Mitutoyo

Dial Depth Gage

Dial Depth Gage

User's Manual

No. 99MAC001A
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Safety Precautions

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

■ **Conventions and wording indicating prohibited and mandatory actions**

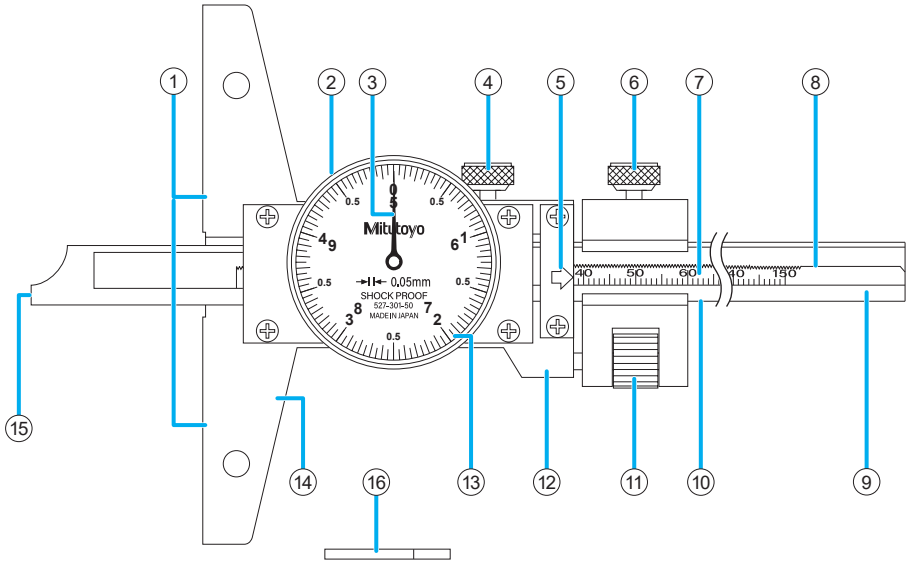
	Indicates concrete information about prohibited actions.
	Indicates concrete information about mandatory actions.

Contents

1 Code Number

527-301-50 527-302-50 527-303-50 527-311-50 527-312-50 527-313-50

2 Names of Components



① Reference surface
② Bezel
③ Pointer
④ Clamping screw
⑤ Main scale reading edge
⑥ Fine-adjustment clamp screw
⑦ Main scale
⑧ Rack
⑨ Beam
⑩ Sliding surface (reference surface)
⑪ Fine-adjustment
⑫ Finger rest
⑬ Dial graduation
⑭ Base
⑮ Measuring face
⑯ Adjuster*

*Standard accessory: Part No. 142115

3 Precautions before Use

- Before using this product for the first time, wipe the rust preventive oil from the product with a soft cloth soaked with cleaning oil. If the rust preventive oil is left on the product, it will dry on and the motion may become stiff. In this case, wipe the sliding surface (reference surface) with a cloth to improve the motion further.
- If cutting chips or debris adhere to the beam, measuring faces, or graduations, wipe them off with chamois or gauze, etc.
- Apply clean oil to the beam. This protects the sliding surface (reference surface) and improves the beam motion.
- Do not perform the adjustment at sites where the temperature will change abruptly. Thermally stabilize the instrument sufficiently at room temperature.
- Be careful not to allow cutting chips or dust to enter the rack. Chips or particles can damage the rack, degrading accuracy or causing the pointer to skip and the zero point to deviate.

4 Basic Usage

■ Holding the dial depth gage and moving the beam

With one hand, bring the base into close contact with the workpiece, and move the beam vertically with the other hand for measurement.

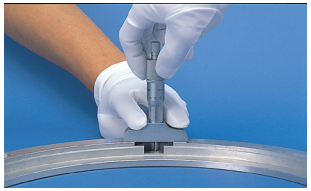


Image shows a depth micrometer example

Tips

- For the measuring method details, refer to "6. Measurement Method".
- Tighten the fine-adjustment clamp and turn the fine-adjustment for fine beam motion.

■ Fixing the beam

Reading of the main scale and dial is usually taken with the measuring face and reference surface in close contact. However, depending on the measuring location, the orientation during measurement and so on, it may be difficult to get a reading in this position.

In this case, fix the beam with a clamping screw and move the dial depth gage carefully away from the workpiece. Hold the dial depth gage where it will be clearly visible and read the graduations.

5 Confirmation before Measurement

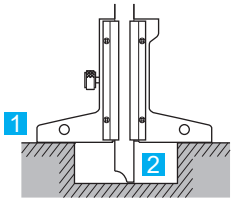
■ Confirming Beam Movement

- Confirm that there is no irregular beam movement and that the beam moves smoothly throughout the measurement range.
- Confirm that there is no play on the beam sliding surface.

■ Confirming that Pointer is on Dial Graduation Zero Point

- Confirm that the pointer is on the dial graduation zero point when the measuring face and reference surface are aligned, using a surface plate, etc.
- If the pointer deviates from the dial graduation zero point, the zero point needs adjustment.
  For the adjustment method details, refer to "8. Zero Point Adjustment".

