



SECTION 5

HAND AND POWER TOOLS



1. POWER TOOLS

- A. References:** 29 CFR 1926 Sub Part I (300-307)
- B.** Employees using hand and power tools and exposed to the hazard of falling, flying, abrasive, and splashing objects, or exposed to harmful dust, fumes, mists vapors, or gases shall be provided with particular PPE necessary to protect them from the hazard by Maul Electric, Inc at no cost to the employee.
- C. Hand Tools:** Hand tools are non-powered tools and include anything from axes to wrenches. The greatest hazard posed by hand tools result from misuse and improper use.
1. All tools will be used for their designed purpose. i.e. a screwdriver may not be used for a chisel.
 2. The handles and point where the head attaches to the handle must be inspected prior to use. Loose heads will be repaired prior to use and tools with damaged, splintered or cracked handles will not be used until repaired.
 3. Wrenches must not be used as hammers. Pipe wrench "teeth" must not be worn smooth or broken. Wrenches with sprung jaws will not be used.
 4. Pipes and bars will not be used on wrench handles for increased leverage.
 5. Impact tools, such as chisels, wedges, or drift pins may not be used if the head is mushroomed or the blade has been "blued" by over heating during sharpening operations.
 6. Chisels and punches should be equipped with hand/wrist impact guards.
 7. CAUTION: Spark Resistant tools are recommended when working around combustible or flammables.
- D. Power Tools:** Power tools are divided in categories based on the power source used, i.e. electric, pneumatic, liquid fuel, hydraulic and powder actuated. Employees must be trained and qualified in the use of power tools and the special hazards they present. Whether furnished by the employer or the employee, the tools shall be maintained in a safe condition. The following general precautions must be followed:



1. Never carry a tool by the cord or the hose.
2. Never yank the cord or hose to disconnect from the power source.
3. Keep all cords and hoses away from sharp edges, hot objects, solvents and oils.
4. Disconnect tools when not in use, before servicing and when changing accessories such as blades, bits and cutters. The plug or connection must be disconnected from the power source and clearly visible to the individual servicing the equipment or the lockout procedure must be followed.
5. All observers should be kept at a safe distance from the work area.
6. Work should be secured with clamps or a vise, freeing both hands to operate the tool.
7. Avoid accidental starting. A power tool should not be carried with the finger by the starting switch.
8. Tools should be maintained, inspected, kept sharp, lubricated properly and clean for safe performance.
9. Keep good footing and balance when working with power tools.
10. All tools that are damaged or defective must be tagged and removed from service immediately.

E. Guards And Safety Switches:

1. Belts, gears, shafts, pulleys, sprockets, spindles, drums, fly wheels, chains, or other rotating, reciprocating or moving parts of equipment must be guarded if such parts are exposed to contact by employees.
2. Guards must be provided to protect operators and employees from the:
 - a) Point of Operations
 - b) In running nip points
 - c) Rotating parts
 - d) Flying chips and sparks
3. Safety Guards, i.e. power saws, portable grinders, must never be operated with disabled blade guards or covers.
4. The following hand held power tools must be equipped with a momentary contact "on-off" control switch:



- a) Drills, tapers, fastener drivers, horizontal, vertical and angle grinders with wheels larger than two inches in diameter, disc sanders, belt sanders, reciprocating saws, saber saws and other similar tools.
 - b) The above listed tools may be equipped with a lock on control provided that turnoff may be accomplished with a single motion of the same finger or fingers that turn it on.
5. The following hand held powered tools may be equipped with only a positive on-off control switch:
- a) Platen sanders, grinders with wheels of two inches or less in diameter, routers planers, laminate trimmers, nibblers, shears, scroll saws and jigsaws with blade shanks one-fourth inch wide or less.
 - b) Other hand held tools, such as circular saws, chain saws, and percussion tools without positive accessory holding means must be equipped with a constant pressure switch that will shut off the power when released.

F. Electric Tools:

1. All hand held electric tools used in wet or potentially wet locations will be connected to GFCI.
2. All hand held electric tools used in confined space entry work will be connected to GFCI.
3. All hand held electric tools shall be equipped with a three-wire cord with ground and the ground connected, or double insulated, or powered by a low voltage isolation transformer.
4. The grounding pins must not be removed.
5. Electric tools must be operated within their design limitations.
6. Gloves, safety footwear and eyewear are recommended for use while using electric tools.
7. Work areas should be kept well lit.



