

Safety Test

Manufacturing/Metals Technology

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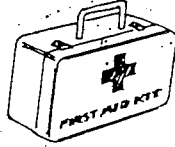
San Diego City Schools
San Diego, California
Revised 1991

Stock No. 41-I-5005



SAFETY TEST

Directions: Complete each of the statements below and on the following pages by selecting the best answer from among the choices given. On the answer sheet provided by your teacher, **SOLIDLY** fill in the bubble opposite the letter of the answer you choose. **DO NOT WRITE IN THIS TEST BOOKLET.**



General Safety Practices

- Any dangerous condition in the shop must be reported to the teacher:
 - when convenient
 - immediately
 - at the end of the class period
 - after class
- When you enter another shop, you must report to the teacher:
 - immediately
 - at your convenience.
 - after you complete your work
 - if requested
- Guards and other safety devices are for your protection; always:
 - remove them
 - cover them
 - keep them in place
 - move them out of the way
- Rags soaked with oil, paint, thinner, or other flammable liquids must be placed in:
 - a wooden box
 - a covered metal container
 - a scrap box
 - a trash can
- Gasoline, paints, kerosene, and other flammable liquids are never to be used near:
 - another student
 - an open flame
 - a workbench
 - a wooden building
- Disturbing another student while he/she is working is:
 - helpful
 - poor manners
 - dangerous
 - the quickest way to do a job

7. Caution another student if you see a violation of:
- a. good manners
 - b. proper grammar
 - c. safety practices
 - d. proper posture
8. When working with hand or power tools, all loose clothing and jewelry must be:
- a. left on
 - b. hidden
 - c. removed
 - d. none of these
9. In case of injury, report at once to the:
- a. nurse
 - b. teacher
 - c. class
 - d. doctor
10. If equipment does not work properly, shut off the machine and inform the:
- a. custodian
 - b. foreman
 - c. principal
 - d. teacher
11. Damage to shop equipment and tools must be reported to the teacher:
- a. the next period
 - b. the next day
 - c. immediately
 - d. when convenient
12. Lifting heavy objects can cause injury. If an object is too heavy:
- a. ask for help
 - b. lift it anyway
 - c. let someone else lift it
 - d. call the principal
13. The proper manner in which to move about in a shop is to:
- a. run
 - b. walk
 - c. skip
 - d. hurry
14. The recommended footwear for lab work is:
- a. sandals
 - b. leather shoes
 - c. cloth tennis shoes
 - d. bare feet
15. If you have questions about any job or operation, you must ask the:
- a. principal
 - b. nearest student
 - c. custodian
 - d. teacher
16. Machinery may be operated only by a student who has passed his/her safety test and received permission from the:
- a. foreman
 - b. nearest student
 - c. custodian
 - d. teacher
17. Rivets, washers, and other foreign materials should not be placed in your:
- a. pockets
 - b. hand
 - c. mouth
 - d. locker

18. Types of behavior not permitted in any shop are:
- a. horseplay
 - b. running
 - c. loafing
 - d. all of these
19. Before touching electrical switches, plugs, or receptacles, hands must be completely:
- a. clean
 - b. dry
 - c. covered
 - d. wet
20. While working in the metal shop, eye protection must be worn:
- a. sometimes
 - b. when available
 - c. when using machinery
 - d. at all times
21. A stream of compressed air must *never* come in contact with:
- a. the work
 - b. your head or body
 - c. the bench
 - d. the machines
22. The main power switch should be turned ON only by the:
- a. foreman
 - b. custodian
 - c. teacher
 - d. nearest student

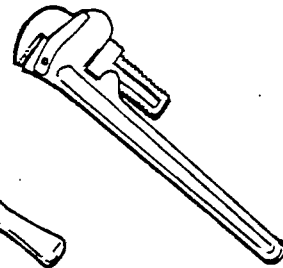
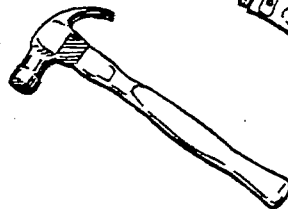
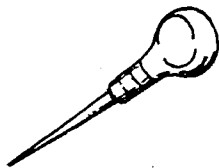
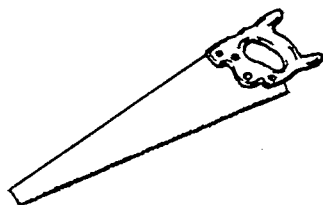
Fire Safety



