Measure what you see.

byko-test
Film Thickness Gage

Manual

A member of ◐ **ALTANA**

◐ **BYK**

byko-test   Manual

Film Thickness Gage   November 2019

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⚠️ **CAUTION!**
Read Instruction Manual before using this instrument.

⚠️ **WARNING!**
This manual cannot address all of the safety considerations associated with its use. It is the responsibility of the user to consult this manual and establish appropriate safety practices for use with this equipment and the individual material being tested.

⚠️ **WARNING!**
The byko-test Film Thickness Gage is designed and intended for the use described in this manual. Using the Film Thickness Gage for other purposes for which it was not designed may reduce or eliminate the protection offered by the features of the instrument. Serious injury may result.

⚠️ **WARNING!**
Ultimate disposal of this product should be handled according to all national laws and regulations.

Please note the following points:

• Familiarize yourself with the layout and operation of the controls.

2 Preparations

Unpack the unit being careful to check all packaging for items. Some accessories required for specific tests may be found in a separate box within the main box. Within the package are the following standard items:

Quantity	Description
1	byko-test Film Thickness Gage
2	AA alkaline batteries
1	Wrist strap
1	Fe zero plate
1	NFe zero plate
5	Plastic calibration shims
1	USB Cable
1	byko-test Connect software

To install the batteries, remove the battery cover using a #1 Philips screwdriver. Install the batteries taking note of the + and – indications inside the battery compartment. Reinstall the cover and tighten the screw. The instrument is powered by 2 AA size alkaline batteries. Rechargeable batteries may be used but do not mix battery types.

Power on the unit using the Menu/Power $\equiv$ ⏻ button.

The battery cover screw is near the bottom of the cover

The byko-test Film Thickness Gage is a small, hand-held instrument used for measuring the thickness of coatings on metallic substrates. It is powered by 2 AA size alkaline batteries.

A ruby tipped probe is at the bottom of the instrument. It is spring-loaded and takes a reading every time it is placed on a sample.

Four buttons on the front control all of the functions.
They are Menu/Power $\equiv$ ⏻, Enter ↵, Up ∧, Down ∨

On the left side is a USB port that allows downloading of data to an external device. No battery charging provision has been made and the USB port will not power the instrument.

The sides are made from a soft-textured material to aid the user in holding the instrument.

Small slots in the rear allow air to enter the unit to measure the air temperature and humidity for display of those parameters along with dew point if desired

A full-color TFT screen is used to display the measurement, statistics, and environmental information as selected by the user.

Battery power is indicated in the upper right corner of the screen. The dark line indicates power remaining.

4 Set Up

The byko-test is customizable for your needs through an easy-to-use menu system. Familiarize yourself with the menu prior to use so you may get the maximum benefit from the features and options available. Power on the instrument by pushing the Menu/Power $\equiv$ ⏻ button.

Each button has multiple functions which depend on the current mode.

The Menu/Power $\equiv$ ⏻ button:
- Pressing once turns on the power.
- Holding for 3 seconds turns the power off.
- Once the power is on, pressing brings up the menu.
- Within the menu, pressing brings you back one level.

The Enter ↵ button:
- Within a menu item, pressing selects that item.
- In measurement mode, pressing deletes the last reading.
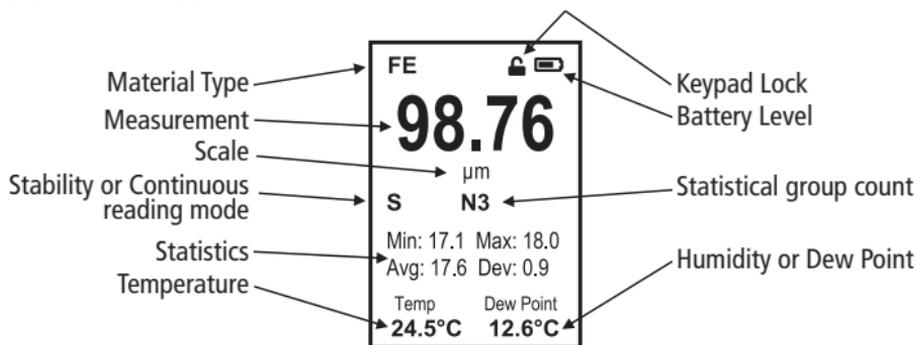
The Up ∧ button:
- Within the menus, pressing moves the selection area up.
- Within a number selection screen, pressing moves the number up.
- In measurement mode, pressing displays the next reading in an average set.

