

Tubular Inside Micrometer

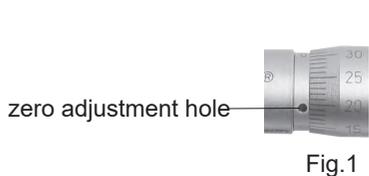
Graduation: 0.01mm

Accuracy: $(6+L/50)\mu\text{m}$ (L is maximum measuring length(mm))



- 1-Fixed measuring face
- 2-Extension rod
- 3-Slot
- 4-Extension rod mounting hole
- 5-Locking screw
- 6-Sleeve
- 7-Friction thimble
- 8-Moving measuring face
- 9-Handle
- 10-Extension sleeve
- 11-Spanner
- 12-Zero spanner

1. Micrometer is used to measure inside size.
2. Before measurement, calibrate the lower limit of the micrometer's measuring range with a ring gage (other calibration measuring tools such as micrometer can also be used for calibration when without ring gage).
 - a: Clean the measuring faces of micrometer and internal face of ring gage with soft cloth, adjust the size of the micrometer to be less than the ring gage, first make the fixed probe contact internal face of the ring gage, slowly rotate friction thimble, meanwhile shake micrometer to find the minimum value when moving measuring face contacts internal face of ring gage. If the micrometer reading is the same as the size of the ring gage, it indicates that the zero position is correct and can be measured.
 - b: If there is a deviation between the micrometer reading and the size of the ring gage, take out micrometer, fasten the zero adjustment hole(Fig.1) with zero spanner, slightly rotate sleeve(Fig.2) until the reading of the micrometer is the same as the size of ring gage. Calibrate again to make sure the result is equal to the size of ring gage.
 - c: The dimension of each extension rod shall be checked regularly. If there is any deviation, it can be adjusted with Spanner. Refer to Fig.3 for the adjustment method.



3. According to the measured workpiece to select extension rod (if necessary, the extension sleeve can be sleeved on the extension rod to increase the size of the extension rod), insert it into the mounting hole and clamp the slot with locking screw. 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.4) and the maximum value in radial direction(Fig.5), then take out micrometer to get the result.

For deeper holes, if want to judge whether there is geometric error, such as cylindricity, can connect the handle to the micrometer (Fig. 6), measure in several axial sections and several radial sections respectively, analyze and compare the measured data to judge whether there is geometric error in the measured hole.

When judging the deviation between an aperture and the standard aperture, first measure the standard aperture with a micrometer, and then compare the measured results with the measured aperture to judge the deviation between the measured aperture and the standard aperture.

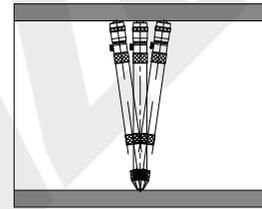


Fig.4

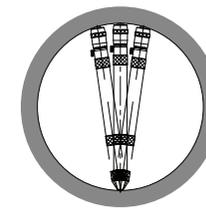
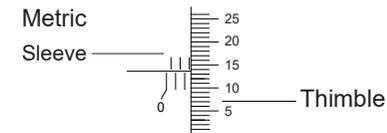


Fig.5



Fig.6

4. During reading, the sight is perpendicular to the scale to avoid parallax reading. The reading is the sum of extension rod's size, extension sleeve's size (if use), sleeve, thimble. For example, a 50-75mm extension rod is used to measure with a 13mm extension sleeve, the reading method is following.



Extension rod:	50mm
Extension sleeve:	13mm
Sleeve reading:	2.5mm
Thimble reading:	0.137mm(7 is estimated)
Reading:	65.637mm

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