

CHAPTER 7

SMALL TOOLS AND EQUIPMENT

I. GENERAL

A review of accidents in our industry indicates that our personnel are very good at dealing with the hazards associated with the use of explosives, radioactive materials and high pressure, as examples. Our major problem is how our personnel handle common small tools and equipment. These items account for a disproportional number of the personnel injury accidents suffered by Wireline personnel.

Power operated tools that are designed to accommodate guards, shall be equipped with such guards when in use. Do not manipulate any guard in such a way that the integrity or ability to provide the intended protection is compromised. All tools are restricted to the use for which they are intended and shall not be used if they are damaged or unsafe. In-operable tools are to be removed from the work area.

A. Tools

1. Hammers, chisels, punches and striking type tools - must be kept in good condition. They must be free from burrs and cracks and any other damage that may cause them to splinter when struck. Hammers must have good tight handles, properly designed and installed.
2. Wrenches
 - a. Use the right size to fit the nut. Do not use shims.
 - b. Never use a wrench as a hammer.
 - c. Keep jaws sharp on pipe wrenches. Replace jaws periodically.
 - d. Keep the open jaws of the wrench toward the direction of the pull.
 - e. Have secure footing and exert a pull rather than a jerk. Do not "bounce" tool.
 - f. A pipe handle extension ("cheater") places undue strain on the tool. Use a larger wrench.
3. Screwdrivers
 - a. Do not hold the material being worked on in your hand. Hold the work on a bench or vise.
 - b. Apply the force on the tool away from your face, body or hands.
 - c. Repair or replace screwdrivers with rounded, chipped or cracked heads. Handles must be kept in good condition or replaced.

- d. The blade must fit the slot of the screw. Use the right size.
- e. Screwdrivers must not be used as a chisel for prying.

4. Files

- a. All files must be provided with handles. They should never be used for any purpose except filing.
- b. Use correctly. Apply steady forward pressure and slide away from work on the return stroke. Keep them sharp and clean.

5. Pliers

- a. Grasp pliers at the end to avoid being pinched.
- b. Never use pliers in place of a wrench.
- c. When clipping wire, hold the wire and cutters well away from your face. Be sure to wear safety goggles.
- d. Replace pliers when edges or gripping surfaces are worn.
- e. When handling wire always securely clamp one end of the wire in a vise.

6. Handles

- a. Remove the handle from a jack when it is not in use. Use the correct size jack.
- b. Handles of all sledges, hammers, mauls, axes, picks, mattocks and other striking tools must be properly wedged into the heads.
- c. Files should not be used without handles.
- d. Nonconductive materials, such as wood or fiberglass, must be used for handles on shovels and posthole diggers to protect against electrical shock.
- e. Cracked or split handles must be replaced as soon as possible. Never paint wooden handles and never tape cracked or split handles.

B. Equipment

1. Abrasive wheel grinders

- a. Safety washers must be used on all abrasive wheels. Abrasive wheels must have a protective shield and a tool rest that is adjustable to maintain a clearance no greater than one-eighth inch. The operator must wear a face shield or goggles; safety glasses, even with side shields, are not proper protection.
- b. Never plug in a grinder until you are sure it is in the off position.

c. The spindle speed of the machine must not exceed the maximum operating speed marked on the wheel.

d. Before a wheel is mounted, it should be closely inspected. This inspection should include the "ring test": tap lightly with a nonmetallic instrument. If the wheel sounds dead or does not ring, it is cracked or defective and is not to be used.

