

Air Chisel

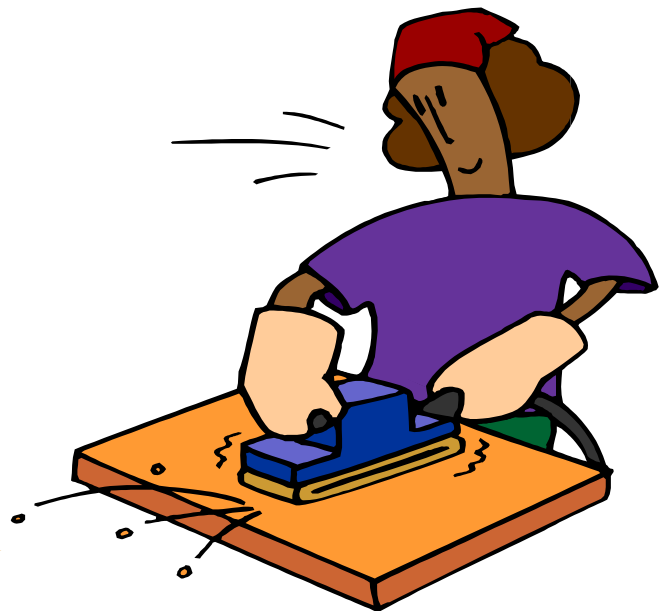
SAFETY SUGGESTIONS

1. Always wear gloves when operating an air chisel.
2. Always wear a protective face shield in addition to proper eye protection.
3. Never point the air chisel toward a person or object who/that could be injured/damaged.
4. Make sure to have a safety collar screwed on tightly to the chisel to prevent the chisel bit from accidentally shooting off of the chisel gun.
5. Keep the chisel bits sharp.
6. Place metal scraps in the garbage can.
7. Keep fingers away from the chisel while it's in use.

Air Sanding Tools

SAFETY SUGGESTIONS

1. Always wear proper eye protection.
2. You must wear a particle mask when sanding automotive plastics and paints.
3. Sanding tools must be operated in a well-ventilated area.
4. Air sanding tools should be hooked up to a vacuum system if at all possible to eliminate as much of the dust particles as possible.
5. Coveralls should be worn to protect clothing.
6. Never operate tools over the recommended air pressure.
7. Never leave tools laying on car when not in use.
8. Keep tools clean and in good repair.



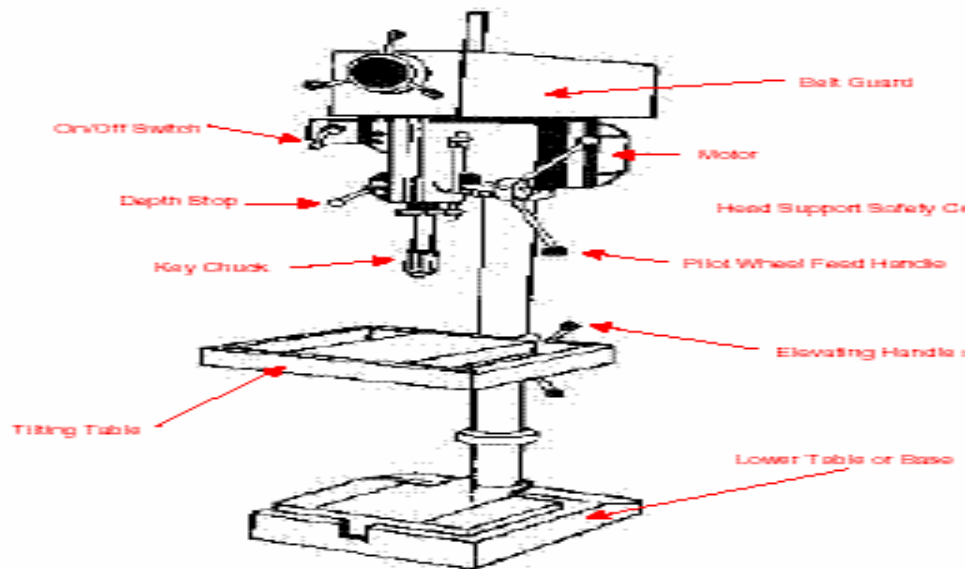
Drill Press Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. Always use a piece of scrap wood and set the table or stop to keep from drilling into the tabletop.
2. Use a clamp or vise grips to secure/fasten your wood to the table.
3. Make sure that your scrap wood, good wood, and any clamp you are using are the ONLY objects on the table. Other objects can get caught in the machine and cause injuries.
4. Use a "V-block" clamp for CO₂ cars, round or irregular shaped stock.
5. Select the right size and type of bit. Wood bits for wood; metal bits for metal.
6. Use a center punch for a guide whenever possible. Always use a center punch when drilling into metal or hard woods.
7. Do not panic if the bit gets stuck in the wood. Turn the machine off. When it has completely stopped, remove the bit from your wood.
8. Select the correct drilling speed. For metal or hard woods and large drill bits you should use a slower speed.
9. Always remove the chips from the table after the machine is turned off and is no longer moving. Use a table brush, never your hands.
10. As with any machine, if it is not working properly you should always turn it off, unplug it, and tell a teacher.

Drill Press Parts



Gas Forge Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. As with any machine you must wear proper eye protection, pass ALL tests with 100 percent, and have your teacher's permission to operate it.
2. Make sure that the area is clear of any type of flammable material and make sure the area is well-ventilated.
3. Keep top OPEN while lighting.
4. Follow all sequential instructions for igniting gas and air; review them if you have questions about operating procedures.
5. Use tongs or pliers to handle HOT metal.
6. To be SAFE, treat all metal that may be around the furnace as being HOT.
7. Wear leather gloves, like for welding, and long-sleeved shirts when handling HOT material.
8. ALL unattended/unused HOT metal should be placed in a specific designated area.
9. Make sure that you stand so that your face is protected when quenching metal.
10. Shut off the "GAS" first and "AIR" last when you are finished using the forge.
11. MAKE SURE that all of the valves are tightly turned OFF when the forge is not being used.
12. It doesn't matter if they are WARM or HOT; quench the tongs before putting them away.

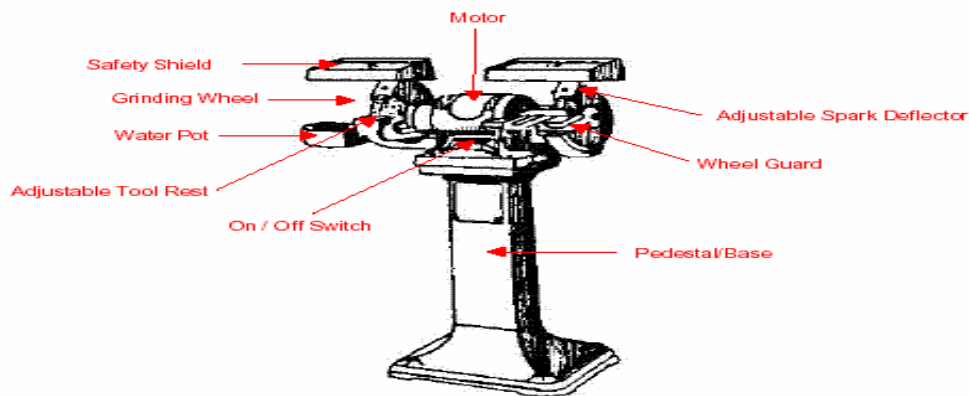
Grinder Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. With this machine you must wear proper eye protection, a face shield, pass ALL tests with 100percent, and have your teacher's permission to operate it.
2. Set the tool rest and spark deflector so that they are 1/16 inch to 1/8 inch away from the wheel.
3. Hold work firmly and securely with both hands. Remember that small pieces require special set-ups.
4. Never stand directly in front of the grinding wheel. Stand to the side when you start this machine.
5. Grind using only the face of the wheel, never use the sides.
6. Press material against the wheel with just enough pressure that you cause a steady, even removal of metal. This will happen with practice; do not become discouraged on your first try.
7. Again, move stock slowly and evenly across the face of the wheel, not the sides.
8. Never leave the machine until the grinding wheels have come to a complete stop, even if someone will be using it right after you do.
9. Grinder must be secured to prevent tipping.

Grinder Parts



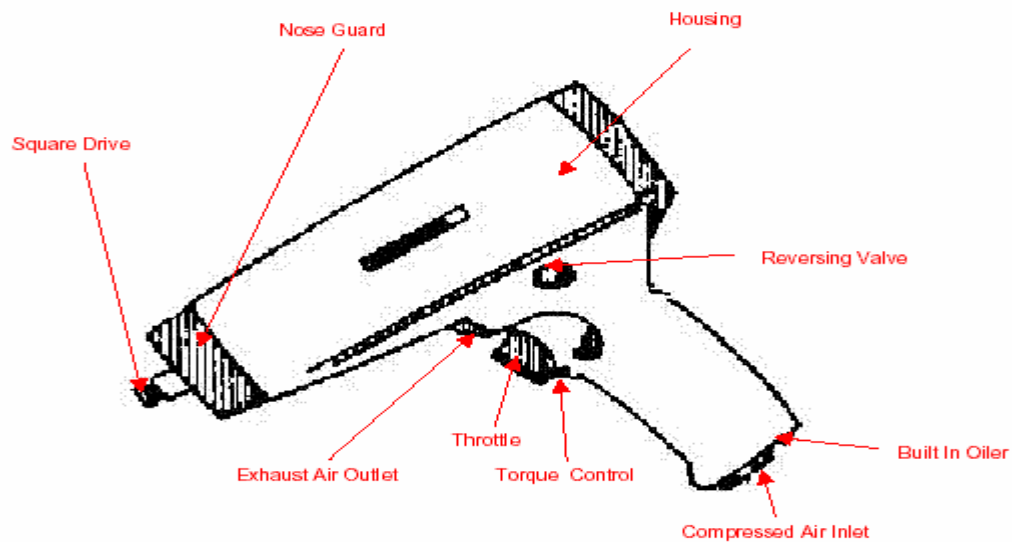
Impact Wrench Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. Be sure the trigger is in the "OFF" position before connecting the air supply.
2. Use only black impact sockets designed for use with power equipment.
3. Secure all work with clamps or tightly in a vise.
4. Set torque control for correct tightness before starting the job.
5. Be sure both hands are free to properly operate the impact tool.
6. Maintain balance and firm footing at all times.
7. Always use the tool in short bursts of power.
10. Disconnect the airline at the tool when not in actual use.

Impact Wrench Parts



Parts Washer

SAFETY SUGGESTIONS

1. Use in well-ventilated area.
2. Wear approved goggles or face shield.
3. Use cleaning solvents with relatively high flash points (temperature at which vapors will ignite when brought into contact with an open flame).
4. Do not spill or splash solvent on clothing.
5. When brushing parts in solvent, use a nylon or brass bristle brush to avoid sparks.
6. A large tank of solvent must have a lid that is held open by a fusible link (holding device that will melt and drop the lid in the event of a fire).
7. Wash hands and arms thoroughly when cleaning job is complete. Apply hand-cream or lanolin after washing.
8. Avoid prolonged skin exposure to all types of solvents. USE GLOVES. If any rash or redness on skin appears—stop using solvent on skin immediately—use gloves.

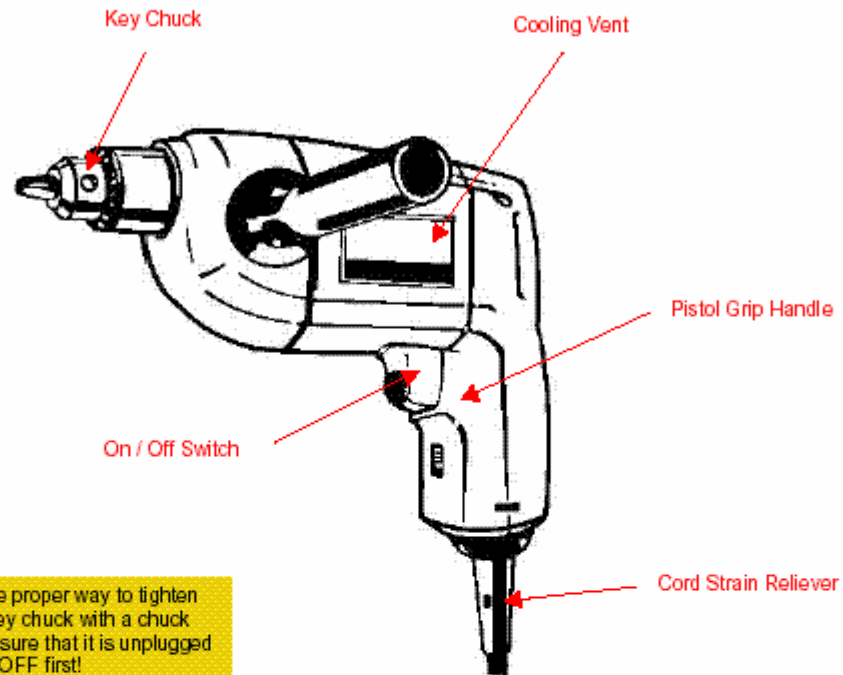
Portable Drill Notes

Requirements:

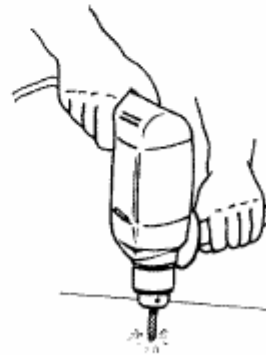
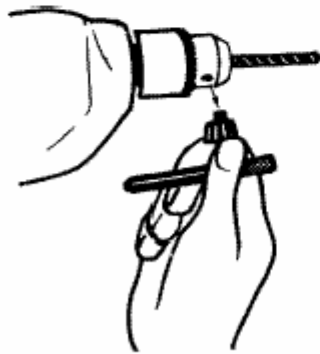
Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. Select the correct drill bit just like you would for the drill press.
2. Secure a piece of scrap wood and the good wood to the table so that it will not move around while drilling.
3. Make sure that the switch is OFF, the chuck key is removed, and that your work area is clean and dry BEFORE you plug the drill in and turn it ON!
4. Drill with straight, even, and steady pressure.
5. When drilling deep holes, withdraw the drill bit several times to clear the area. This helps to provide a SAFE and even drilling process.
6. As with any machine DO NOT PANIC if something "goes wrong." Turn it OFF, unplug it, and tell a teacher.

Portable Drill Parts



NOTE: The proper way to tighten down the key chuck with a chuck key. Make sure that it is unplugged and turned OFF first!



NOTE: The correct and SAFE way to drill.

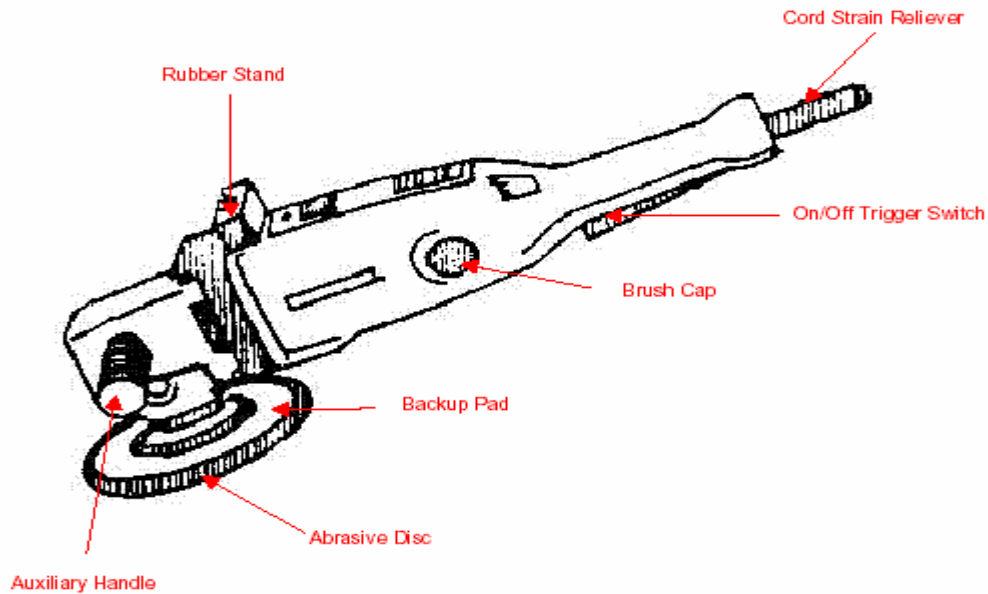
Portable Grinder Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. Be sure switch is in the "OFF" position before connecting the power source.
2. Make all adjustments to pad and disc before turning on the power.
3. Do not allow the edge of the disc to touch the edge of the stock.
4. Stand clear of the spark line or spark area.
5. Sand with a stroking motion; do not pause in one spot.
6. When finished, disconnect the sander from power source and place the sander on its back.

Portable Grinder Parts



Sand Blaster Safety Notes

Safety Rules:

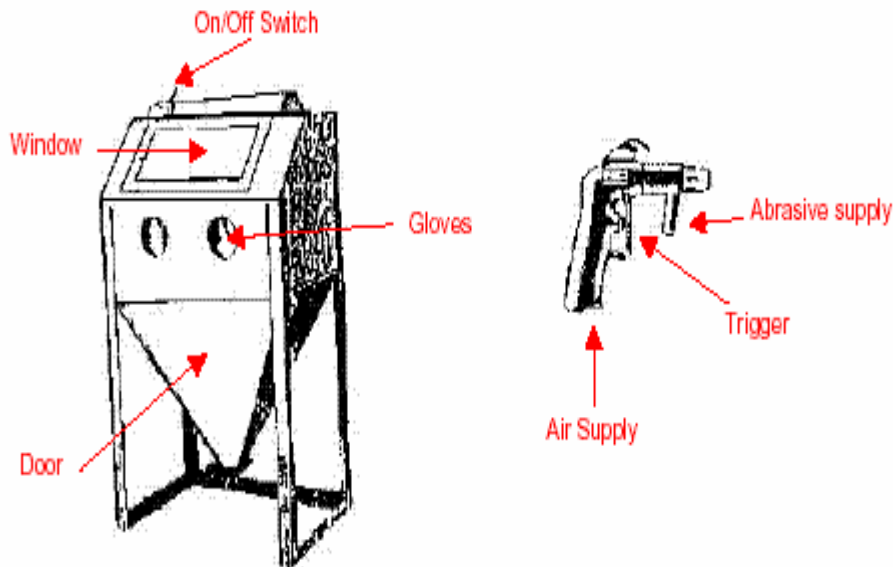
1. Always wear Z87 safety glasses.
2. Keep the access door closed when blasting.
3. Be sure that the exhaust system is working and the bag is attached.
4. Point the nozzle at your project only.
5. Never blast a wet object
6. Remove all loose paper before blasting.

Note: Do not etch the window. If you do, you will buy a new one!

Procedure/Steps:

1. Remove all loose materials that could clog the intake line.
2. Open the door and place your project inside the cabinet.
3. Close the door.
4. Turn on the light and exhaust fan.
5. Hold the blasting nozzle approximately 1-inch away from the project.
6. Keep moving the blasting nozzle around the project. Do not hold in one place for longer than 5 seconds.
7. Stop when you have blasted your project design to the desired depth.
8. Remove the project from the cabinet and check the design.
9. Reblast the project if needed.
10. Close the door to the cabinet and turn off the light and exhaust fan.

Parts Identification:



Service Jack

SAFETY SUGGESTIONS

1. When using the jack, be sure it is securely placed and lift saddle properly aligned to prevent slipping.
2. Once saddles are located, apply some pressure, then stop and examine these before lifting the car.
3. Never raise a car while someone is under it.
4. Always use car stands or supports before going under a raised car.
5. Inspect the jack for oil leaks or other malfunctions before using.
6. Never work under a vehicle supported only by a service jack.
7. If possible, use the service jack as a “backup” to your vehicles jack stands. Bring the saddle just to the cross member (lifting point) and lock.

