



نظام الشارقة للسلامة والصحة المهنية
Occupational Safety & Health Sharjah

حكومة الشارقة
هيئة الوقاية والسلامة

Government of Sharjah
Prevention And Safety Authority



Guideline

Portable Power Tools

OSHJ-GL-08

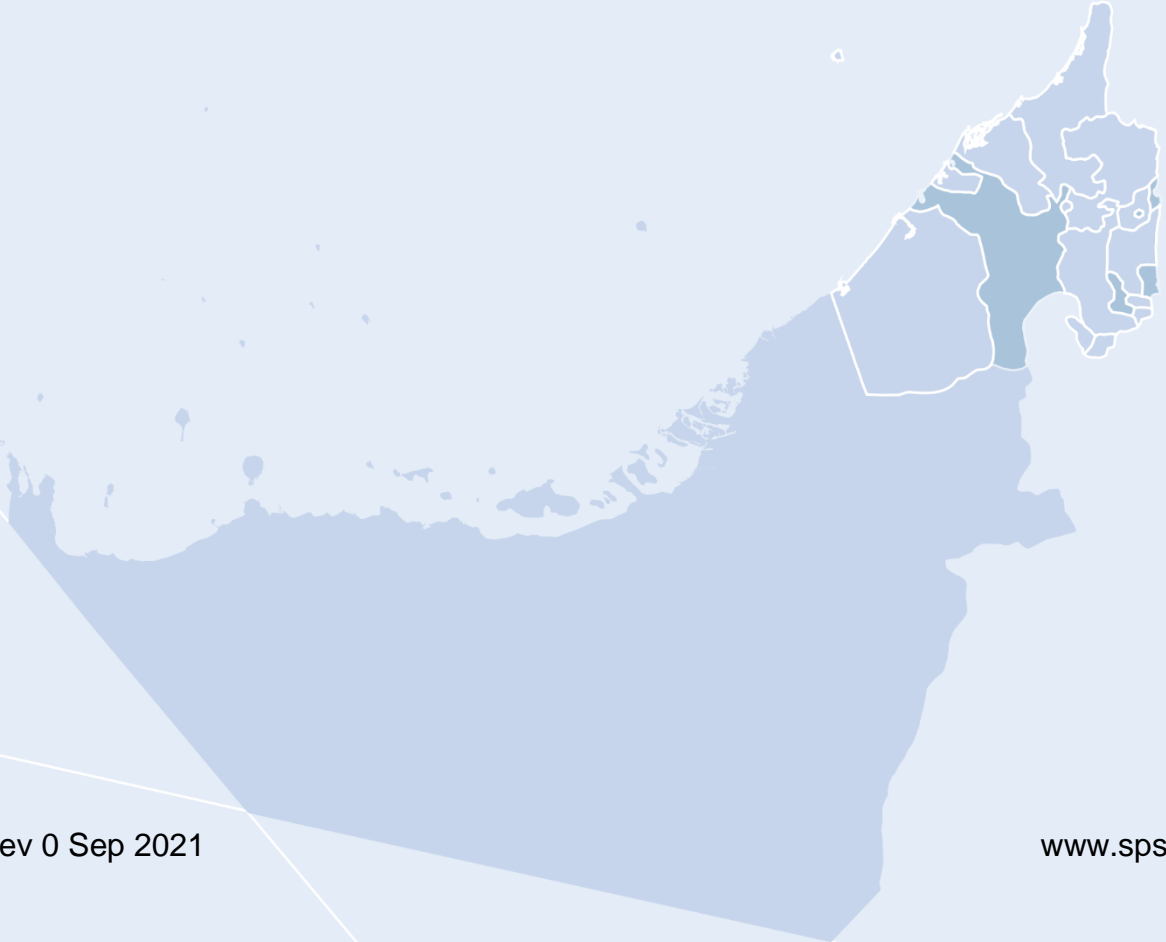


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1 Introduction

The use of hand and power tools are common and are present in nearly every industry. These tools help to easily perform tasks that otherwise would be difficult or impossible. However, these simple tools can be hazardous and have the potential for causing severe injuries when used or maintained improperly. Adequate safety controls are necessary in order to reduce or eliminate hand and power tool hazards.

2 Purpose and Scope

This Guideline document has been developed to provide information to entities to assist them in complying with the requirements of the Occupational Safety and Health System in Sharjah.

