

Lathe/Workshop Safety Guidelines

Wood turner's use a wide range of tools, materials and processes in their project activities, many of those substances and processes may involve risks and hazards which if uncontrolled may present short or long term adverse health risks, injury or death. You must read, understand and follow safety guidelines, safe work practices, and warnings in operator's manuals for the items and products you use.

Preparations before commencing a project

1. Research and Plan the processes and construction sequences for your proposed project. It is highly recommended that you seek training or advice and supervision from experienced turners if new to turning or you are taking on advanced projects.

2. Hazard Identification - implement a process of hazard identification and risk minimisation paying particular attention to electrical and machinery safety procedures or tasks involving hazardous or flammable goods. *Any identified task which presents a risk of severe, critical, life threatening injury or death no matter how unlikely must be managed by implementing hazard reduction procedures immediately!*

3. Manuals. Consult machinery, tooling, lathe and chuck manufacturer's maximum speed or capacity recommendations, they exist for your safety, so DO NOT EXCEED them.

4. Reduce Hazards. Understand the likely hazards to be encountered, volatility and flammability of materials; wood & other dusts; potential ignition sources; cut, crush, pinch, nip, kickback hazards; the speed, mass and impact level of particles and objects, and other physical hazards intentionally or unintentionally created in the processes used. Potential hazards include distractions from outside sources including animals and visitors.

5. Material Safety Data Sheets, Consult MSDS's and technical bulletins for the materials you use. Follow recommended practices for handling, storage and use. Materials may be flammable or dangerous goods, or are known to have short or long term adverse health reactions, some of which may be very fast acting, severe or life threatening.

6. Personal Protective Equipment. Acquire and use recommended PPE to meet the required protection standards for hearing, lung, face and eye protection and hazard exposure level for the proposed tasks and materials used.

- **Face / eye protection** – recommended approved safety goggles or safety glasses with side protectors at minimum PLUS a full face shield for low impact protection; or a high impact face shield for higher impact protection.
- **Lung protection** – mask, respirator or forced ventilation helmet to suit hazard level from toxic / spalted woods, wood dust, fungi, solvents, sealers, and finishes used.
- **Hearing protection** – ear plugs, and/or ear muffs appropriate for the noise level & duration of exposure experienced.
- **Foot protection** – wear sturdy and preferably steel toe capped safety boots.

7. Prepare. Assemble the tools and materials required to complete a task and the personal protective equipment required before commencing any activity on the lathe. **Develop an emergency contact plan** and have a means of getting assistance if things go wrong.

8. Avoid Entanglement, ensure there are no loose items to present a risk of entanglement in rotating / moving parts, remove rings, jewellery, and dangling objects, tie back long hair, preferably use a hair net, not a cap. Wear sturdy close fitting clothes, tape sleeves and cuffs if necessary.

9. Ability. Be aware of your level of competence and the capacity of your lathe, machinery and tooling – do not over extend your abilities, tooling, machinery or lathes capacity without supervision and informed advice.

10. Fatigue. Do not operate workshop equipment whilst tired, under the influence of alcohol, prescription or other drugs. Be aware that common prescription drugs may cause drowsiness or alter your perception. Some medical conditions or disabilities may require machinery modifications or require additional hazard and risk management for implanted medical devices, partial blindness, hearing impairments etc.

11. Maintain personal protective equipment, machinery, dust extraction systems, lathes & tools in good serviceable condition. Do not force a dull tool or use a tool for a purpose it was not designed or intended for, keep tools sharp and clean for improved safer performance.

12. Familiarise yourself with the machinery, lathe controls, emergency stop features, positioning of switches, mains power isolation, fire extinguishers, check that all safety features and machinery guards are in place and functional and ensure that you maintain safe access to them.

Commencing a turning project

13. Examine turning blanks or spindle stock for splits, cracks, foreign bodies, knots, checks, bark pockets, irregularity of shape, balance, protuberances etc. Trim & stabilise before commencing lathe activities or machining. Ask yourself is it worth the risk?

14. Isolate the lathes power supply, before mounting a turning blank or adjusting belt positions on the lathe or before effecting repairs to the lathe. Avoid accidental start ups.

15. Holding Techniques. Understand & follow recommended safe practices & instructions for the proposed work holding method, wood screw, face plate, mechanical chuck, glue or jam chucks etc and the load capacity of the glues, screws & bolts used with them. Turning between centres ensure the work piece is firmly mounted between the headstock drive centre and tailstock live centre. Get assistance or use lifting aids for heavy blanks.

16. Recommended Turning Speed is determined by diameter and dynamic balance of turning blank, slow speed for larger diameter bowls / platters and or unbalanced work; higher speeds for small diameter spindle work, smaller diameter bowls and pieces that are balanced. Consult and DO NOT EXCEED lathe and chuck manufacturer's maximum speed or capacity recommendations. A guide to safe turning speeds is *Bowl or spindle blank diameter (in inches) x lathe RPM = 6000 to 9000*; however this must be adjusted down for unsound blanks. Use and maintain tailstock support for as long as is practical.

17. Lathe Direction. If your lathe has a reverse feature, ensure that you use a securing grub or set screws on face plates and chucks when running in reverse or use manufacturer's approved accessories and follow their recommendations.

