**FQM LIMITED**

**Safe Use of Work Equipment**

1. **PURPOSE**

The purpose of this Procedure is to ensure that work equipment used on all [COMPANY NAME] sites does not present unacceptable risks to the health and safety of personnel regardless of its age, condition, origin or use.

1. **SCOPE**

This Procedure describes a process which provides a framework for achieving compliance with The Provision and Use of Work Equipment Regulations (PUWER). This Procedure does not address use of work equipment in any specific work environment.

1. **GENERAL REQUIREMENTS OF PUWER**

The PUWER regulations apply to all equipment provided for use in the workplace. PUWER places responsibilities on employers and people who have control of work equipment. For a complete understanding of the requirements of the regulations reference should be made to the Regulations and associated Approved Code of Practice (ACOP). The general requirements of PUWER are as follows:

* Equipment must be suitable for the purpose for which it is used or provided.
* Equipment must be maintained in an efficient state, in efficient working order and in a good state of repair.
* Equipment must be inspected to ensure it is installed correctly and safe to operate.
* Where equipment is exposed to conditions likely to cause deterioration it must be inspected regularly to ensure that health and safety conditions are maintained, and that any deterioration can be detected and remedied in good time.
* Where a risk exists from using specific equipment, the use of that equipment must be restricted to persons trained and or competent. Repairs, modifications, maintenance and or servicing of the equipment should also be restricted to trained and or competent personnel.
* Adequate health and safety information and where necessary written instructions must be provided to personnel who use the equipment or supervise/manage the use of the equipment.
* Adequate training must be provided to personnel who use the equipment or supervise/manage the use of the equipment.
* Adequate guards and protection devices must be provided, where necessary, to prevent access to dangerous machinery and to stop machinery when a person enters a danger zone.
* The exposure of a person, using work equipment, to any risk to their health or safety from any hazard in using the equipment must be prevented so far as is reasonably practicable. Where this is not reasonably practicable, the risk must be controlled by the provision of instruction, training or supervision as far as is reasonably practicable.
1. **RESPONSIBILITIES**
* **HSE Manager/H&S Advisors** are responsible for:
* Ensuring that this procedure is maintained and communicated to all relevant [COMPANY NAME] personnel.
* Ensuring by means of induction, signage and information, that all employees are aware of the safe use of work equipment at all [COMPANY NAME] sites.
* Understanding PUWER control measures.
* Ensuring adequate information, instruction and training are provided to personnel about the safe use of work equipment and how to reduce the risks.
* **Operations Managers** are responsible for:
	+ Ensuring this procedure is implemented and adhered to at their site.
	+ Ensuring that supervisory staff under their control are familiar with their duties described in this procedure.
* **Site Foremen/Chargehands** are responsible for:
* Ensuring all personnel on site under their supervision are following correct procedures and instructions.
* Ensuring all personnel on site under their supervision are using work equipment in line with correct safe systems of work and manufactures guidelines.
* **All employees** are required to:
* Comply with correct working procedures and instructions.
* Use all work equipment in line with correct safe systems of work and manufacturers guidelines.
1. **PROCEDURE**

Whenever an activity requires the use of work equipment, an assessment of the equipment’s integrity, place of use, purpose of use and the resulting risk to health and safety must be carried out before the equipment can be considered suitable for the intended use. The process is identical for all work equipment; however, the level of effort and attention varies according to the complexity of the equipment and the level of risk it presents. For example, the use of a hand tool such as hammer, or screwdriver will require a totally different assessment to the use of a radial drill.

xx-OP-001, describes a risk assessment process designed to allow competent persons to assess the risks of an activity. As the use of equipment is part of a work activity, this Risk Assessment should be applied where the risks derive from the use of work equipment.

In carrying out the risk assessment, the general requirements in section 3.0 must be considered to ensure the work equipment:

* Has been designed for the purpose for which it is to be used.
* Has been maintained in good working order by competent personnel designated for that purpose.
* Will be inspected prior to use and an inspection regime exists to ensure deterioration of equipment condition in use does not affect the health and safety of the user.
* Has controls fitted to isolate it from energy sources, adequate health and safety information with written instructions if necessary, provided to the user and supervisor. Protection against specific hazards, other than PPE and instruction/ training, has been provided where reasonably practicable.