To achieve compliance in the Emirate of Sharjah, all entities are required to demonstrate a standard of compliance which is equal to or higher than the minimum acceptable requirements outlined in this Guideline document.

3 Definitions and Abbreviations

Entities: Government Entities: Government departments, authorities or establishments and the like in the Emirate.

Private Entities: Establishments, companies, enterprises and economic activities operating in the Emirate in general.

Risk: Is the combination of likelihood of the hazard causing the loss and the severity of that loss (consequences).

Risk Assessment: The systematic identification of workplace hazards and evaluation of the risks associated. This process takes existing control measures into account and identifies and recommends further control measures where required.

Hazard: Anything that has the potential to cause harm or loss (injury, disease, ill-health, property damage etc).

Competence: The combination of training, skills, experience and knowledge that a person has and their ability to apply all of them to perform their work.

Portable Power Tools: Portable power tool means a mounted or portable tool that requires a power source to operate, such as electrical, compressed air, liquid fuel, hydraulic, and powder-actuated.

Manufacturer's Manual: The instructions, procedures and recommendations provided by the manufacturer to ensure the safe operation, maintenance and repair of the equipment.

4 Roles and Responsibilities

4.1 Entity Responsibilities

- Provide portable power tools that are appropriate for the job;
- Ensure portable power tools are inspected and maintained as per the manufacturer's manual and in safe working condition;

- Identify all foreseeable risks for employees using portable power tools and ensure that adequate control measures are implemented;
- Ensure portable power tools shall only be used for the purpose for which they were designed;
- Ensure that employees receive information, instruction, supervision and training on the portable power tools they are using;
- Ensure safety devices provided with portable power tools are used as per the manufacturer's manual;
- Ensure that where required, employees use appropriate personal protective equipment.

4.2 Employee Responsibilities

- Not endanger themselves or others;
- Follow precautionary control measures to ensure work activities associated with the use of portable power tools are performed safely and without risk to health;
- Cooperate with the entity and receive safety information, instruction, training and supervision;
- Report any activity or defect relating to the use of portable power tools which they know is likely to endanger the safety of themselves or that of any other person.

5 Guidelines

This guideline document provides safety measures for work conducted with portable power tools where potential hazards to employees exist, including but not limited to:

- Liquid fuel powered tools;
- Electrically powered tools;
- Compressed air tools;
- Powder actuated tools;
- Hydraulic power tools.

The general principles where power tools are used, include but are not limited to:

- Select the right tool for the job;
- Keep tools in good working condition;
- Use tools the right way;
- Place/store tools in a safe and secure place.

5.1 Planning

The entity should plan their work activities, ensuring they are appropriately supervised and carried out safely. Planning includes conducting a risk assessment, the selection, inspection, maintenance and use of portable power tools and training requirements for employees.

Employees who use portable power tools can be exposed to the hazards of falling, flying, abrasive, and splashing objects, or to harmful dusts, fumes, mists, vapours, or gases.

The entity shall ensure that those affected by work involving portable power tools understand the hazards and risks associated with their use and the procedures and control measures in place to ensure they are used safely.

5.2 Risk Assessment

The entity should assess portable power tools and the hazards arising from the work activities that require the use of the portable power tools and implement effective control measures to reduce the exposure to employees.

The risk assessment should take into consideration the following, including but not limited to:

- Sources of power, compressed air, liquid fuel, powder actuated and hydraulic pressure;
- Moving parts and flying debris;
- Noise, vibration and ergonomics;
- Slipping and tripping;
- Maintenance and inspection;
- Storage of the tools;
- Safe use of the tools;
- Information, instruction, supervision and training;
- Provision of personal protective equipment;
- Emergency procedures and response.

Further information on risk assessments can be found in OSHJ-CoP-01: Risk Management and Control.

5.3 Electrical Portable Power Tools

Electrical portable power tools are tools that are connected to the fixed mains supply or to a locally generated supply.

The safety of portable electrical power tools depends on the continued integrity of the earthing and correct connections of the fixed electrical installation, this includes the wiring, fuse box, distribution unit and switches up to and including the socket supplying the portable power tool.

5.3.1 Selection of Electrical Portable Power Tool

A good initial level of safety can be achieved by the correct selection and use of electrical equipment and its connectors and cables. Effective maintenance of portable electric

equipment can be achieved by a combination of pre-use checks, formal visual inspections and portable appliance testing.

