ENVIRONMENTAL HEALTH AND SAFETY

Power and Hand Tool Safety and Machine Guarding

Create a safe work area

- Keep your work area clean and well lit.
- Minimize cluttered benches and tables.
- Do not use power tools in explosive environments:
  - Do not use power tools around flammable liquids, gases, or dusts.
- Keep bystanders, visitors, and co-workers at a safe distance to minimize distractions.

Do the job safely

Do:

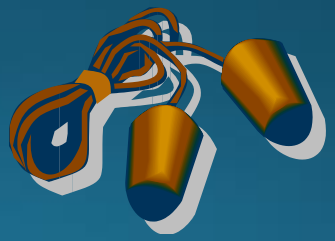
- Use the tools only for the purpose for which they were designed.
- Use clamps, vices, and a stable work surface for the work piece.
- Keep the guards in place and in use.
- Use a method of dust collection to minimize dust exposure and keep the work area clean.

Don't:

- Do not hold the work by hand or against your body.
- Do not force a tool; use the right tool for the job.
- Do not remove or alter guards.
- Do not use accessories from one tool on another tool.
- Don't touch the drill bit, blade, or cutter right after use as it may burn you.

Safety precautions

- Always keep a firm footing when using power tools.
- Be sure you have balance and control before you start the job.
- Use safety equipment such as:
  - Eye protection
  - Hearing protection
  - Dust masks
  - Appropriate footwear
- Keep hands away from rotating or moving parts.



Practice personal safety

- Read all manuals and warnings before using a tool.
- Stay alert and use common sense.
- Do not use power tools if you are not feeling well, are weak, or are experiencing health issues.
- Do not wear loose clothing, loose gloves, or jewelry when operating power tools and long hair should be tied back.
- Keep hands clean and dry and free from grease and oil.

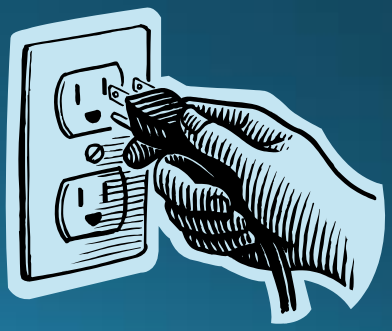

SOME TOOLS ARE IRREPLACEABLE
PROTECT YOUR HANDS
SO THEY LAST A LIFETIME

Tool Maintenance

- Do not use a tool if the Power switch is not working.
- Inspect the tool before use.
- Keep blades and bits sharp.
- Make sure tools are serviced by a qualified individual.
- When replacing parts, make sure they are the same.
- Clean and lubricate tool as directed by manual
- Maintain name plates and warning labels
- Store tools in the “off” position, unplugged, and out of reach of others.

Electricity

- Grounded tools (three pronged cords) must be plugged into a properly grounded installed outlet.
- Never remove or cut off the grounding prong or modify the plug in any way. Do not use any adapter plugs.
- Double Insulated tools have a polarized plug (one blade is wider than the other.) This plug will fit into an outlet only one way. Do not change the plug in any way.
- Do not use AC only rated tools with a DC power supply.
- All portable electric tools that are damaged shall be removed from use and tagged "Do Not Use."



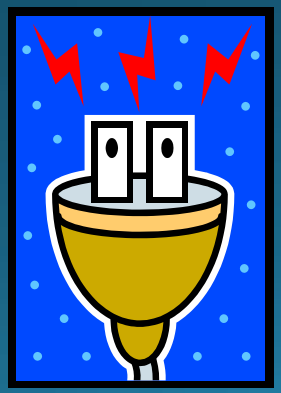
Electricity continued…

- Store battery packs away from other metal objects (paper clips, coins, keys, nails, screws).
  - This can make a connection from one terminal to the other, shorting the battery terminals together and causing burns or fire.

- When using a power tool, don't touch grounded surfaces such as pipes, radiators, ranges and refrigerators. There is a higher risk of electric shock if your body is grounded.

Electricity continued…

- In damp locations, only plug your tool into a Ground Fault Circuit Interrupter (GFCI). If the work area does not have a permanent GFCI on the outlet, use a plug-in GFCI.
- In damp conditions, wear rubber gloves and footwear.
- Don't use or leave power tools in the rain or wet conditions.

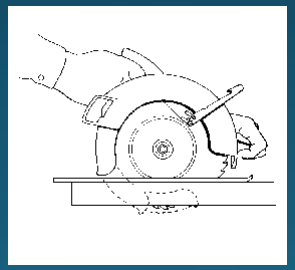


- Do not abuse the cord, carry the tool by its cord, or pull the cord to unplug it.
- Keep the cord away from heat, oil, sharp edges or moving parts.
- Replace damaged cords immediately
- Hold the tool by the insulated gripping surfaces. Contact with hidden wiring or its own cord will make exposed metal parts of the tool "live" and shock the operator.

Machine guarding

- Hazardous moving parts of a power tool need to be safeguarded.
  - For example, belts, gears, shafts, pulleys, sprockets, spindles, drums, fly wheels, chains, or other reciprocating, rotating, or moving parts of equipment must be guarded if such parts are exposed to contact by employees.

