

Safety Manual

**Liberty University
Department
of
Theatre Arts**

WELCOME TO THE SCENE SHOP

The management of the Liberty University Theatre Arts Department Scene Shop recognizes that written safe work procedures are extremely important to ensure a safe work environment. Important safety guidelines to be followed help ensure a continued safe working environment for all.

These guidelines provide information necessary to assist all students, assistants and work-study employees as well as faculty and staff in performing their various tasks safely. These guidelines also assist in the training and orientation of new employees/students in job hazards, as well as providing them with the rules and procedures necessary to ensure that they may perform their work in a safe and hazard-free manner.

ALL faculty, staff and students are expected to familiarize themselves with these requirements. Everyone is expected to follow these general rules when engaged in any activity in the LU Theatre Arts Scene Shop.

Theater work, by nature, is physical, and dangerous. However, if we use common sense and follow these safety procedures, working in the shop and on stage will be fun and safe for all of us.

Please feel free to ask questions at any time.

Remember our guiding principles are:

- 1. Safety**
- 2. Education**
- 3. Production Completion**

Again, welcome. We hope you enjoy your experience in the shop.

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SAFETY RULES

The following general safety rules have been developed to provide a safe and healthy working environment for all LU Theatre Art's employees and students. These apply to all work activities. The most obvious safety rule is to be careful. Pay attention to what you are doing, and what is going on around you, and do not rush. Repetitious jobs are more likely to cause inattention. Try to avoid monotony and boredom.

Being careful means being careful all the time. You can be careful for years and then get hurt in two seconds of inattention. Working with power tools and the equipment in the shop and on stage demands 100% of your attention. This is entirely under your own control. Being careful is your best defense against injury. Having a healthy fear and respect for the tools will help ensure you use them safely.

Avoid danger by using common sense. Some people accept a greater risk of danger in order to work faster, more conveniently, etc. Do not hurry and cut corners on safety. Some people take greater risks because they have a strange notion of invulnerability, or as a show of bravado. This will gain no respect for you in our shop.

SAFETY of the actors, technicians, and audience members is top priority. If something doesn't seem safe, it probably isn't. Common sense will be your best guide. When in doubt about the safety of something, ask the Technical Director. Remember, personal safety is first priority.

Any INJURIES to an actor, technician, audience member or any other person involved in the production, whether it is during build, rehearsal, show, or strike, should be noted in the rehearsal/performance report. The Chair should also be notified. The injured should be encouraged to go to Light Medical. If the injured refuses to be treated, make note of it. Know where the First Aid kit is located. Call 3-911 in emergencies.

Report all CONCERNS OR COMPLAINTS as soon as they are noticed to the Technical Director either by email or phone. The sooner issues or concerns are reported, the sooner they can be addressed. Please include as much information as possible to help reach a speedy resolution. This includes minor damage, light bulbs, etc.

Do not LEND ITEMS from Prop Room or Scene Shop to other groups on campus.

CONSUMABLES The Technical Director will purchase some basic needs early in the season for all productions to use.

Do not attempt to repair defective wiring or other electrical equipment. Report defective electrical equipment to the Technical Director. Electrical equipment can only be repaired or serviced by a qualified electrician.

If something looks unsafe, it probably is ... **IF YOU ARE IN DOUBT ... ASK!**

SHOP SAFETY

1. All employees must take the Right to Know training. Students may not work in the scene shop until that training has taken place.
2. Do not operate any machinery or equipment if it is known to be in an unsafe condition. Any damaged equipment or missing machine guards must be reported to the Technical Director. Damaged or malfunctioning equipment must be reported immediately and tagged to prohibit use.
3. Students shall not use equipment which they have not been properly trained to operate. Machinery and equipment, including vehicles, are only to be operated by qualified persons and then only when adequately trained in the use of the equipment and authorized to operate it. Unsafe work practices and unsafe operation of equipment will not be allowed and may result in expulsion from the scene shop. Inappropriate behavior such as horseplay, fighting and practical jokes are extremely dangerous and will not be tolerated.
4. For safety reasons, at least two people will need to be in the scene shop at all times while working. No student will work in the scene shop alone. No exceptions. A staff supervisor must be present when a student is working in the Scene Shop. A student must have the permission of the Technical Director to work in the shop at any time.
5. The Scene Shop shall be clean and all tools put away at the end of each work day.
6. All warning signs, signals and alarms shall be obeyed. Smoking is prohibited within LU premises and vehicles at all times. Where "NO SMOKING" signs are posted (i.e. near flammable storage), persons shall observe those signs.
7. Report to work well rested and physically fit to be able to give full attention to your job. No person shall be permitted to remain on the premises while their ability to work is so affected by alcohol, drugs (prescription or non-prescription) or other substance, so as to endanger their health or safety or that of any other person.

