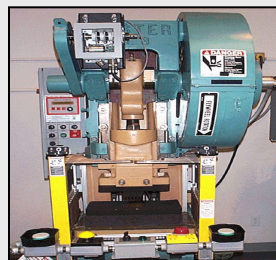
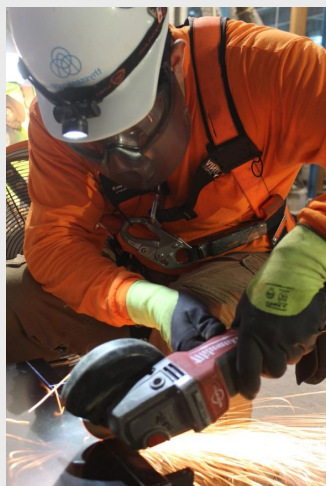




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# Hand & Portable Power Tools Subpart P



# Objectives

After completing this lesson, students should be able to:

- Identify common hand and portable powered tool hazards
- Select standards applicable to hand and portable powered tool hazards
- Recommend feasible abatement methods for hand and portable powered tool hazards

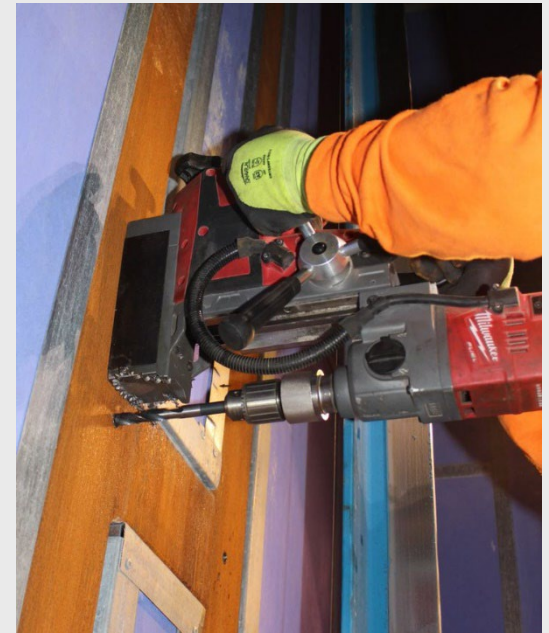
# Hand and Portable Powered Tools

- 1910.241 - Definitions.
- 1910.242 - Hand and portable powered tools and equipment, general.
- 1910.243 - Guarding of portable powered tools.
- 1910.244 - Other portable tools and equipment.
- OSHA PUB 3080

# General Requirements

Employer is responsible for the safe condition of tools and equipment used by employees, **including those which may be furnished by employees.**

1910.242(a)



# Hazards

- Point of operation
- In-running nip points
- Rotating parts
- Flying chips and sparks
- Electrical burns and shock



# Hazards

- Flying, falling, abrasive material, splash
- Harmful dust, fumes, mists, gases, vapors
- Electrical shock from damaged cords, hazardous connections, improper grounding
- Vibration and impacts

# Most Common Injuries

- Electric shock
- Flash burns
- Struck by falling debris
- Hearing loss
- Cuts
- Soft tissue injuries

# 5 Basic Safety Rules

- Keep all tools in good condition with regular maintenance
- Use the right tool for the job
- Examine each tool for damage before use and do not use damaged tools
- Operate tools according to the manufacturers' instructions
- Provide and use properly, the correct PPE



# Hand Tools

- These are tools powered manually.



# Hand Tools

- Injuries usually caused by misuse or improper maintenance
- DO NOT
  - Use wrenches with sprung jaws
  - Impact tools with “mushroom heads”
  - Tools with loose, cracked or splintered handles
  - Screwdriver as a chisel
- Inspect taped handles to ensure tool is not damaged

# Cutting Tools

- Sharp blades are actually safer than dull ones;
- Use PPE such as cut resistant gloves
- Always cut away from yourself
- Do not leave cutting tools laying around
  - Clean up
  - Store the tool
  - Blade down
- Don't try to catch it if it's falling

# Power Tools

- Types
  - Electric (direct and direct)
  - Pneumatic
  - Liquid Fuel
  - Hydraulic
  - Powder Actuated
- They have guards and safety switches
- Hazardous if NOT USED CORRECTLY

# Portable Powered Tools

- Portable Circular Saws
  - Must be equipped with guards above and below the base plate or shoe.
  - Lower guard shall automatically and instantly return to covering position.



