Durometro Barcol con Body Estándar, DeFelsko D   DF-BHI

PosiTector® *BHI*
Barcol Hardness Impressor

Full Guide v. 1.0

DeFelsko®
The Measure of Quality

Introduction

The **PosiTector** *Barcol Hardness Impressor* (**BHI**) is a hand-held electronic instrument that measures the indentation hardness of soft metals (aluminum, copper, brass), harder plastics and fiberglass. It consists of a PosiTector body (Standard or Advanced) and an interchangeable probe.

Quick Start

The **PosiTector** *BHI* powers-up when the center navigation ⚉ button is pressed. To preserve battery life, the Gage powers-down after approximately 5 minutes of no activity. All settings are retained.

1. Power-up the Gage by pressing the center navigation ⚉ button. Ensure the probe indentor (pg. 2) is not in contact with any surface.

2. To take a measurement:

a) Ensure the probe is perpendicular to the surface being tested. Press the probe down onto the material to be measured until the indentor foot is in full, flat contact with the surface. HOLD STEADY against the surface.

b) The Gage will emit a single BEEP and display a ▼ symbol indicating a reading is being taken. The test timer will begin counting down (see **Test Time**, pg. 7). When the timer reaches **0s**, the Gage will BEEP twice and display the measurement value.

3. Lift the probe from the surface between readings.

Verify accuracy (pg. 3) on test disks at the beginning and the end of each shift, or if the gage is dropped or suspected of giving erroneous readings. Be sure to place the leg on the included leveling plate when testing disks to maintain perpendicularity.
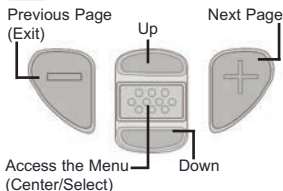
IMPORTANT: Test disks should be replaced when they become worn or visibly pitted.

Menu Operation

Gage functions are menu controlled. To access the Menu, power-up the gage, then press the center navigation button.

To navigate, use the **Up** and **Down** buttons to scroll vertically and to **SELECT**.

Previous Page (Exit)

Up

Next Page

Access the Menu (Center/Select)

Down

Press the **(+)** button to switch pages in a multipage menu.

Press the **(-)** button to return to the previous menu or page.

Select **Exit** to exit from any menu.

Probes

When powered-up, the **PosiTector** automatically determines which probe is attached and does a self-check.

To disconnect a probe from a body, slide the plastic probe connector horizontally (in the direction of the arrow) away from the body. Reverse these steps to attach a different probe. It is not necessary to power-down the Gage when switching probes.

The **PosiTector** gage body accepts a wide variety of probe types including magnetic, eddy-current and ultrasonic coating thickness, surface profile, environmental, hardness, salt contamination and ultrasonic wall thickness probes. See www.defelsko.com/probes

The **PosiTector** *BHI* consists of the **PosiTector** *BHI* probe, Standard or Advanced gage body, leveling plate, test disks (2), replacement indentor, replacement indentor tool, glass plate, calibration certificate, protective rubber holster with belt clip, wrist strap, 3 AAA alkaline batteries, instructions, protective lens shield, convenient hard shell carrying case, USB cable, PosiSoft Software, and two (2) year warranty.

Sleeve

Indentor Foot

Indentor

Calibration, Verification and Adjustment

Three steps ensure best accuracy…

1. **Calibration** - typically performed by the manufacturer. All probes include a Certificate of Calibration.

2. **Verification of Accuracy** - typically performed by the user on known reference standards such as the included test disk.

3. **Adjustment** - to a known hardness

Calibration

Calibration is the high-level, controlled and documented process of measuring traceable calibration standards over the full operating range of the probe, and verifying that the results are within the stated accuracy of the probe. Calibrations are performed by the manufacturer, their authorized agent, or by an accredited calibration laboratory in a controlled environment using a documented process.

Verification

Verification is an accuracy check performed by the user on known reference standards. A successful verification requires the Gage to read within the combined accuracy of the probe and the Test Disks.

Instrument operation may be verified with the included Test Disks and Leveling Plate. Position the Leveling Plate under the Leg and place the Test Disks on a flat, hard surface (as shown). Take three to five readings on each disk. The measurement points should be at least 6mm (0.24") apart. If the average of those readings is outside the combined accuracy of the Test Disk and gage, service may be required.

