

Hand & Power Tools Procedure

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Revision History

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1.0 This Document

1.1 Purpose

The purpose of this procedure is to minimise the risk of impact or injury resulting from hand and power tool usage, As Far As Reasonably Practicable (AFARP). Correct use of the procedure will ensure that adequate controls are in place before carrying out activities involving hazardous hand and power tool, and including lifting, rigging and slinging equipment.

1.2 Scope

This procedure applies to any personnel engaged to work within any worksite managed by Woolnorth Renewables (WNR) and shall be used if an activity involves hand and power tools. Such tools range from unpowered hand operated equipment including wrenches, podgers and flogging spanners, to electric, pneumatic, hydraulic and fuel powered equipment, and includes specific sections on the more common engineering controls such as safety switches and guarding.

2.0 Hand and Power Tools

2.1 General

All hand and power tools must be unmodified as originally supplied from the manufacturer. All hand and portable power tools must be inspected by the user before use, maintained in a safe condition and used in a safe manner. On this basis, all hand and power tools must be maintained according to the manufacturer's requirements (refer to operator's manual) and used only for their intended use and purpose. Tools found to be in an unserviceable condition must be tagged with a 'hazardous or unusual condition' tag until repaired by a competent person or disposed of. As a minimum, a Take 5 should be used to identify the risks associated with the use of hand and power tools, which may lead to additional risk assessment steps being required (e.g. JHA and SWMS). The tool's usage instructions should be considered in this process, which may result in the instructions being appended to the risk assessment documents for a particular task.

2.2 Guarding

When power operated tools/equipment are designed to accommodate guards, they must be equipped with such guards when in use. A manufacturer's designed guard must not be modified or repositioned, unless the guard is designed to be repositioned (e.g. an angle grinder guard) and it must be used according to the manufacturer's instructions.

Belts, gears, shafts, pulleys, sprockets, spindles, drums, fly wheels, chains, or other reciprocating, rotating or moving parts of equipment must be guarded if such parts are exposed to contact by workers or otherwise create a hazard.

One or more methods of guarding must be provided to protect the operator and other workers in the operational area from hazards such as those created by point of operation, in-running nip points, rotating parts, flying chips, and sparks. Examples of guarding methods are barrier guards, hand release tripping devices, electronic safety devices and interlocks.

Point of operation is the area on a tool where work is actually performed on the material being processed. The point of operation of tools whose operation exposes a worker to injury must be guarded. The guarding device must be in conformity with any appropriate Australian Standards or, in the absence of specific standards, must be so designed and constructed as to prevent the operator from having any part of their body in the danger zone during the operating cycle.

Special hand tools for placing and removing material must be such as to permit easy handling of material without the operator placing a hand in the danger zone. Such tools must not be in lieu of other guarding required by this section but can only be used to supplement the protection provided.

Tools or equipment designed for a fixed location must be securely anchored to prevent 'walking' or moving.

2.3 Switches

All hand-held powered tools, such as circular saws, chain saws, and similar percussion tools, grinders, jigsaws etc. should be equipped with a constant pressure switch that will shut off the power when the pressure is released. (Exception: This paragraph does not apply to concrete vibrators, concrete breakers, powered tampers, jack hammers, rock drills, and similar hand operated power tools.)

All switches must operate as per manufacturer's requirements and methods for relieving switch pressure must not be permitted i.e. jamming open or tying off.

2.4 Hand Tools

Wrenches, including adjustable, pipe, end, and socket wrenches, must not be used when the jaws are sprung to the point where slippage occurs. Impact tools, such as drift pins, wedges and chisels, must be kept free of mushroomed heads. The wooden handles of tools must be kept free of splinters or cracks. Whaling and flogging tools must be checked for faults and excessive flaring and ensure that a safe work site and swing zone is maintained throughout use. Also consider the following,

- a) Keep tools stored in an orderly manner on tool benches or in tool chests to prevent possible damage;
- b) Use the proper tool for the task. Never subject a tool to a strain beyond its capacity;
- c) Where hand tools generate dust, swarf, filings or other by-products ensure the operator and others at the work site are not affected.
- d) Tools are not to be left lying on moving or vibrating machinery/equipment or on pipes or structures where they may be dislodged and fall;
- e) All tools including wedges and drifts that may spring, fly or fall to lower levels upon impact must be fitted with an attachment which attaches a safety 'lanyard' to a solid structure to restrain the impact tool from becoming a projectile; and
- f) All hand tools used in elevated areas that may be dropped or fall to lower levels must be fitted with safety lanyards and attached to solid structures or, in the case of podgers, scaffold keys etc., attached by wrist lanyard to the user.