23. Fires involving electrical equipment should be extinguished with:
- a. soda acid
 - b. water
 - c. carbon dioxide (CO₂)
 - d. wet sand
24. When extinguishing flammable liquids, the best type of extinguisher to use is:
- a. soda acid
 - b. water
 - c. carbon dioxide (CO₂)
 - d. a blanket
25. In order to extinguish or stop a fire quickly, you must know which of the following information about all fire extinguishers in the shop:
- a. type
 - b. location
 - c. operation
 - d. all of these

26. Spilled flammable liquids are a fire hazard and must always be:
- cleaned up immediately
 - left alone
 - spread around to speed up evaporation
 - cleaned up at the end of the period
27. Hazardous chemicals are dangerous to the environment. Always dispose of them by:
- pouring them onto the ground
 - pouring them down the drain
 - following directions from the teacher
 - placing them into the trash
28. Dizziness, headaches or sickness can all be signs of toxic chemical exposure caused by:
- too much solvent in the air
 - solvent being absorbed into the skin
 - swallowing chemicals when eating food without washing hands after working
 - all of these
29. Be careful when disposing of chemicals. If they are mixed together, they may cause:
- you to get your hands dirty
 - the container to get dirty
 - hazardous fumes or chemical reactions
 - a mess
30. A chemical container label should always list the following:
- the chemical name and hazard warning
 - the price of the chemical
 - chemical name
 - a hazard warning

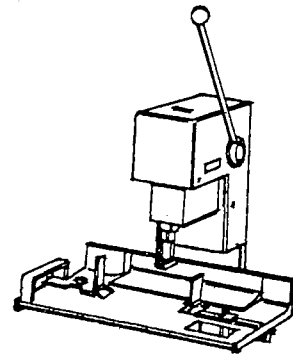
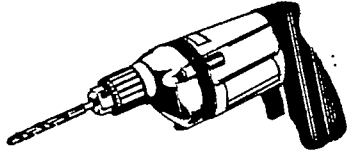
Hand Tools



31. Do not carry sharp or pointed tools and materials in your clothing. Hold sharp points or edges:
- down
 - out
 - up
 - in your hand

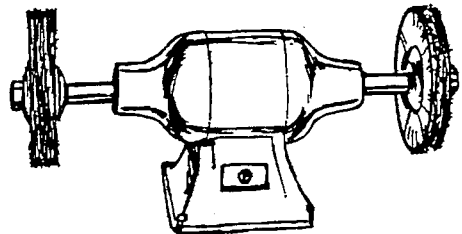
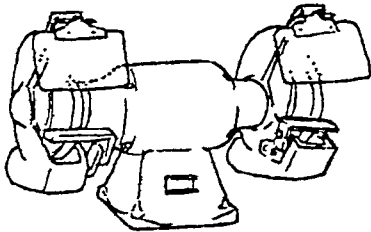
32. Whenever possible, the motion involved in striking objects or cutting materials should be done:
- a. away from others
 - b. toward others
 - c. toward yourself
 - d. toward the aisle
33. When using a chisel, you should:
- a. hold the work in your hands
 - b. hold the work in a vise or clamp
 - c. have a friend hold the work
 - d. have the teacher hold the work
34. Files should be kept clean to avoid:
- a. breakage
 - b. slippage
 - c. chipping
 - d. chatter
35. Before using a hammer, check the:
- a. tang
 - b. body
 - c. head and handle
 - d. shank
36. When completing a cut with a saw, you must:
- a. increase the speed of the stroke
 - b. increase the pressure
 - c. ease up on the pressure and stroke
 - d. break the material off
37. If the wrench is too small, it is best to:
- a. slip a piece of pipe on the handle
 - b. get a larger wrench
 - c. use a hammer
 - d. use a mallet
38. Scratch awls are used for:
- a. prying
 - b. center-punching
 - c. chipping
 - d. marking lines
39. Chips, shavings, and scraps should be cleaned from benches with:
- a. your hand
 - b. a file card
 - c. a bench brush
 - d. a steel rule

