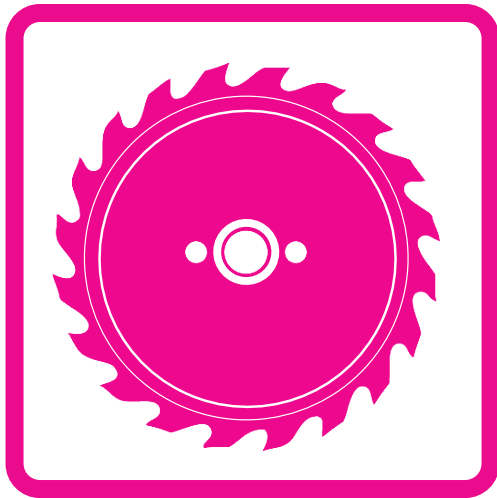




**BOSTON  
ARCHITECTURAL  
COLLEGE**

# **THE BAC SHOP MANUAL**

A guide to making and use protocols of the BAC Shop



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<b>SAFTEY</b>	<b>3.0</b>
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**[shop@the-bac.edu](mailto:shop@the-bac.edu)**

# THE BAC MODEL SHOP HANDBOOK

*The following is a summary of the equipment and tools in the BAC Model Shop. This handbook is intended to familiarize students and faculty with the capabilities of each machine and is not intended to replace individualized instruction. Students and faculty who would like access to the shop are required to attend a general orientation session with the shop technician or monitor before beginning any work. Additional instruction is required for tools not covered in the general orientation.*

*Please ask questions and check with the shop technician or monitor before using any material or performing any procedure you are unfamiliar with. He or she will be able to answer any questions and suggest the safest and most efficient way to accomplish the task.*

## **GENERAL SAFETY RULES**

- RESPECT EQUIPMENT AND TOOLS
- DO NOT LEAVE POWER EQUIPMENT RUNNING UNATTENDED
- MACHINES DEMAND UNDIVIDED ATTENTION
- NO TALKING OR HORSEPLAY WHILE USING EQUIPMENT
- ALWAYS WEAR EYE PROTECTION
- HEARING PROTECTION & DUST MASKS ARE ENCOURAGED

## **PERSONAL SAFETY RULES**

- NO TIES OR LOOSE JEWELRY
- LONG HAIR MUST BE TIED BACK
- NO LOOSE CLOTHING
- CLOSED TOED SHOES ONLY
- FLAT SOLED SHOES ONLY
- NO CELL PHONES OR IPODS WHILE OPERATING MACHINERY
- DO NOT USE ANY TOOL YOU HAVE NOT BEEN TRAINED ON
- ASK QUESTIONS

# WOODWORKING TOOLS

## **DELTA UNI-SAW TABLE SAW**

The table saw is used to rip materials up to 36" wide. It can also be used to crosscut. The saw can accommodate a 10" saw blade or an 8" dado blade.

### **USES:**

- Ripping or crosscutting wood, sheet goods, or plastics
- Cutting dadoes or rabbets

### **SAFETY TIPS:**

**Do not wear gloves while operating a table saw.** There are several reasons, but loss of tactile sense is probably foremost, while a possible loss of gripping power is also close to the top. And some kinds of gloves are loose enough to present an item for the rotating blade to grab.

**Keep the floor in front of the saw free of cut-offs and piled up sawdust.** Tripping or sliding into a running, or even stopped, saw blade can really create problems, but even slipping and banging your head against the cast iron table can bring on a bad injury.

**Wear proper eye and hearing protection.** Eyes need to be protected from damage by projectiles--and no, standard eyeglasses will not do the job. Hearing protection is something every woodworker should start with, and continue. Hearing loss creeps up on you without warning, and often without symptoms, until it's too late to reverse the procedure.

**Wear short sleeves, leave the ties at the office, and junk your dangling jewelry.** Get rid of other loose fitting clothing while operating a table saw. Any of these items might get caught in the blade and yank you into it before you can react. Stand comfortably, with your feet far enough apart for good balance. This is always important, but more so when you're cutting stock long enough to require several steps towards the saw to keep the feed going. Then, you build up momentum and want to be able to stop easily. Wear footwear with non-slip soles.

**Stand comfortably, with your feet far enough apart for good balance.** This is always important, but more so when you're cutting stock long enough to require several steps towards the saw to keep the feed going. Then, you build up momentum and want to be able to stop easily. Wear footwear with non-slip soles.

**Avoid any awkward operations.** If you feel like a gawky fool doing a cut, then don't do the cut in that manner. This helps you avoid losing your balance and possibly falling into the blade or table.

**Use a push stick to cut stock that is 6" or less in width.** A hand that isn't close to a blade isn't going to get cut. Generally, a 6" minimum distance to the blade is considered safe, though some recommend 4".

**Use a stop block when you crosscut short lengths.** Mount a stop block on the fence--this can be as simple as a clamped on board that stops just before the saw blade, so that cut-off pieces cannot bind between blade and fence.

