**Drill Press:**

The drill press is useful for drilling holes accurately. The speed can be adjusted depending on the bit being used. The table can be raised and lowered.

Be sure that bits are tightened in the chuck before drilling.

Sharp bits cut well. Dull bits cut poorly. Sharp bits are safer.

When drilling, back the bit out periodically to clear sawdust – this lets the bit cut and reduces friction and overheating.

Remember you want to *cut* the wood fibers. Drill bits cut cleanly entering the wood, but when the bit exits the wood, the fibers will be pushed out before they’re cut, leaving a jagged hole. If you want a clean exit hole, drill into a board under your workpiece.

Hole saw bits are useful for cutting large holes, but getting the round plug out of the hole saw bit can be a hassle. One useful trick is to drill partway through the piece, then flip it over and finish the cut from the other side.

The drill press *seems* less scary than some of the other machines. Three particular dangers:

1. Drilling into your hand. Duh.
2. Catching loose clothing, hair, etc and pulling you into the spinning bit.
3. If the workpiece is not well secured (especially with drilling big holes and using hole saw bits), the drill bit may catch and spin the workpiece rather than drill into it. Be sure to clamp the work piece down. Clamp in such a way that a clockwise spinning work piece will still be caught by the clamp if the clamp loosens.

**Handheld Drill:**

The handheld drill is often easier to use than the drill press for large awkward workpieces.

If you have to make repeated accurately-placed holes, consider making a drilling template to speed things up. To align holes accurately, consider stacking pieces and drilling them simultaneously, or use the first piece as a template for the others.

If a bit catches with a handheld drill, the workpiece may stand still and the drill itself may spin, trying to break your wrist in the process. Large spade bits are safer in the drill press.

**Generic Power Tool Safety for Robotics Field Builders:**

1. The tool does not know or care about you or the work. The tool’s only goal is to convert electrical to mechanical energy by spinning something very sharp very fast.
2. Your goal is to arrange the world so the tool’s mechanical energy serves to cut wood fibers, rather than hurl projectiles, yank your hair, grab your arm or carve your flesh.
3. Remember chronic injury – use hearing protection and respiratory dust protection.

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