



COLLEGE of CENTRAL FLORIDA
ADMINISTRATIVE PROCEDURE

Title: Applied Welding Safety Program	
Page 1 of 21	Implementing Procedure for Policy 8.05
Date Approved: 11/26/03 Date Revised: 04/18/05 Date Revised: 04/23/10	Division: Instruction

1.1 PURPOSE:

The purpose of this procedure is to establish guidelines and provide information for the establishment of a safe working environment for students in vocational and technical training classes. Consult the CF Safety Management Manual for further information.

1.2 PROCEDURE:

Safety Training

Safety Training should be conducted at the beginning of each semester or prior to the individual using a specific piece of equipment. The training should be documented on the enclosed Training Record. These records should be maintained for a period of 3 years and are subject to inspection and audit by the CF Public Safety Department or State of Florida Department of Education or other agencies.

It is reasonable and prudent for an instructor to provide all students with adequate safety training. This could include, but it not limited to:

- Safety demonstrations – attentively watched by all
- Safety videos
- The proper and adequate wearing of personal protective equipment (PPE) appropriate to the industry or program area.
- Safety quizzes and tests, etc.
- Students demonstrate proficiency in facility, tool, and equipment safety to the instructor, who uses his or her professional assessment in allowing the student to utilize shop facilities.

GENERAL SAFETY PRACTICES

BODY MECHANICS

1. Use proper muscle groups and distribute any weight.
2. Both hands should be used to pick up heavier objects.
3. Lifting heavy objects alone should be avoided. Help should be requested.
4. Pushing should be preferred to pulling.
5. Leg muscles should be used to lift heavy objects rather than back muscles.
6. Bending and unnecessary twisting of the body for any length of time should be avoided.
7. Work should be done at the proper level.
8. Two people carry long pieces of equipment.
9. Do not lift heavy loads above shoulder level.

PERSONAL PROTECTION

1. Confine long hair so that it is not exposed to machinery and does not interfere with vision.
2. Require the wearing of safety goggles, glasses, or other eye protection when there is a danger of eye injury.
3. Provide respirators for use where harmful dusts or fumes exist. ** Respirator use requires appropriate certification, fit testing, and supervision to insure that there is proper fit, training, and inspection are all taking place.
4. Determine the physical defects and limitations of all students so that they will not be assigned tasks detrimental to their health or physical condition.
5. Prohibit the wearing of loose clothing in the laboratory and shop areas.
6. Require students to remove rings and other jewelry while working in the laboratory and shop areas.
7. Where noise levels are excessive over long periods of time, ear protection should be worn.
8. Protective apparel, including safety shoes, aprons, shields, and gloves, are worn properly as required by the nature of the task.
9. Provisions are made for cleaning and sterilizing respirators, masks, and goggles.
10. Head protection is worn in all areas where there is danger of falling and/or flying objects.

FACILITY CONDITION

1. Aisles, machines, benches, and other equipment should be arranged to conform to good safety practices.
2. Stairways, aisles, and floors should be maintained, clean, dry, and unobstructed with no protruding objects.
3. Walls, windows, and ceilings should be clean, maintained in good repair, and free of protrusions.
4. Illumination should be safe, sufficient, and well placed.
5. Ventilation and temperature controls should be proper for conditions.
6. Fire extinguishers and other necessary fire equipment should be properly selected, adequately supplied, properly located, inspected, and periodically recharged as required.
7. Exits should be properly identified and illuminated.
8. Lockers and drawers should be clean, free of hazards, and doors kept closed.
9. Personnel should know the procedures for notification of fire and evaluation of premises.
10. Laboratories and workplaces should be free from excessive dust, smoke, and airborne toxic materials.
11. Utility lines and shutoffs should be properly identified.
12. Stairways, floor openings, and overhead storage areas should be properly guarded with rails and toe boards and have the proper clearances.

