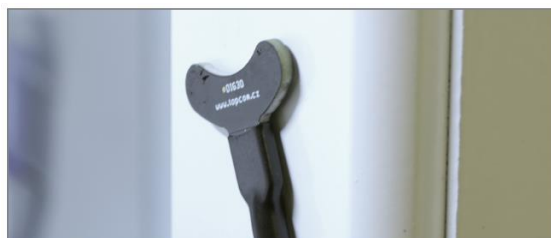
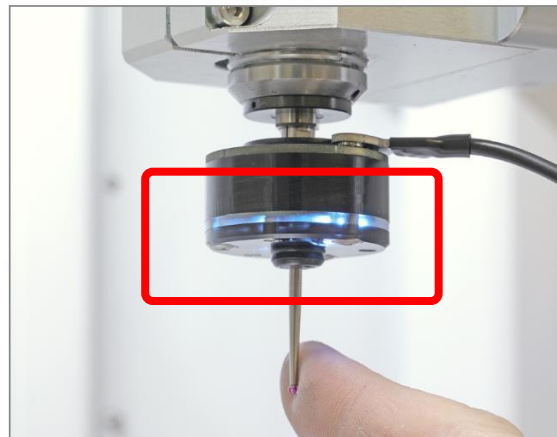
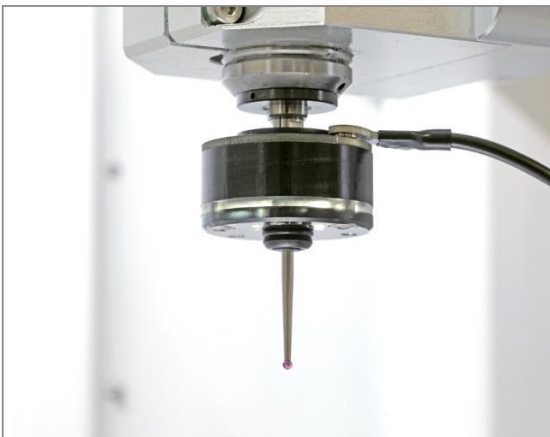
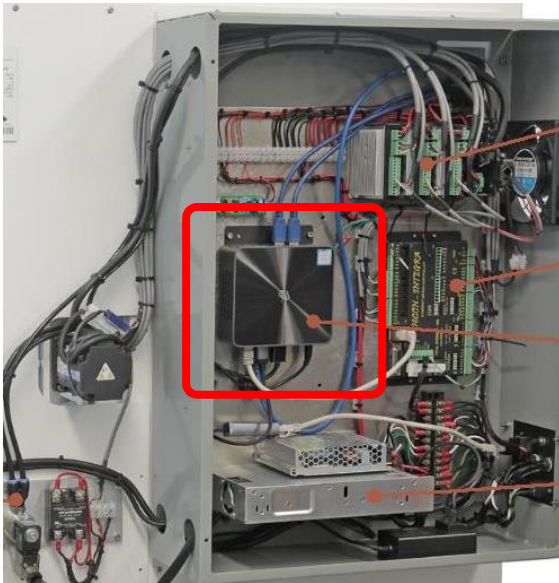


Touch Probe

The touch probe is a great tool to find the edge or center of a workpiece. The NSCNC touch probe is supplied with a shock protected case.

