

Digimatic Micrometer MDC-SX



Safety Precautions

To ensure operator safety, use this product in conformance with the directions, functions and specifications given in this User's Manual.
Use under other conditions may compromise safety.

WARNING Shows risks that could result in death or serious injury.

- Always keep batteries out of reach of children, and if swallowed, consult a physician immediately.
- Batteries should never be short-circuited, disassembled, deformed or come in contact with extreme heat or flames.
- If battery alkaline liquid comes in contact with the eyes, flush eyes immediately with clean water and consult a physician. If battery alkaline liquid comes in contact with the skin, flush the exposed area thoroughly with clean water.

CAUTION Shows risks that could result in minor or moderate injury.

- Never attempt to charge the primary battery or reverse the positive-negative terminals when mounting. Improper battery handling or mounting may cause the battery to explode, cause battery leakage and/or serious bodily injury or malfunctioning.
- Always handle the sharp measuring faces of this product with care to avoid injury.

NOTICE Shows risks that could result in property damage.

- Do not disassemble or modify.
- Do not use or store the product in a place with sudden temperature changes. Adapt the product to ambient temperature before use.
- Do not store the product in a place with high humidity or a lot of dust. Do not use the product in a place where it may contact water or oil.
- Do not apply excessive force or subject to sudden impacts such as dropping.
- Remove dust, cutting chips, etc. before and after use.
- When cleaning, wipe this product with a soft cloth moistened with diluted neutral detergent. Do not use an organic solvent such as thinner, which may cause the product to deform or malfunction.
- Do not press the LCD.
- The spindle structure prevents pulling out, so do not try to forcibly retract in excess of the measurement range.
- Dirt on the spindle may lead to malfunction. If the spindle becomes dirty, wipe it clean with a cloth containing a small amount of alcohol and apply a small amount of micrometer oil (Part No. 207000).
- Do not write numbers, etc. with an electric pen.
- If the product is to be out of use for three months or more, remove the battery before storage. Liquid leakage from the battery may damage the product.

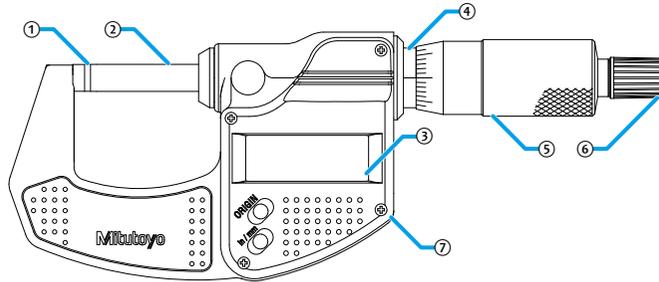
Key operation icon



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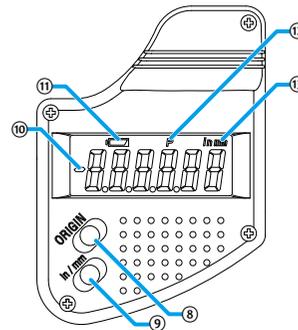
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1. Names of Components



- | | |
|----------------------|--|
| ① Anvil | ⑤ Thimble (or friction thimble for some models) |
| ② Spindle | ⑥ Ratchet stop (or friction thimble for some models) |
| ③ Display unit (LCD) | ⑦ Battery compartment cover (at rear) |
| ④ Sleeve | |

■ Display unit (LCD)



- | | |
|-------------------------------------|-----------------------|
| ⑧ [ORIGIN] key | ⑪ Low voltage display |
| ⑨ [in/mm] key (in/mm products only) | ⑫ Preset display |
| ⑩ Sign display | ⑬ Unit display |

2. Installing the Battery

NOTICE Shows risks that could result in property damage.

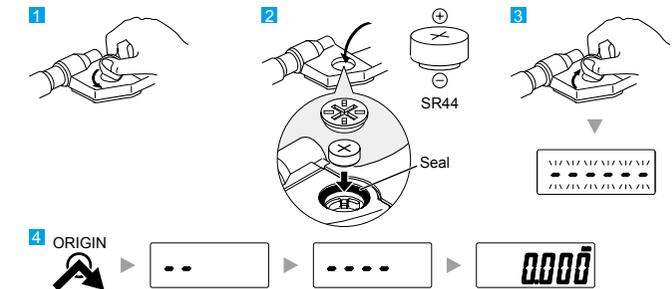
Always align the battery compartment cover with the threads and install so that the seal does not protrude. The product may display an error or malfunction if the battery compartment cover or seal is not mounted correctly.

Tips

- Be sure to use SR44 (silver oxide button battery Part No. 938882) for the battery.
- Do not rotate the thimble until the count is displayed. Initial setting of the electrical components may fail, or the product may not count normally. If you mistakenly move the thimble, reinstall the battery.
- The battery supplied is for confirming the functions and performance of the product. Note that this battery may not fulfill the predetermined life.
- Malfunction or damage due to depleted batteries, etc. is not covered by the warranty.
- Follow local rules and regulations regarding battery disposal.

The battery is not installed into the product at purchase. Install the battery as follows.

- 1 Rotate the battery compartment cover counter-clockwise to remove it.
- 2 Install the battery (SR44) with the positive side facing up.
- 3 Position the battery compartment cover and rotate clockwise to attach. Moving on, set the ORIGIN (reference point).
- 4 Press the [ORIGIN] key.
 - » Count display appears and counting starts.



