YASKAWA
PARTNER SUPPORT
Shared Integration Experience

This document captures ideas, experiences, and informal recommendations from the Yaskawa Partner Support team. It is meant to augment – not supersede manuals or documentation from motoman.com. Please contact the Partner Support team at partnersupport@motoman.com for updates or clarification.

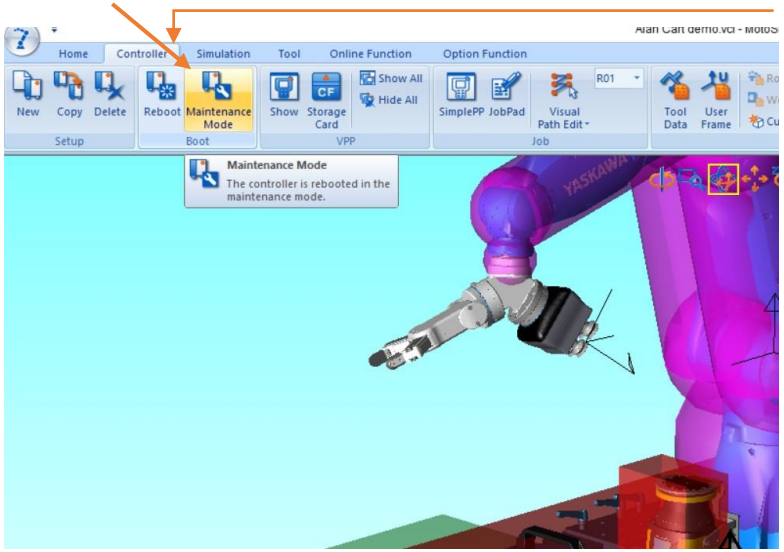
Multi Tool Setup and Teaching

Introduction

The Multi Tool option (Tool No. Switching) is a great option whenever you have a system with multiple grippers or even a weld cell with different torches (like a 22-degree torch and a 45-degree torch required for access issues.)

Setup

1. If you are setting this up within MotoSim, then perform the following procedure. If you are needing this on the real controller, then you will have to contact Yaskawa and have it turned on. ***** **If you have a dual, triple, or quad robot cell, it will already be enabled.** *****
2. Open your MotoSim cell, and then boot into maintenance mode. This can be found under the controller tab.



