



HAND AND POWER TOOL SAFETY



Hand and Power Tool Safety Training – Instruction

All employees who use hand tools or power tools must complete **Hand and Power Tool Safety Training** before performing work tasks that require these tools. This training is designed to help employees recognize hazards, understand safe operating procedures, and prevent injuries associated with the use of tools.

Employees are expected to **carefully review and understand all training materials**, including safety guidelines, hazard information, and proper operating procedures for the tools they will use. Understanding this information is critical to preventing accidents such as cuts, pinch injuries, electrical shock, flying debris injuries, and other serious hazards commonly associated with hand and power tools.

Workers must follow all **company safety policies, manufacturer instructions, and jobsite safety requirements** when using tools. This includes, but is not limited to:

- Inspecting tools before each use to ensure they are in safe working condition
- Using the **correct tool for the specific task**
- Operating tools only as instructed and **never bypassing safety guards or devices**
- Maintaining proper body positioning and secure footing while operating tools
- Wearing the **required personal protective equipment (PPE)** such as safety glasses, gloves, hearing protection, or other protection as required
- Removing damaged or defective tools from service immediately and reporting them to a supervisor

Employees are responsible for **following all safe work practices and procedures covered in this training**. Failure to follow these safety rules may result in disciplinary action and can increase the risk of serious injury.

Supervisors are responsible for ensuring employees understand the training material and **apply safe tool operation practices at all times while on the jobsite**. Safety is a shared responsibility, and proper tool use is essential to maintaining a safe work environment.

The following is a list of the most used hand and power tools at NP Mechanical.

- Angle Grinder
- Band Saw
- Circular Saw
- Drain Cleaning Machine
- Jackhammer
- Nail Gun Safety
- Oxy-Acetylene Torch
- Pipe-Threader
- Powder-Actuated Hand Tool
- Press Tool
- Reciprocating Saw
- Super Hawg (Angle Drill)
- Impact Drill
- Pliers
- Pipe wrench
- Hacksaw



Standard Operating Procedure (SOP)

Use of Power Drills on Construction Job Sites

Document Title: Safe Operation of Power Drills

Applies To: Plumbing, HVAC, and Fire Sprinkler Installers

Work Environment: Residential, Multifamily and Commercial Construction Sites

Effective Date: 3/10/2026

Prepared By: Safety Department

1. Purpose

The purpose of this SOP is to establish safe and consistent procedures for the **inspection, operation, and maintenance of power drills** used on construction job sites to prevent injury, equipment damage, and unsafe work practices.

2. Scope

This procedure applies to all employees and subcontractors who use **corded or cordless power drills**, including:

- Drill drivers
- Hammer drills
- Right-angle drills
- Hole hawg drills
- Impact drivers used for drilling

These tools are commonly used for:

- Drilling through wood framing
- Drilling metal studs
- Drilling masonry or concrete
- Installing anchors, hangers, pipe supports, and duct supports

3. Responsibilities

Employees / Installers

- Follow this SOP at all times.



- Inspect drills before use.
- Use proper PPE.
- Report defective tools immediately.

Foremen / Supervisors

- Ensure employees are trained on safe drill operation.
- Remove damaged tools from service.
- Ensure job site safety compliance.

Safety Manager

- Maintain training records.
- Conduct periodic job site audits.

4. Required Personal Protective Equipment (PPE)

Employees must wear the following PPE when operating power drills:

- Hard hat
- Safety glasses or face shield
- Hearing protection (when required)
- Work boots

IMPORTANT: Gloves protect against cuts and abrasions but can create severe entanglement hazards around rotating equipment. Remove gloves when operating drills, saws, grinders, or lathes. Follow guarding requirements and lockout procedures. Your hands are irreplaceable.

Additional PPE may be required depending on job site conditions.

5. Pre-Use Inspection

Before using a drill, the operator must inspect the tool for:

Corded Drills

- Damaged or frayed power cords
- Missing ground prongs
- Loose or damaged chuck
- Cracked housing



Cordless Drills

- Battery damage or swelling
- Proper battery seating
- Trigger functionality
- Chuck operation

Drill Bits

- Dull or damaged bits
- Bent bits
- Proper bit type for material

If any defect is found:

Tag the tool “Out of Service” and report to the supervisor.

6. Safe Operating Procedures

6.1 Work Area Preparation

- Ensure work area is clean and well lit.
- Check for **electrical wiring, plumbing, or gas lines** before drilling.
- Secure materials before drilling.

6.2 Proper Tool Handling

- Always use **two hands** on high-torque drills.
- Maintain stable footing.
- Do not operate drills from unstable ladders.
- Use the **correct drill speed and torque setting**.

