Directions for Adjusting

These calipers will read correctly if there is no dirt between the anvil and spindle.

When it becomes necessary to readjust the tool to compensate for the wear of screw and nut, this is done not by the anvil, but by means of our adjusting sleeve, as follows: Take up the wear of screw and nut, then remove all dirt from face of the anvil and spindle and bring them together carefully. Insert the small spanner wrench in the small hole and turn until the line on the sleeve coincides with the zero line on the thimble.

Metric Micrometer Reading

The same principle is involved in reading the Metric Micrometer, but the following changes in graduations should be noted to avoid confusion.

The pitch of the screw is ·5 mm.

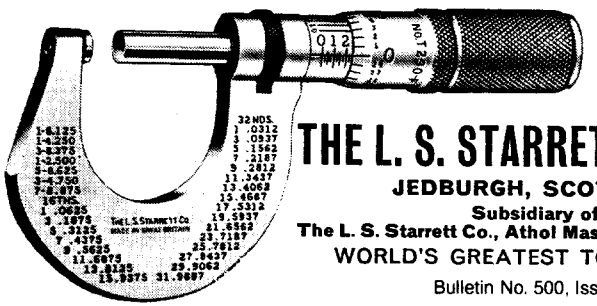
One revolution of the spindle advances it through a distance equal to ·5 mm.

The sleeve is graduated in mm., from 0 to 25, therefore it takes two revolutions of the spindle to advance it through a distance equal to 1 mm.

The thimble is graduated in 50 divisions, every fifth line being numbered, from 0 to 50.

Rotating the thimble from one graduation to the next, therefore, advances the spindle 1/50 of ·5 mm., or 1/100 mm.

How to read a Micrometer Caliper



THE L. S. STARRETT CO. Ltd.

JEDBURGH, SCOTLAND

Subsidiary of

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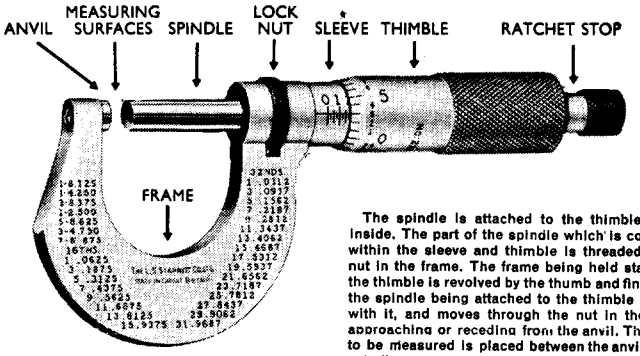
WORLD'S GREATEST TOOLMAKERS

Bulletin No. 500, Issue 2.

How to Read a Micrometer Caliper



The spindle is attached to the thimble on the inside. The part of the spindle which is concealed within the sleeve and thimble is threaded to fit a nut in the frame. The frame being held stationary, the thimble is revolved by the thumb and finger, and the spindle being attached to the thimble revolves with it, and moves through the nut in the frame, approaching or receding from the anvil. The article to be measured is placed between the anvil and the spindle.

The measurement of the opening between the anvil and the spindle is shown by the lines and figures on the sleeve and the thimble.

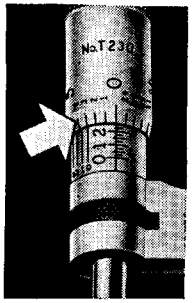
The pitch of the screw threads on the concealed part of the spindle is 40 to an inch. One complete revolution of the spindle therefore moves it longitudinally one fortieth (or twenty-five thousandths) of an inch. The sleeve is marked with 40 lines to the inch, corresponding to the number of threads on the spindle. When the caliper is closed, the bevelled edge of the thimble coincides with the line marked 0 on the sleeve, and the 0 line on the thimble agrees with the horizontal line on the sleeve. Open the caliper by revolving the thimble one full revolution, or until the 0 line on the thimble again coincides with the horizontal line on the sleeve; the distance between the anvil and the spindle is then 1/40 (or ·025) of an inch, and the bevelled edge of the thimble will coincide with the second vertical line on the sleeve. Each vertical line on the sleeve indicates a distance of 1/40 (or ·025) of an inch. Every fourth line equals ·100 and is numbered 0, 1, 2, 3, etc.

