



Hand and Portable Powered Tools

University Facilities

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Approved by: Bob Wells

1.0 Program Objective

UF has implemented this policy to ensure that no employee is exposed to hazards caused by improper use of hand and portable powered tools. This safety program was adopted from OSHA regulations §1910.241 and §1926.300.

2.0 Purpose and Scope

UF will provide instruction and training by a competent person for each employee using any such tool. The program will enable each employee to recognize hazards related to hand and portable powered tool use and will train each employee in the procedures to be followed to minimize these hazards. UF will ensure that each employee has been trained or instructed by competent person in the following areas, as applicable:

- 2.1 All hand and power tools and similar equipment, whether furnished by UF or the employee, will be maintained in a safe condition.
- 2.2 Any tool not in compliance with any applicable OSHA requirements is prohibited. Such tools will either be identified as unsafe by tagging or locking the controls to render them inoperable, or the defective tool will be physically removed from its place of operation.
- 2.3 When power operated tools are designed to accommodate guards, they will be equipped with such guards when in use.
- 2.4 Guards shall be in place and operable at all times while the tool is in use. The guard may not be manipulated in such a way that will compromise its integrity or compromise the protection in which intended.
- 2.4 Employees using hand and power tools and exposed to the hazard of falling, flying, abrasive, and splashing objects, or exposed to harmful dusts, fumes, mists, vapors, or gases will be provided with the appropriate PPE necessary to protect them from the hazards.

- 2.5 Belts, gears, shafts, pulleys, sprockets, spindles, drums, fly wheels, chains, or other reciprocating, rotating, or moving parts of equipment will be guarded if such parts are exposed to contact by employees or otherwise create a hazard.
- 2.6 One or more methods of machine guarding will be provided to protect the operator and other employees in the machine area from hazards such as those created by point of operation, rotating parts, flying chips, and sparks. The point of operation of machines whose operation exposes an employee to injury will be guarded.
- 2.7 All fuel powered tools will be stopped while being refueled, serviced, or maintained. When fuel powered tools are used in enclosed spaces, the applicable PPE requirements for hazardous atmospheres will apply.

3.0 Power Tool Use

UF employees are required to follow these general requirements for safe hand-held power tools:

- 3.1 Do not allow anyone to use power tools that have not been properly instructed and approved in the processes of safe operation.
- 3.2 Be familiar with your power tools. When using a new tool, or one that is foreign to you, take some time to “test-run” it and get a feel for its performance. Read and understand the operator’s manual and follow its instructions. Prior to its use, do a visual and operational inspection to ensure safe mechanical function.
- 3.3 Eye protection is extremely important and must always be worn when using power tools. When operations present potential eye injuries, adequate and appropriate protection must be selected. Use a face shield, protective goggles, or approved safety glasses depending on the job performed.
- 3.4 Hearing protection is required due to the extreme noise levels generated, especially during extended operating sessions.
- 3.5 Depending on the material being cut, gloves can be helpful and a respirator or dust mask may be required.
- 3.6 Wear clothing appropriate for power tool use; avoid long, loose shirt sleeves, neckwear, or untied long hair.
- 3.7 Check that the electrical circuit to be used is of the proper rating and that cords, plugs, and fittings are intact and secure. All power tools must be grounded unless they are double insulated.
- 3.8 Use only extension cords that are free of splices, taps, bare wires, or frayed and deteriorated insulation. Use 3-prong adaptors.
- 3.9 Ensure all power tools are equipped with proper shields and guards, as recommended by the manufacturer. The guards are designed and engineered for the operator’s safety.
- 3.10 Operate only properly maintained equipment. Check that spring-loaded on/off trigger switch functions properly.
- 3.11 If any operational problems are noted, remove the power tools from service and get it repaired immediately.

- 3.12 When repairing tools, or changing blades, bits and/or cutters, always disconnect the power source.
- 3.13 Remove chuck-keys or arbor wrenches before using the tool.
- 3.14 When possible, always secure your work on a stable platform using clamps.
- 3.15 Unsafe practices and inadequate housekeeping create potentially dangerous work-zones; keep the work area free of trip hazards such as tangled power cords, cluttered material, scraps, bricks, or other obstacles and obstructions.
- 3.16 Be aware of your surroundings and always be on the lookout for hazards. Avoid using power tools in a wet environment.
- 3.17 Always use the proper tool for the job. When not in use, store tools in a dry, secure location.

