

Code	Range	Resolution	Zero Repeatability (one direction)	X,Y,Z range
2846-3D	±2mm	0.005mm	±0.005mm	6mm



- 1-Spindle
- 2-Display
- 3-"ON/OFF" button
- 4-Battery cover
- 5-Adjustment screw
- 6-Probe removal hole
- 7-Anti-collision break point
- 8-Contact point
- 9-Hex wrench
- 10-Wrench

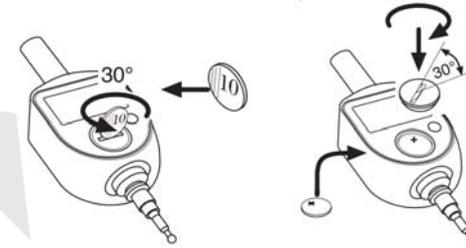


1. Shockproof, IP67 waterproof.
2. It is mainly used for milling machine and CNC machine tools.
 - determine coordinate point on workpiece.
 - find center of holes.
 - adjust and position the workpieces.

It can also be used to measure length and depth.

3. Installation of batteries.

---Use a wrench to turn the battery cover counterclockwise by 30°, remove the battery cover and install the CR2032 battery, the positive terminal of the battery is facing out to install the battery cover, use a wrench to turn the battery cover clockwise by 30° to lock it.



4. "ON/OFF" button: short press to turn on and long press to turn off.

5. Installation and Inspection

---Install the 3D tester on the spindle of machine tool, check if the probe is securely installed, and then check the concentricity between the probe and spindle, if necessary make adjustments.

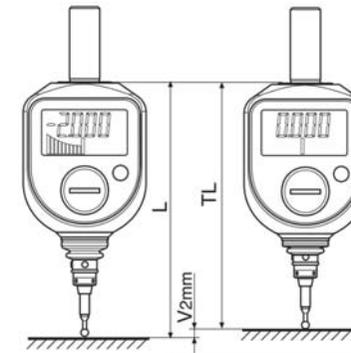
---Confirm the effective total length TL of the 3D tester (Figure 1).

TL=effective total length of the 3D tester in contact state (3D tester reads "0").

When the reading is "0", the length of the 3D tester should be taken by a compensation value of V=2mm.

The effective total length (TL) =total length (L) - compensation value (V=2mm)

Enter the effective total length (TL) into the machine tools as the tool length



6. Probe

--- To protect the workpiece and the 3D gauge probe, all probe have to preset break points

--- Measuring needle replacement.

Remove the probe by inserting a wrench into the probe removal hole 6.

Screw a new probe into the mounting hole and tighten with a wrench.

check the concentricity of the probe to the spindle.

--- When probe has been replaced, the effective total length of the 3D tester needs to be reconfirmed and re-entered on the machine.

7. Check and adjust the concentricity of the probe and spindle.

The concentricity of the probe to the spindle needs to be adjusted in the following situations:

1. The 3D tester is replaced on the machine.
2. The measuring needle is replaced.
3. After a measuring needle breaks.
4. After a collision.

X-axis adjustment

---Rotate the spindle until the X-axis of 3D tester probe and the X-axis of the machine tool coincide.

---Move the indicator towards the contact point until the pointer of dial indicator moves.

---Set the dial indicator to zero (Figure 2).

---The 3D tester rotate 180 °along the center axis, and the dial indicator shows the deviation of X-axis (as shown in the figure 3, the indicator reading is 0.12mm).

---Use Hexagon wrench and rotate the adjusting screw by half the value of the deviation (the figure shows that the reading is 0.06mm), and the X-axis adjustment is completed.

