

مركز أبوظبي للصحة والسلامة المهنية
ABU DHABI OCCUPATIONAL SAFETY AND HEALTH CENTER

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Abu Dhabi Occupational Safety and Health System Framework

(OSHAD-SF)

Code of Practice

CoP 35.0 – Portable Power Tools

Version 3.0

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ABU DHABI PUBLIC
HEALTH CENTRE

مركز أبوظبي
للصحة العامة



Important Note:

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+971 56 231 2171

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1. Introduction

- (a) This Code of Practice (CoP) applies to all employers within the Emirate of Abu Dhabi. This CoP is designed to incorporate requirements set by Abu Dhabi Occupational Safety and Health System (OSHAD) and Sector Regulatory Authorities in the Emirate of Abu Dhabi.
- (b) This CoP established the requirements and standards so that the risks associated with the use of portable power tools are assessed, that control measures are implemented in accordance with the hierarchy of controls and that control measures are taken to prevent injury, illness and disease to persons who might be exposed to risks arising from those activities.
- (c) “Portable Power Tools” is a general term referring to a several types of power tools, based on the power source they use: electric power operated tools (eg. circular saws, drill machines), pneumatic power tools (eg. hammers, chippers, compressed air guns), hydraulic power tools (jacks), and powder-actuated tools (nail guns).

2. Training and Competency

- (a) Employers shall ensure that OSH training complies with the requirements of:
- (i) *OSHAD-SF – Element 5 – Training, Awareness and Competency;*
 - (ii) *OSHAD-SF – Mechanism 7.0 – OSH Professional Entity Registration; and*
 - (iii) *OSHAD-SF – Mechanism 8.0 – OSH Practitioner Registration.*
- (b) In accordance with *OSHAD-SF – Element 1 – Roles, Responsibilities and Self-Regulation* Section 3.2.5 employers shall ensure employees required to implement the requirements of this CoP are trained in portable power tools and understand the risks associated with using the equipment and the control measures put in place by the employer.
- (c) Training for employees shall be competency-based and include:
- (i) systems of work needed for the safe use of portable power tools;
 - (ii) type and selection of correct portable power tools; and
 - (iii) care, maintenance and inspection of portable power tools.
- (d) Employers shall conduct additional retraining whenever a periodic inspection reveals, or there is reason to believe, that there are deviations from or inadequacies in the employee's knowledge of the correct use of portable power tools.
- (e) Employers shall conduct additional retraining whenever a portable power tool safe operating procedures are not complied with.
- (f) Employers shall maintain a record of the required training that contains the following information:
- (i) name and ID Number;
 - (ii) Emirates ID number of the employee;
 - (iii) subject(s) of training;
 - (iv) date(s) of training; and
 - (v) person(s) providing the training.

3. Requirements

3.1 Roles and Responsibilities

3.1.1 Employers

- (a) Employers shall undertake their roles and responsibilities in accordance with the general requirements of *OSHAD-SF – Element 1 – Roles, Responsibilities and Self-Regulation* Section 3.2.5.
- (b) Employers shall undertake their specific roles and responsibilities in accordance with the following:
 - (i) portable power tools shall be appropriate for the task and maintained in good working condition;
 - (ii) all work involving the use of portable power tools shall be appropriately planned, organized and appropriately supervised;
 - (iii) those involved in use of portable power tools are trained and competent; and
 - (iv) all portable power tools are inspected and maintained to manufactures specifications on a regular basis by a competent person.

3.1.2 Employees

- (a) Employees shall undertake their roles and responsibilities in accordance with the general requirements of *OSHAD-SF – Element 1 – Roles, Responsibilities and Self-Regulation* Section 3.2.7.
- (b) Employees shall undertake their specific roles and responsibilities in accordance with the following:
 - (i) employees shall inspect portable power tools before use, report any activity or defect relating to the power tool which they believe is reasonably foreseeable to endanger their safety or the safety of another person; and
 - (ii) employees shall use safety devices provided with portable power tools in accordance with the training or instruction received from the employer.

