



Hand and Power Tools

OSHA 10-Hour Construction Industry

Required Online Topic Time: 30m



Learning Objectives



Duration

30 minutes

Terminal Learning Objective

Given current OSHA and industry information regarding general industry worksite illnesses, injuries, and/or fatalities, the student will be able to recognize hazards associated with using hand and power tools.

Enabling Learning Objectives

- List the basic hand and power tool safety rules
- Identify the precautions essential to the safe use of tools commonly used at construction worksites
- Name the guarding techniques that apply to hand and power tools
- Recognize employer requirements to protect workers from tool hazards

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Introduction



To use **hand** and **power tools** safely, you should:

- Inspect the tool before each use
- Use the right tool for the job
- Operate the tool according to the manufacturer's instructions
- Use proper guarding devices
- Use the appropriate personal protective equipment (PPE)
- Perform maintenance on tools regularly



Power and Handheld



Using power and handheld tools requires **precautions** to ensure the safety of yourself and those around you.

For **hand tools**:

- *Do not use wrenches if the jaws are sprung*
- *Do not use chisels or wedges if the heads have mushroomed*
- *Do not use tools with loose, cracked, splintered or taped handles*
- *Keep cutting tools sharp*
- *Use the proper tool for its intended job*
- *Use proper PPE, safety goggles and gloves*
- *Keep floor surface free of debris and tripping hazards*



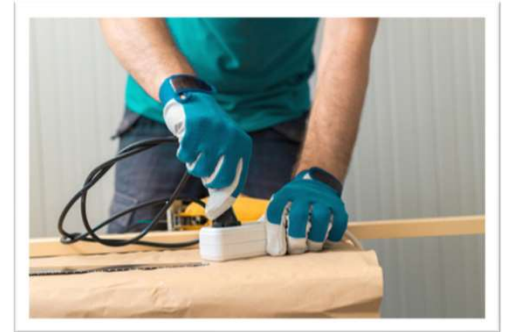
Power and Handheld

continued...



For **power tools**:

- *Disconnect tools when they are not in use, before servicing and cleaning, and when changing accessories*
- *Keeping employees not directly involved with the work away from the work area*
- *Securing your work with clamps or a vise, freeing both hands to operate the tool*
- *Not holding the switch button while carrying a plugged-in tool*
- *Keeping tools sharp and clean*
- *Considering what you wear—loose clothing and jewelry can get caught in moving parts*
- *Removing damaged electrical tools and tagging them as “Do Not Use”*
- *Not using power tools that are not fitted with guards and safety switches*



Power and Handheld continued...



Knowledge Key

Using power and handheld tools requires precautions to ensure the safety of yourself and those around you. Remember to not use tools that are broken in any way. Use each tool for its intended job and always use PPE. Especially for tools that are corded, be sure to be aware of the cord and unplug all tools when they are not in use.

Pneumatic and Liquid



Pneumatic tools are powered by **compressed air** which is passed through a hose. You should apply the same safety precautions with the tool's air hose that you would take with an electrical cord. Pneumatic tools include:

- *Nailers*
- *Staplers*
- *Chippers*
- *Drills*
- *Sanders*
- *Jackhammers*

When working with pneumatic tools, always keep the hose away from sharp objects, oil, etc. Also, beware of the location of the air hose to minimize the chance of tripping. Finally, do not carry the pneumatic tool by the air hose.



Pneumatic and Liquid continued...



Liquid fuel tools present different safety issues than pneumatic tools. You should not only be concerned with tool safety but also the volatility of the fuel.

Fuel should only be stored in **approved containers**, since some elements in fuel types may break down container materials, causing the fuel to leak out.

Be very careful around liquid fuels. **No open flames** or **electrical sparks** should be allowed where there is a potential of **vapors** from liquid fuels. You should also be very careful when it comes to breathing fuel vapors. The area of use should be **well ventilated**.

You should **never** fuel a liquid fuel tool while it is running. If the tool has been running you should let it **cool down before refueling**. This lowers the risk of the liquid fuel bursting into flames.



Pneumatic and Liquid continued...



Knowledge Key

Pneumatic tools are powered by compressed air. Keep the air hose away from sharp objects and away from being a tripping hazard. Liquid fuel should always be contained in the correct container and labeled. Always remember your PPE!

Hydraulic



Many tools are hydraulically powered. **Hydraulic** power is power derived from **liquid under pressure**. Most heavy equipment uses hydraulic power.

Hydraulic jacks are very powerful and can be used to lift very heavy objects. You should always ensure that the jack is placed on a solid surface and will not shift during operation.

Select a jack that has the proper weight capacity for the job at hand. If you are not sure of the weight capacity for the job, a jack with a higher capacity is better than one with a lower capacity. Jacks are also equipped with a stop limit that should never be exceeded.

