



Rethinking safety through
INCLUSION
+
WELLBEING

HS+E INFORMATION

SUPPLEMENTARY MATERIAL AND GUIDANCE

19/07/2023

TOOLS (HAND, POWER + EXPLOSIVE)

PURPOSE AND SCOPE

This HS+E information provides additional direction and guidance on the use of hand tools, power tools, explosive powered tools, compressed air and nuclear density meters. The principles of this information document shall be applied. However, the practical application in the field may differ according to circumstance providing the standards are not lowered or safe outcomes are potentially compromised.

1.0 HAND TOOLS

- Hand tools shall be used for their intended purpose
- Use the correct tool, size and type for the job
- No homemade tools are to be used on the job
- Inspect tools regularly for signs of damage or wear. Hammers with loose heads or damaged shafts, mushroom-headed chisels, hammers and drifts, sprung spanners and bent bars shall be repaired or replaced. Check for wear of jaws and pivot points.
- Ensure any worn or damaged tools are withdrawn from service and replaced
- When using hand tools, watch out for persons working nearby. Don't overcrowd a work area.
- Never use attachments for extra leverage, unless specifically designed for that use
- Stow tools securely when not in use. Don't leave hand tools lying around to cause a hazard or become damaged.
- Take particular care when stowing sharp edged tools to prevent damage and personal injury
- Tools shall be secured by wrist straps or lanyard where there is a risk of falling from heights

2.0 POWER TOOLS

2.1 PURCHASING OF POWER TOOLS

- All new power tools purchased shall be suitable for the intended task, and shall comply with the relevant Australian Standards and Work Health Safety Regulations
- Purchasing specifications shall nominate required safety features, as applicable to the intended task(s)
- All power tools shall be identified and registered. The register shall be used for the hazard identification and risk assessment process, and for scheduled maintenance and inspections.

2.2 GENERAL REQUIREMENTS

- Persons operating such equipment must ensure it is used in the correct manner and only for the purpose for which it is intended
- Personnel operating power tools shall use the appropriate Personal Protective Equipment. All persons operating power tools shall be adequately trained in the correct use of the tools and where required qualified and certificated.
- Electrical power tools are to be tested and tagged by a licensed electrician at intervals as required by legislation. Untagged tools are not to be used.
- Electrical power tools are not to be used in wet or damp conditions
- An inspection and maintenance program are to be in place for power tools



- Power tools are to be used for intended purposes
- Electrical power tools are to be earthed when in use except for double insulated tools
- Residual Current Device (RCD) is to be fitted at electrical supply source
- Power tools are not to be used unless guards and other protective devices are in place. Guards are not to be removed or locked open.
- Before use check for damage to switches, connections, leads, guards etc. Do not use faulty equipment.
- Power tools are to be stored in clean, dry conditions
- Defective electrical equipment shall be removed from site or repaired as soon as practicable. Whilst waiting for removal defective equipment must be tagged "Out of Service".
- Operating switches or levers requiring constant pressure for operation are not to be tampered with to make the tool operate without constant hand or finger pressure
- Always switch off power and remove plug before making any adjustments or changing attachments
- Noise and dust control must be managed
- Ensure there is suitable training and competency verification in the correct use of the tools and where required qualified and certificated
- Provide adequate lighting
- Power tools shall not be modified unless in accordance with manufacturers recommendations and approval given by the manufacturer
- High impact resistant clear face shield plus medium impact safety glasses/goggles shall be worn when operating high velocity power tools
- Clamp everything down, if drilling or cutting material do not rely on hand pressure alone to keep the work piece from moving

2.3 CONTROL OF VIBRATION

- The vibration risk associated with hand-tools shall be identified and assessed. The assessment shall take into consideration at least the following:
 - The vibration level
 - The frequency, direction and acceleration of the source of vibration
 - The lengths of time workers are exposed to the vibration
 - Control measures to reduce exposure to hand-arm vibration may involve finding alternative ways to do the work that eliminates the need to use vibrating equipment or to purchase tools that produce less vibration. Control measures to manage vibration may also include:
 - Speed adjustment to reduce vibration.
 - Internal damping.
 - Vibration-isolated handles (e.g. rubber or foam)
 - Automatic shut-off when the tool is not in operation
 - Rotation of workers
- Gloves should not be relied upon to provide protection from vibration. They only provide protection from cold temperatures, water and cuts and abrasions. The use of thick gloves may worsen exposure by workers applying increased grip forces to the tool and increase transmitted vibration.