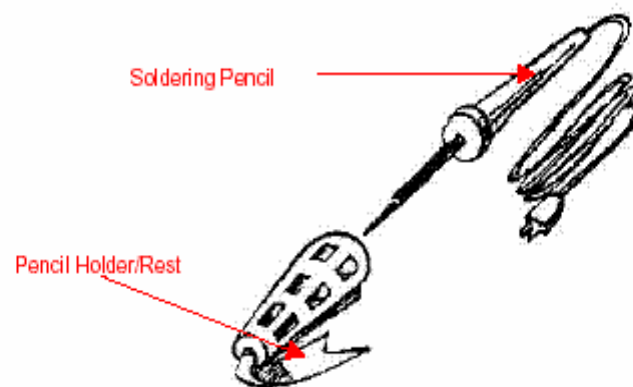
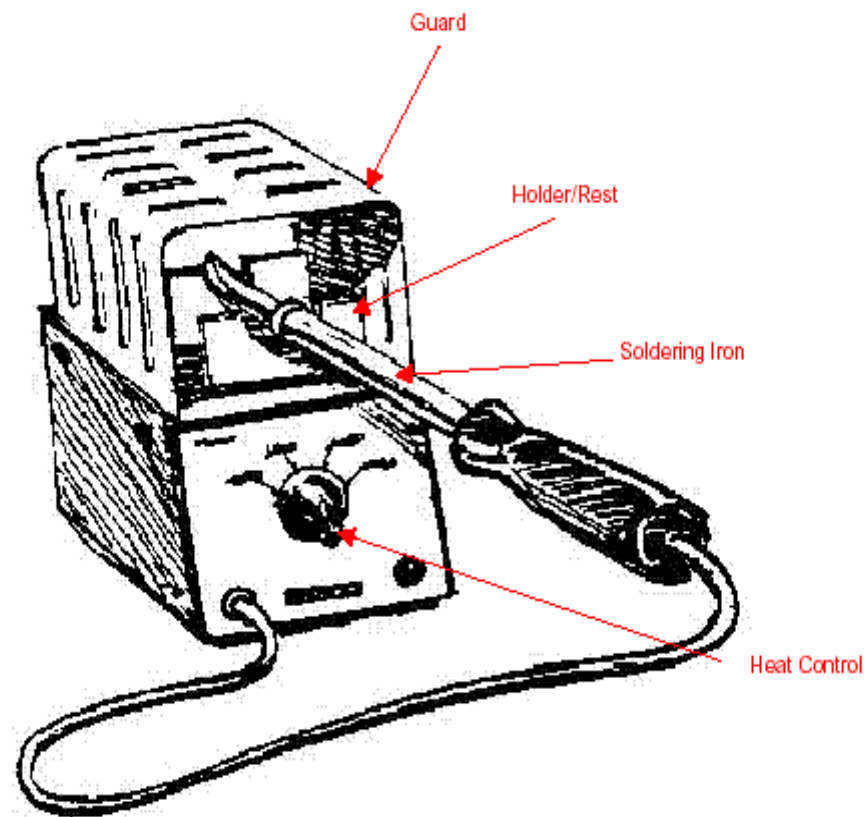
Soldering Station/Pencil Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. Operate only with instructor's permission and after you have received instruction.
2. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Make sure all guards are in place and operating correctly.
4. Always wear eye protection.
5. Avoid serious burns by treating all soldering equipment as though it was hot.
6. Always place equipment back in holder after use. Never lay it on the bench.
7. Handle all soldering equipment with caution.
8. Solder over the bench top to prevent hot solder from dropping on the operator's legs.

Soldering Station/Pencil Parts



Storage Batteries

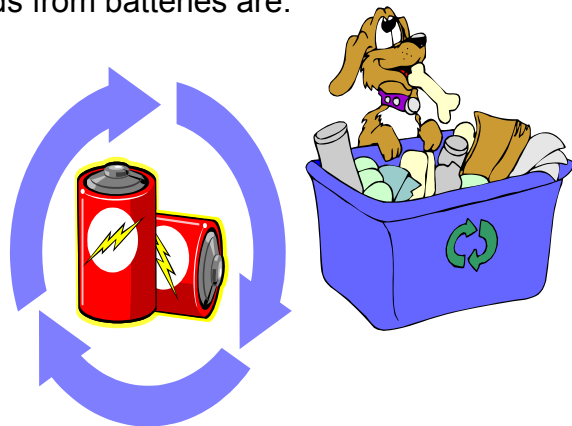
The storage battery that you are most likely to come in contact with is the automotive storage battery. Because of its compact size and the fact that it is so common, sometimes we tend to become careless in our use of the battery.

SAFETY SUGGESTIONS

1. Batteries should be stored or charged only in well-ventilated areas. Do not breathe fumes of battery acid. Battery caps should be removed during charging.
2. All sources of ignition should be remote from the battery storage area (i.e., no smoking, no lighted matches, no sparking from tools). Do not touch or “fiddle” with battery charging clamps while the charger is activated or has just finished charging.
3. Do not work on batteries while on discharge or charge.
4. Proper protective clothing should be worn when handling batteries (i.e., rubber gloves, face shield, apron).
5. Metal jewelry such as rings, bracelets, or necklaces should not be worn around batteries.
6. Deluge showers and eye baths should be provided adjacent to the battery charging area.
7. Acid spills can be neutralized with a weak ammonia solution or a bicarbonate of soda solution or diluted by large quantities of water applied immediately.
8. Battery chargers should be connected or disconnected only when charger is off and caps are in place.
9. Disconnect battery ground (—) cables before performing any major component removal from vehicles.

Some of the more serious potential hazards from batteries are:

1. Explosion due to improper connections.
2. Acid spills by incorrectly handling.
3. Back strain from improper lifting.

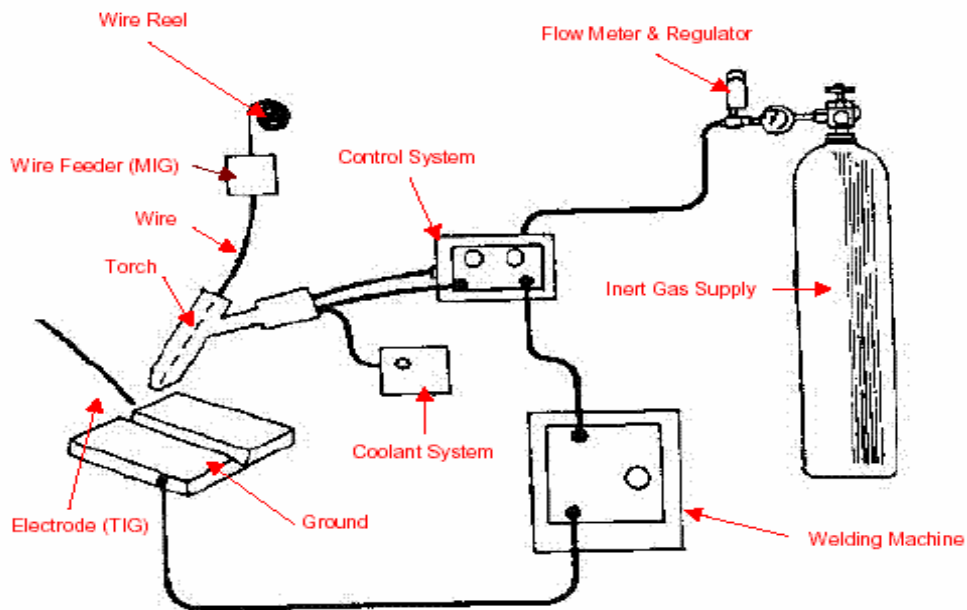


TIG and MIG Welder Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. Additional protective welding clothing, including a helmet, long-sleeved jacket, and gloves, must be worn to prevent burns from ultraviolet and infrared rays emitted while arc welding.
2. The helmet used for TIG and MIG welding should be equipped with a minimum number 12-density shade.
3. Be certain that the welder equipped with a high-frequency stabilizing unit is installed, maintained, and used according to the recommendations of both the manufacturer and the Federal Communications Commission.
4. Never touch the tungsten electrode or MIG wire while the welder is turned on. It is electrically "hot" and can cause a serious shock.
5. The exhaust system must be turned on prior to welding.



NOTE: MIG = Metal Inert Gas. TIG = Tungsten Inert Gas

Tire Changer

SAFETY SUGGESTIONS

1. Wear approved eye protection.
2. Use correct lifting techniques.
3. Deflate the tire by pushing the valve core.
4. Use the proper tools in all aspects of changing tires.
5. Truck tires using a split-rim assembly **require the use of a safety cage.**
6. Be sure that the wheel assembly is securely locked on the mounting machine.
7. Keep fingers away from the tire bead and wheel rim.
8. On tubed tires, be sure that the stem and core are inserted properly.
9. Release the tire wheel assembly from the mounting machine before the air pressure is built up.
10. Eliminate clutter of parts, old tires, etc., from the tire changer area. Have plenty of room to work!

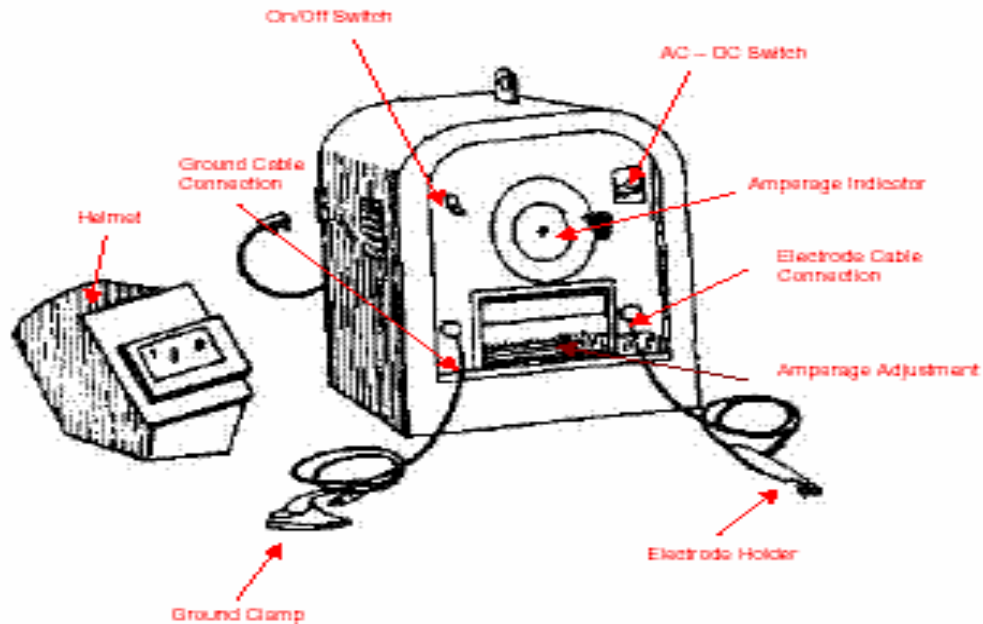
Arc Welder Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. A welding helmet with a clean observation window must be worn.
2. Keep sleeves and pants cuffs rolled down.
3. Goggles must be worn for all chipping operations.
4. Keep all flammable material away from working areas.
5. Always wear leather gloves, apron, and shoes when welding.
6. The floor area should be dry and kept clear of all obstructions.
7. Closed containers should not be welded without the instructor's permission.
8. Report any overheating of the welding unit to the instructor at once.
9. Screens to protect others must be in place before welding is started.
10. The exhaust system must be turned on prior to welding.

Arc Welder Parts



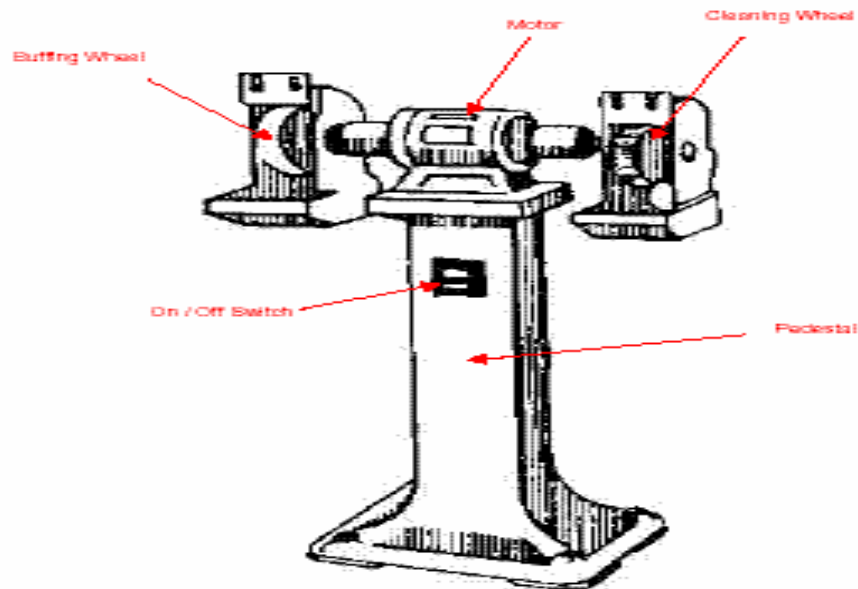
Buffer Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. The *LEFT* side is for *BUFFING*; the *RIGHT* side is for *CLEANING*!
2. The buffer is to be used on plastics. Wood or metal will contaminate the wheel and cause it to scratch and ruin your project.
3. If you need more buffing compound, tell your teacher.
4. Buffing compound is basically a very fine sanding compound. It causes the plastic to heat up and melt, giving you a smooth finish. This means it can and will burn you if you touch it while it is on.
5. Make sure that all clothing, hair, and jewelry is secured or removed. They will get caught in this machine.
6. Work with a partner in case something does go wrong.
7. Hold your plastic with both hands, and buff toward the lower middle. Make sure you are holding the plastic vertically or "UP/DOWN." Never hold it horizontally "SIDEWAYS," because this will ruin the buffing wheels material.
8. Never buff at the top or very bottom of the wheel. Those are the spots where material easily gets caught and thrown, causing injuries.
9. Respect all machines, even the buffer as "nice" as it looks, can cause a serious injury!
10. Remember, have patience and wait quietly behind the yellow line for your turn.
11. As with any machine, if something goes wrong, turn it off, unplug it, and tell your teacher.

Buffer Parts



Crucible Furnace Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. As with any machine, you must wear proper eye protection, pass ALL tests with 100 percent, and have your teacher's permission to operate it.
2. You must wear all necessary protective clothing; i.e., safety glasses, coats, leather gloves, face shield, shoes, and leg protectors.
3. Keep all flammable material away from the work area.
4. Preheat cold metal before placing it in the crucible. Do not just throw or toss the metal into crucible since that can cause a dangerous splash; use tongs to carefully place it inside.
5. Place the mold on the designated area BEFORE you begin to pour the metal.
6. Move cautiously and carry molten metal close to the mold to help reduce possible dangers.
7. Be very careful and make sure that you do not step on any molten metal.
8. Any unused and unattended metal should be placed in an area designated for this purpose. Don't pour molten metal over bare concrete. Moisture in concrete or molding sand will explode when exposed to moderate amounts of molten metal.
9. To shut down, make sure that you turn the "GAS" off first.

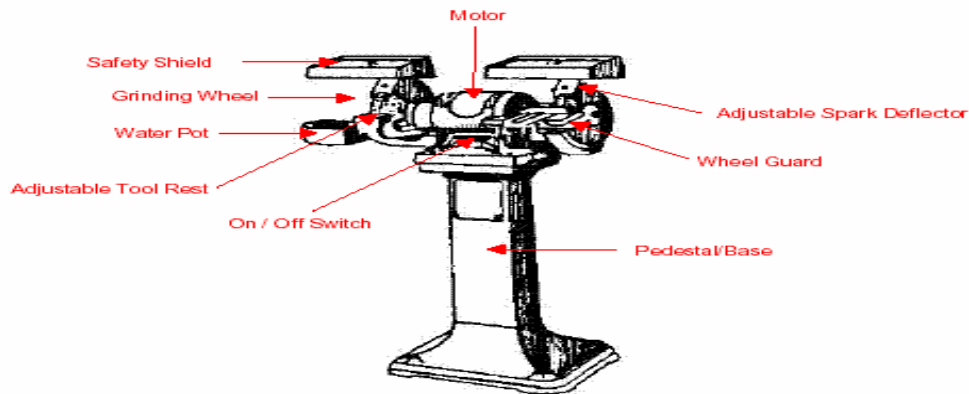
Grinder Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. With this machine you must wear proper eye protection, a face shield, pass ALL tests with 100 percent, and have your teacher's permission to operate it.
2. Set the tool rest and spark deflector so that they are 1/16 inch to 1/8 inch away from the wheel.
3. Hold work firmly and securely with both hands. Remember that small pieces require special set-ups.
4. Never stand directly in front of the grinding wheel. Stand to the side when you start this machine.
5. Grind using only the face of the wheel, never use the sides.
6. Press material against the wheel with just enough pressure that you cause a steady, even removal of metal. This will happen with practice; do not become discouraged on your first try.
7. Again, move stock slowly and evenly across the face of the wheel, not the sides.
8. Never leave the machine until the grinding wheels have come to a complete stop, even if someone will be using it right after you do.
9. Grinder must be secured to prevent tipping.

Grinder Parts



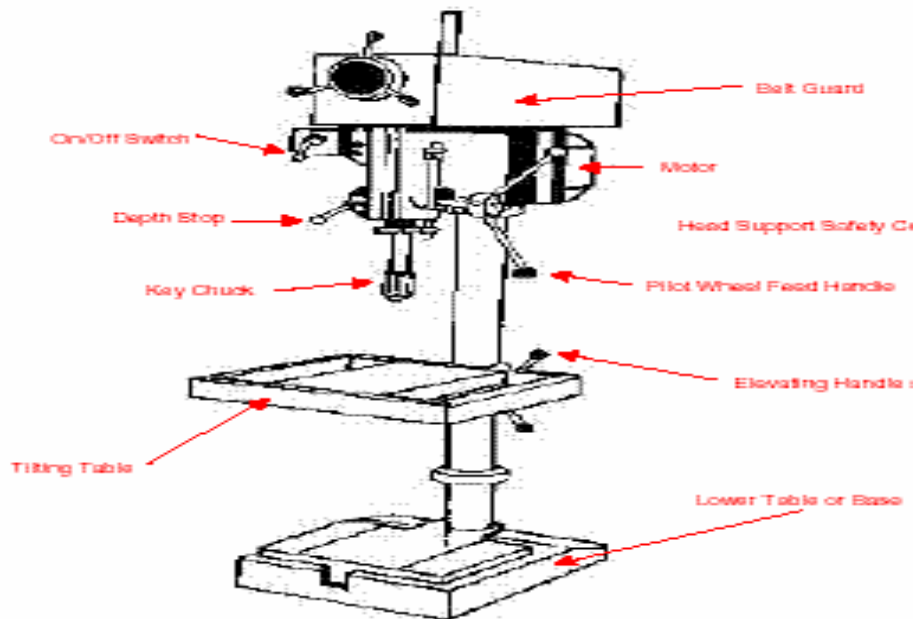
Drill Press Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. Always use a piece of scrap wood and set the table or stop to keep from drilling into the tabletop.
2. Use a clamp or vise grips to secure/fasten your wood to the table.
3. Make sure that your scrap wood, good wood, and any clamp you are using are the ONLY objects on the table. Other objects can get caught in the machine and cause injuries.
4. Use a "V-block" clamp for C0₂ cars or round or irregular-shaped stock.
5. Select the right size and type of bit. Wood bits for wood, metal bits for metal.
6. Use a center punch for a guide whenever possible. Always use a center punch when drilling into metal or hard woods.
7. Do not panic if the bit gets stuck in the wood. Turn the machine off. When it has completely stopped, remove the bit from your wood.
8. Select the correct drilling speed. For metal or hard woods and large drill bits you should use a slower speed.
9. Always remove the chips from the table after the machine is turned off and is no longer moving. Use a table brush, never your hands.
10. As with any machine, if it is not working properly you should always turn it off, unplug it, and tell a teacher.

Drill Press Parts



Horizontal Milling Machine Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. As with any machine you must wear proper eye protection, pass ALL tests with 100 percent, and have your teacher's permission to operate it.
2. Turn the power OFF before you make any measurements or adjustments.
3. Be sure cutter/tooling is tightly secured to machine spindle or arbor.
4. Be sure the holding device is mounted solidly to the table and the work is held firmly.
5. Never reach over or near the rotating center.
6. Cutters should not be handled with bare hands, make sure that you are wearing protective gloves.
7. Always use a small brush like a table broom to remove chips and never clear chips away while the machine is in operation. Don't remove chips with hand as they are sharp and will cut.
8. Do not leave the machine while it is working. Remain with the machine for the duration of the cut.
9. Keep the floor around the machine clear of chips, and wipe up spilled cutting fluid immediately.
10. Make sure that you store all oily rags used to wipe down the machine in an approved metal container that can be closed tightly.