Do not forget that jacks should be inspected and lubricated regularly.



Hydraulic continued...



Knowledge Key

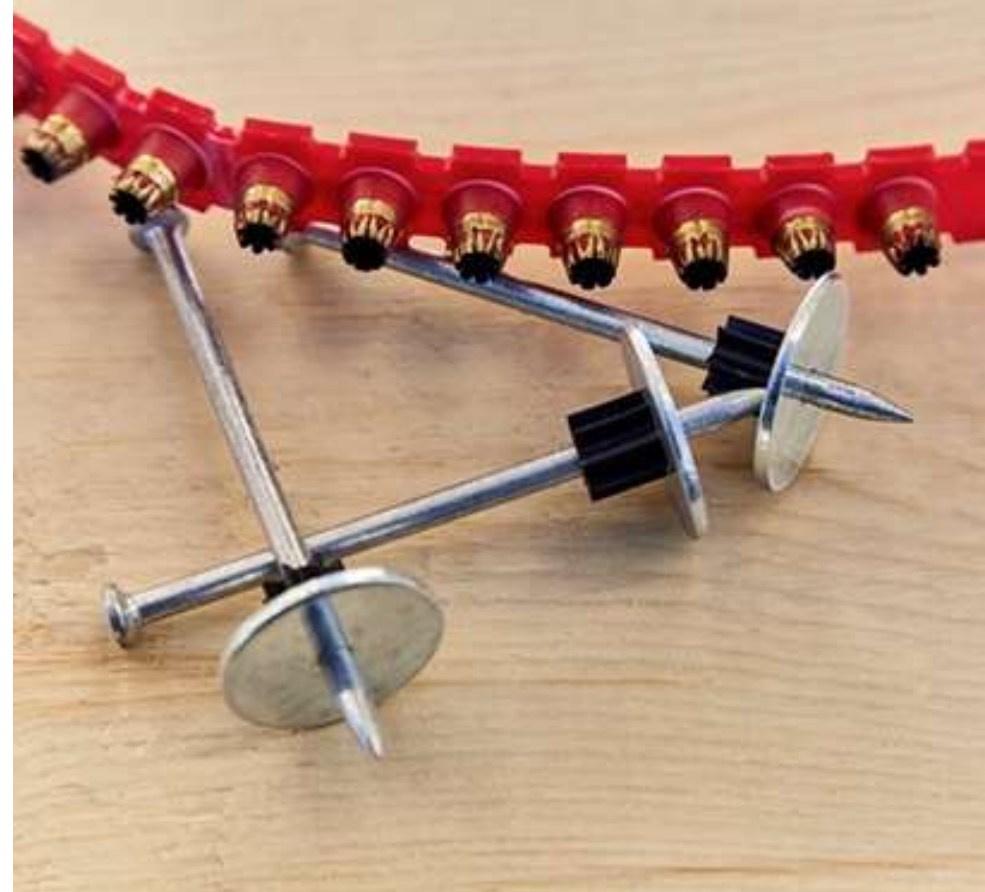
Hydraulics refers to using pressurized liquid to perform tasks and is commonly used on heavy equipment. Ensure that hydraulics, such as jacks, are on a firm flat surface.

Power Actuated



Powder-actuated tools are **very dangerous, and any employees using these tools must be **licensed** and **trained** to use them safely.**

- Employees must be trained to avoid firing into easily-penetrated materials.
- Powder-actuated tools have the power of guns and when misused can be very dangerous.
- Select powder that will do the work without excessive force.
- Safety devices on powder-actuated tools should be tested each day.
- Limit the number of people in the work area to those directly involved in the work when using a powder actuated tool.
- Do not forget proper PPE. Eye, ear and face protection are a must.