1910.243(a)(1)

# Circular Saw Guarding Hazard



# Switches & Controls

## Constant Pressure Switch:

Circular Saws >2" blades

Chainsaws powered by electric, hydraulic, or pneumatic

Percussion Tools w/o positive accessory holding means



1910.243(a)(2)(i)

# Switches & Controls

## Constant Pressure Throttle:

Gas powered chainsaws



1910.243(a)(2)(i)



# Switches & Controls

Constant Pressure Switch & LOCK-ON Control provided turn off can be accomplished by a single finger stroke.

Drills, tapers, fastening drivers, horizontal & vertical & angle grinders w/ >2", disk sanders >2", belt sanders, reciprocating saws, saber & scroll & jig saws w/ shanks >1/4", and other similar tools.

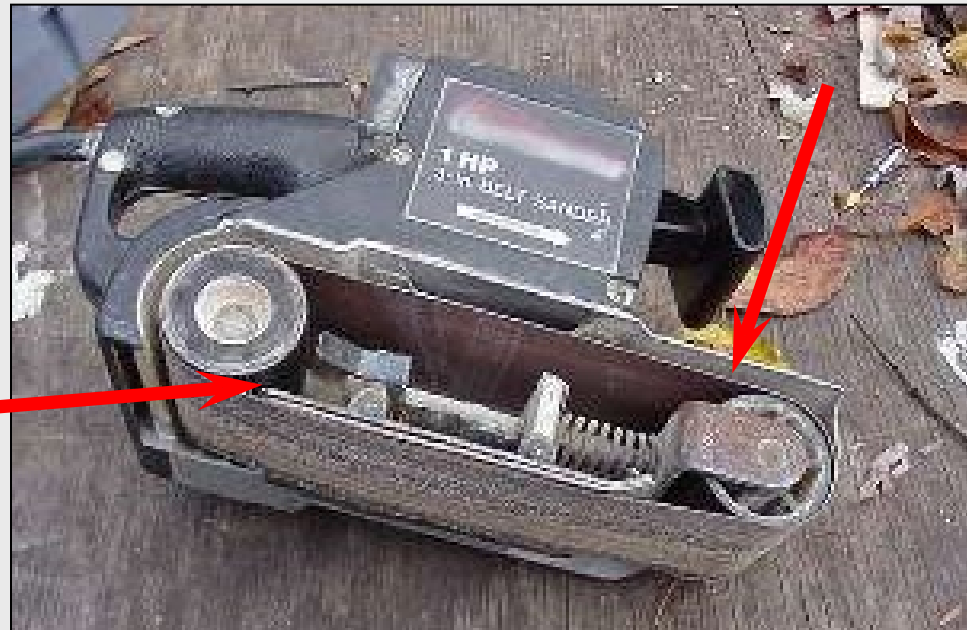


1910.243(a)(2)(ii)

# Portable Belt Sanding Machines

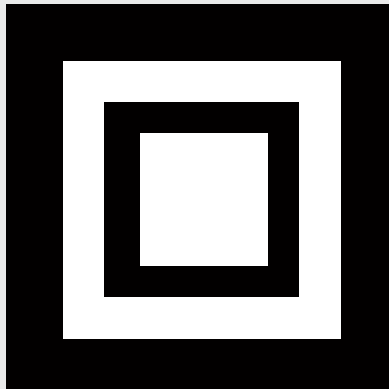
Belt sanding machines shall be provided with guards at each nip point where the sanding belt runs onto a pulley.

**Nip Point**



# Grounding

Portable electric powered tools shall meet the electrical requirements of Subpart S.



# Compressed Air Used for Cleaning

Compressed air shall not be used for cleaning purposes except where **reduced to less than 30 p.s.i.** and then only with effective chip guarding and personal protective equipment

1910.242(b)



# Pneumatic Powered Tools

A tool retainer shall be installed on each piece of utilization equipment which, without such a retainer, may eject the tool.



# Pneumatic Powered Tools

Hose and hose connections used for...compressed air shall...be designed for the pressure and service to which they are subject.



1910.243(b)(2)

# Portable Abrasive Wheels



# Portable Abrasive Wheels

Abrasive wheels shall be used only on machines provided with safety guards as defined in paragraphs:

- (1) General Requirements
- (2) Cup Wheels
- (3) Vertical Portable Grinders
- (4) Other Portable Grinders



1910.243(c)(1)



# Portable Abrasive Wheels

- General Requirement EXCEPTIONS:
  - Used for internal work
  - 2” and smaller in diameter
  - Type 16, 17, 18, 18R, 19 cones



1910.243(c)(1)(i)

# Portable Abrasive Wheels

Safety guards used on machines known as right angle head or vertical portable grinders shall have a maximum exposure angle of 180 degrees.



