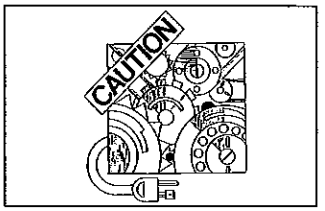


Tools, Hand & Power—An Overview

Overview of Topic

From a simple screwdriver to a reciprocating cut-off saw, tools are the lifeblood of the construction industry. No matter how simple or sophisticated, they all can be dangerous if not used properly. The old saying, "the right tool for the job" hasn't changed.

In this toolbox talk we will take a quick overview of OSHA requirements for tool control and safe use.

Condition of tools

All hand and power tools and similar equipment, whether furnished by the employer or employee, must be safe.

Guarding

When power operated tools are designed to have guards, they must be equipped with the guards when in use.

Personal protective equipment (PPE)

Employees using hand or power tools must be provided with proper personal protective equipment (PPE) for protection when exposed to:

- Falling, flying, abrasive, or splashing objects.
- Harmful dusts, fumes, mists, vapors, or gases.

All PPE must meet the requirements of and be maintained according to Subparts D—Occupational Health and Environmental Controls, and E—Personal Protective and Life Saving Equipment.

Switches

Switch action on power tools is important. For some tools a positive "on-off" control is fine, others require momentary contact "on-off" control, and still others require a constant pressure switch. Some examples are:

Positive "on-off" switch—hand-held platen sanders, grinders (2" dia. wheel or less), routers, planers, shears, and scroll saws.

Momentary contact "on-off" control—hand-held drills, tappers, disc sanders, belt sanders, reciprocating saws, saber saws, and other similar operating powered tools. The tool may have a lock-on control provided that turnoff can be accomplished by a single motion of the same finger or fingers that turn it on.

Constant pressure switch that will shut off the power when the pressure is released—all other hand-held powered tools, such as circular saws, chain saws, and percussion tools without positive accessory holding means.

Employee Training

The OSHA rules require the following training for employees using hand and power tools:

- Only employees qualified by training or experience can operate equipment and machinery (1926.20(b)(4)).
- Employees must be trained to recognize and avoid unsafe conditions and the regulations applicable to his work environment to control or eliminate the hazards (1926.21(b)(2)).
- Employees required to use respiratory protective equipment approved for use in atmospheres immediately dangerous to life must be thoroughly trained in its use. Employees required to use other types of respiratory protective equipment must be instructed in the use and limitations of such equipment (1926.103(c)(1)).

Training Tips

This time could be used to go over and explain the defects of tools pulled from service. Include power tools with bad cords, hand tools with chipped blades and faces, or splintered handles.

Go over your procedure for tagging tools as defective and explain that they should not be used until repaired.

Where To Go For More Information

Construction regulatory text: 29 CFR 1926.300–.307.
Construction regulatory text: 29 CFR 1926.200(h).
General industry regulatory text: 29 CFR 1910.241–.244.

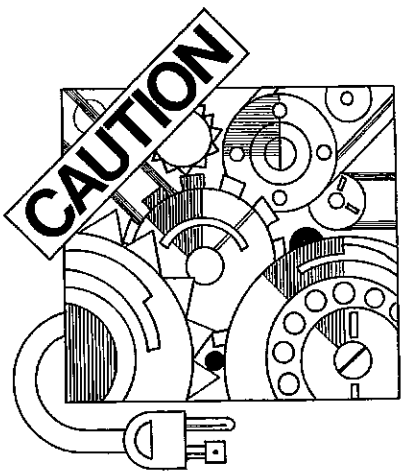
KELLER'S CONSTRUCTION TOOLBOX TALKS

A Safety Overview for Hand & Power Tools

Bedrock Construction Company probably did not require safety glasses when chipping rocks with rocks to make tools or weapons. Chances are, some workers received injuries by flying rock chips. Do you know of any construction workers who still work like that, and put themselves and coworkers in danger? The old saying, "the right tool for the job" hasn't changed. Let's take a quick overview of OSHA requirements for tool control and safe use.

Condition of tools—All hand and power tools and similar equipment, whether furnished by your employer or is your personal tool, must be safe. When tools are no longer safe they must be tagged as such and either repaired before use, or thrown away.

Guarding—When power operated tools are designed to have guards, they must be equipped with the guards when in use. This means you cannot remove a guard because it gets in your way. The best method is to learn to use the tool with the guard attached and appreciate the protection it provides.



Personal protective equipment (PPE)—When using hand or power tools your employer must provide you with proper personal protective equipment (PPE) for protection when exposed to:

- Falling, flying, abrasive, or splashing objects.
- Harmful dusts, fumes, mists, vapors, or gases.

All PPE must meet the requirements of and be maintained according to the OSHA rules.

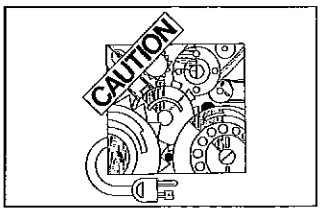
Switches—Switch action on power tools is important for safety reasons. OSHA has requirements for one of three types of switches on all power tools. They are:

Positive "on-off" switches—are a requirement on hand-held platen sanders, grinders (2" dia. wheel or less), routers, planers, shears, scroll saws and similar tools.

Momentary contact "on-off" control switches—apply to hand-held powered drills, tappers, disc sanders, belt sanders, reciprocating saws, saber saws, and other similar operating powered tools. The tool may have a lock-on control provided that turnoff can be accomplished by a single motion of the same finger or fingers that turn it on.

Constant pressure switches that will shut off the power when the pressure is released—are required on all other hand-held powered tools, such as circular saws, chain saws, and percussion tools without positive accessory holding means.

From simple screwdrivers to reciprocating cut-off saws, tools are the lifeblood of the construction industry. Taking care of your personal tools and company tools is an automatic step towards safe work habits.



Tools, Hand & Power—An Overview, Sign-Off Sheet

This sign-off sheet documents the names of employees who attended this training session on Tools, Hand & Power—An Overview at _____.
(company name)

The session covered:

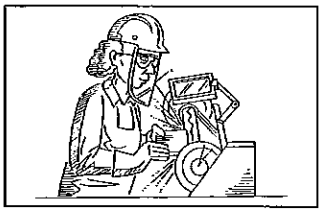
- Condition of tools.
- Power tool guarding.
- Personal protective equipment.
- Power tool switch action.

The space below is for employees to "sign-off" that they were in attendance.

Date of Training: _____ **Job Location:** _____

Employee Signature	**Print Name Here**

_____
Supervisor's Signature



Tools, Hand & Power—Abrasive Wheels

Overview Of Topic

Powered abrasive grinding, cutting, polishing, and wire buffing wheels are regulated at 29 CFR 1926.300 and .303. Because the major hazard of abrasive wheels is flying particles, most of these regulations are designed to protect the worker against flying particles. Here is a summary of the requirements:

- Grinding wheels must be equipped with safety guards.
- Floor and bench-mounted grinders must be provided with rigidly supported and readily adjustable work rests.
- Portable abrasive wheels used for internal grinding must be provided with safety flanges.
- All abrasive wheels must be closely inspected and ring-tested before mounting to ensure that they are free from cracks or defects.
- Grinding wheels must fit freely on the spindle and may not be forced on. The spindle nut must be tightened only enough to hold the wheel in place.
- All employees using abrasive wheels must be protected by eye protection equipment, except when adequate eye protection is afforded by eye shields permanently attached to the bench or floor stand.
- All abrasive wheels and tools must meet ANSI B7.1-1970, Safety Code for the Use, Care and Protection of Abrasive Wheels.

Employee Training

OSHA's construction regulations require the following training:

- Only employees qualified by training or experience can operate equipment and machinery (Sec. 1926.20(b)(4)).
- Employees must be trained to recognize and avoid unsafe conditions and the regulations applicable to their work environment to control or eliminate the hazards (Sec. 1926.21(b)(2)).

- Limitations and precautions must be given to users of eye protection equipment necessary for abrasive wheel use (Sections 1926.102(a)(8) and .303(c)(9)).

Your training program may also cover procedures for inspection, ring-tests, and reporting broken or missing guards or damaged wheels.

Training Tips

During training, you may wish to:

- Demonstrate inspection and ring-test procedures. Have trainees practice these procedures.
- Show trainees what a ring should sound like using good and bad wheels.
- Show the types of eye protection required and available for using abrasive wheels at your company.
- Ask employees where they would stand to start up their abrasive wheel. Due to the possibility of a wheel disintegrating (exploding) during start-up, the employee should never stand directly in front of the wheel as it accelerates to full operating speed.
- Advise trainees: never to clamp a hand-held grinder in a vise, and to turn off the power when not in use.

Where To Go For More Information

29 CFR 1926.300—Tools hand and power—General requirements.

29 CFR 1926.303—Abrasive wheels and tools.

29 CFR 1910.215—Abrasive wheel machinery.

ANSI B7.1-1970—Safety Code for the Use, Care and Protection of Abrasive Wheels.

KELLER'S CONSTRUCTION TOOLBOX TALKS

Abrasive wheels

Powered abrasive grinding, cutting, polishing, and wire buffing wheels create special safety problems because they may throw off flying fragments.