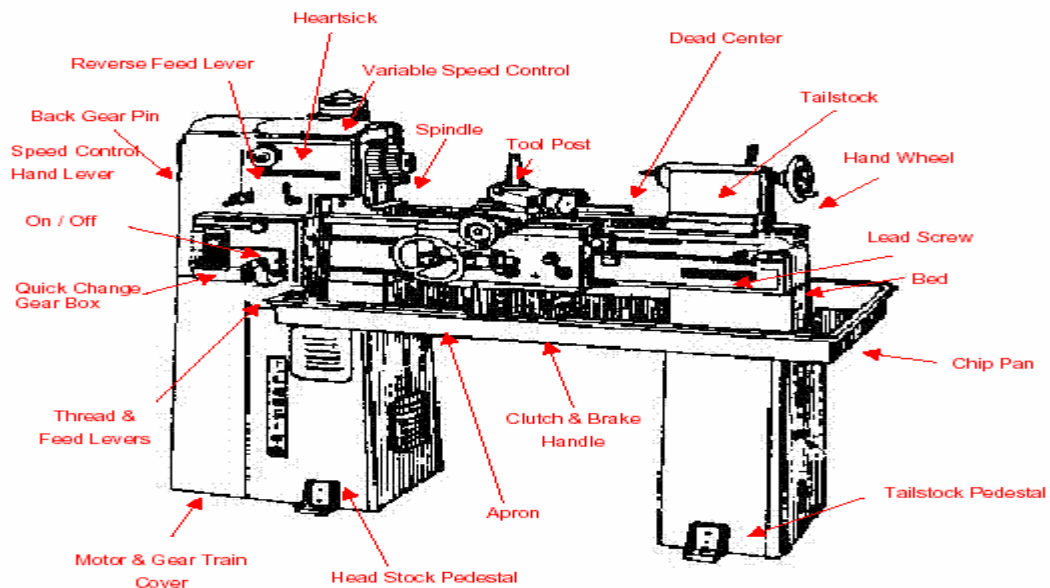
Metal Lathe Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. When operating this machine you must wear proper eye protection, a face shield, pass ALL tests with 100 percent, and have your teacher's permission to operate it.
2. Never leave chuck key or wrench in the lathe chuck since they can be thrown easily, causing an accident.
3. Be sure that all parts of the carriage will clear any rotating part during the full length of the turning that you will be doing.
4. Place hands on the controls or at your sides, except when filing or polishing.
5. Make sure the work is secure and the lathe is set at the correct speed and feed rate before you start.
6. Handle chucks and face plates very carefully.
7. Bring lathe to a complete stop before reversing.
8. Remove tool holder and post before you begin to file or polish.
9. Remove chips with a table broom brush, never by hand.
10. Do not stop a lathe chuck with anything. Allow it to slowly coast to a stop. Remember to keep hands and any other body parts away from all moving parts.
11. No loose clothing!

Metal Lathe Parts



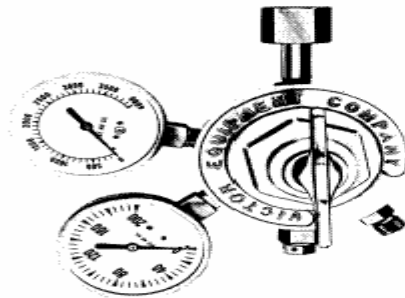
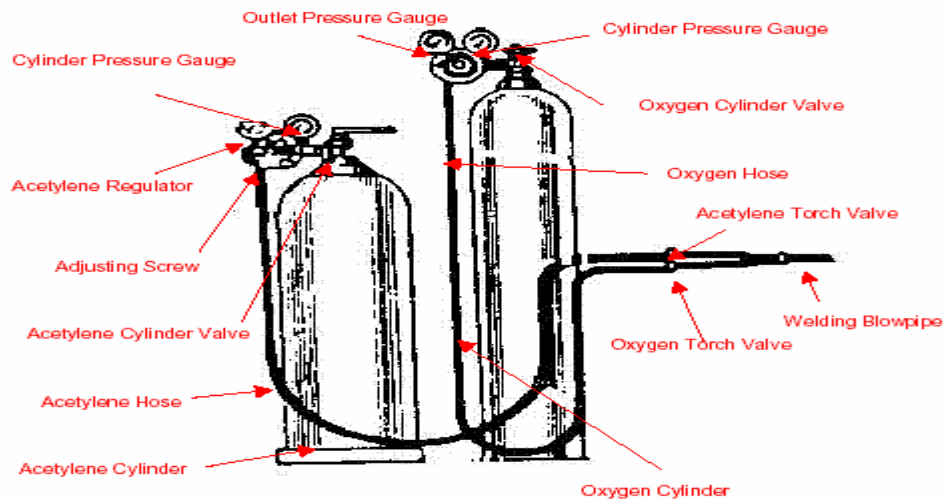
Oxyacetylene Welder Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. Be sure cylinders are fastened with a chain as a protection against falling or rolling.
2. Always close the cylinder valve and replace protective cover before moving the cylinder.
3. Keep welding equipment free of oil and grease.
4. Protective goggles and spark-resistant clothing must be worn when welding.
5. Make sure that hoses are properly connected and all connections are tight.
6. Keep all flammable material away from working area.
7. Do not weld or cut on a closed container without instructor's approval.
8. The acetylene must never exceed 15-psi outlet pressure.
9. Only use a friction torch lighter to ignite the torch.
10. Close the acetylene valve first if the torch backfires.
11. Close cylinder valves when completing a welding job. Release or drain hoses.
12. The exhaust system must be turned on prior to igniting the torch.

Oxyacetylene Welder Parts



NOTE: What a regulator looks like.

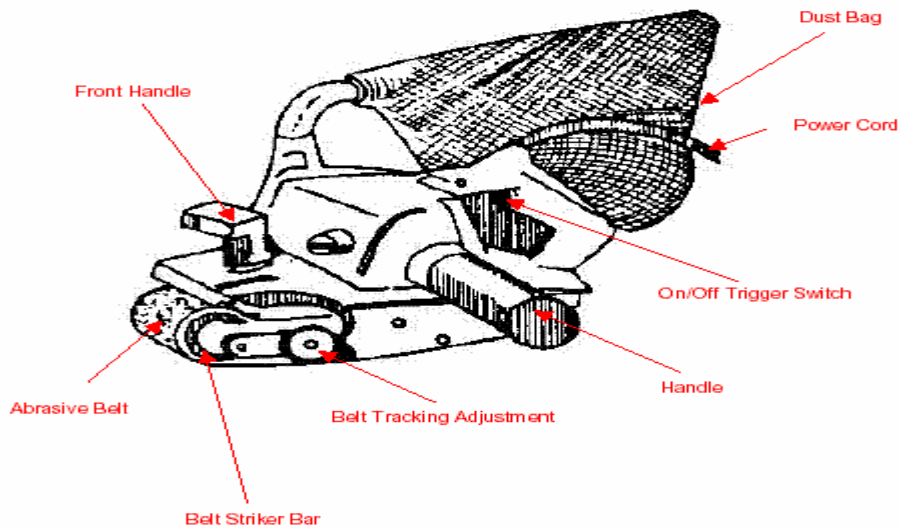
Portable Belt Sander Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. Check to see if the belt is worn or torn, tracking properly, and is the correct grit size for the job.
2. Before connecting to a power source, make sure the switch is "OFF."
3. Start sander above the work, let rear of belt touch first then level the tool.
4. Keep the sander moving back and forth in the direction of the grain. Do not pause in one spot.
5. Lift the sander off the stock when stopping.
6. Always allow the sander to come to a complete stop before placing the sander on the table.
7. Keep electrical cord and dust bag away from working area.
8. When changing belts make sure the new belt runs as the arrow indicates.

Portable Belt Sander Parts



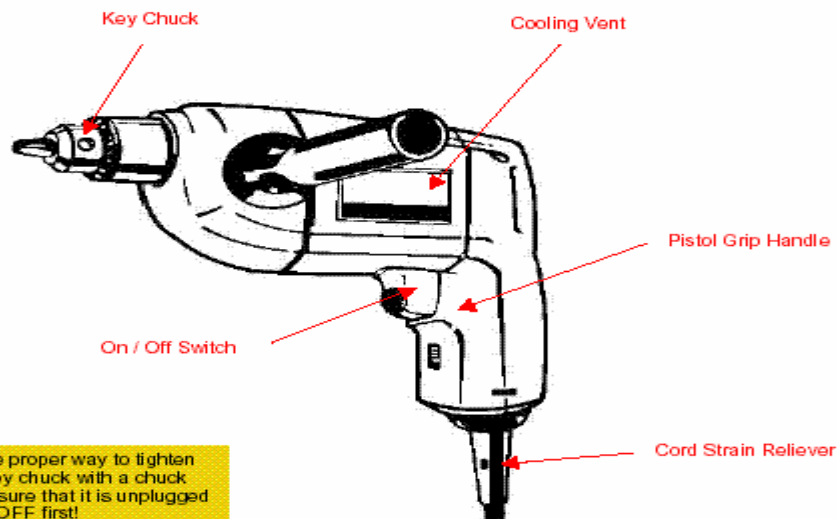
Portable Drill Notes

Requirements:

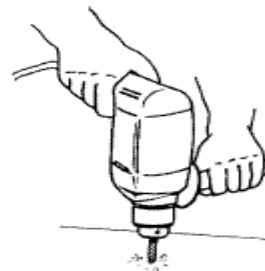
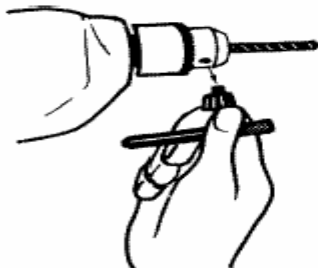
Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. Select the correct drill bit just like you would for the drill press.
2. Secure a piece of scrap wood and the good wood to the table so that it will not move around while drilling.
3. Make sure that the switch is OFF, the chuck key is removed, and that your work area is clean and dry BEFORE you plug the drill in and turn it ON!
4. Drill with a straight, even, and steady pressure.
5. When drilling deep holes, withdraw the drill bit several times to clear the area. This helps to provide a SAFE and even drilling process.
6. As with any machine, DO NOT PANIC if something "goes wrong." Turn it OFF, unplug it, and tell a teacher.

Portable Drill Parts



NOTE: The proper way to tighten down the key chuck with a chuck key. Make sure that it is unplugged and turned OFF first!



NOTE: The correct and SAFE way to drill.

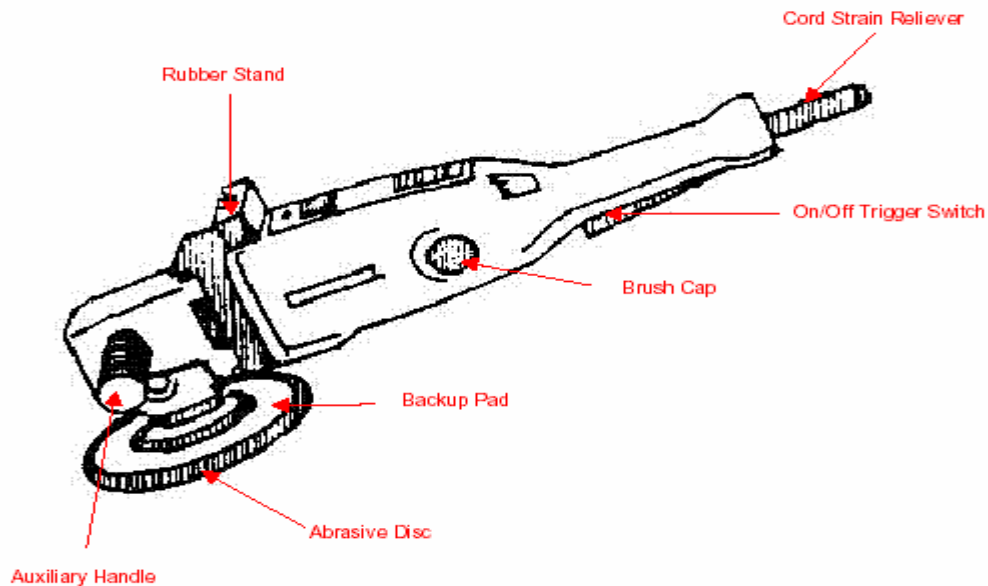
Portable Grinder Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. Be sure switch is in the "OFF" position before connecting the power source.
2. Make all adjustments to pad and disc before turning on the power.
3. Do not allow the edge of the disc to touch the edge of the stock.
4. Stand clear of the spark line or spark area.
5. Sand with a stroking motion; do not pause in one spot.
6. When finished, disconnect the sander from power source and place the sander on its back.

Portable Grinder Parts



Sheet Metal Machines Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. Keep hands and fingers clear of clamps, jaws, and rotating parts.
2. Never bend, roll, crimp, or bead metal that exceeds the capacity of the machine.
3. Make all rolls and bends smoothly and steadily.
4. Work with only one piece of metal at a time.
5. Remove burrs from the metal before attempting to work it in the machine.
6. Obtain help when working with large pieces of stock.
7. Never force levers or handles.

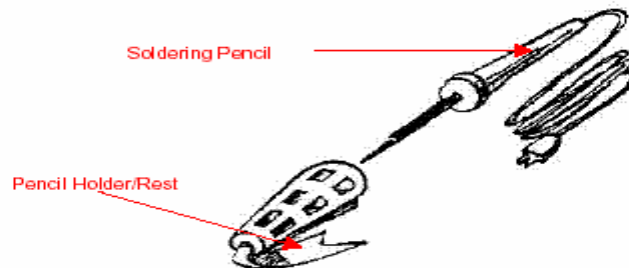
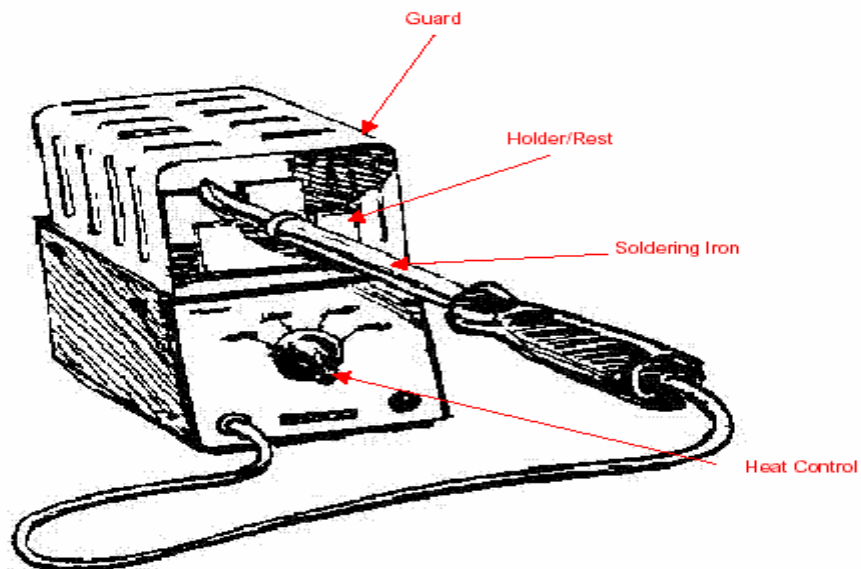
Soldering Station Pencil Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. Operate only with instructor's permission and after you have received instruction.
2. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Make sure all guards are in place and operating correctly.
4. Always wear eye protection.
5. Avoid serious burns by treating all soldering equipment as though it was hot.
6. Always place equipment back in holder after use. Never lay it on the bench.
7. Handle all soldering equipment with caution.
8. Solder over the bench top to prevent hot solder from dropping on the operator's legs.

Soldering Station/Pencil Parts



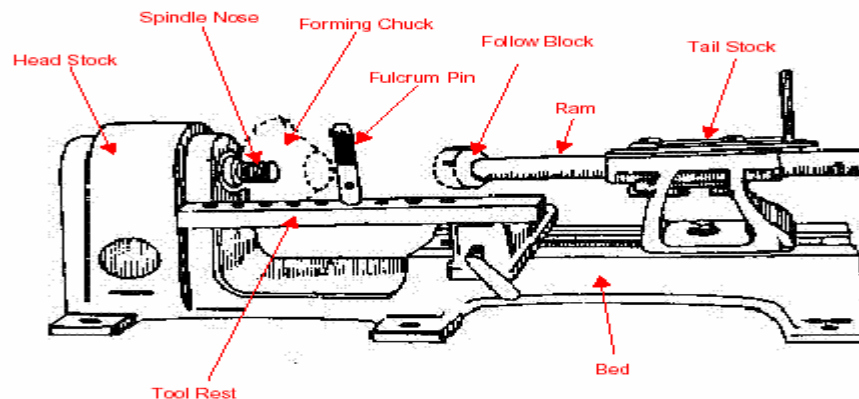
Spinning Lathe Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. Beware of sharp-pointed metal edges when cutting metal discs to size and when getting them ready for spinning.
2. Make sure that the tool rest base, tool rest, and fulcrum pin are securely tightened in place before attempting to spin.
3. Never stand in line with the disc during a centering operation.
4. Make certain the spinning tools are fitted solidly to the handle.
5. Do not touch a spinning disc by hand.
6. Use the correct tool for the operation and slowly force material to match the forming chuck.
7. Remove tool rest and pin when using steel wool or polishing.
8. Seek instructor's help, if in doubt about a specific operation.

Spinning Lathe Parts

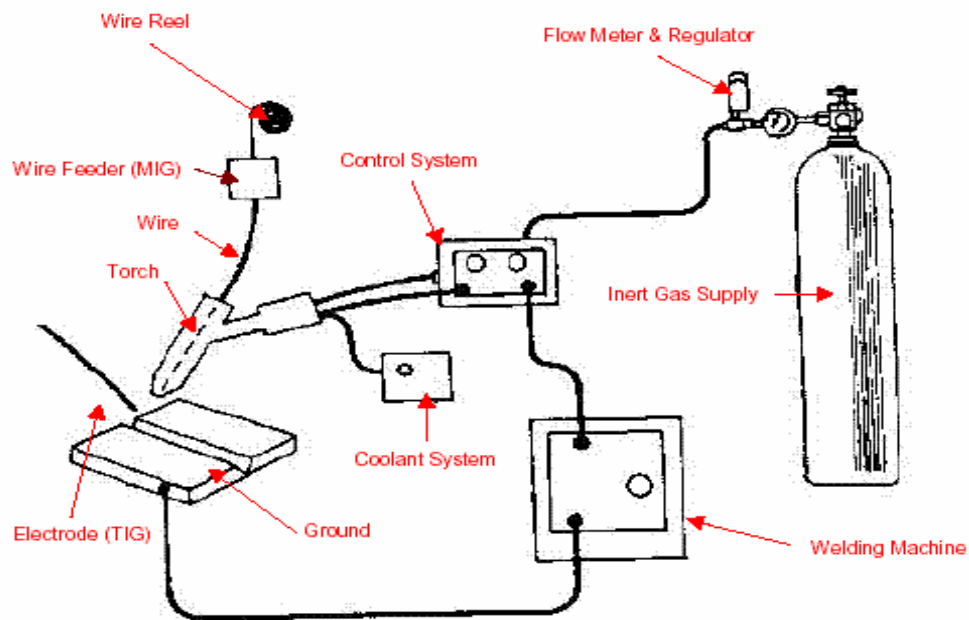


TIG and MIG Welder Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. Additional protective welding clothing, including a helmet, long-sleeved jacket, and gloves must be worn to prevent burns from ultraviolet and infrared rays emitted while arc welding.
2. The helmet used for TIG and MIG welding should be equipped with a minimum number 12-density shade.
3. Be certain that the welder equipped with a high-frequency stabilizing unit is installed, maintained, and used according to the recommendations of both the manufacturer and the Federal Communications Commission.
4. Never touch the tungsten electrode or MIG wire while the welder is turned on. It is electrically "hot" and can cause a serious shock.
5. The exhaust system must be turned on prior to welding.

