CONSTRUCTION
Training Group

LEARNER GUIDE

Front-End Loader/Skidsteer LS

National Guidelines for Occupational Health & Safety Competency Standards for the Operation of Loadshifting & Equipment & Other Types of Specified Equipment

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Loadshifting Equipment

Front-End Loader of a Skid Steer Type

ASSESSMENT

Part 1 Performance

Part 2 Oral/Written

MAY 1994

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ASSESSOR GUIDELINES – GENERAL

1. Introduction

1.1 Scope

These general guidelines apply to all the assessment instruments for the certificates of competency prescribed by the *National Guidelines for Occupational Health and Safety Competency Standards for the Operation of Loadshifting Equipment and Other Types of Specific Equipment. [NOHSC: 7019]*

Assessors should also be familiar with the publication Assessment guidelines for *National Occupational Health and Safety Certification Standard for users and operators of industrial equipment. [NOHSC:1006]*

1.2 Additional Guidelines

Guidelines which provide additional specific information to certificate assessors are also included in each assessment instrument. Included, where appropriate, are specific instructions on the usefulness of training records (such as logbooks) and other certificates with overlapping competencies.

1.3 Evidence of Competence

Evidence of competence is established in a number of ways. The methods used in the following instruments involve:

- Assessment of practical performance
- Written and/or oral answers to questions on underpinning knowledge.

2. Preparing for the Assessment

2.1 Study the instruments

You need to read the assessment instruments and specific instructions carefully before beginning an assessment.

2.2 Confirm Appointments

Prior to an assessment, you need to confirm the date, time and location of the assessment with the applicant and any other relevant people.

2.3 Equipment Availability

The availability of equipment, materials and a suitable working area must be organised and confirmed, prior to the assessment.

2.4 Workplace Factors

Because procedures and processes vary greatly between workplaces, it is important for assessors to plan their approaches to meet the requirements of the individual workplace.
Make sure you take the timeframe into account when planning the assessment and also make the applicant aware of any time limits.

2.5 Selecting Questions

Questions for the written/oral assessment should be randomly
selected, either by hand or using the computer system, if applicable.

3. Conducting the Assessment

3.1 Provide an Explanation

Begin by explaining clearly to the applicant what is required of them. Check that the applicant has provided (or has been provided with) the necessary tools and equipment.

3.2 Practical Performance

Complete the practical performance checklist, as the applicant works through the required tasks. Wherever possible, this should be done in a normal working environment.
Do not ask the applicant questions while he/she is performing a task, as this can be distracting, and may affect the time taken to complete the assessment.

If, at any time, the applicant is endangering themself or others, stop the assessment immediately. This indicates that the applicant is not yet competent and may require further training, before being reassessed.

Assessments should also be stopped, if equipment or property is likely to be damaged.

3.3 Knowledge

The oral/written assessment determines the applicant's under pinning knowledge. The model answers provided with the oral/written assessment instruments are not necessarily exhaustive. Use your own judgement when scoring alternative answers.

3.4 Recording Responses

A box accompanies each item and question on the assessment forms you use. Assessors must complete every box as follows:

✓	CORRECT PERFORMANCE/ ANSWER
X	NOT YET ACHIEVED
NA	NOT APPLICABLE

If a box is marked incorrectly, cross out the mistake, mark the correct response alongside, and initial the change.

4. Determining Competencies

4.1 Assessment Summary

A specific assessment summary is given for each certificate class. This is to be filled in and signed by the assessor and counter signed by the applicant.

Notice of Satisfactory Assessment

The original and duplicate are given to the applicant. The applicant provides the original to the certifying authority. The triplicate is to be retained by the assessor.

4.2 Competency Requirements

In order for you to deem an applicant competent, he or she must have completed each section of the assessment to the standard required. You should note any time constraints when arriving at your decision.

The standard required for each instrument is specified in the specific guidelines and/or on the summary page at the end of each instrument.

In the case of a re-assessment, the assessor can decide to apply the whole or only that part of the assessment not yet achieved.

