

Mitutoyo 2416S-10

Mitutoyo 2416S-10 Dial Indicator User Manual

Precision Measurement Instrument

1. INTRODUCTION AND OVERVIEW

The Mitutoyo 2416S-10 Dial Indicator is a precision instrument designed for accurately measuring surface variations, small linear distances, and object sizes. It is widely used in manufacturing, laboratories, and various industrial or mechanical fields where precise measurements are critical.

This standard dial indicator features a measurement range of 0 to 1 inch, with graduations of 0.001 inches, and an accuracy of +/- 0.002 inches. Its continuous dial provides a 0-100 reading for direct interpretation. The robust design ensures durability and reliable performance.

2. PRODUCT FEATURES

- **Measurement Range:** 0 to 1 inch, with 0.001 inch graduations and a range of 0.1 inches per revolution.
- **Accuracy:** +/- 0.002 inches (total).
- **Dial Face:** White face with a contrasting hand for enhanced readability. Features a rotating bezel and limit markers.
- **Stem Design:** Provides a long clamping range. The frame is designed without screw holes to resist dust and water ingress.
- **Mounting:** Equipped with a rear lug for convenient mounting from the back of the indicator.
- **Stem Diameter:** 3/8 inch diameter stem.
- **Contact Point Thread:** #4-48 UNF thread.
- **Bearing Type:** Jewel bearing for increased precision and smooth operation.
- **Dial Reading:** Continuous dial with a 0-100 reading for direct measurements.
- **Measuring Force:** 1.8 Newtons (N) or less.

3. SETUP

Proper setup is essential for accurate measurements. Follow these steps to prepare your Mitutoyo 2416S-10 Dial Indicator for use:

1. **Mounting:** Secure the dial indicator using its rear lug. The lug allows for mounting from the back of the indicator onto a suitable stand or fixture. Ensure the mounting is firm and stable to prevent any movement during measurement.
2. **Stem Installation:** The indicator features a 3/8 inch diameter stem. Insert the stem into a compatible clamping mechanism on your measurement stand. The stem's design provides a long clamping range, allowing for flexible positioning.
3. **Contact Point:** The contact point has a #4-48 UNF thread. Ensure it is clean and free from debris. If replacing, use only compatible Mitutoyo contact points.
4. **Positioning:** Position the indicator so that its spindle is perpendicular to the surface being measured. This ensures that the displacement is measured along the indicator's axis for accurate readings.



This image shows the Mitutoyo 2416S-10 Dial Indicator, highlighting its white dial, contrasting hand, and the rear lug for

4. OPERATING INSTRUCTIONS

To obtain accurate measurements with your dial indicator, follow these operating guidelines:

1. **Zero Setting:** Before taking a measurement, bring the contact point into gentle contact with a known reference surface or the lowest point of the feature to be measured. Rotate the bezel to align the '0' mark on the dial with the indicator hand.
2. **Measurement:** Carefully move the indicator or the workpiece to measure the desired variation. The indicator hand will move clockwise or counter-clockwise, showing the displacement.
3. **Reading the Dial:** The 2416S-10 is a continuous dial with a 0-100 reading. Each major division typically represents 0.001 inches. The total range is 1 inch, meaning the hand will complete 10 revolutions for a 1-inch displacement.
4. **Measuring Force:** The indicator operates with a measuring force of 1.8 Newtons (N) or less. Apply consistent and minimal force to avoid deforming the workpiece or affecting measurement accuracy.
5. **Limit Markers:** Utilize the rotating limit markers on the bezel to set tolerance limits for quick visual inspection during repetitive measurements.

5. MAINTENANCE

Proper maintenance ensures the longevity and accuracy of your Mitutoyo dial indicator:

- **Cleaning:** After each use, wipe the indicator clean with a soft, lint-free cloth. For stubborn grime, use a mild cleaning solution specifically designed for precision instruments, applied sparingly to the cloth. Avoid harsh chemicals or solvents.
- **Storage:** Store the indicator in its protective case when not in use. Keep it in a dry, temperature-controlled environment, away from direct sunlight, dust, and excessive vibrations.
- **Inspection:** Periodically inspect the contact point for wear or damage. A worn contact point can lead to inaccurate readings. Check the spindle for smooth movement and ensure the bezel rotates freely.
- **Dust and Water Resistance:** The stem design offers resistance to dust and water. However, the instrument is not fully waterproof. Avoid submerging it in liquids or exposing it to excessive moisture.
- **Calibration:** For critical applications, regular calibration by a qualified technician is recommended to maintain certified accuracy.

6. TROUBLESHOOTING

If you encounter issues with your Mitutoyo 2416S-10 Dial Indicator, consider the following:

- **Inaccurate Readings:**
 - Ensure the indicator is securely mounted and not vibrating.
 - Verify the contact point is clean and not worn.
 - Check that the spindle moves freely without sticking.
 - Confirm the indicator was properly zeroed against a stable reference.
- **Sticking Spindle:**
 - Clean the spindle thoroughly to remove any dust or debris.
 - Avoid applying excessive force that could bend or damage the spindle.

- **Dial Hand Not Moving:**

- Check if the contact point is making proper contact with the surface.
- Ensure the indicator is not locked or jammed.

For persistent issues or repairs, please contact Mitutoyo customer support or an authorized service center.

7. SPECIFICATIONS

Specification	Value
Manufacturer	Mitutoyo
Model Number	2416S-10
Measurement System	Inch
Range	0 to 1 inch
Graduations	0.001 inches
Accuracy	+/- 0.002 inches
Range per Revolution	0.1 inches
Measuring Force	1.8 N or less
Stem Diameter	3/8 inches
Contact Point Thread	#4-48 UNF
Dial Face	White
Bearing Type	Jewel Bearing
Dial Reading	0-100 (Continuous)
Product Dimensions (L x W x H)	7.7 x 3.9 x 2.4 inches (19.56 x 9.91 x 6.1 cm)
Product Weight	0.55 lbs (248.48 g)
Batteries Required	No

8. WARRANTY AND SUPPORT

Mitutoyo is a reputable manufacturer of precision measuring tools, founded in Tokyo in 1934. The company is known for its commitment to quality and accuracy.

This product is typically covered by a manufacturer's warranty against defects in materials and workmanship. For specific warranty details, including duration and coverage, please refer to the documentation included with your purchase or visit the official Mitutoyo website.

For technical support, service, or warranty claims, please contact your authorized Mitutoyo dealer or Mitutoyo customer service directly. Keep your purchase receipt and product model number (2416S-10) handy when contacting support.

Additionally, a 30-day return policy may be available from your retailer, allowing for returns or exchanges within that period if the product does not meet your expectations.

