Unit 334: Set up and use transportable cutting and shaping machines

# Delivery guide

Unit information

This unit is about the safe set up and use of portable power tools used within the construction industry.

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

* How do I set up and safely operate a surface planing machine?
* Can I select appropriate tooling for routing stair strings when using a trenching jig?
* How do I make a saddle jig to produce stair wedges?

Please note that whilst there is alignment between this unit and Progression unit 211, there is additional content within Learning outcome 3, criteria 3.2.

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

* Jones, S., Redfern, S., Fearn, C. (2019) *The City & Guilds*

*Textbook: Site Carpentry and Architectural Joinery for the Level 2 Apprenticeship (6571), Level 2 Technical Certificate (7906) & Level 2 Diploma (6706)*. London: Hodder Education.

ISBN 978-1-5104-5813-0

* Burdfield, M., Jones, S., Redfern, S., Fearn, C. (2020) *The City & Guilds Textbook: Site Carpentry & Architectural Joinery for the Level 3 Apprenticeship (6571), Level 3 Advanced Technical Diploma (7906) & Level 3 Diploma*. London: Hodder Education.

ISBN 978-1-5104-5815-4

Websites

* [BWF | Homepage](https://www.bwf.org.uk/)
* [BWF | Machine Safety Cards](https://www.bwf.org.uk/publications/machine-safety-cards/)
* [HSE | Woodwork resources](https://www.hse.gov.uk/woodworking/publications.htm)
* [HSE | Safe use of woodworking machinery](https://www.hse.gov.uk/pubns/books/l114.htm)
* [HSE | Supervising for safety in woodworking](https://www.hse.gov.uk/pubns/indg440.pdf)

Legislation

* [HSE | Health and Safety at Work etc Act (HASAWA) 1974](https://www.hse.gov.uk/legislation/hswa.htm)
* [HSE | PUWER](https://www.hse.gov.uk/work-equipment-machinery/puwer.htm)
* [HSE | ACOPs](https://www.hse.gov.uk/legislation/legal-status.htm)
* [HSE | RIDDOR](https://www.hse.gov.uk/riddor/)
* [HSE | COSHH](https://www.hse.gov.uk/coshh/)
* [HSE | PPE](https://www.hse.gov.uk/toolbox/ppe.htm)
* [GOV.UK | The Manual Handling Operations Regulations 1992](https://www.legislation.gov.uk/uksi/1992/2793/made)
* [GOV.UK | The Control of Noise at Work Regulations 2005](https://www.legislation.gov.uk/uksi/2005/1643/made#:~:text=SCHEDULE%203%20Revocations%20%20%20%20Regulations%20revoked,2%20Part%20IX%20%202%20more%20rows%20)