4.3 Additional Comments

Where an applicant fails to meet the standard of competence, you should add a written comment on the Assessment Summary, which briefly explains the problem. Advice to the applicant, on the appropriate remedial action should also be included. This will also assist the certificate assessor, in the event that the applicant undergoes future reassessment. Likewise, if an applicant demonstrates outstanding or remarkable performance, this should be noted.

4.4 Further Investigation

As a certificate assessor, it is your role to determine whether or not an applicant has achieved the standard necessary for the certifying Authority to be able to grant a certificate of competency.

Whenever you are unsure of the applicant's performance or knowledge, ask additional questions, and obtain additional evidence, before making your final decision.

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National Guidelines for OHS Competency Standards

Loadshifting Equipment

Front-End Loader of a Skid Steer Type

PERFORMANCE ASSESSMENT

MAY 1994

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Assessor Guidelines – Specific (Performance Assessment)

ASSESSMENT INSTRUMENT – SPECIATIONS

The performance assessment covers the following Loadshift elements:

1.1, 1.2, 1.3, 2.1, 3.1 & 3.2

1. This assessment requires the operator to check the equipment, plan the work and to safely and competently operate the skidsteer.

   The Assessment is performed in ten sections:

   1.1 Conduct routine pre-operational check front-end loader/backhoe, equipment and the security of attachments.
   1.2 Inspect the site, plan work and select and fit appropriate attachments.
   1.3 Conduct pre-operational and post start up checks.
   1.4 Drive to the work area.
   1.5 Set up machine and excavate a trench.
   1.6 Use the front-end loader/backhoe as a crane
   1.7 Backfill the trench and load or simulate lading a truck.
   1.8 Consolidate and level a surface.
   1.9 Pick up and shift material in the bucket.
   1.10 Shut down equipment and secure site.

2. Prior learning & experience
   2.1 An applicant who holds a front-end loader, excavator, dragline or dozer certificate do not require assessment in sections 2, 3, 4, 7, 8 and 9.
   2.2 Applicant who produces satisfactory documentary evidence (such as a log book) which establishes 50 days experience in front-end loader/backhoe operations specifically covering competencies tested in sections 2, 3, 4, 7, 8 and 9 does not require assessment in these sections.

3. The performance assessment can be conducted at any location which has:
   - Sufficient clear space to operate the machine
   - Ground suitable for excavating

4. Equipment and Resources Required:
    - Front-End loader/backhoe and equipment.
    - A write rope sling, chain sling, shackle and a fibre rope tag line.
    - Suitable loads to sling (such as a bundle of timber and a concrete pipe).
    - Suitable site on which to use the front-end loader/backhoe and equipment to excavate and backfill a trench, use the front-end loader/backhoe in the crane mode and to load or simulate loading of a truck.
5. Unless other arrangements are agreed to by the assessor, it will be responsibility of the applicant, applicants employer or trainer to provide the required equipment and resources.

6. To be assessed, an applicant must wear:
    - Safety helmet (where required)
    - Appropriate footwear
    - Other protective clothing and equipment as appropriate

7. The performance of each applicant is to be recorded to the assessors checklist.

8. Safety of personnel:
   When an applicant is working dangerously, recklessly or without the necessary co-ordination, the assessor must direct the applicant to cease work and terminate those parts of the assessment immediately.

9. The items in the shaded boxes are critical importance. Failing to get any of these correct means that the competency has not been achieved.

10. Where an applicant is assessed as 'Not Yet Competent' he/she must be informed of the reason(s) in order to gain further appropriate training.