Drill Press and Portable Electric Drill



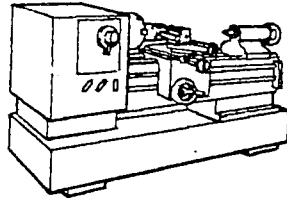
40. When operating revolving equipment, all jewelry, gloves, and loose clothing must be:
- a. left on
 - b. removed or adjusted
 - c. removed
 - d. reported to teacher
41. As the drill goes through the material, the pressure must be:
- a. taken off completely
 - b. eased up
 - c. increased
 - d. held
42. Work to be drilled should be securely held by:
- a. a vise or clamp
 - b. another student
 - c. the shop foreman
 - d. the teacher

Grinder and Buffer



43. You should not use the grinder if the tool rest is away from the wheel *more* than:
- a. 1/8 inch
 - b. 1/4 inch
 - c. 1/2 inch
 - d. 3/4 inch
44. When buffing, material must be held:
- a. below the horizontal center line of the wheel
 - b. above the center line of the wheel
 - c. on top of the wheel
 - d. on the side of the wheel

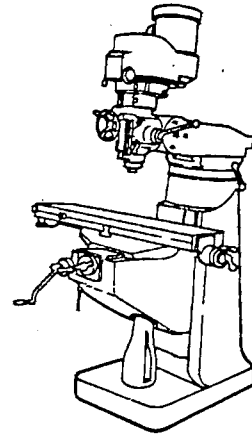
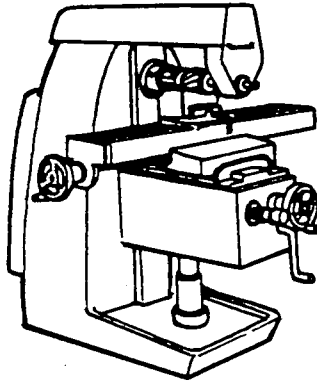
Engine Lathe



45. Items of clothing must be adjusted so that moving parts of the lathe will not:
- a. dirty them
 - b. grab them
 - c. mark them
 - d. discolor them
46. After using the chuck wrench, you should:
- a. leave it in the chuck
 - b. turn it to the left
 - c. check it for damage
 - d. remove it immediately
47. Before using the lathe, make sure that all spinning parts of the lathe will not hit the compound slide during:
- a. the entire cut
 - b. the finish of the cut
 - c. the start of the cut
 - d. hand feeding
48. When you leave the lathe, you:
- a. must shut it off
 - b. may let it run
 - c. may put it on automatic feed
 - d. should have a friend watch it
49. Measuring the work and adjusting, cleaning, or oiling the lathe should be done only:
- a. when the machine is stopped
 - b. when the machine is coasting
 - c. when the machine is running
 - d. when the guards are off:
50. Cuts near the chuck or a shoulder should be done:
- a. with slow speed
 - b. by automatic feed
 - c. by hand feed
 - d. at high speed
51. When polishing revolving work, the ends of the abrasive cloth should be held:
- a. in each hand
 - b. in a clamp
 - c. by pliers
 - d. in one hand

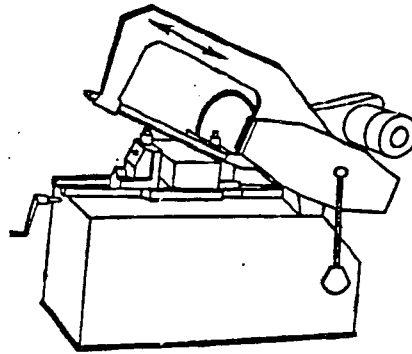
52. Chips should be cleaned from the lathe with:
- a. a rag
 - b. a steel rule
 - c. a bench brush
 - d. a floor broom

