CNC Machine Specific Health & Safety

Prioritise Safety!

- Ensure the CNC machine is properly adjusted, and all locks are securely tightened.
- Be cautious of loose clothing that can easily get caught in moving parts of the machine. Avoid wearing loose neckties or scarves whilst operating the CNC machine.
- When changing tools or cutters, follow proper procedures and ensure the machine is powered off.
- When adjusting settings or parameters, ensure the machine is powered off.
- Always be aware of the position of your hands and fingers in relation to the moving parts and tooling. Never place your hands near the cutting area.
- Utilise clamps, fixtures, or workholding options when machining small pieces. Never hold them by hand.
- Allow the spindle or cutting tool to reach the appropriate speed before engaging with the workpiece. This reduces the risk of the workpiece being dislodged or thrown.
- Never reach across the cutting path of the machine. Supporting the workpiece from the wrong side is hazardous.
- If the workpiece or cutter becomes jammed, turn off the CNC machine. Wait for all moving parts to come to a complete stop before attempting to resolve the issue.
- After completing a machining operation, ensure the machine is powered off before removing the finished workpiece.
- Never use your fingers to clear cuttings, chips, or debris from the machine. Use appropriate tools or brushes instead.
- Clean the machine of chips, dust, or debris after use, ensuring the machine is powered off.
- Wear suitable personal protective equipment to protect against flying debris. Hearing and eye protection will also be necessary.
- Maintain a stable and balanced stance whilst operating the machine, avoiding overreaching and maintaining proper footing.

Prioritise safety by always considering the necessary precautions when operating the CNC machine!

CNC Machine Accreditation Tasks

To operate the CNC machine safely and effectively, it is necessary to complete and document the following basic health and safety accreditation tasks. A written record of your proficiency in these areas should be maintained by your mentor.

1. Familiarise yourself with the contents of this accreditation module and review it in its entirety.
2. Identify the key components of the CNC machine, including the control panel, spindle, gantry, stepper motors, workholding options, and dust collection system. Confirm your knowledge by requesting an assessment from your mentor.
3. Ensure that the CNC machine is clean and properly maintained. Seek guidance from your mentor regarding maintenance requirements and procedures.
4. Understand and adhere to the safety features and emergency stop procedures specific to the CNC machine. Demonstrate your understanding to your mentor.
5. Learn how to verify the sharpness and condition of cutting tools suitable for use with the CNC machine. Request guidance from your mentor on the tool inspection process.
6. Safely change and install cutting tools, including end mills and engraving bits, on the CNC machine. Ensure that the machine is turned off and disconnected from the power supply before making any changes.
7. Programme and execute machining operations on the CNC machine under the supervision of your mentor. Pay attention to the tool paths, feed rates, and speeds specified in the programme.
8. Inspect the machined parts for accuracy and quality, including dimensional measurements and surface finish. Seek guidance from your mentor to ensure proper inspection techniques.
9. Request your mentor's inspection of the machined parts and obtain their sign-off when they meet the required standards.
10. Clean the CNC machine thoroughly, removing any chips, dust, or debris to maintain optimal performance. Ensure that the machine is prepared for the next user.
11. Empty the sawdust collector into the saw dust bin in the wood workshop.

By completing these accreditation tasks and obtaining approval from your mentor, you will demonstrate proficiency in safely operating the CNC machine.

Advice to Mentors

1. Mentors should guide and assist in determining suitable stock metal sizes and cutting tools for the CNC machine.
2. Emphasise the importance of constantly monitoring the operator's body position and the location of their hands and fingers during the cutting process.
3. Stress the necessity of isolating the CNC machine from its power supply before making any changes or adjustments, such as modifying the spindle speed, replacing cutters, or adjusting the work table.
4. Explain the significance of regularly withdrawing the tool from the cut to facilitate the removal of cutting chips.
5. Show how the tool and workpiece can generate significant heat during the cutting process, highlighting the importance of caution and appropriate handling.
6. Demonstrate how using a sacrificial backer board can reduce the risk of the material "bursting through" when drilling holes in thin workpieces.
7. Explain the need for an abundance of caution when supporting and clamping the workpiece before drilling holes, emphasising the importance of secure fixation to ensure accurate and safe machining operations.
8. Emphasise the essential use of eye protection to safeguard against flying debris or particles generated during the machining process.
9. Highlight the importance of wearing ear protection to minimise exposure to high levels of noise produced by the CNC machine.

By providing comprehensive guidance and ensuring the implementation of appropriate safety measures, mentors play a vital role in promoting a safe and productive CNC machining environment.