HOUSEKEEPING PRACTICES

1. Provide for the storage and daily removal of all sawdust, metal cuttings, rags, and other waste materials.
2. Provide properly marked boxes, bins, or containers for various kinds of scrap stock and rags.
3. Utilize sturdy racks and bins for material storage, arranged to keep material from falling on students and to avoid injuries from protruding objects.
4. Employ a standard procedure to keep floors free of oil, water, and foreign material.
5. Provide for the cleaning of equipment and facilities after each use.
6. Provide regular custodial service in addition to end of class cleanup.
7. Prohibit the use of compressed air to clean clothing, equipment, and work areas.
8. Keep walkways and work areas free of all obstructions.
9. Floor surfaces must be maintained in a “nonskid” condition.
10. Tools and materials are stored orderly and safely.
11. File cabinets and other tall cabinets are required to be anchored.

EQUIPMENT

1. All equipment should be operated in accordance with specifications as stated in the owner’s manual.

2. Machines and apparatus should be arranged so that operators should be protected from hazards of other machines or passing individuals.
3. Point of operation zones should be properly identified and guarded.
4. Permanent enclosure guards properly protect pulleys, gears, and belts.
5. Guards should be removed only for repair purposes and then replaced immediately.
6. Equipment control switches for each machine should be easily available to the operator.
7. Machines should be turned off when the instructor is out of the room and/or if the machine is unattended.
8. Proper cleaning equipment is used (avoid air for cleaning purposes).
9. Nonskid areas should be maintained around dangerous equipment.
10. A preventive maintenance program should be established for all equipment.
11. Machines should be guarded to comply with code.
12. Cutting tools should be kept sharp, clean, and in safe working order.
13. All hoisting devices should be maintained in a safe operating condition and specified load ratings should be easily identified.
14. Machines that should be defective or being repaired should be clearly marked and made inoperable by locking out the machine power switch.
15. Machines and apparatus should be marked with proper color code.
16. Equipment cords and adapters should be maintained in a safe working condition.
17. Adjustment and repair of any machine should be restricted to experienced persons.
18. Ladders should be maintained and stored properly.
19. Machines designated for fixed location should be securely anchored.

HAND TOOLS

1. Instruct students to select the right tools for each job.
2. Establish regular tool inspection procedures to ensure tools are maintained in safe condition.
3. Instruct students in the correct use of tools for each job.
4. Provide proper storage facilities.
5. Do not lay tools on operating machinery or equipment.

6. Keep tools out of aisles and working spaces where they may become tripping hazards.
7. Do not put sharp objects or tools in pockets. This could result in cuts or being stabbed.

GENERAL USE OF TOOLS

1. Keep cutting edges sharp and carry in a sheath or holster made for that purpose.
2. Report defective (worn, damaged and etc.) tools promptly to your supervisor for repair or replacement.
3. Keep tool handles free from splinters, burrs, etc. Handles must be tight on the head and free of cracks or splits.
4. Do not use impact tools such as hammers, chisels, punches or steel stakes that have burred heads. Dress heads to remove burrs or chipped edges.
5. When handing a tool to another person, direct sharp points and cutting edges away from both you and the other person.
6. Use only insulated tools when working around energized electrical circuits or equipment.
7. When using a knife, pliers, or other cutting tools, avoid directing the blade toward yourself. Cut away from your body and stand clear of others.
8. Do not carry hand tools in your pockets, such as screwdrivers, scribes, aviation snips, scrapers, chisels, files, etc.

Files/Rasps

1. Never use a file as a pry.
2. When using a file or rasp, grasp the handle of the file or rasp in one hand and the toe in the other.

Hammers

1. Do not use hammer with cracked, broken, splintered or loose handle. It must be securely set in the head. Replace loose or damaged wooden handles and discard hammers with damaged metal or fiberglass handles.
2. Do not use hammer with oily, greasy or wet hands.
3. Use the claw for pulling nails. Do not use as a pry or wedge, or for pulling spikes.