Some causes for the gage to not read properly are the indentor being damaged, incorrect pressure being applied to the test disk or temperatures beyond normal conditions.

Verify accuracy at the beginning and the end of each work shift. During the work shift, if the Gage is dropped or suspected of giving erroneous readings, its accuracy should be re-verified.

Adjustment
Adjustment, or Calibration Adjustment, is the act of aligning the Gage's readings to match that of a known reference in order to improve accuracy of a gage on a specific material. (see **Cal Settings**, pg. 4)

Cal Settings Menu

The **PosiTector** *BHI* is factory calibrated and for most applications no calibration adjustment is required. However, there may be times when a zero, one or two point adjustment is necessary including after indentor replacement or to compensate for indentor wear.

Zero

Zeroing the Gage may be necessary after indentor replacement or when the indentor is worn. For best accuracy, the Gage should be zeroed on the included glass plate.

1. Select **Zero** from the menu.

2. Press the **(+)** button to select the number of readings

3. Measure on the glass plate, ensuring that both the indentor foot and leg are resting on the glass plate. After the last measurement, the Gage will calculate a Zero which represents the average of all the Zero readings taken.

1 Pt Adjust

Adjusts the Gage to a known material hardness.

Step 1: Select **1 Pt Adjust** from the **Cal Settings** menu.

Step 2: Press the **(+)** button to select the number of readings to be used to obtain an average, typically 3 to 10 readings. The greater the variation between readings, the more readings should be taken to obtain an average.

Step 3: Repeatedly measure the known hardness sample using the on-screen green arrows as a guide. After the final reading, the Gage will calculate and display an average measurement value of all readings taken on the sample. If the expected hardness value is not obtained (within tolerance), adjust the displayed value up **(+)** or down **(-)** to the known hardness value and press 〔🌀〕 to save the value.

2 Pt Adjust

Adjusts the Gage within a range of two material hardnesses.

Step 1: Select **2 Pt Adjust** from the **Cal Settings** menu.

Step 2: Press the **(+)** button to select the number of readings to be used to obtain an average for the first point, typically 3 to 10 readings.

Step 3: Repeatedly measure the known hardness sample using the on-screen green arrows as a guide. After the final reading, the Gage will calculate and display an average measurement value of all readings taken on the sample.

Step 4: Repeat Step 2 and 3 for second point.

Setup Menu

Reset

Reset (menu reset) restores factory settings and returns the Gage to a known condition. The following occurs:

- All batches, stored measurements, batch names and screen captures are erased.
- Calibration adjustments are returned to factory settings.
- Menu settings are returned to the following:

Memory = OFF	**Bluetooth & Stream** = OFF
Auto Sub-Batch = OFF	**WiFi & Access Point** = OFF
Statistics = OFF	**Auto Dim** = ON
Hi Lo Alarm = OFF	**Hi Res** = OFF

Perform a more thorough **Hard Reset** as follows:

1. Power down the Gage and wait 5 seconds.

2. Simultaneously press and hold the **(+)** and 🔆 center buttons until the **Reset** symbol ⟳ appears.

This returns the Gage to a known, "out-of-the-box" condition.
It performs the same function as a menu Reset with the addition of:

- Bluetooth Pairing info is cleared.
- Menu settings are returned to the following status:

Bluetooth Smart = OFF	**Auto Sync .net** = ON
Test Time = 1 second	**USB Drive** = ON
Sound = ON	**Language** = English
Backlight = Normal	**Battery Type** = Alkaline
Flip Display = Normal	

NOTE:

Date, Time and WiFi settings are not affected by either **Reset**.

| Test Time |

The **PosiTector *BHI*** has an on-screen timer to measure the hardness of a material after a given period of time.