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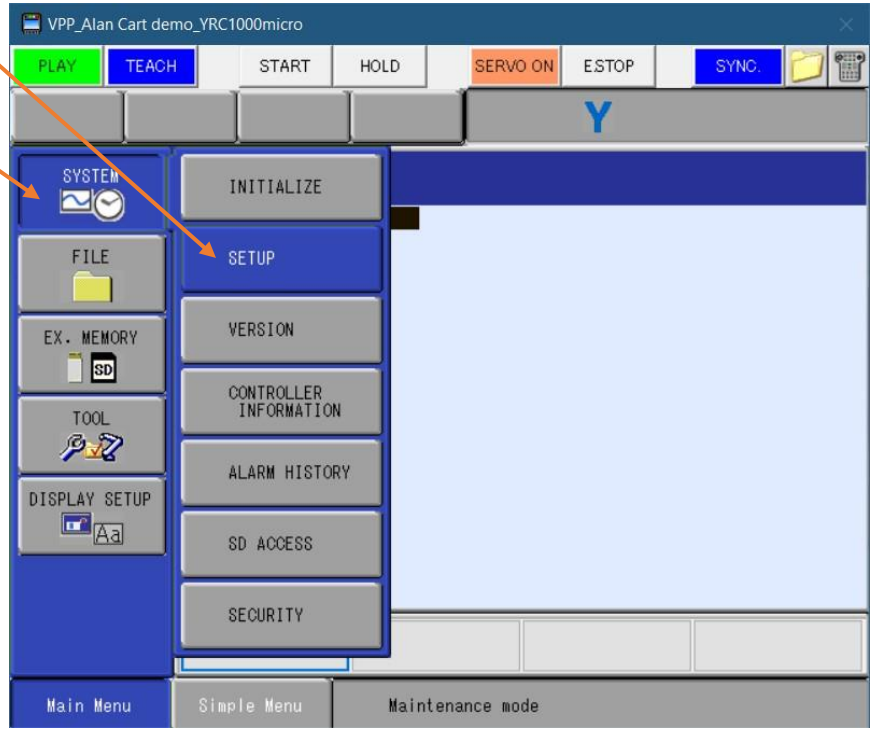
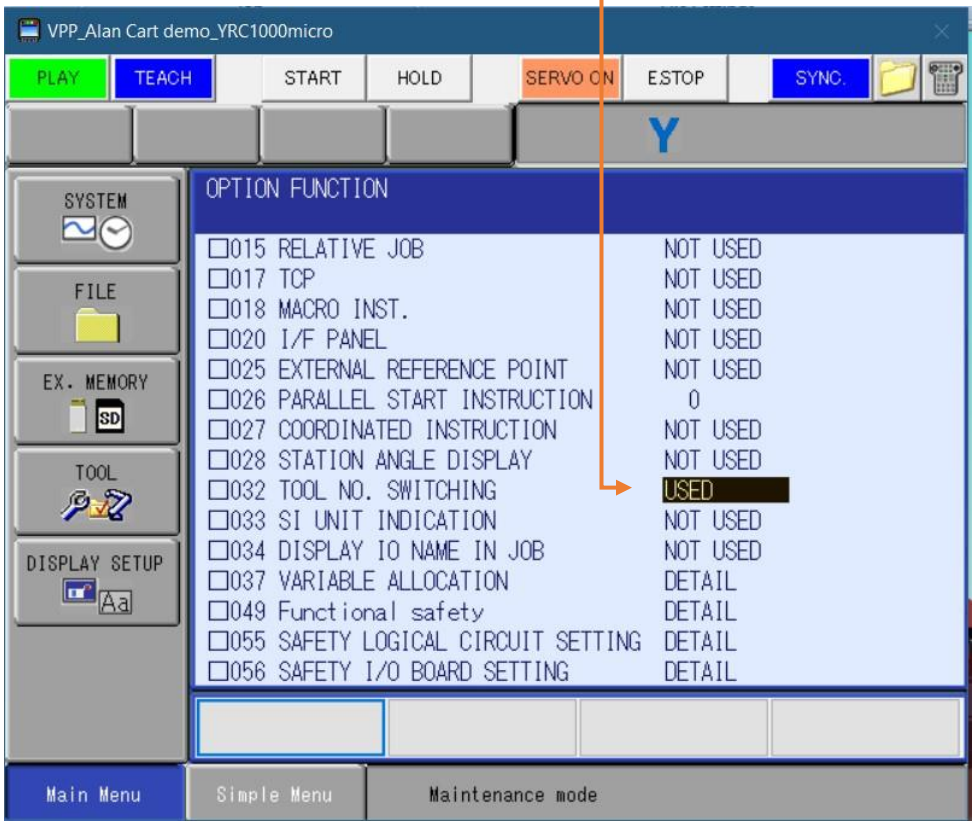
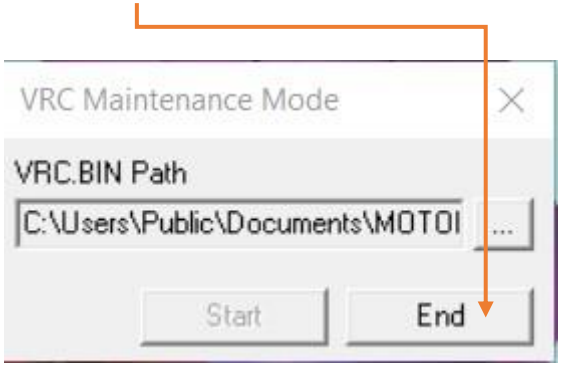
3. Click on SYSTEM and then SETUP.