4. Never use a hammer with a hardened face on tempered, machined or hardened surfaces. Rawhide, plastic, rubber, lead, brass or copper hammers will prevent damage to parts and also eliminate the danger of flying chips of metal.

Knives

1. Do not place the hand or fingers over the back of a knife blade while it is in use.
2. Do not try to catch a falling knife. Move out of its path, allow it to fall, and then pick it up.
3. Always cut away from the body.
4. Keep knives sharp.
5. Replace knives with worn handles.
6. Use knives with retractable blades when available.

Pliers

1. Never cut through live wires; turn off the current first. Use insulated pliers for electrical work.
2. When using diagonal cutting pliers, place the free hand over the ends of cotter pin, safety wire or whatever is being cut; this will prevent the loose ends from flying and causing possible eye injury.

Saws/Hacksaw

1. Adjust blade (hacksaw) so that it is taut in the frame before using.
2. Keep saw blades sharp.

Screwdrivers

1. Select the correct size and type of screwdriver to fit the job.
2. Never use a screwdriver as a chisel or as a substitute for a pinch bar or pry bar. (Exceptions are dry point and impact screwdriver).
3. Do not put fingers near blade when tightening a screw.
4. For electrical work, use only screwdrivers that have insulated handles of nonflammable material.
5. Do not use screwdrivers to tighten/loosen screws on hand-held objects.

Wrenches

1. Do not use a makeshift wrench.
2. Do not use a wrench if the jaws are cracked or worn.
3. Always use box or socket wrenches on hexagon nuts and bolts as a first choice, and open end wrenches as a second choice.
4. When using an adjustable wrench, always place it on the nut so that the pulling force is applied to the stationary jaw side of the handle.

5. Never use a piece of pipe, tubing or another wrench to extend the handle of the wrench in order to secure additional leverage.
6. Do not use wrench with oily, greasy or wet hands.

Machines/Power Tools (General)

1. Operate a machine only after you have received thorough instructions and advised by your supervisor that you are qualified to operate that machine.
2. When working around machinery, do not wear loose clothing, torn sleeves, ties, key chains, rings, watches or any item that could become entangled in the machinery.
3. Use a hair net, rubber band, cap, clamp or other mechanism approved by your supervisor to contain long hair when working around machinery such as drills, grinders, power saws and other machinery with exposed rotating parts.
4. Make all adjustments with the power off.
5. Never attempt repair on live circuits, electrical appliances, power tools, cables or wiring unless you are licensed/certified and authorized by your supervisor.
6. Inspect all portable power tools before operating, including power cables, extension cords and adapters. Do not use if defective or damaged.
7. Use "ground fault circuit interrupter" (GFCI) protected circuits to operate all portable power tools.

Drills

1. Adjust the table or depth stop to avoid drilling into the table.
2. Securely lock drill bit or cutting tool into chuck.
3. Always wear eye protection (safety glasses or a face shield) when using drills.
4. Always keep finger on the portable drill switch so that power may be shut off instantly.
5. Do not use distorted or bent drill bit.
6. Disconnect extension cord before attempting to loosen a chuck on portable drills.
7. Discontinue using a drill, which overheats. (Hot to the touch or smells of burning wire.)
8. Secure work piece before drilling.

Grinders

1. Adjust tool rests to within 1/8" of the abrasive wheel and thoroughly tighten it in place.

2. Adjust movable tongue guard to within 1/4 inch of the abrasive wheel.
3. Inspect the wheels for chips, cracks or grooves on the face or side before turning on grinder. Do not use wheels if any of these problems are recognized.
4. Dress grinding wheels on the face only.
5. When grinding, use the face of the wheel only.
6. If the grinding wheel vibrates, do not use it. Tag it out of service and report it to your supervisor.
7. Do not touch ground portion of work piece until you are sure work piece has cooled.
8. When finished using the grinder, shut off the power and do not leave until the wheel has come to a complete stop and the work area is clean.
9. Do not operate grinders near flammable containers or where gasoline fumes are present.

