Unit 336: 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 know which saw blade to use?
* What regulations cover the use of power tools?
* What does HSS, TCT and SDS stand for?
* How do I know what voltage a power tool is?
* How do I check a power tool is safe to use?
* When would I use a router jig?

Please note that whilst there is alignment between this unit and Progression unit 217, 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 | Publications: Machine Safety Cards](https://www.bwf.org.uk/publications/machine-safety-cards/)

Legislation

* [HSE | Woodworking: Woodwork Resources](https://www.hse.gov.uk/woodworking/publications.htm)
* [HSE | Safe use of woodworking machinery: PUWER](https://www.hse.gov.uk/pubns/books/l114.htm)
* [HSE | Publications: Supervising for safety in woodworking](https://www.hse.gov.uk/pubns/indg440.pdf)
* [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/regulation/6)

| **Learning outcomes** | **Criteria** | **Delivery guidance** |
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| 1. Understand resource selection | * 1. Characteristics of the resources | * Learners to label diagrams of the main parts of the transportable cutting and shaping machines listed below. * Learners to be given one of the listed tools to research its purpose and limitations and list the associated tooling connected with its use, then share their findings with their group. * Learners to be shown how to rectify routine defects on transportable cutting and shaping machines, within the limits of their responsibility, including on: * saws: circular, chop (including compound mitre), table jig, alligator, oscillating (multi-tool) saw blades * tooling: negative, positive and neutral hook, tungsten carbide tips (TCT), plate blade (high-speed steel, or HSS), teeth per inch (TPI) * drills: rotary, rotary percussion, drill driver, HSS, TCT, slotted drive system (SDS) * planers (handheld) * knives * biscuit jointers * cutters: saw blade * disc cutters: cutting, grinding, metal, stone and diamond discs * morticers (portable) * augers and chisels * portable surface planer thicknessers * sanders: orbital, belt, disc, graded abrasive papers * routers: handheld and inverted in a table * cutter types: fluted, fixed pin, ball race, profile, moulding, HSS, TCT, polycrystalline diamond cutter (PCD) * laminate trimmers * cutters: flute, ball race. * Learners to 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 to carry out a number of real-world exercises to use the transportable cutting and shaping machines listed in 1.1. and 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 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: * hazards and risks associated with using cutting machines (projectiles, cutter contact, noise, dust, vibration, electrocution, slips, trips, falls and entanglement, orifical or bodily entry, skin penetration (air/pneumatic supply), kickback, stroboscopic effect) * how the above hazards and risks can be minimised or overcome * how to access information for the safe use of cutting machines including manufacturers’ instructions, Health and Safety Executive (HSE) website, Approved Codes of Practice, appropriate legislation (i.e. Provision and Use of Work Equipment Regulations or PUWER). |
| 1. Understand working to a contract specification | * 1. Methods of work | * Learners to be set real-world exercises to select and use transportable tools to shape timber and panel products, taking into account the following (each of which should be demonstrated to them first): * reference marks, defects such as twist, bow, cupping, sloping grain, shaped work, and size/weight of component * workpiece support equipment, i.e., roller tables, trestles * using jigs and aids for safe working and accurately producing multiple components (wedged jigs, glue block jigs, saddle boards, jigs, push blocks, push sticks, feather boards) * good housekeeping and working in accordance with safety guidance * providing temporary storage of stacked components during machining operations * how to store finished components to prevent damage * how each machine is used to cut, profile and shape components for producing site carpentry components. |
| * 1. Tools and equipment | * Learners to be set real-world exercises covering the following tasks (each of which should be demonstrated to them first): * 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, hinges 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 that make the most of using the machinery listed to expedite the work most efficiently when producing site carpentry components, including: * saws: circular (handheld, including track saw), chop, mitre (compound mitre saw), bench or table, jig, reciprocating (alligator), oscillating (multi-tool) * drills * planers (handheld and portable surface and thicknesser) * biscuit jointers * disc cutters * morticers (portable) * thicknessers (bench-top) * sanders (orbital and belt) * routers (including laminate trimmer). * Learners to set up and use proprietary router jigs including lock, hinge and worktop jigs. In addition, learners to be shown how to make bespoke jigs to carry out carpentry tasks. * Learners to 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 powered 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 |