3.2 Planning and Assessment

- (a) Employers shall evaluate each site or operation to determine if hazards are present from portable power tools, which shall be assessed using risk management practices as required by *OSHAD-SF – Element 2 – Risk Management*.
- (b) Employers shall ensure the following:
 - (i) assessment is made of the various risks associated with using portable power tools and systems of work are established which are safe to both employees and the public;
 - (ii) that effective procedures and control measures are in place which are implemented in order to manage the use of portable power tools;
 - (iii) that for the Building and Construction Sector the management of portable power tool requirements are included in the Pre-Tender Safety and Health Plan in accordance with *OSHAD-SF – CoP 53.0 – OSH Management during Construction Work*; and

- (iv) that associated safe systems of work, and site rules are included in the Safety and Health Construction Management Plan (OSH -CMP) in the case of the Building and Construction Sector in accordance with *OSHAD-SF – CoP 53.0 – OSH Management during Construction Work*.
- (c) When assessing the risks associated with portable power tools employers shall consider the following:
 - (i) risk of shocks, burns, and electrocution if tools are not disconnected before servicing or maintenance;
 - (ii) employees not using the correct personal protective equipment;
 - (iii) incorrect plugs or connections being used resulting in an earth continuity failure;
 - (iv) 'Residual Current Devices' (RCDs) being by-passed;
 - (v) unplanned energizing of portable power tools during maintenance operations;
 - (vi) risk of injury by moving parts due to accidental release of hydraulic/pneumatic energy of the tool;
 - (vii) damage of the portable power tool casing exposing a source of energy;
 - (viii) risk of injury by high-pressure fluid from hydraulic tools;
 - (ix) vibration and noise hazards associated with many types of portable power tool; and
 - (x) risk of burn from hot oil in hydraulic tools.

3.3 Electrically Operated Portable Power Tools

3.3.1 General Requirements

- (a) Employers shall ensure the following:
 - (i) consideration of the following hierarchy when planning to use electrically operated portable power tools:
 1. battery or cordless tools (low voltage);
 2. use of 110v tools using a step-down transformer; or
 3. use of 240v tools protected with a 30mA RCD.
 - (ii) electrically operated portable power tools shall be in good condition and appropriately maintained;
 - (iii) hand-held portable power tools shall be fitted with a constant pressure switch that requires constant pressure to energize the tool;
 - (iv) freestanding or bench mounted portable power tools may be fitted with positive on/off controls provided an emergency stop device is fitted;
 - (v) where 110v portable power tools are not available or it is not reasonably practicable to be provided, 240v electrically operated portable power tools shall be used with a 30mA RCD;
 - (vi) all electrically operated portable power tools and electrical installations shall comply with the requirements of *OSHAD-SF – CoP 15.0 – Electrical Safety*;
 - (vii) electrically operated portable power tools shall be double insulated;
 - (viii) all electrically operated tools are used within their design limitations; and

- (ix) employees are provided with the personal protective equipment necessary to protect them from any specific hazards associated with using electrically operated portable power tools in accordance with the requirements of *OSHAD-SF – CoP 2.0 – Personal Protective Equipment*.

3.3.2 Use of Electrically Operated Portable Power Tools

- (a) Employers shall ensure the following practices are followed when using electrically operated portable power tools:
 - (i) cables from electrically operated portable power tools shall be organized so as not to present a tripping hazard;
 - (ii) tools and power socket-outlets shall be switched off before plugging in or unplugging;
 - (iii) appropriate lighting levels shall be maintained in areas where electrically operated portable power tools are used;
 - (iv) electrical cables or connections shall not be routed through wet areas or areas that are reasonably foreseeable to become wet;
 - (v) guards on electrically operated portable power tools are to be kept in place at all times whilst in use;
 - (vi) industrial connectors/plugs and sockets shall be used for both 110v and 240v electrically operated portable power tools; and
 - (vii) under no circumstances are domestic 3 pin plugs and sockets to be used in an industrial or construction environment.

3.3.3 Maintenance of Electrically Operated Portable Power Tools

- (a) Employers shall ensure the following:
 - (i) no maintenance, cleaning or making adjustments shall be undertaken on electrically operated portable power tools unless the equipment has been unplugged from the mains power supply;
 - (ii) suspect or faulty equipment shall be taken out of use and labeled 'DO NOT USE', in accordance with *OSHAD-SF – CoP 24.0 – Lock-out / Tag-out (Isolation)*; and
 - (iii) maintenance and repair work shall only be undertaken by a competent electrician.