Saws (Power)

1. Do not operate any power saw unless your supervisor or other qualified trainer has trained you.
2. Do not operate saws unless safety guards are in place and operational before use.
3. Always keep hands and fingers away from the saw blade.
4. Disconnect machine from power source when making adjustments.
5. Shut off power and clean the saw and work area before leaving.
6. When operating scroll saws, stop the machine before removing scrap pieces from the table.
7. Turn off the machine if the material is to be backed out of an uncompleted cut or jammed cut.
8. Clamp work when using hole saw or cutting tools larger than 1/2" diameter.
9. On band saws, adjust the upper blade guide about 1/8" above the material being cut.
10. On band saws, make adjustments for taut blade tension and centered blade tracking.
11. Hold work piece firmly against the table.
12. Use push sticks when operating power table saws.

WELDING

WELDING, CUTTING, AND BRAZING

Introduction

The use of welding, cutting, and brazing equipment is common throughout many occupational trades. The improper use of this equipment can be extremely dangerous for those performing the work or those in the general vicinity of the activity. Therefore, it is imperative that proper procedures be followed before doing these specialized tasks. Special efforts must be made to evaluate the procedures used while operating the equipment. Consideration should be given to the storage and handling of the specific gases and to the availability and use of personal protective equipment.

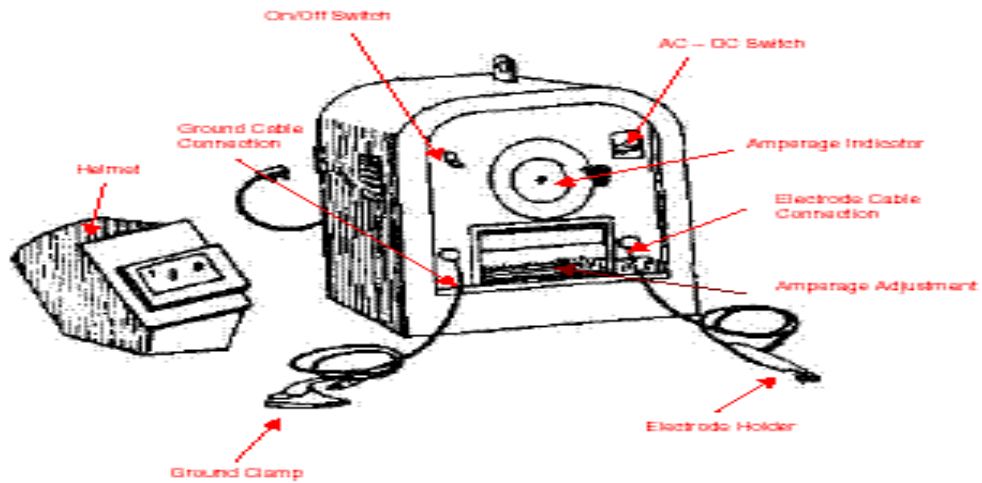
Arc Welder Notes

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



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Buffer Notes

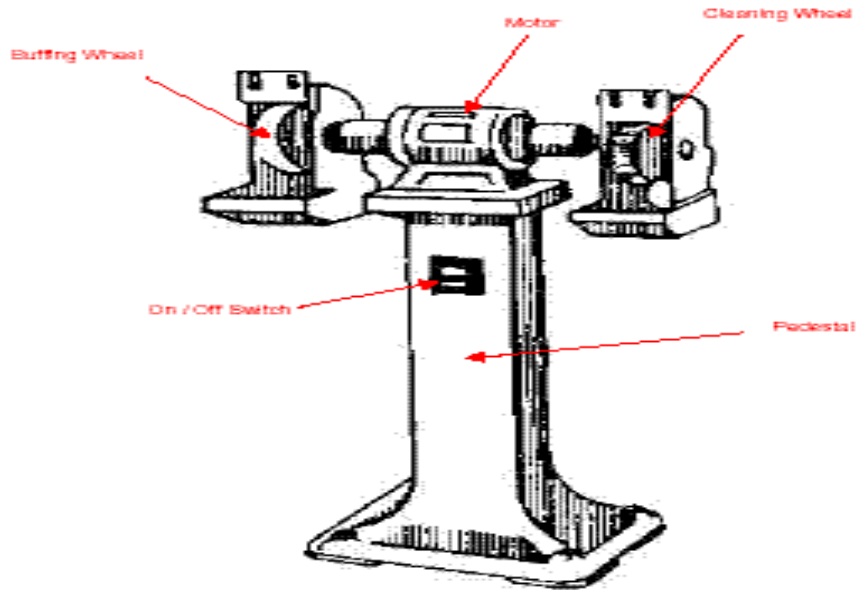
Requirements:

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

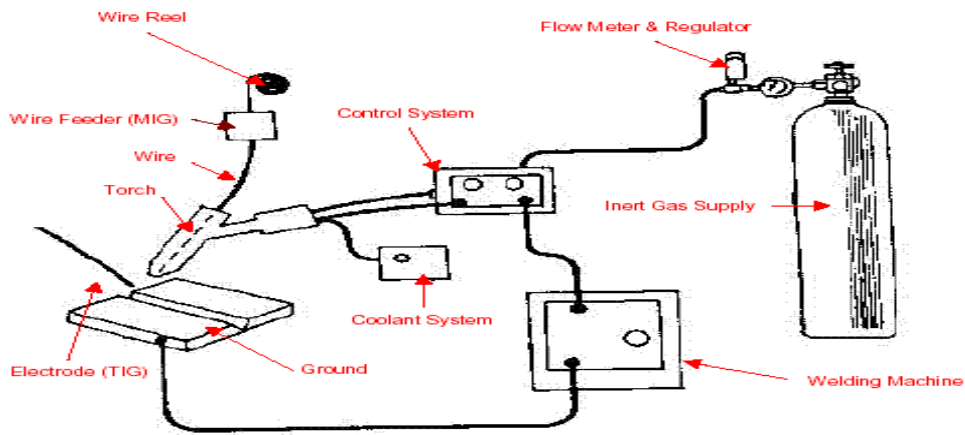


TIG and MIG Welder Notes

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.

