

LEARNER GUIDE



Training support material for:

RIISAM204E

Operate small plant and equipment

Produced by:



PICTURE BASED. PLAIN ENGLISH. LEARNING MADE EASY.



CONTENTS

About this guide.....	4
Language – Literacy – Numeracy (LLN).....	5
LLN core skills – customising training.....	6
Prepare for operating small plant and equipment	7
Conduct pre-operational checks	39
Use small plant and equipment	47
Carry out operator maintenance	59
Conduct housekeeping activities	67

PREPARE FOR OPERATING SMALL PLANT AND EQUIPMENT

Element 1



Introduction

Operating small plant and equipment efficiently and safely is crucial in various industries, including construction, landscaping, maintenance, and more. Proper preparation and understanding of the equipment are essential to make sure of smooth operations, minimise risks, and achieve optimal results. Here are some key steps to consider when preparing for and operating small plant and equipment:

- Read the manual and familiarise yourself with the equipment
- Do a pre-use inspection
- Check fuel, fluids and batteries
- Wear personal protective equipment (PPE)
- Make sure the work area is suitable
- Understand the operating controls
- Follow safe operating procedures
- Communicate with others you may be working with
- Check equipment during use
- Clean and maintain equipment after use.



1. What types of small plant and equipment are used in this unit of competency?

Generally, 2-3 pieces of small plant and equipment will be used in training. On-site training can be customised to specific items of small plant and equipment. Training can include but is not limited to:



Road saws: Road saws, also known as concrete saws or asphalt saws, are powerful cutting machines used in construction and road maintenance. They are typically equipped with a large circular blade with diamond or abrasive teeth and are designed to cut through concrete, asphalt, and other hard surfaces. Road saws are commonly employed to create expansion joints, remove damaged sections of pavement, or cut trenches for installing utility lines.



Brick / masonry saws: Brick or masonry saws are specialized cutting tools used for precision cutting of bricks, blocks, tiles, and other masonry materials. These saws typically have a diamond blade specifically designed for cutting through hard materials like concrete, stone, and ceramics. They are commonly used in construction, masonry work, and tile installation to achieve accurate cuts for fitting bricks or blocks in various applications. Brick or masonry saws may come in different sizes and configurations, including handheld models or larger, stationary saws for more heavy-duty cutting tasks.

Continued next page...

(Continued from last page...)



Compressors: A compressor is a device or machine used to increase the pressure of a gas or air by reducing its volume. It is commonly used in various industries, including manufacturing, refrigeration, air conditioning, and power generation. Compressors are essential components in systems where the compression of gases is required for different purposes.



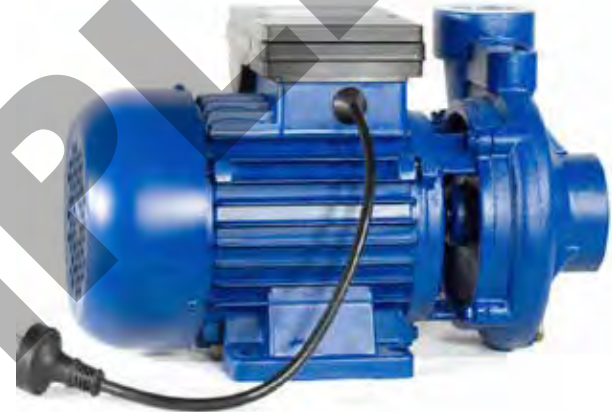
Generators: A generator is a device that converts mechanical energy into electrical energy. It is commonly used to produce electricity when a reliable power source is unavailable or as a backup power supply in case of power outages. Generators are widely used in various applications, including residential, commercial, and industrial settings.

Continued next page...

(Continued from last page...)



Concrete mixers: A concrete mixer is a machine or device used to mix cement, aggregates (such as sand or gravel), and water to create concrete. Concrete mixers are commonly used in construction projects, including building construction, road construction, and infrastructure development.