4.0 Powder-Actuated Tools

UF employees are required to follow these general requirements for safe powder-actuated tool use:

- 4.1 Operators and assistants using tools must use eye, head, and face protection as required by working conditions.
- 4.2 Inspect the tool before use to ensure that it is clean, that all moving parts are free, and that the barrel is free of debris or obstructions.
- 4.3 The muzzle end of the tool must have guard at least 3-1/2" in diameter to confine any flying fragments that might create a hazard.
- 4.4 If a tool is defective, it must be taken out of use until it is properly repaired.
- 4.5 Tools are to remain unloaded until they are to be used.
- 4.6 Never point a tool loaded, or unloaded at anyone.
- 4.7 In case of a misfire, the tool must be held in the operating position for at least 30 seconds, tried a second time, then wait another 30 seconds before unloading in strict accordance with manufacturer's instructions.
- 4.8 Never leave a tool unattended where it would be available to unauthorized personnel.
- 4.9 Fasteners must not be driven into exceptionally hard materials such as cast iron, glazed tile, hardened steel, glass block, or rock.
- 4.10 A backing must be used on all materials to prevent fasteners from passing completely through hand becoming a flying hazard.
- 4.11 Fasteners must not be driven through an existing hole unless means of positive alignment is available.
- 4.12 Fasteners must not be driven into a cracked or fractured area caused by a previous fastener.
- 4.13 Tools must not be used in an explosive or flammable atmosphere.
- 4.14 Requirements for loads and fasteners:
 - 4.14.1 There must be a standard means of identifying the power level of loads being used in the powder actuated tools.

4.14.2 No load may be used in excess of design specifications for a low velocity tool.

4.14.3 Fasteners used in tools must be only those designed to be used in such tools.

5.0 Circular Saws

UF employees are required to follow these safety guideline when using a circular saw:

- 5.1 Eye protection is extremely important and must always be worn when using circular saws. When operations present potential eye injuries, adequate and appropriate protection must be selected. Use a face shield, protective goggles, or approved safety glasses depending on the job to be performed.
- 5.2 Hearing protection may be required due to the extreme noise levels generated, especially during extended use.
- 5.3 A respirator or dust mask may be required, depending on the material being cut.
- 5.4 Do not wear loose clothing, long-sleeves, or gloves while operating a circular saw.
- 5.5 Check that the electrical circuit to be used is of the proper rating and that cords, plugs, and fittings are intact and secure. All circular saws must be grounded unless they are double insulated.
- 5.6 Use only extension cords that are free of splices, taps, bare wires, or frayed and deteriorated insulation. Do not use extensions over 100 ft. long due to the power drop.
- 5.7 Operate only properly maintained equipment. Check that the spring-loaded on/off trigger switch functions properly. If any operational problems are noted, remove the circular saw from service and get it repaired immediately.
- 5.8 Always cut material on an elevated work platform. Never attempt to cut any material lying on the ground or by simply holding the material in your opposite hand.
- 5.9 Be aware of the position of the cord. Always clear the cord before making the cut.
- 5.10 Inspect all material prior cutting. Look for defects such as knots in the wood, nails and screws, or any obstruction that may impede the cut.
- 5.11 Always inspect the saw prior to operation, ensuring the blade is tight and guards are fully functional.
- 5.12 Never pin back or otherwise disable the retractable guard.
- 5.13 Unplug the saw when changing blades or making adjustments, be sure to remove the wrench before operating the circular saw.
- 5.14 Maintain the saw and use only sharp blades or non-defective abrasive wheels free of distortion, cracks, or heat damage. A ring test will be performed on blades prior to installation to determine soundness.
- 5.15 Always store and discard saw blades in a safe responsible manner.
- 5.16 When the saw is not in use, unplug the saw and place the saw out of the way with the blade facing down.

- 5.17 Always use the proper tool for the job. When not in use, store circular saws in a dry, secure location.