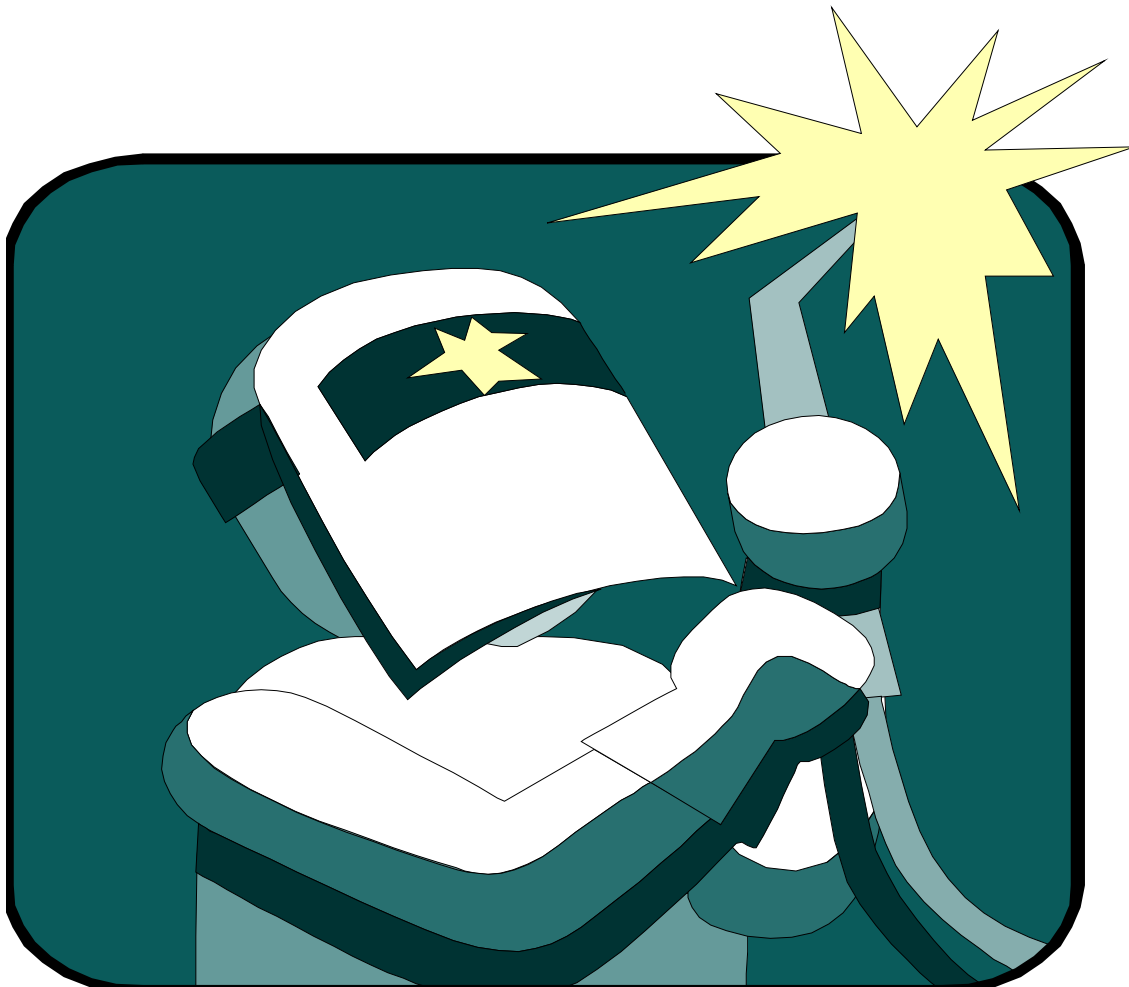


NOTE: MIG = Metal Inert Gas. TIG = Tungsten Inert Gas

Spot Welder

SAFETY SUGGESTIONS

1. Always wear a protective face shield in addition to proper eye protection.
2. Do not weld with wet hands or in a damp area.
3. Do not touch the tips, tongs, or welded material after welding as they become very hot.
4. Never leave the spot welder unattended with the electrical cord plugged in.
5. The metal being spot-welded must be clean and dry.
6. When spot welding galvanized material, remove the galvanize from the area being welded.



Manual and Power Shears

SAFETY SUGGESTIONS

1. Never go beyond the capacity of the shear.
2. Always be certain that the metal is under the hold-down bar or lugs before cutting.
3. Keep fingers clear of the hold-down bar or lugs.
4. Always keep fingers clear of the blade and never override the safety barriers that guard the blade.
5. Before operating the treadle, be sure that the feet of the operator and of any observers are clear.
6. Use gloves when handling sheet metal.
7. Whenever two people are needed to operate the shear, one shall be the operator, the other the helper.
8. If unable to view both sides of the shear, give a "clear" signal before bringing the blade down.

CONSTRUCTION/WOODS TRADES

Band Saw
Belt Finishing Sander
Portable Circular Saw
Disc Sander
Jig/Bayonet Saw
Jointer
Motorized Miter Box
Planer/Surfacers
Portable Belt Sander
Portable Drill
Portable Finishing Sander
Portable Router
Radial Arm Saw
Scroll Saw Notes
Table Saw
Wood Lathe
Uniplane
Portable Electric Plane
Wood Shaper

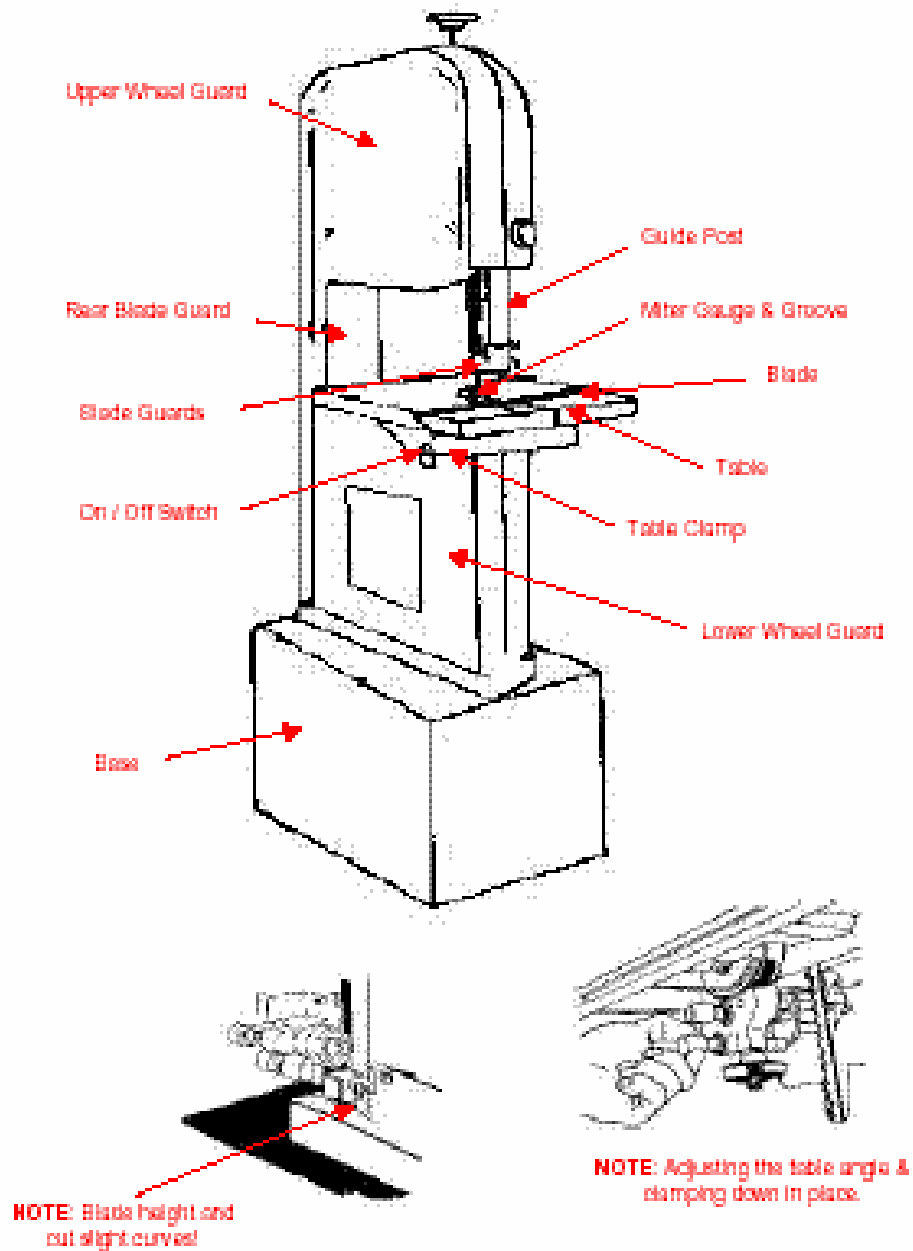
Band Saw Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. Adjust the blade guard to where it is $\frac{1}{4}$ inch above the highest part of the wood.
2. Use a push stick whenever possible and always when cutting small objects.
3. ONLY one person can use the machine at a time. Everyone should form a line and wait patiently and quietly behind the yellow line.
4. Never force your wood into the blade. Let the machine do the work.
5. If it is not working properly, turn it off and tell your teacher immediately.
6. Cut sharp curves on the scroll saw.
7. Avoid backing out of a cut. If there is no way to avoid it, then you need to turn the machine off, wait until the blade has completely stopped, and then carefully back out.
8. Your fingers should be on either side of the blade, but never in front of the blade.
9. Blades do occasionally break. If the blade breaks while you are operating it simply turn it off and send your partner to get the teacher. Never leave the machine or try to open the casing and fix it yourself.
10. Make sure that the dust collector is on and that the vent is open.
11. Round stock must be cut using the V-block to secure it. Also, never reach around the blade to remove your work.
12. Always use scrap wood to push or move scrap wood away from the blade.
13. Never leave the machine until it has come to a complete stop, then clean the table off by using a table broom, never your hands.

Band Saw Parts



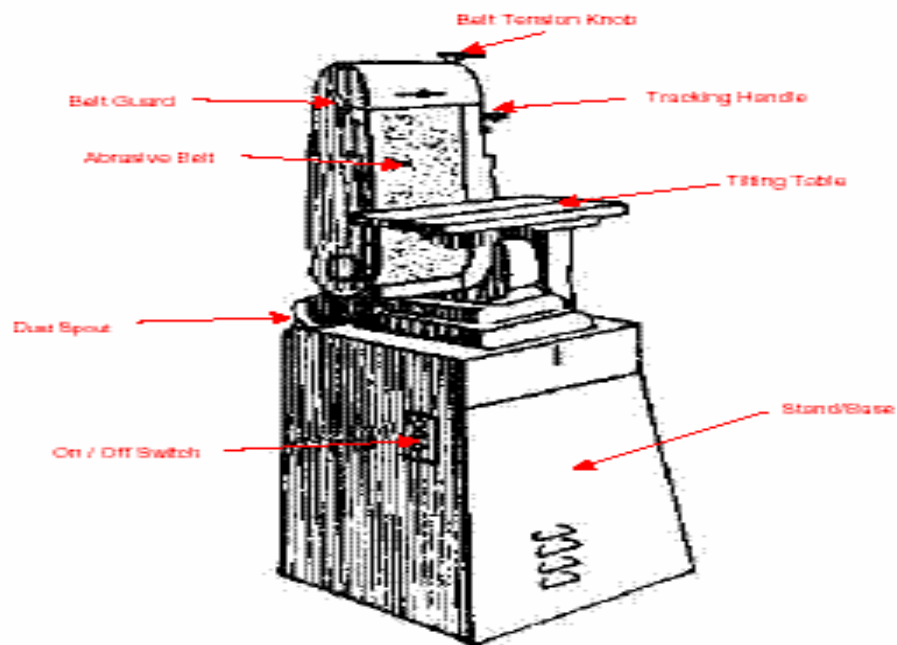
Belt Finishing Sander Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. Make sure there is adequate, strong tension on the belt and that it is not torn.
2. Make all adjustments, except final belt tracking, with the power off.
3. When changing belts, make sure the new belt runs as arrows indicate.
4. Adjust table to within 1/16 inch of the abrasive belt.
5. Sand on the down stroke of the belt sander.
6. Machine-sand only objects large enough to hold safely against the belt.
7. Move stock evenly and steadily over the abrasive surface of the sander.
8. Keep hands clear of the abrasive belt while operating and keep material flat on the table.

Belt Finishing Sander Parts



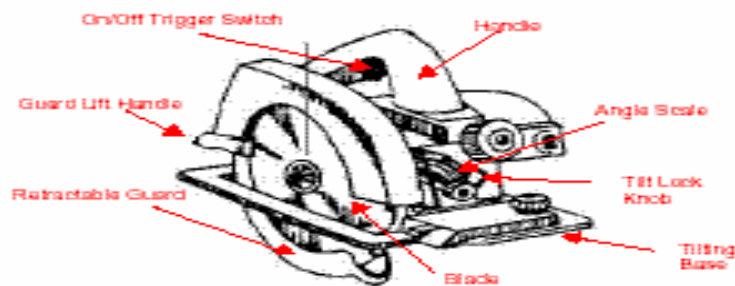
Portable Circular Saw Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. As with any machine, you must wear proper eye protection, pass ALL tests with 100 percent, and have your teacher's permission to operate it.
2. All stock must be well supported and securely clamped down.
3. Adjust the depth of cut to the thickness of the stock (material) plus 1/8 inch.
4. Make sure the power cord is clear of the blade and that your work area is clean before you start cutting.
5. Check the base and angle adjustments to be sure they are tight.
6. Always place the base of the saw on the stock you will be cutting. Make sure that the blade is not actually touching the stock before you turn it on.
7. Advance the saw blade slowly and evenly making sure that it cuts straight through the work.
8. Never put the saw down until the blade has come to a complete stop!
9. Always unplug the machine to change the blades or to make any kind of adjustments.

Portable Circular Saw Parts



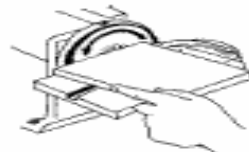
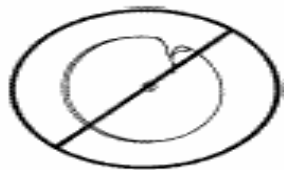
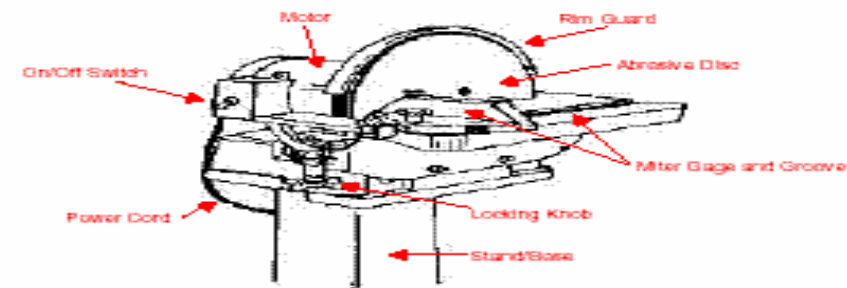
Disc Sander Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. Check the abrasive disc for tears or loose areas. If it has any, report them immediately.
2. The table should be 1/16 inch away from the disc.
3. Always sand on the down-stroke side of the disc. Sanding on the up side will cause your wood to get caught and thrown, potentially causing serious damage to yourself, lab partners, or school property.
4. The disc sander is just as dangerous as any saw. Keep all parts of your body away from the disc as it rotates—especially your fingers. It can cut or tear part of your finger off.
5. Sand objects that you can SAFELY hold against the table.
6. Remember always to hold your wood flat against the table. If you need wood sanded at an angle, adjust the table accordingly.
7. Move your wood at an even and steady pace/pressure across the surface of the rotating disc.
8. Use just enough pressure to do the job. Too much pressure can ruin the disc, machine, and cause injury to someone.
9. Always make sure that the dust collector is turned ON and that the vent is OPEN.
10. Never leave the machine until it has come to a complete stop! You can help it stop by sanding down a piece of scrap wood. Never jam a piece of scrap wood into the machine.
11. As with every machine, if it is not working properly turn it off and tell the teacher.
12. Remember to have patience and wait quietly for your turn behind the yellow line.

Disc Sander Parts



Note: To be safe, sand on the down stroke/left side only!

Jig/Bayonet Saw Notes

Requirements:

1. As with any machine, you must wear proper eye protection, pass ALL tests with 100 percent and have your teacher's permission to operate it.
2. Select the correct blade for the stock (material) and clamp the blade down tightly in the chuck.
3. Always disconnect the saw to change blades or make adjustments of any kind.
4. Use vise or clamps to securely hold the stock (material) that you will be cutting. A C-clamp, wood clamp, or *quick grips* are the easiest ones to use.
5. Keep a constant and even cutting pressure. Do not force the blade into the work. Just like with any saw, if it's not cutting, there is a reason!
6. Do not attempt to cut curves that are so tight that the blade can be twisted and then broken.
7. Never sit this saw or any power tool down on the workbench until it has completely stopped. If you are not going to use it again immediately, you should also unplug it so that it does not get accidentally turned on before you need it again.

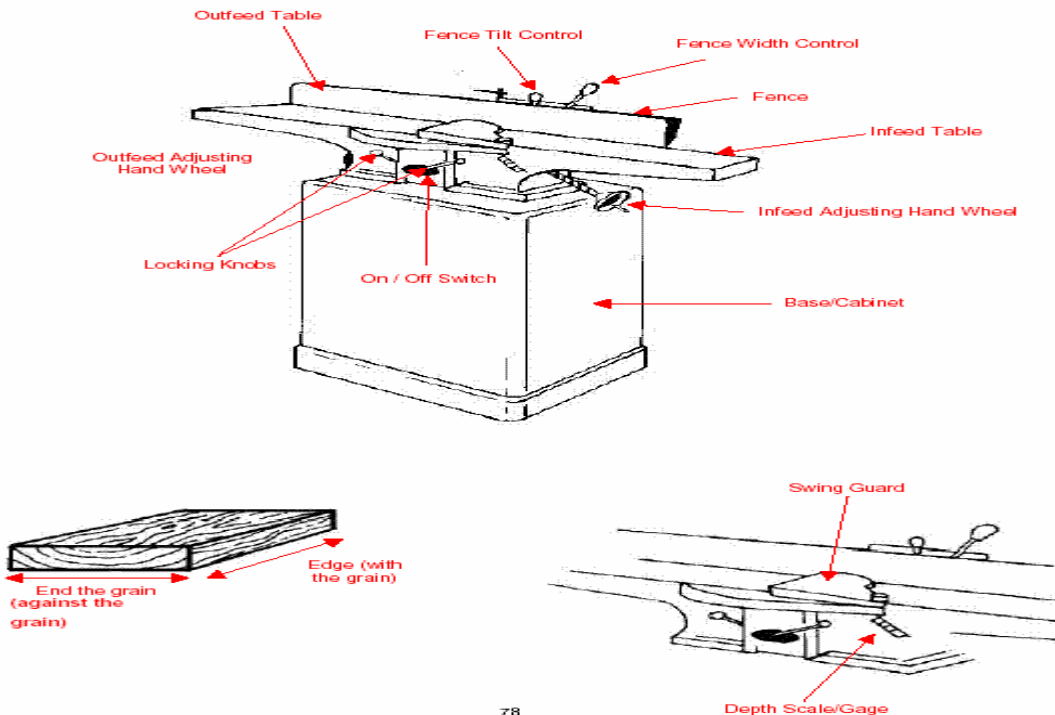
Jointer Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. Always keep the knives of the jointer sharp. Dull knives tend to cause kickbacks and will result in poor planing. Report dull knives to the teacher immediately.
2. The fence should be tight. Never adjust the fence while the jointer is running.
3. Adjust the depth of cut before you turn the jointer on. The maximum safe plane thickness is 1/16 inch.
4. Be sure that the guard is in place and operating with ease. If the regular guard is removed, a special guard must be provided.
5. Always allow the machine to come to full speed before using it.
6. Check all stock for knots, splits, metal particles, and other imperfections. Remove them before you plane the stock.
7. Do not use the jointer on plywood or PARTICLEBOARD.
8. Stand to the side of the jointer, never directly behind it. You want to be out of the way in case of a kick back.
9. Cut with the grain. Also, never joint the end of a board!
10. Always use a push stick or push block when the wood is below the height of the fence or when surfacing the wood.
11. Do not try to make too heavy of a cut. The maximum safe plane thickness is 1/16 inch.
12. Use COMMON SENSE when stock is too thin or thick to joint safely.
13. Never apply pressure to the board with your hand directly over the cutter head area.