**Position your body so that it is NOT in line with the blade.** This keeps sawdust feeding back through the slot of the blade out of your face, and much more important, it keeps you out of the line of most kick-backs.

**Never reach behind or over the blade unless it has stopped turning.** Sometimes this looks safe. It almost never truly is. This does not mean you should stop pushing your work before it finishes passing through the blade, itself an invitation to kick back.

**Always disconnect the power before changing the blade or performing any other maintenance operation.** I like to drape the plug over my fence rail so I know in an instant the saw's unplugged...or not.

**Make sure that the blade has stopped turning before you adjust the table saw.** The reasons are obvious. Making adjustments can get hands too close to the blade, and even a slowly spinning blade has a multitude of sharp edges that can do damage. **Always make sure that the blade is turning free before you turn on the power: this is especially helpful after you make changes or adjustments.** In other words, spin the blade without power a time or two to make sure there are no scraps or tools touching it.

**Keep the tabletop smooth and polished.** A dirty or rough table requires you to use more force to push the stock through the blade. It may also rust like crazy, further reducing the saw's effectiveness.

**Keep the rip fence parallel to the blade so stock doesn't bind on the blade and kick back.** Some woodworkers prefer to keep the rear of the fence kicked out (away from the blade) by 1/64". I believe parallel is better, but a friend of mine, with more experience than I, keeps the back of his fence kicked out. Both work.

**Use zero clearance inserts.** These reduce the chance of slender cuts dropping into the lower part of the blade and making the round trip to speed by your head. They also reduce splintering in cuts.

**Never operate a table saw with the throat insert removed.** Wood that is fed into a gaping hole can drop down and get caught on the blade. That can't happen if the throat insert is in place.

**Do not make free-hand cuts on a table saw.** Guide the stock through the blade using the rip fence or the miter gauge.

**Keep the blade guards, splitters and anti-kickback fingers in place and operating freely.** Check the action of these items before starting work.

**Work should be released only when it is past the blade.** Releasing work too early is an invitation to kickback as it is possible for the blade to grab the part that has not yet gone by.

**Whenever the stock is lifted or tilted above the surface of the table, the saw is able to shake the stock.** If this happens, and you lose your grip, duck down and hit the stop button because losing your grip on the work means it probably is going to come back at you.

**Check stock before cutting.** Look for nails, knots, screws, or stones. Such fun items may become projectiles. If they hit, they smart, and may cause serious injury as well. Also, damage to carbide tipped blades can be major, even if all it does is scare you.

**The fence and the miter gauge are not meant to be used together.** Under some circumstances, you can use both (see above on stop blocks), but the fence then needs an auxiliary fence added. That fence or stop must end just before the saw blade.

**Don't mess with the fence adjustment when the saw is running.** And a general addition, which goes for all tools and all techniques in a wood shop: if a procedure feels unsafe, it probably is, so don't use it. Find another way to do what has to be done.

**Be aware of kick back.** Kickback is caused by one thing only: the part gets bound up allowing the blade to throw it out like sand from under a car tire. Never use the rip fence and the miter gauge at the same time when cutting through a piece. Again, the loose piece can turn and get stuck between the rip fence and blade. Lastly, you need to listen to that little voice in your head. If you don't feel safe making a cut, YOU ARE PROBABLY RIGHT and should figure out a safer way.

### **LIMITATIONS:**

**No cutting of material shorter than 10"**

**Straight cuts only**

**Angle limits from 0-45 degrees**

**Left tilt only**

**Maximum material thickness 3"**

**[Video link to table saw safety:](#)**

**<http://www.youtube.com/watch?v=jaVSsX7qPuc>**

## **LAGUNA 18" BANDSAW**

The band saw is used primarily for cutting freehand exterior curves. The diameter of the wheels and the throat distance determine the maximum width of cut. The width of the saw blade determines minimum the radius which can be cut. There is one 18" band in the BAC model shop.

### **USES:**

- Freehand cutting of curves and irregular shapes
- Crosscutting and ripping
- Re-sawing lumber

### **SAFETY TIPS:**

Keep your fingers out of the path of the blade  
Decrease the feed pressure as you approach the end of the cut  
Keep the wheel covers shut when the saw is running  
Adjust the upper guide approximately 1/4 in. above the work piece before starting the saw  
Keep the blade guard in place  
Disconnect the band saw from the power source before changing blades  
Always wear eye protection when working with the band saw  
If the blade breaks or runs off the wheels, do not open the covers until the machine has come to a complete stop  
Stop the saw before removing small chips that have become stuck in the throat  
Use push sticks when necessary to avoid placing your fingers near blade.  
Be sure the work piece stays in contact with the table at the point where the blade exits.