8. Employees/students are responsible for reporting to the Technical Director and LUES (or Light Medical) whenever they become sick or injured at work. All injuries, no matter how minor, must be reported immediately.

WORKING IN THE THEATER SPACE

This is where a lot of dangerous work goes on in a short amount of time. Make sure you are aware of all the things going on around you. The fast work pace and the extra enthusiasm you will find does not change the need to pay attention and follow all the rules for working in the theater and with power tools. Pay extra attention to nails or screws in wood and debris on the floor.

IN CASE OF AN ACCIDENT

Report all accidents to the Technical Director or Director immediately.

Call LUES at 3-911

There is a phone in the Tech office.

HOUSEKEEPING

(A Clean Shop Is a Safe Shop)

1. Clean up your work area at the end of your work shift, which means clean up all sawdust and debris, put away unused materials and return all tools and equipment to their proper place.
2. Do not leave tools and supplies out unnecessarily.
3. Do not let the work area become too cluttered; this can lead to trip hazards. Clean as you go.
4. Remove all nails and screws in all reused lumber. Flatten nails in lumber that is trash.
5. Do not leave long sticks in trash barrels. They can poke others in the eyes.
6. Do not block fire extinguishers, doors, or marked tool-safety areas.
7. Keep pathways to fire exits and for crossing the shop clear. It can be dangerous having to carry large items while walking over lumber and trash.
8. Complete clean-up of the work area is required after each work session or class.

PROPER ATTIRE

Safety demands that proper clothing be worn for work in the shop. The shop does not provide aprons or overalls, and we will not be responsible for clothing damaged in any way. Failure to wear proper clothing is a safety hazard and is not an excuse to miss work.

1. **PROPER CLOTHING** should be worn when loading-in, striking, and loading-out. No open toes or sandals. Personal Protective Equipment (PPE) such as safety glasses, goggles, ear plugs, etc should be worn when using tools. Only students qualified on tools may use them. See Technical Director to get qualified on specific tools.
2. No loose, long or baggy clothing. It can get caught in moving parts and machinery or snagged on splinters, etc. Very loose clothing and certain jewelry (bracelets, pendant earrings, long necklaces, and large rings) will not be worn near operating power equipment. No long or large jewelry. It can get caught on things and may get ruined. No shorts or skirts (jeans are best). Wear clothes that will protect you from dust, etc. No ties, jewelry, or loose fitting clothes which could become entangled in power equipment are permitted.
3. Wear shoes with good, non-slippery soles that cover the whole foot; no sandals, open toed shoes, high heels, flip flops, or dress shoes. Substantial footwear (a shoe or boot which has an upper section made of leather or man-made leather covering the entire foot and sole of at least 1/4" thickness) must be worn at all times in the Scene Shop. Work boots or safety shoes are recommended. Sandals are not considered shoes in this scene shop.
4. No gloves while using power tools, these can get caught in moving parts of machines.
5. You will get dirty and stained. Bring work clothes that can get dirty and possibly ruined.

6. Long hair must be put up or tied back and put down your shirt. A cap is a good way to keep your hair up. Long hair is required to be pulled back and secured for operation of power equipment. Long hair must be worn up in such a way so as to not be entangled in power equipment.

PERSONAL SAFETY

PERSONAL PROTECTION EQUIPMENT (PPE)

The shop will provide you with safety equipment. If you have any questions or doubts, ask the Technical Director. Your safety is our concern. We will never knowingly put you in a position to be overexposed to hazardous materials. We welcome any questions you may have. We will attempt to explain things to you. Feel free to request safety equipment. We are human; we might forget and it is always better to be safe than sorry. Our goal is to make you safe and comfortable when performing duties in the shop.

1. All employees must take the Right to Know training. Students may not work in the scene shop until that training has taken place.
2. All shop personnel must wear approved eye protection at all times.
3. Hearing protection is recommended during construction activities (sawing, hammering, drilling, etc.) Ear protection is recommended when noise levels rise above a comfortable level. Use discretion.
4. Use of an N-95 dust mask (particle type) is recommended during operation of certain tools. Use discretion. Disposable versions are available.
5. Use of disposable gloves is recommended when working with organic solvents. These are available. Please ask the Technical Director. All explosives and flammable liquids must be kept in a locked cabinet when not in use.
6. All injuries, no matter how slight, or any accident which causes damage to property shall be reported immediately to a shop supervisor.
7. Absolutely no smoking or stiking matches in the Scene Shop.
8. Horseplay of any kind is not permitted and will result in a reduction or suspension of shop privileges.
9. Any student or employee replacing saw blades or repairing machinery or equipment must have received lockout training.

