

Safety in the Farm Workshop



Guidelines & Checklist

Think Safety and Take Action

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INTRODUCTION

Every farm has a requirement to carry out machinery maintenance and repairs. Accordingly, a workshop and an array of workshop tools and equipment are required. Of course, the extent of workshop equipment varies considerably from farm to farm, varying from the very basic, required by farmers with few machines, to a complete workshop, required by highly mechanised farms and contractors.

Adopting safe work practices is imperative when doing all workshop work. Serious or fatal injury can occur due to the mis-use of virtually every item of equipment. This leaflet and accompanying checklist outlines an approach to workshop organisation and key workshop practices required securing Safety Health and Welfare. Further information on specific items of equipment/substances/work practices should be sought from operating manuals or from equipment suppliers or Material Safety Data Sheets.

There is a legal duty on farmers and agricultural contractors to prepare a Safety Statement under Section 12 of the Safety Health and Welfare at Work Act 1989 and Regulations 1993.

Guidelines to preparing a Safety Statement are available from the Health and Safety Authority. Completion of the checklist in this leaflet could be seen as a precursor to preparing a Safety Statement.

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WORKSHOP BUILDING

- **CONSTRUCTION**
Farm workshops should be constructed of fireproof materials such as concrete blocks, concrete, steel and non-asbestos fibre-cement sheeting. Conditions leading to dampness or condensation should be avoided. Solid walls are best as they can provide support for tool boards, shelves and anchorage for benches.



- **DOORS**
These should be high and wide enough to allow entry of modern large tractors and equipment. Doors need to be at least 3.8m high and 4.5m wide. Because of the size of these doors, double sliding types are best. Never use swinging doors - they are too dangerous in wind. A sub-door with adequate headroom should be provided to avoid having to open the main doors for access. Access to the workshop should be limited to persons at work. The workshop should always be locked when unattended.
- **FLOOR**
A wooden float finish is ideal, don't use a steel float or power float as this will lead to a very slippery floor after oil spillage.
- **SPACE**
You need to have at least 2m around the machine. In practice this leads to the minimum building size of 10m x 10m and, if working with combines, you will need a 10m x 15m building.
- **BENCHES AND EQUIPMENT**
Benches and fixed equipment are best concentrated in one area of the workshop with tool boards located over or near the bench. Use of a silhouette board with an outline of each tool makes checking of missing tools a simple matter.
- **LIGHTING**
Good lighting is essential. Artificial light should be strategically placed e.g. over work benches. It is sometimes necessary to provide supplementary lighting for machine tools but this should not be regarded as a substitute for a satisfactory standard of general lighting.
- **HEATING**
Accidents occur most frequently in underheated workshops. A minimum temperature of 10°C should be maintained.

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ACCESS

Prevention of accidents due to trips and falls can be achieved by workshop layout and ongoing tidiness. The following areas require particular attention.

- The workshop should have clearly defined access areas. These should be kept clear of all items. Workshop equipment/materials should be sited in designated areas clear of access areas, generally around the periphery of the building.
- Slippery surfaces due to such materials as oil or grease should be remedied immediately.
- While inspection pits are not generally necessary in a farm workshop, if present, they should be kept adequately covered when not in use. When work is in progress, measures should be taken to prevent falls.
- When working at heights, working platforms with hand support should be provided.



