FD / JD - DIAL THICKNESS GAUGES

Operating Instructions

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NOTES:

1. The lifting cap and contact point must be tightened by hand only.

2. The dial face of the instrument can be opened correctly only by means of special manufacturer's tooling.

1.0 INTRODUCTION

The Electromatic dial gauge can be used as a replacement for mechanical dial gauges, thanks to external dimensions conforming to the various standards for this type of instrument. The functions of the Electromatic dial gauge are as follows:

• change units mm/inch
• change zero point for any probe position
• enter a reference value other than 0.000 mm (preset)
• possibility of measuring with two different references
• store measurement (display hold)
• transmission of measurement to a statistical processing system

The dial gauge has three operating modes, which are selected by pressing the [mode] button for more than 1 second. The functions of each mode are activated by momentarily depressing (< 1 sec) the [set] or [mode] buttons.

The Electromatic dial gauge is equipped with an OPTO-RS compatible data output.

1.1 Overview
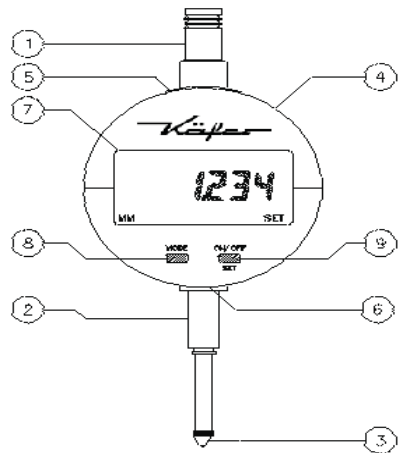
1. Lifting cap (M2.5 interchangeable)

2. 8 mm clamping shaft

3. Contact point (M2.5 interchangeable)

4. Rotating dial (270°)

5. Cover for OPTO-RS connector

6. Pull-out slide for battery replacement

7. Multifunctional LCD

8. [mode] button

9. [set] button (ON/OFF)

9.0 REFERENCE MODE

Measurement according to reference I

Measurement according to reference II
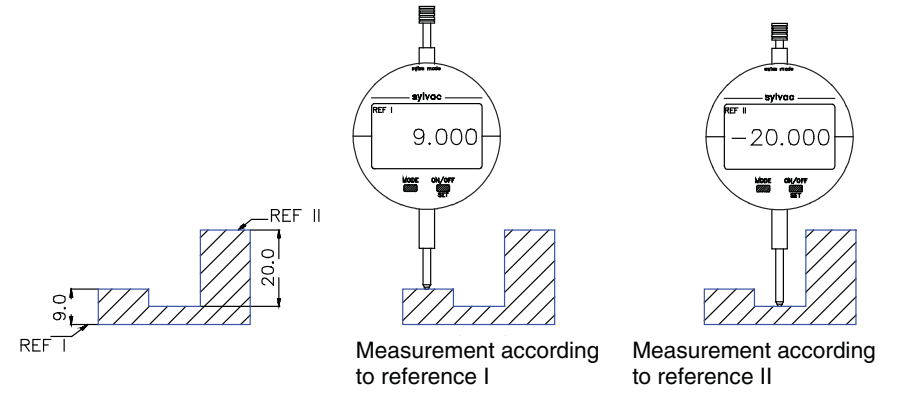
8.0 SPECIFICATIONS

