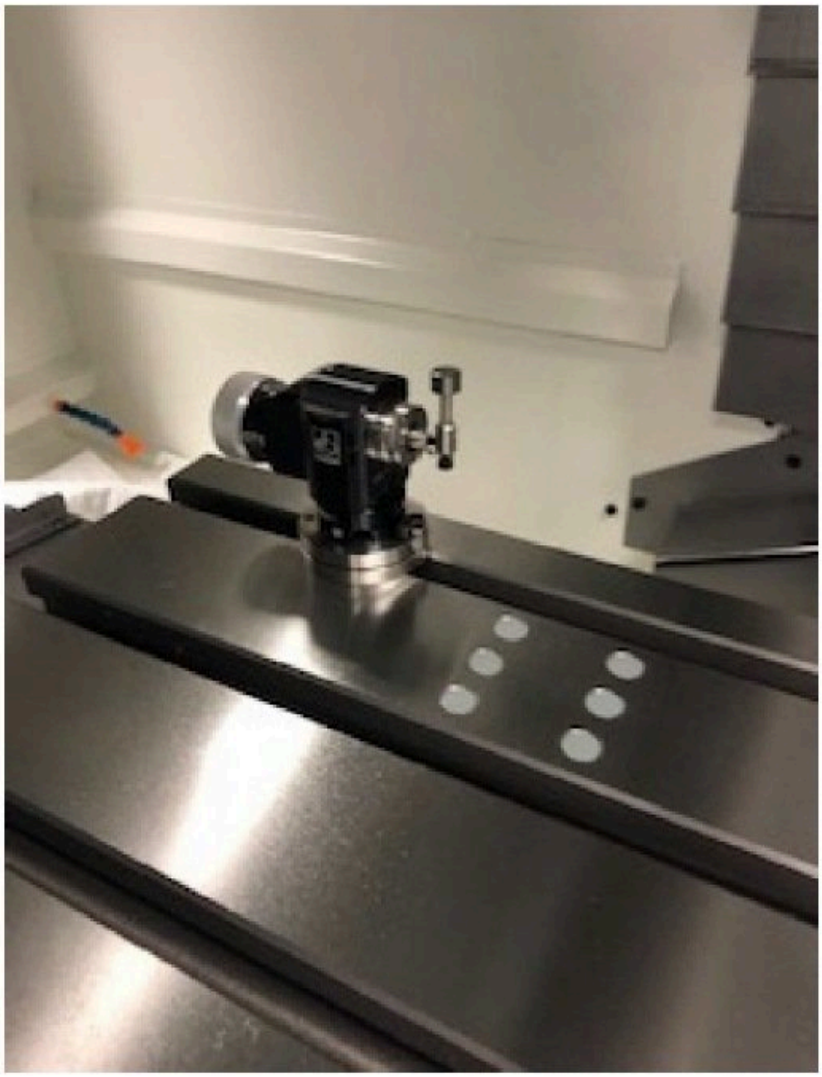
VMCsi Probe Tool Option - Calibrate Tool Setting Probe

Level the stylus and calibrate the OTS tool setting probe (34080-2) on a VMCsi.

Written By: Ryan Levrini



OPTICAL TOOL SETTING PROBE

This document was generated on 2026-11-18 05:07:52 PM (MST).

INTRODUCTION

Calibrate the OTS tool setting probe (P/N **34080-2**): stylus level, then the OTS location, tool length and tool diameter. To calibrate the OMP40-2 spindle probe (P/N **34080-1**), see VMCsi Probe Part Option - Calibrate Spindle Probe.

Two paths, depending on your calibration tool:

Calibration pin: Steps 6 to 10, then Step 13 onward.

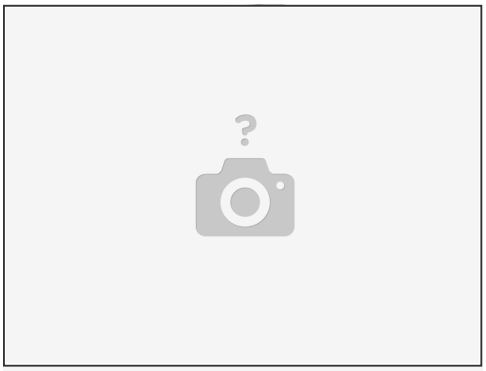
Precision calibration tool: Steps 11 and 12, then Step 13 onward.

