

Thickness Gage (Indicator Type)



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.

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

The edges of the contact point and anvil on the blade thickness type are sharp, and may cause injury. Be especially careful of injury or damaging the edge when handling.

NOTICE Shows risks that could result in property damage.

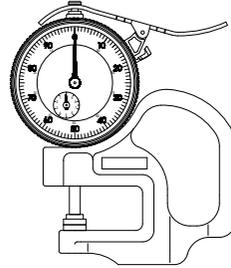
- Do not disassemble or modify.
- Do not use or store the product in a place with sudden temperature changes. Also, before using the product, allow it to acclimate to room temperature.
- Use in a location with minimal dust, oil, and oil mist, away from direct sunlight.
- Do not store the product in a place with high humidity or a lot of dust.
- Do not move the spindle quickly or apply horizontal force.
- Avoid loads in the vertical direction relative to the spindle or usage involving torsion to the spindle.
- Do not apply excessive force or subject to sudden impacts such as falling.
If an impact is applied, inspect accuracy and operation before use.
- Avoid usage in places directly exposed to splashes of water or coolant.

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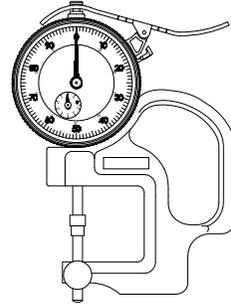
1. Types

Standard type



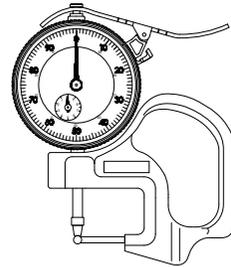
- Code No. 7301 7301A
- 7305 7305A
- 7321 7321A
- 7323 7323A
- 7327 7327A
- 7300S 7300A
- 7304S 7304A
- 7322S 7322A
- 7326S 7326A

Lens meter



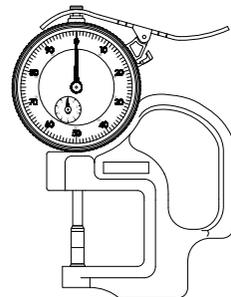
- Code No. 7313
- 7312S
- 7313A
- 7312A

Pipe gage



- Code No. 7360
- 7361S
- 7360A
- 7361A

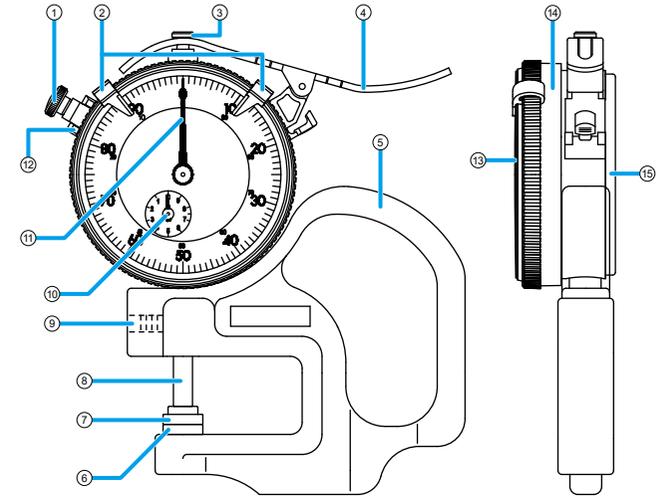
Blade thickness



- Code No. 7315
- 7316S
- 7315A
- 7316A

2. Names of Components

The figure shows Code No. 7301 (standard type).



- | | |
|--|-------------------|
| ① Bezel clamp (option for metric type) | ⑨ Fastening screw |
| ② Limit hand (optional) | ⑩ Short pointer |
| ③ Spacer | ⑪ Pointer |
| ④ Lifting lever | ⑫ Dovetail |
| ⑤ Frame | ⑬ Crystal |
| ⑥ Anvil | ⑭ Bezel |
| ⑦ Contact point | ⑮ Back |
| ⑧ Spindle | |

3. Preparations before Use

1) Checking items before use

- Before using the product, confirm that the pointer, short pointer, and spindle move smoothly.
- Confirm that the stop positions of the pointer and short pointer at the position you have set are stable.
Body temperature or changes in air temperature may cause thermal expansion or contraction of parts such as the spindle or frame, changing the indicated values. The pointer may deviate from zero. However, this is not abnormal.
- For periodic calibration or precision measurement, wear thick gloves in order to reduce changes in the indicated value caused by the transmission of body temperature.
- Confirm that the contact point and anvil are not loose.

