

User Guide

Elcometer 500

Coating Thickness Gauge
(for concrete and other similar substrates)

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Made for



iPod



iPhone



iPad

For the avoidance of doubt, please refer to the original English language version.

Material Safety Data Sheets for the ultrasonic couplant and probe tip oil supplied by Elcometer, are available to download via our website:

Elcometer Ultrasonic Couplant Material Safety Data Sheet:

www.elcometer.com/images/stories/MSDS/Elcometer_Ultrasonic_Couplant_Blue.pdf

Elcometer Ultrasonic Couplant (High Temperature) Material Safety Data Sheet:

www.elcometer.com/images/stories/MSDS/elcometer_ultrasonic_couplant_hi_temp.pdf

Elcometer Probe Tip Oil Material Safety Data Sheet:

www.elcometer.com/images/stories/MSDS/Elcometer_Probe_Tip_Oil.pdf

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1 GAUGE OVERVIEW



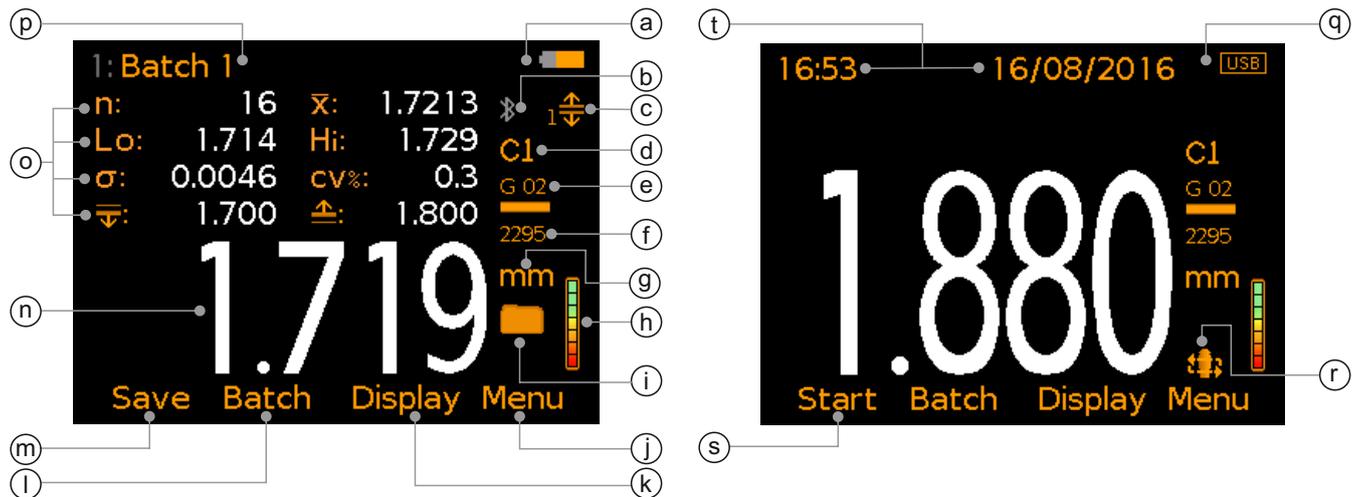
- 1 USB Data Output Socket (below cover)
- 2 LED Indicators - Red (left), Green (right)
- 3 LCD Display
- 4 Softkeys
- 5 On/Off Key
- 6 Probe Socket
- 7 Probe Plug
- 8 Probe
- 9 Probe Tip Collar
- 10 Replaceable Probe Tip
- 11 Wrist Strap Connection
- 12 Battery Compartment ($\frac{1}{4}$ turn open/close)

2 BOX CONTENTS

- Elcometer 500 Coating Thickness Gauge
- Probe Tip Oil; 4ml (0.14fl oz Bottle)
- Ultrasonic Couplant; 120ml (4fl oz Bottle)
- AA Batteries; x2
- Protective Case
- Transit Case (Model T only)
- Wrist Harness
- Screen Protector; x3
- ElcoMaster® Software (Model T only)
- USB Cable (Model T only)
- Test Certificate
- User Guide

Note: The Elcometer 500 is supplied as a gauge only without probe - probes must be ordered separately, see Section 20.1 'Probes' on page en-31.

3 THE DISPLAY



| | Model |
|----------------------------------------------------------------------------------------------------|--------------|
| a Power: Batteries - including battery life indicator | B, T |
| b Bluetooth On - Grey: not connected; Orange: connected | T |
| c Limits On (with Limit Index Number) - Red: limit exceeded | T |
| d Probe Type Connected - C1 or C2 | B, T |
| e Calibration Method | B, T |
| f Calibration: Sound-Velocity | B, T |
| g Measurement Units - μm , mm, mils, inch | B, T |
| h Signal Strength Indicator - Green: valid and stable reading | B, T |
| i Batching On | T |
| j Menu Softkey | B, T |
| k Display Softkey | B, T |
| l Batch Softkey | T |
| m Save Current Reading Value | B, T |
| n Reading Value - White: valid and stable reading; Grey: probe in free air; Red: limit exceeded | B, T |
| o User Selectable Statistics - Maximum of 8 | T |
| p Batch Name - when in batching | T |
| q Power: USB | B, T |
| r Scan Mode On - icon flashes during a scan | T |
| s Start / Stop Scan - when in Scan Mode | T |
| t Date & Time - when enabled and not in batching | T |

4 GETTING STARTED

4.1 ENSURING YOUR GAUGE HAS THE LATEST FIRMWARE

To ensure that your gauge has the most up-to-date gauge firmware, allowing you to benefit from the latest features and functionality, we recommend that the gauge is connected to ElcoMaster® on a regular basis and before first use.

Simply connect the gauge via USB to an internet connected computer running ElcoMaster® using the 'Connect Gauge' feature. If a later version of the gauge firmware is available, 'Update Gauge' will be displayed to the right of the gauge details. Click 'Update Gauge' to install the latest firmware.

4.2 FITTING THE BATTERIES

Each gauge is supplied with 2 x AA alkaline batteries.

To insert or replace the batteries:

- 1 Lift the latch on the battery compartment cover and rotate anti-clockwise to remove the cover.
- 2 Insert 2 batteries taking care to ensure correct polarity.
- 3 Refit the cover and rotate the latch clockwise to close.



The battery condition is indicated by a symbol in the top right of the display (▣▣▣▣):

- ▶ Full symbol (orange) = batteries at full capacity
- ▶ Empty symbol (red, flashing) = batteries at lowest sustainable level

Note: Batteries must be disposed of carefully to avoid environmental contamination. Please consult your local Environmental Authority for information on disposal in your region. **Do not dispose of any batteries in fire.**

4.3 SWITCHING THE GAUGE ON / OFF

To switch on: Press the on/off key for more than 0.5 seconds.

To switch off: Press and hold the on/off key until the screen goes blank.

4 GETTING STARTED (continued)

The gauge can also be set to switch off automatically after a user defined period of inactivity via Menu/Setup/Gauge Auto Off. The default setting is 5 minutes.

4.4 CONNECTING A PROBE

Two probe options are available, C1 and C2. The probe used is determined by the thickness of the coating being measured, see Section 20.1 'Probes' on page en-31 for further information.

To connect a probe:

- 1 Align the red dot on the probe plug with the red dot on the base of the gauge.
- 2 Push the probe into the gauge, ensuring that the connector is fully engaged.



Elcometer 500 probes will be identified automatically by the gauge when connected and details can be viewed at any time via Menu/About/Probe Information.

4.5 FITTING / REPLACING A PROBE TIP

Probes consist of a probe body, probe tip collar and probe tip (supplied fitted^a). Probe tips wear over time and any damage to the probe tip, such as scratches, chips or dents, will affect the accuracy of the readings.

The gauge will automatically check for probe tip wear each time it is switched on and a probe is connected.

If probe tip wear is greater than 0.7mm but less than 1mm: The user will be prompted to check the probe tip for wear or damage. After inspection, the user can choose to continue with the current probe tip or fit a new tip.

