

Mitutoyo 209-843 Dial Caliper User Manual

1. INTRODUCTION

This manual provides detailed instructions for the proper use, setup, maintenance, and care of your Mitutoyo 209-843 Dial Caliper. This precision instrument is designed for accurate external dimension (OD) comparison measurements, particularly for the thickness of grooves, tubes, and other hard-to-reach external dimensions. Featuring carbide pointed jaws and an Ingress Protection 65 (IP65) rating, this caliper offers reliable performance in various industrial environments.

2. PRODUCT OVERVIEW

2.1 Key Features

- **External Dimension (OD) Measurement:** Specifically designed for measuring groove and tube thickness.
- **Spring-Loaded Jaws:** Ensures consistent measuring pressure for accurate point contact.
- **Dial Display:** Provides clear and precise measurements in metric units with 0.1mm resolution.
- **Large Measuring Depth:** Facilitates access to hard-to-reach external dimensions.
- **IP65 Rated:** Resistant to dust penetration and low-pressure water jets, suitable for demanding environments.
- **Carbide Pointed Jaws:** Durable and precise for consistent contact.

2.2 Components

The Mitutoyo 209-843 Dial Caliper consists of a main frame, a movable jaw, carbide pointed contact points, a spring mechanism, and a dial indicator for reading measurements.



Figure 1: Mitutoyo 209-843 Dial Caliper. This image displays the caliper with its pointed carbide jaws, spring mechanism, and a dial indicator showing a 0-10mm range with 0.1mm resolution markings. The Mitutoyo brand name is visible on the body.

3. SETUP

3.1 Unpacking and Inspection

1. Carefully remove the caliper from its packaging.
2. Inspect the instrument for any visible damage that may have occurred during shipping. If damage is found, do not use the caliper and contact your supplier.
3. Ensure all components are present and securely attached.

3.2 Cleaning Measuring Surfaces

Before first use and prior to each measurement session, gently wipe the carbide pointed jaws with a clean, lint-free cloth. Ensure no dust, oil, or debris is present on the measuring surfaces, as this can affect accuracy.

3.3 Zeroing the Dial

With the jaws fully closed and the contact points touching, the dial indicator should point to zero. If it does not, gently rotate the outer bezel of the dial until the zero mark aligns with the indicator needle. This ensures accurate readings from the starting point.

4. OPERATING INSTRUCTIONS

4.1 Holding the Caliper

Hold the caliper firmly but gently. Avoid applying excessive force that could distort the frame or affect the measurement. Position your hand to allow clear visibility of the dial.

4.2 Taking an OD Measurement

- Open Jaws:** Gently squeeze the lever or slide the movable jaw to open the caliper jaws wider than the dimension you intend to measure.
- Position Object:** Carefully position the object between the carbide pointed jaws. For grooves or tubes, ensure the points are seated correctly on the surfaces to be measured.
- Close Jaws:** Release the lever or allow the spring mechanism to close the jaws until the contact points firmly touch the object. The spring-loaded design ensures a constant, repeatable measuring pressure.
- Read Measurement:** Once the jaws are in contact, read the measurement directly from the dial indicator.

4.3 Reading the Dial

The dial on your Mitutoyo 209-843 caliper provides direct readings. Each major division on the dial represents 1mm, and the smaller divisions represent 0.1mm. The needle indicates the precise measurement. For example, if the needle points to '5' and then two small marks past it, the reading is 5.2mm.

5. MAINTENANCE

5.1 Cleaning

- After each use, wipe the entire caliper with a clean, dry, lint-free cloth.
- Pay special attention to the measuring surfaces and the dial mechanism to remove any dust, oil, or moisture.
- Do not use harsh solvents or abrasive cleaners, as these can damage the finish or internal components.

5.2 Storage

- Store the caliper in its protective case (if provided) in a clean, dry environment.
- Avoid storing in areas with extreme temperature fluctuations, high humidity, or direct sunlight.
- Ensure the jaws are slightly open to prevent constant pressure on the contact points during storage.

5.3 Periodic Inspection and Calibration

- Regularly inspect the carbide pointed jaws for wear or damage. Worn jaws can lead to inaccurate measurements.
- Check the smooth movement of the jaws and the responsiveness of the dial indicator.
- For critical applications, periodic professional calibration is recommended to ensure continued accuracy and compliance with measurement standards.

