

Outside Micrometer Caliper Type

Safety Precautions

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

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

Always handle the measuring faces and other sharp parts of this product. Handle them with sufficient care to avoid bodily injury.

NOTICE Shows risks that could result in property damage.

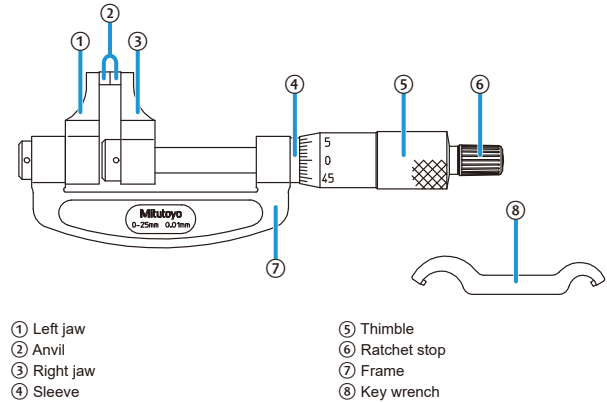
- Do not use this product for purposes other than measurement.
- Do not disassemble or modify. Doing so will void the warranty.
- Do not use or store the product in a place with sudden temperature changes. Adapt the product to ambient temperature before use.
- Do not store the product in a place with high humidity or a lot of dust.
- Do not use the product in a place where it may contact water, etc.
- Apply anti-rust treatment after use if the product is used in a place where it is directly exposed to splashes of coolant, etc. Rust may cause malfunction.
- Do not apply excessive force or subject to sudden impacts such as dropping.
- Remove dust, cutting chips, etc. and apply anti-rust oil after use.
- Remove any dirt on the product by wiping gently with a soft non-linty cloth. Do not use organic solvents such as cleaning agents or thinner.
- Do not write numbers, etc. with an electric pen.

Contents

1. Names of Components	Page 1
2. Precautions for Use	Page 1
3. Reference Point Setting	Page 1
4. Measurement Method	Page 1
5. How to Read Graduations	Page 1
6. Adjusting a Loosened Jaw	Page 2
7. Specifications	Page 2
8. Paid Maintenance	Page 2

1.Names of Components

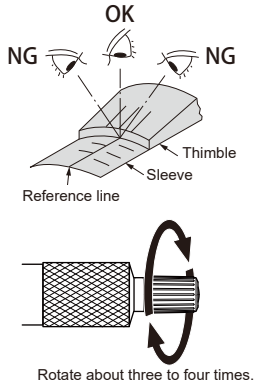
■ 143 Series
OMP-25



2.Precautions for Use

■ Parallax

- Because of the structure of the product, 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 deviate depending on the position of your eyes. When reading measured values, do so with reference to the figure at right, perpendicular from the point where the reference line on the sleeve is aligned with the graduation line on the thimble.
- If looking from a different direction as in the figure at right, there will be a parallax of roughly 2 μm.



■ Measuring Force

- Use the ratchet stop to ensure consistent measuring force.
- The appropriate measuring force is applied by rotating the ratchet stop about three to four times with the fingers after the measuring surfaces are brought into light contact with the workpiece. Note that excessive measuring force may cause measurement error.

■ Precautions and Cleaning after Use

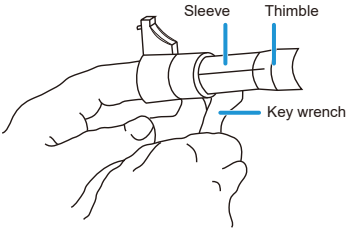
- After use, check each part for damage and clean the anvil with a soft cloth that does not produce fibers.
- If oil, cutting fluid, or liquid itself has adhered to the product, or if the product is very dirty, clean it with a soft, lint-free cloth dipped in a volatile solvent (cleaning alcohol, etc.).
- After use, apply Micrometer Oil (Part No. 207000) to the anvil to prevent rust.
- If using in places exposed to water-based cutting fluid, always apply anti-rust treatment after cleaning.
- If Micrometer Oil is unavailable and the only option is a commercial product, we recommend low-viscosity anti-rust oil of ISO VG10 or so.

3.Reference Point Setting

Important

- Be sure to follow the procedure below to confirm and adjust the reference point prior to measuring.
- When setting the reference point for this product, use a calibrated gage (a gauge block, a micrometer standard bar).
- Remove any dirt or oil from the measuring surfaces of the gage and product prior to setting the reference point.
- Use the same orientation and conditions when measuring and setting the reference point.

