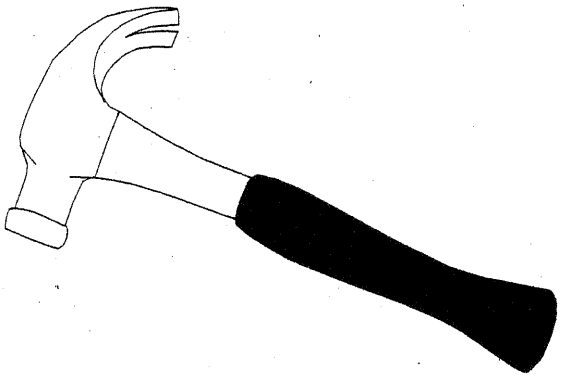
SAFETY

for Technical & Adult Education Programs



West Virginia Department of Education

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SAFETY PROGRAMMING AND IMPLEMENTATION

Formulate Program Objectives

A program is an effort directed at achieving an objective. Thus, one of the first steps in setting up a safety program should be to define exactly what the program will achieve. The administration must make specific decisions in advance regarding what they intend to do and how they plan to carry it out. This can be called the "planning-process."

The overall goal of any safety program is "to improve the safety and health of the school work environment." In more functional terms, this goal can be restated as "to reduce the number and severity of occupational illnesses and injuries." While all safety program activities are aimed at achieving this goal, such a goal is too general to use in organizing a program. To provide a better framework, clear and measurable objectives should be developed. Well-formulated objectives provide the foundation for organizing activities, allocating staff and funds efficiently, and monitoring performance information about the program. These objectives are established by program planners and administrators.

Many different objectives could be pursued in the course of achieving the goal. Because program staff and other resources are limited, assess the current situation before deciding which course of action would bring about the greatest progress toward the goal, given the available resources. For instance, if the largest number of occupational illnesses and injuries occur in shops and laboratories, perhaps the program should allocate extra resources to eliminate hazards, upgrade safety equipment, and instruct vocational teachers and students in safe work practices.

One way to begin formulating objectives for a safety program is to consider the basic functions that are part of an effective safety program. These functions are listed below.

1. Conduct on-site inspections.
2. Corrective action.
3. Rules and regulations.
4. Safety and health training.
5. Recordkeeping and reporting requirements.
6. Accident investigation and reporting.
7. Monitoring and evaluation.

Conduct On-Site Inspections

Inspections should be conducted not only to uncover physical hazards and to assure compliance with safety regulations and other Federal, State, and local codes, but also to examine unsafe practices among employees and students. Besides detecting safety and health problems, these inspections can measure how well the staff is progressing in ensuring that conditions remain safe.

The teacher is directly responsible for environmental conditions and for student safety and (with the assistance of the school administrators) should also be made responsible for locating and reducing hazards. Inspections performed by the school administrators are then basically used to audit the staff's effectiveness.

Formal inspections of all school facilities should be conducted at least once a year. More frequent inspections should be conducted in high risk environments, such as shops, laboratory, physical plant, and food service areas.

Inspections should be conducted by the school administrators, by teachers, and sometimes by safety consultants. The frequency and type of inspections conducted by each depend upon the organizational structure and staffing of the safety program.

It is often helpful to arrange occasional inspections of work areas by other teachers. This compensates for the loss of objectivity inherent in asking a teacher to check their own safety performance. The school administrator must be very diplomatic in initiating these arrangements to avoid conflicts among the parties involved.

The services of outside experts may be needed occasionally to supplement the skills available in the school and to achieve objectivity, particularly when there is no full-time safety professional to conduct inspections and recommend procedures. This service can sometimes be obtained from local safety councils, insurance companies, governmental agencies, and/or local corporations.

All teachers should conduct daily or weekly informal inspections. During the inspections, notes should be taken on all unsafe conditions and activities in order to ensure immediate corrective action. Such action might include instruction, repair of a machine guard, or a variety of other activities. The teacher should note the date of the inspection, the problems, identified, and the corrective actions taken. These records are valuable in guarding both the teacher and the school against both Federal and State compliance violations or court action.

No discussion of inspections could be complete without mention of the Self-Evaluation Instrument (SEI). The SEI is a time-honored tool in the safety and health field and is useful in any safety program for two reasons. First, an SEI identifies areas which should be checked thoroughly during inspections. Second, it provides guidance to teachers who are not as familiar with the legal requirements and

the proposed safety and health procedures as the school administrator. The National Standard School Shop Safety Inspection Checklist is included in the Forms Section as an example of an SEI.

SEIs do have shortcomings, however, as they cannot cover all standards and procedures without becoming too large. Moreover, the standards which are easily included in an SEI tend to be concerned with equipment and facilities. A thorough inspection of any area should consider a variety of factors: people, processes, equipment, materials, and the environmental conditions. This requires a thorough knowledge of safety theory and accepted practices, as well as with all relevant regulations. It requires looking beyond the immediate violations to the causes of those violations in order to eliminate both the violation and the cause. Thus, care must be taken not to become overly dependent on the use of self-evaluation instruments.

Corrective Action

After an inspection is conducted, a report should be sent to the school administrator listing the programs which were identified, an estimate of the severity of each hazard, and the recommended corrective actions. If the teacher intends to correct any problems personally, this should be reported.

The school administrator must summarize the necessary remedies for the problems identified through inspections and through accident investigations.

In developing the summary, the school administrator verifies the teacher's estimate of the severity of the hazard; that is, whether it is an imminent danger violation, a serious violation, or a non-serious violation. The violations are arranged on the summary form in the order of severity. The corrective action(s) required for each, the estimated cost of the corrective action, and the earliest date the corrective action could be completed are listed. This summary is then processed as a request for funds or administration support for the corrective actions. The school administrator determines which actions should be undertaken immediately. Generally, imminent danger and serious violations must be corrected immediately, because they could result in serious injuries or illnesses. Non-serious violations can, if necessary, be allowed a longer time period for corrections.

The school administrator generally must negotiate with others to get the corrective actions carried out. This entails getting them to use their funds, allocating general funds for the project, or devising some other means to get the hazard corrected. The school administrator summarizes the results of all of these actions in the correction plan. The plan lists each corrective action that will be undertaken, the individual who is responsible for the action, the date by which it should be completed, and the estimated cost of the project. The school administrator then sends a copy of the applicable portions of the plan to each work unit or department. The plan guides the activities of those carrying out the corrective actions and also serves as a basis for the school administrator to monitor the progress of these activities.

Rules and Regulations

Safety rules and regulations must be written, published, and communicated to staff and students to provide a consistent and easily administered approach for ensuring safe work practices in all school activities. The development of these rules serves three important functions for a safety program. First, the involvement of staff in the formulation of rules and regulations is an excellent way of motivating them to follow the procedures. Second, a school, by developing its own rules and regulations, is forced to pull together all of the relevant Federal, State and local standards, as wll as all of the rules it has developed on its own. Finally, these written documents set standards for safe work practices and establish a basis for disciplinary action against staff who fail to meet the standards.

However, for these safety rules to be effective and enforceable, they must be well-conceived, realistic, fair and presented in a language and a form which can be easily understood by all. The development of such rules and regulations is not a simple task that can be accomplished overnight; it takes time and thought, and should involve the input of safety professionals and possibly consultants.

The ultimate responsibility for all rules and regulations should rest with the local school board. General safety rules and regulations can be formulated, however, using any one or a combination of the following groups of school personnel: administration, the personnel department, special rules-making committees, departmental committees, or staff safety committees.

General rules and regulations are listed below.

1. Review the existing safety program including the school policy statement.

2. Describe the various administrative functions responsible for the program.

3. List those rules and procedures, including disciplinary actions, applicable to all staff and students.

4. Explain the responsibilities of staff members and students regarding the school safety program.

5. List emergency telephone numbers to keep on hand.

Specific safety procedures or rules will be required for particular operations or jobs. In this case, the personnel who are directly involved with these specific tasks should be given the opportunity to develop the instructions. Any involvement of staff in developing the rules and regulations in this matter draws upon their knowledge of a particular department or operation and, at the same time, motivates them to adhere to the rules that have been developed.

All available resource materials should be reviewed prior to writing the standards, but information should be limited to only those areas which are directly related to activities performed at the school.

After the rules and regulations have been written in draft form, they should be posted on school bulletin boards, so that students and staff may comment on them. The notice should indicate why the rules were developed, their proposed adoption date, and the cut-off date for comments. Advisory comittees or other such groups should review the rules and their comments solicited. It is important to emphasize that allowing students and staff to react to rules that apply to them, giving them an opportunity to express their opinions and comment from their own experiences, should encourage acceptance and cooperation when the rules are made, distributed and enforced.

Once the rules have been issued in final form, a review mechanism should be developed to provide students and staff with the opportunity to suggest any additions, deletions, or alterations that should be made to the existing instructions. As modifications are needed or new rules are developed, updated versions of the rules and regulations must be issued.

Safety and Health Training

Many accidents and injuries that occur in schools result from student oversight or failure to abide by published safety and health rules. Unsafe practices among students include failure to use personal protective equipment, improper lifting and carrying and unsafe use of materials and equipment. Often these unsafe practices can be related directly to the instruction of the student and to a lack of knowledge of the hazards to which they are exposed and of how to handle these potential dangers. Thus, safety and health training is a vital element of the school safety program.

The importance of such instruction is recognized under OSHA, which contains a number of regulations requiring that instruction be provided. These regulations are described in the OSHA publication, *Training Requirements of the OSHA Standards,* which can be obtained from OSHA regional offices. While the regulations specify some functional areas in which instruction is required (e.g., operation of materials, handling equipment, welding equipment, and power presses), they do not specify the type of instruction that must be given, nor do they identify all types of instruction which may be needed. Basically, the responsibility for identifying and meeting safety instruction needs rests with each individual school.

Students should learn to maintain their own safety and the safety of others whenever they need to acquire new knowledge or learn new skills, or take a refresher course in specific information. Generally, this need will arise in the situations which are listed on the following page.

1. Safety instruction is needed when a student enters the program.

2. Safety instruction is needed when a student transfers to a different program.

3. Safety instruction is needed when new equipment is installed or a new task is assigned.

4. Safety instruction is needed any time when the lack of student knowledge or skill is creating accidents or potential hazards.

Instruction should be based upon assessed needs. If lack of skill or knowledge is thought to be at the root of a hazard or potential problem, the instruction should be planned by determining what the student needs to know or should be able to do by the end of the instruction. Assessing what students need to know in terms of safety procedures takes into account some type of analysis of the job itself, the equipment being used, any operating or behavioral problems, and an overall appraisal of the individual's job performance.

Once needs have been determined, objectives must be developed and written down. These objectives must be stated in terms of what the student should know and be able to do by the end of the instruction. Examples of these objectives are listed below.

1. Describe the procedure to follow in case of emergency (fire, chemical spill, etc).

2. Effectively lock power machinery prior to performing maintenance or repair operations.

3. Demonstrate an ability to satisfactorily clean and use the respiratory protective equipment.

The use of these objectives make it easier to determine if the students have really obtained the necessary skills or knowledge at the end of the instruction. Once the objectives have been defined, the content and method should be decided. If this approach is used, determining content and method is simplified and the teacher can focus on the kinds of experiences to be provided so that the study will achieve the desired behavior. For example, to achieve the fire prevention objective stated above, a full-scale fire drill may be necessary. The content and method suggested by the second objective, on the other hand, might consist of showing students how machinery is locked out and letting them practice this procedure.

In some instances, instruction will involve other persons, such as the school administrator or outside consultants. A variety of instructional methods, movies, slides, posters, and manuals can be used. Some of these are already developed and can be purchased from various safety organizations and commercial companies. (See Resource Materials Section)

Recordkeeping and Reporting Requirements

It is wise to document all instruction, medical examinations, inspections, accident investigations, and other tasks conducted by the safety program. When money or manpower are expended on any effort, it is worth the extra time required to document that effort. In case of an accident where the student accident form is completed, the documentation should become a part of the student's permanent record and will then be available in defending the school against court actions. In addition, it can be used to monitor the effectiveness of the program, analyze problem areas and trends, and justify program expenditures to the administration.

Accident Investigation and Reporting

A valuable part of any safety program is the accident investigation and reporting system. Data helpful in program evaluation and improvement can be collected this way. Such information can be used for many purposes and is listed below.

1. Identify and control specific high-risk accident situations.

2. Indicate where a change, substitution, or elimination of materials, methods, processes or operations should be made.

3. Identify trends in the severity of accidents, types of injuries, volume of property damage, location of accidents, causes of accidents, etc.

4. Provide safety performance information to students to enable them to compare their present performance to their own past performance and that of other work groups.

5. Justify program expenditures to the administration by documenting program accomplishments.

6. Identify group and individual training needs.

7. Serve as a basis for award and incentive programs to motivate and stimulate student cooperation with the safety program.

8. Develop defenses for the institution against court actions.

An effective accident investigation and reporting system can help reduce the number and severity of accidents by uncovering the causes of accidents, by initiating corrective actions, and by increasing involvement in the safety program. The system should be based on understanding and following through on three basic principles of accident investigation. (See Student Accident Report Form, page Q-1).

First, the system should investigate all accidents including those which result in injuries requiring only first aid or only in property damage. Any accident, no matter how serious or trivial, could point to a flaw in the safety program. Minor accidents should be reported and investigated because they sometimes are symptomatic of hazardous conditions or practices that could lead to future serious accidents. Moreover, these accidents often result in heavy property damage and other costs to the school.

The second principle is that the reporting system must be easy to use if it is to be successful in collecting information on all accidents.

The third principle is recognition that the key person in any accident prevention program is the teacher. For the safety program to be successful, it must have the full cooperation and support of each teacher. Therefore, all efforts by the school administrator should be conducted in conjunction with the teachers. It is generally the teacher who is responsible for conducting the initial accident investigation and filling out the accident reporting form for any student.

The first step in setting up a system is designing the accident investigation and reporting form. Since this will be the basis for the entire system, care must be taken to require all necessary information, using a form that teachers will be able to complete with a minimum of effort.

Your accident reporting form should be analyzed to make sure that it will contain all of the information required.

Finally, the accident investigation and reporting form should include space for the teacher's analysis of the causes of the accident, covering all information regarding the injured person (what the person was supposed to be doing, what the person actually was doing, and instruction and past performance and accident reports) and an examination or inspection of the equipment being used and the physical environment at the time of the accident. The teacher also should recommend the steps to be taken to prevent similar accidents from occurring. In this manner, the accident investigation and reporting form aids in examining more closely the causes of the accident and in considering the follow-up action to be taken.

As explained above, the school administrator provides guidance, but the immediate teacher - dealing directly with students - is the key person in any safety program. Therefore, the teacher is responsible for ensuring that the work environment is hazard-free and that students are adequately instructed in safe working procedures. The teacher must enforce, on a daily basis, any efforts initiated by the safety program. This includes accident investigation and reporting.

The teacher not only must be thoroughly familiar with the accident reporting system but also must believe in the need to report all accidents. The most important part of the teacher's accident reporting duties is investigating the accident. The teacher must get the answers to two questions: (1) What happened to cause the accident or illness? (2) What can be done to prevent it from happening again?

Based on the results of the accident investigation, the conditions which caused the accident should be eliminated or controlled as soon as possible.

After the teacher has completed the initial investigation and filled out the accident investigation and reporting form, the form should be forwarded to the school administrator for processing and analysis.

The school administrator also should review that portion of the form describing the accident, the causes of the accident, and the control measures that were instituted or recommended by the teacher to prevent a similar accident from occurring. If the investigation, actions, and report filed by the teacher are adequate and do not indicate serious future hazards, the school administrator could simply code the information for use in the various internal summary reports.

Monitoring and Evaluation

Monitoring is the day-to-day review of program activities to determine the extent of progress toward program objectives. The purpose of monitoring is to identify actual and potential problems early, so corrective action can be taken. Evaluation, on the other hand, is the periodic review of the direction, effectiveness, and efficiency of a program.

The school administrator is responsible for monitoring the activities of the safety program to make sure they are carried out as planned. This is an important function of a successful program because it is quite easy to let safety slide if no one is concerned enough to check the program's status.

Specifically, monitoring should ensure that the following activities listed below are performed:

1. Routine inspections of classrooms, work areas and equipment are conducted at the agreed-upon frequencies.

2. Reinspections are conducted to check progress toward compliance in areas where violations were uncovered.

3. All accidents and incidents are investigated thoroughly and reported in writing.

4. Employees receive safety instruction when hired and as needed thereafter.

5. Students receive safety instruction when entering program and as needed.

6. Rules and regulations are updated to encompass new activities and changes in requirements.

7. Records are kept up to date and accurate.

8. Exposure levels for industrial hygiene hazards are checked periodically.

9. Safety committees meet regularly.

10. Any other activities of your safety program are conducted in a timely fashion.

Merely monitoring some activities may be sufficient to keep them on schedule. Other activities may prove to be chronically behind schedule or inadequately performed. This calls for reassessment on the part of the school administrator. Appropriate remedial action follows naturally from a clear understanding of why the problem exists.

SELECTION, PROCUREMENT AND PLACEMENT OF HAND AND MACHINE TOOLS

Because of highly competitive marketing, some manufacturers of machine tools find it advantageous to list safety devices designed for the protection of operators as auxiliary equipment. Vocational personnel must be familiar with such items and assure that they are included in the original purchase order. If adequate guarding is not provided on machinery by the manufacturer, this does not relieve the school of its responsibility for proper guarding.

Attention must also be given to the quality of materials and construction of the many hand tools purchased for the school shop. A quality-built tool is the safe tool, and quality must not be sacrified for the sake of the budget. Electric hand tools must be equipped with ground wires or be double insulated, and connections, plugs, terminals, and wires should be checked to see that all are of approved construction.

In general, the safest machine is the best machine available to do the job. A safety checklist for use in selecting machine tools might well include the following points listed below:

1. Is the machine designed so that it is impossible for the operator to be exposed to the point of operation or any other hazard point while the machine is operating?

2. Is the machine designed so that, wherever possible, all corners are rounded and no sharp corners or edges are exposed?

3. Are the machine controls located so that the operator will not be near the point of operation while operating the controls?

4. Are the controls placed so that the operator will not have to reach excessively or be off balance to operate the machine?

5. Are the power transmission and drive mechanism built in as integral parts of the machine?

6. Are overload devices built into the machine?

7. Is the machine designed for mechanical rather than manual holding devices?

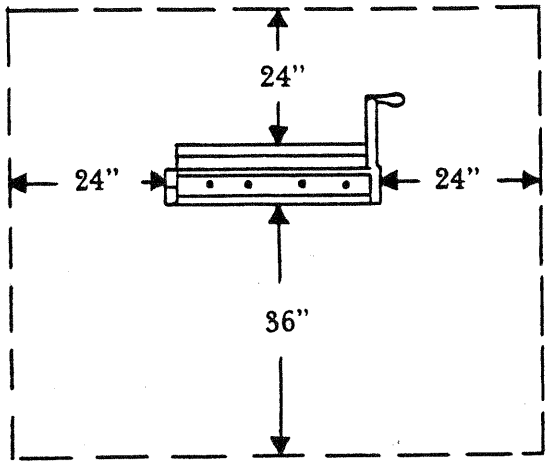
8. Are all electrical components of the machine grounded?

Providing adequate space around equipment is very important. Care must be taken to locate equipment in such a way that there is no interference between the operations and the operators. Machines should be placed at a 45 degree angle to window walls in order to secure the maximum effect from natural light. The angular placement also places operators out of alignment with the revolving spindles of machines adjacent to them and thereby reduces the danger from accessories or materials which may be thrown from neighboring equipment.

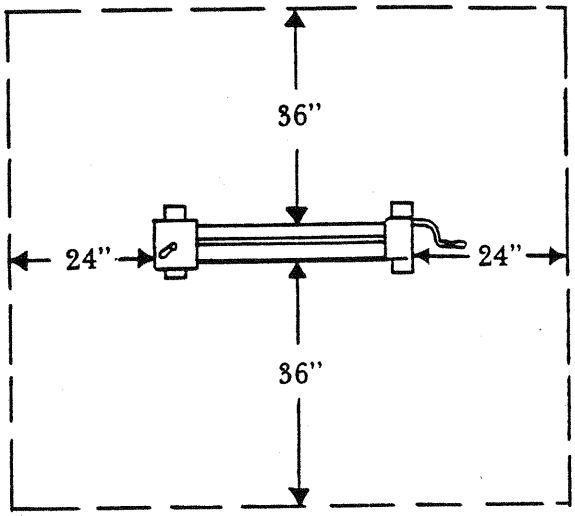
The maximum size of materials to be worked in a machine should be determined, since additional space may be needed. A lathe to be used for machining long bars fed through the head stock obviously needs more space to the left of the machine than one which is to be used only for chuck work. Certain machines, such as the metal working planer and shaper, need to be placed so that sufficient clear space remains where tables or rams are operating at their maximum distances. All heavy equipment should be leveled and securely fastened to floors. The placement of felt, cork, rubber, or other shock-absorbing material under machines is recommended in order to reduce the noise level. Certain machines, such as cutoff saws and shears, should be placed near the material storage areas in order to reduce hazards from handling large pieces of stock.

In almost every shop there are certain pieces of equipment, kinds of materials, or specific processes that deserve extra attention for the protection of workers. In many instances, special shielding of certain equipment and isolation of hazardous processes are required. Welding areas must be isolated to protect nearby persons from flash, burns, and fumes. Foundry and heat-treating areas should be located so as to avoid injury. Hand chipping of metal and machining operations that result in flying chips require isolation or special shielding. Areas such as electroplating and etching, where acids and chemicals are used, need precautionary treatment. Paint and spray areas demand an efficient exhaust ventilation system, as well as an isolated location. An exhaust system is also needed wherever auto or other engines are running. The relatively high speeds of portable and stationary grinding machines and the possibility of the wheel breaking require the segregation of these machines from others in the shop.

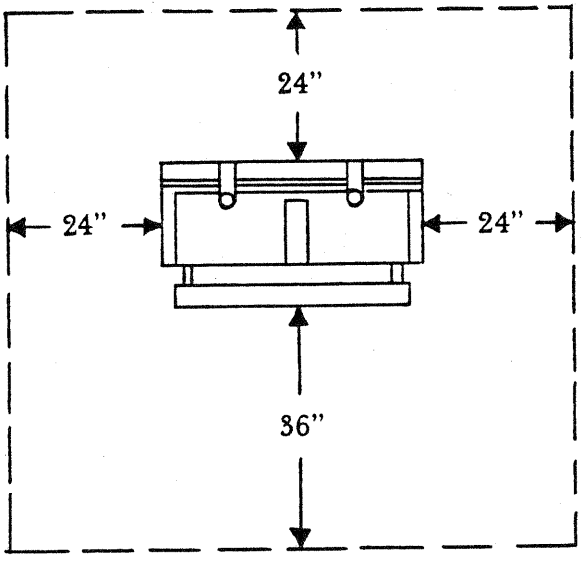
SAFETY ZONE SPECIFICATIONS



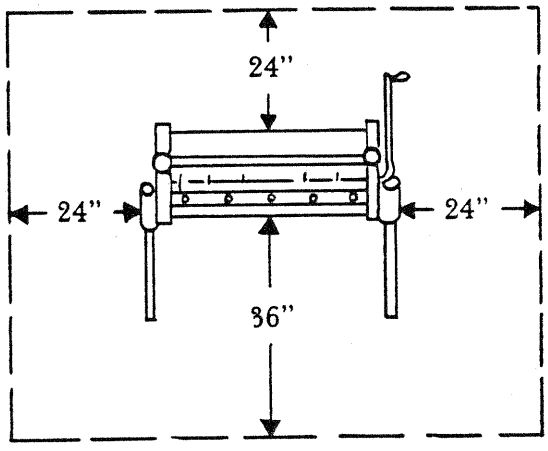
BAR FOLDER



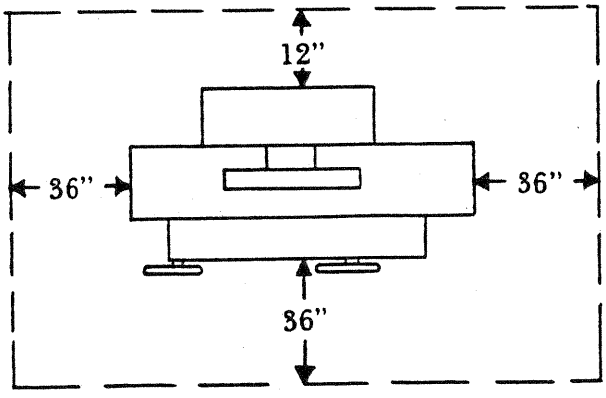
SLIP ROLLS



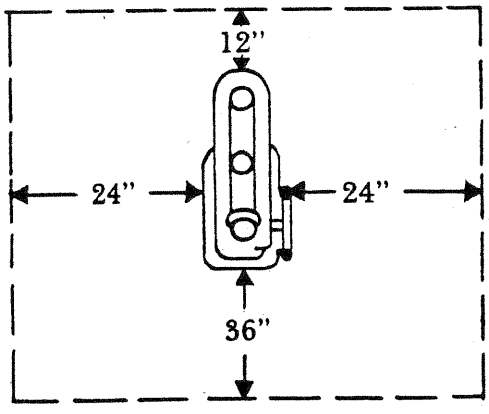
SQUARING SHEARS



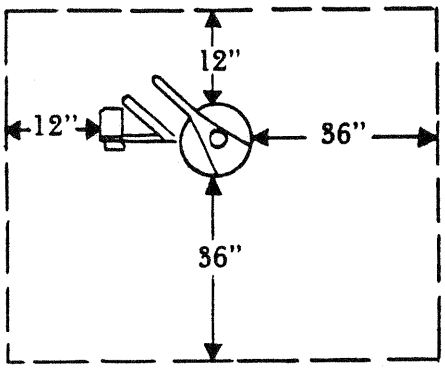
SHEET METAL BRAKE



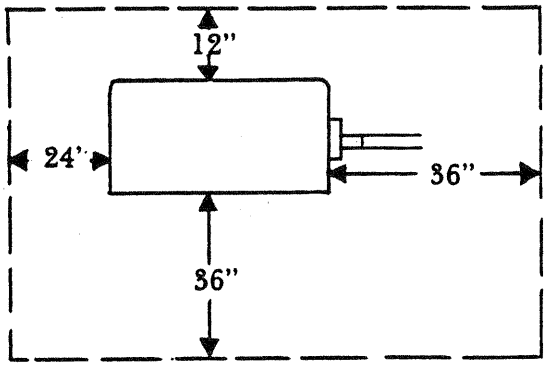
SURFACE GRINDER



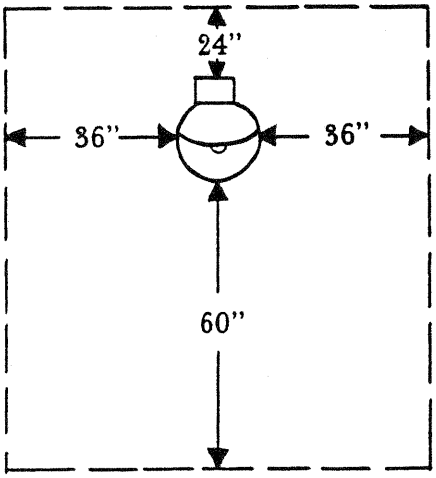
DRILL PRESS



FURNACE



HEAT TREATING FURNACE



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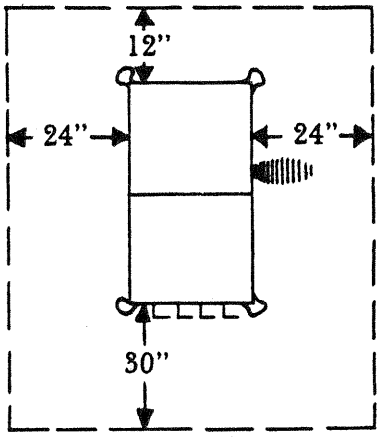
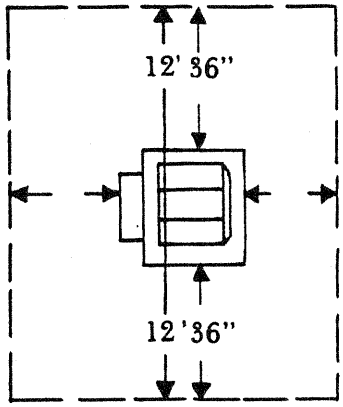
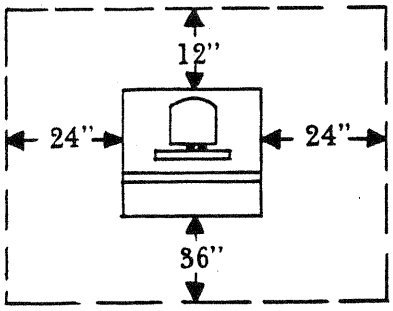


BENCH FURNACE



WOOD PLANER



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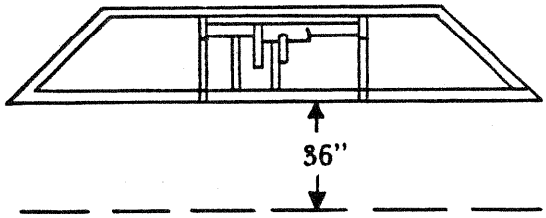
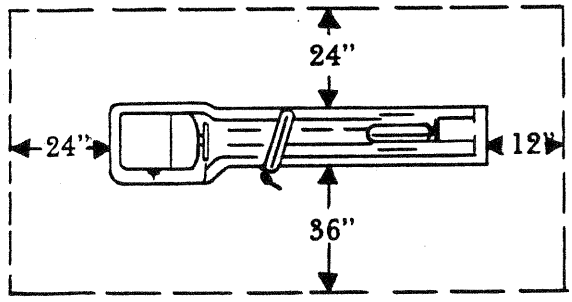
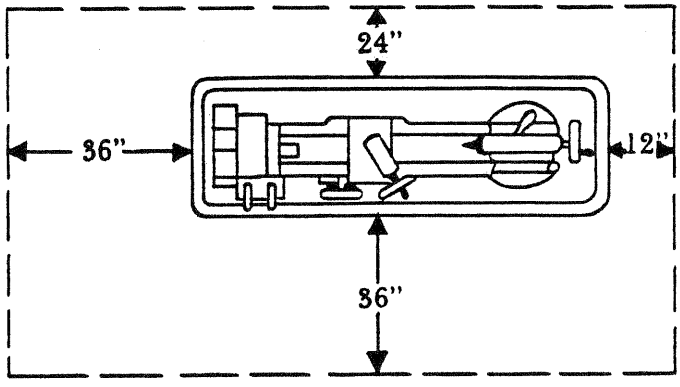


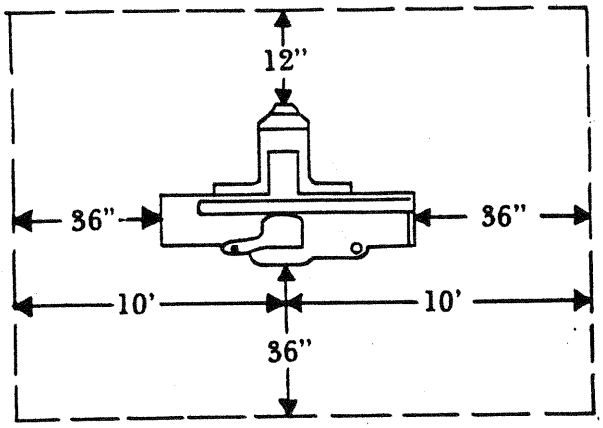
PANEL SAW



WOOD LATHE



METAL LATHE



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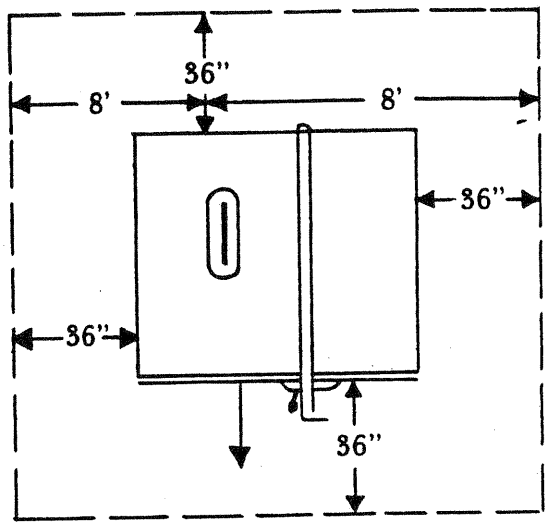
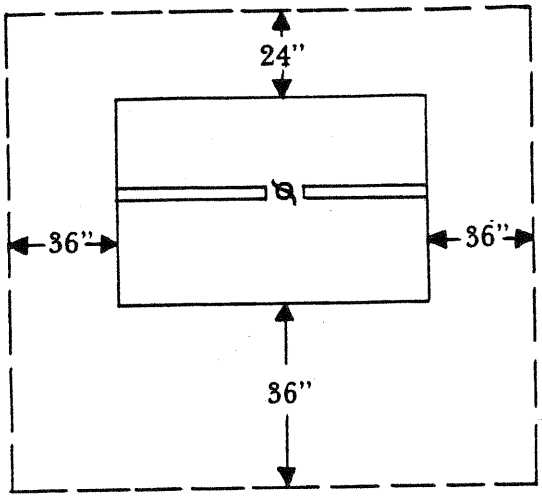
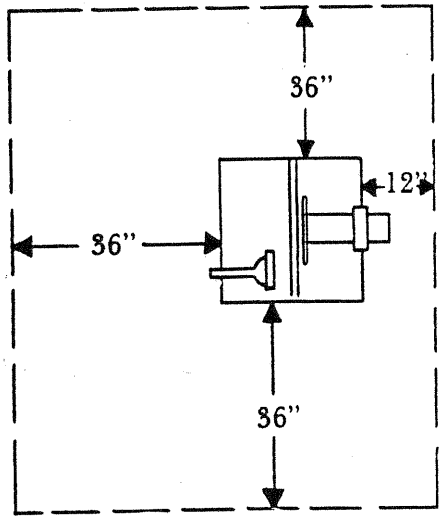


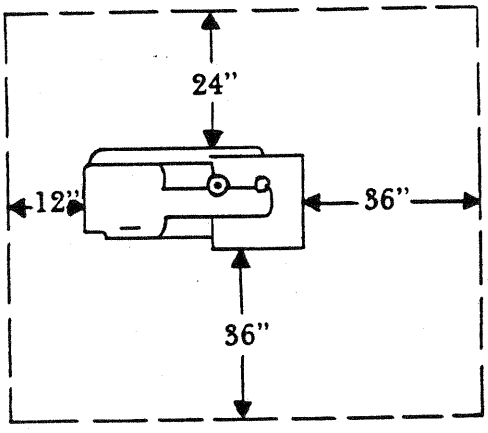
CIRCULAR SAW



SHAPER (WOOD)



SAW TRIMMER



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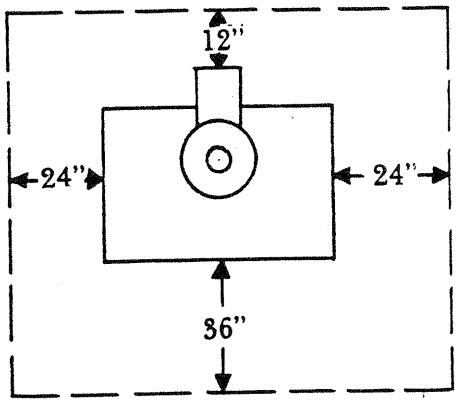

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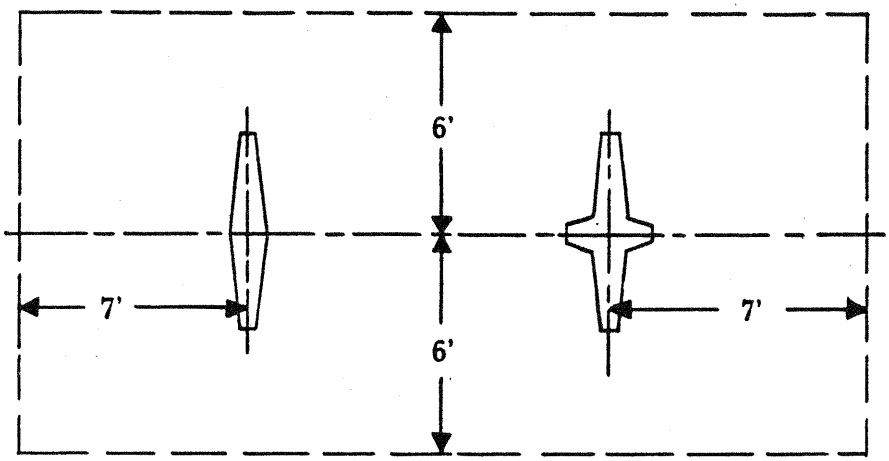

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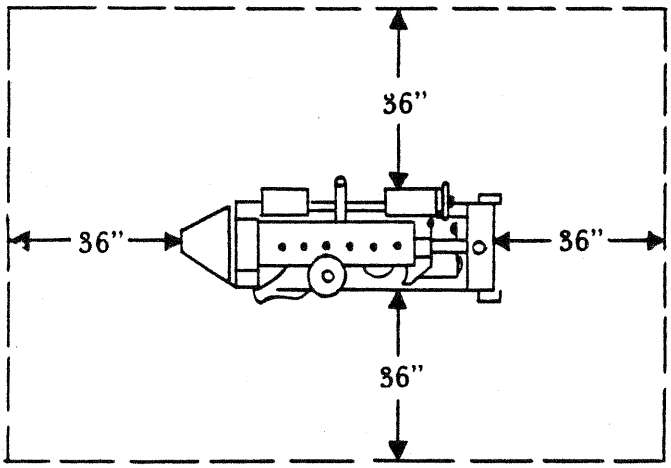

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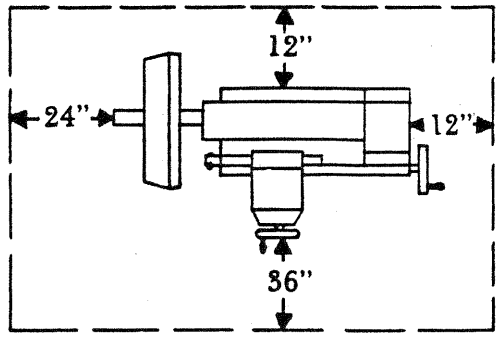

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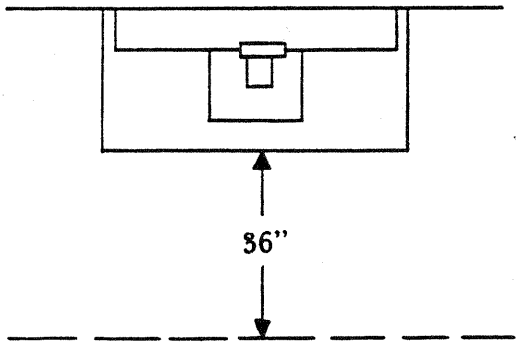

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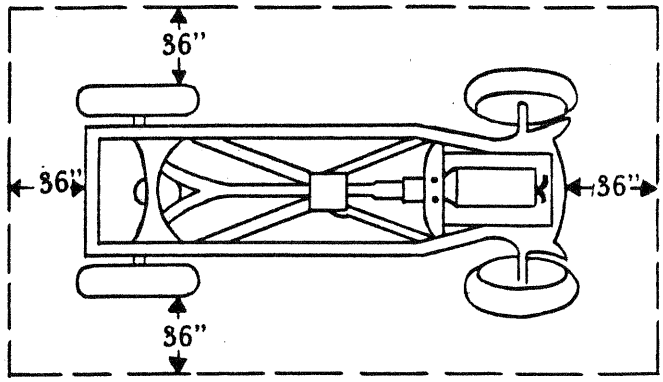

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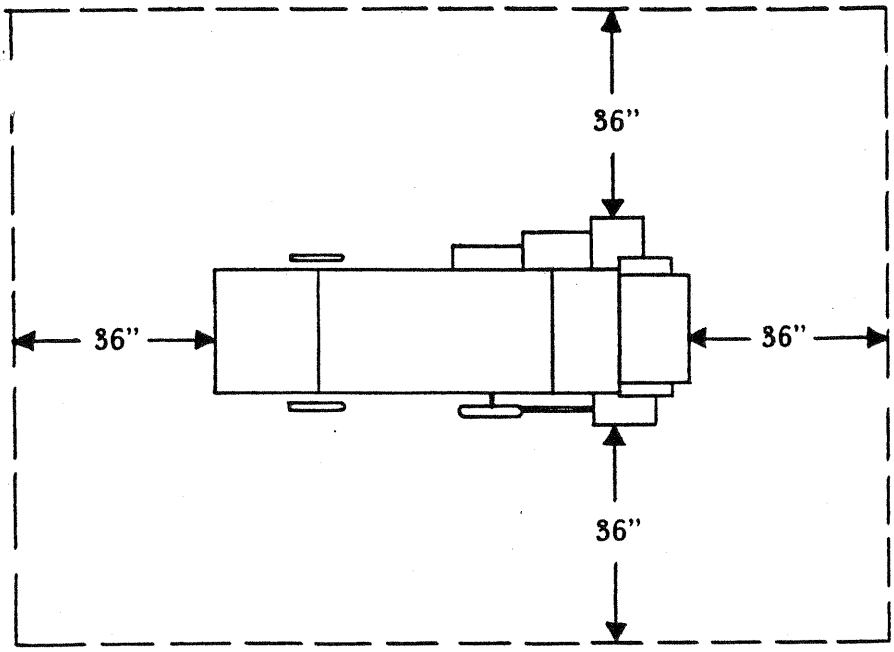

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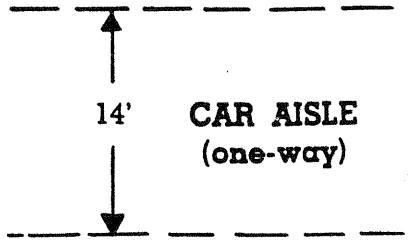

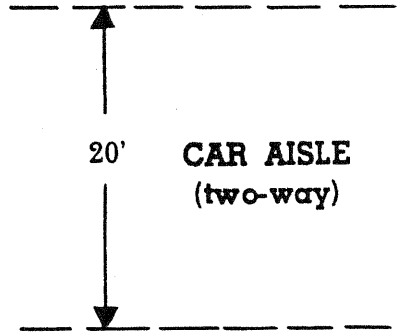

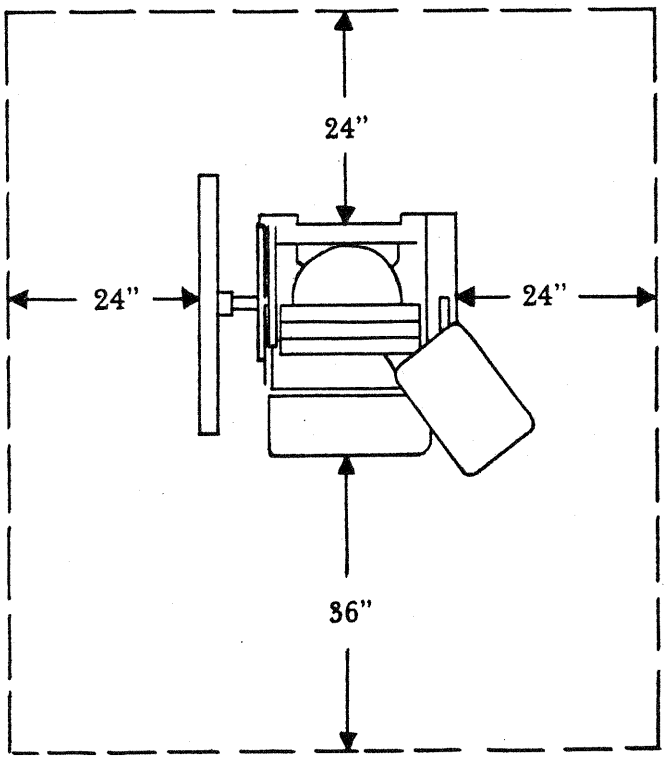

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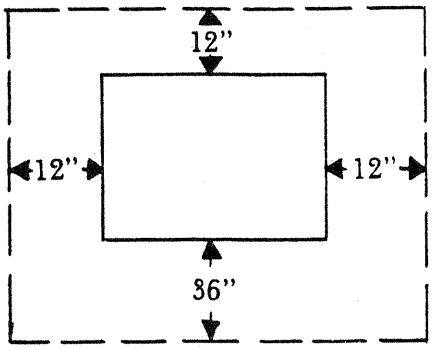

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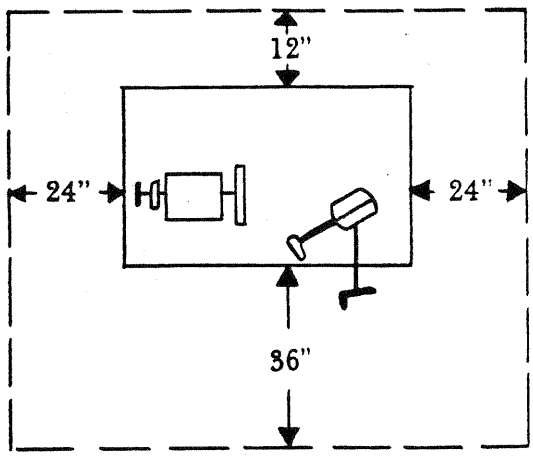

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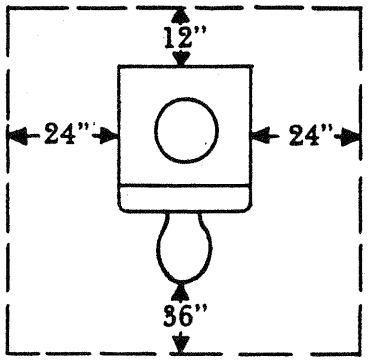

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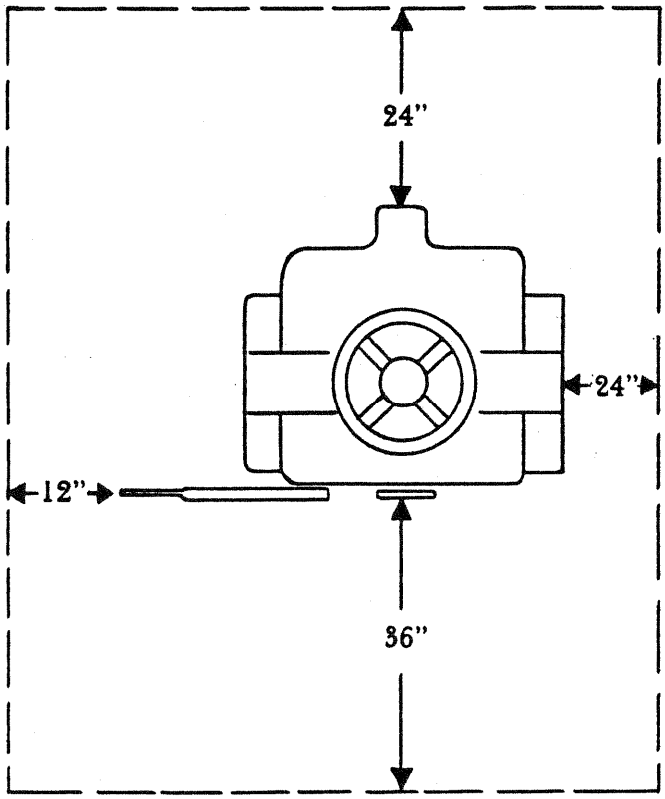

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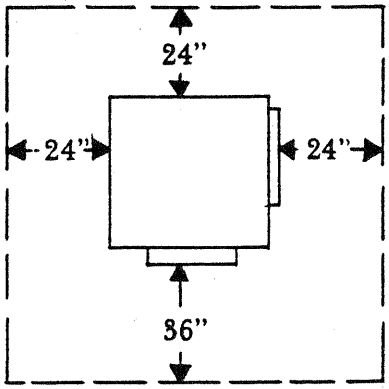

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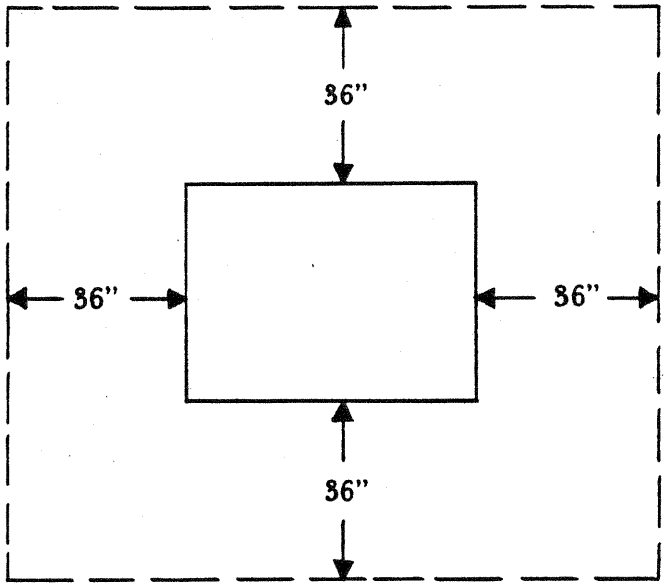

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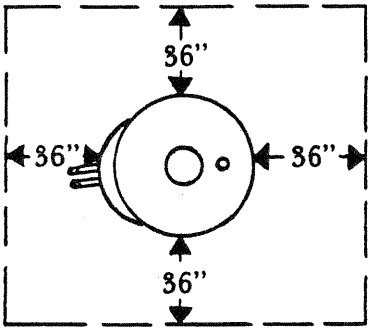

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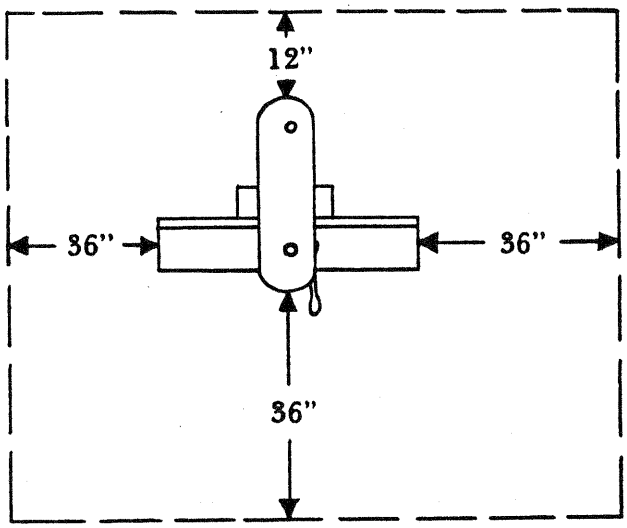

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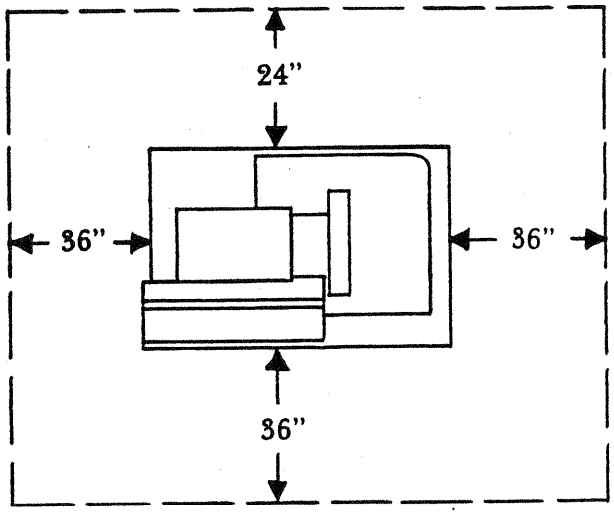

