GOODSON
Tools and Supplies for Engine Builders
156 Galewski Drive • Winona, MN 55987-0847
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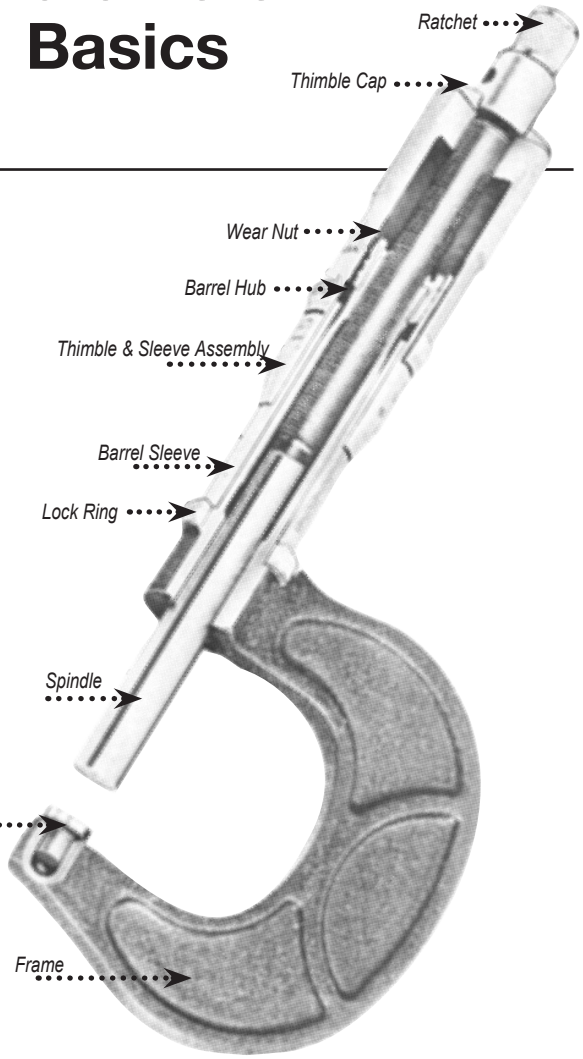
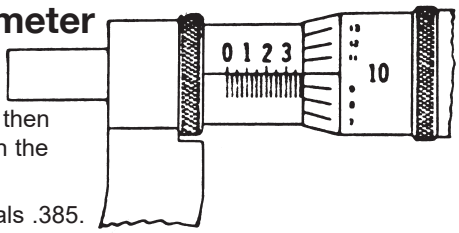
Micrometer Basics



Please read instructions before using

Reading a Micrometer

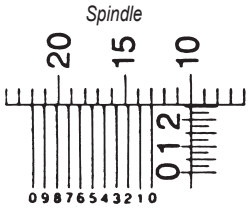


Your reading is taken by FIRST reading the barrel including the last visible line then adding the amount shown on the thimble.

EXAMPLE: .375 + .010 equals .385.

A micrometer is a measuring gauge operated by a screw with 40 threads per inch. Therefore, one complete revolution advances the thread exactly one fortieth of an inch. 1/40" equals 25 thousandths of an inch or .025". In other words, one line on the barrel equals .25". The beveled edge of the thimble is divided into 25 equal parts. Each line equals 1/25 of .025" or .001" (one thousandth of an inch). One complete revolution of the thimble, therefore equals .025" or one line on the barrel scale.

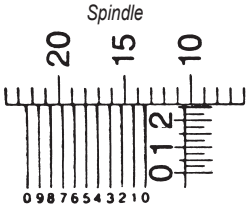
Readings in ten-thousandths of an inch can be obtained by using a vernier scale. The vernier scale, marked on the barrel, has ten divisions which equal nine divisions on the thimble. Since each graduation on the thimble equals 1/1000 of an inch, then each vernier division is 1/10,000 of an inch. Therefore, when the zero lines of the vernier exactly coincide with thimble lines (Figure 1), the number on the vernier lines is the difference between the vernier line and the next thimble line in ten-thousandths of an inch. Thus, when the fifth line on the vernier coincides with a thimble line, the thimble has moved 5/10,000 of an inch.



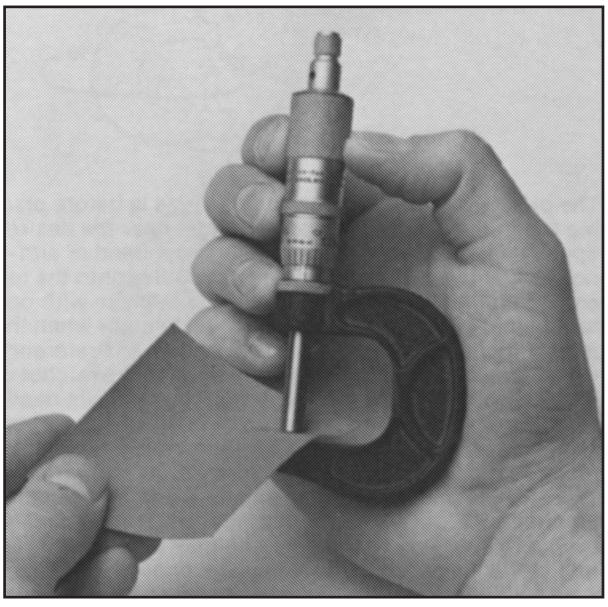
Vernier Scale Barrel
Figure 1

Example:

First determine the number of thousandths, as with an ordinary micrometer. Then find a line on the vernier that exactly coincides with a thimble line. By adding the vernier reading to the thousandths reading, the actual reading in ten-thousandths of an inch is obtained. The reading shown (Figure 2) is .260" plus .0005" or .2605".