2.4 ANGLE GRINDERS

- Angle grinders shall only be used when the work cannot be performed by a safer method
- The use of 9" (230mm) grinders is not allowed
- The use of 7" (175mm) grinders is only allowed when documented by risk assessment as the safest method and approved by the Project Leader and Regional Safety Manager
- Deadman switch fitted and operational (Not capable of being locked in the ON position)
- Guards and handles must be in place and secure
- Always check the Angle Grinder for defects, damage or missing components (i.e. guard missing), before using it
- If found to be unsafe, place an "Out of Service" tag on the angle grinder and report it to a Supervisor immediately
- Smaller work pieces that may move while grinding, must be held securely by mechanical means
- A Hot Work Permit is required for any grinding work not done in a Boilermaker/Fitters workshop. i.e.
 - In a Confined Space
 - Near Hazardous or Flammable Materials
 - Wherever there is potential of fire or explosion as identified by a Risk Assessment
- Make sure the grinding area is free from combustible or flammable materials
- A fire extinguisher shall be in close proximity of the grinding activity
- Welding face shields shall not be worn when grinding, a high impact resistant clear face shield plus medium impact safety glasses/goggles shall be worn
- Hearing Protection Equipment to be worn when using Angle Grinder
- The Angle Grinder must have a current electrical test tag and an RCD (Residual Current Device) used
- Cutting wheels or discs shall not be used for grinding work, and grinding wheels shall not be used for cutting jobs
- Wheels designed for a particular revolution speed shall NOT be used on machines of different speeds
- Wheels shall be used only for the specific material and purpose for which they are designed
- Worn or damaged wheels shall be discarded and NEVER used on smaller machines
- Guards and handles are fitted and secure
- Always make sure the Angle Grinder has been disconnected from its power source before changing accessories or servicing it
- Do not use damaged or second hand discs

2.5 CHAINSAWS

- Chainsaws shall not be used on LORAC projects until written permission has been obtained by the Project Leader and the following has been satisfied:
 - No alternative method can be found to perform the work other than using a chainsaw
 - A risk assessment has been completed and approved by the Project Leader and/or Safety Advisor
 - All personnel involved in the task are to be experienced in the use of chainsaws, have undergone training with a competent person and verification of competency in the use of a chainsaw in the application proposed



- A minimum of 2 meters exclusion zone is applied to the area of chainsaw operation
- All required PPE is provided and worn
- Check the chainsaw thoroughly before every use
- Make sure the bar, chain and sprocket are in top condition
- Check the bar oil is flowing and the chain brake is working
- Sharpen the chainsaw and top up with bar oil each time you stop to re-fill with fuel
- Never use saw to cut anything above shoulder height
- Carry a chainsaw with motor off and saw blade pointing to the rear
- Keep other people away from the working area, barricade and sign where required
- The chainsaw is to cut timber only
- Avoid using a chainsaw in wet or windy conditions or in poor light
- Wait for the motor to cool before refuelling
- When using chainsaws, the following personal protective equipment shall be worn:
 - Medium impact safety glasses
 - Full face mesh face shield
 - Full length chaps
 - Long sleeved shirt
 - Long Trousers
 - Kevlar Gloves (minimum requirement, riggers gloves not allowed)

3.0 EXPLOSIVE POWERED TOOLS

An explosive-powered tool (EPT) is defined as a tool or device whereby a stud, pin, dowel, screw, rivet, spike or other object is driven against, into or through a substance by means of an explosive. It does not include a nail gun, by definition, as an explosive charge is not used. The use of EPTs shall be carried out in accordance with AS1873 and any relevant State and Territory Acts and Regulations.

- An inspection of the work area shall be conducted prior to commencement of work
- Task requirements assessed to determine access and appropriate fastener and charge to suit material and base to be fixed
- Explosive power tools, attachment and equipment selected consistent with requirements of job, checked for serviceability and any faults reported to supervisor
- Appropriate personal protective equipment selected, correctly fitted and used
- Safety hazards identified and correct procedures used to minimise risk to self and others
- EPT operations carried out in accordance with manufacturer's recommendations
- A risk assessment must be carried out prior to any explosive power tool being used. The risk assessment is to address but is not limited to:
 - **Flying Particles** – This is the major hazard. On impact, materials may break up, blow apart, or spall off. This often happens when fasteners are fired too close to a corner of masonry or concrete or when they strike materials such as glazed tile, hollow tile, or thin marble tile.
 - **Ricochets** – These usually result when the tool is not held at right angles to the base material, or the fastener hits a particularly hard material such as stone or hardened steel. Always check the base material to ensure that it can safely accept the fastening device.



