SCC CMA Training Curriculum

Haas CNC Milling Machines

Objectives: Upon completion the User will be able to operate the Haas CNC Milling Machines in a safe manner. User will be able to set up the machine, including loading and touching off tools manually and with the tool probe, touching off work manually and with the probe, loading programs, debugging first runs, and running the machine.

Prerequisite: User MUST have already completed Manual Milling Machine training. User must understand feeds and speeds, milling techniques, workpiece fixturing, tool selection, and have the ability to create or obtain a Gcode program for their part.

Time required: for a group of 8 users or less it should take about 4 hours to deliver this material. This allows for each user to perform the steps on the machine during the training process.

Outline:

1. Safety
    a. Clean work area
    b. PPE / loose clothing / jewelry / hair
    c. Buddy Requirement
    d. Only 1 person operates the machine
    e. Workpiece fixturing
    f. Sign into SUMS kiosk
2. Machine Anatomy / Terminology
    a. Spindle (and tool release button)
    b. Table
    c. Way covers
    d. Doors and sliding windows
    e. Tool carousel
    f. Control
    g. Coolant pump
    h. Lubricator (explain how to add way oil if prompted by the control)
    i. Air supply drain (must bleed before each use)
3. The Haas control panel (break down into button groups, explain each)
    a. Power on/off and E-stop plus the power-up/restart group
    b. Axis control and jog buttons
    c. Manual Override buttons
    d. Display buttons

    e. Cursor buttons
    f. Alpha and numeric keypads (point out enter/reset buttons and explain them)
    g. Mode buttons
4. Machine Power Up
    a. Turn on breaker
    b. Hit power button (watch for low battery warning)
    c. Hit reset until all error messages are gone
    d. Cycle the doors
    e. Make sure nothing is loose on the table, remove tool from spindle if one was left there
    f. Hit Power Up / Restart button and let machine initialize
5. Setting Work Coordinates
    a. G54 and other work coordinate options
    b. How to probe a workpiece
    c. How to manually set your origin
    d. Checking to verify it is set
6. Setting Tools
    a. Using collets and other toolholders
    b. How to set tools with the probing system
    c. Setting the coolant position on the VF2 for each tool
    d. How to set tools by manually touching off
    e. Make sure the tools and the workpiece cannot collide!!! (long tools)
7. File System / Loading and Editing Programs
    a. USB versus Memory
    b. Loading / Saving / File Transfers (delete all your programs from memory when done with machine!)
    c. Super Basic GCode primer
8. Debugging Techniques
    a. Graphic run
    b. Block mode
    c. Feed and Rapid overrides
    d. Thumb on the Feed Hold Button!
    e. Reminder – a crash is not due to a bad program, a crash is due to poor debugging!!!!
9. Running Parts
    a. Listen to machine
    b. Tweak feeds a speeds with override buttons to optimize (then edit code to match for next time)
    c. Coolant flow
10. Maintenance
    a. Way oil – how to add

b. Coolant – how to check and add (use of the refractometer)

11. Shut Down and Cleanup
    a. Tool removal
    b. NEVER LEAVE A TOOL IN THE SPINDLE! (why? They get stuck and break the drawbar assembly)
    c. Use washdown hose to rinse all chips to the auger
    d. Use auger to remove chips from machine
    e. Wipe down the vise and table with shop rag
    f. Light spray of WD40 if not immediately being used
    g. Clean up all around, under floor mat, etc