QUICK START GUIDE

EHC-03
Ultrasonic
Thickness Gage

Software version x.x

Liability

Ultrasonic testing is a function of using the proper equipment (electronics, transducer, cable and couplant combination) for the inspection and a qualified operator who knows how to use this manual, the instruments and all calibration procedures. The improper use of this equipment, along with the improper calibration can cause serious damage to components, factories, facilities, personal injury and even death.

It is understood and also highly recommended that the operator of this equipment is a well trained inspector qualified by either their own company or another outside agency to issue Ultrasonic Level I, 40 hour class room training in Ultrasonic Theory. Danatronics, Corp. and any of its employees or representatives shall not be held responsible for improper use of this equipment for its intended use. Proper training, a complete understanding of Ultrasonic wave propagation, thorough reading of this manual, proper transducer selection, correct zeroing of the transducer, correct sound velocity, proper test blocks, proper cable length, proper couplant selection all play a factor in successful ultrasonic thickness gaging. Special care should be taken when test pieces have rough or painted surfaces, particularly those applications where the test piece is thin to begin with as doubling of the echoes is possible even if the transducer is capable of measuring the desired thickness. As transducers wear or heat up, results can be either too thin due to a lack of sensitivity as a result of wear or too thick due to heating up of the transducer, referred to as “drift.”

1. Installing Batteries

In order to install batteries in any of EHC-03 series unit, open the battery door at the bottom left of the unit. Slide in two AA batteries with positive terminal of both batteries facing towards top of the unit. Close the battery door tight enough so that the batteries make contact with both the battery terminals.

2. Powering ON/OFF

Plug in the DKS537 transducer into the gage. It does not matter which connector is plugged in to either side. To power ON the unit press and hold the F1 key for about three seconds. The LCD will display the company information briefly and then go to the below screen. To turn off the unit press and hold the F1 key for about three seconds. The LCD will briefly display the company information with a 'counting down' clock and then turn off.

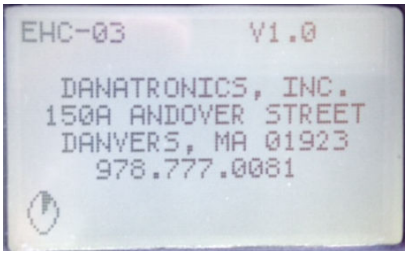
Backlight:

The backlight is always set to automatically turn on with any keypress or active reading and the backlight remains on for approximately 8 seconds.

Auto Power Off:

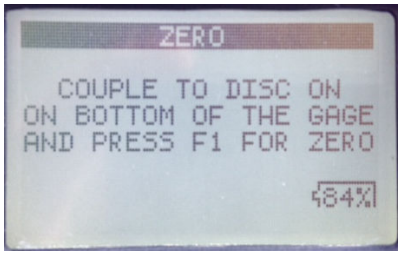
The EHC-03 will automatically turn off after 5 minutes without a valid reading or keypress to conserve battery life.

NOTE: IF NO TRANSDUCER IS CONNECTED, THE FOLLOWING PROMPT FLASHES… "INSERT TRANSDUCER"



Company information screen

The first screen reads:



COUPLE TO DISC ON BOTTOM OF THE GAGE AND PRESSS F1 FOR ZERO

NOTE: Pressing F1 bypasses the zero on block operation and brings you to the screen to make measurements.

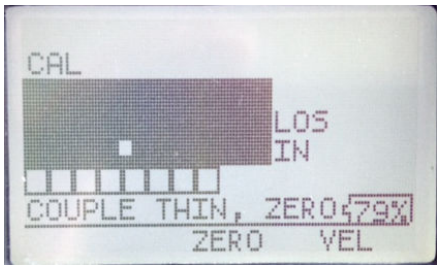
Example of Velocity and Zero values after Auto zero

3. Calibrating the gage

Calibrating is the process of adjusting the gage for a specific material and transducer before testing the material to make sure that all measurements are accurate. You must always calibrate before measuring material for standard accuracy. The following steps show how to perform velocity cal, zero cal, velocity and zero cal and delay-line cal. You will require a test step block of known thicknesses of thin and thick of the same material, surface condition and temperature to perform the most accurate calibration.

