear it or discuss it.

3. Tactile/kinesthetic learners

These learners study best through a hands-on approach. They become bored and distracted if they sit for too long. One way to help overcome this in the classroom is to have partner-and-group work activities rather than long periods of listening to a trainer.

Learners have different learning needs

Learners come with a wide variety of backgrounds, skills, knowledge and experience. The time and experience needed to prepare each learner can vary a lot.

As the licensed operator/trainer, it is up to you to decide what parts of these learning materials you want to use. However, you would expect beginners to cover all these learning materials.

You can use part or all of these training materials in any order. You decide on the needs of each of your learners.

Learning support materials

This Learner Workbook is part of a Start-up pack of learning materials. It supports **TLILIC0021 Licence to operate a slewing mobile crane (up to 100 tonnes)**.

Here are the resources in the Slewing Mobile Crane Start-up pack.

Learner Workbook — Slewing Mobile Crane
Trainer's Marking Guide with model Answers+_

- Gives you training tasks in theory and practice
- Is evidence you've done a formal training program
- Maps the learning tasks to the unit of competency.

Safety and Licence Guide — Slewing Mobile Crane

- Includes knowledge training tasks
- Helps learners prepare for their final test

PowerPoint Presentation

- Multimedia version of the Slewing Mobile Crane Final Review Study Guide
- Great for group learning and revision

Record of Training Logbook

- Great for on-the-job training
- Provides evidence that every performance criteria in the unit has been covered
- The learner and supervising RTO use the record of training logbook to keep written record of workplace training.

Trainer's Resource with editable and printable resources

- Fully editable MS Word documents
- Editable course documentation
- Editable workplace forms and documents
- Editable review questions and answers
- Editable practical tasks
- Editable mapping of unit of competency.

Learning and practical tasks

If you can, have your students train with other learners. Learning is more powerful when you and your learners share ideas and experiences. Below is a brief explanation of how you can use the training tasks in this workbook. Please advise your students if they are to fill in tasks on their own at home or wait until they are in the training room with you.

Theory training tasks

These tasks help the learner understand the underpinning knowledge to safely operate a vehicle loading crane. To help them complete these tasks the learner can use the Information Book and speak to other learners and you, the licensed operator/trainer.

Thinking questions

Thinking questions train your learner to think for themselves.
For example, the Information Book does not directly state the answer.

Practical training tasks

These tasks help the learner acquire the practical skills to safely operate a vehicle loading crane. The tasks use high-risk equipment or machinery. Only a licensed operator/trainer can supervise the learner's practical training tasks.

Review

At the end of each element in the workbook, the learner gets to review their training. The review gives the learner a chance to talk with classmates and you about what they learned. Sharing their learning experiences with others helps them learn.

Review questions

You'll find the review questions on the Trainer's Resource CD. Give the questions to the learner toward the end of training to determine if they understand the information they have covered. You can ask your learner to fill in these questions alone or as a group by using the matching questions in the PowerPoint quiz section.

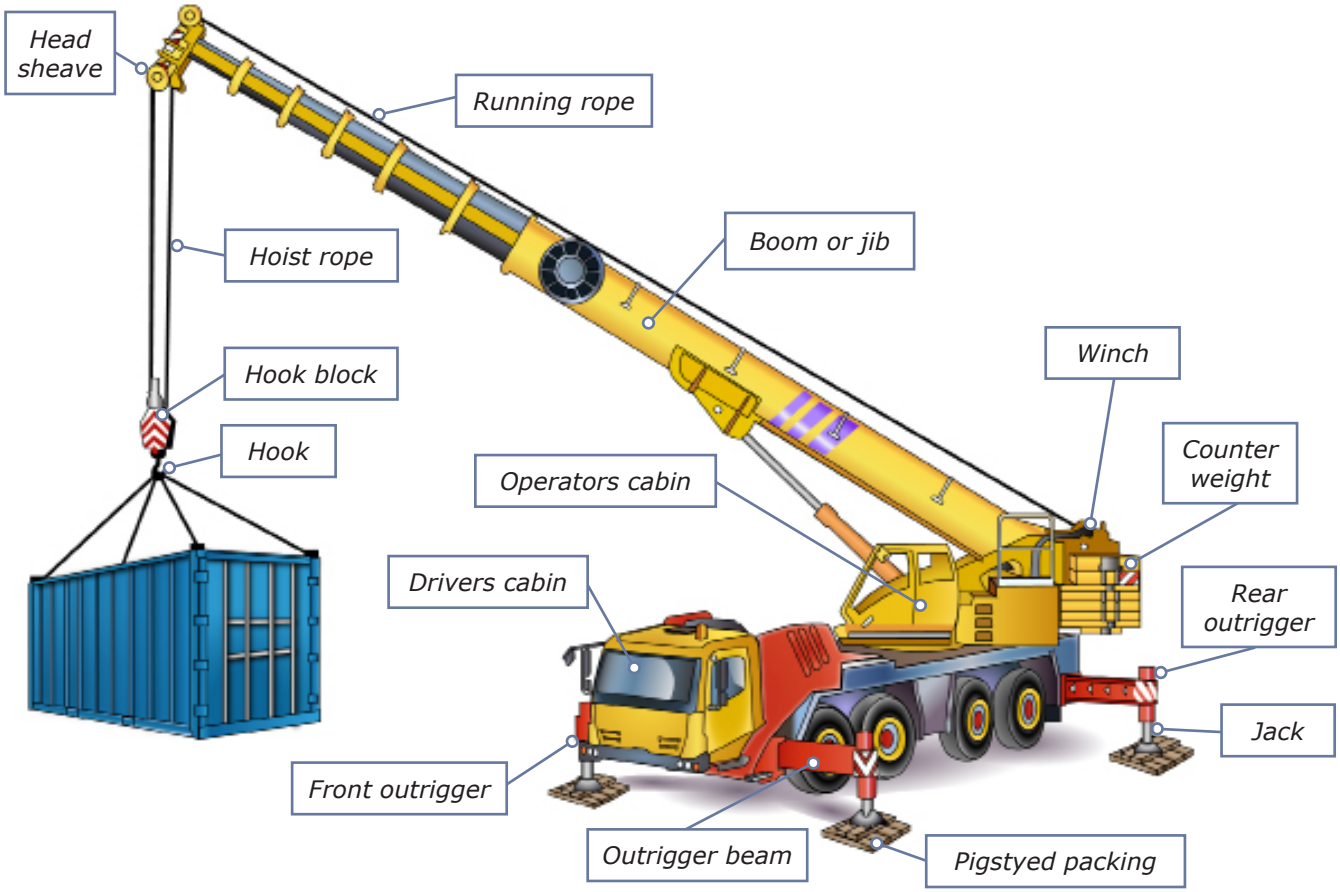
Review—practical tasks

The practical tasks handout is on the Trainer's Resource CD. There is one task for each element and the learner should do all tasks under your supervision.

What is a slewing mobile crane?

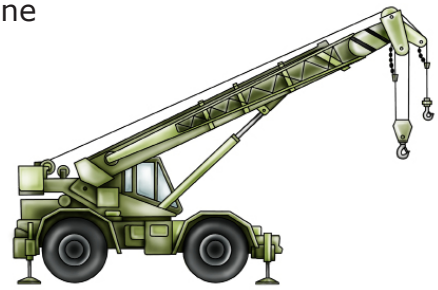
A slewing mobile crane is a powered crane which features a boom or jib that can slew from front to back. The crane is mounted on a vehicle.

Parts of a slewing mobile crane



Slewing mobile crane

Rough terrain slewing crane



Crawler crane

This learner resource does not cover front-end loader, backhoe, excavator or similar equipment when configured (arranged or set up) for crane operations.

Notes

Introduction to high risk licensing

This section contains the following:

- National Vocational Education and Training (VET) Licensing Pathway
- Training and assessment requirements
- Record of training logbook
- Who has a duty of care?
- Where to find licensing information
- Introductory training exercise

National Vocational Education and Training (VET) Licensing Pathway

Training and assessing must be through a Registered Training Organisation (RTO).

"This National Standard recognises the importance of quality training as an underpinning principle in providing skilled workers, and that the most effective form of training is a combination of informal and formal training methods. It requires training and assessment to be undertaken by Registered Training Organisations (RTOs) under the Australian Quality Training Framework (AQTF)."

Introduction

The national system is based on the **'NATIONAL STANDARD FOR LICENSING PERSONS PERFORMING HIGH RISK WORK'** [Australian Government, Australian Safety and Compensation Council, Canberra, April 2006]. The following quotes from this document will help you to understand the main aims of the system:

3. OBJECTIVES AND PRINCIPLES

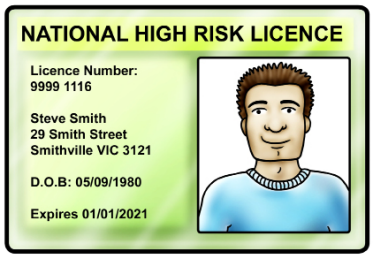
3.1 The objectives of this National Standard are:

(a) to ensure that persons have the skills and knowledge to perform high risk work in a safe manner; and

(b) to facilitate the operation of a nationally uniform and efficient licensing system for persons engaged in high risk work.

3.2 Licences issued in accordance with this National Standard will be recognised in Australian States and Territories to promote the portability of skills and the free movement of labour across State and Territory borders.

3.3 This National Standard provides a national policy approach for authorising the performance of high risk work and promoting safety standards relating to high risk work.



Classes of high risk work covered by the National Standard

Crane and hoist operation:

- tower cranes
- self-erecting tower cranes
- derrick cranes
- portal boom cranes
- bridge and gantry cranes
- vehicle loading cranes
- non-slewing mobile cranes
- slewing mobile cranes
- material hoist
- personnel and materials hoist
- boom-type elevating work platform
- vehicle-mounted concrete placing boom

Forklift operation:

- forklift truck
- order-picking truck

Scaffolding work

Rigging work

Dogging work.

NOTE:
Earthmoving equipment is NOT included in the National Standard.

Training and assessment requirements

The source for the following quotation comes from the
'National Standard for Persons Performing High Risk Work, April 2006'.

> ***6. TRAINING AND ASSESSMENT REQUIREMENTS***
>
> *6.1 This part must be interpreted in conjunction with the AQTF Standards for RTOs. Where either this National Standard or the AQTF sets a higher standard for training and assessment, then the higher standard will apply.*
>
> *6.2 The applicant must complete the relevant nationally endorsed unit or units of competency in a Training Package or accredited course that meets the licensing requirements.*
>
> *6.3 The training and assessment must be delivered under the supervision of, or in partnership with, an RTO in accordance with the AQTF. It must consist of relevant evidence of:*
> - *structured training*
> - *practical training and experience, and*
> - *an assessment of the trainee's competency through the use of nationally approved assessment instruments.*
>
> *6.4 Practical training can be undertaken in the workplace as part of the productive work of the trainee, or in a training facility that includes a simulated work environment, or using a combination of both these training environments.*
>
> ***Recognition of Prior Learning***
>
> *6.5 An RTO:*
> - *a must assess the adequacy of any equivalent qualifications or evidence of prior learning against the licensing requirements, and*
> - *b may exempt a person from undertaking all or part of the training to the extent that the person's equivalent qualifications and prior learning are relevant to the competency.*
>
> ***Assessment***
>
> *6.7 A trainee must be assessed against the requirements of the relevant nationally endorsed unit or units of competency or accredited course. To achieve competency the trainee must be able to demonstrate that he or she:*
> - *has the relevant underpinning knowledge and can safely perform the high risk work under realistic workplace conditions, and*
> - *can use the English language at a level that enables the safe performance of high risk work as specified in the competency standard.*

Licensing system

- Training and assessment must be done in partnership with an RTO
- Training and assessment must be done in accordance with the AQTF
- Recognition of prior learning (RPL) is allowed under certain conditions
- Training and assessment must show evidence of:
  - structured training
  - practical training and experience
  - assessment of the trainee's competency.

Record of Training Logbook

Part of your learning will include doing on the job training. You will use a Record of Training Logbook to keep track of your training. The National Standard for Licensing Persons Performing High Risk Work sets out the requirements for a logbook.

Practise filling out these logbook pages for this task.

(These sample pages are from an Easy Guides Record of Training Logbook)

1

Prepare for hazards

PC 1.2

Hazard control measures

Hazard prevention/control measures are identified consistent with appropriate standards to ensure the safety of personnel and equipment. This means you try to find the best way to control or prevent a hazard if you find a hazard in the workplace.

Description of work/training performed

Date/time	No. of hours	Machine details	Supervising person
Date: ______ Start time: ______ am ______ pm		Make: ______ Model: ______ Serial No: ______ Max Capacity: ______ Boom Length: ______ Jib Length: ______	Name: ______ Signed: ______ Class: ______ Cert No: ______ State of Issue: ______ Issue Date: ______ Expiry Date: ______
Date: ______ Start time: ______ am ______ pm		Make: ______ Model: ______ Serial No: ______ Max Capacity: ______ Boom Length: ______ Jib Length: ______	Name: ______ Signed: ______ Class: ______ Cert No: ______ State of Issue: ______ Issue Date: ______ Expiry Date: ______
Date: ______ Start time: ______ am ______ pm		Make: ______ Model: ______ Serial No: ______ Max Capacity: ______ Boom Length: ______ Jib Length: ______	Name: ______ Signed: ______ Class: ______ Cert No: ______ State of Issue: ______ Issue Date: ______ Expiry Date: ______

Trainers, please use your knowledge to assess the learner's answer.

Who has a duty of care?

Discuss with your learners the importance of duty of care. Duty of care applies to employers and self-employed persons, persons in control of the work site, construction supervisors, designers, manufacturers and suppliers, building workers, subcontractors and inspectors.

Employee's duty of care

By law, as an employee you must take care of your own health and safety—and the health and safety of other people in the workplace. You must not put the health and safety of yourself or other people at risk.

You must also:

- Do your best to follow reasonable safety instructions from your employer/PCBU (boss)
- Follow workplace health and safety procedures and policies
- Do not do work if you believe a hazard would be a serious risk to your health or safety

PCBU's/Employer's duty of care

By law, as an employer you must provide a workplace that is safe and without risk to health.

You must instruct, train and supervise your employees to work safely. You must do so in a way that is easy for your employees to understand.

Penalties

If you are an employer or employee the government can fine you for failing your duty of care.

Guidance notes

Many state/territory WHS/OHS regulators provide guidance notes, safety alerts and other information to improve safety for persons performing high risk work. You can find many more of these by going to the website for your state/territory WHS/OHS website (shown on the next page) for guidance and alert notes. These alerts and notes should be provided to learners via training sessions.

Example 1	Example 2
The following is an excerpt from the safety alert *Fires on mobile plant* on the WorkSafe Victoria website:  Safety Alert WorkSafe Preventing mobile plant fires This Alert highlights the danger of mine workers being exposed to mobile plant fires and provides recommendations to reduce or eliminate fire risks. November 2012 Background Identified causes Preventative control measures Design Installation *(November 2012)*	The following is an excerpt from the safety alert *Maintaining mobile plant* (May 2010) on the WorkCover NSW website. It covers controlling risks related to securing mobile plant properly. "The primary control measure is to ensure that nobody goes near the plant until it is secured. Apply the parking brake, select neutral and switch the engine off – do not assume the parking brake will hold the vehicle if the engine is running. If it is necessary to have the engine running to perform maintenance: • ensure that the park brake is applied and fully operational, and that neutral is selected • ensure that someone is seated at the controls of the plant with their foot on the brake • use wheel chocks (or other safety devices) when required • where possible, work from a safe location considering the potential for unintentional movement of the plant – eg. work from the side of the plant rather than the front or back."

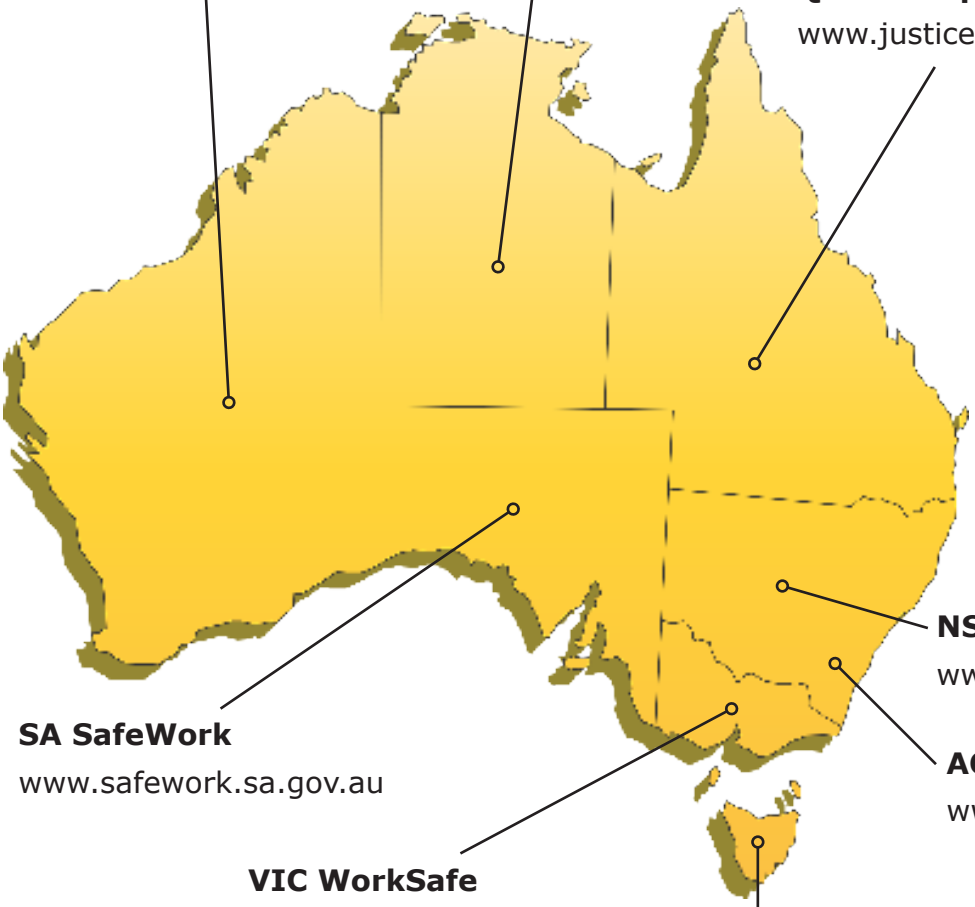
Where to find licensing information

You can check these websites for more information about workplace health and safety.

WA WorkSafe
www.commerce.wa.gov.au/WorkSafe

NT WorkSafe
www.worksafe.nt.gov.au

QLD Workplace Health and Safety
www.justice.qld.gov.au



NSW WorkCover
www.workcover.nsw.gov.au

ACT WorkCover
www.worksafe.act.gov.au

SA SafeWork
www.safework.sa.gov.au

VIC WorkSafe
www.worksafe.vic.gov.au

TAS WorkSafe
www.worksafe.tas.gov.au/home

You can read more about the WHS Act at www.safeworkaustralia.gov.au

Introductory training exercise

The national high risk licensing system

a] Is earthmoving equipment part of the high risk licence system?

Circle the correct answer YES (NO)

b] Look back at the last few pages and read Section 3.1 of the *National Standard for Licensing Persons Performing High Risk Work*. What are the two main aims/ objectives of the system stated in Section 3.1?

Answer should include the following information, either copied and written, or in the learner's own words:

3.1 The objectives of this National Standard are:

(a) to ensure that persons have the skills and knowledge to perform high risk work in a safe manner.

(b) to facilitate the operation of a nationally uniform and efficient licensing system for persons engaged in high risk work.

c] Can you gain your high risk licence without the services of a registered training organisation?

Circle the correct answer YES (NO)

d] Look back at the last few pages and read Section 6.3 of the *National Standard for Licensing Persons Performing High Risk Work*. After you have successfully completed your training course how will your final competency be checked?

Answer may include all or some of the information contained in Section 6.3. However the key point in Section 6.3 is that at the end of the unit of competency training the applicant will be assessed using a nationally approved assessment instrument.

e] What is the main duty of care/obligation of an employer?

An employer must provide a safe workplace. They must also provide employees with information, instruction, training and supervision so they can carry out their work duties in a safe manner.

f] Give an example of a duty of care/obligation of an employee/worker.

Answer may include any of the following:

- **An employee must take care of their own health and safety as well as the health and safety of others they work with**
- **Employees must comply with safe work practices**
- **Employees must carry out their tasks or use equipment according to safety instructions**
- **Employees must co-operate with their employer and follow all systems or procedures in the workplace to the extent necessary to allow compliance with the Act.**

g] Other than the WHS/OHS Act where else could you get government information about slewing mobile crane safety?

Answer may include but not limited to:

- **Guidance notes (on OHS regulator websites such as WorkCover)**
- **Standards (e.g. National Standard for Licensing Persons Performing High Risk Work)**
- **Regulations.**

Notes

Part 1

Prepare for 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.

Performance Criteria: 1.5

Prepare for hazards

A **hazard** is anything that can harm you or others while you work.

A **risk** is the chance of a hazard hurting someone.

Theory Training Task 1

Performance Criteria: 1.5, 2.9, 2.10

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, 2.2, 1.4

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 slewing mobile crane nearby?

They could get in the way of the slewing mobile crane which could cause accident or injury to themselves or the slewing mobile crane operator.

