Woodworking General Shop
Study Guide

1. Always wear safety glasses in the shop. The only exception is when we are having book work.

2. Request teacher approval of special machine set-ups.

3. You need to pass the safety test and receive permission from the instructor before you may use any tool or machine.

4. Make any needed adjustments before turning on the power to the machine.

5. Use pushsticks when fingers get close to a blade.

6. Be aware of nosey people and make sure they are out of the way before you use a machine.

7. Don't use machines for trivial operations, or whenever handtools would best accomplish the task.

8. If you have long hair, put it up. Secure any loose clothing and put away your jewelry.

9. DO NOT THROW ANYTHING IN THIS ROOM!

10. Follow the safety rules for each individual machine.

11. Sit in the seats only and not on machines or the benches.

12. The Air Compressor is to run air tools, not for cleaning yourself off.

13. Use machines only when the instructor is in the room.

14. When you finish with a tool, take it back to the tool closet/ cabinet.

15. Use the correct tool safely for the job.

16. Floors should be kept free of slippery materials.

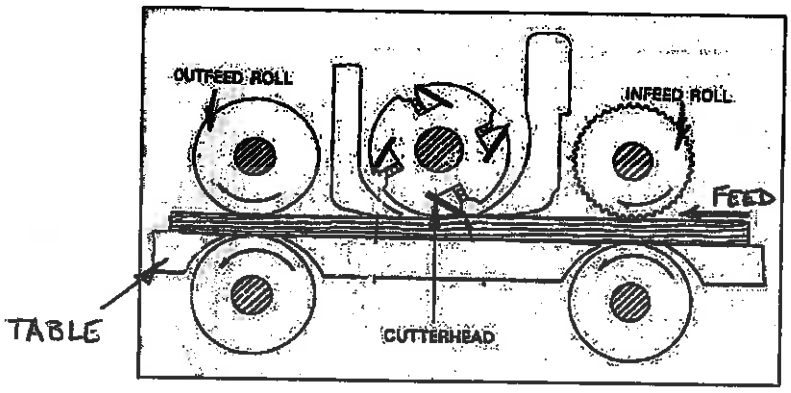
17. Clean up your own mess before doing your clean-up job. Everyone will participate in clean-up and work at it the entire last 6 minutes of the period.

18. Apply finish to your projects in the finish room only. Turn the ventilation fans on before working.

19. Report any damaged or misaligned tools/machines to instructor.

20. Report any accidents immediately to the teacher. I will not be mad, but I do want to know if you hurt yourself.

Planer
Study Guide



The 3 basic parts of a surface planer are the Infeed Roll, Outfeed Roll and the cutterhead. The Infeed Roll pulls the wood into the machine. The Cutterhead holds the knives which cut the wood. The outfeed Roll pulls the wood out of the machine.

1. YOU MUST WEAR SAFETY GLASSES TO USE THIS MACHINE.
2. Turn on the Shop Vacuum before using Planer.
3. When dealing with cupped wood, place the edges pointing down towards the table.
4. Be sure you have the instructor's permission to operate the machine.
5. Measure your wood with a steel rule and adjust the machine to correct thickness of cut before turning on machine.
6. Stock should be at least 12 inches long to be cut with this machine.
7. Surface only new lumber that is free of loose knots and serious defects.
8. Plain with the grain, or at a slight angle with the grain. Never attempt to plane cross grain.
9. The most we can cut with one pass is 1/16 ". This is 1 turn of the elevation hand wheel.
10. Stand to one side of the work being fed through the machine.
11. Do not look into the throat of the planer while it is running.

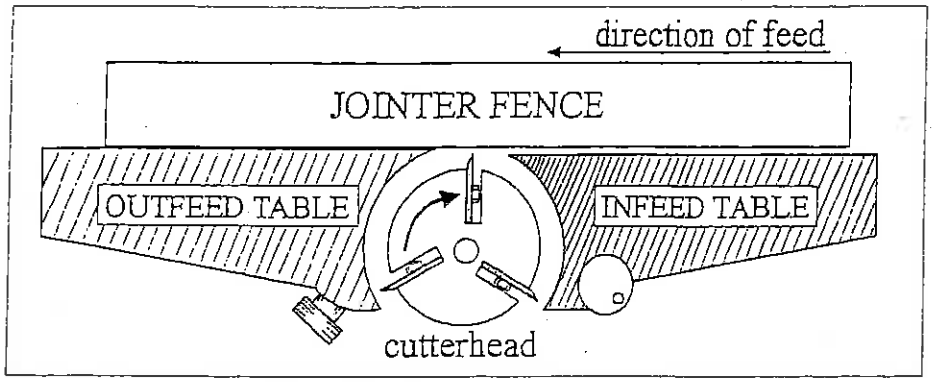
12. DO NOT FEED STOCK OF DIFFERENT THICKNESSES SIDE BY SIDE THROUGH THE MACHINE.