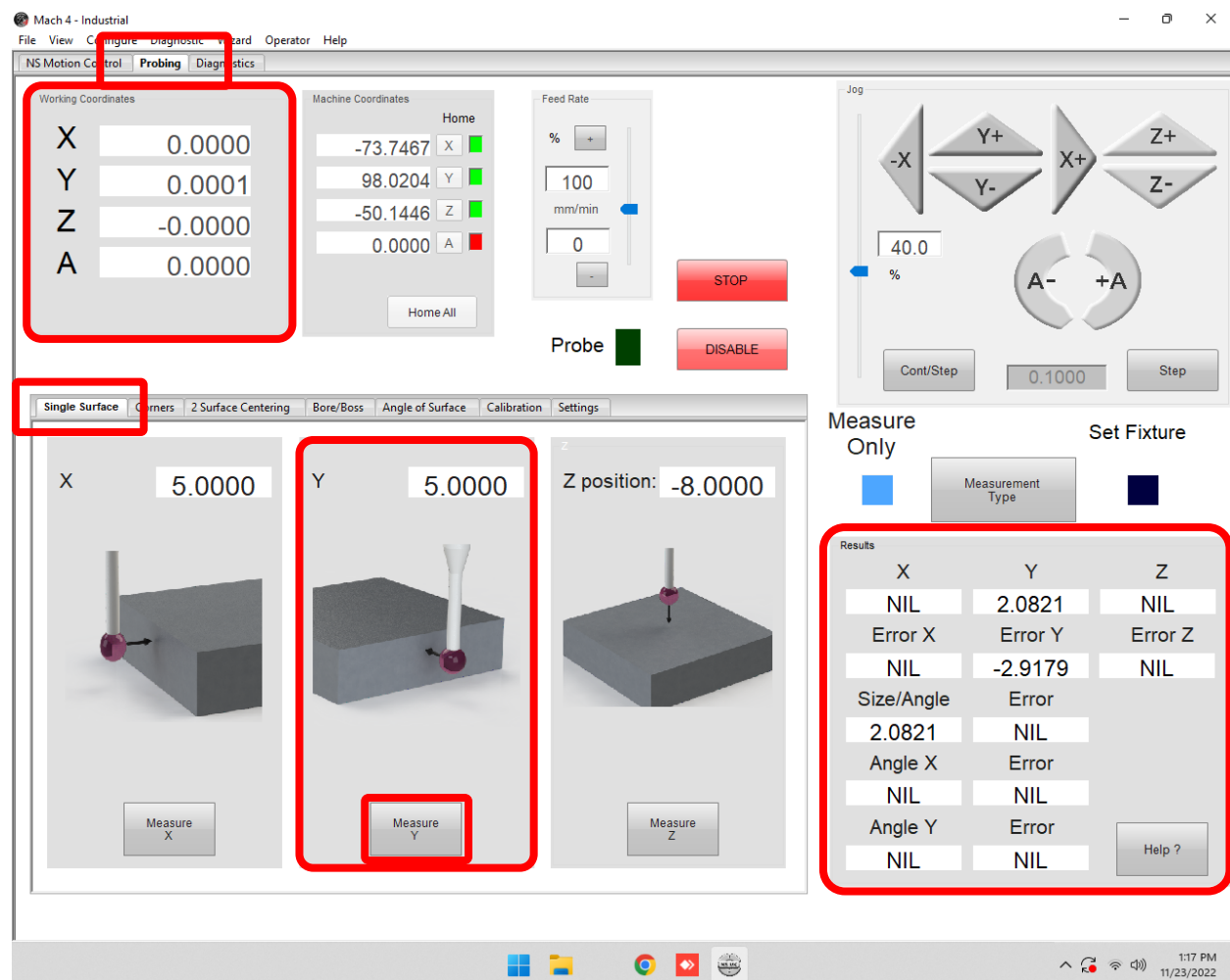
- The wire attaches to magnetic pads on one end, and the other end plugs into the computer inside of the electrical panel.
- When the probe is activated (touching something) the LED on the probe will illuminate blue (see below).
- When not in use, the probe should be stored in the supplied case, and the magnetic end of the wire can be attached to the frame on the inside of the machine (see below).



Edge Finding

In this example we will find the edge of our workpiece. The workpiece is a flat bar, 120 mm long (X-direction), 20 mm tall (Z-direction), and 6.35 mm thick (Y-direction).

1. Start by going to the **Probing** tab, and insert the probe into the spindle, attaching the power cord.
2. Move the tip of the probe to the user side of the workpiece as shown in the screenshot. Make sure the tip is less than 5 mm in the Y-axis, and at least 2 mm in the Z-axis below the top of the workpiece. The X-axis position is not important for this measurement, and can be anywhere on the workpiece.
3. Enter **zeros** for all **Working Coordinates** (X, Y, Z, A).
4. Open the **Single Surface** tab
5. Enter **Y: 5.0** (this will move the probe in the positive Y direction) in the **Measure Y** box.
6. Notice all **Results** are **NIL** until we perform a measurement, then measured values will be shown in the **Results** box, as shown below.
7. Now click the **Measure Y** button. The machine should move toward the part, the probe will illuminate blue upon contact with the workpiece, take a second measurement, and return to the start position.
8. To find the edge of the workpiece, add the measured Y value to the Machine Coordinates Y:
 $98.0204 + 2.0821 = 100.1025$ Y



Center Finding

In this example we will find the center of our workpiece. The workpiece is a flat bar, 120 mm long (X-direction), 20 mm tall (Z-direction), and 6.35 mm thick (Y-direction).

