

How To Use a Hand-Held Micrometer to Measure Miniature and Instrument Ball Bearings

Pacamor Kubar Bearings

For the most accurate measurements, miniature and instrument ball bearing dimensions should be measured with a calibrated air gauge. A good second option is a calibrated optical comparator. On occasion, it may be necessary to use a calibrated, hand-held micrometer to double-check a measurement or for simple verification while working in the field.

While PKB strongly recommends the use of an air gauge or an optical comparator, we also understand the usefulness of a hand-held micrometer in certain situations.

Using a micrometer on delicate objects—like miniature and instrument ball bearings—is very different from using a micrometer on solid objects.

The reason for this is miniature and instrument ball bearing rings are usually quite thin and flexible. Improper micrometer use may cause ring deformation and inaccurate micrometer readings.

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

How to check minimum tolerance of the dimension by using micrometer as go/no-go gage:

1. Twist the ratchet just until the micrometer gauge reads the minimum tolerance for the dimension to be measured.
 - a. Do not adjust the micrometer while the bearing is in between the anvil and spindle.

- b. Do not squeeze the bearing in between the anvil and spindle head, as that may distort the ring.
2. Lock the micrometer.
3. Using proper bearing handling practices, place the bearing between the anvil and spindle of the micrometer.
4. Do not force the bearing into the micrometer.
5. If the bearing does not fit easily into the micrometer, then the bearing exceeds the minimum tolerance for the dimension.
6. If the bearing fits easily into the micrometer, at the preselected minimum tolerance setting, then the bearing is under / less than the minimum tolerance for the dimension.
7. Remove the bearing from the micrometer and set it aside using proper handling techniques.

How to check maximum tolerance of dimension by using micrometer as go/no-go gage:

1. Twist the ratchet just until the micrometer gauge reads the maximum tolerance for the dimension to be measured.
 - a. Do not adjust the micrometer while the bearing is in between the anvil and spindle.

- b. Do not squeeze the bearing in between the anvil and spindle head as that may distort the ring.
2. Lock the micrometer.
3. Using proper bearing handling practices, place the bearing between the anvil and spindle of the micrometer.
4. Do not force the bearing into the micrometer.
5. If the bearing does not fit easily into the micrometer, then the bearing is larger than the maximum tolerance for the dimension.
6. If the bearing fits easily into the micrometer, at the preselected maximum tolerance setting, then the ring is within the maximum tolerance for the dimension.
7. Remove the bearing from the micrometer and set it aside using proper handling techniques.

Find this and other valuable bearing tutorials on our website (www.pacamor.com) Home Page under “New PKB Blogs.” **PTE**

For more information:

Pacamor Kubar Bearings (PKB)
145 Jordan Road
Troy, New York 12180
Phone: (518) 283-8002
www.pacamor.com



Photo courtesy Mitutoyo