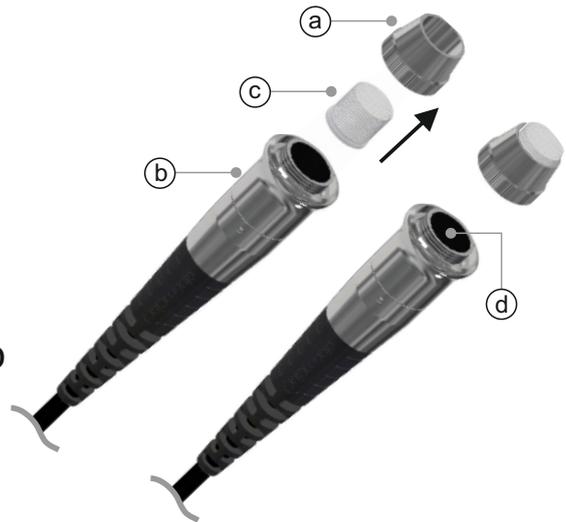
If probe tip wear is greater than 1mm: The user will be prompted to replace the probe tip.

^a Additional probe tips and probe tip oil can be purchased from Elcometer or your local Elcometer supplier, see Section 20.1 'Probes' on page en-31.

4 GETTING STARTED (continued)

To fit / replace the probe tip:

- 1 Unscrew the probe tip collar (a) from the probe body (b).
- 2 Remove the worn or damaged probe tip.
- 3 Fit a new probe tip (c) by sliding it into the probe tip collar.
- 4 Apply a small drop of probe tip oil to the sensor plate (d).
- 5 Refit the probe tip collar to the probe body.



4.6 OILING THE SENSOR PLATE

For the probe to work correctly, there must be no air gap between the probe tip and sensor plate. This is achieved by using a small amount of probe tip oil (supplied with each gauge^a). The gauge will inform the user when oil is required.

To oil the sensor plate:

- 1 Unscrew the probe tip collar (a) from the probe body (b) and remove the probe tip (c) from the sensor plate (d).
- 2 Apply a small drop of probe tip oil to the sensor plate (d).
- 3 Refit the probe tip and probe tip collar to the probe body.



Note: The use of normal oil is not recommended as it could damage the probe tip and affect the accuracy of the gauge. Ultrasonic couplant can be used as an alternative however, the probe tip and sensor plate will need to be cleaned more regularly and couplant re-applied more frequently.

Note: A Material Safety Data Sheet for the probe tip oil supplied by Elcometer is available to download via our website:
www.elcometer.com/images/stories/MSDS/Elcometer_Probe_Tip_Oil.pdf

^a Additional probe tips and probe tip oil can be purchased from Elcometer or your local Elcometer supplier, see Section 20.1 'Probes' on page en-31.

5 TAKING A READING

5.1 BEFORE YOU START

- 1 Switch the gauge on - see Section 4.3 on page en-5.
- 2 Connect a probe - see Section 4.4 on page en-6.
- 3 Oil the sensor plate or replace the probe tip if required - see Sections 4.5 and 4.6 on pages en-6 and en-7.
 - ▶ The gauge will inform the user when oil is required and when the probe tip is worn or damaged and should be replaced.
- 4 Set up the gauge parameters - see Section 7 on page en-10.
- 5 Calibrate the gauge - see Sections 9 and 10 on pages en-15 and en-16.

5.2 TAKING A READING IN STANDARD MODE

- 1 Apply a small amount of couplant to the coated surface.
- 2 Press the probe into the couplant, ensuring that the probe is flat against the surface.
- 3 The display will show a value which is constantly updating (Figure 1).
 - ▶ The stability of the reading is indicated on the signal strength indicator to the right of the display. If the signal strength indicator is green, it is a valid and stable reading. If not green, ensure there is an adequate film of couplant beneath the probe and that the probe is seated flat against the surface. Alternatively, position the probe nearby on a different area of the test surface until a strong signal is received.
 - ▶ '<0.15mm' or '>2.50mm' ('<6mils' or '>98mils') indicates a reading outside the probe range when using a C1 probe or '<0.75mm' or '>10.00mm' ('<30mils' or '>390mils') when using a C2 probe.
- 4 Press 'Save' to store the current reading in the gauge or batch (Model T) memory.
- 5 Remove the probe from the surface.
 - ▶ The reading value turns grey when the probe is removed from the surface (Figure 2).

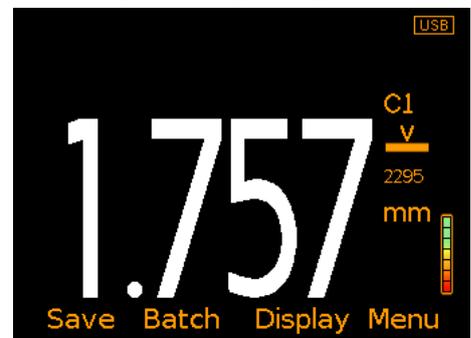


Figure 1

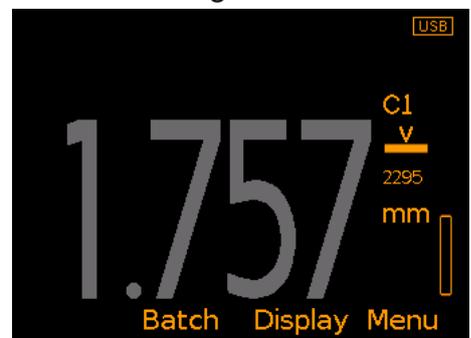


Figure 2

5.3 TAKING A READING IN SCAN MODE - MODEL T

Scan mode allows measurements to be taken quickly over a large surface area by sliding the probe across the coated surface. In Scan Mode, the gauge takes readings at an increased measurement rate and at the end of each scan, the average, lowest and highest reading for the scan are displayed and all three values are saved in the gauge or batch memory.

- 1 Enable 'Scan Mode' via Menu/Setup/Reading/Scan Mode.
- 2 Apply a small amount of couplant to the coated surface.
- 3 Press the probe into the couplant, ensuring that it is flat against the surface.

5 TAKING A READING (continued)

4 Press 'Start' to begin the scan and slide the probe over the coated surface (Figure 3).

5 The display will show a value which is constantly updating.

- ▶ The stability of the reading is indicated on the signal strength indicator to the right of the display. If the signal strength indicator is green, it is a valid and stable reading. If not green, ensure there is an adequate film of couplant beneath the probe and that the probe is seated flat against the surface. Alternatively, position the probe nearby on a different area of the test surface until a strong signal is received.
- ▶ '<0.15mm' or '>2.50mm' ('<6mils' or '>98mils') indicates a reading outside the probe range when using a C1 probe or '<0.75mm' or '>10.00mm' ('<30mils' or '>390mils') when using a C2 probe.

6 Press 'Stop' to stop taking readings and complete the scan.

- ▶ If the scan is interrupted due to lack of couplant beneath the probe for example, the scan is paused until a good signal is received or 'Stop' is pressed.

7 The scanned lowest, average and highest reading will be displayed on screen (Figure 4). Press 'Save' to store the scanned readings into the gauge or batch memory. Press 'Clear' to disregard the last scan and start again.

8 Remove the probe from the surface.

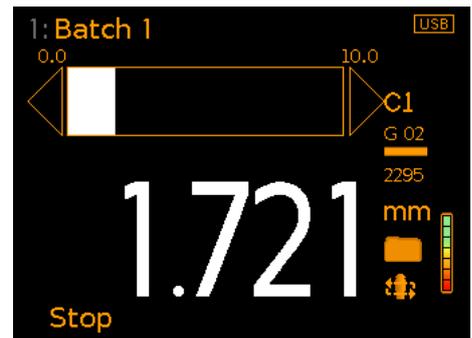


Figure 3

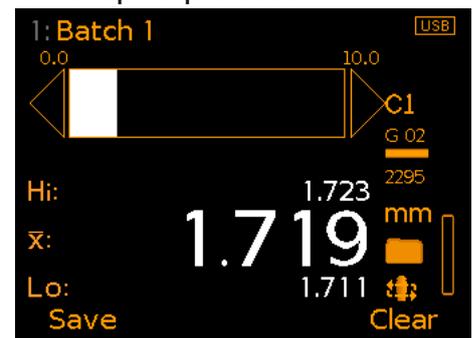


Figure 4

6 VERIFYING THE GAUGE & PROBE PERFORMANCE

Probe tips wear over time which can affect the accuracy of the readings. Any damage to the probe tip such as scratches, chips or dents will also affect the accuracy. Although the gauge will inform the user when the probe tip requires replacement, it is good practice to check the performance of the gauge / probe on a regular basis.

Users can verify the gauge and probe performance in the field using the measurement foils supplied with each probe.

To verify the gauge / probe performance:

- 1 Press Menu/Calibration/Cal Method/Coating Material and select the measurement foil from the 'Generic Materials' list.
- 2 When prompted, apply couplant to the measurement foil and take a reading.

6 VERIFYING THE GAUGE & PROBE PERFORMANCE (continued)

- 3 Compare the reading with the measurement foil thickness value as printed on the foil label.

