

# Harrison M250 Metal Lathe Induction

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## Pre-Induction Study:

Before the induction, watch the first 5 videos (apx 35 minutes): [BlondieHacks Lathe Skills](#) on youtube. We can highly recommend the whole series for those new to lathe work.

## Initial safety

1. Check dangling clothing and jewellery: No loose clothing (eg, sleeves, untucked shirt, tie), check for rings, watches, remove hand and wrist Jewellery. Only thin nitrile/ surgical gloves permitted (that will tear if caught and not entrain hand).
2. Tie back long hair.
3. Point out E-Stop location, wall power switch for rotary transformer and isolator.
4. Eye protection must be worn when the lathe is on.
5. Check the area is safe before starting.
6. Chuck key - NEVER leave the chuck key in the chuck. The spring on the chuck key is there to prevent you leaving it in the chuck. (Do not remove it.)
7. Hand operations are very dangerous, do not do them! Eg emery cloth, files, sandpaper. There is a risk that you will get tangled up in it. The metal lathe will not stop if you are tangled.
8. Watch out for flying debris! Use both eye protection. If necessary adjust settings to reduce cut speed / power to reduce debris.
9. Safety is everyone's responsibility: If other people are too close to the lathe or acting in a way which elevates risk around the machine, please stop the machine and discuss this with them.
10. Safety is everyone's responsibility: if other people are using the lathe in a dangerous way, please ask them to stop the machine and politely discuss this with them.
11. Consider using barrier cream - why
12. Do not eat/drink whilst machining. No alcohol or drugs before machining.

## Introduction to the main components of the lathe

Point out the main lathe components and demonstrate their function:

- A. Chuck - (explain 3 jaw and 4 jaw) - warning about sticking out stock "whipping".
- B. Headstock / Gearbox.
- C. Tailstock - support / drill.
- D. Principle of cutting - Carriage, Cross slide.
- E. Toolpost, tool and tool holder.
- F. Main controls: Start / stop / changing gear - speed controls
- G. Auto feed - Feed engage lever

## Visual Checks Before Starting Work

- General visual inspection of the machine, is everything in the right place and in good condition.
- Check the chuck and sides are secure and correctly fastened.
- Electricals - anything burny or not insulated.
- All Guards in place.
- When the machine is on, listen, does it sound healthy?
- A tidy shop is a safe shop: ensuring all accessories are tidy and out of the way.
- Do not start lathe if you have any doubts about its condition. Put a sign on the lathe. Report any issues to the forum, ask for help from trained inductors and experienced members.

Ask if there are any questions?

## Demonstration of a test cut

Demonstrate a single cut using the power feed. Setup a cutting tool in the tool post before starting.

1. Mount the stock in the chuck - nice and secure. Caution about leaving the chuck key in the chuck.
2. Which tool for basic cut - use cheap insert tools.(HSS also an option).
3. How to position the tool - height and angle. (Use the tail stock for beginners.)
4. Set the spindle speed and direction- (use basic lathework page 92 the manual for speeds and feeds). Set letters with outer knob, then numbers with lever, you will need to rotate the chuck by hand to engage the gear. Put the gearbox in the wrong gear - correct with the lathe turned off.
5. Check feed disengaged both auto feed and thread cut lever is down, and xy knob is in for sideways and out for cross slide.
6. Demo Start lathe and Stop lathe with stop button. A demo / practice test press of the e stop and reset (useful for each induc.)
7. Touchoff.
8. Set cut depth (be conservative 0.2mm(on diameter to start 0.2-0.4mm is workable) standard take your time, feel the pressure) explain backlash wind in.
9. Cutting fluid.
10. Engage feed.
11. Disengage feed at end of cut. Be ready to hit the auto-stop.
12. Stop. Then repeat a few times until comfortable.
13. Remove the swarf - Only when Lathe is stationary With a tool - swarf pliers, not by hand.

Ask if there are any questions?

Each inductee to follow through these steps after your demo - Keep your hand near the e-stop when watching others make a cut.

## Maintenance

\*\* We need to make a video that explains how to do this \*\*

Users need to do maintenance, daily/every time they use the machine - Check Levels and Oil the machine daily (you can't really over oil a lathe. )

If there are any funny sounds/sights/smells - **stop**. Report on the forum and put a sign on the machine - prevent small problems becoming big ones.

If there is any doubt, ask.

## Advanced components

Brief discussion of more "advanced" lathe components:

- Tailstock for extra support and drilling
- Feed settings for thread pitches
- Thread engage lever.
- Automatic cross-feed.
- 4 jaw chucks
- Cooling (Needs some maintenance.)

## Finishing up

Always leave the machine clean and safe.

- Turn off the lathe at the left end.
- Turn off rotary transformer. Isolate the power supply.
- Replace the isolation padlock.
- Clean the machine. All swarf and chips. Post use clean up - leave the machine in a better state than you found it.
- Clean swarf tray.
- Clean floor around machine esp oil spills emergency spill kit on corner of bench.
- Replace dust covers.
- Report any issues, anomalies or breakages to the forum.

## For further information

Next steps after induction - please continue to learn more about the use of the lathe, here are a couple of resources:

BlondieHacks Lathe Skills playlist on youtube - 28 videos starting at the very basics:

<https://www.youtube.com/watch?v=H6Dnmd3IDzA&list=PLY67-4BrEae9Ad91LPRIhcLJM9fO-HJyN>

If you prefer books:

*Basic Lathework: No. 45* by Stan Bray (2010) from the Workshop Practice series. A copy is in the workshop next to the lathe.

*Lathework: A Complete Course: No. 34* by Harold Hall (2003) from the Workshop Practice series.

/induction ends