6.3 Drilling Procedures

1. Select the **correct drill bit** for the material.
2. Secure the bit tightly in the chuck.
3. Mark the drilling location.
4. Hold the drill perpendicular to the surface.
5. Start drilling at **low speed**.
6. Apply steady pressure without forcing the tool.
7. Withdraw the bit periodically to clear debris.



6.4 Special Considerations

Drilling Wood

- Watch for hidden nails or screws.
- Use auger or spade bits when appropriate.

Drilling Metal

- Use cutting oil when necessary.
- Secure the material to prevent spinning.

Drilling Concrete / Masonry

- Use a **hammer drill with masonry bits**.
- Control dust and silica exposure.

7. Kickback Prevention

High-torque drills can cause **sudden rotation (kickback)**.

To prevent injuries:

- Maintain a firm grip.
- Use side handles when available.
- Use clutch settings on high torque drills.
- Position body to avoid wrist strain if the drill binds.

8. Electrical Safety

- Use **GFCI protection** for corded drills.
- Keep cords away from sharp edges and water.
- Do not carry the drill by the cord.
- Disconnect power when changing bits.

9. Ladder and Elevated Work

When drilling overhead or on ladders:

- Maintain **three points of contact** when possible.



- Use tool lanyards if required by site policy.
- Never overreach.

10. Battery Safety (Cordless Drills)

- Use only manufacturer-approved batteries.
- Do not use damaged batteries.
- Store batteries away from extreme heat.
- Remove battery before maintenance.

11. Housekeeping

- Clean drill vents to prevent overheating.
- Store drills in toolboxes or designated storage.
- Keep drill bits organized.

12. Maintenance

- Follow manufacturer maintenance guidelines.
- Replace worn drill bits.
- Periodically inspect batteries and chargers.
- Remove damaged tools from service immediately.

13. Training Requirements

All employees must receive training on:

- Proper drill operation
- Tool inspection
- PPE requirements
- Hazard recognition
- Kickback prevention

Training should be conducted:

- At hire
- When new equipment is introduced
- When unsafe practices are observed



14. OSHA References

This SOP aligns with the following OSHA standards:

- **29 CFR 1926 Subpart I – Personal Protective Equipment**
- **29 CFR 1926.300 – Hand and Power Tools**
- **29 CFR 1926.302 – Power-Operated Hand Tools**
- **29 CFR 1926.416 – Electrical Safety**

15. Incident Reporting

Any injury, near miss, or equipment failure must be:

1. Reported to the supervisor immediately.
2. Documented according to company safety procedures.
3. Investigated to prevent recurrence.

Compliance with this SOP is mandatory for all employees using power drills on company job sites.



SUPER HAWG SAFETY – RIGHT ANGLE DRILL

SPECIFIC SAFETY RULES

- Use auxiliary handle(s), if supplied with the tool. Loss of control can cause personal injury.
- Hold the power tool by insulated gripping surfaces when performing an operation where the cutting accessory may contact hidden wiring or its cord. Cutting accessory contacting a “live” wire may make exposed metal parts of the power tool “live” and could give the operator an electric shock.
- Maintain labels and nameplates. These carry important information. If unreadable or missing, contact the manufacturer for replacement.
- **WARNING** Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:
 1. lead from lead-based paint
 2. crystalline silica from bricks and cement and other masonry products, and arsenic and chromium from chemically treated lumber. Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: work in a well-ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.

PERSONAL SAFETY

- ❖ Stay alert, watch what you are doing and use common sense when operating a power tool.
- ❖ Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication. A moment of inattention while operating power tools may result in serious personal injury.
- ❖ Use personal protective equipment. Always wear eye protection. Protective equipment such as dust mask, non-skid safety shoes, hard hat, or hearing protection used for appropriate conditions will reduce personal injuries.
- ❖ Prevent unintentional starting. Ensure the switch is in the off position before connecting to power source and/or battery pack, picking up or carrying the tool. Carrying power tools with your finger on the switch or energizing power tools that have the switch on invites accidents.

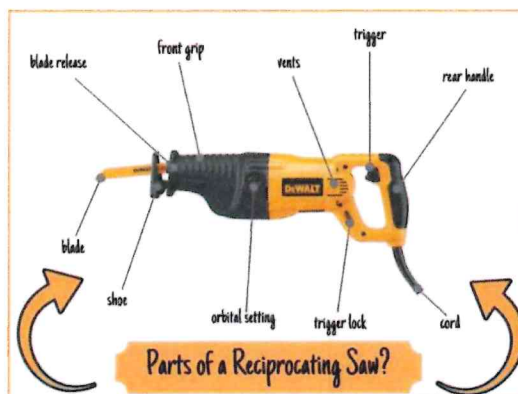
DO NOT WEAR GLOVES WHEN OPERATING A SUPER HAWG. Gloves, particularly loose-fitting ones, can get caught in the rotating drill bit or other moving parts of the drill, pulling your hand or arm into the tool.