TOOLS:

- 1-2-3 blocks (1)
- Tool Setter Dial (1)
- Calibration Tool (1)
- Dial Indicator (0.0001" resolution) (1)
- Set of Metric Allen Wrenches (1)

© 2026

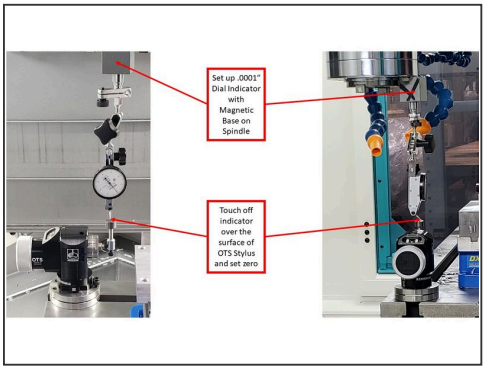
Step 1 — Before You Start: Check the OTS Setup

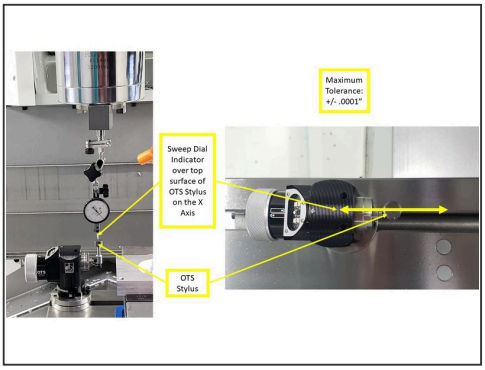


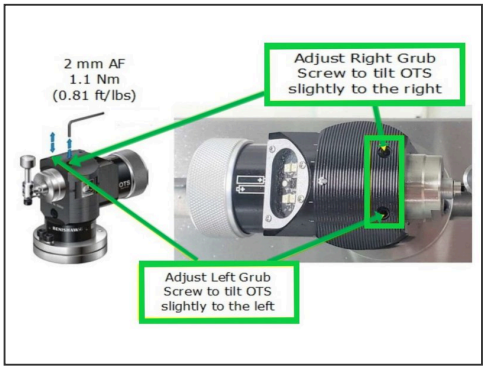
- The OTS must already be mounted and configured. VMCsi Probe Tool Option - Set Up Tool Setting Probe
- You need a 0.0001 in dial indicator, metric Allen wrenches, a tool setter dial, a 1-2-3 block, and a calibration tool (pin or precision tool).

ⓘ Recalibrate after the stylus or break stem is replaced, or after a crash.

Step 2 — Level the Stylus (Y Axis)