1910.243(c)(3)

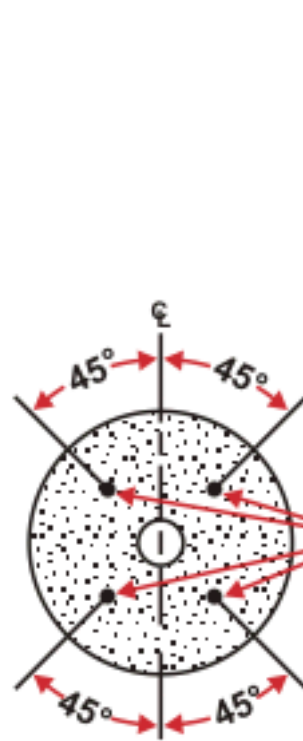
# Portable Abrasive Wheels

- Mounting & Inspection of Portable Abrasive Wheels
  - ALL wheels closely inspected
  - ALL wheels ring tested [see 1910.215(d)(1)]
  - Spindle speeds not exceeded
  - Exceptions:
    - Natural sandstone wheels
    - Metal, wooden, cloth, paper discs having layer of abrasive on the wheel.

1910.243(c)(5&6)

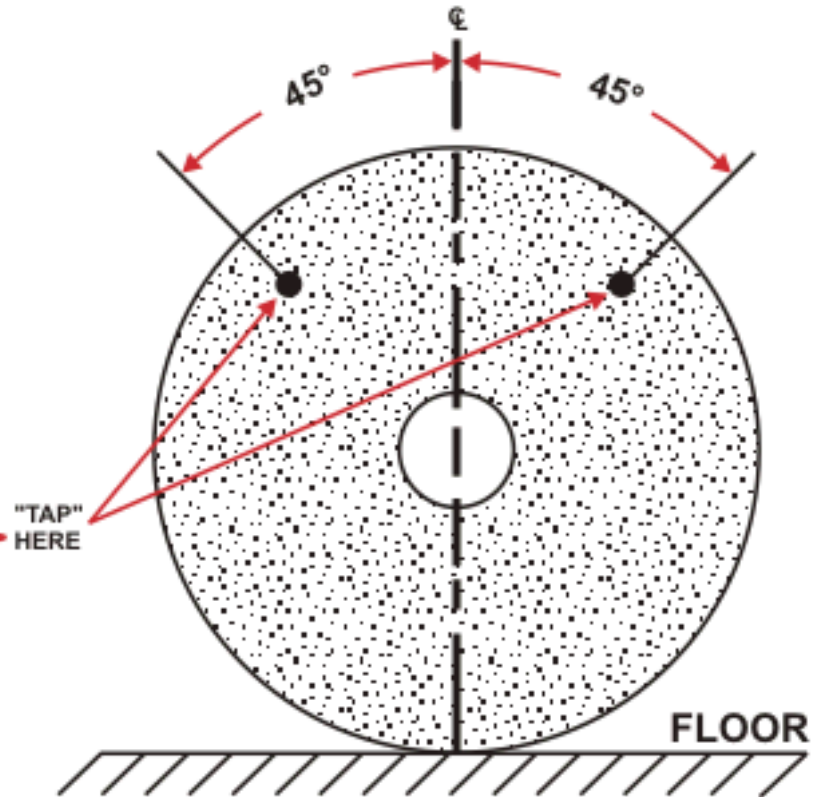
# Ring Test

Before mounting a new wheel, a ring test must be performed to ensure the wheel is not cracked.



Light Wheels  
Suspend from hole by  
small pin or finger

Figure No. O-25



Heavy Wheels  
Support on clean hard floor

Figure No. O-26

# Explosive Actuated Fastening Tools

- General Requirements
- Inspection, Maintenance & Tool Handling
  - High Velocity
  - Low Velocity
  - Hammer Piston
- Loads & Fasteners
- Operating Requirement



# Explosive Actuated Fastening Tools

- General Requirements
  - Actuated by an explosive
  - Meets design requirements of high & low velocity, hammer piston tools in (d)(2)
  - Does not apply for soft construction material
    - Wood, plaster, tar, dry wallboard, stud-welding equipment
  - PPE in accordance Subpart I
    - Eye Protection
    - Head & Face



1910.243(d)(1)