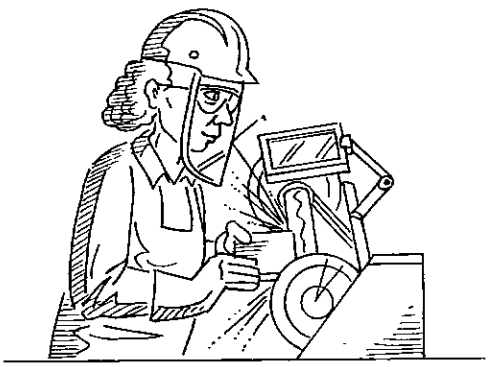
Before using an abrasive wheel:

- Before mounting an abrasive wheel, visually examine and ring-test (sound-test) it for cracks and defects.

  Note: To test, tap the wheel gently with a light non-metallic instrument. If it sounds cracked or dead, it could fly apart in operations, so do not use it. The sound of an undamaged wheel will be a clear metallic tone or "ring."

- Make sure the wheel fits freely on the spindle.

  Note: The spindle nut must be tight enough to hold the wheel in place, without distorting the flange. Follow the manufacturer's recommendations. Care must be taken to assure that the spindle wheel will not exceed the abrasive wheel specifications.



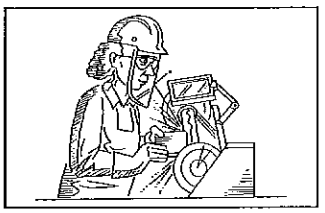
- Make sure side guards, splash guards, and dust collectors are in place. Guards will help protect you from the moving wheel surface and flying fragments in case of breakage.
- Ground electrically operated grinders.
- Make sure wheel and grinder revolutions per minute (RPMs) are compatible.
- Never clamp a hand-held grinder in a vise.

When using an abrasive wheel:

- Wear safety glasses (goggles for heavy grinding) along with face shields.
- Do not stand in front of the wheel when it starts up; it may explode or disintegrate.
- Use light pressure when starting grinding; too much pressure may cause failure.
- Turn off the power when not in use.
- Keep adjustable tongues on the top of the grinder adjusted to within $^1/_4$ inch of the wheel.
- Keep work rests adjusted to within $^1/_8$ inch of the wheel.
- Do not overload the motor by pushing too hard.

To maintain an abrasive wheel:

- Follow the manufacturer's instructions for repair.



Tools, Hand & Power—Abrasive Wheels Sign-Off Sheet

This sign-off sheet documents the employees at this company, _____, who have taken part in a training session on Tools, Hand & Power—Abrasive Wheels. The session covered:

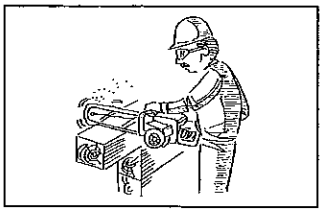
- Abrasive wheel/tool requirements and operation.
- Eye protection equipment training.
- Wheel inspection and ring-test procedures.
- Procedure for reporting broken or missing guards or damaged wheels.

The space below is for employees to "sign-off" that they were in attendance.

Date of Training: _____ **Job Location:** _____

Employee Signature	Print Name Here

_____
Supervisor's Signature



Tools, Hand & Power—Chain Saws

Overview of Topic

Although not specifically in the construction regulations, if you use chain saws at your construction sites you are required to instruct employees on their safe use. You can extract information from the Machine Guarding, Power Tools, and Small Gasoline Engine Powered Equipment, Toolbox Talks to supplement this Toolbox Talk as they are all important.

But to make this Toolbox Talk chain saw specific, it will be geared toward the OSHA requirements for chain saws at 29 CFR 1910.266(e)—Hand and portable powered tools, and 1910.266(e)(2)—Chain saws from the logging industry section of the general industry regulations. These are not OSHA requirements for the construction industry but are good "best practices" for chain saw use and safety.

Chain saw requirements

Each chain saw must be equipped with a chain brake, a protective device that minimizes kickback. Do not remove or otherwise disable a kickback device.

Each chain saw must be equipped with a continuous pressure throttle control which will stop the chain when pressure is released.

The saw must be operated and adjusted in accordance with the manufacturer's instructions.

Fuel your chain saw at least 10 feet from any open flame or other source of ignition. Start your chain saw at least 10 feet from the fueling area.

Pre-operational inspection

You, the employer, must assure that each chain saw is inspected before initial use during each workshift. At a minimum a good chain saw inspection will include:

- Handles and guards—to assure they are sound, tight-fitting, properly shaped, free of sharp edges, and in place.

- Controls—to assure proper function.
- Chains—to assure proper adjustment.
- Chains—to assure the cutting edges are sharp and properly shaped.
- Mufflers—to assure they are operational and in place.

Operational checks

You must ensure that chain saws are being used only for the purpose for which it was designed.

The chain cutting edge should be sharpened in accordance with the manufacturer's specifications whenever it becomes dull.

Start a chain saw on the ground or other firmly supported area and with the chain brake engaged. **Drop starting a chain saw is prohibited.**

The operator must: (1) be certain of footing before starting to cut, (2) use the saw in a position or at a distance that ensures proper balance and secure footing, and (3) clear away brush or other potential obstacles which might interfere with cutting.

Never use the chain saw to cut overhead.

Carry the chain saw so as to avoid operator contact with the cutting chain or hot muffler.

Employee Training

The construction OSHA rules require the following training for employees using power tools:

- Only employees qualified by training or experience can operate equipment and machinery (1926.20(b)(4)).
- Employees must be trained to recognize and avoid unsafe conditions and the regulations applicable to their work environment to control or eliminate the hazards (1926.21(b)(2)).

Training Tips

Go through the inspection and operational procedures for chain saws.

Where To Go For More Information

29 CFR 1910.266(e)—Hand and portable powered tools.

29 CFR 1926.300—General requirements, tools, hand and power.

29 CFR 1926.302(c)—Fuel powered tools.

KELLER'S CONSTRUCTION TOOLBOX TALKS

Chain Saws

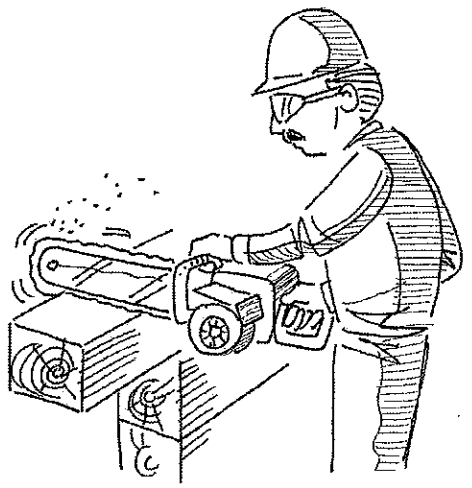
The following chain saw requirements are from the logging industry section of the general industry regulations. These are not OSHA requirements for the construction industry but are good "best practices" for chain saw use and safety.

Chain saw requirements

Each chain saw must be equipped with a chain brake, and a protective device to minimize kickback. No kickback device can be removed or otherwise disabled.

Each chain saw must be equipped with a continuous pressure throttle control which will stop the chain when pressure is released.

The saw must be operated and adjusted in accordance with the manufacturer's instructions.



Fuel your chain saw at least 10 feet from any open flame or other source of ignition. Start your chain saw at least 10 feet from the fueling area.

Pre-operational inspection

You must inspect your chain saw before initial use during each workshift. At a minimum a good chain saw inspection will include:

- Handles and guards—to ensure they are sound, tight-fitting, properly shaped, free of sharp edges, and in place.
- Controls—to assure proper function.
- Chains—to assure proper adjustment.
- Mufflers—to assure they are operational and in place.

Operational checks

You must use your chain saw only for the purpose for which it was designed.

Dull chain cutting edges should be sharpened in accordance with the manufacturer's specifications.

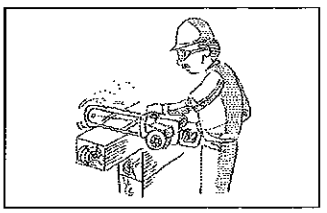
Start a chain saw on the ground or other firmly supported area and with the chain brake engaged. **Drop starting a chain saw is prohibited.**

You must: (1) be certain of footing before starting to cut, (2) use the saw in a position or at a distance that ensures proper balance and secure footing, and (3) clear away brush or other potential obstacles which might interfere with cutting.

Never use the chain saw to cut overhead.

Carry the chain saw so as to avoid operator contact with the cutting chain or hot muffler.

Chain saws are dangerous. However, with common sense and following the above safety regulations chain saw use can be safe.



Tools, Hand & Power—Chain Saws, Sign-Off Sheet

This sign-off sheet documents the names of employees who attended this training session on Tools, Hand & Power—Chain Saws at _____ .
(company name)

The session covered:

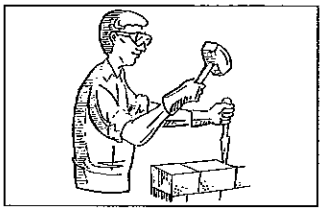
- Chain saw requirements.
- Pre-operational inspection.
- Operational checks.

The space below is for employees to "sign-off" that they were in attendance.

