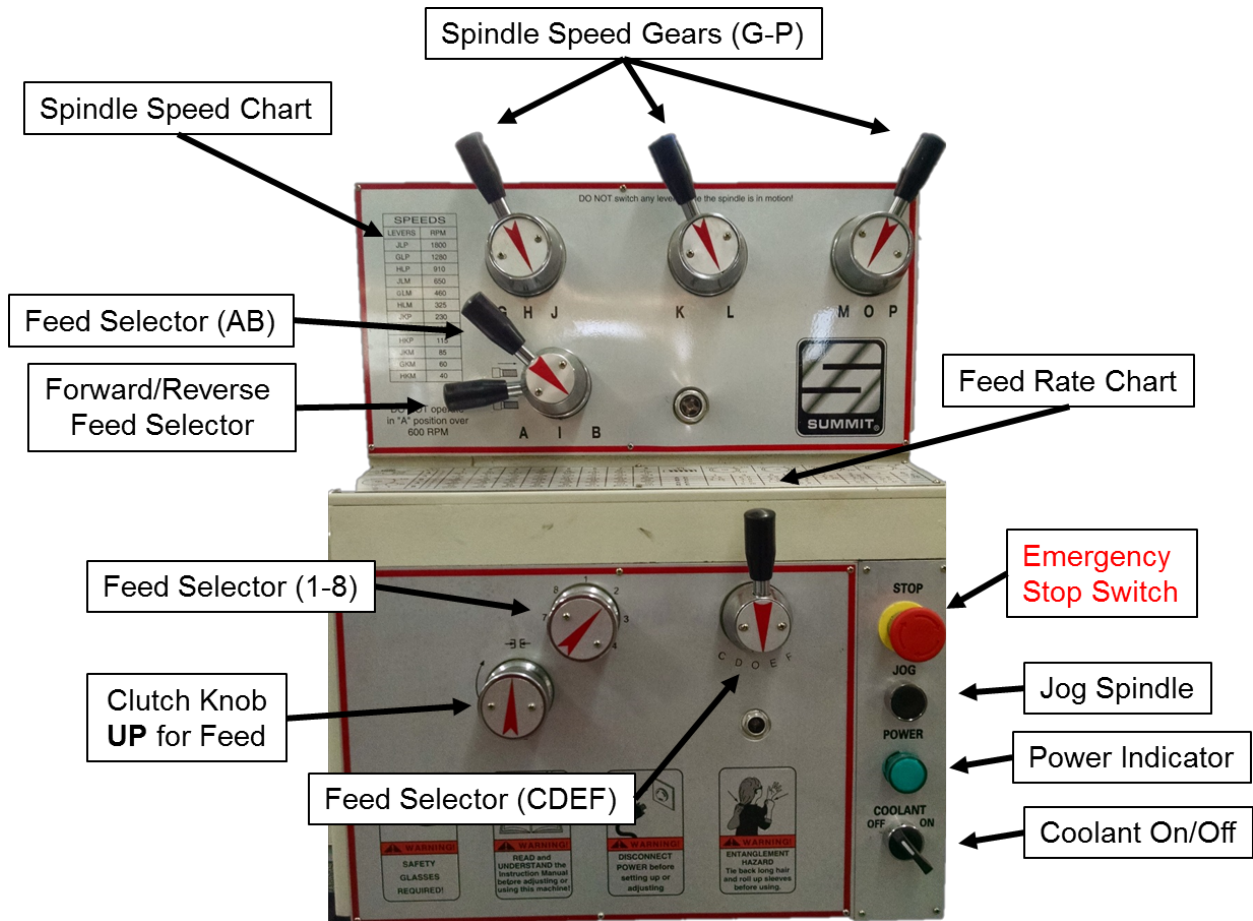
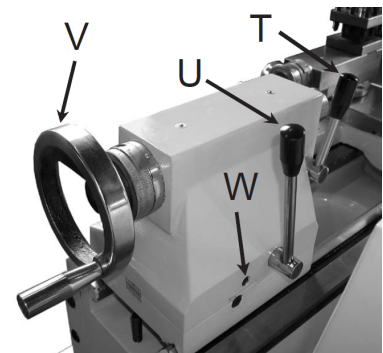
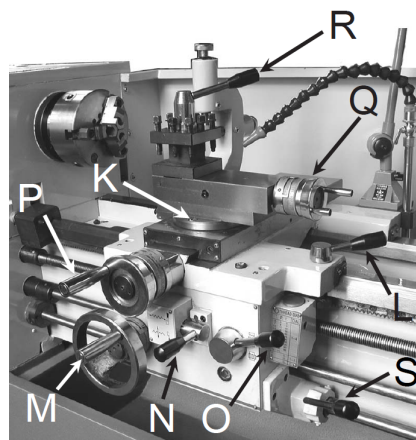