2) Contact point and anvil

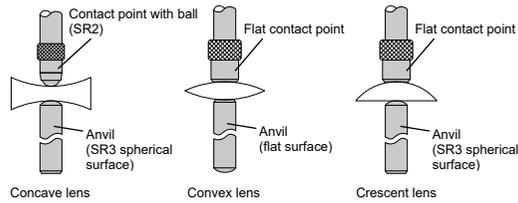
- Standard type, pipe gage, and blade thickness type

NOTICE Shows risks that could result in property damage.

Do not remove the contact point. This could affect the parallelism of the contact point and anvil, leading to poor accuracy. Contact our sales office to replace the contact point.

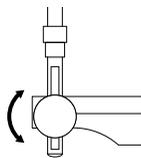
■ Lens meter

- According to the shape of the workpiece being measured, the flat contact point installed can be exchanged with the included contact point with ball (SR2). The anvil can also be set upside down, making it possible to switch between the spherical (SR3) and flat surfaces of the anvil.
- After replacing the contact point or setting the anvil upside down, confirm that the contact point and anvil are in contact, and then reset the reference point before measurement.
- Do not use any flat contact point or anvil other than the one installed on the product at purchase. If this flat contact point or anvil is replaced with another one, its performance cannot be guaranteed.



* Flat contact point/anvil parallelism: 5 μm

- Loosen the screw on the frame when setting the anvil upside down. With the notch facing the screw side, insert the anvil into the frame and tighten the screw. (Code No. 7312A, 7313A)

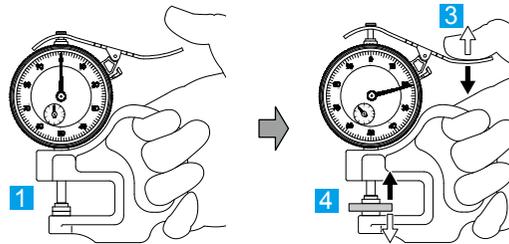


4. Measurement Method

NOTICE Shows risks that could result in property damage.

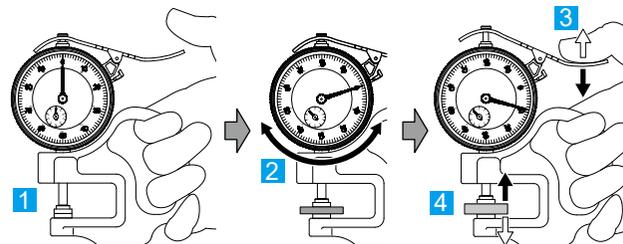
- Do not allow the contact point to strike the workpiece hard. The workpiece may deform and measurement results may be affected.
- Do not loosen the fastening screw or remove it and disassemble the product. The parallelism of the contact point and anvil may be disturbed, and the measuring range, accuracy, and measurement results may be affected.
- **Be sure to perform reference point setting before measurement. For use in a place with fluctuating temperature in particular, frequently check the set reference point.**
- Remove dust, cutting chips, etc. before measurement.

1) Standard measurement



- 1 Hold the frame as shown in the figure.
- 2 With the anvil and contact point closed, turn the bezel so that the pointer shows zero.
- 3 Raise the spindle by gently pressing the lifting lever downward.
- 4 Insert the workpiece, and then bring the contact point into contact with the workpiece by gently releasing the lifting lever.
- 5 Read the long and short pointer values.