Milling Machines



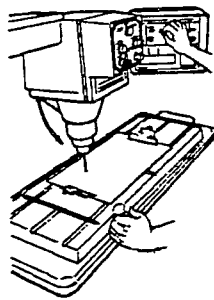
53. To avoid injury to your hands, you must remember that milling cutters are:
- a. fragile
 - b. sharp
 - c. expensive
 - d. accurate
54. Revolving milling cutters are especially dangerous. When the cutter is turning, the operator must:
- a. measure carefully
 - b. oil cautiously
 - c. keep hands away from the cutter
 - d. brush chips slowly
55. When using the horizontal or vertical milling machine, it is important to select the correct feed, speed, and direction to prevent:
- a. overheating
 - b. dulling
 - c. shattering
 - d. all of these
56. To loosen the milling machine arbor nut, you should:
- a. use machine power
 - b. hammer on the wrench
 - c. use a pipe on the wrench
 - d. use your hands on the proper sized wrench
57. Rapidly rotating end mills, if used incorrectly, will:
- a. break and shatter
 - b. overheat quickly
 - c. dull quickly
 - d. all of these

Power Hacksaw



58. The blade should be moving before touching the work on the stock; this:
- a. prevents the blade from breaking
 - b. speeds up the cutting
 - c. prevents the machine from overheating
 - d. prevents the belt from breaking
59. When the saw is running, the operator should:
- a. push down on the blade
 - b. stand clear of the machine and watch it cut
 - c. lift up on the blade
 - d. walk around the shop

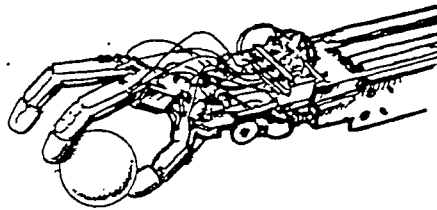
Computer Numerical Control Machining



60. When operating a machine, jewelry should be:
- a. left on
 - b. removed
 - c. given to the teacher
 - d. hidden
61. When using a machine, you should wear:
- a. jewelry
 - b. loose clothing
 - c. adequate eye protection
 - d. none of these

62. Before you make measurements:
- a. put the machine on slow speed
 - b. adjust the machine to high speed
 - c. approach moving parts carefully
 - d. make sure the spindle has completely stopped
63. The work piece and work-holding accessory should be securely fastened to prevent:
- a. damage to the machine
 - b. damage to the work
 - c. injury to the operator
 - d. all of these
64. Operating a machine control without knowing its function:
- a. is a good way to learn how to use the machine
 - b. can cause injury to you and damage to the machine
 - c. saves time
 - d. is acceptable procedure
65. You can make a "dry run" on the CNC machine by:
- a. using the manual plotter
 - b. going through the program without a cutting tool
 - c. computer simulation on the video display
 - d. all of these

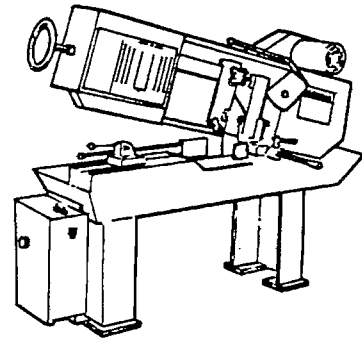
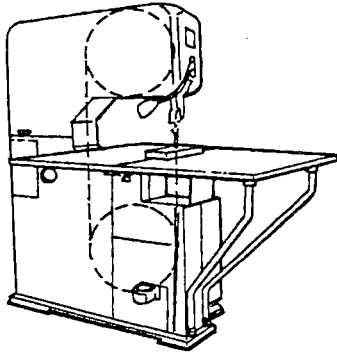
Robotics



66. What should you do if a robot will not work correctly?
- a. turn off the main switch and tell the teacher immediately
 - b. use the teacher's instruction
 - c. troubleshoot the problem
 - d. tell the shop foreman
67. Where should you stand to observe the robot work?
- a. at least 30 feet away
 - b. behind any yellow line
 - c. in the designated safety zone
 - d. wherever you want
68. To safely work on a robotic system, you need to:
- a. keep the area clean and clear
 - b. confine your hair and clothing
 - c. clean and dry your hands
 - d. all of these