Lathe Refresher Guide

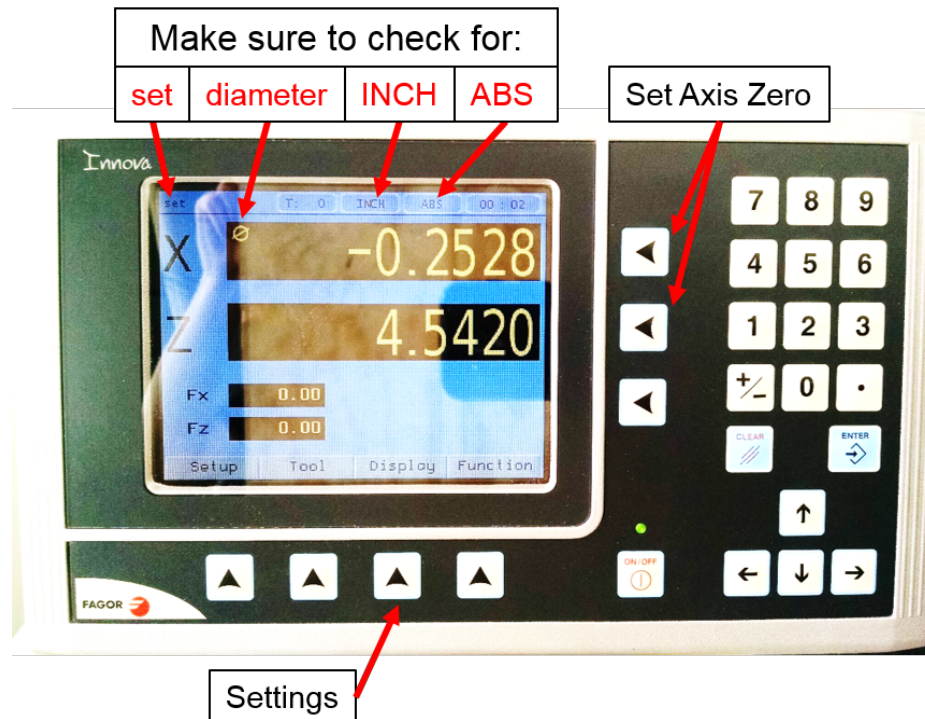
If you suspect the machine is not operating properly, contact mw-lathe@mit.edu immediately! Cell: 505-412-9433



- K - Compound Lock
- L - Carriage Lock
- M - Carriage Traverse
- N - Feed Select Carriage/Cross
- O - Half Nut Engage* (Threads)
- P - Cross Traverse
- Q - Compound Traverse
- R - Tool Post Clamping Lever
- S - Spindle Forward/Reverse**
- T - Quill Clamp
- U - Tailstock Clamp
- V - Quill Traverse
- W - Tailstock Offset*



Using the DRO



Make sure DRO is configured properly:

- “Set”, not clear.
- “INCH” (or mm depending on your preference)
- “ABS” for absolute rather than incremental units
- **Diameter** (\varnothing) not radius mode (unless you really like radius mode for some reason?)

