

## Mitutoyo 526-119

# Mitutoyo 526-119 Dial Bore Gauge Instruction Manual

For Extra Small Holes, 0.3-0.4" Range

## 1. INTRODUCTION

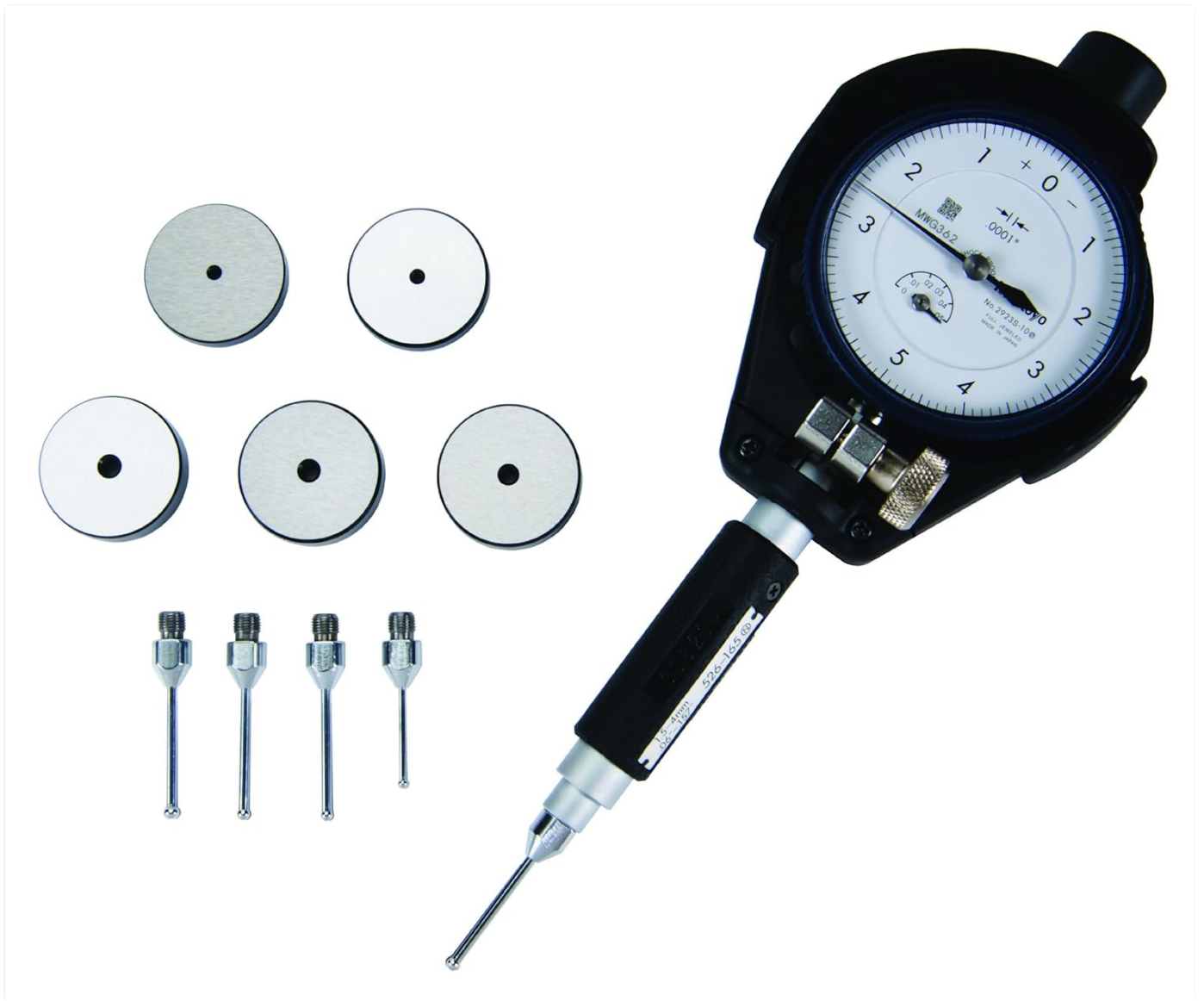
This manual provides detailed instructions for the proper use and maintenance of the Mitutoyo 526-119 Dial Bore Gauge. This precision instrument is designed for accurately measuring the inside diameter of extra small holes and identifying out-of-roundness issues. Adhering to these instructions will ensure optimal performance and longevity of your gauge.

The Mitutoyo 526-119 features a measurement range of 0.3 to 0.4 inches, with a graduation of 0.0005 inches and an accuracy of  $\pm 0.00016$  inches. Its split ball design and stainless steel contact points are engineered for high wear resistance and reliable measurements.

## 2. PRODUCT COMPONENTS

The Mitutoyo 526-119 Dial Bore Gauge package typically includes the following components:

- Mitutoyo Bore Gauge 526-119
- Dial Indicator 2923SB-10
- Six (6) Anvils
- 2.2" Needle



**Figure 1:** Mitutoyo 526-119 Dial Bore Gauge with its various components, including the main gauge body, dial indicator, and a set of anvils and needles. This image shows the gauge disassembled into its primary parts.



