



Forename: _____ Surname: _____

School / College / Institution: _____

Course date: _____

These Training and Accreditation Guidelines are based on, and should be used in conjunction with the following essential publications:

- Health and Safety Training Standards in Design and Technology: D&T Association.
- BS 4163:2021+A1:2022 Health and safety for design and technology in educational and similar establishments – Code of practice.
- Model Risk Assessments for D&T in Secondary Schools and Colleges: CLEAPSS.

Summary Overview**Please tick the boxes below to confirm the sections that you have completed in this document:**

1. Requirements relating to power hacksaws and metal-cutting bandsaws.	☐
2. Practical Assessment – skills using power hacksaws and metal-cutting bandsaws.	☐

The RDTHSC/Trainer will sign and date this form on completion.

RDTHSC/Trainer signature: _____

Date: _____

Delegate signature: _____

Date: _____

Please tick the individual requirements listed in the following sections to confirm your knowledge, skills and understanding, and that you have completed the Practical Assessments:

Assessment Task 1 Requirements Relating to <u>Power Hacksaws & Metal-cutting Bandsaws</u>– what you should know and understand:		
Hazards	Safe system of working (control measures)	
Entrapment/entanglement.	- Long hair and loose clothing should be secured. - Dangling jewellery should be removed. - Gloves or bandages should not be worn. - An apron or work coat should be worn. - Fixed guards (removable only with a tool) or interlocked guards must enclose drive pulleys, belts/and gears. - Guards should prevent access to dangerous in-running nips on the pulleys and gearwheels.	☐
Ejection and blade in motion.	- Workpieces must be securely held in the vice and properly supported (on both sides of the cut if required). - Long, heavy bars should be properly supported to prevent sawn parts from falling or tipping when the vice is unclamped. - On reciprocating power hacksaws, hands should be kept away from the saw arm and drive crank while these are in motion. - The saw should not be manually assisted to increase the rate of cutting. - On bandsaws, blade guides should be correctly adjusted for the size of the material being cut and for the size of the blade itself. - Suitable eye protection should be available near the machine. This should conform to EN ISO 16321:2022 'E' rating. (Existing eye protection BS EN 166:2002 1B can continue in use until 2029). - Eye protection stickers should be visible on the machine. - Eye protection should be worn at all times.	☐
Electric shock/inadvertent starting of the machine.	The machine must have: - A means of electrical isolation. - Fused switch disconnecter. - Starter with overload protection and no-volt release. - Armoured cable to isolator. - A conveniently positioned emergency stop switch or other control device that can quickly stop the machine in an emergency. - An auto finished cut knock-off switch, checked regularly to ensure it is in good order. - The machines should be electrically isolated before any internal mechanisms are adjusted.	☐
Blunt/damaged blades.	Badly worn or damaged blades should not be used.	☐
Cutting fluids, oil and grease.	- Coolant nozzles should remain in position during machining. - Care should be taken not to spill coolants. - Contact with skin should be kept to a minimum. - Hands should be protected with barrier cream before handling materials and washed thoroughly after use.	☐
Manual handling of stock.	- Manual handling tasks associated with moving bar stock should be assessed and measures implemented, as appropriate, to minimise risks (e.g. team lifts, correct lifting techniques, care of passers by). - Leather gloves may be used to remove hot/sharp material from the machine once it has stopped completely.	☐
Tripping/slipping.	- Measures should be taken to prevent persons tripping over long bars being sawn, e.g. by use of a warning sign when bar stock is protruding from the machine vice. - Spilled grease or coolant should be wiped up.	☐

Lack of space around the machine.	- Sufficient space around the machine to prevent the operator being pushed by passers-by. - Reciprocating power hacksaw machines require a space of at least 500mm between the saw arm at the extreme ends of its travel and any fixed object.	☐
Flooring.	- Floor surface should not be slippery and should be kept free of loose items. - Suitable footwear should be worn. - See BS 4163:2021+A1:2022 Section 6 Working Area Environment.	☐
Lighting.	- Adequate lighting should be provided. - See BS 4163:2021+A1:2022 Section 6 Working Area Environment.	☐