Pumps: Pumps are mechanical devices used to move fluids (liquids or gases) from one place to another. They are commonly used in a wide range of applications, including water supply systems, wastewater treatment, oil and gas production, chemical processing, and various industrial processes.

Continued next page...

(Continued from last page...)



Compaction equipment: Compaction equipment refers to a range of machines and tools used to compact or densify various materials, such as soil, asphalt, concrete, and aggregates. Compaction is the process of reducing air voids and increasing the density of a material, which improves its stability, strength, and load-bearing capacity. Compaction equipment is commonly used in construction, road building, landscaping, and other related industries.



Excavation equipment: Excavation equipment refers to machinery and tools used for digging, moving, and removing earth or other materials during excavation and earthwork operations. Excavation is a fundamental process in construction, landscaping, mining, and other industries that involves the removal of soil, rocks, or other materials to create trenches, foundations, ditches, or excavated areas.

Continued next page...

2. What are some examples of maintenance equipment when using small plant and equipment?

Screwdrivers: Tools used for tightening or loosening screws and fasteners.

Pliers: Handheld tools for gripping, bending, and cutting wires or small objects.

Wrenches: Tools for turning nuts and bolts to tighten or loosen them.

Hammers: Used for driving nails or striking objects in maintenance work.

Spanners: Similar to wrenches, but with fixed jaws for specific-sized nuts and bolts.

Saws: Cutting tools for various materials like wood, plastic, or metal during repairs.

Tape measure: A flexible ruler for measuring distances in maintenance tasks.

Spirit level: A tool to check if surfaces are level or plumb during installations or adjustments.

Safety goggles: Protective eyewear to prevent eye injuries while working with tools.

Gloves: Safety gloves to protect hands from cuts, abrasions, or chemicals during maintenance work.



6. What are some examples of small plant and equipment working with clay, silts, stone, gravel, mud, rock and topsoil?

Clay: Clay Mixer

A clay mixer is a small machine used to blend and mix clay with water and other additives to create a consistent and workable clay mixture. This equipment is essential in pottery and ceramics to prepare the clay before shaping it into various forms.



Silts: Silt Fence Installer

A silt fence installer is a small piece of equipment used to install silt fences. Silt fences are temporary barriers made of geotextile fabric used to control erosion and retain sediment (including silts) on construction sites. The installer helps secure the silt fence in place to prevent sediment runoff.



Stone: Stone Masonry Hammer

A stone masonry hammer, also known as a brick hammer or rock hammer, is a small handheld tool used by masons to shape and split stones. It has a chisel-like end for cutting and shaping stone, making it essential for working with stone in construction or artistic projects.



Continued next page...

(Continued from last page...)

Gravel: Vibratory Plate Compactor

A vibratory plate compactor is a small machine used to compact gravel and other granular materials, creating a more stable and solid surface. It's commonly used in road construction, landscaping, and other applications where compacted gravel is needed.



Mud: Mud Mixer

A mud mixer is a small device used to mix mud, which typically consists of soil, water, and sometimes additives, to create a slurry-like substance. This mixture is used in various applications, including construction, drilling, and even in some agricultural practices.



Rock: Rock Drill

A handheld rock drill is a small, portable drilling machine used for drilling holes in rock, such as for mining, quarrying, or geological exploration. It's an essential tool for working with hard rock surfaces.



Topsoil: Topsoil Screener

A topsoil screener is a small machine designed to sift and separate topsoil from larger debris like rocks and sticks. It's commonly used in landscaping and construction to ensure that the topsoil used for planting is free of unwanted materials.

Choose and wear personal protective equipment (PPE)

It is important to wear the correct PPE to keep you safe and protected. Here are some examples:

Here are some typical tools and equipment you might need.



11. How do you check for faults in small plant and equipment?

Conduct a visual inspection, checking for visible damage, wear and tear, loose connections, or missing parts.

Make sure the equipment is properly connected to a suitable power source and examine the power cord for any damage.