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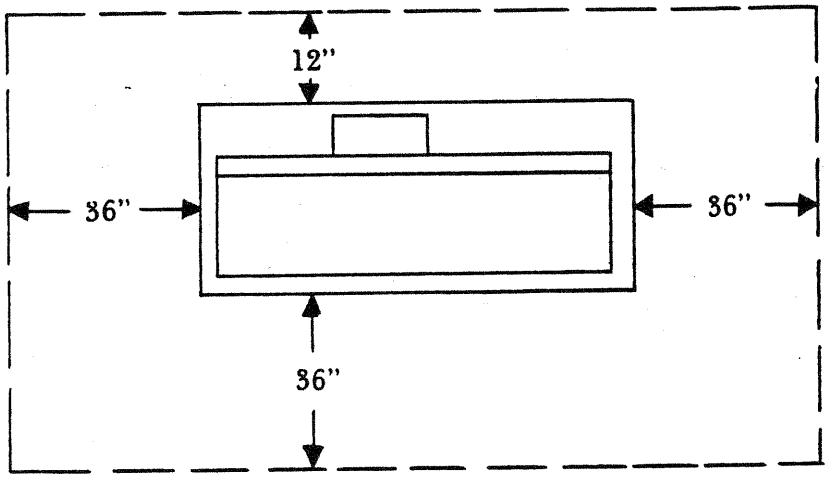

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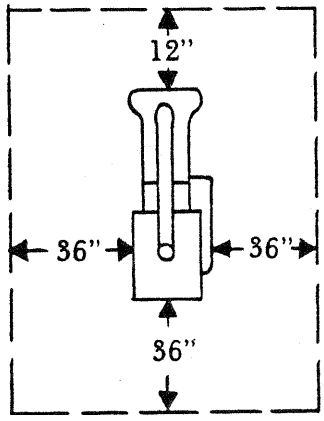

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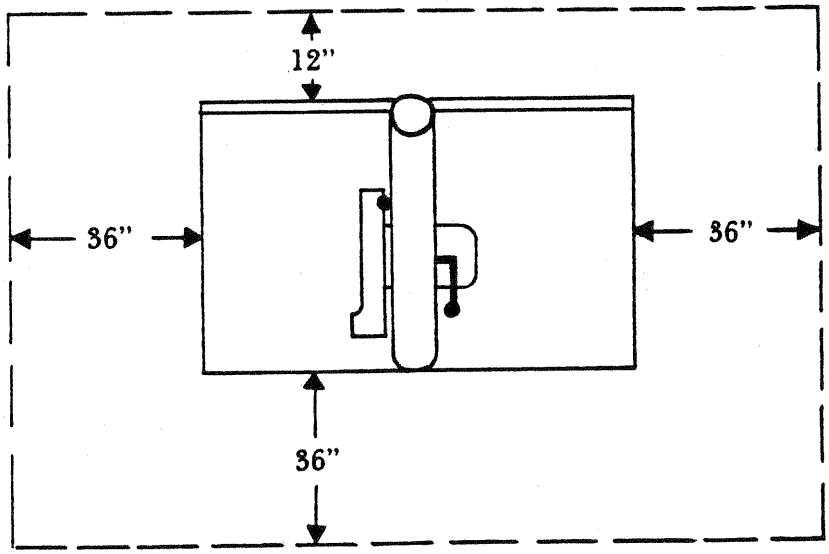

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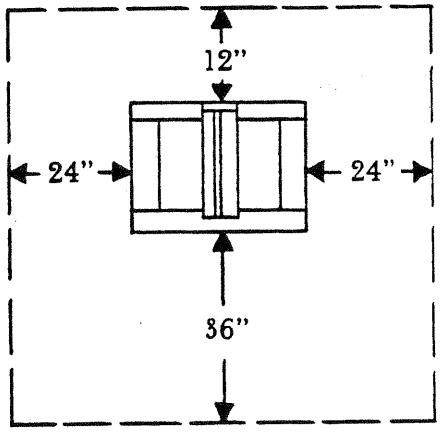

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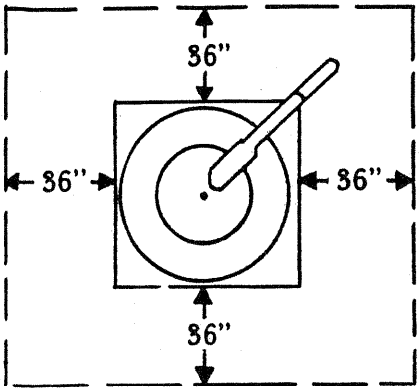

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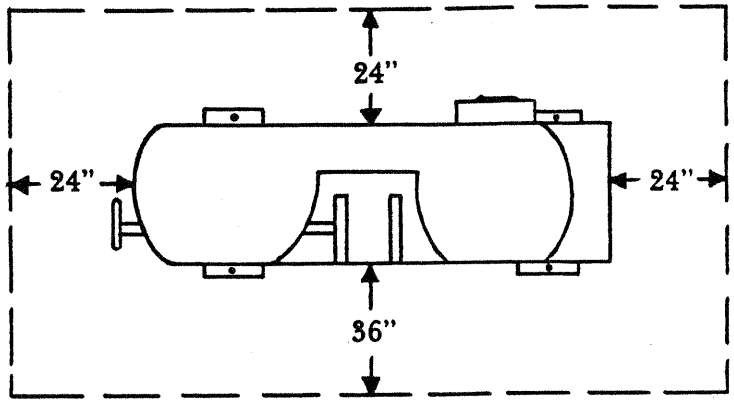
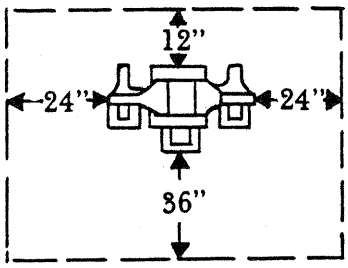


BAND SAW (HORIZONTAL METAL)



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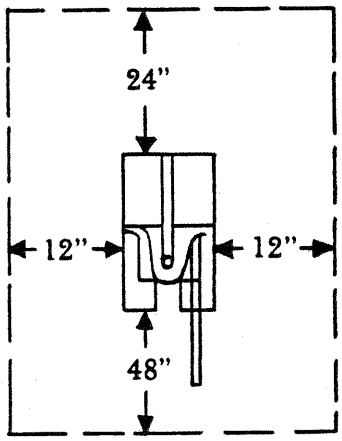

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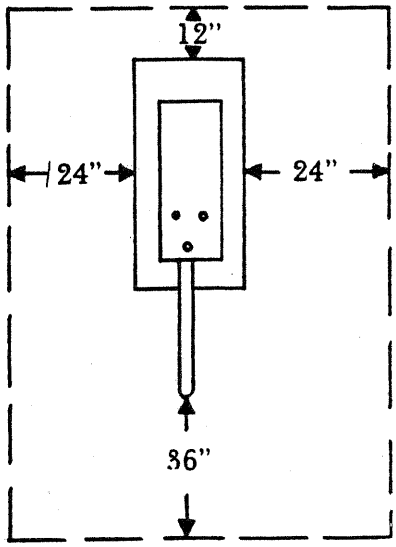

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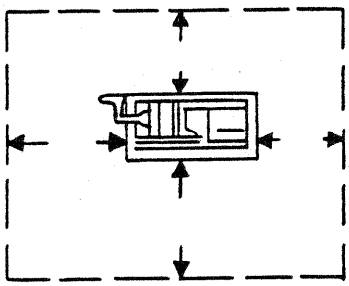

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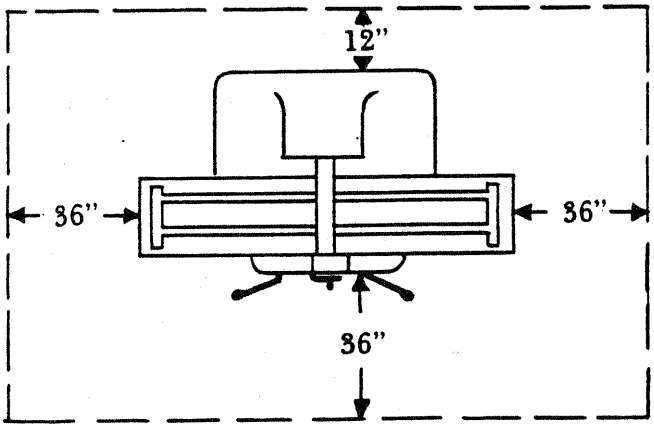

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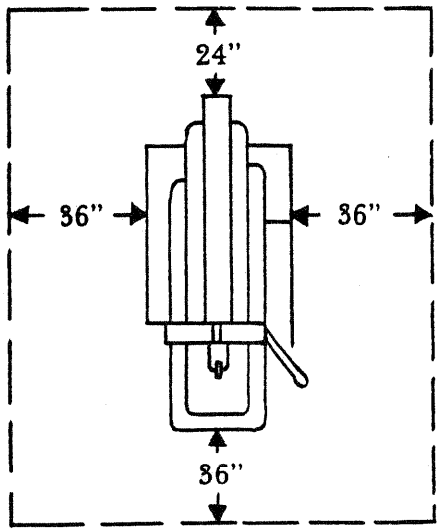


METAL SHAPER

GENERAL SAFETY PRACTICES

Introduction

Accidents are normally caused by *unsafe acts* or *unsafe conditions*. It is apparent that most of OSHA regulations are aimed at alleviating unsafe conditions. A comprehensive safety program must also use various instructional techniques aimed at alleviating unsafe acts. These techniques must build knowledge, skill, habit and attitude in the individual whether the person be staff, faculty, or student.

In collecting and evaluating information concerned with the safety practices for major program areas, many commonalities were identified. These commonalities were placed in the following categories listed below:

Instruction

Body Mechanics

Personal Protection

Facility Condition

Housekeeping Practices

Gas Control

Electrical

Equipment

First Aid

Recordkeeping

Fire Safety

Eye Protection

Ladders

Hand Tools

Hazardous Materials

Scaffolds

Some of the practices or rules which are to follow are in reality portions of OSHA standards which have been divided for the purpose of clarity. They will assist in alleviating the unsafe condition and will be categorized under the title Equipment, etc. Other practices that can be found under a title such as Instruction are not necessarily OSHA standards but assist in overcoming the unsafe act.

The safety practices under review in this manual are concerned with the following areas listed below:

Agriculture

Business and Office Occupations

Marketing and Distribution

Home Economics

Health Occupations

Industrial Arts - Trades and Industry

Diversified Occupations

Safety practices included address programs which are more common and operating in more than one school district. It should also be recognized that, as with OSHA standards, more emphasis has been placed on very hazardous areas.

These topics are arranged so that they may easily be restructured into the form of a "checklist" which can assist administrators and teachers in identifying and abating safety problems. For specific classrooms, laboratories, or shops, additional topics, items, and equipment should be added in constructing the checklist.

Instruction

Safety is taught as an integral part of each instructional unit or job. The techniques that may be incorporated to accomlish this are:

1. Instruction in safety includes audio-visual aids, posters, a suggestion box, and talks by community experts.

2. Safety regulations are posted at each danger station.

3. Printed safety rules are given to each individual.

4. Periodic safety inspections of the laboratory and workplaces are made by industrial personnel, staff, faculty or other concerned persons.

5. Accidents are investigated by students, teachers, and staff.

6. A recordkeeping system is established for the safety units covered.

7. All personnel know the location of, and how to use, proper types of appropriate fire equipment for various fires. (See page Q-9).

8. Machines and dangerous tools are used only under adequate supervision.

9. Students demonstrate and are examined for safety knowledge.

10. A procedure is established for handling emergency situations including accident and fire.

Body Mechanics

1. As many muscles as possible are used, distributing the workload.

2. Both hands are used to pick up heavier objects.

3. Lifting heavy objects alone is avoided. Help is requested.

4. Pushing is preferred to pulling.

5. Leg muscles are used to lift heavy objects rather than back muscles.

6. Bending and unnecessary twisting of the body for any length of time is avoided.

7. Work is done at the proper level.

8. Long pieces of materials are carried by two people.

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.

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 are arranged so as to conform to good safety practices.

2. Stairways, aisles, and floors are maintained clean, dry, with no protruding objects, and unobstructed.

3. Walls, windows and ceilings are clean, maintained in good repair and free of protrusions.

4. Illumination is safe, sufficient and well placed.

5. Ventilation and temperature controls are proper for conditions.

6. Fire extinguishers and other necessary fire equipment are properly selected, adequately supplied, properly located, inspected and periodically recharged as required.

7. Exits are properly identified and illuminated.

8. Lockers and drawers are clean, free of hazards, and doors kept closed.

9. Personnel know the procedures for notification of fire and evaluation of premises.

10. Laboratories and workplaces are free from excessive dust, smoke, and airborne toxic materials.

11. Utility lines and shutoffs are properly identified.

12. Stairways, floor openings and overhead storage areas are properly guarded with rails and toe boards.

13. Stairways are constructed with proper clearance.

Housekeeping Practices

1. Provide for the storage and daily removal of all sawdust, shavings, 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 should be anchored.

Gas Control

1. The flow of gas to gas appliances is regulated so that the flame is of proper height when the appliance valve is turned on full.

2. Gas appliances are properly insulated from tables, benches, adjacent walls, or other flammable materials.

3. No gas hose is used where pipe connections can be made.

4. Gas appliance valves are adjusted so that they may be lighted and maintained at proper height without undue hazard.

5. Operators are instructed how to light gas appliances.

6. There are no apparent gas leaks, nor is there any odor of gas detectable in any part of the shop or laboratory.

Electrical

1. Equipment shall be properly grounded.

2. All switch boxes, junction boxes, wires, and conduits shall be properly covered or closed.

3. Defective, inadequate, worn, frayed, wet, oily, or deteriorated insulation should be replaced.

4. Defective switches, receptacles, extension cords, lamp sockets, tools or equipment should be repaired immediately or properly marked and made inoperable.

5. All stationary and portable electric tools should be properly connected and grounded according to manufacturer's specifications (except double insulated tools).

6. Broken housing and loose or vibrating machine parts should be replaced before equipment is used.

7. Equipment and tools not meeting the approval of the Underwriters Laboratories should not be used.

8. Electrical panels, switch boxes, motors and other electrical equipment should never be cleaned with water or dangerous solvents.

9. Never overload circuits or overfuse circuits by using the wrong size or type of fuse.

10. Hazardous locations should be equipped with explosion-proof or other special wiring methods as defined in the National Electrical Code.

11. All equipment or circuits being worked on or repaired should be locked out or otherwise de-energized and tagged.

12. All installation or extension of electrical facilities must comply with the National Electrical Code.

13. Only heavy duty, grounded extension cords designed for industrial service should be used.

14. Extension cords should never be used to operate stationary equipment or other permanent operations.

15. Clearance of 30 inches and clear access should be maintained around all electrical panels.

16. Work practices which overload motors, insulation, wires or electrical accessories should be avoided.

17. Electrical cords should be disconnected by pulling on the plug, not the cord.

18. Metal ladders should not be used when working on electrical equipment.

19. All switch panels, circuits, outlets, and boxes should be labeled properly.

20. A master control switch should be utilized for all electric installations.

21. All motors should be equipped with magnetic switches to prevent automatic restart after shutdown.

Equipment

1. All equipment should be operated in accordance with specifications as stated in the owners manual.

2. Machines, apparatus is arranged so that operators are protected from hazards of other machines or passing individuals.

3. Point of operation zones are properly identified and guarded.

4. Pulleys, gears and belts are properly protected by permanent enclosure guards.

5. Guards are removed only for repair purposes and then replaced immediately.

6. Equipment control switches for each machine are easily available to the operator.

7. Machines are 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 are maintained around dangerous equipment.

10. A preventive maintenance program is established for all equipment.

11. Machines are guarded to comply with OSHA code.

12. Cutting tools are kept sharp, clean, and in safe working order.

13. All hoisting devices are maintained in a safe operating condition and specified load ratings are easily identified.

14. Machines which are defective or being repaired are clearly marked and made inoperable by locking out the machine power switch.

15. Machines and apparatus are marked with proper color code.

16. Equipment cords and adapters are maintained in a safe working condition.

17. Adjustment and repair of any machine is restricted to experienced persons.

18. Ladders are maintained and stored properly.

19. Machines designated for fixed location are securely anchored.

First Aid

1. The first aid is administered by a qualified individual.

2. A list of the qualified first aid personnel is posted.

Recordkeeping

1. An adequate record of accidents is made and reported through proper channels.

2. An analysis of accidents is made for the purpose of corrective action.

Fire Safety

1. Provide and properly mount approved fire extinguishers in the shop area. Multipurpose dry chemical units are most effective for general use. General purpose fire extinguishers should have at least a 2-A: 10-B: C rating. Water backup for extinguishers is always desirable. Multipurpose dry chemical can damage delicate electrical equipment. Gas type extinguishers eliminate that problem. Halon 1211 is more effective and less costly than CO_2 for extinguishing electrical fires.

2. Store flammable liquids in approved (Underwriters Laboratories or Factory Mutual labeled) safety containers and cabinets.

3. Provide for the inspection and testing of fire extinguishers at regular intervals to ascertain that they are fully charged and in proper working condition. (See National Fire Protection Association Pamphlet 10, "Standard for Portable Fire Extinguishers" for details).

4. Provide instruction to students in the location and proper use of fire extinguishers and other fire-fighting equipment.

5. Provide for the bulk storage of flammable materials in an area removed from the main school building.

6. Segregate oxidizers and oily materials in storage. Do not use oxidizer (peroxide catalyst) containers for other purposes.

7. Prohibit use of flammable liquids for cleaning purposes.

8. Provide Underwriters Laboratories Listed oily waste containers for oily and paint soaked rags. It is a good policy to place waste with spontaneous combustion potential in waterfilled containers. (See National Fire Protection Association Pamphlet 30, Para. 4450, "Flammable and Combustible Liquids Code.")

9. Post fire alarm and evacuation procedures.

10. Students should know remote shutoff valve or switch locations for gas or oil-fired equipment and how to de-energize electrical equipment in an emergency.

11. Deluge showers and fire blankets should be in all shops and laboratories, especially where there is danger of fire igniting clothing made of synthetic materials.

12. Do not stack materials within 30 inches below a sprinkler head.

Eye Protection

1. The law of the State of Delaware requires that eye protection programs be developed and implemented in all areas where there are activities potentially hazardous to the eye. (See Requirements for Eye Protection in Educational Institutions, State of Delaware [Attached])

Ladders

1. Hold on with both hands when going up or down.

2. If material must be handled, hoist it up and lower it down by using a rope.

3. Always face the ladder when climbing up or climbing down.

4. Be sure that your shoes are not greasy, mudding, or slippery before climbing.

5. Do not climb higher than the third rung from the top on straight or extension ladders.

6. Do not climb higher than the second tread from the top on stepladders.

7. Always use one hand to hold on to ladder.

8. Do not reach or extend your body to a point where your belt buckle is beyond the side rails.

9. Do not use metal ladder near or while working on electricity.

10. Special precautions should be taken when erecting and climbing a ladder on a windy day.

11. Place a ladder so that the horizontal distance from the base to the vertical plane of the support is approximately 1/4 the ladders length between supports.

12. Ladders, unless otherwise specified and designed, shall not be used by more than one person at a time, nor with ladder jacks and scaffold planks where use by more than one person is anticipated.

13. Ladders shall not be placed in front of doors, unless the door is blocked off, locked or guarded.

14. Ladders shall not be placed on boxes, barrels, or other unsuitable bases to obtain additional height.

15. No ladder should be used to gain access to a roof or any other elevated position unless the top of the ladder shall extend at least three feet above the point of support.

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.

Hazardous Materials

1. Never use or smell the contents of an unmarked container.

2. Do not store any chemical or chemical solution in an unlabeled container, or above eye level.

3. Do not work alone in the lab or shop. At least one other person should always be in the same area.

4. When using heat or open flames, do so only in the area set aside for this purpose.

5. All equipment operated under pressure must have a vented safety diaphragm or safety valve.

6. When getting material stored out of reach, use only approved stepstools or ladders with safety feet and place them on the floor so they will not slip.

7. When conducting accelerated tests, you may need additional protection because you are using toxic chemicals in higher concentrations than you used in normal application.

8. Know and follow the rules for disposing of chemicals.

9. Keep all chemicals — solids, liquids, or gas — off your skin and away from your eyes.

10. If chemicals or solvents get on skin, they should be washed off immediately.

11. Read complete label or directions before using any material.

12. Use extreme care when using caustics, acids, solvents, epoxies and adhesives.

13. In areas where skin and eye irritants are used, eye wash fountains and safety showers should be provided.

14. Although lead pipe has been largely replaced by copper tubing, steel and plastic pipe, do not underestimate the hazards of lead poisoning involved in working with lead.

15. Clothing should be changed and washed daily if it becomes contaminated with toxic chemicals, dusts, fumes, liquids, etc.

16. Toxic and corrosive refrigerants (i.e., methyl chloride and ammonia) may be flammable in concentrations exceeding 3.5 percent by volume. Ammonia is the most common refrigerant in this category. It is very irritating to the eyes, skin and respiratory system. Should large amounts be released, the area must be evacuated. Re-entry to the area should only be made by personnel wearing appropriate respiratory protection and protective impervious clothing.

17. Personnel should not be permitted to eat around toxic chemicals or in contaminated areas.

18. Insure that personnel are not allergic to dyes and solutions, particularly if they are different from what you have been using before. Have neutralizing agents, for dyes and solutions being used, ready and available for immediate use.

19. Make sure that all materials used, creams, lotions, dyes, etc., are not toxic or injurious by inhalation or absorption.

Scaffolds

1. The footing or anchorage for scaffolding shall be sound, rigid, and capable of carrying the maximum intended load without settling or displacement.

2. Unstable objects such as barrels, boxes, loose bricks or concrete blocks shall not be used to support scaffold or planks.

3. No scaffold shall be erected, moved, dismantled or altered except under the supervision of the instructor.

4. Guard rails and toeboards shall be installed on all open sides of platforms more than 10 feet above the ground or floor.

5. Scaffolds 4 to 10 feet, having a minimum horizontal of less than 45 inches in either direction, shall have standard guard rails installed on all open sides and ends of the platform.

6. Scaffolds and their components shall be capable of supporting without failure 4 times the maximum intended load.

7. All planking of platforms shall be overlapped a minimum of 12 inches or secured from movement.

8. An access ladder or equivalent safe access shall be provided.

9. Scaffold planking shall extend over their end supports not less than 6 inches nor more than 12 inches.

10. The use of shore or lean-to scaffolds is prohibited.

11. The poles, legs or uprights of a scaffold shall be plumb and securely and rigidly braced to prevent swaying and displacement.

SAFETY PRACTICES FOR INDUSTRIAL ARTS – TRADES AND INDUSTRY

The following are further safety practices to consider in the Industrial Arts – Trades and Industry areas.

Transportation

1. Close car doors, hood and trunk lid, and make sure no one is inside before raising vehicles on a lift.

2. Know the load limits of lifts and jacks and do not overload them.

3. Vehicles are checked for proper positioning just after vehicles leave the floor.

4. Do not lock the hoist controls of lifts and jacks in the open or shut position.

5. On lifts not fitted with safety catches or provided with accommodations for the insertion of a safety bar, jack stands should be placed under the front and rear of the vehicle.

6. In pulling operations, never stand directly behind a jack. Stand to one side. Ensure the area is cleared of all other personnel before starting the pull.

7. When a student is required to work under a jacked up vehicle, no other person shall work on that vehicle.

8. Jacks are checked periodically to see if they are in good condition.

9. Vehicles on jacks are cribbed, blocked or secured at once.

10. Support stands are used after the vehicle has been raised with a hydraulic jack.

11. No internal combustion engine should be started and allowed to run in the shop area until the exhaust ventilation (tail pipe exhaust system) has been connected and operating.

12. Double check to see that all controls are in proper starting position before attempting to start engine or motor.

13. All power driven belts, chains, marine propellers, gears and cutting blades should be guarded to prevent accidental contact during repairs which require operation of the equipment.

14. Do not leave running engine unattended

15. No riders are allowed on vehicles, crawlers, skidders or other machinery.

16. Safe vehicle operations are taught to all oeprators.

17. Test engines should be securely mounted to the bench or test stand.

18. Never open a pressurized radiator or air conditioning system while the engine is hot.

19. Proper procedures should be adhered to when fueling all engines.

20. Extreme care shall be taken with flames, heat or sparks in operations or procedures to repair, replace, or close to fuel systems and tanks.

21. Gas and liquid coolants used in automotive air conditioners must be handled with care, especially those stored under pressure.

22. Battery charging areas are ventilated and designated as NO SMOKING areas.

23. Where batteries are serviced, methods must be provided for:
    a. flushing and neutralizing spilled electrolite.
    b. fire protection.
    c. adequate ventilation to prevent hydrogen gas build-up (hydrogen gas given off during battery charging is explosive).
    d. quick drenching of workers if acid is splashed or spilled.

24. Open flames, spark producing apparatus, and electric arc must be excluded from the battery service area.

25. Tools and other metallic objects shall be kept away from the tops of uncovered batteries.

26. Prohibit the use of compressed air to clean clothing, equipment and work area.

27. Air tank drain valve on compressor, shall be opened frequently to prevent excessive accumulation of liquid.

28. Relief valves on compressor shall be maintained in good operating condition and tested at regular intervals.

29. Pressure control gauges on compressors shall be protected and maintained in good operating condition.

30. While working on turbine engines, if engine is in operation, remain 25 feet from intake to avoid being sucked in and 150 feet from rear to avoid being burned from the blast.

31. On piston aircraft, do not touch propellers even when at rest.

32. When working on small engines, disconnect spark plug wire to prevent accidental start.

33. Never place any part of the body under the blade enclosure or in grass discharge chute while lawn mower is running.

34. Safety racks (cage) or equivalent protection should be provided and used when inflating, mounting, or dismounting tires with split rims or lock rings.

35. Only one day's supply of paint is stored outside the storage cabinet.

36. Low flash paint thinners are used for equipment cleaning only under ventilated situations.

37. Portable lamps are removed during spray operations.

38. No Smoking signs are posted in spray area, paint room, paint booth and paint storage area.

39. The spray area is at least 20 feet from flame, sparks, electric motors or other ignition sources.

40. Electric lamps in spray area are enclosed and guarded.

41. The spray area is kept clean of combustible residue.

42. Spray booth floors and baffles are non-combustible and easily cleaned.

43. Spray booths have explosion proof lights or are lighted through sealed clear panels.

44. Mechanical ventilation is operated during spraying and drying operations.

45. Spray booths have independent exhaust systems.

46. Exhaust rates meet minimum requirements.

47. Air exhausted from spray operation is removed from the ventilation system.

48. Ducts have access doors to allow cleaning.

49. Intake air is free of contaminants.

50. Make-up air heater is located outside the spray booth.

51. Overspray filters have pressure gauges to indicate need for filter replacement.

52. The spray area used for drying with portable heaters or heat lamps is kept clean of overspray deposits.

53. The infra-red apparatus is kept out of the spray area during spraying operations.

54. The spray area is completely ventilated before using drying apparatus.

Communications

1. Never place fingers or hands in machinery while in operation.

2. Handle paper carefully to prevent cuts.

3. Stack materials properly.

4. Handle paper cutter knives (on or off the machine) very carefully.

5. Only one person must operate a machine at a time.

6. Watch for accidental double cycling on the cutter blade on electric cutters.

7. Make sure camera lights are disconnected before adjustment or maintenance. Watch out for hot arcs and lights.

8. Do not move in darkroom until eyes adjust. Walk with arms extended.

9. Avoid handling electrical equipment with wet hands.

10. Do not talk to others while operating equipment.

11. Do not operate equipment at excessive speeds.

12. Do not overload pallets or tables.

13. Never work in the pressroom or darkroom alone. A second person must be present to assist in case of an accident.

14. Use and store pencils, pens, tacks, and other sharp objects properly.

15. Do not lean back on stools or chairs balancing your weight on the rear legs.

Electricity/Electronics

1. Turn power off and/or unplug before working on any circuit.

2. Use an isolation transformer when working with any AC line-operated item.

3. Discharge electrolytic capacitors.

4. Use only one hand inside of equipment or panels, even if power is removed. Avoid touching grounded points with other parts of the body.

5. Be extra cautious around water, as it is an excellent conductor.

6. Use caution in handling or working near cathode ray tubes as they explode dangerously if broken.

7. Frames of electric motors, regardless of voltage, must be grounded.

8. Non-current carrying metal parts of fixed equipment that may become energized must be grounded under any of the following circumstances:

   a. In wet or damp locations.

   b. If in electrical contact with metal.

   c. When in a hazardous location.

9. Before repairs on electrically powered equipment are begun, the main switch should be locked in the off position.

10. Electrical installations, modifications, and alterations shall conform to Federal, State, and local municipality standards, codes and specifications.

Materials and Processes

1. All materials stored in tiers shall be stacked, racked, blocked, interlocked or otherwise secured to prevent sliding, falling or collapsing.

2. Always check scaffolding ladders and temporary walk-ways before using.

3. Never carry tools with sharp points or edges in your pocket.

4. Never try to stop a machine with hands or other parts of the body after turning it off.

5. Used lumber shall have all nails withdrawn.

6. Manual adjusting and gauging (calipering) of work shall not be permitted while machine is running.

7. Remove chuck keys and other equipment before starting machine.

8. Do not throw refuse in machine coolant. This contaminates the coolant and could spread disease.

9. Use brush, vacuum or special tools for removing chips.

10. Care shall be taken not to come in contact with projections on work or stock, face plates, chucks, etc., while machine is operating.

11. Do not use wiping rag on revolving parts.

12. Using the machine power to start the faceplate or chuck onto the spindle shall not be permitted.

13. Splash guards, shields and other means should be employed to minimize contact with cutting oils which may cause skin irritation.

14. A "stock tube" should be employed when long sections of stock extend beyond the machine. It is important the bar stock fit completely inside the stock tube so that rotating ends are not exposed.

15. The work rests on offhand grinders are adjusted within a maximum of 1/8" from the wheel.

16. The tongue guard on offhand grinders is adjusted within a maximum of 1/4" from the wheel.

17. Safety set screws are provided on all lathe dogs and revolving accessories.

18. No saw, cutter head or tool collar is placed or mounted on a machine or bar unless it is of proper size.

19. Where a standard guard cannot be used, a feather board or jig is used in place, as in dadoing, grooving, jointing, etc.

20. Persons shall not be permitted to work above vertically protruding reinforcing steel unless it has been protected to eliminate the hazard of impalement.

21. Bull float and vibrator handles shall be constructed of non-conductive materials or insulated, to protect operator, where they may come in contact with energized electrical conductors.

22. Formwork and shoring shall be designed, erected, supported, braced and maintained so that it will safely support all vertical and lateral loads that may be upon it during placement of concrete.

23. Powered and rotating type concrete troweling machines that are manually guided shall be equipped with a control switch that will automatically shut off the power whenever the operator removes his hands from the handles.

24. Knife blades or blades of jointers shall be so installed and adjusted that they do not protrude more than one-eighth inch beyond the cylindrical body of the head.

25. Never place the tool rest below the center of the piece being turned on the lathe.

26. Never let the cutting edge of a lathe tool get under the wood being turned.

27. Don't attempt too heavy a cut with the machine. Take several light cuts.

28. Never attempt to plane or joint very short stock. (See manufacturer's specifications.)

29. Never attempt to make an adjustment while the machine is running.

30. Always turn the power off immediately after using the machine.

31. Saw blade should project through the table just far enough to cut the stock.

32. When pushing material over table saw, the operator should stand to the side.

33. Never attempt to clear saw table of chips or saw dust by hand while the maching is running. Use a stick to push it off.

34. When using a band saw, stand in front of it and never step around to the side in line with the direction of the travel of the band saw wheel. This is to prevent injury should the blade break.

35. Always use as heavy a blade as possible for the work to be done.

36. Make sure band saw blade guides are set properly; if not properly set, the blade will strain, kink and break.

37. The practice of inserting wedges between the saw disc and the collar to form what is commonly known as a "Wobble Saw" shall not be permitted.

38. Push sticks or push blocks shall be provided at each machine requiring their use, and they shall be used by the operator when required by the work being done.

39. No device or attachment facilitating mixture of air or oxygen with flammable gases should be used prior to consumption except at the burner or in a standard torch.

40. All welding equipment and apparatus for gas and arc welding, cutting, and brazing meet American Welding Society Standards.

41. Under no condition shall acetylene be generated, piped, or utilized at a pressure in excess of 15 p.s.i. gauge pressure.

42. All compressed gas cylinders are legibly marked, as to gas content with either the chemical or trade name. Such marking shall be by means of stenciling, stamping or labeling not readily removable.

43. All gas cylinders are kept away from radiator and other sources of heat.

44. Inside of building, cylinders are stored in a well-protected, well-ventilated, dry location, at least 20 feet from highly combustible materials such as oil or excelsior, or substances likely to cause or accelerate fire.

45. Cylinders are stored in definitely assigned places away from elevators, stairs, or gangways.

46. Cylinders are stored or located where cylinders will not be knocked over or tampered with by unauthorized persons. They are secured by a chain or other suitable device.

47. Cylinders are not kept in unventilated enclosures.

48. Empty cylinders have their valves closed and protective caps on.

49. Cylinder valve protective caps are in place, hand-tight except when cylinder is in use.

50. Acetylene cylinders are stored valve end up.

51. Oxygen cylinders in storage are separated from fuel-gas cylinders or combustible materials a minimum distance of 20 feet or by a noncombustible barrier at least 5 feet high having a fire-resistance rating of at least one-half hour.

52. Cylinders, cylinder valves, couplings, regulators, hose, and apparatus are kept free from oily or greasy substances.

53. Oxygen cylinders or apparatus are not handled with oily hands or gloves.

54. A jet of oxygen is not permitted to strike an oily surface, greasy clothes, or enter a fuel oil or other storage tank.

55. Cylinders are not dropped or struck or permitted to strike each other violently.

56. Unless cylinders are secured on a special truck, regulators are removed and valve protection caps are in place before cylinders are moved.

57. Cylinders are not placed where they might become part of an electric circuit.

58. Cylinders are not dropped or used as rollers or supports.

59. Before connecting regulator or cylinder valve, the valve is opened slightly for an instant and then closed.

60. The cylinder valve is always opened slowly.

61. An acetylene cylinder valve is not opened more than one and one-half turns of spindle, and preferably no more than three-fourths of a turn.

62. The acetylene opening wrench is left in position on the cylinder valve while in use so it can be shut off quickly if needed.

63. For a manifold system one acetylene wrench is available for immediate use.

64. When work is finished, cylinder valves are closed and torch and regulator valves opened, then closed, to bleed remaining pressurized gas from regulator and lines.

65. Acetylene cylinders in a manifold system are installed with flash arresters.

66. Each oxy-acetylene cylinder lead is equipped with a backflow check valve.

67. Piping for manifolds for acetylene is steel or wrought iron.

68. The generally recognized colors are red for acetylene and other fuel-gas hose, green for oxygen hose, and black for inert-gas and air hose.

69. Hose showing leaks, burns, worn places, or other defects rendering it unfit for service are repaired or replaced.

70. Gauges or oxygen regulators are marked "USE NO OIL."

71. Cylinders are moved by tilting and rolling on their bottom edge.

72. Cylinders containing oxygen, acetylene, or other fuel-gas are not taken into confined spaces.

73. Torches are lighted by friction lighters or other approved devices, and **NOT** by matches or from hot work.

74. When welding under wet or other conditions causing perspiration, steps are taken to reduce shock hazard.

75. On all types of arc welding machines, control apparatus are enclosed except for the operating wheels, levers, or handles.

76. Terminals for welding leads are protected from accidental electrical contact by personnel or by metal objects.

77. Chains, wire ropes, cranes, hoists, and elevators are not used to carry welding current.

78. All ground connections are checked to determine that they are mechanically strong and electrically adequate for required current.

79. Cables with splices or defects within 10 feet of the holder are not used or replaced.

80. Machines which have become wet are thoroughly dried and tested before being used.

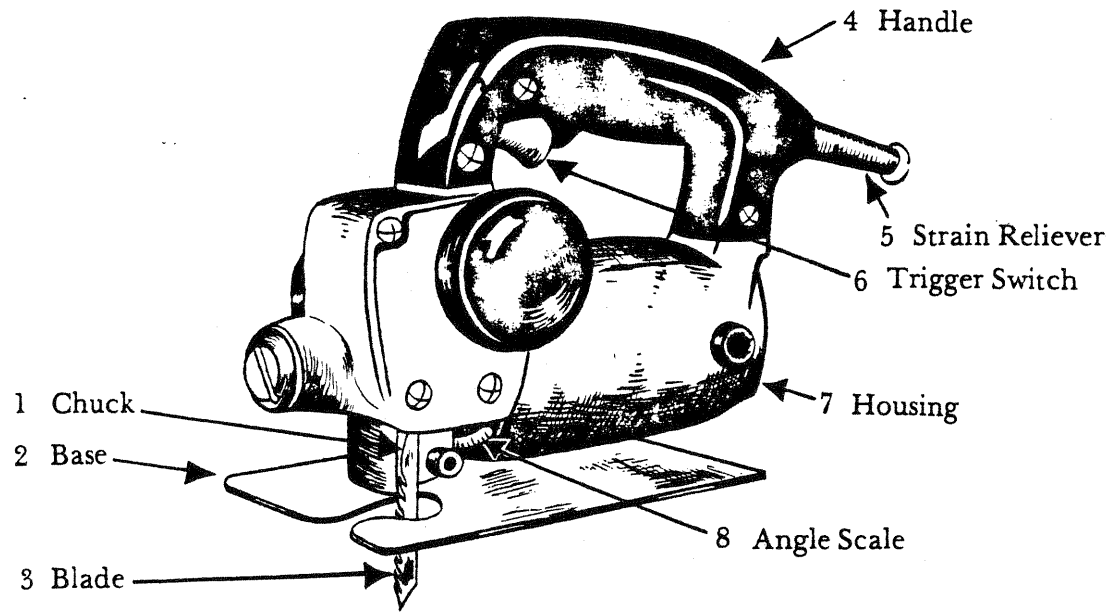
81. Protective shields, ventilation, fire curtains are installed to protect against sparks, harmful rays, and flames.

82. Tests shall be conducted in accordance with manufacturers' instructions and accepted industry practice.

BAYONET SAW

For Safety –

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. Make sure the blade is the correct type for the material and that it is tightly clamped in the chuck.
6. Be sure the switch is off before connecting to the power source.
7. Use vise or clamps to securely hold material to be cut.
8. Keep cutting pressure constant, do not force the blade into the work.
9. Always keep the base tightly against the material being cut.
10. Do not set the saw down on the bench until it has stopped.
11. If the blade is in the tool be sure and lay the tool on its side.



BAYONET SAW

Name _____ Date _____ Test Grade _____

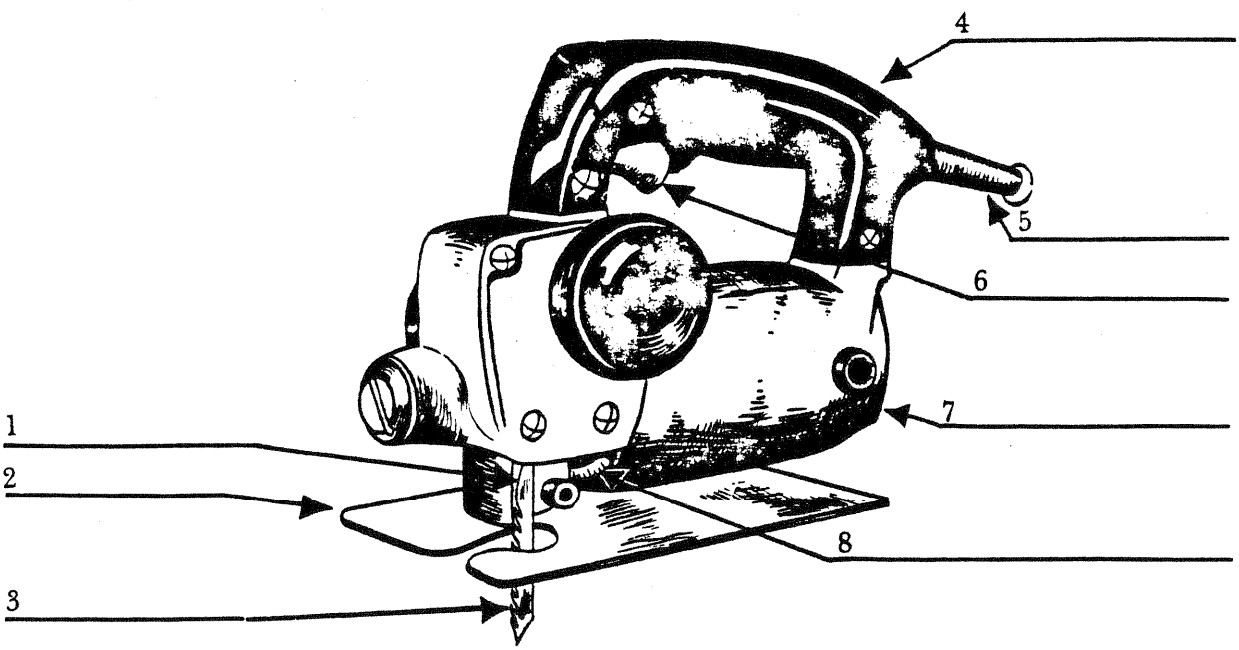
This student has performed operations safely on the Bayonet Saw

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

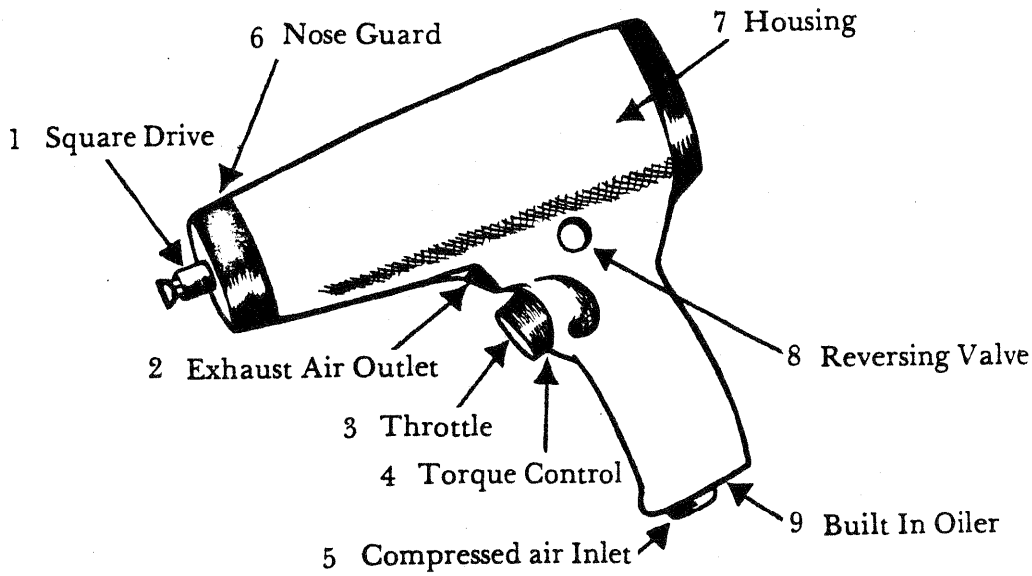
1. Any blade will safely cut any kind of material. T F
2. Material should be held securely before starting to cut. T F
3. Cutting pressure should be constant without forcing the blade into the work. T F
4. The base should always be flat against the work, even when the saw is tilted. T F
5. The saw can be stored using the blade and the rear of the base for support. T F
6. The housing and handle should be kept free of grease, chips and dust.



PORTABLE AIR IMPACT WRENCH

For Safety –

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 throttle is in the off position before connecting to air supply.
6. Always use impact type sockets designed for use with power equipment.
7. Make sure work is secure or held with clamps or tightly in a vise.
8. Set torque control for correct tightness before starting the job.
9. Be sure both hands are free to properly operate an impact tool. Maintain balance and firm footing at all times.
10. Always use the tool in short bursts of power.
11. Quick change coupling should be at end of host whip, not at the tool.
12. Always disconnect the tool when not in actual use.



PORTABLE AIR IMPACT WRENCH

Name _____ Date _____ Test Grade _____

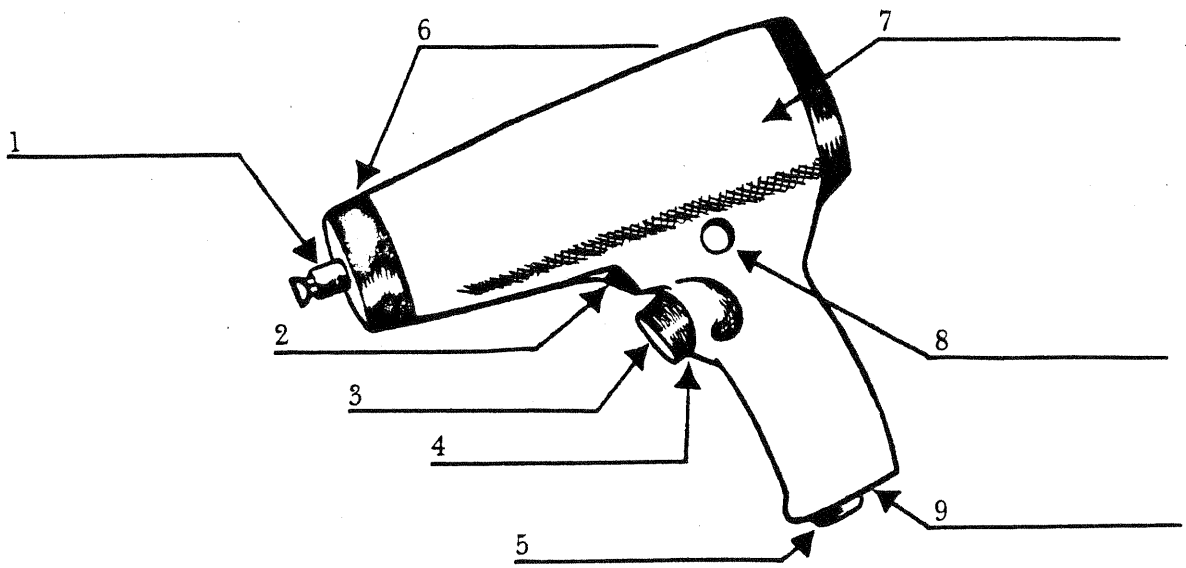
This student has performed operations safely on the Portable Air Impact Wrench.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

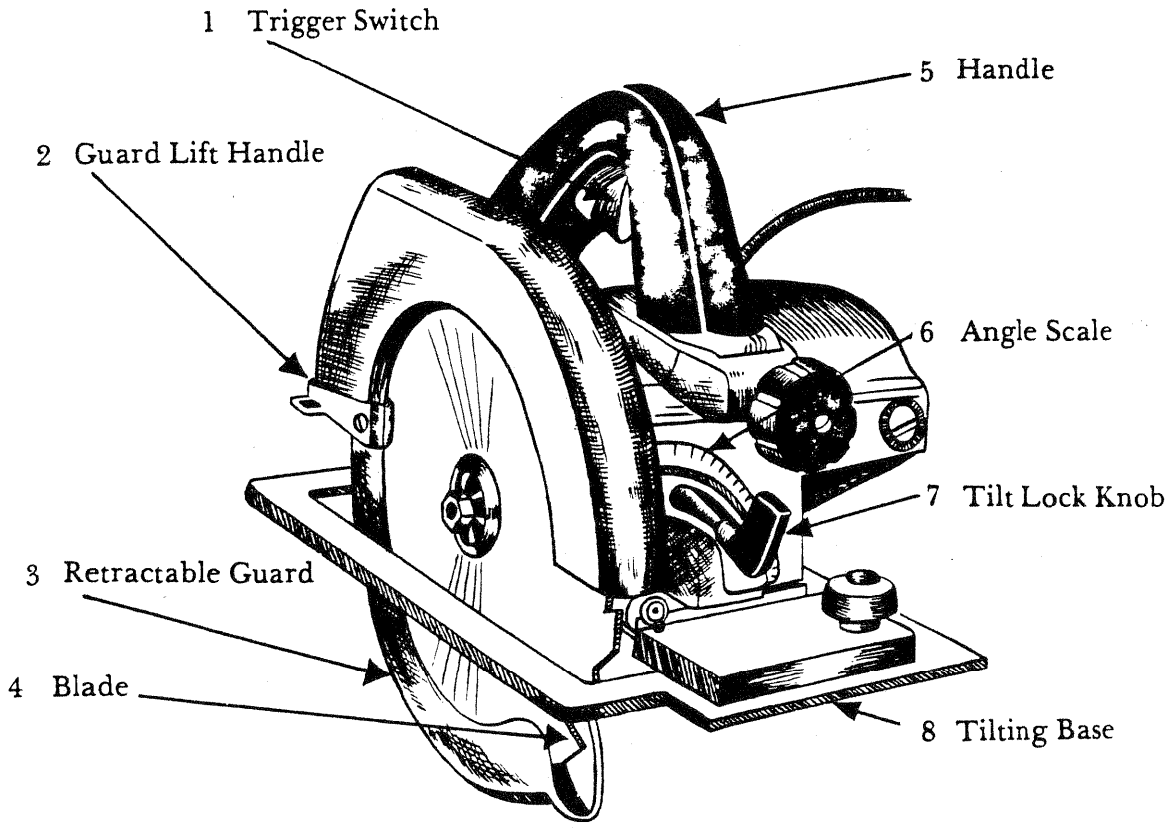
1. It is safe to operate the impact wrench with one hand if the bolt or nut is not too tight. T F
2. Since there are no chips, eye protection is not necessary. T F
3. The sockets used must be designed for impact wrenches. Regular sockets are not adequate.
4. The tool should be disconnected from the air line at the end of the hose whip, not at the tool. T F
5. The impact wrench must be disconnected when not in actual use. T F
6. Short bursts of power should always be used to operate the tool.



PORTABLE CIRCULAR SAW

For Safety –

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 in place and operating correctly.
4. Always use proper eye protection.
5. Make sure that telescoping guard returns automatically to cover the blade after each cut.
6. Do not set saw down until blade stops.
7. If the saw blade binds or smokes, stop cutting immediately.
8. Make sure the power cord is clear of the blade.
9. Be sure the material you are cutting is adequately supported.
10. Check the base setting for the proper depth of cut.