2. Ladders

a. When portable ladders are used on hard surfaces, they must be equipped with nonskid footing or they must be firmly attached to prevent slipping. The top of the ladder should be secured or the ladder should be held by another person. The base of the ladder should be placed away from the wall by a distance of about one-fourth of the working length of the ladder. Always face the ladder when ascending or descending.

b. Ladder side rails must extend 3' above top of upper landing surface. Extension ladders should be placed at a 4:1 ratio. When ladder can not be extended, secure its top to a rigid support that will not deflect.

c. Ladders must be maintained in good condition. Ladders will be inspected when first purchased and at least twice a year thereafter. Ladders will also be inspected after an event or occurrence that may affect their safe use. Ladders must meet OSHA Safety Standards. Ladders with visible defects will be tagged, removed from the work area and disposed of.

d. Do not paint wooden or fiberglass ladders.

e. Do not stand on the top two steps of step ladders.

f. Do not carry anything in hands that could cause injury in the case of a fall.

g. Do not use metal ladders when performing electrical work.

h. Unsecured portable ladders should not be left standing unattended.

i. Ladder rungs, cleats and steps will be parallel, level and uniformly spaced, when the ladder is in position for use.

j. Do not load the ladder beyond the maximum load for which it was built. Do not load the ladder beyond the manufacturer's rated capacity.

k. Ladders are to be used only for the purpose for which they were designed.

3. Power mowers, edgers and trimmers

a. Before beginning work, carefully inspect the area and remove all wire, rocks, glass and other potentially hazardous items that may be thrown by the equipment's blade. The mower discharge chute and rear mower housing must be equipped with a deflector shield.

- b. Before starting the mower, inspect it for loose parts and defects. Disconnect the spark plug wire before attempting an inspection or repair of the mower blade.
- c. Do not add fuel to the engine gas tank while it is running or while hot. Do not refuel in a closed area.
- d. Do not allow anyone to loiter in the vicinity of operations.
- e. The operator is to wear safety glasses with side shields or goggles when mowing, edging or trimming. Safety shoes are also to be worn.
- f. Fuel for power mowers must be carried and stored in approved containers.
- g. Never leave power equipment running when it is unattended.

4. Power tools

- a. Before repairing, servicing or changing components on any power tool, the power is to be disconnected. If the tool is driven by a gasoline engine, the ignition wire is to be disconnected from the spark plug, or other precautions must be taken to prevent accidental firing of the engine.
- b. When there is danger of explosion or fire, air-operated tools must be used. Persons using air-operated tools must be sure that the source of air supply cannot exceed the working pressure of the tool.
- c. The frames of portable electrical tools and equipment, except Underwriters Laboratory (UL) approved double insulated tools, must be grounded either through a third wire in the cable containing the circuit conductors or through a separate wire grounded at the source of the current. Outlets supplying power to portable electric tools that are either outside or in wet locations must have approved ground-fault circuit protection, or other means of grounding the circuit.
- d. Hand-held power tools must be equipped with a switch that is manually held in the "on" position (deadman switch). All drill presses should be equipped with a deadman switch.
- e. Electric power tools and equipment showing worn, deteriorated or inadequate insulation must be removed from service until repaired or replaced.

5. Steamer hoses

- a. The steamer hose should have the nozzle attached and held securely. An operator should not point the nozzle in the general direction of other persons. Use heat-resistant gloves. Steamer hoses should be visually inspected before each use. They should be hydrostatically tested to the working pressure of the hose at least once a year.

6. Floor jacks, hoist and support stands - must be in the best condition possible.

7. Air Compressors

- a. All automatically starting air compressors will be marked with the sign,

"CAUTION: THIS EQUIPMENT MAY START AUTOMATICALLY".

b. All compressors will have an operable pressure regulator and safety pressure relief valve.

c. All belts and pulleys must be guarded to prevent accidental injury.