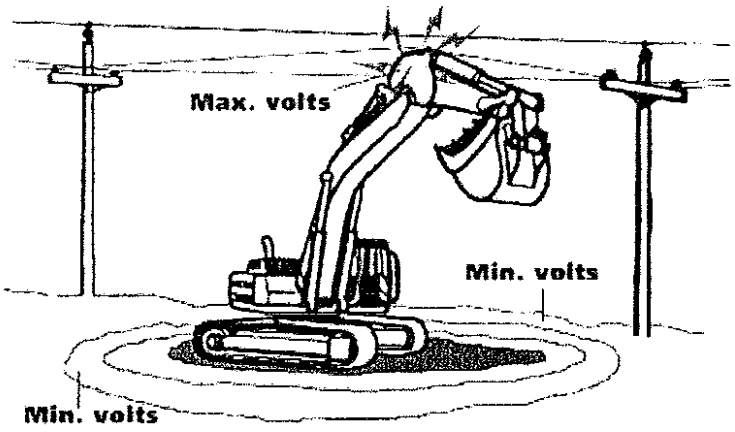
11. The full performance assessment can take up to 1 hour and 30 minutes.

12. The general assessment requirements are set out in the Assessor's guidelines – general.

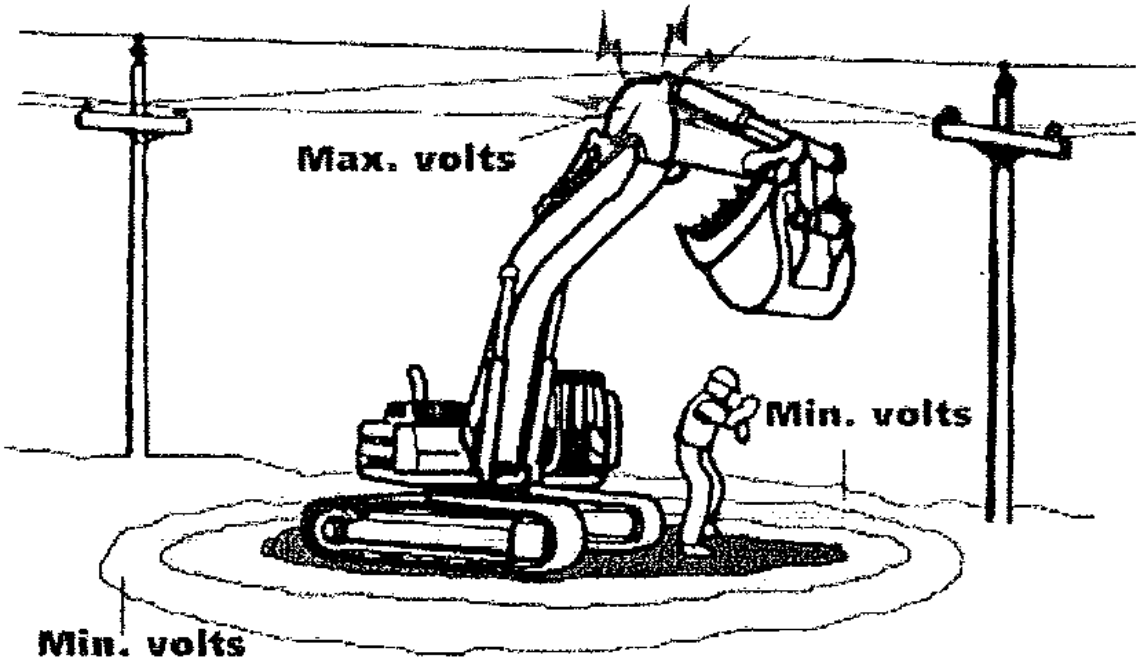
13. The applicant's competence in each unit is to be summarised for both performance and knowledge on the summary sheet. Competence is achieved for a unit when the required number of boxes for that unit have been ticked or marked as 'NA'.

    Overall competence is achieved when competence in all units has been assessed.

Diagram 1:



If anything touches a high-voltage power line or if a power line falls to the ground, electricity will flow to the ground, energising the tree or equipment and anything in contact with it. The surrounding ground may be extremely hazardous. The voltage gradually decreases from the point of contact until it reaches zero. The safe distance shown here—10 metres — is for line voltages up to and including 66 kV (66 000 V).