HANDS

Hands are the most susceptible to injury. Be sure to use the appropriate protective equipment or glove for the task you are performing. If you have any questions about what type of glove to use, please ask. Watch the cutting edge of any tool, especially the power tools and be aware of where your hands are in relation to it. Pay attention and do not get distracted. There is a dangerous temptation to hold parts together with one hand while shooting pneumatic tools with the other.

Sometimes staples and nails turn inside the wood and poke out where you do not expect them.

Use clamps or other devices to keep hands away from dangerous actions. Matte knives also pose a possible danger. Always keep the cutting edge pointed away from you. Chisels also fall into this category. The simple rule is to keep both hands behind the direction in which the sharp edge is going and never pull a blade towards your body.

EARS

Hearing loss is a normal part of the aging process. Throughout our lives we are exposed to loud noises and physical conditions that add up to gradual loss of hearing. Hearing loss is generally gradual, cumulative, and irreversible. The tools in shop generate noise that exceeds safe levels over extended periods of time (generally, more than four hours). We, therefore, suggest you wear hearing protection while you are working in the shop. We have earmuffs and earplugs for your protection. See packaging or ask the Technical Director for assistance in their use.

EYES

Eye protection is required whenever an employee is using or around power tool usage. You must wear eye protection any time a tool plugs in (electrical, air, water), creates debris, or poses a splash hazard. You may not be using a power tool or a chemical, but someone else might be.

You can be struck by flying debris and splashing solvents or paints.

1. Be alert to eye hazards in your workspace.
2. Wear the appropriate protective eyewear for the specific hazards to your eyes and face. If you are not sure which eyewear to wear, ask the Technical Director for assistance.
3. Make sure that your protective eyewear fits properly and is in clean and good condition.
4. Eye protection is required while in the Scene Shop any other time that work is being performed. Normal prescription eyewear will not qualify unless rated for impact and equipped with side shields.

DUST MASKS

Comfort masks are available for employees. These are for use for comfort from dust. They will do nothing to protect from fumes and vapors and other assorted toxins. They will reduce the amount of large particulates that can enter your respiratory system. Read the box for instructions on how and when to use these.

LIFTING

When lifting, have a secure footing, bend your knees, keep your back straight, take a firm hold of the object being lifted and slowly straighten your legs. If you must turn with a load, turn your feet and whole body. **DO NOT** twist yourself. Avoid reaching while lifting or putting the object down. If you are carrying the object you have lifted ensure that the path you are using is clear of debris and safe to move through. Look where you are going and communicate with the others carrying the object. If you are losing your grip or if something is too heavy, tell the person you are carrying it with and take a rest and get a better grip; this is much better than dropping it and having someone suddenly bear the entire weight at once. Be aware of the back end of the object and what is behind you. When carrying tall objects like a flat or ladder, lift with one hand high and one hand low. That is, lift with one hand which carries the weight, and use the other hand to help balance the object. Be aware of the top of tall objects and things that it might hit like the ceiling, tops of doors, other scenery or lighting equipment. If the object is too heavy for you, get assistance. Avoid manual lifting of materials, articles or objects that are too heavy. **Machismo** will only get you hurt. Wherever possible, use mechanical lifting devices to move heavy objects. Such devices include carts, dollies, or hand trucks.

It is all too common to set heavy platforms or walls down on one's toes. Awareness and communication with fellow co-workers are the only prevention. When you lean scenery or materials against a wall, be sure that the object is a sufficient distance between its base and the wall, so it will not fall back by itself.

HEALTH HAZARDS

Ventilation is poor in the shop. We are continuously striving to make improvements with our equipment (within our budgets) and creating procedures for safe and alternate methods. Because this is mainly a woodworking shop, the use of dust masks may help prevent some dust particles from getting in the nose. Note: these are not for lung protection from vapors and fumes.

Paint solvents and adhesives produce toxic fumes. Do not spray paint in the shop. Go outside and use brown paper to prevent overspray. Spray adhesive and spray shoe dye are especially bad.

LADDERS:

Work on elevated structures must be done on safety ladders or scaffolding. Working on ladders and scaffolds presents a potential for a fall. If you must use a ladder, always have someone there to foot and hold the bottom for you. **Do not** stand on the top or any steps the safety labels indicate. Before you get on a ladder, make sure that all four legs are firmly on the floor. Remember not to leave tools and hardware or anything heavy on top of a ladder. This will lead to the next person who moves the ladder getting hit in the head by a falling object. When you are working above on a ladder, you must take extra precautions. You need to be aware of overhead scenery and lighting instruments and the electrical cable. **Do not** have loose items in pockets that may fall, and whenever possible, tools should be attached to you. If you can't attach tools, extra precautions must be made to keep people below aware of you and your work.

