

Quick Start Guide



ECHO Series Thickness Gages



Batteries

The EHCO Series Thickness Gages comes standard with a re-chargeable Li Ion battery located on the back of the gage under the door with the screw. Fully charge your unit before using by simply plugging in the USB cable to the top of the gage and to the AC wall unit. If you purchased the non-rechargeable alkaline AA pack you will need to replace them by un-screwing the battery door on the back of the gage. In the bottom right hand corner of the display is the current battery life remaining percentage.

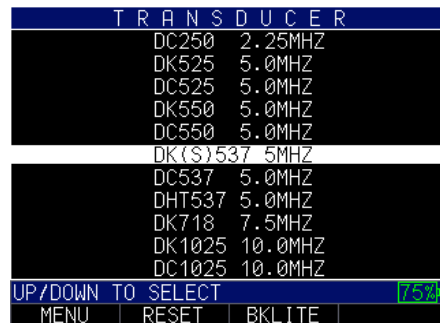
1. Powering ON/OFF

To power on the unit, press and hold the F1 key for more than three seconds. The LCD will briefly display the company information and then the transducer selection screen will appear as shown below. To turn off the unit, press and hold the F1 key for about three seconds.

Note: If the gage is set up for left hand operation, the F1 and F4 display prompts will be reversed.



Company information screen



Transducer selection screen

2. Using Keypad Functions

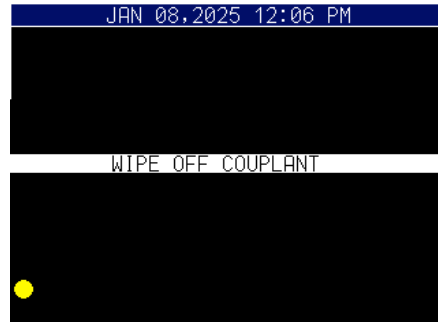
Function keys, or F keys, (e.g., F1, F2, F3, F4) have various gage functions and may change depending on the display screen. View the bottom of the display screen for the function that corresponds with the appropriate F key. For example, F1 may correspond with the Save function, F2 with the Freeze function, or F3 with the Directory function (Dir). Often times, the left or right arrow keys can be used instead of the MENU/OK key to highlight a parameter or to view the parameters from a selected choice.

3. Selecting Transducer and Performing Auto Zero

A new transducer can be selected from the Transducer selection screen, which appears after the unit powers on. The Transducer selection screen can also be accessed from the Measurement mode by pressing the F1 – Menu key. Use the up and down arrow keys to select the Measurements option. Select the Xducer option and press the MENU/OK key to go to the Transducer selection screen.

While in the Transducer selection screen, go to the transducer option that matches the part number on your actual transducer by pressing up or down arrow keys. If you are using a non-listed vendor transducer at 5.0 MHz, select the 'User 5 MHz' option. Lastly, press the MENU/OK key to select the highlighted transducer.

To continue the Auto Zero, follow the instructions given on each display screen; the first of which will prompt you to wipe off any couplant from the transducer and wait three seconds. The waiting time is shown in the changing pie-clock graphic.



After three seconds, the gage automatically begins to zero the transducer

A warning message will appear on the display screen if the Delay Line is below the acceptable limit for accurate thickness measurements. You will need to replace the transducer or select the F1 key to acknowledge the warning message and continue using the same transducer, which may have a worn surface.

After three seconds, or after acknowledging the warning message, the display shows the instrument parameters for three seconds before going to Measurement mode.

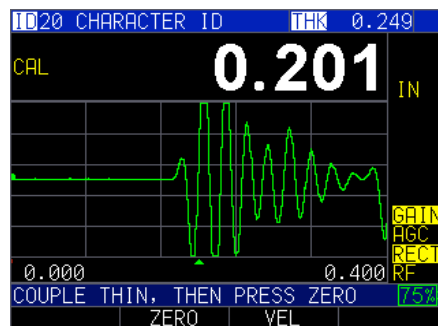
4. Calibrating the Gage

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. A test step block of known thicknesses is required to perform an accurate calibration.

a. Velocity Calibration Only

To perform any calibration, press the F1 – Menu key and use the arrow keys to select the Calibration option. Press the MENU/OK key. Verify your transducer selection and press the MENU/OK key. (To exit without performing any calibration, press the MENU/OK key again.)

