KUSAM-MECO®

ULTRASONIC THICKNESS GAUGE

MODEL - KM 8041

OPERATION MANUAL

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1) *Preface*

Please read the following information carefully before using the meter. The ultrasonic thickness gauge has been designed to measure the material thickness that calipers can't measure, such as boiler, pressure vessels, armor of tank, ship hulls, glass wall, tubes and so on.

2) *Safety information*

$C\epsilon \rightarrow$ According to European Union's CE safety norms

Environment conditions :

- Ambient temperature : -10 ~ +50°C, +14 ~ 122°F
- Storage and transport temperature : -4.0 ~ +70°C

Maintenance & save:

Do not clean the meter using alcohol and impregnant if you do not use it for a long time, please take out the batteries and place the instrument in a dry surrounding.

3) *Function & Features*

- Measuring thickness of various good ultrasonic wave conductors as steel, aluminium, copper, glass etc.
- Ultrasonic wave velocity or thickness display
- Manual material selection
- Ultrasonic wave velocity adjustable
- Thickness unit "mm" or "inch" optional
- Ultrasonic wave velocity testing
- Coupling state display
- Shut down manually or automatically
- Low battery voltage indication
- Built-in calibration metal block (4.0mm)
- Software calibrating to insure high reliablity

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4) *Specifications*

- The meter has been designed according to EMC directive: 2004/108/EC
- Ultrasonic wave frequency : 5MHz
- Digital display : 4 digits
- Measurement range :1. 2mm ~ 220mm (steel).
- Tubes measurement : Minimum   20mm*3mm.
- Ultrasonic wave velocity : 1000~9999 M/s
- Resolution : 0.1mm.
- Accuracy : ± (1%H +0.1mm).
- Measurement rate : 0.6 second.
- Power supply : AAA, 1.5V*3
- Operating temperature : -10~+50°C
- Storage temperature : -40~+70°C, -40~+158°F
- Dimensions : 165(L) x 60(W) x 30(H)mm.
- Weight : approx 210g (including battery and probe).
- Accessories : Probe, operating manual, batteries.

4) *Mounting battery and probe*

Remove the battery cover on the back and put in three 1.5V AAA batteries according to the mark on the shell to insure putting batteries in correctly, and then close the battery cover. Insert two plugs of the probe into two sockets on the top of the meter.

5) *The method of usage*

- Press button "On/Off", the meter selects material 1 automatically, and displays the velocity of ultrasonic wave in material 1.

- Press button "**Select**" to choose a material you will measure. A number displays on the bottom of the screen to indicate the material. The numbers correspond to the material listed in table (1). Smear a little of coupling paste on the surface of the measured object, put the probe on and press it. A coupling symbol would appear if coupling is all right. Synchronously the thickness of the measured object would display instead of ultrasonic wave velocity. If Coupling isn't good, the coupling symbol will not appear and can not get thickness.

Table (1)

Digit	Material	Ultrasonic wave speed
1)	Iron/Steel	5900 M/S
2)	Aluminium	6320 M/S
3)	Copper	4700 M/S
4)	Brass	4430 M/S
5)	Gold	3240 M/S
6)	Silver	3600 M/S
7)	Zinc	4170 M/S
8)	Stannum	3320 M/S
9)	Glass	5850 M/S
10)	Plastic	2250 M/S
11)	Toughened tile	5580 M/S
12)	Water (20°C)	1480 M/S
13)	Material a	6500 (user adjusting)
14)	Material b	5500 (user adjusting)
15)	Material c	4500 (user adjusting)
16)	Material d	3500 (user adjusting)
17)	Material e	2500 (user adjusting)

- When take the probe out from the measured object, the coupling symbol disappears, but thickness keeps displaying.
- At the state of displaying thickness and do not measure, Press button **"mm/inch",** thickness unit "mm" changes into "inch" or contrarily.
- At the state of displaying thickness and do not measure, Press button **"Select",** to display ultrasonic wave speed, thickness will disappear.
- Material a-e (digit 13~17) are offered to user to set own material. Press button ▲ or ▼, its velocity is adjustable
- If user do not know the ultrasonic wave velocity of own material, can test it by oneself.

A) Make a block with measured material (the more thick the block, the more exact the result is), measure its thickness by a calipers carefully.