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

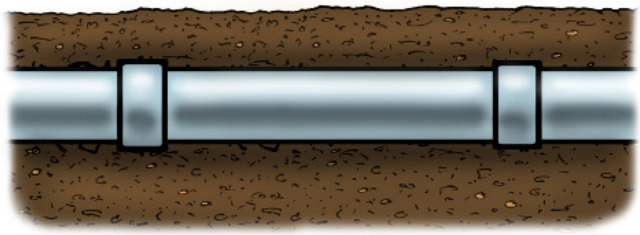
- **Use barricades/fencing to keep people out of the work area.**
- **Use signs to warn people.**
- **Use someone to direct people clear of the work area.**

Theory Training Task 3

Performance Criteria: 2.2

You are working on ground that might be above an underground service, for example, a water pipe. Where can you find out?

Call Dial Before You Dig on 1100.



Theory Training Task 4

Performance Criteria: 1.5, 2.2

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.**

Performance Criteria: 1.5, 2.2

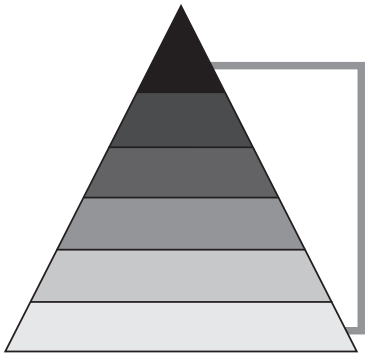
Hazard control measures

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 5

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 6

Performance Criteria: 1.5

Tick the **hazard control measures** you may need to put in place when using a slewing mobile crane.

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

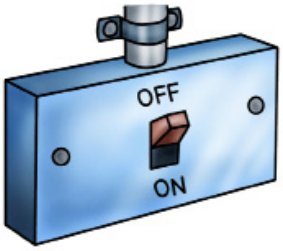
Theory Training Task 7

Performance Criteria: 1.5

List the things you may need to do when working near powerlines.

Answer may include:

- **Consulting with the electricity supply company**
- **Using safety tag or lock-out systems**
- **Use a spotter**
- **Disconnect the power**



Theory Training Task 8

Performance Criteria: 1.5

Look at the picture below.
List the hazard control measures you could use to make the job safer.

Answer may include:

- **Put up a barricade around the crane to stop people coming into the crane's working area , for example witches' hats.**
- **Put up a safety fence around the worksite to keep people out.**
- **Put warning signs on the fence.**
- **Ask the driver of the other vehicle to move it, if possible.**
- **Use two-way radios to communicate with the spotter or dogger.**
- **Clean up rubbish, tripping hazards and mess around the site.**
- **Barricade the trench/excavation.**
- **Check the maximum recommended wind speed for safe operation in the crane's user manual/ manufacturer's instructions or by looking on the cranes data plate.**
- **Stop work during a thunderstorm.**
- **Have the electrical company insulate or disconnect the powerlines.**

Fencing is not shown in this picture

Performance Criteria: 1.9, 1.1

Information to maintenance of your lifting equipment and Lift Plan

Obtaining information about a manufactures equipment

Theory Training Task 9

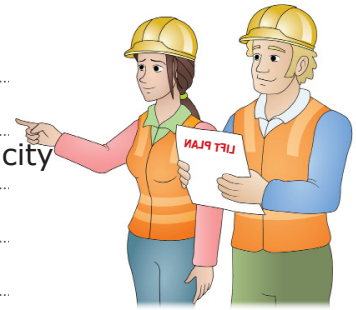
Performance Criteria: 1.9, 1.1, 2.1

a. What type of information is included in the owners manual or operators manual?

Answer may include:

- **The way we should use the equipment or operate and interpret e.g. load chart.**
- **How we should maintain the equipment.**
- **How to inspect that machinery and its parts.**
- **How to store the equipment**
- **Instructions on how to use the equipment, lift features.**
- **Check your manual for storage requirements.**
- **Places to look for faults**
- **Areas to check for levels of fluids, leaks etc.**

b. What type of information can you find in a lift plan, state at least 8 pieces of information you would find?



Answer may include:

Description of load, Weights of load, Load movement, Radius, Rigging setup (sling configuration), Make / Model and load capacity of rig, Load Calculations, Rick Controls, Environment Sketch.

c. Why is it important to talk with other people in your workplace about making clear a work order or a lift plan?

Answer may include:

It is important to talk with other people in your workplace about making a work order or a lift plan clear, so that you can check load lift requirements and make clear the sequence of steps needed to lift a load.

Performance Criteria: 1.6, 1.1

Task requirements & Traffic management plan

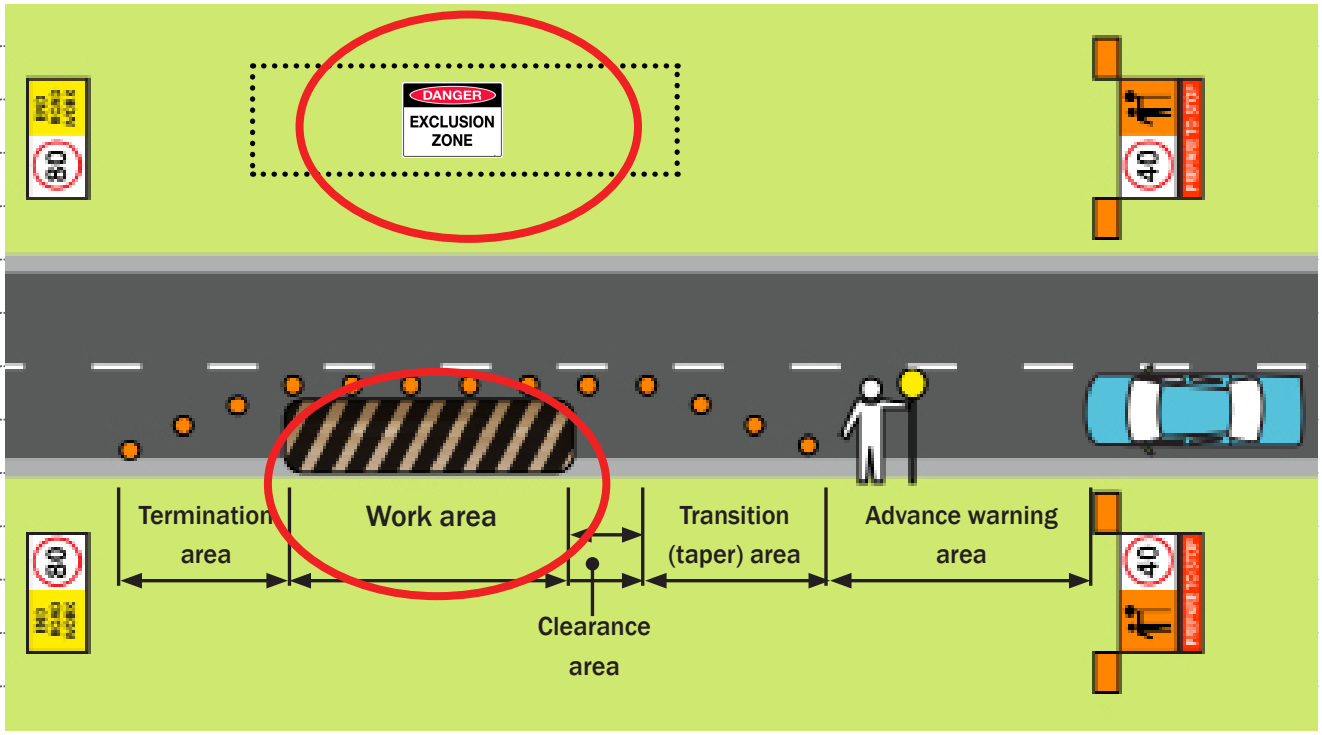
When planning for work tasks you need to know the task requirements and identify the documentation required to confirm work orders.

Usually in a traffic management plan you will see icons and symbols for representations of where safety items should be placed for the control and safety while working on the road.

Theory Training Task 10

Performance Criteria: 1.1, 1.6, 1.8, 2.1

Place a circle around where in the traffic management plan are you allowed to work safely and where is the Exclusion Zone.



Theory Training Task 11

Performance Criteria: 1.1, 1.8, 2.1

State what papers are required to know more information about what work is need to lift a load, who would you check with and what other documentation would you need to create?

Answer may include:

Lift Plan or work order, traffic management plan, Risk assessment document

Client or Delivery driver, Machine operator, Dogger,

Draw a sketch, Risk Assessment and perhaps a list of resources and a sequence of steps to perform lift load document.

Practical Training Task 1

Part 1 — Prepare for hazards
Performance Criteria 1.1, 1.5, 1.6, 1.8, 2.2, 1.3

Prepare for hazards

Learners: You **must** do this task under the **control of a licensed operator**.
Please wait for your trainer to advise you before trying the task.

In this activity your trainer will set up the worksite for you. The worksite will have a few hazards in it. Identify the hazards, assess the risk of the hazard hurting you, and work out how to control the hazards. Fill in a lift plan and make any notes as required and complete / attach all documentation.

- ☐ Task requirements are identified from work orders or equivalent and a lift plan is confirmed with associated personnel and a site inspection is conducted in accordance with workplace procedures
- ☐ Potential workplace hazards are identified. This means you look out for anything that can harm you or others while you work.
- ☐ Hazard prevention/control measures are identified consistent with appropriate standards to ensure the safety of personnel and equipment. This means you try to find the best way to control or prevent a hazard if you find a hazard in the workplace.
- ☐ Appropriate hazard prevention/control measures are applied to the work area in accordance with procedures. This means you can use many different ways to control hazards on a work site.
- ☐ In a lift plan write down all the tasks that are needed to perform load lift, note and confirm hazards, slinging techniques, load type, mass of load, center of gravity and WLL calculations of slinging method techniques to be used, the equipment and lift equipment you might need as a list of resources, sketch of work site and limitation of crane reach for each of the loads. Also attach a traffic management plan and submit for record keeping.

Files to Submit: Traffic management plan, lift plan, risk assessment and control form document.

Part 1 - PC 1.1, 1.2, 3.6:

Satisfactory ☐ **Not yet satisfactory** ☐

Signature (licensed operator/trainer) ..... Date .....

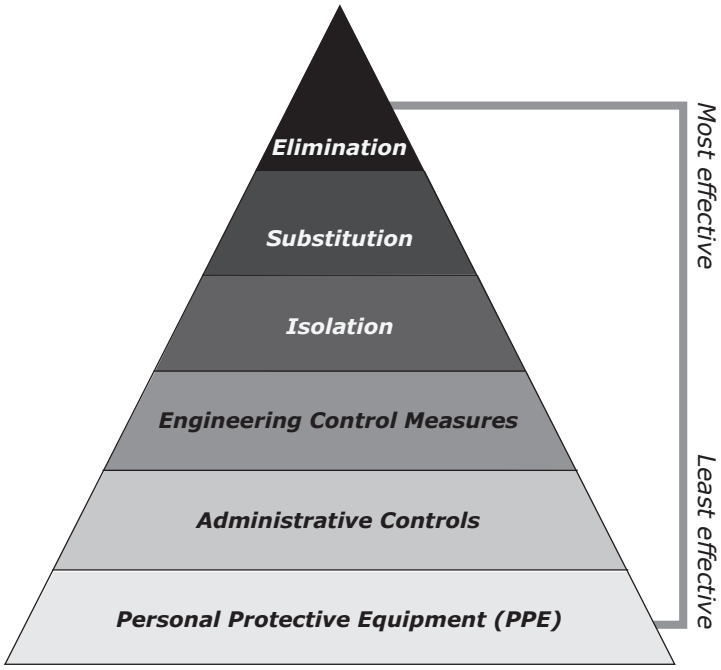
Applying the Hierarchy of Hazard Control

Learners:

You **must** do this task under the **control of a licensed operator**. Please wait for your trainer to advise you before trying the task.

Your trainer will help you to choose a common hazard that may be found in the area where you work.

In this training task you will put the hierarchy of hazard control into action!



Hierarchy of Hazard Control

Go through as many steps as you need to until you eliminate (get rid of) or control the hazard.

HAZARD: .....

Step 1: Elimination

Can you remove or take away the hazard?

Yes ☐ **/ No** ☐

.....

.....

.....

Step 2: Substitution

Can you use a safer method if you cannot remove the hazard?

Yes ☐ **/ No** ☐

.....

.....

.....

Step 3: Isolation

Can you lower the risk of damage or harm by restricting or preventing access to the hazardous area?

Yes ☐ **/ No** ☐

.....

.....

.....

Step 4: Engineering control measures

Can you change the tools, equipment or environment to lower the risk?

Yes ☐ **/ No** ☐

.....

.....

.....

Step 5: Administrative controls

Can you put more safe work practices into place?

Yes ☐ **/ No** ☐

.....

.....

.....

Step 6: Personal protective equipment (PPE)

Do you need to wear PPE? (PPE should not be the only method to control a hazard.)

Yes ☐ **/ No** ☐

.....

.....

.....

Finally, **discuss** your results with your trainer and/or training group.
How many steps did you have to use to control the hazard?

Part 1 - PC 1.2:

Satisfactory ☐ **Not yet satisfactory** ☐

Signature (licensed operator/trainer) ..... Date .....

Review

Part 1—Prepare for hazards

Sharing your knowledge can be a good way to remember things you have learnt. Talk about and/or record below the key points you have learnt in 'Prepare for hazards' and share your experiences with other learners and/or your trainer.

Further learning (optional)

Apply

Talk to others about hazards and see if you can find ways to operate in a safer way.

Notes

Part 2

Communicate clearly

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.

Performance Criteria: 1.7

Communicate clearly

Choose the communication equipment you will use for the job. After you have made your choice, test the equipment to make sure it's working.

Make sure you understand the dogger's hand signals if you use hand signals.

Theory Training Task 12

Performance Criteria: 1.7, 3.7

You can communicate many different ways. What are some of the ways you can communicate with other workers while moving a load?

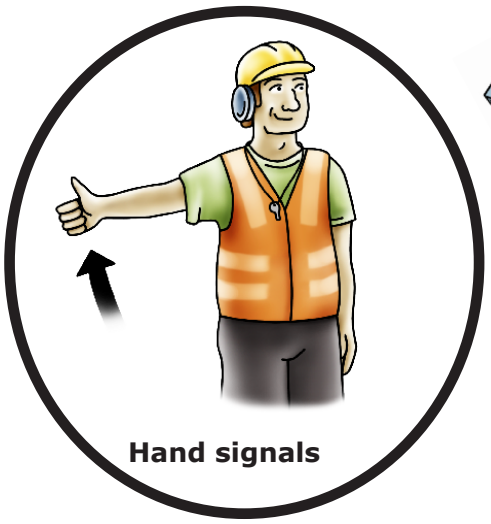
Answer may include:

- **Whistle**
- **Hand signals**
- **Two-way radio**
- **Mobile phones**
- **Written instructions**
- **Speaking, listening, asking questions**
- **Signs (ensure you can read and write enough to understand spoken and written instructions and safety signs).**

Theory Training Task 13

Performance Criteria: 1.7, 3.7, 3.6

How should you and the dogger communicate when you can **see** each other? Circle the answer.



Hand signals

Whistle

Two-way radio

Theory Training Task 14

Performance Criteria: 1.7 & 3.7

a) Name the communication equipment you should test before you start work to see if it functions.

The two-way radio and whistle.

b) What should you do if the equipment doesn't work?

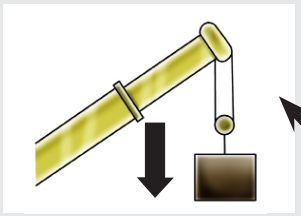
- **Change it for working equipment.**
- **Follow site procedures for tagging out faulty equipment.**

Theory Training Task 15

Performance Criteria: 3.4, 3.7

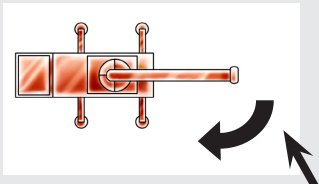
Match the crane boom motion on the left with the correct hand or whistle signals on the right.

Hoisting down



Stop

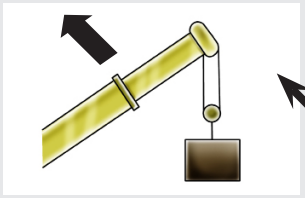
Slewing right



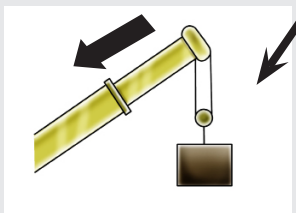
Travel and transverse

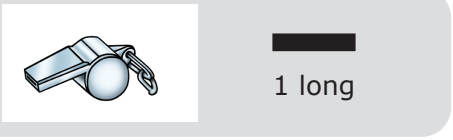
Indicate the direction you want the crane to go

Luffing boom up



Telescoping boom retract. Jib-trolley in.





1 long

1 long, 2 short

Communicate clearly

Learners: You **must** do this task under the **control of a licensed operator**.
Please wait for your trainer to advise you before trying the task.

(a) Your trainer will take you to an area where you'll practise the Australian Standard hand signals with the trainer or dogger. Make sure you understand all of the signals.

(b) Choose a two-way radio and check it for faults or damage. Follow the tag out procedure if the radio doesn't work.

- ☐ Appropriate communication methods are identified in consultation with associated personnel. This means you use communication equipment best suited to the job you are to do.
- ☐ All communication equipment is checked for serviceability. This means you make sure any communication equipment you use works properly.
- ☐ All communication equipment is tested for functionality. This means you test your communication equipment to see if it works.
- ☐ All required communication signals are correctly interpreted in accordance with procedures and the appropriate standard. This means when moving a load, ensure you know and understand the dogger's hand signals.

Part 2: **Satisfactory** ☐ **Not yet satisfactory** ☐

Signature (licensed operator/trainer) ..... Date .....

Review

Part 2—Communicate clearly

Sharing your knowledge can be a good way to remember things you have learnt. Talk about and/or record below the key points you have learnt in 'Communicate clearly' and share your experiences with other learners and/or your trainer.

Further learning (optional)

Apply

Talk to your workmates or other learners. You could try practising the Australian Standard hand signals in the mirror or with a partner.

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.

Performance Criteria: 2.4

Do visual checks

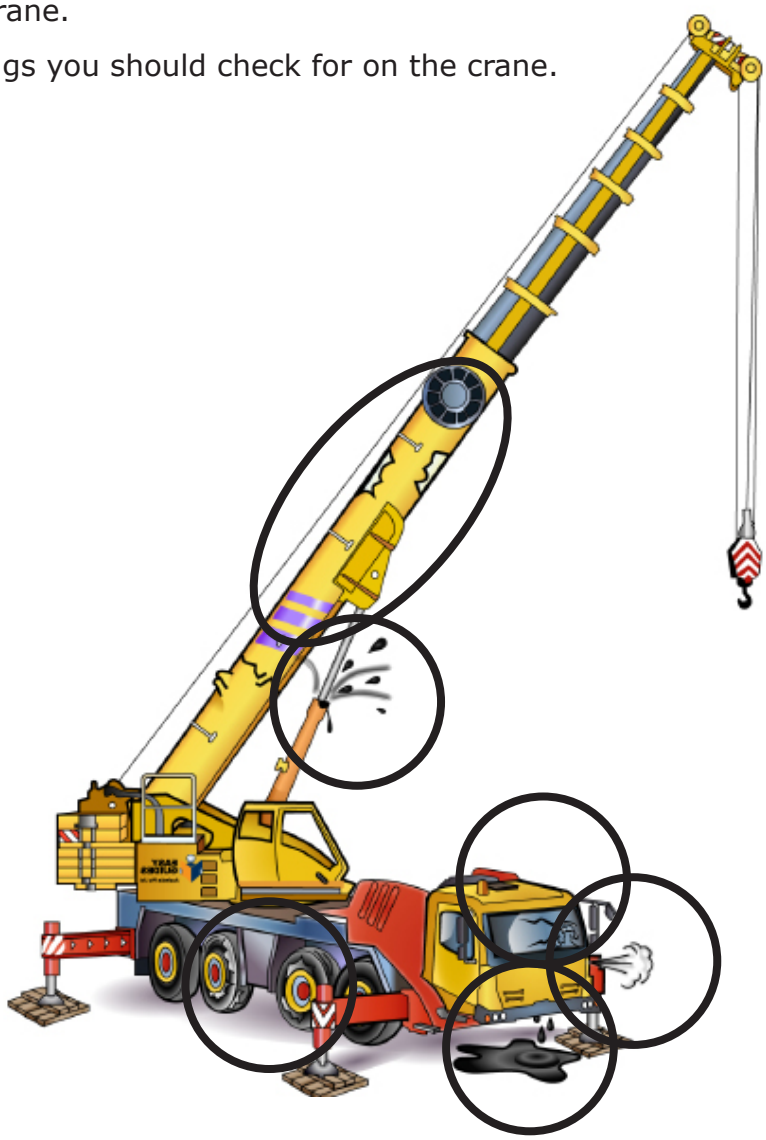
Before you start working, there are important crane safety checks you need to do first. Start with the visual check. Look around the crane for obvious problems such as leaks and damage.

Theory Training Task 16

Performance Criteria: 2.4

Look at this crane.

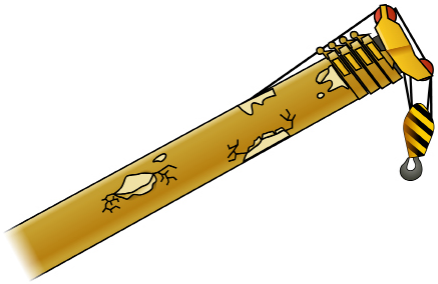
Circle the things you should check for on the crane.



Theory Training Task 17

Performance Criteria: 2.4

Choose two of the areas you circled and explain why you think it's important to make the check.