a. Velocity Calibration Only

To perform a velocity calibration if a test block is not handy. First upon turning on the gage, place the probe on the bottom disc on the bottom of the gage and press F1 to zero. Then press Menu/OK and go to Material, highlight the material closest to what you will be measuring. Press F1 to exit then choose Calibration, While measuring the thicker step, select VEL by pressing F3. After selecting VEL, you can take the transducer off the test block. If the displayed measurement is different than the known value of the step, use the up or down arrow key to adjust the displayed value to the known value of the step. Press OK to perform the calibration. The unit will briefly display the calibrated velocity value in the top of the screen and then return to measure mode.



b. Zero Calibration Only using block on the bottom of the gage

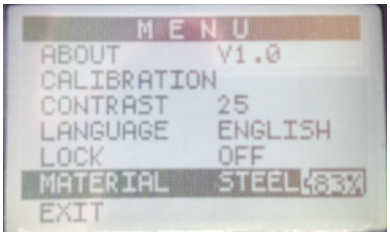
To perform a zero calibration upon powering on, couple to the block on the bottom left of the gage and press F1. The gage will read .433” or 11.00 MM and return to measurement mode.

c. Zero and Velocity Calibration (MOST ACCURATE TECHNIQUE)

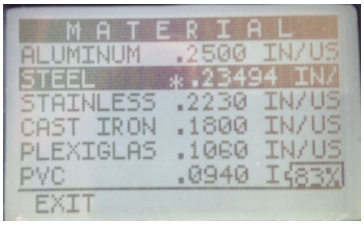
To calibrate both: zero and velocity calibrations at the same time. First go to the Calibration via Menu/OK, highlight Calibration. While measuring the thinner step select ZERO by pressing F2. After selecting ZERO you can take the transducer off the test block. If measured value is different than the known value of the step, adjust the measured value by pressing up or down arrow key **THEN PRESS F1 for CAL**. Measure the thick sample then select VEL by pressing F3. After selecting VEL you can take the transducer off the test block. If the displayed value is different than the known value of the step, adjust the value by pressing up or down arrow keys and press Menu/OK key. The unit will briefly display the calculated sound velocity value and then return to Measure mode. Note that the order of Velocity and Zero calibration could be reversed.

NOTE: The most accurate calibration is a 2 step using a calibration test block. See optional items at end of manual. Once any of the above calibrations is performed, verify the accuracy of the readings using the test step block.

d. Velocity list:



From the Menu/OK, scroll up or down to Material, press Menu/OK to see available materials. The gage defaults to first power on and upon re-set to Steel .2330 IN/Usec. If there is a star next to the velocity, it means that the velocity has been changed manually or via the calibration process. When making measurements on various materials, it is recommended you begin with the one closest to the material you are trying to measure.



4. Taking Measurements:

Once an Auto-zero is performed on the bottom of the test block or F1 pressed the EHC-03 automatically goes to the measure mode as shown below.

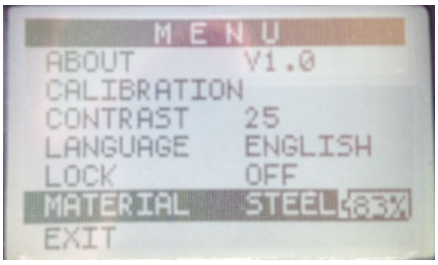
To take thickness readings, simply apply a small amount on fluid (couplant) to the test object and firmly hold the transducer on the part. You will see a number appear on the display and the quality bar fill up from left to right and become solid as the reading becomes more stable.

NOTE: the battery life is in the bottom right hand corner of the display.