POWER TOOLS

Each power tool has its own set of safety rules. They are safe when properly used, but they can cause serious accidents when misused. You will be trained on each power tool before you use it. In general, power tools have rotating parts that can wind you in like a fishing reel if they catch on clothes, hair, or jewelry. Power tools can throw debris at you, so eye or face protection is necessary. Ear

protection from loud noise is also often necessary. Make sure the work surface and floors are clear, and get **EVERYTHING** ready before you hit the **ON** switch.

Employees may **NEVER** operate unguarded power tools.

Sometimes there is a strong temptation to remove safety guards when they seem to complicate the work. If you think you need to do something without the standard blade guard, stop and ask the Technical Director. In cases where a guard must be removed, a jig will be put in its place to allow for safe operation of the saw and still provide adequate protection to the user.

Pneumatic tools are power tools also. You must learn each one before use. They also have safety guards. Do not ever defeat the safety or use the tools in a manner they were not made for (i.e., it is not a target gun!)

1. All individuals working in the Scene Shop **MUST HAVE A CURRENT TOOL QUALIFICATION SHEET ON FILE**. All individuals working in the scene shop must adhere to established Scene Shop rules and regulations. Hand tools are not to be used unless authorized by the Technical Director.
2. **TOOL USAGE:** Tools must be returned each day/night to the Tool Room. Do not leave tools in the theater or Scene Shop overnight. Keep the tools in working order by using them properly. If a tool breaks, it may not be able to get fixed immediately. Keep up with basic tool maintenance. If a tool does not work properly, inform the Technical Director as soon as possible.
3. Employees/students shall not use unfamiliar tools or equipment without proper instruction and permission from the Technical Director. Always use the correct tool for the job.
4. Operation of any tool is prohibited while under the influence of alcohol, non-prescription drugs and certain prescription drugs.
5. If you are unsure about any tool's safe operation, **DO NOT USE** that tool until you have received additional qualified assistance.

TABLE SAW

1. Only operators trained in the safe operation of a table saw are allowed to use the saw.
2. Operator must wear safety glasses. If the material chips severely, a face shield should be used in addition to safety glasses. If the cutting operation is dusty, wear a dust mask.
3. Operators using the saw for extended periods should wear hearing protection.
4. Prior to using the table saw, the blade should be checked for tightness.
5. Check the hood guard and anti-kickback devices for proper operation.
6. Verify location of off switch and/or emergency power disconnect.
7. If used, check to ensure the fence is set properly and tightly.
8. Ensure that the table is clear of materials, tools, and debris.
9. The table saw must have a hood guard, splitter, and anti-kickback device installed. One or more of these devices may be removed **ONLY** if absolutely necessary to perform a specific cut (e.g. dado or rabbet) and only with the approval of the Technical Director. These safety devices must be re-installed immediately after completing the cut(s).
10. The fence and miter gauge should never be used together. Use the fence for ripping and the miter gauge for crosscutting. Use a stop block when you crosscut short lengths.
11. When making a rip cut to bevel an edge, always work **WITH** gravity by positioning your rip fence on the down side of the saw blade and **NEVER** above it.
12. When making a crosscut to bevel an edge, always place your miter gauge on the down side of the saw blade and **NEVER** above it.
13. Always stand firmly on the floor and avoid any awkward operations. This is to avoid falling into the blade by slipping or losing your balance.
14. Do not carry on a conversation while cutting. Pay attention to the work being performed.
15. Do not reach behind or over the blade unless it has stopped turning.

16. Do not leave the saw until the blade has come to a complete stop.
17. Make sure that the blade has stopped turning before you adjust the table saw. After any adjustment, make sure that the blade is free before you turn on the power. When changing the blade or servicing the saw, the power disconnect must be locked in the “off” position. For saws with a cord and plug, the saw must be unplugged. The saw must be tested after disconnecting power and before beginning service.
18. Ensure that the guides are positioned properly and that the tabletop is smooth and polished. An unclean or rough table requires you to use more force to push the stock through the blade. The more force that you are required to use, the more chance that you may slip or lose your balance.
19. Check that the stock has no nails, knots screw, stones etc. in it prior to cutting into the wood. These items can become projectiles and cause injury.
20. Push sticks, feather boards, hold-downs, etc. must be used whenever an operation is performed that would require the operator’s hands to pass within six inches of the saw blade.
21. When boards over three feet in any dimension are cut, a helper should be used to assist in supporting the work.
22. When ripping large or cumbersome work pieces alone, use a roller stand or support table to support your work piece on the outboard side of the main saw table. If you’re not using such a support device and your stock begins to fall after the cut, it’s safer to release it and let it do so. You can always pick it up later after you’ve turned off your machine.
23. Never allow your saw blade to project more than 1/8” to 3/8” above the surface of your work piece during a cut. It just stands to reason that the less the blade is exposed, the less likely you are to come in contact with it, and if you do, the less serious your injury will be.
24. The operator should stand to the side of the wood while it is being fed through the saw.
25. Position your body so that it is NOT in line with the blade. This is to avoid being injured by flying sawdust, woodchips or the work.
26. Keep your saw blades clean and sharp. A dull blade or one coated in pitch or gum can create a dangerous situation.
27. After completing work, the saw blade should be lowered below the table.
28. A two-foot perimeter around the saw should be kept clear of debris and sawdust.