6. TROUBLESHOOTING

Problem	Possible Cause	Solution
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Problem	Possible Cause	Solution
Inaccurate readings	<ul style="list-style-type: none"> • Dirty measuring surfaces • Improper zero setting • Worn or damaged jaws • Incorrect measuring technique 	<ul style="list-style-type: none"> • Clean jaws thoroughly • Re-zero the dial • Inspect jaws for damage; replace if necessary • Review operating instructions
Dial indicator not moving smoothly	<ul style="list-style-type: none"> • Debris in the gear mechanism • Damage to the dial mechanism 	<ul style="list-style-type: none"> • Clean the caliper thoroughly, especially around the dial. Avoid disassembling. • If problem persists, contact Mitutoyo service.
Jaws feel stiff or sticky	<ul style="list-style-type: none"> • Accumulated dirt or grime • Lack of lubrication (if applicable) 	<ul style="list-style-type: none"> • Clean the sliding surfaces. • Consult Mitutoyo for specific lubrication recommendations; generally, precision instruments do not require user lubrication.

7. SPECIFICATIONS

Specification	Value
Brand	Mitutoyo
Model Number	209-843
Material	Carbide
Range	0-10mm
Measurement Accuracy	+/-0.1mm
Resolution	0.1mm
Ingress Protection (IP) Rating	IP65
Manufacturer	Mitutoyo
Country of Origin	Czech Republic
UPC	603908079231

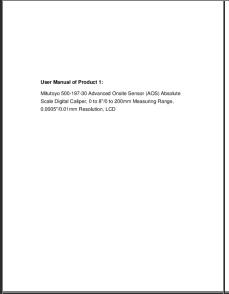
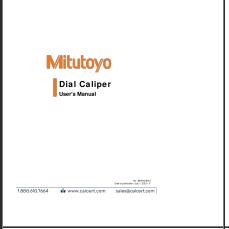
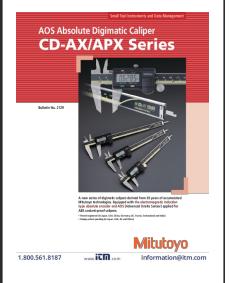
Specification	Value
GTIN	00603908079231
Date First Available	July 8 2013

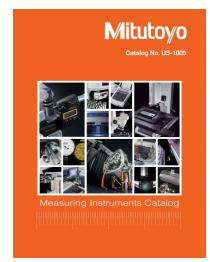
8. WARRANTY AND SUPPORT

For information regarding warranty coverage, technical support, or service for your Mitutoyo 209-843 Dial Caliper, please refer to the documentation provided with your purchase or visit the official Mitutoyo website. Contacting Mitutoyo directly will ensure you receive accurate and authorized assistance for your product.

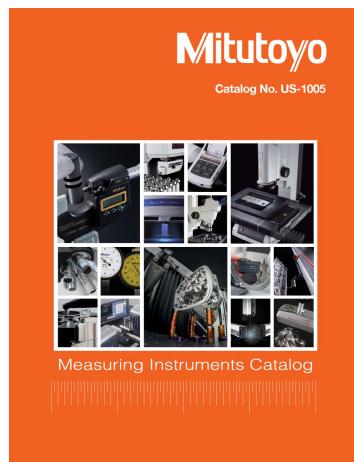
Note: This manual is intended as a guide. Specifications and features are subject to change without notice. Always refer to the latest official documentation from Mitutoyo for the most current information.

Related Documents - 209-843

	<p>Mitutoyo AOS Absolute Digimatic Caliper CD-AX/APX Series User Manual</p> <p>User manual for the Mitutoyo AOS Absolute Digimatic Caliper CD-AX/APX Series, featuring the Advanced Onsite Sensor (AOS) for enhanced accuracy and coolant-proof performance. Includes specifications, functions, and optional accessories.</p>
	<p>Mitutoyo Digimatic and Dial Indicators Catalog</p> <p>Explore the comprehensive range of Mitutoyo Digimatic Indicators, Dial Indicators, and Dial Test Indicators. This catalog details product specifications, features, and applications for precision measurement tools.</p>
	<p>Mitutoyo Dial Caliper User's Manual</p> <p>Comprehensive user's manual for Mitutoyo Dial Calipers, covering safety precautions, component identification, product applications, usage instructions, measurement methods, reading techniques, zero point adjustment, and permissible error specifications. Features model numbers from the 505 series.</p>
	<p>Mitutoyo AOS Absolute Digimatic Caliper CD-AX/APX Series - Precision Measurement Tools</p> <p>Discover the Mitutoyo AOS Absolute Digimatic Caliper CD-AX/APX Series, featuring advanced electromagnetic induction sensors, AOS (Advanced Onsite Sensor) technology for coolant-proof performance, and ergonomic design for accurate and reliable measurements.</p>