B) **Select** anyone of material a~e, and measure its thickness display steady, take the probe out from the block.

C) Press button ▲ or ▼ to change the digits until it is equal to the value measured by the calipers.

D) Press button **"Select",** the ultrasonic wave velocity of user's material will appear. When shut the meter down, the ultrasonic wave velocity will be saved into a memory.

8) To set power off :
   When the meter is working. Pressing button On/Off will get shutdown immediately.

9) Automatic shutdown :
   When the meter is ON, and stop to press button for five minutes, shutdown will occur automatically.

6) Calibrating the meter

- When changing a new probe, or the probe is abrased or the meter is used for a long time, you need to calibrate the meter by yourself, the method is as follows: Power on the meter, smear a little of coupling paste on the surface of the metal block built -in the shell of the meter. Put the probe on and press it, when coupling symbol appears, press button **"Adjust"** for two seconds, four bars appear on the screen. Keep pressing the probe button **"Adjust"** can release. You can see the bars disappear gradually. Finally "4.0mm" displays, the meter will be calibrated.

7) Notices

- When measuring thickness under 2.5mm, sometimes an error named as "double refraction" may occur. Another error is named as "pulse envelope or cycle jump". They bring on a bigger result than actual thickness. So when measuring thin object, should do it repeatedly to look for the least value. If necessary, make a thin block to compare measuring result.

- The ultrasonic wave velocity listed in Table (1) is for reference. Because the component of your material may not be identical with that listed in Table (1), user had better make sample block to test the wave velocity in it.

- It is not a good ultrasonic wave conductor to the poriferous material, or uncompacted material, it can not be measured by the meter. Casting has large crystals, if it surface is rough; it is difficult for user to test thickness by the meter.

- Rough surface may affect test, Burnish it by sand paper, and then measure.

- When the surface has thick paint, scrape it off and then measure.

- Coupling paste is necessary for test, it can eject air out off the gap between the probe and the object to get ultrasonic wave to pass. For rough surface, more viscous coupling paste must be used, such as lubricating oil.

- To measure tubular object, change the direction of the probe for 90°, look for the minimum vaue

- For rough surface, don't press the probe when turning it or slipping it, to protect the probe.

- When battery voltage is too low to work, a battery symbol appears on the screen. It reminds you to change new batteries

- When you do not use the meter for a long time, please take out batteries to avoid damaging the meter by electrolyte.

- Don't store the meter in a high temperature or wet place.

- After power off, to turn power on again, wait for two seconds.

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MUMBAI

TEST CERTIFICATE

ULTRASONIC THICKNESS GAUGE

This Test Certificate warrantees that the product has been inspected and tested in accordance with the published specifications.

MODEL NO. **KM 8041**

SERIAL NO. _____

DATE: _____

ISO 9001
REGISTERED

QC
KUSAM-MECO
PASS

KUSAM-MECO®

WARRANTY

Each "KUSAM-MECO" product is warranted to be free from defects in material and workmanship under normal use & service. The warranty period is one year (12 months) and begins from the date of despatch of goods. In case any defect occurs in functioning of the instrument, under proper use, within the warranty period, the same will be rectified by us free of charges, provided the to and fro freight charges are borne by you.

This warranty extends only to the original buyer or end-user customer of a "KUSAM-MECO" authorized dealer.

This warranty does not apply for damaged Ic's, fuses, burnt PCB's, disposable batteries, carrying case, electrodes, probes, cables or to any product which in "KUSAM-MECO's" opinion, has been misused, altered, neglected, contaminated or damaged by accident or abnormal conditions of operation or handling.

"KUSAM-MECO" authorized dealer shall extend this warranty on new and unused products to end-user customers only but have no authority to extend a greater or different warranty on behalf of "KUSAM-MECO".

"KUSAM-MECO's" warranty obligation is limited, at option, free of charge repair, or replacement of a defective product which is returned to a "KUSAM-MECO" authorized service center within the warranty period.

THIS WARRANTY IS BUYER'S SOLE AND EXCLUSIVE REMEDY AND IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. "KUSAM-MECO" SHALL NOT BE LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES, INCLUDING LOSS OF DATA, ARISING FROM ANY CAUSE WHATSOEVER.

All transaction are subject to Mumbai Jurisdiction.

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