BAND SAW

1. Only operators trained in the safe operation of a band saw are allowed to use the saw.
2. The operator should check the following points before operating the band saw.
3. Operator must wear safety glasses.
4. If the material chips severely, a face shield should be used in addition to safety glasses.
5. Blade should be checked for tightness
6. Verify location of off switch and/or emergency power disconnect.
7. Ensure that the table is clear of materials, tools, and debris.
8. All portions of the saw blade must be enclosed or guarded except the portion between the bottom of the guide rolls and the table.
9. The blade guard should be kept adjusted as close as possible to the table without interfering with movement of the stock.
10. The down travel guard from the upper wheel to the guide rolls shall be so adjusted that the blade will travel within the angle or channel.
11. The wheels of the band saw (upper and lower) must be fully enclosed.
12. A blade tension control device with an indicator must be present on all band saws.

13. Band saws must not be run at speeds in excess of the manufacturer's recommended speed.
14. When changing the blade or servicing the saw, the power disconnect must be locked in the "off" position. For saws with a cord and plug, the saw must be unplugged. The saw must be tested after disconnecting power and before beginning service.

CHOP SAW

1. For operation of the chop saw, a full-face shield and safety glasses are required. Operators should always wear safety glasses under a full-face shield.
2. Gloves, loose clothing, jewelry, or any dangling objects including long hair should not be worn as they may catch in the rotating parts of the saw.
3. All guards must be in place and operating. If a guard seems slow to return to its normal position or hangs up, adjust it or repair it immediately. Unplug or lockout power when making repairs.
4. Hands and fingers must be kept clear of the path in which the blade travels.
5. Clean the lower guard frequently to help visibility and movement. Unplug before adjusting or cleaning.
6. Use only the recommended RPM and sizes of blades.
7. Regularly check and tighten the blade and the blade-attachment mechanism.
8. Prior to installing or changing a blade, be sure to lockout or unplug equipment. Ensure that the blade and its related washers and fasteners are correctly positioned and secured on the saw's arbor.
9. To avoid losing control or placing hands in the blade path, hold or clamp all material securely against the fence when cutting. Do not perform operations freehand.
10. Never re-cut small pieces. Long material should be supported at the same height as the saw table.
11. Never place hands or fingers in the path of the blade or reach in back of the fence.
12. Use the brake if one is provided. To avoid contact with a coasting blade, do not reach into the cutting area until the blade comes to a full stop.
13. After completing a cut, release the trigger switch and allow the blade to come to a complete stop, and then raise the blade from the work piece. If the blade stays in the cutting area after the cutting is complete, injury can result from accidental contact.

DRILL PRESS

1. Be sure that the table and head of the drill press are secure.
2. Select the proper drill bits (avoid dull drill bits). Make sure that the correct speed is used for the bit selected. If uncertain, check with the Technical Director.
3. **REMOVE THE CHUCK KEY BEFORE THE POWER IS TURNED ON!** If the chuck key is not removed, it will be thrown from the chuck at tremendous speed when the power is turned on.
4. Use the drill press vice or clamps whenever necessary to firmly secure the work.
5. **USE A BASE BLOCK UNDER THE WORK AT ALL TIMES!** Set the stop so that the bit will never go through the base block.
6. Make sure that no one but you are within the safety zone.
7. Keep your hands away from the revolving spindle once the power is on.
8. Operate the feed handle so that the drill cuts evenly into the work.
9. Ease up on the pressure as the drill begins to break through.

