

PosiTector® **BHI**

Barcol Hardness Impressor

Instruction Manual

English



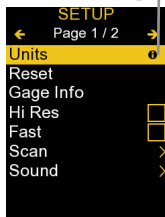
DeFelsko®
The Measure of Quality

On-Gage Help



This instruction manual summarizes the basic functions of the gage. Many menu items include an on-gage help feature with additional information (indicated by an **i** icon). Press **+** or touch the **i** icon to display the help. A formatted PDF containing all on-gage help items is available at

NOTE: Update your gage to ensure that you have the latest on-gage help information.



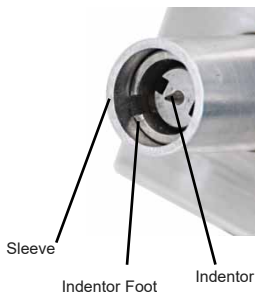
Introduction

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

Press the **≡** button to power up the Gage. To conserve battery life, the gage will automatically go to sleep after 5 minutes of inactivity. While in **Sleep Mode**, the gage powers up significantly faster—convenient when moving between parts or locations. The gage will completely power off after 4 hours of inactivity. Alternatively, select **Power Off** from the main menu. All settings are retained.

1. Power-up the Gage by pressing the center navigation **≡** button. Ensure the probe indenter 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 indenter 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

To access the Menu, power-up the gage, then press the center navigation button . Either the keypad or touch screen can be used to navigate the menu. If desired, touch screen functionality can be disabled within the Setup menu (See **Touch**, pg. 7).

Select a menu option by touching it, or use the  and  buttons to highlight the desired option and press  to select it.

On menus longer than one page, the current page number is displayed below the menu name. Navigate between pages using  when the first menu item is selected, or  when the last menu item is selected. If using touch, navigate between pages by touching  or , or by swiping up or down.

Press the  button or swipe right to return to a previous screen. Select **Exit** to close the Menu.



When a Menu option is highlighted, the  icon indicates on-gage help is available. Press  or touch the  icon to display the help. A formatted PDF containing all on-gage help items

Update your gage to ensure that you have the latest on-gage help information.

 indicates that a sub-menu exists for the Menu option. Select the option to display its sub-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, gloss, and ultrasonic wall thickness probes.

Calibration and Verification

Two 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.

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 on page 4). Take three to five readings on each disk. The measurement points should be at least 6 mm (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 indenter 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.

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.

Zero

Zeroing the Gage may be necessary after indenter replacement or when the indenter 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 indenter 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 $\oplus$ 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 $\oplus$ or down $\ominus$ to the known hardness value and press $\equiv$ 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 $\oplus$ 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 $\oplus$ or down $\ominus$ to the known hardness value and press $\equiv$ to save the value.

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

Cal Reset

Restores the gage back to factory calibration and range settings. The $\circ$ icon will appear on the display.

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

Auto Sub-Batch = OFF

Statistics = OFF

Hi Lo Alarm = OFF

Hi Res = OFF

Bluetooth Classic = OFF

WiFi & Access Point = OFF

Keyboard & Stream = OFF

Auto Dim = ON

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

1. Power down the Gage and wait 5 seconds.
2. Simultaneously press and hold the **⊕** and **≡** 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 = OFF

Test Time = 1 second

Sound = Medium

Backlight = Normal

Touch = ON

Flip Lock = OFF

Auto Sync .net = ON

USB Drive = ON

Language = English

Battery Type = Alkaline

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 indenter 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.

Sound

Adjusts the volume of built-in speaker (Off, Low, Medium, High).

Flip Lock



Disables the **Auto Rotate** feature by locking the display in its current orientation.

Touch



Allows the touch screen functionality to be disabled. All gage functions can also be controlled using the navigation buttons.

Set Clock

All measurements are date and time stamped (24-hour format) when stored into memory. It is therefore important to set the correct date and time. Use the ▲ and ▼ buttons to select a value, and the ⊖ and ⊕ buttons to adjust it. The current date and time setting can also be viewed at the top of the main menu.

