SAFETY OPERATING PROCEDURES

CNC Lathe – Baxter Entrepreneur

DO NOT use this CNC lathe unless you received training by a certified instructor and you have permission to use the equipment.

- Safety glasses must be worn at all times in work areas.
- Sturdy footwear must be worn at all times in work areas.
- Rings and jewellery must not be worn.
- Gloves must not be worn when operating the machine.
- Long and loose hair must be contained.
- Close fitting/protective clothing must be worn.
- Hearing protection may be required for some operations.
- Cell phones must be turned off at all times in the machine shop.

IT IS EXPECTED THAT THESE PROCEDURES BE FOLLOWED AND MAINTAINED IN ALL INSTANCES. Should an incident occur it is imperative it is reported to your instructor or phone 9-911. Please leave all as it is so a review can take place.

PRE-OPERATIONAL SAFETY CHECKS
1. Ensure no slip/trip hazards are present in workspaces and walkways.
2. Keep the machine and work area neat, clean and orderly.
3. **Ensure you know how to stop the machine before you start it.**
4. Ensure the door of the machine is closed when operating the machine.
5. Wear rubber gloves when working with coolant.
6. Do not operate the machine in excess of its rated capacity.
7. Do not wear rings, watches, ties or loose sleeved clothing. Hair must be tucked in.
8. **Stop the machine immediately if anything unexpected happens.**
9. Do not interchange chucks or other spindle mounting items without checking for correct locking.
10. Do not use other workholding devices without checking for compatibility with the instructor.

OPERATING HAZARDS

**Metal Cutting Fluids**
Cancer of the skin may be produced by continuous contact with oil; particularly with straight cutting oils, but also with soluble oils. The following precautions should be taken:
1. Avoid unnecessary contact with oil.
2. Wear protective clothing.
3. Use protective shields and guards.
4. Do not wear oil soaked or contaminated clothing.
5. After work thoroughly wash all parts of the body that have come into contact with oils.
6. Avoid mixing different types of oils.
7. Change oils regularly.
8. Dispose oils correctly.

This SOP does not necessarily cover all possible hazards associated with the machine and should be used in conjunction with other references. It is designed to be used as an adjunct to teaching Safety Procedures and to act as a reminder to users prior to machine use.

Safety Operation of Lathe Chucks

Where details of operating speeds and of maximum recommended operating speeds are supplied these are intended only as a guide. Such details must be regarded as for general guidance only for the following reasons:

1. They apply only to chucks in sound condition.
2. If a chuck has sustained damage, high speeds may be dangerous. This applies particularly to chucks with grey cast iron bodies wherein fractures may occur.
3. The gripping power required for any given application is not known in advance.
4. The actual ripping power being used for any given application is not known by the chuck manufacturer.
5. Never attempt to remove chips by hand, use a chip hook or a brush.

6. Try to eliminate long, stringy chips when machining as they can be easily caught up in the chuck, always exercise proper chip control.
7. Know the machine speeds and feeds, if you are unsure ask your instructor.
8. Make sure the cutting tools are used properly and for their intended application.
9. Never use compressed air to clean the lathe, as small particles may become embedded into parts of the machine causing damage, use a soft bristle brush.
10. Review the CNC program thoroughly paying attention to tool requirements and any messages which may appear in the program.
11. Do a dry run to make sure all tools are clearing obstacles e.g. tailstock and chuck, within the workrange of the machine and execute a run in single block.
12. Install all necessary tools in turret as indicated on the set up sheet and dictated by the program.
13. Ensure the correct inserts are used and inspected prior to their use.
14. Make sure the machine is parked in home position before you start the program.

There is the possibility of the workpiece becoming insecurely gripping due to the influence of centrifical force under certain conditions. The factors involved include:

a) Too high a speed for a particular application.
b) Weight and type of gripping jaws if non-standard.
c) Radius at which gripping jaws are operating.
d) Condition of chuck – inadequate lubrication.
e) State of balance.
f) The gripping force applied to the workpiece in the static condition.
g) Magnitude of the cutting forces involved.
h) Whether the workpiece is gripping externally or internally.

Careful attention must be paid to these factors. As they vary with each particular application, a manufacturer cannot provide specific figures for general use, the factors involved being outside his control.