Safety Instructions: Reciprocating Saw

- Never operate tool when tired or under the influence of drugs, alcohol or medication.
- Never use a tool that is damaged or is not in good working condition.
- Do not use any equipment unless you have been trained.
- Wear proper eye and hearing protection, and tie up loose long hair.
- Use the appropriate mask or respirator in dusty work conditions.
- Do not wear gloves, loose clothes or jewelry which can catch in moving parts.
- Use sharp blades. Dull blades can produce excessive heat and using greater force.
- Know what is behind when cutting into walls, including electrical, water, gas utilities.
- Avoid cutting small pieces that cannot be properly secured or the shoe cannot contact.
- Never hold a work piece in your hand or across your leg when sawing.
- Use caution when stock is knotty or pitchy, since it could more easily kick back.
- Unplug the saw before making any adjustments or changing the blade.
- Check blades carefully before use for proper alignment and possible defects. Never use a bent, broken or warped saw blade.
- Be sure the tool switch works properly.
- Do not use a tool if the switch does not turn it off when returned to the off position.
- When using a variable speed saw, use higher speeds for soft materials and lower speeds for harder materials to avoid blade damage.
- Position yourself for control of the saw. Avoid cutting above shoulder if possible.
- Keep hands away from the blade and shoe.
- Keep power cord and extension cord out of the blade path and that they are long enough to freely complete the cut.
- NEVER overreach! For maximum control, hold the saw firmly with both hands after securing the work piece.
- Allow the blade to reach full speed before contacting the work piece.
- Hold the shoe firmly against the work to prevent operator injury and blade breakage.
- Be alert to the possibility of the blade binding.
- Allow saw to come to a complete stop before removing the blade from work piece.
- Avoid contact with blade and clamp until they have cooled.
- Unplug, clean and store the tool in a safe, dry location.





Safety Instructions: Press Tool

Whether here or at home, it is essential to remember these safety tips when using a portable press tool:



ALWAYS read all safety warnings, instructions, illustrations, and specifications provided with your power tool. Failure to follow all instructions listed below may result in electric shock, fire and/or serious injury. Save all warnings and instructions for future reference. The term "power tool" in the warnings refers to your mains-operated (corded) power tool or battery-operated (cordless) power tool.



SPECIFIC SAFETY RULES

- ❖ **Use the tool only as directed. Only trained personnel should operate the tool.**
- ❖ **Do not use the tool without jaws installed. Fingers could be crushed.**
- ❖ **Keep hands away from jaws while the tool is in use. Fingers could be crushed.**
- ❖ **To reduce the risk of injury, wear safety goggles or glasses with side shields.**
- ❖ **Inspect and discard workpieces with cracks or wear before use. Materials may crack or shatter.**
- ❖ **Use the tool only with the tool manufacturer's jaws, and to press-fit pipes and fittings for which they are designed.** Other uses may cause injury or damage to the tool, accessories, and pipes. Leaking may result.
- ❖ **Only use tool manufacturer jaws designed for use on this tool.**
- ❖ **Maintain labels and nameplates.** These carry important information. If unreadable or missing, contact a manufacturer service facility for a replacement.



Use only correctly sized jaws and fittings. Jaws and fittings must be used in an approved combination. Others may result in faulty connections, which could cause property damage. Keep hands away from jaws while tool is in use. Fingers could be crushed. Always remove battery pack before changing or removing accessories. Only use accessories specifically recommended for this tool. Others may be hazardous. To reduce the risk of injury, wear safety goggles or glasses with side shields.

REMEMBER:

Stay alert, watch what you are doing and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication.





Powder-Actuated Hand Tools

Whenever you operate a powder-actuated hand tool, safe work practices must always be followed. These tools are designed to drive nails or other fastening devices into material such as concrete, steel, and masonry, which are not easily penetrated. These devices use explosive charges similar to a firearm. Since the charge is similar to a firearm, powder actuated tools can “fire” nails and fastening devices into human flesh. Great respect for these tools and the safety precautions for them must be maintained. Only qualified persons who have been trained and certified by an authorized instructor can use a powder-actuated.