13. HANDLE AND HOLD THE STOCK ONLY IN AN AREA BEYOND THE ENDS OF THE TABLE.

14. IF THE MACHINE IS NOT WORKING PROPERLY, SHUT OFF THE POWER AT ONCE AND INFORM YOUR INSTRUCTOR.

Jointer Safety Guide

updated 9-1-01



A jointer is a unique machine. It allows us to straighten one edge of a board so we can square it. (Square means to make all of the adjacent sides of the board 90 degrees to each other) You will use the jointer prior to machining your board on the table saw or gluing up your wood.. The jointer is a very powerful machine that has three blades that revolve at a very high rate of speed. If you get your fingers into the blade, there would not be enough left to reattach to your stub. It is very important to follow all the safety regulations for this machine.

YOU MAY NOT USE THIS MACHINE UNLESS:

1. You have passed a written **safety test** over the jointer.
2. You must observe a **demonstration** by the instructor
3. You must receive **permission** from your instructor.

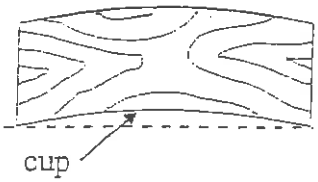
Jointer Hazzards

1.) Injury from the blade (getting cut and kick back)
2.) Electrial Shock

You must use a push stick or push block when:

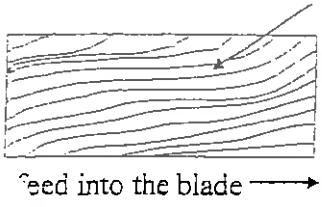
1. Surface Jointing
2. When the wood is lower than the fence.

If at anytime you are unsure how to use the jointer or don't remember the safety procedures , ask the instructor to clear up your questions BEFORE using the machine.

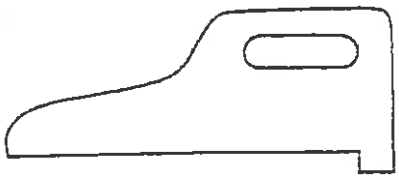


Feeding the wood into the jointer requires two considerations.

1. The cup edge (if there is one) should point down.



2. You should feed with the grain. If you can't see the grain direction, it is often easier to run your finger carefully along the edge of the board you're going to plane. One direction it will feel smooth, that is the way the wood should be fed into the jointer knives.



This is called a **push block**. It is **used to surface plane a piece of stock on the jointer.**

1 You must wear **safety glasses** to use the jointer.

2. You must turn the **shop vacuum** on to use this machine.

3. Before turning on the machine, make adjustments for **depth** of cut and position of **fence.**
4. The maximum depth of cut for planing a **surface** is 1/16".

5. Do not adjust the **outfeed** table or remove the **guards** without the instructors permission.

6. The maximum cut for jointing an edge is **1/8"**:

7. Stock to be jointed must be at least **10"** long.

8. Stock to be surface jointed must be at least 3/8" thick, unless a special **feather board** is used.

9. Feed the work so the knives will cut "**with** the grain".

10. Use only new stock that is free of **knots** , **splits**, and **checks**.

11. Keep your hands away from the **cutterhead** even though the guard is in position.

12. Maintain at least a **4"** safety margin.

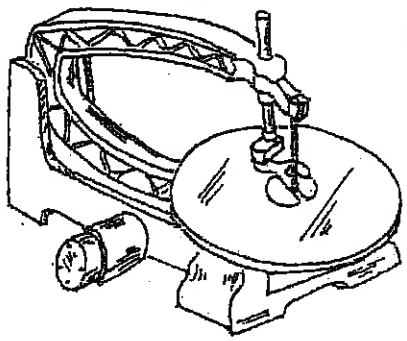
13. Use a **push block** when jointing a flat surface.

14. The jointer knives must be sharp. Dull knives will **vibrate** the stock and may cause a **kickback**.

15. Do not joint your wood **freehand** unless your wood is as **tall** as the fence.

Scroll Saw Safety Information

The scroll saw is a stationary power tool designed to cut irregular shapes in wood up to 2" thick. The wood is held against the platen (table) by a piece of spring metal while the operator feeds the wood into the blade. This saw uses a reciprocating motion which means the blade goes up and down. This makes this saw one of the safest power saws.