The Down ∨ button:
- Within the menus, pressing moves the selection area down.
- Within a number selection screen, pressing moves the number down.
- In measurement mode, pressing displays the previous reading in an average set.

BUTTON DISABLE FUNCTION:
- The buttons may be disabled to allow the instrument to be used in tight quarters or fast moving situations without concern of accidentally deleting a reading.
- Press both the Menu/Power ☰ ⏻ and Down ∨ buttons for more than 5 seconds.
- A Lock icon 🔒 will appear in the upper right corner of the screen next to the battery icon.
- Now short presses of the buttons will not be recognized, the normal functionality of the buttons may be restored by pressing both the Menu/Power ☰ ⏻ and Down ∨ buttons for more than 5 seconds.
- Power off may be accomplished by a long press of the Menu/Power ☰ ⏻ button.

SCREEN LAYOUT:

Material Type → FE 🔒 🔋 ← Keypad Lock / Battery Level

Measurement → **98.76**

Scale → µm

Stability or Continuous reading mode → S N3 ← Statistical group count

Statistics → Min: 17.1 Max: 18.0 Avg: 17.6 Dev: 0.9

Temperature → Temp Dew Point **24.5°C 12.6°C** ← Humidity or Dew Point

Once the instrument is powered on, press the Menu/Power ☰ ⏻ button. This brings up the Settings Menu where the following selections are available:

UNITS
Fe/NFe
Environment
System Settings
Statistics
Calibration
Limits

4 Set Up

Move the green selection bar up and down with the ∧ and ∨ buttons and press Enter ↵ to select that setting. The options for each selection are described below.

UNITS
The Units screen has the following selections:
   Microns
   Mills
   MM
   Inches

Move the green selection bar and press Enter ↵ to select. After selection press Menu/Power ≡ ⏻ to return to the Main screen.

   Fe/NFe
   Fe
   NFe
   Both

Move the green selection bar and press Enter ↵ to select. After selection press Menu/Power ≡ ⏻ to return to the Main screen.

ENVIRONMENT
   Temp only
   Temp/Humidity
   Temp/Dew Point
   Enviro off
   Units F°/C°
     - Select between F or C for the Temperature display.

SYSTEM SETTINGS
Each System Settings selection brings up a sub-menu to choose from.

   Rotation on/off
     - Turn automatic screen rotation on or off.

   Key Beep on/off
     - Turns the beeper off and on.

Stability Test on/off
- Turns off stability testing for use on moving vehicles.
  Stability mode is indicated by the letter S in the display.
  This setting is overridden when Continuous Mode is selected.

Continuous Mode on/off
- Turns continuous reading mode on or off. Continuous mode is
  indicated by the letter C in the display. Continuous mode
  selection overrides Stability Test.

Sleep Timer
  Select between:
    - 30 seconds
    - 1 minute
    - 5 minutes
    - Disable sleep

Brightness
- Use the Up or Down arrows to change the brightness,
  1 is backlight off, 10 is brightest.

Language
- Choose between English, German, French, Spanish, Italian,
  Portuguese, Chinese or Japanese.

About
- Information screen, shows current software version and
  copyright information

STATISTICS
Statistics on/off
- On – Standard statistics mode is on, calculations are based on
  Number of Readings to Average setting. (see below)
- SSPC Mode – Spot and Area averaging mode to comply with
  SSPC (Society of Protective Coatings) methods.
- Off – All statistics turned off.

4 Set Up

Number of Readings to Average
- Standard Mode – Use Up and Down arrow buttons to set the number of readings to use for statistics calculations.
- SSPC Mode Mmnt/Spot – Use Up and Down arrow buttons to set the number of measurements per spot, minimum number is 3.
- SSPC Mode Spots/Area - Use Up and Down arrow buttons to set the number of spots per area, minimum number is 5.

Clear Memory
- Clears the statistics memory.

CALIBRATION
Zero only
- Calibration on the zero plate only. Take one or more readings on a zero plate. When finished press the Enter button to save.

Single Point
- Calibrates zero, then calibrates on a shim selected by the user. Take one or more readings on a zero plate, then press Enter. Place your selected shim on the zero plate and take one or more readings, then press Enter. The Enter Shim Value screen will now appear. Adjust each number to match the value of your shim. Use the Up and Down arrow buttons to adjust, Enter to advance to the next number.

SSPC Mode 1
- Calibration like Single Point.

