Unit 324: Operate powered units, tools or pedestrian plant, machinery or equipment

# Delivery guide

Unit information

The aim of this unit is to provide learners with the relevant practical skills and understanding required for operating powered units, tools or pedestrian plant, machinery or equipment, in a construction and civil engineering environment. It also covers interpreting information, adopting safe, healthy and environmentally responsible work practices, and selecting, preparing and using materials, components, tools and equipment.

Learners may be introduced to this unit by asking themselves questions such as:

* What are the different types of power tools available?
* What are the mandatory items of PPE needed when operating power tools?
* What age do I need to be to use power tools?
* Do I always need a licence to operate power tools?

Learning outcomes

1. Understand resource selection
2. Understand working to a contract specification
3. Comply with the given contract information to carry out the work safely and efficiently to the required specification

Suggested resources

Textbooks

* Copson, M., Kendrick, P., Beresford, S. (2019) *Roadwork Theory & Practice*. Oxford: Routledge.

ISBN 978-0-8153-8318-5

* Chudley, R. (2020) *Chudley and Greeno’s Building Construction Handbook.* Oxford: Routledge.

ISBN 978-0-3671-3543-0

* Health and Safety Executive (HSE) (2014) *Provision and Use of Work Equipment Regulations 1998 (PUWER). Approved Code of Practice and Guidance, L22*. London: HSE Books.

ISBN 978-0-7176-6619-5

Websites

* [Designing buildings | Construction plant](https://www.designingbuildings.co.uk/wiki/Construction_plant)
* [Go construct | What is construction plant and why is it important?](https://www.goconstruct.org/why-choose-construction/whats-happening-in-construction/what-is-construction-plant-and-why-is-it-important/)

Legislation

* [GOV.UK | The Work at Height Regulations 2005](https://www.legislation.gov.uk/uksi/2005/735/contents/made)
* [GOV.UK | The Manual Handling Operations Regulations 1992](https://www.legislation.gov.uk/uksi/1992/2793/made)
* [GOV.UK | The Provision and Use of Work Equipment Regulations 1998](https://www.legislation.gov.uk/uksi/1998/2306/contents/made)
* [GOV.UK | Health and Safety at Work etc. Act 1974](https://www.legislation.gov.uk/ukpga/1974/37/contents)
* [GOV.UK | The Control of Substances Hazardous to Health Regulations 2002](https://www.legislation.gov.uk/uksi/2002/2677/regulation/7/made)
* [GOV.UK | The Traffic Signs Regulations and General Directions 2016](https://www.legislation.gov.uk/uksi/2016/362/contents/made)
* [HSE | Homepage](https://www.hse.gov.uk/)
* [HSE | Mobile elevating work platforms (MEWPs)](https://www.hse.gov.uk/construction/safetytopics/mewp.htm)
* [HSE | Control of Vibration at Work Regulations 2005](https://www.hse.gov.uk/vibration/hav/regulations.htm)

