Unit 211: 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?

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

Websites

* [Cadw (gov.wales) | Homepage](https://cadw.gov.wales/)
* [BWF | Homepage](https://www.bwf.org.uk/)

Legislation

* Approved Codes of Practice (ACOPs)
* [GOV.UK (www.gov.uk) | Building regulations approval](https://www.gov.uk/building-regulations-approval)
* [GOV.UK (www.gov.uk) | The Personal Protective Equipment at Work Regulations 1992](https://www.legislation.gov.uk/uksi/1992/2966/contents/made#:~:text=The%20Personal%20Protective%20Equipment%20at%20Work%20Regulations%201992,9%20Information%2C%20instruction%20and%20training%20More%20items...%20)
* [GOV.UK (www.gov.uk) | The Manual Handling Operations Regulations 1992](https://www.legislation.gov.uk/uksi/1992/2793/made)
* [GOV.UK (www.gov.uk) | The Control of Noise at Work Regulations 2005](https://www.legislation.gov.uk/uksi/2005/1643/made)
* [HSE | Health and safety in the woodworking industry](https://www.hse.gov.uk/woodworking/index.htm)
* [HSE | Woodworking Publications - Free leaflets](https://www.hse.gov.uk/pubns/woodindx.htm)
* [HSE | Safe use of woodworking machinery](https://www.hse.gov.uk/pubns/books/l114.htm)
* [HSE | Health and Safety at Work Act 1974 explained](https://www.hse-network.com/health-and-safety-at-work-act-1974-explained)
* [HSE | Construction Design and Management Regulations 2015](https://www.hse.gov.uk/construction/cdm/2015/index.htm)
* [HSE | PUWER](https://www.hse.gov.uk/work-equipment-machinery/puwer.htm)
* [HSE | RIDDOR](https://www.hse.gov.uk/riddor/)
* [HSE | COSHH](https://www.hse.gov.uk/coshh/)
* [HSE | LOLER](https://www.hse.gov.uk/work-equipment-machinery/loler.htm)

Suggested resources (continued)

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

| **Learning outcomes** | **Criteria** | **Delivery guidance** |
| --- | --- | --- |
| 1. Understand resource selection | * 1. Characteristics of the resources | * Learners to be able to identify the main parts of a variety of transportable cutting and shaping machines. * Learners to know the purpose and limitations of each power tool and its associated tooling and to know how to rectify defects within the limits of their responsibility. * Learners to know about transportable cutting and shaping machines, including: * 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, Teeth Per Inch (TPI) * drill (rotary, rotary percussion, drill driver); High-Speed Steel (HSS), TCT, Slotted Drive Shaft (SDS) * planer (handheld) and planing irons/knives * biscuit jointer, saw blade and cutters (for router) * morticer (including 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, Poly Crystalline Diamond (PCD) * laminate trimmer, cutters: flute, ball race, pin guided.   Power supplies   * Learners to know about types of power supply used for the machines above, to include 110v, 230v and pneumatic and battery. |
| * 1. Use of resources | * Learners to know: * how to use the transportable cutting and shaping machines listed in 1.1. * when 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 and understand their suitability for the task. |
| * 1. Hazards | * Learners to know the common hazards and risks associated with using cutting machines (projectiles, cutter contact, noise, dust, vibration, electrocution, slips, trips, falls and entanglement, orificial bodily entry, skin penetration (pneumatic supply)) and how these can be minimised or overcome. * Learners to know how to access information for their safe use including manufacturers’ instructions, Approved Codes of Practice (ACOPs), appropriate legislation i.e., Provision and Use of Work Equipment Regulations (PUWER), abrasive wheels. |
| 1. Understand working to a contract specification | * 1. Methods of work | * Learners to know how to select and use transportable tools to shape timber and panel products taking into account: * how to use reference marks * the types of defects that can have a detrimental effect on the machined product, including twist, bow, cupping, sloping grain * how shaped work and the size/weight of component affects machining operations * how to use work piece support equipment i.e., roller tables, trestles, operative * how to use jigs and aids for safe working and how to accurately produce multiple components (wedged jigs, glue block jigs, saddle boards, push blocks, push sticks, feather board) * how to practice good housekeeping and to work in accordance with safety guidance * how to provide temporary storage of stacked components during machining operations * how to store finished component to prevent damage. |
| * 1. Tools and equipment | * Learners to be able to select appropriate power tools, tooling and equipment for the chosen task. * Learners to be able to set up power tools and equipment, and change tooling for the chosen task. * Learners to know how to carry out pre-start safety checks. * Learners to know how to maintain and store power tools, tooling and equipment. * Learners to know how to set up and maintain Local Exhaust Ventilation (LEV) systems. * Learners to know how to select the appropriate cutters and collars for proprietary router jigs to include 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 understand measuring, marking out, positioning, feeding and supporting materials for machine operations. * Learners to know how to safely set up, use and maintain different types of hand and power tools when manufacturing joinery products (saw, drill, planer, biscuit jointer, disc cutter, morticer, thicknesser, sander, router, laminate trimmer). * Learners to know how to safely set up and use proprietary router jigs to include stair trenching, hinge and housing jigs. * Learners to know how to isolate woodworking machinery and leave in a safe condition. |
| * 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 (hand held and portable surface and thicknesser) * 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 |