When the above requirements are met, either because they were already in place or have been implemented as additional controls and the risk assessment confirms that the risks to health and safety of personnel from use of the work equipment are as low as reasonably practicable, then the work equipment can be considered suitable for use.

1. **GUIDANCE ON USE OF EQUIPMENT**

A large proportion of the equipment used on [COMPANY NAME] sites could under certain conditions present a significant risk to personnel health and safety and is used on a regular basis, such as drills, lathes and grinding equipment. Although a risk assessment is carried out prior to each use of the equipment general guidance on commonly used equipment is presented in this section. A suitable & sufficient risk assessment and permit to work (where applicable) for the proposed activities should be undertaken, and any precautions/controls identified should be implemented before work commences.

* 1. **High Pressure Water Jetting**

High pressure water jetting is a means whereby water at pressures in excess of 130 bar, is delivered through a nozzle. Equipment consists of a pumping unit, high-pressure hose and a lance, to which a nozzle is attached. The technique is used to great effect to remove dirt, scale and residue from structures, plant and equipment.

Note: High-pressure water jets are powerful cutting tools and, if mishandled, can easily penetrate protective clothing and body tissue beneath.

High-pressure water jetting equipment shall be operated only by specifically trained operators. Operators must comply fully with the operating procedures and wear the necessary protective clothing.

* 1. **Steam cleaning**

Steam is used for the cleaning of engine and other machinery parts and should only be carried out by trained and or competent personnel. Although the process is contained the use of steam still poses a risk to the competent person / operator.

* Operators should check the equipment visually before each use or at the beginning of each shift.
* Operators must never use a machine which appears to be defective.
* Defects should be reported promptly to their Supervisor.
* In addition to operator checks, the Supervisor should carry out formal visual inspection of the equipment on a regular basis.
* All personnel involved in steam cleaning operations must ensure that eye and face protection and PPE provided is correctly used.
* The work area should be maintained free from obstructions and trip hazards as far as possible.
	1. **Pneumatic tools and equipment**

There is a requirement to ensure that the use of compressed air as a driver of pneumatic tools is controlled and maintained to ensure safe operation and adherence to safety precautions throughout the task.

All personnel who, in the course of their work, need to use compressed air must be adequately trained, this includes Supervisors and maintenance personnel.

All pneumatic tools and equipment are subject to the requirements of the Noise at Work Regulations and where necessary appropriate controls should be established. If noise levels produced by air compressors and tools are at or above the 2nd Action Level, then hearing protection must be worn.

A suitable and sufficient risk assessment must be carried out for all work activities involving pneumatic tools and equipment; this should include consideration of hand/arm vibration.

The efficient safe running of a compressed air system relies on cleanliness, filtration, cooling and lubrication which is normally achieved through implementation of a Maintenance Schedule.

The following points should be addressed when using pneumatic equipment:

* Compressed air is properly regulated, adequately filtered, dried and lubricated.
* All tools and fittings should be correctly rated in accordance with the air supply pressure.
* When using compressed air tools the exhausting air is directed away from the body.
* Pressurised components are effectively isolated from all pressure sources and completely vented to atmosphere before dismantling, e.g. before changing attachments such as tool bits, abrasive wheels etc.
* Effective safeguarding of moving parts, by guarding where practicable. Particular attention should be paid to preventing the entanglement with moving parts of long hair, gloves, loose sleeves, bandages, cleaning rags, jewellery, etc.
* Precautions should also be taken to guard against the possibility of injury through the sudden release of components.
* Only tools with finger-operated switches should be used, i.e. the tool must not be capable of being used with the trigger switch locked.
* Couplings between hoses and tools are of the correct size and type and are clamped to prevent accidental disconnection, e.g. crowsfoot connectors must be bonded or clamped and be fitted with a retaining pin/clip and a whip at each coupling.
* Safety devices have not been misused or abused.
* All necessary PPE has been provided and is being used.
* Any defects in equipment are reported at once to your supervisor and the equipment is taken out of service.
	1. **Abrasive wheels and disc equipment**