PORTABLE CIRCULAR SAW

Name _____ Date _____ Test Grade _____

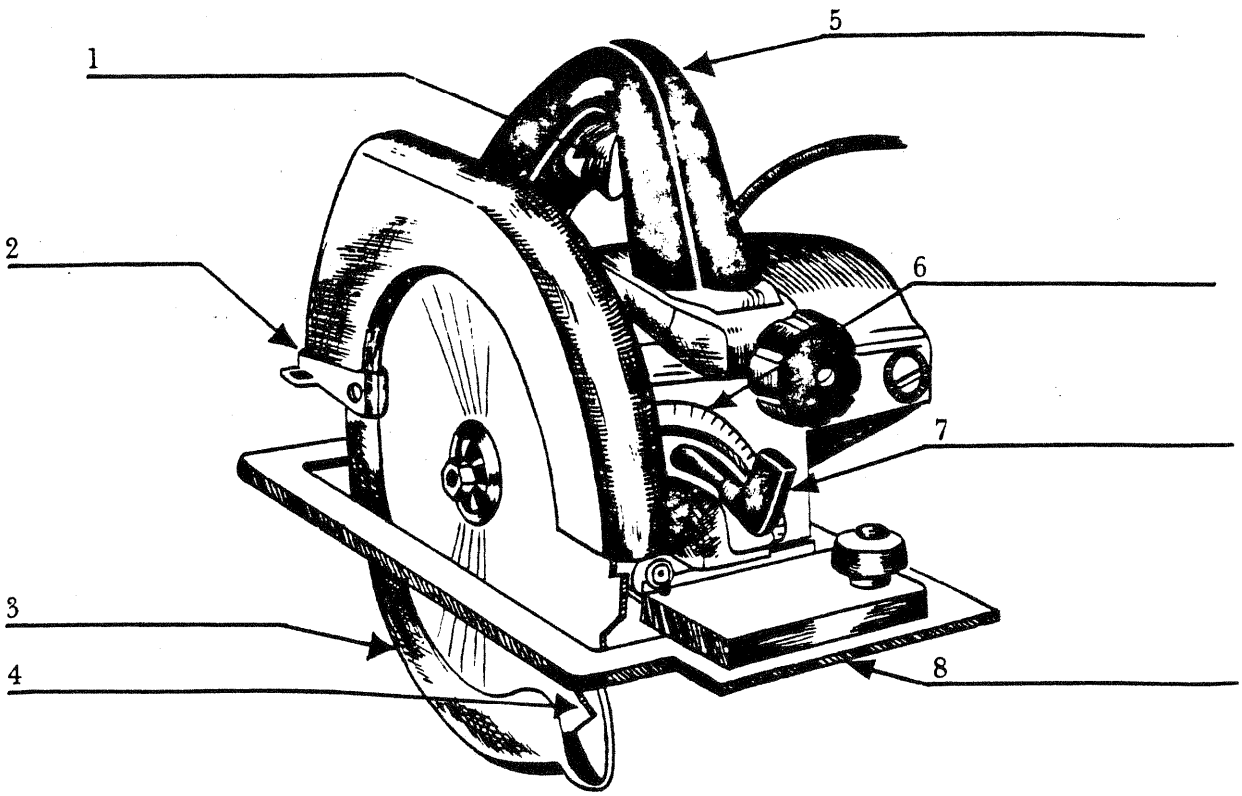
This student has performed operations safely on the Portable Circular Saw.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

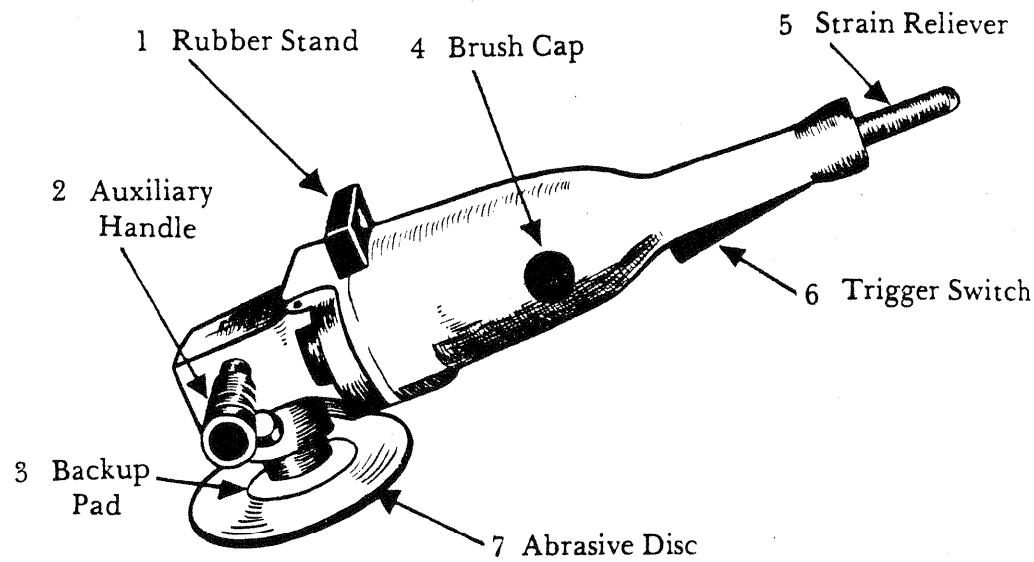
1. Permission should be obtained before operating this tool. T F
2. The guard can be wedged so that it will not be operable. T F
3. Eye protection is not necessary when using this tool. T F
4. You should not set the saw down until it has completely stopped. T F
5. The saw blade should extend about 1/8" beyond the thickness of the material being cut. T F



PORTABLE DISC SANDER

For Safety —

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, be sure the switch is in the off position.
6. Make sure backup pad and disc are securely fastened to the tool. Unplug the sander when changing discs.
7. Do not allow the edge of the disc to touch the edge of the stock.
8. Stand clear of the spark line or spark area.
9. Sand or finish with a stroking motion; do not pause in one spot.
10. Set grinder on back or on rubber stand when not in use and disconnect from power source.



PORTABLE DISC SANDER

Name _____ Date _____ Test Grade _____

This student has performed operations safely on the Portable Disc Sander.
Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

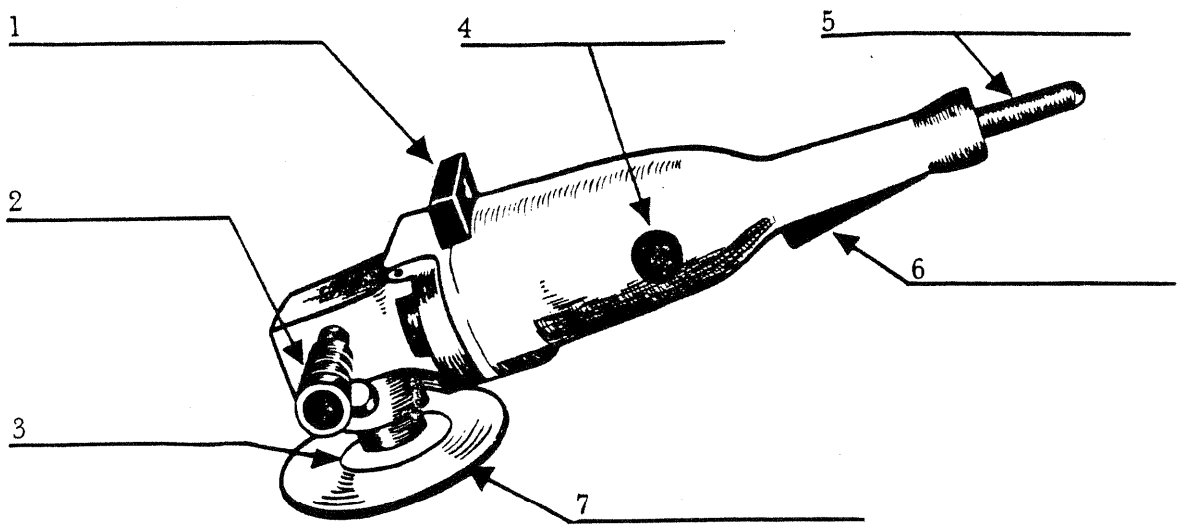
1. The sparks caused by grinding or sanding are warm but not dangerous. T F

2. In order to remove material fast, it is safe to grind steady in one spot. T F

3. It is advisable to wear protective clothing while using this tool. T F

4. A fast rolling action takes place when the edge of the disc touches the edge of the stock which can throw the grinder or sander. T F

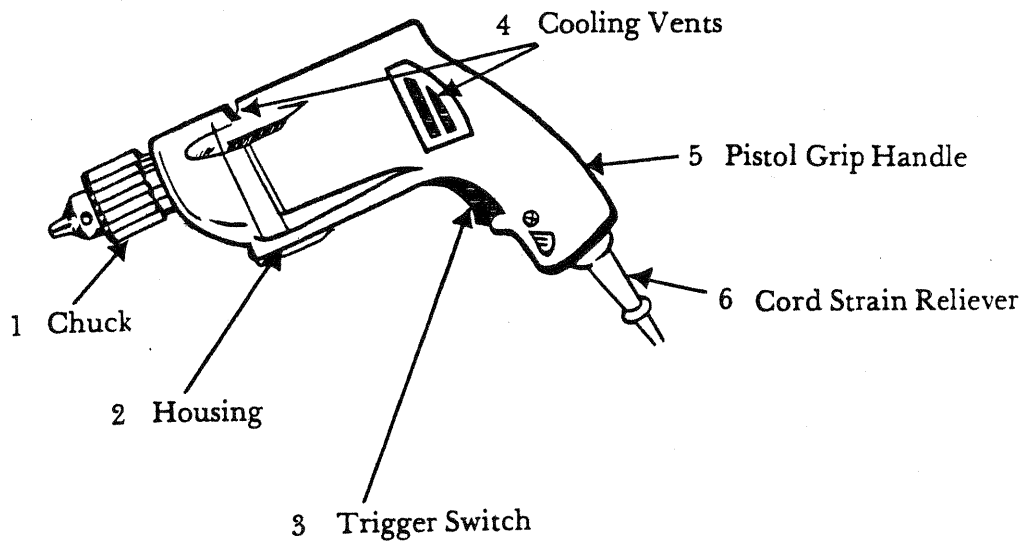
5. The grinder or sander should be unplugged and set on its back when not in use. T F



PORTABLE ELECTRIC DRILL

For Safety –

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. "Unplug" the drill when changing bits.
6. Make sure switch is off and key removed before connecting to power source.
7. Mark hole location with center punch (metal) or awl (wood) before drilling.
8. Be sure work is tightly clamped or secure before drilling.
9. Drill with straight even steady pressure.



PORTABLE ELECTRIC DRILL

Name _____ Date _____ Test Grade _____

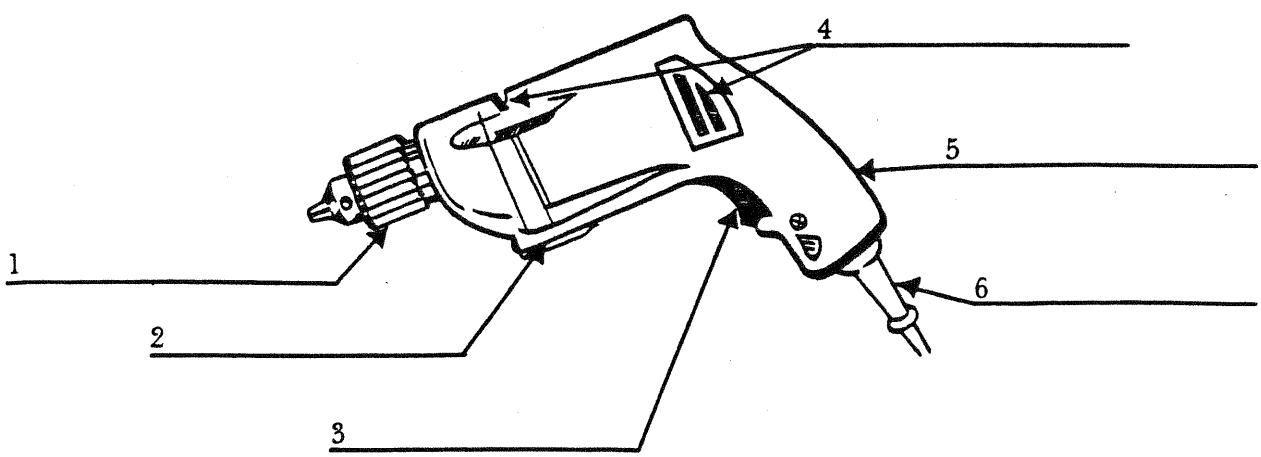
This student has performed operations safely on the Portable Electric Drill.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

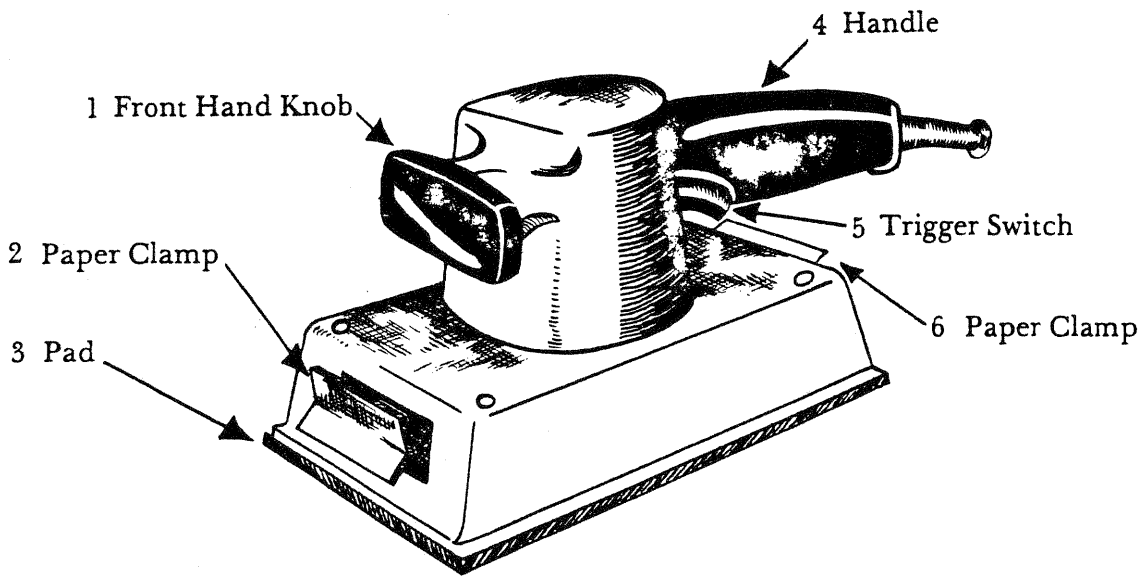
1. Eye protection is not really necessary when drilling wood. T F
2. The drill should be unplugged when changing bits. T F
3. It is alright to carry the drill by the cord. T F
4. Even steady pressure should be used when drilling. T F
5. Work should be clamped while drilling. T F



PORTABLE ELECTRIC FINISHING SANDER

For Safety —

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 connecting to the power source.
6. Make sure abrasive sheet is in good condition and properly installed on the tool.
7. Start the tool above the work, set it down evenly and move slowly over a wide pattern area.
8. Lift the sander from the work before stopping the motor.
9. Do not set the sander on the work bench until it has stopped running.
10. Never lift or carry any portable electric tool by the power cord.



PORTABLE ELECTRIC FINISHING SANDER

Name _____ Date _____ Test Grade _____

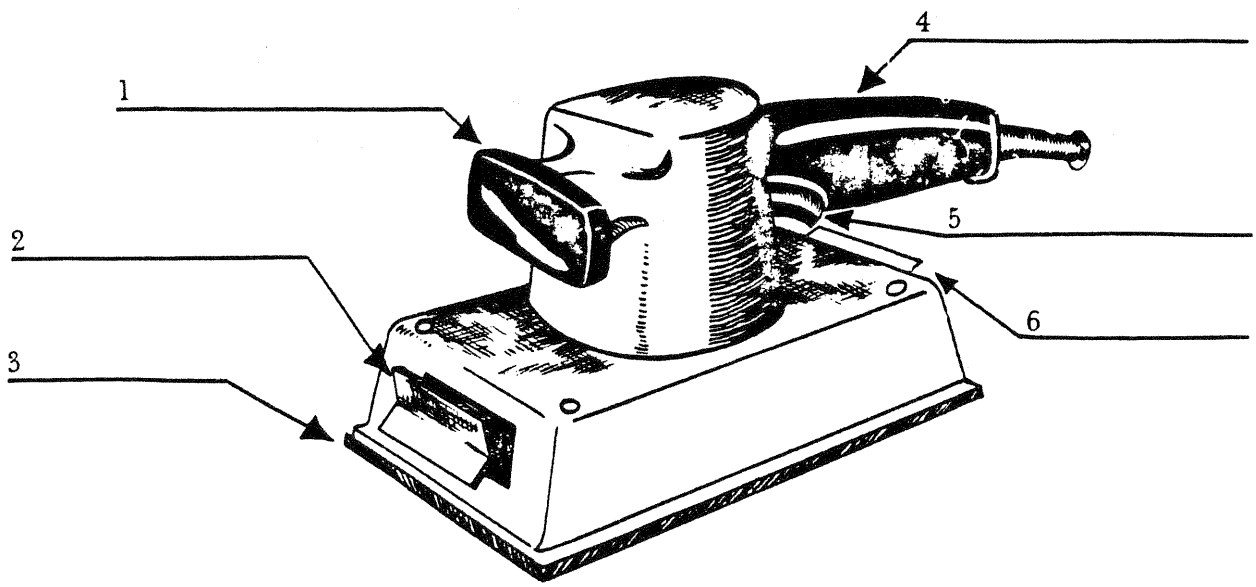
This student has performed operations safely on the Portable Electric Finishing Sander.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

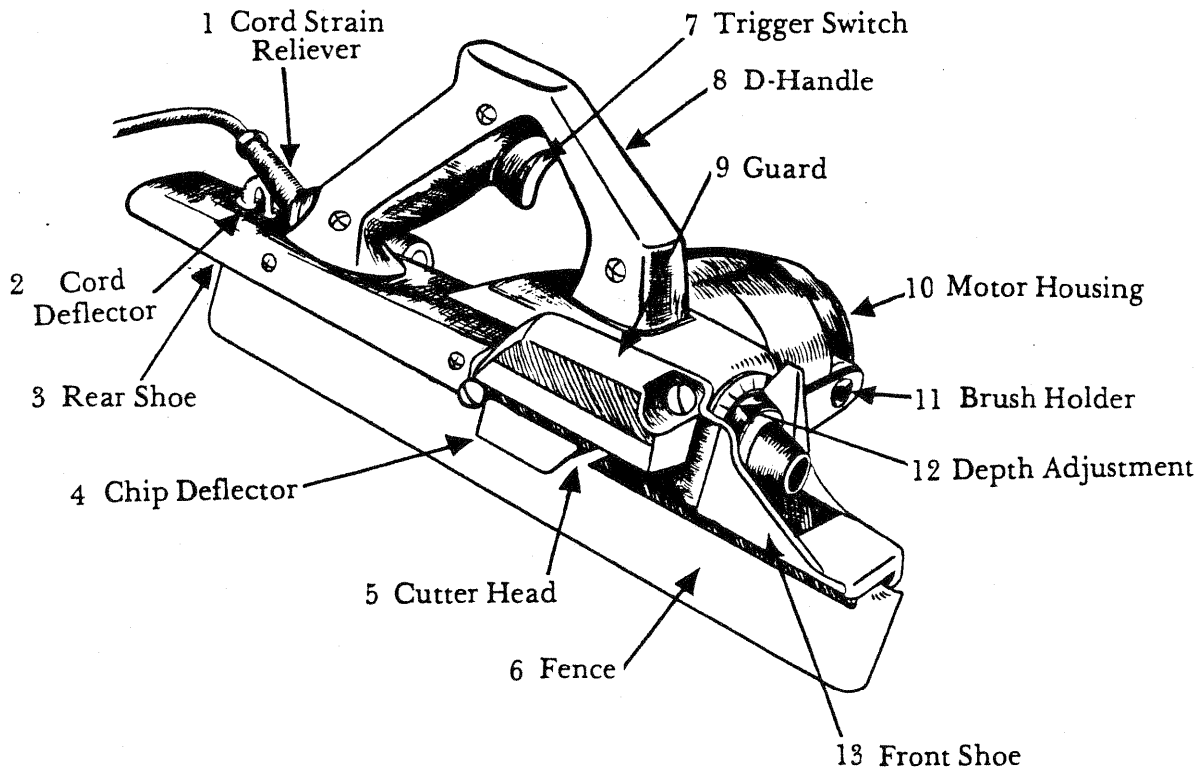
1. Eye protection must be worn when using the sander. T F
2. The abrasive sheet can be loosely clamped yet still be safe and efficient. T F
3. The sander should never be carried by the power cord. T F
4. The tool should be turned on only after it is placed tightly on the material to be sanded. T F
5. Lift the sander from the work before turning it off. T F



PORTABLE ELECTRIC PLANE

For Safety –

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.



PORTABLE ELECTRIC PLANE

Name _____ Date _____ Test Grade _____

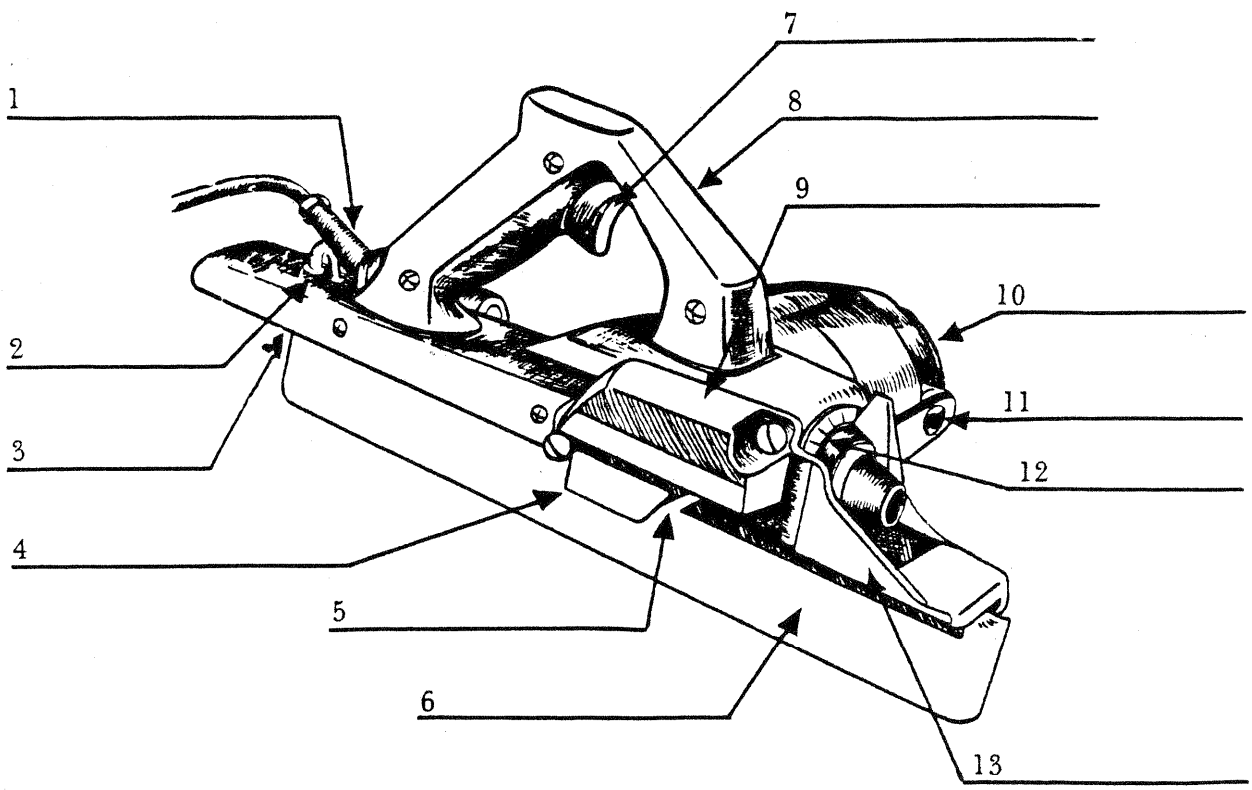
This student has performed operations safely on the Portable Electric Plane.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

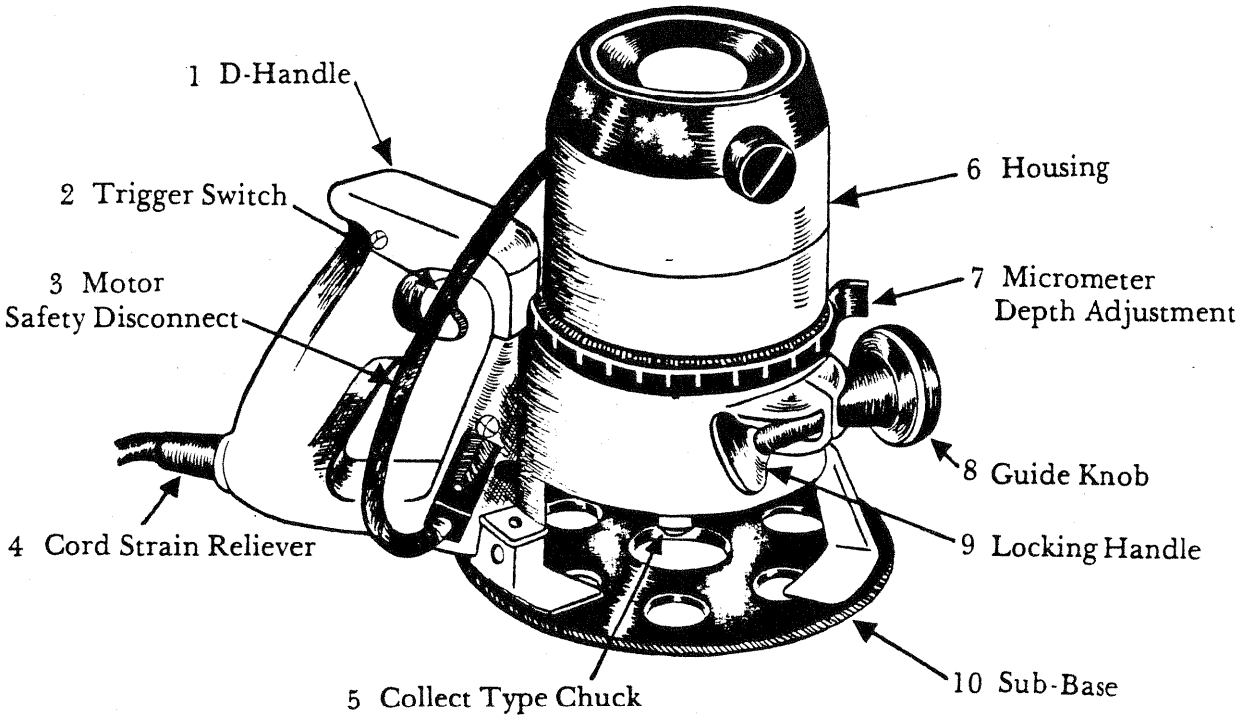
1. Since the cutter will not touch, it is alright to set the plane on the bench while still running. T F
2. The plane will cut deeper the more pressure is applied. T F
3. The plane should be disconnected before adjusting the depth of cut or the fence. T F
4. Eye protection is required when using a power plane. T F
5. The plane should be kept firmly against the work piece until the cut is completed. T F
6. The chip deflector is of no real safety value and can be removed. T F



PORTABLE ELECTRIC ROUTER

For Safety –

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 off before inserting plug into power source.
6. Be sure collet chuck is tight and bit is secure.
7. Make sure work piece is clamped or rigidly held and the area of router travel is free of obstructions.
8. Hold router with both hands and cutting pressure should be constant. Do not force or jam into work.
9. Make a trial cut in a piece of similar scrap material.
10. Disconnect from power source when changing bits, making adjustments, or when router is not in use.



PORTABLE ELECTRIC ROUTER

Name _____ Date _____ Test Grade _____

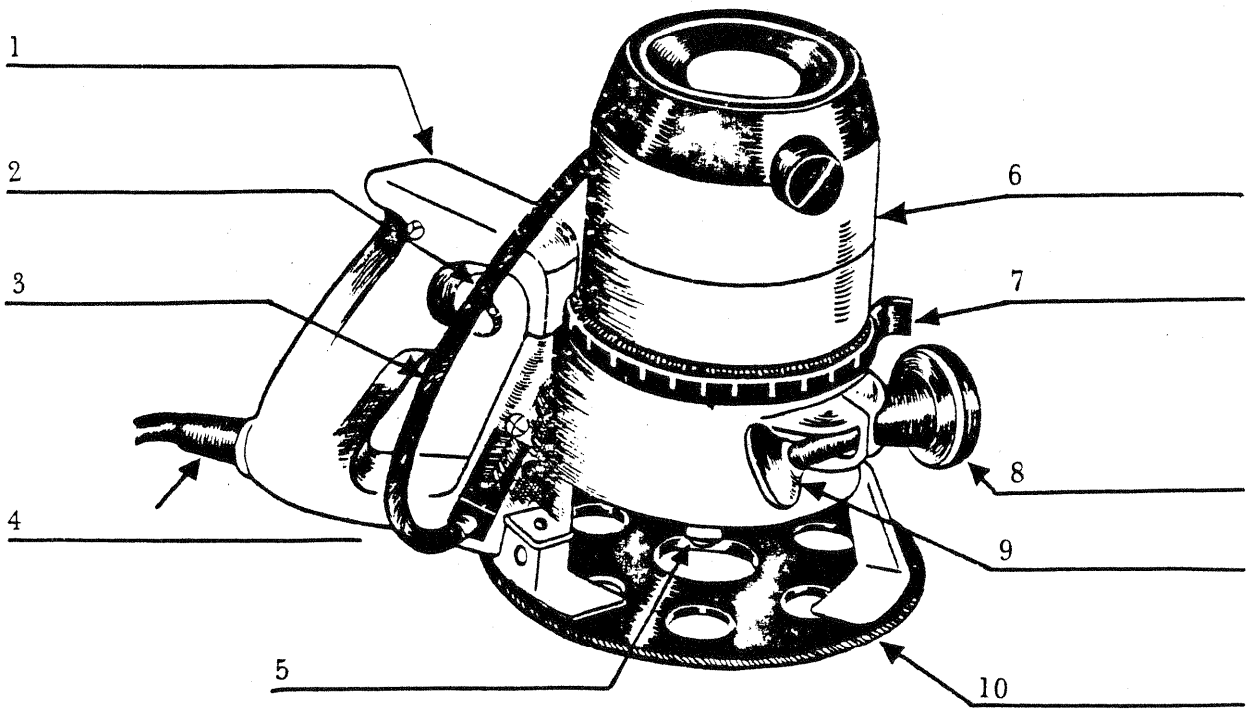
This student has performed operations safely on the Portable Electric Router.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

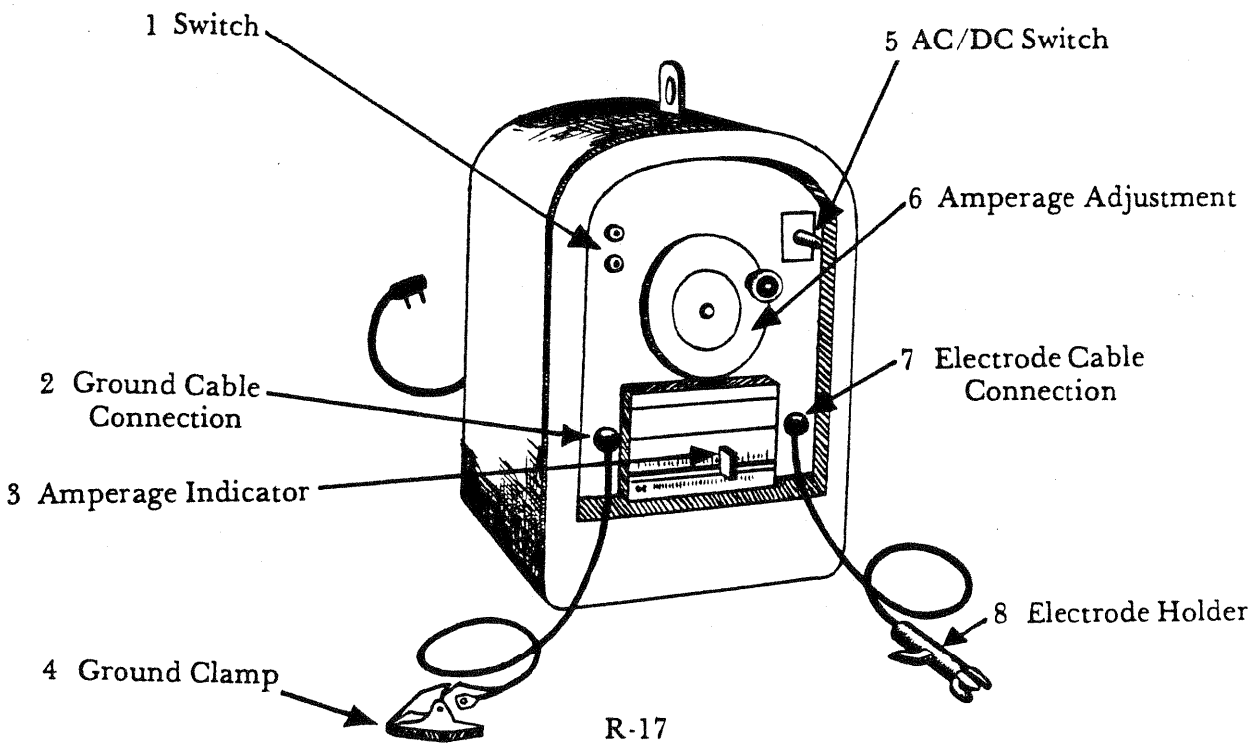
1. It is a good idea to make a trial cut in a piece of scrap wood. T F
2. A router should always be held with both hands. T F
3. A jogging motion should be used when cutting to keep the bit cool. T F
4. It is not necessary to clamp material being routed. T F
5. The depth of cut may be safely adjusted without unplugging the tool. T F
6. The router is not really guarded. T F



ARC WELDER

For Safety –

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 welding helmet must be worn when welding.
6. Proper ventilation must be available.
7. Goggles must be worn when chipping slag.
8. Others in the area must be warned prior to striking an arc.
9. Gloves and proper clothing must be worn when welding.
10. Closed containers should not be welded without instructor's permission.
11. Do not stand in wet areas while welding.
12. Screens to protect others must be in place before welding is started.



ARC WELDER

Name _____ Date _____ Test Grade _____

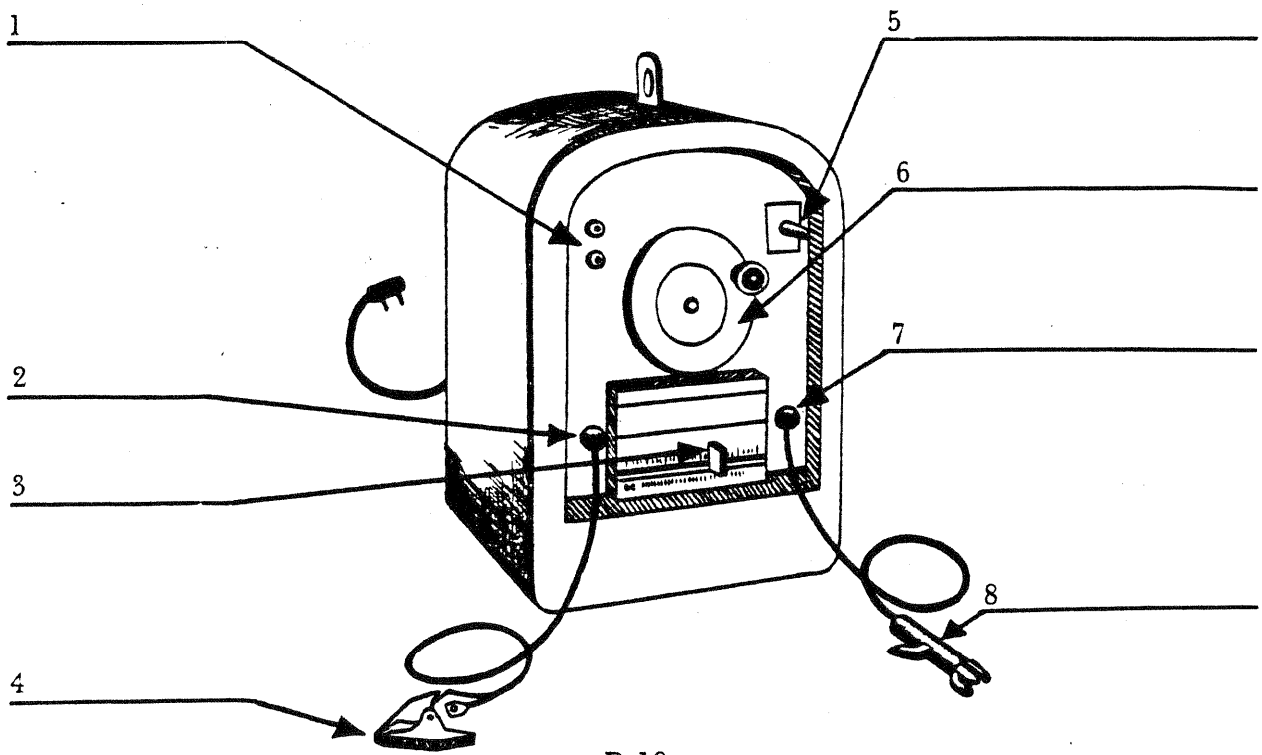
This student has performed operations safely on the Arc Welder.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

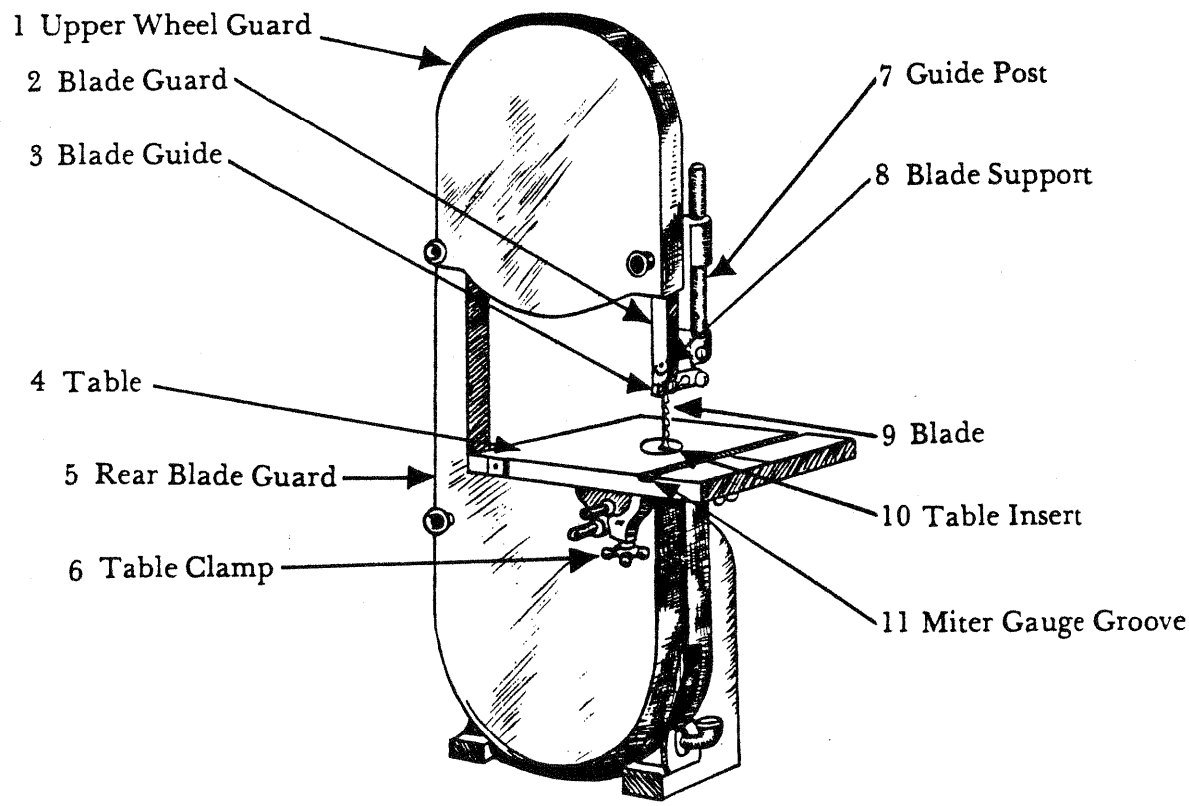
1. You should warn anyone nearby when you start to weld. T F
2. Goggles as well as a welding hood should be available before you start to weld. T F
3. A closed container is dangerous to weld. T F
4. Gloves are not necessary when welding. T F
5. It is dangerous to weld without proper ventilation. T F



BAND SAW

For Safety —

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. Adjust the guide and guard to within 1/4 inch of work.
6. Remove scrap only when machine is stopped.
7. Avoid backing out of a cut (kerf).
8. Keep hands and fingers in such a position that there is no danger of their slipping into the blade. Hold work piece on the right side of the cutting line. Use a push stick where necessary.
9. Do not leave the machine until it has stopped.
10. Consult with your instructor before cutting large or irregular shaped pieces.



BAND SAW

Name _____ Date _____ Test Grade _____

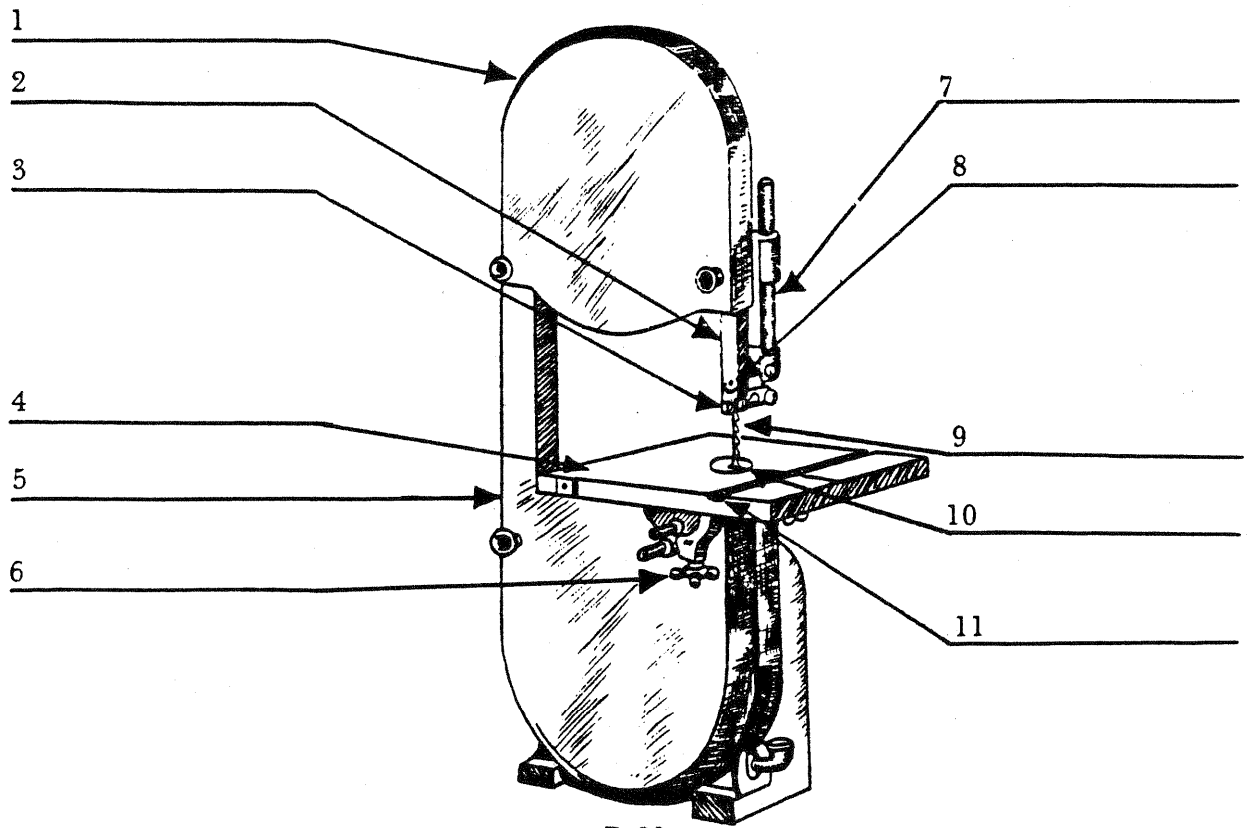
This student has performed operations safely on the Band Saw.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

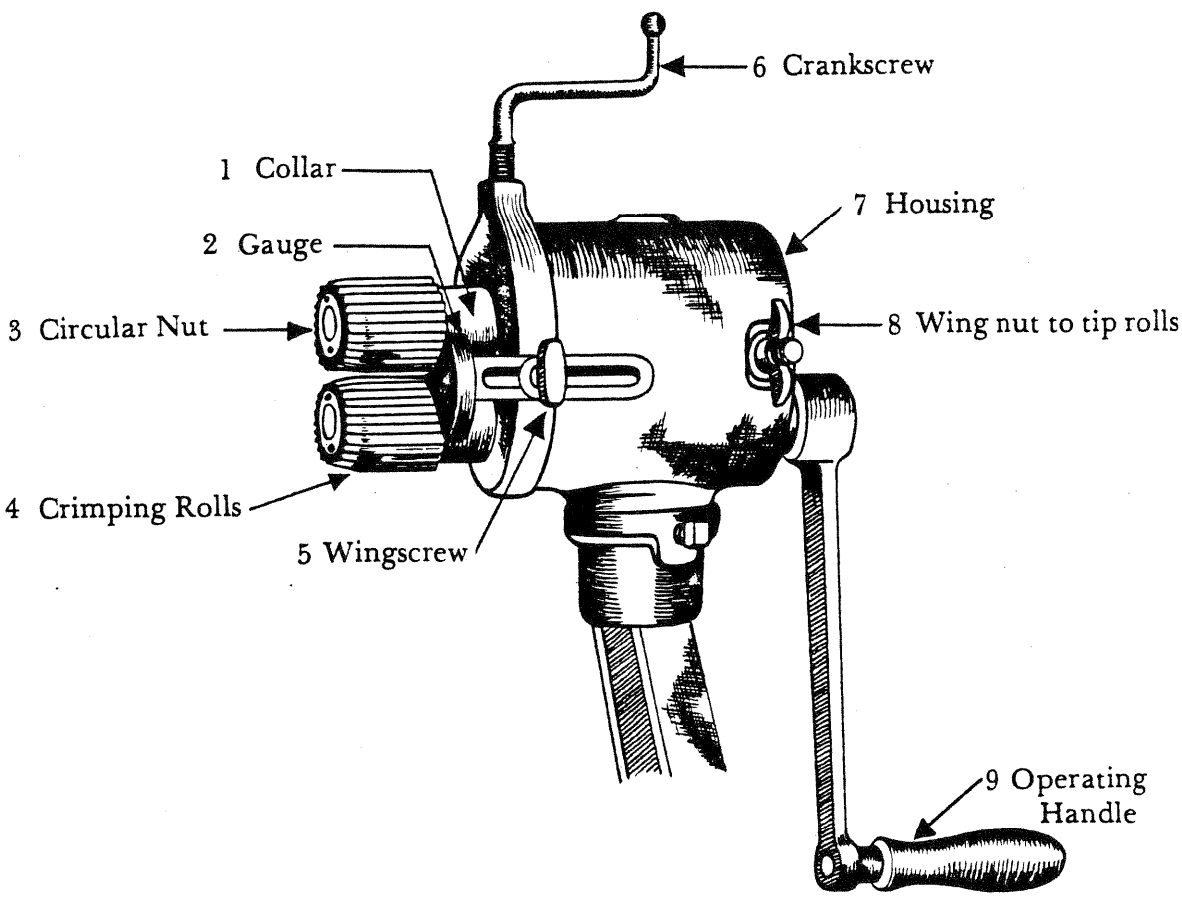
1.	It is safe to tilt the table for cutting bevels.	T	F
2.	The lower band wheel does not require a guard.	T	F
3.	The saw should be stopped by forcing a piece of wood against the blade.	T	F
4.	The blade guard should be adjusted to about 1/4" from the work.	T	F
5.	It is safe to use the fence for cutting several pieces of wood to the same length.	T	F
6.	The hands should come no closer than 2" from the blade.	T	F
7.	The blade guides should be adjusted tight against the blade.	T	F
8.	Instructor's permission is required to operate a band saw.	T	F
9.	Adjustments should be made with the power off.	T	F
10.	Eye protection is not required when operating a band saw.	T	F



BEADING MACHINE

For Safety —

1. Operate only with instructors' permission and after you have received instruction.
2. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Always use proper eye protection.
4. Check setup and machine before operating.
5. Never surpass the capacity of the machine.
6. Keep hands and fingers clear of rolls.
7. Metal must be held firmly during forming operations.
8. Care must be taken to assure that rolls are on properly and securely.



BEADING MACHINE

Name _____ Date _____ Test Grade _____

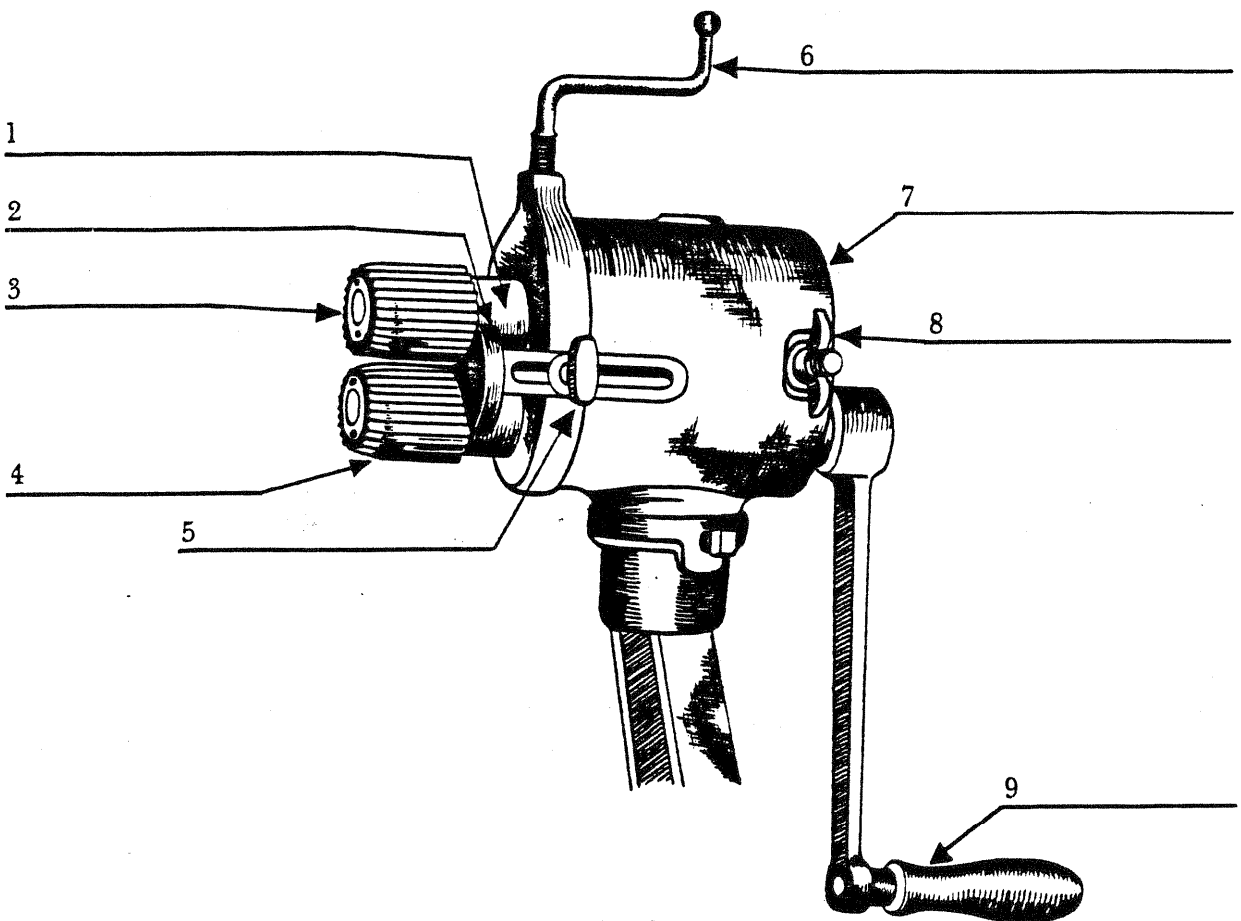
This student has performed operations safely on the Beading Machine.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

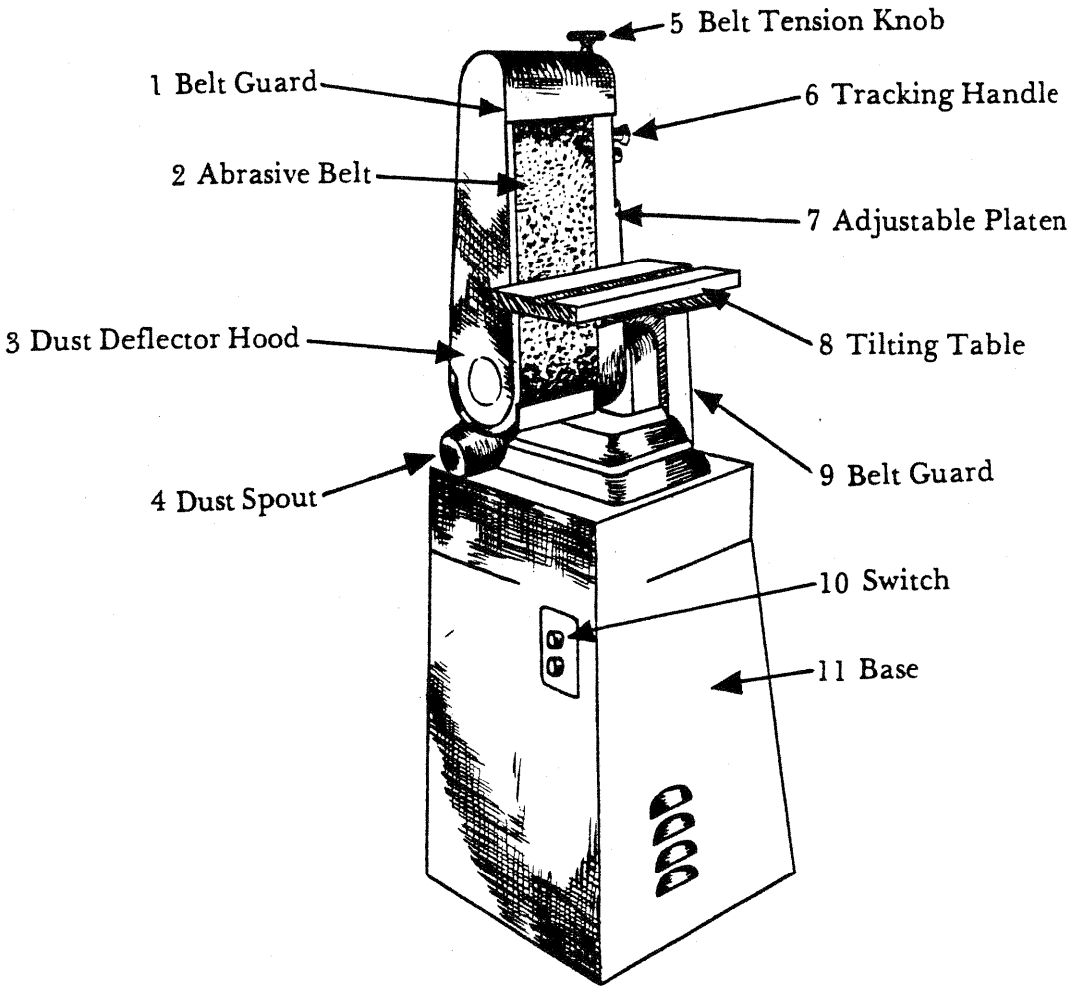
1. Always keep fingers clear from the rolls. T F
2. Metal of any gauge can be used in this machine. T F
3. Two or more thicknesses of metal may be worked at one time. T F
4. It is not necessary to hold the metal being formed. T F
5. It may be necessary to force the metal to begin the operation. T F



BELT FINISHING MACHINE

For Safety —

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. Make all adjustments except final belt tracking with the power off.
6. Make sure there is adequate strong tension on the belt and that it is not torn.
7. When changing belts, make sure the new belt runs as arrows indicate.
8. The table should be adjusted to within 1/16" of the abrasive belt.
9. Keep hands clear of the abrasive belt while operating and keep material flat on the table.
10. The belt must be re-tracked if the angle of the basic machine is changed.