|	
Measuring range	0-12.5 mm / .5" 0-25 mm / 1"
Resolution	0.001 mm / .00005" (0.01 mm / .0005")
Accuracy	5µm (.0002") / 10µm (.0004") **NOTE:** The accuracy is guaranteed only when the dial gauge is attached to the clamping shaft.
Repeatability	2µm or .0001" (+/-2s)
Max. probe travel speed	1.5 m/sec.
Number of measurements per second	
0.01 mm	8 measurements/sec.
0.001 mm	5 measurements/sec.
Measuring force	0.6 to 1.1 N for 0-25 mm (1") 0.7 to 0.95 N for 0-12.5 mm (.5")
Units of measurement	metric/imperial (inch) (direct conversion)
Maximum preset	±2999.99 mm / ±89.9995 in.
Measuring system	SYLVAC system (patented).
Display	Digital LCD sign (–), 6 digits (7 in.) height 8.5 mm, (0.05 mil in inch), display of unit and operating mode.
Power	1 lithium battery 3 V, type CR2032, capacity 190 mAh.
Battery types	Toshiba CR2032 / Maxell CR2032 Renata B/CR2032 / Sanyo CR2032 Ucar CR2032 / Panasonic CR2032 Rayovac CR2032 / Varta CR2032.
Power consumption	60 µA.
Battery life	1 year or > 3000 hours with normal use When "B" is displayed, the remaining battery life is several hours.
Working temperature	+5 to +40 °C.
Data output	RS232 compatible format.
Interface	RS232 interface cable, with optical coupling.
Construction	aluminium case, polyamide rotating dial (270°), hardened and ground stainless-steel measuring spindle
Clamping	lower bushing diameter 8 h6 mm .
Contact point	M 2.5 interchangeable.
Protection	IP 51 (according to IEC 529).
Weight	130 g.

Accessories	OPTO-RS232 connector, 2m cable, duplex connection for PC-AT (Dsub 9p) External power supply (+5.0Vdc to +12.0 Vdc), binder connector 719 (3p)

2.0 MULTIFUNCTIONAL DISPLAY
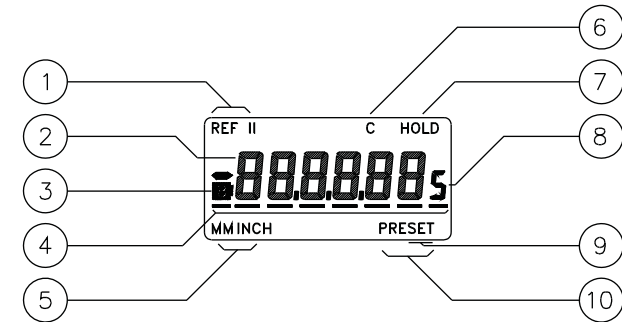
1. Active reference indicator (REFI or REFII)
2. Measured value
3. Battery life warning display
4. Indicating cursor for preset
5. Unit of measurement indicator
6. Locked mode indicator
7. Hold indicator
8. Display .0005/.00005 INCH
9. Preset indicator
10. Preset mode indicator

3.0 FUNCTIONS

3.1 How to use buttons

Mode	> 1sec	< 1sec	> 1sec	< 1sec	= 1sec	
Mesure		mm ⇄ inch	Off	On Set	DIR ⇄ RES	
References		Ref I ⇄ Ref II	Off	On Data out, hold	MODE0 ⇄ MODE1	
Preset		→ -000.123 ↑	Incr. digit → 0.1.2...9 ↑	Digit = digit + 1	> 3 sec (MODE 1, 2, 3) RESET	

3.2 Operation

Press for less than 1 second to activate button function.
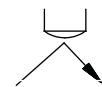
Press for more than 1 second to activate mode change.

3.3 Switch On - Using buttons

1. Momentarily depress the [set] button.

2. The instrument switches on in the mode that was active when it was last switched off (e.g., measuring mode).

3.4 Switch On - Using OPT-RS

Activate the LED of the OPTO-RS connector or transmit any command from the peripheral equipment to switch the instrument on. The instrument responds with its identification (SY225.xx.x).
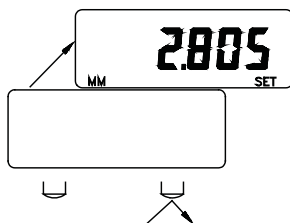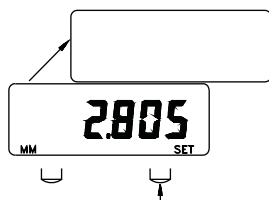
3.5 Switch off

1. Press the [set] button until the display disappears.

2. Remove the OPTO-RS connector, or disable the LED of the connector.

NOTE: It is not possible to switch the instrument off in preset input mode, or when the LED of the OPTO-RS connector is illuminated.