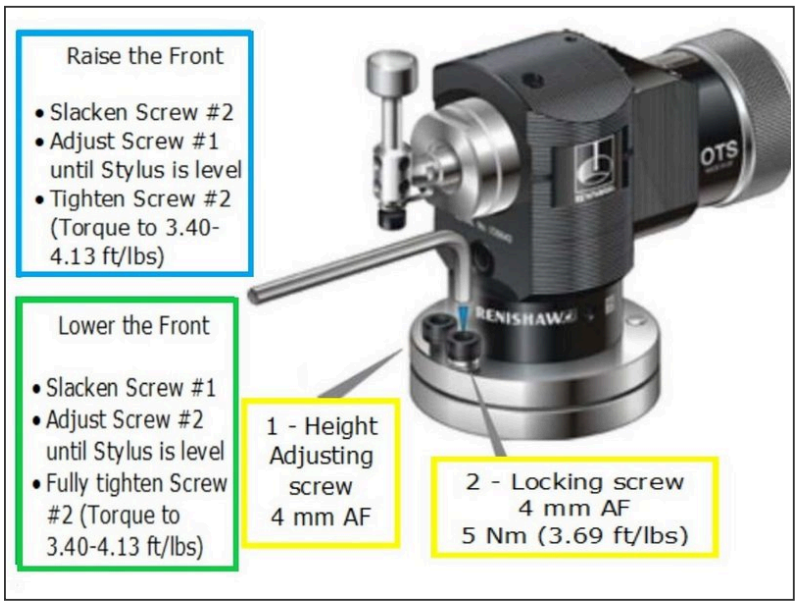






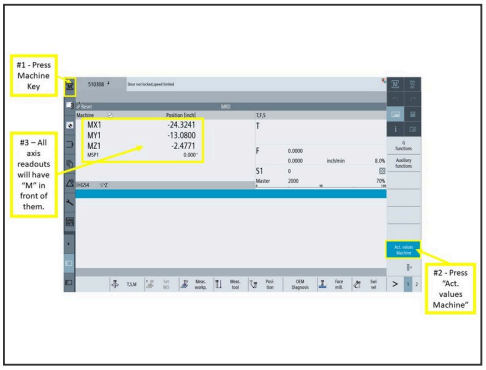
- The top of the stylus must be level side to side (Y) and front to back (X).
- Mount a 0.0001 in dial indicator in the spindle, facing forward, tip pointing down.
- Jog until the indicator touches the top of the stylus. Zero it at the edge.
- Sweep along Y. Level must be within **±0.0001 in**.
- Adjust the two side set screws to level the stylus:
  - The right screw tilts the stylus right; the left screw tilts it left.
- Adjust until level is within tolerance.
- Torque both screws to **0.52 to 0.66 lbf-ft**.

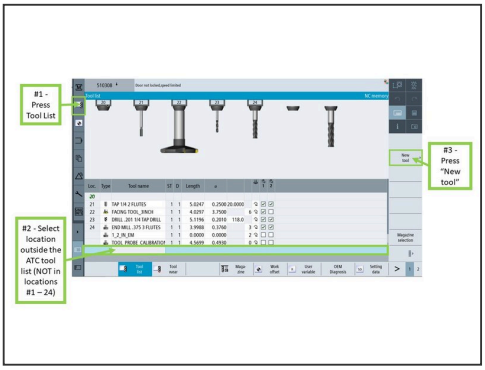
Step 3 — Level the Stylus (X Axis)

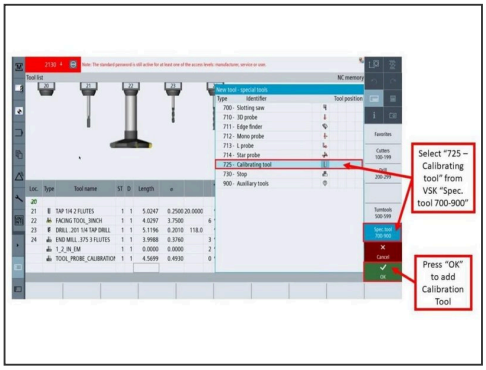


- Sweep the indicator along X (front to back).
- Level must be within **±0.0001 in**.
- Adjust with a 4 mm Allen wrench.
- To raise the front: loosen screw #2, adjust screw #1.
- To lower the front: loosen screw #1, adjust screw #2.
- Recheck level and repeat as needed.
- When within tolerance, tighten both screws. Torque to **3.40 to 4.13 lbf-ft**.

Step 4 — Add the Calibration Tool to the Tool List



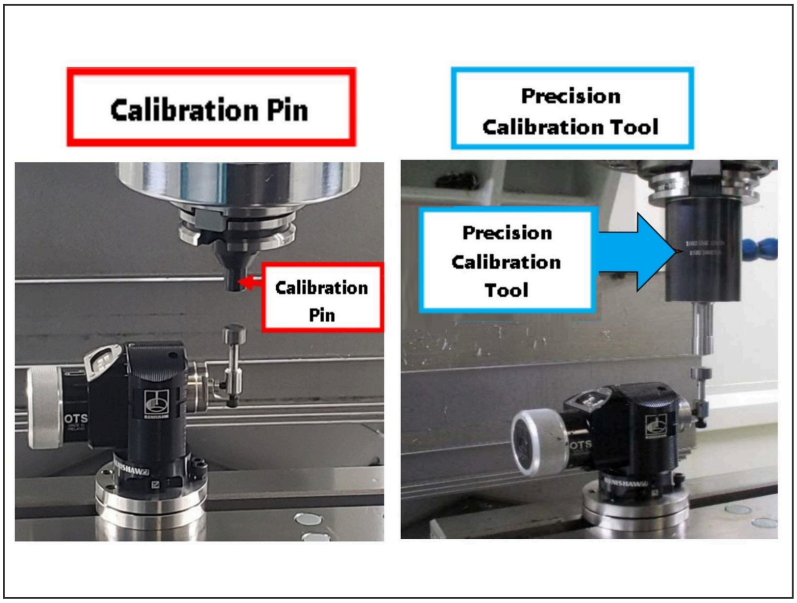




ⓘ Required only if the calibration tool is not already in the tool list. It is usually added at the factory.