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FIRE

- Fire can be a serious hazard in workshops. Flammable materials such as fuels, oil, paint thinners, paint or grease should never be stored in the workshop. There should be a separate, purpose designed, fully ventilated store. Repairs should never be carried out in the vicinity of hay or straw.
- A fire extinguisher must be easily accessible. Choose either a dry powder and/or a carbon dioxide type for the workshop as they are suitable for use on electrical fires and burning liquids. These must be serviced annually. In addition, the workshop should be equipped with fire buckets filled with sand and a fire blanket.
- Storage of petrol: due to the dangers involved, stringent regulations apply to the storage and use of petrol - The Dangerous Substance (retail and Private Petroleum Stores) Regulations (1979). If it is proposed to store more than 100 litres notice in writing must be given to the appropriate licensing authority and annually thereafter. The maximum quantity that may be stored in a container is 23 litres rated capacity, while the maximum that may be transported in vehicle in 20 litres in two separate 10 litre containers. When storing/using petroleum on the farm, adhere to the following:
 - Store in a fire proof building detached from the other buildings with bunding to retain a leakage. The building must have adequate low level "through" ventilation to the outside air. As petrol is heavier than air NEVER store or use in enclosed areas where fumes could build up.
 - Store petrol in suitable leak-proof containers of metal or other material of adequate strength and construction. Containers should be fitted with a vapour-tight stopper and be marked.



"PETROLEUM SPIRIT"
"HIGHLY INFLAMMABLE"
"CAPACITY _____ LITRES"

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FIRE (CONT'D)

- Strictly ensure that there is no means of ignition present when transporting or pouring petrol. Stop engines and allow to cool down before filling. Use an adequate funnel to prevent spillage.
- It must be emphasised that very low quantities of petrol (less than 0.25l) have potential to cause serious injury if ignited.
- Cleaning cloth or paper impregnated with grease can catch fire by spontaneous combustion due to heat build up in bins/containers. Use only steel bins with well fitted lids. Regular disposal of such material is necessary.
- Airborne dust may ignite and cause an explosion. This is a particular hazard where repairs are being carried out in areas such as grain stores or mills. Ventilation and the use of industrial cleaners can effectively achieve reducing dust levels.
- **WORKSHOPS ARE STRICTLY NON SMOKING AREAS:** A sign to this effect would be clearly visible in addition to insistence on compliance with this rule.



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ELECTRICITY

- Installations and alterations should comply with the E.T.C.I. wiring rules for farm buildings and must be checked annually by a competent electrician.
- A disconnecter switch to isolate all electrical circuits that supply fixed equipment and sockets should be installed in an easily accessible position. The "on" and "off" positions must be clearly identified. Where equipment does not have inbuilt controls and a means of isolation, these should be situated within two meters of the switch and be in a position that allows safe use.
- It is mandatory that all socket outlets *above 125 volts* be protected by a 30mA Residual Current Device to protect against electrical shock.
- Portable handlamps must never be used for a 240v mains supply. An extra low voltage transformer system with a voltage not exceeding 25 volts A.C. is required for workshops. A 12 volt battery can be used to supply a handlamp for occasional use.
- Where portable equipment is used in damp locations, a low voltage transformer (125 volts maximum) is mandatory.
- Well located wall sockets minimise the need for extension cables, but when they must be used, route the cable in the safest way possible. Always unwind an extension cable reel fully before use otherwise the electrical load could lead to heating and melting the cables.
- Pneumatic tools can be used as an alternative to electrical tools.



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LIFTING EQUIPMENT

- Always use a jack on a flat level solid floor or surface. Doing repair work in fields should be avoided.
- Lifting equipment should always be checked before use. The safe working load (S.W.L.) in tonnes or kilograms should be clearly marked on the equipment. This load must never be exceeded.
- Trolley/bottle type jacks should only be used to lift a tractor or machine. They should never be used as the sole means of supporting an object when work is being carried out. The lifting capacity of the jack should be adequate for the load being lifted. A crane jack should only be used to lift and move items, never to support the item.
- Secure the machine or equipment before jacking. For example, when jacking a tractor or a combine harvester place the transmission in gear and apply the handbrake.
- All jacks must operate at 90° to the ground. Never bring the metal of the jack into direct contact with the metal of the tractor/machine because of the danger of shearing. Use of a piece of wood of 10-15mm thickness between the metal surfaces. Don't use close grained hard woods as they might split easily under load.
- Support should always be provided by axle stands before any work is undertaken. Wooden blocks, such as railway sleepers, cut in sections, present an alternative. Concrete blocks, of any type, must never be used to support equipment.
- Any lifting equipment such as hydraulic equipment, pulley blocks and slings including fail-safe mechanisms, should be examined and tested before it is brought into use. A certificate of examination and test should be obtained. The equipment should be re-examined thoroughly by a competent person at least every 14 months or in the case of slings, every six months. A competent person, generally an insurance company inspector, normally undertakes this work.



