

## Overview

It's easy to pick up and use a tool without stopping to think about its hazards. It is difficult to remember that tools pose hazards, and sometimes accidents occur before steps can be taken to avoid or eliminate those hazards.

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

## How can I protect myself?

Choose tools made from good quality, durable materials. Metal tools must be able to resist bending, cracking, chipping, excessive wear. Wear the appropriate personal protective equipment (PPE). Wear eye, hand, and foot protection.

Everyone has probably suffered a minor scrape, cut, or bruise while using hand or portable powered tools, but they can also cause more serious injuries. Saws can sever a nerve, tendon, or blood vessel. A screwdriver can cause a deep puncture wound. Dropping a heavy tool on your foot could break a bone. Using an electric power tool that is not properly grounded can cause shocks or electrocution. Be aware of the tool's hazards and use appropriate types of protective equipment to help avoid injury.

## Using the right tool for the job

Sometimes using the wrong tool for the job causes an injury. Sometimes using the right tool, but using it incorrectly is the problem. Not inspecting a tool before you use it can lead to an injury if the tool breaks. Damaged tools don't work very well. Here is an outline of some common tools and tips for using them correctly:

### Hammers and Mallets

Nail hammers are designed to drive nails. Ball pein hammers are for striking cold chisels and metal punches. Mallets have a striking head of plastic, rawhide, or wood and are for striking wood chisels, punches, or dies. Sledgehammers are for striking concrete or stone. You can damage a hammer by using it for the wrong purpose. You can damage other tools by trying to force them by hitting them with a hammer.

### Pliers

Pliers are designed to grip material so you can bend or pull it. Don't substitute a pliers for a wrench—they can easily slip off of a fastener.

### Cutters

Use cutters or snips to remove banding wire or strapping. Trying to use a pry bar to snap open banding can cause injuries.

### Wrenches

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When using open-ended wrenches, position yourself so you will be pulling the wrench towards you, with the open end facing you—this lessens the chance of the wrench slipping off of the fastener when you apply force. Use open-ended wrenches for light-duty to medium-duty jobs. Box and socket wrenches should be used when a heavy pull is needed. Because they completely encircle the fastener, they apply even pressure with a minimal chance of slipping. Some box wrenches are designed for heavy-duty use, and they do have a striking surface. But, in general, don't try to increase the torque by hitting the wrench with a hammer or by adding a cheater bar to the wrench's handle—this can break or damage the wrench. If the fastener is too tight, use some penetrating oil to lubricate it.

### **Wood Saws**

Use a cross-cut saw to cut across the wood grain and a ripping saw to cut with the grain. Select a saw with coarse teeth for sawing green wood, thick lumber, or for making coarse cuts. Use fine-toothed saws for making fine cuts in dry wood.

### **Hack Saws**

Install the blade with the teeth facing forward, and apply pressure on the forward stroke. Use a light pressure to avoid twisting and breaking the blade.

### **Knives**

A sharp blade needs less pressure to cut and has less of a chance of getting hung up and slipping. Always move the blade away from yourself as you cut.

### **Screwdrivers**

Use the right type and size of tip. Screwdrivers with thicker handles apply more torque, with less effort on your part. Using screwdrivers as pries, can openers, punches, chisels, wedges, etc. can damage them.

### **Non-sparking hand tools**

These tools are made from non-ferrous alloys to reduce the chance that using them will create a spark. They need to be used in areas where vapors or dusts create a flammable atmosphere.

### **Electrical power tools**

Portable electric power tools must meet OSHA's grounding requirements.

Operating controls must be located where the possibility of hazardous accidental operation is minimized.

A constant-pressure switch is required on circular saws having a blade diameter greater than 2 inches, electric chain saws, and percussion tools with no means of holding accessories securely.

A constant-pressure switch or control is required on hand-held drills; tappers; fastener drivers; grinders with wheels greater than 2 inches in diameter; disc sanders with discs greater than 2 inches in diameter; belt sanders; reciprocating saws; and saber, scroll, and jigsaws with blade shanks greater than 1/4-inch. These tools can have a "lock-on" control if the operator can turn off the tool with a single motion of the same finger(s) that turn it on.

A positive "on-off" switch is allowed on other hand-held powered tools (platen sanders, routers, planers, etc.). These tools are also allowed to have a constant-pressure switch or a "lock-on" control.

Portable circular saws with a blade diameter greater than 2 inches must have guards above and below the base plate or shoe. When the tool is removed from the work, the lower guard automatically and instantly returns to the covering position.

Portable belt sanding machines must be guarded at each nip point where the sanding belt runs onto a pulley. The unused run of the sanding belt must also be guarded.

### **Portable abrasive wheels**

Work using abrasive wheels can expose employees to flying fragments.

Abrasive wheel machinery must be adequately guarded. The guard should cover the spindle end and nut and flange projections. A maximum of 180 degrees of the wheel can be exposed, with the top half of the wheel enclosed. Cup wheels may be guarded with revolving cup guards. Vertical portable grinders must have the guard located between the operator and the wheel so broken wheel pieces will be deflected away from the operator.

