

JIS

JAPANESE INDUSTRIAL STANDARD

Indicating Micrometers

JIS B 7520 –1981

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JAPANESE INDUSTRIAL STANDARD

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Indicating Micrometers

B 7520-1981
(Reaffirmed: 1986)1. Scope

This Japanese Industrial Standard specifies the indicating micrometers of the maximum measuring length 100 mm or under, which have micrometer part of 0.01 mm in scale interval and 25 mm in working range and indicator part of 0.002 mm in scale interval and ± 0.02 mm, in general, in indicating range, hereinafter referred to as the "micrometers".

Remark: In this standard, units and numerical values given in { } are in accordance with the gravitational unit, and are appended for reference.

2. Definitions

For the purposes of this standard the following definitions apply other than those in accordance with JIS Z 8103.

Applicable Standards:

JIS B 7430-Optical Flats
JIS B 7431-Optical Parallels
JIS B 7506-Gauge Blocks
JIS G 4051-Carbon Steels for Machine Structural Use
JIS G 4303-Stainless Steel Bars
JIS G 4404-Alloy Tool Steels
JIS G 5101-Carbon Steel Castings
JIS H 5501-Cemented Carbide Alloy of Tip
JIS Z 8103-Glossary of Terms Used in Instrumentation

Reference Standards:

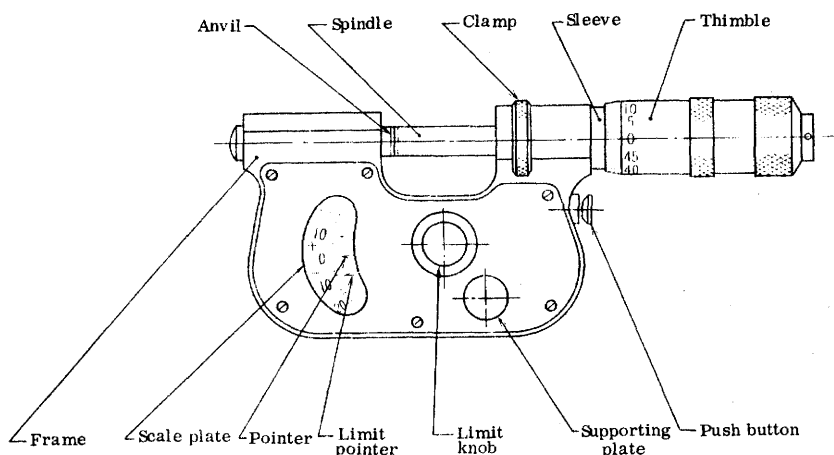
JIS B 7502-Micrometer Callipers for External Measurement
JIS B 7504-Micrometer Heads

- (1) indicating micrometer An external micrometer providing an anvil which is capable of moving slightly in the direction vertical to the measuring face, and including an indicator part which is capable of reading the amount of micro-travel of the anvil.
- (2) indicator part A part which is capable of reading the amount of micro-travel of the anvil with a pointer and scale, using a magnifying mechanism.
- (3) instrumental error A value subtracted by a true value to be indicated from a reading of the micrometer.
- (4) feed error of spindle In a working range of the spindle, taking the minimum measuring length as the fiducial point and the maximum measuring length as the terminal point, the difference between the maximum value and the minimum value of the differences between the micrometer readings and the true values.
- (5) overall errors In the measurements using a micrometer, an overall error including all of the errors which are derived from various factors.

3. Nomenclature for Principal Parts

The nomenclature for principal parts of the micrometer shall be in accordance with Fig. 1.

Fig. 1. Nomenclature for Principal Parts



Remark: This Figure shows nomenclature only, and does not designate the standard for shape and construction.

4. Measuring Range

The measuring ranges of the micrometers shall be classified as given in Table 1.

Table 1. Classification of
Measuring Ranges

Unit: mm	
Measuring range	0 to 25
	25 to 50
	50 to 75
	75 to 100

5. Performances

The performances of the micrometers shall be in accordance with the following:

- (1) The performances of the micrometers shall conform to Table 2.

Table 2. Performances

Flatness of meas- uring face No. of red inter- ference fringes streak	Parallelism of measuring face		Instru- mental error μm	Feed error of spin- dle μm	Disper- sion of indica- tions of indica- tor μm	Indica- tion error of indica- tor μm	Measuring force N {gf}	Disper- sion of measuring force N {gf}	Error due to clamping	
	When an optical parallel is used μm	When a block gauge is used μm							Parallel- ism of measuring face μm	Indica- tion of indicator μm
1	1 (3)	1.5	± 2	3	0.4	± 0.6	5 to 15 {510 to 1530}	2 {204}	0.3 (1)	0.5

- Remarks 1. Numerical values in this Table shall be those at 20°C.
2. The numerical value given in parentheses in the case of the parallelism means an approximate number of interference fringes equivalent to a numerical value indicating the parallelism of the measuring face, which has been measured from an angle not more than 30 degrees with respect to the axial line of the spindle.

- (2) Overall Errors of Micrometer The overall errors of the micrometer satisfying the permissible values of various performance items of Table 2 shall be not more than the values given in Table 3. However, these shall be confined in the case where a metal and an article of which material is the same in properties as the former has been measured under circumstances nearly same as the standard conditions.

Table 3. Overall Errors

Maximum measuring length mm	Overall errors μm
50 and under	± 3
Over 50 to 100 incl.	± 4

6. Scale Figures

Unless otherwise specified, scale figures on the sleeves and thimbles of the micrometers shall conform to Table 4.

Table 4. Classification of Scale Figures

No.	Item	Division		Inscribed scale figures
1	Scale figures on sleeve	Measuring range mm	0 to 25	0 5 10 15 20 25
			25 to 50	25 30 35 40 45 50
			50 to 75	50 55 60 65 70 75
			75 to 100	75 80 85 90 95 100
2	Scale figures on thimble	—		0 5 10 15 20 25 30 35 40 45

7. Shapes and Dimensions

Unless otherwise specified, shapes and dimensions of principal parts of the micrometers shall conform to Table 5.