| **Learning outcomes** | **Criteria** | **Delivery guidance** |
| --- | --- | --- |
| 1. Understand resource selection | * 1. Characteristics of the resources | * Learners should label diagrams of the main parts of the listed transportable cutting and shaping machines below. * Learners to know the purpose and limitations of each power tool and associated tooling and know how to rectify defects within limits of their responsibility. * Learners can be given one of the listed tools to research. They should find out its purpose and limitations, list the associated tooling connected with its use, then share their findings with their group. * Power tools and tooling to include: * saws: circular, chop (including compound mitre), table jig, alligator, oscillating (multi-tool)   + tooling: negative hook, positive hook, neutral hook, Tungsten Carbide Tipped (TCT), plate blade, High-Speed Steel (HSS), Teeth Per Inch (TPI) * drill (rotary, rotary percussion, drill driver), HSS, TCT, Slotted Drive System (SDS) * planer (handheld) * knives * biscuit jointer * cutters: saw blade * disc cutter: cutting, grinding, metal, stone, and diamond discs * morticer (portable) * augers and chisels * portable surface planer thicknesser * sander (orbital, belt, disc), graded abrasive papers * router (handheld and inverted in a table) * cutter types: fluted, fixed pin, ball race, profile, moulding, HSS, TCT, Polycrystalline Diamond Cutter (PCD) * laminate trimmer * cutters: flute, ball race. * Learners can organise in chart form which power supply is most commonly associated with the above listed machines.   Types of power supply used for the machines above including  110 V, 230 V and pneumatic. |
| * 1. Use of resources | * Learners should carry out a number of naturally occurring set exercises to use the transportable cutting and shaping machines listed in 1.1. * Learners to understand how and to whom to report problems or defects with transportable cutting and shaping machines. |
| * 1. Organisational procedures to select resources | * Learners to know how to access or requisition machines within an organisation. * Learners to understand their suitability for the task. |
| * 1. Hazards | * Learners to produce a table showing the risks and hazards associated with the machinery listed in 1.1 to include: * common hazards and risks associated with using cutting machines (projectiles, cutter contact, noise, dust, vibration, electrocution, slips, trips, falls and entanglement, orifical bodily entry, skin penetration (pneumatic supply), kickback, stroboscopic effect) * how the above can be minimised or overcome * how to access information for their safe use including manufacturers’ instructions, Health and Safety Executive (HSE) website, Approved Codes of Practice (ACOPs), appropriate legislation i.e., Provision and Use of Work Equipment Regulations (PUWER). |
| 1. Understand working to a contract specification | * 1. Methods of work | Learners should be set real-world exercises to select and use transportable tools to shape timber and panel products, taking into account (each should be demonstrated first):   * reference marks, defects including twist, bow, cupping, sloping grain, shaped work and size/weight of component * work piece support equipment i.e., roller tables, trestles, operative * using jigs and aids for safe working and accurately producing multiple components (wedged jigs, glue block jigs, saddle boards, jigs for securing curved components whilst being machined on a spindle moulder, push blocks, push sticks, feather board) * good housekeeping and working in accordance with safety guidance * providing temporary storage of stacked components during machining operations * how to store finished component to prevent damage. * Learners to know how each machine is used to cut, profile and shape components for manufacturing joinery products. |
| * 1. Tools and equipment | * Learners to shown how to do the following, and then set real-world exercises to: * select appropriate power tools, tooling and equipment for the chosen task * set up power tools and equipment and change tooling for the chosen task * carry out pre-start safety checks * maintain and store power tools, tooling, and equipment * set up and maintain Local Exhaust Ventilation (LEV) systems * select the appropriate cutters and collars for proprietary router jigs including stair trenching, hinge and housing jigs. |
| 1. Comply with the given contract information to carry out the work safely and efficiently to the required specification | * 1. Demonstrate work skills to measure, mark out and secure materials for power tool operations | * Learners to be set tasks to make the most of using the machinery listed to expedite the work most efficiently: * saws (circular (handheld, including track saw), chop, mitre (compound mitre saw), bench or table, jig, reciprocating (alligator), oscillating (multi-tool)) * drills * planer (handheld and portable surface and thicknesser) * biscuit jointer * disc cutter * morticer (portable) * thicknesser (bench-top) * sanders (orbital and belt) * router (including laminate trimmer). * Learners to be able to safely set up and use proprietary router jigs including stair trenching, hinge and housing jigs. * Learners should set up and use proprietary router jigs including stair trenching, hinge and housing jigs. In addition, they should be shown how to make bespoke jigs to carry out joinery tasks. * Learners should select, safely set up, use and maintain the different types of transportable power tools and associated equipment when undertaking their set tasks. |
| * 1. Set up, use, and maintain power tools including using at least three of the following cutting machines to given working instructions: * saw (at least three from the following: circular, chop, mitre, bench or table, jig, reciprocating, oscillating) * drill * planer * biscuit jointer * disc cutter * morticer   and set up and use at least two of the following powered shaping machines to given working instructions:   * thicknesser * sander (orbital, belt, disc) * router * laminate trimmer |