

PM 1236 Lathe

Basic Setup, Operation and Maintenance Information

Congratulations on owning a PM 1236 lathe. Here's a practical guide for basic setup, setting the controls and basic maintenance.

IMPORTANT: IMPORTANT: IMPORTANT:

Outlined here are the basic procedures to setup, manipulate the controls and maintain the lathe. The reader and/or operator must have prior knowledge of safety procedures and machine operating skills.

NOTE: Safety is your responsibility.

NOTE: This instructional primer does not cover personal and general shop safety procedures or rigging/lifting techniques.

NOTE: Moving and operating equipment such as this can cause serious, deforming injuries, blindness or death.

NOTE: If you do not know about safety procedures such as how to properly lift/transport heavy machinery or, how to use industrial equipment, get the appropriate help and instruction before setting up or operating this equipment.

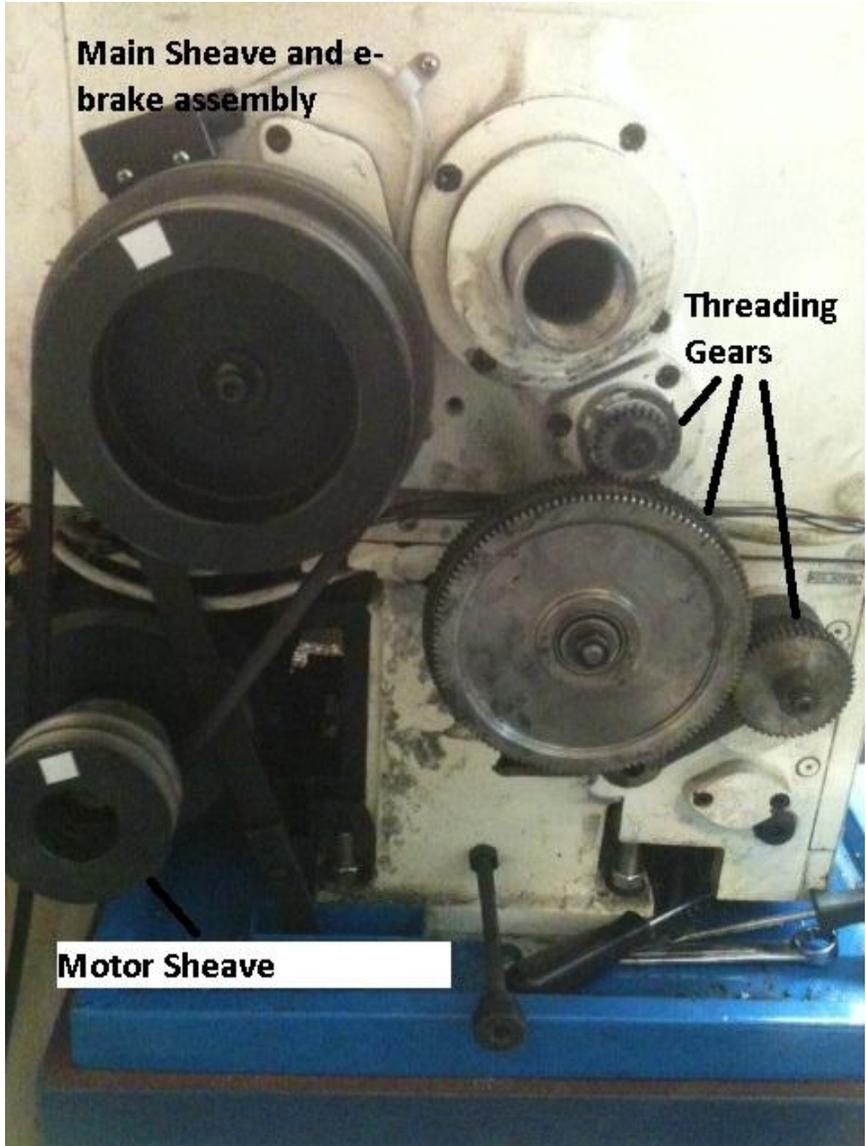
Lifting and Setting Up the Bench:

Lifting the unit is done with an appropriate strap wrapped around the bed only. Make sure the strap is not pressing on the feedrod or ACME leadscrew. Removing the tailstock is advised. The unit and bench weigh approximately 1250lbs.