2.5 Electric Powered Tools

Electrical power tools must be of the approved double-insulated type. The electric cords must not be used for hoisting or lowering of the tool.

Loose clothing and jewelry that could get caught in the machinery should not be worn when using powered tools. Always disconnect the power source before changing blades, repairing, servicing or adjusting power tools.

Keep body parts and clothing away from the point of operation.

Electrical power tools must be fitted with the current inspection tag.

Where electric powered tools are supplied with dust extraction bags or systems, they should be used to prevent excess dust being generated at the work site.

2.6 Portable Generators

Correct earthing of mobile generating sets, as outlined by the manufacturer's usage instructions, must be adhered to. Generators designed to supply power directly to portable equipment i.e. not supplied via a switchboard with a Multiple Earth Neutral (MEN) connection, do not need to be earthed. If, however, the generator is supplying fixed wiring via a switchboard (e.g. a portable office building) then it must be provided with a main earth. The wiring arrangements shown in AS/NZS 3010 should be followed.

Where the direction of rotation is critical, mobile generating sets must be checked for correct phase rotation before being placed in service.

2.7 Pneumatic Powered Tools (Compressed Air)

Compressed air must not be used to clean clothing. The stream of air must not be directed at the operator or workers. Inspect air hoses and couplings before use (pressuring them) to confirm they are in good condition and connected securely. Only approved fittings must be used.

Hoses with larger than 30 mm bore must be coupled with the correct clamps provided with the couplings (double acting fittings). These hoses should also be fitted with an internal steel cable connected to each coupling with locking pins. A whip check or chain must be used on the outside of couplings. Hoses exceeding 12 mm inside diameter must have a safety device at the source of supply or branch line to reduce pressure in case of hose failure. The hoses on pneumatic tools must not be used for hoisting or lowering of the tools.

Before turning on the compressed air supply to a machine or air tool, ensure the controls are in the off position. The air supply must be turned off and air discharged before disconnecting tools or equipment.

Pneumatic power tools must be secured to the hose or whip by approved positive means to prevent the tool from becoming accidentally disconnected. Safety clips or retainers must be securely installed and maintained on pneumatic impact (percussion) tools to prevent attachments from being accidentally expelled.

All pneumatically driven nailers, staplers, and other similar equipment provided with automatic fastener feed, which operate at more than 100 kPa pressure at the tool, must have a safety device on the muzzle to prevent the tool from ejecting fasteners, unless the muzzle is in contact with the work surface.

Compressed air must not be used for cleaning purposes except where reduced to less than 30 kPa, and then only with effective chip guarding and personal protective equipment. The 30 kPa requirement does not apply for concrete form, mill scale and similar cleaning purposes.

Abrasive cleaning nozzles must be equipped with an operating valve which must be held open manually. A support must be provided on which the nozzle may be mounted when it is not in use.

Never use compressed air to pressurise or blow out drums or tanks. These containers are seldom, if ever, constructed for use as pressure vessels, and serious damage or injury may result should the vessel rupture.

2.8 Fuel Powered Tools

Fuel powered tools must be shut down when being refueled, serviced, or maintained. Fuel must be transported, handled, and stored in approved safety cans. Fuel powered tools are not to be used in enclosed or confined spaces. Before repairing or servicing fuel powered tools, always remove the spark plug wire.

2.9 Hydraulic Power Tools

Hydraulic power tools must use only approved fluid that is fire resistant and must retain its operating characteristics at the most extreme temperatures to which it will be exposed. The manufacturer's safe operating pressures for hoses, valves, pipes, filters and fittings must not be exceeded.

Before making any repairs, servicing or adjustments, all sources of energy must be removed and isolated in accordance with WNH isolation procedures.

Always check the manufacturer's manual before disassembling any hydraulic power tool, as the accumulator may be under pressure and create a significant hazard.

Any losses of oil from the equipment shall be contained and cleaned up promptly. Hose containing residual oil will be drained and stored in bags or containers to avoid residual oil loss or spillage in accordance with WNH Q21 Working with Hazardous Materials & Substances Procedure.

2.10 Powered Torque Spanners

Powered torque spanners can be complex tools and as such can have many inherent risks. These may include high pressure oil, reaction points, heavy head units with ridged leads and a variety of attachments for different situations.

