



Material Tester

Instruction Sheet

INTRODUCTION

This tester is designed to not-destructively measure the thickness of non-magnetic coatings (including paint, enamel, plastic, epoxy, paper, etc) on iron, steel or aluminum. The tester can save up to two groups of calibration data for accurate measurements.

STRUCTURE

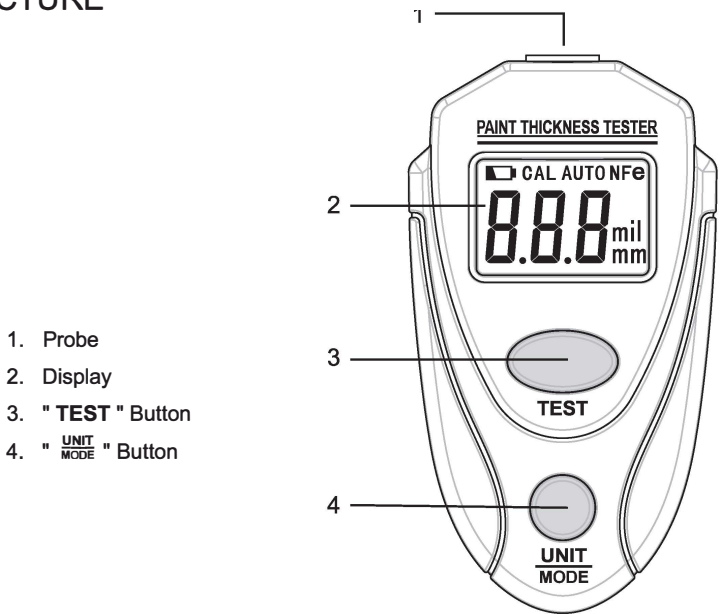


Figure 1

OPERATING INSTRUCTION

1. Hold the tester and make sure that it is as least 20cm away from the object to be tested and other objects. Then press the "TEST" button to turn on the tester. The display shows all segments and symbols momentarily. Then it shows the "AUTO" symbol and the measurement unit "mm", and meanwhile, " - ", " - - ", and " - - - " appear on the display sequentially and repeatedly.
 2. Press the "UNIT MODE" button to select desired measurement unit - mm or mil.
 3. After you turn on the tester, it will default to auto test mode and the display will show "AUTO" as an indication. You can repeatedly hold down the "UNIT MODE" button for about 1 sec to step through "NFe" test mode ("NFe" appears as an indication), "Fe" test mode ("Fe" appears as an indication), and back to the auto test mode ("AUTO" appears as an indication).
- If you can not obtain the naked substrate of the object to be measured and have not calibrated the tester using the naked substrate of this object, you must select auto test mode. The advantage of using auto test mode is that it is not necessary to calibrate the tester, and the disadvantage is that measurement accuracy in auto test mode is relatively low.
- If you have calibrated the tester in the "NFe" or "Fe" test mode using the naked substrate of this object, set the tester in the same test mode (in which the tester has been calibrated by using the naked substrate of this object). The advantage of using "NFe" or "Fe" test mode is that measurement accuracy in "NFe" or "Fe" test mode is high, and the disadvantage is that the tester must be calibrated in this selected test mode beforehand by using the naked substrate of this object.
4. Firmly press the tester's probe perpendicularly against the surface of the object to be tested. When the tester detects a stable reading, this reading will be shown on the display and it is the value of the total thickness of the non-magnetic coatings on the substrate of this object. This reading will be held on the display until the tester turns off or you make a new measurement. If necessary, you can press the "TEST" button to erase this reading and then test again.
 5. If you have not operated the tester about 30 secs, it will turn off automatically. To turn off the tester manually, hold down the "TEST" button for more than 1 sec.

HOW TO CALIBRATE THE TESTER

Before you make measurement in "NFe" or "Fe" mode, you must make sure that in this mode the tester has been calibrated by using the naked substrate of the object to be tested or using a naked substrate which is completely same as the substrate of the object to be tested.



After you finish calibrating the tester in "NFe" or "Fe" test mode, the tester will save the resulting calibration data in this test mode automatically. The calibration data will not be lost even when the tester turns off or when you replace the button cell. But whenever you calibrate the tester again in the same test mode, the already existing calibration data saved in this test mode will be overwritten by the new calibration data. Thus, only the latest calibration data of all calibration data obtained in "NFe" test mode can be retained in "NFe" test mode, and only the latest calibration data of all calibration data obtained in "Fe" test mode can be retained in "Fe" test mode.