- Press **[JOG]** on the MCP.
- Go to **[Machine]** → **[Act. values Machine]**. Axis values now show with an "M" prefix.
- Go to **[Tool List]**. Choose a location outside the ATC range: not 1 to 24 on a 24-tool ATC, not 1 to 40 on a 40-tool ATC.
- Press **[New tool]**.
- Select **[Spec. tool 700-900]**, then **[725 - Calibrating tool]**.
- Press **[OK]**.

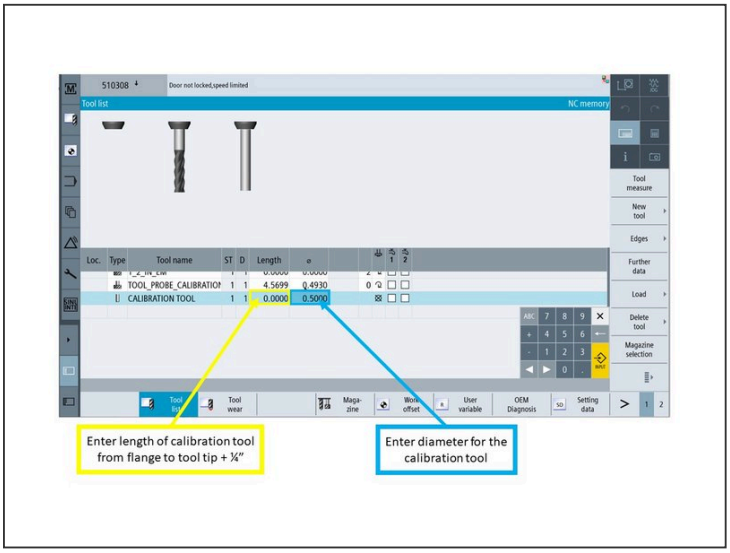
Step 5 — Choose Your Calibration Tool Path



- Choose the path for the calibration tool your shop uses. Both paths end at **Step 13**.
- **Calibration pin:**
  - Do **Steps 6 to 10**, then **Step 13**.
- **Precision calibration tool:**
  - Do **Steps 11 and 12**, then **Step 13**.

This document was generated on 2026-11-18 05:07:52 PM (MST).