- **Noise** – Powder-actuated tools create an extreme pulse of sound when fired. Operators and others in the area shall wear hearing protection – especially when the tool is operated in a confined space.
 - **Sprains and Strains** – These injuries usually result from using the tool repeatedly in awkward, cramped, or unbalanced positions. Operators should try to work from a balanced position on a solid surface.
 - **Explosions** – There is always the risk of explosion or fire when the tools are used in atmospheres contaminated by flammable vapour, mist, or dust. The work area must be ventilated – mechanically if necessary.
 - **Blow-Through** – When the base material does not offer enough resistance, the fastener may pass completely through and fly out the other side. This is particularly dangerous when fasteners penetrate walls, floors, or ceilings where others may be working. If necessary, areas behind, around, and under material should be kept clear of people.
- Where practical, barricade off the area in which it is intended to use explosive powered tools
 - Use the correct strength charge for the specific task. Always use the weakest charge first to test the strength of the charge needed for the job.
 - Do not leave explosive charges lying around at any time
 - EPTs should only be loaded at the place it is to be used and when it is ready for immediate use
 - The EPT operator must wear approved eye (AS1337) and ear protection (AS1270)
 - Never use an EPT where there is flammable gas or vapour, in compressed air, or in extreme heat, as the charge may explode
 - For the safety of others the EPT operator must check the area around and behind the firing area and clear the surface of all loose particles before firing. Alternatively, a 'spotter' may be engaged to keep persons at least six metres clear of the area.
 - The EPT operator must call 'fire' three seconds before firing
 - When firing, hold the EPT perpendicular to the work surface, never at an angle
 - Erect sufficient and approved warning EPT signs (black wording on yellow background and at least 500 mm by 300 mm) in appropriate places, where other people can see them

3.1 COMPETENCY

- EPT Operators shall be trained and verified as competent consistent with CPCCCM2007A - Use explosive power tools (formerly BCGCM2007B)

4.0 COMPRESSED AIR - UTILITY SERVICES

- Compressed air is capable of eye penetration, rupturing eardrums and entering the blood stream causing extreme pain and possible death
- The following safety devices shall be fitted to tools and equipment and be operational before use as per manufacturer's specifications:
 - Flow control valves shall be fitted on supply lines
 - Approved safety clips fitted to all joins & couplings
 - Safety chains used if fitted
 - Ensure hoses are correctly connected and are not crimped, tied or damaged. Hose connections to be tightened as necessary.
 - Check quick release couplings to prevent separating under pressure
- Servicing of equipment shall be carried out as per manufacturer's specifications and records maintained
- The distance between the compressor and the workface shall be minimised (by moving the compressor) to avoid delays in switching off the compressor in the event of an emergency



- Air hoses to be protected against crossing vehicular and pedestrian traffic
- Do not use any pneumatic tool that has a faulty operating valve or governor
- Check that the exhaust air ducts on the tools are clean and that the casing is not damaged
- Where motorised compressor are to be used near excavations, pits or confined spaces a risk assessment regarding the accumulation of exhaust fumes in work areas must be performed and any required control measure to be put in place prior to work commencing

5.0 NUCLEAR DENSITY METERS

- Nuclear density meters are a device used to determine compaction of material used in construction of embankments and pavements. The devices are controlled through legislation.
- Where it is a requirement to use nuclear density meters on a project, contract out the material and product testing requirements to a NATA registered laboratory. LORAC does not take on an inspector/regulator role with respect to testing methods and equipment/devices used for testing.
- The contractor performing the testing must have:
 - A licence for the devices which is described as 'Certificate of Registration of premises in which radioactive substances are used or manufactured'
 - Procedures that cover (as a minimum) storage of the nuclear device, use of the device and any precautions, signage, operational checks for emission levels and personal monitoring
- Include a purpose clause in the Contract document outlining requirements to comply with legislation
- Conduct an audit of the Contractor's implementation of controls and premises (if established on site) using the Nuclear Device Audit Form
- The contractor's radiation officer should conduct periodic audits of their sites to determine compliance with procedures
- Conforms to ARPANSA Code of Practice and Safety Guide for Portable Density/Moisture Gauges Containing Radioactive Sources

6.0 REGULATIONS, CODES AND STANDARDS

- Work Health & Safety Regulation 2011 (QLD, ACT), 2012 (SA) and 2017 (NSW, NT) and 2022 (WA); Chapter 5 Plant & Structures, General duties for plant and structures
- Occupational Health and Safety Regulations 2017 (Victoria) Part 3.5—Plant, 3.5.1 (i)
- AS 1873 Power-actuated hand-held fastening tools
- AS1337 Eye protectors
- AS1270 Hearing Protectors
- AS 1788 Abrasive Wheels
- AS 3535 Acoustics
- AS 3160 Approval & test specification – hand held portable electrical tools
- AS 2726 Chainsaws
- AS 1788 Design construction and safeguarding
- AS 60745 Hand held motor operated electric tools
- AS 4233 High pressure water jetting systems
- AS 2397 Safe use of lasers
- AS 2211.1 Safety of Laser Products; Equipment classification, requirements and user's guide
- AS 2397 Safe use of Lasers in the building and construction Industry
- AS 2763 Vibration & shock