3.6 Changing the battery

1. Change the battery when the "B" indicator appears.Remove battery housing and insert new battery, ensuring correct polarity.

2. Clear the display by pressing the [mode] and [set] buttons.

NOTE: after changing the battery, the instrument displays « RESET », then reverts to measuring mode and displays 0.000 mm (or 0.00 mm)
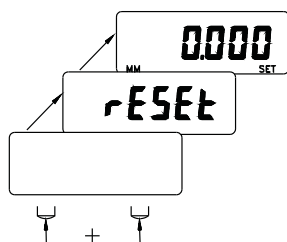
3.7 Changing the direction of measurement permanently

1. Remove the rear cover and reverse the direction of the switch.

2. Reset the instrument (press [mode] and [set] to clear the display) to validate the change of direction of measurement
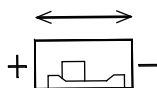
7.0 OPERATION WITH OPTO-RS CONNECTOR

7.1 Operating modes

The dial gauge works in simplex mode: the displayed value is sent from the instrument or requested from the peripheral equipment (pedal or request from peripheral equipment). It can also be used with a duplex OPTO-RS connector. It recognizes any command (ASCII character sent by the computer) as a request to transmit the displayed value.

7.2 Inserting the OPTO-RS connector

Check that the connector is the right way round by means of the polarizing slot. Insert the OPTO-RS cable with the components facing the operator. Neither the instrument nor the connector can be damaged if the latter is inserted the wrong way round.
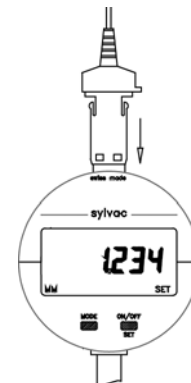
7.3 Transmission parameters

4800 Bd, even parity, 7 data bits, 2 stop bits

7.4 Operation in simplex mode

• **Transmission from the instrument**: select reference mode, then momentarily depress [set] to transmit the displayed value. The value is transmitted regardless of the status of the LED of the OPTO-RS connector. If the LED is extinguished, the display remains frozen until [set] is pressed again or a transmission request is made by the peripheral equipment.

• **Transmission request by the peripheral equipment**: transmission of the measured value can be requested from the peripheral equipment (printer, computer) in measuring and reference modes, by sending any ASCII character or by interrupting the LED for 140 msec.

See operating manual of optical connector for details.

7.5 Error messages

In the event of an error, the instrument sends the following message:

<ERR0>   Measuring system error. Acknowledge by a data request or by means of the [set] button.
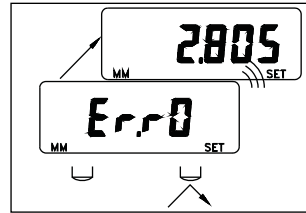
6.0 ERROR MESSAGES ON THE DISPLAY

If a measuring error is detected, the instrument displays the 'Err0' message

6.1 Disable error message

1. Press [set] to restart measurement, or acknowledge by means of an OPTO-RS transmission request.

Important: After diabling the error message, check the measurement reference.
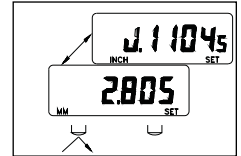
4.0 MEASURING MODE
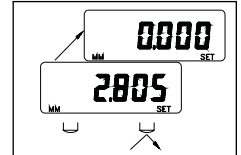
4.1 Changing units

1. Momentarily depress the [mode] button to change the unit.
   Note: except for "mm only" instruments.

4.2 Reset (recall preset)

1. Momentarily depress the [set] button.
   The preset value of the active reference is validated as the new zero point (eg 0.000 mm).
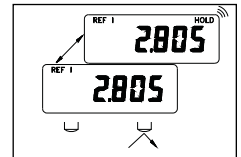
4.3 Reference / HOLD mode

Hold measurement, transmit measured value

1. Place the instrument in reference mode by pressing [mode] for more than 1 second

2. Momentarily depress the [set] button.

Note: The displayed value is automatically transmitted to the OPTO-RS232 interface. Hold is released if the connector is inserted with the LED active or if the peripheral equipment makes a transmission request (see also operating manual for OPTO-RS connector).

