VMCsi Probe Part Option - Calibrate Spindle Probe

Dial in stylus runout and calibrate the length and diameter of the OMP40-2 spindle probe (34080-1) on a VMCsi.

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INTRODUCTION

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

Two paths, depending on what your shop has:

1-2-3 blocks only: Step 4, then Step 8 onward.

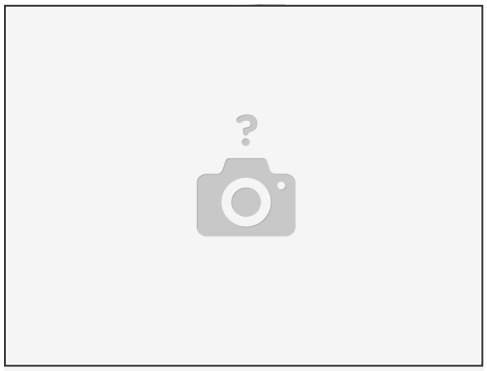
Precision Calibration Tool: Steps 5 to 7, then Step 8 onward.

Both paths end at the same calibration steps.

TOOLS:

- Ring Gauge (1)
- Dial Indicator (1)
- 8" Dial Caliper (1)
- 1-2-3 blocks (2)
- Calibration Tool (1)
- Flat head screwdriver (1)

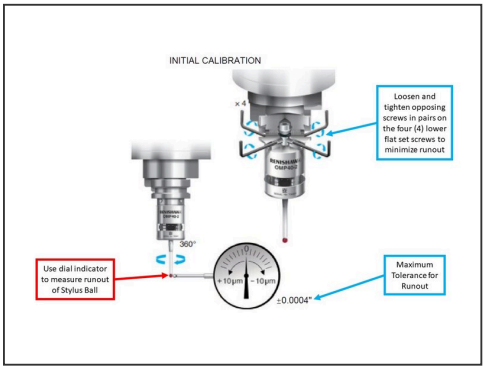
Step 1 — Before You Start: Check the Probe Setup

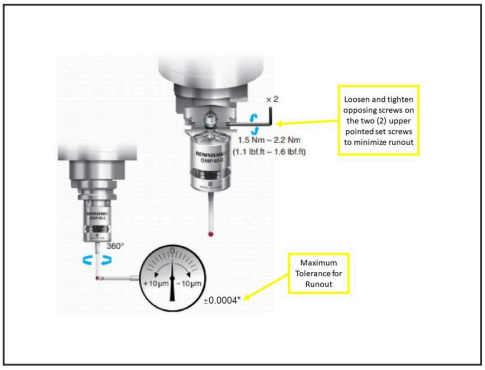


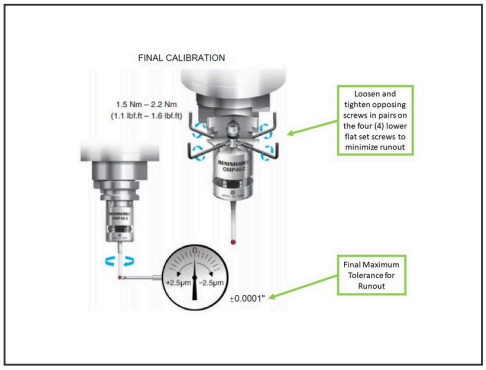
- The probe must already be set up and in the tool list. VMCsi Probe Part Option - Set Up Spindle Probe
- On a machine with two spindle probes, set up the data records first. VMCsi Probe Part Option - Set Up Two Spindle Probes
- You need a dial indicator, a ring gauge and two 1-2-3 blocks, plus the Precision Calibration Tool if your shop has one.

ⓘ Recalibrate after a stylus change or a crash.