Workers must ensure they are competent to use such devices. Ensure that the device is in a serviceable condition, the head unit is suitable and appropriate for the task being performed, the reaction point and alignment are suitable, and the manufacturer's ratings for the power unit, the reaction arm and fittings and the item being tightened are within the same ranges.

2.11 High Pressure Pumps, Rams and Presses

Particular attention to the manufacturer's instructions will be taken when using any high-pressure pump, ram or press. This includes pre-use checks of the equipment including hydraulic lines, seals and pressure vessels for any signs of potential fault or failure. Pressure ratings of any item to be moved must be assessed and compared to the capacity of all of the equipment involved in the move to ensure they fall within the same capacity/range. For example, when removing a shrink element of a wind turbine gearbox in which an oil seal has failed, the strength of the pump must compare with the capacity of the ram which in turn must compare with the recommended pressure required to release the element. If these details are not known then work shall not be undertaken. Ensure all hands, other body parts or clothing are well clear of any reaction points and consider remote operation of equipment if there is any chance of unplanned high velocity equipment movement if a component of the job fails.

2.12 Angle Grinders (Including Wire Wheel Tools)

The most common causes of injury from a grinder are lacerations from attachments that break and become projectiles, and lacerations from angle grinder kickback.

2.12.1 Angle Grinder Hazard Control Measures

Operators shall be competent in the safe and correct use of angle grinders and shall,

- Only use attachments designed for use on angle grinders and the purpose it will be used for,
- Ensure the maximum speed (RPM) marked on the attachment is higher than the maximum speed of the angle grinder.
- Inspect attachments before use for excessive wear or damage, discard worn or damaged attachments,
- Never remove guards, ensure fitted securely in the correct position,
- Ensure the flange and the attachment centre hole are the same size,
- Ensure flanges and nuts are free from wear or damage,
- Before use, ensure the auxiliary handle is attached (unless impractical to be used due to restricted working environment),
- Before use, inspect angle grinder body and leads for damage,
- Ensure angle grinders have a cut-off switch,
- Remove themselves from the line of fire, and
- Avoid using excessive force or pressure during the operation of the tool.

2.12.2 Cutting

No worker shall use an angle grinder 230 mm (9 inch) or above for cutting. Grinders above 170 mm (7 inch) wheels may be used for grinding.

Preferred options for cutting are:

- 220 mm (9 inch) demolition saw with enclosed guard and bull handles.
- 100 mm (4 inch) grinder with less power and greater control.

- Drop saw with enclosed guard and vice.
- Cold cutting saw.
- Sparks and off-cuts must be managed to reduce the risk of fire.

2.12.3 Angle Grinder Operator PPE

Appropriate PPE shall be worn by angle grinder operators and by nearby workers. Only use well fitted gloves that allow good grip of the grinder and will not become caught in the rotating wheel and cause injury.

Eye protection must be used in conjunction with a face shield or, a combination eye/face protection device, rated high impact resistant must be worn to protect a worker from physical hazards when working with or in proximity of grinders.

Airborne health hazards may come from abrasives and bonders in wheels or disks and from the materials on which angle grinders are used. All workers must wear appropriate respiratory protection where airborne health hazards are identified.

2.13 Bench Drills and Pedestal Grinders

Before use of any bench grinder, ensure that:

- a) the side guard is in place;
- b) the tongue guard extending down from the top of the grinder is in place and within 6 mm of the grinding wheel;
- c) the work rest is tight and adjusted to within 3 mm of the grinding wheel;
- d) eye shields are clean and properly adjusted;
- e) PPE is worn as defined by the manufacturer's instructions
- f) the grinding wheel is dressed and in good working condition; and
- g) the wheel is designed for the purpose.

Before use of any pedestal drill, ensure that:

- a) the height and "through holes" of the drill table are aligned, set correctly and fastened securely,
- b) the speed of the machine is set correctly for the bit and the material being penetrated,
- c) The material is fastened securely on the table
- d) PPE is worn as defined by the manufacturer's instructions.

2.14 Chainsaws

Workers must not use a chainsaw unless they are competent and have completed a nationally accredited chainsaw training course for the work they are required to perform. Noting that tree falling requires additionally training and competency to cross-cutting or general use.

Prior to use the operator must check that the throttle trigger, safety lock, stop switch and chain brake are in good working order. Prior to use, hazards must be assessed and controls established to mitigate the hazards identified. Noting again that controls for tree falling and cross cutting or general use could be significantly different. In addition to, or in replacement of, standard PPE, the operator must ensure that the following PPE is worn at all times when operating the chainsaw:

- a) chainsaw pants (cut proof chaps);

- b) hearing protection (ear plugs or ear muffs);
- c) protective eyewear;
- d) safety helmet with full face visor for eye and face protection;
- e) safety footwear; and
- f) high grip gloves.