Change references

1. Place the instrument in reference mode by pressing [mode] for more than 1 second.

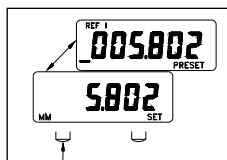2. Momentarily depress the [mode] button to change the active reference.
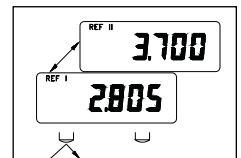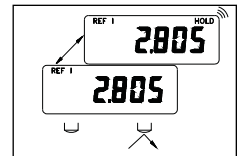
4.4 Preset Mode

Entering a preset value

A different preset value can be entered for each reference (REF I and REF II). Maximum preset values are: ±2999.99 mm/± 89.9995 in.

1. Select the active reference (reference mode).

2. Select preset mode (press [mode] for more than 1 second until "PRESET" indicator appears)

Select digit to change

1. Momentarily depress [mode] the required number of times until the cursor is located under the digit to be changed.
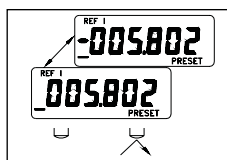
2. The cursor returns to the sign after the last digit.
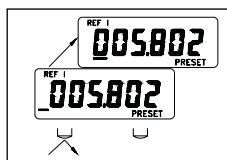
Change value

1. Momentarily depress [set] the required number of times to increase the underlined digit in increments of "1".

2. Alternatively, keep the [set] button pressed until the required value is obtained.
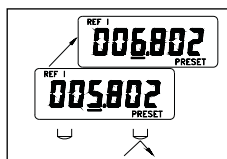
Change sign of preset

1. Move the cursor under the sign, then momentarily depress [set].

Validate value of preset

1. Press [mode] for more than 1 second until the "PRESET" indicator disappears.

Recommended use

1. Set value of preset to 0.000 for Reference I, and use Reference II for different preset values.

5.0 INITIALIZATION FUNCTIONS

These functions make it possible to change the initial parameters of the instrument. These changes are not permanent (disabled after battery replacement or a reset) and require a good working knowledge of the instrument.

5.1 Change the direction of measurement and the resolution

1. Select measuring mode, then momentarily depress [mode] and [set] simultaneously the required number of times to change the resolution and the required direction of measurement. (Resolution cannot be changed on instruments displaying hundredths).

2. Then check the zero point and the unit of measurement.
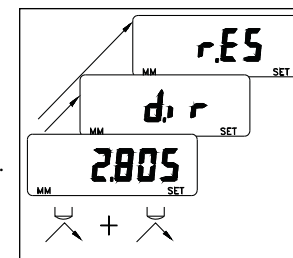
5.2 Locking and unlocking the [mode] button

Disables the function of the [mode] button to prevent the accidental modification of instrument parameters by the user. This function can only be activated in reference mode.

To Lock:

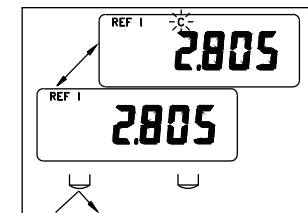1. Place the instrument in reference mode, then momentarily depress [set] and [mode] simultaneously to display <MOdE 0>.
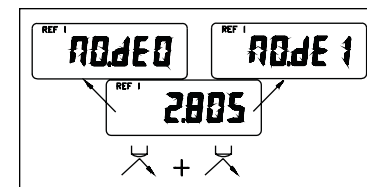
2. Then check the active reference.

To Unlock:

1. Momentarily depress [set] and [mode] simultaneously, or reset the instrument.

5.3 Display indicator

The "C" indicator appears whenever [mode] is used.

5.4 Resetting the instrument

This function recalls the initial configuration of the instrument (status after battery replacement or RESET).

1. Press [mode] and [set] simultaneously to clear the display. The latter briefly displays "RESET" when both buttons are released. The instrument will also reset when the battery is changed.