BELT FINISHING MACHINE

Name _____ Date _____ Test Grade _____

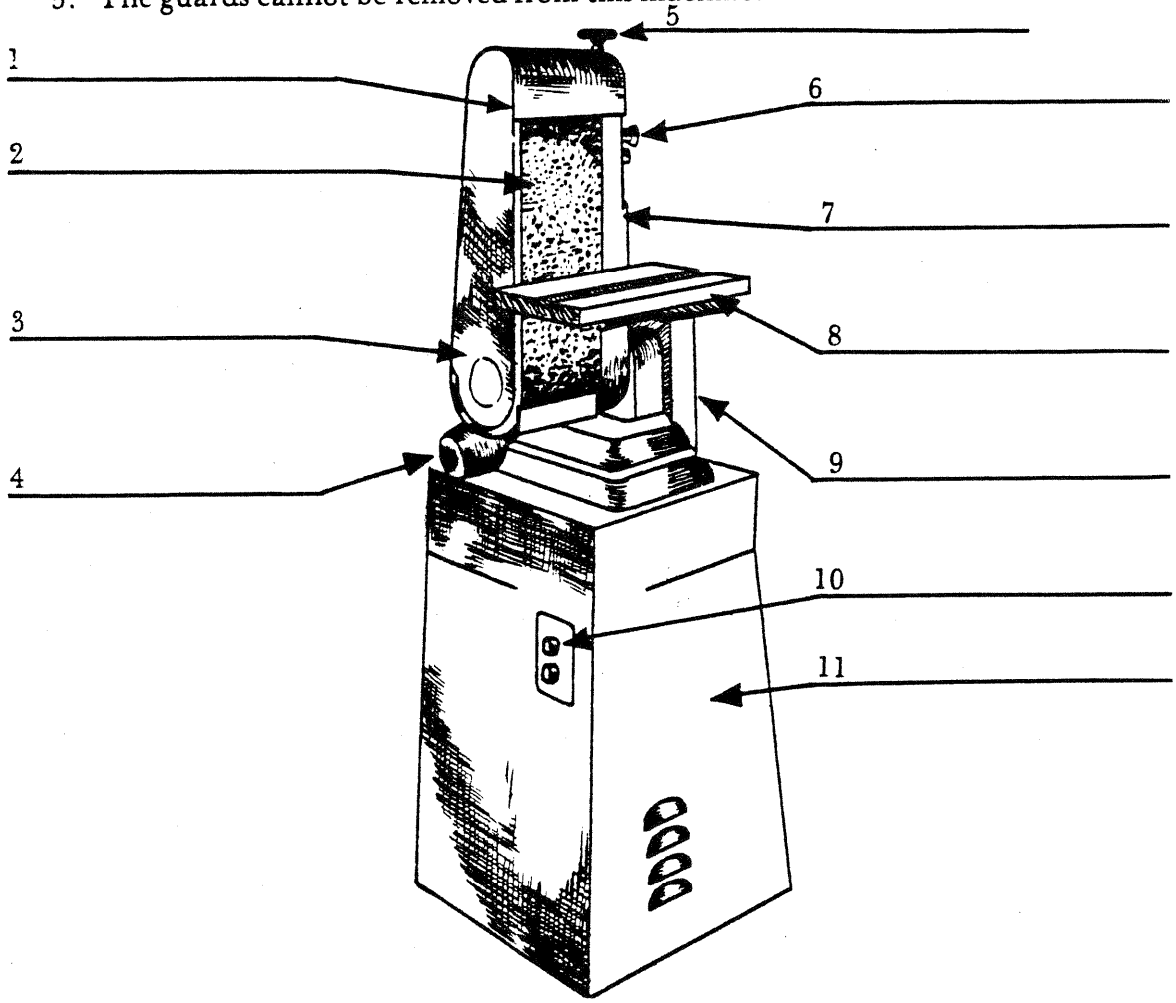
This student has performed operations safely on the Belt Finishing Machine.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

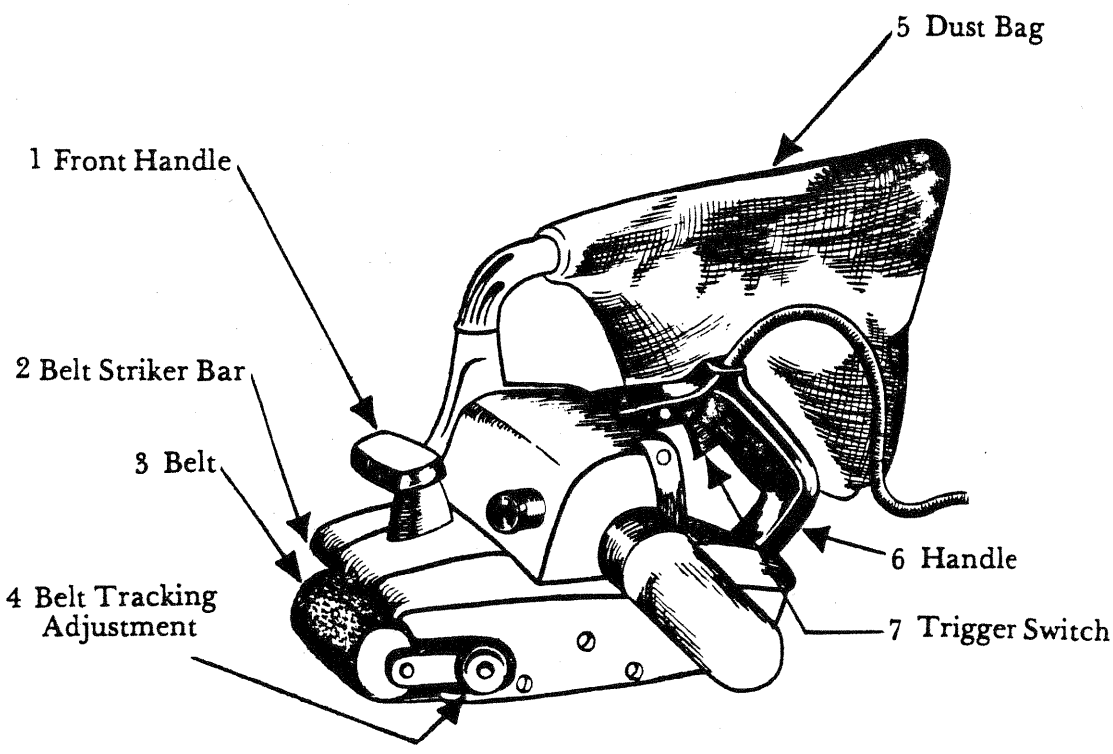
1. Material may be safely sanded in the center of the platen. T F
2. The table should be 1/4" away from the belt for adequate clearance. T F
3. If the angle of the unit is changed, belt tracking should be checked. T F
4. There are directional arrows inside the belt. T F
5. The guards cannot be removed from this machine. T F



BELT SANDER

For Safety –

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. Check to see if belt is properly installed and in good condition before starting.
6. Start sander above work; let rear of belt touch first.
7. Keep the electrical cord clear and the dust bag away from the sander belt.
8. Lift sander off the work before stopping.
9. Wait until belt is completely stopped before placing sander on bench.
10. Empty dust bag daily into proper waste container.



BELT SANDER

Name _____ Date _____ Test Grade _____

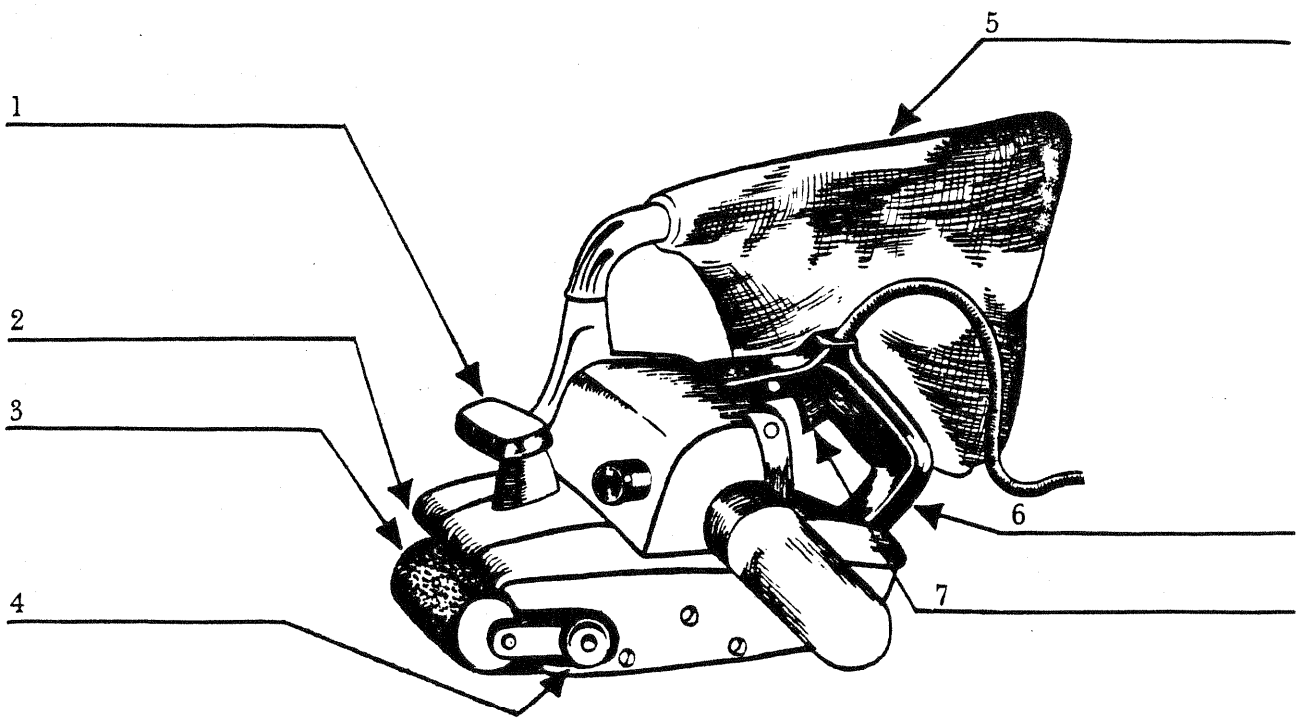
This student has performed operations safely on the Belt Sander.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

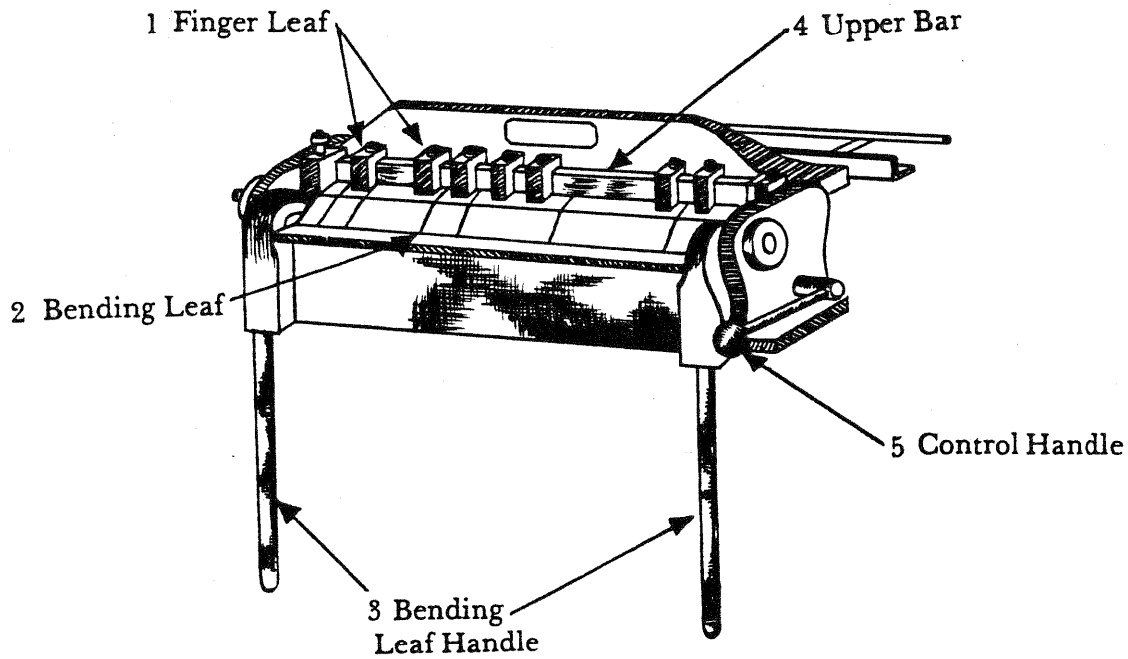
1. Eye protection is required when using this machine. T F
2. You should have a firm grasp on the sander before starting. T F
3. The sander should rest on the work when starting. T F
4. A wood sander should not be used on steel. T F
5. This machine should be examined before starting. T F



BOX OR FINGER BRAKE

For Safety –

1. Operate only with instructor's permission and after you have received instruction.
2. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Always use proper eye protection.
4. Check setup and machine before operating.
5. Never surpass the capacity of the machine.
6. Feed and operate from the front or the operator's position.
7. Whenever two people are needed to operate the brake, one shall be the operator, the other the helper.
8. When setting the fingers of the brake, be sure you don't pinch your fingers.
9. Be sure that fingers are tightened securely on finger leaf.
10. Never work more than one thickness of metal.



BOX OR FINGER BRAKE

Name _____ Date _____ Test Grade _____

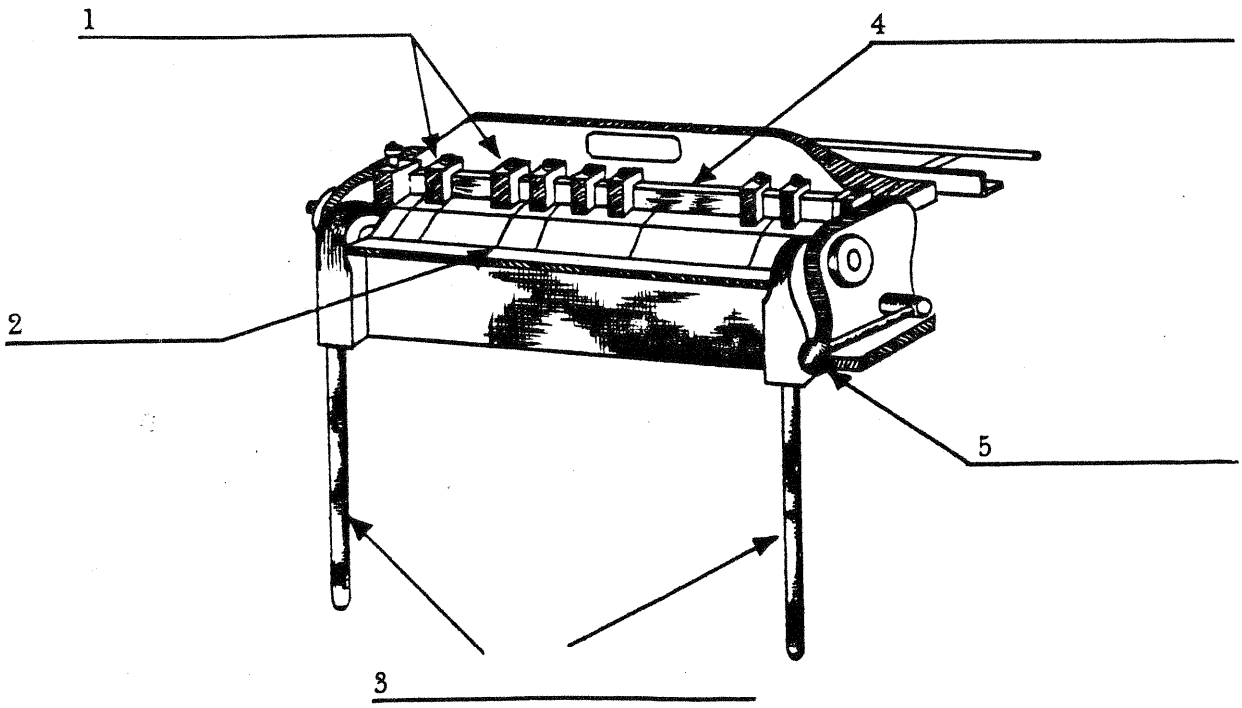
This student has performed operations safely on the Box or Finger Brake.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

1. Only one person should work with this machine at a time. T F
2. Always keep fingers clear from the bending leafs while in use. T F
3. Eye protection is not required when operating this machine. T F
4. Metal of any gauge can be used in this machine. T F
5. Two or more thicknesses of metal may be worked at one time. T F



BUFFER

For Safety —

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. Always buff using the lower half of the wheel (below center).

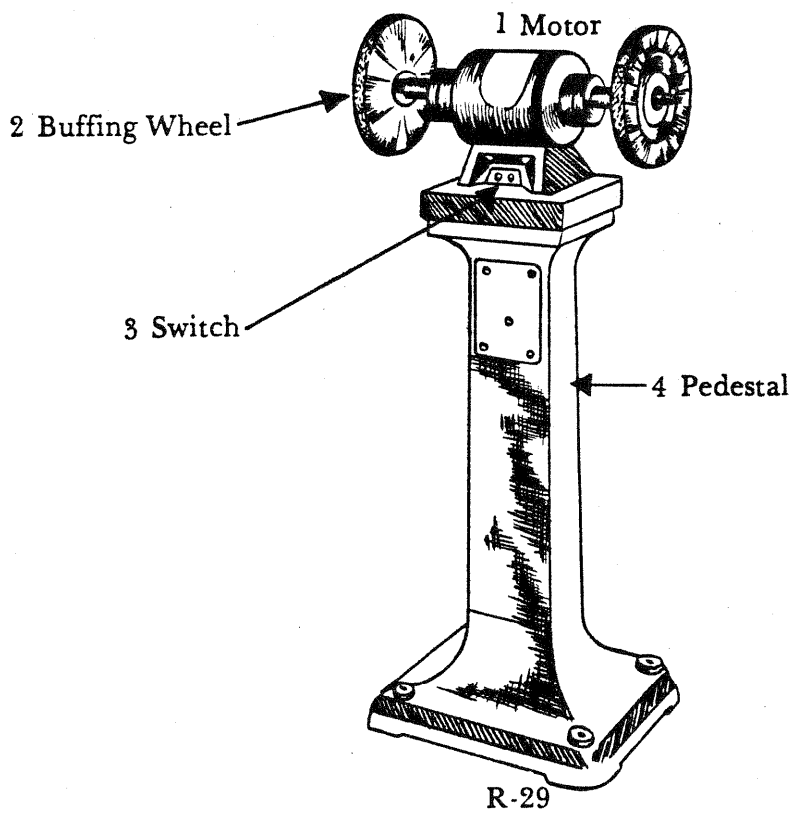
6. Always stand to one side of the wheel when buffing and when applying compound.

7. Never use a rag to hold the work while you are buffing.

8. Use extra caution when buffing around corners, openings, or areas where the wheel could grab and throw the work. Do not buff small diameter tubing, wires, chain or similar material.

9. Exercise caution so that the work does not overheat and burn your hands.

10. Be sure the area behind the buffer is open and that no one else is in the safety zone.



BUFFER

Name _____ Date _____ Test Grade _____

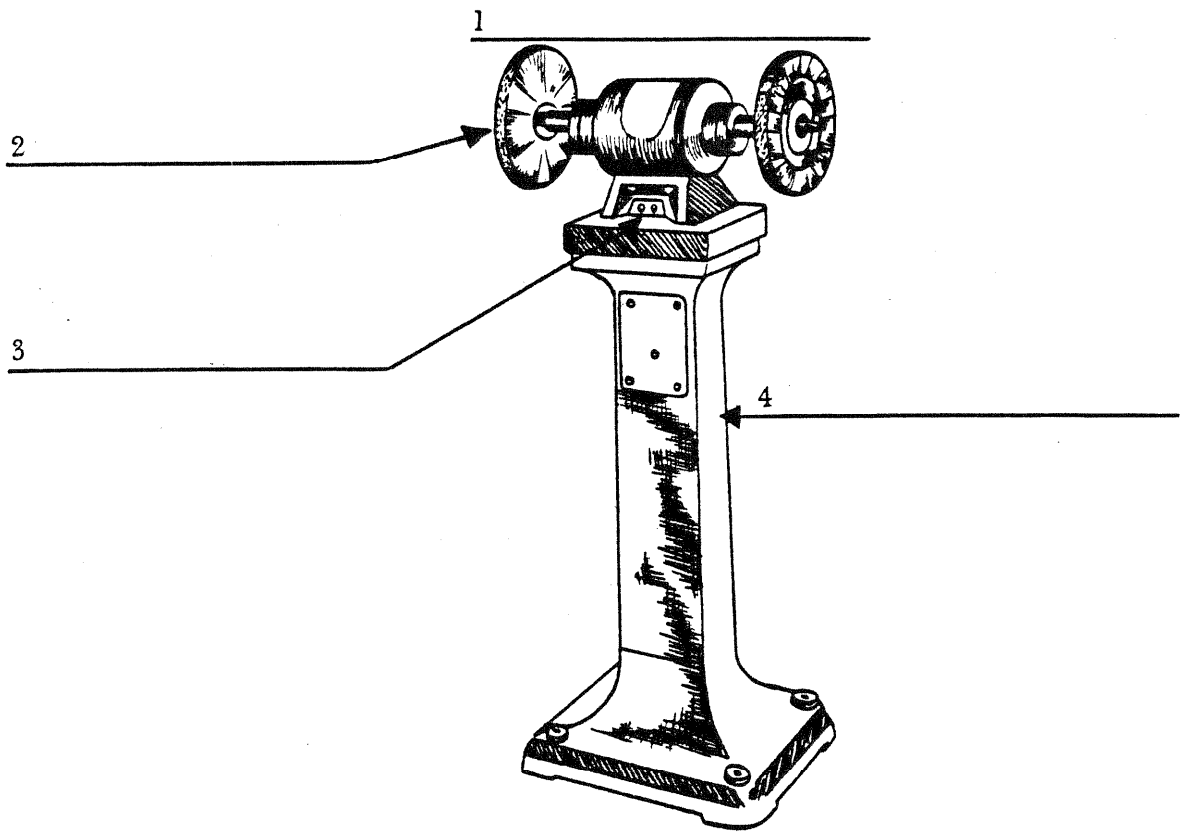
This student has performed operations safely on the Buffer.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

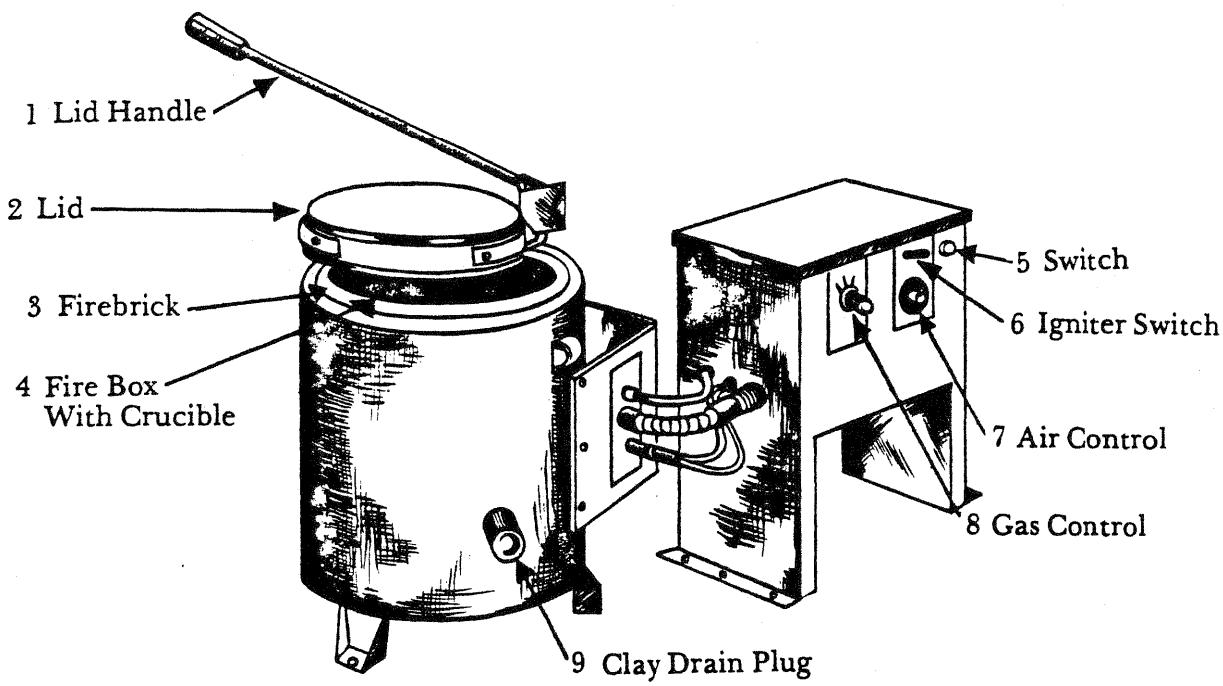
1. A rag should be used to hold hot objects while buffing. T F
2. Always buff on the lower half of the wheel. T F
3. Loose clothing or hair must be confined. T F
4. Eye protection **must** be worn when buffing. T F
5. Use extra caution when buffing corners or confined areas of the work. T F



CRUCIBLE FURNACE

For Safety —

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 correclty.
4. Always use proper eye protection.
5. Protective clothing must be worn (coat, gloves, face shield, shoes, and leg protectors).
6. Do not throw metal in crucible, use tongs.
7. When pouring, keep metal close to the floor and move slowly.
8. Do not step on metal spilled on the floor.
9. Be sure to pin crucible in pouring cradle.



CRUCIBLE FURNACE

Name _____ Date _____ Test Grade _____

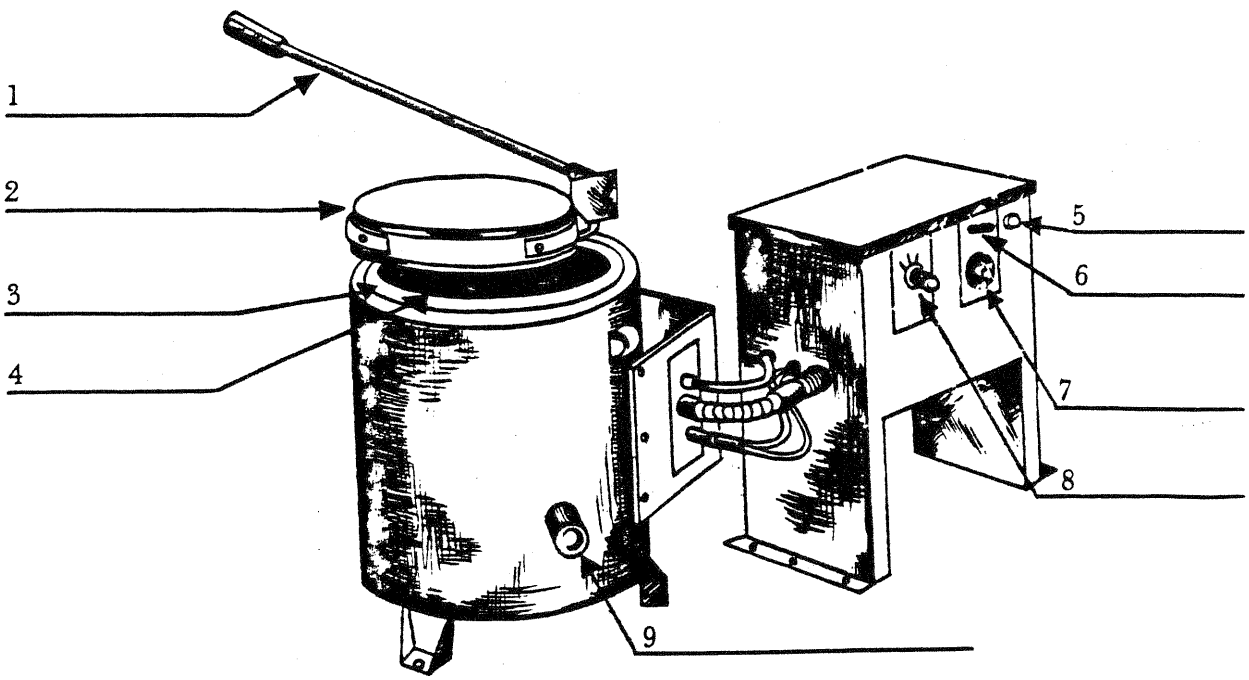
This student has performed operations safely on the Crucible Furnace.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

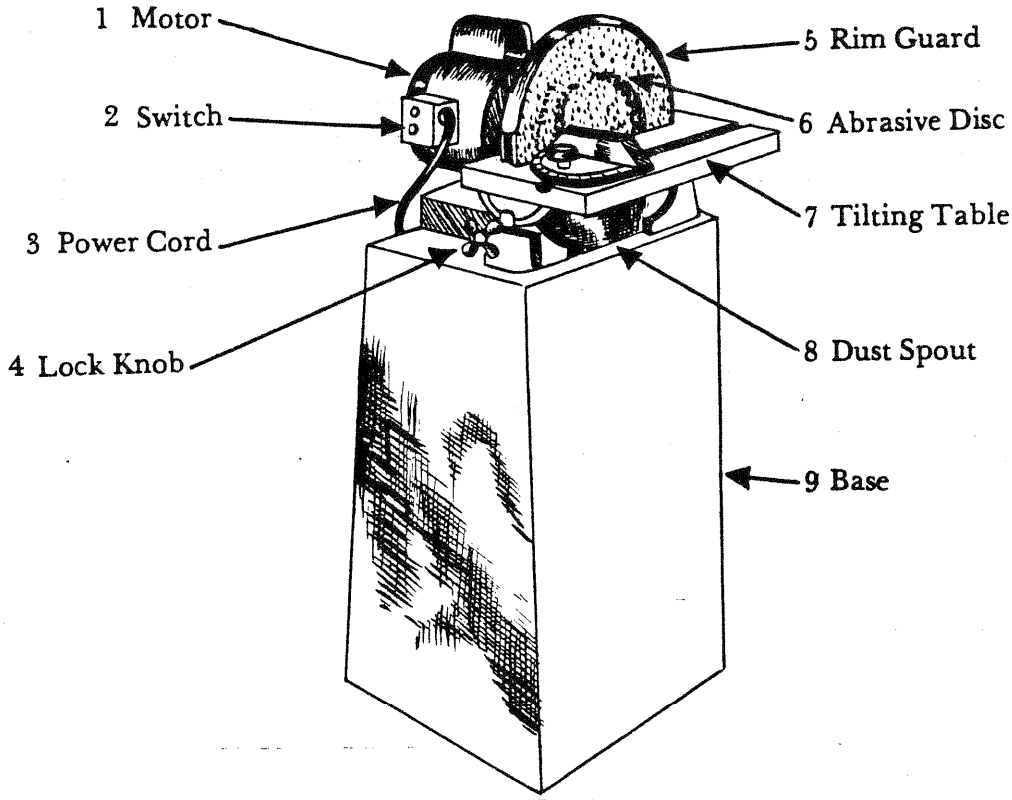
1. Metal accidentally spilled on the floor should be kicked aside. T F
2. When pouring, you should move as quickly as possible. T F
3. Protective clothing is necessary when charging the crucible. T F
4. Metal should not be thrown or dropped into crucible. Tongs should always be used.
5. If goggles are used, a face shield is not necessary.



DISC FINISHING MACHINE

For Safety —

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. Make sure adhesive is holding abrasive disc tightly to the revolving platen.
6. Abrasive disc should not be torn or damaged.
7. Material should be held flat against the table and hands kept clear of the abrasive disc.
8. The table should be adjusted to within 1/16" of the disc.
9. Work must be done on the side of the disc rotating downward.
10. Do not leave this machine until it has coasted to a full stop.



R-33

DISC FINISHING MACHINE

Name _____ Date _____ Test Grade _____

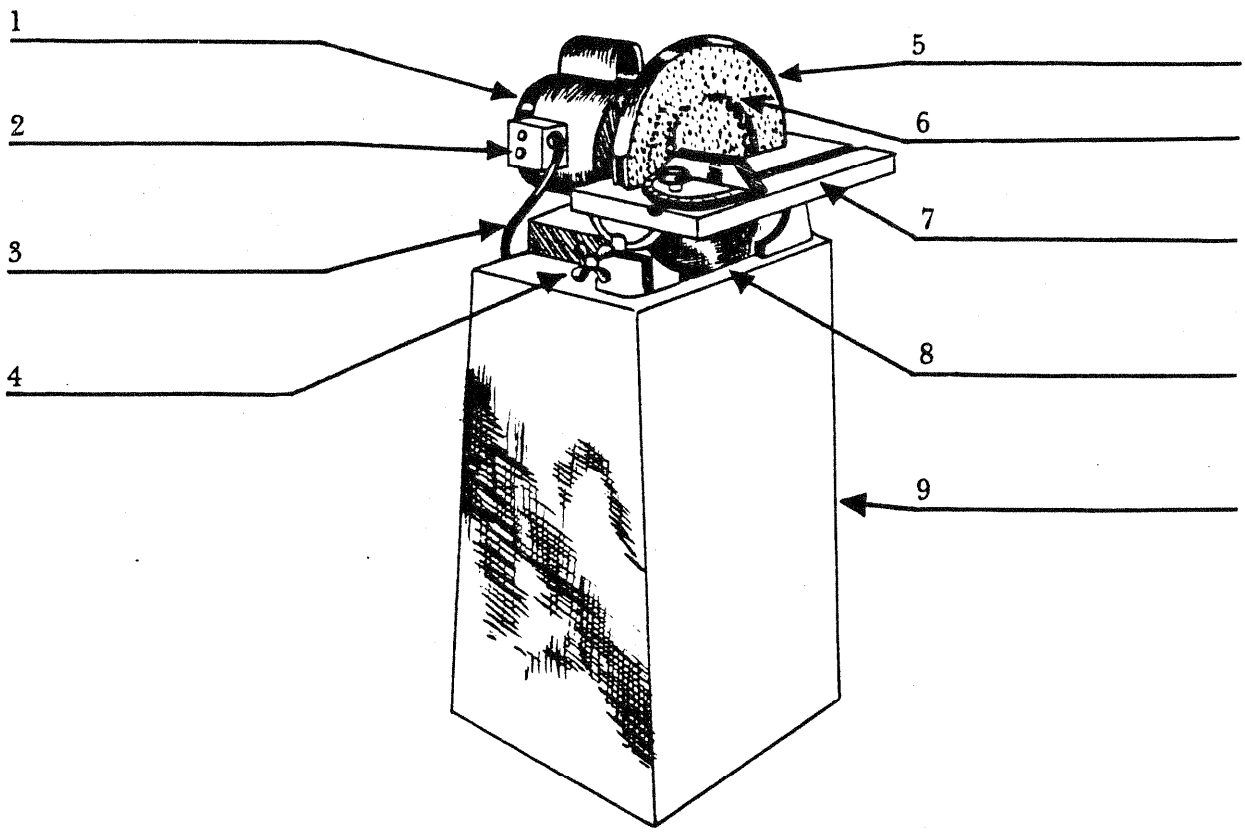
This student has performed operations safely on the Disc Finishing Machine.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

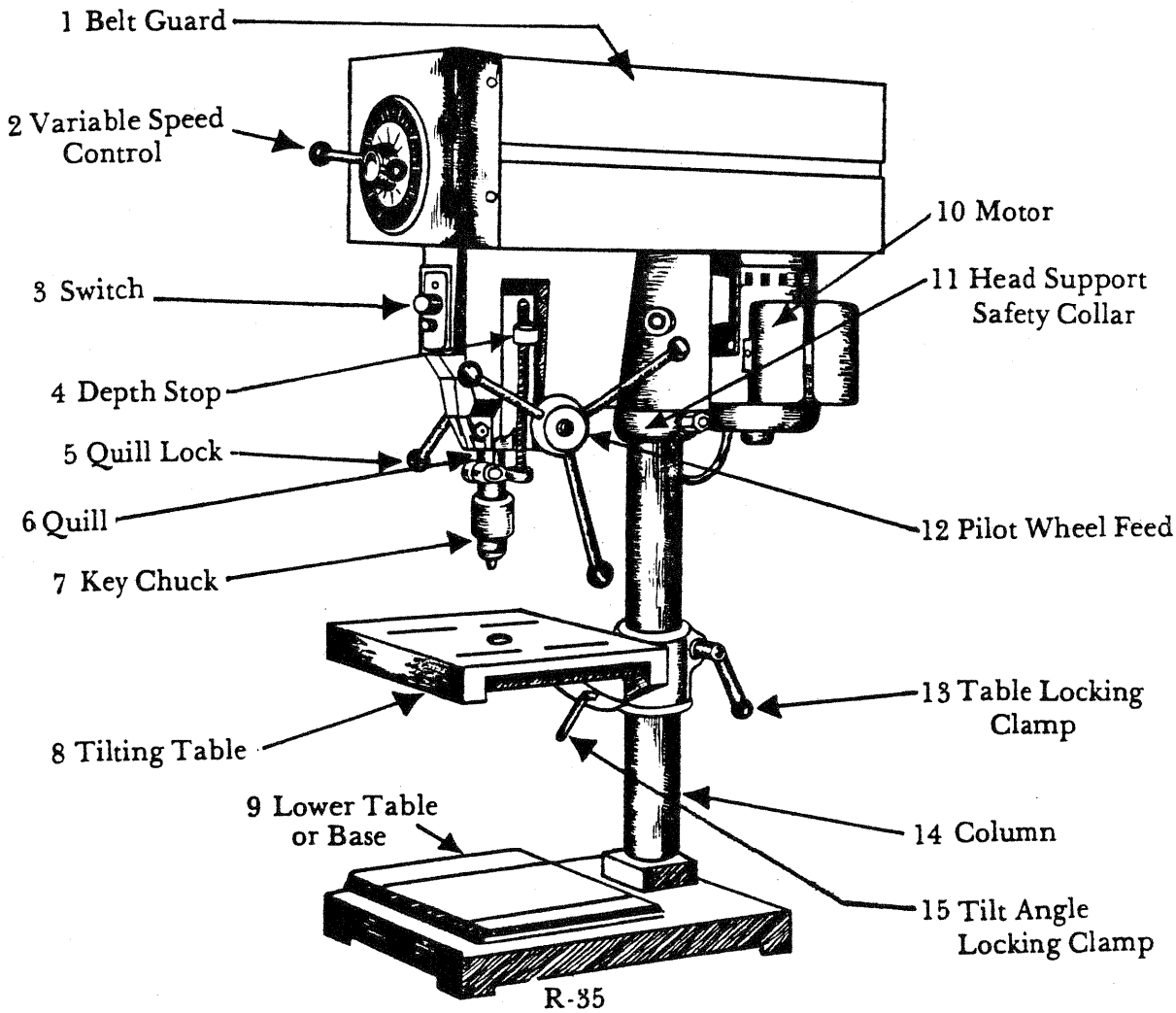
1. Sanding can be safely done on either the left or right side of the rotating disc. T F
2. The Rim Guard is of no real value and can be removed for most operations. T F
3. The table should be adjusted to within 1/16" of the disc. T F
4. A piece of scrap lumber can be used to slow down and stop the disc after turning off the power. T F
5. The table may be tilted safely while the machine is running. T F



DRILL PRESS

For Safety —

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. Select properly sharpened drill bit — tighten in chuck and **remove key.**
6. Clamp material — check for safety — turn on power.
7. If a piece of work is caught in the drill — turn off power — do not try to stop by hand.
8. Select speed carefully — the larger the drill the slower the speed.



DRILL PRESS

Name _____ Date _____ Test Grade _____

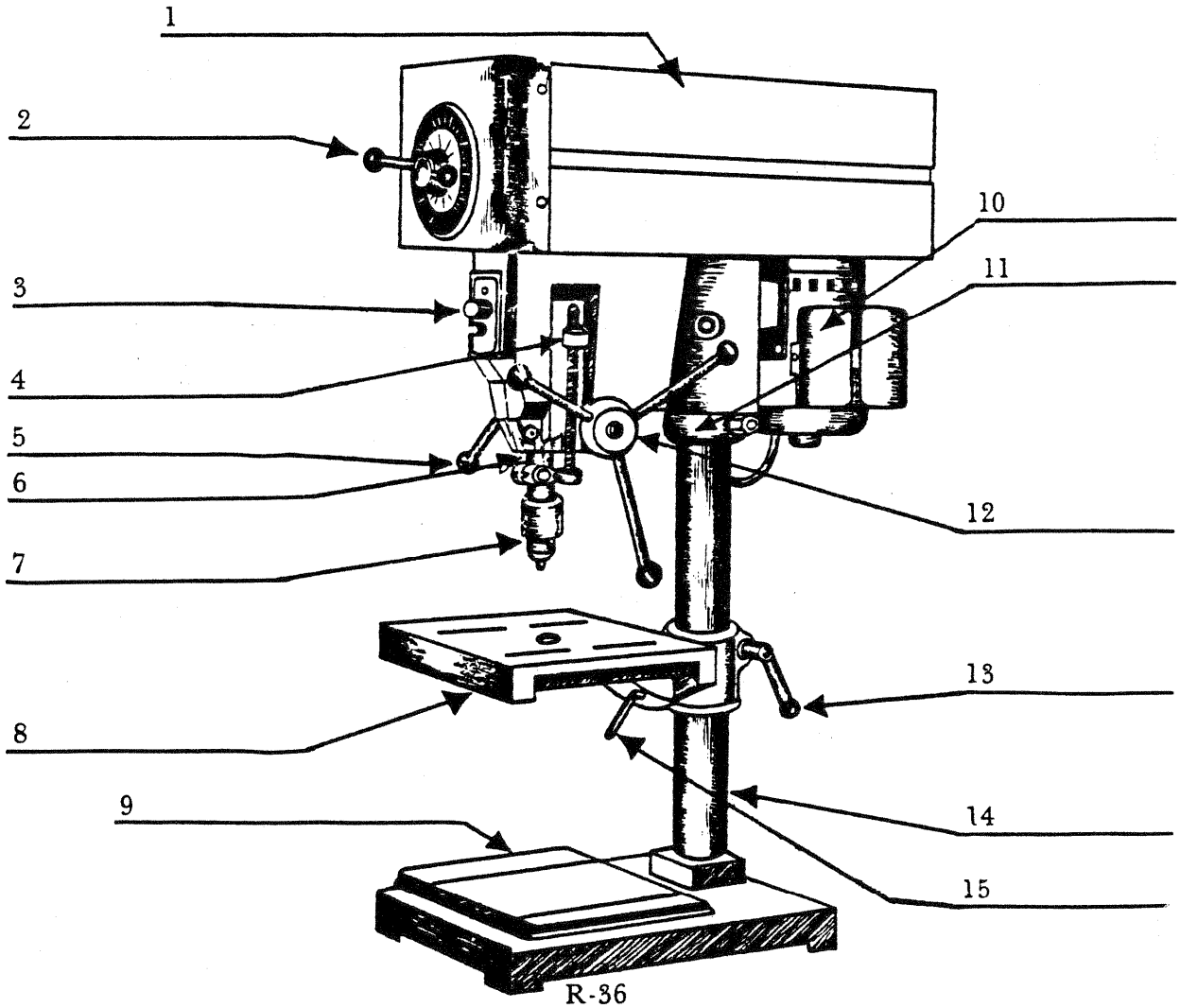
This student has performed operations safely on the Drill Press.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

1. It is necessary to select the proper speed. T F
2. The chuck key should be kept in the chuck at all times. T F
3. Work should always be secured. T F
4. Rings may be worn while operating a drill press. T F
5. A chip brush should be used for removing chips. T F
6. A drill should be operated at top speed for all work. T F
7. The long end of the work should be at the left of the operator. T F
8. Long hair must be confined in a hat or net, or tied back. T F



GAS FORGE

For Safety –

.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. Asbestos mittens (gloves) must be worn when the tongs cannot be used.

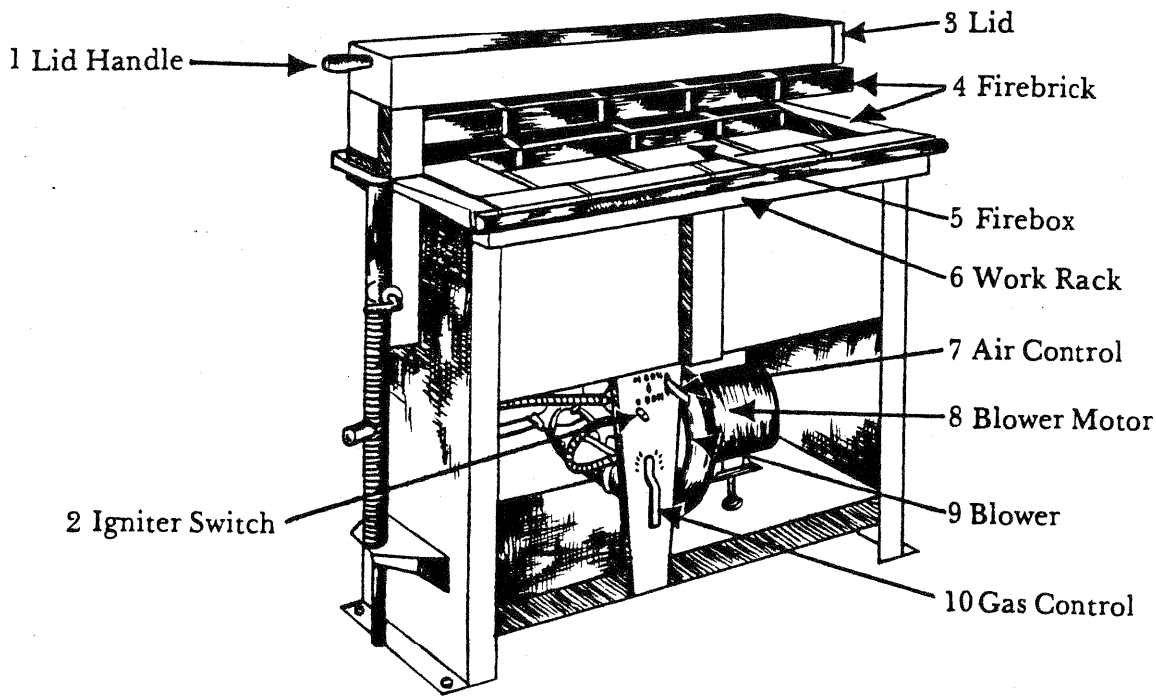
6. A pail of water should be nearby at all times.