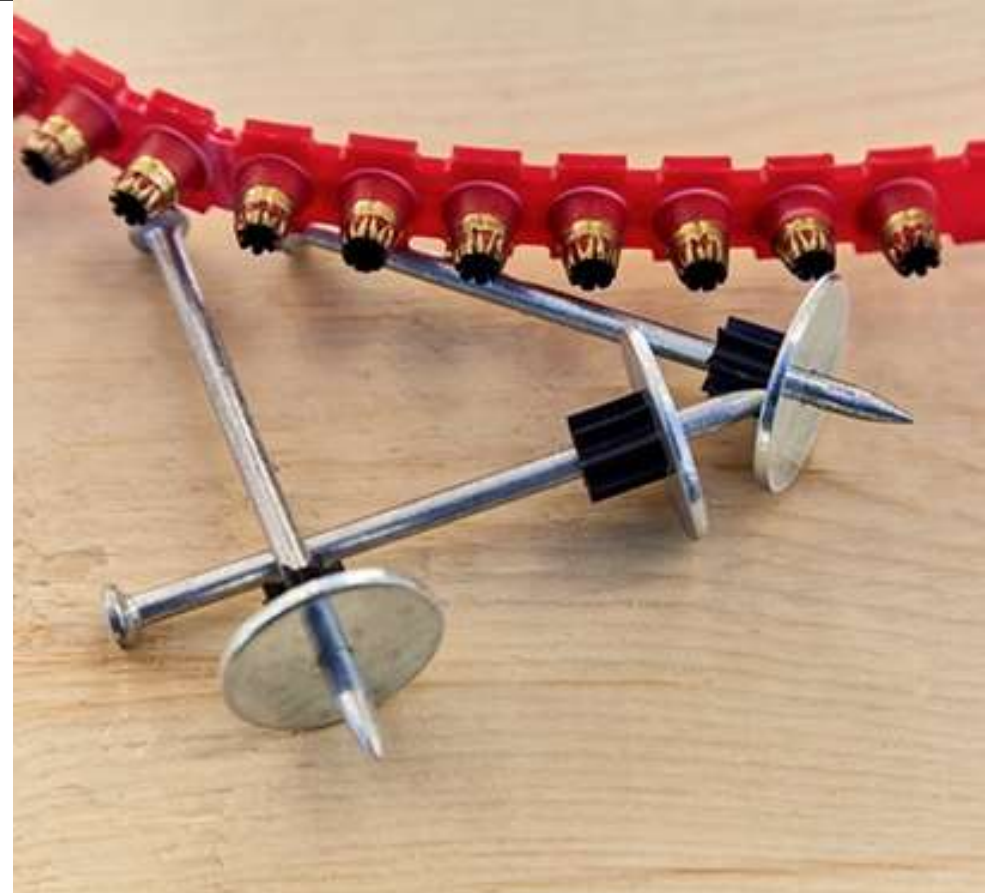


Power Actuated continued...



Since powder-actuated tools can be so dangerous, licensed and trained personnel must follow these precautions during use:

- Do not load tools until just prior to use.
- Never point the tool (loaded or empty) at anyone.
- Keep your hands clear of the open barrel end.
- Never leave loaded tools unattended.
- Do not drive fasteners into very hard or brittle materials.
- Avoid driving fasteners into easily penetrated materials unless they are backed by an impenetrable backing.
- Do not drive a fastener into an area filled with broken pieces of material.
- Do not use tools in an explosive or flammable atmosphere.
- Use the manufacturer-recommended correct shield, guard, or attachment.
- Store tools unloaded and in a locked box.



Power Actuated continued...



Knowledge Key

Powder actuated tools need to be handled very carefully. Remember, they have the power of a gun. Because of that power, think about the type of material you are working with and **ALWAYS** use PPE. Ensure a safe distance from others as well and never point the tool at another person.

Guarding Technique



Guarding is very important when working with all tools. A guarding device is designed to prevent contact between you and the dangerous parts of a tool while it is operating.

You should **NEVER** remove a guard while a tool is in use. Guards help protect from rotating parts, sparks, points of operation, in-running nip points, as well as flying chips and sparks.

Tools with belts, gears, shafts, pulleys, sprockets, spindles, flywheels, chains, and other moving parts require guarding.

As always, use your PPE!



Guarding Technique continued...



Knowledge Key

A guard helps protect you from the most dangerous parts of a tool. You should NEVER remove a guard while a tool is in use. Guards help protect from rotating parts, sparks, and many other things. As always, use your PPE!

Employer Requirements



In addition to what you can do as a worker to start safe and stay safe while using hand and power tools, your employer is **required** to protect you as well.

Employers must comply with OSHA standards on hand and power tools, including training and inspection requirements, as well as any manufacturers' requirements and recommendations for all hand and power tools used by employees.

Employers must also provide necessary PPE to workers who operate hand and power tools and are exposed to hazards.



Employer Requirements

continued...



Knowledge Key

Your employer is required by OSHA to protect you from hand and power tool hazards on your worksite. They must train you on any hand and power tools you use and inspect them regularly and follow all manufacturers' requirements or recommendations.

Practice Questions



1. To which type of tools does the following statement apply? Don't use chisels or wedges if the heads have mushroomed.

- a. Hand tools
- b. Power tools
- c. Pneumatic tools
- d. Hydraulic tools

2. Air hoses should be kept away from sharp objects. Is this true or false?

- a. True
- b. False

3. John was dispatched to acquire additional gasoline for the chain saw. All he could find to hold the gas was a clean milk carton. Is this safe or unsafe?