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HAND HELD TOOLS

A good selection of hand tools is required for every workshop. These can be stored on a display board or in a multi-shelved tool box so that the right one can be easily located.

- Tool selection: a set of both metric combination and imperial (A/F) are necessary to cover the variety of nut and bolt sizes found on equipment. Always use the right size. Packing should never be used. It is preferable to use a socket or ring spanner for tight bolts, always ensure that the tool is fully fitted before applying load. A 'pulling' rather than a 'pushing' action should be used as it will minimise injury risk to the hand and arm if the spanner gives. Use the boxer stance to maintain balance when applying force.
- Never fit a make shift extension to a hand tool. Use penetrating oil to loosen "stubborn" bolts. Heat may be applied using an oxyacetylene or propane torch. This is particularly the case when loosening bolts on farm implements or where the parts are no longer required.
- A 'mushroom headed' chisel is particularly dangerous as a blow may produce a chip of flying metal. Always grind off any mushrooming to restore to its original level-edged end. Throwaway bent, cracked and 'badly mushroomed' chisels.
- Tools or machine parts with sharp edges like a finger bar mower should be stored with the sharp edge covered. Particular care is needed when handling and working with these sharp edges. While sharpening a blade for example with a file, a correct filing action ensures that the hand and arm move away from the blade, thus avoiding injury to the hands/wrist.
- Hammers: The hammerhead should be properly attached and the handle should be in sound condition.



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POWER TOOLS

ANGLE GRINDERS

Check that both the disc and guard are securely fitted. Make sure you are familiar with the controls for turning the power on and off. Secure the piece being worked-on by clamping in a vice, as a flying object could cause serious injury. Never use work down (230mm) angle grinder discs on a mini grinder. The mini grinder rotates at about twice the speed of an angle grinder (11,000 versus 6,500 r.p.m.) so the disc could disintegrate and fly. Take a firm grip of the grinder controls before switching on.

- Never force the disc at the metal or allow the disc to become trapped in the work piece, as this will cause the disc to break or the angle grinder to 'kick back'.



BENCH GRINDERS

Grinding machines fitted with abrasive wheels, which run at high speeds present considerable hazards to all users as they can burst and fly. The requirements of the Abrasive Wheels Regulations (1982) should be implemented. The following serve as a guide to the requirements:

- A person who mounts wheels should receive suitable training. When mounting the wheel must be a 'free fit' but not 'loose' on the spindle. It should be checked for soundness and brushed clean before mounting.
- The grinder must be marked with its maximum permissible speed. The information supplied with the abrasive wheel should be checked to ensure that the maximum permissible speed is never exceeded when in use.
- Both flanges which secure the wheel must be at least one third of the diameter of the abrasive wheel. Both flanges must be the same size, free of burrs and true. Paper washers should be placed between the flanges and the wheel, these should be slightly larger in diameter than the flanges. Check the wheels, washers and flanges for cleanliness before fitting.
- The clamping nut should be tightened sufficiently to hold the wheel firmly - it should never be over-tightened. Adhere to the torque value specified by the manufacturer.

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POWER TOOLS (CONT'D)

- Guards should be fitted properly. The guards are designed and constructed so that, as far as is reasonably practicable, they contain every part of the abrasive wheel if it should fracture during use.
- To compensate for wear, the work rest should be adjusted so that it is set as close as possible to the abrasive wheel. Failure to keep the rest correctly adjusted can result in a serious accident due to the workpiece becoming jammed between the rest and the wheel. This can cause the workpiece to fly or the wheel to burst.
- Run new wheels without load for a period (example, 15 minutes) to test the wheel.
- Wheels should be maintained in a balanced and clean faced condition by using a special abrasive stick or wheel dresser.
- Wheels should be "warmed up" before heavy grinding work to avoid "shock heating" and bursting. This is done by light grinding initially.