Jointer Parts



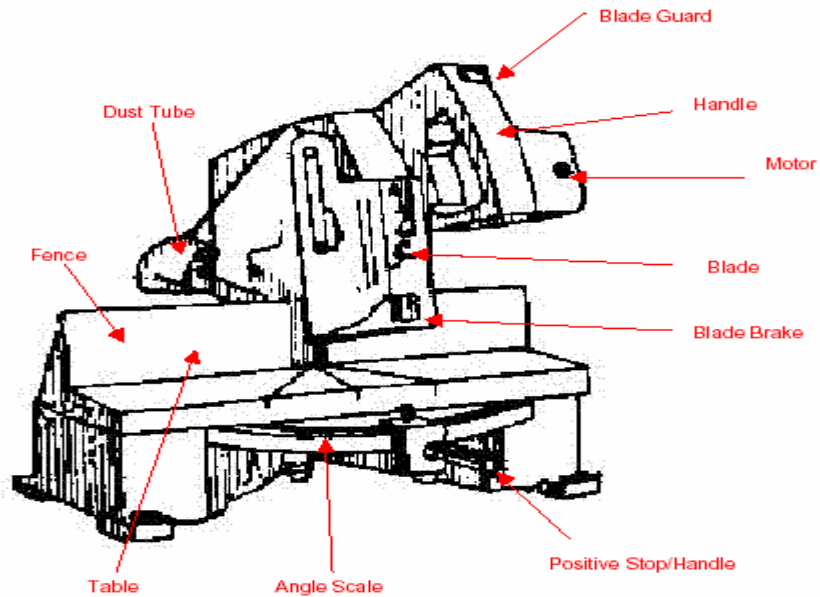
Motorized Miter Box Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. Disconnect power before making angle adjustments or changing blades.
2. Always hold the work firmly against the fence and table.
3. Allow the motor to reach full speed before starting a cut.
4. Keep fingers outside of blade guards.
5. Remove scrap stock from table when making multiple cuts. Use scrap to do this and not your fingers.
6. Use the brake to stop the blade.

Motorized Miter Box Parts



Motorized Miter Box

1. Operate only with instructor's permission and after you have received instruction.
2. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Make sure all guards are in place and operating correctly.
4. Always use proper eye protection.
5. Be sure power is disconnected before making angle adjustments or changing blades.
6. Always hold the work firmly against the fence and table.
7. Install a new table if adequate support has been cut away.
8. Allow the motor to reach full speed before starting to cut.
9. Use the brake to stop the blade before removing scrap or chips from the work area.
10. Be sure guard parts are functioning properly.

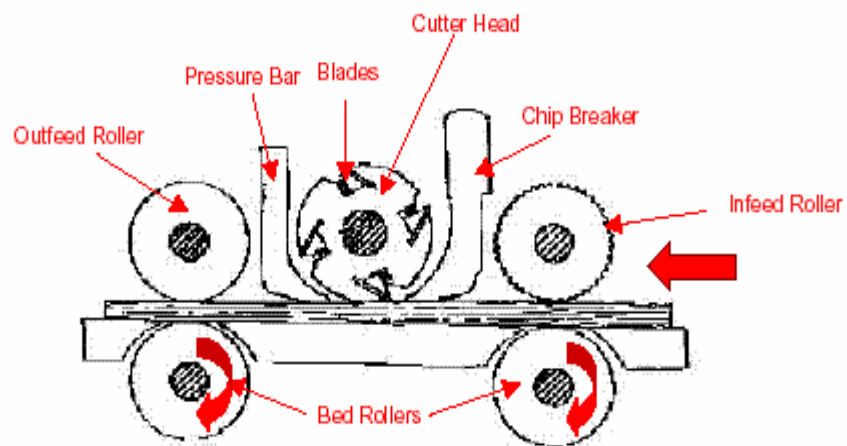
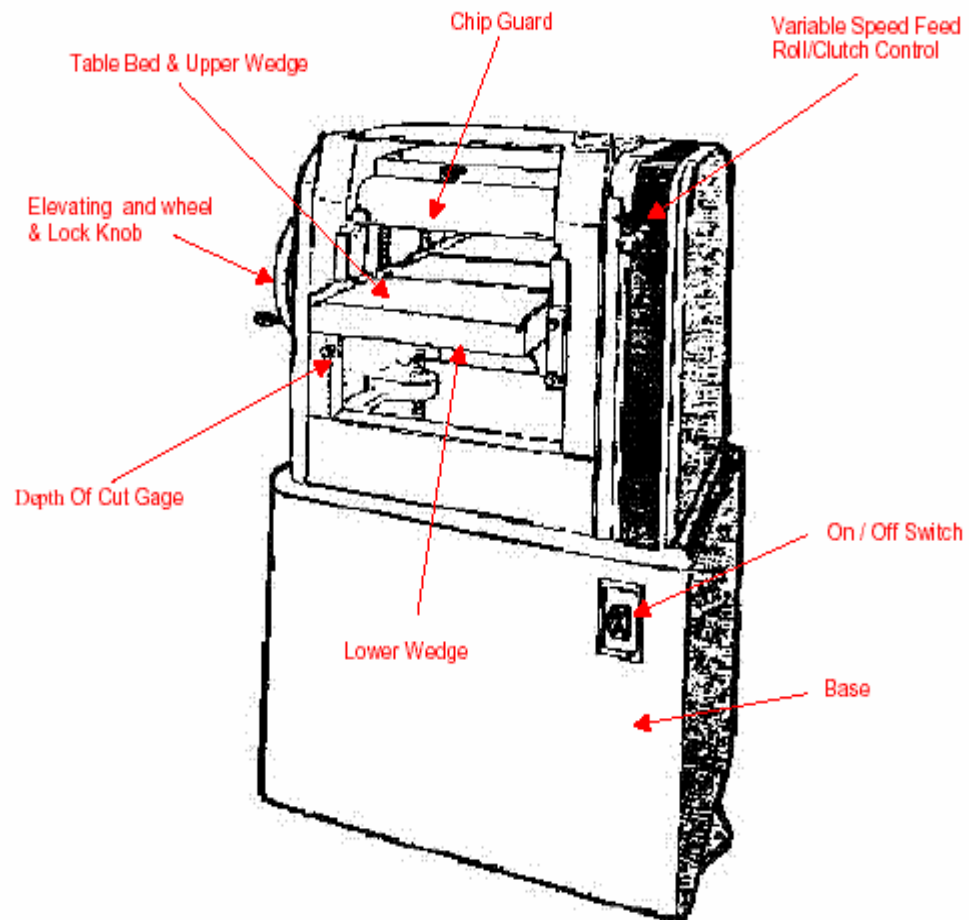
Planer/Surfacer Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. Keep your fingers away from the underside of the board as it is fed through the planer. Keep your hands away from the top of the board near the infeed roller.
2. Never stand directly behind the board or in front of the machine when planing, in case of a kickback.
3. Do not look into the throat of the planer from either side when the machine is in operation.
4. Always surface wood with the grain. NEVER run a piece cross grain
5. Support long pieces of wood. These could throw the planer out of adjustment.
6. Make sure the board is longer than the distance between the centers of the infeed and outfeed rolls.
7. Scrape all glue off the stock before running it through the planer.
8. Before you make any adjustments, turn the power off and check to make sure that the cutter head is standing still. Do not remove shavings while cutter head is revolving.
9. Do not force stock into the planer; never lower the table when a piece of stock will not feed through. Turn off the power after the cutter head has stopped completely and then make the necessary corrections.
10. Do not take cuts deeper than 1/16 inch. The maximum SAFE cut depth is 1/16 inch. Plane to one desired thickness at a time.
11. Check all stock for knots, splits, metal particles, and other imperfections. Remove them before you plane the stock. Always use the exhaust system.

Planer/Surfacers Parts



Planer–Surfacer

1. Operate only with instructor's permission and after you have received instruction.
2. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Make sure all guards are in place and operating correctly.
4. Always use proper eye protection.
5. A "backer board" should be used when planing thin stock.
6. Do not force material through planer.
7. Do not remove chip accumulation while machine is running.
8. Do not stand directly behind the machine or in the line of kick back.
9. Do not look into the throat of the surfacer when it is running.
10. Be sure to select the proper speed and depth of cut.
11. The board being surfaced must exceed the minimum length established for that particular machine (check with instructor).

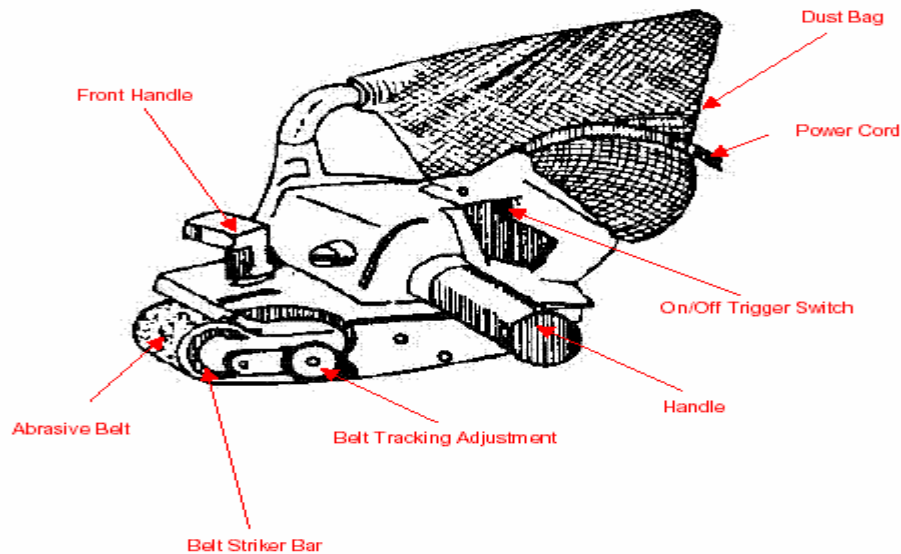
Portable Belt Sander Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. Check to see if the belt is worn or torn, tracking properly, and is the correct grit size for the job.
2. Before connecting to a power source, make sure the switch is "OFF."
3. Start sander above the work, let rear of belt touch first then level the tool.
4. Keep the sander moving back and forth in the direction of the grain. Do not pause in one spot.
5. Lift the sander off the stock when stopping.
6. Always allow the sander to come to a complete stop before placing the sander on the table.
7. Keep electrical cord and dust bag away from working area.
8. When changing belts make sure the new belt runs as the arrow indicates.

Portable Belt Sander Parts



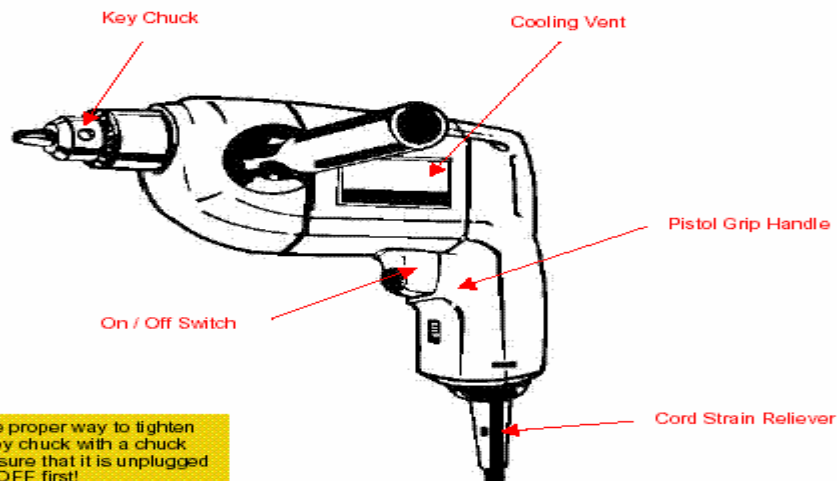
Portable Drill Notes

Requirements:

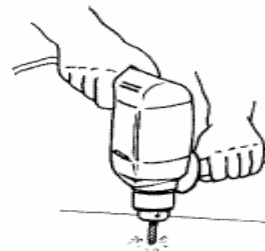
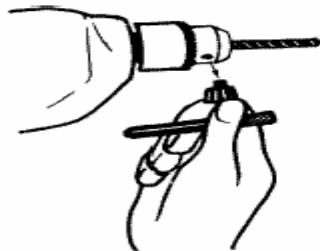
Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. Select the correct drill bit just like you would for the drill press.
2. Secure a piece of scrap wood and the good wood to the table so that it will not move around while drilling.
3. Make sure that the switch is OFF, the chuck key is removed, and that your work area is clean and dry BEFORE you plug the drill in and turn it ON!
4. Drill with straight, even, and steady pressure.
5. When drilling deep holes, withdraw the drill bit several times to clear the area. This helps to provide a SAFE and even drilling process.
6. As with any machine, DO NOT PANIC if something "goes wrong." Turn it OFF, unplug it, and tell a teacher.

Portable Drill Parts



NOTE: The proper way to tighten down the key chuck with a chuck key. Make sure that it is unplugged and turned OFF first!



NOTE: The correct and SAFE way to drill.

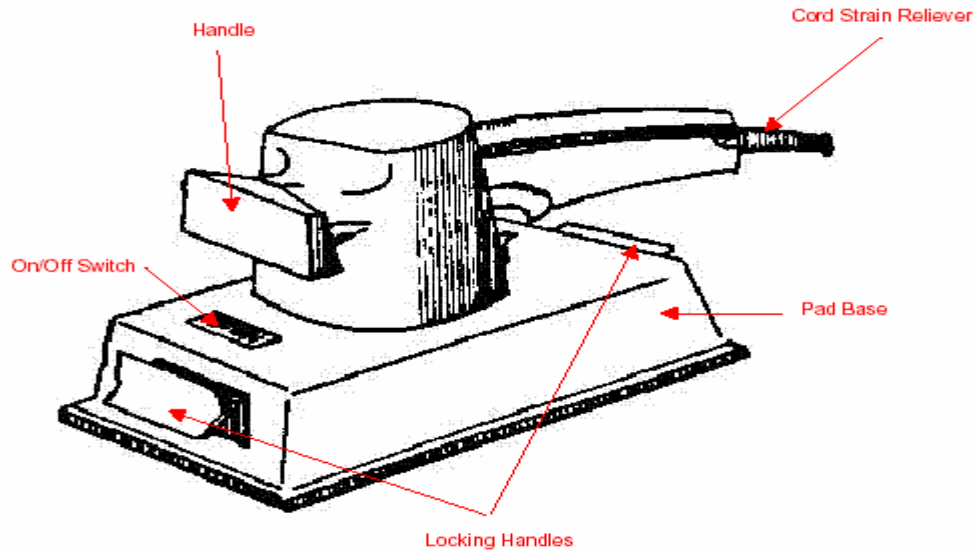
Portable Finishing Sander Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. Before connecting the power cord, be sure the power switch is "OFF."
2. Check to see that the abrasive sheet is in good condition and installed properly.
3. Start the sander above the work and set it down evenly; move slowly over a wide area.
4. Lift the sander from the work before stopping the motor.
5. Be sure the sander has stopped before placing the sander on the workbench.
6. All work must be securely fastened in the holding device.
7. Never carry any tool by its power cord.

Portable Finishing Sander Parts



Portable Router Notes

Requirements:

1. You should never carry any portable tool by its power cord.
2. Always check your wood for any defect that could cause the stock to tear out and then throw that wood, potentially causing injury.
3. Always use a fence to guide your wood and cut with the grain.
4. Only when your work area is prepared should you plug it in and begin cuffing.
5. Always use a face shield to protect your face.
6. Always check to make sure that you are using the correct bit. Check the chart.

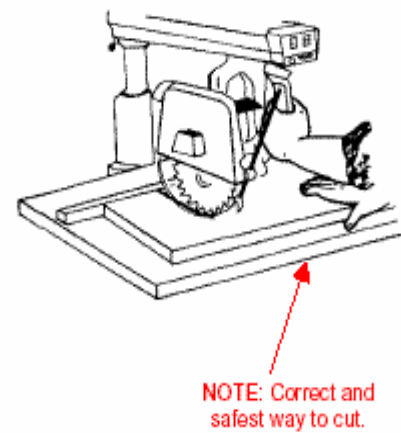
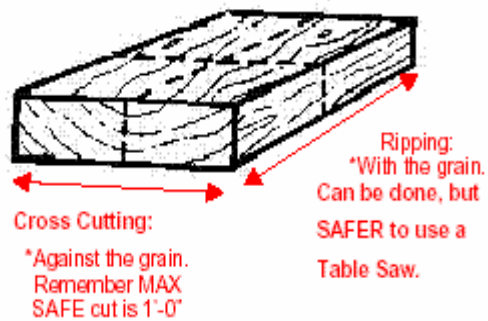
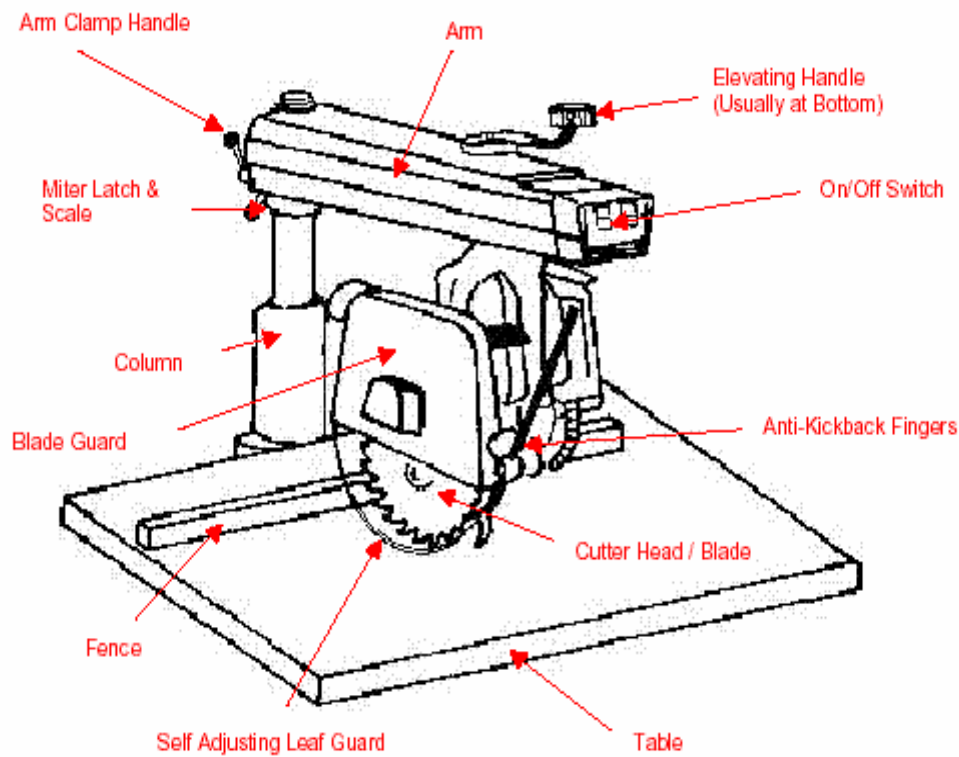
Radial Arm Saw Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. Make all adjustments with the power off and the cutter head behind the fence.
2. Make sure that the cutter is off, place the wood against the fence, and slowly "walk" the blade forward to check your cut mark.
3. Before you make any cut, wait until the exhaust system is turned on and the cutter head is turning at full speed.
4. If cutting long pieces of wood, get your partner to help support the length to your left.
5. Never attempt to cut wood that is wider than 1'-0" Get teacher assistance for stock that is wider.
6. Place the wood against the fence, use your left hand to hold it flush and flat against the table. Stand to the left of the blade and use your right hand to guide the blade across the wood.
7. Always make sure that the blade guard and kick-back fingers are properly adjusted before you attempt to rip the wood.
8. Feed the blade into the wood only as fast as it can smoothly cut without binding or "sticking."
9. Always pull the blade through the wood and return it back behind the fence before making your next cut.
10. Always make sure that the machine is turned off and that the blade has stopped before you leave the machine.
11. As with any machine, if you think that it is not working properly, turn it off, unplug it, and get the teacher(s) to inspect it.
12. Always use common sense when operating this and any machine. Remove your jewelry, tuck your shirt in, wear Z87 safety glasses, work with a partner, and always keep your fingers and body away from the path of the blade.
13. Never, ever, place any part of your body directly in front of or behind the blade.