6.0 Miter Saw

UF employees are required to follow these safety guidelines when using a miter cut-off (chop) saw:

- 6.1 Do not ever, under any circumstances, allow anyone to use a chop saw that has not been properly inspected and approved in the processes of its safe operation.
- 6.2 Prior to its use, do a visual and operational inspections to ensure safe mechanical function of a saw:
 - 6.2.1 Make certain all blade guards are in place and working smoothly. Removing or pinning back guards is not only extremely hazardous; it is considered a serious safety violation.
 - 6.2.2 Check the blade to be sure that it is straight and the arbor bolt it tight.
 - 6.2.3 Ensure the “constant-pressure” trigger switch operates properly.
 - 6.2.4 Check that the electrical cords, plugs, and fittings are intact and secure. Frayed cords are not permissible.
 - 6.2.5 Be sure that arbor wrenches or keys were not inadvertently left behind on the machined during a blade change.
- 6.3 When setting-up the cutting station, it is important that the saw is positioned in a manner that the work piece’s point of contact with the cutting edge can be easily viewed without straining or stooping.
- 6.4 Make sure the work-zone is level and free of trip hazards such as tangled power cords, cluttered material piles, scraps, stones, bricks, or other obstacles and obstructions. Avoid unsafe distractions by setting up away from high traffic areas.
- 6.5 Ensure the saw’s table or platform being used is stable and does not wobble. Be sure that accessory benches (for cutting long stock) are steady and sturdy; get assistance when needed.
- 6.6 During cuts, keep blade speeds at recommended levels; over-pressure on such will create hazardous situations.
- 6.7 Hearing protection is required due to the extreme sonic and acoustical levels generated, especially during extended cutting.
- 6.8 Eye protection must always be worn when using a chop saw.
- 6.9 Depending on the material being cut, a dust mask may be required.
- 6.10 Wear clothing appropriate with chop saw use; avoid long, loose shirtsleeves, neckwear, or untied long hair.

- 6.11 If any operational problems are noted, remove the saw from service and get it repaired immediately.
- 6.12 Proper care and maintenance should always be given the saw. Damage usually occurs during careless transport, handling, and storage of the tool.
- 6.13 Allow only qualified personnel to make repairs to the saw.

7.0 Drills

UF Employees are required to follow these safety guidelines when using drills:

- 7.1 Do not allow anyone to use an electrical drill that has not been properly trained in the processes of safe portable drilling operations.
- 7.2 Operate only properly maintained equipment. Before use, carefully inspect the machine for obvious defects that could cause malfunctions. Ensure that tool's power cord is secure and intact, the trigger switch functions properly, and that all fasteners and attachments are tight and correctly fitted. When possible, operate the tool using both hands and follow the manufacturer's operating instructions.
- 7.3 Eye protection is extremely important and must always be worn when doing overhead operations. When operations present potential eye injuries, appropriate protection must be selected. Depending on the task, use a face shield, protective goggles, or approved safety glasses.
- 7.4 Be familiar with the power drill being used. When using a new or unfamiliar tool, take time to "test-run" it and get a feel for its performance.
- 7.5 Wear clothing appropriate for drilling or boring; avoid long, loose shirtsleeves, neckwear, or untied long hair.
- 7.6 Check that the electrical circuit to be used is of the proper rating and that cords, plugs, and fittings are intact and secure.
- 7.7 Use only extension cords that are free of splices, taps, bare wires, or frayed and deteriorated insulation. Use 3-prong adaptors.
- 7.8 Select the correct drill and bit for the job and mount it securely in the chuck. Avoid using bits that are dull and bent.
- 7.9 When possible, always secure your work on a stable platform using clamps or vices. The work-piece must be secured so it does not move.
- 7.10 Prior to beginning drilling operations, inspect each work piece for nails, knots, or flaws that could cause the tool to buck or jump.
- 7.11 Turn on the switch for a moment to see if the bit is properly centered and running true.
- 7.12 With the switch off, place the point of the bit in the punched layout or pilot hole.
- 7.13 Hold the drill firmly in one or both hands and at the correct drilling angle.