Date of Training: _____ **Job Location:** _____

Employee Signature	**Print Name Here**

_____
Supervisor's Signature



Tools, Hand & Power—Hand Tool Safety

Overview of Topic

The Occupational Safety and Health Administration (OSHA) regulations indirectly or directly mention hand tool safety in many locations. However, for construction, there are two main sources for safety information on tools. They are:

- Construction-specific standards:

  29 CFR 1926.300-.307—Tools, hand and power.

  29 CFR 1926.702—Concrete and masonry construction.

- General industry rules on hand and portable powered tools not specifically covered in the construction regulations.

The hazards of using hand tools include ergonomic hazards such as repetitive motion injuries or injuries from holding or using the tool improperly, injuries due to lack of personal protective equipment that should have been worn while using the hand tool, and injuries from the tool itself striking, cutting, or otherwise injuring the user or a nearby worker.

There are only a few specific rules regarding hand tools in the OSHA standard at §1926.301—Hand tools. They are:

- Employers shall not issue or permit the use of unsafe hand tools.
- Wrenches, including adjustable, pipe, end, and socket, must not be used when jaws are sprung to the point that slippage occurs.
- Impact tools, such as drift pins, wedges, and chisels, must be kept free of mushroomed heads.
- The wooden handles of tools must be kept free of splinters or cracks and shall be kept tight in the tool.

These rules apply to the condition of the hand tools and not their usage, but safe usage instructions can also prevent injuries from hand tools.

Employee Training

Train employees on the proper use of hand tools. The handout provided here is an overview of general rules for using hand tools. Train employees on specific information regarding the tools they work with to ensure they know how to operate their hand tools safely and effectively.

OSHA state-plan-states: Remember that certain states have more stringent regulations that go above and beyond the OSHA standards.

Training Tips

Use the demonstration technique for hand tool training. Choose your best user of a specific tool if there is a particular point you want to emphasize regarding that tool, especially if there is an ergonomic injury hazard associated with the incorrect handling or use of the tool.

To create a dramatic effect or to get a serious point across on hand tool dangers:

- Use a true story of an accident.
- An example of a severe puncture, cut, or other significant accident, can really get the point across about dangers.
- If it's an example from your own company or even the site itself, the point can be that much more effective.

Where To Go For More Information

Construction regulatory text: 29 CFR 1926.300-.307—Tools, hand and power.

Construction regulatory text: 29 CFR 1926.702—Concrete and masonry construction.

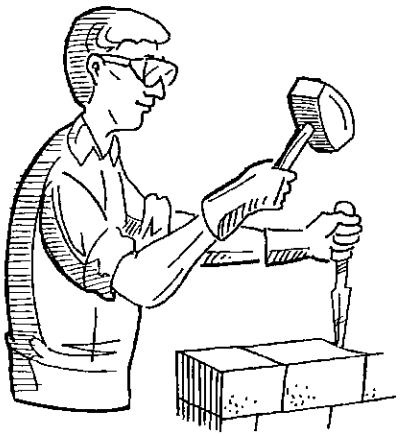
General industry regulatory text: 29 CFR 1910, Subpart P—Hand and portable powered tools and other hand-held equipment.

KELLER'S CONSTRUCTION TOOLBOX TALKS

Tools, Hand & Power—Hand Tool Safety

Hand tools include anything from axes to wrenches. They seem simple, but hand tools can be hazardous on your construction worksite. The greatest hazards posed by hand tools are misuse and improper maintenance. Some OSHA requirements to follow include:

- Never use a chisel as a screwdriver (or vise versa), doing so could cause the tip of the chisel or screwdriver to break, hitting you or other employees.
- If a wooden handle on a tool such as a hammer or an axe is loose, splintered, or cracked, the head may fly off and strike you or another worker.
- A wrench must not be used if its jaws are sprung or smooth; it might slip.



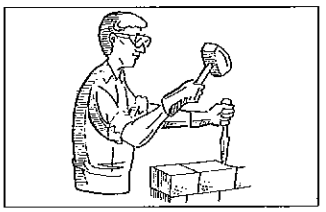
- Impact tools such as chisels, wedges, or drift pins are unsafe if they have mushroomed heads. The heads might shatter on impact, sending sharp fragments flying. Never use a tool in that condition, give it to your supervisor and get a replacement.

Your employer is responsible for the safe condition of tools and equipment you use, but you have the responsibility to use and maintain tools properly and let your employer know if tools are inadequate or in poor condition. Other safety tips to keep in mind for hand tools are:

- Whatever tool you're using, whether it's a saw, knife, or other tool, direct it away from other employees working nearby.
- All cutting tools must be sharp. Dull tools can be more hazardous than sharp ones.
- When working with draw knives, adzes or similar cutting tools, use personal protective equipment such as wire mesh gloves, wrist guards, arm guards, and aprons or belly guards.

These general safety rules apply to all hand tools as well as any job situation:

- Maintain your tools. This includes proper sharpening, oiling and storage.
- Regularly inspect tools, and accessories.
- Replace problem equipment immediately. Make repairs only if you are qualified.
- Keep your work area clean.
- Use personal protective equipment (PPE) such as safety glasses, respirators and hearing protection.
- Dress right. This includes choosing clothing that will not tangle in tools, and not wearing jewelry.
- Choose the right tool for the job. Also, make sure it is not only the right tool, but it is the correct size for the job.



Tools, Hand & Power—Hand Tool Safety, Sign-Off Sheet

This sign-off sheet documents the names of employees who attended this training session on Tools, Hand & Power—Hand Tool Safety at _____.
(company name)

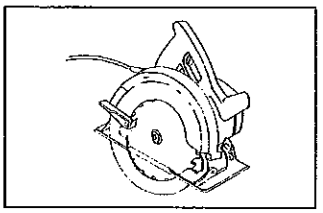
The session covered general information on good work practices for working with hand tools.

The space below is for employees to "sign-off" that they were in attendance.

Date of Training: _____ **Job Location:** _____

Employee Signature	Print Name Here

_____
Supervisor's Signature



Tools, Hand & Power—Machine Guarding

Overview of Topic

The main machine guarding requirements for construction companies are found in Subpart I, Tools, Hand & Power, 1926.300(b)—Guarding. That regulation contains extensive requirements for machine guarding of moving parts of equipment and tools. The requirement to use such guarding, as well as various types of guards and specific machines requiring those guards, are described in this section.

Hazardous moving parts such as belts, gears, shafts, pulleys, sprockets, spindles, drums, fly wheels, chains, or other reciprocating, rotating, or moving parts of equipment, must be guarded if such parts are exposed.

Guards, as necessary, should be provided to protect the operator and others from:

- Point of operation hazards.
- In-running nip point hazards.
- Rotating parts.
- Flying chips and sparks.

Such safety guards should never be removed when the tool is being used.

For example, portable circular saws must be equipped with guards. An upper guard must cover the entire blade. A retractable lower guard must cover the teeth except when it makes contact with the work material. The lower guard must automatically return to the closed position when the user is done making the cut.

Machine guarding protects employees from the danger of cuts, punctures, and other injuries from moving parts on tools and equipment. Unfortunately, sometimes employees try to bypass or remove guards, believing they are safe without them, or sometimes guards fall off or lose effectiveness. These types of situations are the ones your training can help employees avoid, by teaching them: about the need to keep guards on machines, the specific guards on the machines they work on, and the hazards of bypassing guards.

Employee Training

As with many construction regulations, there is no specific call in this section of the regulations for employee training, but the only way to ensure compliance with the regulations is to train employees on:

- The intent of machine guards.
- The need to keep guards on tools and machines.
- The specific types of guards they will encounter on the tools and machines with which they work.

Training Tips

Use the demonstration technique for machine guarding training. Choose your best operator of a specific machine if there is a particular point you want to emphasize regarding that machine's guards.

You may want to combine machine guarding training with power tool training. The two topics are a natural fit with each other. They go together because most machine guarding is on power tools and equipment. Machine guarding and power tool training can easily be combined into one training session.

To create a dramatic effect or to get a serious point across on the dangers of not using or by-passing machine-guarding, use a true story of an accident. An example of the loss of a finger or limb, or other significant accident, can really get the point across about dangers from not using machine guards. If it's an example from your own company or even the site itself, the point can be that much more effective.

Where To Go For More Information

Construction regulatory text: 29 CFR 1926 Subpart I—Hand & power tools.

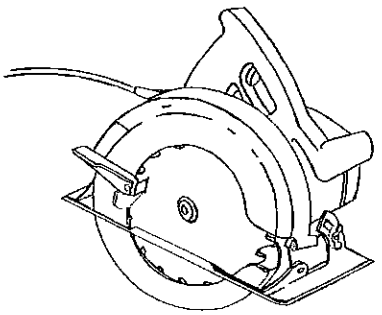
Construction regulatory text: 29 CFR 1926.300(b)—Guarding.

General industry regulatory text: 29 CFR Subpart P—Hand and portable powered tools and other hand-held equipment.

KELLER'S CONSTRUCTION TOOLBOX TALKS

Tools, Hand & Power—Machine Guarding

Many machines and power tools commonly used on construction sites have guards on them to protect you from the danger of hazardous moving parts such as belts; gears; shafts; pulleys; sprockets; spindles; drums; fly wheels; chains; or other reciprocating, rotating, or moving parts of equipment. These moving parts must be guarded, as required by OSHA regulations, if they are exposed.