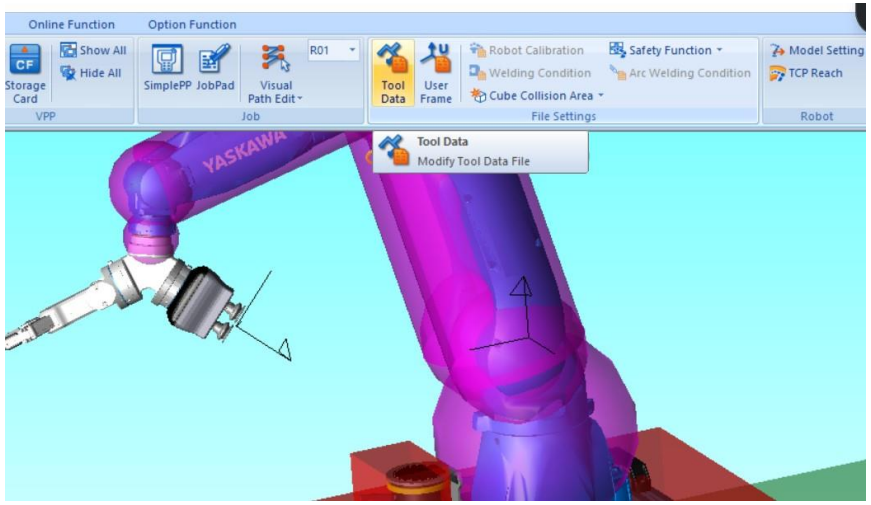
4. Cursor down to TOOL NO. SWITCHING and change it to USED.



5. Once TOOL NO. SWITCHING is set to USED. Clink on the END button of the small window, that is sometimes behind the main pendant window. This will boot the controller back into normal mode.