- 7.14 Turn on the switch and feed the drill into the work-piece. The pressure required will vary with the size of the drill, the diameter of the drill bit, and the kind of material being drilled.
- 7.15 During operation, keep the drill aligned with the direction of the hole. Keep your free hand away from the point of operation.
- 7.16 If any operational problems are noted, remove the drill from service and get it repaired immediately.
- 7.17 When repairing tools or changing bits, always disconnect the power source.
- 7.18 Unsafe practices and inadequate housekeeping create potentially dangerous work-zones; keep the work area free of trip hazards such as tangled power cords, cluttered material, scraps, stones, bricks, or other obstacles and obstructions.
- 7.19 Be aware of your surroundings and always on the lookout for hazards. Avoid using electric drills in a wet environment.

8.0 Portable Abrasive Wheels

UF employees are required to follow these safety guidelines when using handheld grinder or other portable abrasive wheels:

- 8.1 Employees using grinding tools and/or are exposed to the hazards of falling, flying, abrasive, and splashing objects, or exposed to harmful dusts, fumes, or vapors will be provided with, and compelled to use, the particular personal protective equipment necessary to protect themselves from the hazard. This equipment includes eye and face, respiratory, hearing, and hand protection and will be properly maintained to meet all applicable standards.
- 8.2 All power grinding tools will be maintained in a safe condition. When these tools are designed to accommodate guards, they will be in place when the tool is in use. Safety guards will be strong enough to retain flying fragments and withstand the effects of a bursting wheel.
- 8.3 All grinding machines will be supplied with sufficient power to maintain safe spindle speeds under normal operating conditions.
- 8.4 All abrasive wheels will carefully be inspected and “ring-tested” before mounting to ensure that they are free from cracks or defects. To perform a sound or ring test, wheels should be tapped gently with a light, non-metallic instrument. If they sound cracked or dead, they could fly apart during operations and should be discarded. An intact, undamaged wheel will give a clear metallic tone or “ring.”
- 8.5 Only portable grinders with wheels 2 inches in diameter or less may be equipped with a positive on/off control switch. Grinders with wheels greater than 2 inches in diameter will be equipped with a momentary contact on/off switch and may have a lock-on control.

- 8.6 Grinder will be used on a 3-wire grounded circuit or be of the approved double insulated type. Using the tool's power cord for hoisting or lowering will not be permitted.
- 8.7 All grinding/cutting wheels will fit freely on the spindle and must not be forced on. The spindle nut will be tightened only enough to hold the wheel in place.
- 8.8 When grinding metal, it is easy to leave razor-sharp edges; be sure you take them off before walking away from the work piece.

9.0 **Pneumatic Nailers and Staplers**

UF employees are required to follow these safety guidelines while operating pneumatic nailers and staplers:

- 9.1 Never allow anyone to operate these tools without first being properly instructed in their safe use.
- 9.2 Appropriate Personal Protective Equipment must be worn at all times when using compressed air tools and equipment.
- 9.3 Pneumatic powered tools must be secured to the hose by some positive means to prevent the tool from becoming accidentally disconnected.
- 9.4 All pneumatically powered nailers, staplers, or other similar equipment with automatic feed, that operate at over 100 psi at the tool, must have a safety device on the muzzle to prevent the tool from cycling and ejecting fasteners, unless the muzzle is in contact with the work surface.
- 9.5 Compressed air must not be used to clean except where pressure is reduced to less than 30 psi. The 30 psi rule does not apply to concrete forms, mill scale, and similar cleaning purposes.
- 9.6 The manufacturer's safe operating pressure for hoses, pipes, valves, filters, and other fittings must not be exceeded.
- 9.7 Avoid horseplay when using "air guns." Accidentally discharged fasteners can easily penetrate flesh and bone.
- 9.8 Safety features should be left intact or you could nail your foot to the deck – it does happen.
- 9.9 Always wear appropriate eye protection when using any air gun.
- 9.10 Hearing protection is often required depending on the noise level.
- 9.11 Read the owner's manual and operate the tool according to the manufacturer's guidelines.
- 9.12 Ensure that tools are properly maintained and are in good working condition.
- 9.13 Never exceed manufacturer's recommended working pressures and never use more pressure than necessary (seldom more than 90 – 95 psi). Excessive pressure exerts more force, causing harder cycles. It is hard on tools and generates more flying debris.