Use the **(-)** and **(+)** buttons to adjust the test duration. When taking a reading, the timer starts automatically once the indentor is on the surface and the ▼ symbol appears on the display.

| Hi Res | ✓ |

Increases the displayed resolution. Accuracy is not affected.

| Cont. Reading | **(Continuous Reading)**

When enabled, the Gage will continuously display probe readings. Ideal when a test timer is not required or when performing a calibration verification. Cont. Reading is not available when **Memory, Statistics** or **HiLo Alarm** modes are enabled.

| Battery Type |

Selects the type of batteries used in the Gage from a choice of "Alkaline", "Lithium" or "NiMH" (nickel-metal hydride rechargeable). If "NiMH" is selected, the Gage will trickle charge the batteries while connected via USB to a PC or optional AC power supply (USBAC). The battery state indicator symbol ▮▮▮▮ is calibrated for the selected battery type. No damage will occur if the battery type used in the Gage does not match the selected battery type.

| Hi Res | ✓ |

Increases the displayed Gage resolution as follows:

Resolution	Range
0.1 Barcol	20.0 - 100.0 Barcol

NOTE: Gage accuracy is not affected.

| Backlight |

Selects display brightness (Sun, Normal or Night). All settings will dim slightly after a period of no activity to conserve battery life. Press the **Down** button to brighten the display.

Flip Display

This option causes the display to rotate 180°. Ideal for right-side-up viewing when the sensors are pointed away from the user.

Set Clock

All measurements are date and time stamped (24 hour format) when stored into memory. It is therefore important to keep both the date and time current using this menu option. Use the **Up** and **Down** buttons to scroll, and the **(-)** and **(+)** buttons to adjust a value. The Gage's data and time can also be viewed in **Gage Info** (see below).

Language

Converts displayed and printed words to the selected language.

Gage Info

Displays the model number & serial number, probe type & serial number, PosiSoft.net registration key, the amount of remaining memory for storage of readings, date and time, and software packages.

For security purposes, the registration key is required to add the Gage to your free PosiSoft.net account.

Statistics Mode

Statistics ✓ $\bar{x}$

A statistical summary will appear on the display. Remove the last reading by pressing the **(-)** button. Press **(+)** to clear statistics.

$\bar{x}$ – Average	σ – Standard Deviation
$\bar{\uparrow}$ – Maximum Value	$\underline{\downarrow}$ – Minimum Value

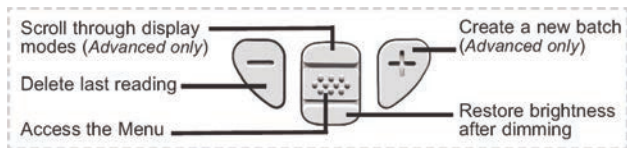## HiLo Alarm ✓ $\updownarrow$

Allows Gage to visibly and audibly alert the user when readings exceed user-specified limits.

Memory Management

The **PosiTector** *BHI* has internal memory storage for recording measurement data. Stored measurements can be reviewed on-screen or accessed via computers, tablets and smart phones. All stored measurements are date and time-stamped.

The 💾 symbol appears when the Gage is set to store measurement data.
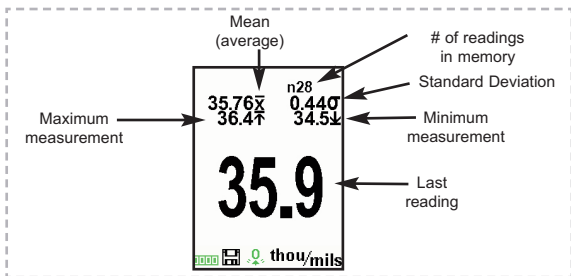
Standard models store up to 250 readings in one batch.

Scroll through display modes (*Advanced only*)

Delete last reading

Access the Menu

Create a new batch (*Advanced only*)

Restore brightness after dimming

On: turns memory on and begins recording
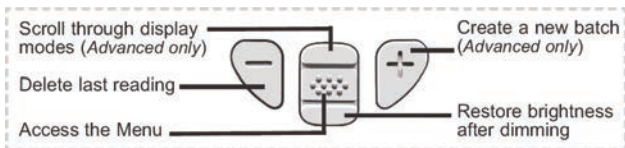*Off*: stops recording (stored readings remain in memory)
Clear: removes all readings from memory
View: lists group statistics and all stored readings on the display. It will begin by showing statistics based on all readings in memory. Use the **Up** and **Down** buttons to scroll through all readings. Press 🔲 to exit.