Safe practices for powder-actuated tools:

- Before use, the operator must inspect to verify that the tool is clean, all moving parts operate freely, the barrel is free from obstructions, and correct shields, guards, or safety attachments recommended by the manufacturer are in place.
- **NEVER** point a powder-actuated tool at anyone, whether it is loaded or unloaded! Handle as you would a firearm.
- A powder-actuated tool should never be loaded until it is ready for use.
- Any defective or poorly working tool should be immediately removed from service and tagged as unsafe.
- Always wear proper personal protective equipment (PPE) when operating powder-actuated tools.
- Powder-actuated tools should not be used in areas where flammable or combustible atmospheres may be present – the tool is a source of ignition and could cause an explosion.
- When operating a powder-actuated tool, press and hold the tool firmly against the surface into which the fastening device is being driven.
- Never drive a fastener into a “spalled” or chipped surface, such as an uneven area where a previous fastening was unsatisfactory.
- Never shoot a fastener into a surface unless you are certain it will contain the fastener. Take time to examine both the surface and the object being penetrated to assure your safety as well as the safety of others. The fastener can pass completely through the material and turn into a flying projectile.




Safe operation of powder-actuated tools demands knowledge and the operator’s constant caution. There are too many recorded cases of innocent co-workers being severely injured when powder-actuated hand tool safety practices were disregarded. Before each use of a powder-actuated tool, a complete job hazard analysis of the task should be completed and only trained personnel allowed to operate the equipment.


Don’t get caught with your guard off...it could be disarming!!



Job Hazard Analysis Form

Task	Pipe Threader Machine
Completed by	Jorge Gomez
Required PPE	Safety Glasses, Work Boots
Date	2024
Notes	

Step	Picture	Step Description	Hazards	Controls
1		Perform pre-use inspection and check	<ul style="list-style-type: none"> Slips Skin or eye injury from the cutting oil in the reservoir 	<ul style="list-style-type: none"> Complete hands-on pipe threader training prior to use. Make sure the work area is clean and well-lit. Red tag any equipment that does not pass inspection. Control oil contact with the floor. Use a floor covering or absorbent such as kitty litter. Use a vacuum cleaner to clean the catch pan. Wear eye protection.
2		Feed the pipe into the sleeve, clamp the pipe in place, ream the pipe and adjust the appropriate die	<ul style="list-style-type: none"> Hand injury while sliding the pipe through. Muscle strain 	<ul style="list-style-type: none"> Don't wear gloves. Position the pipe without reaching over the threader. Keep your foot out of the foot safety switch. Don't tighten the clamp while the machine is running. Don't drop the reamer on your hand while positioning the reamer. Don't clean the die or the pipe end with your hands. Don't start the machine until the die is set
3		Start the threader	<ul style="list-style-type: none"> Injuries due to clothes catching on the threader. Skin or eye injury from the 	<ul style="list-style-type: none"> Don't wear loose clothing or jewelry while operating the threader. Keep your hands away from the die and the pipe. Wear eye protection

Step	Picture	Step Description	Hazards	Controls
			<p>cutting oil being delivered to the pipe.</p> <ul style="list-style-type: none"> • Metal debris projectiles • Burns from metal debris 	<ul style="list-style-type: none"> • Use footswitch to start threading, if anything happens, release from footswitch
4		Wipe excess oil and metal debris from the pipe.	<ul style="list-style-type: none"> • Hand injury from rotating threads • Injuries due to clothing catching on the threader. 	<ul style="list-style-type: none"> • Wear Don't touch the rotating threads. • Use a steel brush or similar instrument to clean the threads. • Don't wear loose clothing while operating the threader. • Keep your hands away from the rotating pipe.
5		Loosen and pull the pipe	<ul style="list-style-type: none"> • Hand injuries from interaction with the pipe vise. • Hand injuries from interaction with the pipe vise 	<ul style="list-style-type: none"> • Remove foot from the safety switch, flip the switch off, and ensure the pipe has stopped rotating. • Remove foot from the safety switch, flip the switch off, and ensure the pipe has stopped rotating • Keep your fingers away from the vise jaws

OXY-ACETYLENE TORCH SAFETY – PART 1

SAFETY EQUIPEMNT

Cylinders - Oxygen and acetylene are kept in separate cylinders and not combined until the torch tip is ignited. Oxygen cylinders, typically painted green, contain oxygen compressed up to 2,200 psi (pounds per square inch). Oxygen is a stable compound by nature, but any oil or grease which comes in contact with the oxygen will burst into flames. Therefore, keep hands and gloves free of these materials before handling cylinders.

