



CNC Milling Machine Tool Change Procedure

Stop Spindle and Verify Machine State

Bring the spindle to a complete stop by pressing the spindle stop button on the control panel. Verify the spindle RPM reads zero on the display before proceeding. Ensure the machine is in manual mode, not mid-program.



Raise Spindle to Safe Working Height

Using the manual jog controls, raise the Z-axis to provide clearance for tool access. Position the spindle at least 6 inches above the work surface or fixture. This prevents accidental contact during tool removal.



Activate Spindle Lock

Locate the spindle lock lever or button on the machine head. Engage the spindle lock to prevent rotation during tool removal. You should hear or feel a positive click when the lock engages.



Loosen Tool Holder

Insert the appropriate drawbar wrench or use the pneumatic tool release button (if equipped). For manual drawbars: turn the wrench counterclockwise 3-4 full turns to release tension. For pneumatic systems: press and hold the tool release button.



Remove Tool from Spindle

Carefully pull the tool holder straight down and out of the spindle taper. Support the tool with your other hand to prevent dropping. Place the removed tool in a designated tool cart or holder—never on the machine table.



Inspect Spindle Taper and Tool Holder

Check the inside of the spindle taper for debris, chips, or damage. Wipe clean with a lint-free cloth if needed. Inspect the tool holder taper for nicks, burrs, or wear. The taper surfaces must be clean and undamaged for proper seating.



Verify New Tool and Holder

Confirm the new tool number matches your setup sheet or program requirements. Check that the cutting tool is securely fastened in the holder and the tool length is appropriate for the operation. Verify the tool is sharp and undamaged.



Install Tool into Spindle

Align the tool holder keys with the spindle keyways. Insert the tool holder straight up into the spindle taper with a firm push until it seats completely. You should feel it "pull" into the taper as it makes contact.



Tighten and Secure Tool

For manual drawbars: Use the wrench to tighten the drawbar clockwise. Apply firm pressure—typically 30-40 ft-lbs or until snug (do not overtighten). For pneumatic: release the button and verify the tool seats with air pressure.



Release Spindle Lock

Disengage the spindle lock by returning the lever or button to its original position. Verify the spindle can rotate freely by manually turning it slightly or jogging at low RPM.



Set Tool Offset and Length

Navigate to the tool offset page on the controller. Use the probe or touch-off method to measure the new tool length. Enter the Z-axis offset value into the corresponding tool number position. Verify the offset is saved before exiting.



Verify Tool Installation

Run a rapid positioning test at reduced feedrate (25-50%) to confirm the tool moves correctly. Perform a test cut on scrap material or air-cut the first few moves of your program to verify proper tool length and operation.



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