- a. Safe
- b. Unsafe

4. Zina has a flat tire on her large SUV. She cannot find her jack. Jeff offers her the use of his hydraulic bottle jack which is rated at 500lbs. Is this safe or unsafe?

- a. Safe
- b. Unsafe

Practice Questions



5. Asa needed to nail a couple of panels of drywall to wall. He had already put his tools up for the day, so to save time he grabbed a powder-actuated tool. Is this safe or unsafe?

- a. Safe
- b. Unsafe

6. Rich needs to use the company band saw. He notices that the guard door is open but the latch is broken and it will not stay shut. Since he just has to do a small job and he is very careful, he proceeds. Is this safe or unsafe?

- a. Safe
- b. Unsafe

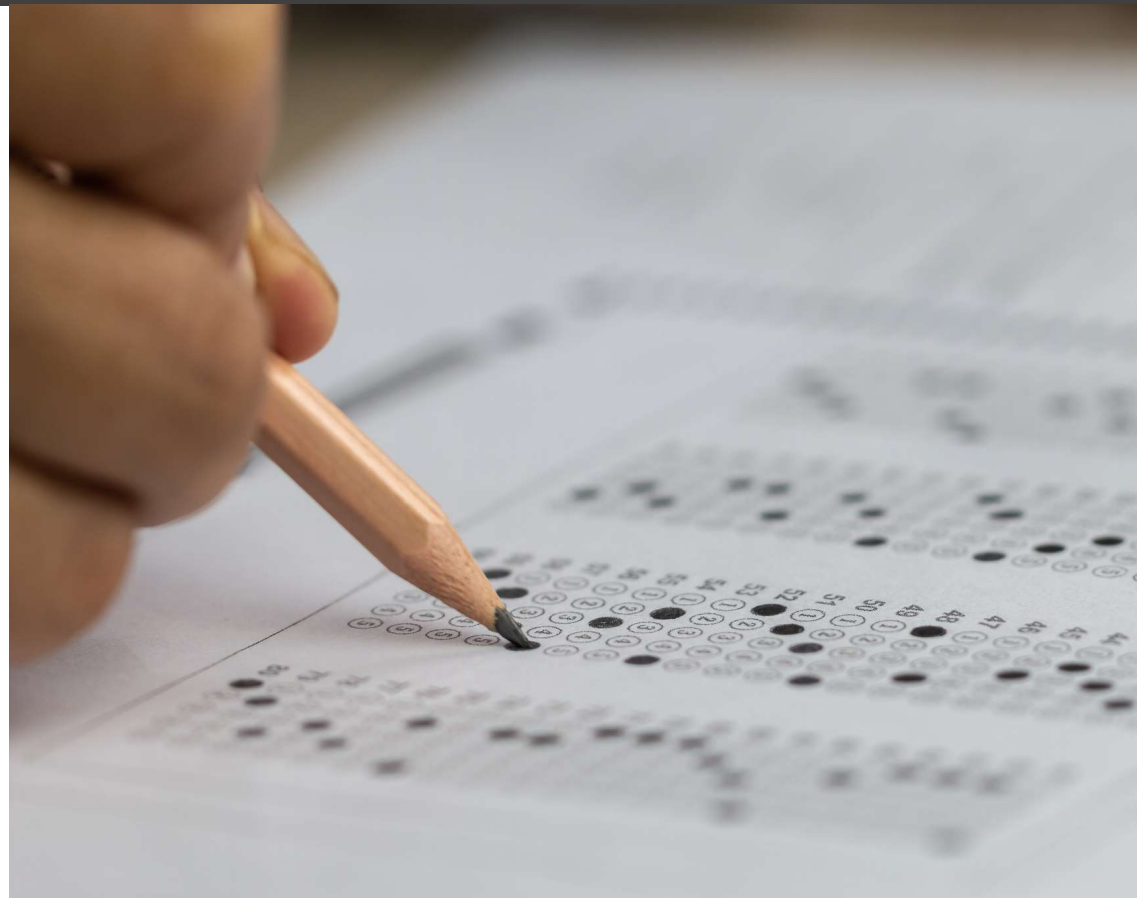
7. Which of the following requirements must employers satisfy? [Select all that apply.](#)

- a. Provide PPE necessary to protect employees who are operating hand and power tools and are exposed to hazards.
- b. Comply with OSHA training and inspection standards related to hand and power tools.
- c. Determine which manufacturer's requirements and recommendations for a tool should be followed.
- d. Do not issue or permit the use of unsafe hand tools.

Practice Questions Answer Key



- 1. A
- 2. A
- 3. B
- 4. B
- 5. B
- 6. B
- 7. A, B, D



Conclusion



Good Job!

You successfully completed the Hand and Power Tools topic.