3.3.4 Inspection and Testing of Electrically Operated Portable Power Tools

- (a) Employers shall ensure visual checks are carried out daily by users and that formal inspections are carried out weekly by a competent person. Inspections shall include the following checks:
 - (i) all cables are sheathed;
 - (ii) the cable outer sheathing is not damaged;
 - (iii) the plug is in good condition;
 - (iv) there are no taped or other non-standard joints in the cable;
 - (v) the cable sheathing is gripped where it enters the plug or tool;
 - (vi) the outer casing of the equipment is not damaged or loose; and
 - (vii) there are no signs of overheating on the plug.

- (b) Employers shall ensure that all electrically operated portable power tools undergo a Portable Appliance Test (PAT) at a frequency determined by the following factors:
- (i) environmental conditions;
 - (ii) frequency of use;
 - (iii) frequency of being plugged and un-plugged; and
 - (iv) the equipment construction:
 - 1. safety of Class 1 equipment is dependent upon the fixed electrical connection to earth; or
 - 2. safety of Class 2 equipment is not dependent upon the fixed electrical connection to earth.
- (c) Employers shall ensure a PAT test is conducted every 3 months on all electrically operated portable power tools used on construction sites.
- (d) Employers shall ensure PAT testing is performed by a person who is competent in the safe use of the test equipment and who knows how to interpret the test results obtained. This person shall be capable of inspecting the equipment and, where necessary, dismantling it to check the cable connections.

3.4 Cartridge Tools

3.4.1 General Requirements

- (a) Employers shall ensure the following:
- (i) all cartridge tools are in good condition and appropriately maintained;
 - (ii) issue of cartridge tools and cartridges shall be strictly controlled;
 - (iii) cartridge tools and cartridges shall remain in the possession of the person to whom they are issued;
 - (iv) when not in use, cartridge tools shall be kept under lock in a controlled storeroom;
 - (v) all cartridges shall be clearly labeled to indicate their strength;
 - (vi) employees using cartridge tools are provided with the particular personal protective equipment necessary to protect them from any specific hazards associated with using cartridge tools in accordance with the requirements of *OSHAD-SF- CoP 2.0 – Personal Protective Equipment*, and
 - (vii) no person shall operate a cartridge-operated tool or powder-actuated tool unless they are trained on the specific tool and demonstrated competency in the use of the tool.

3.4.2 Use of Cartridge Tools

- (a) Employers shall ensure the following when using cartridge tools:
- (i) an exclusion zone shall be formed around the area where the cartridge tool is to be used;
 - (ii) cartridge tools shall not be used in an area where flammable gases, vapor's or explosive dusts may be present;
 - (iii) all guards designed for use with a cartridge tool shall be used; and

- (iv) when not in use cartridge tools shall be locked in a safe and controlled place and shall never be left unattended.

3.4.3 Maintenance and Inspection of Cartridge Operated Portable Power Tools

(a) Employers shall ensure the following:

- (i) no maintenance, cleaning or making adjustments shall be undertaken on cartridge tools unless all cartridges have been removed;
- (ii) suspect or faulty equipment shall be taken out of use, labeled 'DO NOT USE' and kept secure until examined by a competent person, in accordance with *OSHAD-SF- CoP 24.0 – Lock-out / Tag-out (Isolation)*;
- (iii) maintenance shall only be undertaken by persons who are competent;
- (iv) any problems with cartridge tools or cartridges shall be reported to the person who issued them;
- (v) cartridge tools shall be dismantled and examined for defects by a competent person every seven days and taken out of service if any defects are found;
- (vi) cartridge tools are examined before each use for defects by a competent person; and
- (vii) a record of the cartridge tool dismantling and examination carried out every 7 days shall be maintained.