- The bench that comes with the unit is simple and effective. Two pedestal boxes, a drip pan, a foot brake and an actuating rod (i.e. op-rod)

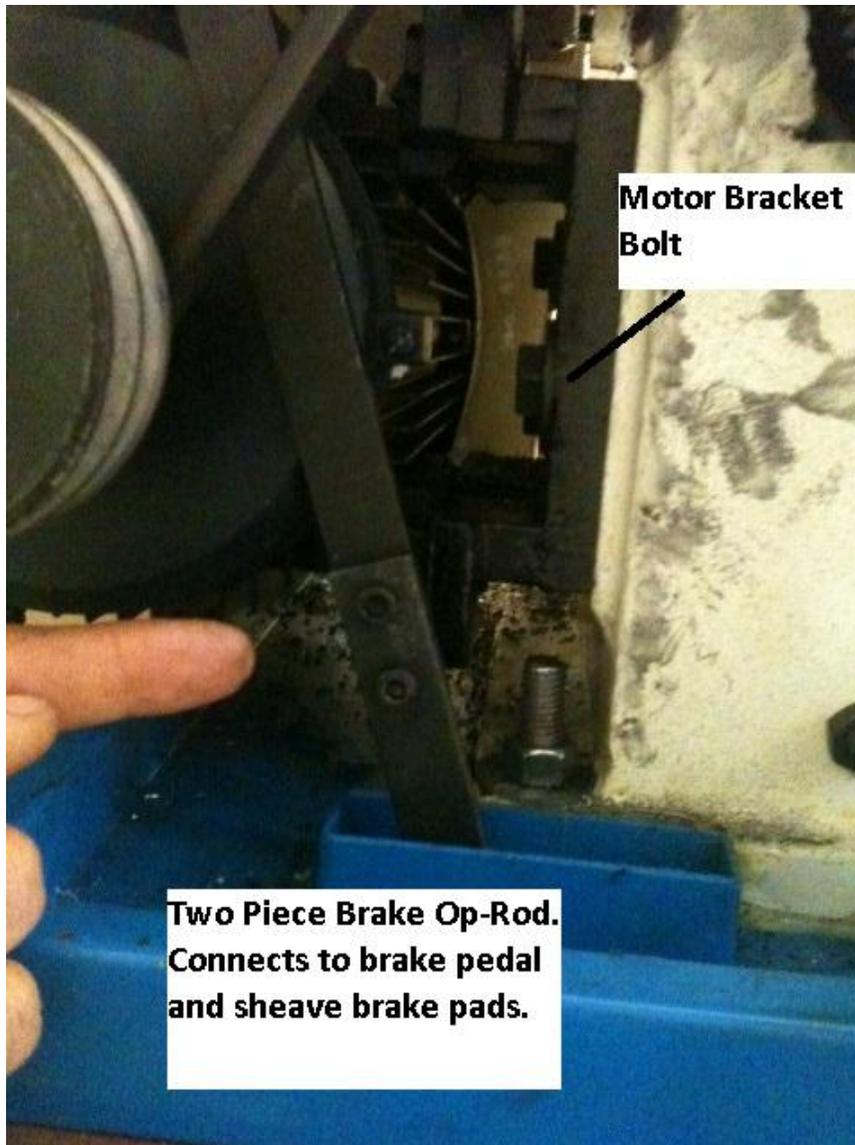
- The smaller pedestal goes under the tailstock area with the storage door in the rear. The storage area is intended to contain the optional coolant reservoir.
- Set the boxes down into position, put the drip pan on the boxes and install the brake pedal between the holes at the lower front end of the two benches. An op-rod is connected between the foot brake and the main sheave braking mechanism. This will be connected at a later time.
- (TIP: Apply a generous amount of silicone sealer on the drop pan and/or the top surface of each pedestal. This will help seal things if you run coolant.)
- Position the lathe above the bench (applying sealer to the bed feet is a good idea) line-up the bolts and start them by several threads. Maneuvering the lathe into position is tricky... -to be expected... It's a heavy piece of machinery. Tighten the 6 hold-down bolts when the lathe is seated on the pedestals.
- If you purchased the bench, the unit comes with a drum brake mechanism located inside the main sheave in the exposed area of the gearbox. There are two brake pads inside that sheave which are operated by a lever connected to the bench foot brake. Connect the operating rod between the foot brake and the sheave brake and attach with two allen screws.