Step 2 — Dial In Stylus Runout

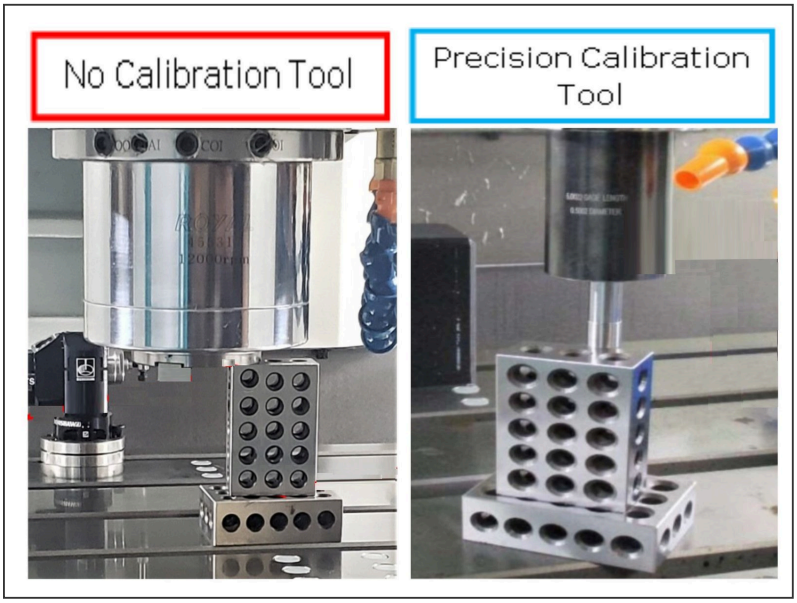






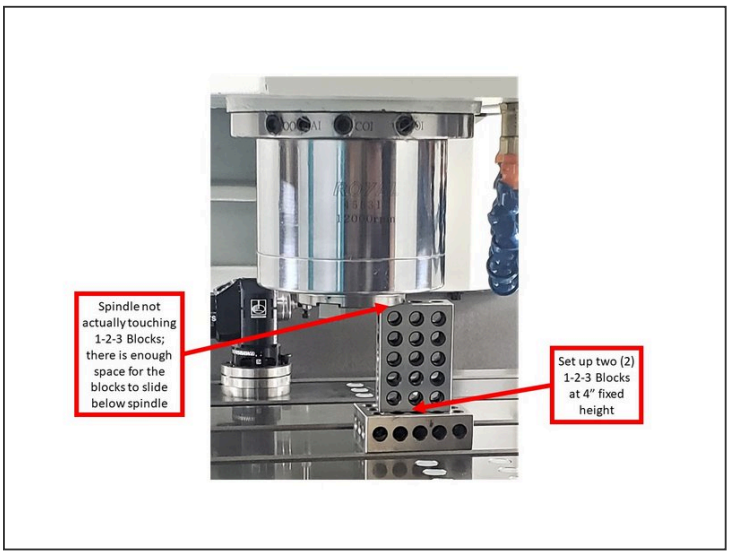
- Load the OMP40-2 into the spindle.
- Check runout at the ruby tip with a dial indicator while turning the spindle by hand.
- First pass: get runout within **±0.0004 in**.
- Adjust the four lower flat set screws in opposing pairs.
- Fine-tune with the two upper pointed set screws, also in opposition.
- Final pass: reduce runout to **±0.0001 in** or better.
- Re-adjust the lower screws as needed.
- Finish with the upper screws. Do not calibrate until runout is within **±0.0001 in**.