Radial Arm Saw Parts



Scroll Saw Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. Make all adjustments with the power OFF.
2. Make sure that you are lightly holding the wood flat against the table to keep the wood from bouncing around and possibly being thrown out.
3. Check to make sure that the teeth of the blade are pointing down and that the guide assembly is flush with the wood.
4. Use both hands to guide the wood through the cut. However, hands should remain to the side of the blade, never in direct line with the blade.
5. The scroll saw can hurt you as badly as the band saw. The smaller blade will not save your hand or fingers.
6. Never use your hand to clear the table. Always use a table broom or the chip blower.
7. Scroll saw blades break very easily, so take your time to make the right cuts. Remember, never force the wood and use the correct speed.
8. "Hard" woods and tight curves should be cut using the slower speed.
9. If the blade breaks, turn the machine off, unplug it, and tell the teacher immediately. Never try to fix it yourself.
10. You have to wait patiently and quietly for your turn on this machine, behind the yellow line, just like with any machine.
11. If for any reason you are not sure of the way to cut out an object, get your teacher's assistance. You may have to wait a little while, but you will be helped as soon as possible. Remember, have patience!
12. The machine must be turned off and at a complete standstill before you can leave it.

Scroll Saw Parts

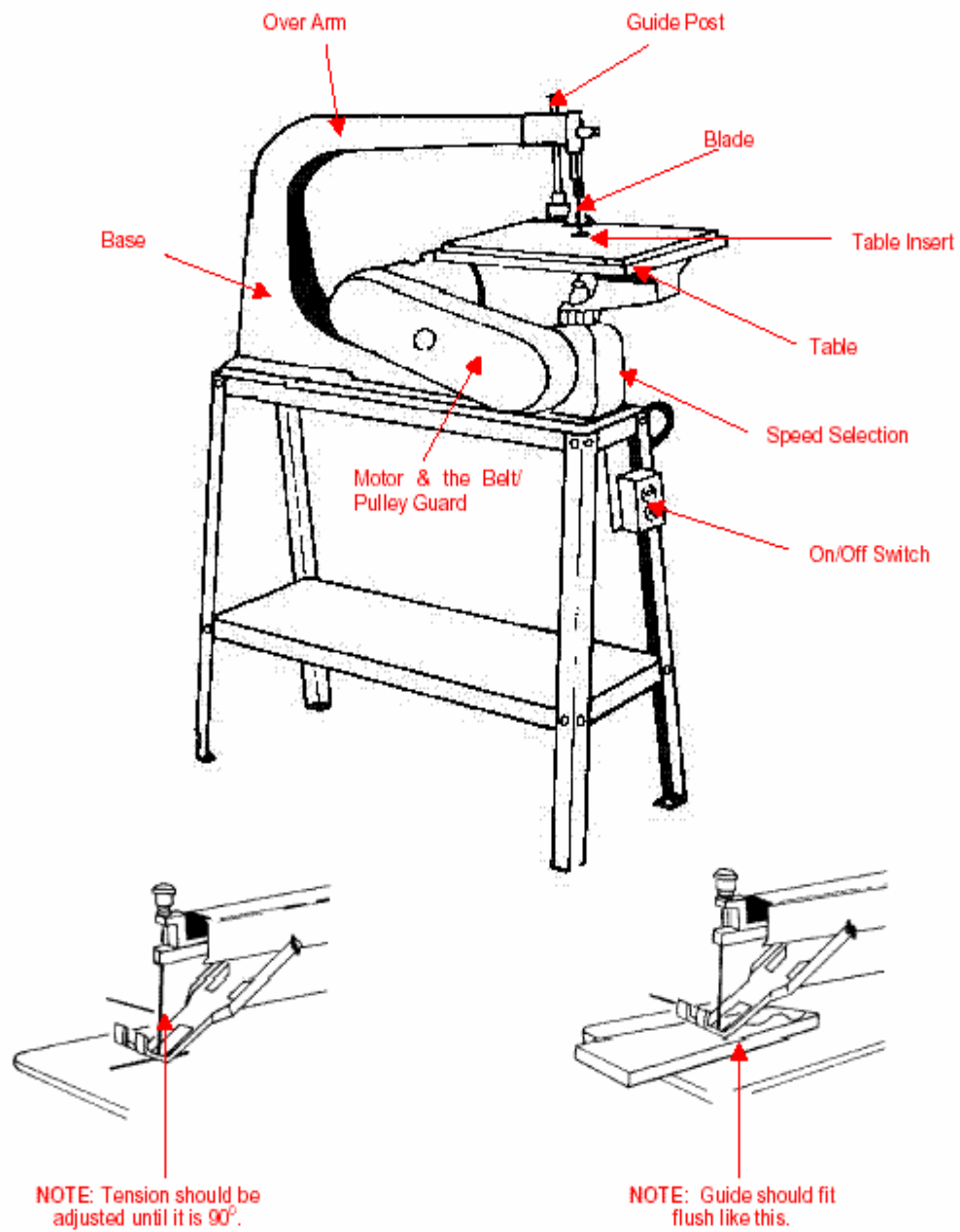


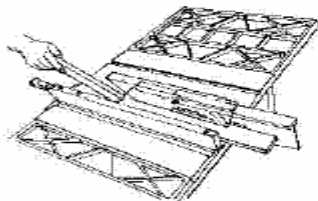
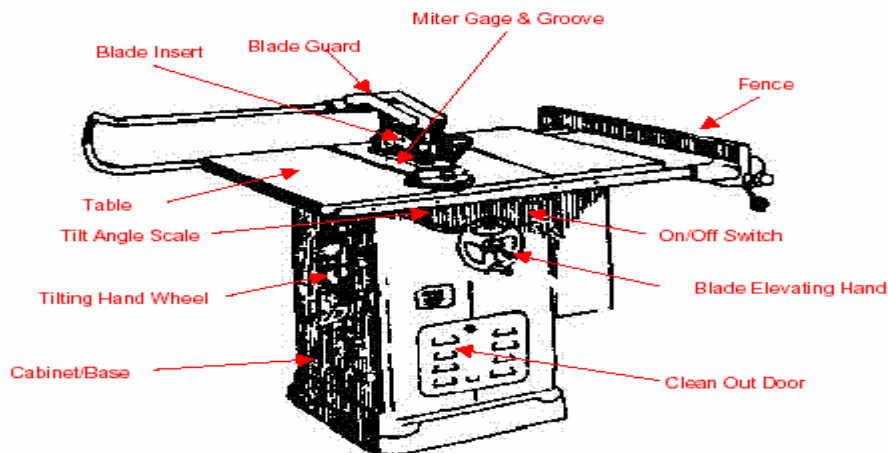
Table Saw Notes

Requirements:

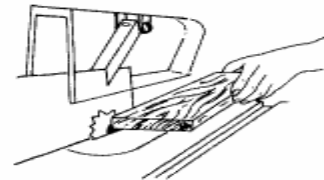
Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. Make sure you are dressed correctly for the job. Remove ties, scarves, jewelry, gloves, and keep long hair tied back.
2. Always wear safety goggles when operating a table saw.
3. Keep guards in place at all times while using a table saw.
4. Stand to the side of the saw during operation. Do not stand in line with the blade.
5. Do not raise the blade more than $\frac{1}{4}$ " inch above the wood's surface.
6. When you are cutting long stock, a helper should support the weight of the wood while the operator does the pushing.
7. Have your instructor inspect all special set-ups and dado heads.
8. Adjustments on the machine should be made with power off and the blade stopped.
9. Use a push stick when ripping narrow pieces of stock.
10. Turn on the exhaust system before beginning work.

Table Saw Parts



NOTE: To be safe always use a Push Stick, Guards, and Help your partner when you cut!



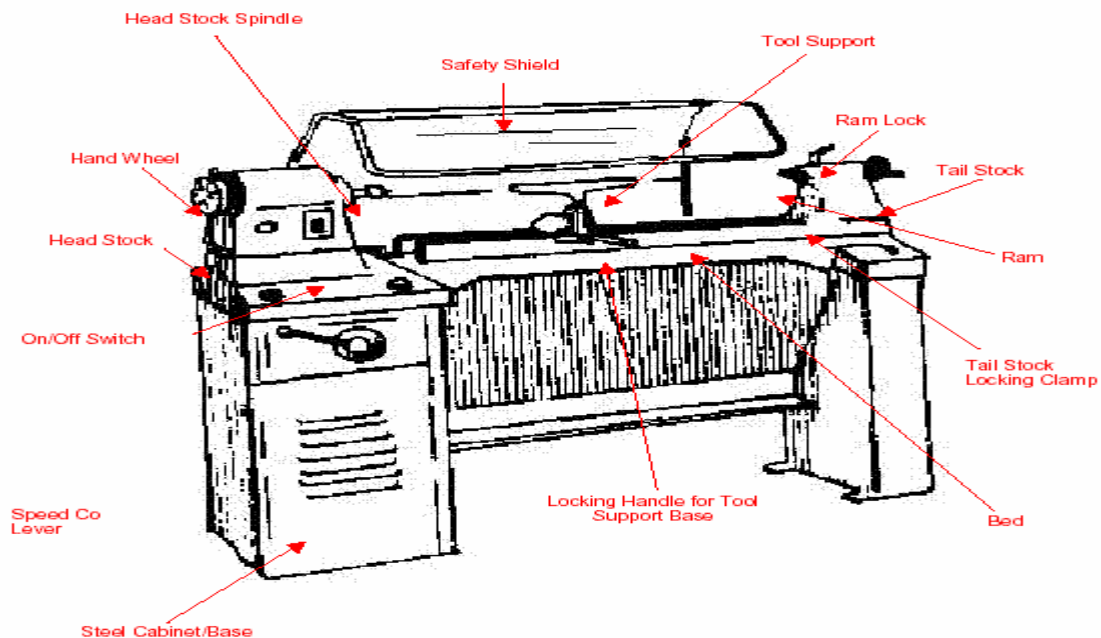
Wood Lathe Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. When operating this machine you must wear proper eye protection, a face shield, pass ALL tests with 100 percent, and have your teacher's permission to operate it.
2. Carefully examine all wood for checks, knots, or other defects before putting it on the lathe.
3. Work must be balanced and securely held between centers or mounted on a faceplate.
4. Rotate spindle by hand to check to make sure that you have enough clearance before starting the turning.
5. Tool rest must be set 1/8" away from the work piece and adjusted to the proper height for the tool being used.
6. Be sure the lathe is running at the proper speed for the operation.
7. You should use caution and common sense to prevent turning tools from catching in the stock.
8. Select and use the correct tool for the cut you plan to make.
9. Even when wearing a face shield, you should also make sure that the safety shield is properly in place.
10. Remove tool rest and base before sanding or polishing.
11. Use a table broom brush to clean off lathe when finished.

Wood Lathe Parts



Wood Lathe

1. Operate only with instructor's permission and after you have received instruction.
2. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Make sure all guards are in place and operating correctly.
4. Always use proper eye protection.
5. The tool rest must be close to the work when cutting tools are being used.
6. The cutting tools must be kept sharp.
7. Do not feel for smoothness of work while machine is running.
8. Work must be centered, balanced, and secured.
9. The tool rest must be removed while sanding.
10. Examine set up and turn work by hand before turning on power.
11. Shut off power while cleaning machine.

Uniplane

1. Operate only with instructor's permission and after you have received instruction.
2. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Make sure all guards are in place and operating correctly.
4. Always use proper eye protection.
5. Be sure switch is in off position before adjusting depth of cut, table tilt, or checking cutters.
6. The guard must be clean and slide freely before beginning the operation. Do not clamp in the up position.
7. Always use push stick or a push block when planing small material.
8. Continue moving the work piece past the cutter head until it is resting against the rear fence.
9. Do not brush chips or dust away from the point of operation until the machine has come to a full stop.

Portable Electric Plane

1. Operate only with instructor's permission and after you have received instruction.
2. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Make sure all guards are in place and operating correctly.
4. Always use proper eye protection.
5. Before connecting to the power source, make sure the switch is in the off position.
6. Make all adjustments with the plane disconnected from the power source.
7. Place front shoe on the work piece, start motor, then move plane over work, keeping pressure and speed constant.
8. Keep fence and the rear shoe tightly against the work piece until the cutter has cleared the work.
9. Keep hands on handle and motor housing away from the cutter head.
10. Be sure of clearance for the motor.

Wood Shaper

1. Operate only with instructor's permission and after you have received instruction.
2. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Make sure all guards are in place and operating correctly.
4. Always use proper eye protection.
5. All adjustments for cutter height and fence position should be made with the power off.
6. Guards and hold-downs should be checked for proper operation.
7. Choose the correct cutter and collars for the operation.
8. Expose only the amount of cutter necessary to do the job. Use additional fixtures if necessary.
9. Always use a starting pin for freehand shaping.
10. Use the smallest table insert possible.
11. Use three-wing one-piece cutters whenever possible.
12. Brush away dust and chips only when the machine has stopped.

GRAPHIC ARTS/ COMMUNICATION TRADES

Hot Glue Gun

Cutter

Platemaker

Drill

Press

Screen Printing

Tools

Photography

Studio Lighting Equipment

Photo Finishing Equipment

Print Dryer

Dry Mount Press

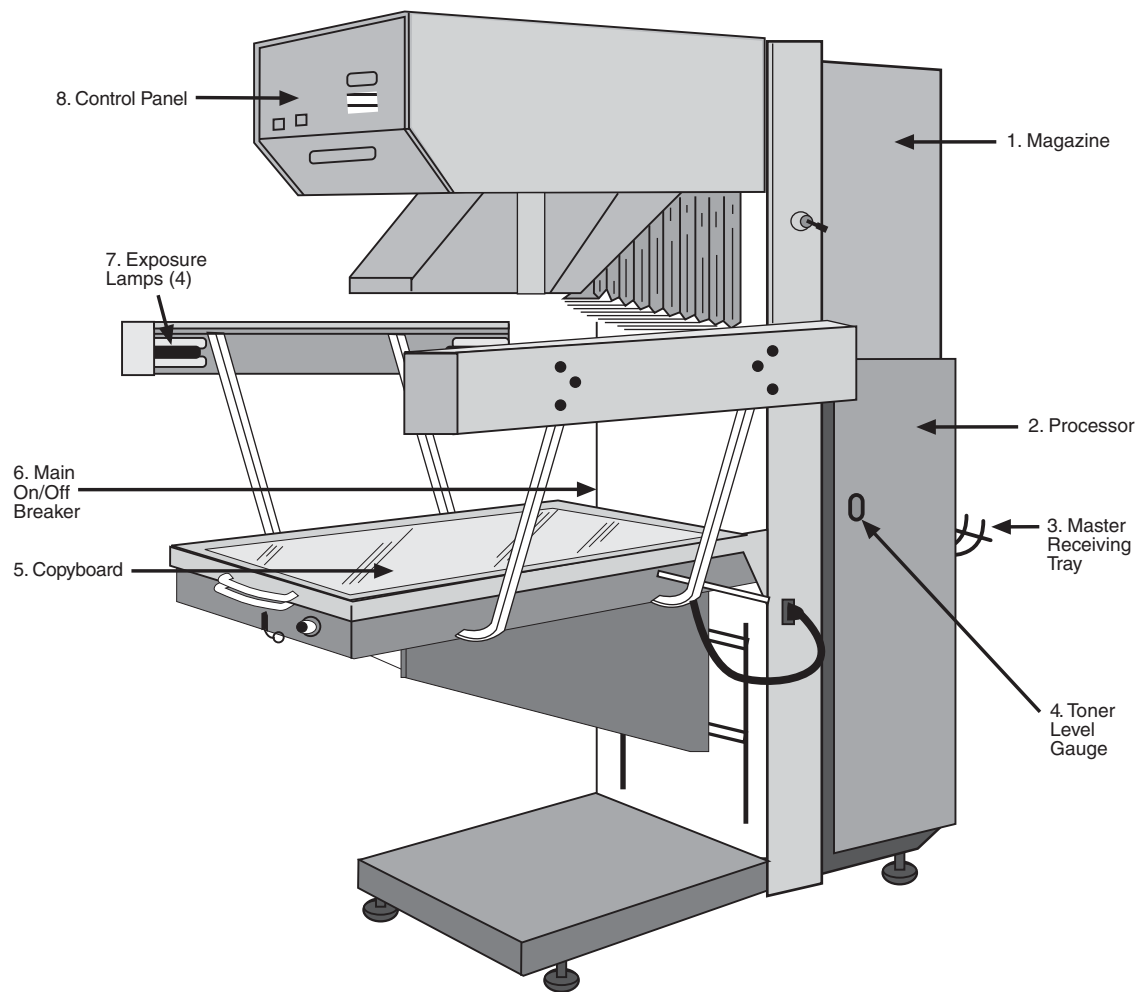
HOT GLUE GUN SAFETY NOTES

You will use a hot glue gun on some activities or projects. A HOT glue gun provides melted glue that dries quickly and provides a very strong bond.

Because the HOT glue can cause burns, you must follow these SAFETY rules when using the gun.

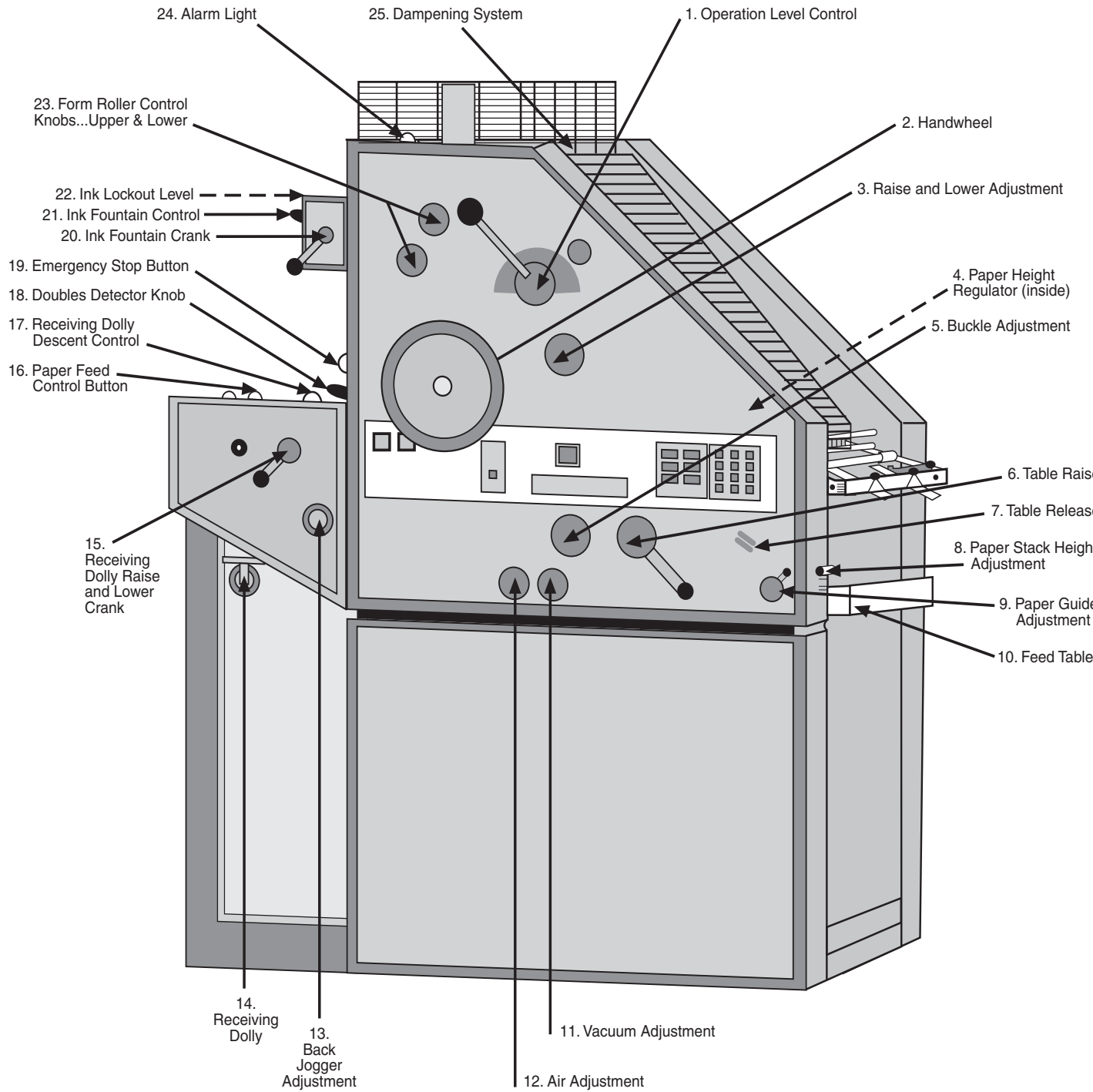
1. Never touch the melted glue or the nozzle of the glue gun.
2. Do not put anything except glue sticks into the glue gun.
3. Use the correct size glue sticks in the glue gun. Do not try to trim a glue stick that is too big.
4. Wait until the glue has melted completely before using it on your project. Test the glue by squirting a small amount on a piece of scrap material. It should be runny and soft.
5. Be careful when holding glued pieces together. Melted glue can soak through thin or porous material and cause burns.