DRILLS

Floor mounted or pedestal drills should be fitted with a telescopic chuck guard. The following guidelines apply to the use of such drills and hand held drills.

- Make sure the twist drill is fully into the chuck. Tighten the drill chuck with the key firmly in position, using all three chuck keyholes.
- Secure the item being drilled in a vice or clamp.
- Use a centre punch dot mark to help start the twist drill into work, except on stainless steel.
- Don't force the drill through the metal; allow it to cut at a steady rate.
- Place a wooden block under the work when drilling thin metal to prevent distortion of the hole when the twist drill breaks through and clamp the metal down.

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PROTECTIVE EQUIPMENT

EYE PROTECTION

Visors/goggles to the standard E.N.166 should always be worn where there is a risk of eye injury when doing repairs. The following Table sets out the various grades specified to this standard. The frames are also marked to indicate the impact performance; this may not be the same standard as the lens itself. Consult a supplier's catalogue for comprehensive information.

Hazard description	Marking under EN166
High impact 190 m/s	A Face shield only
Medium impact 120m/s	B Lens and Frame
Low energy 45m/s	F Lens and Frame
Anti Mist	N Lens
Molten metal & Hot Solids	9 Lens and Frame



Noise in workshops

Exposure to high noise levels, even for short periods, can cause permanent hearing damage. Permanent damage known as "noise induced hearing loss" results because the nerve hairs in the ears which sense and transmit sound messages to the brain become damaged and die. The affected person mis-hears words, for instance the word "pigeon" could be confused with "religion". 'Impact noise' such as that caused by banging of tools can damage the eardrum or bones of the ear.

The legal action level for noise is 85 dB(A). If it is necessary to communicate by shouting at a distance of 2 metres, the noise level is likely to exceed 85 dB(A).

The following are typical noise measures for farm workshop operations:

OPERATION	NOISE LEVEL dB(A)
Angle grinder/chainsaw	110
Tractor at full power	90 - 110

Buildings can intensify noise from tractors and installed equipment.

Methods of reducing exposure to noise:

- Keep away from the noise source. For each doubling of the distance between the noise and the person, the noise is halved.

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PROTECTIVE EQUIPMENT (CONT'D)

- Machinery maintenance can reduce noise e.g. keeping silencers in place.
- Building design: good engineering can avoid noise problems. For instance, excluding noisy equipment from the workshop or using acoustic enclosures.
- Choice of Equipment: when purchasing equipment, seek and consider noise emission data.
- Warning Signs: Posting a warning sign is a legal requirement, where noise levels exceed 90 dB(A) on a regular basis.
- Ear Protection: if noise is likely to exceed 90 dB(A), ear protection is mandatory. Ear protection products are specified as follows:

Ear Defenders	EN 352 - 1
Ear Plugs	EN 352 - 2

RESPIRATORY PROTECTION

Inhaling dust, spores or gases can cause serious lung injury when doing repair work.

- Use ventilation to the maximum extent possible to reduce the risk.
- Wear properly specified personal protective (PPE) equipment where necessary

Hazard	Equipment Specification
Dust or spores	EN 149 Type2 or 3
Gases	EN 141 ABEK Class 1,2 or 3

WORKSHOP CLOTHING

- Trim fitting clothing is required when doing workshop work, especially where there is a risk of entanglement. Engineers overalls with zipped pockets are recommended.
- Leather footwear with non-slip soles is recommended.
- Wear nitrile or neoprene gloves when handling hazardous substances.
- Boots with steel toecaps are recommended

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WELDING

Welding equipment should only be used by people specifically trained to use the particular equipment.