Main Sheave and e-brake assembly

Threading Gears

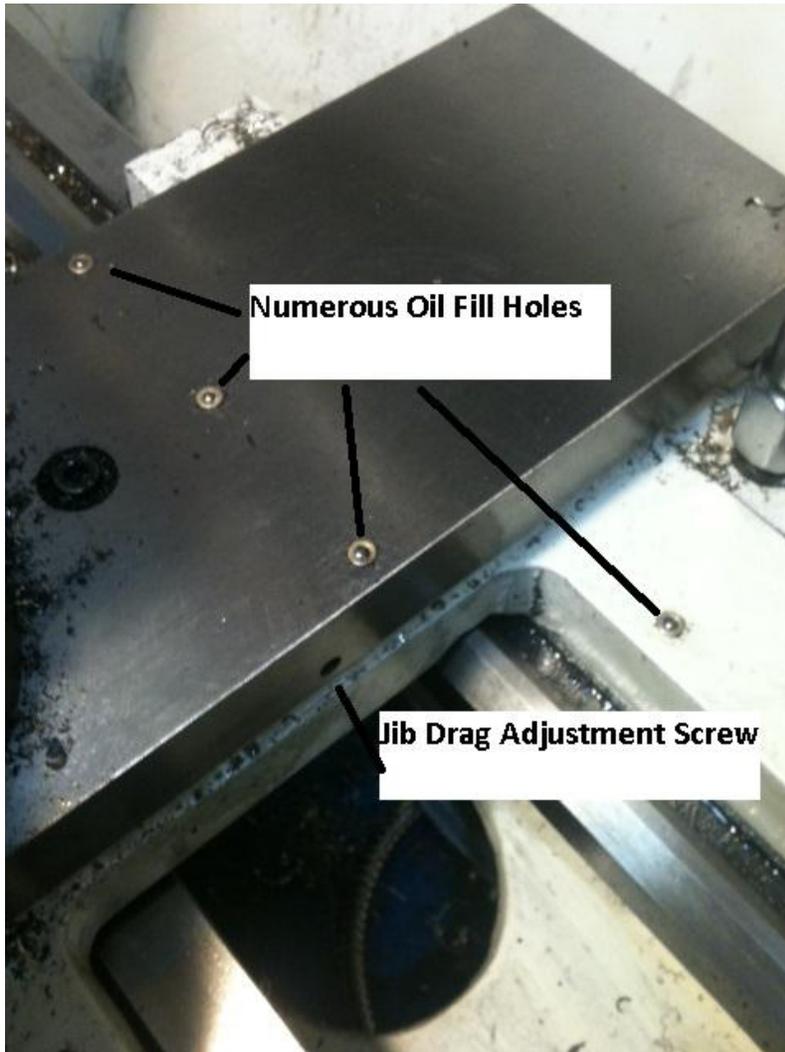
Motor Sheave



Initial Cleaning, Lubricating and Related Maintenance.

- Before operation, the lathe must be cleaned of all cosmoline (i.e. storage grease). WD-40 or other light solvents work well for this.
- Lubricate the ways, lead and feed screws with Way oil.
- There are numerous "oil-BB fill buttons" on the carriage, crossfeed, compound and tailstock. Insert the pointy tip of a high pressure oil can and squirt way oil until it seeps out of the various passages.
- Adjust the cross-feed gib drag for an even but not loose or excessive drag.

- Also note, the compound also has a jib drag adjustment screw on it's left side.