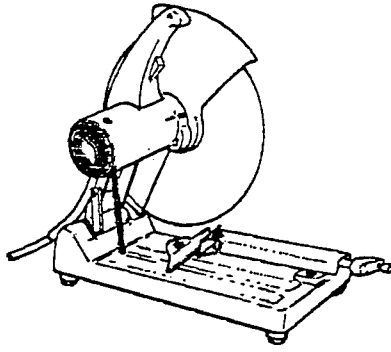
69. To prevent damage to the robot, do not exceed:
- a. manufacturer's recommendations
 - b. manufacturer's address
 - c. manufacturer's lease
 - d. manufacturer's warranty

Band Saw



70. It is best to set the upper saw guide of the band saw:
- a. 1/4 inch or less above the stock
 - b. 1/2 inch above the stock
 - c. tight against the stock
 - d. 1 inch above the stock
71. Stock should be pushed close to the blade with:
- a. the palm of your hand
 - b. a steel rule
 - c. a safe push stick
 - d. your fingers
72. When it becomes necessary to back out of a saw cut, you should:
- a. stop the machine
 - b. back out while the machine is running
 - c. try to turn the stock
 - d. continue to saw forward
73. Care must be used in cutting arcs or curves so that:
- a. the blade is not dulled
 - b. the table is not scratched
 - c. the blade does not get stuck
 - d. waste stock is not cut

Abrasive Cutoff Saw



74. The abrasive saw must be treated with care because it:
- a. throws sparks that could injure the eyes and skin
 - b. turns at high speed and cuts fast
 - c. may bind and break the blade
 - d. all of these
75. When using this machine, you should secure your work with:
- a. the C-clamp
 - b. the vise on the machine
 - c. the V-block
 - d. gloves
76. If the blade binds or gets stuck in the work, you should:
- a. run like mad
 - b. turn off the power at the circuit breaker panel
 - c. turn the power off at the machine and tell the teacher at once
 - d. ask the custodian to help you

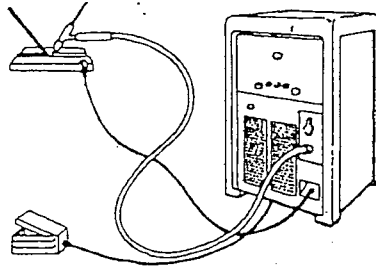
Oxygen-Acetylene Welding



77. Anyone welding, brazing, or watching the flame must wear:
- a. welding goggles
 - b. safety glasses
 - c. a face shield
 - d. a hard hat
78. Oil should not be used around welding equipment due to the danger of:
- a. corrosion
 - b. staining
 - c. explosion
 - d. none of these

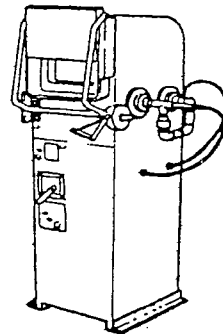
79. You can check the connections on welding equipment for leaks by:
- a. feeling
 - b. smelling
 - c. using soapy water
 - d. listening

Electric Welding



80. For eye protection against ultraviolet light and infrared rays, you must wear:
- a. safety glasses
 - b. a face shield
 - c. an arc welding helmet with a dark observation window
 - d. prescription glasses
81. If the skin is exposed to the electric arc, it will be:
- a. stained
 - b. dried
 - c. contaminated
 - d. burned
82. When chipping slag, you must wear suitable eye and body protection to guard against:
- a. burns
 - b. eye injury
 - c. damage to clothing
 - d. all of these
83. Arc welding must be done only in:
- a. a shielded area
 - b. an open area
 - c. a large area
 - d. none of these

Forging

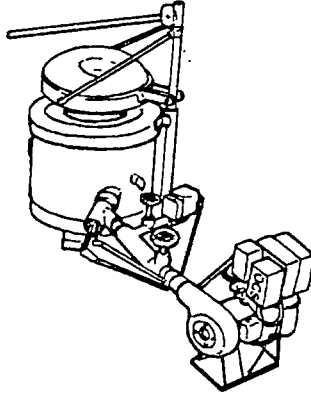


84. When preparing to light the gas forge, you must first asks the teacher and then:
- a. turn on the gas
 - b. close all doors
 - c. run air through the furnace
 - d. place lighted paper in the furnace