Electric Arc Welding

An individual electrical circuit must supply an arc welder. It is obligatory to notify the ESB before a welder set is commissioned. Inadequate installation leads to burnout of the electrical circuit supplying the welder with the consequent electrical and fire risks. A 30 mA RCD must be provided. Plugs and sockets should be of adequate capacity (32 amps). Trip switches (miniature circuit breakers) should be of a k-type (time delay) to prevent frequent tripping.



- The real earth is the green/yellow wire in the mains supply. This is the earth that keeps the operator safe in the event of a short circuit. The return clamp and lead on a welder is not an earth, it completes the circuit between the set and the workpiece.
- Mains supply plugs get warm during use, and repeated heating and cooling tends to loosen the terminal screws. Accordingly, check for screw tightness fortnightly, but don't over-tighten as this can lead to localised overheating.
- A welder should never be used in damp conditions.
- Cables should be checked regularly for fraying, and replaced as necessary. Care of cables during use and storage minimises the risk of damage.

PROTECTIVE EQUIPMENT FOR WELDING

Eyes

Electric arc welding produces high energy UV radiation which can burn the retina in the eye, if looked at either directly or indirectly; blindness can result from exposure.

- The purpose of the filter glass in a welding face shield is to filter out the UV light. This should conform to EN166/169. The marking EW on the filter means it is suitable for electric welding. This is accompanied by a number (e.g. EW 10) in the range 8 to 14. The higher the number, the denser the filter. EW 10 or 11 is recommended for most work, with lower numbers giving protection up to currents of 100A.

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WELDING (CONT'D)

- A clear piece of glass is placed over the filter glass to protect it from damage by molten metal and slag. After a certain amount of use, this glass becomes difficult to see through and must be replaced.
- Onlookers can suffer eye damage from looking at the arc or from reflected light. Exclude or provide screening made of non-reflective material to protect onlookers.
- Never use gas-welding goggles for electric arc work as they do not filter UV light.
- Always wear goggles or a face shield to the standard EN 166.9 when chipping off slag or hammering metal. Molten slag can be up to 2000°C.



Skin Protection

Skin damage due to burns from hot metal and radiant heat is required as follows: -

Face/Head: Use a good quality face shield, along with a cap, if appropriate. Hand-held or head-strap types are available.

Overalls/Jackets: Wear a non-synthetic overall or jacket buttoned-up at the collar to stop sparks or slags.

Gauntlets: These should be made of thick leather to provide protection against sunburn and stop hot metal disappearing up your sleeve.

Trousers: Wear cotton trousers without turn-ups. Turn-ups tend to catch flying sparks.

Boots: Wear leather boots, as canvas or rubber footwear offers no protection against hot metal.

PREVENTING ILL HEALTH WHEN WELDING

Welding fumes are minute particles of metal suspended in the air. Arc welding of mild steel produces fumes of iron oxide, aluminium oxide and nuisance dust.

Welding galvanised metal produces zinc oxide fume. In addition, the reaction between the hot arc and paints and degreasants gives off toxic gases such as phosgene. This is a gas, carbonyl chloride, with a sweet smell; inhalation leads to

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WELDING (CONT'D)

swelling of the lungs (pulmonary odema) and circulatory collapse.

The following steps are necessary to avoid injury:

- Minimise fume problems by grinding away all paint and zinc plating for 50 mm on either side of the weld line.
- Ensure surface is free of all grease oils and depressants.
- Never inhale the blue-white fumes given off by welding galvanised metal. This causes a severe illness called "fume fever". Should this sickness occur take a drink of milk, it may help overcome the sickness and it is advised to see a doctor immediately.
- Extra precautions are required when welding cadmium plating, as cadmium fume is extremely toxic and can cause death. R.S.J.'s used in farm buildings were, formerly, painted with yellow cadmium paint.

Ventilation when welding

- Dilution ventilation –by opening doors and windows to remove fumes can be satisfactory when occasional welding is undertaken. NEVER work in the rising fume column.
- Local Exhaust Ventilation – where a considerable welding takes place then local exhaust ventilation is necessary. Successful local exhaust ventilation depends on having sufficient air velocity, at the point where the fume is produced the suction pipe should be as close as possible to the source of the fumes.

