

# K-METRON (FW 1.5.4)

493K THICKNESS MEASUREMENT GAUGE  
WITH RADIO LINK UP AND SOFTWARE RECORDING

USER INSTRUCTIONS (Doc v1.0.0)  
RELATING TO FIRMWARE VERSION (FW 1.5.4)

*(as displayed on boot-up of the K-METRON)*

**IMPORTANT**

**Read all instructions before use**

**Observe safety precautions**



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## Turning on the unit

To turn on the unit momentarily press the ON/OFF switch on the face of the K-METRON until the POWER LED illuminates.



## Operational Use

Switch the unit on. The Power light will illuminate. If it does not then change the battery. Battery level will be announced each time the unit is turned on.

Place the Sensor Head on the outside of the product to be measured. Place the Transducer Magnet on the other face of the material to be measured and make the magnetic coupling.

Hollow objects can be measured by inserting the Transducer Magnet through small openings. Position the Sensor Head on the outside of the product adjacent to the aperture and insert the Transducer Magnet whilst retaining the retrieval cord (for the puck version). If the magnetic coupling is lost you can easily recover the Transducer magnet. If the ball bearing is lost then it can be retrieved by turning the moulding upside down or by using a telescopic metal pointer.

The Transducer Magnet will automatically couple, orientate and centre itself over the Sensor Head. Slide the Sensor Head to the point which you wish to measure, taking care not to remove the sensor head from the face of the work piece which may result in losing the magnetic couple with the magnet inside the part. The Transducer Magnet will follow the Sensor Head to the desired point of measurement.

**When at the measuring point pull the orange trigger and make small figure of eight movements of the Sensor Head to ensure that Transducer Magnet is centrally located on the Sensor Head. On releasing the trigger the unit will display the minimum value measured and transmit the data to the receiver. If the receiver is not connected to the PC a 'TX Error' will be display. The unit is still operational and can be used without the receiver being connected to the PC.** The minimum measurement value can be red from the screen even with the TX Error.

If an erroneous measurement has been sent to the PC then it can be remotely deleted by pressing the delete button.

Each time the unit is switched ON/OFF the mould index number will increase by '1' unit. So after the measurements have all been made on the mould and recorder to the PC you can index to the next mould number by switching the unit on and off. This will allow the user to keep track of each mould's measurements during the quality measurements.

The instrument is calibrated up to 20mm (0.78"). The Factory setting Calibration is for the 10mm ball magnet. The unit needs to be re-calibrated if the 10mm cube magnet is used.

During the calibration of a sensor magnet the unit will determine at which thickness the sensor magnets become out of range. Then when using the unit it will display O/R for 'out of range'.

Self-centring of the Transducer Magnet will occur on materials of up to 20mm (0.78") depending on surface finish of the material being measured.

The 10mm x 10mm x 10mm cube magnet is best for large thick walled parts. It has a hole through it to allow attachment of a retrieval cord.

The 10mm ball bearing magnet is best for smaller parts when tight radii are to be measured.

The specifications of measurement for each of the magnets are as below:

METRIC	Part thickness	Accuracy	
10mm cube magnet	4mm – 20mm	4mm-17mm: +/- 0.2mm of reading 17mm +: +/- 1.0mm of reading	
10mm sphere magnet	2mm-20mm	2mm-13mm: +/- 0.2mm of reading 13mm: +/- 1.0mm of reading	Factory Set

IMPERIAL	Part thickness	Accuracy	
0.39" cube magnet	0.157" – 0.787"	0.157" -0.669": +/- 0.008" of reading 0.669": +/- 0.039" of reading	
0.39" sphere magnet	0.079" – 0.787"	0.079-0.512": +/- 0.008" of reading 0.512": +/- 0.039" of reading	Factory Set

## **K-METRON Software.**

Download and install the K-Metron software from the link supplied.

Ensure that the correct communication port setting is chosen and that the relevant driver is correctly installed by WINDOWS. Ensure the PC is connected to the Internet.

## **Replacing the battery in K-METRON**

K-METRON uses a single PP3 9 volt battery. An equivalent rechargeable battery may be used. To replace the battery remove the screw holding the cover on. Carefully unclip the spent battery from the battery cover lid and unclip the battery terminals from the flying power lead. Attach the terminals on the battery and ensure they clip on securely. Insert the charged battery into the clip and remount the cover. Make sure the cable is not trapped by the cover.



## **CALIBRATION INSTRUCTIONS**

The system provides for improved accuracy of measurement at point of use. Measurement accuracy ranges from +/- 0.2mm at the lower end of the readings and +/- 1mm at the upper end of measurement. This will depend on whether the spherical magnet or the cube is used.

