Automatic Tool Changer Operations Manual

For machines equipped with a WinCNC controller

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Laguna Tools

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TOOL CHANGER OVERVIEW

The automatic tool changer (ATC) adds another layer of automation to the CNC machine. The advantages of an automatic tool changer are as follows:

- ATC increases the machine's productivity.
- Helps to minimize total machining time.
- Increases the flexibility of the CNC machine.
- Improves tool carrying capacity of the CNC machine.

MANUALLY CHANGING TOOLS

Each machine equipped with an ATC will have a means to chuck or release a tool in the spindle manually. This is useful when the project only requires one tool and does not use the ATC.

Laguna Tools offers a variety of spindle options, but each spindle compatible with an ATC will have a button that releases a chucked tool. The button will be located on the spindle or on the CNC machine near the spindle.

In the picture on the right, the release button is on the front of the spindle.

Figure 1. Tool gripper release button.

EXECUTING TOOL CALL COMMANDS

Tool changes can also be made by executing tool call commands in the command line of the controller interface. The number of tools each ATC can support will vary between machines. The most common is an eight slot tool rack.

If the machine has eight tools, then each tool can be called by executing the command "T#" where the # represents a numerical digit from 0-8.

Changing tools only requires executing a tool call command.

- Prior to executing a tool change make sure any blades have been removed from the TCM-3 and EOT-2 modules. Long blades may collide with tool rack during tool changes.
- Enter the command "T#" where the # symbol represent a number 1-8. For example, the command "T8" will cause the spindle to grab tool 8.
- If there is a tool in the spindle when executing the "T8" command, the tool presently in the spindle will be parked first.

Tool Commands	Description
T0	Unloads Tool.
T1-T8	Changes tool, activates last stored tool measure.