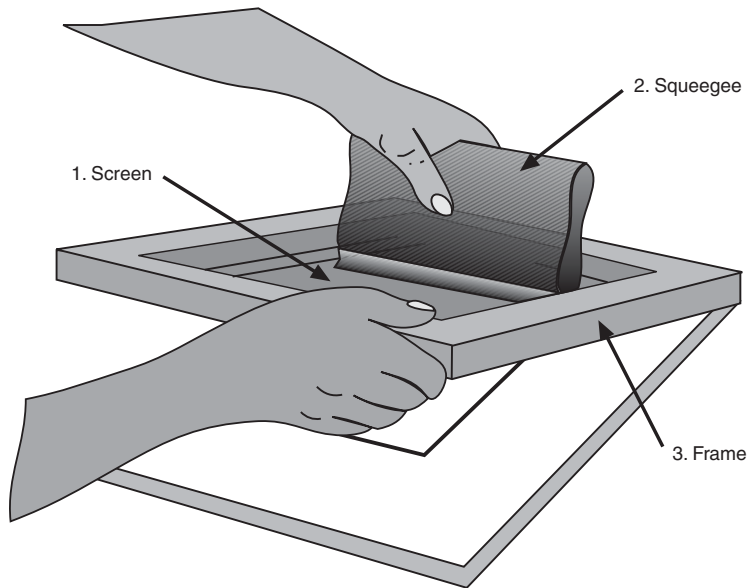


Platemaker

PRESS



SCREEN PRINTER



Photography

1. Obtain the teacher's permission before leaving class on a photography assignment.
2. Secure permission of models and owners of private property before taking photographs.
3. When taking a picture from a car, pull to the edge of the road, stop the car, and put on the brake before beginning to photograph.
4. Never place oneself or one's model in danger when taking a photograph.
5. Treat the camera with care. Do not drop it or place it where it may get banged against solid objects.
6. Do not leave cameras and film in closed cars. The summer sun may superheat them.
7. Before mounting a camera on a tripod, be sure the tripod legs are secure.
8. Never ask a model to look directly into the sun or other bright light.
9. Do not set up foolhardy or dangerous pictures. The photographer is in charge of a photography session and should keep things under control.
10. Be sure to take the necessary training in diving techniques before attempting any underwater photography.

FLASH UNITS

1. Electrical contacts in the camera and the flash unit are to be kept clean. Use a rough cloth or a pencil eraser to clean them before using each new roll of film.
2. Be sure the photoflash batteries are fresh. Alkaline batteries are recommended for their long life and short recovery time. However, units that have unplated brass or copper electrical contacts should use zinc carbon batteries.
3. Use a lamp ejector to eject the spent bulbs. Do not pull the bulbs out by hand. They may break in the hand or foul the fittings.
4. Handle the flashbulbs carefully. Slight cracks may cause the bulb to shatter when fired.

5. Insert the first bulb in a series with the cord or the flash unit disconnected from the camera. If the flashbulb is inserted into a live socket, it may go off in the hand, causing cuts and/or burns if the glass shatters.
6. Always have the flash unit aimed away from oneself and others when connecting it. Several conditions may cause the unit to fire into the eyes as it is connected.
7. Always use a flashguard over the flash unit. Occasionally, flashbulbs shatter. A flashguard will protect both the photographer and subjects.
8. Never allow the flash unit to go off in an explosive atmosphere. Also, do not use flash equipment where there are volatile fumes, such as gasoline, etc.
9. Do not handle the flashbulbs immediately after firing. They are extremely hot and can burn. Use the ejector to eject the spent bulbs into a waste container (when they are cool).
10. Never drop freshly fired bulbs into a recommended voltage. Do not fire the flashbulbs with household current unless they are designed for such use.
11. Fire the flashbulbs only at the recommended voltage. Do not fire the flashbulbs with household current unless they are designed for such use.
12. Do not carry loose bulbs in a pocket or bag. Friction may break or ignite them.

SLIDE PROJECTORS AND MOVIE PROJECTORS

1. Be careful when using projector light bulbs. They become very hot and can cause burns.
2. Be careful not to catch the fingers in the moving gears of the projector.
3. Disconnect the power cord before opening the case to change a burned out light bulb.
4. When changing a bulb, one should be very careful not to crack the bulb and thus cut oneself.
5. Do not put your fingers near moving take-up reels of film, as severe cuts may result.
6. Do not let the projector light shine directly into the eyes of the audience.

7. When using a projector, do not lower the room light so much that the audience could not see to leave in an emergency.
8. Be careful the audience does not trip over extension cords running to the projector.
9. Be sure the projector is set on a solid surface where it will not fall.
10. When the projector session is finished, disconnect power cords and extension cords as soon as possible in order to prevent tripping. Then roll them up neatly and put them away.

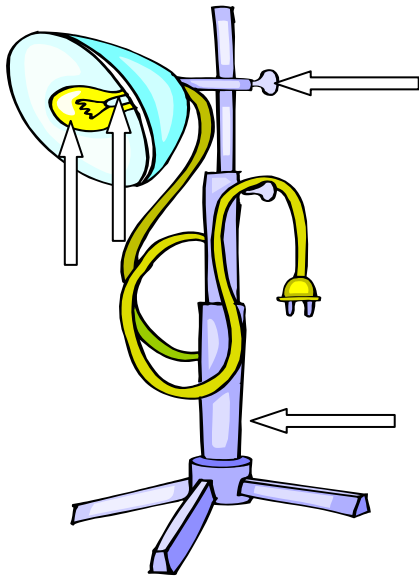
Strobe lights

1. Know how to operate strobe equipment before using it.
2. Be extremely careful not to touch any hot parts.
3. Do not operate strobe lights with a frayed or damaged cord. If an extension cord is necessary, be sure it has suitable amperage rating.
4. Always unplug strobe equipment from the electrical outlet when it's not in use.
5. Let the equipment cool completely before storing it away.

Studio Lighting Equipment

1. Do not handle any power cords or switches with damp hands or while standing on a damp floor.
2. Be sure that all electrical cords and connectors are in good condition before connecting them to the source of power. Tell the teacher immediately if frayed cords are found.
3. Exercise extreme caution with light hazards. The total of all photo lamps connected to a single household circuit should not exceed 1500 watts. Consult an electrician or electrical supply store before setting up a home studio.
4. When raising or lowering the lighting units, use extreme caution in securing the locking devices in order to avoid serious injury.
5. When working with the boom lighting units, use extreme caution to prevent injury from the heavy counter balance units and the possibility of a unit falling on another person.
6. Use caution when handling or moving spotlights. The housings become extremely hot after a few minutes of operation. Also, the bulb life is greatly decreased when the spotlights are moved while they're still hot.
7. Do not place any floodlight reflector or spotlight head directly on the floor of the studio.
8. Take care not to place flammable screen materials too close to or in direct contact with hot lighting equipment.
9. Do not touch any hot lamp with the bare hands or splash any liquid on a hot lamp.
10. After using lighting units, lower all the heads to the lowest possible position, coil the electrical cords, and secure them to the light stand.
11. Be sure all props are firmly secured so they will not fall on models.
12. Tape down any temporary power cords running across the floor so no one will trip over them.
13. Place all studio lighting in such a way that the models do not look directly into the bright lights.
14. To protect the model, never adjust the boom light with the model in place. Always be sure the wing nuts and locks are tightened securely.

15. To adjust boom lights, two students are necessary; one to hold the balance the light, and one to tighten the wing nuts securely.
16. To prevent tripping, return all extension cords and electrical equipment to the proper storage place after each use.



Studio Light

1. Brightness Control (not shown)
2. Tilting Handle
3. Tripod Stand
4. Barn Door Light Frame (not shown)
5. Reflector
6. Quartz Bulb

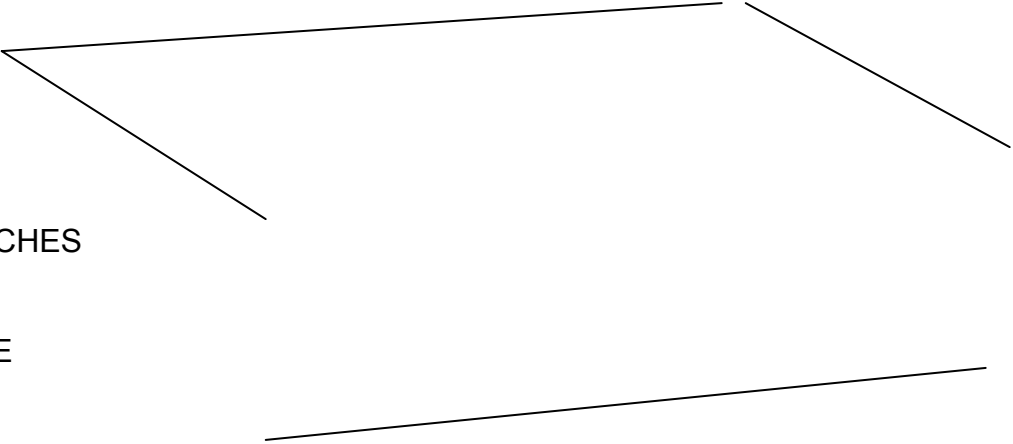
Photo Finishing Equipment

Hand-Operated Paper Cutter

1. Operate only with the teacher's permission and after instructions have been received.
2. Use the paper cutter with great care as it can cause serious cuts and pinches.
3. When operating the paper cutter, keep the fingers behind the safety guard and never remove the guard.
4. To prevent cut fingers, use the safelight when cutting orthochromatic film in the darkroom. For cutting panchromatic film in total darkness, the cutting edge should be coated with fluorescent or luminescent paint.
5. Place a ruler, not the fingers, next to the blade to hold the paper flat.
6. When using a paper cutter, cut only one sheet of paper or film at a time. Do not use the paper cutter to cut anything except paper or film.
7. When finished, always close the cutting blade and fasten it with the safety lock.

CUTTING TOOLS

1. Use all cutting tools (scissors, X-acto knives, matte knife, etc.) very carefully.
2. Keep all cutting tools sharp since dull blades can be dangerous.
3. Carry and store all cutting tools in a safe manner.
4. To prevent serious cuts, never try to catch a dropped cutting tool.

- 
1. SCALE OF INCHES
 2. KNIFE
 3. GUARD
 4. PAPER TABLE

Print Dryer

1. Operate only with the teacher's permission and after instructions have been received.
2. Be careful to avoid burns when using the print dryer. Its surfaces are hot.
3. Be sure the electrical cord to this machine is not worn and is properly grounded.
4. Do not use this machine with wet hands or while standing on a wet floor.

Dry Mount Press

1. Operate only with the teacher's permission and after instructions have been received.
2. When using the dry mount press or tacking iron, students should be careful not to burn themselves.
3. Never test the heat of the press or tacking iron by touching.
4. Do not let your hands come into contact with the platen of the dry mount press. Also, do not close the press on your hands.
5. Dry mount with the heat setting prescribed by the teacher.
6. Do not lay the hot tracking iron down on papers or the counter top. Return it to its proper holder after each use.
7. When closing the platen of the dry mount press, be sure that the print and the mount are the only items under the platen.
8. Turn off and unplug the press or tacking iron when the job is finished.

SPRAY ADHESIVES AND FILM CLEANERS

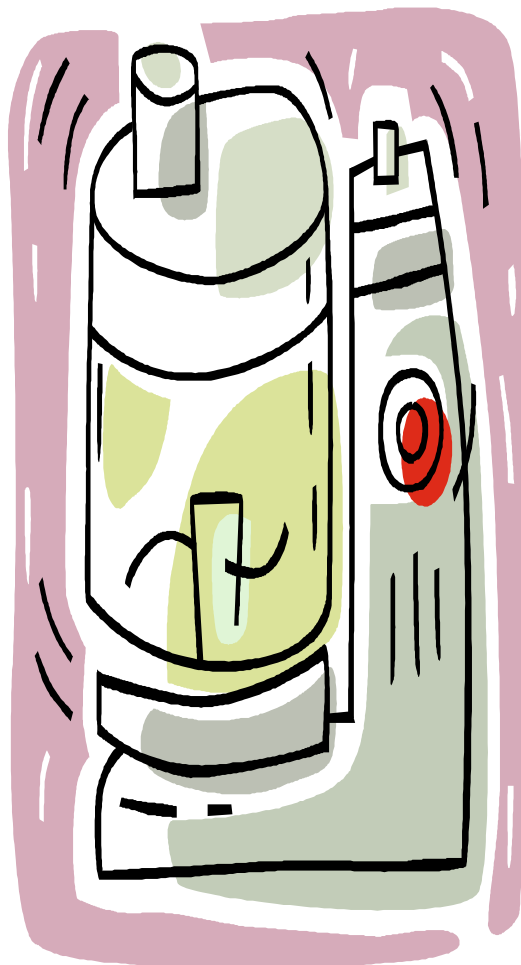
1. Get instructions on how to use these materials properly and safely before proceeding.
2. Use spray adhesives and film cleaners in a well-ventilated place. They are flammable.
3. Avoid breathing the fumes. There is evidence that these fumes can seriously damage one's health.
4. Do not use these materials in areas where others will have to breathe the fumes.
5. Treat these substances just like any other flammable material would be treated.

CULINARY ARTS

Blender
Broiler
Buffalo Chopper
Convection Oven
Conventional Oven
Deep Fat Fryer
Food Processor
Gas Cheese Melter
Gas Range
Griddle
Large Food Mixer
Meat Grinder
Power Meat Saw
Slicer
Steamers
Steam Kettle
Steam Table
Tilting Brazier
Toaster
Vertical Power Shredder

Blender

1. Make sure all legs are in place.
2. Do not fill blender container more than 2/3 full.
3. Make sure blender container is attached to motor securely.
4. Clamp lid on tightly.
5. Start machine on low speed.
6. Do not put any hand tools in container while machine is on.
7. Make sure motor has stopped before removing container.



Broiler

1. Assemble tools necessary to use the broiler (e.g., tongs, wire brush).
2. Before turning on gas broiler, check to ensure that pilot lights are lit.
3. Have dry towels available.
4. Broiler bars must be wire brushed frequently while being used.
5. Broiler must be cleaned regularly to avoid fat build up.
6. Tray at bottom of broiler should be lined with aluminum foil and changed frequently (daily).
7. Ventilating hoods above broiler should be cleaned daily to avoid grease buildup.



Buffalo Chopper

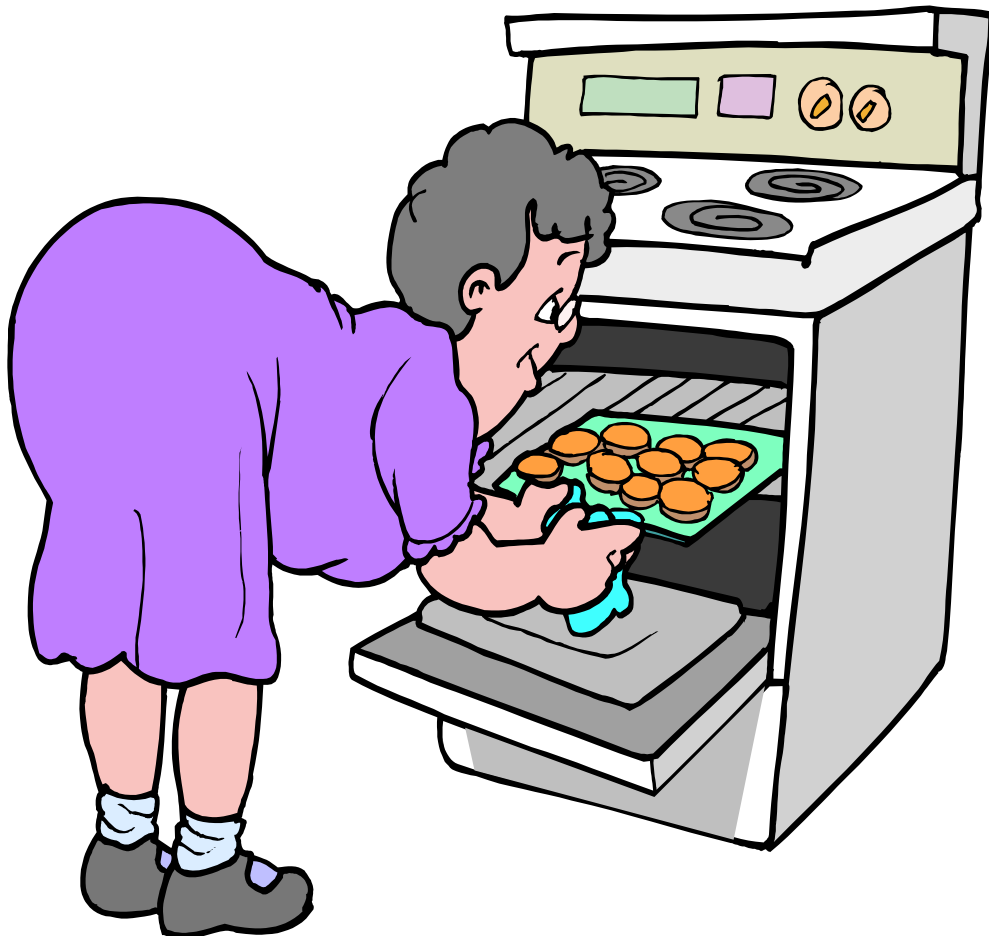
1. Make sure the switch is in the off position while assembling the cutter.
2. Keep hands from under cover or in the bowl when it is operating.
3. Do not lift the lid until knives have stopped revolving.
4. Note that the leader knife is beveled on one side only. This knife is to be on the shaft first nearest the motor.
5. Always turn off machine before switching speeds.
6. Periodic lubrication of the bowl drive gear is needed. A yearly check should be done.
7. Make sure hand knob for knives is tightened before starting machine.
8. Use care not to overload the machine and to add food in such a way that the cuts are fairly uniform in size.
9. When using the attachments on the food cutter, it is a good practice to remove the knife unit.
10. When operating the dicer, slicer or any attachment, make sure the correct knife-cutting frame and pusher plate are assembled according to instructions.

Convection Oven

1. Preheat oven at least 15 minutes before use.
2. Circulating fan must be in operation at all times. Failure to practice this rule will cause the motor to overheat.
3. As with all ovens, always have dry towels or oven mitts available to remove food products.
4. When loading a convection oven, open the door and load quickly to avoid heat loss.
5. If using the timer located on the oven, remember that it does not control the oven temperature.
6. With a convection oven, always keep in mind that the required cooking time is shorter than that of a regular oven. Keep a chart on proper cooking temperatures for your particular oven.
7. Convection ovens must be kept clean. To operate efficiently, check your owner's manual on the proper procedure to clean the interior of the oven.
8. Oven doors must close tightly for proper oven function.
9. Use oven lighting only to check food product. Do not run continuously.

Conventional Oven

1. For gas oven—make sure pilot is lit.
2. When examining contents, pull pans out with shelf rack they are on.
3. Remember inside of door will be hot.
4. Do not use oven door as a shelf.
5. Do not use excessive amount of water when cleaning inside of ovens.
6. Always use hot pads or a dry towel when removing contents from oven.