8. Arc Welding Guidelines

a. The presence of a plastic butane lighter is strictly forbidden within 50 feet of any spark-producing flame, welding or flame cutting operation.

b. Only authorized personnel will use welding equipment.

c. Never weld on any tank or enclosed vessel. Emergency welding can be performed only with written approval of the facility manager when it has been cleaned, safety-checked and found free of combustible or hazardous materials, and written authorization is issued by the manager.

d. Approved welding helmets must be used during all arc welding or arc cutting operations, and safety glasses must be worn underneath the welding helmets.

e. Eye-protection warning signs will be placed on or near all welding equipment.

f. All welding cables, electrode holders, ground clamps, receptacles and other welding equipment will be checked before use.

g. Be sure welding machine is turned off before plugging in or disconnecting.

h. Before striking an arc, be sure there is no one in danger of getting eye burns.

i. Protect all finished surfaces near the weld.

j. Do not weld where hot slag can either drop on other people or on flammable substances.

k. Always inspect welding hood for light leaks. Keep lenses clean or replace them as necessary.

l. Always have good ventilation when welding coated metals, such as zinc or cadmium, because fumes from them are very toxic.

m. Do not throw rod ends on floor; they can roll under foot and cause serious injury.

n. Fire extinguishing equipment must be positioned nearby in easy reach and in the exit direction for each hot work location.

9. Gas Welding Guidelines

- a. Only authorized personnel will use welding or cutting equipment. This list of people will be posted on the bulletin board.
- b. Never cut or weld on any tank or vessel except in an emergency and then only with written approval of the facility manager after it has been cleaned, safety-checked, and found free of combustible or hazardous materials.
- c. Eye-protection warning signs will be placed on all mobile and near all stationary gas welding equipment.
- d. Goggles or other approved eye protection must be used during all gas welding or cutting operations.
- e. All hoses, gauges, regulators, torches and other associated equipment will be checked each month on a regular schedule.
- f. Gas cylinders will always be kept in an upright position and securely chained in that position.
- g. Always check hoses and torch before turning pressure on.
- h. Do not open the valves on a cylinder until the pressure diaphragms have backed off.
- i. Do not use any oil on any oxygen equipment.
- j. Always use friction lighter for flame; do not use hot metal, cigarettes, matches, cigarette lighter, etc.
- k. Always watch cut-off; do not allow hot or heavy pieces of metal to fall where damage can be done. Be especially cautious on cement floors.
- l. Never cut metal where flame comes in contact with cement.
- m. Cylinders must always be turned off after use and pressure must be bled off hoses.
- n. Protective caps will be in place on all cylinders not in use, including all empty cylinders.
- o. Keep heat away from gas cylinders, The fusible plug in acetylene cylinders melts at about 220°F.
- p. Always have good ventilation when welding or cutting. Coated metals give off very toxic fumes.
- q. The equipment to be worked on must be removed from any hazardous area.
- r. Fire-extinguishing equipment must be positioned nearby, within easy reach and in the exit direction for each gas welding unit location.

10. Battery Chargers

- a. Battery chargers need to be inspected before each use.
- b. Before any battery charger is plugged into a receptacle, the cord, plug and receptacle are to be checked for worn, broken and / or damaged parts. If worn, broken and / or damaged parts are found, the charger is to be removed from service until the necessary repairs are made.
- c. All battery chargers must be equipped with a three-wire cord with a properly attached ground.
- d. The charger power supply must be turned off when either connecting or disconnecting the charger to a battery.
- e. Impact-resistant chemical goggles must always be worn when using a battery charger.
- f. The immediate area within a 10-foot (3-meter) radius around a battery being charged must be considered a **NO SMOKING AREA** and a sign to that effect must be posted.

11. Battery Jumping Guidelines

- a. Before attempting to jump start a disabled vehicle, always ensure you have vehicles of the same voltages. (6 to 6 volt, 12 to 12 volt and 24 to 24 volt)
- b. Position both vehicles so no employees can be trapped between them if one or both move during the hook-up, starting or disconnecting procedures.
- c. Make certain the vehicles do not touch.
- d. Turn off all battery-operated accessories on both vehicles.
- e. Be sure the switches are off on both vehicles until the hook-up is made.
- f. Remove the vent caps from both batteries.
- g. Connect one cable to the positive (+) part of the booster battery. Connect the other end of this cable to the positive (+) part of the dead battery.
- h. Connect second cable to the negative (-) part of the booster battery. Connect other end of the second cable to a clean, unpainted area of the disabled vehicle away from the battery.
NOTE: Important, do not connect to the negative part of the dead battery! Sparks could ignite any accumulated hydrogen gas causing the battery to explode.
- i. Start the engine of the booster vehicle first then start the disabled vehicle.
- j. Once the disabled vehicle is running, disconnect the cable end which was

7.7

connected to the clean unpainted area of the disabled vehicle then disconnect remaining cable ends.