Answer may include:

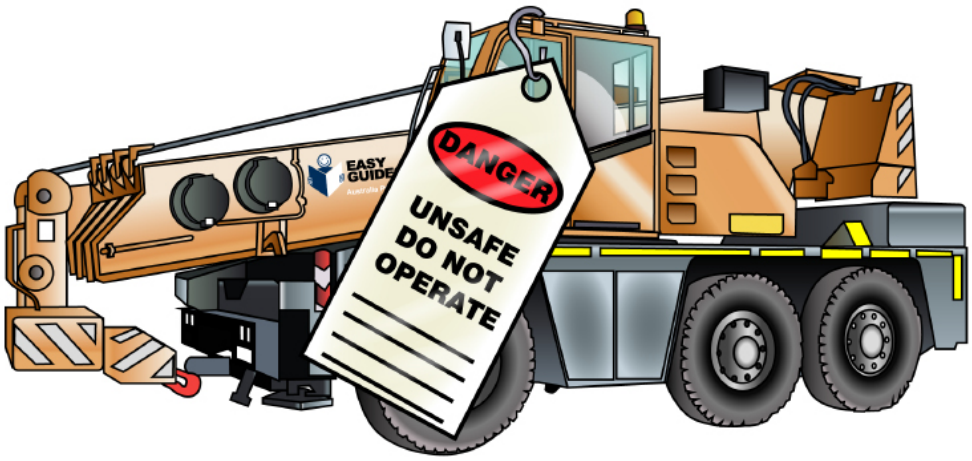
- **Flaking paint, bends, twists and cracks on the**
- **boom or outrigger arm may be signs of wear or a welding fault.**
- **Fluid on ground may be an oil, brake or hydraulic leak.**
- **A broken windscreen may be a sign of vandalism.**
- **A damaged tyre may need to be replaced.**

Theory Training Task 18

Performance Criteria: 2.4

Who is allowed to remove a danger tag?

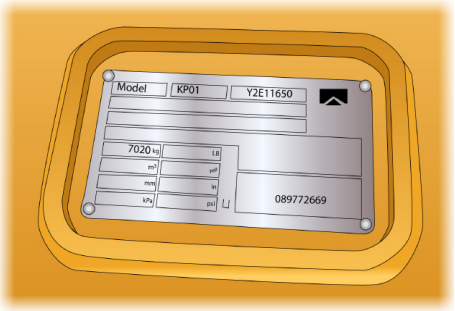
- ☐ Anyone involved in the work
- ☐ Anyone with a dogging licence
- ☑ The person who signed the tag
- ☑ The supervisor of the person who signed the tag



Performance Criteria: 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 readable and clear.



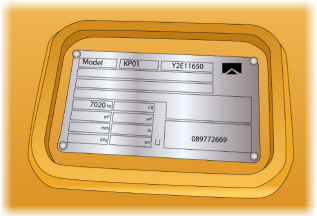
Theory Training Task 19

Performance Criteria: 2.4

List at least 2 things you should be able to read on a data plate.

Answer may include:

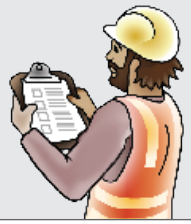
- **Weight (GVM)**
- **Dimensions**
- **WLL/SWL**
- **Model number**
- **Date of manufacture**
- **Serial number**



Performance Criteria: 2.4

Do the pre-operational checks

Do the pre-operational checks to make sure the crane is safe to use.



Theory Training Task 20

Performance Criteria: 2.4

What are four (4) pre-operational checks you need to do on the crane?

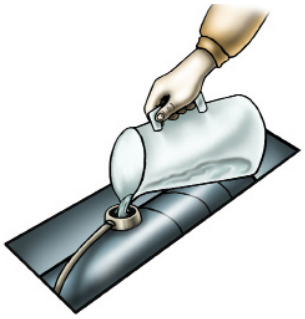
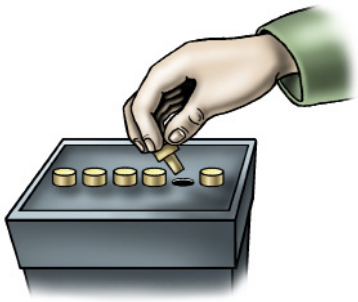
Answer may include:

- **No safety tags on the crane**
- **Load charts**
- **Tyres (condition, pressure)**
- **Ropes, wires and anchorages**
- **Fluid levels and leaks (oil, water)**
- **Logbook is present and in good condition**
- **Structural damage to crane (including boom/jib)**
- **Signage (including manufacturer's data plate and working load limit)**
- **Rope drums**
- **Lifting hook**
- **Communication system**

Theory Training Task 21

Performance Criteria: 2.4

a) Label the fluid checks shown below.

 **Coolant**	 **Battery fluid**
 **Brake fluid**	 **Engine oil**

b) If you forgot to check one of these fluids and they ran dry, what might happen to the slewing crane?

Answer may include but is not limited to:

- **The slewing crane could be damaged.**

Theory Training Task 22

Performance Criteria: 2.4, 2.6, 2.7

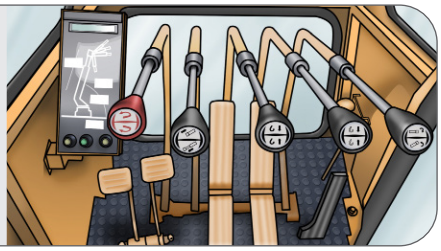
On a lattice boom crane, what problems can cause the boom brakes to creep and engage the boom pawl and ratchet?

Brake condition, mechanical failure or moisture.

Performance Criteria: 2.7

Crane controls

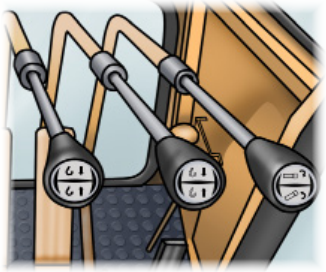
Get to know the controls on the crane you will use.



Theory Training Task 23

Performance Criteria: 2.7

Name the main controls on a slewing mobile crane.



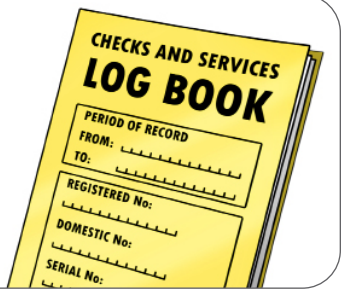
Answer may include:

- **Brake levers**
- **Luffing levers**
- **Hoisting and lowering levers**
- **Boom extension levers (if fitted).**

Performance Criteria: 2.8

Check the logbook

Check the crane service logbook for records of faults, servicing and repairs.



Theory Training Task 24

Performance Criteria: 2.8

a) Why do you need to check the crane's service logbook?

- **It is the right logbook for the crane being used**
- **The crane meets Australian Standards (AS) 1418**
- **Someone has fixed any faults**
- **To ensure maintenance or repairs have been done.**

b) How often should the crane be serviced?

At least every three months.

Performance Criteria: 2.7

Listen for noises

Start the crane and listen for any strange noises and vibrations.

Theory Training Task 25

Performance Criteria: 2.7

a) Where do you find the start-up procedure?

You look in the user manual or in the manufacturer's specifications.

b) How do you start the crane?

1. **Apply the parking brake to stop the vehicle from moving.**
2. **Make sure the manual accelerator control lever is in the catcher and crane control levers are in the neutral positions.**
3. **Set the vehicle's shift lever in the neutral position.**
4. **Start the engine.**
5. **Depress the clutch pedal, pull up the power take up (PTO) lever completely, and release the clutch pedal slowly. This will start the hydraulic pump.**
6. **CAUTION – in winter and cold climates, do not operate the crane immediately after doing steps 1 – 5. (First, boom up and slew a few times without a load to warm up the hydraulic oil.)**

c) What do you do if you hear abnormal (meaning strange) noises coming from the crane when you start it?

You should have the crane inspected to find the cause of the problem.

Performance Criteria: 2.7

Test safety devices

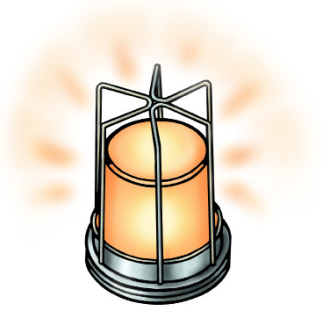
Test the crane's safety devices to make sure the crane is safe to use.

Theory Training Task 26

Performance Criteria: 2.7

a) Label these safety device checks you should carry out before starting a slewing mobile crane.

Horns/sirens



Warning lights

Over hoist limit/anti-two block device

Luff up limit

b) What does the anti-two block device do?

It prevents the lower load block from hitting the upper load block and dragging the hook block into the head sheaves. This is called double blocking.

c) How can you check that the anti-two block device is in working condition?

Check that the switches and weights can move freely.

Performance Criteria: 2.7

Do the post-start operational checks

Do the post-start operational checks after you have started the crane.

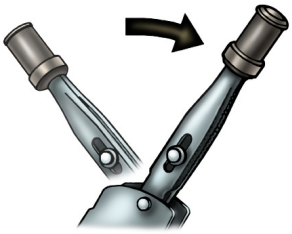
Theory Training Task 27

Performance Criteria: 2.7, 2.8

List the post-start operational checks you should make once you have started the slewing mobile crane.

Answer may include:

- **Hazard controls**
- **All controls and motions to full capability/extension**
- **Make sure the crane is safe to use. For example the throttle control and steering.**
- **Warning devices/systems**
- **Horn/lights/drive indicator**
- **Gauges**
- **Load radius indicator**
- **Communications**
- **Brakes (travel brake handbrake)**
- **A clear view from the cabin across the work area.**



Performance Criteria: 2.7

Record and report faults

If you find any faults with the crane, follow the tag out procedure and do not use the crane.

Theory Training Task 28

Performance Criteria: 2.7

Label and explain the steps you must take if you find a fault or have any problems with the slewing mobile crane you use.

1. **Remove the key** 	**Remove the key so no one else can use the slewing mobile crane.**
2. **Tag** 	**Place an out of service or danger tag on the slewing mobile crane so it cannot be used.**
3. **Record** Fault Reported By:..... Date:...../...../..... Description of fault:..... ..... **NOTE: Operator to TAG OUT machine if needed.**	**Record the fault in the logbook/ daily inspection checklist book.**
4. **Report** 	**Report the fault to your supervisor, manager or other authorised person.**

Practical Training Task 4

Part 3 — Check the crane
Performance Criteria 2.4, 2.7, 2.8, 2.9, 3.10

Check the crane

Learners: You **must** do this task under the **control of a licensed operator**. Please wait for your trainer to advise you before trying the task.

First, your trainer will take you to an area where you will use a slewing mobile crane.

Second, your trainer will ask you to do a routine check of the crane before you start the motor.

Third, your trainer will see if you can find any faults or damage on the slewing mobile crane

- ☐ Crane is visually checked for any damage or defects. This means have a look around the crane for obvious problems.
- ☐ All signage and labels are checked to ensure they are visible and legible in accordance with the appropriate standard. This means you check signs and labels.
- ☐ Routine pre-operational crane checks are carried out in accordance with procedures. This means that once you do a visual check of the crane you then do a thorough pre-operational check.
- ☐ All controls are located and identified. This means you get to know the position and use of all the controls on the crane.
- ☐ Crane service logbook is checked for compliance. This means you find and check the service logbook and daily inspection checklist book.
- ☐ Crane is started in accordance with procedures and checked for any abnormal noises. This means you start the crane and listen for strange noises.
- ☐ All crane safety devices are tested in accordance with procedures. This means you test the safety devices on the crane for problems.
- ☐ Post-start operational checks are carried out in accordance with procedures. This means you do checks after you have started the crane.
- ☐ All damage and defects are reported and recorded in accordance with procedures, and appropriate action is taken. This means if you find any defects and faults with the crane, you need to record and report them.

Your trainer will assess your routine checks of the slewing mobile crane. After you finish, the licensed operator/trainer will then sign and date the box below.

Part 3: **Satisfactory** ☐ **Not yet satisfactory** ☐

Signature (licensed operator/trainer) ..... Date .....

Review

Part 3—Check the crane

Sharing your knowledge can be a good way to remember things you have learnt. Talk about and/or record below the key points you have learnt in 'Check the crane' and share your experiences with other learners and/or your trainer.

Further learning (optional)

Apply

Talk to other learners or workmates about how they check a slewing mobile crane. Ask them what damage and defects they look for. Find out what they did when they found a damaged or faulty part. Have a chat with your trainer about routine checks.

Part 4

Plan the lift

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.

Performance Criteria: 1.3

Find out the weight of the load

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

Theory Training Task 29

Performance Criteria: 1.3

Give some examples of how you find the weight of an unmarked load.

Answer may include:

You can find the weight of an unmarked load by:

- **The weighbridge certificate, consignment note or other paperwork**
- **The load itself or its packaging**
- **Calculate the weight of the load yourself**
- **Weighing the load.**

Theory Training Task 30

Performance Criteria: 1.3

a) You will lift a steel universal beam. The dimensions are:

- Weight of structural steel = 7840 kg per cubic metre

  1 mm = 0.001 m
- Flanges (top and bottom)
  - Length = 12 m
  - Width = 250 mm
  - Thickness = 15 mm
  - Flange = L × W × D × 2 × weight of structural steel
- Web
  - Length = 12 m
  - Width = 275 mm
  - Thickness = 40 mm
  - Web = L × W × D × weight of structural steel

What is the total weight of the steel universal beam in kilograms?

Flange = 12 m × 0.25 m × 0.015 m × 2 × 7840 kg

Flange = 705.6 kg

Web = 12 m × 0.275 m × 0.04 m × 7840 kg

Web = 1034.88 kg

Total weight = 705.6 kg + 1034.88 kg

Total weight = 1740.48 kg

Total weight = 1740.5 kg

Performance Criteria: 2.5, 3.1

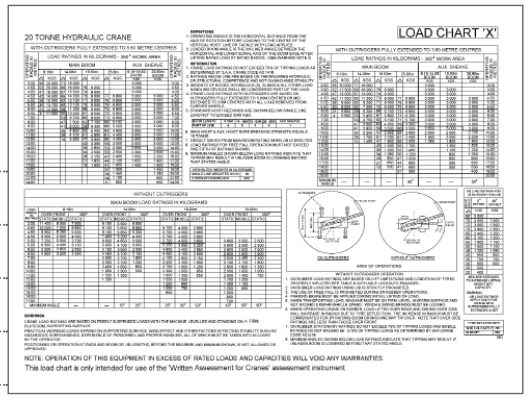
Check the load charts

Check the load charts and make sure the crane can lift the load.

Theory Training Task 31

Performance Criteria: 2.5, 2.6, 3.1

a) How do you find out the crane's lifting capacities to make sure the crane can lift the load?



You can find out by reading the:

- **Crane's lifting limits in the user manual**
- **Crane's load charts**
- **May be marked on the crane.**

b) List at least three (3) things a load chart tells you.

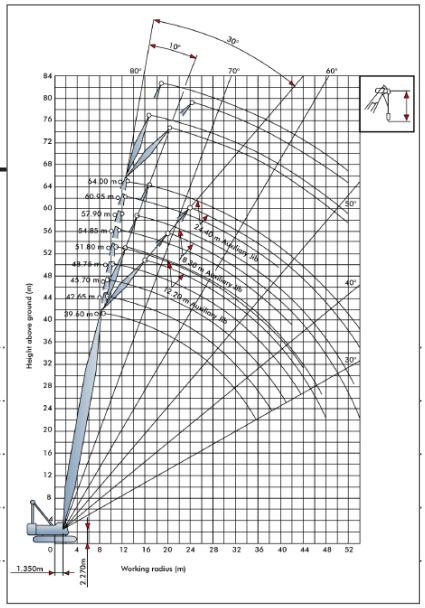
Answer may include:

- **Rated capacity**
- **Length of boom**
- **Operating radius**
- **Winch capacity**
- **Maximum wind speed**
- **Speed**
- **Outrigger set up**
- **Angle of boom**
- **Line load / hoist limits**
- **Jib ratings**
- **Mobiling limits**

Theory Training Task 32

Performance Criteria: 2.5, 2.6, 3.1

Name at least three (3) things a range diagram shows you.



- **Range of boom lengths**
- **Crane structure (configuration)**
- **Boom point elevation**
- **Boom angles**
- **Radius**

Theory Training Task 33

Performance Criteria: 1.3

a) You are doing a multiple crane lift with two cranes.
The load is 20 tonnes.
How much capacity does each crane need to lift this load safely?

Load share of each crane = total load ÷ number of cranes

20 t ÷ 2 = 10 t

Capacity each crane needs = load share of each crane × safety margin

10 t × 1.2 = 12 t

b) How much extra capacity (safety margin) do you need for a three crane lift?

33%

Performance Criteria: 1.4

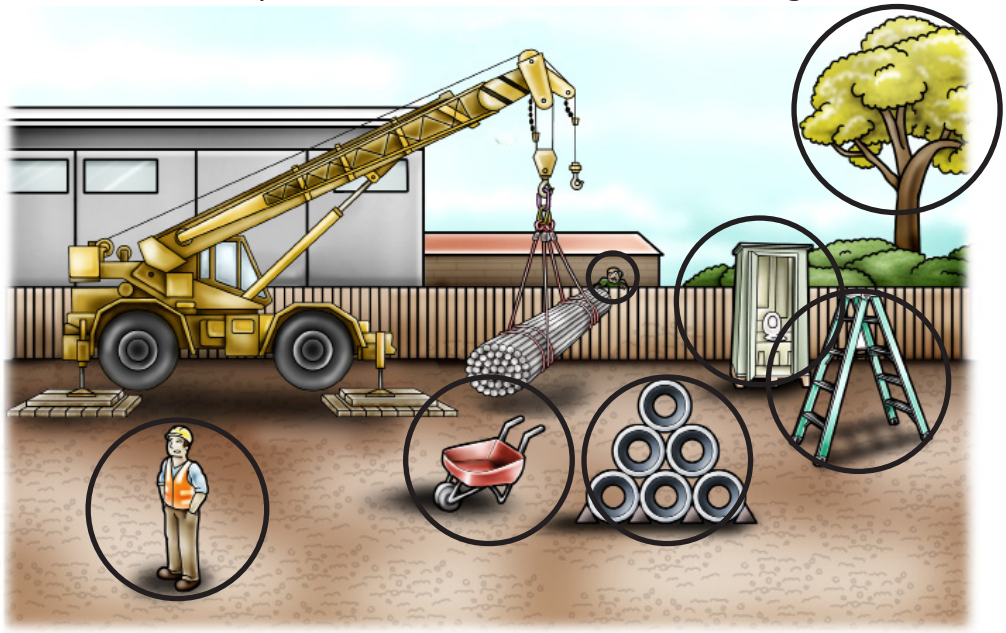
Plan your path

Plan the path you will take to move the load, and look out for hazards.

Theory Training Task 34

Performance Criteria: 1.4

Check the path of movement of loads to avoid hazards.
Circle the **hazards** you should look out for when moving a load.



Performance Criteria: 1.2

Check the ground conditions

Before you set up the crane in the work area, check that the ground can support the crane and the load.

Theory Training Task 35

Performance Criteria: 1.2

Do you think the following **ground conditions** are safe to set up a slewing mobile crane or need further checking to make sure they are stable?

Circle the correct answer.

Recently flooded ground	**Safe**	**Needs further checking**
Hard compact soil	**Safe**	**Needs further checking**
Bitumen road	**Safe**	**Needs further checking**
Swamp area	**Safe**	**Needs further checking**
Soft soil	**Safe**	**Needs further checking**
Uneven ground	**Safe**	**Needs further checking**

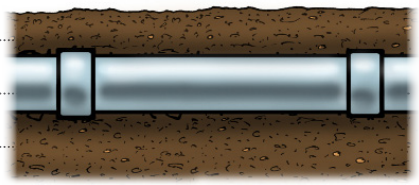
Theory Training Task 36

Performance Criteria: 1.2

What might happen if you set up the slewing mobile crane over underground services?

The slewing mobile crane could:

- **Sink**
- **Tip over while it is moving the load**
- **Damage the underground services.**



Theory Training Task 37

Performance Criteria: 1.2

List the ways you can find out where underground services are:

Answer includes:

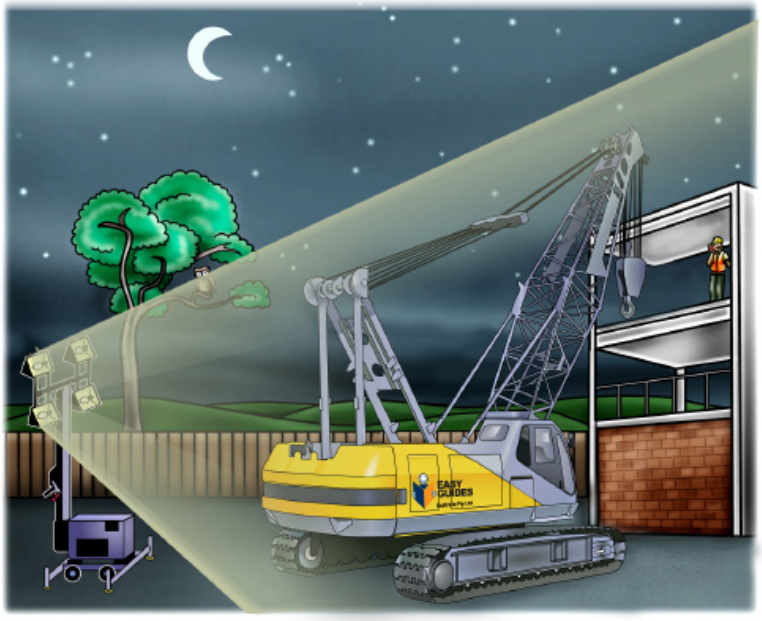
- **Dial before you dig, phone 1100.**
- **Check site plans.**
- **Contact the water authority or local council.**
- **Check the nearby drains or manholes.**
- **Check for signs posted by service providers.**

Theory Training Task 38

Performance Criteria: 1.2

List the things you need to think about when you set up a crane on a suspended floor or temporary formwork.