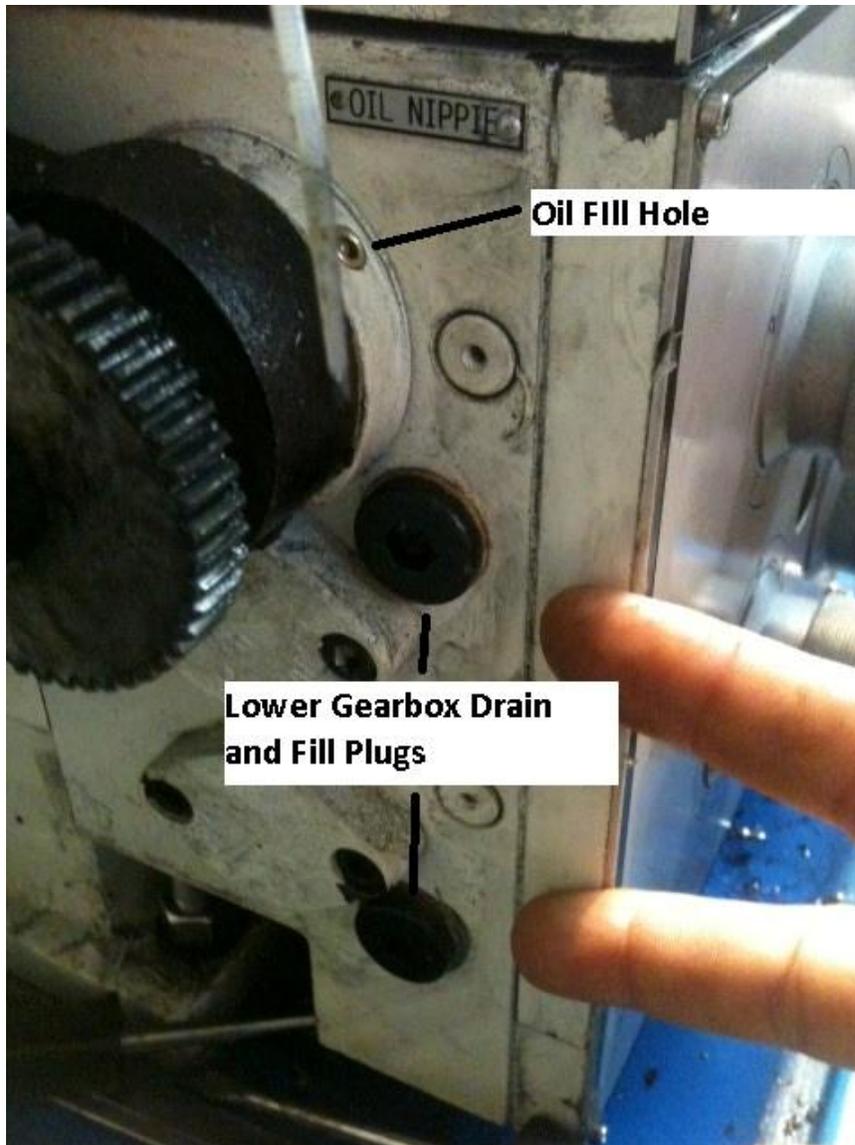


- At the ends of the leadscrew and feed rod are oil BB fill caps. There is also one in the exposed side of the gear box. Pump with oil until an excess amount begins to leak.





- Gearbox lube and apron lube sight glasses should show the mid-level fill position. ISO/AW 100 hydraulic oil is recommended. ISO 68 is suitable for very cold operating conditions.
- All gearbox oils should be replaced after the initial 20 hours of operation with maintenance intervals of approximately 500-700 operating hours (typically once per year under average use). The top gearbox cover is easily removed with 6 screws for easy draining and refilling of fluids. The lower gearbox (which is a separate reservoir) has drain and fill plugs.



Electrical:

- The power cord must be attached with a 220V, 3 prong plug. One of the prongs is perpendicular to the other. This is commonly called a "Air Conditioner" style plug. Power requirements are 220V, with either a 15 or 20 Amp circuit breaker. NOTE: Do not operate the lathe until it's been cleaned and properly setup.