12. Hoists

a. Hand-operated and electric hoists and trolleys of all types should be designed with the safety of the operating personnel first in mind.

b. **DO NOT LOAD BEYOND THE RATED CAPACITY.** The immediate danger is the possible failure of some load-carrying parts. Overloading might also start which could lead to some future failure, even at less than rated capacity.

Mark the rated load capacity on each hoist (including the hoists on pick-up trucks) so it can be read while operating.

c. Establish an inspection and maintenance program to ensure the continued safe operating condition of this equipment. Heavy use or corrosive conditions may dictate the need for more frequent inspections. Maintain inspection and maintenance records as required.

d. **DO NOT USE HOISTING CABLES OR CHAINS AS A SUBSTITUTE FOR SLINGS;** use slings only. Cable or chain slings should be of proper size and type for load handling; never use slings showing physical damage of any degree.

e. Whenever the hoist is lowered so as to take the load off the wire rope, the operator should determine, before again making a lift, whether the wire rope is properly reaved on the drum.

f. Do not carry a load over other people and, as nearly as possible, not over other equipment.

g. Always inch the hoist into the load. Running into the load at full hoist speed imposes excessive overloads on the hoist and could result in failure of parts and / or supporting structure. This is particularly true with high hoisting speeds.

h. Limit switches are for emergency use only and should not be tripped during normal operation. If it is necessary to travel the limit, use extreme caution and approach the limit slowly or by inching. Do not leave hook block in contact with limit switch at end of the operation. A phase reversal with the block in this position will probably result in damage to the hoist if the "down" button or control rope is operated.

i. Be sure the hoist raises and lowers properly when the corresponding push buttons or control ropes are operated. A reversal of direction indicates a phase reversal in the current conductor, the reversal of the rope on the drum or an interchange of wires on a push button, any of which would cause the limit switch to be inoperative. Do not, under any circumstances operate the equipment until the trouble has been found and corrected.

j. Center the hoist over the load before lifting. Do not side-pull or end-pull.

k. Know the hand signals of hoisting, cross travel and crane travel if working with

cross travel and crane travel if working with cab-operated hoists or cranes (refer to hand signals chart located at the end of Chapter 5). Operators should accept the signals of only those persons authorized to give them.

l. Do not leave the load suspended in the air unattended.

m. Do not jab controls unnecessarily. Hoist motors are generally high-torque, high-slip types. Each start causes an inrush of current greater than the running current and leads to overheating and heat failure or burn-out, if continued to excess.

n. Do not use an opposite direction button for a brake.

o. Know how far the trolley or bridge will travel before the brake will stop them.

p. All load hooks will be equipped with safety latches.

q. Do not move the hoist with a load until it has been ascertained the chains are properly hooked and the safety snap is in use.

r. The end stops of the hoist must be bolted and not welded.

s. Hoist inspections shall be conducted as follows:

i. **Daily**, when used, each hoist shall be checked for proper functioning and safe operating conditions by the user or other designated person (no documentation of daily inspections is required).

ii. **Every 6 months**, a documented inspection will be conducted by a lead mechanic.

iii. **Annually**, a complete inspection of each hoist shall be made according to the recommendations of the manufacturer or other competent authority. This inspection shall include crack detection of the hooks, shall be documented and shall be conducted by an authorized person.

t. Any equipment found unsafe will be removed from service until repairs have been made.