Deep Fat Fryer

1. Fill the fryer with fat to a level at least 2 inches above the heating elements and turn on heat. **It is important to have the fat extend above heat elements when heat is on.**
2. Do not heat higher or longer than necessary. At no time should the fat be heated over 400 degrees.
3. Keep the fryer free of sediment and salt.
4. Fryers should be placed where there is sufficient ventilation to prevent fire.
5. Do not overload fryer with food to prevent splattering.
6. Check the outlet to be sure that it is closed. Melted fats on floor are highly hazardous to all kitchen workers.
7. Submerge basket into hot fat cautiously in the event that moisture of food causes hot fat to bubble up.
8. Wash fryer with detergent and hot water, rinse with vinegar solution, then again with water. Dry fryer and elements before using again.
9. When fryer is on standby, the thermostat should be lowered to 200 degrees.



Food Processor

1. To protect against risk of electric shock, do not put base or motor in water or other liquid.
2. Unplug cord from outlet when not in use, before putting on or taking off parts, and before cleaning.
3. Do not operate with a damaged cord or plug.
4. Always use attachments that are made for your processor.
5. Never feed food into chute by hand when slicing or shredding; always use a food pusher.
6. Because blades and discs are sharp, handle carefully.
7. Blades or disc should come to a full stop before removing cover.
8. Never attempt to defeat the locking system of the processor. It is there for a safety reason.
9. Never use more products than the bowl will accommodate.
10. Do not use near hot surfaces. The cord may melt and cause injury to operator.

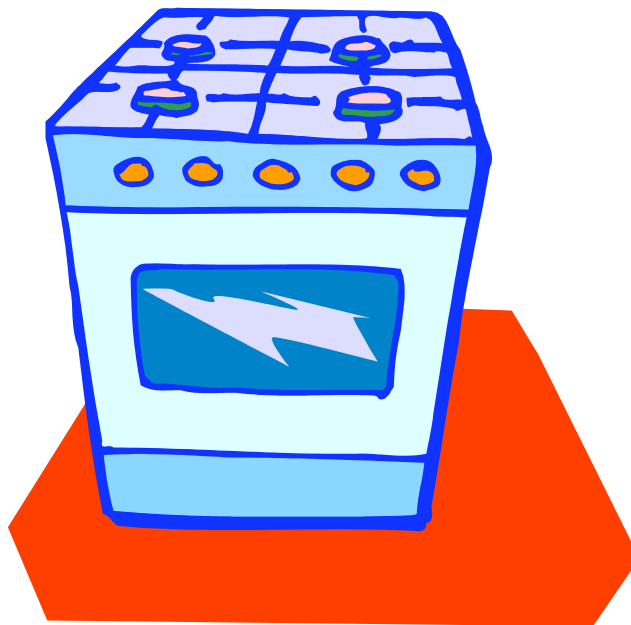


Gas Cheese Melter

1. Make sure pilot is lit before turning machine on.
2. Check heating element for proper ignition while turning on.
3. Keep top and sides free of any excess grease.
4. All outer surfaces will be hot during operation.
5. Clean inside of melter frequently to prevent grease fires.
6. Use hot pads or towels when removing items from the melter.
7. Do not let top of food touch heating element.
8. Do not do "broiling" in the cheese melter.

Gas Range

1. Wear an apron to keep clothes tight to your body, and keep sleeves rolled or tight.
2. Dry towels, oven mitts, and/or hot pads are a necessity.
3. Be careful not to allow towels, etc., to be ignited.
4. Check pilot light before turning on stove or oven.
5. Be sure gas knobs are turned off before relighting pilot light.
6. Be sure burners are off when not in use.
7. Pan handles should be kept inward.
8. Remove covers away from you to prevent steam burns.
9. Keep soda or salt on hand in case of grease fires.
10. Be sure floors are kept clean and grease free.
11. Never use water for a grease fire.



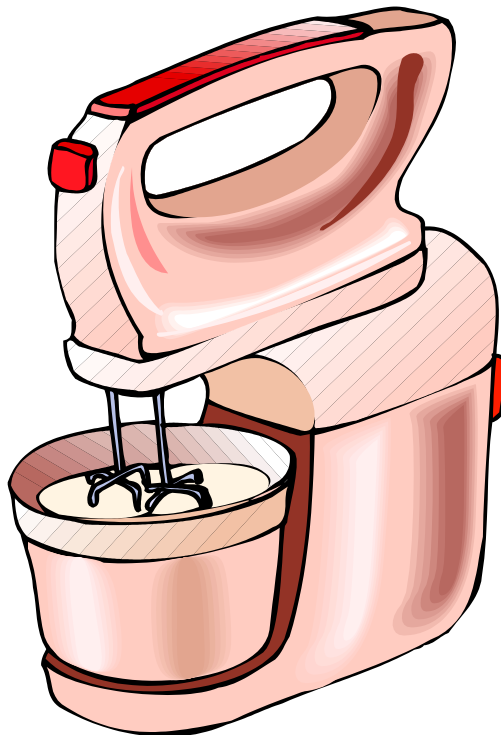
Griddle

1. Always assume that the griddle is hot.
2. Pan handles and tools should always lie inward.
3. Make sure exhaust fans are on during cooking and cleaning time.
4. Salt and soda should always be on hand in case of fire.
5. Keep check on your temperature setting.
6. Be sure all catch pans are clean
7. Floors should be kept clean and grease free.
8. Clothing should not be loose, making it possible to drag in hot grease.
9. Wiring should be checked and kept in good condition.
10. When putting ice or water on griddle for cleaning, watch out for steam burns.
11. Be careful in case the grill brick rolls.
12. Be careful not to splash oil.



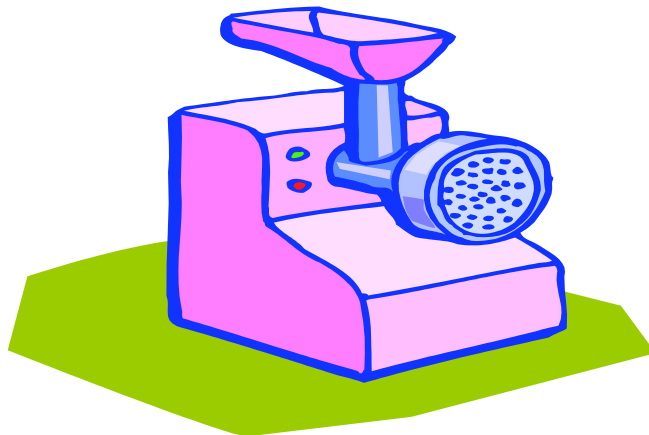
Large Food Mixer

1. Check the mixer bowl for cleanness.
2. When placing the mixer bowl on the mixer support arm, make sure all three securing points are correctly inserted. There are three points. Two points are at the side and one is located on the back of the mixer bowl.
3. Insert the proper mixing attachment onto the mixer shaft. **Caution:** Use care when whipping food products that are hard. The whip tines can be bent or broken.
4. Check the mixer speed before turning the machine on. Never change speeds while the mixer is operating. Raise the mixer bowl before starting the mixer. Operate the mixer at a safe and proper speed.
5. Never place your hand or cooking utensil into the mixer bowl while the mixer is operating. Wait until the machine is completely stopped.
6. Lower the mixer bowl to remove mixer attachment.
7. Do not attempt to lift a heavy mixer bowl. Ask for assistance or use the proper mixer bowl dolly.



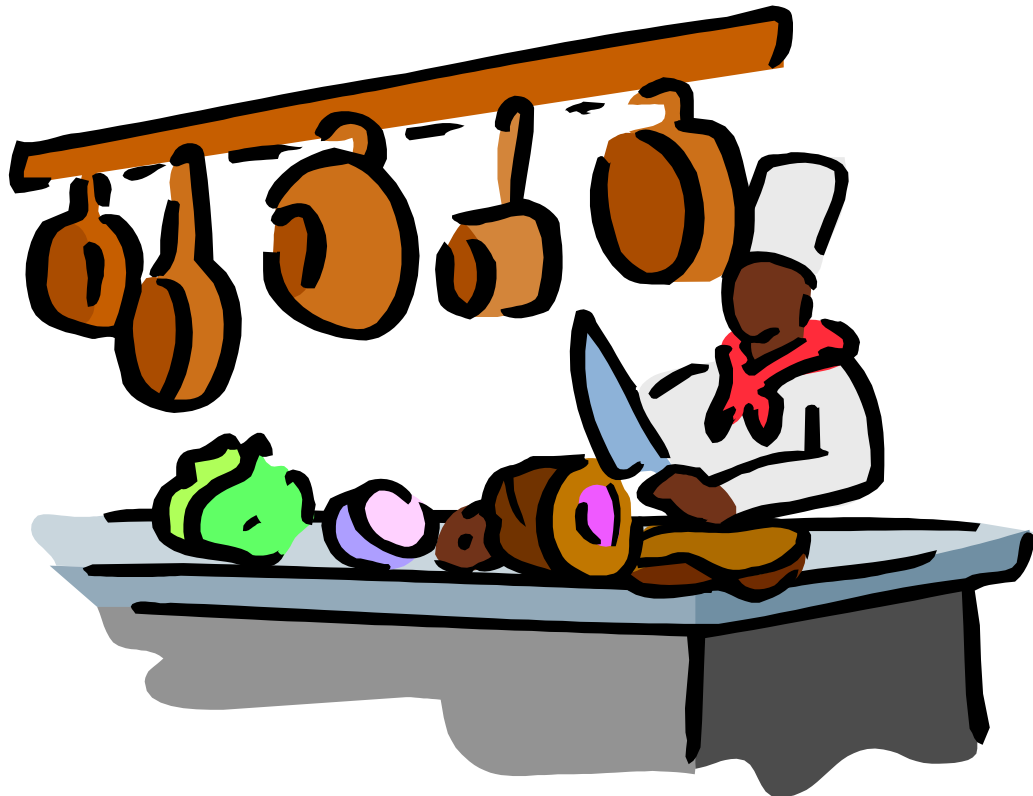
Meat Grinder

1. It is good practice to keep all the grinder parts in one drawer or shelf. This keeps parts from being misplaced.
2. When assembling the grinder, insert the grinder body into the hole at the top of any food mixer. You may have to remove the access plate to expose the hole. Tighten the thumbscrew securely.
3. Insert the worm gear into the grinder body. Make sure the fiber washer is on the end with the large square shaft end. Rotate the worm until it slides all the way into the drive hole.
4. Place the cutter blade with the edges facing out.
5. Select the desired grinding plate and push up against the cutting blade. Rotate the plate until the notch fits into the small peg at the bottom of the grinder body.
6. Thread the hand nut onto the threads of the grinder body, snug the hand nut to the grinder plate, and give a $\frac{1}{4}$ (quarter) turn to properly secure the parts together.
7. Place feed tray on top of feed tube on grinder body.
8. Set mixer speed to desired setting (usually #3).
9. Place product to be ground into feed tray. Turn on machine. **Caution:** Always use stomper to push product down feed tube.
10. Cut pieces to be ground small enough to easily fit down feed tube.
11. Place a cart or stand below grinder plate and place bowl close to grinder end.
12. Food wrap should be draped over the end of the grinder. This will keep product from falling straight down into the bowl.



Power Meat Saw

1. Make sure saw is on level surface.
2. Check saw for proper set-up before turning on.
3. Turn saw on briefly and listen for proper set-up before adding meat.
4. Use all safety guards in operating.
5. Use truck to push meat through saw, not “free hand.”
6. Keep mind on task while working on machine.
7. Shut saw off and disconnect power before cleaning.
8. Turn saw off if blade “binds” while cutting. Do not wiggle or force product through blade.
9. Do not open blade covers while power is connected.
10. Be careful not to get water in motor during cleaning.



Slicer

OPERATING SLICER

1. Make sure slicer is put together properly and tightly.
2. Procedures for slicing:
 - a. Plug slicer in.
 - b. Adjust blade for desired thickness.
 - c. Position food to be sliced
 - d. Secure food with end weight.
 - e. Turn on.
 - f. Slice using end weight and handle only for motion.
3. Do not force food.
4. People coming up behind slicer operator should use caution not to be distracting.
5. Think “caution”—be careful of quick movements.
6. Turn slicer off for loading and unloading of food.
7. Always be sure blade has stopped before going any further.
8. Close blade all the way when not in use.
9. Be sure all wiring is in good condition.
10. Keep floor area clean.

CLEANING SLICER

1. Procedure
 - a. Turn off—never attempt to clean until blade has completely stopped.
 - b. Close blade all the way.
 - c. Pull plug from socket.
2. Wash blade from side.
3. Be careful not to hit blade when removing food tray.

SHARPENING SLICER BLADE

1. The blade should always be kept sharp.
2. Do not use hand sharpener. Use the one on the machine, which is designed for it.
3. Be careful to clean blade from the side after sharpening.
4. The chef or supervisor should be consulted for supervision when sharpening machine.

Steamers

1. Hand protection—hot gloves should be worn at all times.
2. Make sure pan supports are securely in position or door may not close sufficiently to produce proper steaming of product.
3. Close door and engage latch and lock the door handle in upright position before starting cooking cycle.
4. Do not force door at end of cooking cycle; wait until pressure reaches zero.
5. During stand-by periods, allow power to remain on with door ajar.
6. Wash and brush inside of cooker daily and do not allow food particles to fall into drain.
7. It is recommended at least once a week that the safety valve be operated manually while the steamer is pressurized. Use a long-handled kitchen tool to protect hands from steam blow down.
8. Automatic thermostat holds the cooking temperature in chamber at approximately 360°F. Should the circuits malfunction, a safety thermostat opens at a temperature between 450 to 470°F.
9. Door gaskets should be kept clean and free of food to prevent steam escaping, which may cause burns.

Steam Kettle

1. Always assume that the steam kettle is not.
2. Lift lid away from you to avoid steam burns.
3. Use proper equipment—long tongs, spoons, ladles, or paddles.
4. Do not leave utensils in tank.
5. When emptying, watch out for splashing.
6. Always be sure floor area around kettle is clean and dry.
7. Hot pads, oven mitts, and dry towels are essential.
8. When bleeding the lines (which should be done daily), wear heavy rubber gloves.
9. Be sure all wiring is wrapped and not frayed.



Steam Table

1. Always assume that it is hot.
2. Add water before turning on.
3. Be careful to use the correct amount of water.
4. Do not leave utensils in pans
5. Lift lids away from yourself and others on both sides of table.
6. Be sure that people around you are aware that you are removing pans.
7. Hot pads, oven mitts, and dry towels are a must.
8. Be sure all wiring is in good condition.
9. The underneath side of the steam table does get hot, so avoid touching the area.
10. To empty steam table, always turn off and allow water to cool. Scoop all water out until the remainder can be removed with a cloth.



Tilting Brazier

1. Follow the owner's manual for your model in terms of starting the unit. (i.e., gas, or electric).
2. Never allow the unit to overheat when empty as this can cause warpage of the pan bottom. Do not heat an empty pan for more than 5 minutes at a setting higher than 300° F.
3. If possible, use wooden utensils in the brazier to avoid "dinging" the pan bottom.
4. Use the hand crank or electric switch to raise or cover the pan. Do so slowly to avoid spilling contents.
5. If the pan contains items in sauce or melted fat, they can slide forward suddenly during tilting and splash out the hot liquid.
6. Any item prepared will be easier to handle if the pan is first preheated.
7. Close the lid to braise or stew. Leave the vent open to vent out excess steam.
8. The unit will not heat any faster if the thermostat is turned to its highest setting.
9. When pouring liquid items out the pouring spout, try to place the bucket or pan as close to the spout as possible to avoid splashing.
10. To clean the unit, clean while still warm, but not hot. Use a mild detergent and rinse well.
11. When cleaning the electrical type of brazier, use caution, as the control box is not waterproof.

Toaster

1. Make sure cord is in good condition.
2. Make sure table area is dry.
3. At no time should metal be stuck in toaster.
4. Unplug toaster before trying to remove stuck toast.
5. Use wood or plastic utensils to remove stuck toast.
6. Inside filaments are very fragile. Care should be taken not to break them when removing stuck pieces of toast.
7. Little or no water should be used when cleaning outside of machine.
8. Never lift toaster by placing fingers in toaster slot.



Vertical Power Shredder Attachment for Mixer

1. Make sure back case is securely attached to motor.
2. After assembling, briefly turn on machine, on low speed, to check for proper set-up.
3. Be sure to keep hands and fingers out of feed plate area during operation.
4. Keep apron strings, hair, and sleeves away from moving parts.
5. Always feed food into slicer or shredder with plunger.
6. Never open front door assembly while operating machine.
7. Never reach up into the shredder outlet while operating machine.
8. Never attempt to adjust parts while machine is on.
9. Set machine up in area that will allow room for catch pan to sit on secure surface.
10. Never force food into machine, let the machine set the pace.
11. Always replace motor hubcap after removing attachment.

TECHNOLOGY EDUCATION

Hot Glue Gun
Robotics
Soldering Station

HOT GLUE GUN SAFETY NOTES

You will use a hot glue gun on some activities or projects. A HOT glue gun provides melted glue that dries quickly and provides a very strong bond.

Because the HOT glue can cause burns, you must follow these SAFETY rules when using the gun.

1. Never touch the melted glue or the nozzle of the glue gun.
2. Do not put anything except glue sticks into the glue gun.
3. Use the correct size glue sticks in the glue gun. Do not try to trim a glue stick that is too big.
4. Wait until the glue has melted completely before using it on your project. Test the glue by squirting a small amount on a piece of scrap material. It should be runny and soft.
5. Be careful when holding glued pieces together. Melted glue can soak through thin or porous material and cause burns.



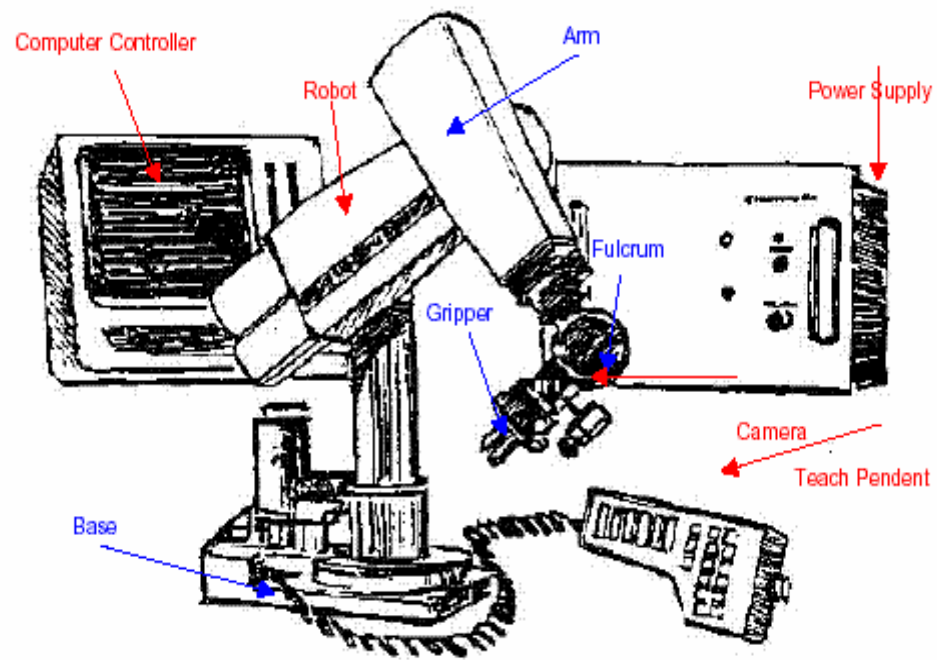
Robotics Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. Operate only with instructor's permission and after you have received instruction.
2. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Make sure all guards are in place and operating correctly.
4. Always use proper eye protection.
5. When in the teach mode, use slow movements to jog the arm from point to point.
6. Be sure the emergency stop button is functioning properly by testing it early in the teach cycle.
7. Care should be taken that the operator's fingers and other body parts are kept out of the work envelope.
8. The operator must understand the program of robot actions and motions prior to the use of the robot.

Robotics Parts



Soldering Station/Pencil Notes

Requirements:

Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

1. Operate only with instructor's permission and after you have received instruction.
2. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Make sure all guards are in place and operating correctly.
4. Always wear eye protection.
5. Avoid serious burns by treating all soldering equipment as though it was hot.
6. Always place equipment back in holder after use. Never lay it on the bench.
7. Handle all soldering equipment with caution.
8. Solder over the bench top to prevent hot solder from dropping on the operator's legs.

Soldering Station/Pencil Parts