7. Hot metal should be marked "HOT" with chalk.

8. The top must be open when lighting the forge.

9. When shutting down, the gas control should be turned off first.

10. Be sure gas is off "tight" when leaving the forge.



GAS FORGE

Name _____ Date _____ Test Grade _____

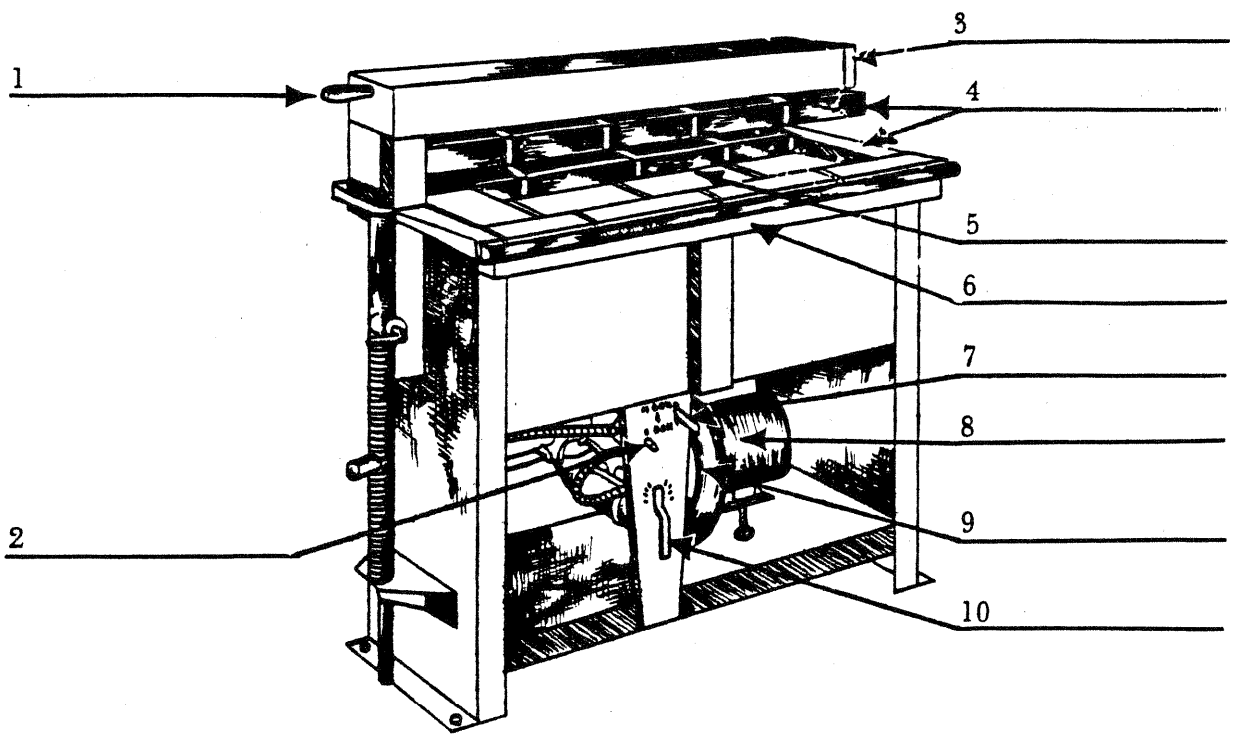
This student has performed operations safely on the Gas Forge.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

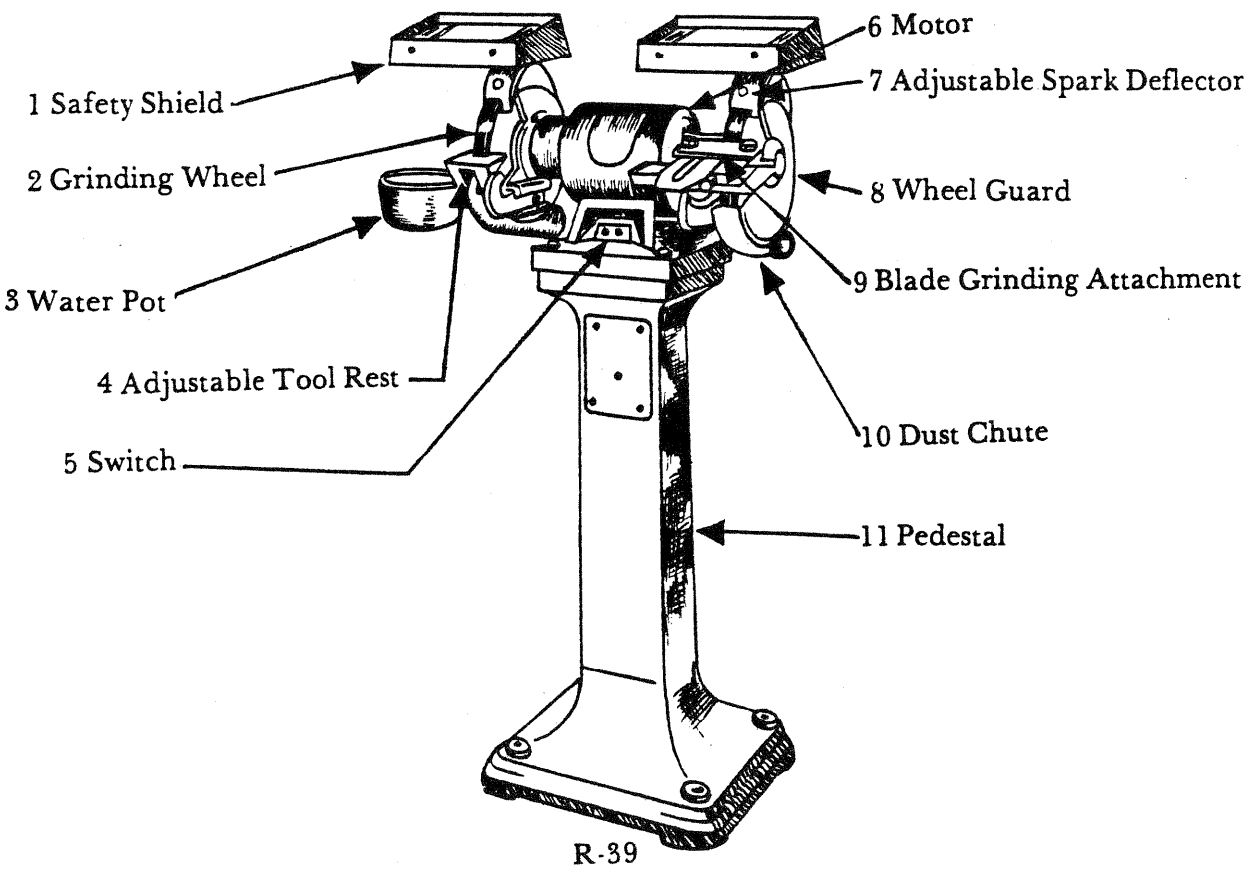
1. Tongs should be available for the handling of hot metal. T F
2. Gloves should be worn when handling the tongs. T F
3. The top slot should be closed when lighting the forge. T F
4. The air should be turned off first when shutting down. T F
5. Hot metal should be marked "HOT." T F



GRINDER

For Safety —

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 adjusted to 1/8" from the wheel.
6. Do not grind on the side of the grinding wheel.
7. Spark arrestor or top guard must be within 1/8" of wheel.
8. Small pieces should be held with "vise grip" type pliers.
9. A wheel that is excessively worn or cracked should be discarded.
10. The glass safety shield should be clean.
11. Stand to one side when starting the machine.
12. Only one operator should use machine at a time.



GRINDER

Name _____ Date _____ Test Grade _____

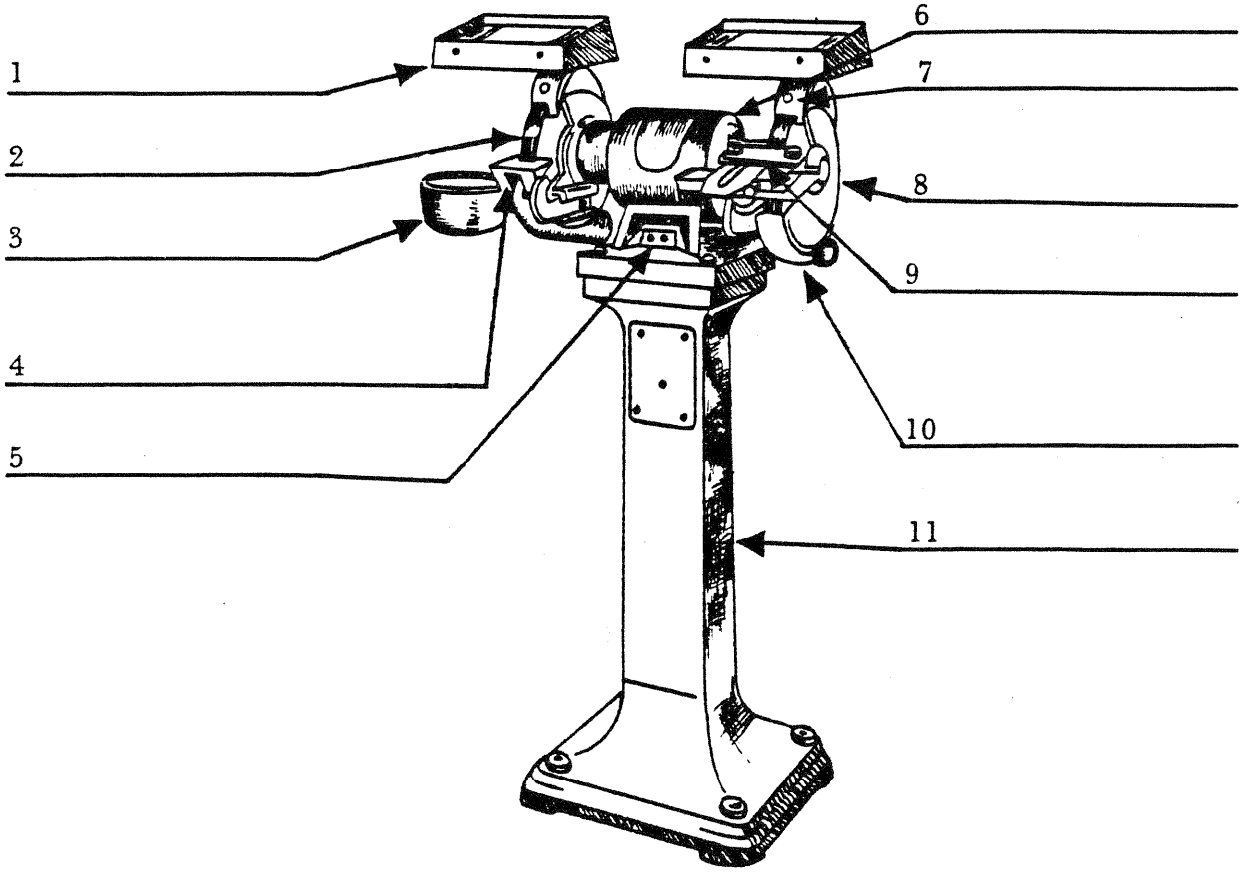
This student has performed operations safely on the Grinder.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

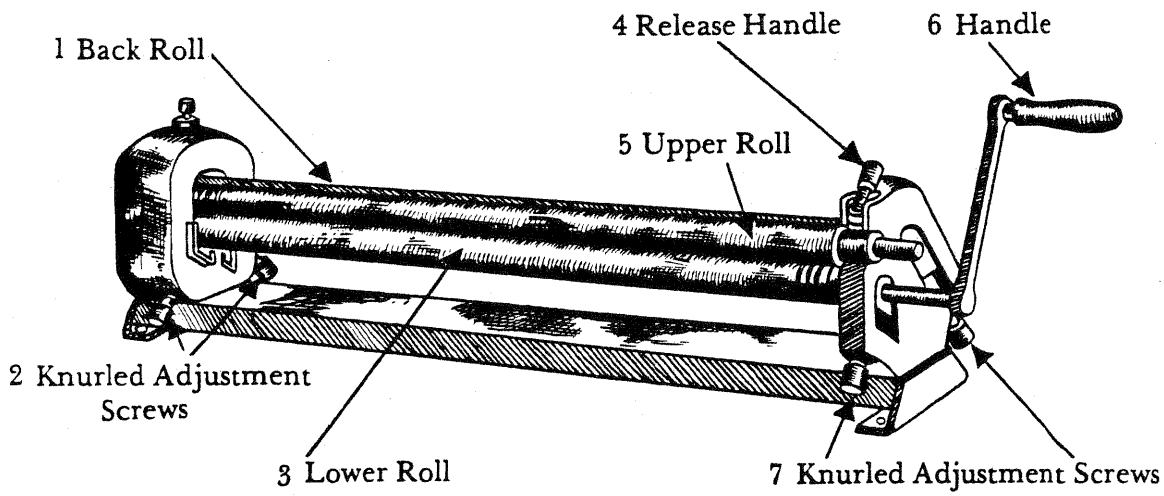
1. The tool rest should be adjusted to within 1/2" of wheel. T F
2. If there is a glass shield, eye protection is not required. T F
3. Once the "off" switch is in the off position, the operator may leave. T F
4. The safety shield should be clean. T F
5. Wheels that are out of balance may be used. T F
6. The spark arrestor is not necessary if there is a glass safety shield. T F
7. When grinding a small piece of steel, "vise grips" are advised. T F



HAND ROLLER

For Safety —

1. Operate only with instructor's permission and after you have received instruction.
2. Remove jewelry, eliminate loose clothing, and confine long hair.
3. Always use proper eye protection.
4. Never surpass the capacity of the machine.
5. Feed and operate from the front of the operator's position.
6. Keep fingers clear of rolls at all times.
7. Use proper adjustment and never force rolling process.
8. Keep machine well lubricated.



HAND ROLLER

Name _____ Date _____ Test Grade _____

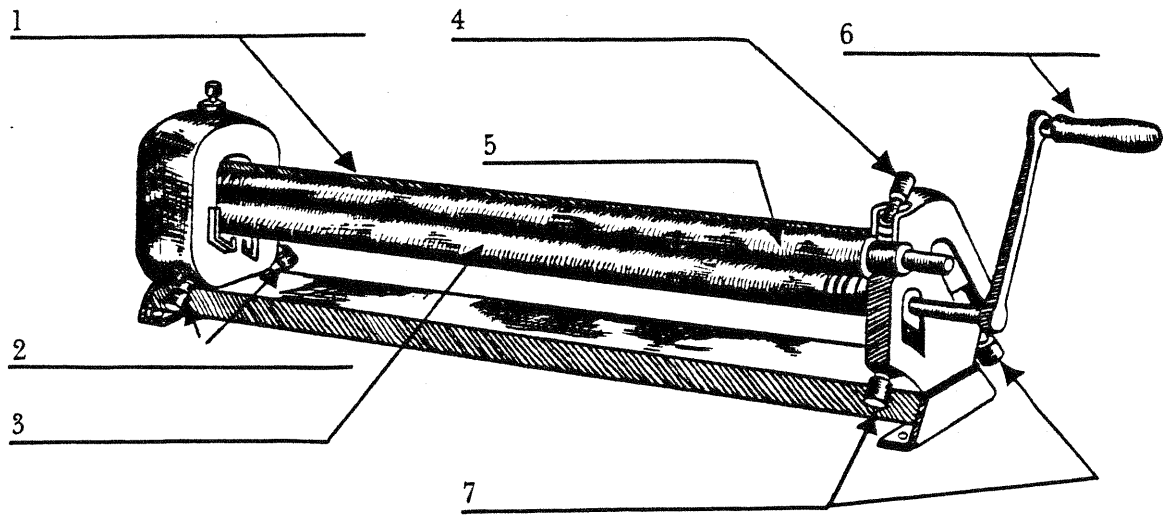
This student has performed operations safely on the Hand Roller.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

1. Correct adjustment will not only be easier to operate but will also protect the machine. T F
2. The roller will smooth burns which are on the metal. T F
3. The roller should be fed from the front only. T F
4. Roll the rollers as fast as possible. T F
5. If the metal can be cut by hand, the metal can be rolled easily with one adjustment. T F



HORIZONTAL BAND SAW

For Safety –

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 to the chip removal brushes, blade tension, guides, vise, or drive system should be done with the power off.

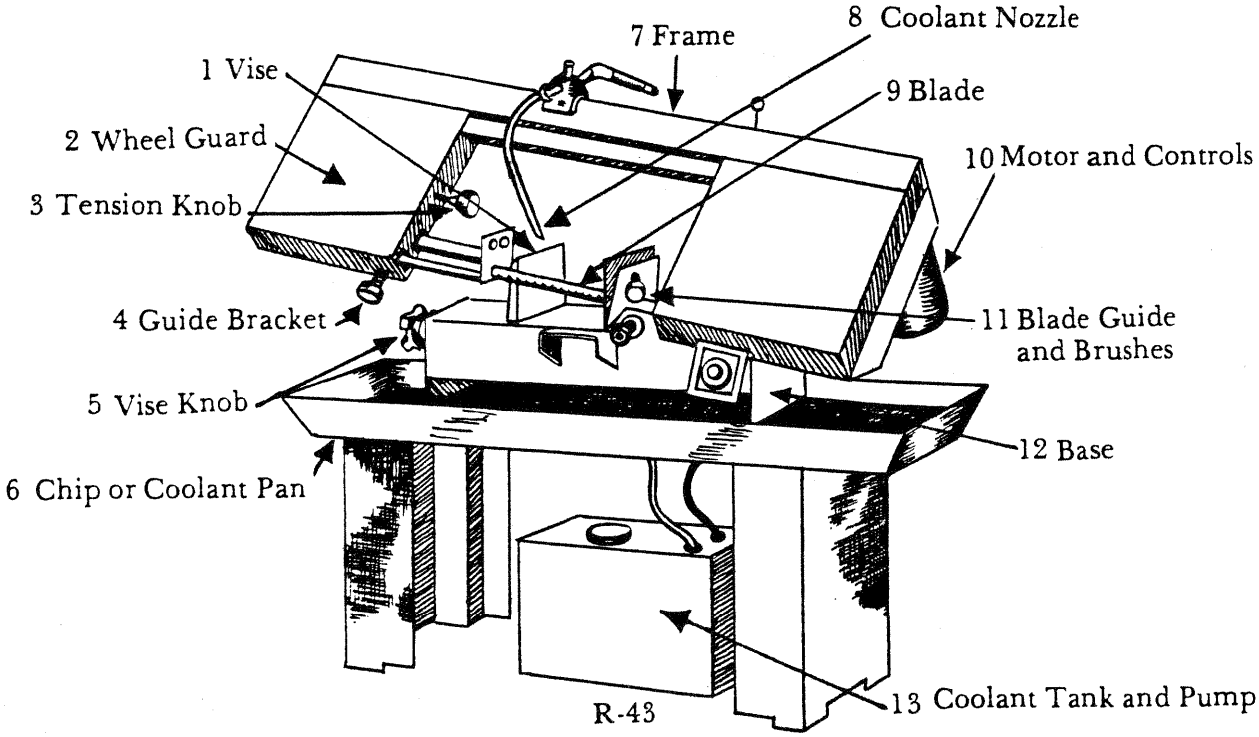
6. Be sure blade guides are properly adjusted to both the blade and the work size or vise before starting out.

7. Adjust feed rate so blade does not bounce or plunge into work when starting the cut.

8. Be sure work is tightly clamped in the vise and properly positioned for an efficient safe cut.

9. Keep hands away from cutting area and brush away chips only when the machine is turned off.

10. If the material requires coolant, be sure the system is working and the correct coolant is used.



HORIZONTAL BAND SAW

Name _____ Date _____ Test Grade _____

This student has performed operations safely on the Horizontal Band Saw.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

1. Chips or dirt in the vise may cause inaccuracy but does not affect safety. T F

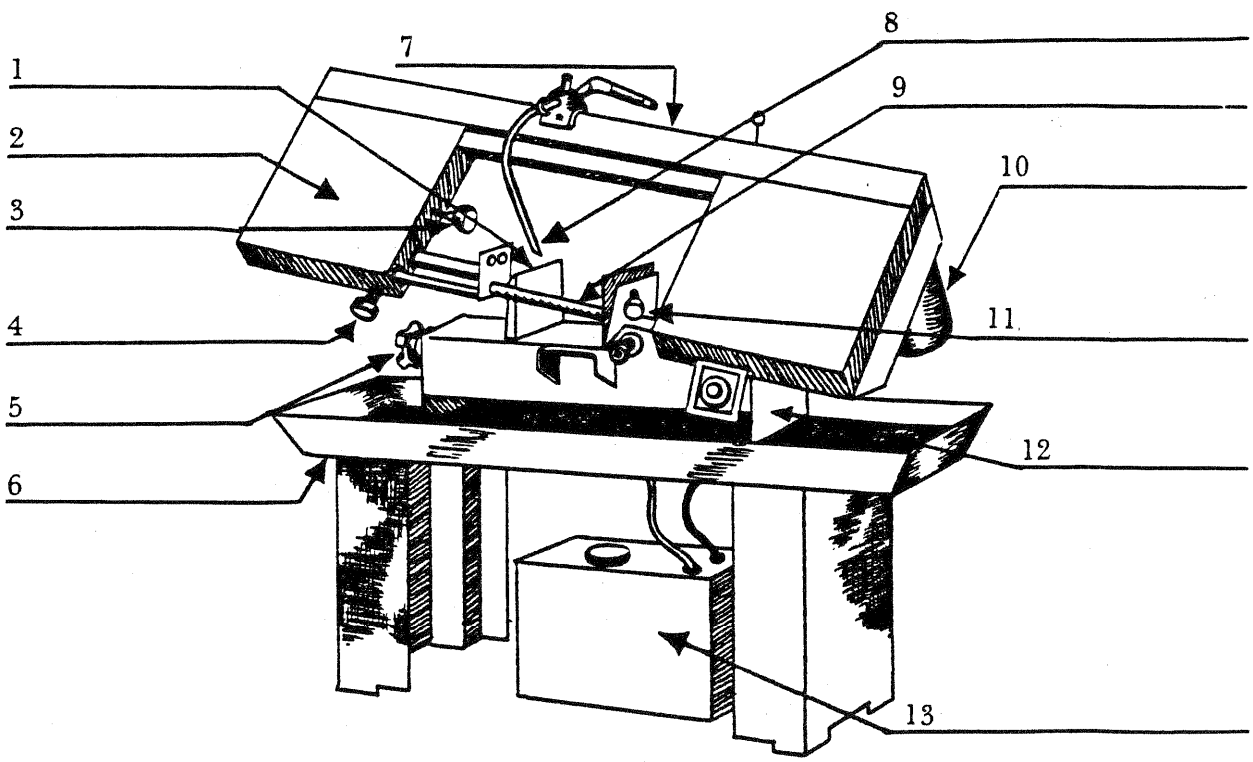
2. It is safe to apply slight pressure to the saw frame to increase the speed of the cutting action. T F

3. Blade guides should be adjusted to the blade and to the size of the work piece or vise. T F

4. Chips should be removed only when the machine is stopped. T F

5. If the cut is not straight, the problem is probably with the material. T F

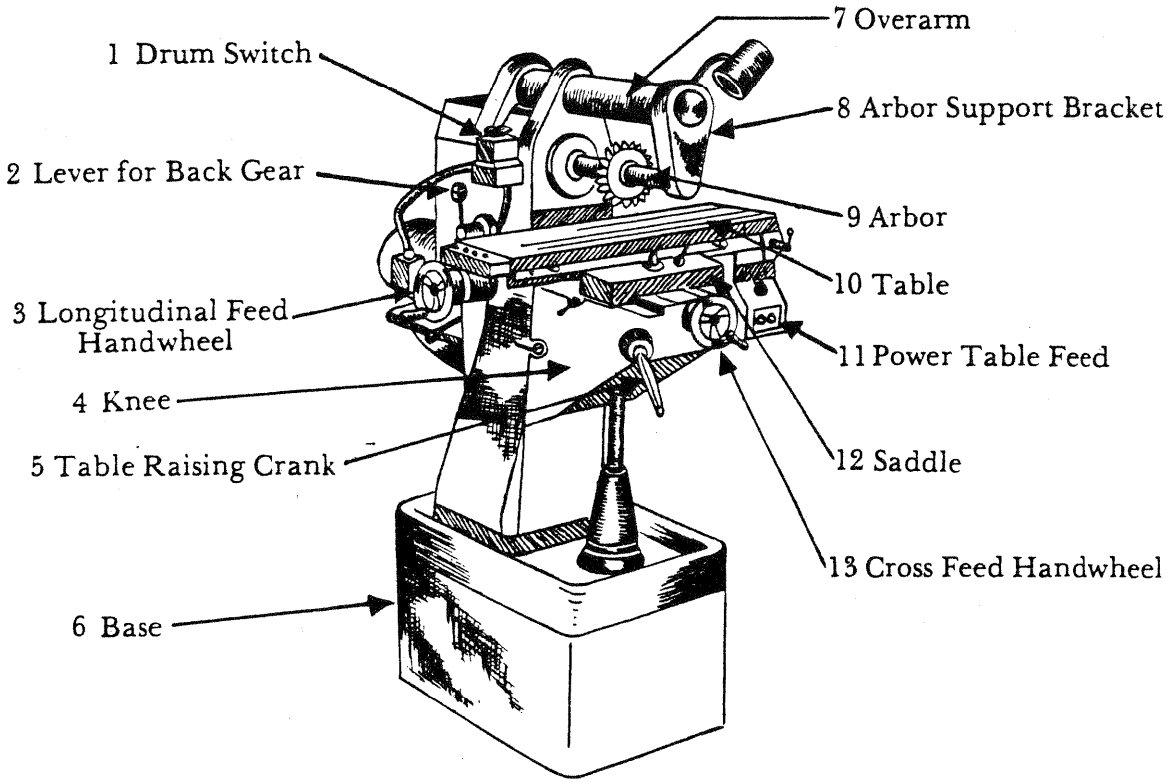
6. The work piece must be properly positioned in the vise, in addition to just being held securely. T F



HORIZONTAL MILLING MACHINE

For Safety —

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. Make all adjustments with the power off.
6. Be sure cutter is tightly held in arbor or collet and material is securely held by a vise, clamps, or magnetic chuck.
7. Do not climb cut without specific permission.
8. Check depth and width of cut, cutter rotation, plus speed of cutter and power feed before starting the machine.
9. Never clear chips away while machine is in operation. Keep hands away from chips and the point of operation.
10. Remain with the machine for the duration of the cut.



HORIZONTAL MILLING MACHINE

Name _____ Date _____ Test Grade _____

This student has performed operations safely on the Horizontal Milling Machine.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

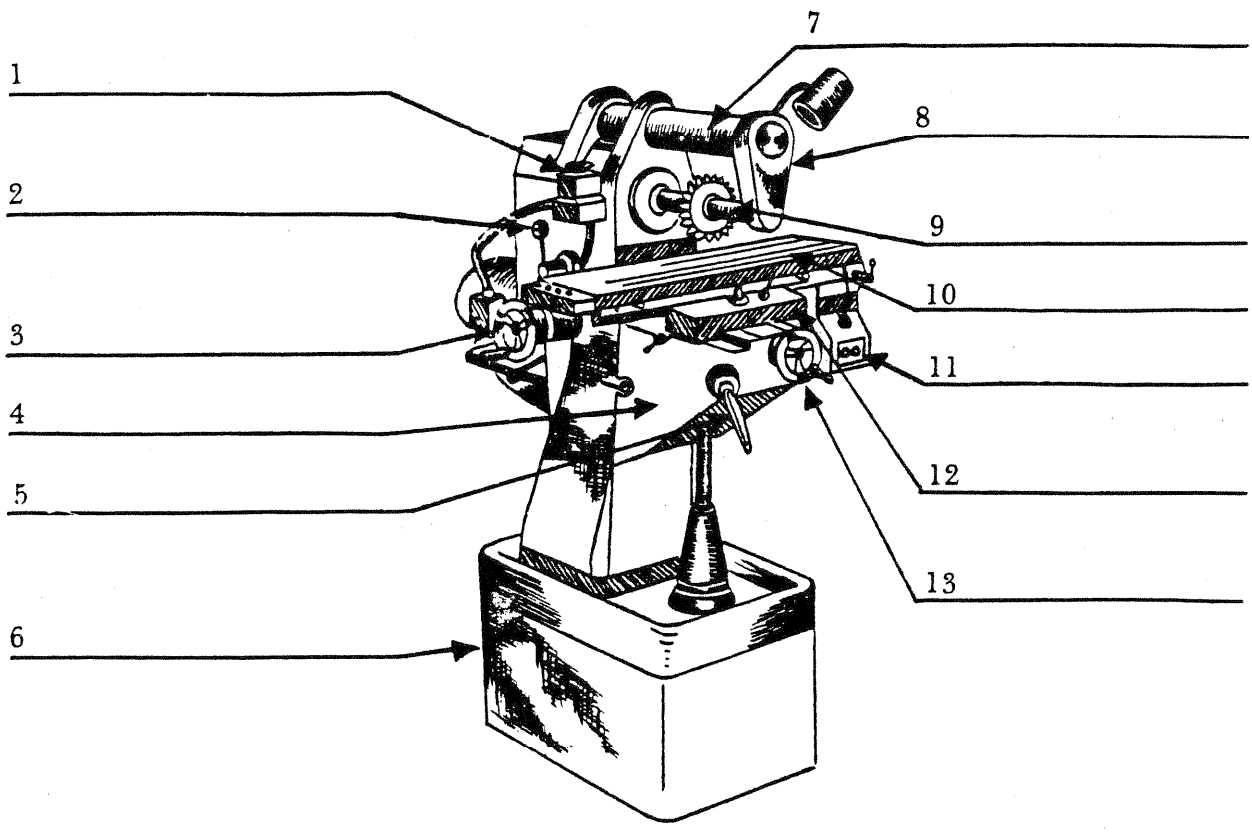
1. Small chips can be safely wiped away by hand if the machine is stopped. T F

2. While on automatic or power feed it is permissable to leave the machine. T F

3. Permission must be obtained to climb cut.

4. Since they are very sharp, cutters should be handled carefully.

5. All adjustments must be made or checked with the power off.



JOINTER

For Safety —

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.

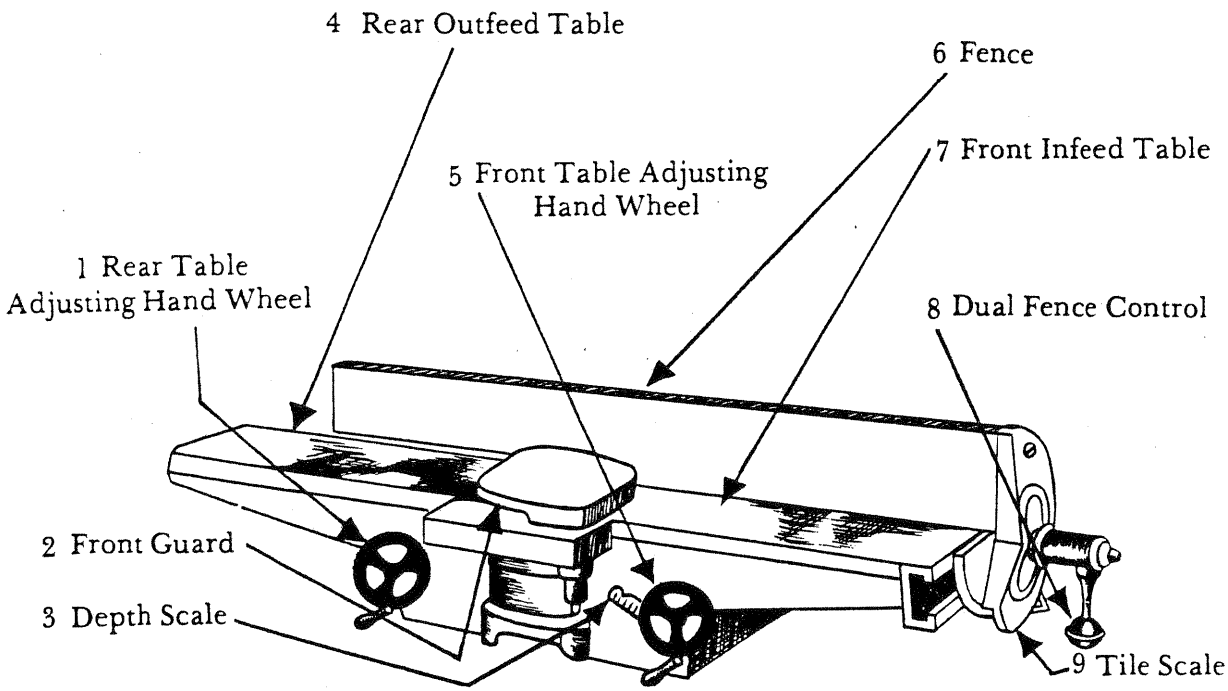
5. Before starting, make sure that guards are free and will cover the blade at all times.

6. A push stick must be used on all material that would bring the hands within 2" of the cutter.

7. An assistant or supports should help support long pieces.

8. Several light cuts are safer than one heavy cut.

9. The board being jointed must exceed the minimum length established for that particular machine (check with instructor).



JOINTER

Name _____ Date _____ Test Grade _____

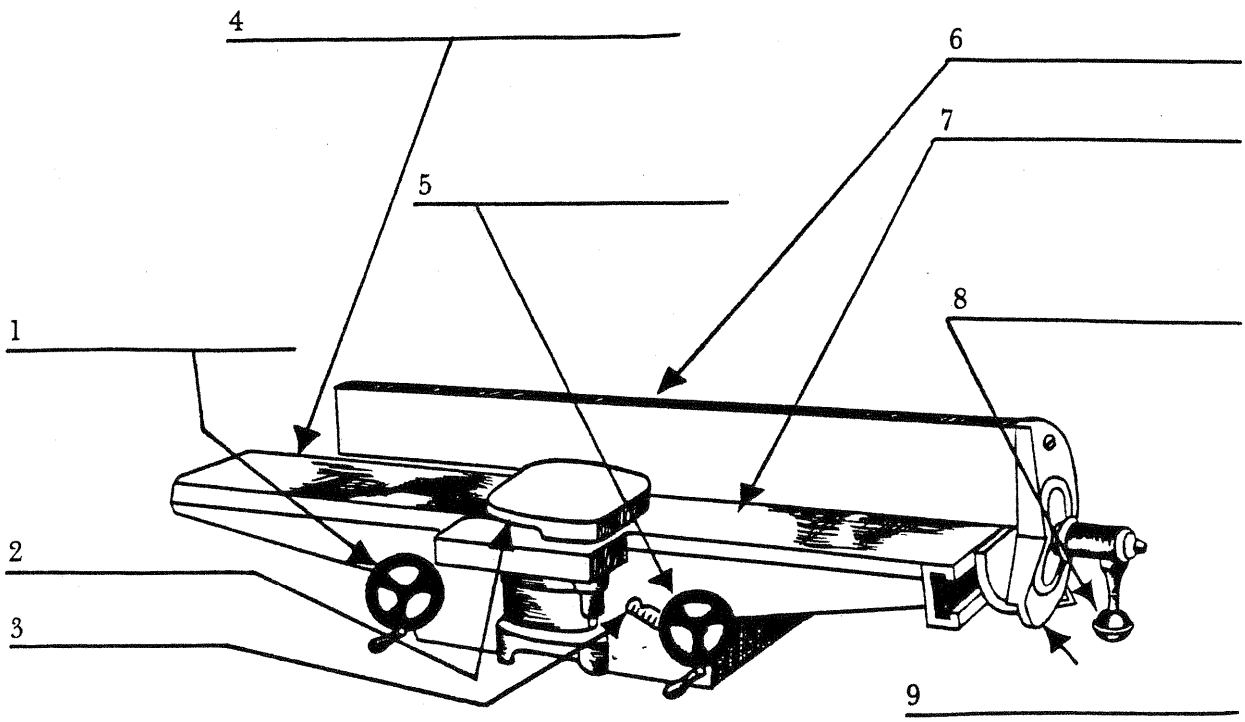
This student has performed operations safely on the Jointer.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

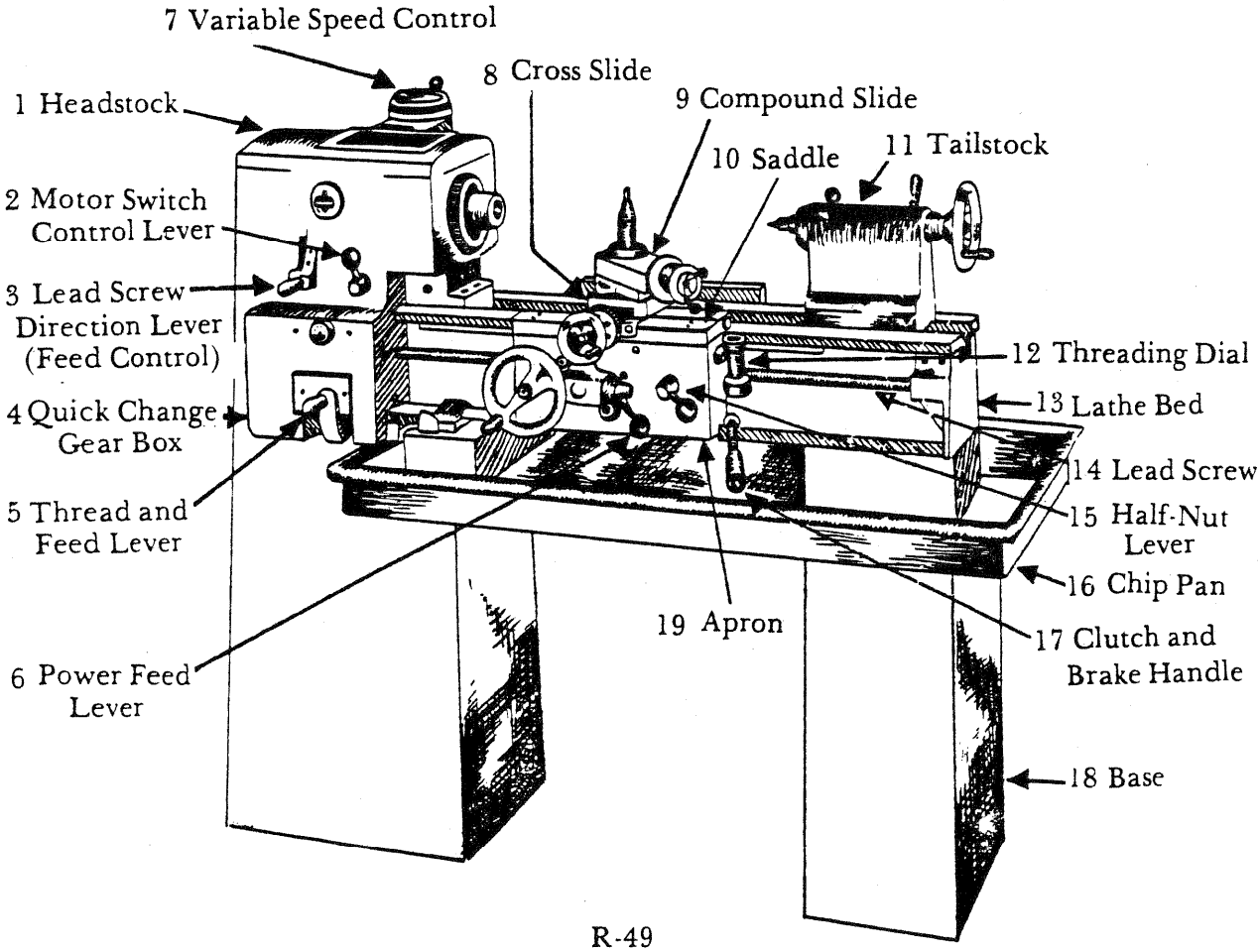
1. It is possible for the guard to stick and not cover the cutter. T F
2. A push stick should be used when the hands could get close to the cutter. T F
3. Eye protection is not necessary when operating a jointer. T F
4. Permission should be obtained before using the jointer. T F
5. Stock shorter than 6" may be processed on the jointer. T F



METAL LATHE

For Safety —

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. Do not leave the machine until it has stopped.
6. A brush should be used to remove chips.
7. The chuck should be turned by hand before starting.
8. Never leave chuck wrench in chuck.
9. Stock should be balanced and secured before starting.
10. Operate at the correct speed for the job.
11. Handle chucks with care; keep hands away from moving parts and work.



METAL LATHE

Name _____ Date _____ Test Grade _____

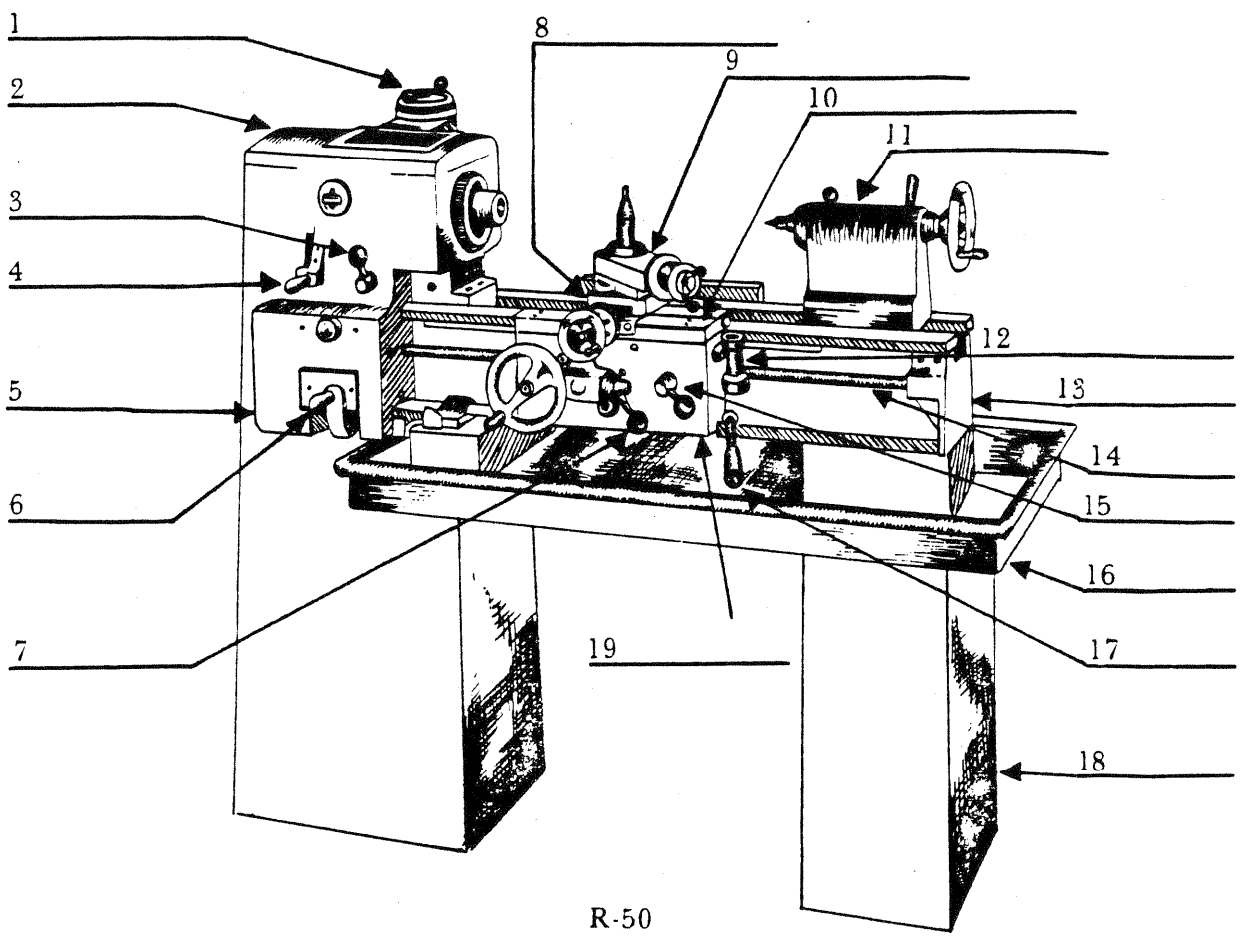
This student has performed operations safely on the Metal Lathe.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

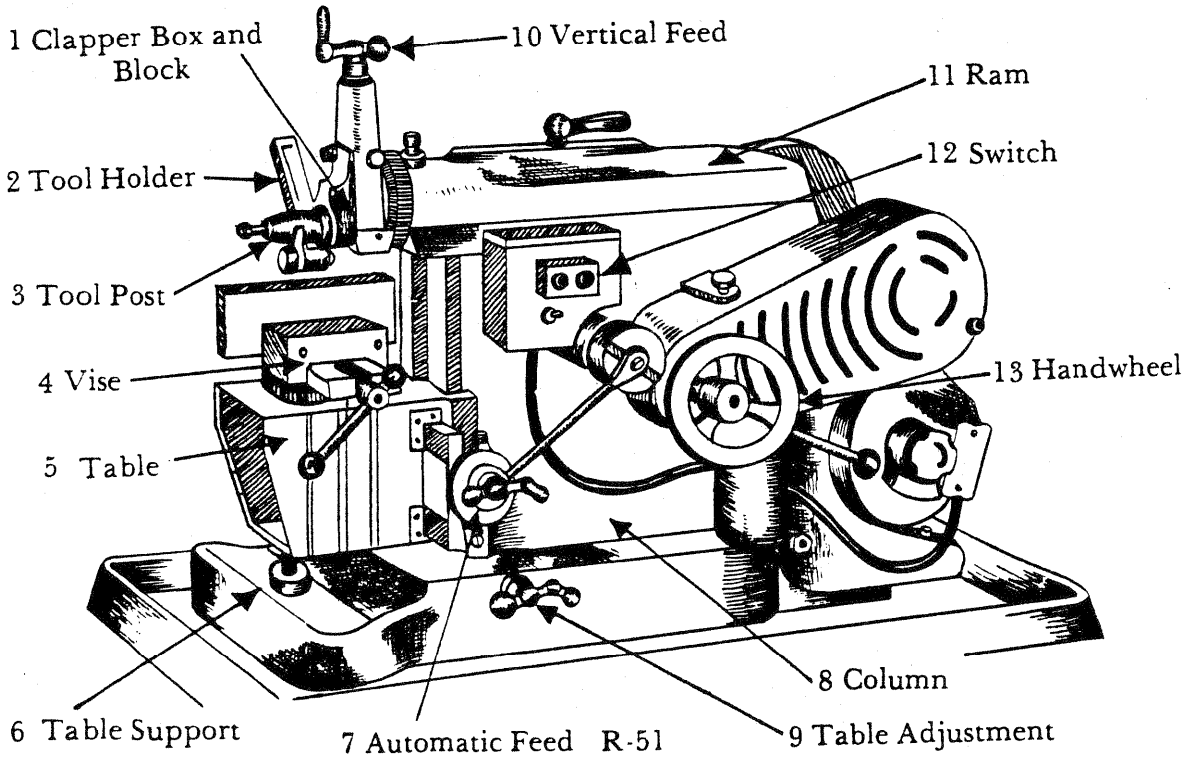
1. A brush should be used for removing chips. T F
2. The tail stock need not be secure to the bed. T F
3. The chuck wrench remains in the chuck when the machine stops. T F
4. It is safe to turn machine by hand before starting. T F
5. Measurements should be made while the machine is stopped. T F



METAL SHAPER

For Safety —

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. Make adjustments while the machine is stopped and run through one cycle by hand as a check for clearance.
6. Make sure all guards are secure before starting the machine.
7. Be sure the work piece is securely held in the vise or holding device.
8. Avoid standing directly in front of the ram.
9. Keep hands away from the work point or possible pinch point of the shaper.
10. Do not lay tools or tooling on any part of the machine.
11. Never remove chips while the machine is in motion.
12. Before leaving make sure the shaper comes to a full stop.



METAL SHAPER

Name _____ Date _____ Test Grade _____

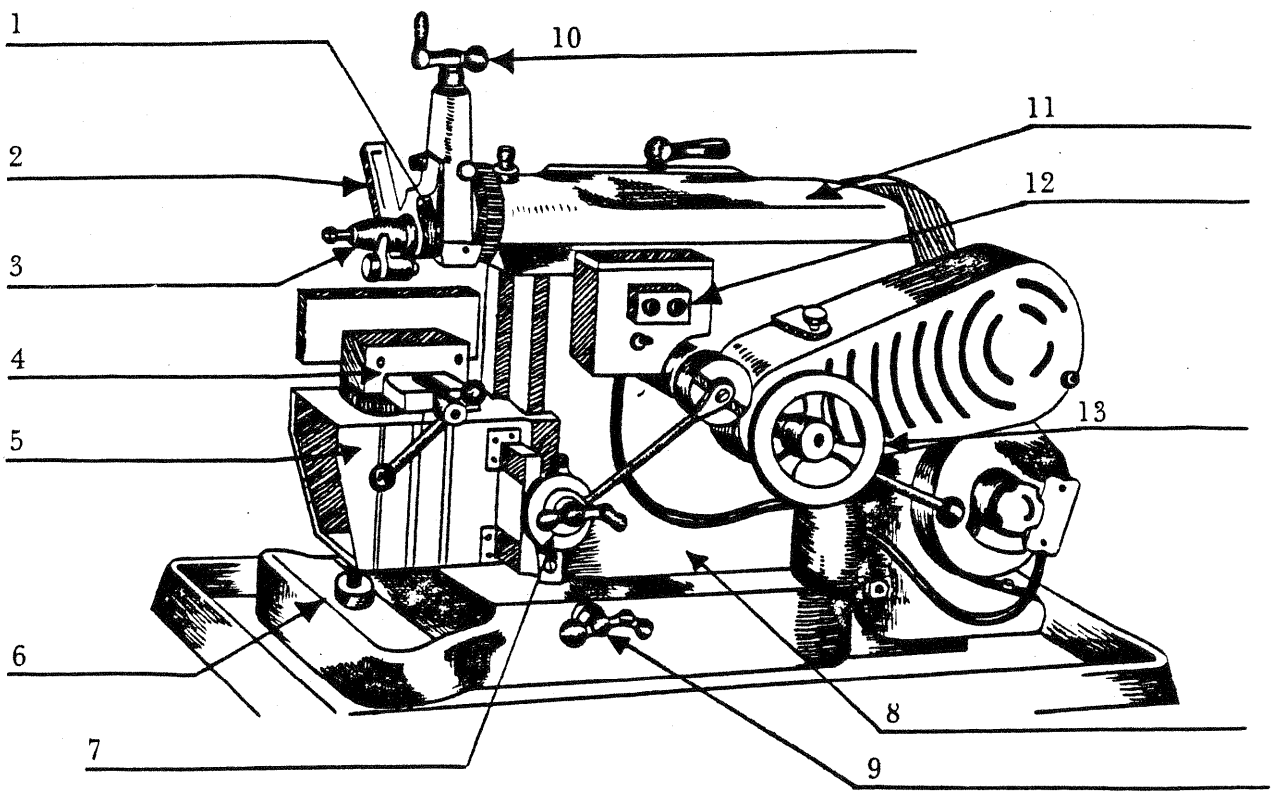
This student has performed operations safely on the Metal Shaper.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

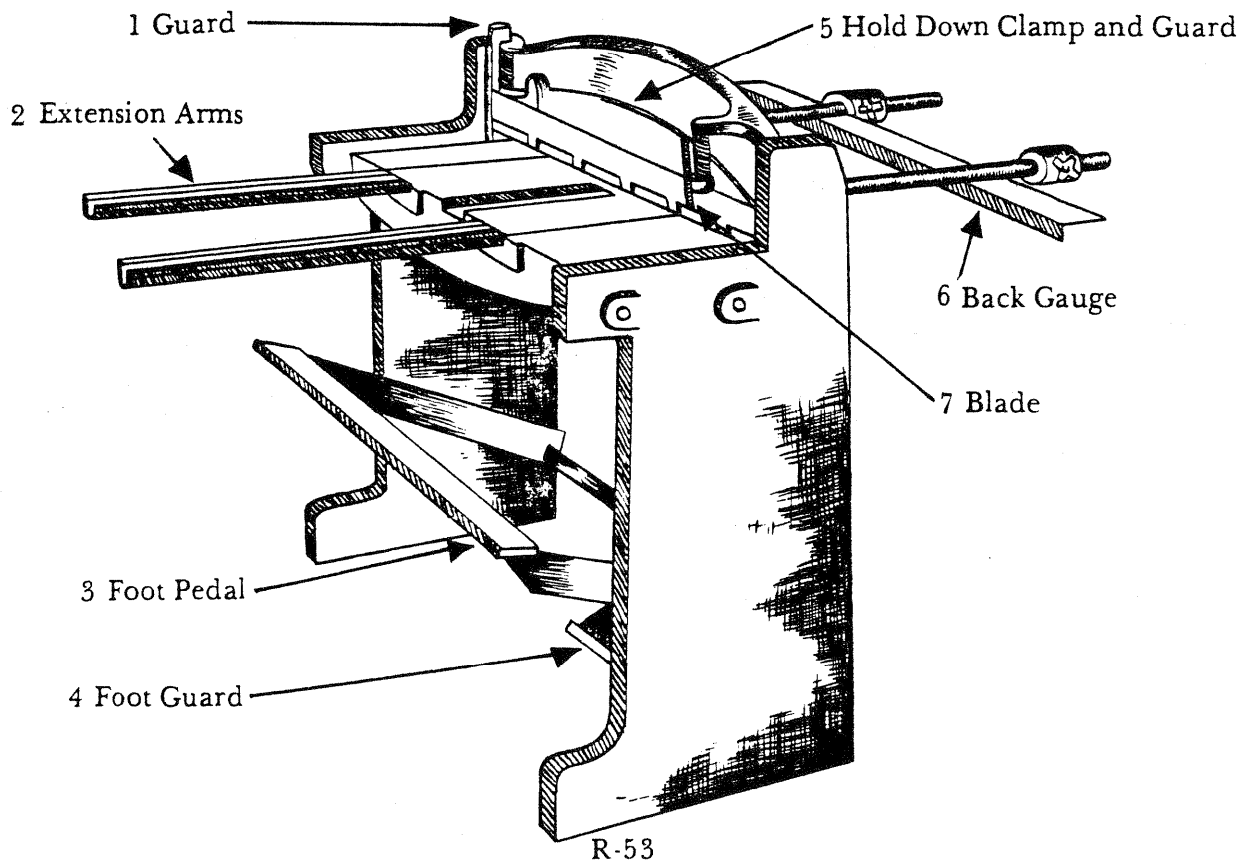
1. It is permissible to stand in front of the machine while it is running. T F
2. Eye protection must be worn. T F
3. A heavy cut may get the job done more quickly but also could be unsafe. T F
4. Chips may be quickly removed while the machine is running. T F
5. All clearances should be checked before the ram is set in motion. T F
6. All set-ups should be approved by your instructor. T F



METAL SQUARING SHEAR

For Safety –

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. Check setup and machine before operating.
6. Never surpass the capacity of the machine.
7. Feed and operate from the front or the operator's position.
8. Always keep your fingers away from the pressure bar and blade, a minimum of 4 inches.
9. Keep the foot that is not being used out from under the treadle.
10. Allow small pieces to drop; do not attempt to catch them.
11. Remove burrs before working; gloves or pads are recommended for handling sheet metal, especially large pieces.
12. Place scraps or trimmings in metal waste container and return machine to normal.
13. Whenever two people are needed to operate the shear, one shall be the operator, the other the helper.



