

TB118 (Rev3) - Custom M codes for CNC7/CNC10/CNC11 ATC Systems

Below is a list of custom M codes that can be found on swingarm and/or umbrella type tool changers for controls running either CNC7, CNC10, and CNC11 software.

Custom M codes used on all ATC PLC programs

M3 - Turns the spindle ON in the CW direction.

M4 - Turns the spindle ON in the CCW direction.

M5 - Turns the spindle OFF as well as the Spindle Orientation.

M6 - Changes the tool that is in the spindle by using other custom M codes.

M7 - Turns the Mister pump ON.

M8 - Turns the Flood pump ON.

M9 - Turns either/both coolant pumps OFF.

M10 - Turns ON the clamp on the rotary table.

M11 - Turns OFF the clamp on the rotary table.

M18 - Resets the tool counter to tool #1. **Ensure that the tool changer is at bin location #1 and that tool #1 is in the spindle.**

M19 - Orients the spindle to the desired location to perform a tool change. **Cannot be done if M15 is already active. If the spindle motor, spindle encoder, spindle inverter, or inverter encoder parameters are changed, the inverter parameters must be checked to ensure proper spindle orientation to prevent a crash. Please follow the tech bulletin for the appropriate inverter on setting the inverter parameters.**

WARNING: Some controls may have shipped with an incorrect M19. If the **CNC7.M19** file does not contain an **M95/11** at the beginning or an **M108/2** at the end, then you should add those lines. If those lines are missing then you will be unable to use the spindle override when running a program after you do a tool change.

M31 - Turns the optional Chip Auger forward.

M32 - Reverses the optional Chip Auger.

M33 - Turns the optional Chip Auger OFF.

Additional M codes used on UMBRELLA tool changer PLC program in CNC11

M15* - Unclamps the tool and turns the Air Blow ON. **Be prepared to catch the tool from the spindle. Will not operate if the spindle is turning.**

M16* - Clamps the tool and turns the Air Blow OFF.

M15 and M16 are not to be used to manually change tools. Use the Clamp/Unclamp button located on the spindle head.

M20 - Turns the spindle OFF as well as the Spindle Orientation.

M21 - Turns the optional Chip Washer pump ON.

M22 - Turns the optional Chip Washer pump OFF.

M80* - Moves the carousel IN regardless of the Z-axis position. **Will not operate if the spindle is turning.**

THERE IS NOTHING TO PREVENT THE CAROUSEL FROM SLAMMING INTO THE SPINDLE HEAD OR TOOL. ENSURE SUFFICIENT CLEARANCE BEFORE ISSUING THIS COMMAND.

M81* - Moves the carousel OUT.

ENSURE THE TOOL IS NOT PARTIALLY COVERED BY SPINDLE OR THE TOOL WILL BE KNOCKED OUT AND THE CAROUSEL FINGERS MAY BE DAMAGED.

Additional M codes used on UMBRELLA tool changer PLC program in CNC7 and CNC10

The M codes listed below are ones that are either different than or in addition to the ones used in CNC11.

M17 - Turns the coolant and spindle OFF and turns Spindle Orientation ON.

M21 - Moves the spindle head up to the Z home position.

M22 - Moves the spindle head up to the tool change position, G30. **Do not change the G30 parameters and do not use any codes in your program that will overwrite these parameters.**

M50 - Simulates a positive Tool Index while the program is running.

M51 - Simulates a negative Tool Index while the program is running.

M50 and M51 are typically used when there are large tools that would interfere with the part or fixture.

Additional M codes used on SWINGARM tool changer PLC program in CNC11

M13* - Cycles the tool changer swingarm. The M13 cycle does the following:

- Turns the swingarm motor ON and waits for the ARM_STOP signal to go OFF.
- Waits for the ARM_STOP signal to come ON and then shuts OFF the swingarm motor.

M14* - Brings the tool pot down.

M15* - Brings the tool pot up.

M60 - Turns the optional Chip Washer pump ON for 0.1 seconds and then shuts it OFF.

M61 - Records the bin location of tool #1.

M88 - Turns ON the optional thru-tool coolant.

Additional M codes used on SWINGARM tool changer PLC program in CNC7 and CNC10

The M codes listed below are ones that are either different than or in addition to the ones used in CNC11.

M0 - Turns ON the optional amber light in addition to issuing an M0.

M1 - Turns ON the optional amber light in addition to issuing an M1.

M14* - Brings the tool pot up.

M88 - Turns ON the optional thru-tool coolant.

M89 - Turns OFF the optional thru-tool coolant.

Commands with an * next to them require the AUX12 key on the jog panel to be pressed. The AUX12 key must be held down until the carousel and clamp switches are in the default state or a stop condition will result. The AUX12 key is the second unlabeled blue key located in the rightmost column of the coolant row on the jog panel. The AUX12 is indicated in the picture below.



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