

How to Use a Micrometer

The micrometer is an instrument for measuring very small distances, typically thousandths of an inch (0.001 in) or hundredths of a millimeter (0.01 mm). In visualizable terms, this is a precision of around 1% of the thickness of a dime. The tricky part is reading the scale, since it requires that you add together two numbers read from different parts of the instrument.

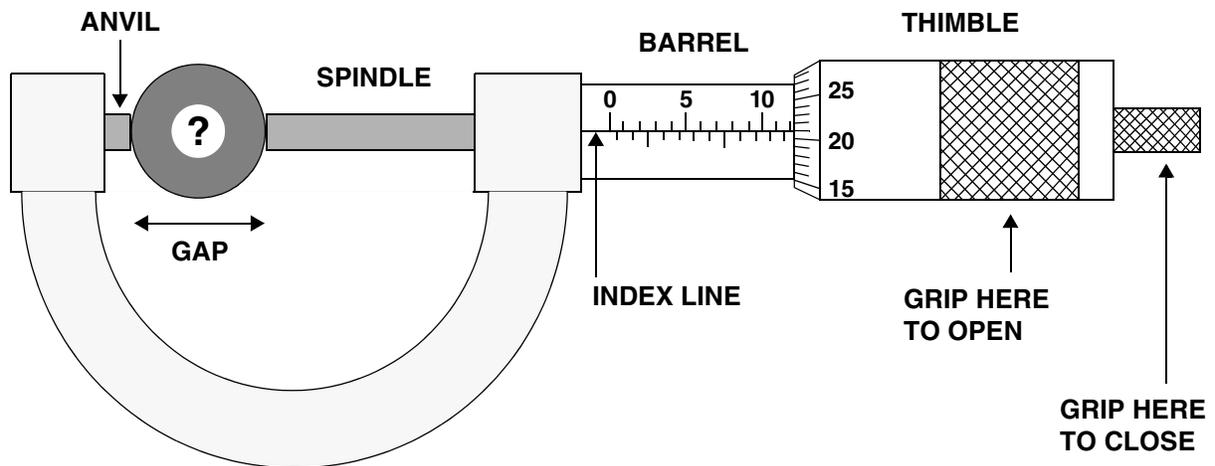
The example below is for the *metric* micrometers used in most labs. Once you learn how to use this one, you should have no trouble transferring that skill to its *imperial* counterpart.

To Measure an Object:

1. Verify that the micrometer is correctly zeroed.*
2. Open the gap to a size slightly wider than the object to be measured.
3. Place the object between the anvil and spindle.
4. Close the gap until the spindle meets the object and the clutch (in the grip) begins to slip.
5. Read the size of the object by adding the thimble quantity to the barrel quantity.

To Damage a Micrometer:

1. Drop it.
2. Use it like you would a clamp.
3. Continue tightening it on an object after the clutch begins to slip.
4. Store it with the gap closed all the way to zero.



To read the scale:

Simply add the quantity shown on the barrel scale to the quantity shown on the thimble scale.

The example at right shows 6.50 mm on the barrel and 0.03 mm on the thimble. Thus, $d = 6.53$ mm.

Note that the thimble will rotate twice as it moves from one mm mark to the next.

You can tell when you are on the second rotation in a given mm by checking whether the half-mm mark has been passed.

* A correctly zeroed micrometer will have the zero on the thimble scale exactly aligned with the index line when the gap is completely closed.