Check to the user manual or manufacturer's instructions for guidance on common issues and troubleshooting steps.

Test the equipment's functions and features individually to make sure of proper operation.

Check the functionality of safety features like guards, emergency stop buttons, and thermal overload protection.

Check calibration or use reference equipment to ensure accurate measurements, if applicable.

Inspect fluid levels, look for leaks, and ensure they are within recommended ranges.

Check wearable parts and replace or repair any that are worn out or damaged.

Test the equipment under realistic load conditions for performance evaluation.

Keep proper documentation of inspections, maintenance, and repairs for future reference and troubleshooting purposes.



CONDUCT PRE-OPERATIONAL CHECKS



Element 2

60 WEEKS
Pages in triplicate

For users of light and medium sized machinery



14. What fuel and lubricants might you use to operate small plant and equipment?

Fuel: Fuel is what powers the equipment and makes it work. Common fuels for small plants and equipment include petrol and diesel.

Petrol is often used for smaller engines, like those found in lawnmowers or chainsaws.

Diesel fuel is commonly used for larger equipment, such as generators or construction machinery. These fuels are flammable liquids that burn inside the engine to produce the energy needed for the equipment to function.

Lubricants: Lubricants are substances that reduce friction and wear between moving parts in the equipment. They help the components move smoothly and prevent them from overheating or getting damaged.

The specific lubricants used depend on the type of equipment, but some common ones include motor oil, grease, and hydraulic fluids.

Motor oil is used in engines to lubricate the internal parts. Grease is a thicker lubricant that is applied to joints and bearings. Hydraulic fluids are used in hydraulic systems to transmit force and provide lubrication.



...Continued from previous page

Once the equipment starts, listen for strange sounds or vibrations.

Test the different controls and functions to make sure they work correctly.

Check that all safety features, like emergency stop buttons or kill switches, are working.

Shut-Down Procedure:

Cooling Down: If needed, let the equipment run at a slow speed for a few minutes to cool down. Follow the instructions from the manufacturer.

Turning Off: Switch off any power switches or controls that are running the equipment.

Turn off the ignition or any fuel valves, depending on the type of equipment.

Post-Shut-Down Inspection: After turning off the equipment, check for any leaks, loose parts, or signs of damage.

Clean the equipment if necessary and store it properly.



USE SMALL PLANT AND EQUIPMENT

Element 3



19. How can you identify hazards when operating small plant and equipment?

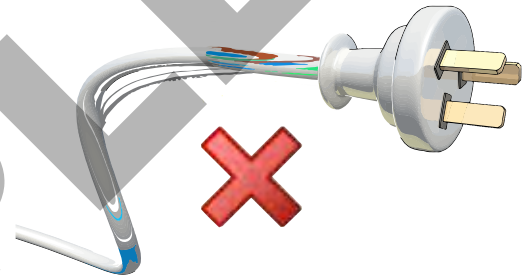
Conduct a pre-operational inspection: Check for visible defects, damage, or wear and tear. Check for loose or missing parts, leaking fluids, frayed cables, or any other signs of potential hazards.

Read the manufacturer's instructions and safety guidelines: Pay attention to any specific hazards associated with the equipment.

Identify electrical hazards: If the equipment is powered by electricity, check for any exposed wires, damaged cords, or faulty electrical connections. Make sure that electrical outlets and connections are properly grounded and that circuit breakers or fuses are in good working condition.

Check the working environment: Consider the surroundings in which the equipment will be used. Look for potential hazards such as uneven terrain, obstacles, overhead power lines, or other structures that could pose a risk during operation. Identify areas with poor lighting, ventilation, or restricted access that could impact safe operation.

Evaluate ergonomic factors: Assess the ergonomics of the equipment to identify potential hazards related to repetitive or awkward movements, excessive vibrations, noise levels, or inadequate operator protection.



Continued on next page...