3.5 Compressed Air Tools

3.5.1 General Requirements

(a) Employers shall ensure the following:

- (i) all compressed air tools shall be in good condition and appropriately maintained;
- (ii) compressors shall be supervised by a competent person who will ensure guards, hoses and couplers are in place and that ventilation is appropriate;
- (iii) employees using compressed air tools shall be provided with the particular personal protective equipment necessary to protect them from any specific hazards associated with using compressed air tools in accordance with the requirements of *OSHAD-SF – CoP 2.0 – Personal Protective Equipment*;
- (iv) no person shall operate a compressed air tool unless they are trained in the use of the specific tool and demonstrate competency in the use of that tool; and
- (v) air receivers shall be marked with their safe working pressure and distinguishing number; they shall also be fitted with a safety valve, pressure gauge, and drain cock.

3.5.2 Use of Compressed Air Tools

(a) Employers shall ensure the following when using compressed air tools:

- (i) air compressors shall be to be operated and maintained in accordance with the original equipment manufacturer's instructions;
- (ii) air compressors shall be positioned on a firm and level surface prior to starting;
- (iii) the air intake for the compressor shall not be exposed to atmospheric contaminants, exhaust fumes or excessive dust;
- (iv) petrol operated air compressors shall be used in a well-ventilated location;

- (v) a shut off valve shall be fitted at the connection between the hose and the tool;
- (vi) whip-check fittings shall be used to secure all connections;
- (vii) compressed air shall not be used for cleaning purposes except where reduced to less than 30 P.S.I.;
- (viii) the manufacturers safe operating pressure for hoses and accessories shall not be exceeded;
- (ix) all hoses exceeding 12mm inside diameter shall have a safety device at the source of supply or branch line to reduce pressure in case of hose failure; and
- (x) air supply lines shall be protected from damage by vehicles and materials.

3.5.3 Maintenance and Inspection of Compressed Air Portable Power Tools

(a) Employers shall ensure the following:

- (i) suspect or faulty equipment shall be taken out of use, labeled 'DO NOT USE' and kept secure until examined by a competent person, in accordance with *OSHAD-SF – CoP 24.0 – Lock-out / Tag-out (Isolation)*;
- (ii) maintenance shall only be undertaken by persons who are competent;
- (iii) no maintenance work shall be undertaken on air compressors or compressed air tools unless the equipment has been completely de-energized and pressure release valves are left open; and
- (iv) a maintenance program shall be implemented for compressors which should, in addition to the manufacturers recommendations, include the following:
 1. inspect, clean or replace inlet filter cartridges;
 2. clean out debris and check operation of drain traps;
 3. compressor lubricant level shall be inspected daily and top-up or replace compressor lubricant and change lubricant filter;
 4. air lubricant separators (lubricant-injected rotary screw compressors) shall be changed as per the manufacturer specifications, or when the pressure drop exceeds 10 P.S.I., whichever is less;
 5. check belts for wear and check/adjust tension;
 6. verify that the operating temperature is as per the manufacturer specification;
 7. replace airline filters when pressure drop exceeds 2 to 3 P.S.I.;
 8. for water-cooled systems check water quality, flow and temperature, and clean/replace filters and heat exchangers;
 9. check compressed air lines including fittings, clamps, valves, regulators, filters, lubricators, gauge connections, and end-use equipment for leaks; and
 10. check system for compressor and motor lubricant leaks and cleanliness.

(b) Employers shall ensure the regular inspection of compressors and air powered tools which should include:

- (i) daily checks for oil leaks and correct fitting of guards;
- (ii) daily checks of tools, damage to hoses and dirty, inoperable or damaged fittings and connections;
- (iii) verification of correct operation of pressure relief valves; and

- (iv) periodic inspection of the pressure vessels as prescribed by the manufactures specifications.

3.6 Hydraulic Power Tools

3.6.1 General Requirements

- (a) Employers shall ensure the following:
 - (i) all hydraulic power tools shall be in good condition and maintained in accordance with the manufacturer's instructions;
 - (ii) no person shall operate hydraulic power tools unless they are trained in the use of the specific tool and found to be competent in the use of that tool;
 - (iii) employees using hydraulic tools shall be provided with the particular personal protective equipment necessary to protect them from any specific hazards associated with using hydraulic tools in accordance with the requirements of *OSHAD-SF – CoP 2.0 – Personal Protective Equipment*;
 - (iv) the fluid used in hydraulic power tools shall be an approved fire-resistant fluid and must retain its operating characteristics at the most extreme temperatures to which it will be exposed;
 - (v) the manufacturer's recommended safe operating pressure for hoses, valves, pipes, filters, and other fittings shall not be exceeded;
 - (vi) all jacks including lever and ratchet jacks, screw jacks, and hydraulic jacks shall have a stop indicator and the stop limit must not be exceeded; and
 - (vii) the manufacturer's load limit shall be permanently marked in a prominent place on the jack and the load limit must not be exceeded.