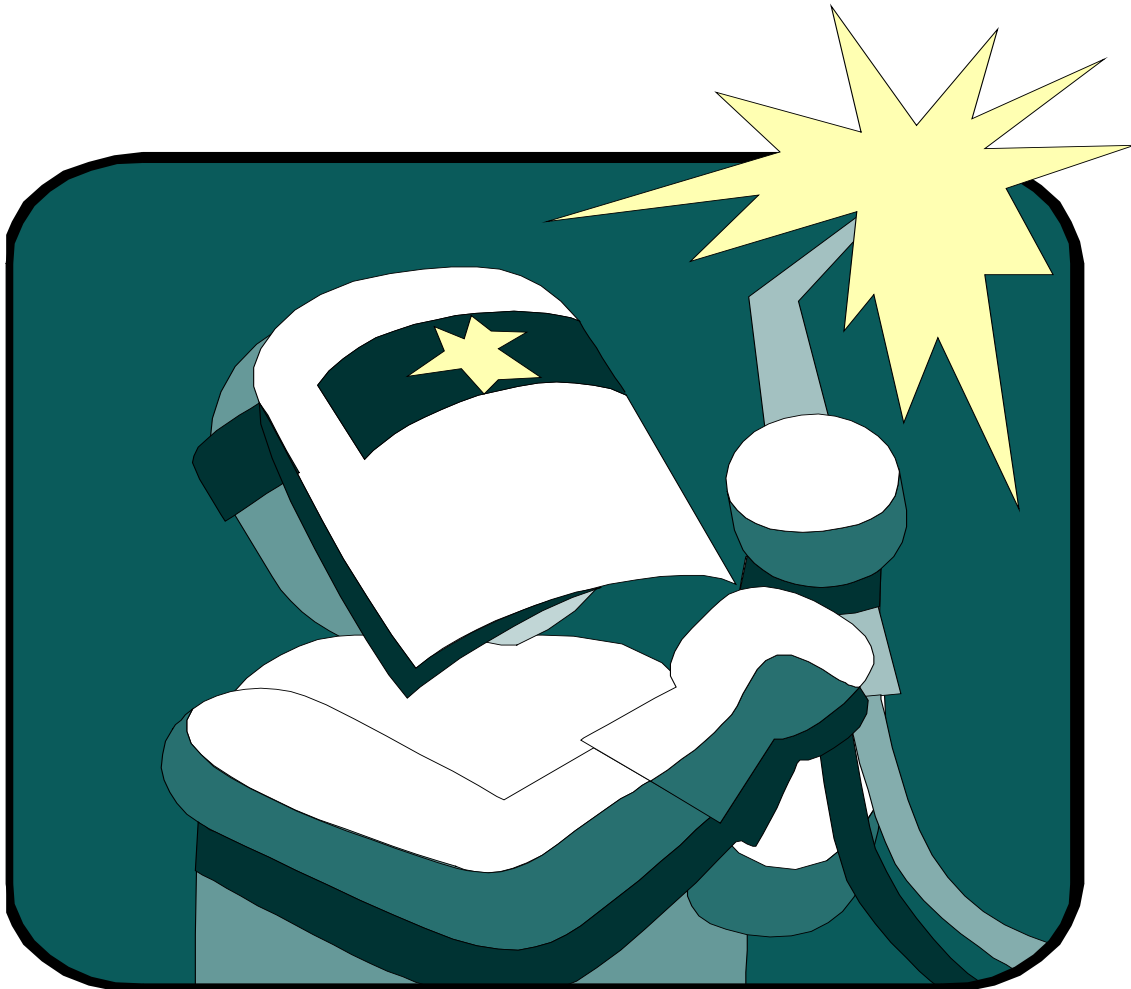


NOTE: MIG = Metal Inert Gas. TIG = Tungsten Inert Gas

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.