- Guards, as necessary, should be provided to protect the operator and others from the following:
  - in-running nip points,
  - Point of Operation
  - rotating parts, and
  - flying chips and sparks.



- Safety guards must never be removed when a tool is being used.

Hand tool safety

- Hand tools are non-powered. They include anything from axes to wrenches.
- The greatest hazards posed by hand tools result from misuse and improper maintenance.

Some examples:

- Using a screwdriver as a chisel may cause the tip of the screwdriver to break and fly, hitting the user or other employees.
- If a wooden handle on a tool such as a hammer or an axe is loose, splintered, or cracked, the head of the tool may fly off and strike the user or another worker.
- A wrench must not be used if its jaws are sprung, because it might slip.
- Impact tools such as chisels, wedges, or drift pins are unsafe if they have mushroomed heads. The heads might shatter on impact, sending sharp fragments flying.

Hand tool safety

- The employer is responsible for the safe condition of tools and equipment used by employees but the employees have the responsibility for properly using and maintaining tools.
- Saw blades, knives, or other tools be directed away from aisle areas and other employees working in close proximity.
- Knives and scissors must be sharp. Dull tools can be more hazardous than sharp ones.
- Appropriate personal protective equipment, e.g., safety goggles, gloves, etc., should be worn due to hazards that may be encountered while using portable power tools and hand tools.

Hand tool safety cont'd…

- Floors should be kept as clean and dry as possible to prevent accidental slips with or around dangerous hand tools.

- Around flammable substances, sparks produced by iron and steel hand tools can be a dangerous ignition source.
  - Where this hazard exists, spark-resistant tools made from brass, plastic, aluminum, or wood will provide for safety.

PNEUMATIC TOOLS

- Pneumatic tools are powered by compressed air and include chippers, drills, hammers, and sanders.
- The main danger is getting hit by one of the tool's attachments or by some kind of fastener the worker is using with the tool.
- Eye protection is required and face protection is recommended for employees working with pneumatic tools.
- Noise is another hazard. Working with noisy tools such as jackhammers requires proper, effective use of hearing protection.

PNEUMATIC TOOLS cont'd…

- Pneumatic tools should be fastened securely to the hose to prevent them from becoming disconnected.
- A safety clip or retainer must be installed to prevent attachments, such as chisels on a chipping hammer, from being unintentionally shot from the barrel.
- Screens must be set up to protect nearby workers from being struck by flying fragments around chippers, riveting guns, staplers, or air drills.
- Compressed air guns should never be pointed toward anyone. Users should never "dead-end" it against themselves or anyone else.

Powder actuated tools

Powder-actuated tools operate like a loaded gun and should be treated with the same respect and precautions. they must be operated only by specially trained employees

- These tools should not be used in an explosive or flammable atmosphere.
- Inspect the tool to determine that it is clean, that all moving parts operate freely, and that the barrel is free from obstructions before use.
- The tool should never be pointed at anybody.
- The tool should not be loaded unless it is to be used immediately. A loaded tool should not be left unattended.
- Hands should be kept clear of the barrel end.

Powder actuated tools

- If a powder-actuated tool misfires, the employee should wait at least 30 seconds, then try firing it again.
  - If it still will not fire, the user should wait another 30 seconds so that the faulty cartridge is less likely to explode, than carefully remove the load. The bad cartridge should be put in water.
- Suitable eye and face protection are essential when using a powder-actuated tool.
- The muzzle end of the tool must have a protective shield or guard centered perpendicularly on the barrel to confine any flying fragments or particles that might otherwise create a hazard when the tool is fired. The tool must be designed so that it will not fire unless it has this kind of safety device.
- All powder-actuated tools must be designed for varying powder charges so that the user can select a powder level necessary to do the work without excessive force.
- If the tool develops a defect during use it should be tagged and taken out of service immediately until it is properly repaired.

HYDRAULIC POWER TOOLS

- The fluid used in hydraulic power tools must be an approved fire-resistant fluid and must retain its operating characteristics at the most extreme temperatures to which it will be exposed.

- The manufacturer's recommended safe operating pressure for hoses, valves, pipes, filters, and other fittings must not be exceeded.

Jacks

- All jacks - lever and ratchet jacks, screw jacks, and hydraulic jacks - must have a device that stops them from jacking up too high.
- The manufacturer's load limit must be permanently marked in a prominent place on the jack and should not be exceeded.
- A jack should never be used to support a lifted load. Once the load has been lifted, it must immediately be blocked up.
- To set up a jack, make certain of the following:
  - the base rests on a firm level surface,
  - the jack is correctly centered,
  - the jack head bears against a level surface, and
  - the lift force is applied evenly.

- All jacks must be inspected before each use and lubricated regularly.
  - If a jack is subjected to an abnormal load or shock, it should be thoroughly examined to make sure it has not been damaged.
- Hydraulic jacks exposed to freezing temperatures must be filled with an adequate antifreeze liquid.

Main points:

- Keep work area clean
- Maintain tools and equipment
- Do not use tools if distracted
- Use tools for their intended purpose only
- Regularly inspect tools and replace parts
- Keep all guards and labels in place
- If tools are not operating properly, place them out of service
- Follow all safety recommendations in the operating manual