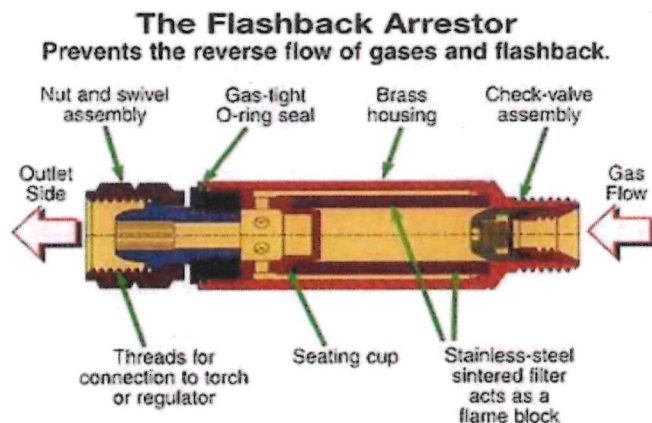
Acetylene gas cylinders are compressed at only about 250 psi, which is much lower than oxygen tanks. However, unlike oxygen, acetylene is rather unstable and, therefore, should not be introduced into the torch above 15 psi. As an extra precaution, cylinder valves should be open no more than 1.5 turns, in the event an operator must close a valve quickly.

Regulators - Installed on the cylinder, regulators control both the pressure of the cylinder and the outlet pressure leading to the torch. Turn keys, or knobs, on the regulators allow adjustment of the outlet pressure. Again, the setting should be no more than 15 psi for acetylene. Consult torch manufacturing for proper pressure settings for acetylene and oxygen.



Check Valves - From the regulator, the two gases travel through check valves, which ensure that the gases can be shut off in the event of backflow. Alternatively, check valves can be placed between the gas hoses and the torch. Please note that check valves can stop reverse gas flow, but they cannot stop flame in the event of a flashback.

Flashback Arrestors - Flashback arrestors prevent fire from flowing back into the cylinders, which will otherwise lead to an explosion. Flashback arrestors contain cut-off valves with low melting points. When triggered by flame, they readily shut off the gas supply and thus extinguish the flame. Both check valves and flashback arrestors should be tested or changed regularly to ensure they are working properly.





OXY-ACETYLENE TORCH SAFETY – PART 2

SAFE OPERATION

In addition to using safety equipment, workers should practice safe operation to prevent flashbacks. Keep acetylene and oxygen separate until the torch is ignited. When starting a torch, the acetylene valve should be opened first. Next, the torch should be ignited, and then oxygen can be introduced. Please note that opening both gas valves prior to ignition can cause gas backflow into either gas hose, leaving the system vulnerable to flashback.

After use, it is critical that both gas lines be emptied separately-one at a time-through the torch. If this "bleeding" of gas lines is done simultaneously for oxygen and acetylene, any pressure difference between the gas lines will cause backflow of one gas into the other line, so this should be avoided.

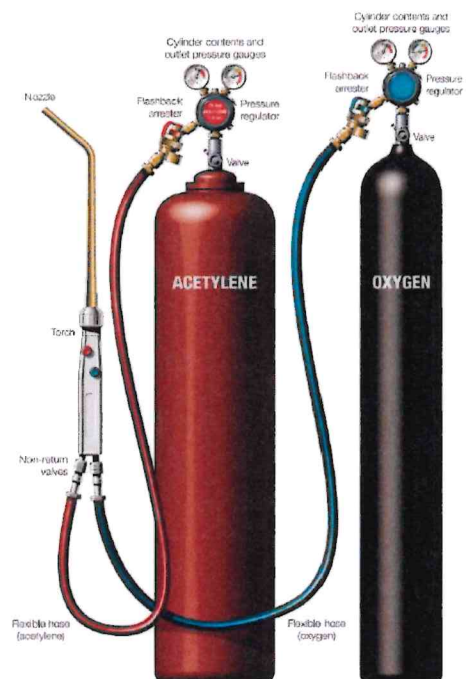
Flashbacks can also be caused by brazing with multiple torches, simultaneously, on one part. If using dual torches to heat both sides of a part, do not aim the torches at each other, but rather, angle each torch toward the part. If one torch should cause flashback in the other, operators will hear a loud hissing sound and should immediately turn off the gas by closing first the acetylene valve and then the oxygen valve.

REMINDER:

Know your filler metals: Be especially careful not to overheat assembly when using filler metals that contain cadmium. Consult the Safety Data Sheet (SDS) for maximum recommended brazing temperatures of a specific filler metal. The filler metal carries a warning label. Be sure to look for it and follow the instructions carefully



Damaged hoses after fire





Nail Gun Safety

Pneumatic Nail Guns can cause many injuries to the hands, feet, as well as the eyes and other body parts. Unfortunately, Nail Gun injuries are common in residential construction. Most of these injuries occur during framing, sheathing, and other carpentry type work. Injuries can also occur during roofing, finish work and a variety of other tasks.