METAL SQUARING SHEAR

Name _____ Date _____ Test Grade _____

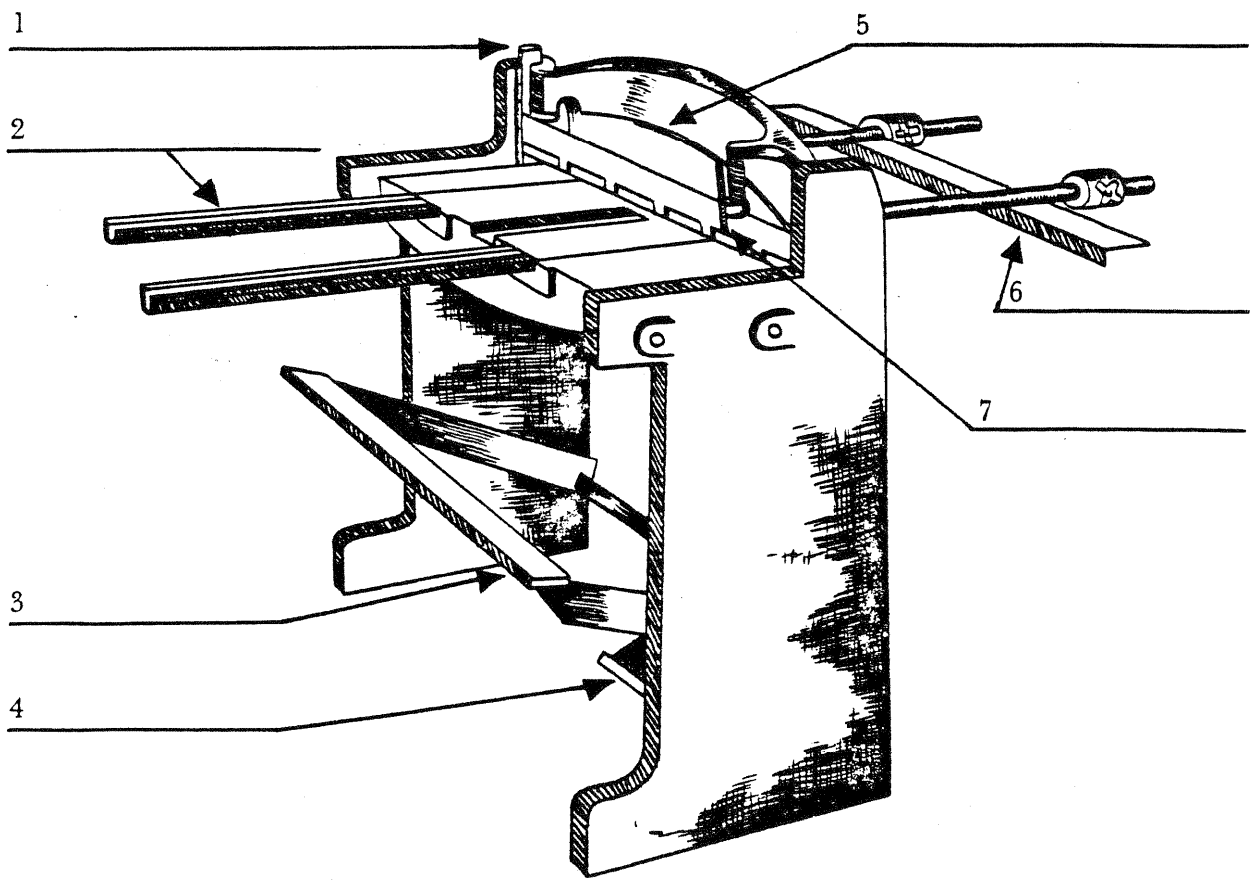
This student has performed operations safely on the Metal Squaring Shear.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

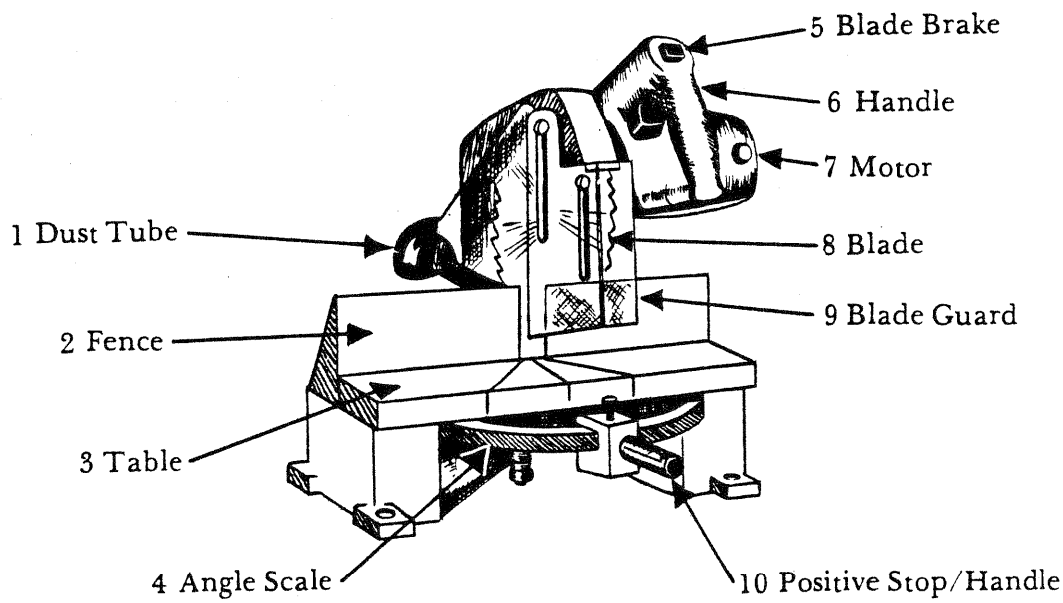
1. Feed and operate from the treadle side of the machine only. T F
2. It is permissible to let small pieces drop into a box as they are cut. T F
3. Two students may operate the shear together. T F
4. For some projects the guard can be removed. T F
5. The foot treadle should be so arranged that there is a 2" floor clearance at the bottom of a stoke. T F



MOTORIZED MITER BOX

For Safety —

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.



MOTORIZED MITER BOX

Name _____ Date _____ Test Grade _____

This student has performed operations safely on the Motorized Miter Box.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

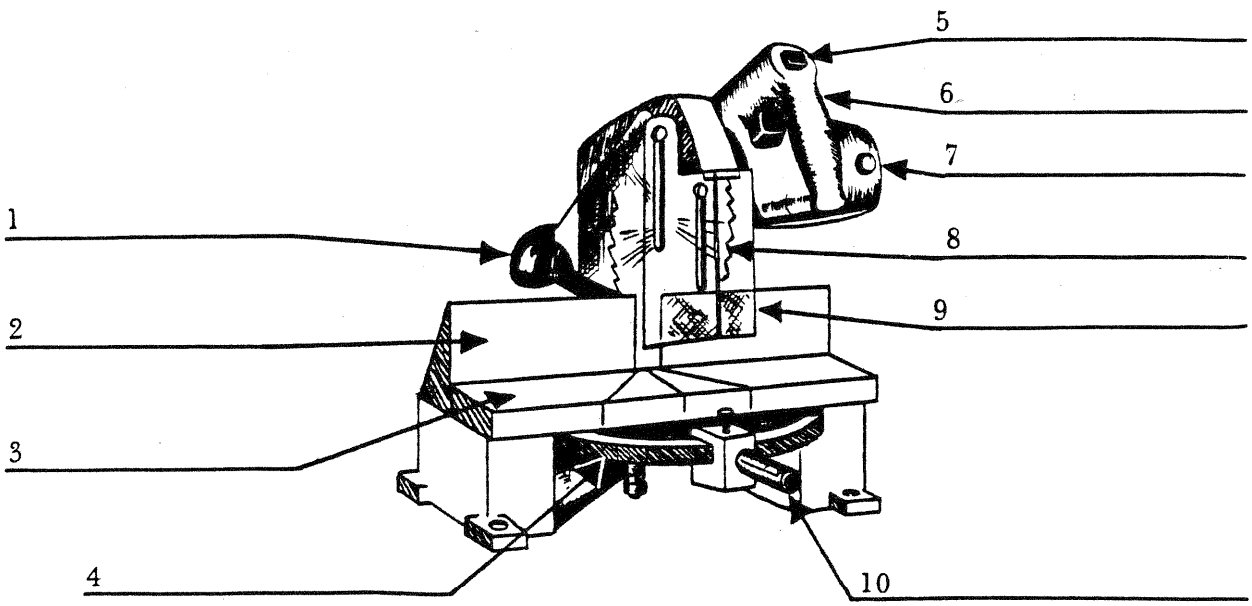
1. The table on this machine can be cut so often that it no longer gives safe support to the work. T F

2. The machine should be stopped by pushing a piece of scrap against the side of the blade. T F

3. The guard sections can easily be checked for proper operation before starting to use the machine. T F

4. The trigger switch and the brake button can be used together to gain better control. T F

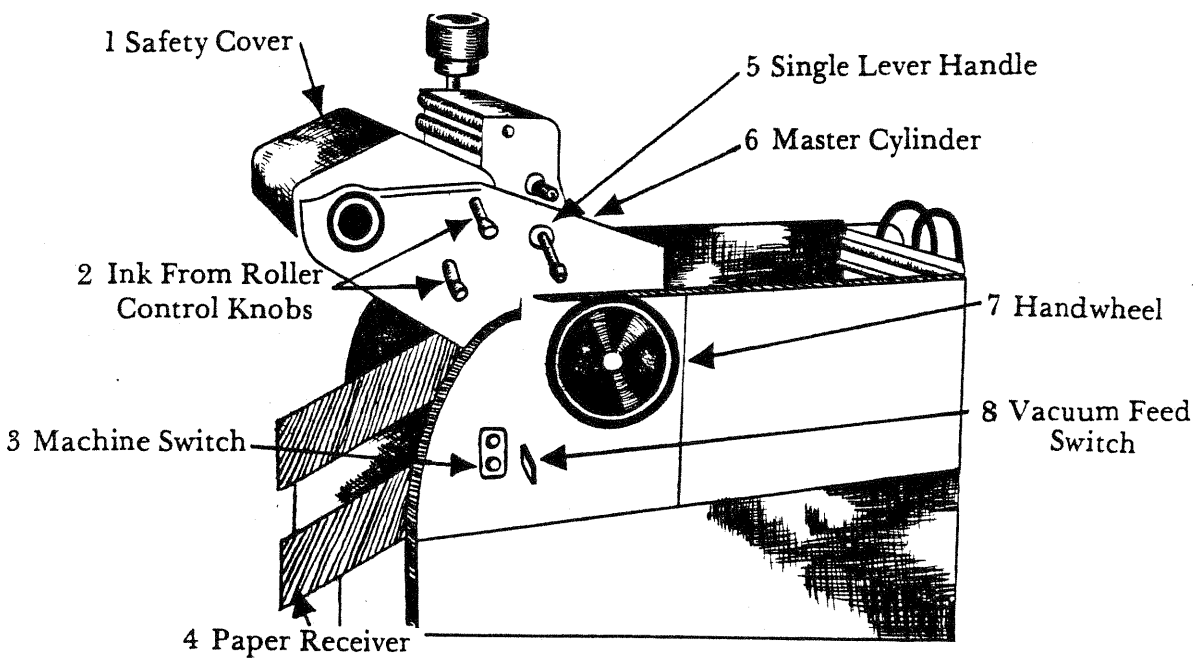
5. A warped or twisted work piece is not really dangerous. T F



OFFSET PRINTING PRESS

For Safety –

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. Never reach for misprinted or dropped paper while the press is in operation.
6. Do not make internal adjustments while the press is in operation.
7. Do not clean the press while it is in operation.
8. **The instructor** should determine the operating speed.
9. Never reach across the press while it is in operation.
10. When finished with the press, it must be clean of all paper, equipment and tools must be returned to proper storage.



OFFSET PRINTING PRESS

Name _____ Date _____ Test Grade _____

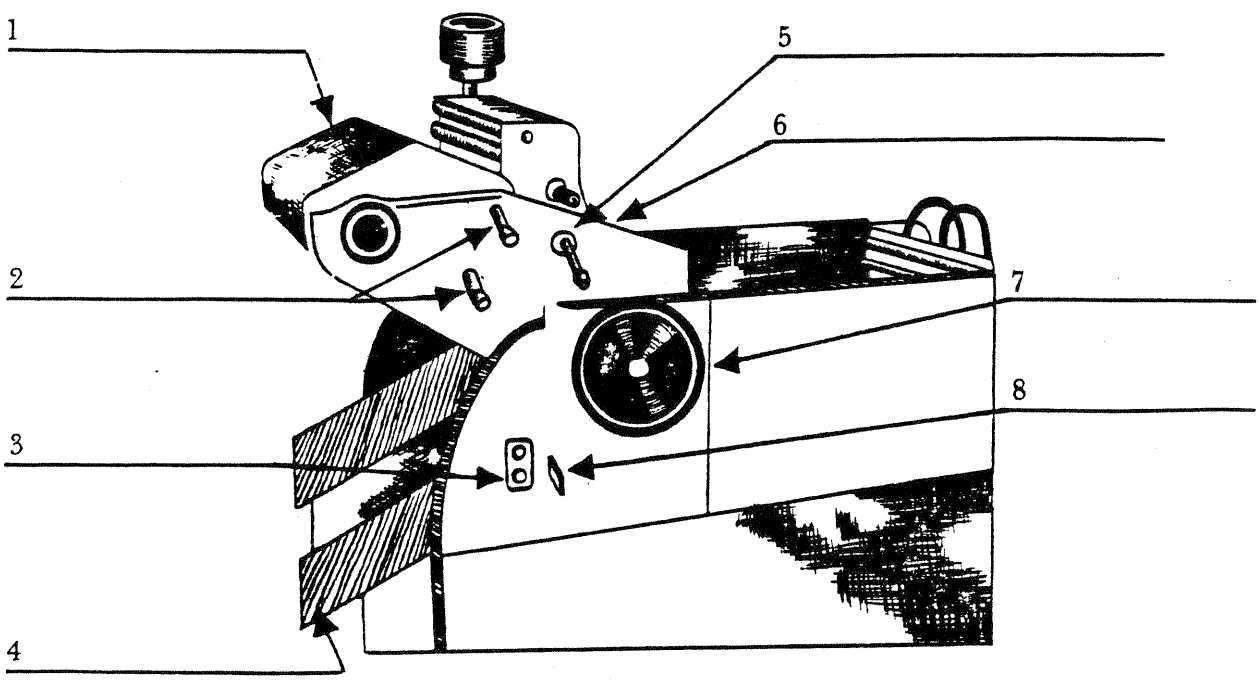
This student has performed operations safely on the Offset Printing Press.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

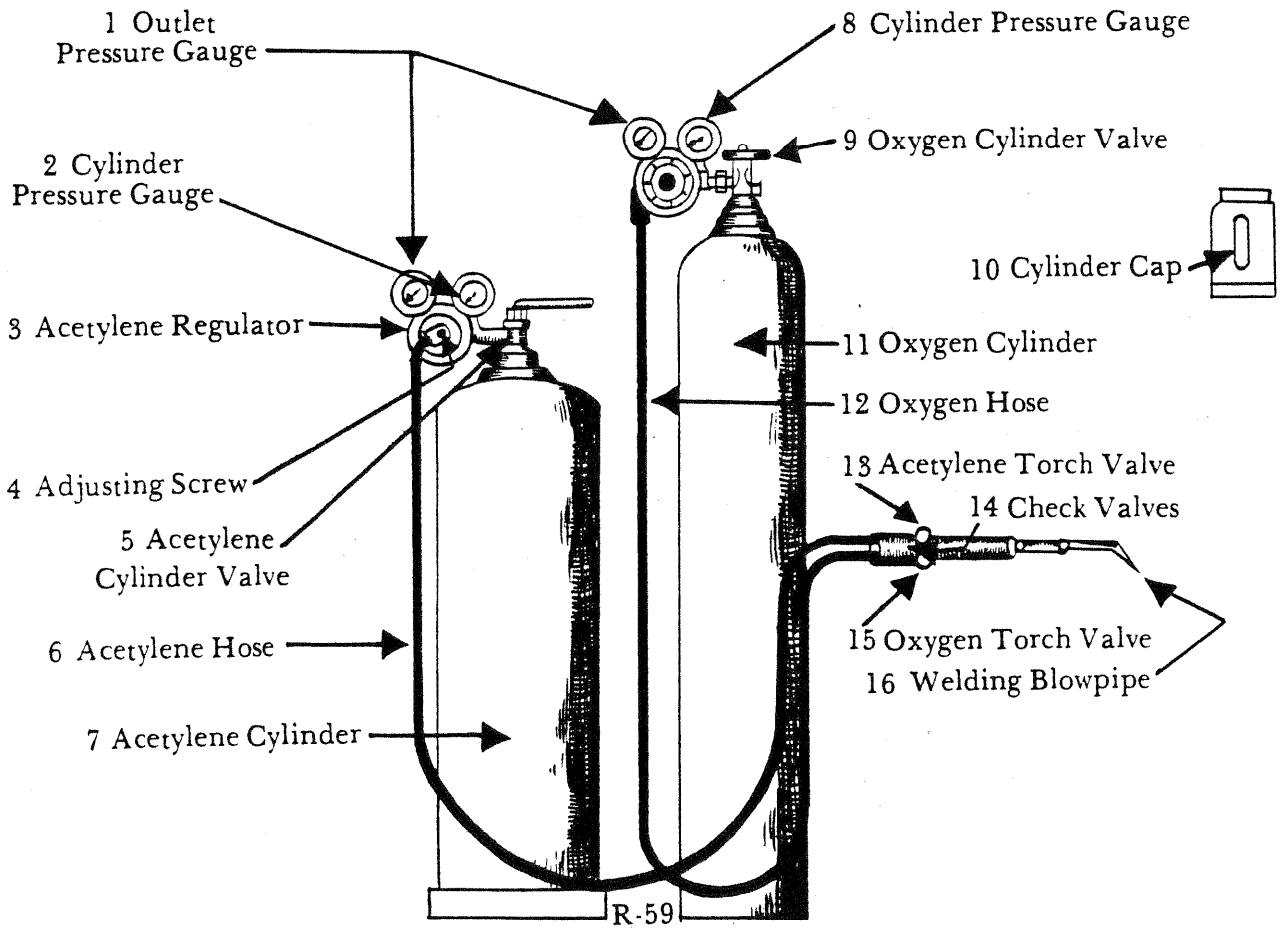
1. The gears need not be covered while the press is in operation. T F
2. The machine must be stopped before misprinted or dropped paper is removed from the press. T F
3. Final adjustments may be made while the machine is running. T F
4. You should be alert to keeping others away from the press while it is in operation. T F
5. It is safe to reach across the press when it is operating. T F



OXY-ACETYLENE WELDER

For Safety —

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. Do not weld galvanized metal without proper ventilation.
6. Do not allow oil to come in contact with hoses or equipment.
7. Gas bottles must be erect and **secure** at all times.
8. Protective goggles and spark-resistant clothing must be worn when welding.
9. Do not weld or cut on a closed container without instructor's approval.
10. Confine all cutting and welding to the designated area in the shop.
11. Turn off torch valves when finished with equipment.
12. Keep the cylinder caps on the bottles when not in use.
13. Turn off gas and oxygen at tanks or stations at the end of class session.
14. Bend the end of long welding rods to identify hot end and to reduce potential exposure to eye injury.



OXY-ACETYLENE WELDER

Name _____ Date _____ Test Grade _____

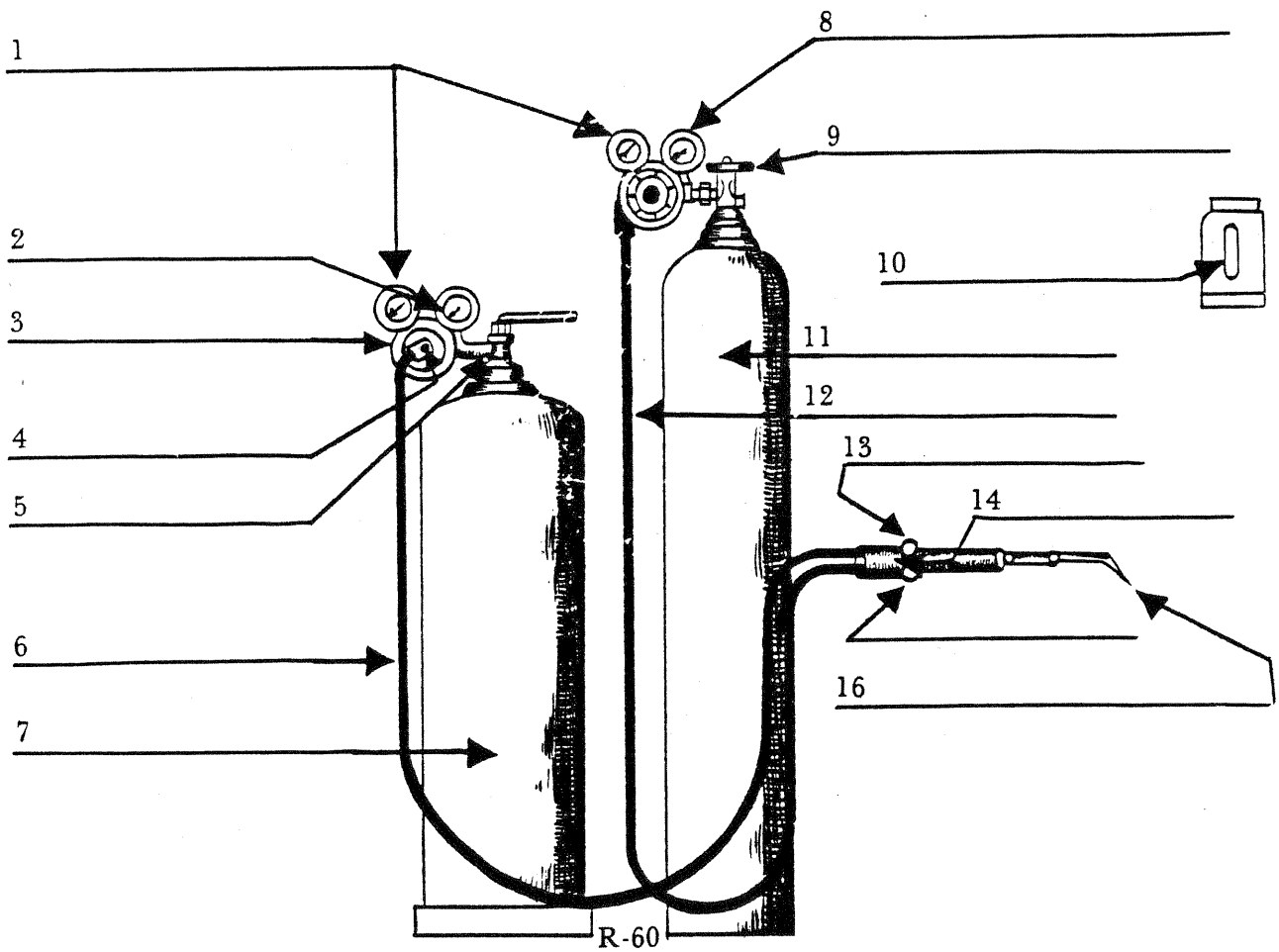
This student has performed operations safely on the Oxy-Acetylene Welder.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

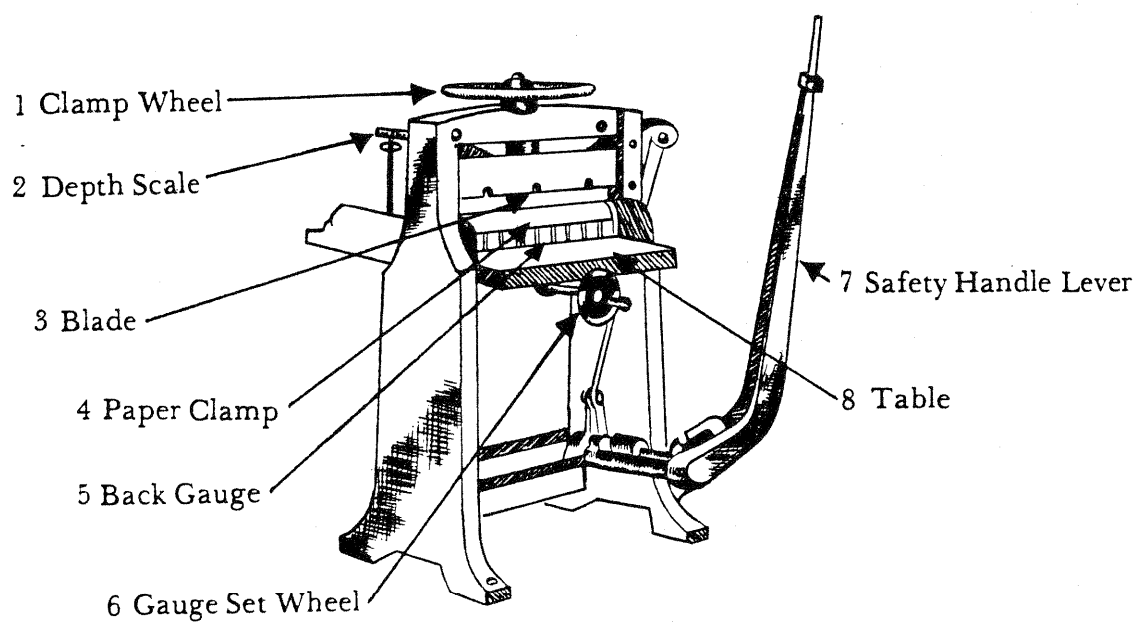
1. Gas bottles may be laid on the floor when not in use. T F
2. Closed containers are not hazardous to weld or repair. T F
3. The cylinder caps should be placed on all bottles when not in use. T F
4. Eye protection must be worn for all welding, cutting and chipping operations. T F
5. The equipment should not be wiped down with oily rags. T F



PAPER CUTTER

For Safety —

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. Changing or adjusting of the knife must be done by the instructor only.
6. All items other than the paper to be cut must be kept off the tables.
7. Both hands must be kept on the controls during the complete clamping and cutting cycle.
8. Floor area around the machine and controls must be clear of trimmings.
9. All adjustment of the machine, positive stops or guides must be made with the power off.



PAPER CUTTER

Name _____ Date _____ Test Grade _____

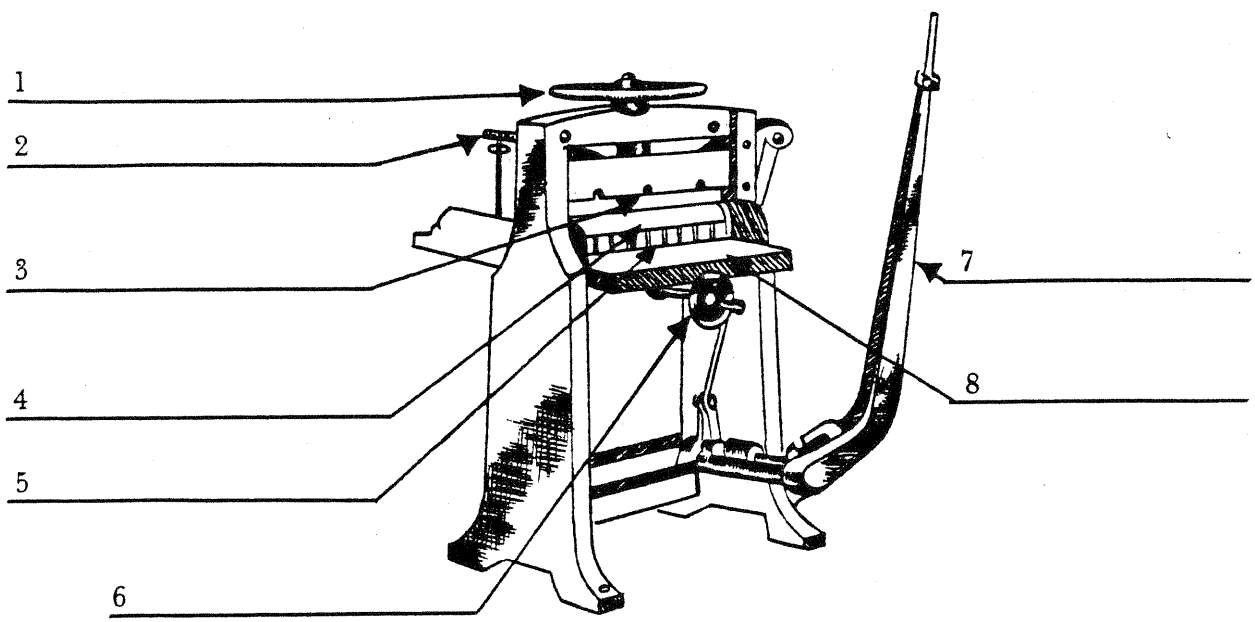
This student has performed operations safely on the Paper Cutter.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

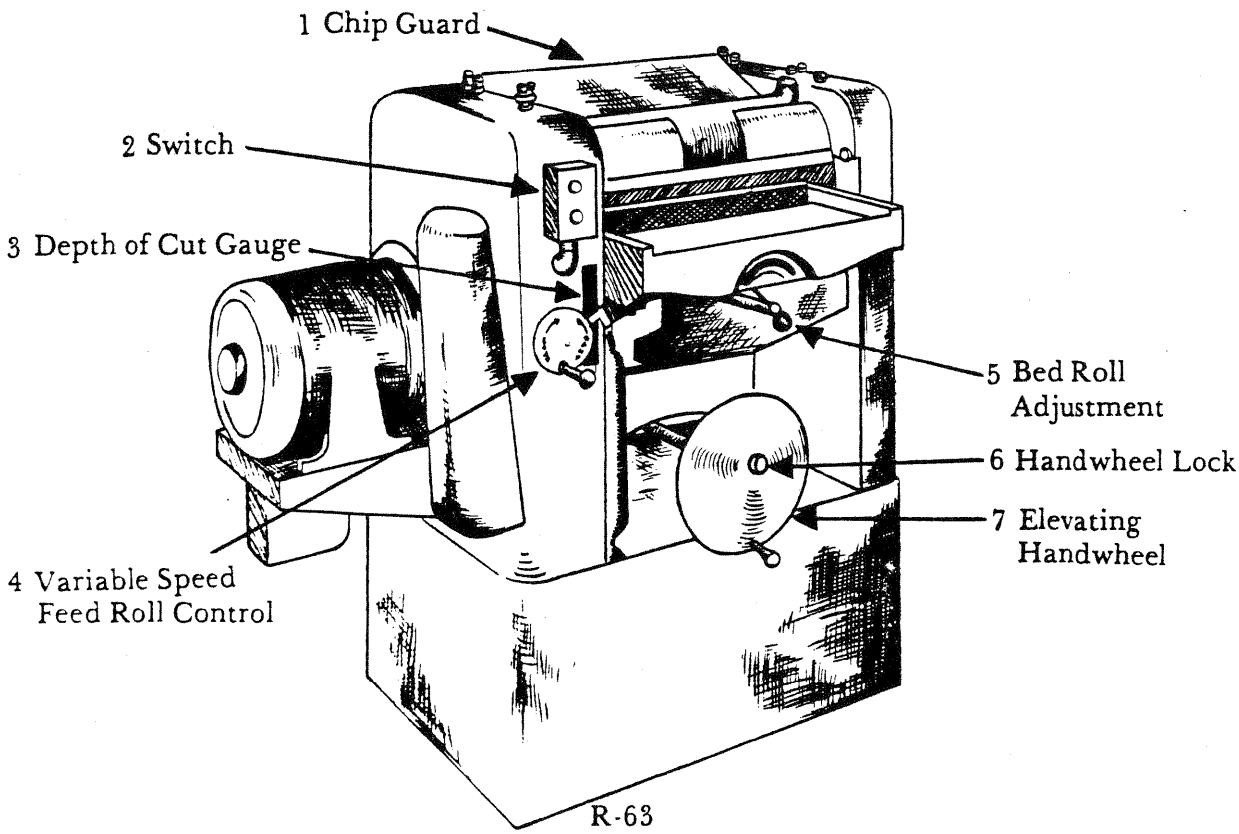
1. Since there are no chips involved, safety glasses are not required to operate this machine. T F
2. The floor must be kept clean around the paper cutter. T F
3. It is alright to cut thin gauge metal on this machine. T F
4. Stops or gauges should be adjusted only when the machine is turned off. T F
5. Hands should always be kept clear of the clamp and the cutter.



PLANER-SURFACER

For Safety —

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).



PLANER-SURFACER

Name _____ Date _____ Test Grade _____

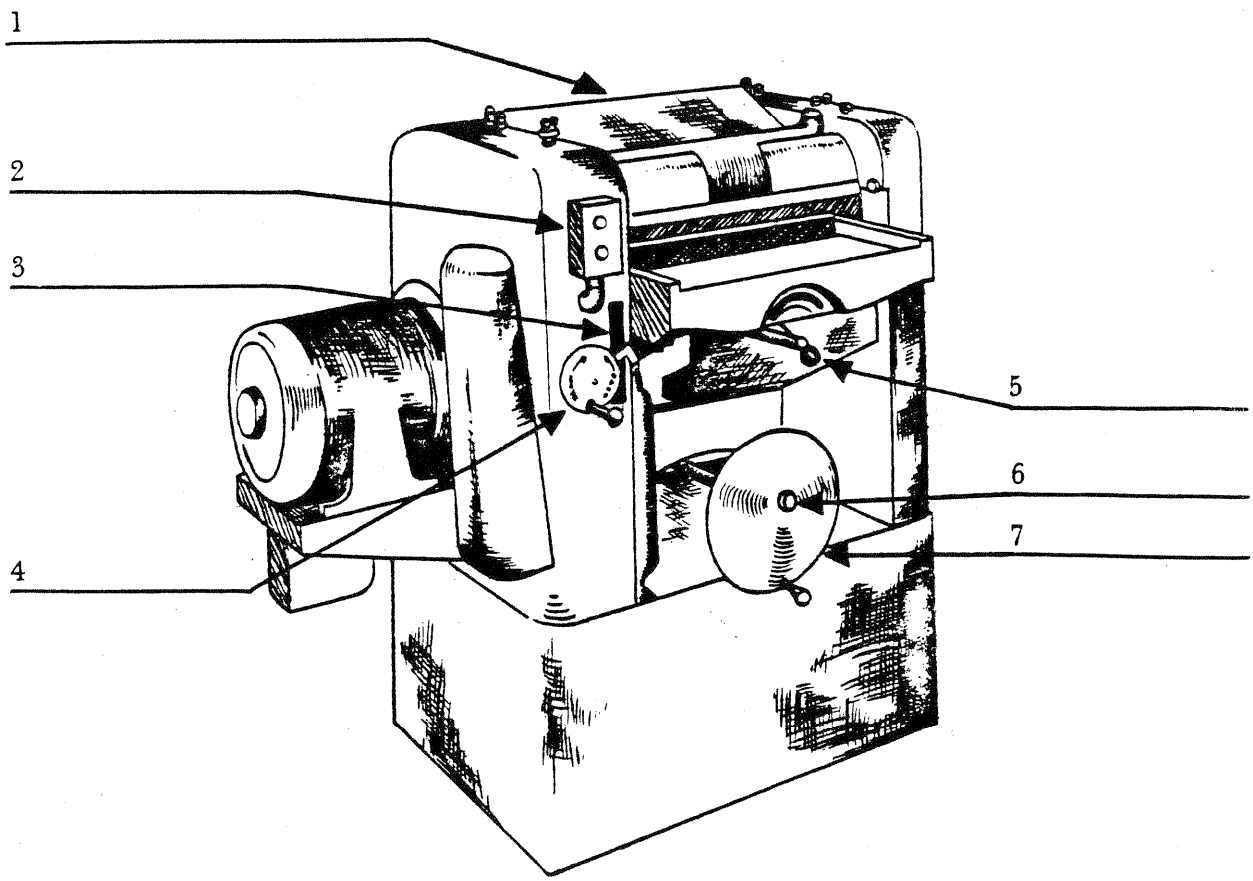
This student has performed operations safely on the Planer-Surfacer.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

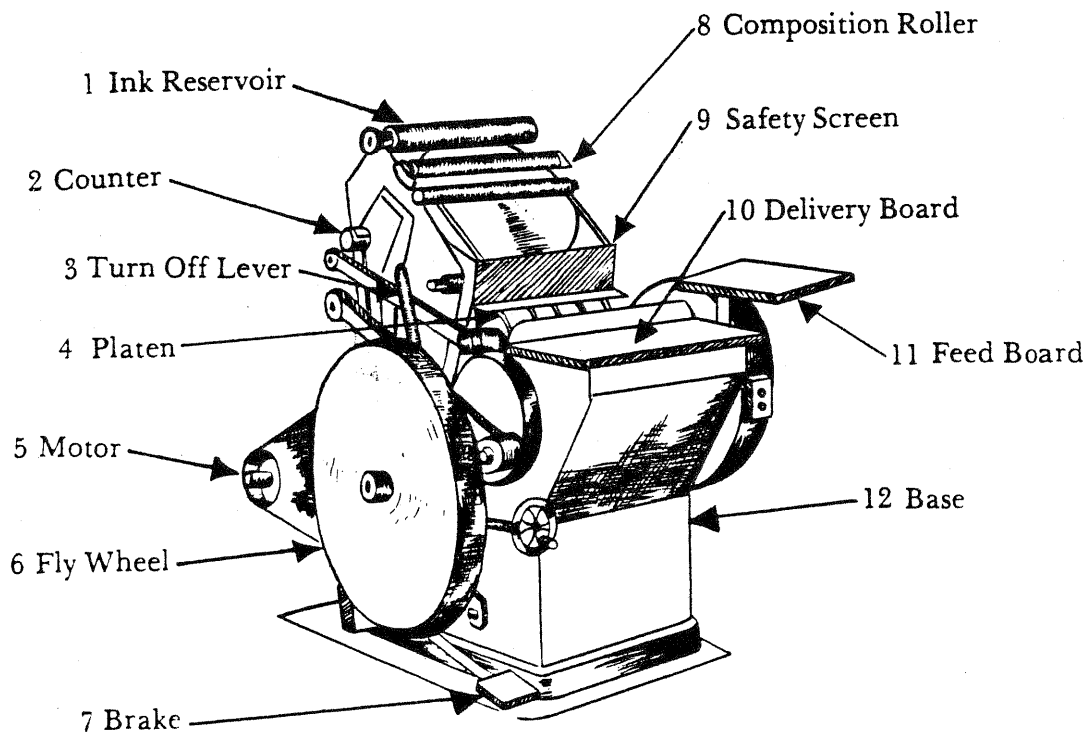
1. Instructor's permission is required to operate the machine. T F
2. Eye protection is required to operate machine. T F
3. Chips may be removed while machine is running. T F
4. It is safe to plane wood with loose knots.
5. If material becomes stuck, it is safe to stop machine. T F
6. Line of sight should be through the throat of the machine. T F
7. Assistance should be obtained when planing long pieces of wood. T F



PLATEN PRINTING PRESS

For Safety —

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. Operate the press at a speed that matches your ability to feed the paper.
6. Apply ink to the ink plate prior to starting the press.
7. Make sure the grippers are not in the way of the type form.
8. Only one operator at the press at a time.
9. Keep your hands out of the press when creating an impression.



PLATEN PRINTING PRESS

Name _____ Date _____ Test Grade _____

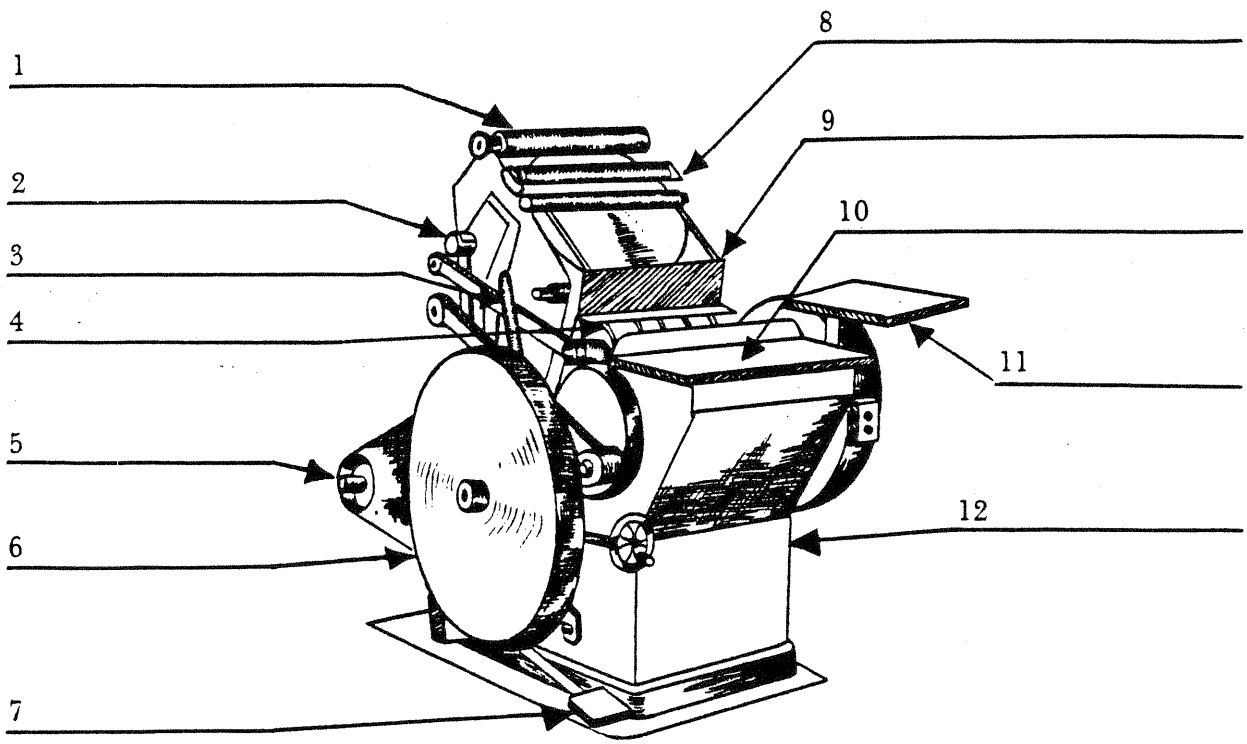
This student has performed operations safely on the Platen Printing Press.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

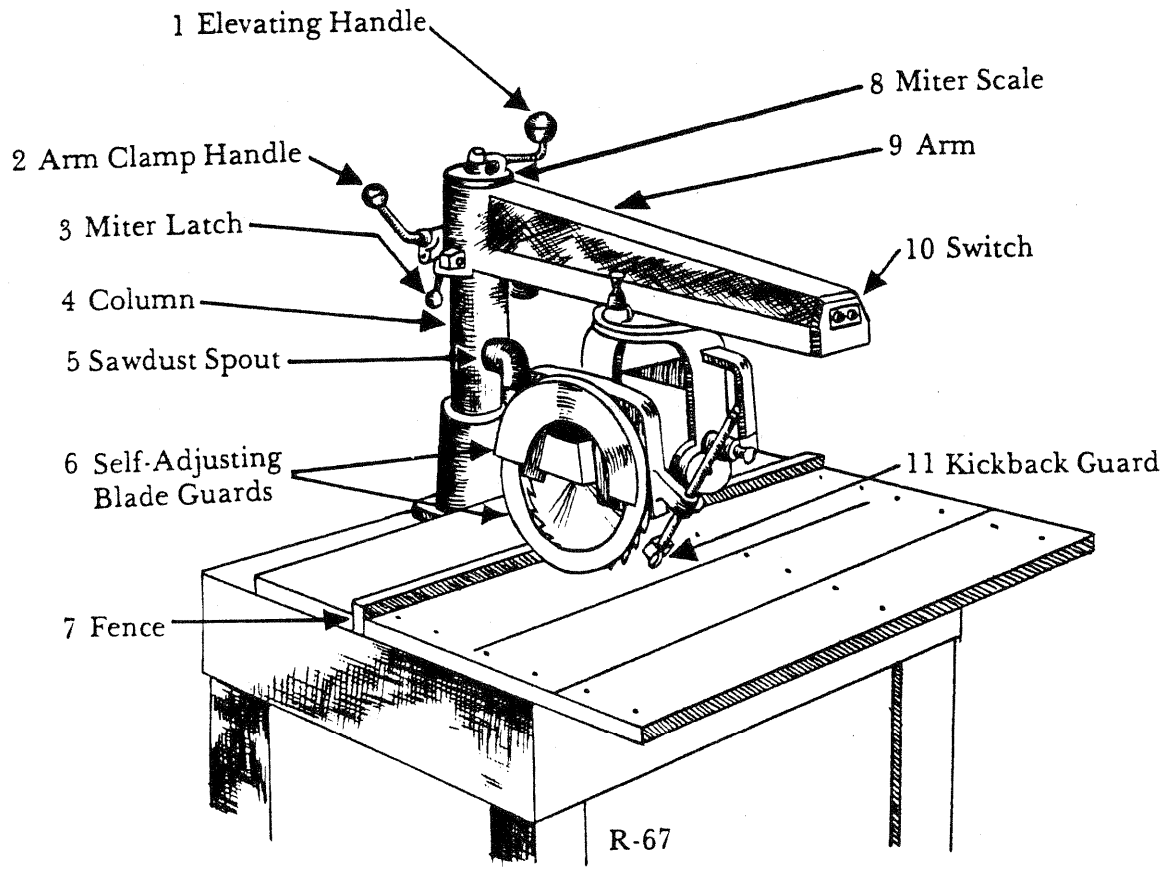
1. Operate the press at a speed that is safe for your ability level. T F
2. Loose clothing or hair must be confined. T F
3. The position of the grippers is not important. T F
4. The ink plate may be inked while the press is in operation. T F
5. Three or four people can successfully operate the platen press at the same time. T F



RADIAL ARM SAW

For Safety –

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 that the saw travels easily on the arm.
6. Be sure that the blade will not extend beyond the front of the table.
7. Before starting, make sure that the guard telescopes properly.
8. Make sure that the blade is stopped before leaving the machine.
9. Make sure that the material being cut is tight against the fence.
10. Be sure the saw returns to the rear of the table at the completion of the cut.
11. Avoid cross hand operation of this machine.



RADIAL ARM SAW

Name _____ Date _____ Test Grade _____

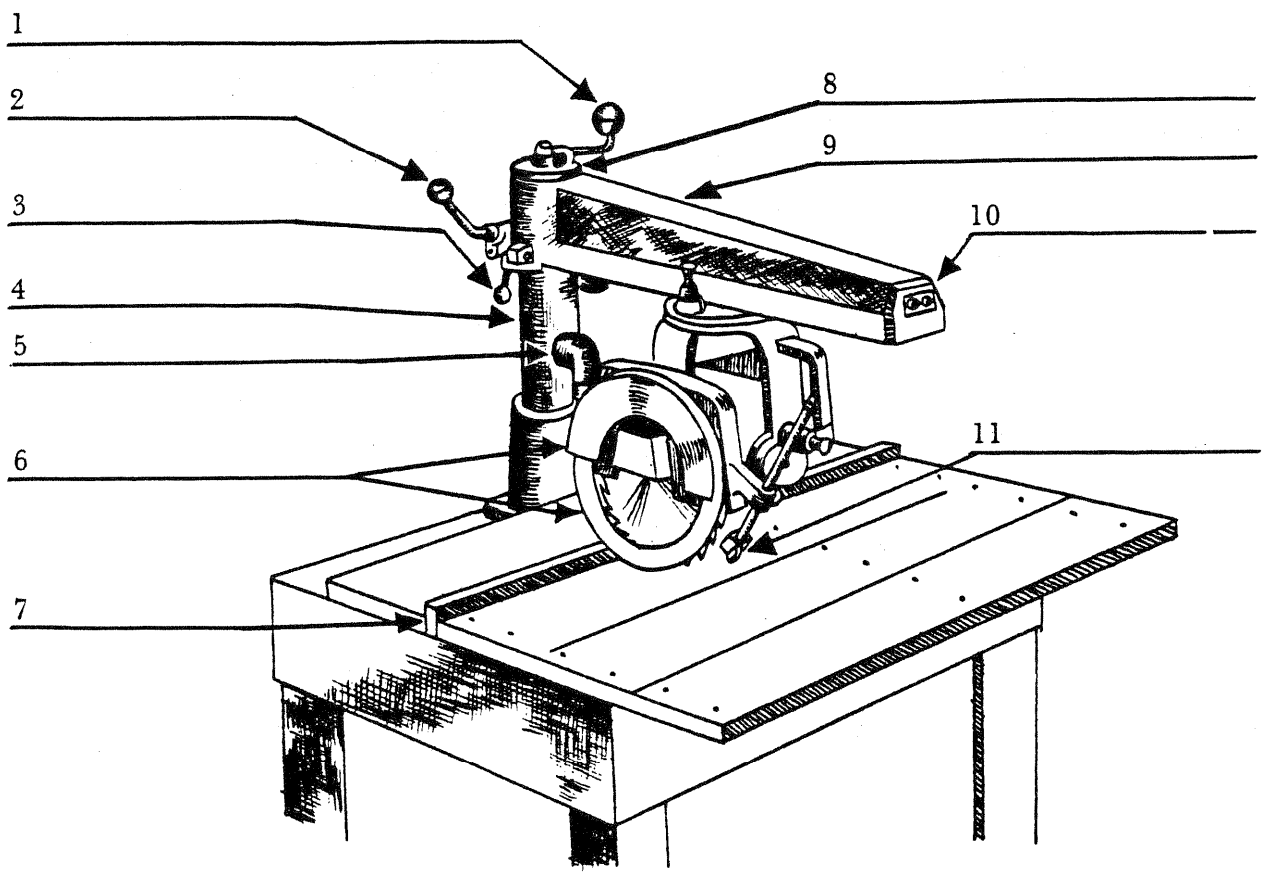
This student has performed operations safely on the Radial Arm Saw.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

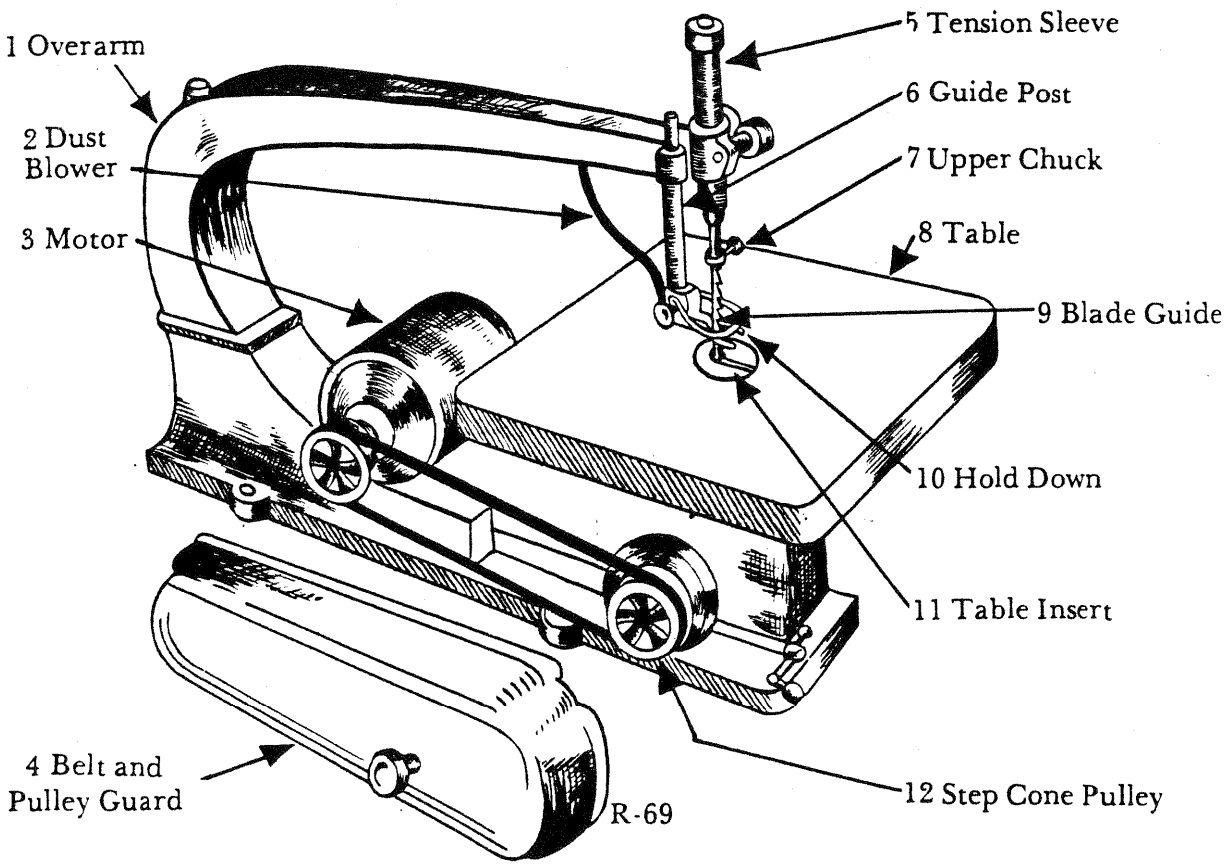
1. Eye protection is not necessary except when ripping. T F
2. You may leave the machine as soon as you have pushed the "off switch". T F
3. The guard must be in place when ripping. T F
4. The saw blade may extend beyond the table. T F
5. The blade should be installed so that in cross cut position the teeth at the bottom of the blade point away from the operator. T F
6. When ripping, one hand must hold the material and the other hand operate the saw. T F
7. In cross cutting, the saw should automatically return to the rear of the radial arm upon the completion of a cut. T F



SCROLL SAW

For Safety —

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. Make all adjustments before turning on scroll saw.
6. Lower the hold-down so that the spring fingers bear lightly on the work.
7. The danger area is within the "line of cut." Hold work piece with both hands on either side of the "saw line."
8. Shut off power and clean the machine before you leave it.
9. Avoid overloading the machine by feeding the stock too fast.
10. Avoid pinching the blade by turning too sharply.