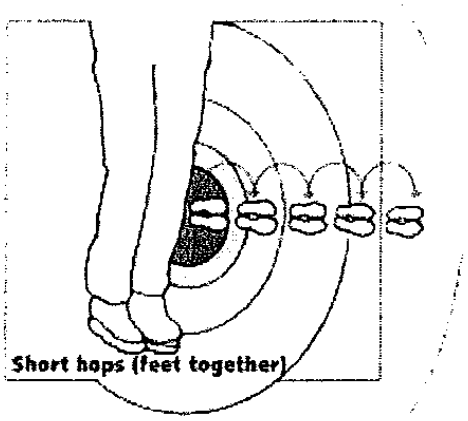


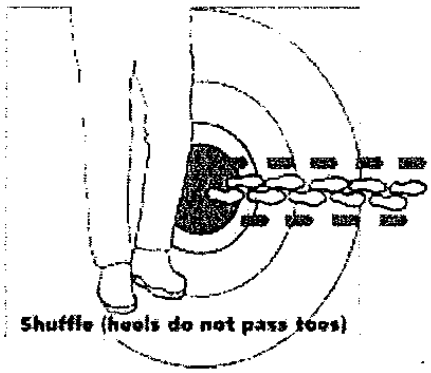
Step potential

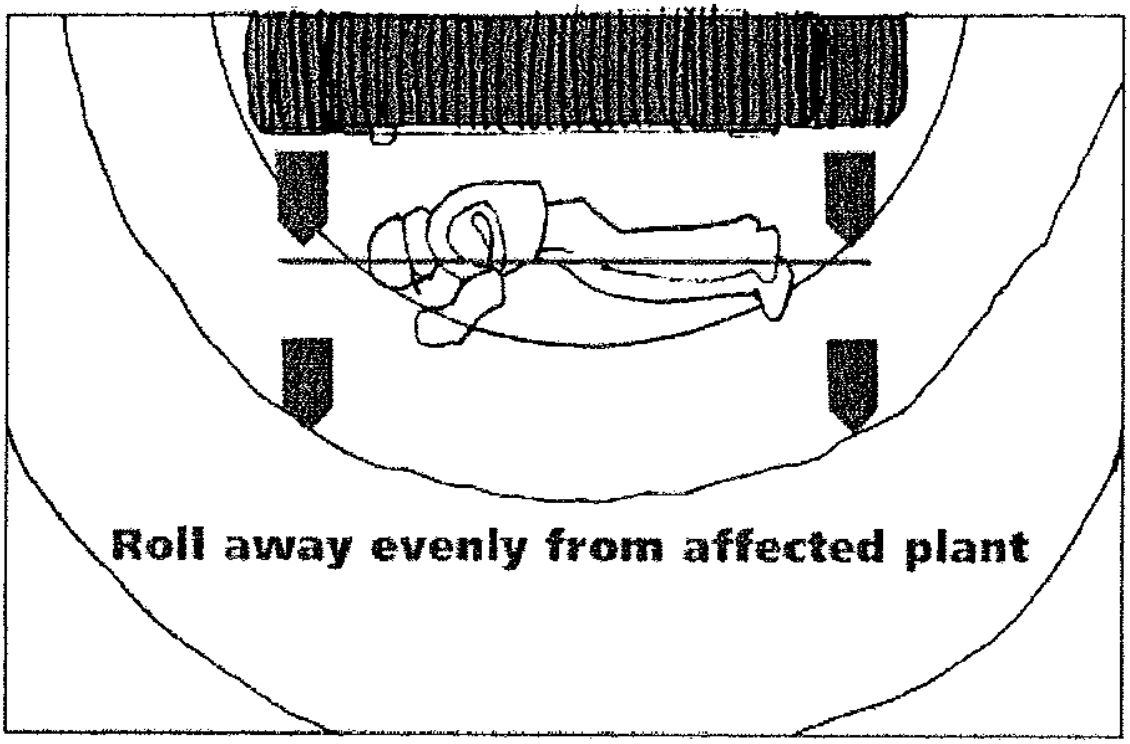
Step potential is the voltage difference between two places that are a step apart on energised ground. For example, if you are standing on energised ground, there could be a significant difference in voltage between where one foot and the other are placed, and an electric current could flow up one leg and down the other.