- **The floor is strong enough to take the weight of the crane and load.**
- **Beware of single point loadings.**
- **The age of the slab.**
- **Whether back-propping or shoring is needed on the floors underneath.**
- **Written confirmation from a qualified engineer.**



Notes

Load charts

This book covers up to 100 tonnes slewing mobile crane capacities.

Read this page, and answer the questions about the crane capacity you are studying for.

Introduction to load charts

All cranes have their own load chart. The load chart gives information about the load capacity of the crane in a given configuration (set up). The crane's capacity changes depending on how the crane is set up.

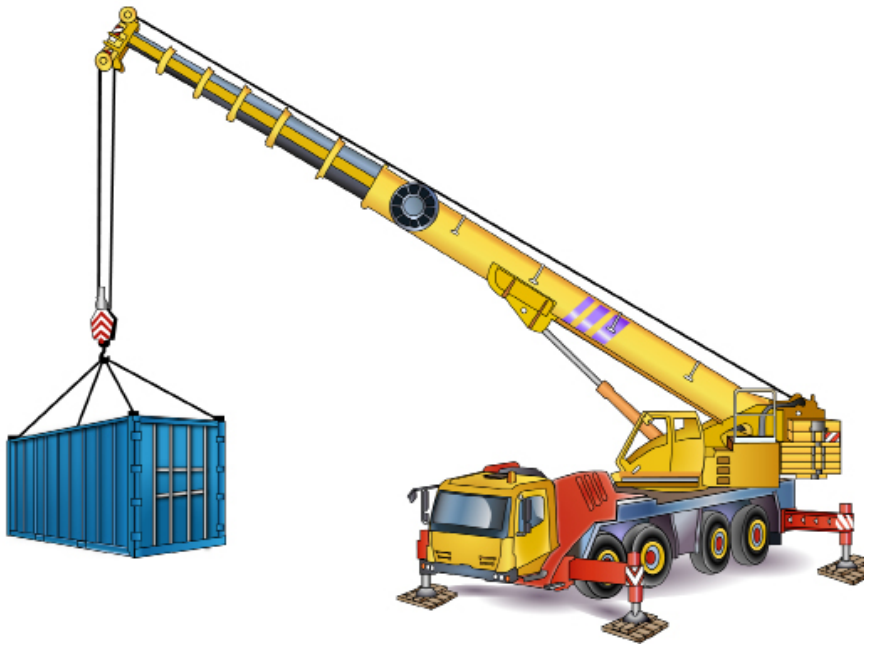
The configuration of the crane includes:

- the outrigger set up
- the length and angle of the main boom
- maximum line load and winch capacity
- fly jib and hook attachments.

Other important information can include:

- specific limitations of boom angles
- operational condition such as wind speed.

Read all of the information on the load chart.



How to read load chart

To calculate the maximum load that you can safely lift, there are some basic rules for all load charts.

1. Outriggers

Work out the outrigger set up. This will help you know which section of the load chart to look at.

2. Boom length

Work out the length of the boom. This will help you know which column to look at.

3. Operating radius

Work out the operating radius. This will help you know which row to look at.

4. Capacity

The figure in the box will state the capacity of the crane.

5. Hook block/s

The weights of hook block(s) are part of the load. Deduct the weight from the capacity. These weights are on the load chart.

6. Jib weight

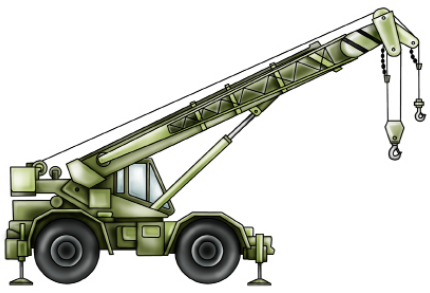
The weight of the jib (fly), either fitted or stowed are part of the load and may be a deduction from the capacity. This information is on the load chart.

7. Line (hoist rope)

Look at the hoist rope reeving to determine how many parts of line (hoist rope) are needed to support the load. For example, if the load you will lift is 5 tonnes and if the hoist rope has a capacity of 3 tonnes then 2 parts of line are required to safely hoist the load.

8. Jib configuration

Information about the load capacity of the different jib configurations (exclusive jib load chart).



Slewing mobile crane charts (up to 100 tonnes)

Answer these questions if you are studying the **TLILIC0021 Licence to operate a slewing mobile crane (up to 100 tonnes)**.
If you are studying for a different licence, skip to that section.

Note: For the following crane exercises us the LIEBHERR TM1100-5.2 load chart. This is located in the 'Trainer's Resource' of the Easy Guides training material. Your trainer will provide you with this crane chart.

Load Chart Activity 1

Performance Criteria: 2.7, 3.1, 1.3,

Use C1 Load charts

Note: Use the LIEBHERR TM1100-5.2 load charts

General load chart questions

a) Locate the cranes mass if it is to maintain a axle loading of 12t per axle?

Answer = 60T

b) At what rate does the second winch wind on its hoist rope?

Answer: = 130m/min

Answer = 90.2t

d) The fly jib has 3 off-set settings on the load chart, what are the off-sets?

Answer = = 90.2t

e) When the crane is maintaining a 12t per axle weight, how much counter ballast is on the crane carrier?

Answer: = 15t cw

The LTM1100 you are operating has 26t of counterweight fitted and a main boom length of 45m and the 3-sheave hook block fitted

Question 1

The load you are about to lift weighs 6000kg, and 75kg of rigging is required, in between which 2 radii would you expect the 90% rated capacity alarm to activate?

Answer = load equals 6000kg + 75kg rigging + 500kg hook block

= 6575kg total load weight

(To calculate % of crane capacity) = (load on hook / crane capacity at radii) x 100

Example at 24m % of crane capacity = (6575kg / 8100kg) x 100 = 81%

Example at 26m % of crane capacity = (6575kg / 7000kg) x 100 = 94%

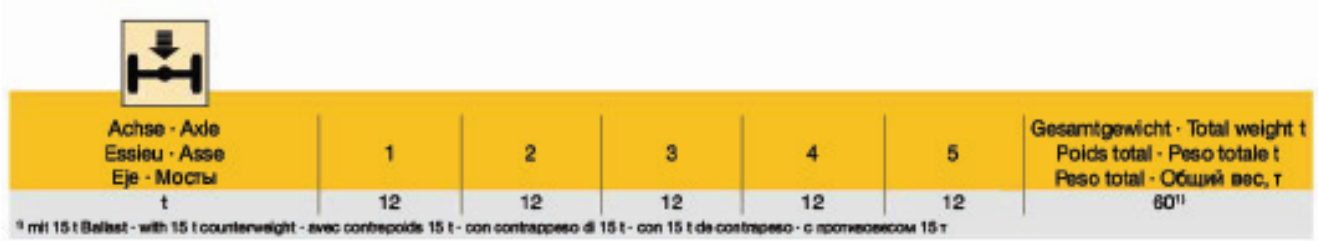
Therefore, the crane will reach a 90% capacity in between 24m – 26m radii

Slewing mobile crane charts (up to 100 tonnes)

Question 2

Using the same parameters as above in question 1, calculate the maximum outrigger pressure imposed by the crane and load?
Use outrigger formula 0.65 x (CM + Load)

Calculate the crane mass (CM) first (use load chart extract below)



Achse · Axle Essieu · Asse Eje · Мосты	1	2	3	4	5	Gesamtgewicht · Total weight t Poids total · Peso totale t Peso total · Общий вес, т
t	12	12	12	12	12	60[1]

[1] mit 15 t Ballast - with 15 t counterweight - avec contrepoids 15 t - con contrappeso di 15 t - con 15 t de contrapeso - с противовесом 15 т

Crane Mass = 60t with a 15t cw attached (this is on road travel),
We need to add the extra weight of our current counterweight of 26t
(26t – 15t (that the crane was already fitted with) = 11t extra was added to the crane)
= 60t + 11t
Current crane mass = 71t

Load = 6000kg + 75kg rigging + 500kg hook block
= 6575kg total load weight

Substitute it into the formula 0.65 x (CM + Load)
= 0.65 x (71t + 6.575t)
= 0.65 x 77.575

Answer: = 50.43t (rounded to 2 decimals)

Question 3

Would 1.2m x 1m packing be suitable for this setup if the ground has a permissible ground bearing pressure of 30t/m²

Remember to use the outrigger formula - 0.65 x (CM + Load) / Pmax of soil

Already have (0.65 x (CM + Load)) – question 2 = 50.43t
Now divide by Pmax of Soil (30t/m²)
50.43t / 30t/m²

= 1.681m² pad size would be required

What is our current pad size? – 1.2m x 1m = 1.2m²

Answer: = This shows our current pad size of 1.2m² is insufficient for what is required at 1.681m²

Question 4

The Liebherr LTM 1100-5.2 crane is reconfigured with 35 tonnes of counterweight with a main boom length of 52m, a 14m fixed fly and 10.8m of folding fly set at a 40º angle. What is the furthest radius this crane configuration can pick a load?

Answer: = 56m radius

Question 5

What would be the minimum radius for this setup?

Question 6

Using a single fall hook block, what is the maximum weight of a load that can be lifted at 48m radius? Using 85kg of rigging to secure the load. Show workings.

Answer: = Rated Capacity of the crane at radii - Hook being used – Rigging used to secure the load.

= 1.3t (capacity) - 0.25t (hook) - 0.085t (rigging)

= 0.965t or 965kg

Question 7
The Liebherr LTM 1100-5.2 is dual lifting with a Tadano GR-800EX. The load of 64t is to be shared equally between the 2 cranes, calculate the required Safe Working Load of the Liebherr LTM1100 at the radius of the lift is going to be?
Remember for 2 crane lifts the safety factor of (load share +20%) is required
64t / 2 = 32t per crane + 20%
= 32 x 1.2 or 32 x 120%

Answer: = = 38.4t

Each crane must be good for 38.4t minimum at the radius of lift

Slewing mobile crane charts (up to 100 tonnes)

Note: For the following crane exercises use the Tadano GR-800EX load chart. This is located in the 'Trainer's Resource' of the Easy Guides training material. Your trainer will provide you with this crane chart.

Load Chart Activity 3

Performance Criteria: 2.6, 3.1

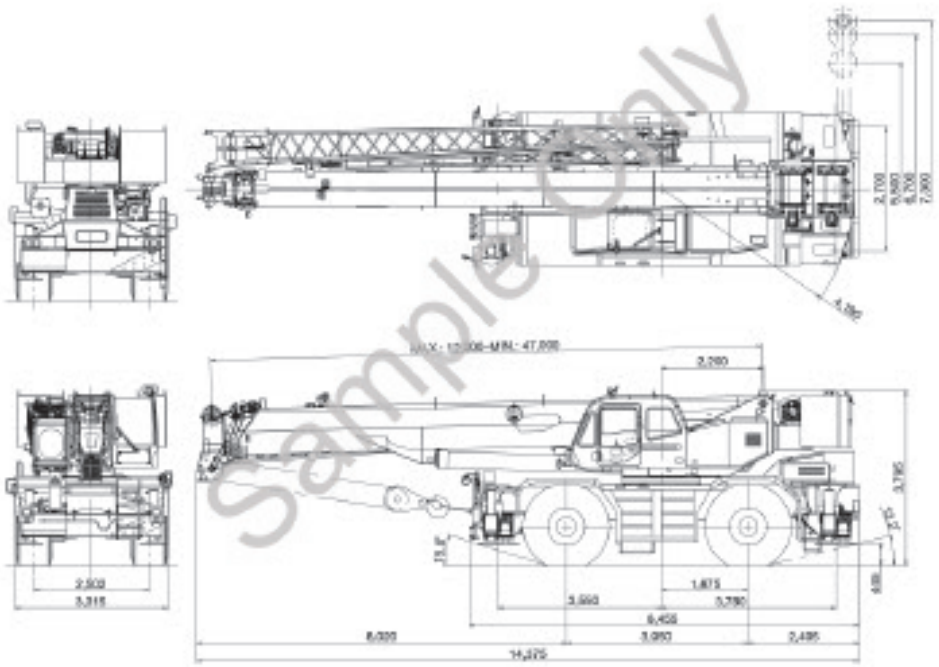
TADANO

GR-800EX
(Left-hand drive)
80 Ton Capacity

SPEC. SHEET NO. GR-800E-3-00103/EX-01

HYDRAULIC ROUGH TERRAIN CRANE

DIMENSIONS



Note : Dimension is with boom angle at -1.5 degree.

GENERAL DIMENSIONS

Turning radius (29.5 - 25 Tires)	
4 wheel steer	6.8 m
2 wheel steer	11.9 m

Overall length	approx. 14,375 mm
Overall width	approx. 3,315 mm
Overall height	approx. 3,795 mm

Specifications are subject to change without notice.

General Questions

Question 1 - What is the Cranes overall height when stowed ready to travel?

Answer: = Approx 3.795m (front page)

Question 2 - What is the rated capacity (line pull) of the main winch?

Answer: = 6600kg (note 10 p.8)

Question 3 - If the wind speed is between 12m/s and 14m/s the rated capacity of the crane should be reduced by how much?

Answer: = Reduce by 70% (note 5 p.8)

Question 4 - When operating "on-rubber" tire pressure is particularly important for the stability of the crane, what should the tire pressure be set at for this operation?

Answer: = 400kPa (note 5 p.7)

Question 5 - When outriggers are fully extended, they have a spread of how far?

Answer: = 7.3m (load chart p.4)

Question 6 - What is the tare weight of the 60t hook?

Answer: = 540kg (note 3 p.8)

Question 7 - When using the ön-rubber" chart how much tolerance from 0° centre of slew is there for working over the front ?

Answer: = Over the front operation shall be performed within 2 degrees in front of chassis (note 6 p.7)

Scenario 1

The Crane is set up on outriggers with a spread of 7.3m, 360° rotation and a boom length 29.5m with a 50t hook fitted,

Question 1 - What is the cranes (best) rated capacity for this configuration at 10m radii?

Answer: = 18.2t

Question 2 - To achieve this capacity the boom is in which tele-mode?

Answer: = 1.

Question 3 - What are the telescoping conditions for this scenario?

Answer: = 2nd boom 100%

Answer: = 3rd boom 33%

Answer: = 4th boom 33%

Answer: = Top boom 33%

Question 4 - What is the main boom angle in this configuration?

Answer: = 26m.

Question 5 - With this current set up what is the maximum radius that could be reached safely?

Answer: = 26m

Scenario 2

The Crane is set up on rubber and stationary, lifting over the front and a boom length of 20.8m with a 6.6t hook fitted, the load to be lifted weighs 4.5t and rigging weight of 70kg,

Question 1 - What is the maximum capacity of the crane at a radius of 9m?

Answer: = 10.8t

Question 2 - Can the crane raise the load and rigging, show working?

Answer: = 10.8t

Question 3 - Could the load be slewed over the side in this current configuration?

Answer: = No, crane has a rated capacity of 4.2t over the side.

Question 4 - Can the load be travelled with at "creep-speed" over the front?

Answer: = Yes , creep chart shows a rated capacity of 7.3t

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Performance Criteria: 2.11, 2.12

Calculating the weight of loads

In preparation of lifting a load you need to identify, calculate or estimate the weigh or confirm the weight of loads.

Theory Training Task 39

Performance Criteria: 2.11, 2.12

a) Calculate the weight of the following loads in kilograms?

i) What is the total weight of load if we had;

20 kg cement mix bag,

with 10 bags,

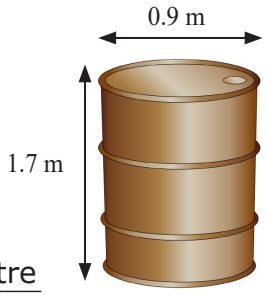
Plus weight of pallet, which is 15kg

Calculation:

20 kg × 10 bags = 200 kg

200 kg + 15 kg = 215 kg

ii) Calculate the final drum weight with water according to the following job specifications:



Job:

Move a drum filled with water

Specifications:

Weight of water:

Estimate the weight of Water per Cubic Meter: 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)

Calculation

Answer may include:

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 m3

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)

iii) Calculate the weight of a pipe that is hollow length ways, according to the following job.

Job:

Lift a concrete pipe

Specifications:

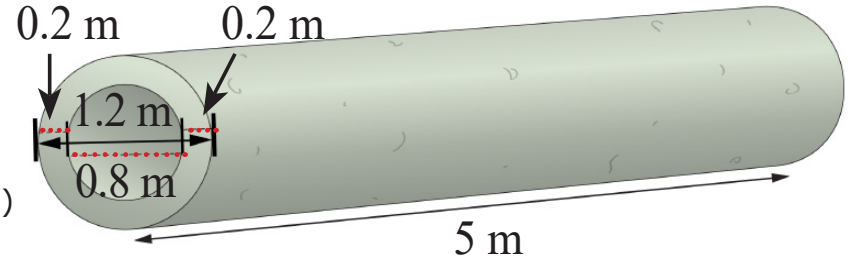
Diameter (D): 1.2 m

Length (L): 5 m

Thickness: 0.2 m (200 mm)

Weight of material:

2400 kg per cubic metre



Calculation

Answer may include:

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

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

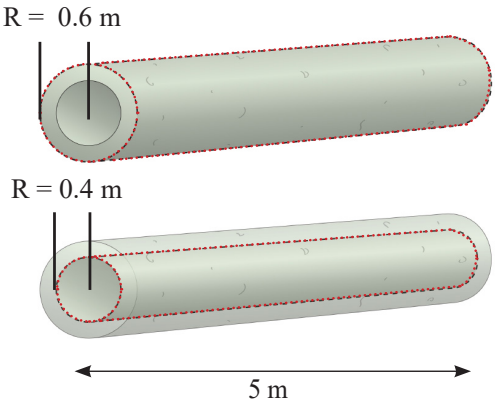
3. Take the inner pipe volume away from the outer pipe volume.

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)

iv) Calculate the weight of a pipe that is hollow length using Pi as the formula 3.14, according to the following job.



Job:

Lift a concrete pipe

Specifications:

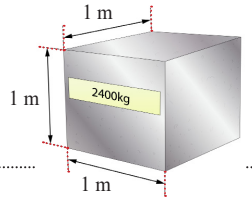
Outer cylinder radius of: 0.6 m

Inner cylinder radius of: 0.4 m

Length (L): 5 m

Weight of material:

Concrete Density 2400 kg per cubic meter



Concrete 2400 kg per cubic metres (m^3)

Calculation

Answer may include:

To work out the volume of the cylinder

1. Work out the volume of the outer cylinder.

R in **(m) × R** in **(m) × 3.14 × L** in **(m)**

3.14 m × 0.6 m × 0.6 m × 5 m = 5.652 cubic metres

2. Work out the volume of the inner cylinder.

R in **(m) × R** in **(m) × 3.14 × L** in **(m)**

3.14 m × 0.4 m × 0.4 m × 5 m = 2.512 cubic metres

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

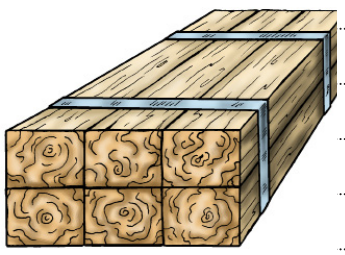
5.652 cubic metres − 2.512 cubic metres = 3.14 cubic metres

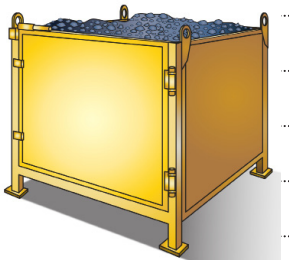
4. Multiply the volume by the weight of material.

3.14 cubic metres × 2400 kg = 7.536 kg (7.6 t)

b) Estimate what is the weight of the following loads in kilograms;

1000 liters of water 1 cubic meter of hardwood timber, 1 cubic meter of blue metal,



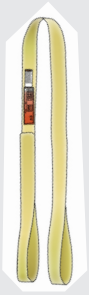


100 kg Approx 1100 kg, if wet up to 50% more 1900 kg

Performance Criteria: 2.11, 2.12

Calculating the working load limit (WLL) of selected slinging techniques for lifting a load.

When lifting a load with different sling techniques, the working load limit rated capacity lowers.



Theory Training Task 40

Performance Criteria: 2.11, 2.12

a. Work out how much weight a sling can lift for each of the following;

i) FSWR

Where D = Rope diameter (mm) - 10mm

Safety Factor = 8

Calculation for FSWR WLL (kg)

WLL (kg) 10mm FSWR

10 × 10 × 8 = 800 kg (0.8 t)

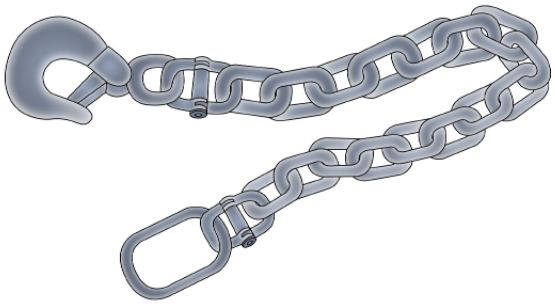
ii) Chain 80 Grade

Where D = Chain diameter (mm)

G = Grade of chain S = Safety factor

Chain Diameter 10mm

Calculation



10 mm Grade 80 chain

WLL (kg) = D X D X G X S

10 x 10 x 80 x 0.4 = 3200 kg or (3.2 t)

iii) Fibre rope -

Fibre Rope diameter 10 mm

Calculation

WLL (kg) = D X D

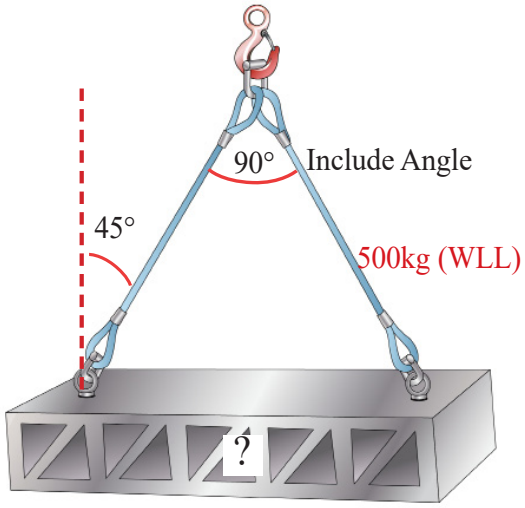
10 x 10 = 100kg (0.1 t)

Theory Training Task 41

Performance Criteria: 2.11, 2.12

Calculate the maximum safe working load with the following slinging configuration description scenarios using the angle sling mode factor.

a.) Calculate the maximum safe working load.