Vernier Scale Barrel
Figure 2



Cleaning Contact Surfaces

A handy method to clean the contact surfaces is to close the micrometer lightly on a piece of soft paper. Gently withdraw the paper. It will probably leave fuzz or lint on the surfaces. Blow this out with lung power. Never use compressed air to clean any precision measuring instrument. The high velocity forces abrasive particles into the mechanism as well as away from it.

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Micrometer Basics

Adjusting the Micrometer

With our special form of adjustment, accurate and instantaneous in its action, the problem of adjusting the micrometer becomes a simple matter.

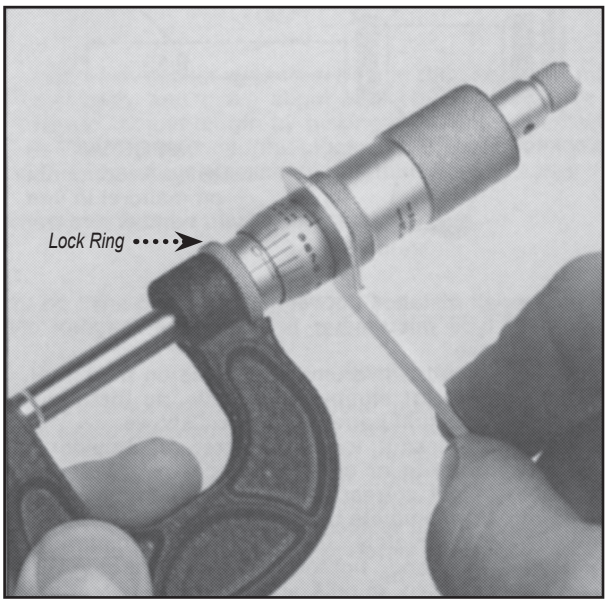
To effect adjustment for wear on measuring surfaces, first clean the spindle and anvil contact points, then close the micrometer to the proper feel (1¾ lbs. of torque pressure or 3 clicks of the ratchet). Secure the micrometer by turning the lock ring to lock the spindle firmly. Grasp the frame firmly with thumb and forefingers of left hand. With the measuring surfaces in contact, insert the spanner wrench in the hole drilled in the micrometer sleeve, holding the spanner between the ball of your thumb and forefinger on your right hand.

The sleeve can then be rotated the amount necessary to make the desired correction. The adjustment should be tested with the micrometer set at zero, taking precautions that there is NO OIL OR DUST ON ANVIL OR SPINDLE SURFACES.

NOTE:

Before leaving the factory, our micrometers are adjusted and vigorously inspected, comparison being made with the most accurate gauges available. This assures all requirements outlined in Federal Specifications are met or exceeded.

For greatest satisfaction, we recommend adjustments in tension and setting be made for wear only. The presence of foreign matter on the anvil or spindle not visible to the human eye may mislead you into thinking the micrometer is out of adjustment. Make sure all measuring surfaces are clean and that the standard of comparison is correct. Micrometer checking blocks and optical parallels are available for checking a micrometer for lead error and parallelism.

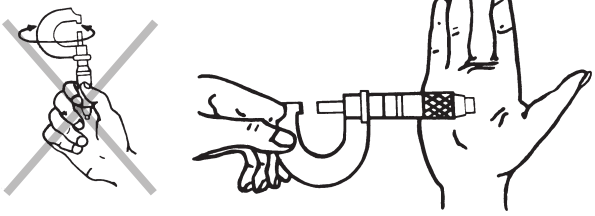


CAUTION: If the spindle is removed for cleaning, DO NOT touch the lock ring!

DO NOT use electrical marking pencil on measuring instruments.

Micrometer Care

The proper way to approach the part size is before placing the micrometer on the part, bring it to nearly the desired opening. Do this by rolling the thimble along your hand or arm; not by twirling. When placing the micrometer onto the reference plane of the part, hold it firmly with one hand. Use the feel of stability (no rock) to show the axis of the micrometer is perpendicular to the reference plane. Rapidly close the micrometer using the ratchet until the spindle is nearly on the measured plane of the part. This can usually be determined visually. If you hit the part before expected, back off slightly and then slowly and gently close the spindle until the ratchet stop disengages one click.



WRONG RIGHT

Note that the procedure requires two hands. If the micrometer is handled with only one hand, the ratchet stop cannot be reached, and reliability will suffer. It works out fine for any part that is large enough to support itself without moving around during measurement. It is awkward for small parts.

Some people purchase micrometers without ratchet stops; DON'T BE ONE OF THEM. The micrometer is a contact instrument. That means there must be positive contact between the part and the micrometer. The amount of contact is up to the user. When you are attempting to measure one-mil (0.001"), reliably — the same true reading time after time — almost imperceptible differences in gauging force can be very important. Because humans vary so widely, this can be a source of serious errors in measurement.