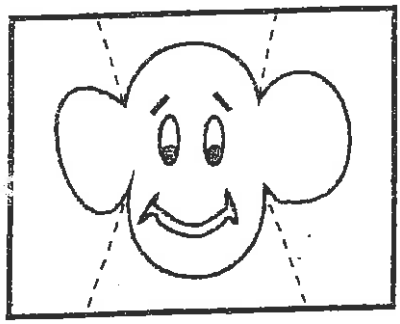


A scroll saw is also unique because it can make internal cuts without cutting through the outside edge of the project. the steps to do this are :

a. **drill a 1/4" hole through the project** in the area you want to remove.

b. **disconnect** the saw blade from the top chuck and **insert it through the hole**.

c. **reconnect the blade** to the top chuck and adjust the holddown spring and **complete the cut.**



sample of relief cut application

Relief cuts serve two purposes:

a. they keep the blade from binding

b. they allow exits so you don't have to back out of long cuts.

Potential Hazards :

1. **Injury from the blade**
2. **Electrical Shock**

Before using this saw you must :

1. **Pass a safety test.**
2. **Observe a demonstration by your instructor.**
3. **Receive permission to use the machine.**

If at anytime you are unsure of a safety practice or an operating procedure for a machine, DO NOT attempt to use that machine until you have had your questions answered by the instructor.

The two most commonly injured body parts are :

a. eyes **b. fingers**

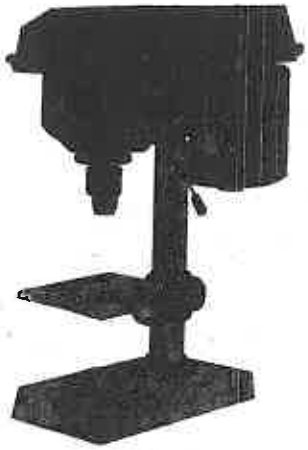
If the material chatters (goes up and down quickly)as you're cutting, you're doing one of two things wrong :

a. the holddown clamp isn't low enough on the material being cut.

b. you're feeding the material into the saw blade too quickly.

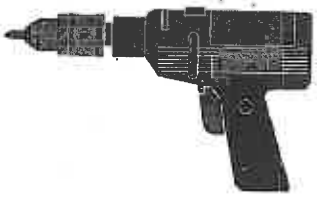
Safety Precautions when using the Scroll Saw

1. Always wear **safety glasses**.
2. Never operate in or around **water**.
3. Ask **instructor** for permission before using the scroll saw.
4. Hold material **securely** while cutting but keep fingers away from the **path** of the blade at all times.
5. Always check the blade before using and make sure it is held securely by the **chuck**.
6. Do not **force** the wood into the blade !! Take your time , it should cut **easily**.
7. **Start** the saw and allow it to run before the blade **contacts** the wood.
8. If you suspect something is **wrong** with the saw, turn it off and **report** it to the instructor.
9. Cut slightly to the **outside** of the line to allow room for filing and sanding.
10. Lower the **holddown** spring so it presses **lightly** on the material being cut.
11. Turn off machine if the blade is to be **backed out** of a long cut.
12. The speed when cutting wood should be between **1500** and **2000** rpms.



DRILLING SAFETY

WOODWORKING I



Hazards:

1. Electrical Shock
2. Bit Breaking
3. Bit catching wood and causing it to spin.
4. Getting clothes, hair, or jewelry wrapped around bit.

The Drill Press is a versatile tool. It can be used for drilling and boring and, with attachments, as a mortise, router, shaper, or planer. The drill press comes with variable speeds derived from step pulleys. They allow for speeds from 500-4500 rpm. It comes in either a floor or bench top model. The size of a drill press is determined by the distance from the chuck to the column. Wood should be clamped securely when using a 3/8" drill bit or larger.

The portable electric drill can be used for many jobs including drilling, sanding, buffing as well as driving screws with a screwdriver attachment. The size of a portable hand drill is determined by the capacity of the chuck. The chuck holds the bit with three steel jaws. It is tightened by using a chuck key. The three most common hand drill sizes are ¼", 3/8", and ½". The size of the chuck tells you the largest bit shank that it will hold.

Steps For Use:

1. Always wear safety glasses when using the drilling machines.
2. Observe class demonstration by instructor and pass a written safety test over the drilling machines.
3. Ask instructor for permission and have him check setup.
4. Use an awl to mark center of hole. It should leave an indentation in the surface of the material.
5. Insert bit into chuck and tighten with chuck key making sure all three jaws securely hold the bit.