SCROLL SAW

Name _____ Date _____ Test Grade _____

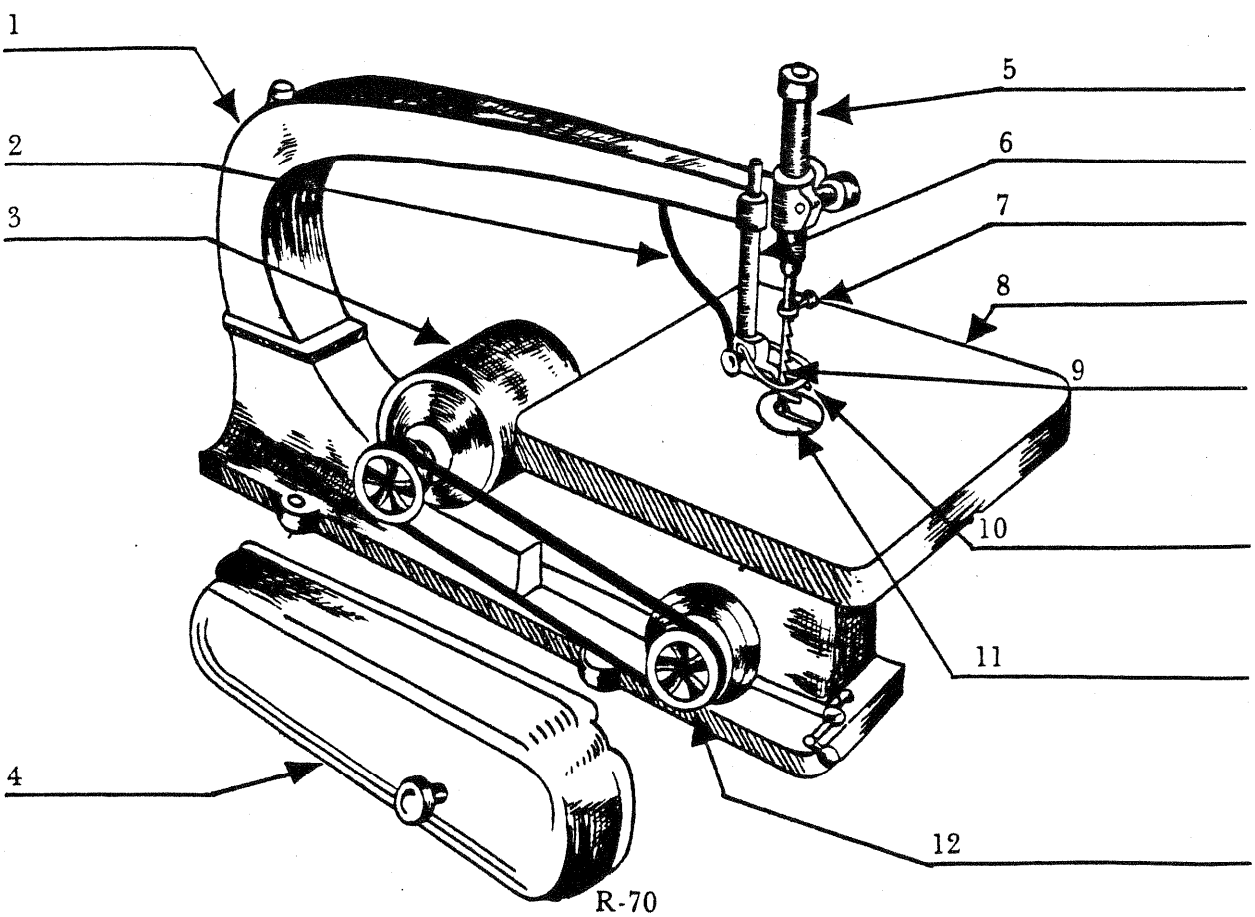
This student has performed operations safely on the Scroll Saw.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

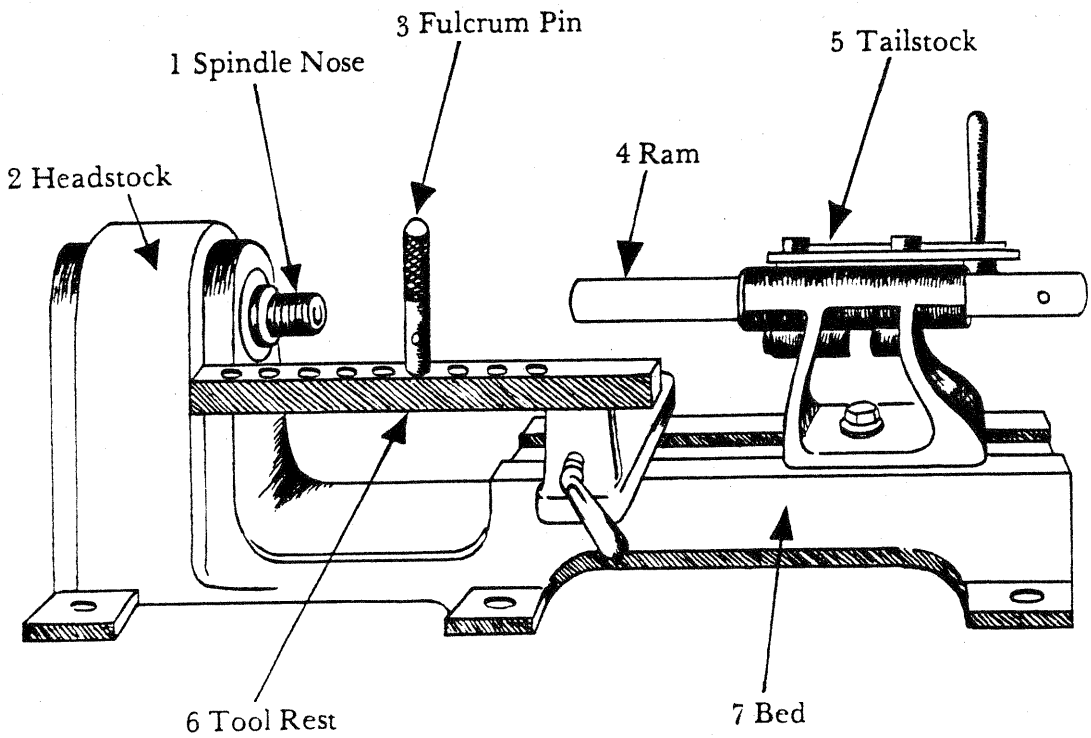
1. If the blade pinches in the kerf, do not stop the machine. T F
2. Eye protection must be worn. T F
3. It is not necessary to have the flat side of the stock next to the table. T F
4. Fingers should be kept away from the line of cut. T F
5. Adjustments may be made while the saw is running. T F
6. The hold-down should bear lightly on the work. T F



SPINNING LATHE

For Safety —

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 and stand clear of the spindle nose in front of the spinning lathe.
6. Do not touch a spinning disc by hand.
7. The tool rest should be no farther than 1" away from the disc.
8. Tool rest base, tool rest and fulcrum pin must be tight and secure.
9. Use the correct tool for the operation and slowly force material to match the forming chuck.
10. Remove tool rest and pin when using steel wool or polishing.



SPINNING LATHE

Name _____ Date _____ Test Grade _____

This student has performed operations safely on the Spinning Lathe.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

1. There is really no danger zone in front of a spinning lathe. T F
2. The spinning disc or material should never be touched by hand. T F
3. 2" is the correct working distance between the tool rest and the disc. T F
4. Eye safety protection is not necessary when spinning since there are no chips. T F
5. There is a correct tool for each of the various spinning operations. T F

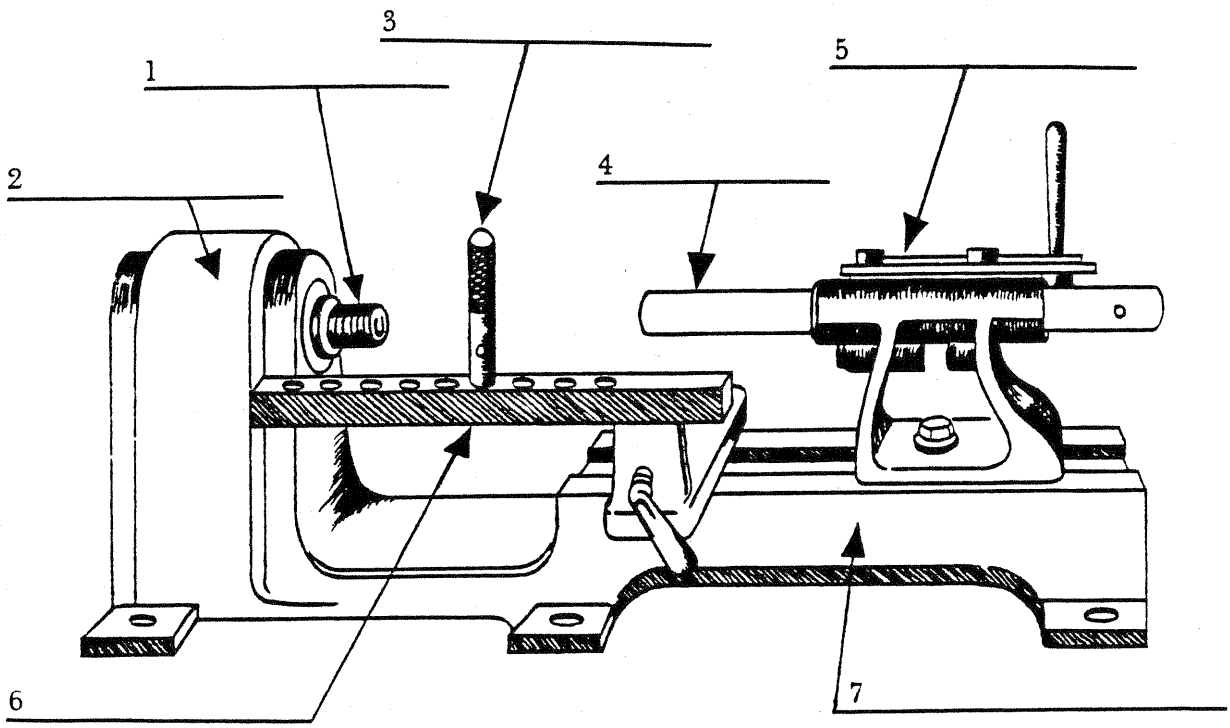
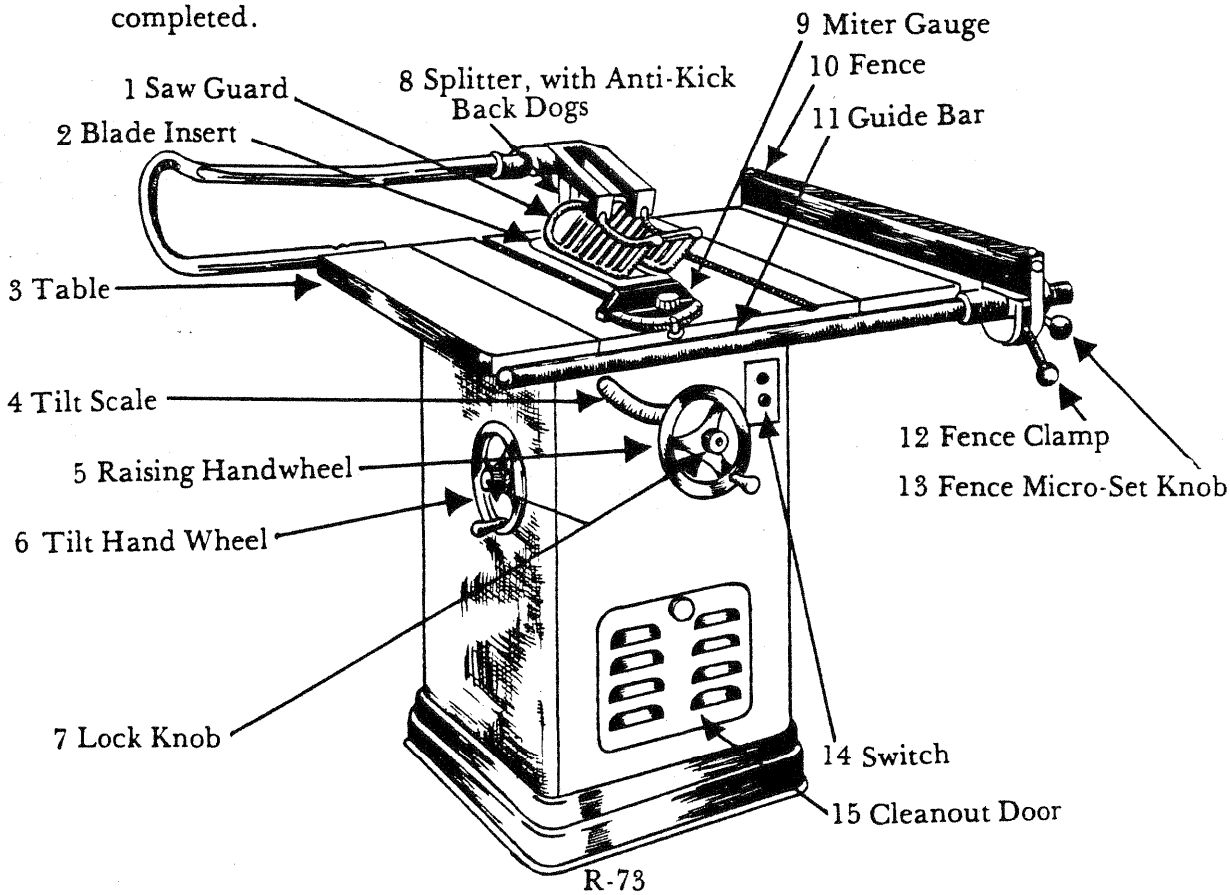


TABLE SAW

For Safety --

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. Make all adjustments and remove scraps with the machine completely stopped.
6. Select proper blade and set at correct height (1/8 inch above wood).
7. Never saw freehand — never reach over the saw blade.
8. Make sure blade is installed with the teeth pointing in the proper direction.
9. Stand to the side — not in line with the blade.
10. A push stick should be used when the hands come within 3 inches of the blade.
11. Use the rip fence for ripping and miter gauge for crosscutting.
12. Stop the machine, lower blade below table, and clean up scraps when completed.



R-73

TABLE SAW

Name _____ Date _____ Test Grade _____

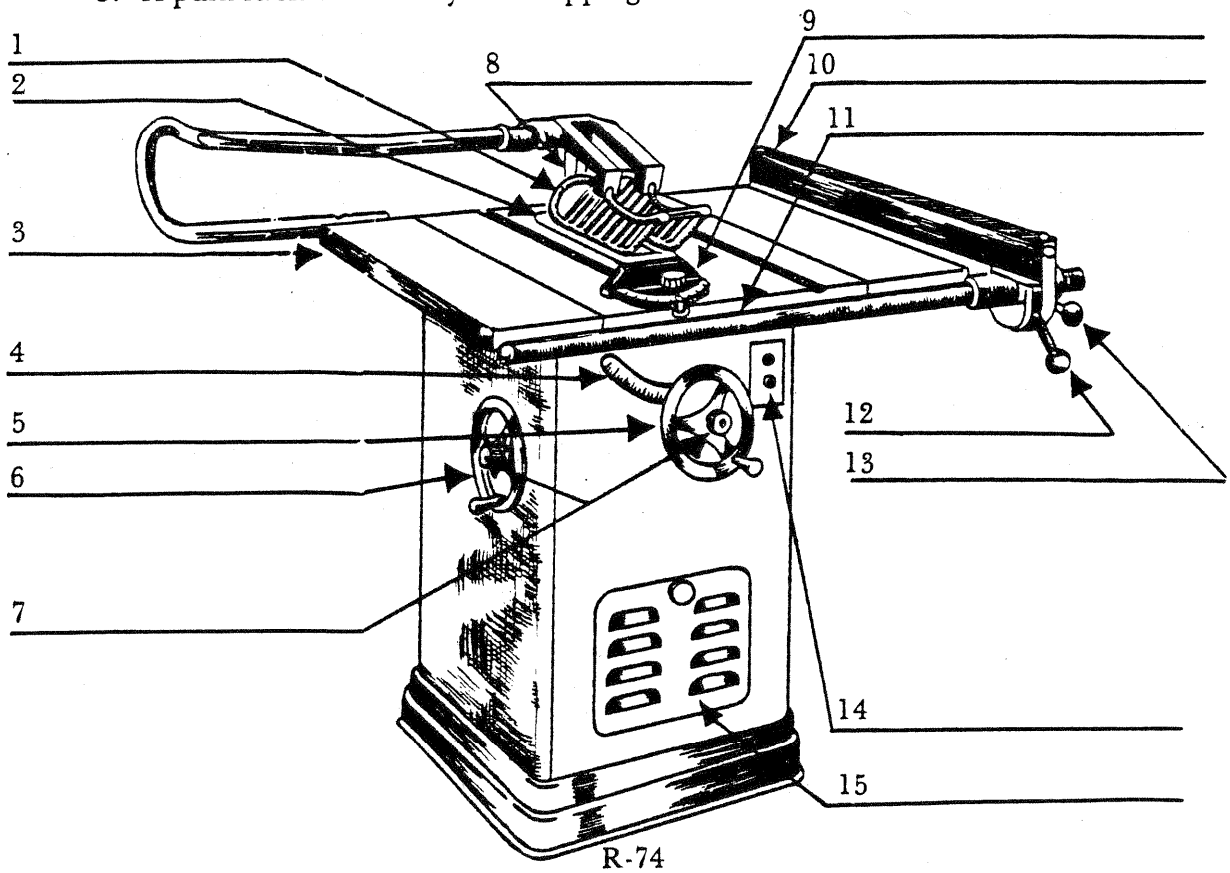
This student has performed operations safely on the Table Saw.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

1. It is safe to saw freehand. T F
2. The fence should always be used. T F
3. The guard is not always necessary. T F
4. When ripping, it is best to stand directly behind the blade. T F
5. Eye protection should be worn when using a table saw. T F
6. The saw blade should be adjusted so that the teeth clear the thickness of material by the depth of the teeth. T F
7. A helper or roller should be used when ripping long pieces. T F
8. A push stick is necessary when ripping narrow stock. T F



TIG AND MIG WELDER

For Safety —

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.

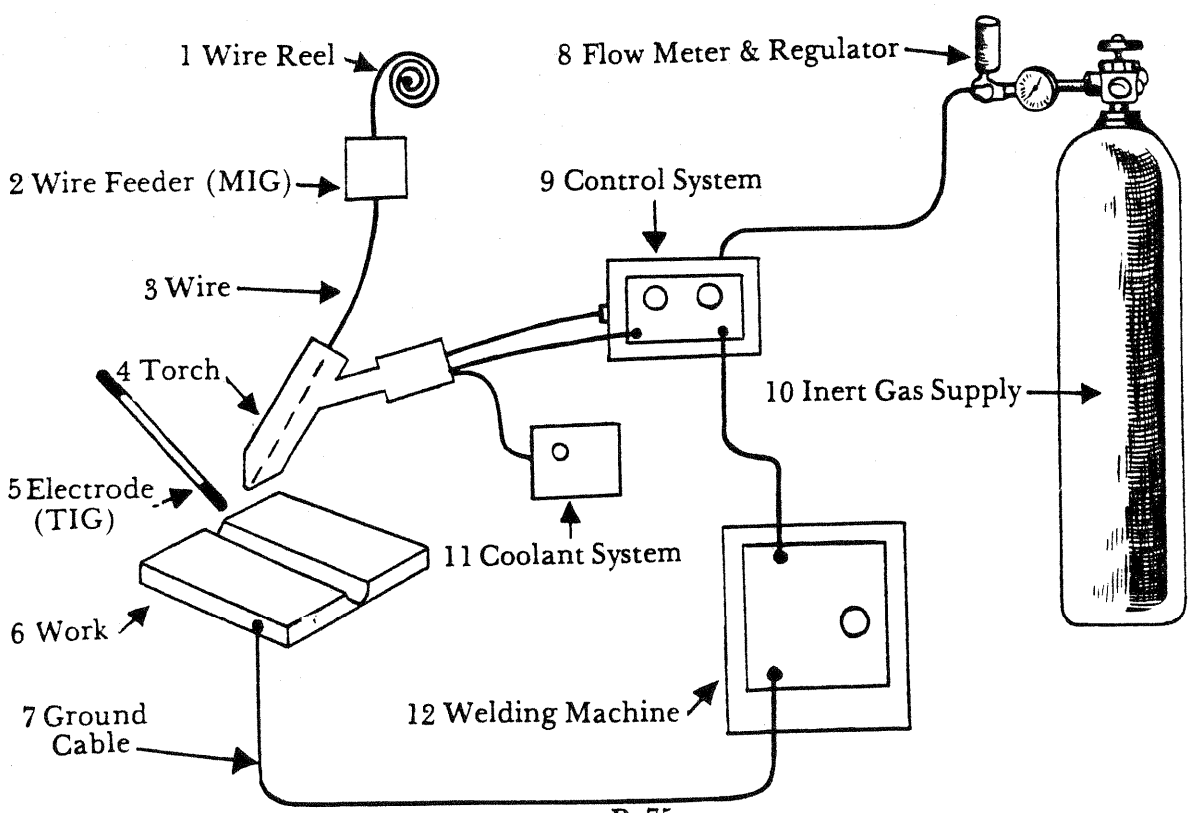
5. Additional protective welding clothing, including a helmet, long sleeve jacket, and gloves must be worn to prevent burns from ultraviolet and infra red rays emitted while arc welding.

6. The helmet used for TIG or MIG welding should be equipped with a minimum number twelve density shade.

7. 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 Communication Commission.

8. Never touch the gungsten electrode or MIG wire while the welder is turned on. It is electrically "hot" and can cause a serious shock.

9. Never use the high frequency when performing shield metal arc (stick electrode) welding.



TIG AND MIG WELDER

Name _____ Date _____ Test Grade _____

This student has performed operations safely on the TIG and MIG Welder.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

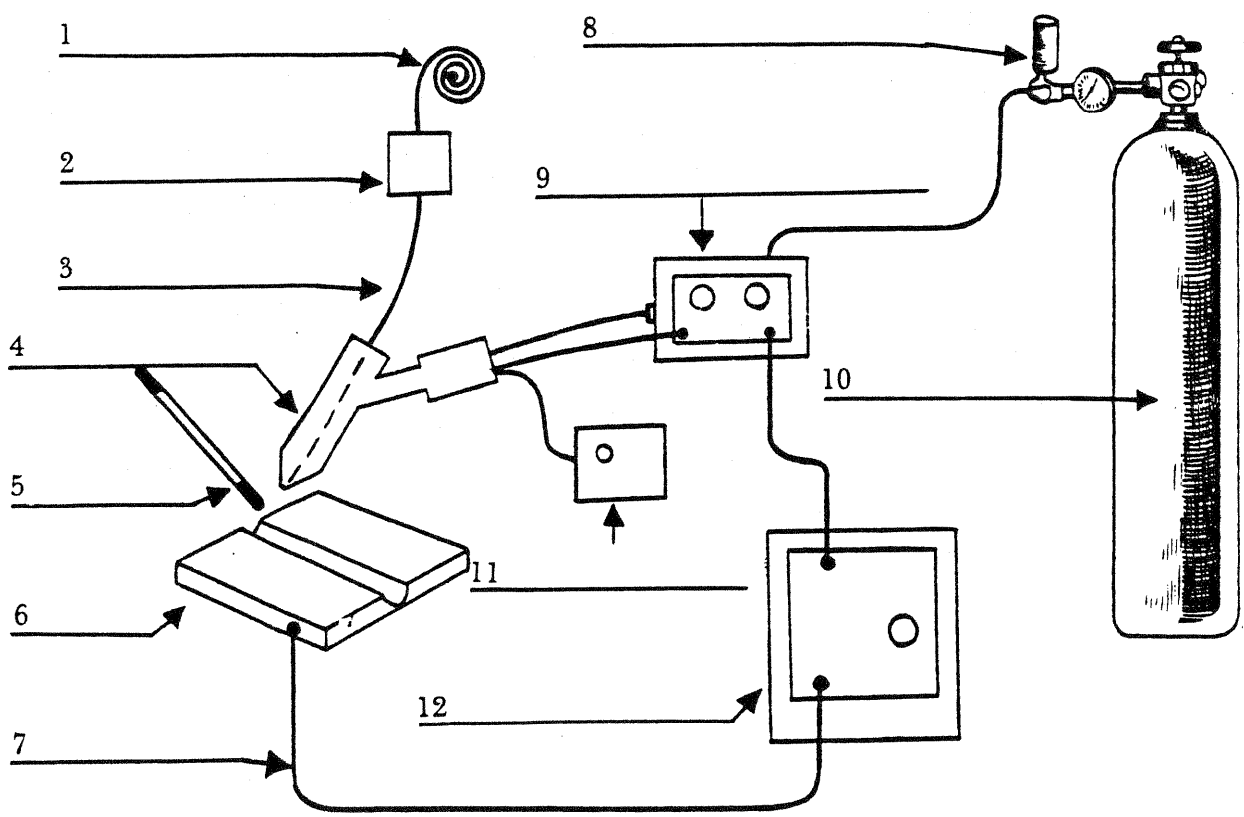
1. Special protective equipment should be worn to prevent burns while arc welding. T F

2. It is safe to touch the tungsten electrode or MIG wire while the welder is turned on. T F

3. The helmet used for TIG or MIG welding should be equipped with a minimum number twelve density shade. T F

4. The welder does not have to be equipped with a high frequency stabilizing unit. T F

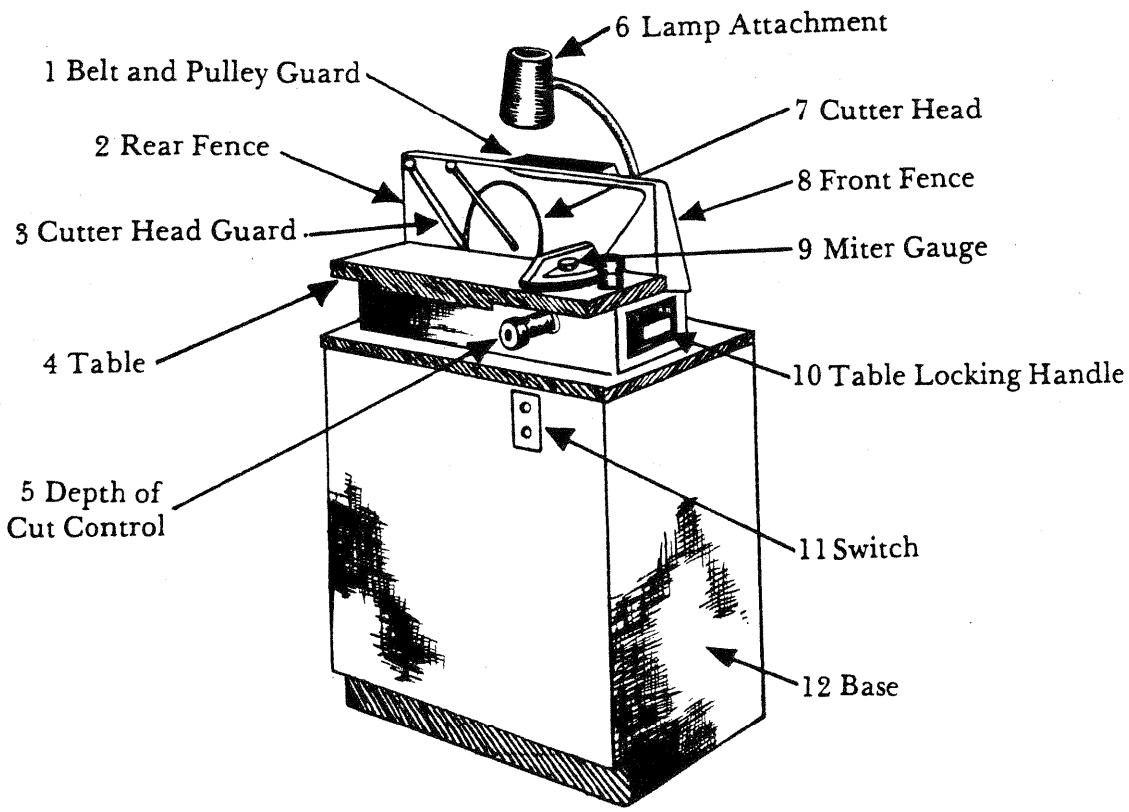
5. The welding machine must have a ground cable connected to the work. T F



UNIPLANE

For Safety –

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 cutterhead 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.



UNIPLANE

Name _____ Date _____ Test Grade _____

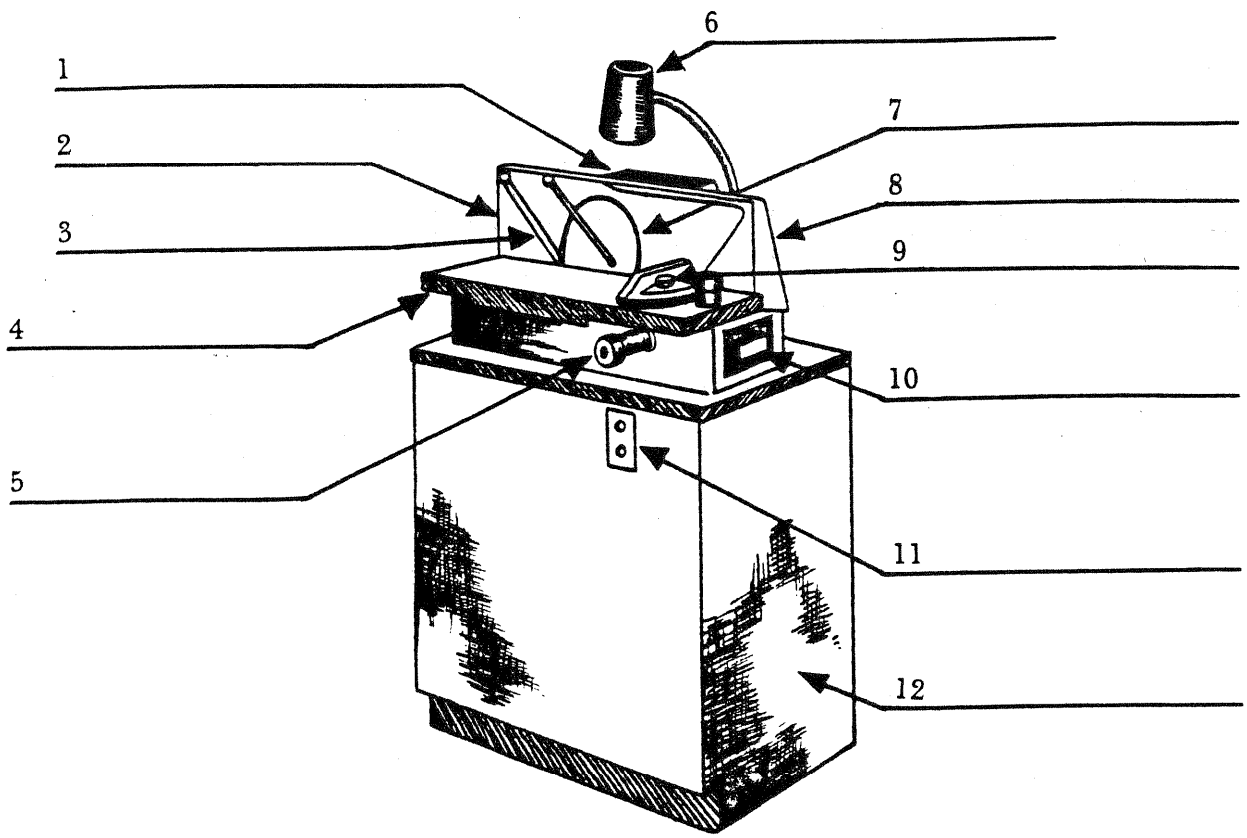
This student has performed operations safely on the Uniplane.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

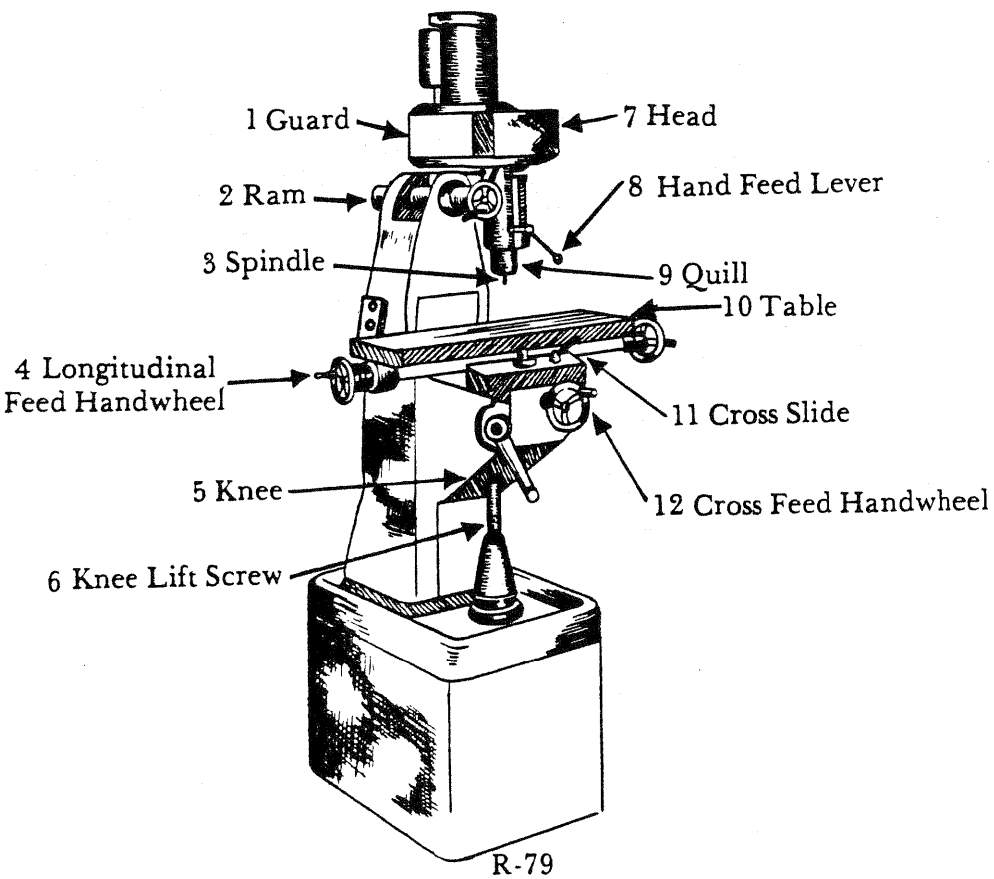
1. The guard should be clamped in position to clear the work piece. T F
2. Loose cutters will give a rough cut but are not detrimental to safety. T F
3. The work piece should be moved through the machine to the rear fence before removing. T F
4. The machine must come to a full stop before it is safe to leave the work area. T F
5. All adjustments should be made with the power off. T F
6. A lamp attachment contributes to safety. T F



VERTICAL MILLING MACHINE

For Safety –

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. Make all adjustments with the power off.
6. Be sure cutter is tightly held in the collet and material is securely held by a vise, clamps, or magnetic chuck.
7. Check spindle rotation, speed, depth of cut and all power feed adjustments before starting the cut.
8. Keep hands away from the cutter. Remove chips with a brush after the machine is turned off.
9. Once a cutting pass is made, do not back out or return to the starting position without proper clearance.
10. Remain with the machine for the duration of the cut.



VERTICAL MILLING MACHINE

Name _____ Date _____ Test Grade _____

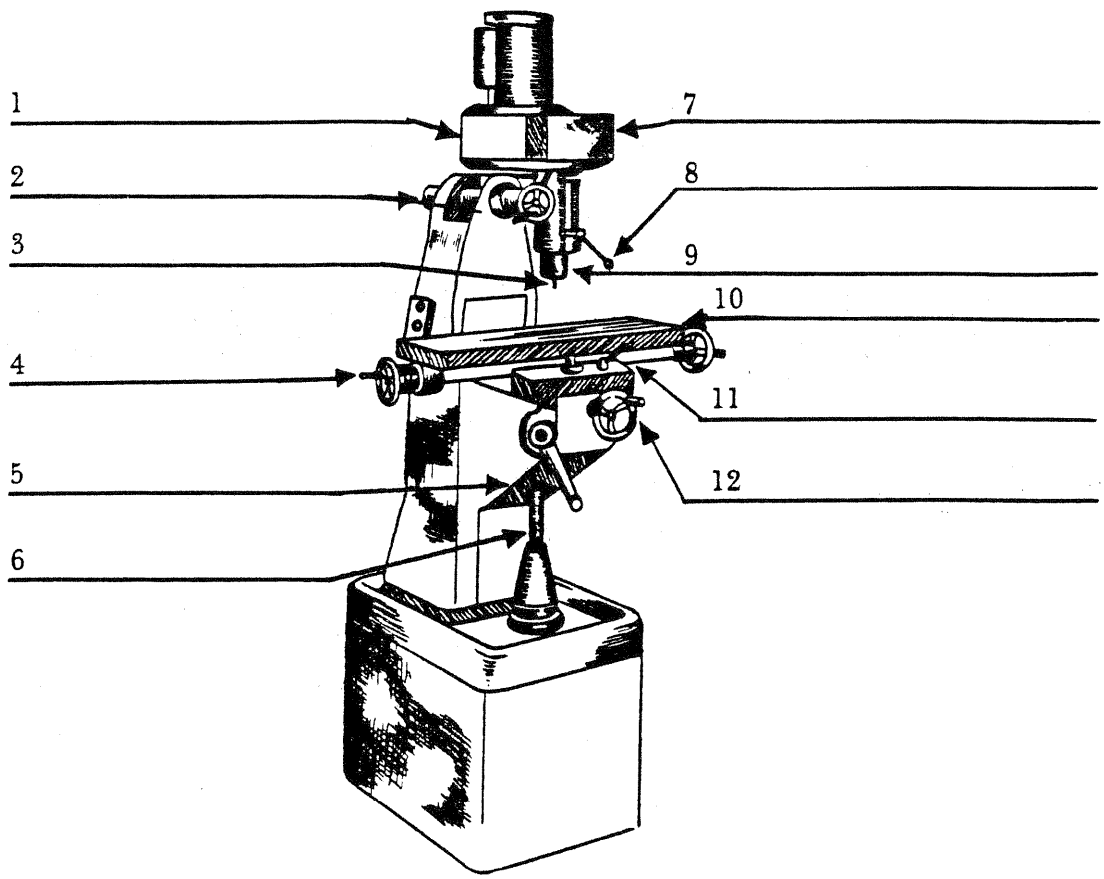
This student has performed operations safely on the Vertical Milling Machine.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

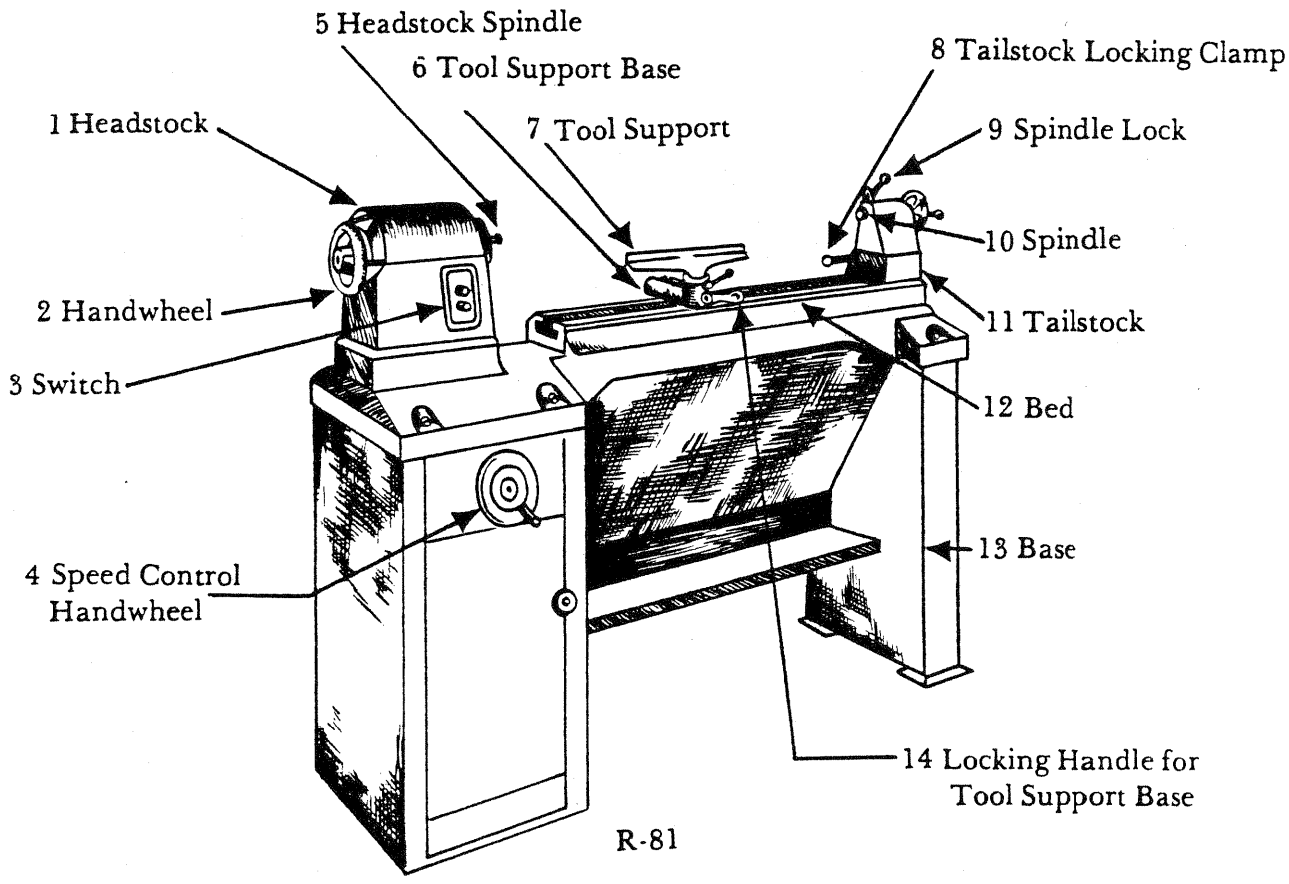
1. If a brush is used it is safe to remove chips while the machine is running. T F
2. All adjustments have to be made with the power turned off. T F
3. If machine is running slow, eye protection is not necessary. T F
4. You can back out of a cut at any time without raising the quill or moving the table. T F
5. The work piece must be securely fastened to the table before beginning the cut. T F



WOOD LATHE

For Safety —

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 setup and turn work by hand before turning on power.
11. Shut off power while cleaning machine.



WOOD LATHE

Name _____ Date _____ Test Grade _____

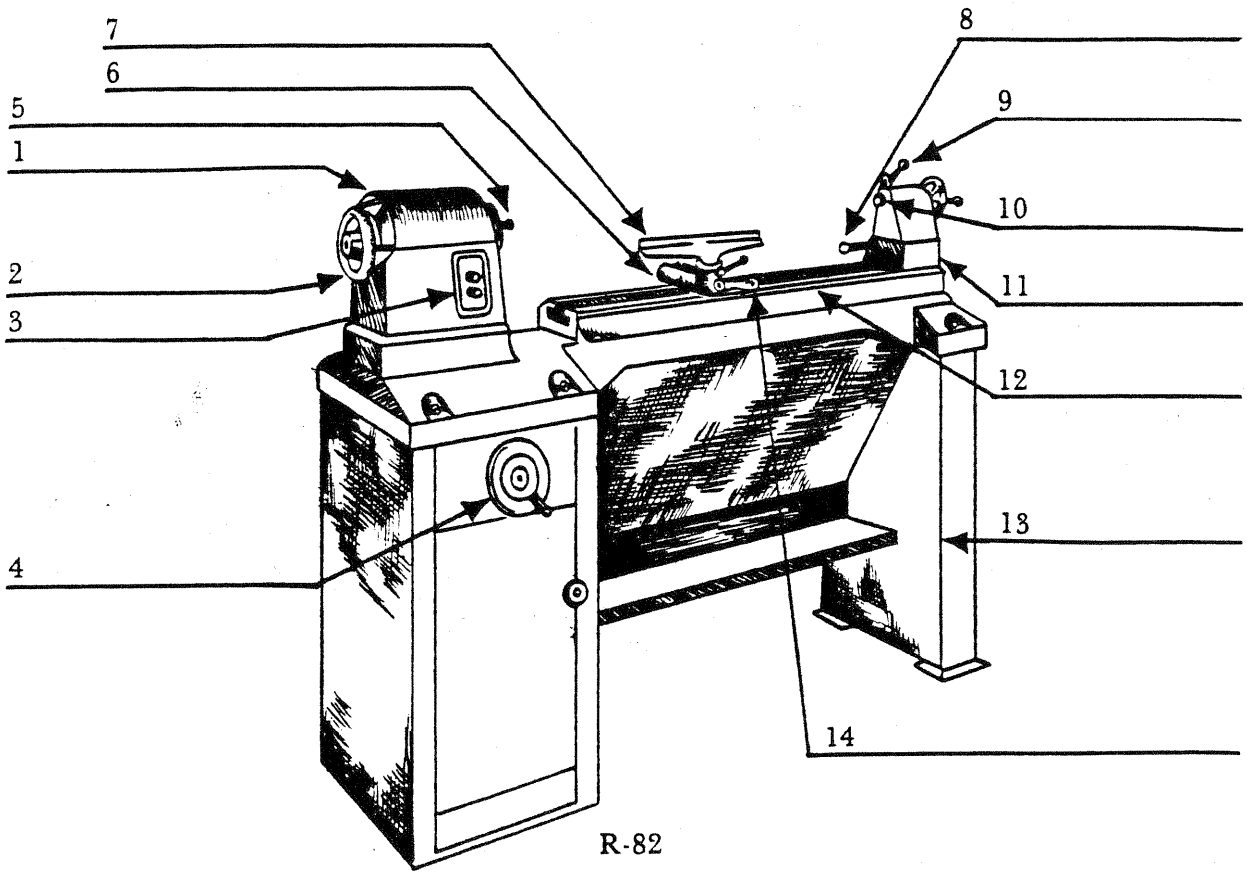
This student has performed operations safely on the Wood Lathe.

Teacher_____ Date_____

Studen _____ Date_____

Safety Quiz (Circle True or False)

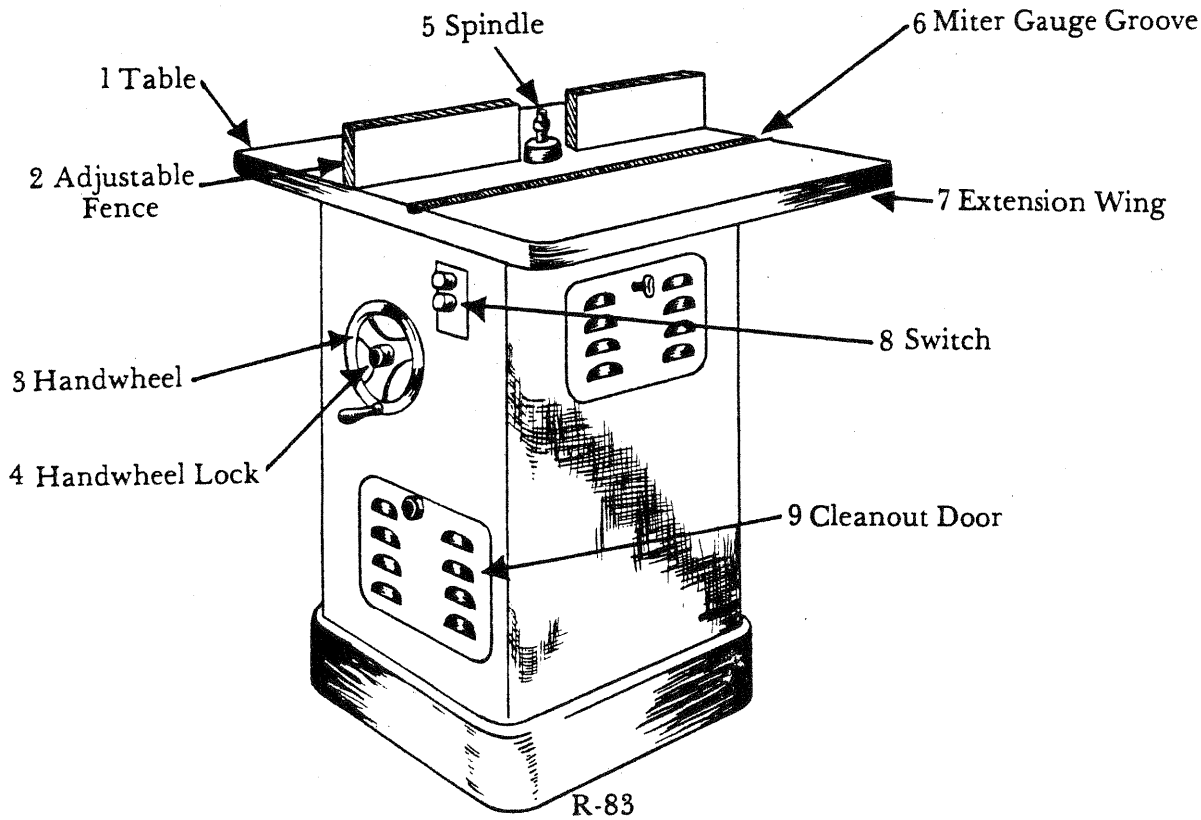
1. The speed of the machine is not important for safe operation. T F
2. A space of 1" is safe between the tool rest and the work. T F
3. Eye protection is not necessary during operation. T F
4. Dull tools may be used. T F
5. It is safe to feel for smoothness while turning. T F
6. The tool rest should be removed while sanding. T F
7. It is safe to turn work that is not balanced. T F
8. Long sleeves may be worn while operating. T F



WOOD SHAPER

For Safety –

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 free hand 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 is stopped.