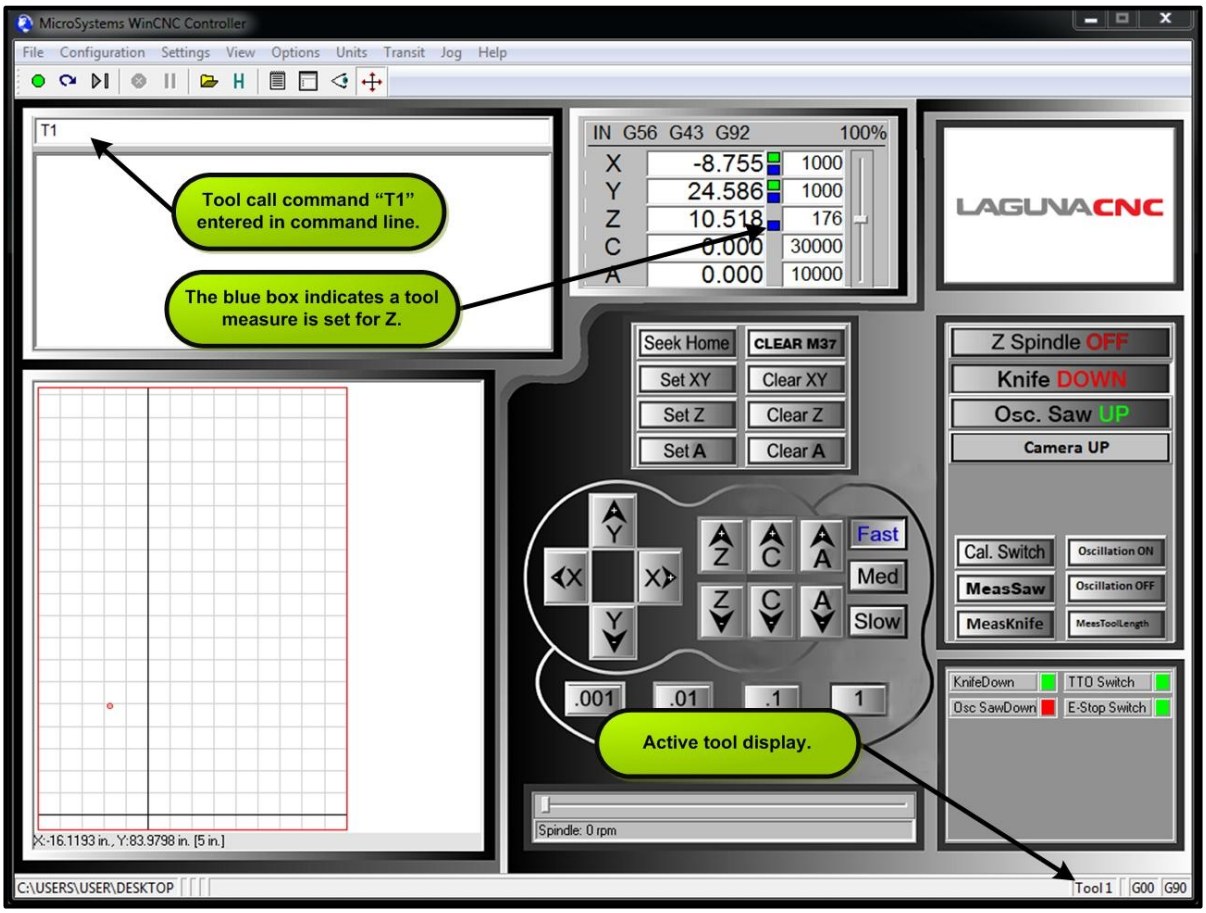


Figure 2. Screen capture demonstrating ATC fundamentals.

For a simple demonstration three concentric circles were drawn. Each circle has been assigned a different tool to cut along the perimeter of each circle. In figure 3 below is a screen shot of the Aspire software after creating three separate toolpaths, each using a different tool.

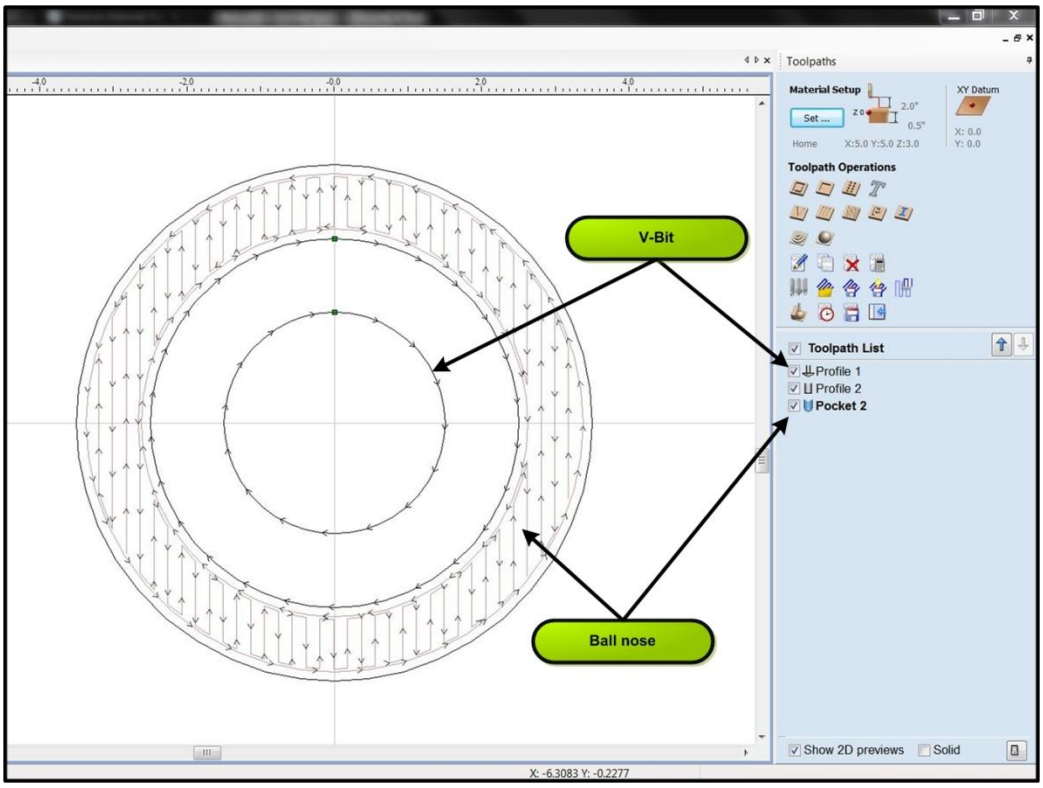


Figure 3. Demonstrating multiple toolpaths using different tooling.

