

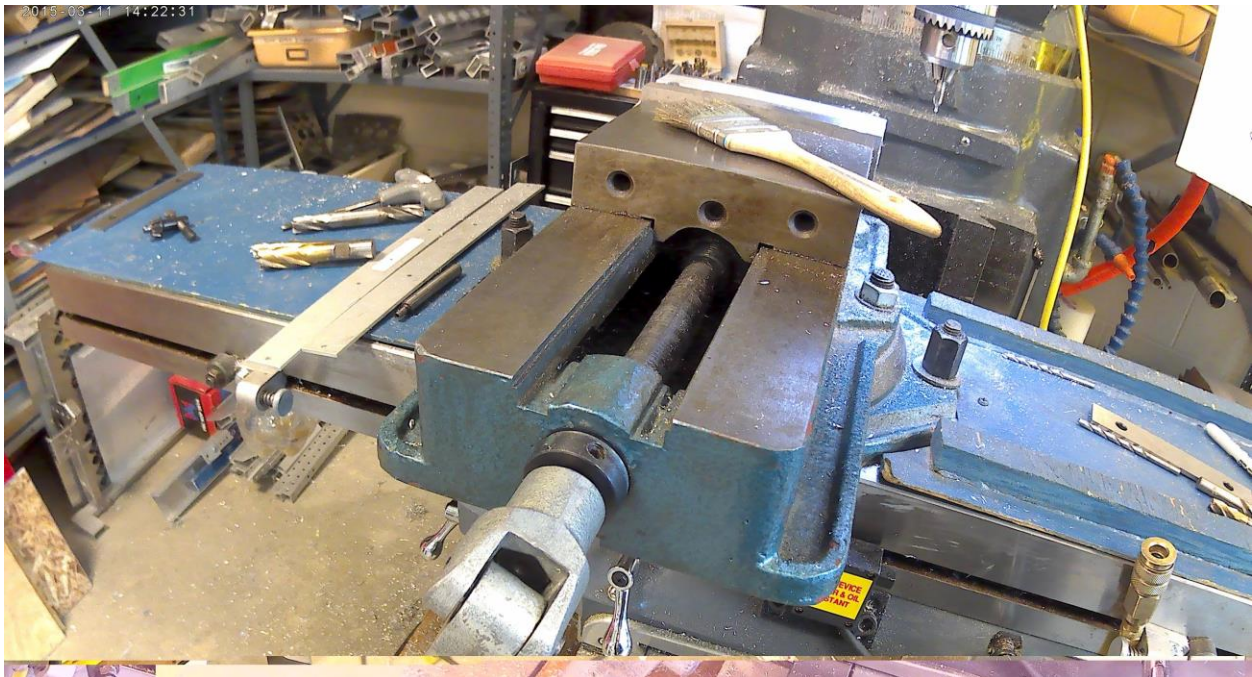
THE ATLAS VERTICAL MILL: BASIC OPERATION AND SAFETY

2015-03-11 14:20:54



By Joseph Gembacz

The Atlas vertical mill shares some similarities with the drill press, yet the mill is more precise, more powerful, and more dangerous if you're not careful. Unlike the drill press, the mill has a moving bed that moves on XYZ axes, unlike the drill press, which has a stationary bed and a moving chuck.



This is the bed of the mill, and it has a vice built in, attached with big bolts so it stays accurately in place, and you would put your workpiece into this vice, with gauge blocks under it for calibration and also to be a base for the workpiece to sit on so it doesn't tilt in the vice, and also keeps the workpiece elevated from the vice so that way the vice doesn't get all cut up. Turn the vice clockwise to clamp down on the workpiece and counterclockwise to release the piece. It's a good idea to clean the vice and