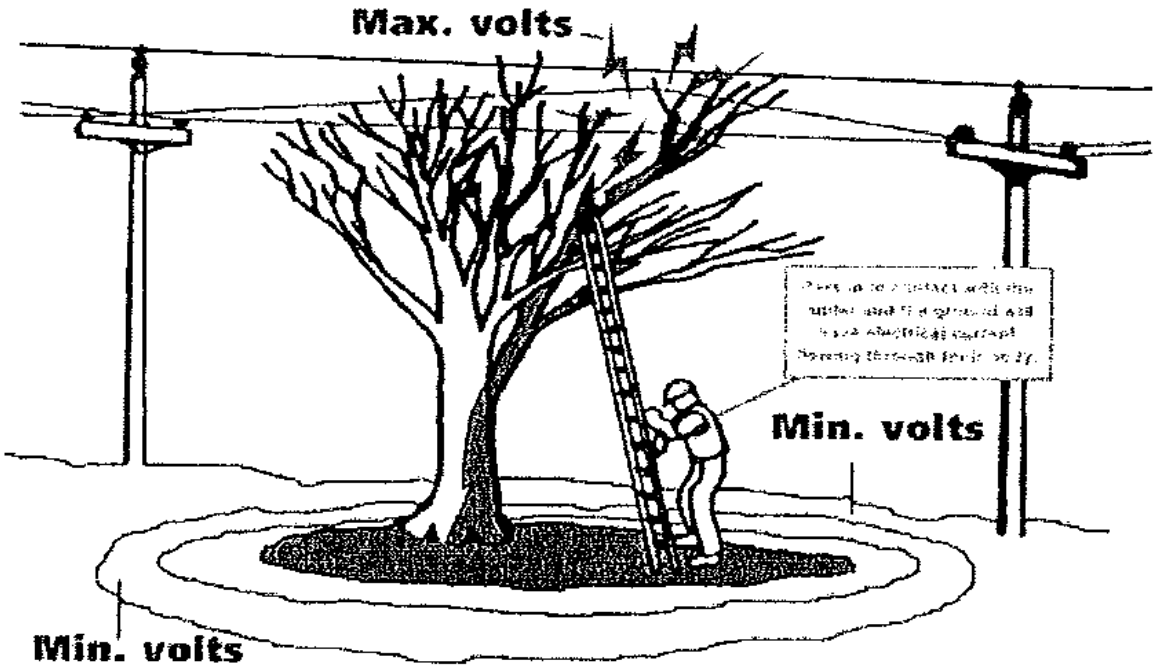
Step potential. If your feet are spread apart on energised ground, electricity can flow through your body from the area of higher voltage to the area of lower voltage

If your feet are close together and touching, you are fairly safe. Since there is almost no voltage difference between the places your feet stand, there is little reason for electricity to seek a path through your body.


Short hops (feet together)


Shuffle (heels do not pass toes)


Roll away evenly from affected plant



Touch potential

Touch potential is another danger that comes from the difference in voltage. It occurs when you touch something that is energised while standing on the lower voltage ground. For example, if some equipment is in contact with a power line, it will be energised to the same voltage as the power line; the surrounding ground will be energised to a lower voltage. If you touch the energised equipment or tree at the same time as you touch the ground with your feet, electricity will flow through your body from the higher voltage equipment to the lower voltage ground.

Touch potential: Trees and equipment become energised when they contact a power line. Electricity can flow through a worker who touches the energised tree or equipment, often causing serious injury or death.

Currents greater than 75 mA can cause ventricular fibrillation (rapid, ineffective heartbeat) and will cause death in a few minutes.