Inspect abrasive wheels immediately before mounting them. Look for damage, and do a ring-test.

Check the spindle speed of the machine before mounting the wheel to make sure the speed does not exceed the wheel's maximum operating speed, which is marked on the wheel.

Wheels must fit freely on the spindle. There must always be a safe clearance between the wheel hole and the machine spindle to avoid excessive pressure build-up from spindle heat expansion during use.

### **Pneumatic tools**

Pneumatic tools are powered by compressed air and include chippers, drills, hammers, and sanders. Pneumatic tools can expose workers to the dangers of getting hit by attachments or a fastener. Safety requirements for pneumatic tools include:

- Eye protection is required and face protection is recommended for pneumatic tool work.
- Working with noisy tools such as jackhammers requires proper, effective use of hearing protection.
- The air hose must be designed for the pressure and intended service.
- Check to see that a tool is fastened securely to the hose to prevent it from becoming disconnected. A short wire or positive locking device attaching the air hose to the tool will serve as an added safeguard.
- A safety clip or retainer must be installed to prevent attachments, such as a chipping hammer chisel, from being unintentionally shot from the barrel.
- Screens must be set up to protect nearby workers from being struck by flying fragments around chippers, riveting guns, staplers, or air drills.
- A compressed air gun should never be pointed toward anyone. Users should never "dead-end" it against themselves or anyone else.

### **Explosive-actuated fastening tools**

Explosive-actuated tools operate like a loaded gun and should be treated the same. In fact, they are so dangerous that they must be operated only by specially trained employees.

Safety precautions to remember include:

- Never use the tool in an explosive or flammable atmosphere.
- Inspect the tool before use to make sure that it is clean, all moving parts work freely, and the barrel is clear.
- Eye protection for the operators and assistants is essential when using an explosive-actuated tool. Head, face, and hearing protection may also be required.
- Never point the tool at anybody.
- Never load the tool unless it is to be used immediately. Never leave a loaded tool unattended. Never leave an explosive-actuated tool where it would be available to unauthorized persons.
- Always use the appropriate load and power level.
- Use the correct manufacturer recommended shield, guard, or attachment. Keep hands clear of the barrel end.
- To prevent the tool from firing accidentally, two separate motions are required: one to bring the tool into position, and another to pull the trigger.
- The tool must not be able to operate until it is pressed against the work surface with a force of at least five pounds greater than the total weight of the tool.
- If the tool misfires, wait at least 30 seconds, then try firing it again. If it still will not fire, wait another 30 seconds so that the faulty cartridge is less likely to explode, then carefully remove the load according to the manufacturer's instructions. The bad cartridge should be put in water.
- Any tool not in proper working order must be taken out of use immediately. Repairs must meet the tool manufacturer's specifications.
- When using explosive-actuated tools to apply fasteners, certain precautions must be taken:
- Easily penetrated materials must be backed by a material that will prevent fasteners from passing through to the other side to become a flying-missile hazard.
- Fasteners must not be driven into very hard or brittle materials which might chip, splatter, or make the fastener ricochet.
- Follow the regulation's instructions for how close to edges or corners fasteners can be driven directly into some types of materials.
- An alignment guide must be used when shooting a fastener into an existing hole.
- A fastener must not be driven into a spalled area caused by an unsatisfactorily fastening.

### **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 manufacturer's recommended safe operating pressure for hoses, valves, pipes, filters, and other fittings must not be exceeded.

### **Jacks**

The operator must make sure the jack is rated to lift and sustain the load. The jack's load rating must be permanently marked on the jack.

Block the base of the jack if the foundation is not firm. Use a block between the jack's cap and the load if there is a possibility that the cap could slip.

The operator must watch the jack's stop indicator and stay within the jack's limits.

As soon as the load has been raised, block, crib, or otherwise secure it.

Jacks must be lubricated at regular intervals, and they must be thoroughly inspected at least every six months when they are used at one location. If a jack is sent out for use, it must be inspected before it leaves and upon its return. A jack that will be subjected to an abnormal load or shock must be inspected before and after use.

Defective or damaged jacks must be tagged to show they are out of order. They cannot be used until they are repaired, and repair or replacement parts must be inspected for possible defects.

Hydraulic jacks may need to be supplied with antifreeze liquid if they are exposed to freezing temperatures.

### **Power lawnmowers**

The following are some of the general requirements for lawnmower safety:

- The positions of the operating controls must be clearly identified.
- Power-driven chains, belts, and gears must be positioned or guarded to prevent the operator from coming into contact with them during normal starting, mounting and operation of the mower.
- Self-propelled mowers must have a warning that cautions the operator to make sure the controls are in neutral before starting the mower.
- The shutoff device must require the operator to intentionally reactivate the motor or engine.

### **Abrasive blast cleaning nozzles**

OSHA's regulation also has some requirements for blasting equipment. Abrasive blast cleaning nozzles must have an operating valve that needs to be manually held open. There must be a support where the nozzle can be mounted when it is not in use.