2.15 Explosive Powered Tools

No person must use an explosive powered tool unless accredited and licensed. Explosive powered tools need to be approved for use on WNR sites through a job specific risk assessment approved by the Site Supervisor.

2.16 Welding

Persons undertaking welding activities must be competent and trained in the technical and safety aspects of the welding. Only persons with trade level qualifications shall undertake structural welding tasks and welding tasks in restricted areas.

Electric shock from open-circuit voltages greater than 48 volts AC and 113 volts DC can be fatal. A welder can be exposed to these voltages when changing the electrode or when welding:

- a) in damp or wet areas on concrete or wet ground;
- b) in humid areas;
- c) in conductive spaces such as pipelines; and
- d) on steel structures such as scaffolds and buildings.

All welders must have a voltage-reduction device (VRD) fitted. A VRD is built into or adapted to a welding machine. The VRD keeps the no-load voltage at the handpiece at low volts until welding is required. The VRD is activated by scratch and strike of the electrode when ready to weld or, in some configurations, by pressing a button on the handpiece, similar to using a MIG gun trigger.

The following safety precautions must be adhered to when welding:

- a) DC welders are preferred rather than AC welders;
- b) ensure the welding machines, welding cables and welding appliances are in good condition;
- c) ensure the welding machines, welding cables and welding appliances have been regularly checked by a competent person and defective equipment is restored to a fit-for-purpose state prior to use;
- d) wear appropriate PPE to avoid radiation burns;
- e) use an auto-darkening face shield;
- f) use dry welding gloves;
- g) wear dry, approved clothing with no exposed steel cap boots;
- h) use leather cushions, rubber matting, wooden duckboards or other means to insulate the welder from the conductive environment;
- i) ensure leads and welding equipment are inspected prior to use, and all joints and connections are secure and insulated;
- j) keep the work area clear of rubbish and leads; and
- k) always use screens to protect people around you from welding flash.

2.17 Grit Blasting and Powered-Paint Application

The following points must be considered

- a) people must be familiar with the SDS for the material being removed or applied;
- b) all blasting and painting equipment must be inspected before use;
- c) metals such as lead, cadmium and manganese are extremely toxic when inhaled. Some existing paints at WNR sites are lead based and contain carcinogens e.g. MRWF farm buildings. Regulations require special handling, trained personnel and medical monitoring when these paints are being removed;
- d) airless spray equipment that atomises paints and fluids at high pressure must be equipped with automatic or visible manual safety devices to prevent the inadvertent release of substances;
- e) to prevent static electricity build up, all paint and blasting hoses must be grounded at the pot prior to the start of work;
- f) silica sand is a serious health hazard and must not be used as an abrasive on WNR sites;
- g) air-supplied respirators should be used when portable units are used in areas without enclosure and under any circumstances where the operator is not physically separated from the abrasive material by an exhausted enclosure;
- h) blasting operations that create high noise levels must require both the operator and nearby workers to wear hearing protection;
- i) dust is nearly always created at any point where abrasives are transferred, whether by hand or shovel. All points of transfer must be properly exhausted, and workers who handle abrasives manually must wear particulate filter respirators (P2 minimum); and
- j) where sensitive equipment such as oil lubrication and electronic control equipment is in place, extra precaution must be used to protect these from dust contamination during transfer or blasting and painting operations.

3.0 Definitions

None

4.0 Accountabilities

General

Officers of WNR shall ensure that AFARP, hazards are identified and where they cannot be eliminated, will be controlled. This shall include documenting hazards, processes to identify hazards relevant to WNR business and tasks it undertakes and lastly communicating hazards to the workers of WNR.

All workers of WNR shall ensure that:

- they understand the requirements of this procedure
- ensure their activities are in compliance with this procedure
- can access this procedure
- support the implementation of this Procedure by providing feedback to peers and supervisors where improvements to task compliance or risk management can be made.

The HSE Manager for WNR is to ensure AFARP that this meets National and State legislative requirements and Standards and that this document is maintained as a part of the businesses HSE management system.

5.0 References

- AS/NZS 3010:2017 Electrical installations – Generating sets.
- WNH Q21 Working with Hazardous Materials & Substances Procedure
- Code of Practice – Managing the risk of plant in the workplace