Common types of equipment on which you might find machine guards include:

- Circular saws and other power saws.
- Jointers.
- Grinders.
- Routers.

Guards, as necessary, are provided to protect the operator and others from:

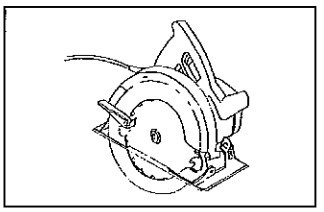
- Point of operation hazards.
- In-running nip point hazards.
- Rotating parts.
- Flying chips and sparks.

Never remove safety guards when the tool is being used or in operation. If the guard is not on, you are exposed to hazards from the moving parts of the machine or tool.

For example, portable circular saws must be equipped with guards. An upper guard must cover the entire blade. A retractable lower guard must cover the teeth except when it makes contact with the work material. The lower guard must automatically return to the closed position when you're done making the cut. Otherwise, you may be exposed to the cutting action of the blade.

Such a guard is often defeated or purposely by-passed because a worker thinks he can get more done without it on. However, the worker exposes himself to unnecessary risks of cuts, being hit by flying objects, and other hazards. And it is against OSHA regulations to defeat the guard, too. So just don't do it.

Don't take a chance with machine guards. Make sure guards are in place on the tools, equipment, and machines that require them. Take any machines, tools, or equipment on which you notice a defective or missing guard out of service. You'll protect yourself and others.



Tools, Hand & Power—Machine Guarding, Sign-Off Sheet

This sign-off sheet documents the names of employees who attended this training session on Tools, Hand & Power—Machine Guarding at _____.
(company name)

The session covered:

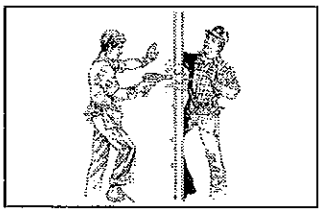
- The intent of machine guards.
- The need to keep guards on tools and machines.
- The types of guards they will encounter on the tools and machines with which they work.

The space below is for employees to "sign-off" that they were in attendance.

Date of Training: _____ **Job Location:** _____

Employee Signature	**Print Name Here**

_____
Supervisor's Signature



Tools, Hand & Power—Nail Guns

Overview of Topic

Two employees were doing remodeling construction and were building a wall. One of the workers was killed when he was struck by a nail fired from a powder-actuated tool. The tool operator, while attempting to anchor plywood to a 2" X 4" stud, fired the tool. The nail penetrated the stud and the plywood partition prior to striking the victim.

As a result of an OSHA investigation, citations for three serious violations were issued. Had employees been trained in the use of powder-actuated tools and had precautions been taken to prevent the nail from passing through the wall, the accident would not have occurred.

Citations that were issued

Employees using powder-actuated tools must be trained in the operation of the particular tool (29 CFR 1926.302(e)(1)).

Driving into materials easily penetrated must be avoided unless materials are backed by a substance that will prevent the nail from passing completely through and creating a flying missile hazard on the other side (29 CFR 1926.302(e)(8)).

Operators and assistants using powder-actuated tools must be safeguarded with eye protection (29 CFR 1926.302(e)(4)).

OSHA regulations for nail guns

Nail guns must be tested each day before loading to ensure the safety devices are working properly. Use the manufacturer's recommended procedure for testing.

Any tool not working properly during the daily test or while using must be immediately removed from service, tagged, and not used until repair.

You must use the proper personal protective equipment in accordance with Subpart E of the construction regulations.

Tools must not be loaded until just prior to the intended firing time.

Never point a nail gun, loaded or unloaded, at another person.

Never leave loaded tools unattended.

Never drive fasteners into very hard or brittle material such as: cast iron, glazed tile, surface hardened steel, glass block, live rock, face brick, or hollow tile.

Never drive a fastener into a spalled area caused by an unsatisfactory fastening.

Do not use nail guns in an explosive or flammable atmosphere.

All tools must be used with the correct shield, guard, or attachment recommended by the manufacturer.

Ensure your nail guns meet all other applicable requirements of American National Standards Institute, A10.3-1970, *Safety Requirements for Explosive-Actuated Fastening Tools.*

Other regulations for nail guns

You must also follow the general requirements for Tools, Hand & Power at 29 CFR 1926.300.

Employee Training

Unlike many OSHA regulations, the rule for powder-actuated says: Only employees who have been trained in the operation of the particular tool in use shall be allowed to operate a powder-actuated tool. Other requirements are:

Employees must be trained to recognize and avoid unsafe conditions and the regulations applicable to their work environment to control or eliminate the hazards (1926.21(b)(2)).

Training Tips

Go through the inspection and operational procedures for nail guns.

Where To Go For More Information

29 CFR 1926.302(e)—Powder-actuated tools.

29 CFR 1926.300—General requirements, tools, hand and power.

KELLER'S CONSTRUCTION TOOLBOX TALKS

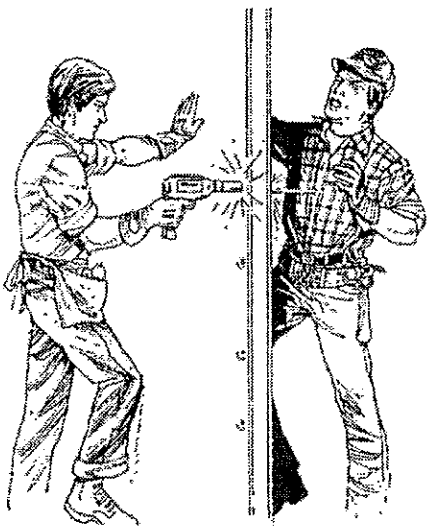
Nail Guns

Two employees were doing remodeling construction and were building a wall. One of the workers was killed when he was struck by a nail fired from a powder-actuated tool. The tool operator, while attempting to anchor plywood to a 2" X 4" stud, fired the tool. The nail penetrated the stud and the plywood partition prior to striking the victim.

As a result of an OSHA investigation, citations for three serious violations were issued. Had employees been trained in the use of powder-actuated tools and had precautions been taken to prevent the nail from passing through the wall, the accident probably would not have occurred.

Citations that were issued

Employees using powder-actuated tools must be trained in the operation of the particular tool.



Driving into materials easily penetrated must be avoided unless materials are backed by a substance that will prevent the nail from passing completely through and creating a flying missile hazard on the other side.

Operators and assistants using powder-actuated tools must be safeguarded with eye protection.

OSHA regulations for nail guns

The nail gun must be tested each day before loading to ensure the safety devices are working properly.

Use the manufacturer's recommended procedure for testing.

Any tool not working properly during the daily test or while using must be immediately removed from service, tagged, and not used until repair.

You must use the proper personal protective equipment in accordance with Subpart E of the construction regulations.

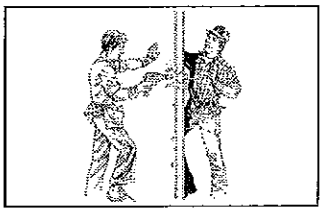
Tools must not be loaded until just prior to the intended firing time.

Never: (1) point a nail gun, loaded or unloaded, at another person, (2) leave loaded tools unattended, (3) drive fasteners into very hard or brittle material such as: cast iron, glazed tile, surface hardened steel, glass block, live rock, face brick, or hollow tile, and (4) drive a fastener into a spalled area caused by an unsatisfactory fastening.

Do not use nail guns in an explosive or flammable atmosphere.

All tools must be used with the correct shield, guard, or attachment recommended by the manufacturer.

Nail guns save time and energy at construction sites. They can also be deadly when handled incorrectly. Before you pull the trigger, think about where the fastener is going.



Tools, Hand & Power—Nail Guns, Sign-Off Sheet

This sign-off sheet documents the names of employees who attended this training session on Tools, Hand & Power—Nail Guns at _____ .
(company name)

The session covered:

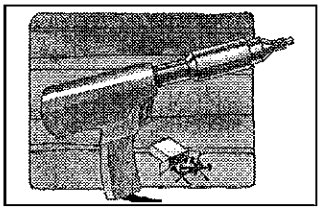
- Citations issued in an inspection by OSHA.
- OSHA regulations for nail guns.
- Other regulations for nail guns.

The space below is for employees to "sign-off" that they were in attendance.

Date of Training: _____ **Job Location:** _____

Employee Signature	**Print Name Here**

_____
Supervisor's Signature



Tools, Hand & Power—Pneumatic Tools

Overview Of Topic

Pneumatic tools are often used at construction jobsites. These tools are powered by compressed air and include nailers, drills, hammers, and sanders. In one respect, they are safer than electric tools because the shock hazard is eliminated. But, they are still very dangerous because the tools are under pressure and can come apart. When this occurs there is the danger of a "flying missile" striking nearby workers. It is extremely important that pneumatic tools are inspected daily and kept in good working order.

When your employees work with pneumatic tools, eye protection is required and head and face protection is recommended. When required, screens must also be set up to protect nearby workers from being struck by flying fragments around chippers, riveting guns, staplers, or air drills.