6. Place piece of scrap wood under the material to be drilled.
7. Roll up sleeves, take off jewelry, and put up hair while working in the shop area.
8. Don't touch the drill bit immediately after use, it will be very HOT!
9. Keep fingers away from the drill bit at all times while it is spinning.
10. Never turn drill on while chuck key is still in the chuck.

For the Drill Press:

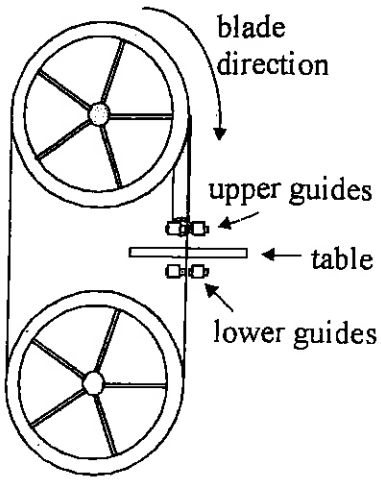
11. Align center of drill press table so when the drill bit comes down it will exit through the hole in the table.
12. Clamp or hold wood securely on the drill press. Set depth gauge if needed.
13. Turn drill press on and slowly but firmly, pull hand lever to feed drill bit into wood.
14. Go completely through material or until you hit the depth stop.

For the Hand Drill:

15. Grasp drill handle holding it like a pistol. Keeping the tool straight, place the point of the bit on the center of the hole.
16. Turn on switch and guide bit into the wood. If necessary, support the drill with your left hand. Any sideways shifting of the drill can cause small drill bits to break.

Bandsaw Safety

The band saw is a relatively simple machine. It consists of a frame on which 2 large wheels are mounted. The upper wheel is adjustable and can be tilted. The size of the band saw is determined by the **depth of the throat**. This is the distance from the column to the blade. A sliding bar is mounted to the top section. It contains the upper blade guides and can be moved up or down depending on the thickness of the of the material being sawed.



Since the band saw cuts in a continuous downward motion, it cuts material faster and smoother than does the scroll saw or saber saw. The drawback to this is **the blade has a tendency to pull material into it**. For this reason it is very important to KEEP YOUR FINGERS OUT OF THE BLADE PATH AT ALL TIMES.

The lower blade guards are mounted to the bottom section of the band saw. You must always keep all safety guards in place whenever the saw is plugged in.

Bandsaw Hazzards

1.) Injury from the blade
2.) Electrial Shock

YOU MAY NOT USE THIS MACHINE UNLESS:

1. You have passed a written **safety test** over the band saw.
2. You must observe a **demonstration** by the instructer.
3. You must receive **permission** from your instructor.

Keys to Successful Bandsaw Use

1. Don't be in a **hurry**
2. Use plenty of **relief cuts**. (If you're not sure if you need one, use one!)
3. **Anticipate** the path of the blade. (It's very similar to driving a car down a curvy road)
4. Don't try to turn the wood while in a cut unless you are pushing **forward** into the blade at the same time.

STEPS FOR SAFE OPERATION

1. Adjust the top guide to within **1/4** inch of the material being cut.

2. Do not **twist** the blade trying to force it to cut to sharp a curve. The **friction** developed crystallizes the blade and will cause it to break.

3. A cracked or partially **broken** blade will saw for a short time, but will make a **knocking** or **clicking** noise. If you hear this, stop the machine and report it to the instructor.

4. If the blade breaks: **Turn off** the machine, step **away** from the machine and get the **instructor**.

5. Always use a **V block** for sawing cylindrical stock.

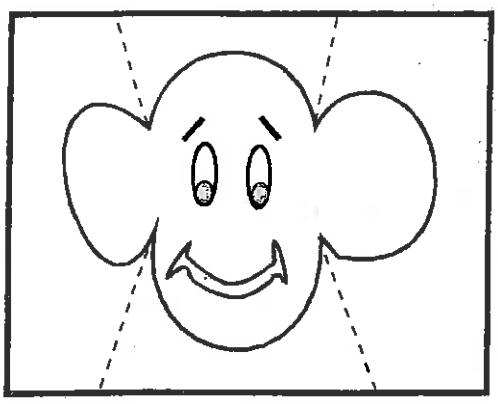
6. Replace worn **throat plates** because chips of wood may fall through them, causing the blade to break.

7. Stand to the left of the work and the blade. Guide the stock with your **dominant** hand and use your **other** hand to steady the material. Use Push Sticks to keep your fingers **4"** away from the blade.

8. ALWAYS KEEP YOUR FINGERS FROM THE **PATH** OF THE BLADE AT ALL TIMES!!! Use a **Push Stick** to remove small pieces of wood away from the blade.