The reading should be within $\pm 2\%$ or $10\mu\text{m}$ (0.4mils)^b of the measurement foil thickness value. If outside this range, zero the probe (see Section 12 'Zeroing the Probe' on page en-24) and repeat the process. If the gauge is still outside specification - contact Elcometer or your local supplier for further advice.

7 SETTING THE GAUGE PARAMETERS

7.1 SELECTING YOUR LANGUAGE

- 1 Press and hold the ON/OFF button until the Elcometer logo is displayed.
- 2 Press Menu/Setup/Language and select your language using the $\uparrow\downarrow$ softkeys.
- 3 Follow the on screen menus.

To access the language menu when in a foreign language:

- 1 Switch the gauge OFF.
- 2 Press and hold the left softkey and switch the gauge ON.
- 3 Select your language using the $\uparrow\downarrow$ softkeys.

7.2 SCREEN SETTINGS

A number of screen settings can be defined by the user via Menu/Setup/Screen Settings including:

- **Screen Brightness;** This can be set to 'Manual' or 'Auto' - the brightness is adjusted automatically using the gauge's ambient light sensor.
- **Screen Timeout;** The display will dim if inactive for more than 15 seconds and will go 'black' if inactive for the period defined. Press any key or tap the gauge to awaken it.

7.3 SETTING UP THE READING DISPLAY

The colour LCD display is split into two halves; Top Display and Bottom Display. The user can define what information is displayed in each half including: Readings, Statistics, Run Chart, Bar Graph and Readings & Differential^c.

^b Whichever is the greater

^c Not available in 'Scan Mode' - see Section 5.3 'Taking a Reading in Scan Mode - Model T' on page en-8.

7 SETTING THE GAUGE PARAMETERS (continued)

- **None;** No information is displayed.
- **Readings (Figure 5);** The reading value is displayed using the resolution as defined by the user, see Section 7.7 on page en-13.
- **Statistics - Model B (Figure 6);** The following statistical values are displayed as each measurement is taken:

Number of Readings, Mean, Lowest Reading, Highest Reading, Standard Deviation, Coefficient of Variation.

To clear the current statistical values, press Display\Clear Statistics.

- **Selected Statistics - Model T (Figure 7);** Up to 8 statistical values can be displayed as defined by the user via Display/Statistics/Select Statistics.

Select from:

Number of Readings, Mean, Lowest Reading, Highest Reading, Standard Deviation, Coefficient of Variation, Low Limit Value, Number Below Low Limit, High Limit Value, Number Above High Limit, Range, NDFT (Nominal Dry Film Thickness) Value.

To view the current statistical values, press Display/Statistics/View Selected or View All.

To clear the current statistical values, press Display/Statistics/Clear Statistics.

- **Run Chart - Model T (Figure 8);** A line trend graph of the last 20 measurements which is updated automatically after each reading.
- **Bar Graph - Model T (Figure 9);** An analogue representation of the current measurement value together with the highest (Hi), lowest (Lo) and average (\bar{x}) reading. The graph is updated automatically when each reading is taken.



Figure 5: Readings



Figure 6: Statistics & Readings (Model B)

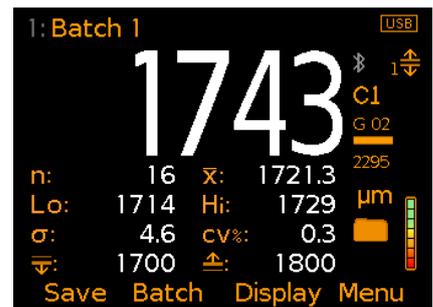


Figure 7: Selected Statistics & Readings (Model T)

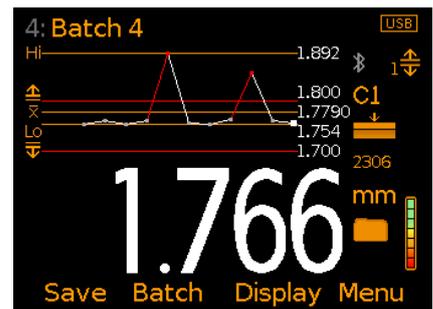


Figure 8: Run Chart & Readings

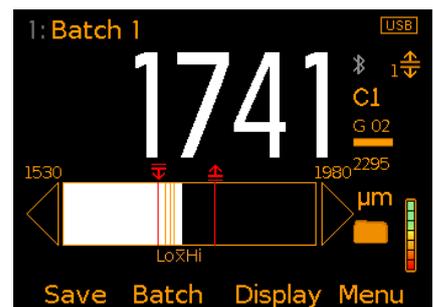


Figure 9: Readings & Bar Graph

7 SETTING THE GAUGE PARAMETERS (continued)

- **Readings & Differential (Δ)^c - Model T (Figure 10);** The last reading is displayed together with the variation from the NDFT (Nominal Dry Film Thickness) value set via Menu/Limit Memories/Create Limit Memory/Set NDFT.



Figure 10: Readings & Differential

To setup the display:

- 1 Press Display/Setup Display/Top Display (or Bottom Display as required).
- 2 Use the $\uparrow\downarrow$ softkeys to highlight the required option and press 'Select'.

Note: If 'None' is selected for one half and 'Readings' or 'Run Chart' for the other half, the readings or run chart will fill the whole screen. If any other combination of options is selected; the data will be shown in the top or bottom display as specified.

7.4 THE MEASUREMENT RANGE

The Elcometer 500 uses the 'Pulse-Echo' measurement technique (the total thickness from the base of the probe to the material density boundary is measured), to non-destructively measure coatings up to 10mm (390mils) thick on concrete and other similar substrates.

Whilst the Elcometer 500 can measure up to 10mm (390mils) of a typical epoxy coating, depending on the probe used, more sound absorbent coatings such as rubber may reduce the measurement range of the gauge. Contact Elcometer for further information.

7.5 MEASUREMENT SUBSTRATES

The Elcometer 500 has been designed to measure coatings on concrete and other similar substrates. These include drywall, plasterboard, concrete block, brick, stone, cinder block and other cementitious materials.

The Elcometer 500 is ideally suited for measuring coatings on rough and smooth substrates alike. Due to the nature of ultrasonic technology, however, as the roughness increases the stability of the reading - as indicated by the signal strength indicator to the right of the display - may deteriorate. If the signal strength indicator is green, it is a valid and stable reading otherwise position the probe nearby on a different area of the test surface until a strong signal is received.

^c Not available in 'Scan Mode' - see Section 5.3 'Taking a Reading in Scan Mode - Model T' on page en-8.

7 SETTING THE GAUGE PARAMETERS (continued)

7.6 SELECTING THE MEASUREMENT UNITS

The Elcometer 500 can take measurements in μm , mm, mils and inch. To select the measurement units, press Menu/Setup/Units.

7.7 SELECTING THE MEASUREMENT RESOLUTION

The Elcometer 500 has a user selectable measurement resolution of:

- Low: 10 μm , 0.01mm, 1mils or 0.001"
- High: 1 μm , 0.001mm, 0.1mils or 0.0001"
(for more precise readings when measuring thinner coatings.)

To select the resolution, press Menu/Setup/Reading/Resolution and select 'Low' or 'High' as required.

8 SETTING LIMITS - MODEL T

Limits are acceptable tolerance levels as defined by the user, allowing readings to be compared with pre-defined values. The Elcometer 500 Model T can store up to 40 pre-programmed limits.

Limits can be created on the gauge or via PC using ElcoMaster®, and saved into the gauge memory for future selection. Using ElcoMaster®, saved limits can be transferred to other gauges.

Each Limit can consist of an NDFT (Nominal Dry Film Thickness) value (x:) - required for 'Readings & Differential' - a low ($\overline{\downarrow}$) and / or high ($\overline{\uparrow}$) limit value.

If a measurement is taken which falls outside set limits, the appropriate limit icon and the reading value turn red, the red LED flashes and the alarm beeps (Figure 11).

Limits can either be created for individual readings or when a new batch is opened, see Sections 8.1 and 8.2. Different batches can have different limit values.



Figure 11

When created, limits are stored in the gauge limit memory and are available for future selection, see Section 8.3.

Saved limits can be renamed and the values can be amended at any time, see Sections 8.4 and 8.5.