Angle Factors	
0°	= 2
30°	= 1.93
45°	= 1. 85
60°	= 1.73
90°	= 1.41
120	= 1

Scenario / Description:

2 legged angle sling

WLL of each sling: 500kg.

Angle from vertical: 45° and an

Include angle of 90°

Calculation:

Answer may include:

Formula:

SWL = WLL weight Capacity of Sling * Load Factor

Calculation:

500 kg * 1.41 = 705 kg

* So Maximum Load we can lift is 705 kg.

b.) Calculate the maximum safe working load.

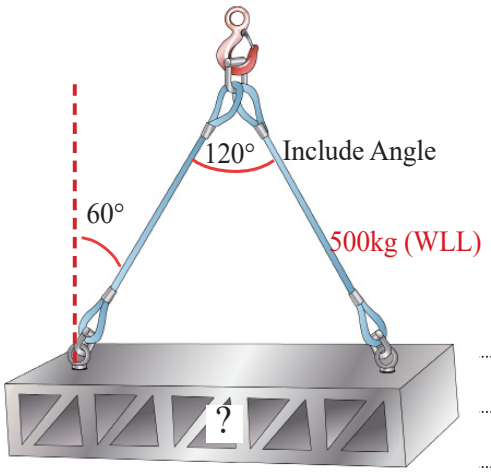
Scenario / Description:

2 legged angle sling

WLL of each sling: 500kg.

Angle from vertical: 60° and an

Include angle of 120°



Calculation:

Answer may include:

Formula:

SWL = WLL weight Capacity of Sling * Load Factor

Calculation:

500 kg * 1 = 500 kg

* So Maximum Load we can lift is 500kg

c.) Calculate the maximum safe working load.

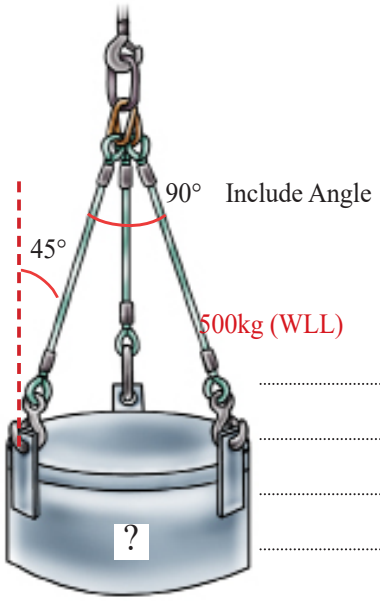
Scenario / Description:

3 legged angle sling

WLL of each sling: 500kg.

Angle from vertical: 45° and an

Include angle of 90°



Calculation:

Answer may include:

Formula:

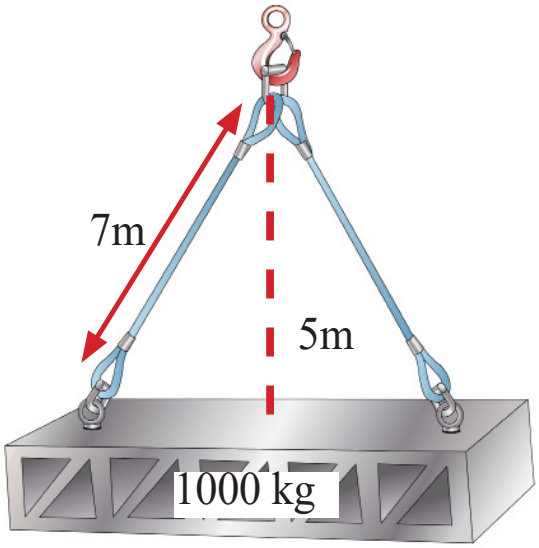
SWL = WLL weight Capacity of Sling * Load Factor

Calculation:

500 kg * 1.41 = 705 kg

* So Maximum Load we can lift is 705 kg

d.) Calculate the maximum load of a sling when a 2 Leg Angle Sling configuration is used?



Scenario / Description:

if load is 1000 kg

7m = L = Length of Sling Leg

5m = H = Height Distance from Pick Point

Calculation:

Answer may include:

Formula:

=(Load Weight / No sling Legs) x (L / H)

Calculation is:

=(1000 kg / 2) x (7/5)

=500 kg x 1.4

= 700 kg per sling

Theory Training Task 42

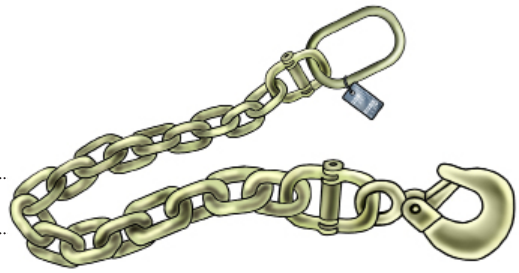
Performance Criteria: 2.11, 2.12, 2.13

Calculate the sling rope types diameter need to lift load from the following scenario descriptions:

a. Scenario / Description:

Chain 80 grade

Load = 3200 kg, Included angle = 90°, 2 leg sling



Answer may include:

Formula: D = √ L (kg) ÷ 0.4 ÷ G (80) ÷ angle factor

Calculation:

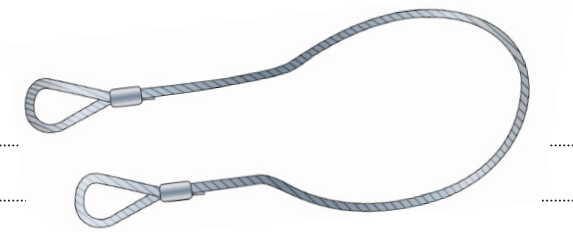
D = 3200 ÷ 0.4 ÷ 80 ÷ 1.41 = 70.92

D = √ 70.92 = 8.42 (Rounded up to 9 mm)

b. Scenario / Description:

Flexible steel wire rope

Load = 1600 kg, Included angle = 90°, 2 leg sling



Answer may include:

Formula: D = √ L (kg) ÷ 8 ÷ angle factor

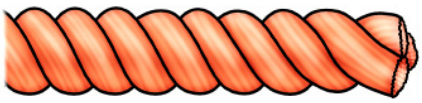
Calculation:

D = 1600 ÷ 8 ÷ 1.41 = 141.84

D = √ 141.84 = 11.9 (Rounded up to 12 mm)

c. Scenario / Description:

Synthetic or natural fibre rope



Load = 200 kg, Included angle = 90°, 2 leg sling

Answer may include:

Formula: D = √ L (kg) ÷ angle factor

Calculation:

D = 200 ÷ 1.41 = 141.84

D = √ 141.84 = 11.9 (Rounded up to 12 mm)

Theory Training Task 43

Performance Criteria: 2.11, 2.12, 2.15

Calculate how much weight you can lift from the following scenario information.

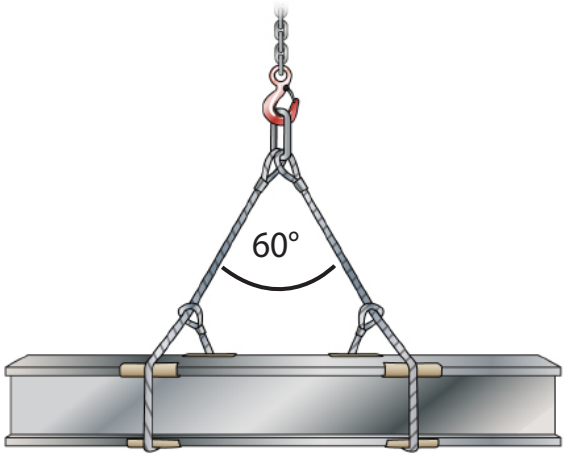
Scenario / Description:

Slings: Two FSWR slings

WLL = 8 tonne

Included angle: 60°

Sling method: Choke hitch rectangular load



Answer may include:

WLL slings × Angle factor × Reeve factor

Calculation:

8 (t) × 1.73 (Angle factor) × 0.5 (Reeve factor)

8 × 1.73 × 0.5 = 6.92 tonnes is the maximum load weight that can be lifted.

Performance Criteria: 2.13, 2.14, 2.15, 1.9, 2.2

Identifying different slinging techniques and lifting points for a load

When lifting different load types you can use a number of sling lifting techniques. If risk control measures for hazards are identified, how do we check if they have been followed?

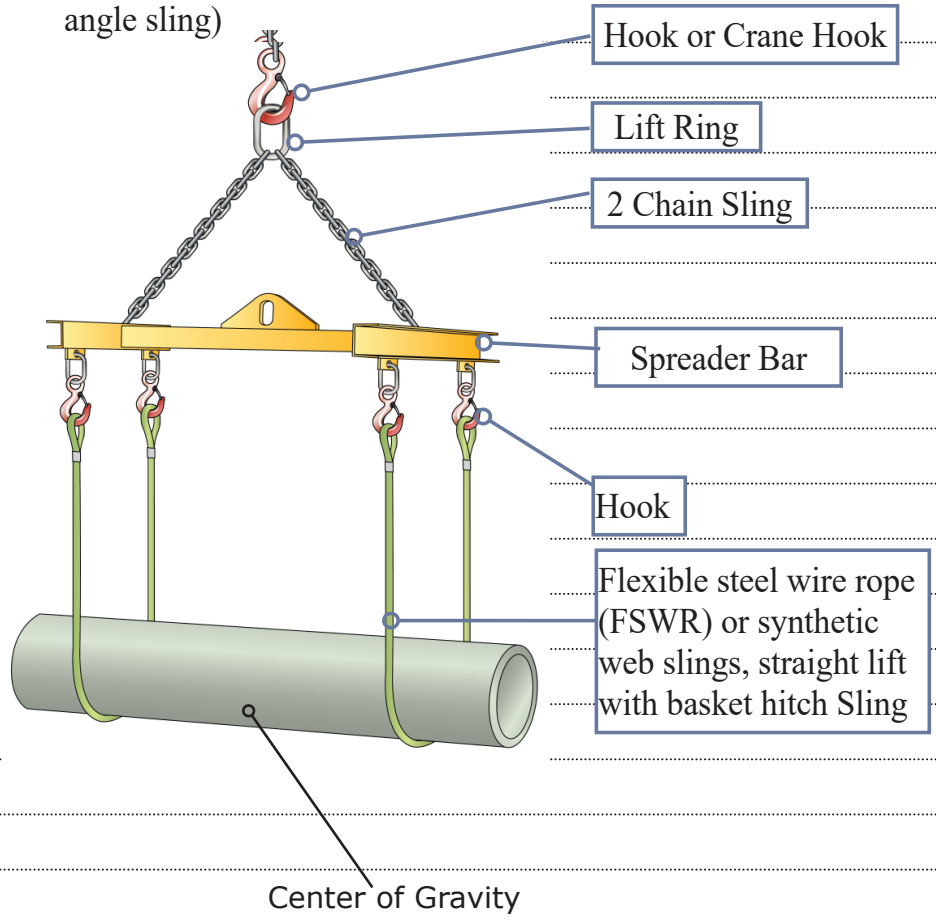
Theory Training Task 44

Performance Criteria: 2.13, 2.14, 2.15, 1.9, 2.2

Identify the different slinging techniques, lifting points and equipment you can use to lift a concrete piping load, from the following diagram.

Answer may include:

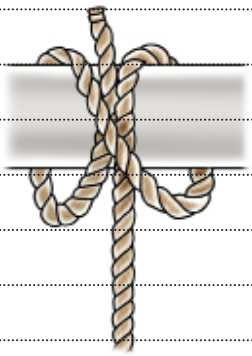
- *SLING Type:* FSWR or synthetic web slings, straight with basket hitch sling with spread beam and (angle chain sling or FSWR angle sling)



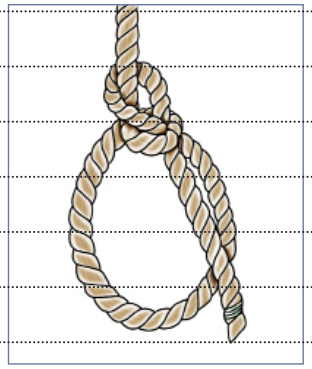
Theory Training Task 45

Performance Criteria: 2.13, 2.2

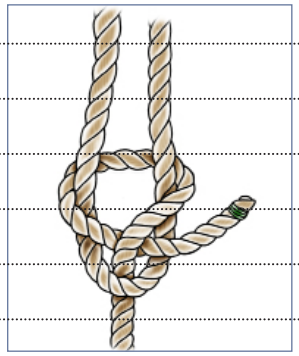
i). Identify each of the tag lines used for stabilization of loads for temporary connections.



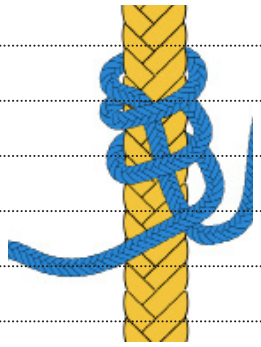
clove hitch



bowline



single sheet bend



rolling hitch

ii). Choose 3 questions that you would ask to check if people are following the correct control measures in the work pace or according to lift plan:

a. Are control measures in place?

b. Are controls preventing or minimizing the risk?

c. Are there any new problems with the risk?

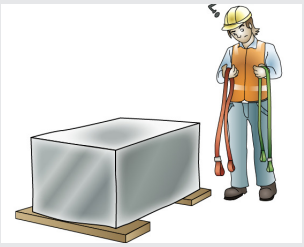
d. Do not ask any questions at all and let people do their job.

Answer may include:

Ans: a,b,c

Performance Criteria: 2.14

Lifting equipment and gear is prepared for safe use

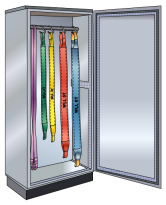


Before lifting a load, you need to prepare all the equipment and gear is ready for safe use.

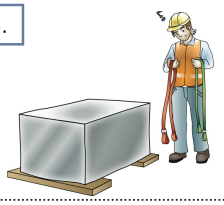
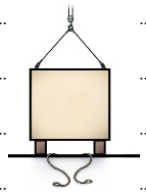
Theory Training Task 46

Performance Criteria: 2.14

What would you do in preparation of lifting a load? State what you might need to do from the following images as a guide.

1. 

2. 

3. 


4. 


5. Stable. Unstable.

Answer may include:

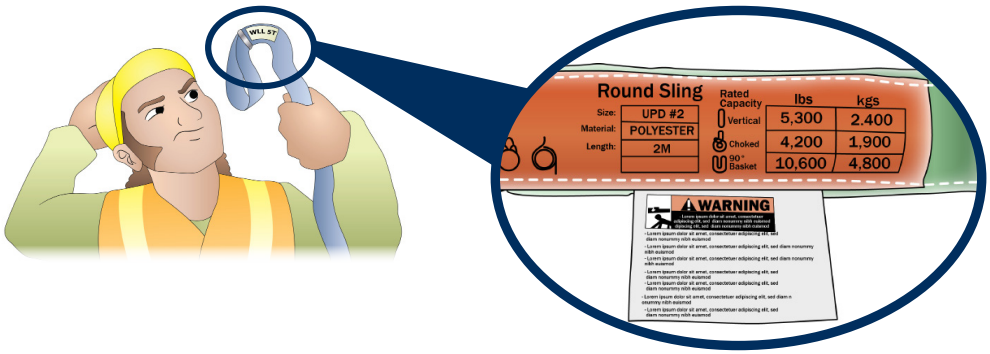
You would;

1. Gather equipment and gear.
2. Inspect equipment tag information, other load lifting factors and inspect working condition of equipment.
3. Layout load equipment and assemble.
4. Inspect destination is setup to receive load (e.g. work blocks, wedges).
5. Do a test run.

Theory Training Task 47

Performance Criteria: 1.9, 2.14, 3.10

a. The colour of a sling usually tells you its capacity. Can you use a sling when you've only checked the colour?

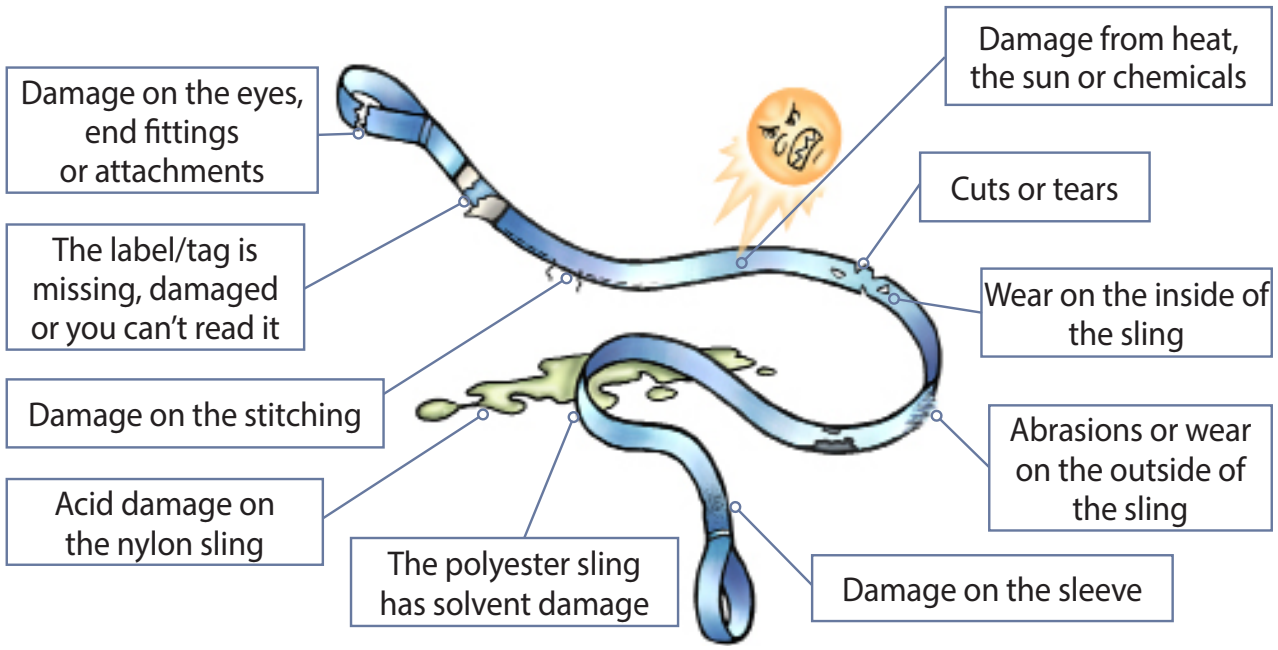


Answer may include:

No. You must check the WLL on the sling before you use it.

DO NOT use a sling that does not have a tag

b. What are some defects (problems) that stop you using a synthetic sling for lifting? Label 10 defects that would stop you from using the following synthetic sling.



Theory Training Task 48

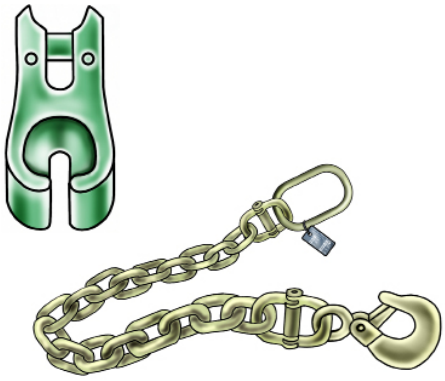
Performance Criteria: 1.9, 2.14

a. When sling a configuration, you use a number of items to connect the load securely. What are some lifting equipment that can be used to lift a load and a sling configuration?

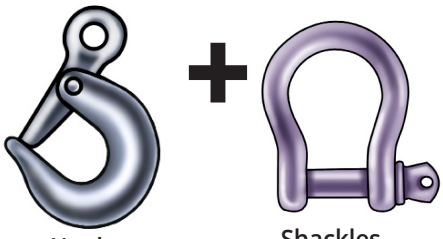
Label the following slinging equipment images that you might use when sling a load?