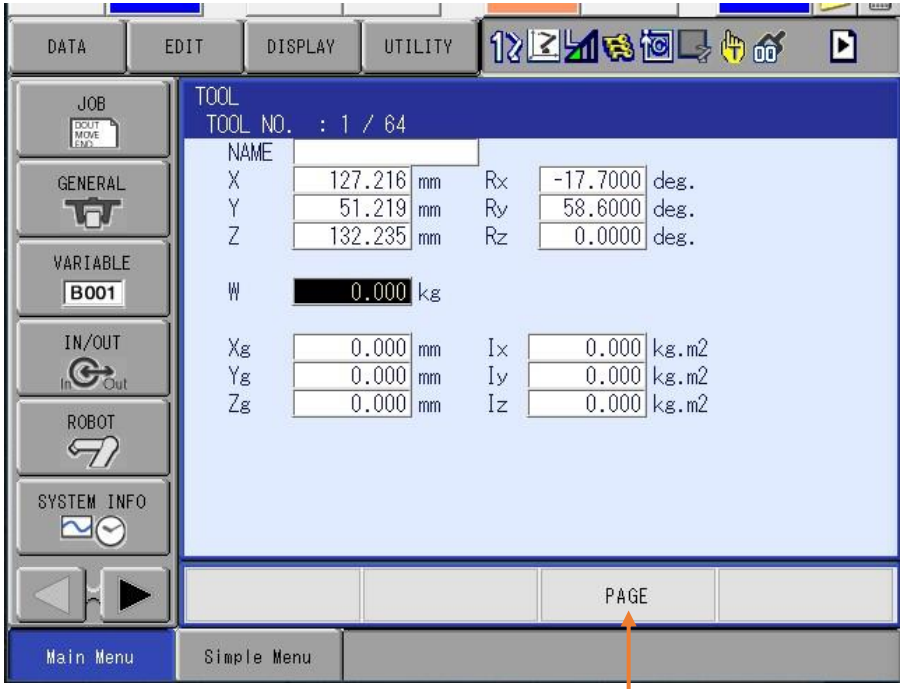


6. In MotoSim, there are 2 ways to enter TOOL data.
    a. One is under the controller tab in the main MotoSim window.



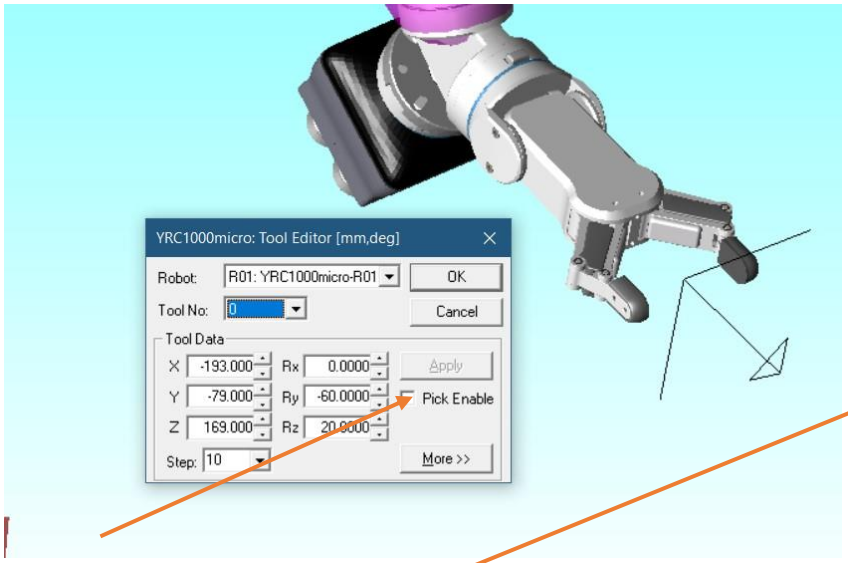
b. The other will be in the pendant, under ROBOT and TOOL

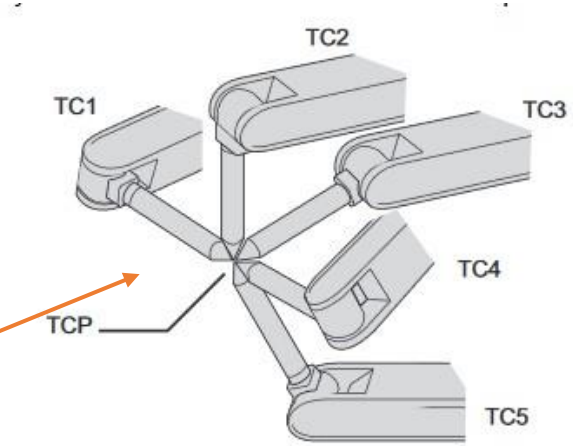
c. This will open the TOOL settings window