85. To prevent burns, tongs should be:
- a. held by the jaws
 - b. handled with plastic gloves

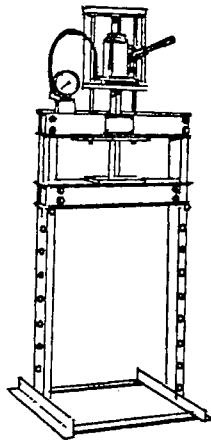
- c. grasped by the handles
- d. placed on the floor

Foundry



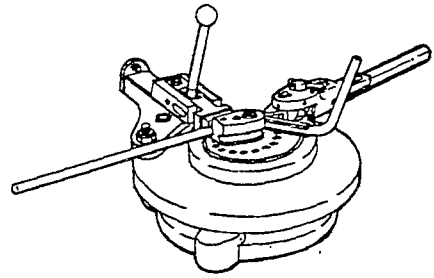
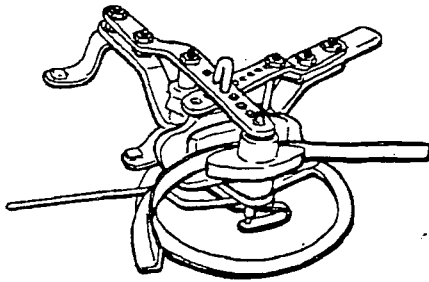
86. To insure against explosions from the steam buildup, it is necessary to provide molds with proper:
- a. foundation
 - b. vents
 - c. texture
 - d. hardness
87. When pouring metal, you should place the mold:
- a. on the bench
 - b. at waist height
 - c. at any convenient place
 - d. in the protected area of the floor
88. Molten metal should be handled slowly and carefully to avoid:
- a. cooling it
 - b. spilling it
 - c. heating it
 - d. damaging it

Hydraulic Press



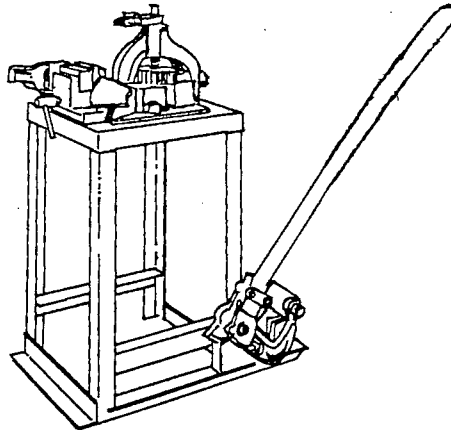
89. Before using the hydraulic press, you must first:
- a. lock the bleeder valve
 - b. get permission from the teacher
 - c. set work on the press
 - d. test the equipment

Hossfeld and Diacro Benders



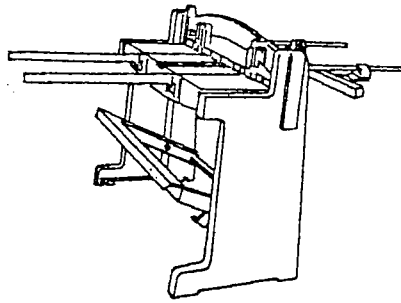
90. When using the bender, it is important to:
- a. keep both feet in the air
 - b. Keep your fingers clear of the shoes and stock being bent
 - c. wash your hands
 - d. oil the stock
91. When using the bender, make sure you have:
- a. clean hands and rubber shoes
 - b. steel-toed shoes and rubber gloves
 - c. a clean and dry floor
 - d. someone to help you

Angle Iron Cutter/Bender



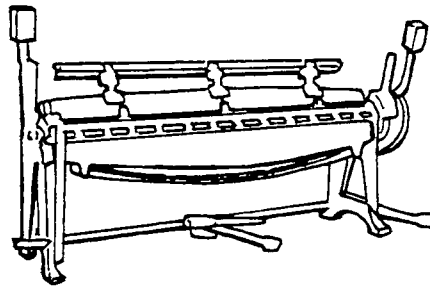
92. The multipurpose cutter/bender must be used to cut only materials specified by:
- a. a friend
 - b. another student
 - c. the manufacturer of the equipment and your teacher
 - d. none of these
93. When using the cutter or notcher, keep your hands and fingers:
- a. on the bench
 - b. away from all cutting edges and the clamp
 - c. in your pockets
 - d. on the material