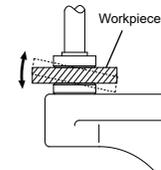
2) Incremental measurement



- 1 Hold the frame as shown in the figure.
- 2 Measure a reference gage or master (1.20 mm), and then turn the bezel so that the pointer shows zero.
- 3 Raise the spindle by gently pressing the lifting lever downward.
- 4 Insert the workpiece (1.29 mm), and then bring the contact point into contact with the workpiece (1.29 mm) by gently releasing the lifting lever.
- 5 Read the long and short pointer values.

Tips

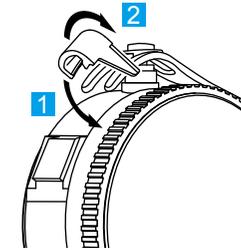
The orientation of a large workpiece may not be stable in measurement and indicated values may not be stable. Support the workpiece by hand so that its orientation is stabilized.



5. Limit Hand/Bezel Clamp/Lifting Lever

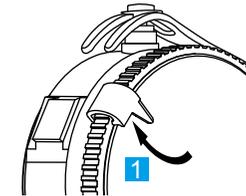
1) Mounting/removing the limit hand (optional)

- Mounting



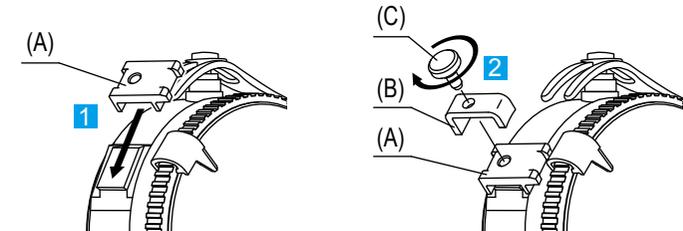
- 1 Hook the limit hand on the bezel.
- 2 Push the limit hand until a click sound is heard.

- Removing



- 1 Remove the limit hand by lifting it in the direction indicated by the arrow.

2) Mounting the bezel clamp (option for metric type)



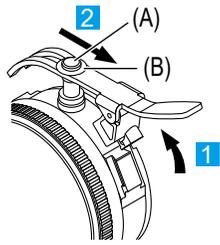
- 1 Fit the clamp bracket (A) into the dovetail.
- 2 Tighten the clamp screw (C) while pressing the clamp bracket (A) with the clamp plate (B).

NOTICE Shows risks that could result in property damage.

If using the product horizontally, the clamp screw may loosen and fall off due to vibration, etc.

3) Mounting/removing the lifting lever

● Mounting



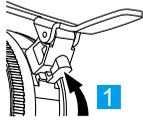
1 Lift the spindle and fit the stop screw (A) between the tips of the lifting lever.

Tips

Insert the tips of the lifting lever under the spacer (B).

2 Fit the grooves of the lifting lever into the dovetail groove and move it in the direction of the arrow to secure it.

● Removing



1 Push the finger rest part up and remove the lifting lever.

6. Precautions after Use

- Clean the sliding surface of the spindle with a dry cloth or a cloth slightly moistened with alcohol. Do not lubricate the spindle at this time.
- When cleaning the crystal, wipe it 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.
- For the standard type and lens meter, store with a piece of grease paper or similar material inserted to prevent wringing (adhesion) between the flat contact point and anvil (flat surface).
- Apply anti-rust treatment to the contact point and anvil.
- The performance of the thickness gage is strongly influenced by usage and storage conditions. We recommend stipulating a maintenance cycle as in-house rules according to usage frequency, environment, storage method, etc., and inspecting the product periodically.
- Do not store the product in a place with a high temperature or humidity, or a lot of dust or oil mist.

7. Specifications

Operation environment: Temperature 0 °C to 40 °C, humidity 30 % to 70 % (no condensation)

8. Off-Site Repairs (Subject to Charge)

Off-site repair (subject to charge) is required in the case of the following malfunctions. Contact the agent where you purchased the product or our sales office. If the product is repaired or disassembled by a party other than Mitutoyo, its performance cannot be guaranteed.

- Poor spindle operation
- Serious pointer dwell position deviation (pointer skipping)
- Poor accuracy

* If the fundamental structural components or multiple components need to be replaced, we reserve the right to decline the repair.