WOOD SHAPER

Name _____ Date _____ Test Grade _____

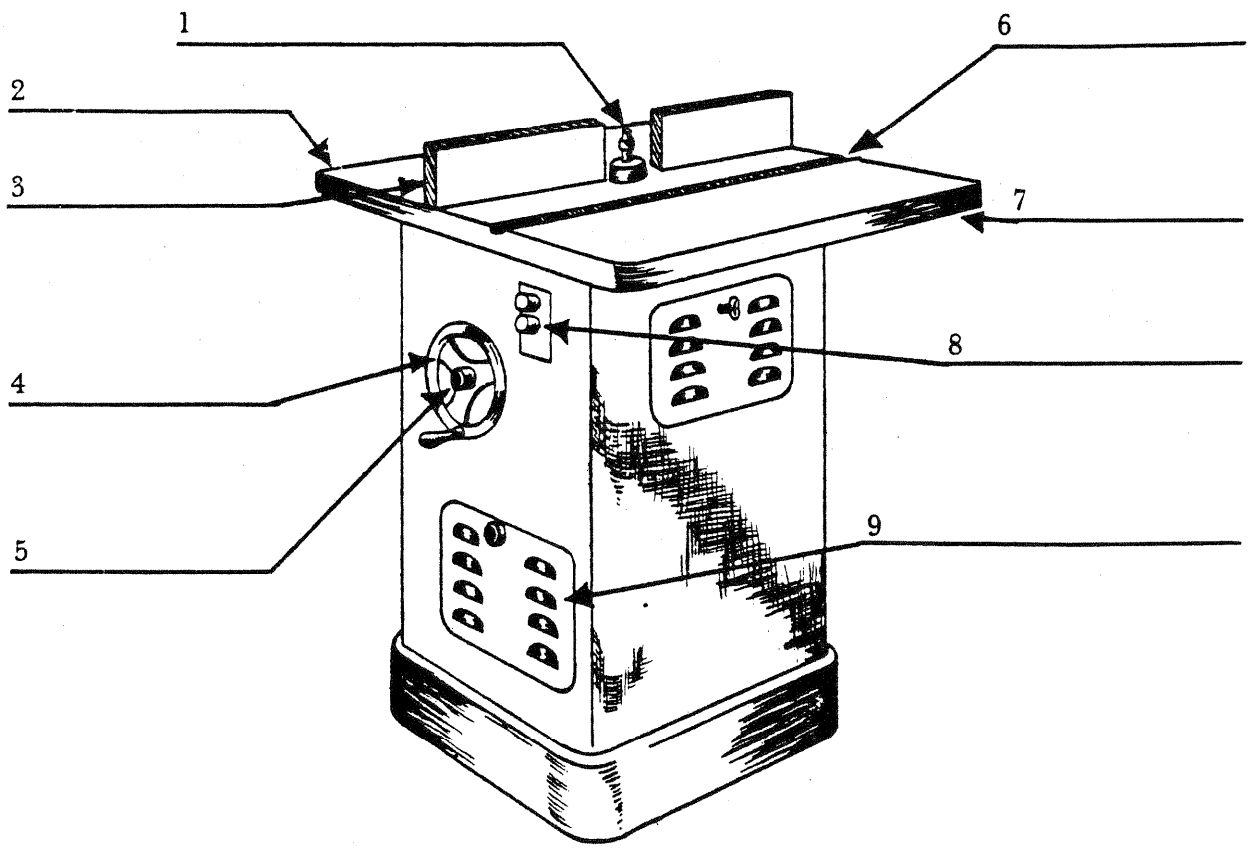
This student has performed operations safely on the Wood Shaper.

Teacher_____ Date_____

Student _____ Date_____

Safety Quiz (Circle True or False)

1. In most cases guards and hold downs only get in the way. T F
2. Often special or custom fixtures must be made to do a job safely. T F
3. A starting pin is not necessary. T F
4. The largest table insert should always be used. T F
5. A brush should be used to brush away chips when the machine is running. T F
6. Three wing cutters are safer than a cutter head. T F



RESOURCE MATERIALS

Sources of OSHA Information

Copies are available for purchase from the Superintendent of Documents, United States Government Printing Office, Washington, D.C. 20402.

1. Occupation Safety and Health Act of 1970

2. Job Safety and Health Magazine

3. Federal Register

4. The Principles and Techniques of Mechanical Guarding (OSHA 2057) November 1973

5. A Handy Reference Guide (OSHA 2004) 1971

6. Subscription Service (service providing all standards, interpretations, regulations and procedures.)

   a. Gen. Ind. Standards and Interpretations
   b. Maritime Standards and Interpretations
   c. Construction Standards and Interpretations
   d. Other Regulations and Procedures
   e. Compliance Operations Manual

Copies of the following publications are available free in limited quantities from your nearest OSHA office:

1. All About OSHA (OSHA 2056) September 1973.

2. Safety and Health Protection on the Job (OSHA 2003) Revised November 1973.

3. Questions and Answers to Part 1910 — The OSHA General Industry Standards (OSHA 2005; November 1973.

4. Fact Sheet for Small Businesses on Obtaining Compliance Loans (OSHA 2005) January 1972.

5. Asbestos: Airborne Danger (OSHA 2075) June 1972.

6. The Safe Use of Anhydrous Ammonia (OSHA 2011) January 1972.

7. Scientific Equipment Aids OSHA Compliance Efforts (OSHA 2049) May 1972.

8. How States Plan for Job Safety and Health (OSHA 2050) May 1973.

9. Target Health Hazards (OSHA 2051) June 1972.

10. Careers in Safety and Health: The Occupational Nurse (OSHA 2053) June 1972.

11. Noise (OSHA 2067) August 1972.

12. Guidelines for Setting up Job Safety and Health Programs (OSHA 2070) November 1972.

13. Don't Dig Your Own Grave (OSHA Special Emphasis Poster) March 1973.

14. Employer-Employee Safe Practices for Excavation and Trenching Operations (OSHA 2085) March 1973.

15. Contractor Planning for Job Safety and Health in Excavation Trenching and Backfilling (OSHA 2086) March 1972.

16. 15 Questions: Know the Answers . . . Help Prevent Cave-ins (OSHA 2087) March 1973.

OSHA Regional Offices

Region I: Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont
18 Oliver Street
Boston, Massachusetts 02110

Region II: New York, New Jersey, Puerto Rico, Virgin Islands, Canal Zone
1515 Broadway (1 Astor Plaza)
New York, New York 10036

Region III: Delaware, District of Columbia, Maryland, Pennsylvania, Virginia, West Virginia
15220 Gateway Center
3535 Market Street
Philadelphia, Pennsylvania 19104

Region IV: Alabama, Florida, Georgia, Kentucky, Mississipppi, North Carolina, South Carolina, Tennessee
1375 Peachtree Street, N.E., Suite 587
Atlanta, Georgia 30309

Region V: Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin
230 South Dearborn
32nd Floor - North
Chicago, Illinois 60604

Region VI: Arkansas, Louisiana, New Mexico, Oklahoma, Texas

1512 Commerce Street, 7th Floor
Dallas, Texas 75201

Region VII: Iowa, Kansas, Missouri, Nevada

911 Walnut Street, Room 3000
Kansas City, MO 64106

Region VIII: Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming

1961 South Street, Room 15010
Denver, Colorado 80202

Region IX: Arizona, California, Hawaii, Nevada, Guam, American Samoa, Trust Territory of the Pacific Islands

450 Second Avenue, Room 9470
San Francisco, California 94102

Region X: Alaska, Idaho, Oregon, Washington

506 Second Avenue, Room 1808
Seattle, Washington 98104

OSHA State Office

Delaware OSHA Office
Department of Labor
Division of Industrial Affairs
Wilmington, DE 19801

U.S. Department of Labor
Bureau of Labor Statistics – Regional Office

REGION I – Boston

Regional Director
Bureau of Labor Statistics
1603-A Federal Office Building
Boston, MA 02203

REGION II – New York
Regional Director
Bureau of Labor Statistics
1515 Broadway
New York, NY 10036

REGION III – Philadelphia

Regional Director
Bureau of Labor Statistics
Penn Square Building, Room 406
1317 Filbert Street
Philadelphia, PA 19107

REGION IV – Atlanta
Regional Director
Bureau of Labor Statistics
50 Seventh Street, N.E.
Atlanta, GA 30323

REGION V — Chicago
Regional Director
Bureau of Labor Statistics
300 South Wacker Drive - 8th Floor
Chicago, IL 60606

REGION VI — Dallas
Regional Director
Bureau of Labor Statistics
1100 Commerce Street, Room 6B7
Dallas, TX 75202

REGION VII & VIII — Kansas City and Denver
Regional Director
Bureau of Labor Statistics
Federal Office Building
911 Walnut Street
Kansas City, MO 64106

REGIONS IX & X — San Francisco and Seattle
Regional Director
Bureau of Labor Statistics
450 Golden Gate Avenue
Box 36017
San Francisco, CA

Service Organizations and Associations

The following list will provide you with an idea of the types of services available to the general public as well as to members of these organizations. A more complete list of possible sources can be found in the National Safety Council publication titled, "Accident Prevention Manual for Industrial Operations."

American Chemical Society
1155 16th Street, N.W.
Washington, D.C. 20036

- This society has a committee on chemical safety.

American Industrial Hygiene Association
210 Haddon Avenue
Westmont, NJ 08108

- This association will furnish names of industrial hygienists in your area.

American Medical Association
Department of Occupational Health
535 North Dearborn Street
Chicago, IL 60610

- This association has many pamphlets on occupational health subjects.

American National Standards Institute
1430 Broadway
New York, NY 10018

- Many standards set by this organization were adopted as OSHA's initial standards.

American National Red Cross
Safety Services
17th and D Streets, N.W.
Washington, D.C. 20006

- This organization has developed training programs that will help your establishment meet the first-aid requirements listed in the standards.

American Public Health Association
1740 Broadway
New York, NY 10019

- A committee of this association deals with injury control and emergency services.

American Society for Testing and Materials
1916 Race Street
Philadelphia, PA 19103

- The society sponsors research in the properties of engineering materials and develops standards, including specifications and test methods.

American Society of Safety Engineers
850 Busse Highway
Park Ridge, IL 60068

- The society promotes and develops educational programs for safety training and conducts research in safety areas.

Delaware Safety Council
300 Foulk Road
Wilmington, DE 19803

- The State branch of the National Safety Council, the largest organization in the world devoted to the prevention of injury. Accident prevention material and programs are available through the Council.

Human Factors Society
P.O. Box 1369
Santa Monica, CA 90406

- This society will help in the referral of human factors specialists upon request.

Industrial Hygiene Foundation of America
5231 Central Avenue
Pittsburgh, PA 15232

- Will assist establishments in the development of health programs.

Industrial Medical Association
55 East Washington Street
Chicago, IL 60602

- This association sponsors committees in areas such as industrial hygiene and clinical toxicology, radiation, and education and training.

Industrial Safety Equipment Association, Inc.
60 E. 42nd Street
New York, NY 10017

- Will provide information on personal protective equipment for industry.

The National Fire Protection Association
60 Batterymarch Street
Boston, MA 02110

- A clearinghouse on the subjects of fire prevention and protection.

The National Safety Council
425 North Michigan Avenue
Chicago, IL 60611

- The largest organization in the world devoted to the prevention of injury. Accident prevention material and programs are available through this council.

National Society for the Prevention of Blindness, Inc.
79 Madison Avenue
New York, NY 10016

- Participates as a member of the American National Standards Institute in studies on illumination, vision, and eye protection.

Underwriters Laboratories, Inc.
207 East Ohio Street
Chicago, IL 60611

- Maintain laboratories for the examination and testing of devices, materials and systems.

Safety Publications

Articles:

Automation in Housing
"OSHA: Do We Really Need It?"
Wayne A. Endicott
February, 1973

Automation in Housing
"Do Your Employees Understand Power Tool Safety?"
The Power Tool Institute
October, 1973

Books:

Accident Prevention Manual for Industrial Occupations

National Safety Council
425 North Michigan Avenue
Chicago, IL 60611

Accident Prevention and Loss Control

C.L. Gilmore
Amerian Management Association
New York, NY

Accident Prevention Manual for Shop Teachers

William A. Williams
American Technical Society, Chicago, 1963

Accident Prevention Manual for Training Programs

Merle E. Strong
American Technical Society, Chicago, 1975

Code of Federal Regulations, 29 Labor Part 900 to End

U.S Department of Labor, Washington

Federal Register

U.S. Department of Labor, Occupational Safety and Health Administration, Vol. 36, No. 105. Washington, May 29, 1972

Fundamentals of Industrial Hygiene

National Safety Council, Olifshifski, J.B. and McElroy, F.E. (Eds.). Chicago, 1971

Occupational Safety and Health in Vocational Education

National Institute for Occupational Safety and Health
4676 Columbia Parkway
Cincinnati, OH 45226

Peril on the Job

Davidson, R.
Washington, Public Affairs Press, 1970

Power Press Safety

Society of Manufacturing Engineers
20501 Ford Road
Dearborn, Michigan 48128

Safety and Health for Industrial/Vocational Education

National Institute for Occupational Safety and Health
4676 Columbia Parkway
Cincinnati, OH 45226

Safety Education

American Technical Society
848 East 58th Street
Chicago, IL 60637

Safety in Industry — The Fundamentals of Accident Prevention

U.S. Department of Labor, Occupational Safety and Health Administration, Washington, D.C. 20210

Safety Training Observation Program (S.T.O.P.)

E.I. du Pont deNemours and Company, Inc.
Wilmington, DE

Self Teaching Education Program (S.T.E.P.)

National Safety Council
Programmed Instruction Courses: Chicago

Shop Safety

Westinghouse Learning Corporation
100 Park Avenue
New York, NY 10017

Supervisors Safety Manual

National Safety Council
425 North Michigan Avenue
Chicago, IL 60611

Teachers Liability

Prakken Publications
416 Longshore Drive
Ann Arbor, Michigan

Total Environmental Control

Fletcher, J.A., and Douglas, H.M.
Ontario: Hunter Rose Company, 1970

Booklets and Bulletins:

Bend at the Knees, Keep the Back Straight

Commonwealth of Virginia, Department of Labor and Industry
Richmond, VA 23219

Control of the Physical Environment

U.S. Department of Labor, Bureau of Labor Standards
Bulletin 211

Falls

Commonwealth of Virginia, Department of Labor and Industry
Richmond, VA 23219

Fire Extinguishers and Their Use

Commonwealth of Virginia, Department of Labor and Industry
Richmond, VA 23219

Health and Safety

National Education Association
1201 16th Street N.W.
Washington D.C. 20036

How to Keep Electricity from Killing

Bureau of Ships, Navy Department
Washington, D.C. 20025

How to Prevent Accidents in Your Home

National Research Bureau, Inc., Third Street
Burlington, IO 52601

Listing Containing Publications

National Institute for Occupational Safety and Health
Room 10-A-22
5600 Fishers Lane
Rocherville, MD 20853

Maintenance and Safety

U.S. Department of Labor, Bureau of Labor Standards
Bulletin 246

Occupational Health Hazards

U.S. Department of Labor, Bureau of Labor Standards
Bulletin 198

A Primer on Grinding Wheel Safety

Norton Company Grinding Wheel Division
Worchester, MA 01606

Safety Education as Your Career

List of Free Materials Available to Educators
J. Clausen
Educational Service Bureau
Dow Jones & Company, Inc.
Princeton, NJ 08540

The Shocking Truth About Electrical Accidents

Harry B. Head
Harvey Hubbell, Inc.
320 Wood Road
Louisville, KY 40222

Catalogs:

American Medical Association
535 Dearborn Street
Chicago, IL

Electrical Safety
Electrical Safety/Catalog #1771-1015

Fire & Explosion
Fire/Catalog #1771-1002

Hand Safety
Hand Safety/Catalog #1771-1036

Material Handling & Storage
Moving Things Safely/Catalog #1035

Psychology of Safety
Courtesy/Catalog #1771-1806

Your Attitude/Catalog #1771-1810

Safety Practices
Accident Prevention Checklist/Catalog #1033
Next Accident/Catalog #1771-1003
You and Safety/Catalog #1771-1020

Documents:

U.S. Department of Health Education and Welfare
Public Health Service
Consumer Protection and Environmental Management
222 East Central Parkway
Cincinnati, OH 45202

Demonstraton Guide for Prevention of Electrical Shock Injury

Public Health Service. 1969. 54 pages. By illustrating and explaining basic facts particularly applicable to electricity, electrical systems, and electrical cords and appliances in the home, this demonstration guide is intended to prevent injuries associated with the misuse of electrical current.

Pamphlets:

United States Government Printing Office
Washington, D.C. 20000

Getting There and Back Safely

Let Your Legs do the Act of Lifting

Sizing Up Machines for Safety

The Safe Way is the Only Way to do the Job

When Can You Trust a Ladder?

Work Clothes that Protect the Body

Working Safely with Substances that can Explode and Burn

ERIC Document Reproduction Service
LEASCO Information Products, Inc.
P.O. Drawer O
Bethesda, MD 20014

request: on-demand order blanks

Construction Safety, Site Clearing — Document No. VT 011 074

Safety in Industry Instructor Outline. Bulletin 302. Includes teaching aids and tips.

Find Your Way — Document No. VT 011 550

46 pages. This learning activity is intended to help the new student become familiar with the placement, purposes, uses, and safety rules of power equipment in the shop.

Handling Materials Safely — Document No. VT 011 622

Safety in Industry Instructor Outline. Bulletin 291. Includes teaching aids and tips.

Housekeeping for Safety — Document No. VT 011 624

Bulletin 295. Safety in Industry Instructor Outline. Includes teaching aids and tips.

Construction Safety, File Driving, and Cofferdams — Document No. VT 011 692

Safety in Industry Instructor Outline. Bulletin 305. Includes teaching aides and tips.

Safety Handbook: A Guide for Industrial Arts Programs and Transparency Masters — Document No. VT 009 867

1969. 78 pages. Safety unit for junior and senior high industrial arts. First section covers safety material for the teacher and administration; second section is a unit on general safety education.

Safety in Industrial Arts Laboratories — Document No. VT 011 775

Ralph V. Steeb and John J. Geil. May, 1969. 86 pages. Developed by industrial arts consultants to help the teacher develop within each student an awareness of safety that will carry through school, post-school work and recreation.

Safety in Industry (Instructor Outline) — Document No. VT 011 422

Stanley J. Butcher. Department of Labor Safety Training Programs. 1970. 65 pages. An outline designed to aid in planning and presenting on-the-job industrial safety programs.

Safety in the Auto Shop — Document No. VT 011 497

Unit 1 —lap No. 1, Edgar Williams, et al, ND. 18 pages. A learning-activity package on safety in the high school auto shop. A self-instructional unit.

Safety, Your Concern and Mine — Document No. VT 011 495

Learning Activity Package, Safety in the Wood Shop. LAP No. 2 by R.M. Shreve. July 1968. 20 pages. Describes safety rules for the high school wood shop. Covers also general safety rules.

Service Station Safety for Young Workers — Document No. VT 010 333

1965. 28 pages. Summarizes safe work habits for service station employees when lubricating a car, changing a tire, or checking the radiator.

Shop Safety — Document No. VT 010 686

1966. 38 pages. Workbook for students use in learning shop safety rules. Explanatory text and line drawings followed by questions which student must answer and check.

Use of Color For Safety — Document No. VT 011 626

Safety in Industry Instructor Outline. Bulletin 298. Includes teaching aids and tips.

Fundamentals of Accident Prevention — Document No. VT 011 343

Safety in Industry Organization and Administration Series. Outlines the basic elements which must be incorporated into every program of accident prevention if maximum results are to be obtained.

Illumination for Safety — Document No. BT 011 625

Safety in Industry Instructor Outline. Bulletin 297. Includes teaching aids and tips.

Industrial Arts Safety Checklist — Document No. VT 011 074

Washington State Department of Public Instruction 1969. 18 pages. Will serve to: (1) inform, educate, and remind people of what to look at, (2) train personnel to be observant, (3) provide a source of feed-back to teachers and administrators, (4) provide a record of safety items and activities.

Mechanics for the Safety Man — Document No. VT 011 341

Safety in Industry, Mechanics and Physical Hazards. Applies the laws of mechanics to the daily work of preventing accidents. Bulletin 239.

Operating Engineers: First Course in Apprenticeship, Part 1 — Document No. VT 011 242

1965. 148 pages. Includes major study units on: (1) background of apprenticeship, (2) safety and first aid, (3) orientation to heavy equipment, (4) planning reading and grade setting. Units divided into topics containing an introduction, related information, work assignments and 25 True-False questions.

Preventive Maintenance for Safety — Document No. VT 621

Safety in Industry Instructor Outline. Bulletin 284. Includes teaching tips, planning procedures, charts, and teaching aids.

Safe Working Surfaces — Document No. VT 011 623

Safety in Industry Instructor Outline. Bulletin 292. Includes teaching tips and aids.

Recommended Safe Practices for Gas-Shielded Arc Welding — Document No. VTT 011 980

1966. 16 pages. Discusses the potential hazards associated with the gas shielded arc welding process and gives recommended control measures.

Rigging and Safety for Apprentice Training in the Plumbing and Pipe Fitting Industry — Document No. VT 010 015

D. Bart Phipps, August 1955, 48 pages. Contains instructional material on rigging and saftey — part of apprenticeship training for plumbing and pipe fitting industry.

Safe Practices for Welding and Cutting Containers That Have Held Combustibles — Document No. VT 011 978

1965. 21 pages. Intended as a safe practice guide for persons who weld or cut containers that have held combustibles.

National Institute for Occupational Safety and Health
Office of Public Information
Room 10-A022
5600 Fishers Lane
Rockville, MD 20852

Kit of Basic NIOSH Reference Materials

Basic materials concerning the Occupational Safety and Health Act of 1970 and the NIOSH program. Contains article reprints, fact sheets, and related materials.

Films and Filmstrips on Occupational Safety and Health

Listing of occupational safety and health films and filmstrips compiled to provide interested individuals and groups with a current reference to loan-free audio-visual aids. Includes a listing of organizations that offer rental and purchase occupational safety and health audio-visual aids.

Working with Industrial Solvents

8 pages. For use by workers using organic industrial solvents. Pamphlet includes a discussion of the nature of solvents, health problems, control of exposure, and the actions of employers and employees.

Welding Safety

8 pages. Information pamphlet for welders. Discusses the health aspects of welding operations. Pamphlet includes a discussion of health hazards, control methods, and possible actions by management and workers.

Job Safety and Health Services

4 pages. Discusses the services NIOSH can offer to private industry and other government agencies and where these services can be obtained.

Working With Cutting Fluids

5 pages. Discusses what cutting fluids are, how they are used, how they may affect the worker, and methods for control.

Directory of Governmental Occupational Safety and Health Personnel

Annual listing of local, state and Federal agencies engaged full or part-time in occupational safety and health activities.

A Learning Experience in Occupational Safety and Health

12 pages. Course listing for NIOSH's Division of Training for June 1973 - July 1974.

The President's Report on Occupational Safety and Health

A report on the year's progress by the Department of Labor (OSHA) and the Department of Health, Education and Welfare (NIOSH) in implementing the Occupational Safety and Health Act of 1970. Available in single copies only.

Annual Report of the Federal Coal Mine Health and Safety Act

This Annual report describes the activities of NIOSH (DHEW) in carrying out health responsibilities under the Federal Coal Mine Health and Safety Act of 1969.

Training Grants

Describes NIOSH supported training grant programs underway in colleges and unversities across the nation.

On-The-Job Safety Rules for Power Tools

4 pages. A joint publication by the Power Tool Institute, Inc., National Association of Home Builders, the United Brotherhood of Carpenters and Joiners of America, and NIOSH. Presents through drawings and narration the rules for power tool use in occupational settings.

Protecting the Health of Coal Miners — An Interagency Approach

17 pages. Describes the liaison arrangements of NIOSH and the Bureau of Mines and the principal health protective measure of the Act (respirable dust standards). A review of compensation features of Title IV for disabled miners and their survivors is also presented.

Criteria for a Recommended Standard — Occupational Exposure to Carbon Monoxide

124 pages. Recommends control of worker exposure to carbon monoxide. GPO Order No. 1733 00007. NTIS Order No. PB 212629.

Criteria for a Recommended Standard — Occupational Exposure to Noise

152 pages. Recommends control of worker exposure to noise, GPO Order No. 1733 0007. NTIS Order No. PB 213563.

Annual List of Toxic Substances — 1972

572 pages. A listing of potentially hazardous materials. Serving as a guide for research needed in setting new occupational health standards. Publication required annually by the Occupational Safety and Health Act of 1970. GPO Order No. 1719 00006.

Safety Films

"American Roulette" - motion picture, sound, color, 28 minutes.

Grinding Wheel Institute
2130 Keith Building
Cleveland, OH 44115

— This safety film cuts through to operating men, and to the safety drop-out. Shows grinding safety as practiced by good men on the floor today.

"Bridge of Safety" - 16 mm, sound

General Motors Corporation
Public Relations Staff, Educational Relations Section
General Motors Technical Center
Warren, Michigan 48090

"Best Foot Forward" - motion picture, sound, color, 15 minutes

Modern Talking Picture Service
Caterpillar Film Library
1687 Elmhurst Road
Elkgrove Village, IL 60007

— Entertains workers while emphasizing foot protection and the quality of today's shoes.

"The Challenge"

Travelers Insurance Companies
Travelers Film Library
52 Prospect Street
Hartford, Connecticut 06115

"Challenge of Safety" - motion picture, sound, color, 23 minutes

Modern Talking Picture Service
Caterpillar Film Library
1687 Elmhurst Road
Elkgrove Village, Illinois 60007

— Depicting safe operation of construction equipment.

"Danger Sleuths" - 16 mm sound

Underwriter's Laboratories, Inc.
207 East Ohio Street
Chicago, Illinois 60611

"Coal Miner — Today" - motion picture, sound, color, 12 minutes, 1970

Bureau of Mines
Motion Pictures
4800 Forbes Avenue
Pittsburgh, PA 15213

— Film takes viewer underground, into a coal mine, showing the men and machinery as they perform their various specialized jobs. Reasons for each job are explained; hazards are given, and safety procedures are stressed, emphasizing the correct way of doing the job.

"Days of our Years (Safety)" - 16 mm, sound, color

Union Pacific Railroad
Motion Picture Bureau
Department of Public Relations
1416 Dodge Street
Omaha, Nebraska

"Don't Drop Your Guard"

Aetna Life and Casualty Co.
Public Relations and Advertising Dept. Film Library
151 Farmington Avenue
Hartford, Connecticut

"Don't Push Your Luck" - motion picture, sound, color, 13 minutes

National Society for the Prevention of Blindness
79 Madison Avenue
New York, New York 10016

— Vividly depicts a blinding eye accident in an industrial plant. A dramatic tool for boosting safety programs.

"Everything to Lose" - motion picture, sound, 21 minutes

Modern Talking Picture Service, Inc.
Caterpillar Film Library
1687 Elmhurst Road
Elkgrove Village, IL 60007

— Shows the terrible consequences of ignoring shop safety rules . . . of taking foolish chances where there's everything to lose.

"Expedite-School Eye Safety" - motion picture, sound, color, 12 minutes

Film Distribution Service
Bausch and Lomb
635 St. Paul Street
Rochester, NY 14602

— Eye hazards in school and college chemistry labs, industrial art classes, and industrial shops - with the specific eye equipment recommended.

"The Four P's of Safety" - filmstrip, sound (record), 20 minutes

The Power Tool Company
175 N. State Street
Aurora, Illinois 60507

— Safety in grinding with portable grinders and shows unsafe and safe practices, analyzing usual causes of accidents and how to avoid them. Shows personal aspects of safety, applicable to almost any safety program.

"Get the Message" - motion picture, sound, color, 13 1/4 minutes

Film Librarian
Aetna Life & Casualty
151 Farmington Avenue
Hartford, Connecticut

— The film describes how a concerned company discovered that poor safety communications between management and employees was the cause of its poor safety record and how it established an effective safety program.

"Gift of Life" - motion picture, sound, color, 18 minutes

Creative Communications, Inc.
13900 Panay Way, M-120
Marina del Rey, CA 90291 (loan-free only to qualified organizations)

— By juxaposing the rewards life offers when one is sound of mind and limb with the tragedies of accidents and death, the camera gives new meaning to safety practices. This film portrays a wide range of accidents and all of those which happen most frequently to carpenters while they're on the job.

"Guy Behind Your Back" - filmstrip, sound, black and white, 20 minutes, 1953

Airco Welding Products
P.O. Box 799
Lexington, KY 40501

— The fundamental approach to safety for operators of oxyacetylene welding and cutting equipment. Cartoon style shows operations hazardous to the operator and others if not done properly.

"The Handitrap Test" - motion picture, color, 20 minutes

U.S. Steel Film Distribution Centers
208 S. LaSalle Street
Chicago, Illinois

— Test on hand and finger injuries and related pinchpoints. Helps create and maintain awareness of potential hazards faced daily.

"The Hard Hats and Thinking Caps" - motion picture, color, 20 minutes

U.S. Steel Film Distribution Centers
208 S. La Salle Street
Chicago, Illinois

— Film was designed to reduce accidents among the structural ironworkers in American Bridge Division by establishing a constant awareness that thoughtlessness causes most accidents and that the "hard hats" must give way to the "thinking cap" as the emblem of future safety accomplishments.

"Help Wanted (First Aid)" 16 mm, sound

United States Graphic Services
Bureau of Mines
4800 Forbes Avenue
Pittsburgh, PA 15213

"Instep Guard Story" - motion picture, sound, color, 8 minutes

Hy-Test Safety Shoes
1509 Washington Avenue
St. Louis, MO 63166

— Demonstrates the effective laboratory testing of shoes and compares the results of test blows to protected and unprotected foot forms. It is a convincing demonstration of the value of safety shoes.

"Lifting, Man's Age Old Problem" - motion picture, sound, color, 12 minutes

Aetna Life and Casualty
151 Farmington Avenue
Hartford, CT 06115

— Special photographic techniques highlight safe lighting guidelines and other tips for avoiding the back problems that plague millions.

"A New Approach to Saw Guarding" 16 mm, sound, 15 minutes

Brett Guard Corp.
160 Woodbine Street
Berganfield, NJ 07621

"No Second Chance" - motion picture, sound, color, 23 minutes

Sellstrom Manufacturing Company
Sellstrom Industrial Park
Palatine, IL 60067

— Makes students and employees realize the importance of eye protection in shop and lab classes. An employee blinded in an industrial accident tells what it's really like to go through life without sight.

"Orientation and Indoctrination of Safety Workmen" - motion picture, sound, 27 minutes

Motion Pictures
Bureau of Mines
4800 Forbes Avenue
Pittsburgh, PA 15213

— Follows group of new employees through actual working situations. Job safety is stated as an integral part of production, and the value of accident prevention training for all employees is highlighted.

"Our Aching Backs" - motion picture, sound, color, 18 minutes

Sandis Laboratories, Div. 7544
P.O. Box 5800
Albuquerque, NM 87115

— The film deals with everyday hazards and how to prevent injury and take proper care of the back. Uses animated cartoon characters as well as "life" talent to discuss back safety.

"Play It Safe" 16 mm, color, sound

Santa Fe Film Bureau
316 Railway Exchange, 80 East Jackson
Chicago, Illinois 60604

"Playing It Safe With Power Tools" - motion picture, sound, color, 14 minutes

Modern Talking Picture Service, Inc.
Caterpillar Film Library
1687 Elmhurst Road
Elkgrove Village, IL 60007

— Demonstrates safe procedures in the use of variety of portable power tools for industry, home and lawn and garden. Proper tool application, work preparation, and the use of auxiliary safety equipment are depicted. Film stresses accident prevention by "working defensively."

"Principles of Safety" - motion picture, sound, black and white, series of 5/6 minutes each

Television Film Libraries
107 DuPont Street
Toronto 5, Ontario, Canada

— No. 1 in the series points out that the same attitude of mind leading to lost production can also contribute to accidents. Nos. 2-5 deal with specific failures on the part of supervision in the following areas. Permitted Occasions, Ineffective Supervision, Incomplete Supervision and Negative Promotions.

"Safe Driving" - motion picture

Reincke-Meyer & Finn
625 N. Michigan Avenue
Chicago, Illinois 60611

— Demonstrates the proper use of air powered staplers and nailers. The film is an integral part of an overall safety program.

"Safe Hands of Steel"

J. C. Renfroe & Sons, Inc.
Box 4279
Jacksonville, FL 32201

— Aims to improve safety conditions in steel fabricating plants and wherever the handling of metals is a problem. Acquaints men of steel with safe techniques and cost reduction through proper use of steel tools.

"Safety"

NBC Educational Enterprises, Inc.
30 Rockefeller Plaza Room 1040
New York, NY 10020

"Safety . . . a Major Emphasis in Each Instructional Module"

Aims Instructional Media Service, Inc.
P.O. Box 1010
Hollywood, California 90028

"Safety at Work" - motion picture, sound, color, 19 minutes

Aetna Life and Casualty
151 Farmington Avenue
Hartford, CT 06115

— Viewers tour a diversified manufacturing plant to see a far-reaching safety program in action at every step from raw material to finished product.

"Safety—Everybody's Business" - motion picture, sound, color, 11 minutes

Aetna Life and Casualty
151 Farmington Avenue
Hartford, CT 06115

— Shows common causes of accidents in an industrial plant and demonstrates the importance of strong safety supervision.

"Safety Makes Sense"

Clark Equipment Company
Industrial Truck Division
Battle Creek, Michigan 49016

"Safety Practices in the Shop"

Coronet Films
Coronet Instructional Materials
65 East South Water Street
Chicago, Illinois 60601

"Safety Zone" - motion picture, sound, color, 27 minutes

Gypsum Associates
201 North Wells Street
Chicago, Illinois 60606

— Depicts preventive and corrective action vital to any plant safety program. Drives home safety practices that should be utilized in all industries.

"A Split Second from Disaster" 16 mm, 14 minutes

Education Film Department
Miller-Falls Company
Greenfield, Massachusetts 01301

"The Sound of Sound" - motion picture, sound, color, 16 minutes, 1970

American Optical Corporation
Safety Products Division
Southbridge, Massachusetts 01550

— Film focuses on industrial noise; its insidious attack on hearing; the permanence of a noise-related hearing loss. Industrial workers speak candidly of their occupational deafness - their loneliness and frustration. These men avidly support the film's basic message, "Keep the hearing you've got. Wear the proper hearing protection."

"Straight Talk on Eye Safety" - motion picture, sound, color, 12 minutes

Bausch & Lomb
Film Distribution Service
635 St. Paul Street
Rochester, NY 14602

— Prevention is the key word in this filmed interview. STRAIGHT TALK ON EYE SAFETY sends a plea to schools and industries on the need for eye and face protection.

"Survival is the First Job" - motion picture, sound, color, 14 1/2 minutes

External Information Department
IBM Corporation
Neighborhood Road
Kingston, NY 12401

— Teaches employee awareness of unsafe situations on and off the job.

"This is OSHA" slide animation motion picture, sound, color, 27 minutes, 1973

Occupational Safety and Health Administration
Department of Labor
Regional and Area Offices

— Broad overview of OSHA activities — its standards setting, compliance inspection, voluntary compliance, training, and State programs.

"To Conserve and Protect" - motion picture, sound, color, 14 1/2 minutes

Modern Talking Picture Service, Inc.

— As narrator, James Mason says: "Noise pollution, if allowed to go unchecked will rob millions of us of our God-given gift - the ability to hear." This important film covers the different aspects of noise pollution - its causes, bad effects on human beings, and what can and must be done to conserve and protect our precious ability to hear.

"Way to Live" - motion picture, sound, color, 19 minutes

Mine Safety Appliances Company
201 North Braddock Avenue
Pittsburgh, PA 15208

— Explains how a respirator works and how simple it is to wear and take care of. Stresses the importance of wearing proper protective equipment.

"What's Stopping You" - film strip, 33 mm, 12 minutes

American Brakeblok Pir
900 West Maple Road
Troy, Michigan 48084

— Describes how automobile brakes work.

"Windows of Your Soul" - motion picture, sound, color, 28 minutes

Sellstrom Manufacturing Company

— Features the late Senator Everett M. Dirksen in which he points up the importance of wearing face and eye protection in school shops, labs, and industry.

"Working With Compressed Gas" - motion picture, sound, color, 20 minutes

Matheson Gas Products
Box 85
East Rutherford, NJ 07073

— Its theme — compressed gases — vital, versatile tools for industry and research. How do we handle them safely and productively?

"Wrong Place, Wrong Time, Wrong Shoes" - motion picture, sound, color, 15 minutes

Joseph E. Schmitt & Associates
P.O. Box 180
Feton, Missouri 63026

— This film is worker-oriented and dramatizes actual foot accidents, their consequences and how safety shoes helped avoid serious injury.

Transparencies

"Safety Machine & Power Tools"

DCA Educational Products
Industrial Education Catalog
Warrington, PA

Films Available in the
Department of Public Instruction Film Library

"ABC OF HAND TOOLS"

Grade Level — Junior High thru Adult Color film — 33 minutes

— Animated by Walt Disney, film shows how tools should be used to get the best results.

EYE EMERGENCY – HEALTH/SAFETY

Grade Level — Junior/Senior High School Color film — 23 minutes

— Shows how to prevent eye accidents and how to treat them if they do occur. Using real workers and real rescue personnel, the films shows real step-by-step treatment for foreign body in the eye, blunt injury, and chemical burn. Animation shows how the eye is structured and how it can be protected. Accidents are dramatized at factory, at home, and during sporting activities while case history drives home the fact that 95% of all eye injury can be prevented.

HAND TOOLS FOR METAL WORKING

Grade Level — Junior thru Senior High School Color film — 25 minutes

— Film presents an overview of hand tools for metal working found in school shops and in the home. Discusses and demonstrates the use of each tool and the methods for adjustment, emphasizing safety.

HAND TOOLS FOR WOODWORKING

Grade Level — Junior thru Senior High School Color film — 22 minutes

— A correct foundation for successful woodworking habits is given in this introduction to woodworking hand tools. Correct choice and proper use of each tool in the various categories are detailed in step-by-step demonstrations. Tool care and maintenance are outlined and safety practices are emphasized.

LIFE YOU SAVE (FIRST AID)

Grade Level — Junior thru Senior High School Color film - 11 minutes

— Demonstrates practical first aid for simple injuries. Well organized and informative.

PORTABLE ELECTRIC SAWS

Grade Level — Junior/Senior High School and Adult Color Film - 22 minutes

— Both metal frame and plastic frame saws are demonstrated. Sequences of ripping, crosscutting, bevelcutting, and metal and masonry cutting are explained.

PORTABLE POWER TOOLS

Grade Level — Junior thru Senior High School Color film - 17 minutes

— Describes a variety of portable electric tools commonly found in the school shop and at home. It emphasizes safety practices and care in treatment of power tools.

SAFE SHOP, A

Grade Level — Junior thru Senior High School Black/White film - 11 minutes

— Discusses the safety problems and procedures for the school shop.

SCHOOL SHOP SAFETY

Grade Level — Junior thru Senior High School Color film - 15 minutes

— Emphsizes basic safety practices to be observed when handling various materials, hand tools, power tools, heated materials, and electricity.

Miscellaneous Teaching Aids

"Accident Prevention" — Cassettes

Cassettes Unlimited
Roanoke, TX 76262

Safety Charts (10) — Charts

U.S. Government Printing Office
Washington, D.C. 20000

School Shop Poster Packet — Charts

25 Posters Concerning School Shop Hazards
8 1/2 x 11 inches Stock # 189.10
National Safety Council

Eye Safety Equipment — Charts

Fendall Company
2222 W. Diversey Parkway
Chicago, IL 60647

Safety Posters — Posters

National Safety Council
Catalog-Poster Directory
425 N. Michigan Avenue
Chicago, IL 60611

"Shop Safety" — Self Instructional Course

Westinghouse Learning Corporation
100 Park Avenue
New York, NY
#31-1007

"Think First Aid" — Slides

National Safety Council
425 North Michigan Avenue
Chicago, IL 60611

Addresses of Producers, Publishers and Organizations

Abbott Laboratories
Professional Relations Department
Abbott Park
North Chicago, IL 60064

Academy McLarty Productions, Inc.
207 Delaware Avenue
Buffalo, NY 14202

Aetna Life & Casualty
151 Farmington Avenue
Hartford, CT 06115

Aims Instructional Media Service, Inc.
P.O. Box 1010
Hollywood, CA 90028

Airco Welding Products, Inc.
P.O. Box 799
Lexington, KY 40501

American Gas Association
1515 Wilson Boulevard
Arlington, VA 22209

American Heart Association
Distribution Department
44 East 23rd Street
New York, NY 10010

American Hospital Association
840 North Lake Shore Drive
Chicago, IL 60611

American Medical Association
535 Dearborn Street
Chicago, IL 60610

American National Standards Institute
1430 Broadway
New York, NY 10018

American Optical Corporation
Safety Products Division
Southbridge, MA 01550

American Personnel and Guidance Association
1607 New Hampshire Avenue, N.W.
Washington, D.C. 20009

American Technical Society
848 East 58th Street
Chicago, IL 60637

American Welding Society
345 East 47th Street
New York, NY 10017

Association-Sterling Films
866 Third Avenue
New York, NW 10022

Atchison, Topeka & Santa Fe Railway Co.
80 E. Jackson Blvd.
Chicago, IL 60604

Audio Productions, Inc.
639 North Avenue
New York, NY 10036

Audio-Visual Center
Indiana University
Bloomington, IN 47401

Audio-Visual Services
Porter Building
University of Kentucky
Lexington, KY 40506

Automation in Housing
300 West Adams Street
Chicago, IL 60606

Baker and Taylor Company
Audio Visual Services Division
Box 230
Momence, IL 60954

Bausch & Lomb
Film Distribution Services
635 St. Paul Street
Rochester, NY 14602

Bete, Channing L. Co., Inc.
45 Federal Street
Greenfield, MA 01301

Better Vision Institute
230 Park Avenue
New York, NY 10017

Bowmar, Stanley-Company
4 Broadway
Valhalla, NY 10595

Bray Studios
630 Ninth Avenue
New York, NY 10036

Bureau of Business Practice
24 Rope Ferry Road
Waterford, CT 06385

Bureau of Mines
4800 Forbes Avenue
Pittsburgh, PA 15213

Business Education Films
5113-16th Avenue
Brooklyn, NY 11204

CCM Films
34 MacQuesten Parkway, South
Mount Vernon, NY 10550

Capitol Region Education Council
443 Windsor Avenue
Windsor, CT 06095

California State Department of
Education
Fiscal Office-Order Section
721 Capitol Mall
Sacramento, CA 95814

Cal-Central Press
2629 Fifth Street
Sacramento, CA 95818

Cassettes Unlimited
Roanoke, TX 76262

Central Film Library
Veterans Administration
Washington, D.C. 20420

Changing Times Education Services
Department CL
1729 H Street, N.W.
Washington, D.C. 20006

Channing L. Bete Company, Inc.
Greenfield, MA 01301

Clark Equipment Company
Industrial Truck Division
Battle Creek, MI 49016

Close Productions, Inc.
2020 San Carlos Boulevard
Fort Myers Beach, FL 33931

Coronet Films
Instructional Materials
65 East South Water Street
Chicago, IL 60601

Creative Communications, Inc.
13900 Panay Way
Marina del Ray, CA 90291

Cummins Engine Company
Columbus, IN 47201

Curriculum Innovations, Inc.
501 Lake Forest Avenue
Highwood, IL 60601

David McKay Company, Inc.
750 Third Avenue
New York, NY 10017

DCA Educational Products, Inc.
Order From:
Harrison Harries, Inc.
Hartford, CT 06101

Delmar Publishing Company
P.O. Box 5087
Albany, NY 12205

John V. Dunigan Studios
208 5th Avenue
New York, NY 10010

Education Design, Inc.
47 West 13th Street
New York, NY 10011

Education Resources Information Center
Ohio State University
Columbus, OH 43210

Educational Service Bureau
Dow Jones & Company Inc.
Princeton, NJ 08540

Educators Progress Service, Inc.
Randolph, WI 53956

Employers Insurance of Wausau
2000 Westwood Drive
Wausaw, WI 54401

External Information Department
IBM Corporation
Neighborhood Road
Kingston, NY 12401

Eye-Gate House
146-01 Archer Avenue
Jamaica, NY 11435

Factory Mutual
1151 Boston-Providence Turnpike
Norwood, MA 02062

Fearon Publishers, Inc.
6 Davis Drive
Belmont, CA 94002

Fendall Company
2222 W. Diversey Parkway
Chicago, IL 60647

Fertilizer Institute
1014 18th Street, N.W.
Washington, D.C. 20036

Follett Publishing Company
1010 West Washington Boulevard
Chicago, IL 60607

Foredom Electric Company
Route 6, Stony Hill
Bethel, CT 06801

G.P. Putnam's Sons
200 Madison Avenue
New York, NY 10016

General Electric
Educational Relations
570 Lexington Avenue
New York, NY 10022

Goodyear Publishing Company, Inc.
15115 Sunset Boulevard
Pacific Palisades, CA 90272

The Greater Chicago Safety Council
10 North Clark Street
Chicago, IL 60602

Greater Los Angeles Chapter
National Safety Council
3388 West 8th Street
Los Angeles, CA 90005

Grinding Wheel Institute
2130 Keith Building
Cleveland, OH 44115

Guidance Associates, Inc.
41 Washington Avenue
Pleasantville, NY 10570

Gypsum Association
201 North Wells Street
Chicago, IL 60606

Harry B. Head
Harvey Hubbell, Inc.
320 Wood Road
Louisville, KY 40222

Harvest Films
309 Fifth Avenue
New York, NY 10016

Health & Safety Counselors
P.O. Box 5253
Fort Wayne, IN 46805

Alfred Higgins Productions
9100 Sunset Boulevard
Los Angeles, CA 90069

Houghton Mifflin, Inc.
100 Tremont Street
Boston, MA 02107

Hyster Company
P.O. Box 2902
Portland, Oregon 97208

Hy-Test Safety Shoes
1509 Washington Avenue
St. Louis, MO 63166

Indiana University
Audio-Visual Center
Bloomington, IN 47401

Instructional Material Production
Engineering Extension Service
F.E. Drawer K
College Station, TX 77843

International Film Bureau, Inc.
332 S. Michigan Avenue
Chicago, IL 60604

International Medifilms
3491 Cahuenga Boulevard
Los Angeles, CA 90068

International Brotherhood of
Electrical Workers
AFL-CIO & CLC
Washington, D.C. 20005

International Union of
Operating Engineers
3515 Prospect Avenue
Cleveland, OH

Interstate Printers and
Publishers, Inc.
19-27 North Jackson Street
Danville, IL 61832

Iowa State University
Fire Service Extension
Ames, IA 50010

J.G. Ferguson Publishing Co.
Chicago, IL 60600

Johnson Press, Inc.
P.O. Box 4156
1800 Broadway
Rockford, IL 61110

Lawson Book Company
9488 Sara Street
Elk Grove, CA 95625

Liberty Mutual Insurance Co.
Bankans Building
Lexington, KY

Lineman's Supply Division
P.O. Box 1690
Binghamton, NY 13902

Mafex Associates, Inc.
111 Barron Avenue
Johnstown, PA 15906

McGraw-Hill
Text-Film Division
330 West 42nd Street
New York, NY 10036

McGraw-Hill
Manchester Road
Manchester, MO 63011

McKnight and McKnight Publishing Company
Bloomington, IL 61701

Manufacturing Chemists Assn.
1825 Connecticut Avenue, N.W.
Washington, D.C. 20009

Marshall Maintenance
529 South Clinton Avenue
Trenton, NJ 08611

Matheson Gas Products
Box 85
East Rutherford, NJ 07073

Metropolitan Life Insurance Company
Health & Welfare Division
1 Madison Avenue
New York, NY 10010

Mine Safety Appliances Company
201 North Braddock Avenue
Pittsburgh, PA 15208

Middle West Service Company
69 West Washington Street
Chicago, IL 60602

Modern Talking Picture Service
Caterpillar Film Library
1687 Elmhurst Road
Elkgrove Village, IL 60007

Mogull's
235 West 46th Street
New York, NY 10010

National Association of Automotive Mutual Insurance Companies
20 N. Wacker
Chicago, IL 60606

National Audio Visual Center
National Archives and Records Service
General Services Administration
Washington, D.C. 20409

National Broadcasting Company
Educational Enterprises, Inc.
30 Rockefeller Plaza Room 1040
New York, NY 10020

National Education Association
1201 16th Street, N.W.
Washington, D.C. 20036

National Educational Media, Inc.
3518 W. Cahuenga Boulevard
Hollywood, CA 90068

National Film Board of Canada
Suite 819, 680 Fifth Avenue
New York, NY 10019

National Institute for Occupational Safety and Health
1014 Broadway
Cincinnati, OH 45202

National Restaurant Association
1530 North Lake Shore Drive
Chicago, IL 60610

National Rural Electric Cooperative
2000 Florida Avenue, N.W.
Washington, D.C. 20009

National Safety Council
425 N. Michigan Avenue
Chicago, IL 60611

National Society for the Prevention of Blindness
69 Madison Avenue
New York, NY 10016

New Readers Press
Publishing Division of Laubach Literacy
1112 1/2 East Fayette Street
Syracuse, NY 13210

New York Life Insurance Company
Box 51
Madison Square Station
New York, NY 10010

New York State College of Agriculture
& Life Science
Cornell University
Roberts Hall
Ithaca, NY 14850

New York University Film Library
26 Washington Place
New York, NY 10003

Norton Company
Publicity Department
Worcester, MA

Occupational Health Institute
55 East Washington Street
Chicago, IL 60611

The Ohio State University Film Library
Dept. of Photography & Cinema
156 West 19th Avenue
Columbus, OH 43210

Pennsylvania State University
Audio-Visual Service
6 Willard Building
University Park, PA 16802

Prakken Publications
416 Longshore Drive
Ann Arbor, MI

Price Filmakers
3491 Cahuenga Boulevard
Hollywood, CA 90068

Reincke-Meyer & Finn
625 No. Michigan Avenue
Chicago, IL 60611

J. C. Renfroe & Sons, Inc.
Box 4279
Jacksonville, FL 32201

Sandia Laboratories, Div. 7544
P.O. Box 5800
Albuquerque, NM 87115

Joseph E. Schmitt & Associates
P.O. Box 180
Fenton, MO 63026

Scott Education Division
Holyoke, MA 01040

Scott, Foresman and Company
1900 East Lake Avenue
Glenview, IL 60025

Sellstrom Manufacturing Company
Sellstrom Industrial Park
Palatine, IL 60067

Society of Manufacturing Engineers
20501 Ford Road
Dearborn, MI 48128

South Central Bell Telephone Co.
P.O. Box 538
Louisville, KY 40203

Southern California Edison Company
P.O. Box 800 Rosemead
Rosemead, CA 91770

Southern New England Telephone Co.
2 Central Row
Hartford, CT 06103

Southwestern Publishing Company
Cincinnati, OH 45200

Special Education Instructional
Materials Center
University of Kentucky
Lexington, KY 40506

Stanwix House, Inc.
3020 Chartiers Avenue
Pittsburgh, PA 15204

Steck-Vaughn Company
Austin, TX 78700

SVE Society for Visual Education
1345 Diversey Parkway
Chicago, IL 60614

TAPPI
1 Dunwoody Park
Atlanta, GA 30341
Television Film Libraries
107 Dupont Street
Toronto 5, Ontario, Canada

Thor Power Tool Company
175 N. State Street
Aurora, IL 60507

3-M Company
Visual Productions Division
Box 3100A
Saint Paul, MI 55101

Technifax Corporation
Holyoke, MA 01040

Trade and Industrial Education
State Department of Education
P.O. Box 2847
University of Alabama

Travelers Insurance Companies
Travelers Film Library
52 Prospect Street
Hartford, CT 06115

Fern-Tripp
2035 East Sierra Way
Dinuba, CA 93618

Universal Education & Visual Arts
221 Park Avenue South
New York, NY 10003

U.S. Department of Labor
Bureau of Labor Standards
Washington, D.C. 20210

U.S. Steel Corporation
Chicago Film Center
208 South LaSalle Street
Chicago, IL

University of Michigan
Audio-Visual Education Center
416 Fourth Street
Ann Arbor, Michigan 48103

Visual Education
1425 H. Street, N.W.
Washington, D.C. 20005

Vocational Education Media Center
Clemson University
Clemson, South Carolina 29631

Walch, J. Weston Publisher
Box 1075
Portland, ME 04104

Westinghouse Learning Corporation
100 Park Avenue
New York, NY 10017

John Wiley & Sons, Inc.
605 Third Avenue
New York, NY 10016

Willson Products Division
P.O. Box 622
Reading, PA 19603

Xerox Films
245 Long Hill Road
Middletown, CT 06457

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