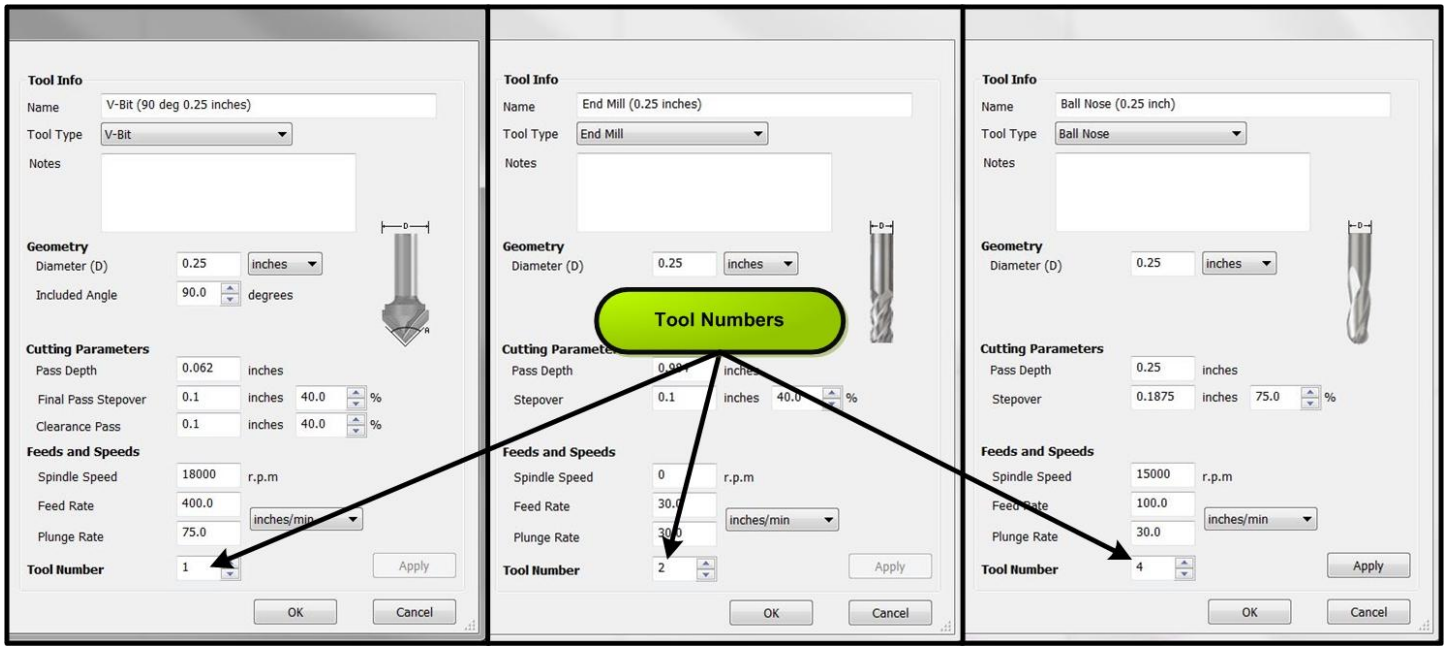
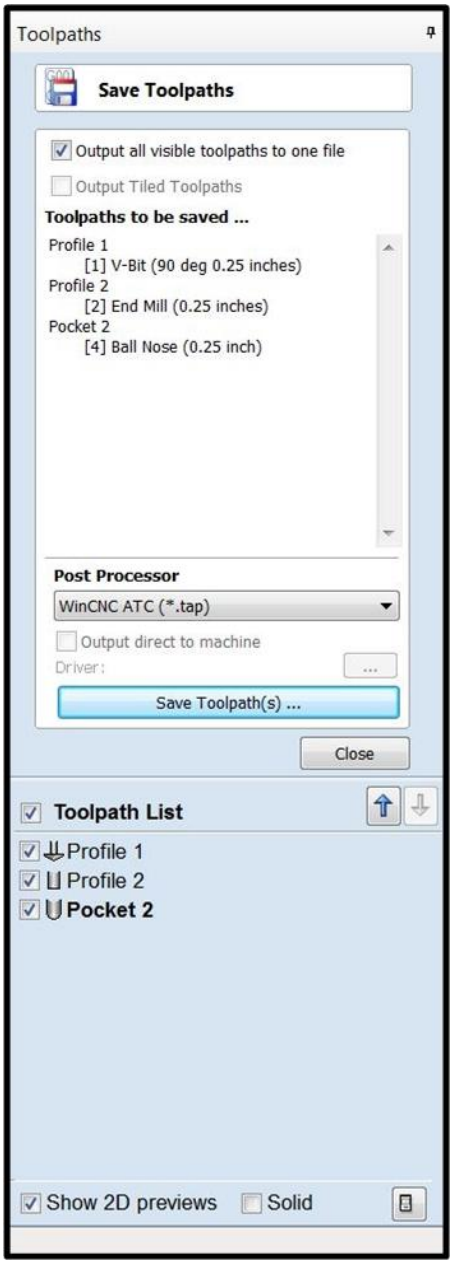
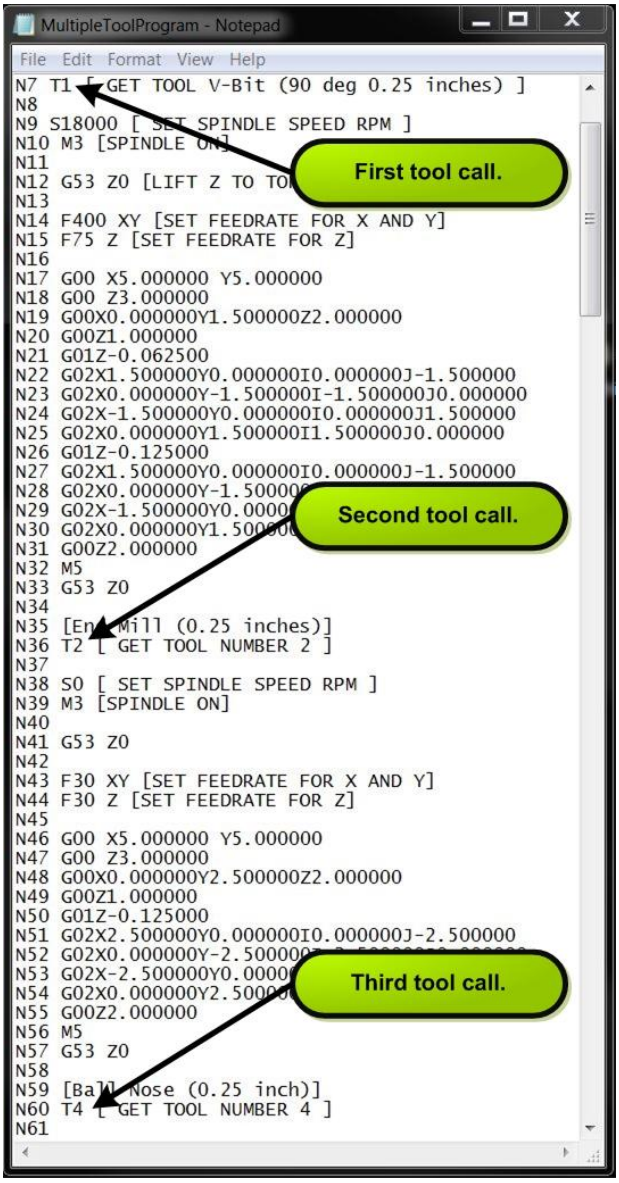