Y-axis adjustment

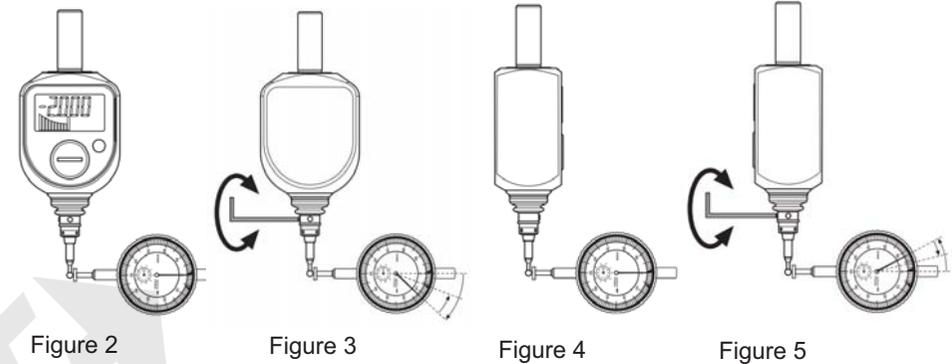
--- The 3D tester rotate 90 °along the center axis(the 3D tester is now facing the direction of the dial indicator).

--- Set the dial indicator to zero (Figure 4).

--- The 3D tester rotate 180 °along the center axis, now the display shows the deviation of the Y-axis (as shown in the figure 5, the dial indicator reads 0.08mm) .

--- adjust the bolt with an allen wrench to half of the reading (as shown in the figure 5, the dial indicator reads turn to 0.04mmh), the Y-axis adjustment is complete.

--- you can check again, if there is a problem, in accordance with the above description and again for adjustment.



8. Measurement.

8.1 How to avoid measurement errors

To avoid measurement errors consider the following factors.

---Check the tightness of the 3D tester mounting.

---Check the tightness of the 3D tester contact point on the active surface.

---Check the concentricity of the 3D tester probe with the spindle.

---After probe changes, the total effective length of the 3D tester needs to be reconfirmed and re-entered on the machine.

---When in contact with the workpiece, the 3D tester probe must not move along the edge of the workpiece.

Before contact measurement with the workpiece, the contact point must be in the operator's line of sight. If the probe is turned by an error, the whole measurement process needs to be restarted.

8.2 Contacting the workpiece (positioning in XYZ position)

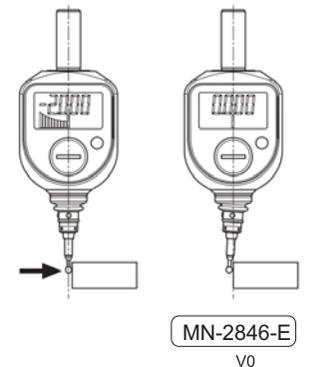
The machine stops the spindle and switches off the coolant.

---Move at right angles to the contact surface of the workpiece.

---once in contact, move slowly until the 3D tester shows "0".

---the X axis of the machine corresponds to the edge of the workpiece.

---When the 3D tester value exceeds 2mm, the display starts to flash and an over-travel arrow appears on display.



8.3 Confirming the center of the hole

Checking the X-axis coordinates

- Place the probe in the hole and move it along the X-axis until the 3D tester contacts the workpiece and displays "0" (Figure 6).
 - Set the machine X-axis value to zero.
 - Then move the probe in the opposite direction along the X-axis until the 3D tester contacts the workpiece and displays "0".
 - Record the machine X-axis display value, move the value along the X-axis by half the distance and set the machine X-axis value to "0" at this point.
- Check the Y-axis coordinates
- Confirm the Y-axis coordinates in the same way as the X-axis coordinates (Figure 7).
 - Now, you can find the position of the hole center on the machine.

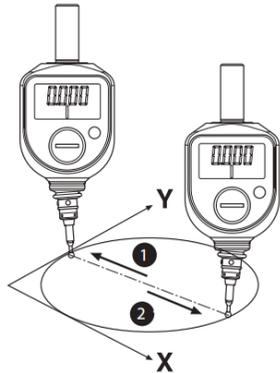


Figure 6

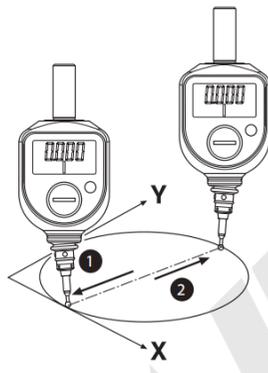
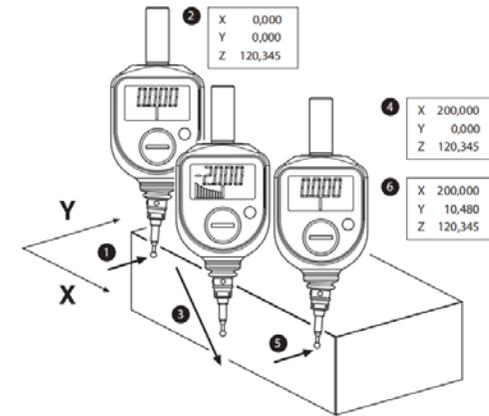