Ventilated Welding Visor

- Air is drawn through a filter pack mounted on the welder's back and passed into the welding visor. This approach is for situations where fume concentrations are relatively low. The manufacturer's instructions must be followed in relation to filter changes and fitting to ensure that satisfactory protection is achieved.

Oxy Acetylene Welding

An Oxy-acetylene welding set consists of cylinders, regulators, hoses and a blowpipe with a range of nozzles. The cylinders are colour coded, maroon for acetylene and black for oxygen. To ensure correct assembly the oxygen cylinder, regulator and hose



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WELDING (CONT'D)

have right-hand threads while the acetylene have a left-hand thread.

- The cylinder should always stand vertically, secured either on a purpose made trolley or secured in a stand. If a cylinder is allowed to fall and the regulator head is damaged, compressed gas could be released with explosive force.
- A flashback arrest must be connected to the regulator for each cylinder; the hose is then connected to the arrest outlet. The flashback arrest prevents explosive combustion of the compressed gas if the flashback or flame return from the blowpipe into the hose.
- Check regulators, hose and blowpipes at frequent intervals, discard any damaged equipment.
- Do not allow oil or grease to get onto the cylinders or regulators. High-pressure oxygen reacts violently with oil or grease and may explode.
- Use a brush to apply soapy water to any joint suspected of leaking. Bubbles will appear if there is a leak. Never check for leaks with a naked flame.
- Never store or use an Oxy-acetylene set adjacent to an electric welder as arcing into the set could occur.
- Galvanise should be ground off before Oxy-acetylene welding as dangerous fumes are given off.
- Wear Oxy-acetylene goggles, these differ from those required for arc welding, non-synthetic overalls, gauntlets and leather boots.
- Never pass acetylene through copper piping.

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WORKING WITH BATTERIES

ACID

- Batteries contain sulphuric acid, which causes serious burns in contact with the skin or eyes. If this happens wash off with a lot of clean water and have eyes checked by a doctor as soon as possible.

CHARGING

Battery charging causes both hydrogen and oxygen to be given off. This can lead to an explosion should a spark ignite the gas mixture. Always ensure that a battery is charged in a well ventilated environment. Observe the following charging procedure:-



1. Don't smoke in the vicinity of charger batteries.
2. Remove screw-on caps, check if flaps should be removed. Check each cell for electrolyte level.
3. Connect clips to terminals (+ to + and - to -) before turning on mains at switch.
4. Charge at one tenth of the amp hour (ah) rating of the battery.
5. Use a hydrometer to check when battery is fully charged. Do not allow amp meter on charger to drop to zero.
6. Turn off mains before disconnecting clips to prevent sparks.

Boost charging, which uses a high rate of charge for a short period on a flat battery should be restricted to about 5 minutes with strict observance of the charging rules. Sealed batteries, requiring no maintenance, are not suitable for boost charging.

FROZEN BATTERIES

- A discharged battery will freeze if it is not protected from frost. When starting or when using jump leads, the battery could explode. The best protection is to keep all batteries well charged. If topping up a battery during the winter months, ensure that any water added is well mixed with the electrolyte solution. Never store a battery on a floor, always place on wooden blocks for insulation.

DISCONNECTING A BATTERY

On modern tractors with a negative earth system, disconnect the negative first and replace last to prevent arcing.

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WORKING WITH BATTERIES (CONT'D)

USE OF JUMP LEADS

Adequate maintenance of a battery and starter system minimises the need to use jump leads.

When using jump leads use the following procedure for negative earth systems.

1. Connect the positive terminals of both batteries using one jump lead.
2. Connect the second lead to the negative terminal of the booster battery.
3. Connect the other end of the negative lead to a good earth point - at least 500 mm from the discharged battery. Do not connect to the negative terminal of the discharged battery as this could cause an explosion due to ignition of gases given off by the battery electrolyte.
4. Check that both leads are clear of any moving parts, run the engine of the donor battery, if fitted. Operate the starter of the vehicle with the run down batter for short periods.
5. When the engine has started, stop the engine of the donor battery. First remove the negative from the tractor chassis, then disconnect the others in reverse order.