Pre-use checks by the user involve looking for signs that the electrical equipment may not be in a safe working condition, including but not limited to;

- Damage to the power supply cable, plug or connector;
- Evidence of overheating;
- Damage to the external casing of the equipment or loose parts;
- Inadequate joints, taped joins in cables.

5.3.2 Use of Electrical Portable Power Tools

The entity should ensure safe practices are followed when using electric power tools, including but not limited to:

- Reduce the voltage wherever possible by using:
 - Battery powered or cordless power tools;
 - Use of 110 volt power tools using a step down transformer.
- Provide a safety device when using 240 volt power tools, protect the user with a residual current device (RCD) of not more than 30 milliamps (mA);
- Competent employees are assigned to operate electric power tools within their design limitations and in accordance with manufacturer's manual;
- Do not use electric power tools in damp or wet locations unless they are designed for that purpose;
- Suspect or faulty electrical equipment is taken out of use, labelled 'DO NOT USE' and kept secure until examined and rectified by a competent person;
- Where possible, portable power tools and power socket outlets are switched off before plugging in or unplugging;
- Portable power tools are switched off and/or unplugged before cleaning or making adjustments;
- Ensure work areas have adequate lighting when operating electric power tools;
- Ensure that cords/cables from electric power tools do not present a tripping hazard;
- Store electric power tools in a dry place when not in use;
- Use appropriate PPE to protect from specific hazards when using electric power tools.

5.3.3 Maintenance of Electrical Portable Power Tools

The entity should ensure maintenance and repairs should only be undertaken by a competent electrician. When conducting maintenance, cleaning or adjustments to electrical portable power tools the equipment must be unplugged from the power source.

Suspect or faulty electrical portable power tools are immediately taken out of use, labelled 'DO NOT USE' and kept secure until examined and rectified or disposed of by a competent person.

The entity shall record and retain maintenance records.

5.3.4 Inspection and Testing of Electrical Portable Power Tools

The entity should ensure formal visual inspections are conducted by a competent person in a formal and systematic manner considering the following:

- The electrical equipment is being used in accordance with the manufacturer's manual;
- The equipment is suitable for the work activities;
- There has been any change of circumstances;
- The user has reported any issues.

The entity should ensure a portable appliance test (PAT) is a combined inspection and test conducted by an electrically competent person, including but not limited to;

- The correct polarity of power supply cables;
- The correct fuses are used;
- The effective termination of cables and cores;
- That the equipment is suitable for its environment;
- The pre-user checks as described above;
- Appropriate electrical tests such as insulation resistance test.

The aim of these checks are to determine whether the equipment is fully serviceable or whether remedial action is necessary to make sure it is safe to use. Fault finding helps the entity decide what action to take, depending on whether the faults show:

- The wrong equipment is being selected for the job;
- Further protection may be necessary in a harsh environment;
- The equipment is being misused.

The entity shall record and retain inspection and testing records.

Further information on electricity can be found in OSHJ-CoP-05: Electrical Safety at Work.

5.4 Compressed Air Tools

Pneumatic tools are powered by compressed air. Common types of these air-powered hand tools that are used in industry include buffers, nailing and stapling guns, grinders, drills, jackhammers, chipping hammers, riveting guns, sanders and wrenches.

5.4.1 Selection of Compressed Air Tools

The entity should ensure a clean, dry air supply is safely generated and distributed to all outlet points. The type of equipment to be connected to the outlet point will determine what extra

precautions will be required. The most common range of devices will be air or blow guns, portable tools or pneumatic powered machinery. The selection of compressed air tools, include but not limited to:

- Compressed air tools should be adequately maintained and in safe working order;
- All components including safety devices of compressed air tools should be checked by a competent person prior to use;
- Air receivers shall be fitted with a safety shut off valve, pressure gauge and drain cock and have the safe working pressure identified.

5.4.2 Use of Compressed Air Tools

The entity should ensure employees follow safe practices to use compressed air tools, including but not limited to:

- Information on any risks that could not be eliminated through control measures;
- The safety features or devices fitted to compressed air tools and how to use them;
- Suspect or faulty compressed air tools or components are taken out of use, labelled 'DO NOT USE' and kept secure until examined and rectified or removed by a competent person;
- Requirements for maintenance and repair;
- Requirements for special tools to use or maintain compressed air tools;
- PPE required to be worn when operating compressed air tools;
- Emergency situations.