Some of the most obvious OSHA requirements that must be stressed to workers using pneumatic tools are:

- Never point compressed air guns at anyone.
- Check pneumatic tools to ensure they are fastened securely to the air supply hose to prevent them from becoming disconnected. A short wire or positive locking device must attach the air hose to the tool. This will serve as an added safeguard to prevent "whiplash" if the hose becomes disconnected.
- Make sure a safety clip or retainer is installed to prevent attachments, such as chisels on a chipping hammer, from being ejected during tool operation.
- If the air hose is more than 1/2 inch in diameter, a safety excess flow valve must be installed at the air supply source to reduce pressure in case of hose failure.
- Take precautions to protect the air hose from physical damage. The hose is subject to the same kind of physical damage as electrical cords.
- Equip pneumatic tools (that shoot nails, rivets, staples, or similar fasteners, and operate at pressures more than 100 pounds per square inch) with a special device to keep fasteners from being ejected, unless the muzzle is pressed against the work surface.

- Equip airless spray guns (that atomize paints and fluids at pressures of 1,000 pounds or more per square inch) with automatic or visible manual safety devices. These devices will prevent pulling the trigger until the safety device is manually released.
- Don't let workers use compressed air for cleaning, unless the pressure is reduced to less than 30 pounds per square inch, and then only with effective chip guarding and personal protective equipment.
- When a worker is operating a jackhammer, require them to wear safety glasses and safety shoes. These items will protect them against injury if the jackhammer slips or falls. A face shield should also be used.

Working with noisy tools, such as jackhammers, requires proper, effective use of appropriate hearing protection.

Employee Training

The OSHA rules require the following training for employees using hand and power tools:

- Only employees qualified by training or experience can operated equipment and machinery (1926.20(b)(4)).
- Employees must be trained to recognize and avoid unsafe conditions and the regulations applicable to their work environment to control or eliminate the hazards (1926.21(b)(2)).

Training Tips

Prior to presenting this toolbox talk, you may want to review manufacturers' safety requirements for your pneumatic power tools.

Where To Go For More Information

29 CFR 1926.302(b)—Pneumatic power tools.

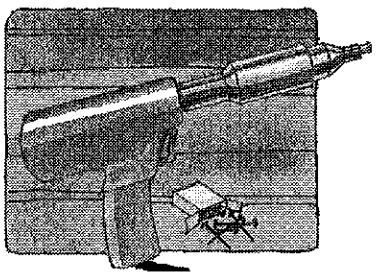
KELLER'S CONSTRUCTION TOOLBOX TALKS

Tools, Hand & Power—Pneumatic tools

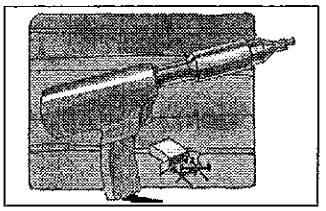
Pneumatic tools are powered by compressed air and include nailers, drills, hammers, and sanders. They are dangerous because the tools are under pressure and can come apart. When this occurs there is the danger of a "flying missile" striking you or other workers. It is important that you inspect your pneumatic tools daily and keep them in good working order.

You must also wear eye protection. Head and face protection is recommended. When required, you should set up screens to protect nearby workers from being struck by flying fragments from chippers, riveting guns, staplers, or air drills.

When you use pneumatic tools you must:



- Never point compressed air guns at anyone.
- Check the pneumatic tools to make sure they are fastened securely to the air supply hose to prevent them from becoming disconnected. A short wire or positive locking device must attach the air hose to the tool. This will serve as an added safeguard to prevent "whiplash" if the hose becomes disconnected.
- Make sure a safety clip or retainer is installed to prevent attachments, such as chisels on a chipping hammer, from being ejected during tool operation.
- If the air hose is more than 1/2 inch in diameter, there should be a safety excess flow valve installed at the air supply source. This will reduce pressure in case of hose failure.
- Take precautions to protect your air hose from physical damage. The hose can be easily damaged.
- Check pneumatic tools that shoot nails, rivets, staples, or similar fasteners, and operate at pressures more than 100 pounds per square inch to make sure they are equipped with a special device to keep fasteners from being ejected, unless the muzzle is pressed against the work surface.
- Check airless spray guns (the kind that atomize paints and fluids at pressures of 1,000 pounds or more per square inch) to make sure they have automatic or visible manual safety devices. These devices will prevent pulling the trigger until the safety device is manually released.
- Don't use compressed air for cleaning, unless the pressure is reduced to less than 30 pounds per square inch, and then only with effective chip guarding and personal protective equipment.
- When you are using a jackhammer, wear safety glasses and safety shoes. These items will protect you against injury if the jackhammer slips or falls. Use a faceshield too.
- Wear appropriate hearing protection when working with noisy tools, such as jackhammers.



Tools, Hand & Power—Pneumatic Tools Sign-Off Sheet

This sign-off sheet documents the employees at this company, _____, who have taken part in a training session on Cranes & Derricks—Crane Operations. The session covered:

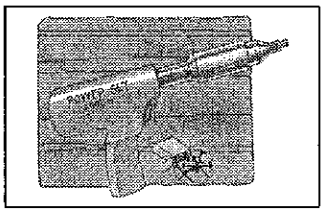
- The importance of proper job planning.
- Operational considerations and how they fit-in with job planning.

The space below is for employees to "sign-off" that they were in attendance.

Date of Training: _____ **Job Location:** _____

Employee Signature	Print Name Here

Supervisor's Signature



Tools, Hand & Power—Powder-Actuated Tools

Overview Of Topic

Powder-actuated tools used for fastening operate and can injure and kill much like a loaded gun and should be treated with the same respect and precautions. In fact, they are so dangerous, that they must be operated only by specially trained employees. For these reasons, OSHA regulates powder-actuated tools under 29 CFR 1926.302(e).

Here is a summary of the requirements:

- The tool must be tested each day before loading according to the manufacturer's recommended procedure.
- If a defect develops during use, the tool must be removed from service until properly repaired.
- Employees using powder-actuated tools must wear proper personal protective equipment.
- Tools must not be loaded until just prior to the intended firing time. People and hands must be kept clear of the open barrel end.
- Loaded tools must not be left unattended.
- Fasteners must not be driven into very hard or brittle materials.
- Driving into easily penetrable materials must be avoided unless these materials are backed by an impenetrable substance.
- No fastener shall be driven into a spalled area caused by an unsatisfactory fastening.
- Powder-actuated tools shall not be used in an explosive or flammable atmosphere.
- Powder-actuated tools must be used with correct shield, guard, or attachment recommended by the manufacturer.
- Powder-actuated tools must meet ANSI A10.3-1970, Safety Requirements for Explosive-Actuated Fastening Tools.

Employee Training

OSHA's construction regulations require the following training:

- Only employees who have been trained in the operation of a particular tool in use may be allowed to operate a powder-actuated tool (Sec. 1926.302(e)(1)).
- Employees must be trained to recognize and avoid unsafe conditions and the regulations applicable to their work environment to control or eliminate the hazards (Sec. 1926.21(b)(2)).
- Protection limitations and precautions must be given to users of eye protection equipment necessary for powder-actuated tool use (Sec. 1926.102(a)(8) and .302(e)(4)).

Training Tips

During training, you may wish to:

- Demonstrate inspection, testing, misfire, and procedures. Have trainees practice these procedures with an unloaded tool.
- Review the explosive or flammable areas where the tool is not allowed to be used.
- Show the types of eye, face, foot, and hearing protection that may be required and available for powder-actuated tool use at your company.
- Show trainees the warning sign that reads, "POWDER-ACTUATED TOOL IN USE," posted when using powder-actuated tools.

Where To Go For More Information

29 CFR 1926.300—Tools hand and power—General requirements.

29 CFR 1926.302—Power-operated hand tools.

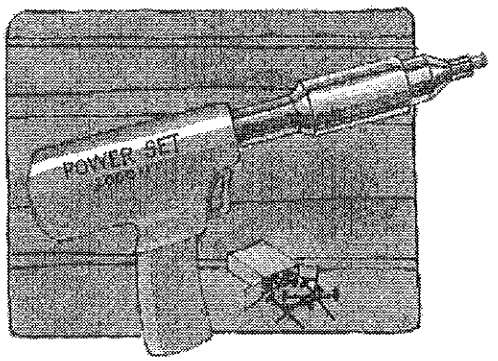
ANSI A10.3-1970—Safety Requirements for Explosive-Actuated Fastening Tools.

KELLER'S CONSTRUCTION TOOLBOX TALKS

Powder-actuated tools

Failure to take safety precautions while using a powder-actuated tool can be deadly. In one incident, two workers were building a wall during remodeling construction. One worker was using a powder-actuated nailer and fired the tool to anchor plywood to a two-by-four-inch stud. The nail penetrated the stud and the plywood partition and struck another worker, killing him. The accident could have been avoided if employees took precautions to prevent the nail from passing through the wall.

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



Before using a powder-actuated tool:

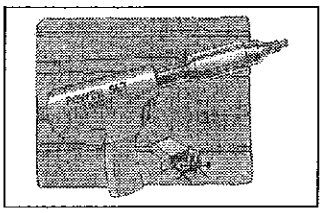
- Store the tool in a locked tool case.
- Inspect the tool for cleanliness, freely operating parts, damage, and barrel obstruction.
- Do not load the tool until just before firing.
- Test a tool before loading according to the manufacturer's recommendations to make sure safety devices are functioning correctly.
- Make sure the correct shield, guard, or attachment recommended by the manufacturer is used.