Use the following guidelines to help reduce injuries:

- Nail gun users must be trained on proper use
- Refer to the user manual for safe operation and proper maintenance
- Use the required PPE appropriate to the task
 - Always, wear safety glasses (Z87.1) when using a nail gun
- Inspect the tool, air hose, and connections before each use, must be in good condition
- Never alter or disable a nail gun's safety features (removing the spring from the safety-contact tip, tying back triggers, etc.)
- Do not hold or carry the tool with a finger on the trigger
- Do not lift, lower, carry, or drag a pneumatic nail gun by the air hose
- Do not press the trigger unless you are intending to fire the tool
- Never rest the nail gun against your body or point it at anyone
- Never fire until the nose is firmly pressed against the intended material
- Always disconnect pneumatic nail guns from their air source anytime you are:
 - Leaving the tool unattended
 - Ascending/descending a ladder
 - Passing the nail gun to a worker
 - Clearing jammed nails
 - Performing any type of maintenance

Pneumatic Nail Guns are among several types of equipment powered by compressed air. These tools require care and caution to avoid accidents. The risk of injury can be greatly reduced by following the manufacture's specifications and some of these simple basic guidelines.





Jackhammer Safety

If safety precautions are not taken seriously, jackhammers and handheld powered chipping tools can be dangerous. Jackhammer operators on the job site must be trained and authorized.

The major safety risks to be aware of when operating a jackhammer include:

- Flying debris
- Fatigue
- Sprains and strains
- Abrasions and lacerations
- Harmful vibrations
- Respiratory hazards
- Hazardous noise exposure
- Electrocutation



Jackhammer operators, and those working in the area, need to be wearing appropriate personal protective equipment (PPE), including hearing protection, safety glasses, and steel-toed boots. Jackhammer operators need to also be wearing gloves and metatarsal guards.

Jackhammers can be very heavy so always get help with loading and unloading. When the jackhammer is still on the job, but not currently in use, lay the jackhammer down, instead of propping it up. This will prevent the tool from falling over, which can cause an injury.

Check that air hose couplings are secure before each use. Stretch out the air hose and place it where it will not cause a tripping hazard.

Always make sure to use the right bit for the job.

Operators should use their upper body strength and their legs to lift on the jackhammer, not their back.

When jackhammers or chipping tools are used indoors or in an enclosed area, wet methods or a Vacuum Dust Collection System may not reliably keep exposure low. Extra ventilation may be needed to reduce visible airborne dust. Extra ventilation can be supplied by using exhaust trunks, portable exhaust fans, air ducts, or other means of mechanical ventilation.

Position the ventilation to move contaminated air away from the workers' breathing zones. Ensure that air flow is not impeded by the movements of workers, or by the opening or closing of doors and windows.

Unless there is a ventilation system that effectively captures the dust cloud, do not use compressed air or blowers to clean surfaces, clothing, or filters because it can increase exposure to silica. Instead, clean with a HEPA filter-equipped vacuum or by wet methods.

Feet should be planted shoulder-width apart with the body square to the jackhammer. If the jackhammer is to be used for periods of greater than 15 minutes, workers should rotate the task to minimize chances of injury.

Using a jackhammer or handheld power chipping tool to break or demolish concrete, stone, masonry, or other silica-containing materials can generate respirable crystalline silica dust. When inhaled over time, the small particles of silica can irreversibly damage the lungs.

Two methods for controlling dust when using jackhammers or powered chipping tools are:

1. Wet Methods. Use a manual sprayer or water-spray system that provides a continuous stream or spray of water at the point where the jackhammer's tip strikes the surface material.

2. Vacuum Dust Collection System (VDCS).

A shroud around the jackhammer connects to a vacuum that provides enough suction at the cutting point to effectively capture the dust.

Where water is used to control dust, electrical safety is a concern. Use ground-fault circuit interrupters (GFCIs) and watertight, sealable electrical connectors for electric tools and equipment.

In addition to using wet methods or a Vacuum Dust Collection System, the use of respiratory protection with a minimum Assigned Protection Factor (APF) of 10 is required whenever jackhammers or handheld powered chipping tools are used indoors or in an enclosed area. Assigned Protection Factor 10 respirators are also required when jackhammers or handheld powered chipping tools are used outdoors for more than four hours per shift.



DRAIN CLEANING MACHINE SAFETY

The following is a list of safety precautions when using drain cleaning machines.

