

# OWNER'S GUIDE

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## PASSIVE PROBE (PN 32309)

# PURPOSE

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This document gives instructions on configuring, calibrating, maintaining, and making electrical connections (for use with non-Tormach mills) for a Passive Probe.

## PRODUCT INFORMATION

**Product:** Passive Probe (PN 32309)

Quantity	Description
1	2 mm Hex Wrench
1	2 mm Pin
1	2.5 mm Hex Wrench
1	Ceramic Stylus with Ruby Ball Tip
1	<b><u>TTS Gauge Holder: 10 mm (PN 32018)</u></b>



**Note:** If any items are missing, we can help. Create a support ticket with Tormach Technical Support at [tormach.com/how-to-submit-a-support-ticket](https://tormach.com/how-to-submit-a-support-ticket) for guidance on how to proceed.

## USING THE PROBE

Complete the following steps in the order listed:

- Enable the Probe in PathPilot..... 3
- Calibrate the Probe Tip..... 3

### Enable the Probe in PathPilot

➤ From the **Settings** tab, select **Passive Probe**.

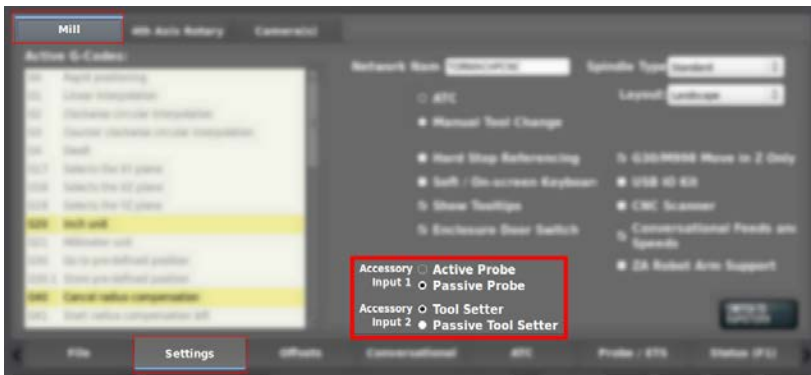


Figure 1: Probe options on the Settings tab.

### Calibrate the Probe Tip

Calibrating the probe tip verifies that the center line of the probe tip is coaxial to the centerline of the machine's spindle.

For best results, you must routinely calibrate the probe tip. You also must calibrate the probe tip before initially using the probe, and any time that you replace the probe tip.

To calibrate the probe tip:

1. Find the three adjustment set screws on the probe.



Figure 2: Adjustment set screws on the probe.

2. Load the probe into the spindle so that one of the three adjustment set screws is pointing toward the machine column. Label the adjustment set screw as A.

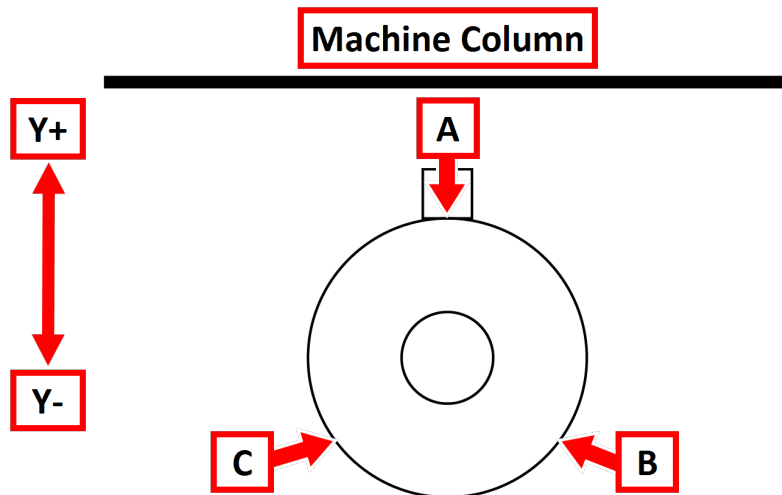


Figure 3: Probe correctly oriented in the spindle.

3. From the PathPilot interface, select the **Probe/ETS** tab. Then, select the **Probe Setup** tab.
4. In the **Tip Concentricity** section, select **A Y+** as shown in the following image.



Figure 4: A Y+ button on the Probe/ETS tab.

5. Rotate the probe clockwise (as viewed from above), so that the second adjustment set screw is pointing toward the machine column. Label the adjustment set screw as B.
6. From the PathPilot interface, on the **Probe/ETS** tab, in the **Tip Concentricity** section, select **B Y+**.
7. Rotate the probe clockwise (as viewed from above) so that the third (and final) adjustment set screw is pointing toward the machine column. Label the adjustment set screw as C.
8. From the PathPilot interface, on the **Probe/ETS** tab, in the **Tip Concentricity** section, select **C Y+**.
9. Determine which DRO value is largest between A, B, and C. Then, tighten the its adjustment set screw.