Only trained and competent personnel are permitted to mount and replace/change abrasive wheels, the required training must include instruction in the following in relation to the class or description of abrasive wheel for which the person is authorised:

* Mounting of abrasive wheels, including provision of advisory literature.
* Hazards arising from the use of abrasive wheels and precautions which should be observed.
* Methods of marking abrasive wheels as to type and speed.
* Methods of storing, handling and transporting abrasive wheels.
* Methods of inspecting and testing abrasive wheels to check for damage.
* The functions of all components used with abrasive wheels, including flanges, washers, bushes and nuts used in mounting and including knowledge of the correct and incorrect methods of assembling all components and correctly balancing of abrasive wheels.
* The proper method of dressing an abrasive wheel.
* The adjustment of the rest of an abrasive wheel.

**General Precautions**

* Before mounting and using an Abrasive Wheel:
* Check the abrasive wheel for damage.
* Check the flanges for damage, equal and correct diameter.
* Check the spindle for damage and balance.
* Check the grinding equipment for damage.
* Ensure the work piece rest is adjusted correctly (fixed equipment), as close to the wheel as possible.
* Ensure the speed of the abrasive wheel is compatible with the machine.
* Ensure the work area is clear and tidy, etc.
* During use:
* Use the abrasive wheel for the purpose it was designed, i.e. cutting or grinding.
* Wear the correct PPE (eye protection = goggles and/or face shields).
* Never remove guards and make full use of them when equipment is in use.
* Apply the work piece slowly taking care not to exert too much pressure.
* Ensure the work piece is secured (use holder for small pieces if necessary).
* Never strike the wheel or use the side of the wheel for grinding (unless it is designed for this type of use).
* Mounting Wheels:
* Check that the machine has been isolated and locked off.
* Check that the new wheel is free from defect and conduct a ring test if applicable (vitrified bonded wheels only).
* Use the correct tools.
* Check if the wheels will require blotters or reducing bushes.
* Check that the tools and equipment have been stored in their correct place.
* Check that the speed of the wheel is **not** below the speed of the spindle.
* New wheels should be allowed to run free for about 60 seconds, users should stand clear during this period.
* Follow any specific guidance provided by the manufacturer.
* Dressing Wheels

There are many types of abrasive wheel dressers, and various methods by which these operations may be carried out, in general:

* + Dressing tools should be rigidly mounted and positioned at the proper angle whether on the table or on the guard.
* Hand dressers should be properly supported so that leverage may be applied without undue effort.
* Care should be taken to prevent the possibility of dressing tools jamming between the abrasive wheel and the work rest or any fixed part of the machine.
* Ensure that the work rest is in good condition before wheel dressing, it is helpful to fit a spare rest with a straight edge specifically for this purpose.

**Provision and Use of Work Equipment Regulations (PUWER)**

All personnel who are appointed to mount abrasive wheels or discs must be familiar with the requirements summarised in the following sub-sections.

* Examination:
	+ Wheels should be carefully unpacked, cleaned with a brush and examined for possible damage in transit.
	+ Wheels can be further checked by tapping them with a light non-metallic implement. This is known as the ‘ring’ test and is used only for vitrified bonded wheels.
	+ If the wheel sounds dead (cracked) it should not be used.
	+ Comparison with other wheels of the same lot and specification will allow rejection of any wheel with a suspiciously different ring before use.

As the ring test is not practicable with the following types of wheels because of their shape or size, extra care and vigilance is required during the visual examination:

* + Small wheels (100mm diameter and smaller).
	+ Plugs and cones.
	+ Mounted wheels.
	+ Segments.
	+ Plate-mounted wheels.
	+ Inserted nut and projecting stud disc wheels.
* Handling

All abrasive wheels are fragile. It should not be assumed that organic bonded wheels (resin, shellac, rubber) will stand rough handling.