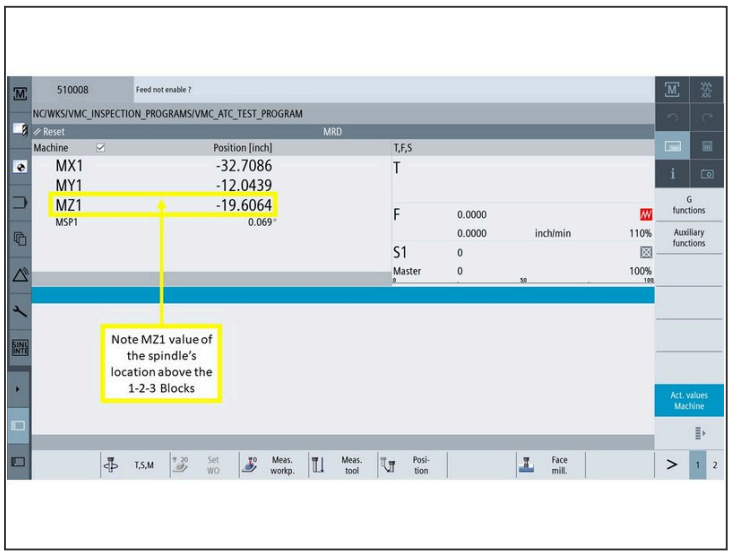
Step 3 — Choose Your Calibration Path



- Pick the path for the equipment your shop has. Both paths end at **Step 8**.
- **No calibration tool (1-2-3 blocks only):**
  - Do **Step 4**, then skip to **Step 8**.
- **Precision Calibration Tool:**
  - Do **Steps 5 to 7**, then **Step 8**.

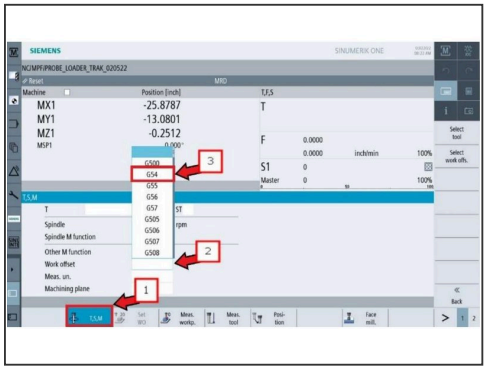
Step 4 — No Tool: Record a Fixed Height

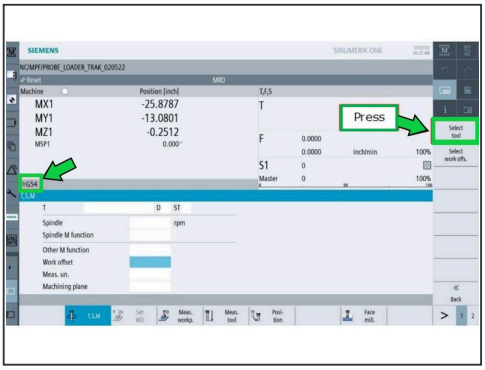


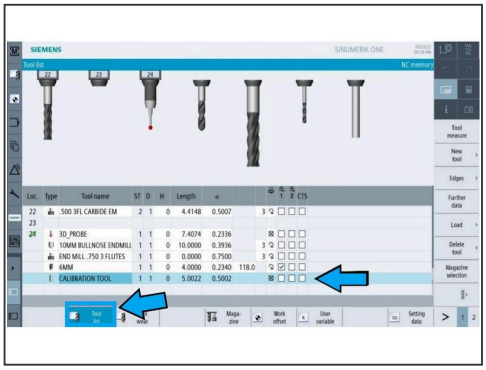


- Stack two 1-2-3 blocks to make a 4 in fixed height on the table.
- Jog the spindle down until the blocks no longer slide underneath it.
- Jog the spindle up slowly until the blocks just slide freely underneath.
- ⚠ The spindle should sit just above the blocks, not touching them.
- **Record the MZ1 value** shown at this height.
- You enter this value in **Step 9**. Skip to **Step 8**.