Conduct Routine Checks:

Performance Criteria 1.1.1 and 1.1.2

1. **Conducts routine checks on vehicle equipment:**
   - ☐ Tyre condition & inflation

   Checks liquid levels:
   - ☐ Fuel
   - ☐ Hydraulic Oil
   - ☐ Engine Oil
   - ☐ Battery
   - ☐ Coolant

   Checks structure for defects:
   - ☐ Damaged or broken parts
   - ☐ Loose nuts, bolts and couplings

   Checks attachment for defects:
   - ☐ Damage
   - ☐ Bucket for missing, work or loose teeth
   - ☐ Hoses, fittings, hydraulic rams for oil leaks
   - ☐ Connections for missing pins or keepers
   - ☐ Grease holes and grease pins
   - ☐ Checks attachments for security

Performance Criteria 1.2.1, 1.2.3 and 1.2.5

2. **Inspects site and plans work:**

   Identifies Hazards:
   - ☐ Power lines
   - ☐ Phone Lines
   - ☐ Service drains
   - ☐ Obstructions

   Access and path of movement is indicated:
   - ☐ To work area
   - ☐ For loads

   Appropriate equipment for the task:
   - ☐ Equipment is appropriate for the task

Performance Criteria 1.3.1

3. **Conducts pre-operations and post start-up checks in accordance with manufacturers specifications/operating manual**
   - ☐ Mounts correctly
   - ☐ Adjusts seat
   - ☐ In neutral
   - ☐ Warning device
   - ☐ Engine start
   - ☐ Gauges
   - ☐ Warm-up allowed
   - ☐ Attachment movement
   - ☐ Clear for travel
   - ☐ Foot brake
   - ☐ Holding brake
   - ☐ Steering

SHIFT LOAD:

Performance Criteria 2.1.1 & 2.1.3

4. Drives to the work area:

- ☐ Raises attachments smoothly
- ☐ Secures backhoe bucket
- ☐ Ensures travel direction clear
- ☐ Selects appropriate route
- ☐ Travels at safe speed

Performance Criteria 2.1.2

5. Backfills trench and loads truck:

- ☐ Bucket at correct level and angle
- ☐ Uses sufficient revs and speed
- ☐ Avoids excessive wheel spin
- ☐ Crowds bucket to fill
- ☐ Ensures direction of clear travel
- ☐ Travels with bucket low
- ☐ Acceptable and safe speed
- ☐ Minimises spillage and ground damage
- ☐ Uses appropriate path of travel
- ☐ Approaches trench or truck correctly
- ☐ Smoothly raises and dumps load
- ☐ Repositions bucket ready for reload
- ☐ Maintains stockpile and working surface

6. Spread soil and level surface:

- ☐ Spread soil with bucket blade
- ☐ Levels surface with bucket blade
- ☐ Leaves soil for natural compaction
- ☐ Maintain level surface to work from

7. Picks up and moves material in the bucket:

- ☐ Picks up material
- ☐ Caries material in bucket

Performance criteria 2.1.1, 2.1.4, 2.1.5 and 2.1.6

General performance sections of 2, 3, 4, 5, 6 and 7

- ☐ Bucket suitable for the work
- ☐ Machine suitable for ground conditions
- ☐ Completely shifts material
- ☐ Equipment operated at a safe speed
- ☐ Instructions and signals are correctly interpreted and complied with
- ☐ Loads placed to ensure stability
- ☐ Loads placed to avoid causing hazard

SHUT DOWN EQUIPMENT AND SECURE SITE
Performance Criteria 3.1.1, 3.1.2, 3.1.3 and 3.2.1

8. **Shuts down equipment and secures site:**

Parks equipment:

- ☐ Machine parked in suitable area
- ☒ Attachments lowered to ground
- ☐ Cutting edge of bucket on ground

Shuts down equipment:

- ☐ Neutralises controls
- ☒ Applies holding break
- ☐ Idles to stop, locks ignition
- ☐ Moves controls to release pressure

Post Operational check:

- ☐ Minor service
- ☐ Checks and reports any damage

Avoid hazards:

- ☒ Parks away from danger areas
- ☐ Removes keys

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National Guidelines for OHS Competency Standards

Loadshifting Equipment

Front-End Loader of a Skid Steer Type

ORAL/WRITTEN ASSESSMENT

MAY 1994

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Assessor Guidelines – Specific (Knowledge Assessment)

ASSESSMENT INSTRUMENT – SPECIATIONS

The performance assessment covers the following Load shift elements:

