



MAKER LAB Safety Instructions

Power Tool Training

Note: All the instructions from Basic Training apply to Power Tool Training. **If you have not completed Basic Training, do so before you complete Power Tool Training.**

Power Tool Training equipment list:

1. Dremel Rotary Tool
Has a small, powerful electric motor and is made to accept a large variety of accessories including abrasive wheels, drill bits, wire brushes, polishers, engraving cutters, router bits, cutting wheels, and attachments.
2. Drill Press
Used for drilling accurate and consistent holes. The depth of the hole being drilled can be preset and repeated consistently.
3. Orbital Jig Saw
Uses a reciprocating or elliptical motion to saw through material depending on the use. Can be used to make straight or curved cuts.
4. Reciprocating Saw
Uses a push and pull motion of the blade to saw through material. Generally used for construction and demolition work.
5. Trim Saw
Used for making straight, relatively accurate cuts.
6. Other Items or tools may be added to the Lab at a later date. If other tools are added to Power Tool Training, additional Safety Training may be required and approved for its use.

Disregarding lab rules or working unsafely will result in suspension or revocation of lab privileges depending on the severity of the infraction.

In an Emergency:

Call 4444 from the lab phone (or 408-554-4444 from a cell phone), or 911 from a cell phone.

The Maker Lab is located in Guadalupe Hall, 3rd Floor, Room 301
Maker Lab Website: <http://makerlab.engr.scu.edu> **Maker Lab E-mail:** scumakerlab@gmail.com



Power Tool Training: General Safety Guidelines

Emergency Information

1. **Injuries:** For immediate help notify Campus Safety at x4444 (408-554-4444) and follow their direction. Do not attempt to remove foreign objects from the eye or body; it is better to have trained medical personnel remove foreign objects from the eye or body.

Being ready to work

2. **Do not operate** equipment unless you have been properly trained to do so. If you're unsure about the safe operation of a tool or any aspect of a job – ask for help. **If you can't do a job safely, don't do it!**
3. **Never work when you are impaired.** Do not drink alcoholic beverages before or during work in the lab area. Do not work when you are under the influence of any substance that can impair judgment or alertness. Do not work when you are too tired, stressed or hurried to work carefully.

Personal Protection

4. **Must wear safety glasses with side shields whenever in the lab**
5. Long hair must be tied back or covered to keep it away from moving machinery.

Shop and Tools

6. **Always keep aisles, exits and access to emergency equipment** (fire extinguishers, fire alarms, first aid kit) clear at all times.
7. Do not enter **Operator Zones** marked on the floor unless trained on the equipment.
8. **Become familiar** with how the tools work and the dangers before using them. Ask for help!
9. **Never operate equipment unless all required guards and shields are in place.**
10. **Verify** the overall condition of the equipment (e.g., damaged power cord, visible cracks, or defects in the tool housing or anything that would compromise the safe use of the tool).
11. **A hard faced hammer (like a claw hammer) should not be used to strike a hardened tool (like a cold chisel) or any machine part.** Use a soft-faced hammer or one designed for this work.
12. Machine must be **shut off** and not moving when you are cleaning, oiling, adjusting, or leave the area.
13. **Keep fingers clear** of the point of operation of machines by using special tool or devices, such as, guards, push sticks, hooks, pliers, etc. **Never use a rag near moving machinery!**
14. Keep the floor around the machines clean, dry, and free from trip hazards. **Do not allow chips or dust to accumulate.**
15. Get help in lifting or moving any heavy tool, attachment, or equipment.
16. Take care not to make loud and/or sudden noises.
17. **Shut off** and disconnect power tools before cleaning and performing set-ups.

Sign and date in space provided, verifying you have received a copy of and have read and understand the safety instructions.

Name: _____

SCU ID: _____

Signature: _____

Date: _____



Power Tool Training: Dremel Rotary Tools Safety Guidelines

1. Always wear safety glasses when using the Dremel rotary tool. Wear hearing protection and/or dust mask when appropriate.
2. Unplug the tool/disconnect the battery before cleaning, making any adjustments, or changing accessories.
3. Inspect the Dremel before use (cord not damaged, switch properly working, accessories not damaged).
4. Verify the accessory is secure and the collet is tight.
5. Keep Dremel dry and clean.
6. Inspect work piece for nails, knots, or other foreign objects. Objects must be removed or steps taken to prevent the object from coming in contact with the Dremel.
7. Use clamps to support the work piece
8. Don't carry the Dremel with your fingers on the switch trigger.
9. Never start the tool with the bit in contact with the work piece.
10. Do not use the cord to move or drag a power tool.
11. Always keep a firm grip on the Dremel. Do not leave it running unattended.





Power Tool Training: Drill Press Safety Guidelines

You may not operate the drill press without the requisite training and approval from the Maker Lab Staff. Always wear safety eye protection (safety glasses) while drilling.