9. Never stand or allow **spectators** to stand in line with the revolving blade.

10. Do not leave the **machine** until it has stopped running.



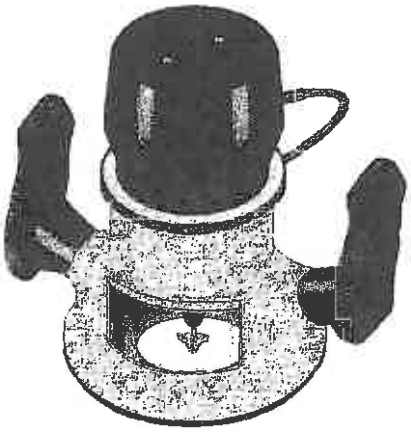
sample of relief cut application

Relief cuts serve two purposes:

a. they keep the blade from binding

b. they allow exits so you don't have to back out of long cuts.

Router Safety Information

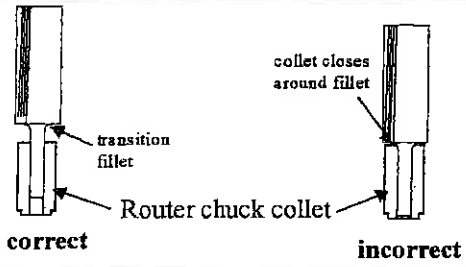


Router Safety Hazards

1.) Injury from the bit
2.) Electrial Shock

YOU MAY NOT USE THIS MACHINE UNLESS:

1. You have passed a written **safety test** over the router.
2. You must observe a **demonstration** by the instructer.
3. You must receive **permission** from your instructor.

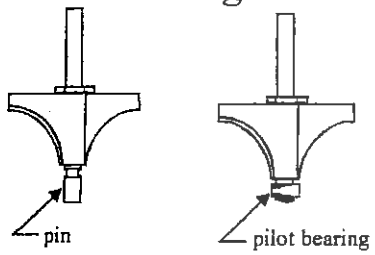


Inserting the bit into the collet

Insert the bit as deep as possible but don't let the fillet be grabbed by the collet

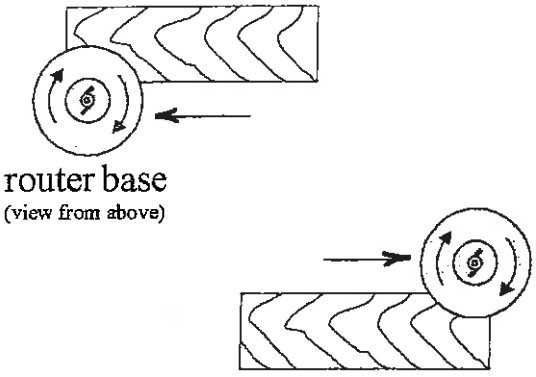
If at anytime you are unsure how to use the router or don't remember the safety procedures , ask the instructor to clear up your questions BEFORE using the machine.

Select the Right Bit



Whenever possible use router bits that have a pilot bearing instead of a bushing or a pin. Bushing and pins turn at the same rate as the bit and have a tendency to burn the wood. Bearings turn independently and don't rub or burn.

Direction of feed when using the router



Using the correct feed direction when using the router is critical. You want to route against the rotation of the bit. (So the bit turns the opposite direction that you're pushing the router) If you route with the turning of the bit you run the possibility of the bit biting the wood and skipping off the stock.

Safety Rules for Routers

1. The **bit** must be securely mounted in the chuck (or collet) to a depth of at least 1/2" and the router base must be **tight**.

2. As with all portable tools, be certain that the motor is properly **grounded**.

3. Wear **safety glasses** when using the router.

4. Be certain the work is securely **clamped** and will remain **stationary** during the routing operation.

5. Place the router **base** on the work or template, with the bit not **touching** the wood before turning on the power.

6. Hold router firmly when turning on the motor to overcome starting **torque**.

7. Hold the router with both **hands** and feed it smoothly through the cut in the correct **direction**.

8. When the cut is complete, turn off the motor. Do not lift the machine from the work until the motor has **stopped**.

9. Always ask your **instructor** to check special setups before proceeding.

10. Always unplug the motor when **mounting** bits or making **adjustments**.

11. If you're routing a piece of woof that is too small to clamp, use a foam rubber **router pad** to keep the piece from moving as you route it.

12. If you need to make a **deep cut**, never HOG the cut by trying to cut too much on one pass. Make several shallow cuts, never taking off more than 1/8" to 1/4" per pass.

13. Make sure to have **test pieces** available to check your depth of cut before routing your finished work.

14. When routing the sides of a project always route the **end grain** first then do the **edges** to help prevent splintering.