Installing the 6", 3 jawchuck:

- To install the 3 jaw chuck, start by putting a piece of wood on the ways below the spindle area. This is to protect both your fingers and the ways.

- The spindle is a D1-4. Align the holes and insert the chuck into the spindle.

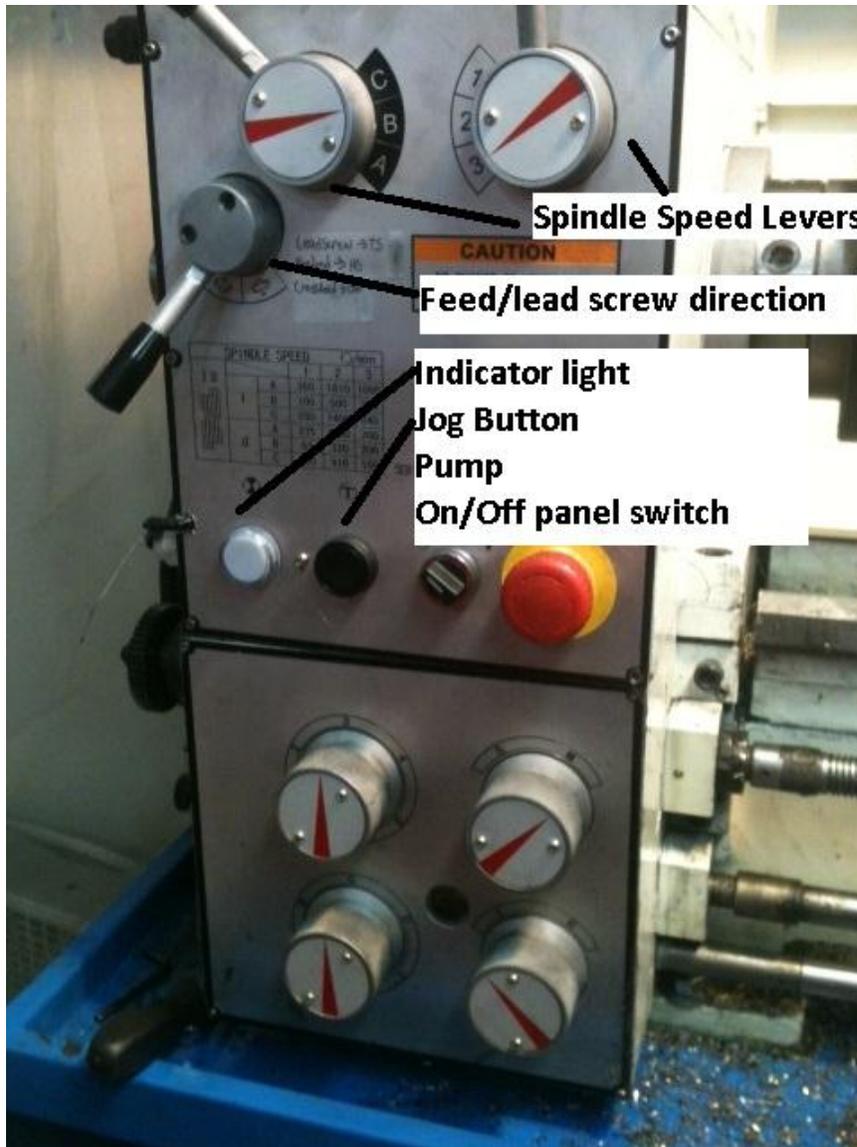


- Tighten the D1-4 cams. Each cam turns about 2/3 revolution to tighten. First, lightly tighten each cam making sure the spindle face is flush. Snug each cam down firmly. (NOTE: adjustment to the backplate is sometimes needed as, backplates are not custom fitted at the factory. This is covered in other areas of this instructional guide).
- Removal is the opposite of installation. When the cam is completely loose, you will hear a click. NOTE: New chucks are sometimes on pretty tight. Once the cams are loose, tap the chuck with a wood block and hammer. Be prepared to catch it and always have a piece of wood to protect the ways.

