

# CNC Milling Technology

## SAFETY GUIDELINES

A CNC milling process requires a complex system containing machinery that is potentially dangerous if proper safety practices are not followed. Certain operating procedures apply each time the system is used, while others are more specific.

Safety precautions in the CNC milling environment serve to protect the human operators as well as the milling equipment. Always use caution when working with a machining center to avoid personal injury and damage to the equipment.

The following safety practices must be adhered to in the classroom or laboratory. Carelessness can lead to serious injury!

- **Dress Appropriately:** Do not wear loose clothing or jewelry, which can get caught in moving parts. Wear a hair net or tie your hair back to keep it away from the moving parts.
- **Wear Safety Glasses:** During operation, the mill can throw foreign objects and harmful chemicals into your eyes. Always put on safety glasses or eye shields before starting up the machining center. Safety glasses or shields should provide full protection at the sides, as well as the front of the eyes.
- **Do Not Overreach:** Keep your balance at all times to prevent yourself from falling into or grabbing onto the moving machine.
- **Avoid Distractions While Running the Machine:** Use common sense and pay attention while operating any piece of machinery.
- **Avoid Dangerous Environments:** Do not use the machining center in wet or damp locations. Never operate electrical equipment in the presence of volatile or flammable petroleum-based substances.
- **Keep Untrained Visitors Away from the Equipment:** Children and visitors who are unfamiliar with the hazards of rotating machinery should always be kept away from the work area.
- **Know Your Machining Tool:** Read all instructions carefully before you use the machining center. Know the intended applications and limitations of the machining center as well as its hazards.
- **Ground All Tools:** The machining center has an AC power cord terminated by a three-prong plug. The power cord should be plugged into a three-hole, grounded receptacle. If a grounding adaptor is used to accommodate a two-prong receptacle, the adapter wire must be attached to a known ground. Never remove the third prong from the plug on the AC power cord.
- **Do Not Force a Tool:** Select the **feed rate** and the **depth of cut** best suited to the design, construction and purpose of the cutting tool. It is always better to take too light a cut than too heavy a cut.
- **Use the Correct Tool:** Select the type of cutting tool best suited to the milling operation. Do not force a tool or attachment to do a job for which it was not designed.
- **Maintain Cutting Tools in Top Condition:** Keep cutting tools sharp and clean. Lubricate and clean machining center components on a regular basis.

- **Use the Emergency Stop Switch in an Emergency:** Always use the emergency stop switch to disconnect power and disable the spindle motor if an emergency arises. Do not rely solely on a programmed Pause command to disable machining center operation.
- **Keep the Work Area Clean:** Cluttered work areas and bench tops invite accidents.
- **Avoid Accidental Starting:** Ensure that the power switch on the machining center is Off before plugging in the power cord.
- **Use Recommended Accessories:** To avoid stressing the machining center and creating a hazardous machining environment, use only those accessories designed for use with the BenchMill 6x00.
- **Secure the Workpiece:** Ensure that you have firmly secured the workpiece and the cutting tools in the collet before turning on the spindle motor.
- **Remove Adjusting Keys and Wrenches:** Make it a habit to check that keys and adjusting wrenches are removed from the machining center before turning on the machine.
- **Tighten All Holding, Locking, and Driving Devices:** Tighten the collet. Do not over tighten tool-holding devices. Over tightening may damage or warp parts, thereby reducing accuracy and effectiveness.
- **Keep the Safety Shield Closed:** The safety shield should remain closed whenever the spindle motor is on or the cross-slide is moving.