The following precautions should be taken to avoid chipping, cracking and breakage:

* Handle the wheels carefully to prevent dropping or bumping.
* Do not roll abrasive wheels, where this is unavoidable because of the large size of the wheel, a soft floor surface is essential.
* Do not pile heavy tools on top of abrasive wheels.
* Storage

Suitable racks or bins should be provided to accommodate the various types of wheels used, and as they are porous the wheels should be stored in a dry atmosphere in order that they do not absorb moisture which would introduce out of balance forces to the wheel.

Other points to be considered with respect to storage include:

* To prevent warping, organic bonded wheels should be laid flat on a horizontal steel surface away from excessive heat and moisture.
* The outer surfaces of organic bonded wheels (resin, shellac, rubber) may be affected by oxidation if the wheels are stored for a long period. To minimise this effect, organic bonded wheels should be stored in a room which is free from damp and not subject to extreme temperatures.
* In the case of doubt, or if wheels have been in stock for more than two years, the manufacturer/supplier should be consulted about their suitability for use.
* Suitable arrangements should be made for the interim storage and ultimate disposal of used abrasive wheels such that old wheels are not used inadvertently.
	1. **Welding and cutting equipment**

Use of this equipment will be controlled by a PTW Certificate where applicable, if in doubt check with the Supervisor responsibly for the work task. The precautions in the following sections address the specific hazards associated with the equipment.

* Gas Cylinders:

Check that the following conditions apply in all instances involving the use of gas cylinders:

* All gas cylinders are colour-coded in accordance with the appropriate British Standard, currently oxygen - black, acetylene - maroon, propane - red.
* Cylinders are stored in a cool, well ventilated area well away from flammable materials or corrosive liquids.
* Cylinders are protected from radiant heat, possible sources of ignition, so far as is reasonably practicable.
* Cylinders in transit are firmly secured preferably in a cylinder rack.
* Cylinders should not be dropped, thrown or rolled.
* Cylinder valves and union nozzles are not used for lifting the cylinders.
* Cylinders should not be moved with regulators and hoses attached unless a trolley or specially designed carrier is used.
* Cylinders and valves etc. are kept free of oil or grease.
* Cylinders are kept on a trolley or firmly locked in an upright position to a guardrail or similar structure.
* When left unattended, cylinders are always turned off at the head valve. A cylinder valve key must be available at every set for this purpose.
* Empty cylinders are clearly identified and stored apart from full cylinders.
* Hoses:

Check the following conditions apply with regard to hoses:

* Damaged portions of the hose are cut out and reconnected using the correct clamped connectors.
* Leak tests are carried out prior to use and hoses with an excessive number of repairs are replaced.
* Jubilee clips must not be used to connect hoses.
* Hoses are correctly colour coded. Red - acetylene, blue - oxygen.
* Hose check valves are fitted immediately upstream of the welding torch, and flashback arrestors are fitted to both oxygen and fuel gas hoses immediately downstream of the regulator.
* Any hose in which a flashback has occurred will have its inner wall damaged and must be discarded immediately.
* Eyes and ears are always protected when blowing gas to clear hoses and nozzles.
* When not in use and left unattended hoses are de-pressurised.
* At the end of a shift hoses and torches are withdrawn from the worksite and neatly coiled beside the cylinders.
* Welding/Cutting Torches:

Check the following conditions apply with regard to torch assembly:

* The correct torch is selected for the grade of work and the correct nozzle is used as per manufacturer's instructions.
* Leak tests are carried out on the torch and connections before use. Torches with leaks must not be used.
* Torches are lit on acetylene first using a friction lighter and the oxygen valve used to adjust the flame.
* Gas from a torch must not be used to blow clothing or equipment clean.
* Protective Clothing:

Ensure that all persons at the site where welding/cutting is taking place wear appropriate protective clothing which must not be contaminated with oil or grease, this may include:

* Firewatcher
	+ Flame-resistant coveralls.
	+ Gauntlet type gloves.
	+ Eye protection against both glare and fragments of metal and grit.
* Welder and Assistant
	+ Flame-resistant coveralls.
	+ Gauntlet type gloves.
	+ Full face shield complete with ultraviolet protective lens.
* Metal Arc Welding