G. Powered Abrasive Wheel Tools:

1. Abrasive wheels selected for tools must be rated for the spindle wheel speed.
2. Before mounting an abrasive wheel it should be inspected closely and a sounding or ring test must be completed. NOTE: A ring test is accomplished by tapping the wheel gently with a light non-metallic implement. If the wheel sounds cracked or dead, the must be discarded. If the wheel is sound, it will give a clear metallic tone or ring.
3. When mounting wheels, the installer must be sure that it fits freely on the spindle. The spindle nut must be tightened enough to hold the wheel in place, but not so tight as to distort the flange.
4. Employees must never stand in front of the wheel when starting.
5. The wheel should not be used until it has come to full operating speed.
6. Safety guards must be in place and functioning properly.
7. Face shields over safety glasses with side shields should be worn.
8. Turn off the power when completed.
9. Never clamp a hand held grinder in a vise or to a workbench.
10. In many client locations, use of electric tools, including battery-operated tools constitutes hot work and a hot work permit will be required.

H. Pneumatic Tools:

1. Pneumatic tools that shoot nails, rivets, or staples, and operate at more than 100 PSI, must be equipped with a special device to keep fasteners from being ejected, unless the muzzle is pressed against the work surface.
2. Eyewear is required for all operations, and face protection is recommended for work with pneumatic tools.
3. Hearing protection is required.
4. Hoses connected to pneumatic tools must be equipped with positive locking devices or wired together at the connection



hose/tool connection point and the tool hose to feed hose connection point.

5. Airless spray guns operating at 1,000 PSI or more must be equipped with manual safety devices which will prevent pulling the trigger until the safety is manually released.
6. Air hoses more than one half inch in diameter must have a safety excess flow check valve installed at the source that will cause the air supply to shut off automatically in the event of hose failure.
7. A safety clip or retainer must be installed to prevent attachments, such as chisels on a chipping hammer, from being accidentally shot out from the barrel.
8. Cups installed on impact guns must be installed with a pin and the rubber-retaining ring in place. A piece of tape should also be installed around the rubber-retaining ring.
9. Compressed air guns must never be placed against body parts and turned on.
10. Compressed tools must not be pointed at other individuals.

I. Powder Actuated Tools:

1. Powder actuated tools must be operated by trained, qualified and licensed employees only.
2. They must never be used in an explosive or flammable atmosphere.
3. The tool must be inspected prior to use, to insure that it is clean, all moving parts operate freely, and the barrel is free from obstructions.
4. It must never be pointed at anyone.
5. The tool must not be loaded unless it is to be used immediately.
6. When the tool is not in use, it must be locked away.
7. Hands must be kept clear of the barrel end.
8. The tool must be designed that it will not operate until the barrel and the surface of the material to be fastened are pressed together with a force of five pounds greater than the total weight of the tool.



9. In the event of misfire, the user must wait 30 seconds before attempting to fire again. If the tool misfires again, wait another 30 seconds and remove the load. The bad cartridge should be placed in water.
 10. Eye and Hearing protection must be worn at all times during use.
 11. The area should be marked with barrier tape and signs posted.
 12. Tools must be designed to accept varying load charges. Extreme care must be used to select the proper charge.
 13. 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.
 14. Any defect noticed in a tool will require immediate removal from service and tagging to indicate defect.
 15. Fasteners must not be fired into material, which would allow the fastener to pass through to the other side.
 16. The fastener must not be driven into materials like brick or concrete any closer than 3 inches to an edge or corner.
 17. The fastener must not come any closer than 1/2 inch from any corner or edge when fired into steel.
 18. Fasteners must not be driven into spalled areas.
 19. An alignment guide must be used when shooting a fastener into an existing hole.
 20. Fasteners must not be driven into very hard or brittle materials, which might chip, spatter or make the fastener ricochet.
- J. 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 manufacturers recommended safe operating pressure for hoses, valves, filters and fittings must not be exceeded.
- K. Liquid-Fuel Tools:** The most serious hazard of fuel-powered tools is the vapors from fuel that can burn or explode and give off dangerous exhaust.
1. Care must be used in the transport, storage and use of fuel.



2. The engine must be shut off and allowed to cool down before refueling.
3. A fuel-powered tool must not be used in a confined space, unless appropriate ventilation and SCBA are in use.
4. Fire extinguishers must be located with the tool.

L. Jacks:

1. Lever, ratchet, screw and hydraulic jacks must be equipped with a device that prevents them from jacking up to high.
2. Load rating and manufacturers recommendations must be permanently marked on the jack in a prominent place.
3. Manufacturer's recommendations must not be exceeded.
4. A jack must never be used to support a lifted load. The lifted load must be blocked up.
5. Use wooden blocking under the base, if necessary, to keep the jack level and secure.
6. If the lift surface is metal, a one-inch thick hardwood block or equivalent between it and the metal jack head must be installed to prevent slippage.
7. A jack must be set up so that:
 - a) The base rests on a firm, level surface.
 - b) The jack is correctly centered.
 - c) The jack head bears against a level surface.
 - d) The lift force is applied squarely.
8. Jacks exposed to freezing temperatures must be filled with an adequate anti-freeze liquid.
9. If a jack is subjected to abnormal load or shock, it must be thoroughly inspected to make sure that it has not been damaged.
10. Leaking jacks, damaged jacks, bent jacks, must be taken out of service and tagged as defective, immediately.