10. Back out the drill as soon as the hole is drilled.
11. When boring to depth, use the lock nut on depth adjustment.
12. Stop the drill press before attempting to remove work.
13. Keep the floor clean around the drill press.
14. If the work comes loose and is seized by the drill press, shut off the power immediately if possible without endangering yourself. If impossible to shut the machine off, move away from the machine and move others away.
15. The drill bit should be backed out occasionally to clear shavings and cool the bit.
16. Obtain approval of the Technical Director for any special setups on the drill press before beginning the operation.
17. ALWAYS WEAR YOUR SAFETY GLASSES!!!!!!

HAND DRILL

How do you select the proper bit or attachment?

1. Follow manufacturers' instructions when selecting and using a bit or attachment, especially with unfamiliar drills or work.
2. Select the bit or attachment suitable for the size of the drill and the work being done.
3. Ensure that the bit or attachments are properly seated and tightened in the chuck.
4. Use only bits and attachments that turn true.
5. Use the auxiliary (second) handle for larger work or continuous operation.

What should you do when working with powered hand drills?

1. Wear safety glasses or a face shield.
2. Keep drill air vents clear to maintain adequate ventilation.
3. Keep drill bits sharp always.
4. Keep all cords clear of the cutting area during use. Inspect for frays or damage before each use.
5. Disconnect power supply before changing or adjusting bits or attachments.
6. Tighten the chuck securely. Remove chuck key before starting drill.
7. Secure work piece being drilled to prevent movement.
8. Slow the rate of feed just before breaking through the surface.
9. Drill a small "pilot" hole before drilling large holes.

What should you do when working with small pieces?

1. Clamp stock so work will not twist or spin.
2. Do not drill with one hand while holding the material with the other.

What should you avoid when working with powered hand drills?

1. Do not use a bent drill bit.
2. Do not exceed the manufacturer's recommended maximum drilling capacities.

3. Do not use a hole-saw cutter without the pilot drill.
4. Do not use high-speed steel (HSS) bits without cooling or using lubrication.
5. Do not attempt to free a jammed bit by starting and stopping the drill. Unplug the drill and then remove the bit from the work-piece.
6. Do not reach under or around stock being drilled.
7. Do not overreach. Always keep proper footing and balance.
8. Do not raise or lower the drill by its power cord.

SABER & RECIPROCATING SAW

What should you do before you start cutting with powered handsaws?

1. Wear safety glasses or a face shield.
2. Disconnect power supply before changing or adjusting blades.
3. Use lubricants when cutting metals.
4. Keep all cords clear of cutting area.
5. Position the saw beside the material before cutting and avoid entering the cut with a moving blade.
6. Make sure guards, if present, are installed and are working properly.

What should you do to work with powered handsaws safely?

1. Remember saber saws cut on the up stroke.
2. Secure and support stock as close as possible to the cutting line to avoid vibration.
3. Keep the base or shoe of the saw in firm contact with the stock being cut.
4. Select the correct blade for the material being cut and allow it to cut steadily. Do not force it. Clean and sharp blades operate best.
5. Set the blade to go no further than 1/8" to 1/4" inch deeper than the material being cut.
6. Do not start cutting until the saw reaches its full power.
7. Do not force a saw along or around a curve. Allow the machine to turn with ease.
8. Do not insert a blade into or withdraw a blade from a cut or lead hole while the blade is moving.
9. Do not put down a saw until the motor has stopped.
10. Do not reach under or around the stock being cut.
11. Maintain control of the saw always. Avoid cutting above shoulder height.

How should you start an external cut?

1. Place the front of the shoe on the stock.
2. Make sure that the blade is not in contact with the material, or the saw will stall when the motor starts.
3. Hold the saw firmly down against the material and switch the saw on.
4. Feed the blade slowly into the stock maintaining an even forward pressure.

How should you start an inside cut?

1. Drill a lead hole slightly larger than the saw blade. With the saw switched off, insert the blade in the hole until the shoe rests firmly on the stock.
2. Do not let the blade touch the stock until the saw has been switched on.

JIG SAW

1. Always wear safety glasses.
2. Make sure the blade is secure.
3. Clamp down your work piece.
4. Do not cut small pieces of wood, such as anything smaller than your hand.
5. Make sure there is nothing underneath the board you are cutting such as your **HAND, LEG, CLOTHING**, vise, or anything else.
6. Be aware of where the blade is going and what may be underneath the wood in that direction such as your **HAND** or anything else.
7. Hold the tool firmly.
8. Keep hands away from moving parts.
9. Keep constant pressure when cutting, but do not twist or force the blade.
10. Let the blade come to a complete stop before taking it out of a cut, and do not try to insert a moving blade into a cut.
11. Do not touch the blade after use because it will burn you.