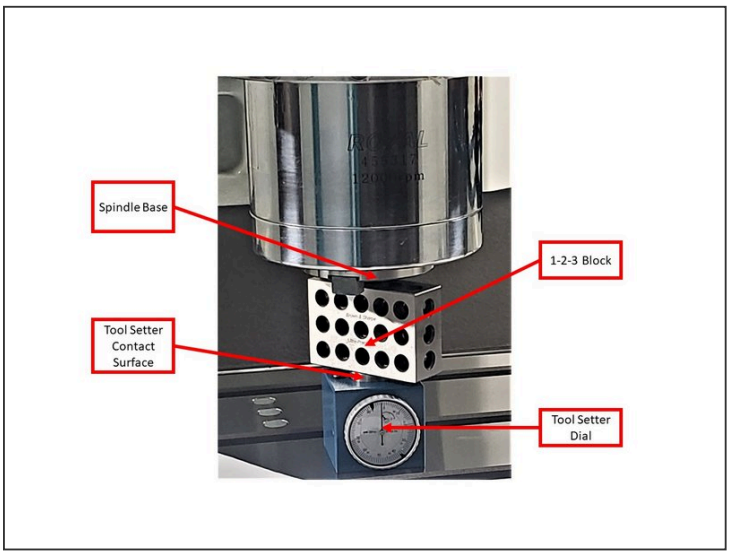
Step 6 — Pin: Enter the Tool Data

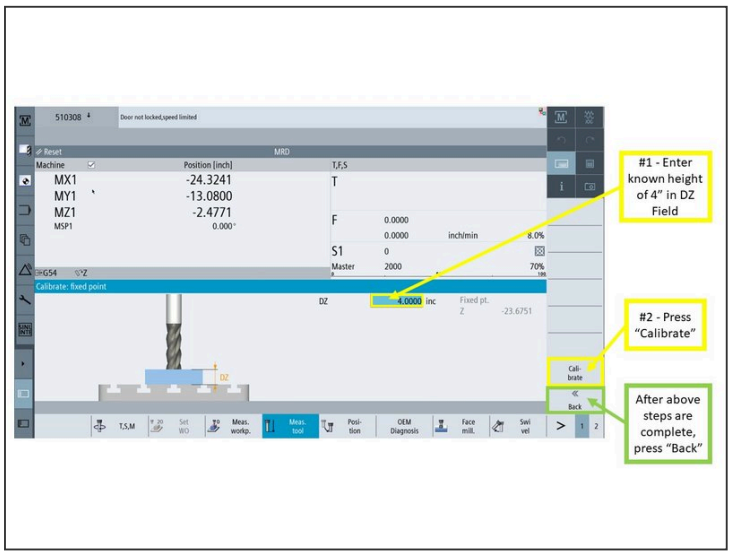




- Enter the calibration pin length (flange to tip) plus **0.25 in**.
- Enter the pin diameter (for example **0.5**, as shown).
- Press **[Machine]**, then **[Meas. tool]**.
- Press **[Calibrate fixed pt.]**.
- ⓘ The Z reference (fixed point) is set at the factory. Step 7 is required only if the Z reference has changed. Otherwise skip to **Step 8**.

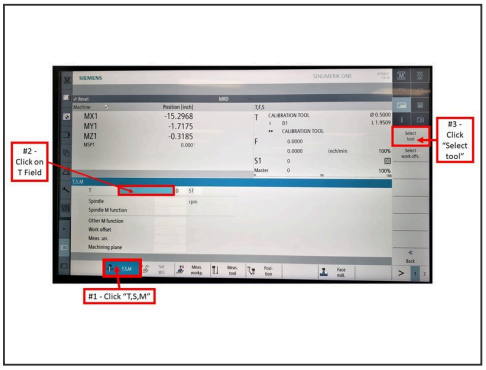
Step 7 — Pin: Set the Z Reference at a Known Height

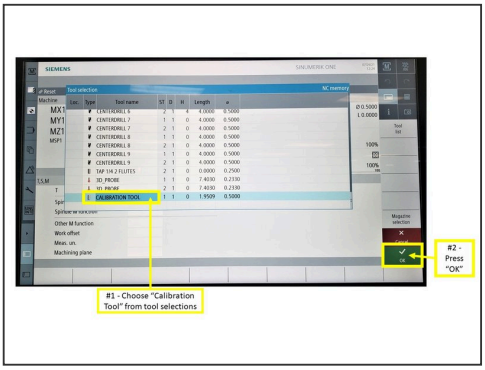


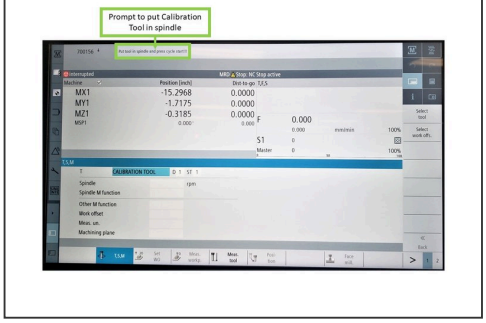


- Required only if the Z reference has changed.
- Place a tool setter dial (2 in) on a 1-2-3 block on the table, as shown.
- Jog Z down slowly until the spindle base (not the drive keys) contacts the dial.
- Keep jogging down until the dial reads zero.
- In the "Calibrate: fixed point" window, enter **4.000 in** in the **DZ** field.
- Press **[Calibrate]**, then **[Back]**.