Standard model display with **Memory** ON shows measurement statistics:

Mean (average)

# of readings in memory

Standard Deviation

Maximum measurement

Minimum measurement

n28
35.76X̄   0.440σ
36.4↑   34.5↓

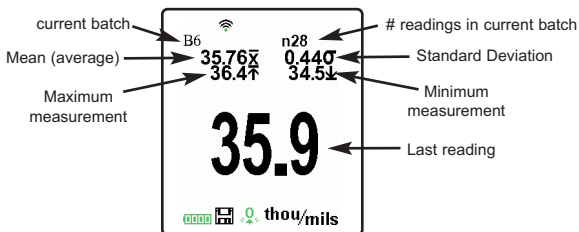35.9

Last reading

thou/mils

9

Advanced models store 100,000 readings in up to 1,000 batches. "New Batch" closes any currently opened batch and creates a new batch name using the lowest available number. New batch names are date-stamped when they are created.

Scroll through display modes (*Advanced only*)	Create a new batch (*Advanced only*)
Delete last reading	
Access the Menu	Restore brightness after dimming

New Batch

Closes any currently opened batch and creates a new batch name using the lowest available number. For example, if only **Batch 1** and **Batch 3** exist, then **Batch 2** would be created and made the current batch. Each measurement will be displayed and stored into this new batch. On screen statistics are immediately updated with each measurement. New batch names are date stamped at the time they are created.

Shortcut: When a batch is open, press **(+)** to create a new batch

current batch — B6 — # readings in current batch n28
Mean (average) — 35.76x̄ — Standard Deviation 0.44σ
Maximum measurement — 36.4↑ — Minimum measurement 34.5↓
Last reading — **35.9**
thou/mils

NOTES:

- Remove the last reading from the current open batch by pressing **(-)**.

- Calibration adjustments cannot be made if readings are stored in memory.

New Sub-Batch *(appears only if a batch is currently open)*

Creates a new sub-batch within the currently opened batch.

Shortcut: When a sub-batch is open, create a new sub-batch by pressing **(+)**

In the following example, **B2s2** is a sub-batch of **Batch 2**. Sub-batching allows the user to group related batches so that statistics can be accumulated for them. **Batch 2** contains the statistics for **B2s1** and **B2s2.**
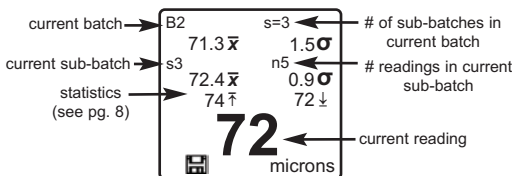
Auto Sub-Batch *(Advanced models only)*

This option will automatically create a new sub-batch after the required number of readings are stored in the current sub-batch. Use the **(-)** and **(+)** buttons to set the number of readings to store in each sub-batch, then select **New** to open the first sub-batch.

Open

Selects a previously created batch or sub-batch name to open and make current. If it contains measurements, on-screen statistics will immediately reflect values calculated from this batch.

NOTE: A solid triangle ▶ is displayed to the right of the batch name when sub-batches are present. Press ▦ to view sub-batches. This also applies to the *Delete*, *View* and *Print* options.

Close

Stops the recording process, closes the current batch, and removes batch information from the display.

11

Delete

Removes a batch or sub-batch completely from memory. The name is deleted and all measurements are erased. Sub-batches can be deleted individually. To delete all related sub-batches, simply delete the top-level batch.

View

Scroll using the **Up** or **Down** buttons through information, statistical summary, and a list of each reading in the currently opened batch. Press 〔🔳〕 to exit.

| Annotate | (Advanced models only)
| --- |

Create meaningful batch names and enter notes directly on the Gage using a familiar onscreen *QWERTY* keyboard.

Use the Gages navigation and **(-)(+)** buttons to enter annotations.

Annotations can be synchronized with PosiSoft.net and the PosiTector App and are included in PosiSoft USB Drive reports.

Print

Sends a statistical summary and individual measurements to the optional Bluetooth wireless printer.

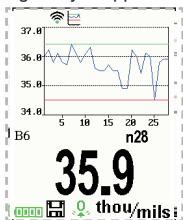NOTE: To cancel printing, press and hold the **(-)** and **(+)** buttons simultaneously

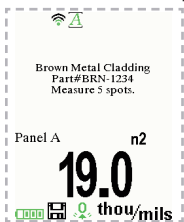12

Display *(appears only if a batch is currently open)*

The following user selectable display options are available:

📉 ***Chart***: A real-time chart of batch readings

x-y Chart for
Single Layer Application

📐 ***Notes***: Instructions, descriptions or notes (see **Annotate**, pg.12)

None: Default screen shows statistics

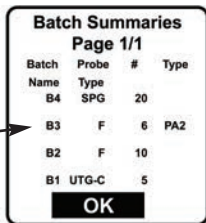Shortcut: When a batch is open, press **Up** to scroll through the above display options.