Step 5 — Calibration Tool: Set the Work Offset

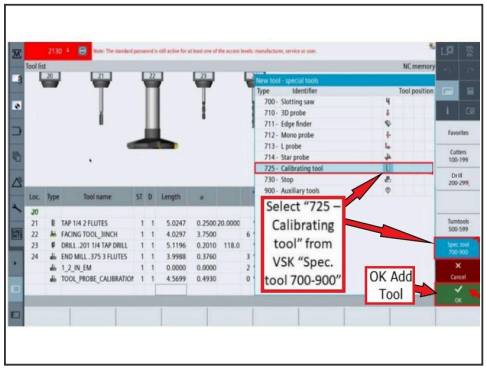


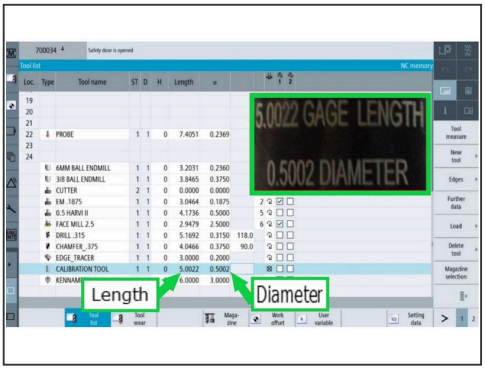


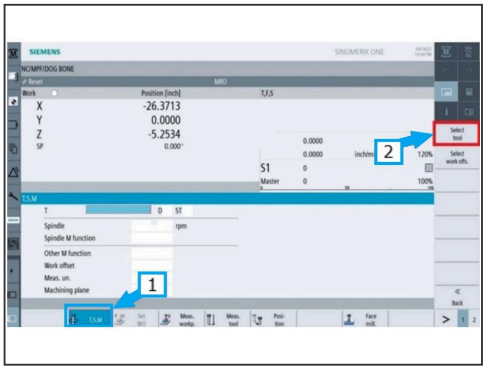


- Press **[T, S, M]**.
- Press **[Work offset]**.
- Select an available offset, for example G54.
- Press **[CYCLE START]** to activate it.
- Confirm the offset name (for example G54) shows on the screen.
- Press **[Select tool]**.
- If the calibration tool is already in the tool list, select it, load it with **[CYCLE START]**, and skip to **Step 7**.
- If it is **not**, continue to **Step 6** to add it.

Step 6 — Calibration Tool: Add and Load the Tool

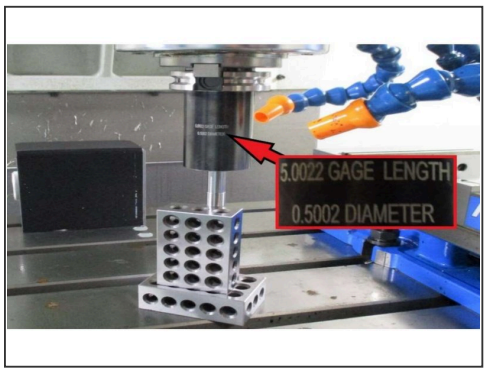


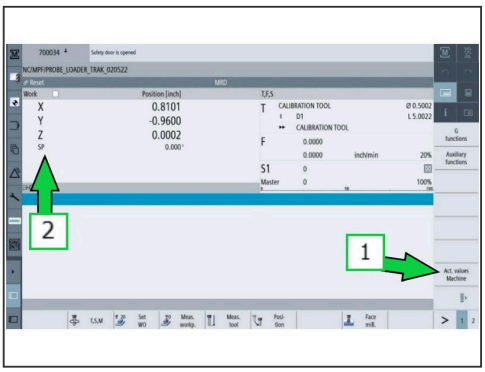


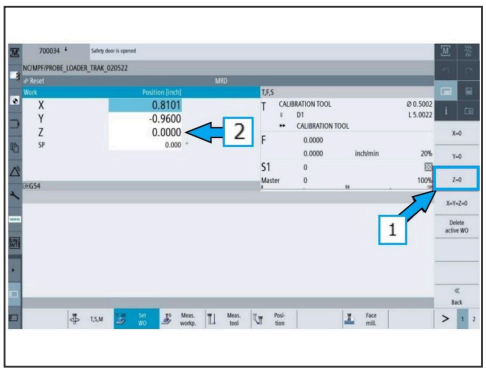


- In the **New tool - favorites** window, press **[Spec. tool 700-900]**.
- Select **725 - Calibrating tool**.
- Press **[OK]** to add it to the tool list.
- Enter the tool length and diameter engraved on the calibration tool body.
- Press **[JOG]** on the MCP.
- Press **[T, S, M]**, then press **[Select tool]**.
- Select the calibration tool and press **[CYCLE START]** to load it.