Figure 7

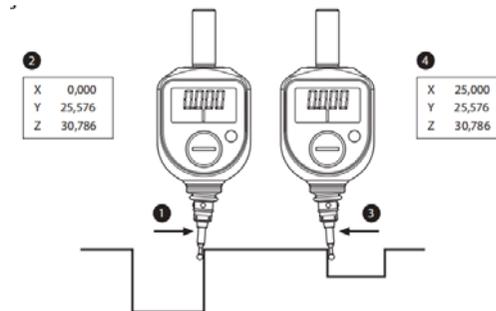
8.4 Checking and calibrating the position of the workpiece

- Move the probe along the Y-axis until it makes contact with the workpiece and the 3D tester value is "0".
- Set the machine X-axis and Y-axis values to "0".
- The probe is moved along the X-axis by dx (dx is 200mm in the illustration).
- The probe moves along the Y-axis until it makes contact with the workpiece and the 3D tester value is "0".
- Record the value of dy in the Y-axis on the machine (dy is 10.48 mm in the illustration). Confirm the correction angle (angle = $\arctan dy/dx = 3^\circ$) and realign the part, which is now correctly aligned.



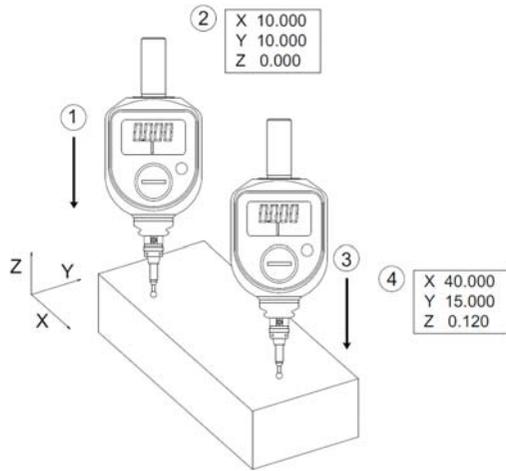
8.5 Length measurement

- Move the probe along the X-axis until the 3D tester contact point makes contact with the workpiece and displays "0".
- Set the machine X-axis value to "0".
- Contact the other side of the workpiece and move along the X-axis until the 3D tester displays "0".
- Record the value of the X-axis on the machine at this point (the X-axis value is 25mm in following illustration) and confirm the length.



8.6 Measuring height difference

- Move the probe along the Z-axis until the 3D tester contact point contacts the workpiece and displays "0".
- Set the machine's Z-axis value to 0.
- Contact another point on the same surface of the workpiece and move the probe along the Z-axis until the value of the 3D table shows "0".
- The value of the Z-axis on the machine (0.12mm in the case of the illustration) is the height difference between the two points on the measured surface.



9. Cautions.

- Avoid impacts and knocks during use, and do not operate with excessive force. When not in use for a long time, remove the probe and protect it with oil.
- The rubber ring will be squeezed to produce internal and external pressure difference. Before use, please lift up a corner of the rubber ring to let air in, and wait until the internal and external pressures are balanced before use (Figure 8).
- When the probe is subjected to excessive force, the break point of the stylus breaks to protect the body (Figure 9).



Figure 8

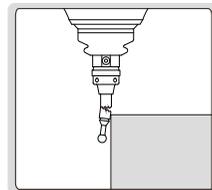


Figure 9

- 10. Optional accessory: Probe (model 2840-N1), which can be replaced by inserting a wrench into the removal hole and unscrewing it.