8 SETTING LIMITS - MODEL T (continued)

8.1 CREATING LIMITS FOR INDIVIDUAL READINGS

- 1 Press Menu/Limit Memories/Create Limit Memory/Set Upper Limit (or 'Set Lower Limit').
- 2 Use the $\uparrow\downarrow$ softkeys to set the required value and press 'Set'.
- 3 If required, repeat Step 2 for 'Set Lower Limit' (or 'Set Upper Limit') and 'Set NDFT'.
- 4 When all values have been set, use the $\uparrow\downarrow$ softkeys to highlight 'Save Limit Memory n' and press 'Select' to save.

8.2 CREATING LIMITS FOR A NEW BATCH

- 1 Press Batch/New Batch/Batch Limits/Create Limit Memory/Set Upper Limit (or 'Set Lower Limit').
- 2 Use the $\uparrow\downarrow$ softkeys to set the required value and press 'Set'.
- 3 If required, repeat Step 2 for 'Set Lower Limit' (or 'Set Upper Limit') and 'Set NDFT'.
- 4 When all values have been set, use the $\uparrow\downarrow$ softkeys to highlight 'Save Limit Memory n' and press 'Select' to save.

Batch limits can be viewed at any time via Batch/Review Batch/Batch Information.

8.3 SELECTING SAVED LIMITS

- 1 Press Menu/Limit Memories/Select Limit Memory or when in Batching, press Batch/New Batch/Batch Limits/Select Limit Memory.
- 2 Use the $\uparrow\downarrow$ softkeys to highlight the limit memory required and press 'Select'.

When a limit memory is in use, $n\updownarrow$ is displayed to the right of the measurement screen, where n = the limit memory index number.

8.4 RENAMING LIMITS

- 1 Press Menu/Limit Memories/Edit Limit Memory/Rename Limit Memory.
- 2 Use the $\uparrow\downarrow$ softkeys to highlight the limit memory to be renamed and press 'Select'.
- 3 Use the $\leftarrow\rightarrow$ softkeys to rename the limit memory.
- 4 Select 'Ok' to save the changes or 'Escape' to exit and disregard any amendments made.

8 SETTING LIMITS - MODEL T (continued)

8.5 AMENDING LIMITS

- 1 Press Menu/Limit Memories/Edit Limit Memory/Amend Limit Memory.
- 2 Use the **↑↓** softkeys to highlight the limit memory to be amended and press 'Select'.
- 3 Use the **↑↓** softkeys to highlight 'Set Upper Limit' (or 'Set Lower Limit') and press 'Select'.
- 4 Use the **↑↓** softkeys to set the required value and press 'Set'.
- 5 If required, repeat Steps 3-4 for 'Set Lower Limit' (or 'Set Upper Limit') and 'Set NDFT'.
- 6 When all values have been amended as required, use the **↑↓** softkeys to highlight 'Save Limit Memory n' and press 'Select' to save the changes.

9 CALIBRATION METHODS

Calibration is the process of setting the gauge to known coating thickness values to ensure accurate and repeatable readings on different coating materials.

A choice of calibration methods is available, see Table 2: Calibration Methods. To select the calibration method, press Menu/Calibration/Cal Method.

The calibration method currently selected is indicated by the calibration method icon on the right of the measurement screen.

TABLE 2: CALIBRATION METHODS

| Calibration Method | Icon | Description |
|--------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 Point |  | A reading is taken on a substrate with a coating of known thickness and adjusted accordingly. See Section 10.2 'Using 1 Point Calibration' on page en-16 and Section 11 'Using the Coating Calibration Mould' on page en-22. |
| Coating Material |  | The coating material is selected from a pre-defined list of generic or user defined coating materials, stored in the gauge memory. See Section 10.5 'Using Coating Material Calibration' on page en-19 and Section 11 'Using the Coating Calibration Mould' on page en-22. |

9 CALIBRATION METHODS (continued)

TABLE 2: CALIBRATION METHODS (continued)

| Calibration Method | Icon | Description |
|--------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Velocity Entry |  | If the sound-velocity of the coating is known, simply enter the value. See Section 10.3 'Using Velocity Entry' on page en-18 and Section 11 'Using the Coating Calibration Mould' on page en-22. |

10 CALIBRATING YOUR GAUGE

The gauge should be calibrated each time a different probe is used or a different type of coating is measured.

10.1 BEFORE YOU START

- 1 Switch the gauge on - see Section 4.3 on page 5.
- 2 Connect a probe - see Section 4.4 on page en-6.
- 3 Oil the sensor plate or replace the probe tip if required - see Sections 4.5 and 4.6 on pages en-6 and en-7.
 - ▶ The gauge will inform the user when oil is required and when the probe tip is worn or damaged and should be replaced.

10.2 USING 1 POINT CALIBRATION

This procedure requires a sample of the coating with a known thickness, measured by some other means such as a dry film thickness gauge.

If a sample is not readily available, one can be created using the Elcometer 500 Coating Calibration Mould (CCM), see Section 11 on page en-22.

- 1 Press Menu/Calibration/Cal Method and select '1 Point'. If '1 Point' is already selected, simply press Menu/Calibration/Calibrate.
 - ▶ The calibration method currently selected is indicated by the icon to the right of the display.
- 2 To ensure accurate and repeatable readings and to check for probe wear, the user will be prompted to zero the probe; clean the probe surface, hold the probe in free air and press 'Zero'.
 - ▶ The 'Zero Probe' procedure is not only part of the calibration process, it can also be performed at any time to check that there is sufficient probe tip oil on the sensor plate and the condition of the probe tip. See Section 12 'Zeroing the Probe' on page en-24 for further information.
- 3 When prompted, apply couplant to the coated sample.
 - ▶ If a sample with a coating of known thickness is not readily available, one can be created using the Elcometer 500 Coating Calibration Mould (CCM), see Section 11 on page en-22.

10 CALIBRATING YOUR GAUGE (continued)

4 Place the probe on to the coated sample, ensuring that it is flat against the surface (Figure 12). The display will show a thickness value which is constantly updating.

- ▶ The stability of the reading is indicated on the signal strength indicator to the right of the display. If the signal strength indicator is green, it is a valid and stable reading. If not green, ensure there is an adequate film of couplant beneath the probe and that the probe is seated flat against the surface. Alternatively, position the probe nearby on a different area of the test surface until a strong signal is received.

5 Remove the probe from the surface. The last reading is held on screen (Figure 13). If not representative, repeat Steps 3-4.

- ▶ Excessive use of couplant can result in a distorted reading when the probe is removed from the surface. If this occurs, clean the probe tip and coated surface, then repeat Steps 3-4.

6 Press 'Adjust' and using the $\uparrow\downarrow$ softkeys, adjust the reading to the known thickness value, then press 'Set' to set the value (Figure 14).

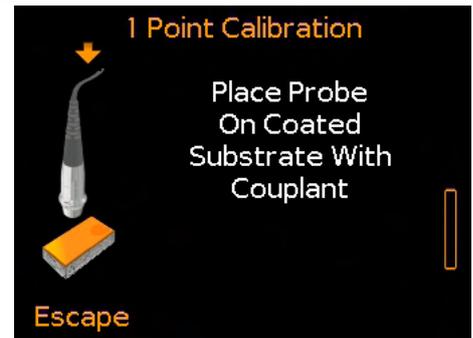


Figure 12



Figure 13

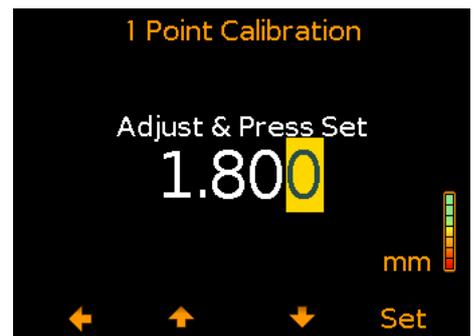


Figure 14

At the end of the calibration procedure, the user is given the option to save the coating calibration in the gauge memory for future use, see Section 10.4 'Saving the Coating Calibration' on page en-19 for further information.

The gauge is calibrated using the coating thickness value entered and the derived sound-velocity is displayed to the right of the measurement screen, below the calibration method icon (Figure 15).

Pressing 'Escape' at any time will exit the calibration procedure without calibrating the gauge.

