

General Safety Rules

WARNING! A 1987 study done by The Campbell foundation, Memphis, Tennessee titled: *Woodworking injuries: An Epidemiologic Survey Of Injuries Sustained Using Woodworking Machinery And Hand Tools* found: **Woodworking equipment produces approximately 720,000 injuries per year often causing severe psychological and functional impairment. Responses from 1000 injured woodworkers to a demographic survey revealed that 60.5% of injuries occurred to amateur woodworkers; 42% of injuries were caused by the table saw and 37% of respondents reported amputation of one or more digits. The most significant causal factor reported was failure to use properly installed guards, but personal factors, such as fatigue and lack of concentration were also implicated. Twenty-seven percent of respondents required hospitalization for an average of 3.7 days, and 22.8% were treated by hand surgeons. Hand surgeons need to become more aware of the dangers of specific types of woodworking equipment and the injuries produced by these tools to better treat and perhaps, prevent woodworking injuries.**

WARNING! All of the machinery, power tools and hand tools in the workshop are capable of causing injury. In some cases, the result could be amputation or death. Operate only machinery that you have been trained to use and for which you have read the operating procedures and safety procedures.

PROCEDURES

Always read, understand and follow the operating and safety procedures for the tools and equipment that you are about to use.

PERSONAL PROTECTIVE EQUIPMENT (PPE)

Eye Protection. You must wear safety glasses with side shields at all times when in the workshop. The only exception is when no work is being done in the workshop. Hearing protection is also required when operating power tools or in the vicinity of where power tools are being used. This applies to those performing work as well as bystanders. Turning off hearing aids does not provide hearing protection and may not be used as a substitute for hearing protection. You may at times need a dust mask (NIOSH approved) and tight fitting leather gloves.

Please be aware that the lenses of safety glasses are made of impact resistant materials that meet the standards set by ANSI Z87.1. The frames are designed to be strong enough to resist the impact also. Safety glasses which meet the safety requirements established in ANSI Z87.1 are marked with 87.1 on the lenses, frame and side shields. If your glasses do not have the Z87.1 marked on them, they are not safety glasses. If you wear prescription glasses, you must wear either prescription safety glasses or safety glasses that are designed to be worn over prescription glasses. If a lot of chips are being generated by the work being performed, such a lathe work, a face shield is also recommended. Wearing a face shield however, does not eliminate the need for wearing safety glasses.

DANGER! The temples of safety glasses affect the seal that can be obtained when wearing ear muff type hearing protection. Thick temples, like those used on disposable plastic safety glasses, will prevent a good seal and allow sound to bypass the ear muff. Therefore, temples made of metal are recommended.

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Face Protection. There will be times when you need more than eye protection. A face shield provides protection for your entire face and should be worn anytime there is the potential for a projectile being directed towards your face. Lathe work is a good example. But, be aware that not all face shields are created equal. Many are designed only to protect you from the splash of liquids. This type will not provide adequate protection. The face shield must be impact rated and be ANSI Z87 certified. The Honeywell S8500 Bionic face shield (Amazon.com) is an example of such a face shield. Note that the face shield is supported by a frame all the way around the perimeter.



Honeywell S8500 Bionic Face Shield

Hearing Protection. Hearing protection is required and is available in many styles. The disposable plugs that go in the ear work well because they expand and fit tightly in the ear canal. However, after a while, the pressure from the expansion may cause discomfort. Ear muffs are recommended because they are more comfortable and easy to remove and replace. The ability of the muffs to keep out the noise is indicated by their decibel rating. The higher the decibel rating, the better job they do of keeping the noise out. I suggest that you use ear muffs with a decibel rating of 28-32.

You can buy cheap ear muffs at lots of places. However, their decibel rating is usually low or they become uncomfortable after wearing them for a while. The 3M Optime 105 (formerly Pelator) brand (~\$25) is recommend. They are available from Home Depot, Lowe's, Grainger, Woodworker's Supply, and possibly at sporting goods stores or places that sell guns. [Noise cancelling hearing protection designed for shooting may also work well.](#)

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Respirators. All respirators must be NIOSH approved. Many that are sold in catalogs and home centers are not. The NIOSH approval means that the respirator has been tested and found to be effective at keeping out dust (and/or organic vapors). The effectiveness of a respirator is dependent on how well it seals to your face. In order for the respirator to provide good protection, all air that you breathe must pass through the filter on the respirator. If the respirator does not seal tightly to your face, you will also be breathing dirty air that has bypassed the filter. That is why OSHA requires that each person that wears a respirator be tested to ensure that the respirator seals tightly to your face.