The PAGE button will navigate to the different tool files

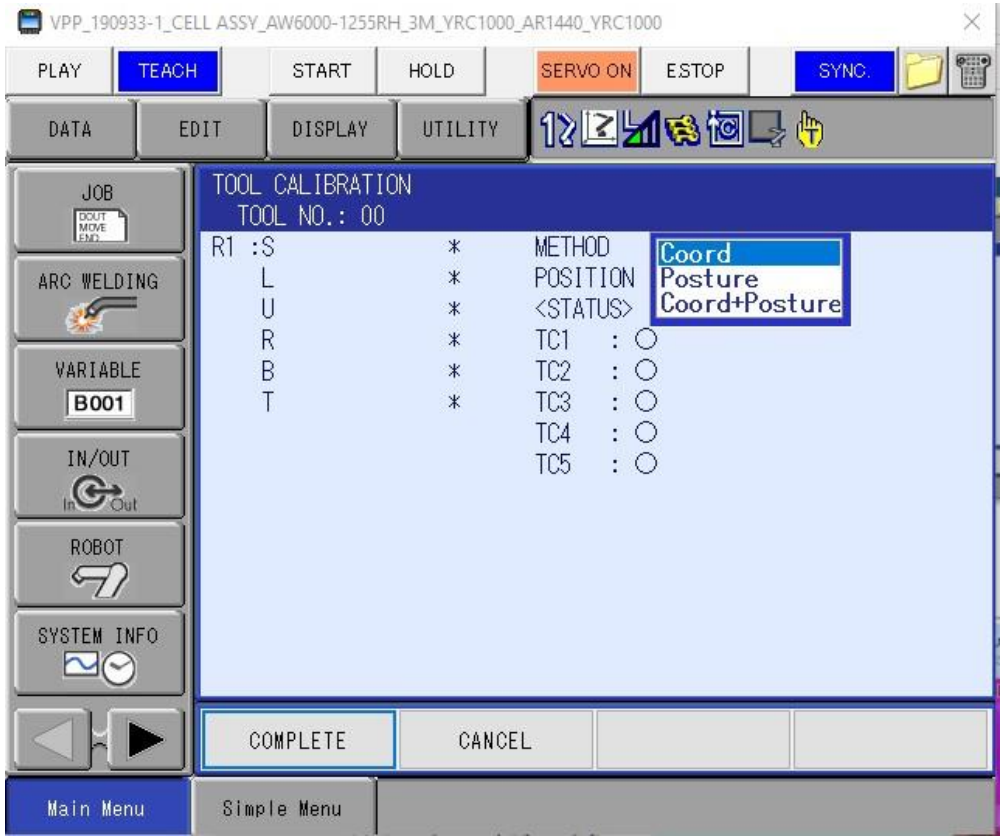
7. If you know the tool data from your CAD file, you may directly enter it. If not, it will have to be calculated. **Please reference section 8 of your controller "Instruction Manual", to run the tool calculation for real robot.** You can also calculate the tool inside MotoSim with this method. This will have to be done on the pendant side of MotoSim. Create a pointer or use a model already in your layout for a calibration point. Inside MotoSim, you can move the TCP (TOOL) to where you need it. You can also click the pick enable and snap the TCP frame to a location. Can also load the TOOL.CND from real robot if you have it.



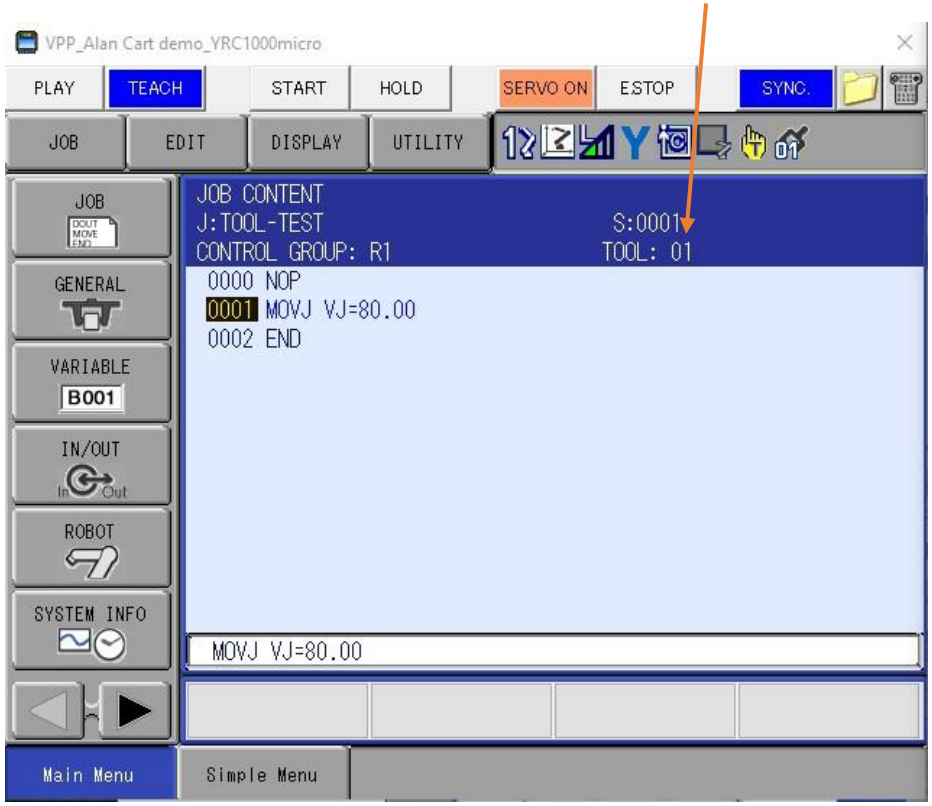


A. The Pick Enable button will allow you to snap the TCP to a location, like the wire of a weld torch, to define X, Y or Z. Then roll in Rx, Ry or Rz for angle you need. This is an illustration of the 5 point teach method from section 8 of the instruction manual.