### **LIMITATIONS:**

**Always adjust blade guard to proper height**  
**Do not allow stock to spin**  
**Keep material flat on the table at all times**  
**Keep hands away from blade or use a push stick**  
**Do not force cut**  
**Wait for blade to stop before removing material**  
**If blade breaks turn off machine**  
**Wood and plastics only**  
**Angle limits from 0-45 degrees**  
**Height limit 16"**  
**Width limit 18"**

### **Video link to band saw safety:**

[http://www.youtube.com/watch?v=FNal\\_tcDo1g](http://www.youtube.com/watch?v=FNal_tcDo1g)

<http://www.youtube.com/watch?v=qhwFk-64IBw>

## **DEWALT SLIDING COMPOUND MITER SAW**

The compound sliding miter saw cuts by pulling a spinning blade down into material in a short controlled motion. The material is held against a fence. This provides a precise cutting angle between the blade and the longest work piece edge. The angle can be adjusted between 0 and 50 degrees. The compound feature allows the angle of the cutting blade to be adjusted in two planes. The BAC model shop has one compound miter saw.

### **USES:**

- QUICK ACCURATE CUTS UP TO 7.5" WIDE
- USE FOR WOOD AND MOST PLASTICS

### **SAFETY ISSUES & LIMITATIONS:**

- KEEP HANDS AWAY FROM SPINNING BLADE
- CLAMP WORKPIECES SHORTER THAN 8"
- DON'T FORCE CUT MATERIAL
- MAXIMUM CUTTING WIDTH 7.5"
- MAXIMUM CUTTING ANGLE 50 DEGREES

## **SCROLL SAW**

The scroll saw moves a small blade through a tilt table and is used to make curved cuts in wood and plastic. It is ideally suited for detail work and interior holes. The BEB model shop has one scroll saw.

### **USES:**

- CUTTING DETAILED CURVES IN WOOD OR PLASTIC
- CUTTING BLIND HOLES IN MATERIAL

### **SAFETY ISSUES & LIMITATIONS:**

- TABLE MAY BE TILTED FOR 45 DEGREES
- MATERIAL THICKNESS IS LIMITED TO 2"

## **GENERAL 20" THICKNESS PLANER**

The planer is used to shave the surface of wood and bring it to a desired thickness. It planes the top surface of a board parallel to the opposite side. The BEB model shop has two planers.

### **USES:**

- PLANE STOCK TO DESIRED THICKNESS
- SMOOTH ROUGH LUMBER
- PLANE SURFACES PARALLEL

### **SAFETY ISSUES & LIMITATIONS:**

- MAXIMUM CUTTING DEPTH 1/16" AND WIDTH OF 20"

- ONLY NEW SOLID LUMBER (NO MDF ETC.)
- NO USED WOOD
- NO STOCK SHORTER THAN 12"

## DELTA DJ-20 8" JOINTER

The jointer is used to machine a square or flat surface on the face of edge of material. The size of the jointer is determined by the width of the knives. The BEB model shop has one 8" jointer.

USES:

- EDGE JOINTING
- CORRECTING WARP OR TWIST IN LUMBER
- BEVELING, TAPERING

SAFETY ISSUES & LIMITATIONS:

- ALWAYS USE PUSH STICKS OR SAFETY PADDLES

WHEN FACE JOINING

- NO MATERIAL SHORTER THAN 10"
- ALWAYS USE CUTTER HEAD GUARD
- KEEP FINGER AWAY FROM CUTTER HEAD

## DELTA 12" DISC SANDER

The disc sander has a 12" diameter disc. It is used to sand outside curves and flats on wood and plastic. The table may be tilted to angle edges. The BEB model shop has two sanders.

USES:

- FREEHAND SANDING
- BEVEL, CHAMFER, AND SQUARE STOCK

SAFETY ISSUES & LIMITATIONS:

- HOLD WORK ON TABLE AT ALL TIMES
- KEEP FINGERS AWAY FROM DISC IT WILL PULL

FINGERS BETWEEN DISC AND TABLE

- SAND ON THE SIDE OF THE DISC THAT IS TRAVELING DOWN

## DELTA VERTICAL BELT SANDER

The horizontal belt sander is used to sand radiuses and flats on wood and most plastics. It has a 6" wide sanding belt.

USES:

- SHAPING WOOD AND PLASTICS
- ABLE TO SAND OUTSIDE RADIUSSES



#### SAFETY ISSUES & LIMITATIONS:

- KEEP HAIR AND LOOSE CLOTHING
- AWAY FROM SANDER

#### DELTA DRILL PRESS

The drill press is to drill accurate vertical holes in wood plastics and metal. It will accommodate a 6" shank and speed can be adjusted according to different materials. The BEB model shop has two drill presses.

#### USES:

- DRILLING HOLES IN VARIOUS MATERIALS

#### SAFETY ISSUES & LIMITATIONS:

- CLAMP SMALL PIECES

#### KEEP CLOTHING AND HAIR AWAY

- ALWAYS REMOVE KEY FROM CHUCK
- USE PROPER SPEEDS FOR BITS