3.6.2 Use of Hydraulic Tools

- (a) Employers shall ensure the following when using hydraulic tools:
 - (i) before making or breaking any hydraulic connection the system shall be de-pressurized;
 - (ii) jacks shall always be positioned on a firm base of appropriate bearing strength;
 - (iii) a jacking base such as a steel plate or timber spreader shall be used to distribute the load;
 - (iv) once the load has been lifted it shall be blocked in place wherever reasonably practicable so that the jack is not supporting the load;
 - (v) oil connections should be kept clean;
 - (vi) couplers should be wiped before connecting;
 - (vii) dust caps should be used to keep dirt out;
 - (viii) cylinder mounting threads should be protected; and
 - (ix) protectors should be used to prevent damage to the thread.

3.6.3 Maintenance and Inspection of Hydraulic Portable Power Tools

- (a) Employers shall ensure the following:
- (i) no maintenance, cleaning or making adjustments shall be undertaken on hydraulic power tools unless the equipment has been completely de-energized;
 - (ii) suspect or faulty equipment shall be taken out of use and labeled 'DO NOT USE' and kept secure until examined by a competent person;
 - (iii) maintenance of hydraulic power tools shall only be undertaken by persons who are competent, in accordance with *OSHAD-SF – CoP 24.0 – Lock-out / Tag-out (Isolation)*;
 - (iv) jacks shall be tested in accordance with *OSHAD-SF – CoP 34.0 – Safe Use of Lifting Equipment and Lifting Accessories*; and
 - (v) maintenance of hydraulic power tools shall be carried out in accordance with the manufacturer's recommendations.

3.7 Inspection of Portable Power Tools

- (a) In addition to the specific inspection requirements detailed in this CoP, employers shall ensure:
- (i) visual checks shall be carried by users on portable power tools out before use;
 - (ii) formal inspections shall be carried out by competent persons at regular intervals; and
 - (iii) any portable power tool that is malfunctioning shall immediately be removed from service and labelled 'DO NOT USE' and kept secure until examined by a competent person, in accordance with *OSHAD-SF – CoP 24.0 – Lock-out / Tag-out (Isolation)*.

3.8 Maintenance of Portable Power Tools

- (a) Employers shall ensure the following:
- (i) a schedule of all portable power tools shall be maintained at each workplace;
 - (ii) all portable power tools shall be included in a maintenance program which take into account the following factors:
 1. type of tool and power source;
 2. manufacturer's instructions and recommendations;
 3. age of the tool;
 4. frequency of use and the work cycle of the tool;
 5. working environment in which the tool is used (eg. wet or dusty), or likelihood of mechanical damage;
 6. foreseeable misuse of the tool;
 7. effects of any modifications or repairs to the tool; and
 8. analysis of previous records of maintenance.

4. References

- *OSHAD-SF – Element 1 – Roles, Responsibilities and Self-Regulation*
- *OSHAD-SF– Element 2 – Risk Management*
- *OSHAD-SF – Element 9 – Compliance and Management Review*
- *OSHAD-SF – CoP 2.0 – Personal Protective Equipment*
- *OSHAD-SF – CoP 15.0 – Electrical Safety*
- *OSHAD-SF – CoP 24.0 – Lock-out / Tag-out (Isolation)*
- *OSHAD-SF – CoP 34.0 – Safe Use of Lifting Equipment and Lifting Accessories*
- *OSHAD-SF – CoP 53.0 – OSH Management During Construction Work*

5. Document Amendment Record

Version	Revision Date	Description of Amendment	Page/s Affected
3.0	1 st July 2016	Change of Logo	All
		Change from AD EHS Center to OSHAD	throughout
		Change of document title: AD EHSMS RF to OSHAD-SF	Throughout
		Acknowledgements deleted	2/3
		Preface Deleted	4
		EHS changes to OSH	throughout