Step 8 — Pin: Load the Calibration Pin

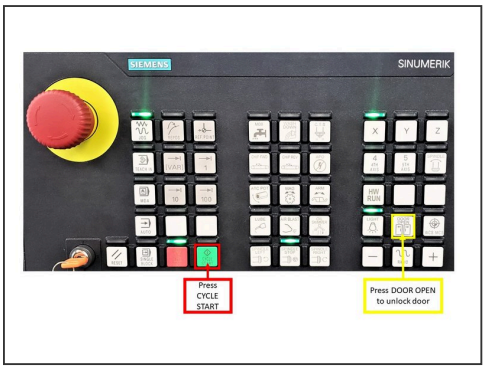


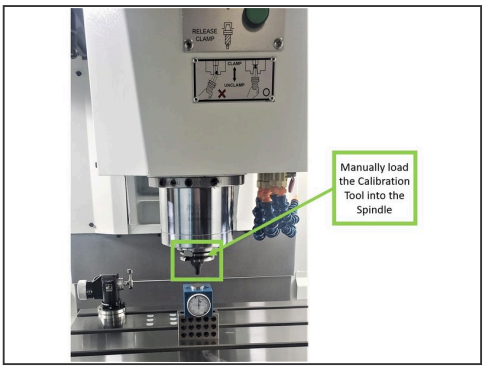


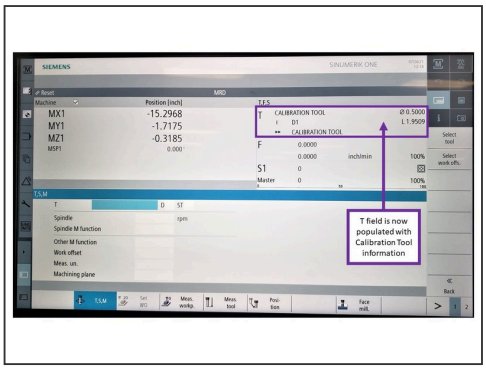


- Press **[T, S, M]**, then tap the **T** field.
- Press **[Select tool]**.
- In the "Tool selection" window, select the calibration tool and press **[OK]**.
- The control prompts you to load the tool by hand.

Step 9 — Pin: Load the Calibration Pin (Continued)



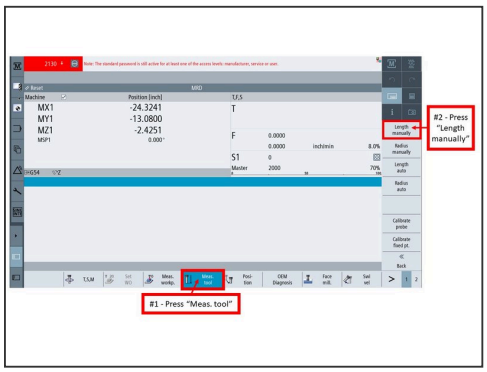


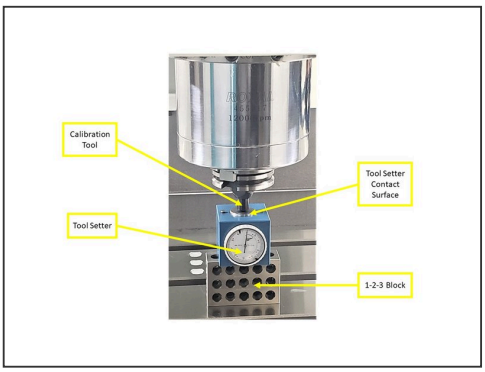


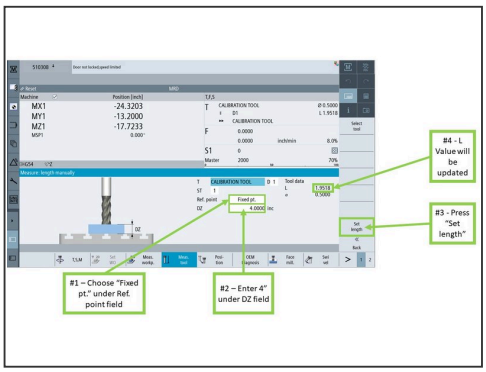
- Press **[CYCLE START]**.
- Press **[DOOR OPEN]** to unlock the doors.
- Load the calibration pin into the spindle by hand, then close the doors.
- Press **[CYCLE START]** again to finish the tool change.
- The **T** field now shows the calibration tool.

This document was generated on 2026-11-18 05:07:52 PM (MST).