Further information on compressed air can be found in OSHJ-GL-13: Compressed Gases and Air.

5.5 Hydraulic Power Tools

Hydraulic tools are powered by pressurized oil and can operate at much higher pressures and deliver greater force than comparably sized pneumatic tools, with more precise control and no delay in the movement.

5.5.1 Selection of Hydraulic Power Tools

General safety precautions that should be followed by the entity when selecting hydraulic power tools, including but not limited to:

- All hydraulic power tools should be in good working condition and maintained as per the manufacturer's manual;
- No employees shall operate hydraulic power tools unless they are trained and competent in the use of that hydraulic power tool;
- Employees shall be provided with appropriate personal protective equipment to protect them from the specific hazards present when using hydraulic power tools;

- The fluid used in hydraulic power tools must be an approved fire-resistant fluid which must retain its operating characteristics at the most extreme temperatures to which it will be exposed;
- The manufacturer's manual safe operating pressure for hoses, valves, pipes, filters and other fittings must not be exceeded;
- All jacks -- including lever and ratchet jacks, screw jacks, and hydraulic jacks -- must have a stop indicator and the stop limit must not be exceeded;
- The manufacturer's load limit must be permanently marked in a prominent place on the jack and the load limit must not be exceeded.

5.5.2 Use of Hydraulic Power Tools

The entity should ensure safety precautions that are followed when using hydraulic power tools, include but are not limited to:

- The hydraulic system is completely de-energised before breaking or making a connection;
- When using a jack;
 - Whether used individually or in a system, should be completely supported on a solid, firm, non-sliding foundation capable of supporting the load;
 - The load must be centered on the jack, or equally distributed on multiple jacks. Off-center loading can result in the jack slipping out and loss of the load;
 - For multiple jack lifts, employees must be able to determine the location and number of lifting points that will allow the load to be evenly distributed to all the jacks;
 - Once the load has been lifted, it must immediately be blocked up so that the jack is not supporting the load.
- Oil connections should be kept clean, couplers cleaned before connecting and dust caps used to keep dirt off.

5.5.3 Maintenance and Inspection of Hydraulic Power Tools

The entity should ensure maintenance and inspection include the following, but are not limited to:

- No maintenance or inspection shall be undertaken on hydraulic power tools unless the equipment has been completely de-energised;
- Suspect or faulty hydraulic power tools are taken out of use, labelled 'DO NOT USE' and kept secure until examined by a competent person;
- Maintenance and inspection shall only be undertaken by competent persons;
- Maintenance and inspection of hydraulic power tools shall be conducted as per the manufacturer's manual.

The entity shall record and retain maintenance and inspection records.

5.6 Powder Actuated Tools

A powder-actuated tool is a type of tool, such as a nail gun, used in construction and manufacturing to join materials to hard substrates such as steel and concrete. Known as direct fastening, this technology is powered by a controlled explosion of a small chemical propellant charge, similar to the process that discharges a firearm.

The entity must ensure that powder actuated tools are operated by trained competent employees only.

5.6.1 Selection and Use of Powder Actuated Tools

The entity should ensure safety precautions are followed when selecting powder-actuated tools, including but not limited to:

- Inspect the tool before using it to determine that it is clean, that all moving parts operate freely, and that the barrel is free from obstructions and has the proper shield, guard and attachments recommended by the manufacturer's manual;
- Select a powder level -- high or low velocity -- that is appropriate for the powder-actuated tool and necessary to do the work without excessive force.

The entity should ensure safety precautions are followed when using powder-actuated tools, including but not limited to:

- Preventing the tool from firing accidentally, two separate motions are required for firing. The first motion is to bring the tool into the firing position, and the second motion is to pull the trigger;
- Not using powder actuated tools in an explosive or flammable atmosphere;
- Ensuring a protective shield, a guard and any other safety attachments recommended by the manufacturer's manual are fitted;
- Take suspect or faulty powder actuated tools out of use, label 'DO NOT USE' and kept secure until examined by a competent person;
- To not fire fasteners into material that would allow the fasteners to pass through to the other side or into very hard or brittle material that might chip or splatter or make the fasteners ricochet;
- Do not leave a loaded powder actuated tool unattended, especially where it would be available to unauthorized persons;
- Keep hands clear of the barrel end and never point the tool at anyone;
- Employees must wear suitable personal protective equipment to provide ears, eyes, and face protection.

