Proper Measurement Techniques for Miniature & Instrument Ball Bearings

For the most accurate measurements, miniature and instrument ball bearing dimensions should be measured using a calibrated air gauge. A reliable alternative is a calibrate optical comparator.

In some cases, it may be necessary to use a calibrated, hand-held micrometer to verify measurements or perform quick checks in the field.

While CW Bearing strongly recommends the use of an air gauge or an optical comparator for precise measurements, we acknowledge that a hand-held micrometer can be useful in certain situations.

Proper Micrometer Usage for Miniature and Instrument Ball Bearings

Using a micrometer on delicate components — such as miniature and instrument ball bearings — requires special care. Unlike solid objects, miniature and instrument ball bearing rings are typically thin and flexible. Improper micrometer usage may cause ring deformation, leading to inaccurate readings.

To measure a miniature or instrument ball bearing ring without damaging or distorting it, it is advisable to use the micrometer as a GO/NO-GO gauge.

Checking Minimum Tolerance Using a Micrometer as a GO/NO-GO Gauge:

1. Adjust the micrometer until it reaches the minimum tolerance for the dimension being measured.
    - Do not adjust the micrometer while the bearing is positioned between the anvil and spindle.
    - Avoid squeezing the bearing between the anvil and spindle head, as this may deform the ring.
2. Lock the micrometer in place.
3. Using proper bearing handling techniques, insert the bearing between the anvil and spindle.
4. Do not force the bearing into the micrometer.
5. If the bearing does not fit easily into the micrometer, it exceeds the minimum tolerance for the dimension.

6. If the bearing fits easily into the micrometer at the preselected minimum tolerance setting, it is below the minimum tolerance for the dimension.
7. Remove the bearing from the micrometer and store it using proper handling techniques.

Checking Maximum Tolerance Using a Micrometer as a GO/NO-GO Gauge:

1. Adjust the micrometer until it reads the maximum tolerance for the dimension being measured.
    - Do not adjust the micrometer while the bearing is positioned between the anvil and spindle.
    - Avoid squeezing the bearing between the anvil and spindle head, as this may distort the ring.
2. Lock the micrometer in place.
3. Using proper bearing handling techniques, insert the bearing between the anvil and spindle.
4. Do not force the bearing into the micrometer.
5. If the bearing does not fit easily into the micrometer, it is larger than the maximum tolerance for the dimension.
6. If the bearing fits easily into the micrometer at the preselected maximum tolerance setting, the ring is within the maximum tolerance for the dimension.
7. Remove the bearing from the micrometer and store it using proper handling techniques.

For more bearing measurement best practices and technical resources, visit CW Bearing's website.

Your Requirements Are Our Standard CW Bearing collaborates with customers to deliver precision, reliability, and innovation. Whether standard or custom-engineered, we are your trusted partner.

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