When using a powder-actuated tool:

- Treat the tool carefully as if it were a loaded gun. Do not point the tool at anyone. Keep hands clear of the barrel end. Do not leave a loaded tool unattended.
- Do not use a tool in explosive or flammable areas.
- Wear ear, eye, face, and foot protection.
- Do not use defective tools.
- Only authorized persons may use tools.
- Post a warning sign that reads: "POWDER-ACTUATED TOOL IN USE," when using a tool.
- If a misfire occurs, keep the tool against the working surface for 30 seconds, then fire again. If after another 30 seconds the tool did not fire, remove the charge according to manufacturer instructions.
- Do not fire fasteners into material that would let them pass through to the other side. On the other hand, don't drive fasteners into very hard or brittle materials which might chip or splatter, or make the fastener ricochet.

When maintaining a powder-actuated tool:

- If a defect develops during use, tag the tool and take it out of service immediately until it is properly repaired.



Tools, Hand & Power—Powder-Actuated Tools, Sign-Off Sheet

This sign-off sheet documents the employees at this company, _____, who have taken part in a training session on Tools, Hand & Power—Powder-Actuated Tools. The session covered:

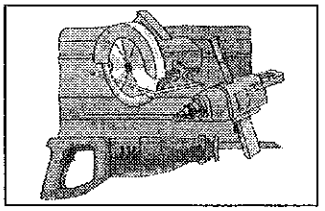
- Powder-actuated tool requirements and operation.
- Eye protection equipment training.

The space below is for employees to "sign-off" that they were in attendance.

Date of Training: _____ **Job Location:** _____

Employee Signature	**Print Name Here**

_____
Supervisor's Signature



Tools, Hand & Power—Power Tools

Overview of Topic

The Occupational Safety and Health Administration (OSHA) regulations indirectly or directly mention power tool safety in many locations. However, for construction, there are two main sources for safety information on tools:

- Construction-specific rules:

  29 CFR 1926.300-.307—Tools, Hand and Power.

  29 CFR 1926.404—Electrical Safety.

  29 CFR 1926.702—Concrete and Masonry Construction.

  29 CFR 1926.951—Power Transmission and Distribution.

- General industry rules on machine guarding and hand and portable powered tools not specifically covered in the construction regulations.

A 1980 Department of Labor, Bureau of Labor Statistics (BLS), report concluded that:

- 1,007 workers received eye injuries from hand and power tools. Of those injured:
  - Seven percent (69 workers) blamed tools in bad condition or not working properly.
  - Another seven percent reported that there were no barrier guards to protect against swinging, flying, or falling objects.
  - One percent reported that there were barrier guards but they were not being used at the time of the accident.
- 79 received head injuries. Of those 79 injuries, most were caused by work tools in bad condition or not working properly.
- 728 received face injuries. Of those injured, 96 workers reported that their work tools, which were in bad condition or not working properly.

In summary, hazards from tools can be put into two broad categories. They are:

- Power sources for the tools. Most often, this is electricity but can be air or hydraulics.
- Dangers from the tool's action—cutting, shearing, drilling or debris resulting from those actions.

Because of the many rules on proper use and design of power tools, you must be aware of the requirements and train employees on the proper use of such tools.

Additional specific rules exist for using certain types of power tools such as abrasive wheels and tools, jacks, powder-actuated tools, woodworking tools, air receivers, and mechanical power transmission apparatus. If employees work with those types of power tools, you should provided with training specific to each of those they work with.

Employee Training

Because of the many rules on proper use and design of power tools, you must be aware of the requirements and train employees on the proper use of such tools. The handout provided here is just an overview of general rules for using power tools. Train employees on specific information regarding each of the tools they work with to ensure they know how to operate their power tools safely and effectively.

Training Tips

Use the demonstration technique for power tool training. Choose your best operator of a specific tool if there is a particular point you want to emphasize regarding that tool.

To create a dramatic effect or to get a serious point across on power tool dangers, use a true story of an accident. There are only too many serious accidents and injuries from power tools. An example of an electrocution, loss of a finger or limb, or other significant accident, can really get the point across about dangers. If it's an example from your own company or even the site itself, the point can be that much more effective.

Where To Go For More Information

Construction regulatory text: 29 CFR Subpart I—Hand & power tools.

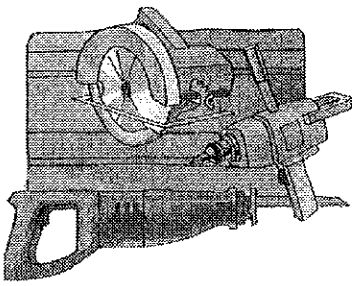
General industry regulatory text: 29 CFR, Subpart P—Hand & portable powered tools & other hand-held equipment.

KELLER'S CONSTRUCTION TOOLBOX TALKS

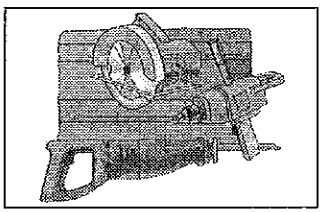
Power Tools

There's no doubt, power tools enable us to be more efficient and productive. Unfortunately, the power and efficiency also can pose serious risk of injury or death. Too often, tragedy occurs before steps are taken to search out and avoid or eliminate tool-related hazards. OSHA regulates power tools and their safe usage.

The following general precautions should be observed by users of all power tools:



- Never carry a tool by the cord or hose.
- Never yank the cord or the hose to disconnect from the receptacle.
- Keep cords and hoses away from heat, oil, and sharp edges.
- Disconnect tools when not in use, before servicing, and when changing accessories such as blades, bits, and cutters.
- Keep all observers at a safe distance from the work area.
- Secure work with clamps or a vise, freeing both hands to operate the tool.
- Avoid accidental starting. Don't put your finger on the switch while carrying a plugged-in tool.
- Follow instructions in the user's manual for lubricating and changing accessories.
- Keep good footing and maintain good balance. This is another reason to keep your work area free from excess debris.
- Wear appropriate clothes. Loose clothing or jewelry can get caught in moving parts.
- Damaged portable electric tools shall be removed and tagged "Do Not Use." Ask your supervisor for approved company procedures for tagging broken equipment.
- Use proper machine guards where required to protect from hazardous moving parts. Never remove a guard from a power tool.
- Make sure safety switches requiring momentary contact for "on-off" control are in working order and not over-ridden on the tools they should be on (such as drills, tappers, fastener drivers, horizontal, vertical and angle grinders with wheels larger than two inches in diameter, disc sanders, belt sanders, reciprocating saws, saber saws, and other similar equipment).
- Make sure other hand-held powered tools such as circular saws, chain saws, and percussion tools without positive accessory holding means, are equipped with a constant pressure switch that will shut off the power when the pressure is released.
- Be aware of the shock and burn hazards of electric tools, and protect yourself against them.
- Always wear the proper personal protective equipment for the work being performed.



Tools, Hand & Power—Power Tools, Sign-Off Sheet

This sign-off sheet documents the names of employees who attended this training session on Tools, Hand & Power—Power Tools at _____.
(company name)

The session covered general information on good work practices for working with power tools.

The space below is for employees to "sign-off" that they were in attendance.

Date of Training: _____ **Job Location:** _____

Employee Signature	**Print Name Here**
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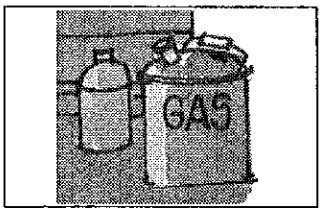
Supervisor's Signature



Tools, Hand & Power—Priming Gasoline Engines

Overview Of Topic

Small gasoline powered engines are common on construction jobsites. They can be used to power different types of equipment, like generators (to power electric tools) or compressors (that power pneumatic tools).

The engine won't start

One of the most frustrating parts of working with small gasoline powered engines is not being able to start the engine. This can be because the:

- fuel tank is empty (no fuel),
- spark plug needs replacing (no spark),
- engine is flooded (too much fuel),
- engine hasn't been started in a while (no fuel in carburetor), or
- air temperature is cold (engine parts are cold and stiff, which makes starting more difficult).

Check the instruction manual

On many engines there is a starting procedure to follow. Check the manufacturer's instruction manual for specifics. Many of these starting procedures discuss priming the engine.

Priming the engine

There are three main types of priming systems for small gasoline engines:

Manual primer — This a rubber bulb or pushbutton that squirts a little extra gas into the intake pipe. The person starting the engine must manually manipulate this. The engine manual will tell you how many times this bulb should be pressed. Many of the small engines in use today have a priming system rather than a choke.

Automatic primer — Newer engines have a chamber in the carburetor which fills up when the engine is shut off. The fuel in this chamber then provides an additional shot of gas to help the engine start.

Choke plate — This device operates as a control on the carburetor to close off the air intake, which increases the amount of fuel drawn into the cylinder. Most of the time, the choke is closed when starting a cold engine and then opened after the engine starts. Normally, it is left fully open once the engine is running. If the engine is already warm, you may not need to use the choke to start the engine.