- 1 Remove any dirt or dust from the measuring surfaces of the gage and the product.
- 2 Rotate the thimble to make light contact between the measuring surfaces of the products or between the measuring surfaces and the gage.
- 3 Apply the prescribed measuring force by rotating the ratchet stop three to four times.
- 4 Read the graduations, and if the reading does not match the zero point or the gage dimensions, adjust the reference point using the following procedure.
 - If the reference point difference is ± 0.01 mm or less
Insert the supplied key wrench into the hole on the rear of the reference line on the sleeve, and then rotate the sleeve until the reference line is aligned with the zero graduation line on the thimble.



- If the reference point difference is ± 0.01 mm or more
 - 1 While holding the thimble in place with your fingers to prevent it from rotating, insert the supplied key wrench into the hole on the side of the ratchet stop and loosen the ratchet stop.

Thimble Ratchet stop
Key wrench
 - 2 Rotate the thimble while pushing it toward the ratchet stop and align the thimble's graduation with the sleeve's reference line.
 - 3 Tighten the ratchet stop with the key wrench, being careful not to allow the thimble to rotate.
 - 4 If the zero point is slightly off, make adjustment in accordance with "If the reference point difference is ± 0.01 mm or less".

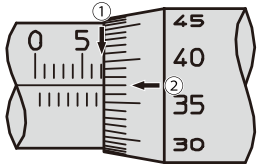
4.Measurement Method

Perform measurement with the same orientation and conditions as when setting the reference point and read the value of the graduations.

5.How to Read Graduations

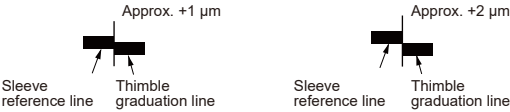
Read the graduations as below.

① Sleeve reading	7.0 mm
② Thimble reading	0.37 mm
Micrometer reading	7.37 mm



Read the thimble at the location where the sleeve reference line matches the graduation line on the thimble.

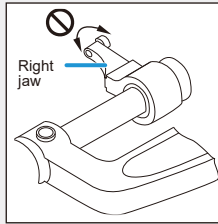
This is normally read up to a graduation of 0.01 mm as shown above. However, it is also visually possible to read up to a graduation of 0.001 mm as shown in the figure below.



6.Adjusting a Loosened Jaw

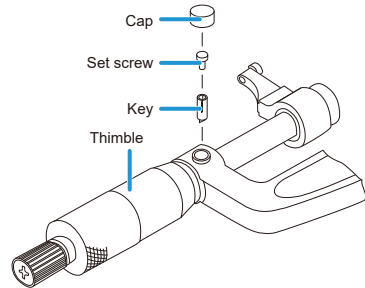
NOTICE Shows risks that could result in property damage.

Do not apply excessive force in the circumferential direction of the jaw. Doing so may cause malfunction of the thimble, loose jaw, or damage to the key.
In the unlikely event that the jaw becomes loosened, make the following adjustments.

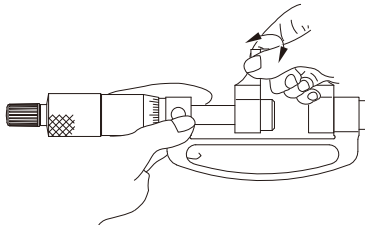


Make the following adjustments when you move the right jaw in the circumferential direction of the sleeve and the tip of the right jaw is loose enough to be visually confirmed.
If the looseness cannot be visually confirmed, do not adjust as it will not affect the measurement error.

- 1 Remove the cap and loosen the set screw.



- 2 Press the key, and adjust so that the looseness of the right jaw cannot be visually confirmed, then tighten the set screw.



- 3 Attach the cap.

Tips

Note that overtightening the right jaw will make the thimble operate more heavily.

7.Specifications

- Maximum allowable error
Maximum measurement length of 100 mm or less :
 $\pm (4 + \text{maximum measurement length} / 25) \mu\text{m}$ (fractions rounded up)
 $[(\pm 0.0002 + 0.0005 \times \text{maximum measurement length})^*]$
Maximum measurement length of over 100 mm and under 300 mm:
 $\pm (6 + \text{maximum measurement length} / 50) \mu\text{m}$ (fractions rounded up)
- Graduation : 0.01 mm
- Operating temperature : 5 °C to 40 °C
- Storage temperature : -10 °C to 60 °C

8.Paid Maintenance

We recommend periodic inspections to check and maintain the product's accuracy. Also, if the following defect occur, please contact the agent where you purchased the product or a Mitutoyo sales office.

- Inconsistent measured values
Burr or nicks generated by an impact on the measurement surfaces may affect measurement repeatability.