# Explosive Actuated Fastening Tools

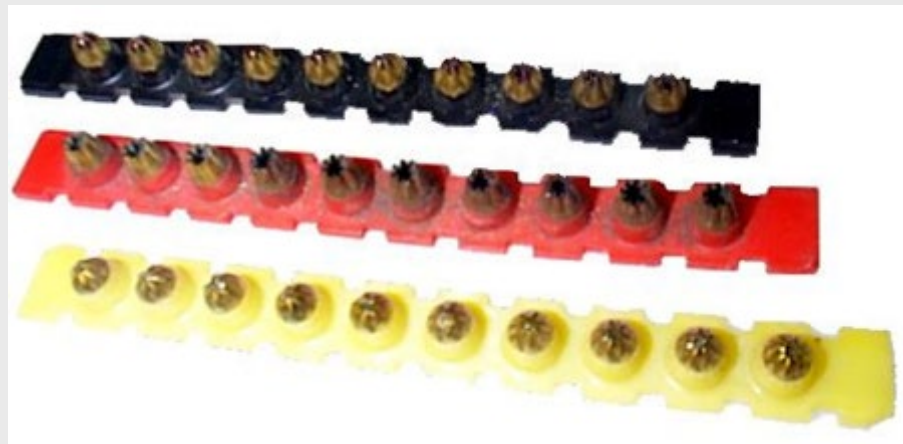
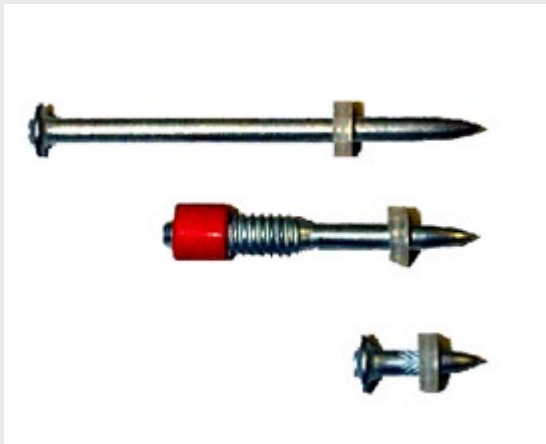
- Inspection, Maintenance & Tool Handling
  - High Velocity (>300 fpm 6.5 ft from muzzle)
    - 3.5 inch muzzle shield
    - Cannot be fired unless equipped with shield
    - Cannot be fired during loading or preparation
    - Two separate distinct actions for firing
  - Low Velocity (<300 fpm 6.5 ft from muzzle)
    - Spall Shield
    - Cannot operate unless against the surface
  - Hammer Piston
    - Muzzle shield



1910.243(d)(2)

# Explosive Actuated Fastening Tools

- Loads & Fasteners
  - Standard means of identifying the power level of loads
  - Cannot use high velocity loads in low velocity tools
  - Only use fasteners specifically manufactured for use



1910.243(d)(3)



# Explosive Actuated Fastening Tools

- Operating Requirements
  - Inspect before use
  - Stop using it if it is defective
  - Only load prior to use
  - Don't point tool at other people
  - Misfire wait time 30 sec.
  - Don't leave unattended
  - Don't use in explosive atmosphere



# Jacks



1910.244(a)

# Jacks

- Loading & Markings
  - Enough jack for the load
  - Jack load rating must be visible.



1910.244(a)(1)

# Jacks

- Operation & Maintenance
  - Base of jack blocked
  - Stop Indicator
  - After load raised, cribbed or blocked
  - Regular lubrication



1910.244(a)(2)



# Jacks

- Operation & Maintenance
  - Inspected every 6 months
  - Tagged out of order jacks



1910.244(a)(2)

**CERTIFICATE OF LIFT INSPECTION**  
ALL MAJOR COMPONENTS OF THIS LIFT HAVE BEEN INSPECTED BY A QUALIFIED LIFT INSPECTOR

INSPECTING COMPANY:  
**LAZZAR'S FLOOR JACK & HYDRAULIC REPAIR CENTER**

<b>SERVICE DATE</b>	<b>SERVICED BY</b>
<u>3-1-11</u>	<u>Marc/Steven</u>
_____	_____
_____	_____
_____	_____

MFG: Western  
MODEL: WC070 AC  
CAPACITY: 7,000

**LAZZAR'S FLOOR JACK & HYDRAULIC REPAIR CENTER**  
(562) 596-5477

No guarantee/warranty is implied by this certification

# Practice 1

The manufacturer is responsible for the safe condition of tools and equipment used by employees.

- a. True
- b. False

# Practice 2

Compressed air shall not be used for cleaning purposes except where reduced to less than \_\_\_\_\_ psi at the tip.

- a. 30
- b. 35
- c. 40
- d. 50

# Practice 3

Safety guards used on machines known as right angle head or vertical portable grinders shall have a maximum exposure angle of \_\_\_\_\_ degrees.

- a. 120
- b. 140
- c. 160
- d. 180



# Practice 4

If an employee uses their own tools, the employer has no responsibility to ensure the tools are in good working order.

True or False