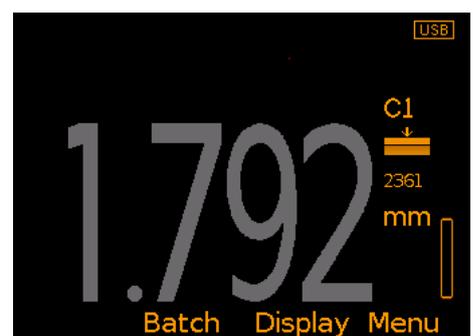


Figure 15

10 CALIBRATING YOUR GAUGE (continued)

10.3 USING VELOCITY ENTRY

To calibrate the gauge using this method, the user must know the sound-velocity of the coating material. If the sound-velocity is not known, '1 Point' or 'Coating Material' Calibration can be used or alternatively, the sound-velocity can be determined by using the Elcometer 500 Coating Calibration Mould (CCM), see Section 11 on page en-22.

- 1 Press Menu/Calibration/Cal Method and select 'Velocity Entry'. If 'Velocity Entry' is already selected, simply press Menu/Calibration/Calibrate.
 - ▶ The calibration method currently selected is indicated by the icon to the right of the display.
- 2 Enter the known sound-velocity using the $\uparrow\downarrow$ softkeys to select 0 to 9 and the \rightarrow softkey to move to the next digit, followed by 'Set' to use the value entered (Figure 16).
 - ▶ If the sound-velocity of the test coating is not known, it can be determined by using the Elcometer 500 Coating Calibration Mould (CCM), see Section 11 on page en-22.
- 3 To ensure accurate and repeatable readings and check for probe wear, the user will be prompted to zero the probe; clean the probe surface, hold the probe in free air and press 'Zero'.
 - ▶ The 'Zero Probe' procedure is not only part of the calibration process, it can also be performed at any time to check that there is sufficient probe tip oil on the sensor plate and the condition of the probe tip. See Section 12 'Zeroing the Probe' on page en-24 for further information



Figure 16

At the end of the calibration procedure, the user is given the option to save the coating calibration in the gauge memory for future use, see Section 10.4 'Saving the Coating Calibration' on page en-19 for further information.

The gauge is calibrated using the sound-velocity entered which is then displayed to the right of the measurement screen, below the calibration method icon (Figure 17).

Pressing 'Escape' at any time will exit the calibration procedure without calibrating the gauge.

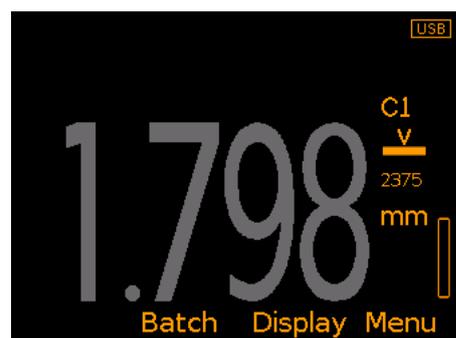


Figure 17

10 CALIBRATING YOUR GAUGE (continued)

10.4 SAVING THE COATING CALIBRATION

At the end of '1 Point' and 'Velocity Entry' calibration, the user is given the option to save the coating calibration in the gauge memory for future use.

When prompted, select 'Yes' (Figure 18) to save and name the calibration as appropriate for the specific coating or job for example.

The coating calibration is then saved in the 'User Materials' list for future selection using the 'Coating Material' calibration method, see Section 10.5 'Using Coating Material Calibration'.



Figure 18

Using ElcoMaster®, saved 'User Materials' lists can be transferred to other Elcometer 500 gauges, at any time.

10.5 USING COATING MATERIAL CALIBRATION

The gauge is calibrated using the known sound-velocity of a coating material as selected by the user from one of two pre-defined lists stored in the gauge.

- **'Generic Materials'**: Choose from Epoxy, PVC, Rubber, Polyurethane, Bitumen.
- **'User Materials'**: A list of up to 64 user defined coating materials with unique sound-velocities and names, created by either:
 - Saving '1 Point' or 'Velocity Entry' calibrations - see Section 10.2 'Using 1-Point Calibration' on page en-16 and Section 10.3 'Using Velocity Entry' on page en-18;
 - Using the Elcometer 500 Coating Calibration Mould (CCM) to determine the sound-velocity of the coating material - see Section 11 on page en-22 for further information.

Using ElcoMaster®, saved 'User Materials' lists can be transferred to other Elcometer 500 gauges, at any time.

Note: CAUTION - different colours of the same material may have different sound-velocities.

10 CALIBRATING YOUR GAUGE (continued)

- 1 Press Menu/Calibration/Cal Method and select 'Coating Material' followed by 'User Materials' or 'Generic Materials'. If the coating material required is already selected, simply press Menu/Calibration/Calibrate.
 - ▶ The calibration method currently selected is indicated by the icon to the right of the display.
- 2 Use the $\uparrow\downarrow$ softkeys to highlight the required coating material followed by 'Select' (Figure 19).



Figure 19

The gauge is calibrated using the sound-velocity of the coating material selected which is then displayed to the right of the measurement screen, below the calibration method icon, with the coating material list index number above (Figure 20).

Pressing 'Escape' at any time will exit the calibration procedure without calibrating the gauge.



Figure 20

10.6 USING FACTORY CALIBRATION

Press Menu/Calibration/Factory Calibration to restore the default factory calibration sound-velocity setting of 2390m/s (approximately 0.0941in/ μ s), the sound-velocity of a typical epoxy coating.

10.7 TESTING & VALIDATING THE GAUGE CALIBRATION

This feature allows the user to test and validate the gauge calibration by taking a reading on a sample with a coating of known thickness, without the reading being saved.

To test and validate the calibration:

- 1 Press Menu/Calibration/Test Calibration.
- 2 When prompted, apply couplant to the coated sample.
 - ▶ If a sample with a coating of known thickness is not readily available, one can be created using the Elcometer 500 Coating Calibration Mould (CCM), see Section 11 on page en-22.

10 CALIBRATING YOUR GAUGE (continued)

- 3 Place the probe on to the coated sample, ensuring that it is flat against the surface. The display will show a thickness value which is constantly updating (Figure 21).
 - ▶ The stability of the reading is indicated on the signal strength indicator to the right of the display. If the signal strength indicator is green, it is a valid and stable reading. If not green, ensure there is an adequate film of couplant beneath the probe and that the probe is seated flat against the surface. Alternatively, position the probe nearby on a different area of the test surface until a strong signal is received.
- 4 Remove the probe from the coated sample. The last reading is held on screen. If not representative, repeat Steps 2-3.
 - ▶ Excessive use of couplant can result in a distorted reading when the probe is removed from the surface. If this occurs, clean the probe tip and coated surface, then repeat Steps 2-3.
- 5 Press 'Validate' to retain the existing calibration but refresh the associated time and date of calibration to the current time and date, 'Cal' to re-calibrate the gauge or 'Ok' to exit the test calibration procedure.

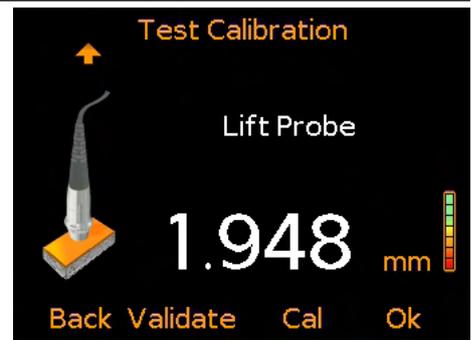


Figure 21

10.8 LOCKING THE CALIBRATION - MODEL T

Using the 'PIN Lock' feature, the calibration settings can be 'locked', preventing the user from making any changes to the calibration without first disabling PIN lock.

Users can still test the calibration via Menu/Calibration/Test Calibration when 'PIN Lock' is enabled, but are unable to validate or re-calibrate the gauge.

For more information on 'PIN Lock', see Section 13 'PIN Lock - Model T' on page en-25.

11 USING THE COATING CALIBRATION MOULD

In addition to measuring coatings on concrete and other similar substrates (see Section 7.5 'Measurement Substrates' on page en-12), the Elcometer 500 C1 and C2 coating thickness probes have been designed to measure coatings on the steel Elcometer 500 Coating Calibration mould (CCM) for calibration purposes.

Available to purchase as an optional accessory, the Elcometer 500 Coating Calibration Mould (CCM) is a steel mould with two chambers - a sample chamber and overflow chamber - which can be used to determine the sound-velocity of coating materials for calibration.



By using the Elcometer 500 CCM following the procedure outlined below, the Elcometer 500 gauge calibration will be traceable to National and International Standards.

To use the Elcometer 500 CCM:

- 1 Place the Elcometer 500 CCM onto a flat, horizontal surface.
- 2 Completely fill the sample chamber (a) with the test coating, making sure that there is a slight dome or meniscus (Figure 22).
- 3 Using the plastic scraper supplied (b), scrape over the coating allowing the excess to fall into the overflow chamber (c) (Figure 23).
- 4 Allow the coating to dry, ensuring that the Elcometer 500 CCM remains flat at all times.



