Section 13

Hand and Portable Power Tools
Hand & Power Tools

References

EM 385-1-1 Section 13
29 CFR 1926 Subpart I
29 CFR 1910 Subpart P
Potential Contractor Mishaps

- Amputation
- Laceration
- Contusion
- Electrocution
Direct Causes

- Failure to guard point of operation
- Removal or over riding guarding devices
- Poor maintenance
- General misuse.
Types of Power Tools

- Electric
- Pneumatic (air)
- Liquid fuel
- Hydraulic
- Powder-actuated
Power tools shall be of a manufacture listed by a nationally recognized testing laboratory for the specific application for which they are to be used.
Use, Inspection, and Maintenance

Hand and power tools shall be used, inspected, and maintained in accordance with the manufacturer's instructions and recommendations and shall be used only for the purpose for which designed. A copy of the manufacturer's instructions and recommendations shall be maintained with the tools.
Examples of Misuse

Hand and power tools shall be inspected, tested, and determined to be in safe operating condition before use. Continued periodic inspections shall be made to assure safe operating condition and proper maintenance.
Hand and power tools shall be in good repair and with all required safety devices installed and properly adjusted: tools having defects that will impair their strength or render them unsafe shall be removed from service.
Hand & Power Tools Guarding

Section 13.A.03

a. Power tools designed to accommodate guards shall be equipped with such guards. All guards must be functional.

b. Reciprocating, rotating, and moving parts of equipment shall be guarded if exposed to contact by employees or otherwise create a hazard.

29 CFR 1926.300
Tool Mishandling

- Throwing tools or materials from one location to another or from one person to another, or dropping them to lower levels, shall not be permitted.
Guarding Requirements

- Belts
- Gears
- Shafts
- Pulleys
- Sprockets
- Spindles
- Drums
- Flywheels
- Chains
- Other moving parts
13.A.06 Only non-sparking tools shall be used in locations where sources of ignition may cause a fire or explosion.
When fuel-powered tools are used in enclosed spaces, the requirements for concentrations of toxic gases and use of personal protective equipment, as outlined in sections 5 and 6 of this manual, shall apply.

- Section 5 (PPE)
- Section 6 (Hazardous Environment)
Clothing

Loose and frayed clothing, loose long hair, dangling jewelry (including dangling earrings, chains, and wrist watches) shall not be worn while working with any power tool.
General Power Tool Precautions

- Never carry a tool by the cord or hose
- Never yank the cord to unplug it
- Keep cords and hoses away from heat, oil, and sharp edges
- Disconnect tools when not in use
- Make sure observers are at a safe distance
- Secure work with a vise or clamp
13.B.01 With some exception, abrasive wheels shall be used only on machines provided with safety guards.
Safety With Power Grinders

Grinders shall be supplied with power sufficient to maintain the spindle speed at safe levels under all conditions of normal operation.
Guarding.

Guard not functional, wedged up with a piece of wood.
Portable power-driven circular saws shall be equipped with guards above and below the base plate or shoe.

29CFR1910.243
Radial Arm Saws

The table of radial arm or swing saws shall extend beyond the leading edge of the saw blade.

13.C.06
Power Tools Requiring Momentary Switches

- Drills
- Tappers
- Fastener drivers
- Disc and belt sanders
- Reciprocating saws
- Horizontal, vertical, and angle grinders
- Saber saws

**Note:** These tools can have a “lock-on” switch that turns off with a single finger motion.
Pneumatic Tools

Safety clips or retainers shall be installed and maintained on pneumatic impact tools to prevent dies and tools from being accidentally expelled from the barrel.

13.D.01
13.E Explosive-Actuated Tools

Each tool shall be provided with the following:

- a. A lockable container with the words "POWDERACTUATED TOOL" in plain sight on the outside and a notice reading "WARNING - POWDER-ACTUATED TOOL TO BE USED ONLY BY A QUALIFIED OPERATOR AND KEPT UNDER LOCK AND KEY WHEN NOT IN USE" on the inside
Fasteners shall not be driven into soft or easily penetrable materials unless they are backed by a material that will prevent the fastener from passing through to the other side.

13.E.08.a
Powder-Actuated Tools

Only qualified operators shall operate explosive-actuated tools. A qualified operator is one who has:

- a. Been trained by an authorized instructor (one who has been trained, authorized, and provided an authorized instructor's card by the tool manufacturer or by an authorized representative of the tool manufacturer);
- b. Passed a written examination provided by the manufacturer of the tool; and
- c. Possesses a qualified operator's card supplied by the manufacturer and issued and signed by both the instructor and the operator.

13.E.02
Safety With Powder-Actuated Tools

- Do not use in an explosive or flammable atmosphere
- Inspect the tool prior to use
- Never point the tool at anyone
- Load the tool only when it is going to be used
- Keep hands clear of the barrel end
The tool operator shall wear safety goggles or other face and eye protection.
Powder Actuated Tools

Carp. Apprentice in head by nail fired from powder actuated tool. Operator was anchoring plywood form for pouring a concrete wall. Nail traveled 27 feet before striking victim.
Chain Saws

Chain saws shall have an automatic chain brake or kickback device.
Chain Saw Basics

13.F.03 Operators will wear proper PPE. Eye, ear, hand, foot (safety shoes), and leg protection are required as a minimum.

13.F.04 Chain saws will not be fueled while running, while hot, or near an open flame. Saws will not be started within 10 ft (3 m) of a fuel container.

13.F.05 The operator will hold the saw with both hands during all cutting operations.

13.F.06 A chain saw must never be used to cut above the operators' shoulder height.
Power-driven Nailers and Staplers

13.H.01 This section applies to hand-held electric, combustion or pneumatically driven nailers, staplers, and other similar equipment (heretofore referred to as “nailers” in this section) which operate by ejecting a fastener into the material to be fastened when a trigger, lever, or other manual device is actuated. This does not apply to common spring-loaded “staple guns”.
13.H.02 Nailers shall have a safety device on the muzzle to prevent the tool from ejecting fasteners unless the muzzle is in contact with the work surface. The contact trip device or trigger shall not be secured in an “on” position.
Nailers shall be operated in a way to minimize the danger to others and the operator from ricochets, air-firing, and firing through materials being fastened.

13.H.03
The Five Basic Rules for Power Tools

1. Keep all tools regularly maintained
2. Use the right tool for the job
3. Examine each tool for damage before use
4. Operate tools in accordance with the manufacturer
5. Provide and use the proper personal protective equipment
Summary

- Trained operators
- Safe Equipment
  - Guards in place
  - Cords in serviceable condition
  - Personal Protective Equipment used
  - Good Housekeeping
  - Ground Fault Circuit Interrupters