The NIOSH approved disposable masks work well for short periods. However, they are called disposable masks for a reason. Taking them off and putting them back on numerous times causes them to not fit tight against your face. If you like this kind of mask, plan on replacing it after a day or two of use. The masks with the exhalation valve cost more, but have less of a tendency to fog your safety glasses. Many prefer the 6200 series half-face piece respirator made by 3M (~\$15). The body is made of soft silicone rubber and can be comfortably worn for extended periods. It is also very light. Numerous types of cartridges are available for this mask.

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Dust Mask with P100 Filter (Purple)



Organic Vapor (Yellow)/P100 (Purple)
Combination Finishing Respirator

Use the flat pancake P100 filters (Purple) for dust (~\$10/pair). P100 means that it is essentially 100% effective at removing respirable size dust particles. The organic vapor cartridge (Yellow) is good for finishing and staining operations that are done with a rag or brush (~\$13/pair). For spray finishing you need the organic vapor cartridge/P100 filter combination cartridge (~\$25/pair). These dust masks and cartridges are available from Home Depot, Grainger, Orr Safety, and McFeeleys. Lowe's carries respirators with a N95 dust filter which is only 95% efficient at removing respirable size dusts. Grainger sells the respirators in sizes small, medium and large. Most other suppliers sell only the medium size, which fits most people.

DANGER! If you have a beard with more than a few days growth, it is unlikely that the air filtering respirators described above will provide the face seal and protection required. In these cases, a Powered Air Purifying Respirator (PAPR) must be worn. These respirators include a hood that encloses your head and a fan that blows filtered air into the hood. This maintains a slight positive pressure inside the hood and prevents dirty air from entering. These respirators also have a face shield to protect you from flying objects. However, safety glasses with side shield must still be worn. Recommended PAPR units include the Trend Airshield and the 3M Versaflo. The Trend Airshield has a four hour battery life and the battery is mounted in the hood. The 3M Versaflo has an eight hour battery life and the battery is mounted in a backpack. The 3M Versaflo comes with a heavy duty face shield, filter life alarm, and air flow test kit. Both are available at amazon.com. Trend Airshield \$350; 3m Versaflo \$1,150. I encourage you to read the reviews for both.

DANGER! Sanding dust is irritating to the eyes. For many tropical woods the sanding dust is also toxic. The use of a PAPR will prevent sanding dust from getting into your eyes and is recommended when sanding tropical woods; for example when using the lathe.

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Trend Airshield



3M Versaflo

Hand Protection. Tight fitting, light weight leather gloves (Often referred to as drivers, mechanics or shooters gloves) will protect your hands from splinters and sharp edges. They should be used when handling rough lumber and can be used with all machines. This type of glove is like a second skin and does not affect dexterity or the ability to pick up items, or make adjustments. The gauntlet type of gloves, or loose fitting gloves are never to be used when operating equipment.

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OK if tight fitting



Not to be worn when operating machinery

Body Protection. A leather or heavy nylon apron will help protect you if there is a kick-back and when handling rough wood. It is also a convenient place to carry your pencils, 6” scale and measuring tape.

LOCKOUT/TAGOUT

All power tools and machinery must be disconnected from the power source when maintenance is being performed, or blades or cutters are being removed or installed. Some machinery also requires the power to be disconnected when making adjustments.

For corded power tools, this can be accomplished by unplugging the tool or machine, provided that only one person is involved in the work and the one performing the work has sight of and full control over the plug. If these conditions are not met, or the one performing the work does not complete the work, the plug must be placed in the lock box and a lock placed on the lock box.

Machinery that is powered by a dedicated circuit breaker must have the breaker locked in the open (OFF) position.