Particular care should be taken to ensure that the jump lead clamps of a pair of grip leads connected to a battery never touch. This will lead to a heavy electrical discharge and arcing with consequent injury risk.

CUTTING BARRELS

A high risk of explosion exists when cutting or welding barrels or cans which contain even traces of flammable material such as oil or chemicals. To allow such work to be completed safely:-

- Check with the manufacturer of the barrel contents regarding the safety of cutting.
- Thoroughly drain out all flammable material.
- Wash-out with hot water and detergent.
- Fill the tank with inert material such as water or sand before work commences.

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USE OF COMPRESSED AIR

Many workshops have a permanently installed air compressor, which, depending on the model, operates at a pressure of 150 psi or more. Control is automatic when the compressor is running, the pressure switch in the air receiver tank starts and stops the motor to maintain air pressure at a pre-set level. A safety valve is fitted as fail safe to prevent explosion. A compressor may explode due to a crack in the compressor tank.

- Air compressors require an annual inspection by a qualified person, generally an insurance company Inspector.
- When fitting or removing bayonet type air couplings –to prevent injury if the hose releases grip the flexible hose close to the coupling with one hand and release the coupling with the other. Always stand to the side of the fitting.
- When pumping tyres a high quality pressure gauge should always be used as excessive inflation can cause tyre to burst.
- Failure to follow the correct procedure when fitting a tyre on a wheel rim can produce an explosion, which may result in serious injury or death.

Always use a safety cage when inflating a split rim tyre.

Wear goggles when blowing dust and grit from machinery and equipment. Always direct the air blast away from yourself or other people since air can penetrate the skin and cause death.



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HEALTH

Many substances used in workshops and by-products of workshop processes have potential to cause permanent ill health. Ill-health effects include Dermatitis - irritant or allergic; Respiratory Sensitisation; Neural Effects such as drowsiness/unconsciousness, headache, nausea; Cancer.

Irritant Dermatitis: In this case, the substance in contact with the skin acts as an irritant. Irritation usually occurs on the parts in contact with the substance.

Allergic Dermatitis: In this case, the substance causes the exposed person to become sensitised or develop an allergy. Once a person is sensitised, each time the person comes into contact with the substance, even in trace amounts, dermatitis will develop. This condition will occur all over the body, not just on areas in contact with the substance.

Respiratory Sensitisation or sensitisation of the lungs leads to occupational asthma when sensitised, subsequent exposure to low levels of the substance can trigger attacks.

Petrol:

- Persistent skin contact can cause dermatitis and possibly skin cancer.
- Vapour inhalation is highly dangerous. Never enter an enclosed space where there is a possibility of the presence of petrol fumes.
- Never use petrol for component cleaning.
- When handling, wear oil resistant neoprene or nitrile rubber gloves, face shield and overalls.

Diesel:

- Presents little risk from inhalation until atomised.
- Skin contact can cause either contact or allergic dermatitis. Wear gloves, goggles and overalls.

Oil and Greases:

- Persistent contact with fresh oil can cause dermatitis/irritation.
- Avoid contact with "burnt" engine oil as it is a known carcinogen.
- Keep oil mist from air tools and machining operations to a minimum.



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HEALTH (CONT'D)

- Wear gloves, face shield and coverall as necessary.

Solvents/Thinners

- These give off vapours which, if inhaled, can cause injury to many organs. Short term effects include headache, nausea, eye and respiratory sensitisation. Long term injury can be caused to the lungs, neural system, liver, blood and kidneys.
- Check instructions provided by the supplier.
- Ventilate well.
- Avoid skin contact. Wear gloves, a face shield and coverall. Respirator filters must be to the correct specification to provide protection.