Battery Type

Selects the type of batteries used in the Gage from a choice of “Alkaline”, “Lithium” or “NiMH” (nickel-metal hydride rechargeable). 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.

Statistics Mode

Statistics



A statistical summary will appear on the display. Remove the last reading by pressing the $\ominus$ button. Press $\oplus$ to clear statistics.

$\bar{x}$ – Average

σ – Standard Deviation

$\uparrow$ – Maximum Value

$\downarrow$ – Minimum Value

HiLo Alarm



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

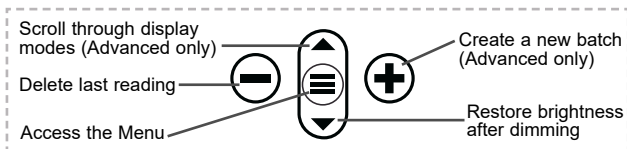
Memory Management

The **PosiTensor 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 1,000 readings in one batch.

Advanced models store 250,000 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.



Screen Capture

Press both $\ominus$ and $\oplus$ buttons simultaneously to save an image of the current display. The last 100 screen captures are stored in memory and can be accessed when connected to a computer (see **PosiSoft USB Drive** pg. 9).

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.

Maintenance

The **PosiTector BHI** includes an indenter 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



Indenter and Replacement Tool

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

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-C cable. View and print readings and graphs using universal PC/Mac web browsers or file explorers. No software or internet connection required.

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.

PosiTector App - *(Advanced models only)* 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.

PosiSoft.net - Compatible with PosiSoft Desktop and the PosiTector App, PosiSoft.net is a secure way to store and share measurement data using the cloud.

For more information on our PosiSoft solutions

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** and **PosiSoft Desktop** (pg. 9).

USB

When **USB Drive** is enabled ☒, the PosiTector 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 and digital cameras. **USB Drive** is also available to import stored measurements into **PosiSoft Desktop** software (pg. 9).

NOTE: When connected, power is supplied through the USB-C cable. The batteries are not used and the body will not automatically power down.

Stream

(Advanced models only)

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:

Keyboard

(Advanced models only)



When enabled and connected to a computer, the PosiTector will be recognized as a **Keyboard**. Readings are sent to the computer as they are taken, emulating keystrokes, followed by a carriage return.

Sync .net Now

The above **WiFi** and **USB** 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 to synchronize measurements with **PosiSoft.net**.

Bluetooth

(Advanced models only)



Allows communication with a smart device running the **PosiTector App** (pg. 9) via auto-pairing **Bluetooth** (BLE) wireless technology.

Sync Batches

Select batches to flag them for synchronization to the PosiTector App. **Sync Batches** is useful when connecting a new device to a gage with pre-existing batches, since only batches created while **Bluetooth** is enabled are automatically selected.

Selected batches are synchronized when the next reading is taken in a batch flagged for synchronization, or when the **Sync Batches** option is selected at the bottom of the list of selected batches.

NOTE: If **Bluetooth** is disabled or disconnected, 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. **Send Batches** is useful when switching between devices, as only readings and batches that have yet to be synchronized with any smart device are synchronized automatically.

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

Keyboard

(Advanced models only)

When enabled and connected to a computer, the PosiTector will be recognized as a wireless **Keyboard**. Readings are sent to the computer as they are taken, emulating keystrokes, followed by a carriage return.

NOTE: **Keyboard** is located in the **Bluetooth Setup** menu.

Input Devices

(Advanced models only)

Allows Bluetooth Devices such as barcode scanners and keyboards to be paired with the PosiTector for annotating batches and readings.

NOTE: **Input Devices** is located in the **Bluetooth Setup** menu.

Bluetooth Classic

(Advanced models only)



Allows individual readings to be sent to a computer, printer or compatible device as they are taken using Bluetooth Classic wireless technology.

Updates

Determines if a software update is available for your Gage.

WARNING: The Gage will perform a **Hard Reset** after an update (see pg. 6).

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. 12) and re-attempt measurements.

IMPORTANT:

If these steps do not resolve the issue and the Gage must be returned for service, please follow the instructions provided at

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

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