21. How can you get optimum output but stay within specified tolerances?

Understand the specifications: Familiarise yourself with the specified tolerances and performance requirements for the equipment. This ensures you have a clear understanding of the desired output.

Properly calibrate the equipment: Make sure that the equipment is calibrated correctly according to the manufacturer's guidelines. Calibration helps maintain accuracy and ensures that the output aligns with the desired tolerances.

Perform regular maintenance: Follow a scheduled maintenance routine to keep the equipment in good working condition. Regular inspections, lubrication, and component replacements can prevent deviations from the specified tolerances.

Use the appropriate settings and adjustments: Set the equipment to the recommended parameters for the desired output. Adjust settings such as speed, pressure, or temperature according to the specifications to achieve optimum performance.

Monitor and control variables: Continuously monitor and control variables such as material inputs, environmental conditions, or process parameters. This allows you to make adjustments in real-time and ensure that the output remains within the specified tolerances.



Continued on next page...

...Continued from previous page

Implement quality control measures: Do quality control checks during the production process. Inspect samples or conduct tests to verify that the output meets the specified tolerances. Identify and fix any deviations at once.

Train operators effectively: Provide proper training to operators on the correct operation of the equipment. Ensure they understand the specified tolerances, the impact of their actions on output quality, and how to make necessary adjustments.

Document and analyse performance data: Keep records of the equipment's performance, including output measurements, adjustments made, and any deviations from the specified tolerances.

Communicate and collaborate with stakeholders: Maintain open communication with supervisors, quality control personnel, and other relevant stakeholders. Share feedback, discuss challenges, and work together to optimise output while staying within specified tolerances.

By following these guidelines, you can maximise the output of small plant and equipment while ensuring that the final results meet the specified tolerances and quality requirements.



22. How can you operate small plant and equipment to produce results within specified workplace tolerances?

Familiarise yourself with the equipment: Understand its components, functions, and any safety guidelines associated with it.

Read instructions and guidelines: Carefully read and understand the operating instructions and guidelines provided by the manufacturer.

Prepare the equipment: Before using the equipment, make sure it is clean, well-maintained, and in proper working condition. Check for any defects or damage that may affect its performance.

Safety first: Always prioritise safety. Wear appropriate personal protective equipment (PPE) such as helmets, gloves, goggles, or any other gear recommended for the specific equipment and task. Make sure the area is clear of obstacles or hazards that could cause accidents.

Follow correct procedures: Operate the equipment according to the correct procedures outlined in the instructions. Take note of any specific settings, adjustments, or controls required for the desired outcome.



Continued on next page...

...Continued from previous page

Practice control and precision: Pay attention to details and exercise control over the equipment. Use the appropriate force, speed, or pressure as needed to achieve the desired outcome while staying within the specified workplace tolerances.

Monitor and adjust: Continuously check the performance of the equipment and the results it produces. If necessary, make adjustments to settings or techniques to make sure the output meets the specified tolerances.

Regular maintenance: Maintain the equipment regularly by following the manufacturer's recommendations. This may include cleaning, lubricating, or replacing parts as needed. Well-maintained equipment performs better and produces more consistent results.

Get help if needed: If you have difficulties or are unsure about any aspect of operating the equipment, get help from a supervisor, workmate, or someone experienced in using that specific equipment.

Record and report: Keep a record of any issues, malfunctions, or maintenance performed on the equipment. Report any concerns to the appropriate personnel to ensure proper maintenance and troubleshooting.



...Continued from previous page

Store them off the ground: Whenever possible, avoid storing the items directly on the ground. Use shelves, pallets, or racks to elevate them and protect against moisture or potential floor damage. This also helps in organizing the storage area more efficiently.

Consider climate control: If your small plants and equipment are sensitive to temperature or humidity, consider storing them in a climate-controlled environment. Extreme temperature changes or high humidity can cause damage, so maintaining a stable environment can help preserve the items' quality.

Secure the storage area: If the items are valuable or require extra security, ensure the storage area is locked or restricted to authorized personnel only. This prevents unauthorised access and reduces the risk of theft or damage.