6 Measurement Method



1 Bring the base reference surface into close contact with the workpiece.

2 Move the beam until the measuring face makes contact.

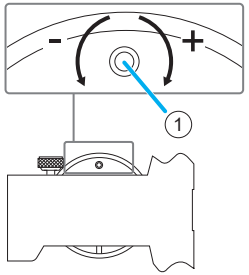
3 With the workpiece in close contact, take the main scale and dial readings.

- Bring the measuring face into contact perpendicular with the workpiece.
- Bezel rotation tightness can be adjusted by rotating the bezel tightness adjustment screw on the back of the dial with a Phillips screwdriver. The screw can be rotated up to two turns.

  - : Looser

  + : Tighter

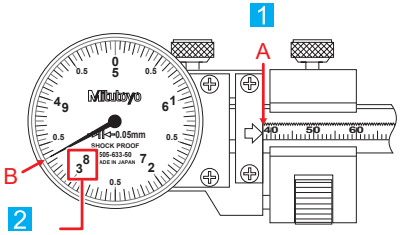
  ① : Bezel tightness adjustment screw



7 Reading Measurements

The measurement value (C) is obtained by adding the main scale reading (A) and the dial reading (B).

The resolution (dial graduation interval value) is shown on the inside of the dial graduation (0.05 mm).



1 Take the main scale reading (A) shown by the ain scale reading edge.

The main scale reading interval is 10 mm. Positions within the intervals are read with dial graduations.
A = 30 mm

2 Take the dial reading.

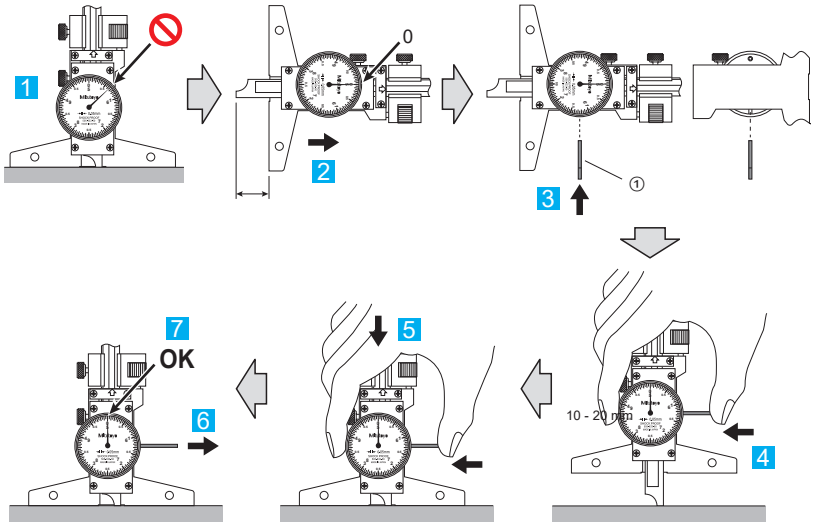
The dial reading is 5 mm per rotation. Therefore the main scale reading interval 10 mm is two rotations. The first rotation is read with the outside numbers and the second with the inside numbers (above example: 2nd rotation = 8 mm).
B = 8 mm + 0.05 mm x 2 = 8.1 mm

3 Add the main scale and dial readings for the measurement value (C).

C = A + B = 30 mm + 8.1 mm = 38.1 mm

8 Zero Point Adjustment of Pointer

Wipe any cutting chips, dust, or oil carefully off the measuring face and reference surfaces, and align them with a surface plate, etc. If the pointer deviates from the dial graduation zero point at this time, use the included adjuster (①, No. 142115) to adjust the zero point as shown below.



1 **Wipe any cutting chips, dust, or oil carefully off the measuring face and reference surfaces, and align them with a surface plate, etc.**

If the pointer deviates from the dial graduation zero point, align the pointer to the zero point as shown below.

2 **While moving the measuring face and reference surface about 10 to 20 mm apart, align the pointer to the dial graduation zero point.**

3 **Insert the adjuster into the groove on the rear side of the dial.**

4 **Push the adjuster in and fix the pointer position.**

5 **Pushing the adjuster, slide the base gently in and align the measuring face and reference surface.**

When sliding the base in, confirm that the pointer is not moving.

6 **Remove the adjuster.**

7 **Confirm that the dial graduation zero point and pointer are aligned.**

9 Precautions after Use

- If there is dirt on the measuring face, reference surfaces, sliding surface, etc., wipe it away with a dry cloth or a cloth slightly moistened with alcohol.
- For long-term disuse, wipe away any dirt carefully and apply a light coating of rust preventive oil before storage.
- Do not store in locations with high temperatures, low temperatures, high humidity, or exposure to direct sunlight.

10 Maximum Permissible Error of Indicated Values

Maximum permissible error conforms to JIS B7507.

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