- 9.14 Always keep the nose of the tool pointed toward the work-piece or downward when air charged. Never point the tool towards yourself or others.
- 9.15 During use, hold the nose of the gun firmly against the work-piece.
- 9.16 Ensure all safety features are intact and operational. Make sure they are not disabled and are functioning properly.
- 9.17 Always disconnect tool from air supply when clearing a jam or when not in use. Keep hoses and fittings and good condition.
- 9.18 Never carry an air-gun with your finger on the trigger. Accidental discharge and injury may result.
- 9.19 Tie-off and secure the air hose when working on a roof or scaffold to prevent the tool from falling on others.
- 9.20 Always move forward when working a nailer or stapler on a roof so you do not inadvertently trip or fall from the roof.
- 9.21 Never use volatile bottled gas to operate pneumatic fasteners or operate air guns around flammables; sparks may cause a fire.
- 9.22 Keep your free hand clear of air gun's nose during use.
- 9.23 Safety clips or retainers must be securely installed and maintained on pneumatic impact (percussion) tools to prevent attachment from being accidentally expelled.

10.0 Air Compressors

UF employees are required to follow these safety guidelines while operating air compressors:

- 10.1 Every air receiver must be equipped with a pressure indicator gauge with one or more spring-loaded safety valves.
- 10.2 Pressure gauges must be located so as to be readily visible.
- 10.3 The pressure relief safety valves may not exceed the rated working pressure of the air receiving tank.
- 10.4 No valve of any type may be placed between the safety valve and the air receiver.
- 10.5 Safety valves, pressure gauges, regulators, and other controlling devices must be designed and installed so that they cannot be easily rendered inoperative by any means, including weather elements.
- 10.6 All safety valves must be installed at the lowest point of any air receiver to provide for the frequent and complete removal of accumulated oil and water.
- 10.7 Never install compressors on an unrated air tank. The air receiver tank must be rated equal to or higher than original equipment.
- 10.8 If pressure gauges or pressure relief valves are damaged, replace them with compatible equipment before using the compressor.

- 10.9 If a compressed air storage tank is dented, deeply gouged, or badly rusted, compressor must be removed from service.
- 10.10 Do not use compressed air to pressurize barrels, pipes, or other containers not designated or intended as pressure vessels.
- 10.11 If an air receiver is equipped with a quick connect/release fitting, make sure the lock collar is fully engaged when hose is connected. When the hose is released from the fitting, firmly grasp the hose close to the fitting before releasing the lock collar.
- 10.12 Before servicing a compressor, disconnect it from the power source and bleed the pressure from the tank. (Use appropriate LOTO)
- 10.13 Pulleys and belts on compressor motors and pumps must be properly guarded.
- 10.14 Is using a gas powered compressor, check power cord for cuts and abrasions, if the cord, plug, or any components are damaged, replace before use.

11.0 Hand Tools

UF employees are required to follow these safety guidelines when using hand tools:

- 11.1 General Tools: always wear Personal Protective Equipment that is appropriate for the hand tool being used.
- 11.2 Damaged, worn-out, or defective tools should be tagged and removed from service. Do not perform “make-shift” repairs to tools.
- 11.3 Never use a tool if its handle has splinters, burrs, cracks, splits or if the head of the tool is loose.
- 11.4 Do not use impact tools such as hammers, chisels, punches or steel stakes that have mushroomed heads.
- 11.5 When handing a tool to another person, direct sharp points and cutting edges down and away from yourself and the other person.
- 11.6 Carry all sharp tools in a sheath or holster. Do not carry sharp or pointed hand tools such as screwdrivers, scribes, snips, scrapers, chisels or files in your pocket unless the tool is sheathed. Transport hand tools only in toolboxes and other elevated work platforms.
- 11.7 Avoid carrying tools in your hand when you are climbing. Carry tools in tool belts or hoist the tools to the work area using a hand line.
- 11.8 Do not throw tools from one location to another or from one employee to another.
- 11.9 Hammers: Do not use a hammer if your hands are oily, greasy, or wet.
 - 11.9.1 Never strike another hardened steel tool or surface, such as a cold chisel, with a claw hammer.
 - 11.9.2 Avoid striking nails or other objects with the “cheek” of the hammer.
 - 11.9.3 Do not strike one hammer against another hammer.