Step 7 — Calibration Tool: Set Z to Zero

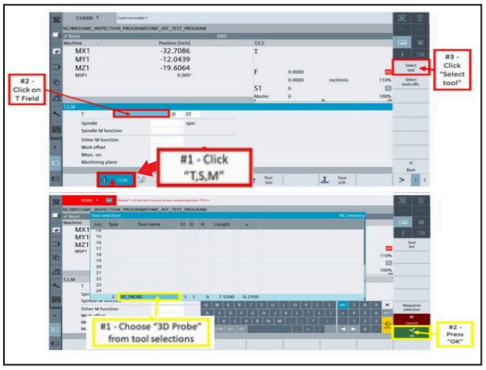


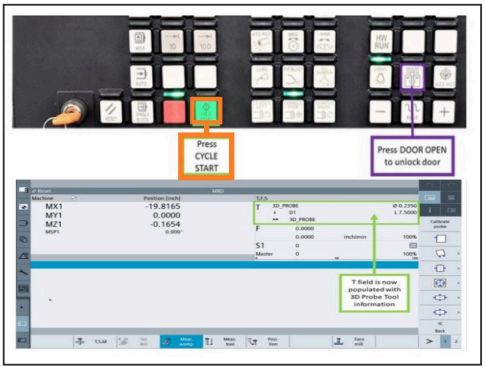


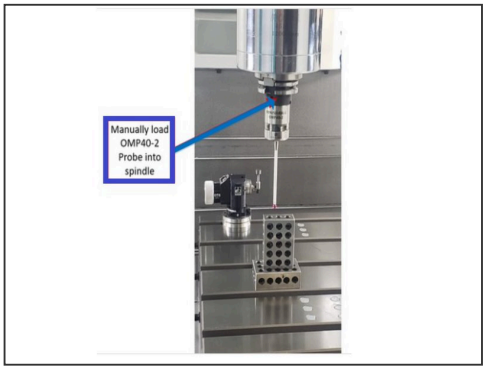


- Stack two 1-2-3 blocks on the table (4 in).
- Lower the calibration tool below the top of the blocks, beside them.
- Raise the tool slowly until the blocks just slide underneath without contact.
- Press **[Act. values Machine]** to turn off machine values. The display switches to work offset values.
- Press **[Z=0]**.
- Confirm Z reads **0**.