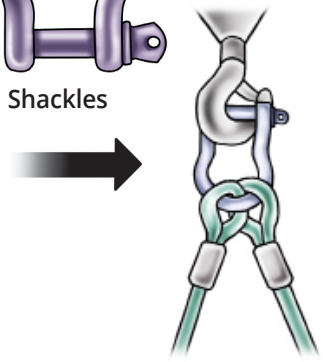
Answer may include:

Shorten a chain

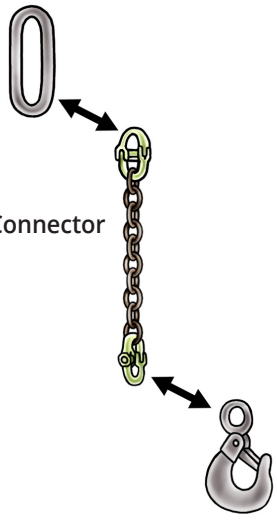


Put the lifting equipment together

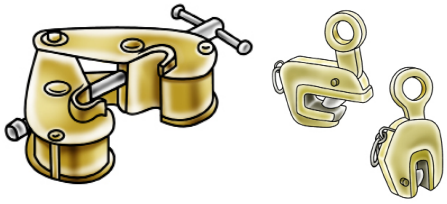


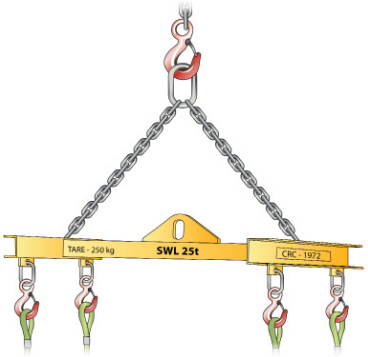


Lifting rings



Clamps



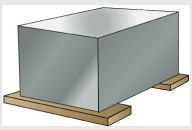


Spreader bar or beam

Performance Criteria: 2.15

Prepare load destination and load connections

You may be moving a load to a spot on the ground, a loading, platform, a suspended floor or onto a vehicle.



Theory Training Task 49

Performance Criteria: 2.15

a. Is the following statement true or false about why you should check with site personnel or an engineer before placing a load.

When moving a load you need to check if destination can bear the weight, area is prepared for safe access, landing and any other supporting equipment is in place such as blocks to remove sling ropes.

Yes ☐ / **No** ☐

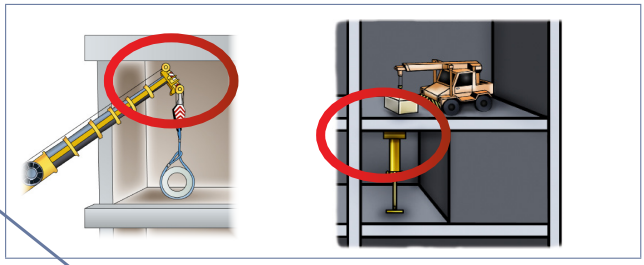
Ans is: True

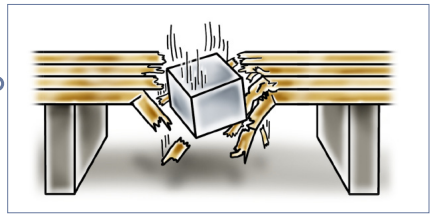
Theory Training Task 50

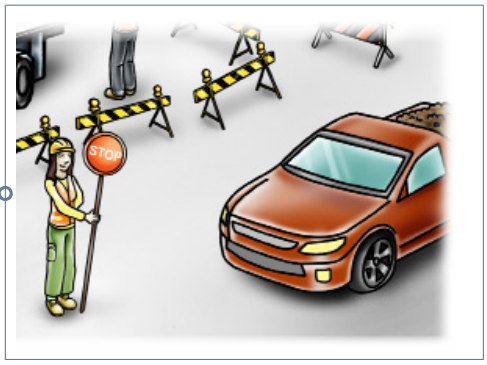
Performance Criteria: 2.15

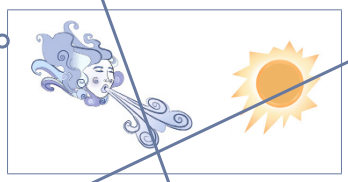
a. Match the description hazards that could occur while preparing a load for safe access and landing with the correct image by drawing a line to each.

- Instability of landing surfaces
- Overhead, underground hazards, clearance
- Insufficient lighting
- Weather
- Traffic
- Pedestrian traffic









Practical Training Task 5

Part 4—Plan the lift

Performance Criteria 1.3, 1.4, 3.1, 2.1, 2.11, 2.12, 2.13, 2.14, 2.15, 2.10

Plan the lift

Learners: You **must** do this task under the **control of a licensed operator**.
Please wait for your trainer to advise you before trying the task.

First, your trainer will take you to an area where you will use a slewing mobile crane.

Second, your trainer will select a basic task for you to plan or example, moving a load.

Third, your trainer will help you fill out a Safe work method statement (SWMS) for you to plan moving your load.

- ☐ Weight of load is identified and estimated in consultation with relevant workplace personnel. This means before you start a job there are rules and plans you need to know about.
- ☐ Crane is appropriate to the load/s and workplace conditions. This means you check the crane you use can lift the load.
- ☐ Appropriate path for moving loads in work area is inspected and determined. This means you check the route you will take to move the load.
- ☐ Ground suitability is checked and other work environment conditions that might affect the stability. This means you check the ground is okay to use the slewing mobile crane before you set up. e.g. type of ground, if heavy rain will it affect the work conditions. Make a note in lift plan these conditions.
- ☐ In lift plan write down and confirm hazards, slinging techniques, load type, mass of load, center of gravity and WLL calculations of slinging method techniques to be used.
- ☐ Gather and inspect all the resources required to conduct the lift load.
- ☐ Talk with your supervisor or other workplace personnel and write down the sequence of steps needed to lift load by making notes in lift plan, to check the work that needs to be performed to lift load. e.g., raise boom, extend boom, swing crane to right etc.
- ☐ Confirm the mathematical calculations of load lifts and slinging calculations on lift plan.

Now fill out your SWMS (see over). After you finish your SWMS, your trainer will check you have done all the planning you needed to do, e.g. created a Implementation Plan. The licensed operator/trainer will then sign and date the box below.

Part 4: **Satisfactory** ☐ **Not yet satisfactory** ☐

Signature (licensed operator/trainer) ..... Date .....

Safe work method statement

This SWMS is site-specific statement that must be prepared before any high-risk construction work is commenced.

Person responsible for ensuring compliance with this SWMS:		**Date:**	
High-risk job:		**Location:**	

What are the tasks involved?	What are the hazards and risks?	How will hazards and risks be controlled? (describe the control measures and how they will be used)
Think about the worksite and each stage of the project, including preparation and clean-up.		

Review

Part 4—Plan the lift

Sharing your knowledge can be a good way to remember things you have learnt. Talk about and/or record below the key points you have learnt in 'Plan the lift' and share your experiences with other learners and/or your trainer.

Further learning (optional)

Apply

You've covered a lot of topics so far and picked up new skills. Talk to others about planning for lifts and see if you can find other ways to plan well.

Notes

Part 5

Set up 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.

Performance Criteria: 1.4, 1.6

Follow safety procedures

Follow all of the safety procedures when you drive the crane to the work area.

Theory Training Task 51

Performance Criteria: 1.4, 1.6

Circle the correct answer for the following statements.

a) When driving a crane you do not have to obey road signs.

True **False**

b) When driving a crane you must check for clearances below tunnels and powerlines.

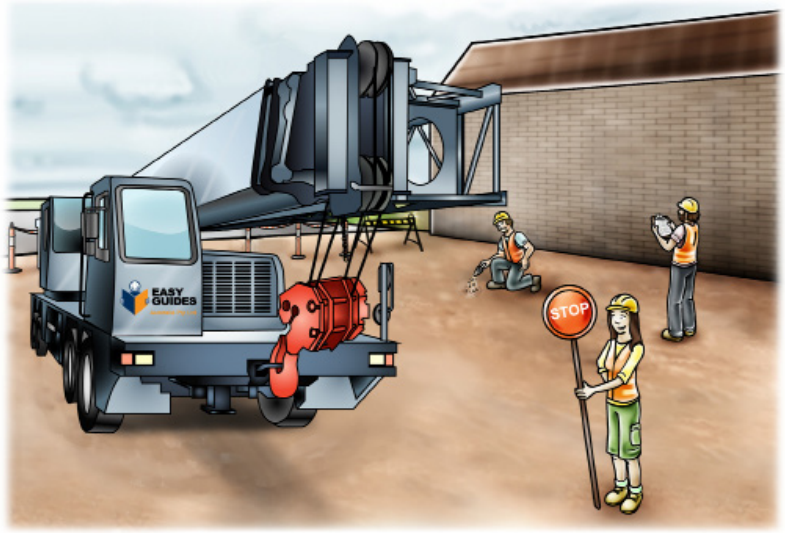
True **False**

c) When driving a crane outriggers/stabilisers do not have to be retracted.

True **False**

d) Pedestrians don't need to be a safe distance from the crane.

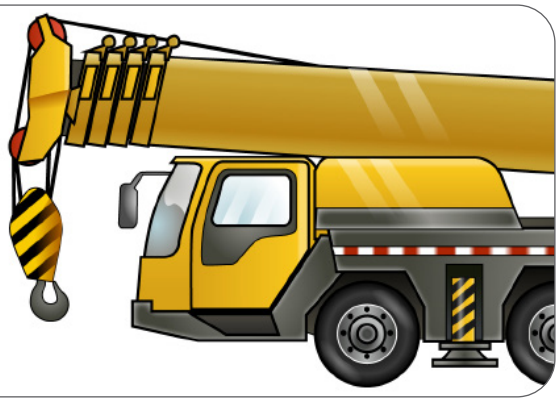
True **False**



Performance Criteria: 1.2, 2.1

Position the crane

Position the crane in a spot which is good for balance and the lift.



Theory Training Task 52

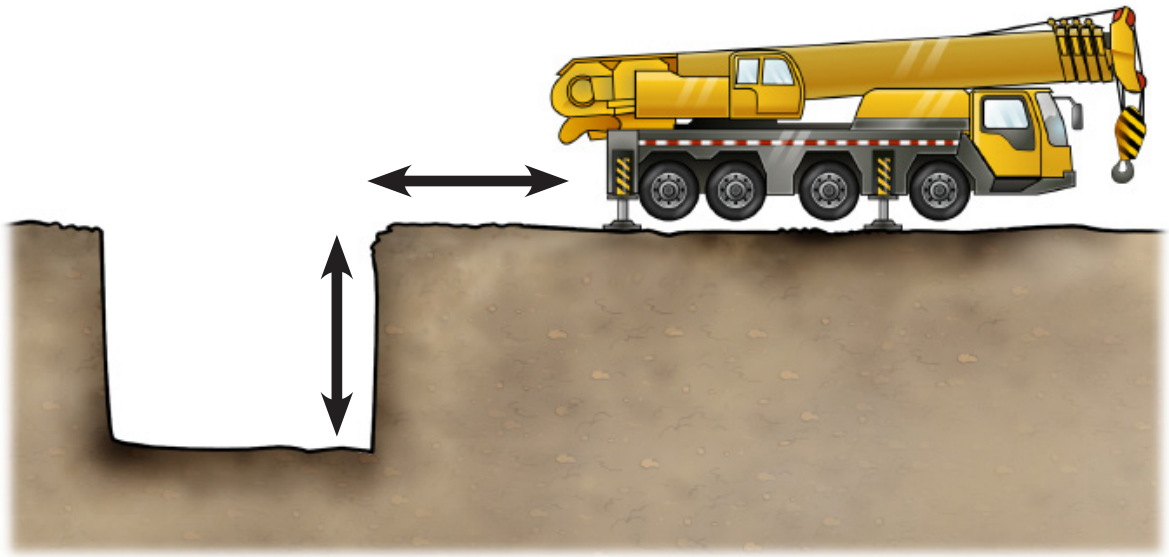
Performance Criteria: 1.2, 2.1

a) How far away should you set up your crane from a 4 metre deep trench or excavation?

At least four metres away.

b) If the ground is soft near the trench, what should you do?

You might need to set up further away from the trench.

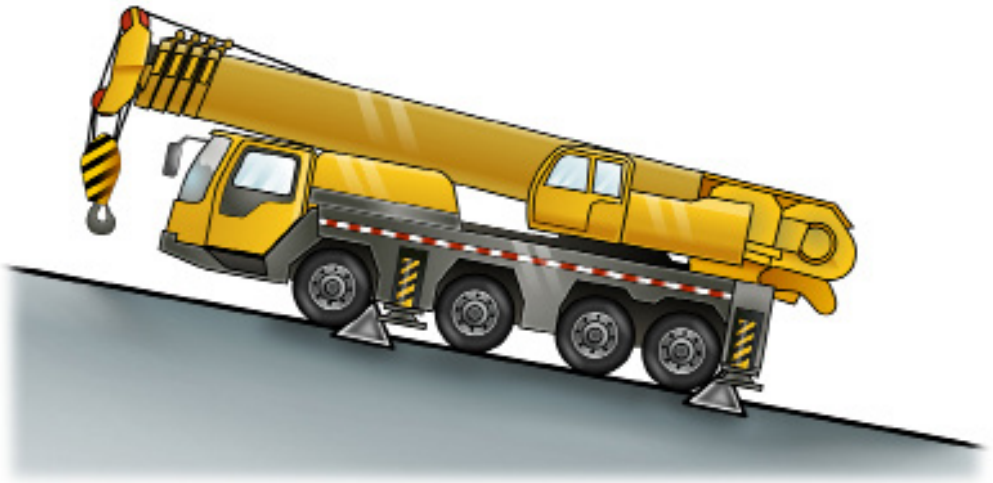


Theory Training Task 53

Performance Criteria: 1.2

Write a number in each box to show the right order in which you **set up** a slewing mobile crane on **sloping ground**.

2	Chock the wheels
1	Put on the parking brake
3	Set up the outriggers on the lowest side to level the truck



Theory Training Task 54

Performance Criteria: 3.3

Why are outriggers and packing important when you use a slewing mobile crane?

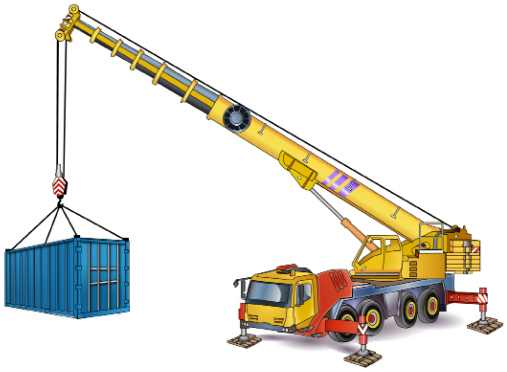
- **Outriggers help keep the crane stable.**
- **Packing distributes the weight of the crane and load over a bigger area.**

Theory Training Task 55

Performance Criteria: 1.8, 3.3, 2.5

a) What is the formula for calculating packing?

Area = $\frac{0.65 \times (Cm + L)}{V}$



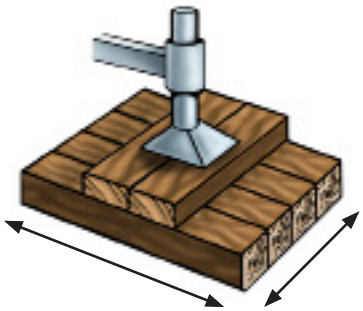
b) Use the figures below to estimate the area needed for packing.

Cm (crane mass) = 42 t

L (load mass) = 21 t

V (bearing pressure of the ground in tonnes m²) = 25 t

Round up to the nearest whole centimetre.



Area = 1.638 m²

Round up to the nearest whole centimetre

Area = 1.64 m²

c) What is the length of one side of packing?

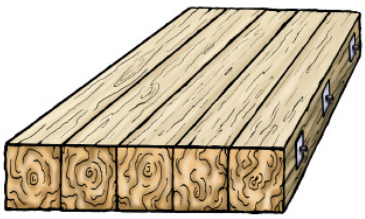
$\sqrt{1.64}$ = 1.28 m

Theory Training Task 56

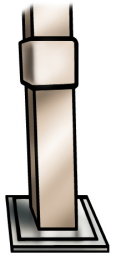
Performance Criteria: 1.2

Label the types of packing shown below.

Pigsty timber packing



Sleeper mats

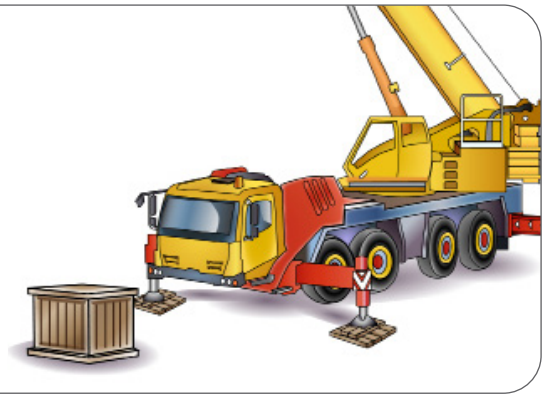


Steel plates

Performance Criteria: 1.8, 2.6, 3.1, 3.3

Set up the crane

Check the rated capacity, and set up the crane properly for the lift.



Theory Training Task 57

Performance Criteria: 3.1, 3.3

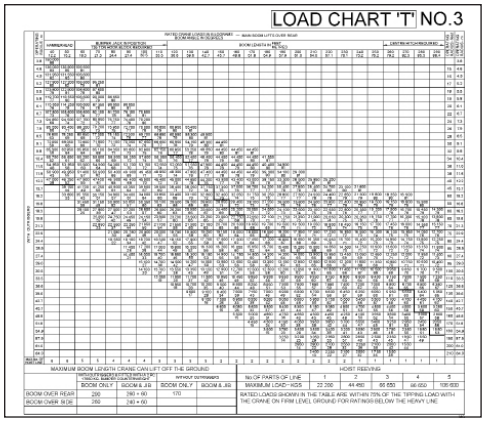
What does 'rated capacity' mean?

The rated capacity tells you how much the crane can lift at a specific boom length, boom angle and boom radius.

Theory Training Task 58

Performance Criteria: 2.5, 3.1

a) Where can you find out the configuration you need for the load you'll lift?



On the load chart.

b) Where can you find the crane's load chart?

The load chart must be in the cabin of the crane.

Performance Criteria: 1.3, 2.4

Enter data into the computer

Enter the boom/jib and counterweight configuration into the computer.

Theory Training Task 59

Performance Criteria: 2.6, 1.3, 2.4

What does the load meter/crane computer show you?

- **Boom length**
- **Boom angle**
- **Capacity of the crane in its configuration**
- **Actual load on the crane**
- **Outrigger position**
- **Which hook is being used (main or auxiliary).**

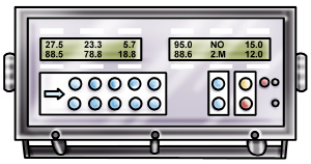
Theory Training Task 60

Performance Criteria: 2.6, 1.3

What data do you enter into the crane's computer?

Some examples are:

- **Boom length**
- **Operating radius**
- **Number of falls of rope**
- **Attachments**
- **Outrigger extension**



Theory Training Task 61

Performance Criteria: 1.3

a) What is the purpose of the crane's computer?

The crane's computer is used as a guidance system. You don't rely on it alone. Check the load chart first and use the computer to cross check.

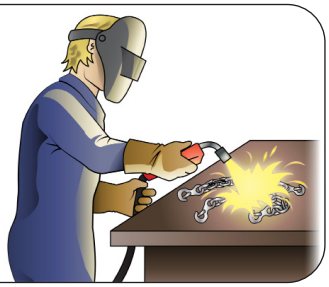
b) How does the crane's computer help improve safety when you're lifting a load?

- **The computer helps prevent the crane from overloading and overturning.**
- **The computer has a load limiting/indicating system.**

Performance Criteria: 3.10

Defective equipment

Before you use your equipment and gear, you must inspect for defects.



Theory Training Task 62

Performance Criteria: 3.10

Choose ONE correct answer, If you find any defective equipment during your work tasks you must:

a. 1. Isolate, 2. Tag, 3 Report, 4 Repair / Destroy

b. 1. Tag, 2. Report, 3 Repair / Destroy

c. 1. Tag, 2. Report, 3 Reuse.

Answer:

Answer may include but is not limited to:

a. 1. Isolate, 2. Tag, 3 Report, 4 Repair / Destroy

Set up the crane

Learners: You **must** do this task under the **control of a licensed operator**.
Please wait for your trainer to advise you before trying the task.

First, your trainer will take you to an area where you will use a slewing mobile crane.

Second, your trainer will choose a crane for you to set up.

Third, you'll set up the crane including positioning the crane, positioning the boom/jib and entering the load data into the crane's computer.

- ☐ Crane is driven to the work area in accordance with procedures. This means you follow all procedures and guidelines when driving the slewing mobile crane to the work site.
- ☐ Crane is positioned for work application and stability in accordance with procedures. This means you put the slewing mobile crane where you can do the job safely and effectively.
- ☐ Appropriate crane configuration for work task is determined in accordance with procedures. This means checking the crane's load chart and rated capacity to make sure you set up the crane properly.
- ☐ Boom/jib and counterweight configuration data is input into crane computer as required. This means the load your crane can lift will depend on the type of boom/jib and counterweight you use during a lift.
- ☐ Confirm with relevant personnel that risk control measures are in place according to lift plan and safe work procedures, by providing a check list from the implementation plan, to ensure people are following the safe work practices.

Your trainer will check how you set up the slewing mobile crane. After you finish, the licensed operator/trainer will then sign and date the box below.

Part 5: **Satisfactory** ☐ **Not yet satisfactory** ☐

Signature (licensed operator/trainer) ..... Date .....

Review

Part 5—Set up the crane

Sharing your knowledge can be a good way to remember things you have learnt. Talk about and/or record below the key points you have learnt in 'Set up the crane' and share your experiences with other learners and/or your trainer.

Further learning (optional)

Apply

Try to find a licensed person with a slewing mobile crane.
Ask them if you can help them set up the crane at a work site.
You'll need to set up the crane on different sites so you know how to set up the crane in new situations.

Part 6

Do the lift

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.

Performance Criteria: 2.3

Access the crane safely

Climb in and out of the crane's cabin safely.