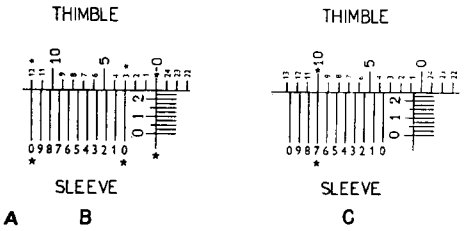
The bevelled edge of the thimble is marked in twenty-five divisions, and every line is numbered, from 0 to 25. Rotating the thimble from one of these marks to the next moves the spindle longitudinally 1/25 of twenty-five thousandths, or one thousandth of an inch. Rotating it two divisions indicates two thousandths, etc. Twenty-five divisions will indicate a complete revolution, ·025 or 1/40 or an inch.

To read the caliper, therefore, multiply the number of vertical divisions visible on the sleeve by 25 and add the number of divisions on the bevel of the thimble, from 0 to the line which coincides with the horizontal line on the sleeve. For example, as the tool is represented in the engraving, there are seven divisions visible on the sleeve. Multiply this number by 25, and add the number of divisions shown on the bevel of the thimble 3. The micrometer is open one hundred and seventy-eight thousandths. (7× 25=175+ 3=178)

2

How to Read a Ten-Thousandths Micrometer Caliper

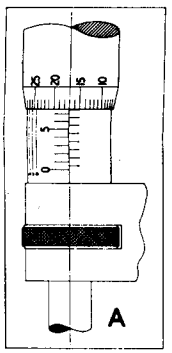




Readings in ten thousandths of an inch are obtained by the use of a Vernier, so named from Pierre Vernier, who invented the device in 1631. As applied to a caliper this consists of ten divisions on the adjustable sleeve, which occupy the same space as nine divisions on the thimble. The difference between the width of one of the ten spaces on the sleeve and one of the nine spaces on the thimble is therefore one-tenth of a space on the thimble. In engraving B the third line from 0 on thimble coincides with the first line on the sleeve. The next two lines on thimble and sleeve do not coincide by one-tenth of a space on thimble; the next two, marked 5 and 2, are two-tenths apart, and so on. In opening the tool, by turning the thimble to the left, each space on the thimble represents an opening of one-thousandth of an inch. If, therefore, the thimble be turned so that the lines marked 5 and 2 coincide, the caliper will be opened two-tenths of one-thousandth or two ten-thousandths. Turning the thimble further, until the line 10 coincides with the line 7 on the sleeve as in engraving C, the caliper has been opened seven ten-thousandths, and the reading of the tool is ·2507.

To read a ten-thousandths caliper, first note the thousandths as in the ordinary caliper, then observe the line on the sleeve which coincides with a line on the thimble. If it is the second line, marked 1, add one ten-thousandth; if the third marked 2, add two ten-thousandths, etc.

Starrett vernier metric micrometer caliper



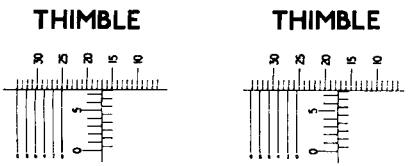


FIG A&B READING 7·67m.m.
FIG C READING 7·674m.m.

These are read in a similar manner to the English ten-thousandths micrometer except that the vernier scale has five divisions occupying the same space as nine divisions on the thimble. Therefore the difference between the width of one of these spaces on the vernier and two of the spaces on the thimble is a fifth of a hundredth of a millimetre or two thousandths millimetre. From the example shown it will be seen how an exact measurement to ·002 mm can be obtained.

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