Step 8 — Load the Probe Into the Spindle

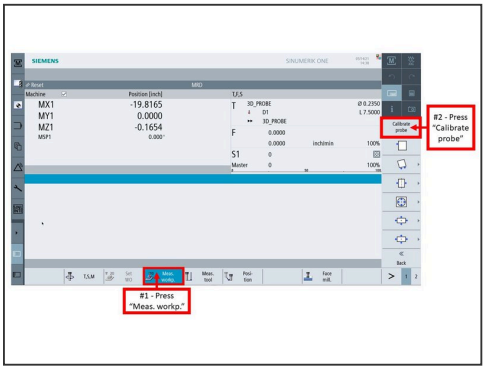


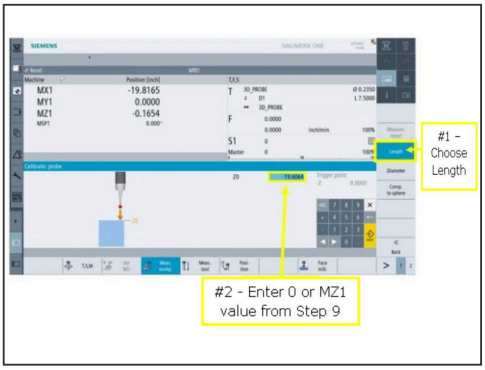


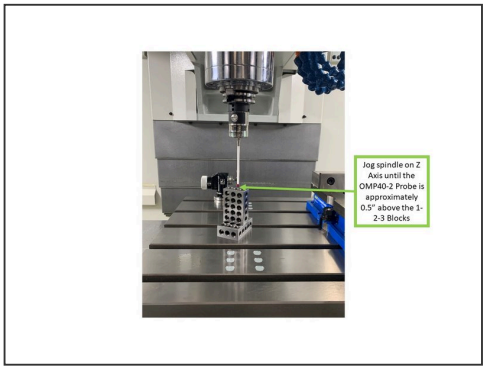


- Press **[T, S, M]**.
- Click the **T** field, then press **[Select tool]**.
- Select the 3D probe tool created during setup.
- Press **[OK]**.
- Press **[CYCLE START]**.
- Press **[DOOR OPEN]** to unlock the door.
- Insert the OMP40-2 into the spindle.
- Confirm the **T** field shows the 3D probe tool.

Step 9 — Calibrate Probe Length

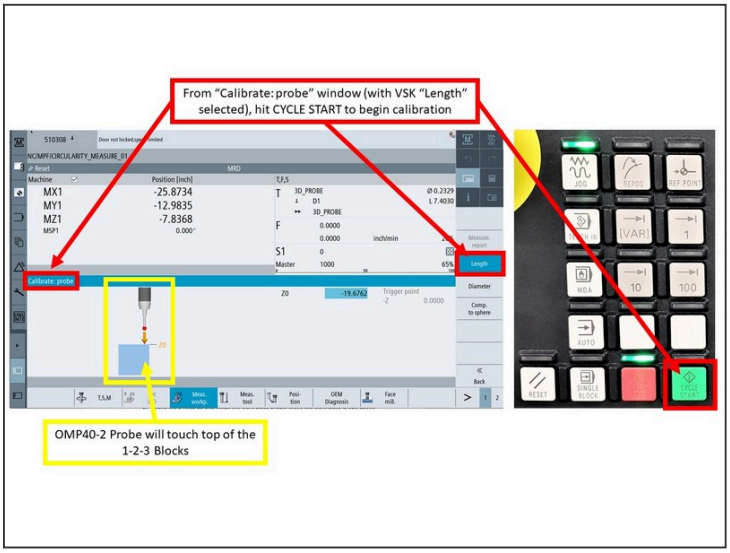


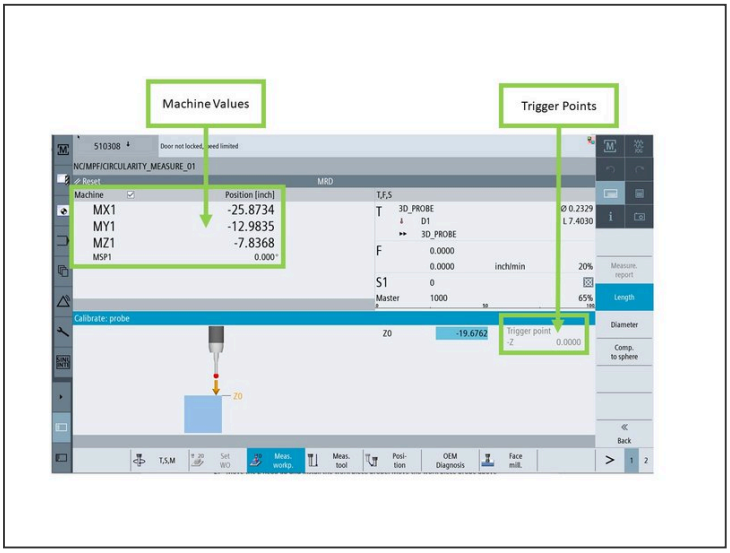




- Press **[Meas. workp.]**.
- Press **[Calibrate probe]**.
- Press **[Length]**.
- **No calibration tool:** enter the MZ1 value from **Step 4** in the **Z0** field.
- **Calibration tool:** enter **0** in the **Z0** field.
- Jog Z down until the probe is about 0.5 in above the 1-2-3 blocks.
- Check the setup before starting the cycle.