Theory Training Task 63

Performance Criteria: 2.3

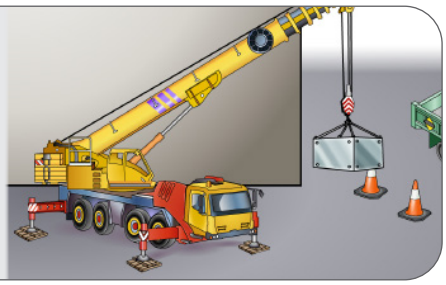
How should you get in and out of the crane's cabin?

- **When you're climbing into the cabin, 3 body parts should be touching the crane at the same time.**
- **Use 2 feet and 1 hand, or 2 hands and 1 foot.**
- **Using 3 body parts at the same time will keep you stable while you are climbing in or out.**

Performance Criteria: 1.3, 2.5, 2.6

Check the crane's capacity

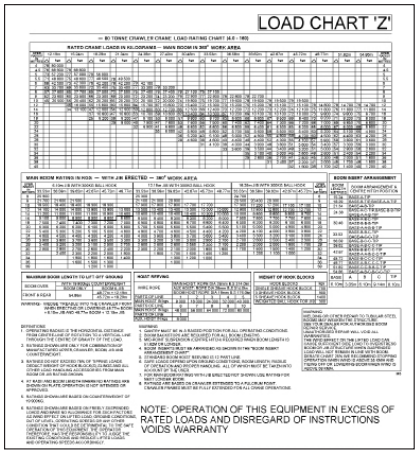
Check the crane's load capacity, and always stay within the safe working limit (SWL) of the crane and boom.



Theory Training Task 64

Performance Criteria: 1.3, 2.5, 2.6

How do you know that the load is within the limits of the crane?

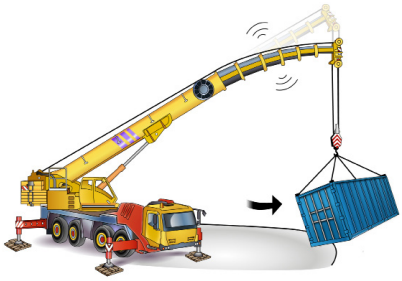


- **Check the load chart.**
- **Keep an eye on the crane's computer.**

Theory Training Task 65

Performance Criteria: 2.6, 3.2, 3.9

i). What do you need to plan for when moving a load within the crane's working radius?



Plan for:

- **Boom/jib deflection**
- **Boom angle**

ii). Why should we monitor load disconnection from hook?

Choose one correct answer;

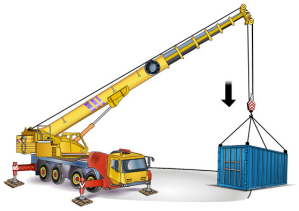
a. To ensure no movement from crane controls,

b. To ensure no movement from crane controls to make disconnection safe,

c. To look like we are doing something in the work place,

Answer b.

iii). You are releasing a heavy load from the crane hook. How do you control boom deflection?



Choose **two** correct answers:

a. make sure controls are active.

b. make sure controls are not active.

c. Lower the boom/jib slightly as the load settles on the supporting surface before lowering the hook. **Answer b, c**

Theory Training Task 66

Performance Criteria: 2.5

Can you exceed the safe working load (SWL) at a given radius of the crane?

No. Not ever.

Performance Criteria: 3.2

Position the boom/jib

Position the boom/jib and hoist block over the load's center of gravity.

Theory Training Task 67

Performance Criteria: 2.6, 3.2

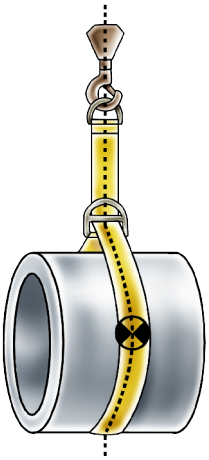
Who guides you when you're positioning the boom/jib and hoist block over the load?

The dogger.

Theory Training Task 68

Performance Criteria: 3.2

Why is it important to put the lifting hook over the load's center of gravity?



Answer includes:

- **To reduce the risk of overloading the crane.**
- **To prevent load swinging on lift.**
- **To prevent damaging the crane.**
- **To prevent damage to the load caused by load toppling.**

Performance Criteria: 3.4

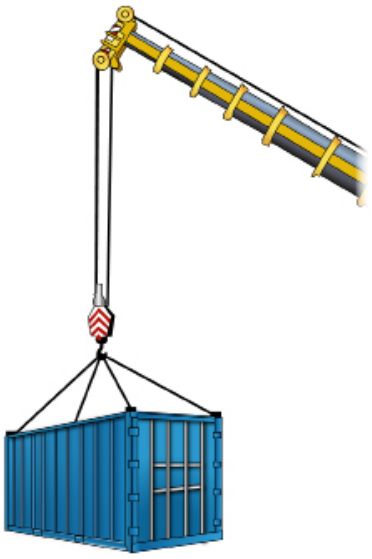
Do a test lift

Once you've set up, do a test lift to make sure the lift can be done safely.

Theory Training Task 69

Performance Criteria: 3.4

Why should you do a test/trial lift?



Answer includes:

- **To check the crane can do the lift.**
- **To see if all crane equipment works properly.**
- **To check the load is stable.**
- **To make sure there is enough clearance for the boom movement.**
- **To ensure the outriggers/packing are secure.**

Theory Training Task 70

Performance Criteria: 3.4

Explain the procedure for doing a test lift.

1. **Lift the load off ground.**

2. **Stop.**

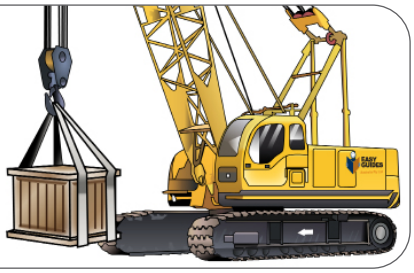
3. **Check lifting slings/chains have been positioned correctly for even weight distribution.**

4. **If safe and secure - GO AHEAD.**

Performance Criteria: 3.6

Use crane movements

When you are moving the load, use all movements of the crane safely and follow the rules.



Theory Training Task 71

Performance Criteria: 3.6

When you lift or move a load, you have to think about a number of things. Look at the picture examples of moving or lifting a load shown here. Answer these questions for each picture example:

a) Explain what the crane operator is doing wrong.

b) Why is this unsafe?

c) How would you avoid this unsafe moving or lifting a load?

Picture 1

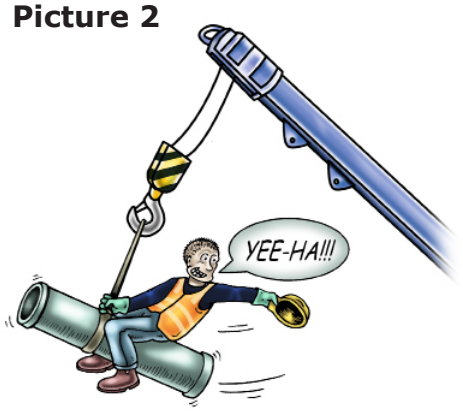
Answers may include:

a) **Dragging (snigging) a load.**

b) **It can damage the crane, lifting equipment or load. It can also cause the load to swing or fall over.**

c) **Sling the load correctly and guide it as it's being moved.**

Picture 2

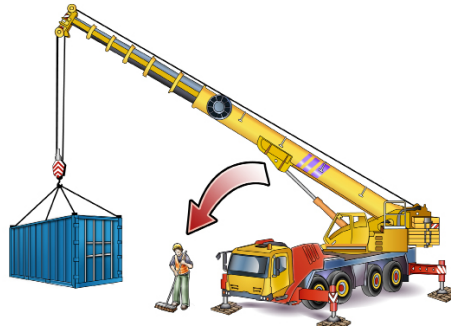


a) **Riding on the lifting hook, sling or suspended load.**

b) **The lifting equipment may break, the extra weight may tip the crane or the person may hit an obstacle.**

c) **Use a workbox.**

Picture 3



a) **Standing between the truck and the load (crush zone).**

b) **The load blocks your view. You don't have a clear view of the boom and jib movements.**

c) **Work at the side with the controls, seated at the controls or nearby if using a remote control.**

Picture 4

a) **Making contact with powerlines with a crane or load.**

b) **Personnel could be electrocuted and the crane could be damaged.**

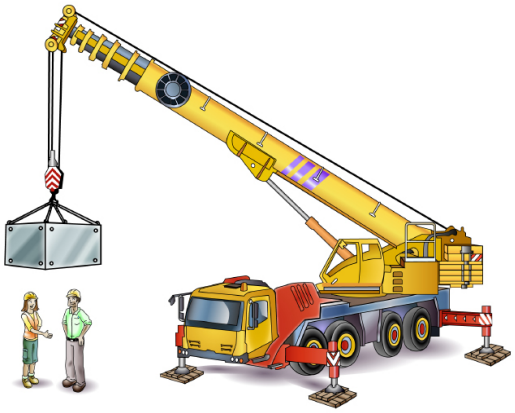
c) **Keep a safe distance from powerlines at all times. If this is not possible you can have the powerlines insulated or isolated.**

Theory Training Task 72

Performance Criteria: 3.5

Why is it dangerous to raise or lower the load above a person?

- **The boom or load could hit and injure or kill the person.**
- **NEVER raise or lower the boom or load over people.**



Performance Criteria: 3.5, 3.6

Use the crane

Find out how to set up and use the crane by checking the right information.

Theory Training Task 73

Performance Criteria: 3.5, 3.6

If you were not sure how to start up a slewing mobile crane, where would you find out, or any other information, e.g. requirements on outrigger procedures?

You should read the user manual/operator's manual or the manufacturer's instructions.

Theory Training Task 74

Performance Criteria: 3.2

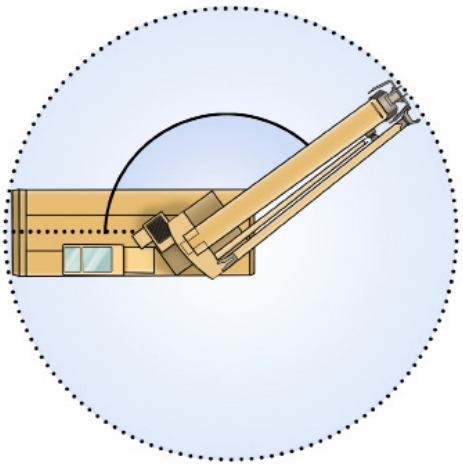
On a lattice boom crane, what can happen if you luff out too quickly with the boom pawl engaged?

The pawl might bend or break.

Theory Training Task 75

Performance Criteria: 2.5

When the crane slews from front to rear, what happens to the crane's capacity?



The crane's capacity may be greater over the rear. The load chart gives information on the crane's capacity in all configurations.

Performance Criteria: 3.6

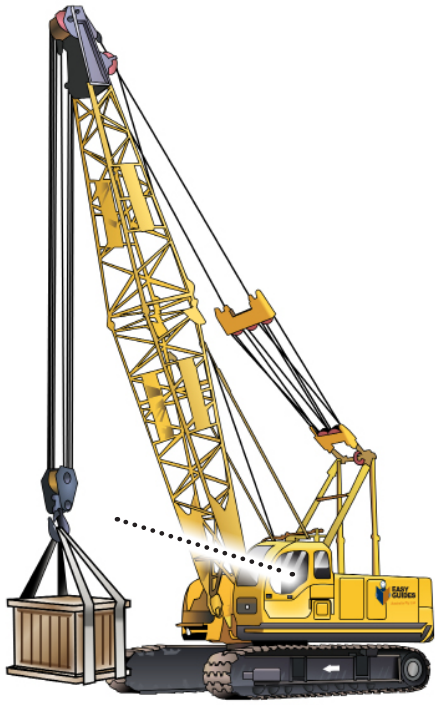
Keep an eye on the load

Always watch the load while you are moving it.

Theory Training Task 76

Performance Criteria: 3.6

Why must you always watch the load when you're moving it?



Always watch the load to make sure it's clear of hitting hazards such as people, buildings or equipment.

Performance Criteria: 3.6

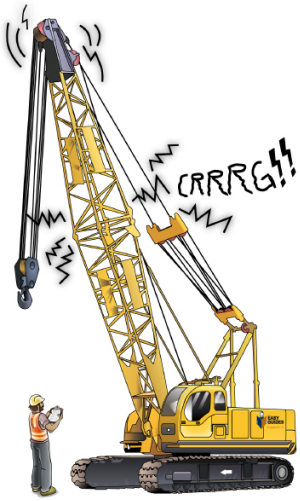
If you find a problem

If you find a fault with the crane while you are using it, follow the safety procedures.

Theory Training Task 77

Performance Criteria: 3.6

What should you do if you hear the crane make an unusual noise or you feel the crane vibrate or shake?



You should stop work and find out what the problem is.

Performance Criteria: 1.4

Check your route

Check your planned route for hazards and things that might be in your way.

Theory Training Task 78

Performance Criteria: 1.4

a) You're planning the path you'll use to move the load.
What sorts of unusual or difficult surfaces do you need to look out for?

- **Bumpy ground**
- **Soft or wet ground**
- **Check the ground type**
- **Suspended floors**
- **Recently filled excavations**

b) Who can give you information about unusual or difficult surfaces?

The site engineer.

Performance Criteria: 2.6, 3.2, 3.5

Configure the boom/jib and mobile safely

Set up the crane and boom/jib so you can mobile (drive) the crane safely.
Follow the rules while you are mobiling (driving) the crane with a load attached.

Theory Training Task 79

Performance Criteria: 2.6, 3.2, 3.5

a) Where should you position the load before mobiling?

As close to the ground as possible.

b) Why?

To keep the crane well-balanced.

Theory Training Task 80

Performance Criteria: 2.6, 3.5

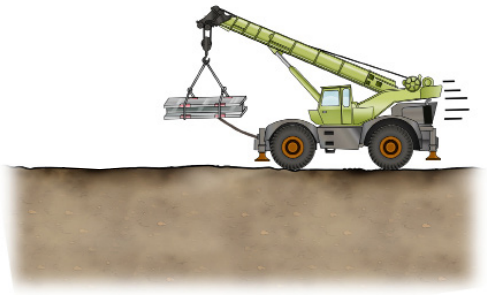
When you're mobiling a load up or down a hill, in which direction should the boom and load be facing? Why?

- **The load should be facing up the hill.**
- **To keep the crane balanced.**

Theory Training Task 81

Performance Criteria: 3.5

You are mobiling (moving) a load.
How fast should you mobile the load?

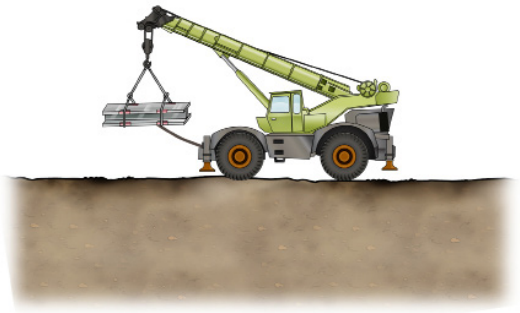


You should mobile the load at creep speed as slowly as you can.

Theory Training Task 82

Performance Criteria: 2.6, 3.5, 3.6

How can you keep the load well balanced?



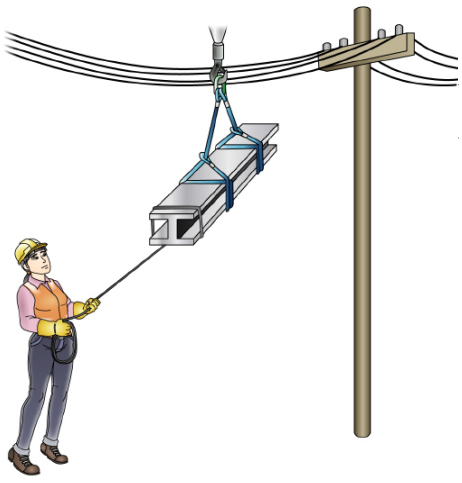
Answer may include:

- **Keep the boom/jib as short as you can.**
- **Keep the load close to the ground.**
- **Attach a bridle to the load.**

Theory Training Task 83

Performance Criteria: 3.5

What are taglines used for?



Taglines help keep the load clear of hazards.

Performance Criteria: 3.5, 3.6, 3.7

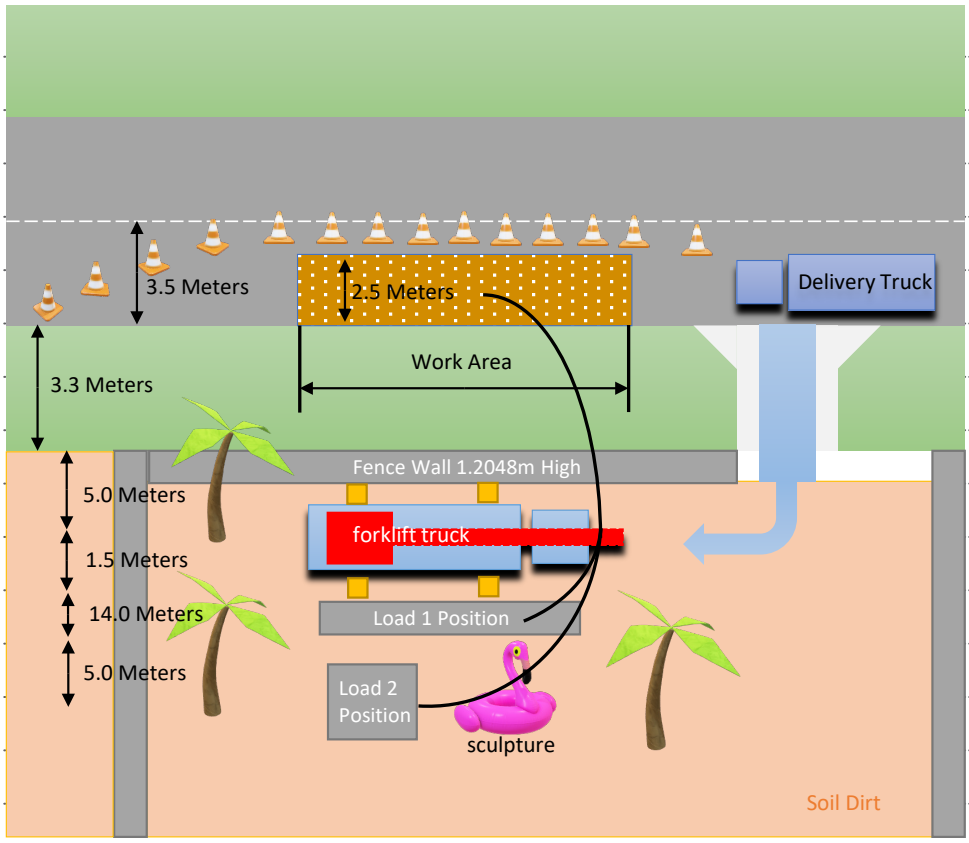
Crane Movements and monitoring

Before performing a load lift you would check with the lift plan the sequence of steps required to communicate with crane operator such as hand signals for communication, we should also monitor the load to ensure safe operation of lift.

Theory Training Task 84

Performance Criteria: 3.5, 3.6, 3.7

a) From the lift plan sketch after consulting with the relevant personnel, write down the sequence of hand signals you might use to help the vehicle crane operator to pick up load 1 from a delivery truck to its destination as shown in the sample lift plan sketch.



Answer may include:

Answer may include:

Lift Boom up

Slew left /Travel left

Jib out /Trolley out

Hoisting lower/down

Stop

Hoisting raise

Stop

Jib in /Trolley in

Slew right /Travel right

Stop

Hoisting lower/down

Stop

Theory Training Task 85

Performance Criteria: 3.6, 3.5

i). Choose the correct words to complete the sentence for the reason why we should monitor the transfer of a load?

The reason why we monitor a load and a cranes movement is to _____ tasks to be performed.

a. on next load lift we can add more items to

b. ensure safe operation of

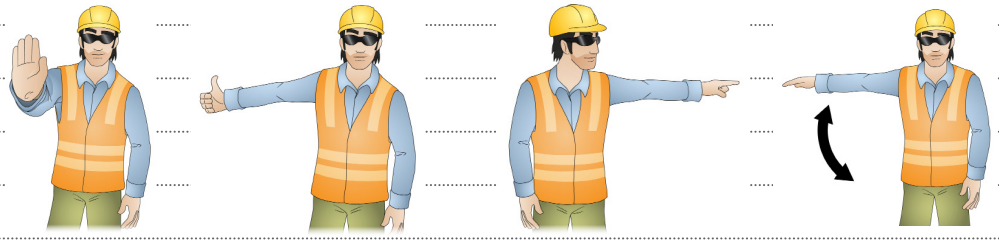
c. be amazed that load does not fall during

Answer b. **ensure safe operation of**

ii). What sequence of hand singles would you use to tell the crane operator to stop and make adjustments to the crane lift;

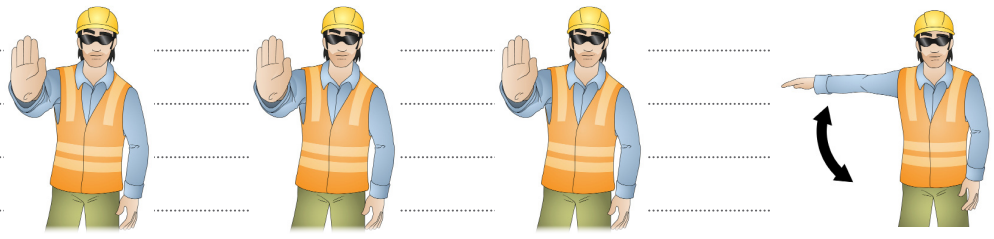
So that the load can be lifted up by 2 meters and swing to the right of the vehicle and lowered because a tree branch fell and caused a major hazard, choose a) ,b), or c)?

a).