Anytime that a lock is applied, a DANGER – Do Not Operate Tag must be attached to the lock with the reason why the lock was applied written on the tag.

Refer to the CLUB Lockout/Tagout Procedure for additional information.

CONDUCT

Due to the hazards of the workshop, it is important that everyone keeps safety in their mind at all times. This includes:

- Stay alert and concentrate on the work at hand (e.g. not on how your football team may be doing). Besides being safety issue, day dreaming may cause you to make a wrong cut and ruin your workpiece.

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- Do not use any tool or machine if tired, or under the influence of any drug, alcohol or medication.
- Do not wear loose clothing (e.g. shirts, jackets, sweaters, etc.) while operating power tools. If wearing long sleeved shirts, either button the cuff or roll the shirt sleeves above the elbow.
- Recall the applicable parts of the operating procedures and safety procedures for the work to be performed. If in doubt, review the procedures. They are available in the library. Also, do not hesitate to ask the Shop Leader for Help. Consulting your coworkers may, or may not provide you with the information you need.
- Do not distract others while they are using tools or equipment.
- No horseplay

WORK AREA

Visitors are not allowed in the work area. To enter the work area, you must have taken the safety training, passed the safety test, obtained the Sawdust Maker status and be wearing the appropriate PPE.

The area where the work is being performed must be kept clean and free of materials that pose a tripping or slipping hazard. Cluttered benches and work areas invite accidents. The work tables of machinery and equipment must be clean and free of “stuff” that is not the workpiece that is to be machined. Generally, there should be no one within three feet of you when you are operating a machine. Bystanders should be kept out of the work area. Distractions can cause you to lose control. Debris left on the machines work table should be removed using a brush. Do not use your hand. When finished, clean the machine or tool that you have used and clean the area around it. At the end of the work period, the workbenches(s) you used, all machinery and the floor should be vacuumed clean. Pickup all coffee cups, drink bottles and other trash and place it in a trash can.

Trash should be placed in the trash cans with plastic liners. When the trash can is full, remove the liner, tie the bag closed and place it outside the back door along the building. Do not place wood scraps in the trash cans with plastic liners. The wood will tear the liner and make a mess when the bag is removed. Replacement plastic liners are kept in the rest room hallway.

All wood scraps are to go in the trash cans that do not have a liner, or under the radial arm saw workbench. Wood scraps in these bins are available for the use of anyone. You are encouraged to take home the smaller scraps for use as kindling.

You should plan on taking home with you all materials that you brought to the workshop. With the Shop Leader’s permission, you may leave your project and necessary lumber at the workshop in the area he designates. All projects and materials left in the shop must have your name marked on them. Nothing is to be left on or under the workbenches.

PORTABLE POWER TOOLS

- Do not use extension cords that are damaged.

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- Do not use power tools that have damaged power cords. Do not abuse power tool cords by carrying it by the cord or by pulling on the cord to unplug it. Keep the cord away from heat, sharp edges, or moving parts. Report any damaged cords to the Shop Leader.
- Be sure your footing is firm before turning the tool on.
- Ensure that the tool's switch is in the off position before plugging it in.
- Remove adjusting keys and wrenches before turning the tool on.
- Always maintain firm footing.
- Unplug the tool before changing the bit/blade and accessories.
- Only use accessories that were designed for that specific tool.
- Use the vacuum dust collection attachment and shop vacuum whenever possible to reduce dust related hazards.

JOB SAFETY

- Ensure that the workpiece is held securely by the machine, vise or clamps. Do not hold the workpiece by hand or against your body.
- Keep guards in place and working properly.
- Do not try to force the tool. Use the right tool for the job. It will do the job better and safer.
- Do not touch the bit, blade or cutter immediately after use. They may be very hot and cause serious burns.
- Always use the dust collection system designed for the tool or machine and turn it on first, before starting the machine.

MAINTENANCE

- Look at the tool before using it. Determine if any moving parts are misaligned, broken or missing. Damaged tools must be repaired before they are used.
- Use only bits and blades that are sharp and clean.
- Do not attempt to repair damaged tools. Report any tool damage to the Shop Leader.