PORTABLE CIRCULAR SAW

1. Many portable circular saws have grounded plugs. If a plug has three prongs, make sure each prong is in good working condition and not broken off or loose.
2. Make sure that the lower guard revolves up into the upper guard assembly without sticking or binding, and rotates freely back, covering the circular blade, at the completion of the cut.
3. Make sure you check the blade for the proper cutting application for the job. Ask the Technical Director for assistance for special cutting operations.
4. Before starting a cutting operation, you should set the proper cutting depth at 1/8" below the thickness of the stock you are cutting.
5. All stock must be supported so that the rotating guard will not bind and will move freely during the complete cutting operation.
6. Place the saw on the stock to be cut with the blade clear of the stock and lined up with the cut line on the stock, before the power is turned on.
7. The portable circular saw is designed to cut only straight lines, which can be square or beveled from the top surface of the stock to be cut.
8. When using portable electric power equipment, always check to see that you have ample length of power cord to complete the job.
9. Before starting your cutting operation, make sure the electric power cord will not come in contact with the moving blade.
10. If the cutoff piece of stock is unsupported, caution must be used so that when it falls, the stock does not cause injury to the operator, other students, or damage to the cut stock.

11. Make sure the switch is in the off position before plugging the saw into the power source.
12. The saw must be unplugged from the power source when changing the blade, adjusting the depth of cut, or doing any adjustments in the cutting operation.
13. Every student must obtain permission from the instructor prior to using the portable circular saw. The instructor will assist in selecting the proper blade and provide strict supervision in the cutting operation.
14. If you are apprehensive about using this machine, have the instructor assist you.
15. Always wear approved eye protection while operating this machine.

PNEUMATIC TOOLS

Pneumatic tools are powered by compressed air. Common types of these air-powered hand tools that are used in industry include buffers, nailing and stapling guns, grinders, drills, jack hammers, chipping hammers, riveting guns, sanders and wrenches. Compressed air shall not be used for cleaning clothing or to blow dust from your body.

How do you use pneumatic tools safely?

1. Review the manufacturer's instruction before using a tool.
2. Wear safety glasses or a face shield and, where necessary, safety shoes or boots and hearing protection.
3. Ensure that the compressed air supplied to the tool is clean and dry. Dust, moisture, and corrosive fumes can damage a tool. An in-line regulator filter and lubricator increases tool life.
4. Keep tools clean and lubricated, and maintain them according to the manufacturers' instructions.
5. Use only the attachments that the manufacturer recommends for the tools you are using.
6. Be careful to prevent hands, feet, or body from injury in case the machine slips or the tool breaks.
7. Reduce physical fatigue by supporting heavy tools with a counter-balance wherever possible.

How should you handle air hoses?

1. Use the proper hose and fittings of the correct diameter.
2. Use hoses specifically designed to resist abrasion, cutting, crushing and failure from continuous flexing.
3. Check hoses regularly for cuts, bulges and abrasions. Tag and replace, if defective.
4. Blow out the air line before connecting a tool. Hold hose firmly and blow away from yourself and others.
5. Make sure that hose connections fit properly and are equipped with a mechanical means of securing the connection (e.g., chain, wire, or positive locking device).
6. Do not operate the tool at a pressure above the manufacturer's rating.
7. Turn off the air pressure to hose when not in use or when changing power tools.
8. Do not carry a pneumatic tool by its hose.
9. Avoid creating trip hazards caused by hoses laid across walkways or curled underfoot.
10. Do not use compressed air to blow debris or to clean dirt from clothes.

What should you avoid with a compressed air?

Cleaning with compressed air is dangerous. Compressed air may be used only if no alternative method of cleaning is available. The nozzle pressure **MUST** remain below 30 psi. Personal protective equipment and effective chip guarding techniques must be used.

What general safety principles should you follow when using pneumatic nailing and stapling tools?

1. Permit only experienced and trained persons to operate pneumatic nailing and stapling tools.
2. Wear safety glasses or a face shield and, where necessary, use hearing protection.
3. Inspect a tool before connecting it to air supply.
4. Check tool safety mechanisms if applicable.
5. Tighten securely all screws and cylinder caps.
6. Check correct air supply and pressure before connecting a tool.
7. Check that the tool is correctly and securely connected to the air supply hose and that it is in good working order, with the safety mechanism operative, before using.
8. Always handle a tool as if it loaded with fasteners (nails, staples, etc.).
9. Equip tools with a work-contacting element that limits the contact area to one that is as small as practical.
10. Make sure that the mechanical linkage between the work-contacting element and the trigger is enclosed.
11. Disconnect a tool from air supply when the tool is unattended and during cleaning or adjustment. Before clearing a blockage, be sure that depressing the trigger exhausts all air from the tool.
12. Use only fasteners recommended by the manufacturer.
13. Permit only properly trained people to carry out tool maintenance.

