

# UW Physics Student Machine Shop

## Standard Operating Procedures

### Stationary Belt Sander/Disc Sander

#### Purpose

Belt and disc sanders can be equipped with a variety of abrasives and grit sizes to handle a wide variety of materials from soft woods to hardened steels. They can be used to remove material rapidly and can be used to produce a mirror finish. Using various types of fixtures, they can be used to template sand forms, to sand angles, to sand flats and to free hand contour.

#### Limitations

- Never try to rush any type of grinding or other abrasive machining operation.
- “Hold Tight, Push Light” - Let the abrasive do the work. Do not force the workpiece into the belt/disc. If force is required to remove material at a gradual steady rate, you probably are using a worn sanding belt/disc that needs to be replaced. Or, you are using the wrong material for that sanding belt/disc and/or sanding machine.
- To often, the user will expect one belt or disc to take care of all situations, but the materials to be sanded, the desired finish and the amount of material to be removed influence the selection grade of grit, abrasive material and construction. Contact suppliers of abrasive belts and discs for their recommendations on the work to be done.
- Set and watch the clearance gap between the Table and moving belt/disc. The Belt/Disc Sander will not shrink with wear like a grinding wheel does, but safety accessories may not be adjusted properly. Maximum Table gap is  $\frac{1}{8}$ ”, but best practice is minimum clearance.
- Keep the part on the table at all times when sanding for stability. Do not try to hold the freehand above the surface.
- The machine is designed to operate safely in only one direction. Never use a Belt/Disc Sander or any other sander rotating in reverse direction. Parts can become dangerous projectiles.

**As always, whenever you have any questions 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:

- Amputation/Mutilation: GLOVES SHOULD NEVER BE WORN while operating Stationary Belt/Disc Sander. The belt/disc 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.
- Treat moving sanding belts as cautiously as other cutting tools. These abrasives move with sufficient speed and force to remove careless flesh and bone in less than a second.
- Belts should be tight and tracking on center so that there are no exposed abrasive moving edges.
- Make sure that all safety features are in place and are in working condition. The Table should be set as close to the belt/disc as possible, as long as there is clearance. Never let the Tool Guard's clearance exceed the thickness of your work piece or  $\frac{1}{8}$ " , whichever is less.
- Work pieces must not be held in such a way that they can get pulled into nip points. Always keep work pieces flat on the table. Tilt the table if needed or use miter guide to maintain an angle.
- Hot Objects: Abrasive cutting causes significant heat buildup in work pieces. Allow cooling breaks and always keep work piece moving along belt/disc to distribute heat and wear.
- Projectiles: Work pieces can easily become dangerous projectiles. Always keep work pieces securely held flat on the tables. Do not freehand above the surface. Work pieces must be large enough to be held while keeping body parts away from moving abrasive.
- 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 dust from the floor and nearby surfaces when work is done.

### **Required Personal Protective Equipment (PPE)**

- Safety Glasses and/or Face Shield. Eye protection should be worn at all times.
- 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.