Hazards

Priming is often done incorrectly by pouring fuel directly into the engine's carburetor. This is very dangerous and should never be attempted. The engine can backfire through the carburetor, shooting a burning jet of fuel back at the person doing the priming. This can cause the container of fuel being used to prime the carburetor to explode. At the very least the person will be burned.

Employee Training

The OSHA rules require the following training for employees using this type of equipment:

- Only employees qualified by training or experience can operated equipment and machinery (1926.20(b)(4)).
- Employees must be trained to recognize and avoid unsafe conditions and the regulations applicable to their work environment to control or eliminate the hazards (1926.21(b)(2)).

Training Tips

Demonstrate how to start a small gasoline engine, such as a weed wacker or chain saw. Discuss the correct priming procedures for the various types of small engines common to your jobsites.

Where To Go For More Information

29 CFR Subpart I—Hand & Power Tools.

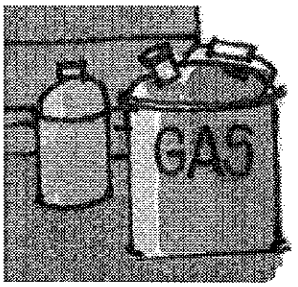
KELLER'S CONSTRUCTION TOOLBOX TALKS

Tools, Hand & Power—Priming Gasoline Engines

Small gasoline powered engines are common on construction jobsites. They can be used to power different types of equipment, like generators (to power electric tools) or compressors (that power pneumatic tools).

The engine won't start

One of the most frustrating parts of working with small gasoline powered engines is not being able to start the engine. This can be because the:



- fuel tank is empty (no fuel),
- spark plug needs replacing (no spark),
- engine is flooded (too much fuel),
- engine hasn't been started in a while (no fuel in carburetor), or
- air temperature is cold (engine parts are cold and stiff, which makes starting more difficult).

Check the instruction manual

On many engines there is a starting procedure to follow. Check the manufacturer's instruction manual for specifics. Many of these starting procedures discuss priming the engine.

Priming the engine

There are three main types of priming systems for small gasoline engines:

Manual primer — This a rubber bulb or pushbutton that squirts a little extra gas into the intake pipe. The person starting the engine must manually manipulate this. The engine manual will tell you how many times this bulb should be pressed. Many of the small engines in use today have a priming system rather than a choke.

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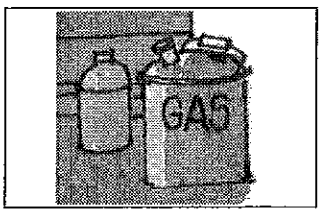
Hazards

Priming is often done incorrectly by pouring fuel directly into the engine's carburetor. This is very dangerous and should never be attempted. The engine can backfire through the carburetor, shooting a burning jet of fuel back at the person doing the priming. The container of fuel being used to prime the carburetor can explode. At the very least the person will be burned.

If you have any questions about how to start or prime a gasoline powered engine, discuss them with your supervisor.



Tools, Hand & Power—Priming Gasoline Engines Sign-Off Sheet

This sign-off sheet documents the employees at this company, _____, who have taken part in a training session on Tools, Hand & Power—Priming Gasoline Engines. The session covered:

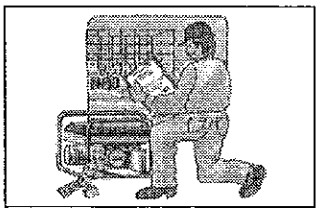
- Reason why gasoline powered engines don't start.
- Why you need to check the manufacturer's instruction manual.
- The three main types of priming systems for small gasoline engines.
- Hazards associated with priming an engine through the carburetor.

The space below is for employees to "sign-off" that they were in attendance.

Date of Training: _____ **Job Location:** _____

Employee Signature	Print Name Here

_____
Supervisor's Signature



Tools, Hand & Power—Small Gasoline Engine Powered Equipment

Overview of Topic

Fuel powered equipment has its own set of hazards and safety requirements, storage and handling of fuel, and carbon monoxide poisoning are two examples.

The OSHA regulations

The following requirements pertain to fuel powered tools:

- All fuel powered tools must be stopped while being refueled, serviced, or maintained.
- Internal combustion engine equipment must be located so that exhaust pipes are well away from combustible materials.
- Fuel must be transported, handled, and stored in accordance with Subpart F (Fire Protection and Prevention) of the OSHA construction standards.
- When fuel powered tools are used in enclosed spaces, the requirements for concentrations of toxic gases (Subpart D) and personal protective equipment (Subpart E) are required.

Carbon monoxide—Enclosed spaces and small gasoline-powered equipment don't mix. Even when the space is well ventilated, enclosed or partially enclosed areas can put your workers at risk of serious illness and even death from carbon monoxide poisoning. Your employees must be able to recognize the danger of using small fuel-powered engines indoors.

The recommendation from OSHA is, "When you have an opportunity to use small gasoline-powered engines indoors, DON'T."

Fuel handling and use—If any flammable and combustible liquids are handled or used at your construction sites, you must instruct employees in their safe handling and use (29 CFR 1926.21(b)(5)).

A fire extinguisher, rated not less than 10B, must be provided within 50 feet of wherever more than five gallons of flammable or combustible liquids are being used on the jobsite.

Only approved containers and portable tanks can be used for storage and handling of flammable and combustible liquids.

Approved red metal safety cans must be used when handling or using flammable liquids in quantities greater than one gallon. If the flammable liquid has a flash point at or below 80 °F, the can must have a yellow band or the name of the dangerous liquid stenciled in yellow.

For quantities of one gallon or less, only the original container or an approved metal safety can be used for storage, use, and handling.

Flammable liquids must be kept in closed containers when not actually in use.

If you store combustible and/or flammable liquids at your construction site you must follow the procedures at §1926.152(b)–(d).

Personal protective equipment

Protective equipment for your eyes, face, head, and extremities, protective clothing, respiratory devices, and protective shields and barriers, must be provided, and used when hazardous conditions are present. A hazard assessment of the work involving small fuel powered equipment should reveal the exact equipment needed to make the process safe.

Employee Training

The OSHA standards require the following training for employees using gasoline powered engines:

- Only employees qualified by training or experience can operate equipment and machinery (§1926.20(b)(4)).
- Employees must be trained to recognize and avoid unsafe conditions and the regulations applicable to his work environment to control or eliminate the hazards (§1926.21(b)(2)).

Training Tips

Prior to presenting this toolbox talk you might want to review the general requirements for all tools (see Tools, Hand & Power—An Overview).

Where To Go For More Information

Construction regulatory text: 29 CFR 1926.20(b)(4).

Construction regulatory text: 29 CFR 1926.152(b)–(d).

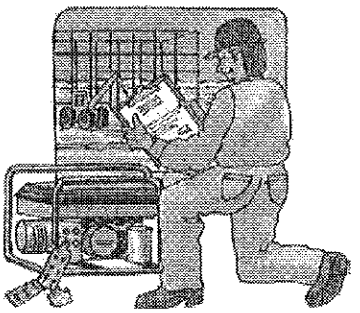
KELLER'S CONSTRUCTION TOOLBOX TALKS

Tools, Hand & Power—Small Gasoline Powered Equipment

When it comes to tools around construction sites there are normally plenty of pieces of equipment that use fuel: generators, weed whackers, cut-off and chain saws, and pumps, to name a few.

Electric, fuel, and pneumatic tools have much in common, but fuel powered equipment has its own set of hazards and safety requirements different from other tools (storage and handling of fuel, and carbon monoxide poisoning).

The OSHA regulations—The following OSHA standards pertain to fuel powered tools:



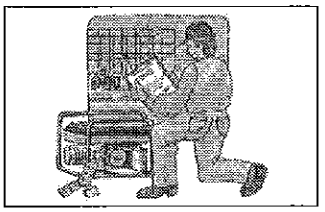
- All fuel powered tools must be stopped while being refueled, serviced, or maintained.
- Internal combustion engine powered equipment must be located so that the exhaust pipes are well away from combustible materials.
- Fuel must be transported, handled, and stored in accordance with Subpart F (Fire Protection and Prevention) of the OSHA construction standard.
- When fuel powered tools are used in enclosed spaces, the applicable OSHA rules for concentrations of toxic gases and proper personal protective equipment must be followed.

Carbon monoxide—Enclosed spaces and small gasoline-powered equipment can be a deadly combination. Even when the space is apparently well ventilated, enclosed or partially enclosed areas can put you at risk of serious illness and even death from the lethal poison, carbon monoxide. You must be able to recognize the danger of using small fuel-powered engines indoors. The bottom line recommendation from OSHA is, "When you have an opportunity to use small gasoline-powered engines indoors, DON'T."

Fuel handling and use—If any flammable or combustible liquids are used at your jobsite, you must know how to store, handle, and use them safely. Other rules are:

- A fire extinguisher, rated not less than 10B, must be provided within 50 feet of wherever more than five gallons of flammable or combustible liquids are being used.
- Only approved containers and portable tanks can be used for storage and handling of flammable and combustible liquids.
- Approved red metal safety cans must be used when handling or using flammable liquids in quantities greater than one gallon.
- If the flammable liquid has a flash point at or below 80 °F, the can must have a yellow band or the name of the dangerous liquid stenciled in yellow.