| **Learning outcomes** | **Criteria** | **Delivery guidance** |
| --- | --- | --- |
| 1. Understand resource selection | * 1. Characteristics of the resources | * Learners to understand the range of resources used to operate powered units, tools or pedestrian plant machinery and equipment to drawings, specifications and operating instructions. Learners to be given examples of typical scenarios in groundworks, such as excavating and compaction activities. * Learners to understand the characteristics and suitability when selecting resources for operating powered units, tools or pedestrian plant machinery and equipment for residential or larger civil engineering projects. Learners to be aware of certain considerations including types of materials and location of works to be carried out, noise, duration of works, enclosed works. * Learners to understand how to operate powered units, tools or pedestrian plant machinery and equipment and to be able to identify those defects that can affect the structural integrity and need replacing and those that only affect the aesthetics, their uses and limitations and sustainable alternatives. * Learners to be shown generic start and stopping procedures including pre-start and fuel level checks. Learners to be aware of any specific training or licences required by the operatives and how to check whether all attachments are available and ready for use. * Learners to have, or know how to access, the relevant manuals and to be aware that maintenance schedules should be followed. * Learners to be shown and know about power sources, including: * fuel types * air lines * electric cables * chargers. * Learners to be shown and know about equipment that includes: * handheld non-power tools * handheld petrol power tools * electrical tools (saws – circular saw, chop saw, drills, hammers) * battery-operated tools * air-driven tools * plate vibrators * compactor/vibrating plates * pneumatic drills * angle grinders * disc cutters * demolition/breaker hammers * hammer drills * rollers * excavators * loading shovels. * Learners to be shown and know about documentation that includes: * specifications * drawings * operating instructions * checklists * method statements * risk assessments * safe systems of work * manufacturers’ information * Control of Vibration at Work Regulations 2005 (hand–arm vibration syndrome, or HAVS) * exposing limit values (HASAWA and manufacturer’s recommendations) * Working at Height Regulations 2005 (WAH) * Manual Handling Operations Regulations 1992 * mobile elevating work platforms (MEWPs) * Provision and Use of Work Equipment Regulations 1998 (PUWER) * Health and Safety at Work etc Act 1974 (HASAWA) * Control of Substances Hazardous to Health Regulations 2002 (COSHH) * Traffic Signs Regulations and General Directions 2016 (TSRGD). |
| * 1. Use of resources | * Learners to understand how the resources should be used and how any problems associated with the resources are to be reported. * Learners to be shown a range of resources to aid their learning. * Learners to understand which materials are to be used in specific locations, the procedures and reporting protocols to follow to report any problems, as well as defects or concerns with selected resources. * Learners to know how to select and use tools and equipment for their intended purpose and how to rectify or report any defects. * Learners to be able to use defect sheets and to know what checks would be made from different organisations. |
| * 1. Organisational procedures to select resources | * Learners to understand the working procedures used to select the most appropriate methods to operate powered units, tools or pedestrian plant machinery and equipment in accordance with written instructions and verbal instructions to meet the contract size/needs. * Learners to be able to identify the relevant operating handbooks for each type of equipment covered, where to locate these and how to source them if not available. * Learners to be given examples of how to raise requisitions – either from their own company or a plant hire company – and how to order resources to complete a specific task using organisational procedures. |
| * 1. Hazards | * Learners to know and be able to identify the hazards associated with operating powered units, tools or pedestrian plant machinery and equipment, the maintenance and replacement of components as well as the correct method of work, whilst working in a construction and civil engineering environment. * Learners to be given examples of poor practices and be able to explain what dangers these pose. Learners to use HSE website for recent issues and any legislation to follow. * Learners to have reinforced on them the importance of pre-start checks and an awareness of the surrounding area when operating equipment. Learners to understand what elements of the risk assessments or safe systems of work will identify best practices. * Learners to discuss and identify hazards, including: * not working to method statements and risk assessments * open excavations * moving plant and equipment * slips, trips and falls * working at height * hand and eye injuries * being hit by falling objects. |
| 1. Understand working to a contract specification | * 1. Methods of work | * Learners to understand the application of knowledge for safe and healthy work practices and the procedures and skills relating to the method, process and area of work. * Learners to be given examples of typical scenarios and, in each case, be able to list what should be prepared first and what PPE is needed for specific items of equipment. * Learners to know how to plan their work efficiently from the given instructions and how to complete the work to the agreed timescales/specifications. Learners to understand what to do if agreed timescales are not possible. * Learners to understand the importance of communication amongst team members and the needs of other occupations working alongside them. * Learners to be given examples of who may be working alongside them and what needs to be implemented, such as designated working areas, site protection measures (e.g. barriers) and ensuring that all team workers have suitable PPE. * Learners to be shown site drawings and specifications to understand the correct methods of selecting the appropriate equipment whilst working in a construction and civil engineering environment. * Learners to establish the setting out details from drawings, specifications and verbal instructions. * Learners to understand how to identify problems and how to report them, having been given examples of who they may need to contact and typical problems encountered. |