Figure 22

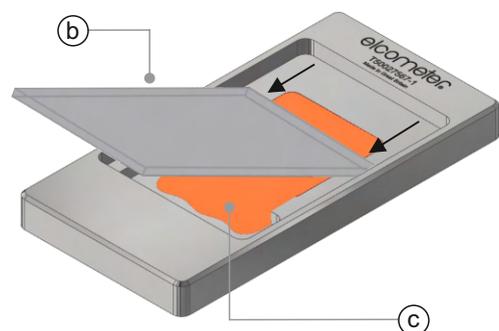


Figure 23

11 USING THE COATING CALIBRATION MOULD (continued)

- 5 When fully cured, using an Elcometer 456 ferrous coating thickness gauge, measure and record the dry film thickness at the centre of the coating in the sample chamber. The value can be written on the dried coating in the overflow chamber.
 - ▶ The Elcometer 456 ferrous coating thickness gauge must be calibrated on the Elcometer 500 CCM, using a calibration foil or shim and the base of the CCM as a zero plate (*d*), prior to taking the dry film thickness measurement. Refer to the Elcometer 456 user guide for instructions on how to do this.
- 6 Using the Elcometer 500 gauge with probe connected, select Menu/Calibration/Cal Method/1 Point and take a measurement of the coating in the sample chamber.
 - ▶ The measurement should be taken in approximately the same location as the dry film thickness measurement taken in Step 5.
- 7 Press 'Adjust' and using the $\uparrow\downarrow$ softkeys, adjust the reading to the dry film thickness value measured with the Elcometer 456, then press 'Set' to set the value.
- 8 Press 'Yes' to save into the 'User Materials' list for future selection and insert an appropriate name for the coating.



The Elcometer 500 gauge can now be calibrated by using the 'Coating Material' calibration method (see Section 10.5 on page en-19) and selecting the user defined coating from the 'User Materials' list.

Up to 64 user defined coatings can be stored in the gauge memory. Using ElcoMaster®, saved 'User Materials' lists can be transferred to other Elcometer 500 gauges, at any time.

| Description | Part Number |
|-----------------------------------------------|--------------------|
| Elcometer 500 Coating Calibration Mould (CCM) | T50027567-1 |

12 ZEROING THE PROBE

The 'Zero Probe' procedure is part of the calibration process however, a probe zero can be performed at any time to check that there is sufficient probe tip oil on the sensor plate and the condition of the probe tip.

12.1 BEFORE YOU START

- 1 Clean the probe surface of any couplant residue.
- 2 Connect the probe - see Section 4.4 on page en-6.
- 3 Switch the gauge on - see Section 4.3 on page en-5.

12.2 TO ZERO THE PROBE

- 1 Press Menu/Calibration/Zero Probe.
- 2 Hold the (clean) probe in free air and press 'Zero' (Figure 24).

If the signal strength indicator is not green: The user will be prompted apply probe tip oil. Apply oil to the sensor plate, see Section 4.6 on page en-7, press 'Ok' and repeat Step 2 above.



Figure 24

If the signal strength indicator is green and the probe tip wear is less than 0.7mm: The zero probe procedure will complete and the gauge will revert to the reading screen (or calibration screen if zeroing as part of the calibration procedure).

If the signal strength indicator is green and the probe tip wear is greater than 0.7mm but less than 1mm: The user will be prompted to check the probe tip for wear or damage. After inspection, the user can choose to continue with the current probe tip or fit a new tip (recommended), see Section 4.5 on page en-6. Press 'Ok' to complete the zero probe procedure and revert to the reading screen (or calibration screen if zeroing as part of the calibration procedure).

If the signal strength indicator is green and the probe tip wear is greater than 1mm: The user will be prompted to replace the probe tip. Replace the probe tip, see Section 4.5 on page en-6, press 'Ok' and repeat Step 2 above.

13 PIN LOCK - MODEL T

The 'PIN Lock' feature prevents the user from accidentally adjusting the gauge settings.

To set a PIN code:

- 1 Press Menu/Setup/PIN Lock.
- 2 Set the four digit PIN code using the $\uparrow\downarrow$ softkeys to select 0 to 9 and the \rightarrow softkey to move to the next digit^d (Figure 25).
- 3 Press 'Ok' to set, 'Escape' to cancel or 'Adjust' to amend the PIN code.



Figure 25

When enabled, the following features are disabled and can not be adjusted:

| | |
|--------------------------------------------------|--------------------------------------|
| Menu/Calibration/Calibrate | Menu/Calibration/Cal Method |
| Menu/Calibration/Cal Memory | Menu/Calibration/Factory Calibration |
| Menu/Reset | Batch/Edit Batch/Delete Batch |
| Menu/Limit Memories/Create Limit Memory | Batch/Deleted Reading |
| Menu/Limit Memories/Edit Limit Memory | |
| Batch/New Batch/Batch Limits/Create Limit Memory | |

To unlock the PIN code:

- 1 Press Menu/Setup/PIN Lock.
- 2 Enter the four digit PIN code using the $\uparrow\downarrow$ softkeys to select 0 to 9 and the \rightarrow softkey to move to the next digit^d.
- 3 Press 'Ok' or 'Escape' to cancel.

Note: Should the user forget or lose the PIN code, it can be disabled via ElcoMaster®. Using the USB cable supplied, simply connect the gauge to a PC with ElcoMaster® version 2.0.57 or higher installed and select Edit/Clear PIN.

14 BATCHING - MODEL T

The Elcometer 500 Model T can store 100,000 readings in up to 1,000 batches. The following batch functions are available:

- **Batch/New Batch;** Creates a new batch.
- **Batch/New Batch/Fixed Batch Size;** Pre-define the number of readings which are stored in a batch. The gauge will notify the user when a batch is complete and ask if another batch is to be opened. These batches are then linked when transferred to ElcoMaster®.

^d The \rightarrow softkey will appear when the first 'X' is changed to a number.

14 BATCHING - MODEL T (continued)

- **Batch/Open Existing Batch;** Open an existing batch.
- **Batch/Review Batch;** Review the readings, statistics, batch information, calibration and limit information and a graph of all readings - see Section 15 'Reviewing Batch Data - Model T'.
- **Batch/Copy Batch;** Copy a batch including the batch header information, calibration and limit information.
- **Batch/Edit Batch/Rename Batch;** Rename an existing batch.
- **Batch/Edit Batch/Clear Batch;** Clear all readings within a batch - but leaving all batch header information.
- **Batch/Edit Batch/Delete Batch;** Delete a single batch or all batches entirely from the gauge.
- **Batch/Deleted Reading/Delete Without Tag;** Delete the last reading entirely.
- **Batch/Deleted Reading/Delete With Tag;** Delete the last reading but mark it as deleted in the batch memory.

15 REVIEWING BATCH DATA - MODEL T

15.1 BATCH STATISTICS (Batch/Review Batch/Statistics)

Displays statistical information for the batch including (Figure 26):

- Number of readings in the batch (n:)
- Average reading for the batch^e (\bar{x} :)
- Lowest reading in the batch^e (Lo:)
- Highest reading in the batch^e (Hi:)
- Standard Deviation^e (σ :)
- Coefficient of Variation^e (cv%:)
- Low limit value ($\bar{\underline{L}}$:) - if set - and the number of readings below the low limit ($\underline{\bar{n}}$:)
- High limit value ($\bar{\underline{H}}$:) - if set - and the number of readings above the high limit ($\underline{\bar{n}}$:)
- Range^e ($\bar{\underline{I}}$:); the difference between the highest and lowest reading in the batch
- NDFT (Nominal Dry Film Thickness) value (NDFT:)



Figure 26

^e For batches of more than one reading.

15 REVIEWING BATCH DATA - MODEL T (continued)

15.2 BATCH READINGS

(Batch/Review Batch/Readings)

Displays the reading value together with date and time stamp for each individual reading in the batch.

Press the $\uparrow\downarrow$ softkeys to scroll through the readings and \rightarrow to move to the next information screen (Figure 27).

Readings outside any enabled limits for the batch are displayed in red with the appropriate limit icon to the left of the reading, (∇) if the reading is below the low limit and (\triangle) if above the high limit.