	<p>Mitutoyo Catalog US-1005: Precision Measuring Instruments and Metrology Solutions</p> <p>Explore the comprehensive Mitutoyo Catalog US-1005, featuring a wide range of precision measuring instruments, micrometers, calipers, vision systems, and data management solutions. Discover Mitutoyo's global network, technical support, and calibration services.</p>
	<p>Mitutoyo AOS Absolute Digimatic Caliper CD-AX/APX Series: Precision Measuring Tool</p> <p>Discover the Mitutoyo AOS Absolute Digimatic Caliper CD-AX/APX Series, engineered with advanced AOS (Advanced Onsite Sensor) and electromagnetic induction absolute encoder technology for superior accuracy, durability, and coolant resistance. This brochure details key features, specifications, and the technological evolution of Mitutoyo's precision measuring instruments.</p>

Documents - Mitutoyo – 209-843



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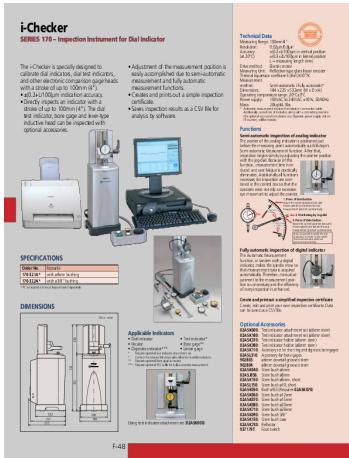
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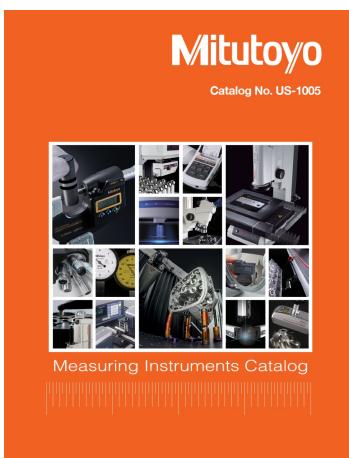


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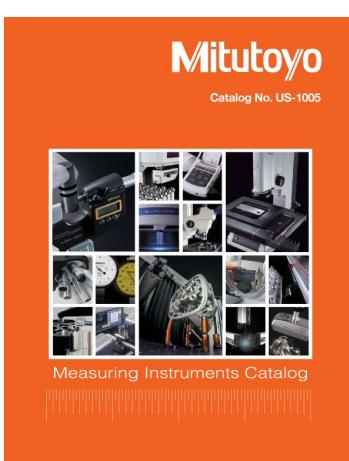
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[Mitutoyo Digimatic & Dial Indicators: Precision Measuring Tools](#)

Explore Mitutoyo's comprehensive range of Digimatic and Dial Indicators, including the ID-S, ID-U, ID-C, ID-H, and ID-F series. This catalog details features, technical specifications, and applications for precision measurement tools like solar-powered, calculation-type, and bore gage indicators, ensuring accuracy and reliability for various industrial and workshop needs.

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[Mitutoyo Measuring Instruments Catalogue 2017-2019](#)

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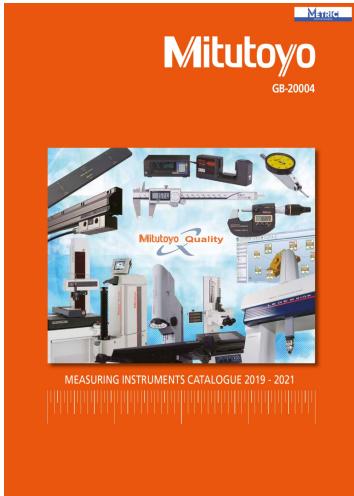


MEASURING INSTRUMENTS CATALOGUE

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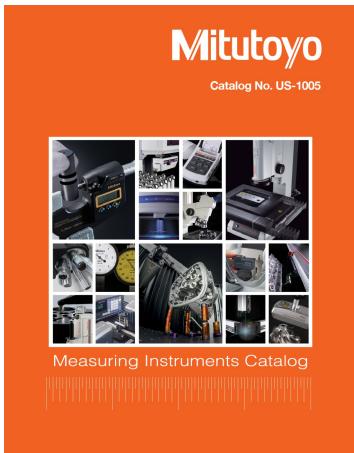


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