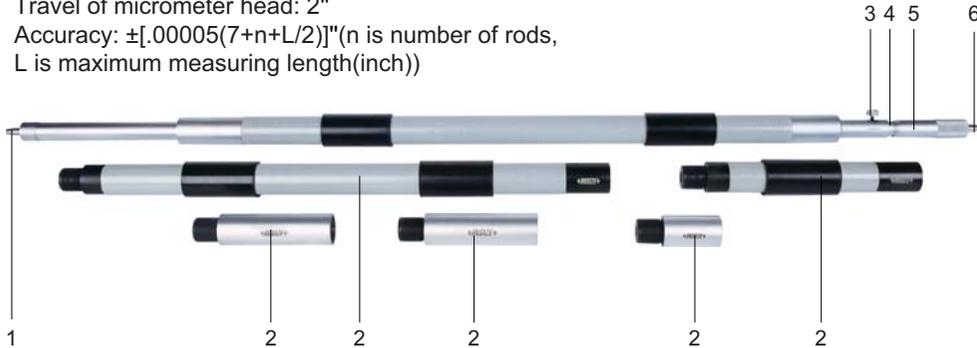




OPERATION INSTRUCTION

Tubular Inside Micrometer

Graduation: 0.01mm
 Travel of micrometer head: 50mm
 Accuracy: $(7+n+L/50)\mu\text{m}$ (n is number of rods, L is maximum measuring length(mm))
 Graduation: .001"
 Travel of micrometer head: 2"
 Accuracy: $\pm[.00005(7+n+L/2)]''$ (n is number of rods, L is maximum measuring length(inch))



- 1-Fixed measuring face
- 2-Extension rod
- 3-Locking screw
- 4-Sleeve
- 5-Friction thimble
- 6-Moving measuring face
- 7-Zero spanner
- 8-Spanner

- Micrometer is used to measure inside size.
- It is necessary to calibrate micrometer with cylindrical gage block or setting standard before measuring. Clean the measuring faces and internal blocks of gage block with soft cloth. Then use micrometer to measure gage block: rotate friction thimble to adjust the size to be less than gage block. Put fixed measuring face to contact gage block, rotate friction thimble slowly, meanwhile shake micrometer to find the minimum value when moving measuring face contacts gage block. If result is equal to the normal value of gage block, micrometer is ready to measure, otherwise, mark down the position of the zero scale points, take out micrometer, rotate friction thimble until zero scale points the mark as before. Tighten the locking screw, fasten the zero adjustment hole(Fig.1) with zero spanner, slightly rotate sleeve(Fig.2) until the zero scale on sleeve coincides with the scale on friction thimble. Loosen the locking screw, calibrate again to make sure the result is equal to the normal value of setting standard.

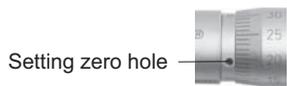


Fig.1



Fig.2

Caution: when there is deviation in the measurement, check whether the extension rod is worn. The ejector rod in the worn extension rod can be replaced with a wrench(Fig.3).



Fig.3

- According to the measured workpiece to select extension rod, the number of extension rod is less to reduce accumulated errors. The longest one connects to sleeve first, and decrease in length in turn, the shortest is the last one. Install extension rod, first take down fixed probe part, and extension rod connects to thimble(Fig.4).

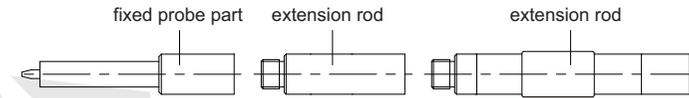


Fig.4

- During measurement, make sure there are no cutting chips or other debris on both measuring faces and workpiece surface which will affect the result. Rotate friction thimble to set its size less than the hole's diameter, and then put micrometer into the hole. Put fixed measuring face to contact the measured hole, rotate friction thimble slowly, shake micrometer gently along hole's axial and radial to find the minimum value in axial direction(Fig.5) and the maximum value in radial direction(Fig.6), tighten the locking screw, take out micrometer to get the result.

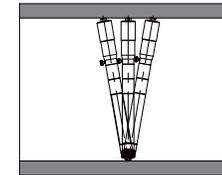


Fig.5

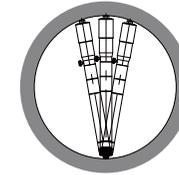
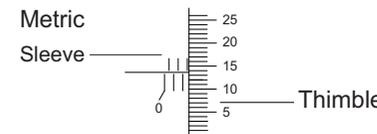


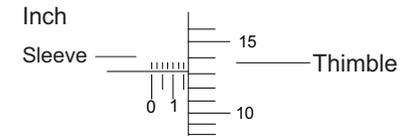
Fig.6

- During reading, the sight is perpendicular to the scale to avoid parallax reading. The reading is the sum of a initial reading, extension rod's range, sleeve, thimble. For example, the rod's range is 100mm in metric or 4" in inch, the reading method is following.



Metric
 Sleeve ——— 25
 20
 15
 10
 5 ——— Thimble
 0

Initial reading: 1000mm
 Extension rod: 100mm
 Sleeve reading: 2.5mm
 Thimble reading: 0.137mm(7 is estimated)
 Reading: 1102.637mm



Inch
 Sleeve ——— 15
 10
 5 ——— Thimble
 0

Initial reading: 40"
 Extension rod: 4"
 Sleeve reading: 0.15"
 Thimble reading: 0.0131"(1 is estimated)
 Reading: 44.1631"

- Take down extension rod, they should be oiled to prevent rust after measurement.

MN-3224-C/E