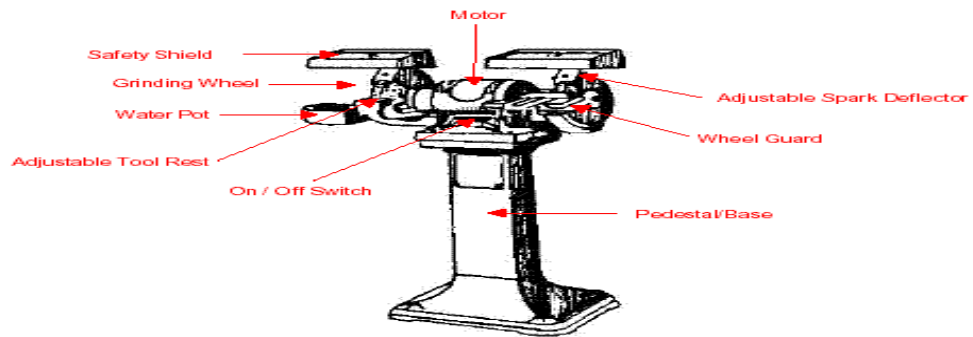
Grinder Notes

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



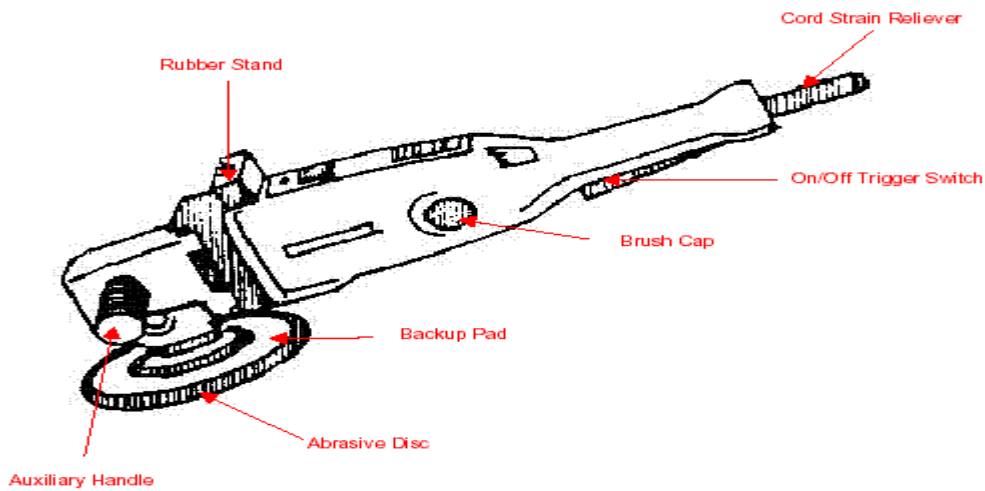
Portable Grinder Notes

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



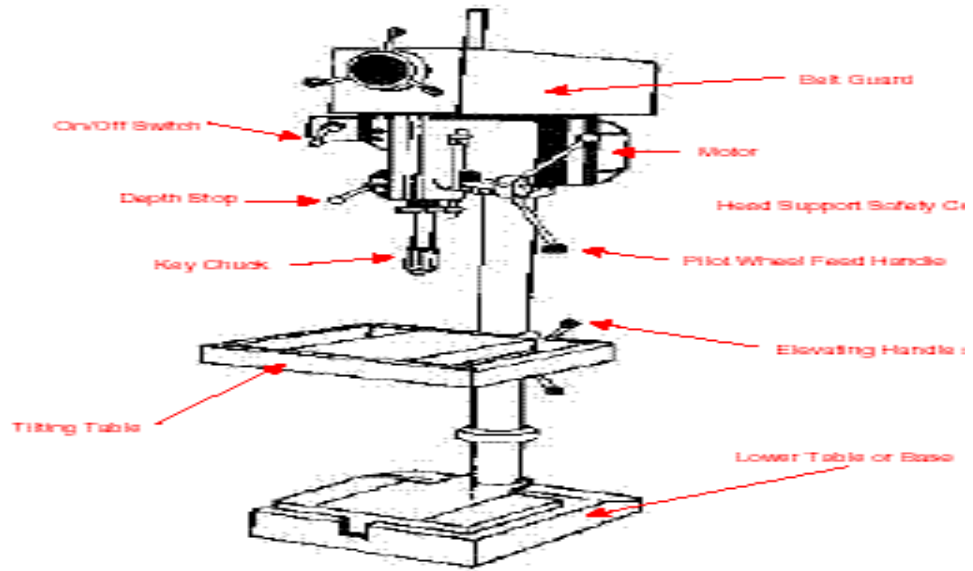
Drill Press Notes

Requirements:

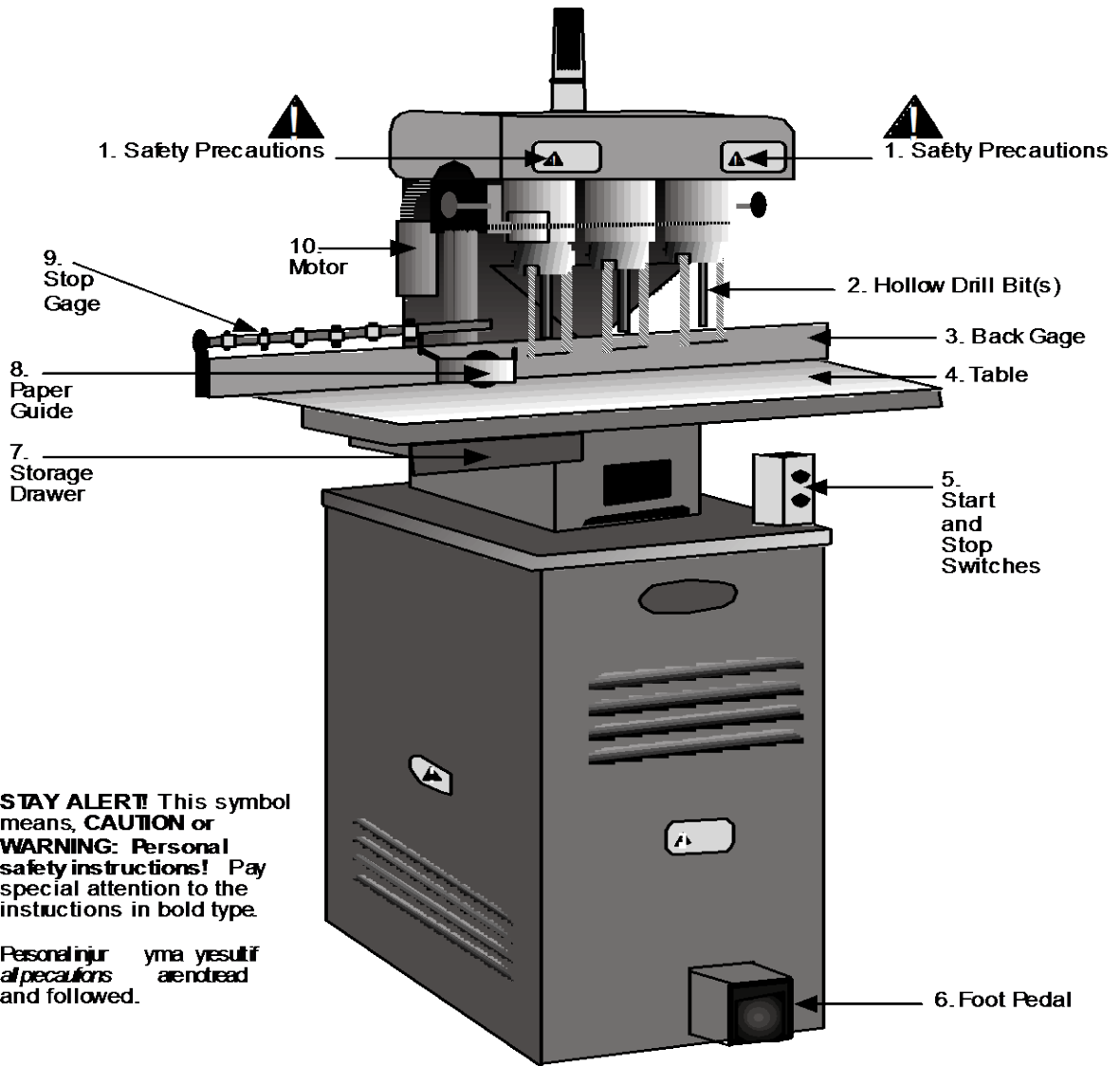
Proper eye protection must be worn—operate only with instructor's permission and after proper instructions have been received.

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, 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



DRILL



! **STAY ALERT!** This symbol means, **CAUTION** or **WARNING: Personal safety instructions!** Pay special attention to the instructions in bold type.

Personal injury may result if all precautions are not read and followed.

RECORDKEEPING

1. Always keep an adequate record of accidents and report it through proper channels.
2. An analysis of accidents should be made for the purpose of corrective action.

1.3 RESPONSIBILITY

It is the responsibility of each instructor to insure that a safe environment is maintained in his/her area and that this policy is adhered to.

Vice President of Instructional Affairs

Date

Approved By:
President

Date