Although the units are calibrated before leaving 493K re-calibration may be necessary within your plant.

Select a location that is at least 1 metre away from any steel or ironwork which will affect accuracy of calibration.

### **To enter calibration mode:**

With the unit turned OFF hold down the DELETE button & the Trigger button. While still holding these buttons down (in one hand) turn the unit on with the other. When the display lights up release the ON/OFF button and continue to hold down the DELETE and the Trigger button until 'CALIBRATION' comes onto the screen. Immediately release all buttons.

The display should now request Position 21 – no magnet.

With no magnets (spherical or cubed) near the sensor head the trigger should be quickly depressed and released – holding the trigger for too long may result in the position jumping to the next position, e.g. position 19. If this is the case then switch the unit off and re-enter the calibration mode.

After successfully acknowledging 'position 21 – no magnet' then the unit will now request the 20mm position. The magnet should be placed on the 20mm step and the trigger pulled. On removing the magnet from the calibration steps the next position will be requested, i.e.19mm.

The magnet should be placed on each step so that it is in the centre of the sensor head and is not interfering with the step edge. Ensure that the magnet is not moving when calibrating as this will affect the calibration values.

Continue this step by step calibration down to the 'Zero' thickness with the magnet directly on the sensor surface.

**THE CUBE AND BALL BEARING MAGNETS ARE NOT INTERCHANGEABLE AND DOING SO WILL RESULT IN INACCURATE READINGS. YOU WILL NEED TO RE-CALIBRATE WHEN CHANGING THE MAGNET.**

A similar run down the steps at the end of the calibration will provide a quick check that the calibration that you have carried out has been accurate. No calibration is required for use with differing materials. When measuring the thickness of non-ferrous metal parts please ensure that there is no movement of the magnet during reading. Do not perform the figure of 8 movement for these materials.

## **Sensor Head Care**

Non-ferrous materials of any density will return an accurate reading within the limits of the device.

DO NOT ALLOW THE TRANSDUCER MAGNET TO “SNAP” TO THE FACE OF THE SENSOR – SEVERE DAMAGE MAY OCCUR TO THE DEVICE SENSOR AND MAGNET.

Keep Sensor Head and Transducer magnet away from computer displays or any product which is sensitive to strong magnetic fields. Permanent damage may occur to such devices.

The Sensor which this instrument uses is highly sensitive to magnetic fields and temperature. High temperature environments may affect the accuracy of readings.

The instrument has been factory calibrated to accuracies shown in the table above.

Regular checks should be made to ensure instrument is operating within its capabilities and it is recommended that the unit is returned to 493K Limited for an annual recalibration to ensure its continued performance is maintained. 493K offer a return carriage paid service, calibration and inspection.

## **Measured Units**

The unit can be changed between IMPERIAL and METRIC units. To do this hold down the DEL button while switching the unit on. While continuing to hold down the DEL key IMPERIAL and METRIC will alternate on the screen. Release the DEL key when the chosen unit type is displayed.

## **What Materials can be Measured?**

No calibration is required for use with differing materials. This equipment will measure materials of a thickness between 2mm to 20mm where access can be achieved to both sides of the product being measured.

Materials that can be measured include all non-magnetic materials such as:

- *Plastics of any density or composition*
- *Foamed materials*
- *Laminates*
- *Fibreglass*
- *Carbon Composites*
- *Glass*
- *Aluminium*
- *Brass and copper*

## **What is included with K-METRON**

The system comprises:

1. A portable display unit containing the measurement electronics;
2. A PP3 9volt battery;
3. Sensor Head with lead attached to the display unit;
4. 2 x spherical 10mm magnets & 1 x 10mm cube magnet with retrieval cord
5. 1mm - 20mm Calibration Steps;
6. Instruction Manual;
7. K-METRON Software.

## **DISCLAIMER**

Use of this instrument is at the operators' risk and 493K Limited will not be held liable for any claims for damage to other equipment occasioned by its use or any consequential claims related to the instruments accuracy. See also limitations as to use.

## **SPECIFICATIONS**

Range:	2 to 20mm
Resolution:	0.1mm
Accuracy:	+/- 0.2mm or +/- 1mm depending on calibration type
Range error:	Better than +/- 0.3mm
Temperature:	5 to 35 deg C
Calibration	@ 20 deg C
Minimum radius measured	(10mm Cube): 20mm (10mm Ball): 5mm
Power Supply:	1 x PP3 9 volt battery. (Alkaline or Lithium can be used)