Antifreeze

This contains ethylene glycol. Contact can produce irritation to the skin and eyes and is highly toxic if swallowed. Wear gloves and goggles when handling.

Exhaust Fumes:

Both petrol and diesel engines give off carbon monoxide, which is highly toxic at very low concentrations. Non-burnt hydrocarbons and oxides of nitrogen given off increase cancer risks and affect the nervous system. Diesels generate soot which is a carcinogen. Ventilation preferably of the local exhaust ventilation (L.E.V.) type is required.

Dust:

This can be generated from many sources in the workshop including; clutch and brake linings; grinding and crop dust on machines such as combines. Crop dust can act as a medium for the multiplication of micro-organisms. Exposure to airborne micro-organisms causes respiratory sensitisation and occupational asthma.

- Ventilate well and wear a mask to the correct specification in enclosed spaces or where dust levels remain high.

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HEALTH (CONT'D)

Hygiene

Washing and drying and toilet facilities should be readily available.

- If necessary, use an appropriate hand cleanser to remove heavy oils/contamination. If these are used they must always be washed off with soap and water and use a hand cream to return the skin to a healthy state.
- Use gloves or apply a barrier cream before work.
- Never clean hands with solvent thinner as these degrease the skin and cause dermatitis.

Use of warning signs

Display of suitable warning signs is an integral part of Health & Safety Management. Such signs are mandatory in prescribed situations under the 1989 Act and accompanying Regulations. For example when noise exceeds 90 decibels on a regular basis a warning sign is mandatory. It is advised to use the colours and designs of signs as specified by the European Communities (Safety Signs at Work) Regulations 1980. A booklet depicting these designs is available from H.S.A.

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HEALTH AND SAFETY CHECKLIST FOR WORKSHOPS

ITEM	YES	NO	ACTION REQUIRED
Are persons trained for all tasks?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Is a Safety Statement available?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Is the building structure adequate?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Is there enough space/access?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Is availability of tools adequate?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Are all tools easily accessible?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Is the workshop secure?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Are suitable warning signs displayed?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Is bench space adequate?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Are there any fire hazards?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Is first aid equipment available?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Are fire extinguishers available?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Is heating adequate?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Is lighting adequate?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Is petrol and flammable liquid stored correctly?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Are ill health causing substances controlled?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Are electrical installations adequate?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Is a low voltage electrical system available?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Are extension leads adequate?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Is lifting equipment adequate?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Are jacks available?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Are supports available?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Are statutory checks carried out on lifting equipment?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Are anglegrinders safe for use?	<input type="checkbox"/>	<input type="checkbox"/>	_____

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HEALTH AND SAFETY CHECKLIST FOR WORKSHOPS

ITEM	YES	NO	ACTION REQUIRED
Are bench grinders safe for use?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Are drills safe for use?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Is protective equipment available:	<input type="checkbox"/>	<input type="checkbox"/>	_____
For eyes?	<input type="checkbox"/>	<input type="checkbox"/>	_____
For noise?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Gloves?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Boots?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Overalls?	<input type="checkbox"/>	<input type="checkbox"/>	_____
	<input type="checkbox"/>	<input type="checkbox"/>	_____
Are ventilation Systems adequate?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Is battery charging safe?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Is jump lead use safe?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Is welding carried out safely?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Is compressed air used safely?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Are statutory checks carried out	<input type="checkbox"/>	<input type="checkbox"/>	_____
on air receivers?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Is tyre inflating equipment adequate?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Is a safety cage used for fitting tyres?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Is cutting equipment used safely?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Are hygiene/toilet facilities adequate?	<input type="checkbox"/>	<input type="checkbox"/>	_____
Any other hazards identified?	<input type="checkbox"/>	<input type="checkbox"/>	_____

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NOTES

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Attention:

While every attention has been paid to the preparation of this leaflet, it is intended for guidance only. Regarding the use of specific items of equipment or substances specific information should be sought.

FURTHER INFORMATION

Further information on all aspects of Health & Safety is available from Teagasc and the Health & Safety Authority