9. Wear protective clothing.
10. Use protective shields and guards.
11. Do not wear oil soaked or contaminated clothing.
12. After work thoroughly wash all parts of the body that have come into contact with oils.
13. Avoid mixing different types of oils.
15. Dispose oils correctly.
HOUSEKEEPING
1. Switch off the main power switch on the lathe and reset all guards to a fully closed position.
2. Leave the machine in a safe, clean and tidy state.

FORBIDDEN
■ Cell Phones must be turned off at all times in the machine shop.

Figure 1 – Baxter Entrepreneur CNC Lathe
General principles concerning operator safety for CNC lathes

1. Do not grip a workpiece with grease or oil on it.
   Grip all workpieces firmly.
   Do not attempt to hold workpieces that are too awkward or too difficult to hold.
   Do not hold workpieces that are too heavy for the machine.
   Know how to hold workpieces properly when lifting.

2. Be sure to clean oil or grease from hand tools, levers and handles.
   Be sure there is enough texture on the surface of the hand tool or lever handle for proper safe hand contact.

3. Grip hand tools and lever handles firmly.
   Always choose the proper hand tool and appropriate grip position on the lever handle.
   Do not use hand tools or lever handles in an awkward position.
   Do not apply excessive force.

4. Always use the recommended gripping position to grasp hand tools and lever handles.

5. Do not use broken, chipped or defective tools.

6. Be sure the workpiece cannot move in the chuck or other holding device.


8. Beware of large burrs on workpieces.

9. Always select the correct tool for the job.

10. Do not run the machine unattended.

11. Do not use tools without handles.

12. Always support the workpiece as necessary using chucks, steadies and centres.

13. Correctly locate tool in socket heads and screw slots.

14. Beware of obstructions that prevent complete tightening of screws – ensure screw is tight.

15. Do not rush work.

16. Never substitute the wrong size tools if the correct sized tool is not available or cannot be located in the shop.

17. Do not move guards while lathe is under power.
18. Do not place hand or body in path of moving objects.

   Beware of moving lathe parts that can fall.

19. Beware of accidentally moving levers, clutches (when applicable) or turning the power on.

20. Know the function of each and every control.

21. Make sure the power has been turned off when the lathe is unused for sometime.

22. Always check the chuck area for loose items.

23. Do not allow distractions to interfere with lathe operations.

   Do not operate a lathe whilst talking.

24. Beware of lathe dangers when attending to other aspects of lathe operation. e.g. Whilst operating a tailstock.

25. Beware of loose clothing near the rotating parts of the lathe.

26. Beware of loose hair near the rotating parts of the lathe.

27. Beware of performing another operation while in close proximity to rotating parts on the lathe.

28. Always wear protection before operating the lathe.

   Always wear the correct protection before operating the lathe.

   Never remove protection for even a short time when operating the lathe.

   Wear protective devices correctly.

   Know the correct way to wear protective devices.

29. Beware of material flying from the lathe.

30. Keep protective guards at the point of operation.

   Know how to set or attach protective guards properly.

   Never use the wrong protective guard.

   Know how to select the proper guards.

31. When the chuck and workpiece are in motion never reach over, under or around a workpiece to make an adjustment.

   Never reach over, under or around a workpiece to retrieve anything.

   Beware of where you leave your tools during set up.

   Never reach over, under or around a workpiece to move hand tool/lathe to another position.

   Never reach over, under or around a workpiece to tighten a lathe part.

   Never reach over, under or around a workpiece to remove swarf (chips).
32. Know the proper procedure for applying loads.
   Never apply force from an awkward position.

33. Never mount a workpiece too large for the lathe.

34. Never mount a workpiece too large for the operator to handle.

35. Use the equipment necessary for handling workpieces.

36. Never apply undue force on accessory or control lever.

37. Secure all workpieces.

38. Secure all jaws, nuts, bolts and locks.

39. Always use the correct equipment.

40. Never take cuts beyond the machine’s capability.

41. Always use a proper hand tool to remove swarf (chips).
   Never hurry to remove swarf (chips)
   Beware of swarf (chips) wrapped around the chuck or workpiece.