SSPC Mode 2
- Calibration like Single Point except with 2 shims, a low and high value.

Reset to Factory Values
- Resets the instrument to the factory programmed calibration.

LIMITS

Limits on/off
- Turns limit warnings on and off.

Warning indication
- Beeper – Beeper only, long beep indicates limits exceeded
  NOTE:
  The Key Beep must be set to ON in the System Settings to hear the beeper!
- Backlight Flash – Backlight flashes once for a no-sound limit indicator.
- Both – The beeper will long beep and the backlight will flash together.
- Off – Both are turned off.

Set Limits
- Set Low Limit – Use the Up and Down buttons to enter the Low Limit, Enter button moves the highlight to the next number, Menu button saves and exits.

- Set High Limit - Use the Up and Down buttons to enter the High Limit, Enter button moves the highlight to the next number, Menu button saves and exits.

5 Operation

Grip the instrument in your hand with your thumb on the ribbed section between the buttons and your other fingers on the back.

Press the Menu/Power ≡ ⏻ button to power on the instrument.

To calibrate, select the calibration type then press the instrument to the calibration surface and remove. For each reading, place the instrument on the surface and remove by at least 25 mm for each reading. Press the Enter ↵ button to complete the calibration after removing the instrument from the calibration surface.

Press the instrument probe firmly against the surface to be measured. Remove from the surface and read the measurement directly on the screen. The backlight will turn off in 15 seconds, to restore the backlight simply press either the Up ∧ or Down ∨ arrow buttons.

Statistics are shown on the lower area of the screen. The reading number in the statistics count is shown above the stats preceded by the letter N.

Along the lower edge of the screen are the environmental measurements. Air temperature and humidity are measured by a sensor system located below the three small slots on the upper back of the instrument. Make sure these are clear of debris for the best accuracy in measurements. The display can be set to show dew point instead of humidity if so desired.

Environment measurements are best taken shortly after powering on the instrument. Prolonged continuous use of the display backlight may raise the indicated temperature slightly. If the temperature appears to be rising, turn off the instrument for a few minutes and then power it on and take another measurement to confirm.

CLEANING AND ROUTINE MAINTENANCE
Care should be taken to avoid dropping the instrument. Do not immerse in water or any other liquid. If the instrument case becomes dirty, clean the covers with mild soap and water as soon as practical. Avoid using solvents to clean the instrument as it may be seriously damaged by strong solvents.

TROUBLESHOOTING
If an error occurs, first remove the batteries and replace with a new set. Use of high quality alkaline batteries are preferred however, rechargeable batteries may be used. The instrument has no provision to charge rechargeable batteries so they must be recharged using a separate charger (not included). Do not mix battery types. If the instrument is going to be stored for more than 30 days, remove the batteries to prevent discharge and subsequent leakage. If new batteries do not restore use, contact your local BYK-Gardner office for assistance.

SERVICE AND SPARE PARTS
For all service and spare parts requirements, please contact your local BYK-Gardner office.

Components
Ordering Information

Part Number	Description
3790	byko-test Film Thickness Gage

Recommended Accessories

Part Number	Description
3798	byko-test Connect Software
3799	USB connection cable
0470	BYK t200 IR Thermometer (for surface temperature measurements)

7 Technical Data

Weight	5.6 oz	160 g
Height	4.53 inches	115 mm
Width	2.65 inches	67 mm
Depth	1.75 inches	44 mm
Measurement Range	0-79 mils	0-2000 microns
Accuracy	±.078 mils + 3% of measured value	±2 microns + 3% of measured value
Min Substrate Thickness	FE – 0.008 in NFE – 0.002 in	FE – 0.2 mm NFE – 0.05 mm
Minimum Curvature	Convex 0.2 in Concave 1.2 in	Convex 5 mm Concave 30 mm
Temperature - Storage	0° – 150° F	-18° – 66° C
Temperature - Operating	32° – 140° F	0° – 60° C
Power	2 AA 1.5v Alkaline batteries	

All technical data is subject to change.

$C\epsilon$ **◗ BYK**

We   BYK-Gardner USA
          9104 Guilford Road
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herewith declare the product:

Type: **byko-test Ne/NFe, byko-test Lite Coating Thickness Tester**

comply with the requirements of the following EC directives:

Electromagnetic Compatibility 2014/30/EU

The following harmonized standards were applied:

**EN 61326-1:2013
EN 61326-2-1:2013**

Columbia, MD, August 30, 2019

Technical documentation is available

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