Teaching Strategies

- It is essential that a risk assessment is completed to cover the use of this machine by learners and colleagues. This will normally involve the adoption and adaptation of model risk assessments, e.g. BS 4163:2021+A1:2022.
- It is essential that a regular maintenance programme is put into operation and that a maintenance log is kept. This should involve daily, weekly and termly checks, covering general maintenance and identifying any faults that require repairs.
- It is essential that a regular maintenance programme is put into operation and that a maintenance log is kept. This should involve daily, weekly and termly checks, covering general maintenance and identifying any faults that require repairs.
- Learners should be aware of the hazards associated with the equipment and the precautions that should be taken during use.
- Before using the equipment, learners should be trained and assessed as competent, and a record of their training should be kept.
- Learners should be supervised at all times by a trained, competent person.
- Sawing machine health and safety rules should be available and observed.
- Demonstration of power hacksaw and metal bandsaw machines to learners should include:
 - Judgement on which, if any, learners can use machines with supervision.
 - The position of all controls, i.e. workshop emergency stop buttons, isolator switch, start button and emergency foot stop button on machine.
 - The use of eye protection, an apron or work coat and substantial footwear.
 - The application of barrier cream when required.
 - How to check the condition of the saw blade.
 - Safe lifting and handling of stock material.
 - Checking the suitability (type, size and thickness) of metal for cutting.
 - Securing material into cutting position in the vice and supporting long and short stock material.
 - Correct coolant nozzle positioning and flow rate.
 - Setting the hydraulic dashpot or damper arm to control blade pressure while cutting.
 - How to lower/lift sawing arm safely and correctly.
 - Ensuring that operator is in a safe position with hands clear of machine before starting and while cutting is in progress.
 - Ensuring that the saw is not manually assisted to increase the rate of cutting.
 - Ensuring that when cutting is complete, learners turn off the machine and never walk away until the machine has come to a complete stop.
 - Highlight need for safe handling of hot/sharp cut material.

Assessment Task 2 Practical Assessment –

what you should be able to demonstrate when using Power Hacksaws & Metal-cutting Bandsaws:



Demonstrate practical familiarity with:

- Procedure for isolating the machine, stop/start controls, and use of emergency stops.
- Checking that machine guards are properly positioned and secure.

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Demonstrate practical familiarity with:

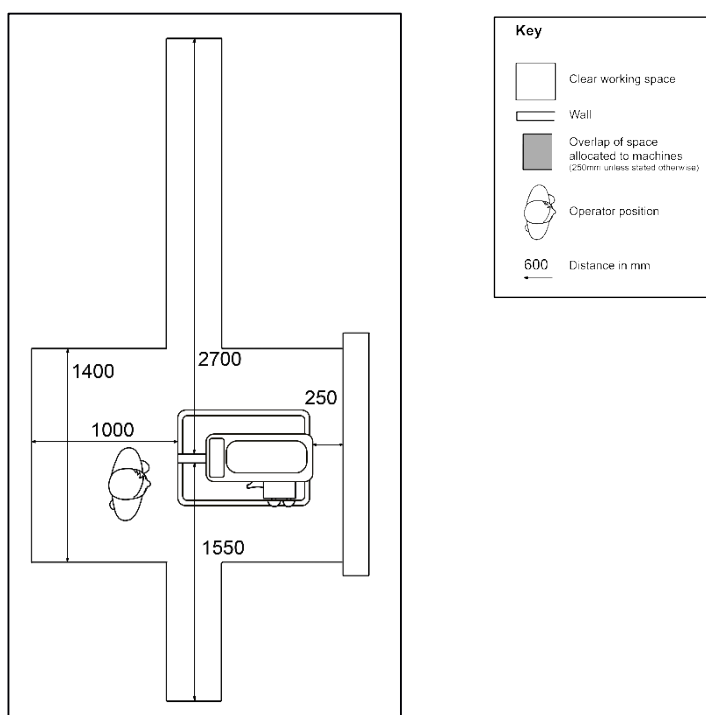
- Use of correct PPE and skin protection.
- How to check blades to identify excessive wear or damage.
- Selection and fitting of a blade to the correct specification for the material to be cut, i.e. length, TPI etc.
- How to set the blade guides on metal bandsaws.

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• How to check and adjust the hydraulic dashpot or damper arm. • Checking the safe and effective operation of the vice and that the material supports are level and properly positioned. • Safe handling and storage of stock material and cut pieces. • Adjustment of correct coolant nozzle positioning and flow rate, only when the machine is stopped. • Appropriate metalworking fluids, i.e. checking use-by dates, supplier's instructions.	
Undertake a range of metal cutting operations commonly undertaken in school workshops, to demonstrate correct practice, i.e.: • Cut flat and square/rectangular Black MS /BMS to a given size. • Cut round brass or aluminium alloy to a given size. • Set up (not cut) non-ferrous casting ingot.	☐
Discuss routine maintenance requirements, i.e.: • The requirements recommended by the manufacturer. • The identification of defects and reporting procedures.	☐

Supplementary materials:

The space-allocation diagrams indicate the clear working space required on either side of the machine. Where machines are next to another, dimensions can be overlapped, as indicated by the shaded zone on the diagram. Distances in front of the machine are assumed to adjoin circulation routes. A 200mm space has been allowed at the back of the machine for cleaning and maintenance.



Power Hacksaw

The following references provide additional notes and guidance to support training sessions:

<https://www.hse.gov.uk/metalworking/>

<https://www.axminstertools.com/machinery/saws/bandsaws/metal-cutting-bandsaws>