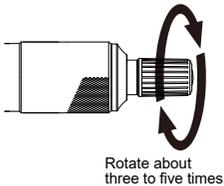
Tips

- Re-installing the battery will erase the ORIGIN (reference point) position. Perform reference point setting again (refer to "4. ORIGIN (Reference Point) Setting").
- If an abnormal display is shown, such as an error display or not counting, etc., try removing the battery and reinstalling.

3. Precautions for Use

■ Measuring Force

- Be sure to use the ratchet stop (or friction thimble for some models) to ensure consistent measuring force.
- The appropriate measuring force is achieved with the following procedure: make light contact between the measurement surfaces and the workpiece, stop momentarily, and then manually turn the ratchet stop (or friction thimble for some models) about three to five times.



■ Precautions after Use

- After use, clean the entire product and check that none of the parts are damaged.
- Do not store the product in a place with high humidity or a lot of dust.
- For storage, leave a gap of 0.2 to 2 mm open for the measurement surfaces.
- If the product will not be used for three months or longer, apply micrometer oil (Part No. 207000) to the spindle to prevent rust, and store it with its battery removed.

4. ORIGIN (Reference Point) Setting

Reference point setting and measurement should be made in the same orientation and conditions and with the same procedure as below.

- Clean both the anvil and spindle measurement surfaces to remove all debris or dust.
- After making light contact with both measurement surfaces, stop momentarily, and then apply the appropriate measuring force (refer to "3. Precautions for Use ■ Measuring Force").
- Press the [ORIGIN] key.
 - Check that [P] is blinking and the ORIGIN (reference point) value* is displayed (*refer to "Tips" below).
- Press the [ORIGIN] key again.
 - [P] goes out and the ORIGIN (reference point) value is set.



Tips

- If the product is not used for about 20 minutes, the LCD will automatically turn off. However, the ORIGIN (reference point) will be stored. To turn the display back on, rotate the thimble.
- If the [ORIGIN] key is accidentally pressed during measurement, perform the procedure described in "4. ORIGIN (Reference Point) Setting" again.

Key operation icon



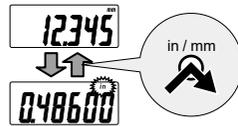
5. Measurement Method

- Be sure to perform reference point setting before measurement.
- Bring the measuring surface of the spindle slowly into contact with the workpiece. Moving too quickly could deform the workpiece and affect measurement results.

Gradually and lightly bring the measurement surfaces into contact with the workpiece in the same orientation and conditions as for reference point setting, apply the appropriate measuring force, and then read the indicated value (refer to "3. Precautions for Use ■ Measuring Force").

6. Switching in/mm (in/mm products only)

- Press the [in/mm] key.
 - "in" and "mm" switch back and forth each time the key is pressed.



7. Errors and Troubleshooting

- " display
The battery voltage is low. Replace the battery promptly.
- "Err-oS" display
A counting error has occurred due to excessive speed or noise. Try removing the battery and reinstalling.
- "Err-S" display
Initial setting of the electrical components failed, or a counting error has occurred due to a sensor signal error. Try removing the battery and reinstalling.

8. Specifications

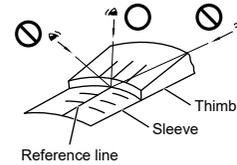
Measuring range	: 0 - 25 mm 0 - 1 in (in/mm products only)
Resolution	: 0.001 mm 0.00005 in (in/mm products only)
Maximum permissible error $J_{MPE} *1$: $\pm 2 \mu\text{m}$ ± 0.0001 in (in/mm products only)
Measuring force	: 5 N - 10 N
Display	: LCD (6-digit and minus sign)
Power supply	: Button type silver-oxide battery (SR44 No.938882), x1
Battery life	: Approximately 2.4 years
Temperature range	: 5 °C to 40 °C (operating temperature), -10 °C to 60 °C (storage temperature)
Standard accessories	: Wrench (No.301336)

*1: Maximum permissible error for indicated value via contact with full measuring face J_{MPE} (20 °C).

9. Reference Information: Parallax and How to Read Graduations

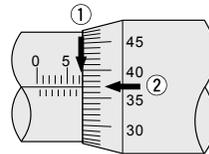
■ Parallax

- When using a micrometer, the reference line surface on the sleeve and the graduation line surface on the thimble are not on the same plane, so the point where the two lines meet will vary depending on the position of your eyes. When reading measured values, do so perpendicular from the point where the reference line on the sleeve matches the graduation line on the thimble.
- If looking from a different direction (as in the figure), there will be a parallax of roughly 2 μm .



■ How to Read Graduations

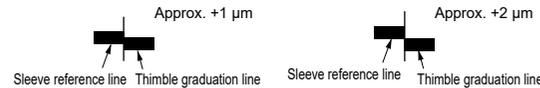
Reference graduations (graduation 0.01 mm)



① Sleeve reading	7 mm	
② Thimble reading	+ 0.37 mm	
Micrometer reading	7.37 mm	

For ② (0.37 mm), read the location where the reference line on the sleeve matches the graduation line on the thimble.

This is normally read up to a graduation of 0.01 mm (as shown in the figure above). However, it is also possible to read up to a graduation of 0.001 mm (as shown in the figure below).



10. Off-Site Repairs (Subject to Charge)

Off-site repair (subject to charge) is required in the case of the following malfunctions. Contact your nearest dealer or our sales office.

- Faulty spindle operation
If the spindle is scratched, these scratches may interfere while the spindle is retracting, causing faulty operation.
Operation may also suffer if the spindle is rusted.
- Inconsistent measured values
If there are burrs or nicks generated by an impact on the measuring surfaces, it may affect measurement repeatability.
- Count value error/faulty operation
If the thimble of this product is retracted too far, the internal sensor will be damaged. This may cause count errors or faulty operation.