

Class 2 ShopBot General Mechanical

Identify the Greased areas of the machine.

- Motor Gear tracks
- Top Rails
- Spindle

Identify the pinch points on the machine.

- X,Y,Z Axis travel and End points
- Drag Chain

How to power on the table

- Location of disconnect (Red Switch on Yellow background of main control box)
- Location of power plugs
 - 220v(spindle) is at back of machine center
 - 110v(motion and control) is to rear of machine right side (red and black cable)
- How the reset button works and how the Start button does not.
- E-Stop and what you should do with it.
 - How to reset after E-Stop (don't forget to push the reset button)
- Signing into the PC (Maker/Make312!)

Warming up the spindle (see document on wall)

- Start at 150 Hz (9000rpm) for 4 minutes
- Increase to 200 Hz (12000rpm) for 2 minutes
- Increase to 250 Hz (16000rpm) for 2 minutes
- Increase to 300 Hz (18000rpm) for 2 minutes
- Can use timer program on PC.

Table coordinate system (3 Axis) ; X , Y, Z (review picture on wall)

- True size of the table [115.5" / 111"](X); [61.5" / 60.5"](Y) {long # includes front of bed}
- Current corner offset is (X:8.2") (Y:1")
- Table limit switch stops
- Table hard stops

How to change a bit

- Choosing a collet, Imperial units only.
- .125(1/8)", .25(1/4)", .5(1/2)" You **cannot** use a 6mm,12mm bits in imperial collets

Using Metric bits in an imperial collet is dangerous and will damage the collet.

How to zero the position of the bit

- Understanding offsets and zeroing Axis of the table (**make sure you know where zero is**)
- Zero X,Y using limits (Using control software)
- Set offset for X and Y
- Zero Z using probe method



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- Reset Zero of X and Y (as a blind offset)
 - Discuss the set corner mounted on the main deck.

How to move the machine to specific locations.

- Use the Shopbot control software (“Shopbot3” Red Window[yellow button])
- Vacuum gate operation
- How to remove the vacuum guard
- How to turn on the Vacuum system. (Future plans) [existing issues]
- 1.25” above the surface (don’t forget your material.) max of about 3.75” above the board.
- True Max Z height is depend on the bit length and material thickness. Max movement is 5.5”

How to secure your material to the bed

- Side clearance (Can’t use full surface of spoil board)
- Screws (take it easy... Clean up if needed)
- Extra sacrifice board Use one if;
 - You know you are going to cut into the surface of the spoil board
 - You have multiple moves or material changes.
 - Use double sided tape or Blue tape and CA Glue trick
- Push Latch (use spacers/supports)

Chip load (review)

- Primary heat dissipation for bit and spindle
- Dust collection is better with bigger chips.

Spindle RPM Math: $\text{RPM}/60 = \text{Frequency to set.}$

- 8,000 RPM / 60 = 133 f
- 12,000 RPM / 60 = 200 f
- 18000 RPM / 60 = 300 f

Understanding bits (basic)

- Up cut
- Down cut
- Compression
- Reminder about imperial only.
- **Large diameter bits run at low RPMs see manufacturer for details on max RPMs**
- Replicable edges

Dry run Pirate Pumpkin (Demo)

Clean up. Leave machine in proper state for next user.