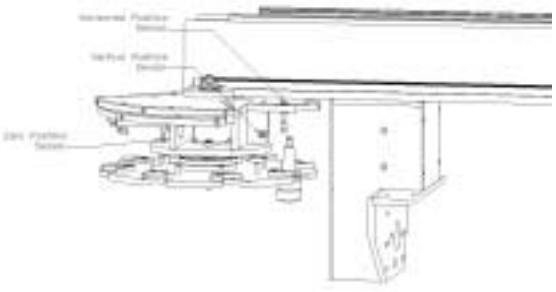
('ak-sēz) AXYZ™ AUTOMATION INC.

ATC Tool Changer Option

Description

The AXYZ Automatic Tool Changer provides an easy and convenient way of running jobs requiring multiple tooling using an eight position rotary carrousel style automatic tool changing system.



Features

Flexible Tooling Options
There are a total of 16 tools available. Tools 1 to 8 are automatic and accessed by the machine using the ATC system, without operator intervention. Tools 9 to 16 are manual, this is a powerful feature. Often special tools that are used infrequently and/or do not fit into the carrousel are required by a particular job. Rather than having to spend the time to set up a tool for a one-time only use, it is simpler to assign it to a “manual tool” and manually insert the tool into the spindle as required. Job setup is the same as automatic tool selection, and the job is sent to the machine in the same way.

F25 Sensor
The F25 sensor is an automatic tool tip sensor which is used in determining the relative lengths of each tool to every other tool. This process is called qualifying the tool. This is an important step in setting up the ATC system for safe operation, and the F25 Sensor handles the process easily and rapidly to a high degree of accuracy.

ATC Brush Foot
The included Adjustable Brush Foot provides an effective solution for the removal of dust and chips. It does this by surrounding or enclosing the tool bit and removing the dust/chips through a vacuum hose. This device automatically opens pneumatically to clear the bit during a bit exchange.

ATC Pressure Foot
The available Pressure Foot option provides local hold-down pressure which is particularly useful for cutting small parts or very flexible material. It provides a high level of vacuum to a small area around the tool bit for efficient chip extraction.

Error Codes
As an important safety feature, the spindle will shut down and display an error code when: a tool is not properly seated, system did not get the required tool, if a jam occurs etc. This ensures constant safe operation and prevents further complications.

F25 Sensor

Adjustable Brush Foot

Pressure Foot option

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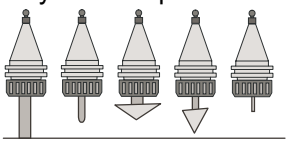
Qualifying the Tooling

This is an important step in setting up the ATC system. A quick look at all the tools hanging in the carrousel will show that they are all different lengths:



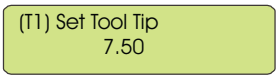
In order for the machine to operate properly it must "know" the relative length of each tool relative to every other tool. This proces is called "qualifying the tooling". It is done on AXYZ routers using Function 25..

To use Function 25 first pick a surface that will be used as the qualifying surface. (usually the machine's surface) but it can be anywhere the shortest tool can reach. Each tool in the carrousel must be qualified using the following procedure:

Tool 1:

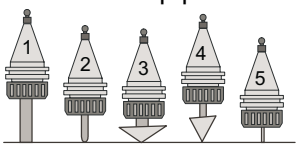
ENTER FUNC 2 5 +/- 1 ENTER

If tool number one is not in the spindle the machine will go over to the ATC carrousel and get it. Once it has the tool it will come back and the console display will show:



(T1) indicates that tool 1 is being qualified. The 7.50 shows the present qualification setting. Now using the jog keys lower the tool until it touches the chosen qualifying surface. Note that the setting will lower as you go down. Try to touch the surface very accurately as this will determine how accurate the machine will be cutting.

Once the tool has been qualified, press Enter and the spindle will return to the machine top position and tool 1 qualification setting will be stored in the flash memory.



Repeat the procedure for all the tools in the carrousel

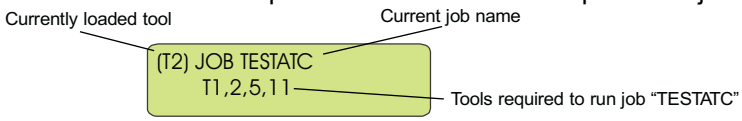
Function 352

Function 352 is available to help qualify all the tools in the ATC carrousel. It will simply load each tool in succession and prompt the operator to qualify it. It is the same as doing separate function 25 procedures.

If an F25 sensor is installed on the machine it will do the entire procedure automatically with every tool in the carrousel.

Using the ATC System

The ATC System always tracks the tools that are loaded in the spindle and the tools that a particular job wil use. This is indicated on the sub console screen:



Function 4 and 8

Function 4 is used to set the lift bottom and lift top positions. Function 8 is used to set the zero datum position for three-dimansional jobs (also referred to as material surface). Generally they function exactly like single tool machines except that the system must now take the tool qualifying value into consideration. This means that the system must know which tool is in the spindle when doing these functions.

The operator can choose to do function 4 using tool 2 by entering in FUNC 4+/-2, ENTER. This will select tool 2 and its associated qualifying values. If the selected tool does not happen to be in the spindle the machine will automatically change to the selected tool, then prompt the operator to proceed with the function's steps.

Unknown Tool

When the machine is first powered up and there is already a tool in the spindle the machine has no way of knowing which tool is inserted. This is an unknown tool and is indicated on the screen:

The operator must manually remove the tool using the manual release button on the spindle. If the tool came from the carrousel use function 351 to lod it back into the proper carrousel position. NOTE that the "(T?) Will change to (T0) indicating that the spindle is empty. This is OK, the first time the operator or a job calls for a tool, the ATC system will automatically load it and the machine will no correctly track the tools.

To avoid unknown tool situations always unload the tool using function 351 before powering down the machine. The spindle should always be left empty.