Squaring Shear



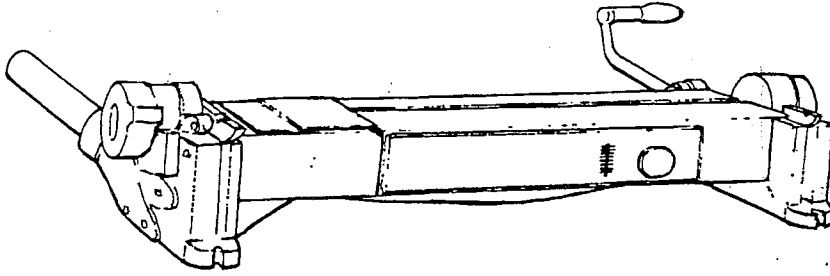
94. When operating the squaring shear, use one foot to move the treadle and keep the other foot:
- a. on the treadle
 - b. under the treadle
 - c. clear of the treadle
 - d. away from the floor
95. When using the shear, you should keep your hands:
- a. near the clamp and blade
 - b. under the clamp and blade
 - c. between the clamp and blade
 - d. away from the clamp and blade

Cornice and Box-Pan Brake



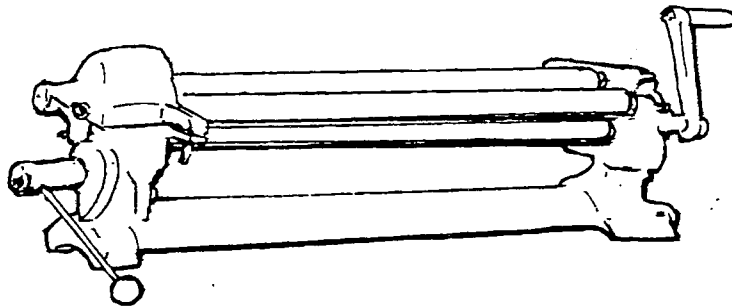
96. Before operating the brake, you must:
- a. drop the leaf
 - b. make sure everyone is clear of the counterbalances and bending leaf
 - c. remove the counterbalances
 - d. remove the bending leaf
97. After completing a bend:
- a. allow the bar to fall back
 - b. release the bar
 - c. pull up on the bar
 - d. move the bar down slowly

Bar Folder



98. When folding metal in the bar folder, you should:
- a. keep your fingers away from the folding bar
 - b. wear rubber gloves
 - c. always fold across a hem
 - d. feed the work as rapidly as possible
99. After finishing a bend, do not allow:
- a. the folding bar to stop at 90 degrees
 - b. the folding bar to come forward
 - c. the folding bar to fall back
 - d. the folding bar to stop at 180 degrees

Forming Roll

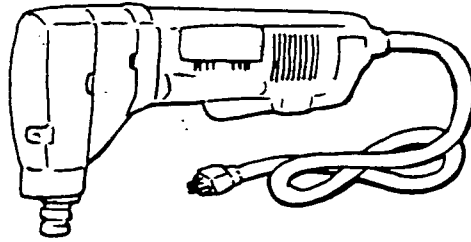


100. When feeding the stock into the rolls,
- a. turn the handle rapidly
 - b. hold your hands close to the rolls
 - c. keep your fingers away from the rolls
 - d. have another student turn the handle

Bench Shear

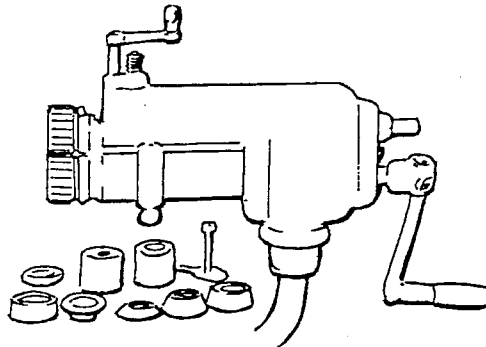
101. When using the bench shear, keep your hands away from:
- a. the cutting blade
 - b. the handle
 - c. the bench
 - d. the stock