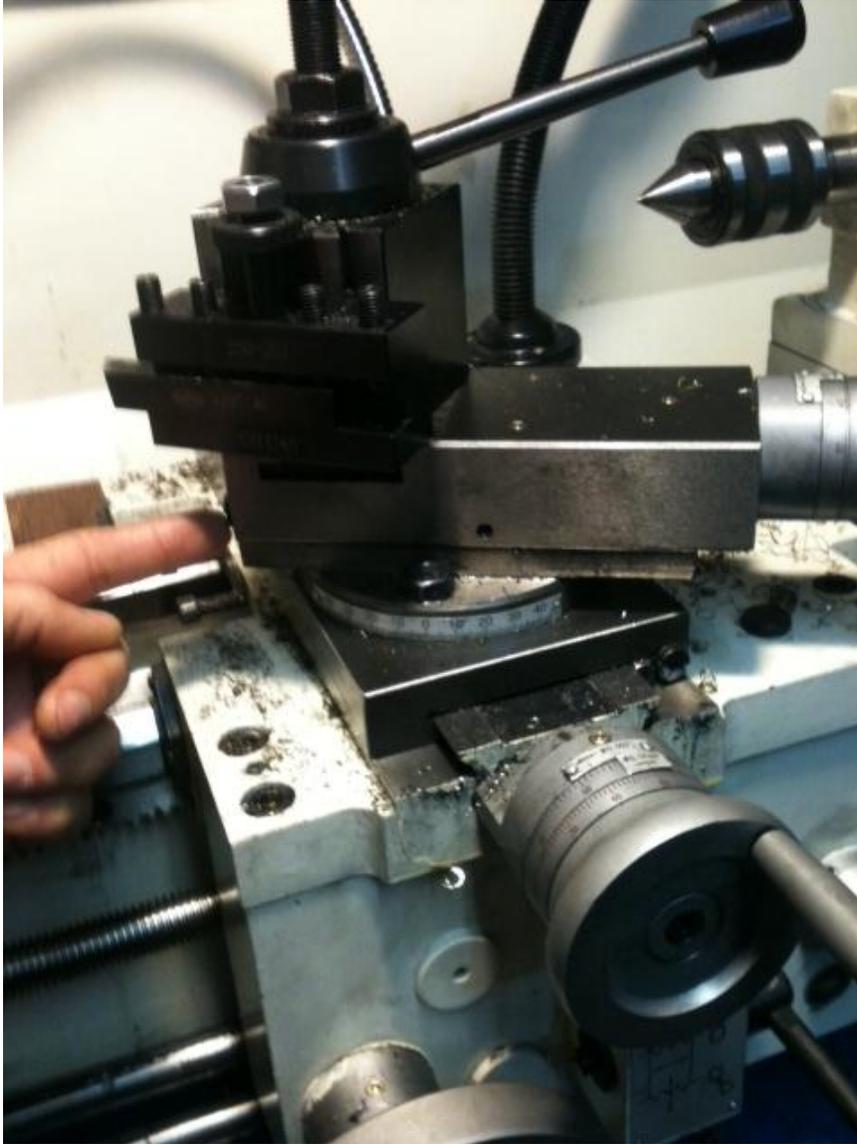


Preparing to run and normal start/stop/reset.

- General front-panel layout:



- Install the 6" chuck with the jaws mostly closed.
- Move the carriage a safe distance from the headstock and place the compound at a central position as shown.



- The operating rod on the apron must be in the middle position. Pressing down is forward, up is reverse, middle is neutral/off.



480x640 129kb JPEG

- For the unit to operate, the side cover must be installed. There's a proximity switch to ensure this.
- The brake pedal must not be depressed. Pressing the brake pedal operates a kill switch and continued pressure on the brake applies the mechanical braking action. On a newly installed system, the brake switch may need adjustment.
- The Red panel switch must be pulled out.
- The crossfeed and carriage feed operating lever must be in the neutral position



- The halfnut/leadscrew lever must be open in the Up position.



- Place the spindle speed levers in a low-speed setting (B-1) as show with the following settings. NOTE: If a dial or lever will not engage, manually spin the chuck lightly by hand to shift the gear position while attempting to operate the dial or lever.
- NOTE: Never change gear settings with the motor running. The gears are not synchro-mesh. The gears will always require pre-alignment as they are flat-tooth gears for maximum power transmission. They will not “break-in” over time and become easy to shift.