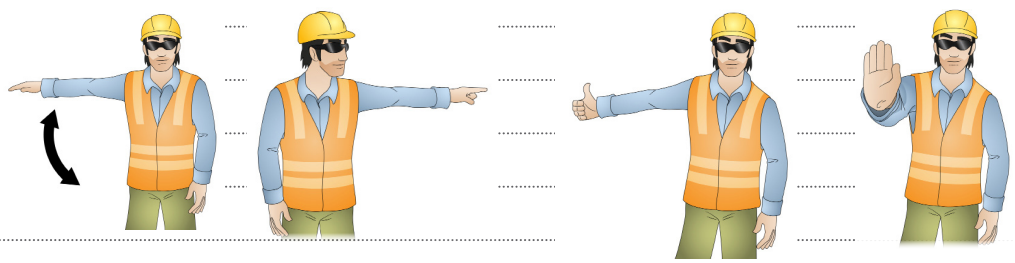
Stop | Luffing boom up | Slew right /Travel right | Lower

b).



Stop | Stop | Stop | Lower

c).



Lower | Slew right /Travel right | Luffing boom up | Stop

Performance Criteria: 1.5, 3.5, 3.2

Identify what hazards can be found when sling a load

To prevent harm on one's self and others, you would need to identify hazards and use appropriate risk controls while slinging a load.

Theory Training Task 86

Performance Criteria: 1.5, 3.5, 2.2

i). Identify what hazards can be found when slinging a load, assess the risk level, identify the consequences and likelihood of them occurring and what control options you would put in place to eliminate the risk

Hazards that can be found with slinging a load, can be;

Sling hazard 1. Sharp edges on load,

Sling hazard 2. _____ and _____ on sling equipment,

Sling hazard 3. _____ In-balance,

Sling hazard 4. Incorrect use of _____ that makes up _____ configuration

Sling Hazard 5. WLL. – Incorrect reading of _____ and calculations of load to become _____ or _____.

Hazard Item	Likelihood / Risk Level	Consequences / Likelihood	Control options or protection measures
1	1 = low	Could - Cause load to fall	Use protective material around sling to prevent break and damage to sling
2			
3			
4			
5			
Approved By:			

Hazard Item	1. Elimination	2. Substation	3. Administrative	4. preferred control options	5 use ppe
1	Yes	Yes	Yes – have an equipment checklist	See notes	N/A
2					
3					
4					
5					

Additional notes for sling risks: **Possible Sample Answer:**

Hazards that can be found with slinging a load, can be;

Sling hazard 1. Sharp edges on load.

Sling hazard 2. Wear and tear on sling equipment.

Sling hazard 3. Load In-balance.

Sling hazard 4. Incorrect use of equipment that makes up sling configuration

Sling Hazard 5. WLL. – Incorrect reading of working load limits and calculations of load to become unstable or drop load.

Hazard Item	Likelihood / Risk Level	Consequences / Likelihood	Control options or protection measures
1	1 = low	Could - Cause load to fall	Use protective material around sling to prevent break and damage to sling
2	1 = low	Possible – Could cause sling to fail or break	Use protective equipment when sling and store in a safe environment.
3	2 =moderate	Could - Cause load to fall	Use a Leveler when testing lift to en sure load lift to destination will stay the same level and load is balanced, ensuring center of gravity.
4	2=moderate	Could - Cause load to fall	Have a supervisor review you sling configuration hook,
5	3=High	Likely - sling line or sling to break and load to fall	Remove any hazards such as people and direct people around load area. Use a spotter to monitor lift of load, on the ground with communication such as walkie talkie to lift operator. Double check WLL calculations with Supervisor.
Approved By:		TJ Crossbow	

Hazard items	1. Elimination	2. Substation	3. Administrative	4. preferred control options	5 use ppe
1	Yes	Yes	Yes – have an equipment checklist	See notes	N/A
2	Yes	Yes	Check equipment for faults and not use and use new equipment	See notes	N/A
3	Yes	Yes	Use a leveler or a tennis ball and see if it does not fall or move.	See notes	N/A
4	Yes	Yes	Yes – Supervisor check. Use different conf	See notes	N/A
5	Yes	No	Yes	See notes	N/A
	Signed:		TJ Crossbow		

ii). What 3 questions would you ask to confirm that people are following the correct control measure procedures in the work place?

a. Does everyone know what they are doing on how to get to site?

b. Are control measures in place?

c. Are controls preventing or minimizing the risk?

d. Are there any new problems with the risk?

Possible Sample Answer:

b,c,and d

Performance Criteria: 1.5, 2.2 Risk Control and Hazards

Conducting, applying hazard and risk assessment strategies.

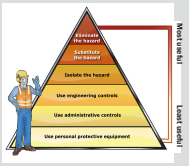
Risk assessment management and mitigation strategies, including hierarchy of control..

Theory Training Task 87

Performance Criteria: 1.5, 2.2

i). From the following work order identified hazard, demonstrate how you can use the Hierarchy of hazard controls to fill out and make comments or explain your choice about what would be the most effective hazard control method or risk strategies to use, to eliminate the risk hazard.

Task / Work order: You have been given the task of relocating a load which sits next to a fuel tank containing a flammable substance. The fuel tank has a vent which allows fuel vapors to escape. The fuel tank is partially under a concrete floor and the contents cannot be removed or eliminated as they are used to supply equipment in the building. **Hazard:** Vapors given off from the fuel are highly flammable.

	Control Measures						**Explain your Choice / comments**
Hazard Item 	**1. Elimination**	**2. Substation**	**3. Isolation**	**4. Engineering**	**5.**	**6. PPE**	
1 Fuel vapours from the tank vent	No						Ask yourself, Can the hazard be **eliminated**? (Removed) e.g. This would be the most effective control but is not possible because the fuel tank is partially under the concrete floor.

Additional notes for risks: **Possible Sample Answer:**

	Control Measures						Explain your Choice
Hazard Item	1. Elimination	2. Substation	3. Isolation	4. Engineering	5.	6. PPE	
1 Fuel vapours from the tank vent	No						Ask yourself, Can the hazard be **eliminated**? (Removed) This would be the most effective control but is not possible because the fuel tank is partially under the concrete floor.
		No					Ask yourself, Can the hazard be **substituted**? (Replaced) This is the next most effective control but is also not possible as the fuel is needed in the building
			No				Ask yourself, Can the hazard be **isolated**? (Separate, restrict or prevent access) This cannot be done as the vapour, cannot be contained by a barrier etc.
				Yes			Ask yourself, Can the hazard be **engineered** out? (Modify equipment). This control can be used. The vent on the tank can be extended away from the work area meaning the vapours will not be in the vicinity of where the work is being done. **Note: The hazard can be engineered out by having the vent extended away from the work area.**
					Yes		Ask yourself, Can **administrative** controls be put in place to assist in minimising the risk? (Signs, procedures, training). This control can be used to help make engineering controls more effective however would not be suitable on its own. **Note: We can also use an administrative control by using signs and procedures to minimize the number of people involved.**
						Yes	Ask yourself, Would **PPE** also help to reduce the risk? (Safety clothing etc). This control can be used together with engineering and administrative controls to further reduce the risk to workers. **Note: We can also use an administrative control by using signs and procedures to minimize the number of people involved. PPE must be worn at all times to prevent fuel coming into contact with skin and vapour being inhaled.**

Practical Training Task 7

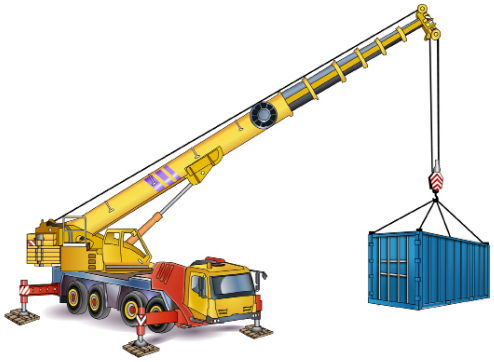
Part 6—Do the lift
Performance Criteria 1.2, 2.3, 2.5, 2.6, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.10, 3.9, 2.2

Do the lift

Learners: You **must** do this task under the **control of a licensed operator**.
Please wait for your trainer to advise you before trying the task.

First, your trainer will take you to an area where you will use a crane to transfer a load.

Second, your trainer will choose a load for you to transfer and a place for you to transfer it to.



- [ ] Crane is accessed in a safe manner. This means you get on and off the crane as safely as you can.
- [ ] Inspect all the lifting equipment and gear for defects and defective items are isolated, labeled and reported.
- [ ] Lifts are determined within the capacity of the crane. This means you always stay with the safe working load (SWL) of the crane.
- [ ] Boom/jib and hoist block is positioned over load following directions from relevant workplace personnel. This means you put the lifting hook over the load's center of gravity.
- [ ] Test lift is carried out in accordance with procedures to allow for safety checks to be safely made, in consultation with relevant personnel. This means you do a test/trial lift before you use the crane to move a load.
- [ ] Loads are transferred using all relevant crane movements in accordance with procedures and the appropriate standard. This means you need to think about a number of things to move the load correctly.
- [ ] Crane is operated in accordance with procedures. This means you follow Australian Standards and site procedures.
- [ ] Load movement is monitored constantly to ensure safety of personnel and load, and crane stability. This means you always keep the load in view while moving it.
- [ ] Unplanned and/or unsafe situations are responded to in accordance with procedures. This means things can go wrong when you use your crane.

- ☐ Suitability of planned route for crane is checked for the crane in accordance with procedures. This means you should look out for difficult or unusual surfaces in your planned route.
- ☐ Crane is configured to mobile load in accordance with procedures. This means you should set up and move loads safely.
- ☐ Load is moved using best mobile practice in accordance with the appropriate standard. This means you should follow procedures such as driving the crane slowly, and keeping the load close to the ground.
- ☐ Lifting gear is disconnected from load and crane is set up for next task. This means you should follow procedures for un-hooking lift load and preparing for next load lift.
- ☐ All required communication signals are correctly interpreted and followed whilst crane is operated in accordance with the lift plan and safe work procedures.
- ☐ Are control measures, identified and checked for implementation e.g. exclusion zones according to lift plan and traffic management plan.

Your trainer will assess how well you moved the load. After you finish, the licensed operator/trainer will then sign and date the box below.

Part 6: **Satisfactory** ☐ **Not yet satisfactory** ☐

Signature (licensed operator/trainer) ..... Date .....

Review

Part 6—Do the lift

Sharing your knowledge can be a good way to remember things you have learnt. Talk about and/or record below the key points you have learnt in 'Do the lift' and share your experiences with other learners and/or your trainer.

Further learning (optional)

Apply

It's a good idea to get hands-on experience with using a slewing mobile crane to move different loads. If you know a licensed person with a slewing mobile crane, ask if you can work with them when they move a load. Get to know how to choose a place to move a load to and how you move the load.

Notes

Part 7

Shut down and pack up

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.

Performance Criteria: 4.1

Stow the boom

You've finished the lift. Stow the boom as shown in the user manual or manufacturer's instructions.

Theory Training Task 88

Performance Criteria: 4.1

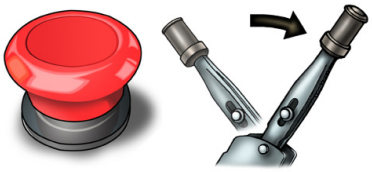
Explain how you should stow/put away the boom, jib and equipment.

- **You remove the load, stow the boom, jib and equipment as shown in the operator's manual.**
- **Take off any lifting parts and attach them to the crane.**

Performance Criteria: 4.3

Use motion locks

Turn on all motion locks and brakes.



Theory Training Task 89

Performance Criteria: 4.3

a) You have finished using the crane. How can you stop unauthorised people from using the crane?

Apply the motion lock and brake to disable the motions of the crane and to prevent unauthorised people using the crane..

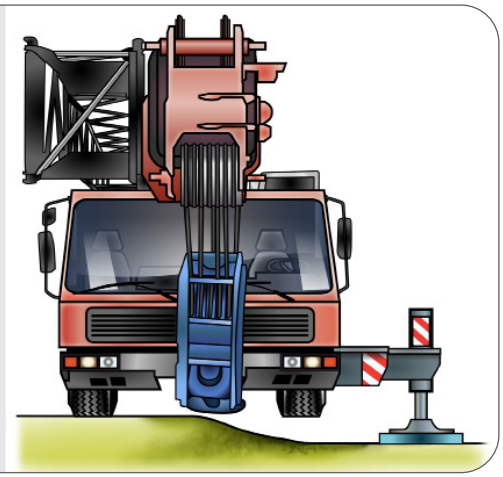
b) Where can you find out more information?

Australian Standard (AS 2550 6.5 c).

Performance Criteria: 4.4

Stow outriggers

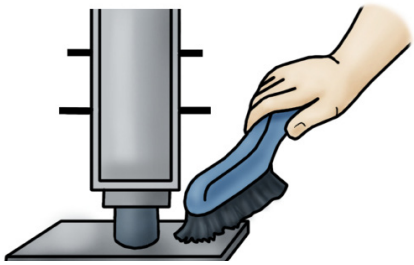
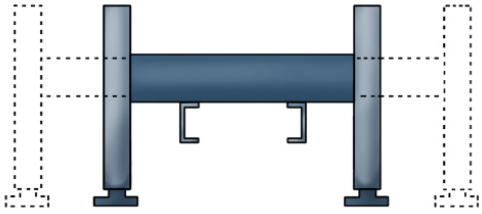
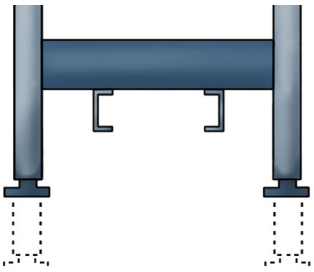
Pack up and stow outriggers/stabilisers.



Theory Training Task 90

Performance Criteria: 4.4, 4.6

Number the steps to show the correct procedure for stowing outriggers/ stabilisers on a slewing mobile crane.

3 	4 
Pick up the packing timbers	Clean steel plates
2 	1 
Use the controls to retract the outriggers	Use the controls to raise the outrigger footplates

Performance Criteria: 4.1, 4.2, 4.3, 4.4, 4.5, 4.6

Shut down the crane

Shut down the crane by following the instructions in the user's manual.

Different cranes have different shut down procedures.

Theory Training Task 91

Performance Criteria: 4.1, 4.2, 4.3, 4.4, 4.5, 4.6

List the shutdown process for the slewing mobile crane.

Answer includes:

- **Hook block/hoist rope/lifting assembly is raised clear of any obstructions**
- **The crane jib is lowered, retracted, folded and raised, extended or unfolded according to user manual manufacturer's specifications**
- **The boom is retracted/folded/lowered for travel**
- **Retract and store outriggers and packing**
- **Make sure the hoist brake is applied**
- **Retract and store outriggers and packing**
- **Make sure all controls are in neutral**
- **Idle engine to stabilise temperature**
- **Turn off engine (if applicable)**
- **Remove/take key from ignition**
- **Lock and secure cabin controls and access to the crane**
- **Turn off and secure the isolating switch**
- **Remove hazard controls (if applicable).**

Theory Training Task 92

Performance Criteria: 4.5

Give some examples of what to do if you leave the crane unattended.

Answer includes:

- **Secure/lock the crane**
- **Raise the hook to a safe height**
- **Turn off the crane power (if possible)**
- **If you leave the crane unattended overnight, remove the load and shut down the crane.**

Performance Criteria: 4.6

Do the post-operational checks

After you've shut down the crane, do the post-operational checks to find out if the crane has any defects or damage.

Theory Training Task 93

Performance Criteria: 4.7

List the post-operational checks you should make when you finish using the slewing mobile crane.

Answer includes:

- **Check boom for dents, cracks, flaking paint and wear in the boom (possible overstressing caused by overload)**
- **Lower and retract boom and jib**
- **Check all pins and locks are in place and secure**
- **Retract hoist rope and hook block**
- **Check hook is secure**
- **Check outriggers are retracted**
- **Check tyres are not damaged**
- **Check for leaks from oil filters, diesel lines and water hoses.**

Performance Criteria: 4.6

Stow plates and packing

Finally, stow and secure all plates and packing so you are ready for travel.

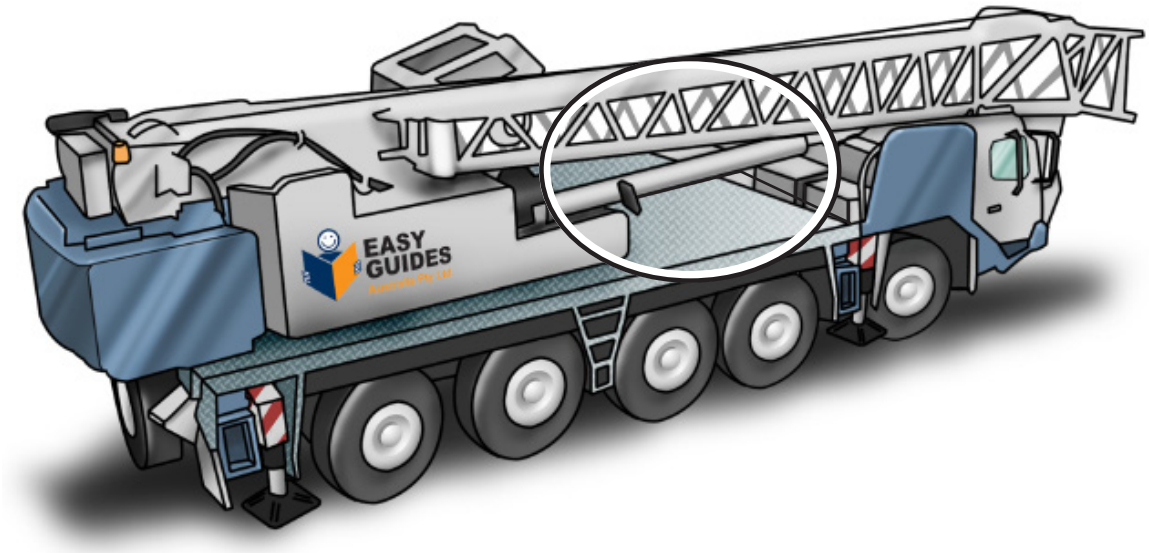
Theory Training Task 94

Performance Criteria: 4.6

a) On a slewing mobile crane, where do you stow the plates and packing?

In the designated area on the crane.

b) Mark with a circle the area where you stow the plates and packing.



c) How do you secure the packing?

Tie the packing down with ropes or straps.

Shut down and pack up

Learners: You **must** do this task under the **control of a licensed operator**.
Please wait for your trainer to advise you before trying the task.

In this activity you will practise shutting down and packing up the crane and the equipment.

This includes stowing equipment such as packing and outriggers, shutting down the crane and applying motion locks and doing the post-operational checks.

- ☐ Crane boom/jib and equipment are stowed and secured as required in accordance with procedures and the appropriate standard. This means you stow the boom as shown in the user manual or manufacturer's specifications.
- ☐ Relevant motion locks and brakes are applied as required. This means you check all motion locks and brakes are turned on.
- ☐ Outriggers/stabilisers are stowed and secured in accordance with procedures. This means you check that outriggers/stabilisers are stored safely for travel.
- ☐ Crane is shut down in accordance with procedures. This means the user manual shows you how to shut down the slewing mobile crane.
- ☐ Routine post-operational crane checks are carried out in accordance with procedures. This means you do a post-operational check when you finish using the slewing mobile crane.
- ☐ Plates or packing are stowed and secured. This means you secure all packing properly and safely.

Your trainer will assess how you shut down and stowed and secured the slewing mobile crane. After you finish, the licensed operator/trainer will then sign and date the box below.

Part 7: **Satisfactory** ☐ **Not yet satisfactory** ☐

Signature (licensed operator/trainer) ..... Date .....

Review

Part 7—Shut down and pack up

Sharing your knowledge can be a good way to remember things you have learnt. Talk about and/or record below the key points you have learnt in 'Shut down and pack up' and share your experiences with other learners and/or your trainer.

Further learning (optional)

Apply

It's a good idea to get hands-on experience with shutting down and packing up a slewing mobile crane. If you know a licensed person with a slewing mobile crane, ask them if you can help or observe them shutting down the crane.

Beaufort Wind Scale

The Beaufort Wind Scale is to be used as a guide only. Please consult with operator manuals and workplace rules and regulations on determining when you should stop working during windy conditions.

Beaufort Scale Number	Description	Units in km/h	Description for land
0	Calm	0	Smoke rises vertically
1-3	Light winds	19 km/h or less	Wind felt on face Leaves rustle Ordinary vanes moved by wind
4	Moderate winds	20-29 km/h	Raises dust and loose paper Small branches are moved
5	Fresh winds	30-39 km/h	Small trees (in leaf) begin to sway Crested wavelets form on inland waters
6	Strong winds	40-50 km/h	Large branches in motion Whistling heard in telephone wires Umbrellas used with difficulty
7	Near gale	51-62 km/h	Whole trees in motion Inconvenience felt when walking against wind

Reference: www.bom.gov.au/lam/glossary/beaufort.shtml — for more details

Flash/bang rule

If a storm is approaching you should cease work until safe to do so. The flash/bang rule is an indication only and you should find out what your workplace rules are.

After you see lightning count the seconds until you hear thunder.
Every 3 seconds means the lightning is 1 km away. For example, a 30 second gap means the lightning is 10 kms away.

You should NOT work if lightning is within a 15 km radius.

Notes

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Easy Guides would like to thank the following people for kindly volunteering their time and expertise in assisting with this set of slewing mobile crane learning materials.

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