Regular maintenance checks: Even when not in use, periodically check your stored small plants and equipment for any signs of deterioration, pests, or moisture buildup. This helps identify any issues early on and allows for necessary maintenance or repairs.

By following these simple steps, you can store your small plants and equipment safely, keeping them in good condition and ready for future use.



CARRY OUT OPERATOR MAINTENANCE



...Continued from previous page

Follow Safety Procedures: Emphasise adherence to safety protocols, including lockout/tagout procedures and the use of personal protective equipment (PPE).

Cool Down (if applicable): If the equipment was in use before maintenance, allow it to cool down before starting any work.

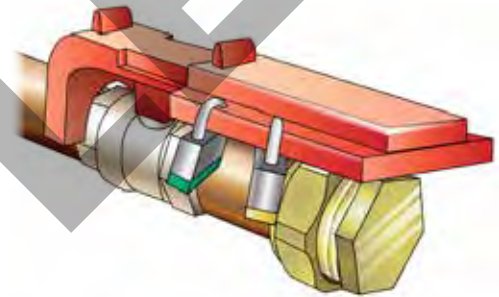
Document Equipment Condition: Take note of the current condition of the equipment, including any visible issues or concerns that need attention.

Assign Responsibilities: Assign specific tasks to the maintenance team members to ensure an organized and efficient process.

Coordinate with Vendors (if necessary): If the equipment is under warranty or requires specialised expertise, coordinate with vendors or technicians for assistance.

Backup Data (if applicable): If the equipment contains data or settings that could be lost during maintenance, ensure proper backups are made.

Communicate with Users: Inform users or relevant departments about the upcoming maintenance, outlining any potential downtime or alternative arrangements.



CONDUCT HOUSEKEEPING ACTIVITIES



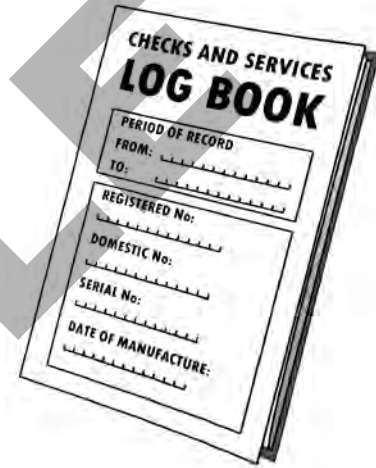
...Continued from previous page

Document the Issue: Keep a record of the issue, including the date, time, location, and description of the problem. This documentation can be useful for future reference or insurance purposes.

Follow Reporting Procedures: If your workplace has specific protocols for reporting equipment issues, make sure to follow them accordingly. This makes sure that the problem is addressed in a timely and organised manner.

Recommendations for Improvement: If you notice recurring issues or have suggestions to improve equipment performance, share them with your supervisor or management. Your insights can contribute to better maintenance practices.

Avoid Making Repairs Yourself: Unless you are trained and authorized to perform equipment repairs, avoid attempting to fix the issue yourself. Unauthorised repairs can void warranties and may lead to further problems.



30. What written records and reports do you need to do?

When using small plant and machinery, it's important to keep written records and reports.

Maintenance Records: Keep a record of all maintenance tasks you perform on the equipment. Note down the date, type of maintenance, and any parts replaced or repaired.

Inspection Reports: After inspecting the equipment, write a report detailing its condition. Note any issues, damages, or signs of wear you observed.

Accident Reports: If there's an accident or near-miss involving the equipment, create an accident report. Describe what happened, who was involved, and any injuries or damages.

Equipment Logs: Maintain a log that tracks when the equipment was used, who used it, and for what purpose. This helps monitor usage and identify patterns.

Fuel and Fluid Usage: If the equipment runs on fuel or fluids, keep track of the amount used and when it was refueled or replenished.

MAINTENANCE RECORD		
DATE	BY	NEXT DUE

Continued on next page...