**Figure 2:** The Mitutoyo 526-119 Dial Bore Gauge kit, neatly organized within its protective orange carrying case. All components, including the gauge, dial indicator, anvils, and needle, are securely stored in custom-fit foam inserts.

### 3. SETUP AND CALIBRATION

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Proper setup and calibration are crucial for accurate measurements. Always ensure the gauge is clean and free from debris before use.

1. **Assemble the Gauge:** Attach the appropriate anvil and needle to the bore gauge body. Ensure they are securely fastened.
2. **Mount the Dial Indicator:** Carefully mount the dial indicator (2923SB-10) onto the bore gauge body. Ensure the stem of the indicator engages correctly with the gauge's internal mechanism.
3. **Select Setting Ring:** Bore gauges are typically calibrated using a setting ring. Select a setting ring that corresponds to the nominal diameter of the hole you intend to measure.
4. **Calibrate:** Insert the assembled bore gauge into the setting ring. Gently oscillate the gauge to find the minimum reading. Adjust the dial indicator's bezel to set the reading to zero at this minimum point. This establishes the reference for your measurements.
5. **Verify Calibration:** Remove the gauge from the setting ring and re-insert it to confirm that it returns to zero. Repeat calibration if necessary.

### 4. OPERATING INSTRUCTIONS

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Follow these steps for accurate measurement of bore diameters:

1. **Prepare the Workpiece:** Ensure the hole to be measured is clean and free from burrs or obstructions.

2. **Insert the Gauge:** Carefully insert the calibrated bore gauge into the hole. The split ball design will expand to contact the bore walls.
3. **Find Minimum Reading:** Gently rock or oscillate the gauge within the bore to find the point of minimum deflection on the dial indicator. This minimum reading represents the true diameter of the bore at that specific depth.
4. **Read the Measurement:** Note the reading on the dial indicator. If the gauge was zeroed to a setting ring, the reading indicates the deviation from the setting ring's diameter.
5. **Check for Out-of-Roundness:** To detect out-of-roundness, take multiple measurements at different angular positions within the same cross-section of the bore. Significant variations indicate an out-of-round condition.
6. **Measure at Different Depths:** For a complete profile, take measurements at various depths along the bore.

The gauge uses a two-point contact system, which is effective for measuring ovality. For more complex form errors like lobing, a three-point contact gauge would typically be used, though this model is optimized for two-point contact measurements.

## 5. MAINTENANCE

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Proper maintenance ensures the accuracy and longevity of your Mitutoyo bore gauge.

- **Cleaning:** After each use, wipe the gauge body, anvils, and contact points with a clean, lint-free cloth. If necessary, use a mild, non-corrosive cleaning solution and ensure all parts are thoroughly dried.
- **Lubrication:** Apply a thin film of light machine oil to moving parts periodically, as recommended by Mitutoyo, to prevent corrosion and ensure smooth operation. Avoid over-lubrication.
- **Storage:** Store the gauge in its original protective case when not in use. Keep it in a dry environment, away from direct sunlight, extreme temperatures, and corrosive substances.
- **Handling:** Handle the gauge with care. Avoid dropping it or subjecting it to impact, as this can affect its calibration and accuracy.
- **Inspection:** Regularly inspect the contact points and anvils for wear or damage. Replace worn components to maintain measurement accuracy.

## 6. TROUBLESHOOTING

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If you encounter issues with your bore gauge, consider the following:

- **Inaccurate Readings:**
  - Ensure the gauge is properly calibrated with a suitable setting ring.
  - Check for dirt or debris on the contact points or within the bore being measured.
  - Verify that the anvils and needle are securely attached and not worn.
  - Confirm the dial indicator is functioning smoothly and its stem is not binding.
- **Gauge Not Moving Smoothly:**
  - Clean the internal mechanisms and apply a small amount of appropriate lubricant.
  - Check for any physical damage or bending of the stem or anvils.
- **Difficulty Zeroing:**
  - Re-check the calibration procedure with the setting ring.
  - Ensure the dial indicator is correctly seated and its bezel can rotate freely.

If problems persist, contact Mitutoyo customer support or an authorized service center for assistance.

## 7. SPECIFICATIONS

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Feature	Specification
Model Number	526-119
Measurement Range	0.3 to 0.4 inches
Accuracy	+/-0.00016 inches
Graduation	0.0005 inches
Contact Points	Stainless Steel
Gauge Stem Diameter	0.375 inches
Probe Depth	2.2 inches
Design	Split Ball for ID measurements and out-of-roundness detection

## 8. WARRANTY AND SUPPORT

Mitutoyo products are manufactured to high standards of quality and precision. For specific warranty information, please refer to the documentation included with your purchase or visit the official Mitutoyo website. For technical support, service, or replacement parts, please contact Mitutoyo customer service or an authorized dealer. You can find more information and contact details on the [Mitutoyo Brand Store](#).