1. Just using common sense will keep you out of dangerous situations.
2. Machines should be checked for damaged power cords, pulled-out strain reliefs, damaged switches, and missing ground prongs.
3. All machines should have a ground fault circuit interrupter (GFCI). The GFCI should be integrated into the power cord so that both the machine and the cord are protected.
4. The machine must be plugged into a properly grounded outlet. If the ground wire is electrified, the operator can be electrocuted by just touching the machine. Be sure to use a UL/CSA-approved tester to ensure the outlet is safe.
5. Be sure all machines use a pneumatic foot pedal, an air bubble connected to the machine through an air hose, so there's no electricity running from the pedal to the machine. The wires and switching occur at the motor several feet above the wet floor.
6. If the power cord supplied with the machine is not long enough, be sure to use a three-wire, heavy-duty extension cord that is in good condition. Using lighter cords can result in severe power loss and motor overheating.
7. Wear only leather gloves. Never use any other type of glove, such as cloth or rubber, when handling the cable, as these can get caught between the coils of the cable and take off a finger.



Figure 7 – RIDGID Drain Cleaning Gloves – Leather, PVC



8. Place drum-type and sectional machines designed for close-up operation within two feet of the drain. If you can't get the machine this close, run the cable through a pipe to prevent cable whipping.
9. Don't force the cable through the blockage. Let the cutter do the work. You won't get the job done any faster, and you could damage the cable or injure yourself. Excessive torque on the cable can cause it to whip and kink, and injure the operator in the process
10. If you're using a sectional walk-behind machine, don't touch the cable while it's spinning. There's no need to. Use a cable feeding tool if you're having trouble getting the cable started in the drain. You could lose a finger if you try to force the cable in by hand.
11. Always wear safety glasses when operating the machine to protect your eyes from debris spraying from the drain.
12. Drain cleaners are designed for one-person operation. The person controlling the foot pedal or ON/OFF switch should also be the same person controlling the cable.
13. Make sure your machine has a belt guard.
14. Read the instructions provided with your machine. Follow the maintenance procedures outlined in them and replace worn or lost safety decals.
15. Use common sense. I mention this twice because it's that important. It will save your neck if you use it right.

Pre-Operation Inspection



Before each use, inspect your drain cleaning machine and correct any problems to reduce the risk of serious injury from electric shock, twisted or broken cables, chemical burns, infections and other causes and prevent drain cleaner damage.

Always wear safety glasses, and other appropriate protective equipment when inspecting your drain cleaner.

! WARNING!

Read this Operator's Manual carefully before using this tool. Failure to understand and follow the contents of this manual may result in electrical shock, fire and/or serious personal injury.

Does operating a drain cleaning machine have to be dangerous? No. Just like driving a car, don't run red lights, pay attention to your actions and, most importantly, use common sense. **ALWAYS READ YOUR MACHINE'S OPERATOR MANUAL.**



Safety Instructions: Band Saw

Whether here or at home, it is important to remember these safety tips when using a portable band saw:

PERSONAL SAFETY

- Stay alert, watch what you are doing, and use common sense when operating a power tool. Do not use a power tool while you are tired or under the influence of drugs, alcohol or medication. A moment of inattention while operating power tools may result in serious personal injury.
- Use personal protective equipment. Always wear eye protection. Protective equipment such as dust mask, non-skid safety shoes, hard hat, or hearing protection used for appropriate conditions will reduce personal injuries.
- Prevent unintentional starting. Ensure the switch is in the off-position before connecting to power source and/or battery pack, picking up or carrying the tool. Carrying power tools with your finger on the switch or energising power tools that have the switch on invites accidents
- Remove any adjusting key or wrench before turning the power tool on. A wrench or a key left attached to a rotating part of the power tool may result in personal injury.
- Do not overreach. Keep proper footing and balance at all times. This enables better control of the power tool in unexpected situations.
- Dress properly. Do not wear loose clothing or jewellery. Keep your hair, clothing and gloves away from moving parts. Loose clothes, jewellery or long hair can be caught in moving parts.
- If devices are provided for the connection of dust extraction and collection facilities, ensure these are connected and properly used. Use of dust collection can reduce dust-related hazards.



POWERTOOL USE AND CARE

- Do not force the power tool. Use the correct power tool for your application. The correct power tool will do the job better and safer at the rate for which it was designed
- Do not use the powertool if the switch does not turn it on and off. Any power tool that cannot be controlled with the switch is dangerous and must be repaired.
- Disconnect the plug from the power source and/or the battery pack from the power tool before making any adjustments, changing accessories, or storing power tools. Such preventive safety measures reduce the risk of starting the power tool accidentally.
- Store idle power tools out of the reach of children and do not allow persons unfamiliar with the power tool or these instructions to operate the power tool. Power tools are dangerous in the hands of untrained users.
- Maintain power tools. Check for misalignment or binding of moving parts, breakage of parts and any other condition that may affect the power tool's operation. If damaged, have the power tool repaired before use. Many accidents are caused by poorly maintained power tools.
- Keep cutting tools sharp and clean. Properly maintained cutting tools with sharp cutting edges are less likely to bind and are easier to control.
- Use the power tool, accessories and tool bits etc. in accordance with these instructions, taking into account the working conditions and the work to be performed. Use of the power tool for operations different from those intended could result in a hazardous situation.