- The feed rod and thread rod rotation selector can be in either position and the corresponding dials on the lower part of the gearbox can be in any position.
- The feed/thread rod rotation selector also has a center neutral position. When placed in this intermediate location, neither the feedrod or leadscrew will be driven.



- With all the above criteria met, it is safe to start the lathe. Verify safe positioning of all controls and that the chuck jaws are in a safely closed position then, move the operating rod to the down position. The lathe will now turn forward in its slowest setting.
- To shut the lathe off, return the op-rod to neutral OR, press the Red stop button OR, press the emergency brake.
- Verify that the carriage and/or crossfeed are not automatically progressing. If so, stop the unit and verify all the settings listed above.

- To restart the lathe, the op-rod must return to neutral, pressure relieved from the emergency brake and the red button pulled out.

Initial Break-in Procedure:

- The main motor sheaves support a high and low ratio (SHOW PICS). It does not matter which ratio is selected for initial breakin.
- On the gearbox faceplate, notice the spindle speed matrix with A1, A2, A3; B1, B2, B3... It is split into two sections for Speed Ratio 1 and 2 corresponding to the two steps on the motor sheave/belts.



- Using the top two spindle speed levers, run the lathe at increasing values (B1, C1, B3, A1...) and proceed through the speeds lowest to highest. If there is no excessive noise or vibration, run at each speed for 1 minute. NOTE: The lathe must be stopped before changing gears.
- If the machine starts to vibrate excessively or make unexpected noise stop the machine and see the trouble shooting area.

Auto Feed and feedrod/leadscrew Direction.

- See the picture below for the feed/lead direction selector and read the little cheater notes. When the lever is in the right-side position (as shown) and the op-rod is pushed down (lathe in forward rotation) the cryptic notes remind you that:
 1. "When the leadscrew is engaged with the halfnut, the carriage will move toward the tailstock" and
 2. "If the feedscrew is selected with it's corresponding lever on the apron, the carriage will move toward the headstock" and,
 3. "if the crossfeed is selected with it's corresponding lever on the apron, the crossfeed will move out (toward you)".
- If you change the feed/lead direction lever to the left side, the above cheat-sheet notes are reversed.
- If you change the rotation of the motor by changing the op-rod position to up (reversing the motor), the above notes will be reversed.
- NOTE: It is not mechanically possible to engage the leadscrew and feed rod simultaneously.
- NOTE: It is not mechanically possible to engage the carriage travel and the crossfeed simultaneously.



The feed selector dials:

See the picture below. Here's a description of each knob.

- M and S specifies either/or the leadscrew (M) or feedrod (S).
- NOTE: Only use the ACME leadscrew in combination with the halfnut lever when you intend to cut threads. If you're just removing stock from a workpiece, spare the leadscrew of unnecessary wear & tear and use the feedrod (S).

- The I and II is a speed doubler. Switching from I to II will double the current RPM rate of the selected rod (i.e. either leadscrew or feedrod).
- Alpha A-E in combination with numerics 1-5 set the base speeds of either the leadscrew or feed rod. The values you select are taken from the graph on the cover of the side-gear assembly. This will be discussed later.



480x640 128kb JPEG

- NOTE: Caution is advised when you're first testing this... It's perfectly fine to experiment but it's wise to run the motor speed at a low RPM at. If you engage the carriage or crossfeed and have these speed dials set to a rapid rate, well, the carriage or crossfeed will move rapidly... And you could crash the lathe before you press the stop or emergency brake. Starting out with motor RPMs under 700 is a safe bet and give you plenty of reaction time.
- NOTE: Never let any auto-feed mechanism drive the carriage or crossfeed into or beyond it's maximum range. That is, do not let the carriage ram the gearbox or tailstock end of bed. Never let the crossfeed retract to the point of no more travel.

Changing Side Gears, Threading and Feed Rates.

INCLUDE MATT'S DOC HERE...