| * 1. Tools and equipment | * Learners to understand the importance of maintaining tools and equipment and the operative care associated with hand tools, portable power tools, powered units, machinery and ancillary equipment. Learners to be informed of maintenance schedules and how to determine when tools may no longer be suitable or unsafe. * Learners to understand procedures such as start-up and shut-down checks, calibration and planned maintenance schedules. * Learners to be shown how to maintain common equipment to ensure its correct use and to know how equipment should be cleaned, maintained and safely returned after use. Learners to understand methods of maintaining tools and equipment including checking for accuracy, cleaning equipment and maintenance schedules (in accordance with operating instructions). |
| 1. Comply with the given contract information to carry out the work safely and efficiently to the required specification | * 1. Operate and monitor powered units, tools or pedestrian plant, machinery or equipment to given working instructions, relating to: * continual running * closing down * cleaning | * Learners to be able to demonstrate that they can plan for operating powered units, tools or pedestrian plant machinery and equipment by following the information and guidance given to them by using the relevant documentation. * Learners to be able to produce a method statement and work programme to plan efficiently for the work to be carried out within the agreed timescale. * Learners to be able to identify and extract suitable information from a range of sources to operate powered units, tools or pedestrian plant machinery and equipment, including: * specifications * drawings * operating instructions * checklists * method statements * risk assessments * safe systems of work * manufacturers’ information. * Learners to be required to follow the sector regulations when carrying out this work, to include: * Working at Height Regulations 2005 (WAH) * Manual Handling Operations Regulations 1992 * mobile elevating work platforms (MEWPs) * Provision and Use of Work Equipment Regulations 1998 (PUWER) * Health and Safety at Work etc Act 1974 (HASAWA) * Control of Substances Hazardous to Health Regulations 2002 (COSHH) * Traffic Signs Regulations and General Directions 2016 (TSRGD). |
| * 1. Use and maintain powered units, tools and ancillary equipment | * Learners to be able to identify and use suitable personal protective equipment (PPE) whilst operating powered units, tools or pedestrian plant machinery and equipment. Learners to be shown plant and machinery (either actual, in an operator manual or online) to highlight where this information would be visible. * PPE to include: * safety boots * hard hats * high-visibility jackets * goggles * gloves * dust masks * respiratory equipment * local exhaust ventilation (LEV). * Learners to be able to identify and extract suitable information to ensure equipment is used safely whilst operating powered units, tools or pedestrian plant machinery and auxiliary equipment. * Learners to ensure supplier literature, MEWPs and COSHH are all adhered to. Learners to be given hire company literature typically available when hired. * Learners to attend a site visit, or a mock-up site scenario to be able to identify the signage and barrier protection types required – as listed below – and to place them in the correct location whilst operating powered units, tools or pedestrian plant machinery and equipment. * Barrier protection types include: * fencing * hoardings * sheeting * netting * pedestrian barriers. * Signage types include: * mandatory (gloves, masks, goggles must be worn, high-visibility vests and hard hats must be worn, pedestrians only, sound horn) * warning (slippery surface, corrosive, forklifts and plant operating) * prohibition (not drinking water, no smoking, no entry, scaffold incomplete, do not touch) * traffic signs (notification of works, lane closures, speed restrictions) must conform to Traffic Signs Regulations and General Directions 2016 (TSRGD) in force at the time of the works. * Learners to be able to identify, prepare and operate powered units, tools or pedestrian plant machinery and equipment. * Learners to be able to maintain the equipment in good condition for future use. * Equipment includes: * handheld non-power tools, handheld petrol power tools * electrical tools (saws – circular saw, chop saw, drills, hammers) * battery-operated tools, air-driven tools, plate vibrators * compactor/vibrating plates, pneumatic drills, angle grinders * disc cutters, demolition/breaker hammers, hammer drills * rollers, excavators, loading shovels. |
| * 1. Demonstrate work skills to start, stop, replenish and control the use of powered units, tools or pedestrian plant machinery and equipment | * Learners to be given site-based scenarios to identify and select the correct tools for the designated task. * Learners to be able to start and stop powered units, tools or pedestrian plant machinery and equipment safely in accordance with the manufacturer’s instructions**.** Learners to be able to replenish and control equipment, ensuring there is sufficient supply and that replacement tools, parts and fixtures are available. |
| * 1. Disassemble, clean and return powered units, tools or pedestrian plant, machinery or equipment to a safe operational condition on completion of work | * Learners to be able to wash down equipment using chemicals, store tools and equipment safely and ensure the work area is kept clean and tidy. Learners to understand what issues could arise if this was not done correctly. * Learners to know to place all designated waste into the correct containers. Waste to include: * metal * timber * hardcore * chemicals (fuels and oils). * Learners to be able to ensure that pedestrian plant, machinery, equipment and tools that have defects and require repair or replacement are placed in a designated quarantine area. * Learners to be able to record the defects within a logbook or company documentation. Learners to share completed documents with each other to compare and contrast. |