1. Start by going to the **Probing** tab, and insert the probe into the spindle, attaching the power cord.
2. Move the tip of the probe to the top of the workpiece as shown in the screenshot. Make sure the tip less than 5 mm in the Z-axis above the workpiece, and roughly centered in the Y-axis. The X-axis position is not important for this measurement, and can be anywhere on the workpiece.
3. Enter **zeros** for all **Working Coordinates** (X, Y, Z, A).
4. Open the **2-Surface Centering** tab
5. Enter **Width: 6.35** (this is the know width of our workpiece), **Approach 5.0** (this will move the probe in the positive/negative Y direction), and **Z position: -10** (this is position the probe will move to take a measurement) Notice all **Results** are **NIL** until we perform a measurement, then measured values will be shown in the **Results** box, as shown below.
6. Now click the **Measure Center Y** button. The machine will measure both sides, the probe will illuminate blue upon contact with the workpiece on each side, take a second measurement on each side, and return to the start position.
7. To find the center of the workpiece, add the measured Y value to the Machine Coordinates Y: the center of the workpiece = $103.0082 + 1.2275 = 104.2357$ Y

The screenshot displays the Mach 4 - Industrial software interface. The **Probing** tab is selected, and the **2 Surface Centering** sub-tab is active. The **Working Coordinates** section shows X: 0.0000, Y: 0.0000, Z: -0.0000, and A: 0.0000. The **Machine Coordinates** section shows X: -73.7467, Y: 103.0082, Z: -39.4312, and A: 0.0000. The **Feed Rate** is set to 100 mm/min. The **Probe** status is green. The **Measure Only** section shows a blue square for the measurement type. The **Results** section shows the following data:

	X	Y	Z
Results	NIL	1.2275	NIL
Error X	Error Y	Error Z	
	NIL	1.2275	NIL
Size/Angle	Error		
	8.2322	1.8822	
Angle X	Error		
	NIL	NIL	
Angle Y	Error		
	NIL	NIL	

The **Measure Center Y** button is highlighted in the **Measure Only** section. The **Results** section is also highlighted. The **Measure Center Y** button is highlighted in the **Measure Only** section.

Angle Finding

In this example we will find the angle of our workpiece. This will help you align the edge of the workpiece with the X-Y axes of the machine. The workpiece is a flat bar, 120 mm long (X-direction), 20 mm tall (Z-direction), and 6.35 mm thick (Y-direction).

1. Start by going to the **Probing** tab, and insert the probe into the spindle, attaching the power cord.
2. Move the tip of the probe to the user side of the workpiece as shown in the screenshot. Make sure the tip is less than 5 mm in the Y-axis beside the workpiece, at least 2 mm from the top of the workpiece in the Z-axis, and near the left hand side of the workpiece in the X-axis.
3. Enter **zeros** for all **Working Coordinates** (X, Y, Z, A).
4. Open the **Angle of Surface** tab
5. Enter **Y position: 5** (this will move the probe in the positive Y direction), **X increment: 20** (this will move the probe 20 mm in the positive X-direction), **X center: 0**, and **Y center: 0**. Notice all **Results** are **NIL** until we perform a measurement, then measured values will be shown in the **Results** box, as shown below.
6. Now click the **Measure Angle** button. The machine will measure from the start position, the probe will illuminate blue upon contact with the workpiece, take a second measurement, then move 20 mm in the positive X-direction, take two more measurements, then return to the start position
7. The error is shown in the **Results** box. In this example we have an error of -1.8322, which means that the right side of the workpiece is closer to the user than the left side. To reduce the error, we need to move the right side of the workpiece in the positive Y-direction.