To perform a velocity calibration, place couplant on the surface of a 5-step test block. Couple the transducer to the material. A similar screen to the one shown below will appear:



Cal screen for datalogger version

While measuring the thickest step, select F3 - VEL key. After pressing the F3 key, 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 the MENU/OK key 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

To perform a zero calibration, go to the Calibration mode as shown in part a. While measuring the thinner step, press the F2 – Zero key. After selecting the F2 key you can take the transducer off the test block. If the measured value is different than the known value of the step, adjust the measured value by pressing up or down arrow keys. Press the MENU/OK key to perform the calibration. The unit will briefly display the calibrated zero value in the top of the screen and then return to Measure mode.

c. Velocity and Zero Calibration

To calibrate both velocity and zero at the same time, first go to the Calibration mode as shown in part a. While measuring the thinnest step, press F2 – ZERO and then use the up or down arrow keys to scroll through the thickness value number to the known thickness. Then press the F1 - CAL key. While measuring the thickest step, press the F3 - VEL key after which time 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 the MENU/OK key to perform the calibration. For a few seconds in the top left hand corner, the calculated acoustic sound speed will be displayed.

Note: The order of Velocity and Zero calibration can be reversed. If Velocity calibration is performed after Zero calibration, the calibrated velocity value will be displayed at the end of the calibration process.

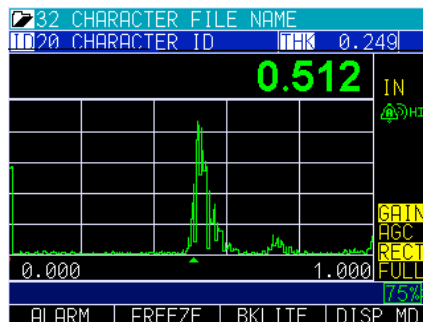
d. Delay Line Calibration

Delay Line calibration is done every time the thickness gage is powered on and a transducer is selected, or when a different transducer is selected during normal operation. Please see Section 4 above for instructions on Delay Line calibration, which is the same as performing an Auto Zero.

Note: Once any of the above calibrations are performed, verify the accuracy of the readings using the test step block.

5. Taking Measurements

After an Auto Zero is performed on a selected transducer, the unit automatically goes to the Measure mode as shown below.



To take thickness readings, simply apply couplant to the material's surface followed by the transducer to measure the thickness. Depending on the settings, the display may show other parameters. For more detailed information on Measure mode, please refer to the ECHO Series User's Guide on the CD provided with the gage.

6. Changing the Parameter Settings

To change any parameter settings, press the F1 – Menu key from the Transducer selection screen. Use the up and down arrow keys to select the Display, Initial Settings, or Measurements option and press the MENU/OK key. Use the arrow keys to select any of the settings you wish to change. Once you select a parameter, use the arrow keys to navigate the options. When finished, press the F1 – Back key. For more detailed information on parameter settings, please refer to the ECHO Series User's Guide on the CD provided with your gage.

Display mode parameters:

BKLIGHT	AUTO
COLOR	COLOR SELECTIONS
Demo	
USER	RIGHT HAND
WAVEFORM	OUTLINE

Initial Settings mode parameters:

ABOUT	VXX.XX
AUTOOFF	5 MIN
BEEPER	OFF
CLOCK	10:10 AM
LANGUAGE	ENGLISH
LOCK	OFF
OPTIONS	DATALOGGER
RESET	PARAMETER
RESOLUTION	0.001 IN
UNITS	IN
BEEPER	OFF

Measurements mode parameters:

RANGE	1.000 IN
RECT	FULL
VEL	0.23482 IN/US
XDUCER	DK(S)537 5.0MHz
ALARM TYPE	OFF
BLANK	ON
BSCAN	OFF
DIFF TYPE	OFF
E-TO-E	OFF
FAST	OFF
GAIN	AGC
HOLD	OFF
MEAS.TYPE	THICKNESS
REF THX	0.500 IN