B. The illustration above goes along with this window. It is showing the posture of the 5 teach points



8. Once all tools have been defined you can create a new job. The active tool will show in the header



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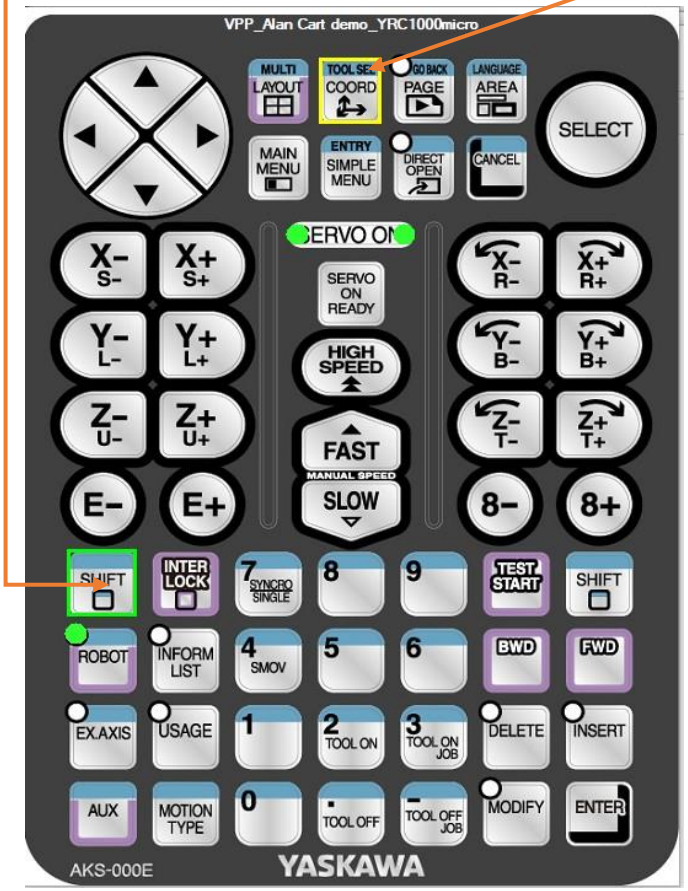
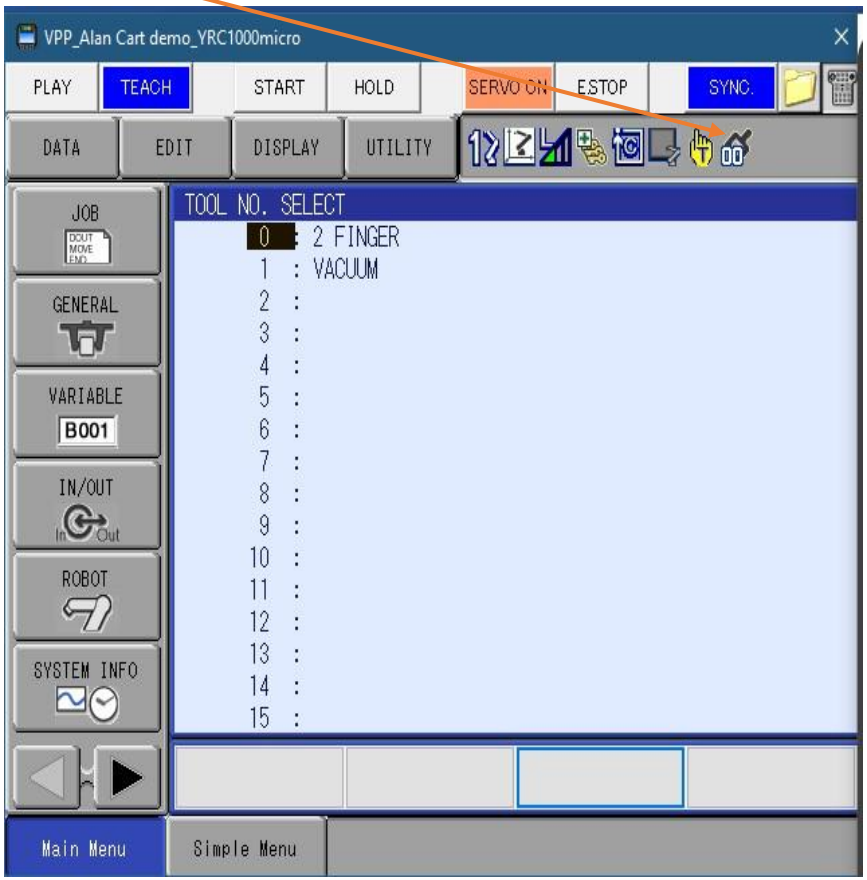
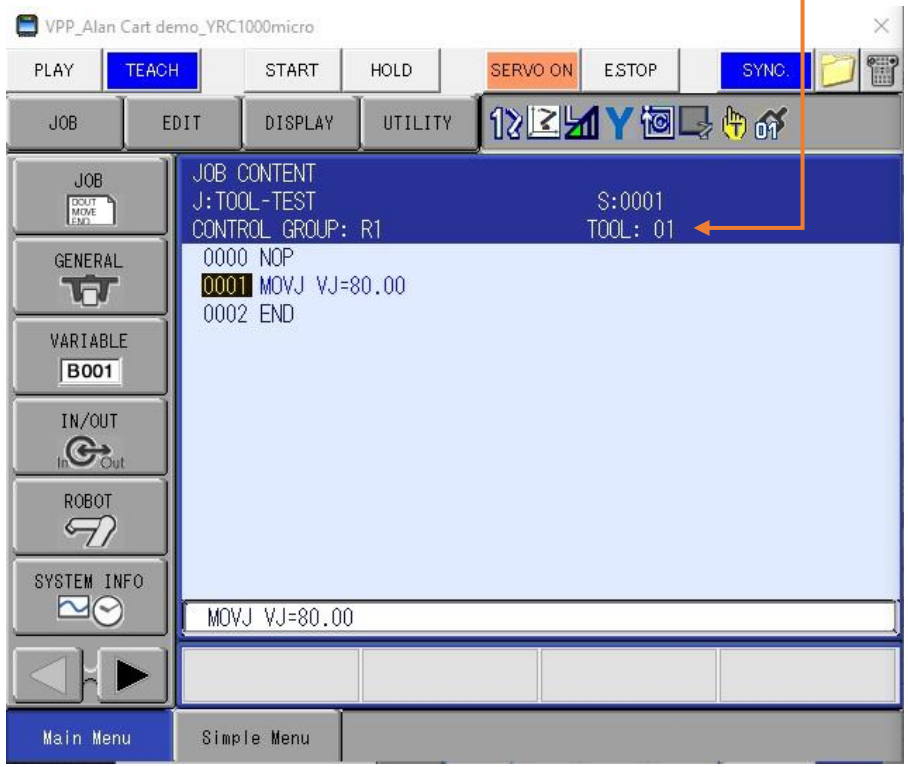
9. To change the active tool, you will have to hold the SHIFT key and COORD (tool) key to open the TOOL select window. Cursor to the tool you need, and then go back into the job. Active tool number will be displayed here.





10. The tool that was used during the teaching of a point is registered in the job header. You can have multiple tools used in one job, but care needs to be taken when teaching or touching up points. If a different tool is active from the one it was taught with and you do Modify Enter, it will overwrite that point with the new tool data. To safeguard against this, set parameter S2C234 to a 1. This will keep it from over writing the tool that was originally used and give you a pop-up window telling you that the active tool is different than your current tool.
11. If the job needs to use multiple tools, and you may need to teach points with different tools, then S2C234 must be a (0). **USE CAUTION** if that is the case