When metal arc welding is being performed the following additional points need to be considered:

* Insulated electrode holder.
* Local isolation switch.
* Extraction equipment.
* Welding set transformer.
* Work piece may require to be earthed.
* Proper cable connections.
* Welding leads should be insulated, robustly constructed and big enough to carry the current safely.
* Use of welding screens.
* Use of an insulated box or hook to rest the electrode holder.
* Welders should not wear metallic jewellery, rings, or watchstraps.
	1. **Hydraulic Torqueing / Tensioning Equipment**

**General precautions**

Hydraulically powered torquing and tensioning equipment is primarily utilised during the assembling and tightening of bolted flange connections. This is achieved through the use of portable hydraulically operated torquing units, which apply a pre-selected pressure to a variety of bolt / nut combinations.

Other applications which may involve the use of hydraulically powered torquing equipment include the assembly / dismantling of plate pack coolers.

**Safe Use of Hydraulic Torquing / Tensioning Equipment**

When using hydraulic equipment for bolted connections, it is important to be aware of the very high operating pressures involved and also to consider the inherent hazards when operating the equipment. Particular attention should be paid to pinch & nip points, entrapment areas, manual handling and also communication within the working party, especially whilst within congested areas.

For all hydraulic equipment, key safety precautions to be aware are:

* Do not exceed the stated maximum working pressures for the equipment.
* Do not over bend or kink the hoses.
* Do not pressurise unconnected lines / hoses.
* Ensure work areas are suitably barriered off.
* Do not leave pressurised systems unattended.
* Do not make or break hose connections whilst still pressurised.
* Always wear eye protection.
* Only trained and competent personnel should operate this equipment.
	1. **Use of Hand Tools**

There is a requirement to ensure that the use of hand tools is controlled and maintained to ensure safe operation and adherence to safety precautions throughout the task.

All personnel who, in the course of their work, need to use hand tools must be adequately trained and have a good understanding in the use of these tools, this includes all employees.

A suitable and sufficient risk assessment must be carried out for all work activities involving hand tools.

The following points should be addressed when using hand tools:

* All hand tools should be inspected before use to ensure they are in a good state of repair.

Hand tools are only used for the purpose for which they were designed to be used.

* Precautions should also be taken to guard against the possibility of injury through the use of hand tools.
* All necessary PPE has been provided and is being used.
* Any defects in equipment are reported at once.
	1. **Use of workshop machinery**

Working with machinery can be dangerous because moving machinery can cause injuries in many ways. People can be hit and injured by moving parts of machinery or ejected material. Parts of the body can also be drawn into or trapped between rollers, belts and pulley drives. Sharp edges can cause cuts and severing injuries, sharp-pointed parts can stab or puncture the skin, and rough surface parts can cause friction or abrasion. People can be crushed both between parts moving together or towards a fixed part of the machine, wall or other object, and two parts moving past one another can cause shearing. Injuries can also occur due to machinery becoming unreliable and developing faults due to poor or no maintenance or when machines are used improperly through inexperience or lack of training.

The following points should be addressed when using workshop machinery:

* All machinery should be inspected before use to ensure they are in a good state of repair.
* In addition to operator checks, the Supervisor should carry out formal visual inspection of the equipment on a regular basis.
* All machinery must have a working emergency stop in place, and tested before operating the machinery.
* All machinery must have suitable and sufficient guarding in place before operation.
* Precautions should also be taken to guard against the possibility of injury to personnel in close proximity of the machinery.
* All necessary PPE has been provided and is being used.
* Any defects in equipment are reported at once.
* The work area should be maintained free from obstructions and trip hazards as far as possible.
* Adequate training must be provided to personnel who use the equipment or supervise/manage the use of the equipment.

**7.0 REVIEW**

This procedure will be reviewed regularly, at a minimum on a yearly basis, at the annual management meeting. Additional review maybe required due to changes in legislation, operations, technology, personnel etc.