1.1, 1.2, 1.3, 2.1, 3.1 & 3.2

1. Knowledge assessment for Front-end Loader/Backhoe is divided into three units and seventeen sections (performance criteria 1.1.1, 1.1.2 etc).
2. To satisfy the requirements for competency the applicant must correctly answer (either in writing or orally) the specified number of questions in each of the following sections:

Unit 1.0

1.1 Conduct routine checks

- 1.1.1 (select 3)
- 1.1.2 (select 1)

1.2 Plan work

- 1.2.1 (select 1)
- 1.2.2 (select 3)
- 1.2.3 (select 1)
- 1.2.4 (select 1)
- 1.2.5 (select 1)

1.3 Check controls and equipment

- 1.3.1 (select 1)
- 1.3.2 (select 1)

Unit 2.0

2.1 Shift load

- 2.1.1 (select 1)
- 2.1.2 (select 1)
- 2.1.3 (select 1)
- 2.1.5 (select 1)
- 2.1.7 (select 1)

Unit 3.0

3.1 Shut down equipment

- 3.1.1 (select 1)
- 3.1.3 (select 1)

3.2 Secure site

- 3.2.1 (select 1)

3. Prior learning and experience:

An applicant who holds a front-end loader, excavator, dragline or dozer certificate who answers questions for performance criteria 1.1.1, 2.1.2 and 2.1.5 satisfactorily is not required to complete the rest of the assessment.

4. The full knowledge assessment of twenty one questions can take up to thirty minutes.

5. The items in the shaded boxes are of critical importance. Failing to get any of these correct means that competency has not been achieved.

6. The applicant's competence in each unit is to be summarised for both performance and knowledge on the summary sheet. Competence is achieved for a unit when the required number of boxes for that unit have been ticked or marked `N/A'.

   Overall competence is achieved when competence in all units has been assessed.

CONDUCT ROUTINE CHECKS:
Performance criteria 1.1.1 (select 3 including 1 with a shaded box)

1. What precaution must be taken when inspecting under a raised attachment?

   Provision provided to prevent attachment descending.

2. Name three defects to look for in the hydraulic system.

   Hydraulic oil leaks, loose connections, and hoses for splits, fractures or bulges,

3. Should loadshifting equipment be refuelled while the engine is running? Explain your answer.

   No. The fuel could be ignited by the running engine

4. Why should you not completely full the hydraulic storage tank?

   To allow for expansion and displacement in the system

5. What problems could be indicated by bubbles or milky engine oil in the sump?

   Water leaking into the sump

6. When changing the battery, which battery clamp should be removed first?

   The earth battery clamp

Performance criteria 1.1.2 (select 1)

7. What would you look for to ensure that the bucked of the front-end loader of the skid steer type is securely attached to the machine?

   Ensure that all moving joints are not worn and the safety pin or clips are not damaged or lost

PLAN WORK:
Performance criteria 1.2.1 (select 1)

8. In built-up areas what checks should be made under the ground before excavation commences?

   Check for power, telephone, gas or drainage lines.

9. To establish the location of existing underground services, what would you refer to?

   Supply authority or council maps.

Performance criteria 1.2.2 (select 3 including 1 with a shaded box)

10. What shall be provided to prevent a person falling into an excavation?

    Barricades or guardrails

11. When should an operator wear ear protection?

    Where the noise could contribute to the loss of hearing

12. What is the danger of loading a truck across a sloping surface?

    The loader could overturn.

Performance criteria 1.2.3 (select 1)

13. Which is the safest route of travel, diagonally across or directly down sloping surface?

    Directly down the sloping surface.

14. For suitability which direction and how should a rubber tyred skid steer loader be driven up a steep ramp onto a truck?

    Slowly with the rear of the machine facing up the ramp and bucket low

Performance criteria 1.2.4 (select 1)

15. What would you be required to obtain from the Relevant Authority to operate a machine in a hazardous working area?

    The required permits.

16. What must be obtained to drive unregistered rubber tyred loadshifting equipment along a public road?

    An unregistered vehicle permit or other document required in jurisdiction as applicable

Performance criteria 1.2.5 (select 1)

17. Why would you select a loader of a skid steer type instead of a conventional front-end loader to work in a small confined space?