Figure 4. Snapshot of the tool info menu, highlighting the tool number parameter.

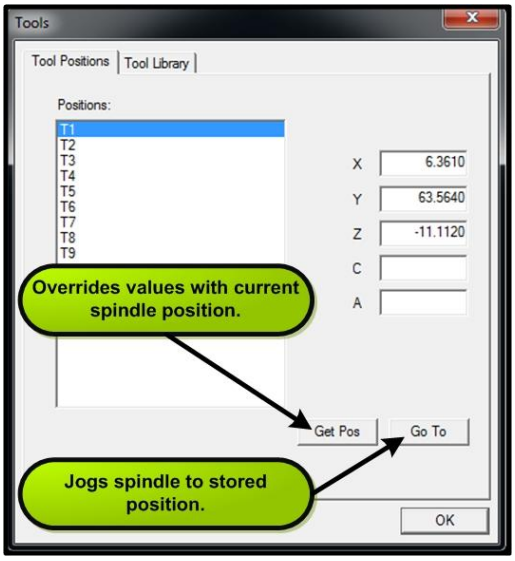
- With all toolpaths selected, save the toolpath list after selecting the WinCNC ATC(*.tap) post processor.





STORING TOOL LOCATIONS

It is possible that a location will need to be reset. To view and edit a tool location, follow the path Settings→ Tool Positions. This opens the tool positions dialog box.



WHAT HAPPENS DURING A TOOL CHANGE?

The flow diagram below captures the order of events that occur when a tool command is executed.