Figure 27

15.3 BATCH GRAPH (Batch/Review Batch/Batch Graph)

Allows the users to view the readings within the batch as a column bar graph. Up to five horizontal axes are displayed representing different values / statistics as follows:

- Highest reading in the batch^e (Hi:)
- Lowest reading in the batch^e (Lo:)
- Average reading for the batch^e (\bar{X} :)
- Low Limit (∇):); *when set and enabled*
- High Limit (\triangle):); *when set and enabled*

If limits were not set and enabled, the readings are displayed as white vertical bars. If limits were set and enabled, readings are displayed as white bars if within set limits or red; if outside set limits (Figure 28).

If there are more readings in the batch than can be displayed on a single screen, multiple readings will be combined into one bar. Should a single reading within the 'combined bar' be outside set limits, the whole bar will be red.

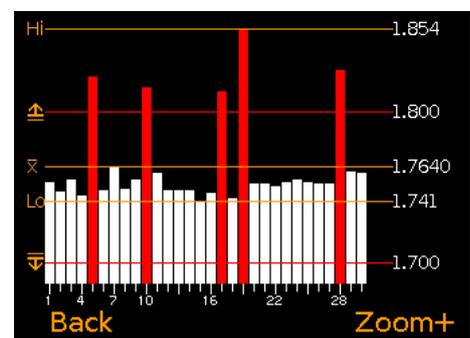


Figure 28

^e For batches of more than one reading.

15 REVIEWING BATCH DATA - MODEL T (continued)

Pressing the 'Zoom+' softkey, allows each individual reading to be displayed, thereby showing the individual readings outside the set limits (Figure 29).

When zoomed in, the graph will always display the first 25 readings. Pressing the → softkey will display the next 25 readings in the batch (Figure 30).

Subsequent presses of the → softkey will scroll forwards through the readings, 25 readings at a time. Pressing the ← softkey will scroll backwards.

Pressing the 'Zoom-' softkey returns to the original overview graph of all readings in the batch.

Pressing the 'Back' softkey returns the gauge to the Batch/Review Batch menu.

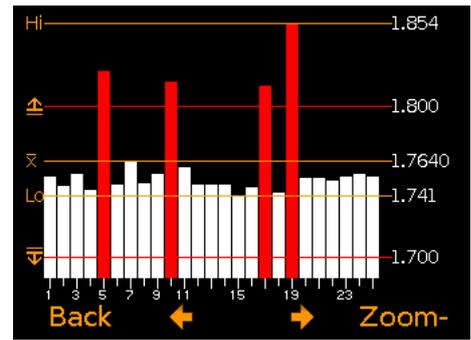


Figure 29

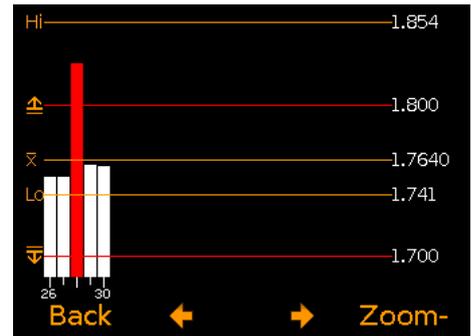
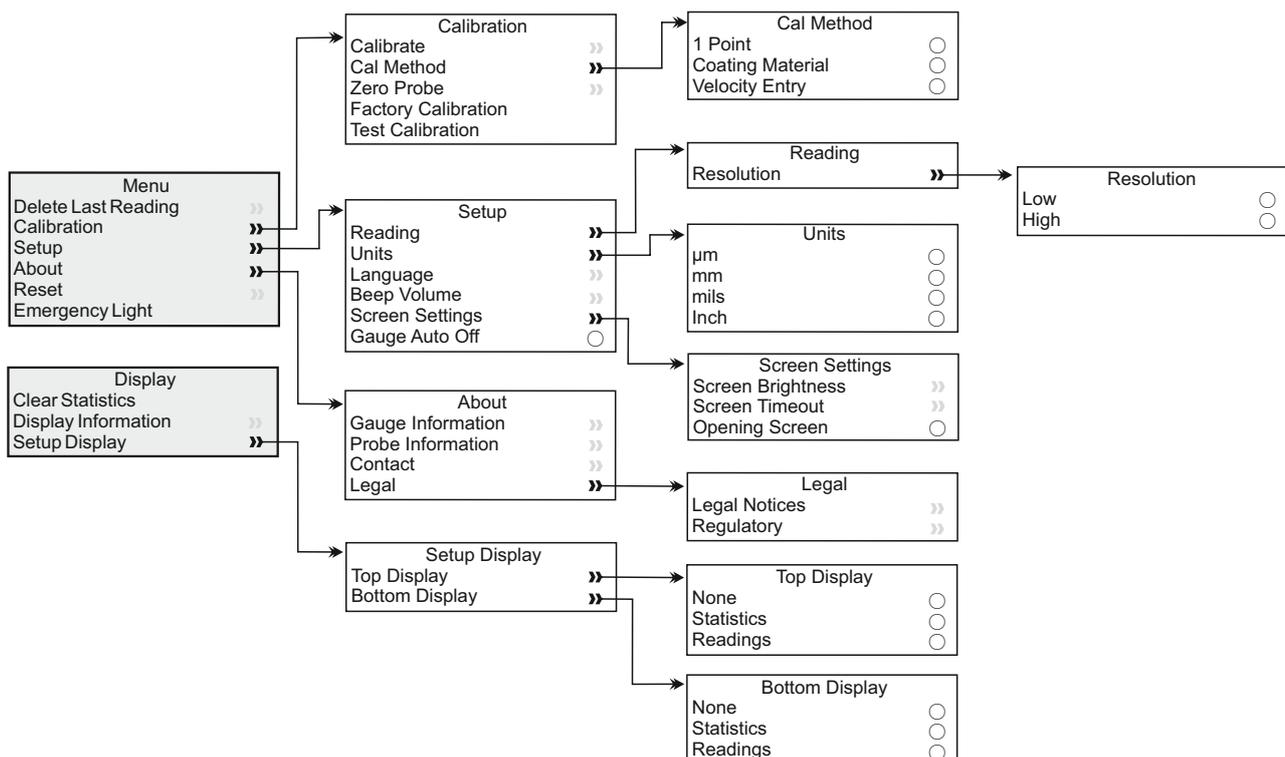


Figure 30

16 MENU STRUCTURE - MODEL B



18 DOWNLOADING DATA

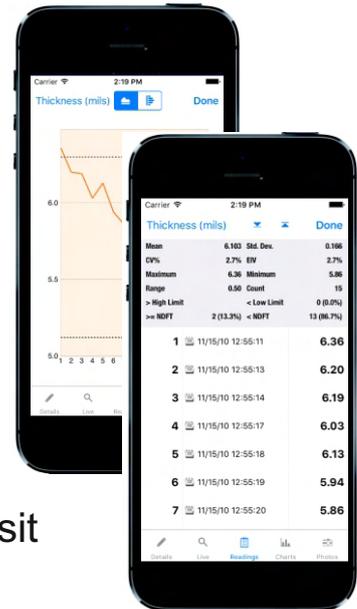
18.1 USING ELCOMASTER® ON A PC

Using ElcoMaster® - supplied with the Elcometer 500 Model T and available as a free download at elcometer.com - gauges can transmit readings to a PC for archiving and report generation. Data can be transferred via USB (Model B & T) or Bluetooth® (Model T). For more information on ElcoMaster® visit www.elcometer.com

18.2 USING ELCOMASTER® MOBILE APPS - MODEL T

Ideal when out in the field or on-site, using the ElcoMaster® Android™ or iOS Mobile App users can:

- Store live readings directly on to a mobile device and save them into batches together with GPS coordinates.
- Add photographs of the test surface.
- Map readings on to a map, photograph or diagram.
- Inspection data can be transferred from mobile to PC for further analysis and reporting.



For more information on ElcoMaster® Mobile Apps visit www.elcometer.com



Compatible with smart phones and tablets running Android 2.1 or above. To install, download via www.elcometer.com or using the Google Play™ Store app, and follow the on screen instructions.



Made for iPhone 6 Plus, iPhone 6, iPhone 5s, iPhone 5c, iPhone 5, iPhone 4s, iPhone 4, iPad Air 2, iPad mini 3, iPad Air, iPad mini 2, iPad (3rd and 4th generation), iPad mini, iPad 2, and iPod touch (4th and 5th generation). To install, download via www.elcometer.com or the App Store, and follow the on screen instructions.

19 UPGRADING YOUR GAUGE

Gauge firmware can be upgraded to the latest version by the user via ElcoMaster®, as it becomes available. ElcoMaster® will inform the user of any updates when the gauge is connected to the PC with an internet connection.