NOTES:

- PosiSoft.net and the PosiTector App are used to insert an *Image* and *Notes* into a batch.

- Remove the last reading from the current open batch by pressing **(-)**.

- Calibration adjustments cannot be made if any measurements were taken with that setting and stored into a batch.

- If memory is ON while continuous measurements are being taken, only the last value on the display (when the probe is lifted) is stored into memory. **Scan Mode** stores ALL measurements into memory (pg. 9).

- Each batch can contain a maximum of 10,000 readings.

Summaries (Advanced models only)

Displays a summary of all stored batches including the name, probe type, number of readings and type.

In the following example, Batch 3 (**B3**) indicates an "**F**" *6000* coating thickness probe was used to record a total of "**6**" readings in "**PA2**" mode.
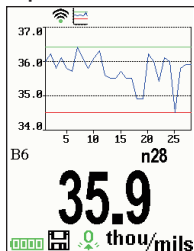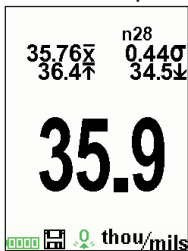
| Batch Summaries Page 1/1			
Batch Name	Probe Type	#	Type
B4	SPG	20	
B3	F	6	PA2
B2	F	10	
B1	UTG-C	5	
OK			

Screen Capture

Press both the **(-)** and **(+)** buttons at any time to capture and save an image copy of the current display. The last 10 screen captures are stored in memory and can be accessed when connected to a computer (see PosiSoft USB Drive, pg. 18).

Sample Screen Captures

14

Maintenance

The **PosiTector *BHI*** includes an indentor tip precisely machined with a 26° angled tip. Visually inspect the tip for damage at the beginning of each work shift or if the gage is dropped or suspected of giving erroneous readings.
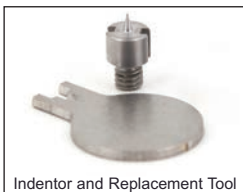
Indentor and Replacement Tool

If the indentor becomes worn or damaged, a replacement indentor is included. Using the enclosed indentor replacement tool, unscrew the damaged indentor and replace. Tighten the new indentor and verify gage operation (pg. 3) before testing. A **ZERO**, **1 Pt** or **2 Pt Cal Adjust** may be required (pg. 4 and 5).

Accessing Stored Measurement Data

DeFelsko offers the following free solutions for viewing, analyzing and reporting data:

PosiSoft USB Drive - Connect the Gage to a PC/Mac using the supplied USB cable. View and print readings and graphs using universal PC/Mac web browsers or file explorers. No software or internet connection required. **USB Drive** must be selected in the Gage's "**Connec**t > **USB**" menu (pg. 18).

PosiSoft Desktop - Powerful desktop software (PC/Mac) for downloading, viewing, printing and storing measurement data. Includes a customizable, templated PDF Report Generator. No internet connection required.

PosiSoft.net - Web-based application offering secure, centralized storage of measurement data. Access your data from any web-connected device.

PosiTector App - (*Advanced models only, serial numbers 784000+*) App for compatible iOS and Android smart devices. Permits users to create, save and share professional PDF reports. Add images and notes using the smart device's camera and keyboard.

For more information on our PosiSoft solutions, see:
www.defelsko.com/posisoft

Connect Menu

| WiFi |
(Advanced models only)

Allows connection to your local wireless network or mobile hot spot. Ideal for using your network's internet connection for synchronizing stored measurements with PosiSoft.net (pg. 15). See www.defelsko.com/wifi

| Enable | ✓ |

Turns WiFi functionality **ON**. When selected, the icon will appear on the display. To deactivate WiFi, uncheck the Enable box.

| Access Point | ✓ |

Connect your smart device/computer to a PosiTector Advanced body wirelessly without the need for a separate network. Wirelessly import readings into PosiSoft Desktop v4.0 Software whenever a WiFi network is not available or out-of-range.