Shears and Nibblers—Portable Electric



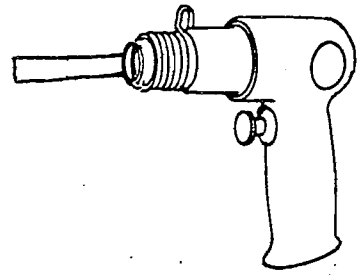
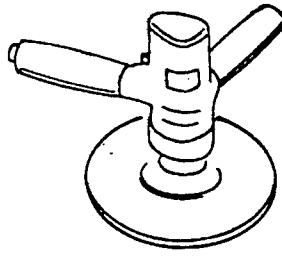
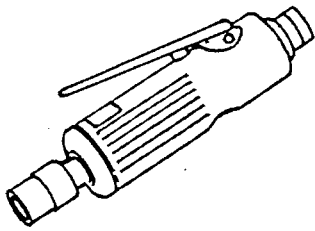
102. You should watch carefully as you hold material to be cut with the shears or nibbler because:
- a. chips and long bits of material might fly into your eyes
 - b. the material might slip and cut you
 - c. gloves do not adequately protect your hands
 - d. all of these
103. One problem with material that has been cut with the shears or a nibbler is that:
- a. large holes are left in the work
 - b. rough edges may cause injury
 - c. the work is smooth and may slip
 - d. the material may contain many dents

Rotary Machine



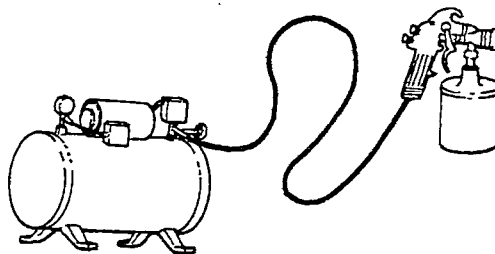
104. When using the rotary machine, an injury could result if:
- a. large pieces of material are put into the machine
 - b. small pieces of material are put into the machine
 - c. thicker material than specified by the manufacturer is put into the machine
 - d. none of these
105. When using the rotary machine, you should:
- a. keep materials against the gauge
 - b. use light pressure on the work
 - c. keep all nuts and bolts on the machine tightened
 - d. all of these

Pneumatic Tools and Air Hammers



106. Before using the air hammer, be sure:
- a. the spring guard is in place
 - b. the tool bit is against the work
 - c. you are wearing eye protection
 - d. all of these
107. To disconnect a "quick disconnect" air hose safely, you should:
- a. disconnect as quickly as possible
 - b. unscrew the fittings
 - c. use both hands
 - d. let only the teacher do it
108. To insure good operation of the air hammer, the gun should be held:
- a. 1/16 inch away from the work
 - b. With a firm grip 1/16 inch away
 - c. with a firm grip against the work
 - d. with a loose grip
109. Avoid jamming the air hammer in tight areas because:
- a. the bit can fly off
 - b. your hands can be injured
 - c. it may cause the gun to get caught in the work
 - d. all of these

Spraying



110. When using a spray gun, you should:
- a. wear eye protection
 - b. be in a well-ventilated area
 - c. wear breathing apparatus
 - d. all of these
111. Before spraying, be sure to check:
- a. the length of the nozzle
 - b. the air pressure
 - c. the relief valve to make sure it is working
 - d. both b and c

112. Vapor fumes are highly flammable. While in the finishing room or spray booth, avoid open flames, static electricity, and:
- a. dust or lint
 - b. bright lights
 - c. sparks
 - d. dirt particles

Sandblasting

113. When sandblasting, you should:
- a. work only in a well-ventilated area
 - b. aim away from other persons
 - c. wear special gloves, head gear, and face cover
 - d. all of these
114. Sandblasting, when done improperly, can be dangerous. The main area of concern is injury to:
- a. the hands
 - b. the lungs
 - c. the eyes
 - d. both b and c