Personal protective equipment—Protective equipment for your eyes, face, head, and extremities, protective clothing, respiratory devices, and protective shields and barriers, must be provided, and used when hazardous conditions are present.



Tools, Hand & Power—Small Gasoline Engine Powered Equipment, Sign-Off Sheet

This sign-off sheet documents the names of employees who attended this training session on Tools, Hand & Power—Small Gasoline Powered Equipment at _____.
(company name)

The session covered:

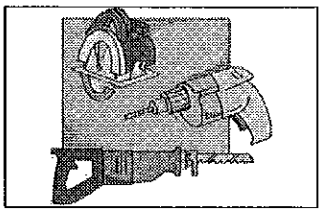
- Condition of tools.
- Power operated tool guards.
- Personal protective equipment.
- Power tool switch action.

The space below is for employees to "sign-off" that they were in attendance.

Date of Training: _____ **Job Location:** _____

Employee Signature	Print Name Here

_____
Supervisor's Signature



Tools, Hand & Power—Tool Selection

Overview Of Topic

Many construction workers use hand tools throughout the course of their workday. Most of them don't give much thought as to how the tool was designed, or if it is ergonomically correct. What workers care about is if the tool can stand up to its intended use and not fail. However, a tool that is ergonomically designed takes much less strength to use.

When workers think of an ergonomically designed tool they may think of those funny looking lawn rakes with the curved handles (or the snow shovels, for employees who shovel snow in the winter). However, there are many more inconspicuous things a tool maker can do to make their tools safer and easier for you to use.

Things to look for

The following tips will help you and your employees choose a safer hand tool:

- Look for a tool that needs less force to use.
- Make sure the handle feels comfortable in your hand.
- Use tools that do not conduct electricity.
- Avoid tools with sharp edges near the handle.
- Get a non-slip handle that's made of a soft material.
- Get a handle that is long enough so you can use a power grip if necessary.
- Wear gloves while using the tool? The tool handle will probably need to be larger.
- Think about the task: Can you keep your wrist straight while working with the tool?

Power tools

Stress that workers should always use a power tool, instead of a hand tool, if they can; it increases productivity and saves wear and tear on hands and shoulders.

Rating

Make sure the tool is rated for the job. A power drill that is meant for home use may not be heavy duty enough for use on the jobsite. Using it may cause undue strain because it may not have the power needed.

Design

The power tool's trigger should be long enough so workers can get two or more fingers on it. This will reduce fatigue.

Look for a power tool that doesn't vibrate excessively. It'll be easier to grip and won't fatigue users' hands.

Selection

Always use the proper tool for the job. It's worth the time and effort to go to the gang box and get the right tool, rather than making do with a tool that's not designed for the job. Using tools that fit you and the task at hand will save your hands (and the rest of your body) lots of pain in the long run.

Employee Training

You have to train employees in the proper use of tools and machinery (29 CFR 1926.20(b)(4)). Only employees who have been trained in the operation of the particular tool in use shall be allowed to operate a powder-actuated tool (29 CFR 1926.302(e)(1).

OSHA state-plan-states: Certain states have more stringent regulations than Federal OSHA. If you operate in a state-plan-state, check with your local OSHA office to determine if there are regulations that go above and beyond Federal OSHA.

Training Tips

Bring in some examples of ergonomically designed hand tools.

Where To Go For More Information

29 CFR 1926.300-.307—Tools, hand and power

ANSI Standard A10.3-1970—Safety Requirements for Explosive-Actuated Fastening Tools

KELLER'S CONSTRUCTION TOOLBOX TALKS

Tools, Hand & Power—Tool Selection

Many construction workers use hand tools throughout the course of their workday. Most of them don't give much thought as to how the tool was designed, or if it is ergonomically correct. What workers care about is if the tool can stand up to its intended use and not fail. However, a tool that is ergonomically designed takes much less strength to use.

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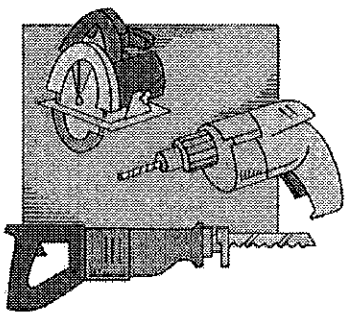

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- Avoid tools with sharp edges near the handle.
- Get a non-slip handle that's made of a soft material.
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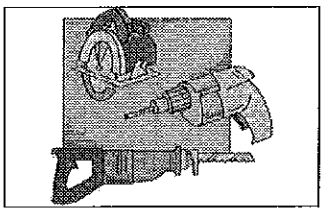
Using tools that fit you and the task at hand will save your hands (and the rest of your body) lots of pain in the long run.



Tools, Hand & Power—Tool Selection Sign-Off Sheet

This sign-off sheet documents the employees at this company, _____, who have taken part in a training session on Tools, Hand & Power—Tool Selection. The session covered:

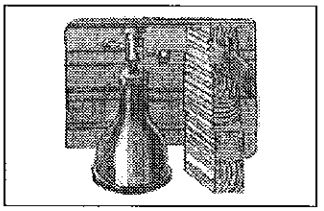
- Why tool design is so important.
- Power tool rating and design.
- Why proper tool selection is worth the effort.

The space below is for employees to "sign-off" that they were in attendance.

Date of Training: _____ **Job Location:** _____

Employee Signature	**Print Name Here**

_____
Supervisor's Signature



Tools, Hand & Power—Working with Jacks & Jack Stands

Overview Of Topic

Maintenance work on construction equipment can be dangerous, but working on equipment that needs to be jacked up for repair is doubly dangerous. From changing a tire on a pickup truck to working on a front end loader, there are certain precautions your employees must take.

Read the instruction manual

As always, before using any type of equipment, make sure that employees read the instruction manual. With that said, there are some universal safety precautions workers need to take.

The basics

All jacks—lever and ratchet jacks, screw jacks, and hydraulic jacks—must have a device that stops them from being jacked up too high. Also, the manufacturer's load limit must be permanently marked in a prominent place on the jack. Do not exceed that limit.

Blocking the load

A jack should never be used to support a lifted load. Once the load has been lifted, block it up immediately with jack stands or other suitable blocking devices or material. Use wooden blocking under the base (if necessary) to make the jack level and secure. If the lift surface is metal, place a 1-inch-thick hardwood block or equivalent between it and the metal jack head to reduce the danger of slippage.

Setting up the jack

To set up a jack, make certain the:

- Base rests on a firm level surface,
- Jack is correctly centered,
- Jack head bears against a level surface, and
- Lift force is applied evenly.

Inspection

OSHA requires a thorough inspection of jacks used constantly or intermittently at least every six months. Common sense tells you to inspect a jack before each use. If a jack is subjected to an abnormal load or shock, thoroughly examine it to make sure it has not been damaged. A jack sent out of the shop for special work needs to be inspected before it leaves and after it returns.

Maintenance

Proper maintenance of jacks is essential for safety. Fill hydraulic jacks exposed to freezing temperatures with an adequate anti-freeze liquid. Lubricate jacks at regular intervals. Examine repair or replacement parts for possible defects. If you find a jack that is damaged or defective, tag it accordingly and don't use it until fixed.

Employee Training

The OSHA standard requires the following training for employees using hand and power tools:

- Only employees qualified by training or experience can operate equipment and machinery (1926.20(b)(4)).
- Employees must be trained to recognize and avoid unsafe conditions and the regulations applicable to his work environment to control or eliminate the hazards (1926.21(b)(2)).

OSHA state-plan-states: Remember that certain states have more stringent standards that go above and beyond the OSHA standards

Training Tips

Bring a typical jack and pair of jack stands in and demonstrate how to properly use them. If you have any photographs of vehicles or equipment jacked up or on jack stands discuss those.

Where To Go For More Information

29 CFR 1926.20—General safety and health provisions.

29 CFR 1926.21—Safety training and education.

KELLER'S CONSTRUCTION TOOLBOX TALKS

Tools, Hand & Power—Working with Jacks & Jack Stands

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Read the instruction manual

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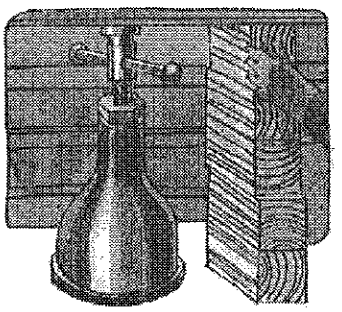

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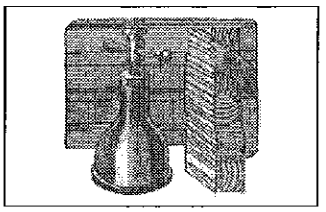

Tools, Hand & Power—Working with Jacks & Jack Stands—Sign-Off Sheet

This sign-off sheet documents the employees at this company, _____, who have taken part in a training session on Tools, Hand & Power—Working with Jacks & Jack Stands. The session covered:

- The basic safety precautions to follow when using a jack.
- Blocking the load.
- How to safely set up a jack.
- Proper inspection and maintenance procedures.

The space below is for employees to "sign-off" that they were in attendance.

Date of Training: _____ **Job Location:** _____

Employee Signature	**Print Name Here**

Supervisor's Signature