What should you avoid when using pneumatic nailing and stapling tools?

1. Do not point the tool toward yourself or anyone else, whether it contains fasteners or not.
2. Do not operate at a pressure above the manufacturers' rating.
3. Do not depress the trigger unless the nosepiece of tool is directed onto a safe work surface.
4. Do not carry a tool with the trigger depressed.
5. Do not load a tool with fasteners while the trigger is depressed.
6. Do not overreach. Keep proper footing and balance.
7. Do not use compressed air to blow debris or to clean dirt from clothes.

RIGHT TO KNOW

MSDS

Material Safety Data Sheets (MSDS) for chemicals and materials used in the shops are maintained by the Technical Director and are available at any time to all persons in the theater area. Workers in the shops, students, and paid assistants are required to follow safety guidelines on each sheet for each material and chemical. If you do not understand or have questions about anything in any MSDS, or about any process, see the Technical Director for clarification.

1. Flammable fluids will be stored in an appropriate "flammables" cabinet and will be apportioned in as small a quantity as possible for use.
2. Toxic waste and materials will be turned over to the TD supervising the work for appropriate disposal (NOT the sink!).
3. Do not dispose of any hazardous materials or flammable liquids by pouring them down a sewer or drain. Guidance in proper disposal of hazardous materials is available from the Technical Director.

FIRE CONTROL AND USE

Fire is always a hazard in the Theater. To minimize this problem, the following shall be adhered to at all times:

All technical personnel and students **MUST**, and all actors **SHOULD**, be trained in the location and use of fire extinguishers in the backstage areas. **HOWEVER**, if a fire cannot be extinguished within the first ten seconds or so, **GETTING EVERYONE OUT SAFELY IS THE FIRST PRIORITY!** This is the responsibility of the Production Stage Manager and the Technical Director. Fire alarm boxes are located at each exit to the building. Pull an alarm switch to alert the Fire Department on the way out if it has not already been activated.

THE USE OF OPEN FLAMES IN PRODUCTION IS STRONGLY DISCOURAGED!

The use of open flames shall be permitted when necessary for production **ONLY WITH THE APPROVAL OF THE TECHNICAL DIRECTOR** who is responsible for training and overseeing personnel handling the effect. If necessary, the TD shall consult with and obtain permission from the City Fire Marshal before effects can be permitted. **IF EITHER THE TECHNICAL DIRECTOR OR THE FIRE MARSHAL DISAPPROVES OF THE FIRE EFFECT, NO MATTER HOW SMALL, IT SHALL NOT BE PERMITTED.**

At any time open flames are in use, at least one crew person shall stand by offstage with a fire extinguisher at hand the entire time the open flame is present, and that shall be that **PERSON'S SOLE DUTY AT THAT TIME!**

SMOKING OR FIRE on stage such as lit candles, cigarettes, cigars or any other incendiary object that is to be used must be put in writing to the Technical Director requesting permission. Generally, no flammable liquids or open flames will be considered. This procedure must be followed or you will be in violation of the fire code and thus jeopardize your production and the university.

In the event of a fire alarm, the building will be evacuated until such time as a person of authority gives an "all clear". Please move at least 100' from the building.

FIRE SAFETY

1. Most of the materials in the shop are combustible.
2. Paint solvents etc. are highly flammable and must be kept in a special cabinet.
3. Paper, sawdust, oil, and all flammable items must be moved away from the work area during these procedures.
4. Know where the Fire Exits are in the shop.
5. Know where the fire extinguishers are and what types we have in the shop.
6. No smoking or striking matches!!!!

COMBAT AND WEAPONS

ACTORS and DIRECTORS: No stage combat shall be permitted in production or class without training and approval of the Theatre faculty responsible and/or the faculty Fight Director.

PROPS: Prop weapons are **NOT** toys. They are **NOT** to be handled **EXCEPT** by authorized persons and are the responsibility of the Props master of each production and/or the assigned Weapons Handler. **NO ONE ELSE IS ALLOWED TO HANDLE ANY PROP WEAPON!**

Prop weapons shall be secured when not in use, and shall be issued to the actors using them only when required, and shall be immediately turned back in immediately when finished to the props' person responsible; the weapon shall then be immediately secured until the next performance.

All prop weapons **MUST ALWAYS BE TREATED AS REAL** weapons (which in fact they are). All guns used as props must be handled as if loaded; all edged weapons must be treated as sharp. **EVEN BATED WEAPONS CAN KILL!**

Productions containing **GUN SHOTS** made by a prop gun must be reported to the Technical Director two weeks in advance of the first scheduled occurrence. All weapon's use requires training and documentation.