OPERATIONAL MANUAL

SA-40

ULTRASONIC THICKNESS GAUGE

1-Overview 3
2-Keypad 3
3-LCD display 3
4- Calibration 3
5-Change velocity 3
6-Measuring Velocity 4
7-Data Memory And Read 4
8-Optional Probes 4
9-Attached Table 5
10-Precautions 5
11-Specifications 5

1-Overview

SA 40 is a miniaturized ultrasonic thickness gauge which can measure thickness and velocity with memory capacity of 40 data.

2-Keypad

ON--Turn on the gauge
OFF--Turn off the gauge
--Menu key. Circularly press to enter into different mode
ENTER--Confirm the change of parameters conversion between mm and in
READ--Increase parameters, Read measured data stored in memory
MEM--Decrease parameters, Save measured data in memory

3-LCD display

THK- thickness measurement
CAL-calibration function
VEL-velocity setting
CLR-clear the memory
MEM-memory mode
READ-read the data
THK+CAL-velocity measurement

4- Calibration

4.1 Press menu key until CAL 0.00 displays on LCD.
4.2 Take the probe to measure the block of 3.00mm attached on the panel of gauge.
4.3 After 3.00mm displays, the calibration is finished and the display will come back into the mode of thickness measurement automatically.

If there is a change for batteries or the probes, it should be recalibrate with a standard block of 3mm before measurement.

5-Change velocity

5.1 Press menu key consecutively until VEL and current velocity value displays on LCD.
5.2 Press key Δ or ∇ to change the value of velocity to be wanted.
5.3 Press key ENTER to confirm and the display will enter into the mode of measurement with new velocity.

Note: Press and hold Δ or ∇ to let changing number go fast.

6-Measuring Velocity

If we do not know the velocity of the measured material but know the thickness of the material, we can measure the velocity.

6.1 Press key consecutively until both THK and VEL display on LCD. And also last stored thickness value will display.
6.2 Press △ or ▽ to change the number to be the thickness value of measured sample.
6.3 Press ENTER to store this value in memory if necessary.
6.4 Put the probe on the sample, making sure there is a correct coupling, the value of the velocity which appears on the screen will correspond to the velocity of the measured sample .The gauge will automatically save this velocity and go into the mode of thickness measurement.

Please note in order to make the measured velocity more accuracy, we suggest the thickness of the sample block is more than 10mm.

If the setting thickness value is much different from the actually thickness value, E01 will appear. And the gauge can not get the new velocity.

7-Data Memory And Read

In measuring mode, after taking a measurement of thickness, press the MEM key, the value will be stored in memory. At the same time an address number . PXX will follow up and MEM displays on LCD which means this value has been stored. Repeat the procedure to store the second value, the third value and so on. If PPPP displays on LCD, it means the memory is full.

In measuring mode, press key READ to recall the data in memory. The last stored value will be displays after its address number flashes. At the same time,“READ” displays on LCD which means this value is a recalled value. Press key READ continually, all stored values will display one by one from the end to the head.

To clear the memory, press key consecutively until CLR displays on LCD, then press ENTER, a ? displays to remind you if you want to clear the memory. Press ENTER again to clear all memory. After “- - - -“ displays, the gage will automatically enter into the measurement mode.

8-Optional Probes

PT-5	5MHz	Dia. ∅10mm	For standard applications
XT-5	5MHz	Dia. ∅8mm	For tubes with small diameter
GT-5	5MHz	Dia. ∅12mm	For high temperature up to 400°C
CT-2.5	2.5MHz	Dia. ∅12mm	For unfavorable attenuation

9-Attached Table

Reference velocity of various materials

Material	Sound Velocity (L wave, m/s)	Acoustic impedance (Lwave,106kg/m2s)
Al	6260	16.9
Zn	4170	29.6
Ag	3600	38.0
Au	3240	62.0
Su	3230	24.2
Fe	5900	46.0
Cu	4700	41.8
Brass	4640	39.6
SUS	5790	45.7
Acrylic resin	2730	3.2
Water(20°C)	1480	1.48
Oil	1390	1.28
Glycerin	1920	2.43
Water glass	2350	3.99

10-Precautions

Avoid shock, heavy dust and damp. Remove the batteries from the gauge when not in use for long time.

11-Specifications

Display : 4 digital LCD with back light
Measurement frequency : 5MHz
Measurement range : 0.8--225.0mm(steel)
Resolution : 0.01mm @0.8—99.99mm
0.1mm @100.0—225.0mm
Adjustment of velocity : Max. 9999m/s
Automatic power off : 3 minutes of non-use
Power : DC 3V x 2 (two AA batteries)
Low voltage indicating with BAT display
Size : 124X67X30mm
Weight : 240g
Environments for use : Temperature:0-40°C
Humidity:40°C(20—90)%RH