Use the following procedure to calibrate the tester:

1. Make sure that the tester has turned off. Press and hold down the "UNIT MODE" button, then press and release the "TEST" button while still holding down the "UNIT MODE" button, and then release the "UNIT MODE" button. "CAL" is shown on the display indicating that the tester is in calibration mode.

2. Press the "UNIT MODE" button to select "NFe" or "Fe" test mode, the display will show the corresponding symbol ("NFe" or "Fe") as an indication.
Tip: After calibration, the resulting calibration data will be saved in the test mode in which the tester has been calibrated, and will be automatically used in all subsequent measurements in this test mode until they are overwritten by new calibration data.
3. Prepare a desired naked substrate, make sure that its surface is flat, clean and dry and does not have any coating on it. Then press the probe of the tester perpendicularly against the surface of this naked substrate. When the display shows "LRL", move the tester away from the substrate. The display shows the reading "1.80mm".
4. You can press the "TEST" button to increase or the "UNIT MODE" button to decrease the reading in the 1.50mm - 2.20mm adjustment range. Adjust the reading on the display until it equals the thickness value of the calibration plate (nonmetal plate) to be used. (The thickness of the calibration plate must be in the range of 1.50mm and 2.20mm.)
5. Place the calibration plate on the substrate, then firmly press the tester's probe perpendicularly against the calibration plate and keep this pressing. After the display shows "LRL" and then "aUt", the calibration is finished and the tester returns to normal operation and displays the present measurement reading. If this reading does not equal the thickness value of the calibration plate being under the tester probe, the cause may be that there was a gap or dirt between the calibration plate and the substrate or between the tester probe and the calibration plate during calibration, which resulted in incorrect calibration. In this condition, it is necessary to find out the real cause and calibrate the tester again.

REPLACING THE BUTTON CELL

When the low button cell indicator " " appears steadily on the display, the button cell is low and must be replaced immediately.

Use the following procedure to replace the button cell:

1. Make sure that the tester has turned off. Rotate the button cell cover in the direction indicated by the arrows on the button cell cover to the end to unlock the button cell cover. Remove the button cell cover from the tester.
2. Tap the tester on palm to remove the exhausted button cell.
3. Install a new button cell of the same type (3V button cell, CR2032 or equivalent) in the button cell compartment, make sure that the positive terminal of the button cell will face the button cell cover after the button cell cover is installed (see the Figure 2).
4. Reinstall the button cell cover, and fully rotate the button cell cover in the opposition direction of the arrows on it so as to lock it.



Figure 2

The positive terminal of the button cell must face the button cell cover after the button cell cover is installed.

MAINTENANCE AND CLEANING

Keep the tester clean and dry. Periodically clean the case with soft cloth. Do not use solvent and abrasive. Do not let water or liquid enter the tester case.

SPECIFICATION

- Measuring Range:** 0.00mm - 2.20mm, or 0.0mil - 86.0mil
- Resolution:** 0.01mm/0.1mil
- Overrange Indication:** "OL" shown on the display
- Measurement Accuracy:**
- For measurements in "NFe" or "Fe" test mode in which the tester has been properly calibrated: $\pm 0.05\text{mm}$
 - For measurements in auto test mode and on object with aluminum substrate: $\pm (2\% \text{ of reading} + 0.05\text{mm})$
 - For measurements in auto test mode and on object with steel substrate: $\pm (10\% \text{ of reading} + 0.10\text{mm})$
- Note:** The above accuracy specifications assume that the operating temperature is $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$ and the operating relative humidity is $\leq 75\%$.
- Power Supply:** 3V button cell, CR2032 or equivalent, 1 piece
- Operating Environment:** Temperature: 0°C to 40°C
Relative Humidity: $\leq 80\%$
- Temperature Coefficient:** $0.15 \times (2\% \text{ of reading} \pm 0.05\text{mm}) / ^{\circ}\text{C}$ ($< 18^{\circ}\text{C}$ or $> 28^{\circ}\text{C}$)
- Storage Environment:** Temperature: -10°C to 50°C
Relative Humidity: $\leq 80\%$
- Size:** 6.9×3.8×2cm
- Weight:** About 29g (including button cell)

NOTE

1. This Instruction Sheet is subject to change without notice.
2. Our company will not take the other responsibilities for any loss.
3. The contents of this Instruction Sheet can not be used as the reason to use the tester for any special application.

DISPOSAL OF THIS ARTICLE

Dear Customer,
If you at some point intend to dispose of this article, then please keep in mind that many of its components consist of valuable materials, which can be recycled.

Please do not discharge it in the garbage bin, but check with your local council for recycling facilities in your area.