Step 10 — Pin: Set the Calibration Pin Length

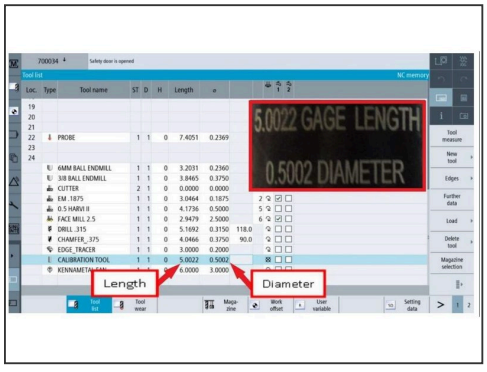


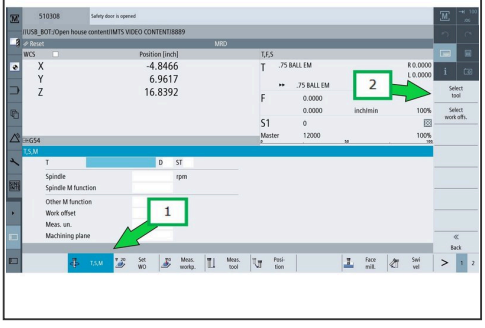


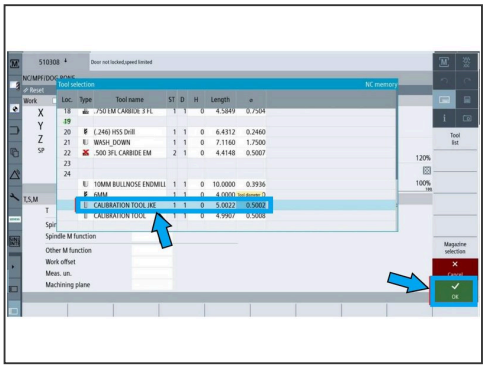


- Press **[Meas. tool]**, then **[Length manually]**.
- Place the tool setter dial on a 1-2-3 block on the table (4 in total).
- Jog Z down until the dial reads zero.
- In the "Measure: length manually" window:
  - Set **Ref. point** to **[Fixed pt.]**.
  - Enter **4.000 in** in the **DZ** field.
  - Press **[Set length]**.
- The **L** value in the tool data updates. Skip to **Step 13**.

Step 11 — Precision Tool: Enter the Tool Data



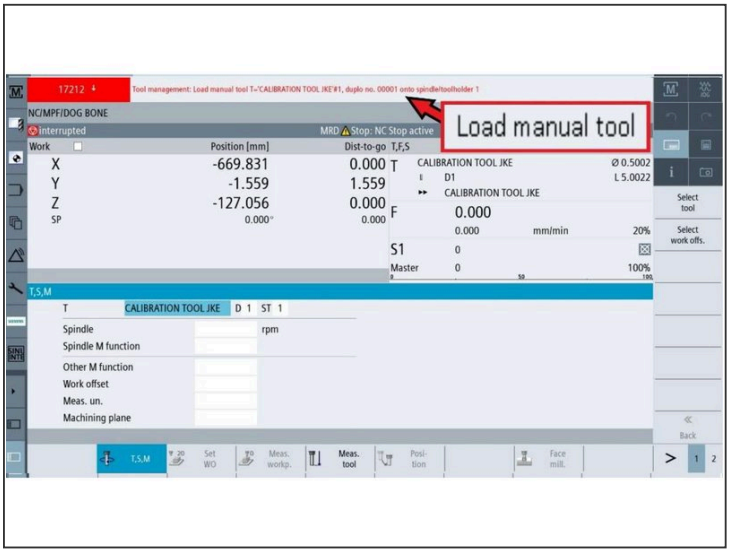


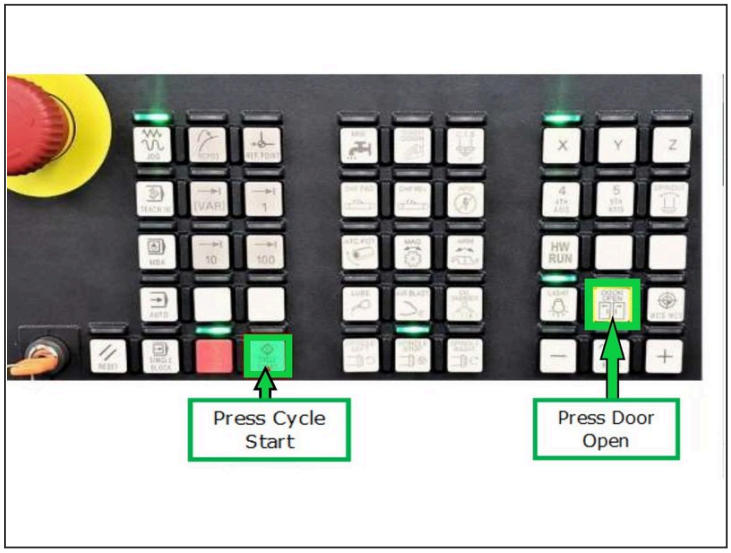


- Enter the length and diameter engraved on the precision calibration tool (see image).
- Press **[JOG]**, then **[T, S, M]**.
- Press **[Select tool]**, select the calibration tool, and press **[OK]**.

This document was generated on 2026-11-18 05:07:52 PM (MST).