Hand Tool Safety: Saws, Wrenches, Pliers and Vises

Saws

- Keep control of saws by releasing downward pressure at the end of the stroke.
- Do not use an adjustable blade saw (such as a hacksaw, coping saw, keyhole saw, or bow saw) if the blade is not taut.
- Do not use a saw that has dull saw blades.
- Oil saw blades after each use of the saw.
- Keep your hands and fingers away from the saw blade while you are using the saw.
- Do not carry a saw by the blade.
- When using the handsaw, hold the workpiece firmly against the work table.
- Use the circular saw guard when using the circular saw.

Wrenches

- Do not use wrenches that are bent, cracked or badly chipped, or that have loose or broken handles.
- Do not slip a pipe over a single-head wrench handle for increased leverage.
- Do not use a shim to make a wrench fit.
- Use a split box wrench on flare nuts.
- Do not use a wrench that has broken or battered points.
- Use a hammer on striking-face wrenches.
- Discard any wrench that has spread, nicked or battered jaws, or if the handle is bent.
- Use box or socket wrenches on hexagon nuts and bolts as a first choice, and open-end wrenches as a second choice.

Pliers

- Do not use pliers as a wrench or a hammer.
- Do not attempt to force pliers by using a hammer on them.
- Do not slip a pipe over the handles of pliers to increase leverage.
- When you are performing electrical work, use insulated pliers. Generally insulated pliers have the blue rubber sleeves covering the handle.
- Do not use pliers that are cracked, broken or sprung.
- When using the diagonal cutting pliers, shield the loose pieces of cut material from flying into the air by using a cloth or your gloved hand.

Vises

- When clamping a long work piece in a vise, support the far end of the work piece by using an adjustable pipe stand, saw horse or box.
- Position the work piece in the vise so that the entire face of the jaw supports the work piece.
- Do not use a vise that has worn or broken jaw inserts, or has cracks or fractures in the body of the vise.
- Do not slip a pipe over the handle of a vise to gain extra leverage.



Handle Tools for Your Safety

Many workers routinely use hand tools and don't think of them as dangerous, but accidents continue to occur. Hand tools include hammers, screwdrivers, saws, wrenches, cutters, tape measures, sledge hammers, cat's paws, chisels, punches, pipe wrenches, pliers, and planes, just to name a few. Each tool is designed to do a specific task. The greatest hazards posed by a hand tool are from their misuse or improper maintenance. It's up to you to select the right tool for the job and to use and care for it properly.

Hand tool safety begins by selecting the right tool for the task and using it the way it was designed. Using the wrong tool for a job is likely to result in an accident. Before you start a job, inspect the tool for defects. Check to be sure that the handle fits tightly into the head, especially with a cutting tool such as an axe. Replace cracked, splintered or broken handles and worn jaws on wrenches or pliers. Replace or repair broken tools and/or power cords. Keep tools clean, sharp and in good condition so they'll be ready for use the next time. When you've finished the job, return tools to their proper storage position protected from unintended contact.

If possible, choose tools designed to keep your wrist straight not bent. Pull on wrenches or pliers don't push on them and avoid applying excessive force. When using a cutting tool, hold its handle firmly in the palm of your hand and cut away from your body never towards it. Carry sharp tools away from your body, never in your pocket. Keep pointed or sharp tools away from walkways where they could injure someone passing by.

Tools should never be tossed to another worker, surface or height; they should be handed securely to another worker or placed directly on another surface or level. If working on a ladder or scaffold, tools should be raised or lowered using a bucket and hand line. Never carry tools in a way that may interfere with your using both hands on a ladder or climbing on a structure.

Remember to wear personal protective equipment when using certain tools. Wear hearing protection when using power saws, drills or other noise-generating tools. If a task involves getting close to pointed objects or branches - like when pruning- or if work could possibly generate flying objects or dust, protect your eyes by wearing safety glasses with side shields or safety goggles. When gloves are necessary, make sure they fit properly. Gloves that are too loose, tight or bulky could contribute to hand fatigue or injury.



Handle Tools for Your Safety Ctn.

As the tool handler, think of your safety first, but also be aware of others around you when using tool, so you don't involve them in an accident. If you have any question about the use, condition or care of a tool, talk to your supervisor.