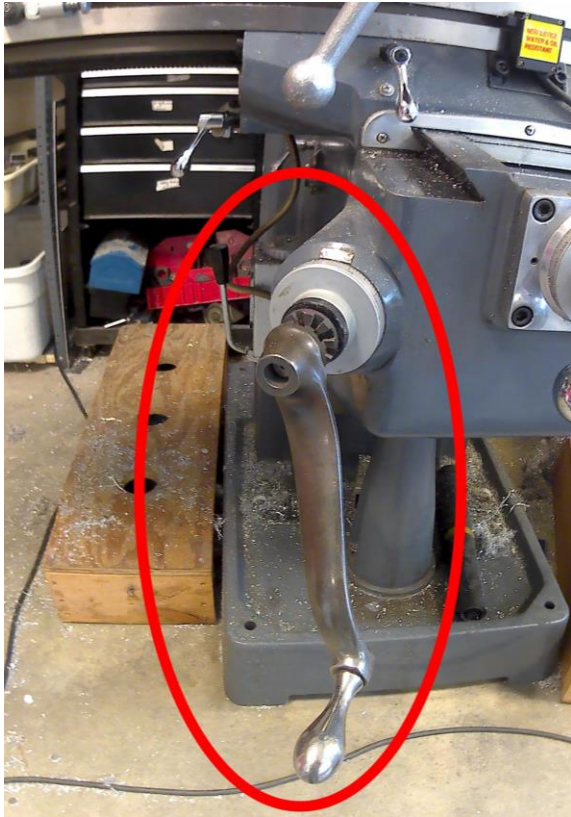
the bed out, as shavings could potentially clog up the the workings of the bed. Or could cut ya if you're not careful. The yellow hose on the bed is used to blow off any shavings. The paintbrush can be used to brush off any stubborn chips that can't be blown out.

The bed of the vertical mill has four manual cranks and one automatic crank to control movement along the XYZ axes.

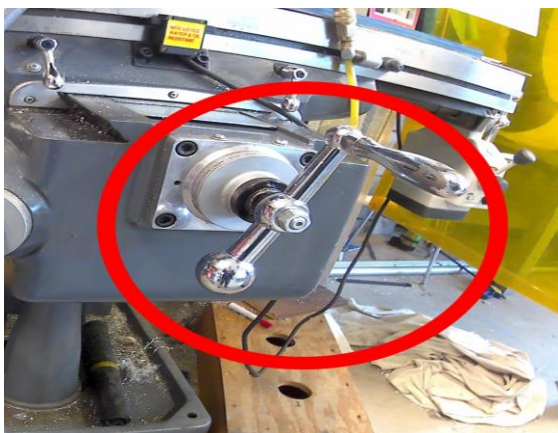


Gauge Blocks

The crank shown here controls height (Y) of the bed. Clockwise makes bed go up, counter-clockwise makes bed go down.



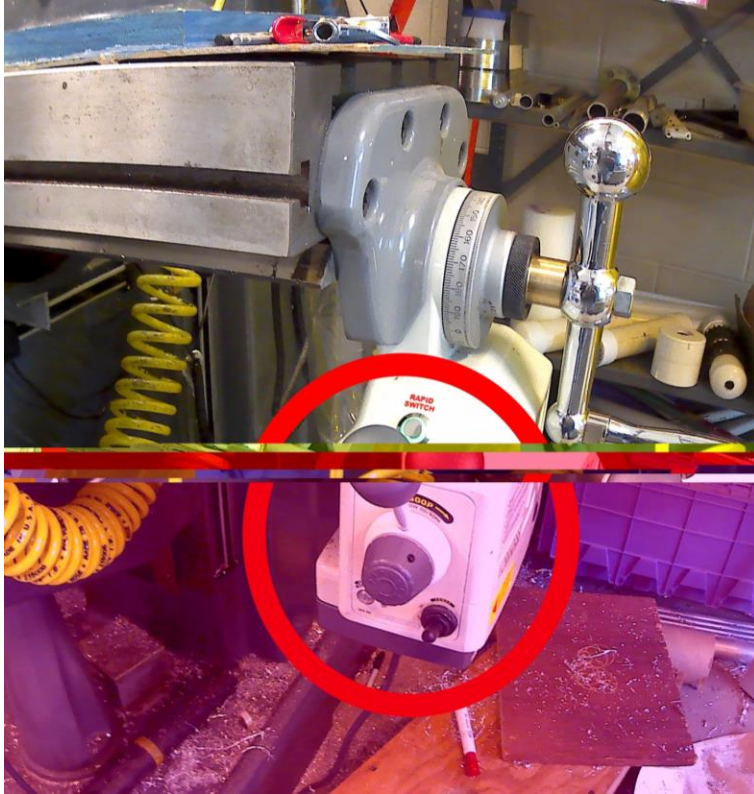
This crank controls the position (Z) of the bed. Clockwise makes bed move away, counter-clockwise makes the bed move towards you.



These cranks controls the position (X) of the bed manually. Direction depends on the side.