To enable, select **Access Point** from the **Connect > WiFi** menu. The Access Point icon will display in the upper left of the PosiTector display.

Securing your Access Point -

To ensure the PosiTector is only accessible to authorized devices, it is important that you enter a passphrase (password) for the Access Point. The default Passphrase is **password**.

In the **Connect > WiFi > Setup** menu, select **AP Passphrase.**

Press 🔛 button to display on-screen keyboard. Enter a Passphrase for the Access Point. The Passphrase will be required for all devices connecting to the PosiTectors Access Point.

The PosiTector is now visible to all WiFi enabled devices. Simply connect your devices WiFi to the new PosiTector Access point. All PosiTectors are uniquely identified by their respective gage body serial numbers.

AP Channel - Default Channel: 6

For most users the default channel will not have to be altered. If you are experiencing poor connection or are unable to connect, try another channel.

In the **Connect > WiFi > Setup** menu, select **AP Channel**.

Press the **UP** center navigation button to highlight the channel. Use the (-) or (+) buttons to change the channel. Press the **DOWN** navigation button and select **OK**. Press the 〔▨〕 button.

Networks: With WiFi Enabled (pg. 18) the Gage will allow the user to add a new network and will automatically check for available local networks. Available networks detected by the Gage are listed on the screen along with any networks that the Gage has previously been connected to that are not currently within connection range.

Information: Gage displays information about the local WiFi network connection including...

• **SSID**: the network's name

• **State**: displays if the Gage is connected to the network or not

• **IP Address**: the network's IP Address

Setup: Allows user to setup a WiFi connection

• **IP Settings**: enter the IP information as follows...

IP Type (DHCP or Static), IP Address,

Gateway, Netmask, DNS1, DNS2

• **Server Enable**: enables a connection between the network and the Gage

• **Gage Name**: enter a name for the Gage (up to 14 Characters).

AP Channel: The access point channel corresponding to a frequency range. (Default Channel: 6)

AP Passphrase: A series of characters, numbers or symbols used to log on to a WiFi network.   (Default Passphrase: password)

• **WiFi Reset**: erases all WiFi settings

USB

When **USB Drive** is checked ☑, the **PosiTector** gage uses a USB mass storage device class which provides users with a simple interface to retrieve stored data in a manner similar to USB flash drives, digital cameras and digital audio players.

USB Drive is also required to import stored measurements into PosiSoft Desktop software (pg.15). Once connected, any computer can view measurements stored in memory by navigating a virtual drive labeled "PosiTector" using the included USB cable.

A formatted HTML report is viewed by selecting the "index.html" or "START_HERE.html" file found in the root directory. Optionally, text ".txt" files located in each batch folder provide access to measurement values. Stored datasets and graphs can be viewed or copied using universal PC/Mac web browsers or file explorers.

When your **PosiTector** is first connected to your Windows PC via a USB cable, an enumeration process is started that installs device drivers without re-booting your computer. You may see several pop-up windows in the taskbar at the bottom right of your screen. Wait for the entire process to be completed before proceeding.

NOTE: When connected, power is supplied through the USB cable. The batteries are not used and the body will not automatically power down. If rechargeable (NiMH) batteries are installed, the instrument will trickle charge the batteries.

Stream

(Advanced models only, serial numbers 784000 and greater)

Stream individual readings to a USB connected computer via a serial protocol. Ideal for use with serial compatible SPC data collection software.

NOTE: For more information on USB Keyboard and Streaming visit: defelsko.com/usb/stream/

Retrieving stored screen captures:
The last 10 screen captures stored in memory can be accessed by navigating to the "screen capture" directory within the "PosiTector" virtual drive.

NOTE: When connected, power is supplied through the USB cable. The batteries are not used and the body will not automatically power down. If rechargeable (NiMH) batteries are installed, the instrument will trickle charge the batteries.

Sync .net Now

The above **WiFi**, **USB** and **Bluetooth** menus contain a **Sync .net Now** option. When selected, the Gage immediately synchronizes stored measurement data via its respective communication method (internet connection required). Alternatively, select **Auto Sync .net** from within the **USB** connect menu to automatically synchronize upon connection to a PC. Additional measurements added to memory while connected are synchronized only when the USB cable is disconnected and reconnected, or when the **Sync.net Now** option is selected. **WiFi** connected gages automatically attempt synchronization upon power-up.

