

UW Physics Student Machine Shop

Standard Operating Procedures

Table Saw

Purpose

The Table Saw is only for cutting wood and some plastics. It comes in two basic types, the smaller, more portable contractors' model and the larger cabinet model. The high-end cabinet models, like our Sawstop, can make excellent cuts in the largest workpieces. The machine is designed to produce dimensionally accurate as well square and parallel cuts that repeat consistently. The basic design allows the workpiece to lay flat on a large flat surface. A square edge of the material can then slide across a long guide rail that is set parallel to the cutting line of the blade. The Guide Rail also doubles as an indexable stop to set the dimension from blade. The powerful motor and 100mph circular blade are mounted below the table, adjusting up and down to accommodate thicker and thinner material respectively.

In careful qualified hands, this machine tool is extremely effective in producing highly accurate and consistent cuts in large sheets of material in very quick set-up and run times. In careless and/or unqualified hands the table saw can be an extremely dangerous tool, sending US operators to hospital emergency rooms at the rate of over 67,000 a year or 150 a day.

Limitations

- The main limitation with this tool is the danger it presents for even a split second of careless or unqualified operation. For this reason, the UW Physics Dept Student Shop keeps the power switch padlocked in the off position. This forces would-be operators to convince the shop management or other highly-skilled Instrument Makers that they are qualified.
- The special danger of the Table Saw lies in the machine's tendency to **"Kickback"** the workpiece from the saw blade. Kickback of a workpiece can occur in several different ways. It can launch a workpiece like a projectile with tremendous force. Even worse, kickback can rotate and raise the workpiece onto the top of the blade. This happens in the blink of an eye, often taking the operator's fingers through the spinning blade.
- Kickback can be controlled in three ways: 1) Use a Riving Knife or Splitter to hold the workpiece below the top of the blade. 2) Maintain a parallel relationship between the rail and blade to avoid pinching. 3) Watch that the workpiece is not rotating upward away from the rail, riding up to top of the blade wheel.
- Always use a proper push stick.

As always, whenever you have any doubt regarding the safe operation of Student Shop equipment, find the Shop Instructor or another Instrument Maker and ask before you act.

Hazards

There are a number of particular hazards associated with the operation and use of tool, including but not limited to:

- **Kickback: Please read above sections carefully**
- Stand slightly off to one side to stay out of the likely direction of launching workpiece.
- Amputation/Mutilation: **GLOVES SHOULD NEVER BE WORN** while operating Table Saw. The blade is moving with enough speed and force to remove a small part of a hand and suck it into the inner moving parts. The glove however would likely mean the entire hand, and then arm, going with it.
- Loose long hair, clothing, jewelry, lanyards, etc should also never be worn while operating this machine for the same reason. Protect your hair and face and protect your neck.
- Make sure that all safety features are in place and are in working condition. The Riving Knife should be in place.
- Dust: Dust generation produced from the abrasive surface and machining of the workpiece may present physical and health hazards. Minimization practices may

include dust collection equipment and general housekeeping practices. Proper operation and maintenance of dust collection equipment is essential to effective dust minimization. Always sweep sawdust from the floor and nearby surfaces when work is done.

- Watch for sharp edges and burrs
- Keep work area free of clutter, dust and debris.

Required Personal Protective Equipment (PPE)

- Safety Glasses and/or Face Shield. Eye protection should be worn at all times, including when handling or changing blade as well during saw operation.
- Closed-toe, sturdy footwear. Sturdy sneakers and other such footwear is the minimum level of allowable foot protection. Proper safety shoes or boots, with steel toes, electrical protections, etc. are preferred. Extremely lightweight sneakers and all sandals and flip-flops are not safe for vertical band saws or machine shops in general.
- Hearing protection is recommended in areas which exceed 85 decibels. Higher decibel levels can cause permanent hearing loss very quickly so hearing protection is always recommended in machine shop.
- If sufficient dust is created, a particle mask or respirator is advised.
- Hair ties, hats, etc. to safely contain long hair if needed
- Sturdy, well-covering and comfortable clothing WITH NO LOOSE SLEEVES, SCARVES, etc. that could get pinched and pulled through the band saw.
- ABSOLUTELY NO GLOVES ARE TO BE WORN WHILE THE MACHINE TOOL IS RUNNING.