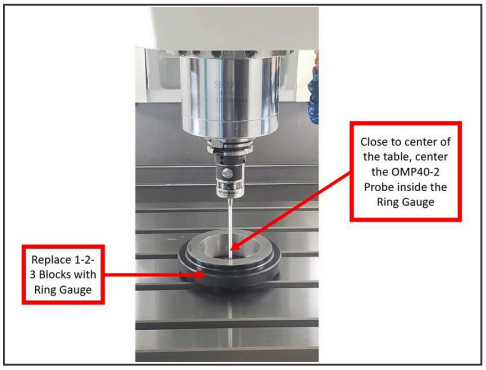
Step 10 — Calibrate Probe Length (Continued)

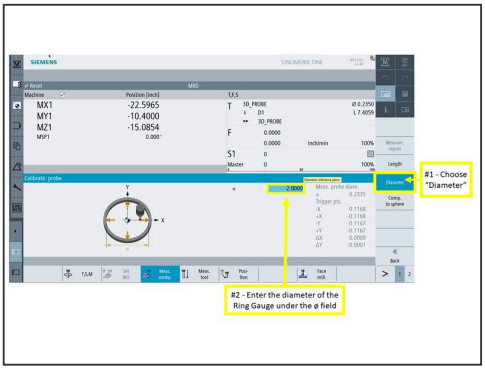


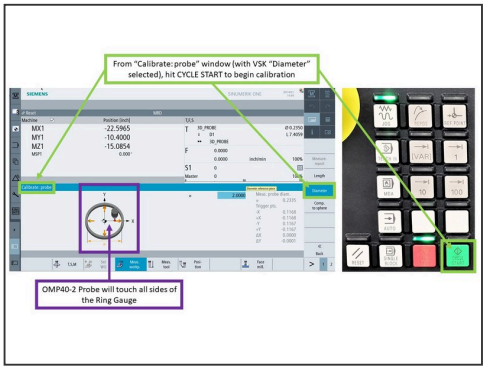


- Press **[CYCLE START]**.
- The probe moves down, touches the top of the blocks, and measures its length.
- The "Calibrate: probe" window shows the machine values and trigger points.
- Run the length calibration **three times**.
- Confirm the machine values and trigger points **repeat** each run.
- If they vary, lower the program feedrate and repeat.

Step 11 — Calibrate Probe Diameter

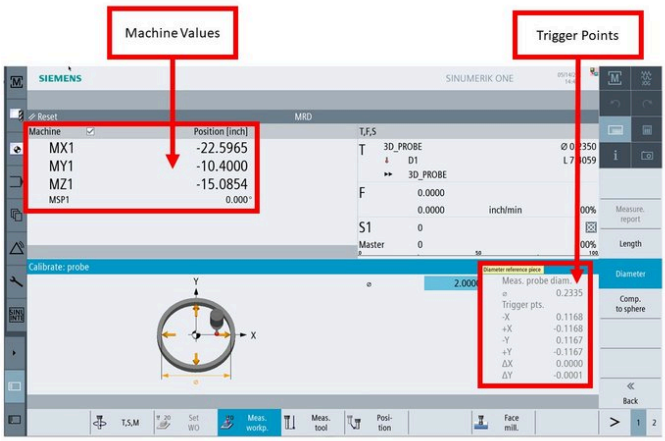






- Remove the 1-2-3 blocks from the table.
- Place the ring gauge near the center of the table.
- Secure it with magnets or clamps so it cannot move.
- Jog so the stylus ball sits in the center of the ring gauge, below the rim.
- In the "Calibrate: probe" window, press **[Diameter]**.
- Enter the ring gauge diameter in the **ø** field.
- Press **[CYCLE START]**.
- The probe touches the inside of the ring gauge on all sides to measure diameter.

Step 12 — Calibrate Probe Diameter (Continued)



- When the cycle finishes, the window shows the machine values and trigger points.
- Run the diameter calibration **three times**.
- Confirm the machine values and trigger points repeat each run.
- If they vary, lower the program feedrate and repeat.