NOTE: **PosiSoft Desktop** is required when using **USB** connections to synchronize measurements with PosiSoft.net.

Bluetooth (Advanced models only)   **Bluetooth®**

Allows individual readings to be sent to a computer, printer or compatible device as they are taken using Bluetooth wireless technology. See www.defelsko.com/bluetooth

Pairing

The instrument and receiving device must be paired before stored or streamed datasets can be transmitted. For pairing instructions, see http://www.defelsko.com/bluetooth

Info

Lists information about your current Bluetooth connection, including the currently paired device and MAC address.

Stream

When checked, the instrument will stream datasets to the paired Bluetooth Device as they are taken. Datasets can be streamed as they are taken to the optional Bluetooth printer or third-party computer software.

Powder Probes

Displays menu options that enable the PosiTector Advanced body to communicate with wireless PosiTector PC probes. See http://www.defelsko.com/pc

19

Bluetooth Smart *(Advanced models only, serial numbers 784000 and greater)* **Bluetooth**

When **Enabled** ☑, allows communication with a smart device running the PosiTector App (pg. 15) via auto-pairing **Bluetooth Smart** (BLE) wireless technology.

Sync Batches

Select ☑ batches to flag them for synchronization to the PosiTector App. New batches created while **Bluetooth Smart** is enabled are automatically selected.

With **Bluetooth Smart** enabled, select **Sync Batches** to transfer selected ☑ batches to the PosiTector App. This is useful when switching between smart devices, as only readings and batches that have yet to be synchronized with any smart device are synchronized automatically.

NOTE: If **Bluetooth Smart** is disabled, data from batches selected in the **Sync Batches** menu are held in a queue until communication with the PosiTector App is re-established.

Send Batches

Transfers selected ☑ batches to the PosiTector App (useful when switching between devices).

The **Send Batches** option is visible in the menu when the Gage is connected to a smart device running the PosiTector App.

Determines if a software update is available for your Gage. If an update is available, a prompt will appear allowing the user to choose to perform the update at this time or not.

To perform an update the Gage must be connected to an internet connected computer with *PosiSoft Desktop* (pg. 15), or **WiFi** network (pg. 16).

NOTE: Ensure that stored measurements are backed up to a PC or *PosiSoft.net*. The Gage may perform a **Hard Reset** (pg. 6) after completion of the update and ALL readings in memory will be erased.

Updates - Sample Screen

Currently installing update 2 of 3 total → **2 / 3**

Progress bar
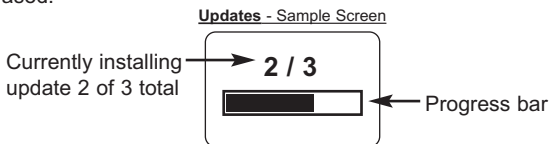
⚠ **DO NOT** unplug the Gage during the update operation.

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.

Returning for Service

Before returning the Gage for service…

1. Install new or newly recharged batteries in the proper alignment as shown within battery compartment.

2. Examine the indentor tip and indentor foot for dirt or damage.

3. Perform a **Hard Reset**. (pg. 6)

4. Attempt a measurement on the supplied test disk. (see **Verification**, pg. 3)

5. If issue is not resolved, **Update** your **PosiTector** gage body (pg. 21) and re-attempt measurements.

IMPORTANT:

If you must return the Gage for service, please fill out and include the Service Form located at www.defelsko.com/support with the Gage. Be sure to also include the probe, your company name, company contact, telephone number and fax number or email address.

Limited Warranty, Sole Remedy and Limited Liability

DeFelsko's sole warranty, remedy, and liability are the express limited warranty, remedy, and limited liability that are set forth on its website: www.defelsko.com/terms

DeFelsko®

The Measure of Quality

www.defelsko.com

DeFelsko®

Simple. Durable. Accurate.

twilight

INSTRUMENTOS DE MEDICIÓN INDUSTRIAL

📞 LLÁMANOS

+52(81) 8115-1400 / +52 (81) 8173-4300

LADA Sin Costo:
01 800 087 43 75

E-mail:
ventas@twilight.mx