Otherwise, hit the Display arrow to change the settings

To zero, hit the arrows next to **X** (diameter) or **Z** (axial), type the number on the keypad, and press **Enter**.

Basics

Turning on the Power

If power indicator is not on, turn on power on the left of the machine. Spindle on/off is lever (S).

Setting tool height

Put a cylindrical part in the chuck. Put a 6” rule between the part and the tool, and move the tool in enough to pin the ruler. Adjust the tool height to make the ruler vertical (top tilting slightly OUT if you can’t tell). Make sure the tool is locked when you check ruler tilt.

Zeroing

Z: take a facing cut and set zero on DRO

X: Take a radial cut, measure the diameter with calipers, and type in as the *diameter*

Feeds and Speeds

These are **MAXIMUM**. You can go slower (and that is recommended)!

Diameter	Aluminum	Brass	Plastic	Steel	Stainless
1/8"	1280	1280	1280	910	910
1/4"	1280	1280	1280	910	650
3/8"	1280	1280	1280	650	325
1/2"	910	910	910	650	325
5/8"	910	910	910	325	230
3/4"	910	910	910	325	230
7/8"	650	650	650	230	160
1"	650	650	650	230	160
2"	325	325	325	160	115

Changing the Spindle Speed

Stop the spindle. Look at the table left of the spindle, and make selections with the **Spindle Levers G-P**. If the levers are stuck - rotate the chuck by hand while putting slight pressure on the lever. A good conservative depth of cut is **0.030in** for both turning and facing.

Changing the Feed Rates

		1	2	3	4	5	6	7	8	
	A	C	4	4½	5	5½	5¾	6	6½	7
		D	.0294	.0261	.0235	.0214	.0205	.0196	.0181	.0168
	A	C	8	9	10	11	11½	12	13	14
		D	.0147	.0131	.0117	.0107	.0102	.0098	.0090	.0084
	B	C	16	18	20	22	23	24	26	28
		D	.0073	.0065	.0058	.0053	.0051	.0049	.0045	.0042
	A	E	32	36	40	44	46	48	52	56
		F	.0042	.0038	.0034	.0031	.0030	.0028	.0026	.0024
	B	E	64	72	80	88	92	96	104	112
		F	.0021	.0019	.0017	.0015	.0015	.0014	.0013	.0012

Stop the spindle. Look at the table under spindle levers (or above) for rates. The decimal numbers are *Inches Per Rotation*. The integers (and fractions) are *Threads Per Inch*. Usually you want to be using a **Coarse Feed BD** or a **Fine Feed BF**.

Turn the **clutch knob down (6 o'clock)**. Set rates with levers **AB, 1-8, CDEF**. Now turn the **clutch knob back up (12 o'clock)**. **Selection lever (N)** is up for carriage feed (moving tool leftwards), down for crossfeed (moving tool towards spinning axis).

You can change the feed direction if you like, but you shouldn't have to. That makes the autofeed move right/outwards rather than left/inwards.

Troubleshooting

Why can't I move the spindle levers? You need to slightly rotate the chuck by hand to engage gears. **Be careful! Make sure no one nearby could bump the spindle ON lever!**

Why can't I move the feed gear levers? You need to slightly rotate the feed rod or lead screw by hand to engage them. They are the top rod (threaded) and middle rod (unthreaded) under the carriage.

Why doesn't the carriage (Z) autofeed work? Check that the **clutch knob is UP (12 o'clock)**. Otherwise, you are out of gear on either **Feed Direction, AB, CDEF, or 1-8**.

Why doesn't the cross (X) autofeed work? You are in **C or E**. Those settings are for threading only, so the crossfeed is disengaged. Please don't use C/E unless you are threading, it prematurely wears the lathe.

How do I select my feed rate and spindle speed? These are a function of your operation, part size, and material. You can calculate these yourself and/or look up recommended values online or in the Machinery Handbook. A good rule of thumb is **BD for coarse, BF for fine** and a depth of cut of **0.030"**

Contact the on-duty Mentor with anything you're not sure about! It is their job to answer your questions!