Step 12 — Precision Tool: Load the Tool



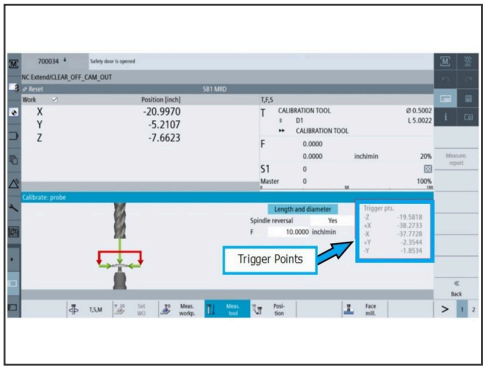


- Press **[CYCLE START]**.
- Press **[DOOR OPEN]** to unlock the door.
- Load the calibration tool into the spindle by hand and close the door.
- Press **[CYCLE START]** again to finish the tool change.

Step 13 — Calibrate the OTS Location

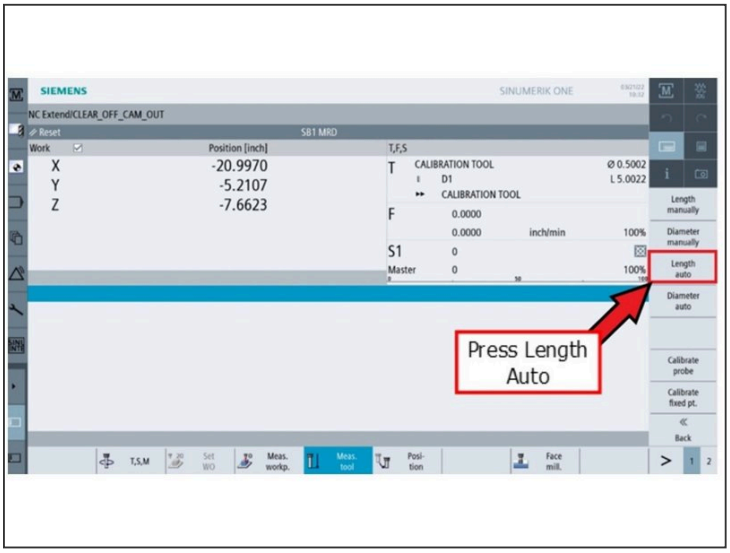






- Jog the calibration tool to about 0.5 in above the stylus, centered in X and Y.
- Press **[Meas. tool]**, then **[Calibrate probe]**.
- In the "Calibrate: probe" window, press **[CYCLE START]**.
- The tool touches the top and sides of the stylus.
- When it finishes, the window shows the machine values and trigger points.
- Run the calibration **three times** and note the machine values and trigger points each run.
- Confirm they repeat. If they do not, recheck stylus level (Steps 2 and 3) and repeat.

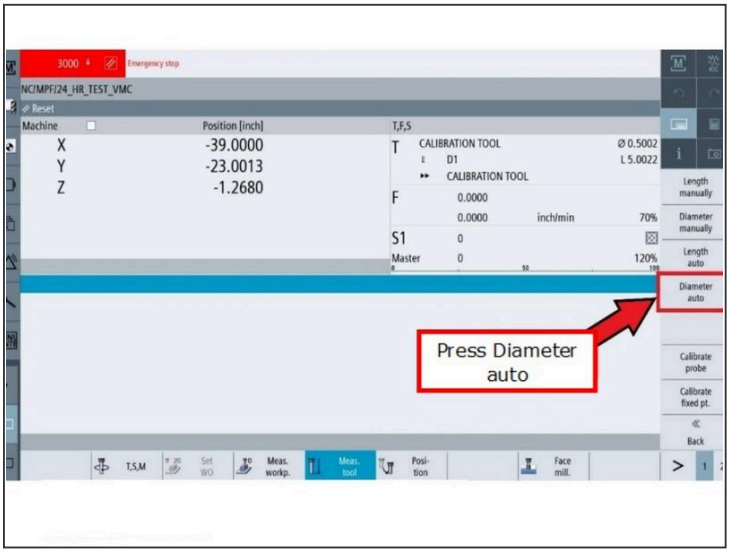
Step 14 — Measure Tool Length Automatically





- Press **[Back]**, then **[Length auto]**.
- Press **[CYCLE START]**.
- The machine positions the calibration tool over the stylus and measures its length.
- ⓘ The measured length should match the value you entered. If it does not, rerun **Step 13**.

Step 15 — Measure Tool Diameter Automatically





- Press **[Back]**, then **[Diameter auto]**.
- Press **[CYCLE START]**.
- The machine measures the tool diameter and logs it.
- ⓘ The measured diameter should match the tool table value. If it does not, rerun **Step 13**.