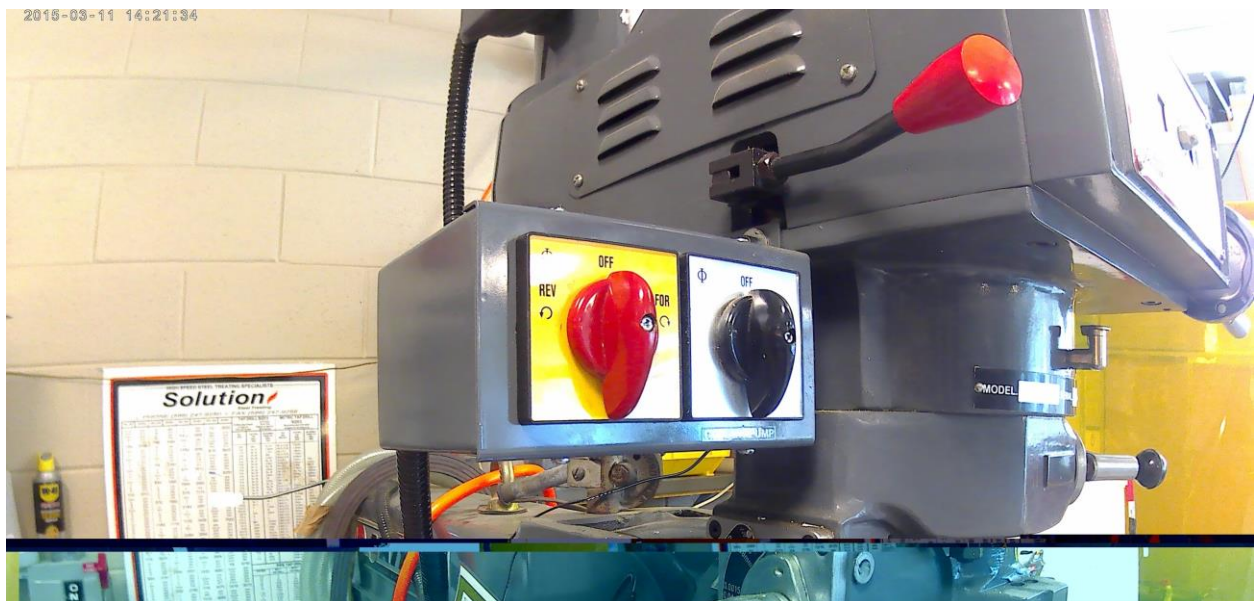
This crank controls the (X) position of the bed automatically, and the button makes the bed move faster automatically.



These readouts will tell you precisely the XYZ positions of the bed, though must be turned off when not in use to save battery, and must be zeroed once the workpiece is in position to begin cutting to be accurate in measurements. To put the workpiece in position, make it so the workpiece edge is below the edge of the cutting bit while the bit is rotating, then raise the bed until a little dinking sound can be faintly heard. Then zero the readouts.



The red knob controls direction, and the red handled lever is the brake, which is used for stopping the spindle from spinning after the red knob has been switched to “off”.



You must loosen this to put a tool/bit into the spindle.



This crank controls speed. Counter-clockwise makes the spindle spin faster, clockwise slower.



The mill has many uses, including but not limited to very precise hole drilling, making cuts into metal, plastic, and though not recommended can cut wood as well. A mill can also create slots, cut gears out, boring holes, and also machine a flat surface out. I modified a few brackets for the 2017 robot with the Atlas mill once.

When operating the vertical machine mill, be sure to wear your safety glasses, and also NEVER wear gloves, because the mill is very powerful, and if the glove gets caught on the end of the bit, your hand's going to come with it, whereas your bare hand can get cut up without gloves, but you will be fine. Also don't wear any loose clothing or hair that can possibly get caught in the machine for similar reasons, can pull you into the machine. Also, don't leave the mill running unattended, as bad things can happen if the mill is still spinning without supervision, also wears down the mill to leave it running without it being used. Be sure that the mill isn't excessively covered in metal shavings to avoid shrapnel being kicked up or just the bed to stop operating properly. Also, concentrate on what you're doing with the mill, and don't put your hands near the rotating bit, injury can occur. Also, when using the automatic (X) axis control, be sure no wires, cables, hoses, etc. are on or near any of the moving parts (unless it's being

worked on in the vise, of course.) and also be aware of others walking by, we don't want team members taking a spinning handle to the knee.

CITATION

http://www.americanmachinetools.com/how_to_use_a_milling_machine.htm

<http://electron.mit.edu/~gsteele/mirrors/www.nmis.org/EducationTraining/machineshop/mill/intro.html>

Writings on the Atlas mill