    Because of the manoeuvrability of the machine.

18. Name three operations which a clam type bucket (4in 1 bucket) is designed to perform.

    Scooping up a load, carrying a load, picking up an object, levelling a surface etc.

CHECK CONTROLS AND EQUIPMENT:
Performance Criteria 1.3.1 (select 1)

19. On the post start-up check you notice a bulge from in a hydraulic hose. What action would you take?

    Switch off the machine and have the hose replaced.

20. When should tests, checks and inspections be made by the operator on the loadshifting equipment that is to be operated?

    Daily before use.

Performance criteria 1.3.2 (select 1)

21. What action would you take with damage and defects found on the machine?

    Report the damage and defects to authorised person and ensure safety is not jeopardised.

SHIFT LOAD:
Performance criteria 2.1.1 (select 1)

22. Is it permissible to hoist persons with the bucket of a front-end loader skidsteer?

    No.

Performance criteria 2.1.2 (select 1)

23. What is the approximate weight of a cubic metre of wet sand?

    1.5 tonnes

24. of top soil or clay which is more cohesive and harder to excavate, push and spread?

    Clay.

Performance criteria 2.1.3 (select 1)

25. Why should the seat belt be worn or the pull down bars be in place before operating the machine?

    So that the operator cannot be bounced out of the machine while operating

Performance criteria 2.1.5 (select 1)

26. Applicant to state the meaning of the hand signal for "stop" demonstrated by the assessor.

    Stop

Performance criteria 2.1.7 (select 2)

27. If a hydraulic hose sprung a leak when a loaded bucket was raised what action would you take?

    Lower bucket and have repairs carried out.

28. If the machine contacted a live power line which could not be released or the power turned off, how would you dismount the machine?

    Jump clear ensuring contact with the ground and machine is not at the same time.

SHUT DOWN EQUIPMENT:
Performance criteria 3.1.1 (select 1)

29. Name three areas where you would not park the front-end loader/backhoe.

    Access ways, near overhangs, refuelling sites, tidal or flood areas, adjacent to an excavation.

30. Before leaving the controls of the machine what should be done with all hydraulically raised attachments?

    Attachments lowered and pressure removed from hydraulic lines.

Performance criteria 3.1.3 (select 1)

31. What post-operational checks should be carried out by the operator on the front-end loader/backhoe to prepare it ready to be reoperated?

    Check the structure and equipment for defects and wear and the oil, fuel and water levels.

SECURE SITE:
Performance criteria 3.2.1 (select 1)

32. What shall be provided when a front-end loader/backhoe has to be parked on or protrudes onto an access way?

    Barricades, lights and signs.

33. For what reason should the key be removed from the ignition of the machine?

    To prevent unauthorised movement.

34. Before leaving the site what must be provided to restrict access to the site?

    Barricades or fences.

Unit	Form of assessment	Total number of boxes in the assessment	Number of boxes given or NA	Number of boxes required to meet standard	Were all critical boxes given or NA?		Assessment standard requirements achieved *		
1	Performance	33		29	Yes	No	Yes	No	
	Knowledge	13		8	Yes	No	Yes	No	
	Assessment completed within time allowed						Yes	No	NA
2	Performance	31		28	Yes	No	Yes	No	
	Knowledge	5		3	Yes	No	Yes	No	
	Assessment completed within time allowed						Yes	No	NA
3	Performance	11		9	Yes	No	Yes	No	
	Knowledge	3		2	Yes	No	Yes	No	
	Assessment completed within time allowed						Yes	No	NA

*Performance standard = Number of items required to meet standard (including all critical boxes)

Knowledge standard = Number of questions required to meet standard (including all critical boxes)

Summary

Candidate is:

☐ **COMPETENT** Date:_____

☐ **NOT YET COMPETENT**

Name of Assessor:_____ Signature: _____

Name of Candidate_____ Signature: _____

Comments/feedback:

_____

_____

_____