1. Do not wear gloves or any loose clothing, lanyards or jewelry.
2. Pull back, secure and contain long hair.
3. Make adjustments only when power switch is turned off.
4. Always inspect the drill bit before using. Don't use a dull or cracked drill bit.
5. **Always remove** chuck key immediately after using it and return it to the chuck key holder.
6. Set the belts to adjust the speed to a setting that is appropriate for the material and bit size.
7. Always hold small pieces in a vise or clamp to the drill table.
8. Always try to support part on parallels or use a backing board when drilling through material.
9. Make sure that no one but you is inside the operator's zone.
10. Don't drill with too much pressure – let the bit do the work.
11. Ease up on drilling pressure as the drill starts to break through the bottom of the material.
12. Lower the drill spindle close to the table when releasing the drill chuck to reduce the chance of damage should the bit fall onto the table.
13. **Never touch or clean a machine while it is in motion!!**
14. If the drill binds in a hole, stop the machine and turn the spindle backwards by hand to release the bit.
15. When drilling a deep hole withdraw the drill bit frequently to clear chips. Lubricate the bit if drilling into metal.
16. Let the spindle stop of its own accord after turning the power off. **Never try to stop the spindle with your hand.**
17. Always turn the power off and ensure that the drill chuck is stopped before trying to loosen.
18. Remove chips with a brush, **never** by hand.
19. When raising or lowering the table – be sure the table is held secure, then loosen the lock/clamp before cranking or moving the table up or down.
20. When done, clean off drill press table and surrounding area. Return cleaned drills, coolants, and clamping devices to designated place. Any waste containing flammable materials must be disposed of in the hazardous waste bin.





Power Tool Training: Orbital Jig Saw Safety Guidelines

You may not operate the Orbital Jig Saw without the requisite training and approval from the Maker Lab Staff.

1. Secure any loose fitting jewelry or clothing, tie back long hair - they can get caught in moving parts.
2. Avoid accidental starting. Be sure power switch is off before plugging in/attaching the battery.
3. Unplug tool/remove battery when you need to change the blade or adjust the shoe angle.
4. Do not start saw with material to be cut touching the saw blade.
5. Always be aware of where your fingers and power cord are in relation to the cutting blade.
6. Do not cut metal with a blade rated for cutting wood. Typically blades for wood will have larger and fewer teeth than blades for metal (smaller and more teeth)
7. Always use the proper blade for the task at hand. The wrong type blade may cause the blade to seize and shake the tool violently, or may break the blade.
8. Use clamps to minimize vibration of the work piece.
9. Always use clamps when cutting any metal.
10. Be aware of sharp burrs on the cut edge on metal pieces.
11. Do not start cutting until the blade is moving at full speed.
12. Do not force the saw blade into a very tight curve too fast. You can break the saw blade.
13. Make sure blade is installed with the cutting teeth facing the front of the saw, and that it is aligned straight and secure.
14. Do not cut without adequate clearance for the blade below the material being cut. If the tip of the blade strikes down on a solid surface, it will usually break.
15. Do not attempt to reinsert the blade into the kerf the cut area while the saw is running.
16. Do not touch the blade or reciprocating parts of the saw while it is in motion. The tip of the saw may not be visible while the saw is running.
17. Be aware that the blade will be very hot after finishing a cut.





Power Tool Training: Reciprocating Saw Safety Guidelines

You may not operate the Reciprocating Saw without the requisite training and approval from the Maker Lab Staff.

1. Wear eye protection at all times when using the reciprocating saw.
2. Keep all electrical cords out of the way of the cut being made.
3. Locate yourself in a good steady position prior to making cuts with the reciprocating saw.
4. Hold the saw firmly with both hands when making cuts. This saw will vibrate a lot during operation and must be held tightly to keep the cut on line and to avoid being dropped during operation.
5. Do not operate close to other workers especially since the blade on this saw is unguarded.
6. Use clamps or other devices to secure the material being cut with the reciprocating saw.
7. Always make sure the saw blade and the metal are cool before touching them.
8. Do not bind or pinch the blade when making cuts with the reciprocating saw. Binding the blade may cause the blade to break or possibly jerk the saw from the user's hands.
9. Do not place excessive pressure on the saw while cutting and become over balanced.
10. If the saw requires excessive pressure to cut, it is in need of a new blade. Inform Maker lab Staff before continuing to use the saw.
11. Too much forward pressure will usually cause the blade to break prematurely.





Power Tool Training: Trim Saw Safety Guidelines

You may not operate the Trim Saw without the requisite training and approval from the Maker Lab Staff.

1. **Always** wear safety glasses and hearing protection when operating the trim saw.
2. **Never cut metal or metallic faced materials** with the trim saw.
3. Inspect the blade before using it, to make sure it is the proper blade and is sharp and free from cracks and broken teeth. Never use a dull blade.
4. Clamp down the work piece when using the trim saw.
5. Always inspect wood stock prior to starting cut, examining carefully for nails and other metallic objects. If such material is discovered, it must be removed or steps taken to prevent the object from coming into contact with the saw blade.
6. Never allow your fingers to get near the blade when sawing.
7. Always stand to one side, never directly in line with the blade or work being fed into the saw.
8. Never remove scrap with the blade running, first shut off the saw and wait until blade stops.
9. Never allow the work to ride up onto the blade, use appropriate hold downs to ensure work stays in contact with the table at all times.
10. If the piece of material you are cutting is large, have someone assist you. The work piece should be supported without pinching or binding the blade in the cut. Make sure everyone understands their role.
11. Beware of kickback when operating the saw. Kickback is a sudden reaction to a pinched blade, causing an uncontrolled saw to lift up and out of the work piece toward the operator. Always maintain a firm grip with both hands on the saw while cutting.
12. Don't pull the saw backwards when cutting, this may result in kickback and cause an injury.
13. Never reach under the saw to obtain something from the other side.
14. Never make any adjustments to the saw while it is running. Turn off the power, unplug/ remove battery, and make sure the saw is completely stopped before attempting to adjust it.
15. Always wait until the saw blade stops before lifting it from a cut; and make sure the guard is closed before setting the saw down.