Changing the parameter settings

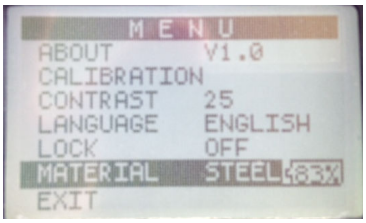
The following is a list of available parameters in alphabetical order:

- About
- Calibration
- Contrast
- Language
- Lock
- Material
- Reset
- Units



To change any parameter settings press Menu/OK and then go to the option by pressing up or down arrow keys. Press OK to go to accept. Go to the desired parameter from the list by pressing up or down arrow keys. You can change the settings for that parameter directly from the main menu screen by pressing the left and right arrow keys. Otherwise you can press OK to list all the settings for that parameter on a new screen and then go to the desired setting from the list and press OK. The display will return to measurement. Consequently, the F1 Key is exit to back out of that screen.

Languages:



The EHC-03 comes standard with the following languages:

- English (Default and upon re-set)
- Italian
- Spanish
- French
- Czech
- Finnish
- German
- Polish
- Portuguese
- Slavakian
- Chinese

Reset:

From the Menu/OK scroll to re-set, press Menu/OK to re-set, are you sure prompt then F2 for Yes or F3 for No.

Units:

From the Menu/OK key, scroll to units, scroll to desired units such as In, MM or Usec, then press Menu/OK to accept.

About:

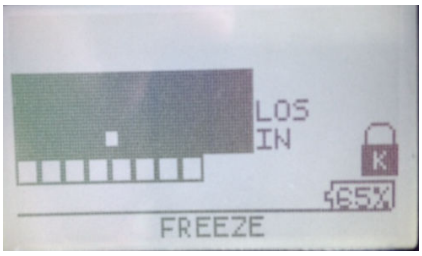
Displays operating software and company contact information

Contrast:

Highlight contrast then us the left or right arrow to adjust display contrast from 25-30 to set the most desired contrast.

Lock:

User can lock the keypad (Key) or Calibration (Cal) and a symbol will be shown in the bottom right K inside the lock symbol represents the keypad is locked like this:



Freeze:

By pressing F2, operator can freeze a reading…press F2 to unfreeze.

Optional Spare Parts:

5 SB-09, 5 step steel test block .100-.500 or 2054mm-12.70mm

PP-09, protective pouch for EHC-03

Spare Transducer, DKS537

Re-Calibrations:

It is recommended to re-calibrate your gage every 12 months. Danatronics offers a re-calibration certificate traceable the NIST. Contact us below for any questions or services.

EHC-03 Specifications:

Size: 5" (127 mm) (L) x 3" (76.2 mm) (W) x 1.25" (31.75 mm) (H)
Weight: 8 OZ (.23 kg)
Thickness range: .040"-20" (1mm-508mm) in steel
Material Velocity Calibration Range: 0.0200 - 0.7362 in/uS (0.508 - 18.699 mm/uS).
Temperature: Gage Operating: -4° F to 122° F (-20° C to 50° C)
Battery life: Up to 50 hours (20 hours with backlight on)
Battery type: 2 "AA" Alkaline
Display: 128 X 64 Graphics LCD monochrome, sunlight readable
Language support: multi language of English, French, Spanish, Italian, Czech, German, Chinese Portuguese, Slovak, Finnish, and Hungarian
Q-Bar: graphic display that confirms measurement stability
Package: IP54 rated custom, splash-proof, high impact plastic with rubber keypad
Bandwidth: 0.5-20 MHz (-3dB)
Units: English/Metric/Microseconds
Backlight: Auto on with valid reading or keypress for 10 seconds
Optional Protective pouch: Custom molded pouch with wrist strap and belt clip
Transport case: Hard plastic with high density molded foam cut out for gage and most accessories
Freeze mode: Freezes display
Hold mode: Holds display to retain last thickness reading
Standard EHC-03 includes: Ultrasonic

thickness gage, DKS-537 5MHz 0.375 inch diameter potted cable, operational manual, NIST traceable calibration certificate
Note: The EHC-03 is only available with the DKS-537 and is not field upgradeable
Warranty: Limited 2 year warranty on parts and labor for gage only under normal use

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