18. Adjust the tool rest height and banjo position to suit the blank and turning tools.

19. Select Appropriate Turning Tools for the task at hand. Be aware that some tools, shapes or grinds offer considerable advantages over others and that some tools are known to be very hazardous in particular inappropriate uses, e.g. do not use spindle roughing gouges to true up face grain bowl blanks.

20. Habit. Form checking habits / routines before turning on the lathe – always check PPE; spindle locks are disengaged; remove chuck keys, adjusting tools and knockout bars; check firmness of all clamps; hand rotate the turning blank at least one full turn before starting the lathe. Check the dynamic balance and consider the use of dynamic balance systems to reduce vibration of large blanks.

Starting the lathe

21. Verify the lathes is in the "Off" position and variable speed control is adjusted to zero or belts are positioned at the recommended setting for the proposed task before reconnecting the lathes power supply. Ensure "forward" is selected if the lathe has a reversing feature. Ensure your PPE is adjusted correctly and is being worn!

22. Stand Aside - outside the "red zone" or "firing zone", an area considered the most hazardous and most likely area for a work piece or part of it to fly off when starting or performing tasks on the lathe. It is an area directly behind and in front of the spinning work piece or perpendicular to the lathe bed or turning axis for adjustable headstock lathes.

23. Perform a last check & Power Up the lathe keeping a hand over the off switch in case an emergency shut down is required or if excessive vibration occurs.

24. Observe the dynamic balance of the blank and speed and adjust speed as required with variable speed control if fitted to minimise vibration. Observe recommended speeds!

25. Stop & Check the lathe, check the work piece is still mounted securely and that all clamps are still secure etc. When satisfied restart the lathe. Remember the PPE!

Commencing tasks on the lathe

27. Position your self comfortably in front of the lathe, maintain proper footing and balance at all times and particularly before commencing a cut. Have a dry run with the lathe off if necessary to check range of body and tool movement required etc. NEVER over reach, or attempt to reach across a running lathe to access tools or other materials, stop it first. Minimise positioning your body in the "Red Zone" where ever possible. Place tools in easily accessible locations and avoid placing tools or other items behind the lathe, on headstocks, or lathe beds without appropriate accessories to prevent them falling.

28. Place turning tool firmly on the tool rest, holding the tool in a neutral cutting position before commencing a supported controlled cut. The tool must always contact the tool rest before contacting the rotating blank. Tool grip should be sufficiently firm and comfortable. If the tool requires very firm pressure or force to commence a cut or to control, stop and check tool sharpness, direction of rotation etc. Use trim cuts to balance the blank first then commence shaping cuts.

29. Routine, shut down the lathe before adjusting tool rest height & position. Always remove the tool rest before sanding, finishing or polishing operations. Check PPE!

30. Stay Alert, look and listen to what is occurring. Often a noise or sound will alert a turner to a sudden or gradual change to the stability of the turning blank. Stop & investigate strange noises or occurrences immediately.

31. Learn from your successes & failures; & safe methods to reverse mount work pieces to finish off the bottom or to complete multiple chucking / mounting operations if required.

32. Safety - implement safe practices. Do not use large pieces of cloth to apply finishes to rotating work pieces, use paper towels as a safer option. NEVER wrap cloths, sandpaper or burnishing wires, around fingers or hands. Do not insert fingers into small openings in rotating work pieces.

Finishing for the day or temporary breaks.

33. Isolate & Make Safe. NEVER leave a lathe (or any machinery) running unattended. Turn power off and ensure the lathe (or machine) is isolated and comes to a complete stop before leaving it. Consider installing no volt protection switches (in case of power failure or improper shut down) and lock out devices if necessary to isolate or prevent unauthorised use.

34. Housekeeping, Pay attention to good housekeeping practices. Remove waste regularly, use correct disposal methods especially for cloths, paper towels and steel wools used to apply oil and other finishes. Delayed spontaneous combustion may occur in favourable environmental conditions. Return tools to their place & arrange any necessary repairs.

Please do not become complacent about your safety!

Be safe, have fun, explore and enjoy wood turning. If you are supervising a learner or another turner, be aware that you are responsible for the safety of both parties, offer praise and advice in a non threatening manner, and be firm when unsafe practices are employed.

Refer to manuals, safety procedures, technical bulletins and Material Safety Data Sheets often and particularly when using new tools, machinery or products. Take the time to constantly review hazard reduction procedures and adopt risk minimisation strategies in your workshop. Check your environment, mechanical and electrical safety, lighting, ventilation, dust control etc, and the hazards and risks of the task/s you are about to undertake.

Be aware that in your area, machinery, electrical, health and safety legislation may exist to control, restrict or prohibit some activities or procedures. You may be legally liable for injuries or damage caused to others or face potential prosecution for breaches under existing legislation.

It is an unfortunate fact of life that some incidents will always occur despite all the best intentions, or adopting safe procedures and education programs, because humans are adventurous and curious, they are also fallible and make mistakes for various reasons, or become complacent.

By adopting safe routines we can at least control most hazards and minimise risk.

“It’s certainly not good enough for you to do nothing.”