If a powder-actuated tool misfires, the user must hold the tool in the operating position for at least 30 seconds before trying to fire it again. If it still will not fire, the user must hold the tool in the operating position for another 30 seconds and then carefully remove the load in accordance with the manufacturer's manual. This procedure will make the faulty cartridge less likely to explode. The faulty cartridge should then be put in water immediately after removal. If the tool develops a defect during use, it should be tagged and must be taken out of service immediately until it is properly repaired.

When powder actuated tools and cartridges are not in use they shall be locked in a safe and secure place to prevent unauthorised access.

5.7 Liquid Fuel Powered Tools

Fuel-powered tools are usually operated with petrol or diesel. The greatest risk associated with the use of fuel-powered tools comes from fuel vapours that can burn or explode and also give off dangerous exhaust fumes. The employee must be careful to handle, transport, and store gas or fuel only in approved flammable liquid containers, according to procedures for flammable liquids.

Before refilling a fuel-powered tool tank, the user must shut down the engine and allow it to cool to prevent accidental ignition of hazardous vapours. Fire extinguishers must also be available in the area.

5.8 Inspection of Portable Power Tools

Some types of portable power equipment are required to be thoroughly examined periodically by a competent person.

With regards to the frequency of inspections, the intervals between inspection will depend on:

- Legal requirements;
- Manufacturer's manual;
- The type of equipment;
- How often it is used;
- The environmental conditions that it is used in;
- Specific formal inspection requirements.

The entity shall record and retain inspection records.

5.9 Maintenance of Portable Power Tools.

Equipment maintenance is any process used to keep portable power tools in reliable working order. It may include routine maintenance as well as corrective repair work.

The entity should control risks involved in portable power tool maintenance by following safe working practices, including but not limited to:

- All portable power tools should be part of a maintenance programme;
- Only competent employees or third parties should undertake maintenance of portable power tools;
- Isolate power to portable tools;
- Isolate equipment and pipelines containing pressurised fluid or air;
- Allow components which operate at high temperatures to cool.

The entity shall record and retain maintenance records.

6 Training

The entity shall provide training for existing as well as new or inexperienced employees, who need to have adequate knowledge to use and maintain portable power tools safely.

The entity should provide training in languages and in a format that employees understand, including but not limited to;

- Specific information, instruction and training on how to operate portable power tools safely;
- Using manufacturer's manual safety instructions;
- Type and selection of correct power tools suitable for the work;
- Hazards and control measures related to specific portable power tools;
- Pre-use check and inspection of power tools;
- Maintenance and storage of power tools;
- Formal training on the use of specific portable power tools.

Periodic refresher training should be conducted to ensure employees competency is maintained, including but not limited to:

- Where training certification has expired;
- Where identified as part of a training needs analysis;
- Where risk assessment findings identify training as a measure to control risks;
- Where there is a change in legal requirements;
- Where incident investigation findings recommend refresher training.

The entity must record and maintain accurate training records of OSH training provided to employees.

Further information on training can be found in OSHJ-GL-26: Training and Competence.

7 Emergency Preparedness and Response

The entity should be prepared for emergencies that may occur during the use and maintenance of portable power tools, including but not limited to:

- Emergency response personnel are available, who can take charge and make decisions on behalf of the entity during an emergency and liaise with emergency services;
- Emergency response personnel are available, who are familiar with the work area ensuring the prompt evacuation of the workplace in the event of a fire.
- Adequate firefighting and first aid equipment is available for the type of work activities and the equipment present in the workplace;
- Employees are trained in emergency response, including information of first aid arrangements and where first-aiders, first aid equipment and facilities are located;

- Employees are appointed as first-aiders and available at each location and during each working shift when work is being conducted.

Further information on first aid can be found in OSHJ-CoP-16: First Aid at Work.

Further information on developing an emergency plan can be found in OSHJ-CoP-18: Emergency Preparedness and Response.

8 References

OSHJ-CoP-01: Risk Management and Control

OSHJ-CoP-05: Electrical Safety at Work

OSHJ-CoP-18: Emergency Preparedness and Response

OSHJ-GL-13: Compressed Gases and Air

OSHJ-GL-26: Training and Competence

9 Document Amendment Record

TITLE	Portable Power Tools		
DOCUMENT AMENDMENT RECORD			
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1	15 SEP 2021	New Document	N/A