11.9.4 Never use a hammer as a wedge or a pry bar.

11.10 Hand Saws: When using a handsaw, hold the work-piece firmly against the work table.

11.10.1 Do not use an adjustable blade saw, such as a hacksaw or a coping saw, if the blade is not taut.

11.10.2 Avoid using any saw with a dull blade; always keep blades clean and sharp.

11.10.3 Keep hands and fingers away from the point of cut when using any saw.

11.10.4 Never carry a hand saw by the blade.

11.11 Screwdrivers: Do not use a screwdriver if your hands are wet, oily, or greasy.

11.11.1 Always match the size and type of screwdriver blade to fit the head of the screw.

11.11.2 Never hold the work-piece against your body while using a screwdriver.

11.11.3 Avoid putting your fingers near the blade of the screwdriver when tightening a screw.

11.11.4 Use a drill, nail, or an awl to make a starting or pilot hole for screws.

11.11.5 Do not force a screwdriver by using a hammer or pliers on it.

11.11.6 Never use a screwdriver as a punch, chisel, pry bar, or nail puller.

11.11.7 When performing electrical work, ensure the screwdriver has a properly insulated handle.

11.12 Pliers: Do not use pliers that are cracked, broken or sprung.

11.12.1 Never use pliers as a wrench or a hammer.

11.12.2 Do not attempt to force pliers by using a hammer on them.

11.12.3 When you are performing electrical work, use pliers that have properly insulated handles.

11.12.4 When using diagonal cutting pliers, shield the loose pieces of cut material from flying into the air.

12.0 Wrenches

UF employees are required to follow these safety guidelines when using wrenches:

12.1 Inspect the wrench carefully before use and do not use if damaged.

12.2 Discard any wrench that has spread, nicked or battered jaws, or if the handle is loose, broken or bent.

- 12.3 Always use the proper size wrench for the job. A slipping wrench can damage bolt heads and nuts and can cause personal injury. Do not use a shim to make a wrench fit the fastener.
- 12.4 Use a wrench that gives a straight, clean pull. If you must push the wrench, use the heel of your hand; do not wrap your fingers around the tool.
- 12.5 Do not cock the wrench in a manner that puts a strain on the points of contact; this can lead to tool failure. Keep the wrench flush with bolt head.
- 12.6 Avoid using a pipe or other “cheater bars” to extend the length of a wrench. Under excessive force, the wrench or bolt can slip or break.
- 12.7 Do not use a hammer with a wrench unless the wrench has been specifically designed for this purpose.
- 12.8 Replace cracked, worn, or “tweaked” wrenches.
- 12.9 Do not attempt to straighten a bent wrench. It will only weaken it further.
- 12.10 Do not substitute slip-joint pliers for a wrench; the pliers can slip and damage the bolt heads and nuts and cause hand injuries.
- 12.11 Sockets designed for use with hand wrenches, wear eye protection to safeguard against blowing debris. Use only heavy-duty hardened sockets.
- 12.12 Use a torque wrench for tightening only. Never use torque wrenches to break nuts or bolts loose; they are designed to measure tightness.
- 12.13 Be sure the jaws on your pipe wrenches are still sharp as unexpected slippage can cause injury.

13.0 Jacks – lever and ratchet, screw, and hydraulic

UF employees are required to follow these safety guidelines when using jacks:

- 13.1 The manufacturer’s rated capacity will be legibly marked on all jacks and will not be exceeded.
- 13.2 All jacks will have a positive stop to prevent over travel.
- 13.3 When it is necessary to provide a firm foundation, the base of the jack will be blocked or cribbed. Where there is a possibility of slippage of the metal cap of the jack, a wood block will be placed between the cap and the load.
- 13.4 After the load has been raised. It will be cribbed, blocked, or otherwise secured at once.
- 13.5 Hydraulic jacks exposed to freezing temperatures will be supplied with an adequate antifreeze liquid.
- 13.6 All jacks will be properly lubricated at regular intervals.
- 13.7 Each jack will be thoroughly inspected at times which depend upon the service conditions. Inspections will be not less frequent than the following:

13.7.1 For constant or intermittent use at one locality, once every 6 months.

13.7.2 For jacks sent out of shop for special work, when sent out and when returned.

13.7.3 For a jack subjected to abnormal load or shock, immediately before and immediately thereafter.

13.8 Repair or replacement parts will be examined for possible defects.

13.9 Jacks which are out of order will be tagged accordingly, and will not be used until repairs are made.