**Note:** If you can't tighten the adjustment set screw of the largest value, try loosening the other two adjustment set screws.

10. Rotate the probe so that the adjustment set screw labeled A is pointing toward the machine column. Then, repeat Steps 4 through 9.

11. Depending on the DRO values, do one of the following:
  - a. **All DRO Values are the Same** Go to Step 12.
  - b. **Different DRO Values** Repeat Step 10.
12. Put a mark on spindle pulley with a marker or paint pen at a location that corresponds to the angular position of the probe cord. Then, if you remove the probe, you can replace it in the exact spindle orientation in which you calibrated it (which helps to eliminate error stackup).

## MAINTENANCE

Over time, corrosion can build up on the contact surfaces of the passive probe. This can lead to inconsistent electrical resistance and faulty operation. To avoid potential problems, you must regularly clean the probe contacts.

To clean the probe contacts:

1. Remove the 3 mm screws on the probe with a 2.5 mm hex wrench.



*Figure 1: Removing the screws from the probe.*

2. Disassemble the probe, and identify the central mandrel. Then, set all other components aside.



*Figure 2: Probe disassembled.*

3. Inspect each contact spoke on the central mandrel for corrosion.



*Figure 3: Example of corrosion on a contact spoke.*

4. Clean the contact spokes with emery paper, Scotch-Brite™, or steel wool. Use enough force to remove the corrosion, but be careful not to bend the contact spokes.



*Figure 4: Example of a cleaned contact spoke next to a contact spoke with corrosion.*

5. Wipe all contact surfaces with a corrosion inhibitor (like LPS 1® Greaseless Lubricant or similar).

6. Reassemble all components of the probe that you set aside in Step 2. Verify that the spring is aligned as shown in the following image.



*Figure 5: Spring aligned correctly in the probe.*

## Replacement Parts

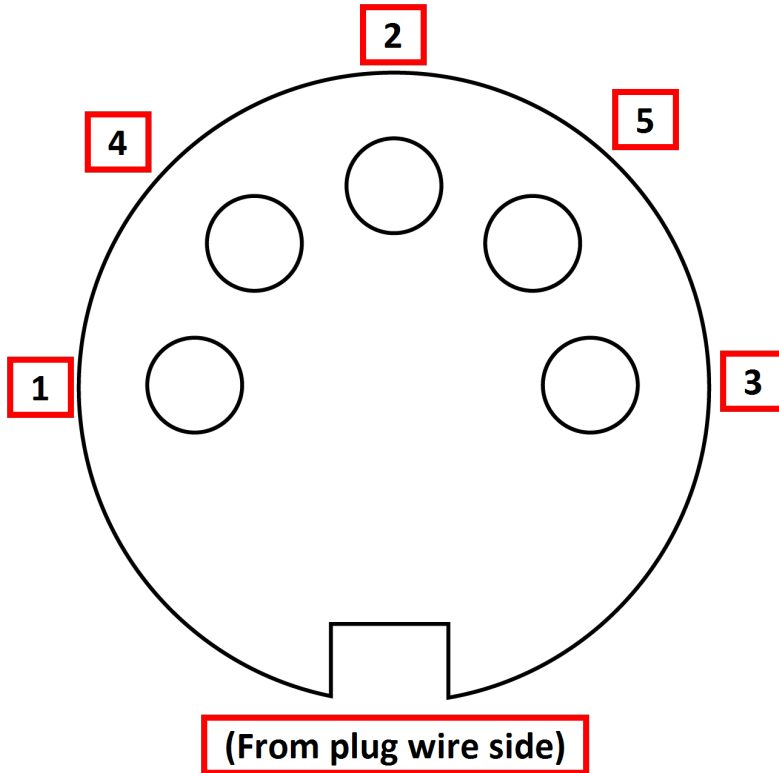
- Probe Stylus, 50mm Length, 6mm Ruby Ball, M4 Thread (PN 51781)
- Replacement Breakaway Section for Practice Probe Tip (PN 31901)
- DIN Connectors: Male (PN 30624)
- DIN5 Connector Assembly (PN 38212)
- 5-Pin DIN Extension Cable, 6 ft (PN 30701)



## THIRD-PARTY CONTROL SYSTEMS: ELECTRICAL CONNECTIONS

### Notes

- The Tormach passive probe is configured as a normally closed (NC) switch between pin 4 and pin 5 on the DIN connector. Pin 1, pin 2, and pin 3 are not used.



*Figure 1: Pin connections.*

- Switch polarity isn't important.
- The probe operates with electrical continuity between pin 4 and pin 5 until the probe tip is triggered, which opens the circuit.
- If necessary, cut the cord to remove the DIN connector and rewire it with a different connector.