20 SPARES & ACCESSORIES

20.1 PROBES

Two probe options are available; C1 and C2, which can measure coatings up to 2.50mm (98mils) and 10mm (390mils) thick^f respectively.

As the Elcometer 500 uses ultrasonic technology to non-destructively measure the coating thickness on concrete and other similar substrates, the gauge/probe's overall measurement range is determined by the coating's formulation.



Whilst the Elcometer 500 can measure up to 10mm (390mils) of a typical epoxy coating, more sound absorbent coatings such as rubber, will reduce the measurement range of the gauge.

Similarly, due to the nature of the measurement technology, coatings with high levels of 'aggregate' may also affect the performance of the gauge.

Elcometer 500 probes will be identified automatically by the gauge when connected and details can be viewed at any time via Menu/About/Probe Information.

The Elcometer 500 is supplied as a gauge only, without probe - probes must be ordered separately.

Probes are supplied with a probe tip (fitted), two measurement foils⁹ for verifying the gauge and probe performance, see Section 6 on page en-9, and a test certificate.

^f Epoxy coatings, thickness on other materials may vary.

⁹ C1 Probes supplied with nominal values 1 & 2mm (40 & 80mils)

C2 Probes supplied with nominal values 3 & 8mm (120 & 310mils)

20 SPARES & ACCESSORIES (continued)

| Probe Type | Measuring Range ^f | Accuracy | Part Number |
|------------|-----------------------------------------------|------------------------------------|---------------|
| C1 | 0.15 - 2.50mm (6 - 98mils) | ±2% or ±0.01mm (±2% or 0.4mils) | T500-C1 |
| C2 | 0.75 - 10mm (30 - 390mils) | | T500-C2 |
| C1 | Replacement Probe Tip; Pack of 2 | | T50027602-1 |
| C2 | Replacement Probe Tip; Pack of 2 | | T50027602-2 |
| C1 / C2 | Probe Tip Oil; 4ml (0.14fl oz) Bottle | | T50027604 |
| C1 | Foil Set: 1 & 2mm (40 & 80mils) | | T99022255-13 |
| C1 | Foil Set - Certified: 1 & 2mm (40 & 80mils) | | T99022255-13C |
| C2 | Foil Set: 3 & 8mm (120 & 310mils) | | T99022255-14 |
| C2 | Foil Set - Certified: 3 & 8mm (120 & 310mils) | | T99022255-14C |

Note: A Material Safety Data Sheet for the probe tip oil supplied by Elcometer is available to download via our website:

www.elcometer.com/images/stories/MSDS/Elcometer_Probe_Tip_Oil.pdf

20.2 ULTRASONIC COUPLANT

For the gauge to work correctly, there must be no air gap between the probe and the test surface. This is achieved by using a small amount of couplant.

A 120ml (4fl oz) bottle of couplant is supplied as standard with each gauge, other sizes are available to purchase separately.



Description

Ultrasonic Couplant; 120ml (4fl oz)

Ultrasonic Couplant; 300ml (10fl oz)

Ultrasonic Couplant; 500ml (17fl oz)

Ultrasonic Couplant; 3.8l (1 US Gallon)

Ultrasonic Couplant - High Temperature; 60ml (2fl oz)
(for use in warm environments)

Part Number

T92015701

T92024034-7

T92024034-8

T92024034-3

T92024034-9

Note: Material Safety Data Sheets for the ultrasonic couplant supplied by Elcometer are available to download via our website:

www.elcometer.com/images/stories/MSDS/Elcometer_Ultrasonic_Couplant_Blue.pdf

www.elcometer.com/images/stories/MSDS/elcometer_ultrasonic_couplant_hi_temp.pdf

^f Epoxy coatings, thickness on other materials may vary.

20 SPARES & ACCESSORIES (continued)

20.3 ELCOMETER 500 COATING CALIBRATION MOULD (CCM)

The Elcometer 500 Coating Calibration Mould (CCM) is a steel mould with two chambers - a sample chamber and overflow chamber - which can be used to determine the sound-velocity of coating materials for calibration purposes. See Section 11 on page en-22 for further information.



Description

Elcometer 500 Coating Calibration Mould (CCM)

Part Number

T50027567-1

21 WARRANTY STATEMENT

Gauges are supplied with a 12 month warranty against manufacturing defects, excluding contamination and wear. The warranty can be extended to two years within 60 days of purchase via www.elcometer.com.

Probes are supplied with a 12 month warranty against manufacturing defects, excluding contamination and wear.

22 TECHNICAL SPECIFICATION

| Model | Model B | Model T |
|------------------------------------------------------------------------------|------------------------------------------------------------------------------|----------------------------------------------------------|
| Thickness Range^f | Using C1 Probe: Using C2 Probe: | 0.15 - 2.50mm (6 - 98mils) 0.75 - 10mm (30 - 390mils) |
| Accuracy^h | ±2% or ±10µm (±2% or 0.4mils) | |
| Resolution (user selectable) | Low: 10µm, 0.01mm, 1mils or 0.001" High: 1µm, 0.001mm, 0.1mils or 0.0001" | |
| Measurement Rateⁱ | 60+ readings per minute | |
| Gauge Memory | None | 100,000 readings in up to 1,000 batches |
| Operating Temperature | -10 to 50°C (14 to 122°F) | |
| Power Supply | 2 x AA batteries (rechargeable batteries can be used) | |
| Battery Life^j | Alkaline: Approximately 15 hours Lithium: Approximately 28 hours | |
| Gauge Weight | 161g (5.68oz) including batteries, without probe | |
| Gauge Dimensions | 141 x 73 x 37mm (5.55 x 2.87 x 1.46") without probe | |
| Can be used in accordance with: ASTM D6132, SSPC-PA 9, ISO 2808 Method 10 | | |

^f Epoxy coatings, thickness on other materials may vary.

^h Whichever is the greater.

ⁱ 140+ readings per minute when using the Model T in Scan Mode.

^j When in continuous reading mode. Rechargeable batteries may differ.

23 LEGAL NOTICES & REGULATORY INFORMATION

The Elcometer 500 Model T meets the Radio Equipment Directive and the Elcometer 500 Model B meets the Electromagnetic Compatibility Directive.

The Elcometer 500 Model B & T are Class B, Group 1 ISM equipment according to CISPR 11.

Group 1 ISM product: A product in which there are intentionally generated and/or used conductively coupled radio-frequency energy which is necessary for the internal functioning of the equipment itself.

Class B product are suitable for use in domestic establishments and in establishments directly connected to a low voltage power supply network which supplies buildings used for domestic purposes.

The USB is for data transfer only and is not to be connected to the mains via a USB mains adapter.

The ACMA compliance mark can be accessed via: Menu/About/Legal/Regulatory

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Elcometer 500 Model T: The Giteki mark, its product identification code and Bluetooth SIG QDID can be accessed via: Menu/About/Legal/Regulatory

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
- Consult the dealer or an experienced radio/TV technician for help.

To satisfy FCC RF Exposure requirements for mobile and base station transmission devices, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during operation. To ensure compliance, operation at closer than this distance is not recommended. The antenna(s) used for this transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

Modifications not expressly approved by Elcometer Limited could void the user's authority to operate the equipment under FCC rules.

Elcometer 500 Model T: This device complies with Industry Canada license exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

This Class B digital apparatus complies with Canadian ICES-003.

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Elcometer 500 Model T: Made for iPhone 6 Plus, iPhone 6, iPhone 5s, iPhone 5c, iPhone 5, iPhone 4s, iPhone 4, iPad Air 2, iPad mini 3, iPad Air, iPad mini 2, iPad (3rd and 4th generation), iPad mini, iPad 2, and iPod touch (4th and 5th generation).

“Made for iPod,” “Made for iPhone,” and “Made for iPad” mean that an electronic accessory has been designed to connect specifically to iPod, iPhone, or iPad, respectively, and has been certified by the developer to meet Apple performance standards. Apple is not responsible for the operation of this device or its compliance with safety and regulatory standards. Please note that the use of this accessory with iPod, iPhone, or iPad may affect wireless performance.

iPad, iPhone, and iPod touch are trademarks of Apple Inc., registered in the U.S. and other countries.

App Store is a trademark of Apple Inc., registered in the U.S. and other countries.

Google Play is a trademark of Google Inc.

All other trademarks acknowledged.

The Elcometer 500 is packed in a cardboard package. Please ensure that this packaging is disposed of in an environmentally sensitive manner. Consult your local Environmental Authority for further guidance.

