

JIS

JAPANESE INDUSTRIAL STANDARD

Gear Tooth Vernier Callipers

JIS B 7531 —1982

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1. Scope

This Japanese Industrial Standard specifies the gear tooth vernier callipers giving the minimum reading value of 0.02 mm and having the maximum measuring lengths 30 mm and 60 mm of gear tooth thickness, hereinafter referred to as the "vernier callipers".

2. Definitions

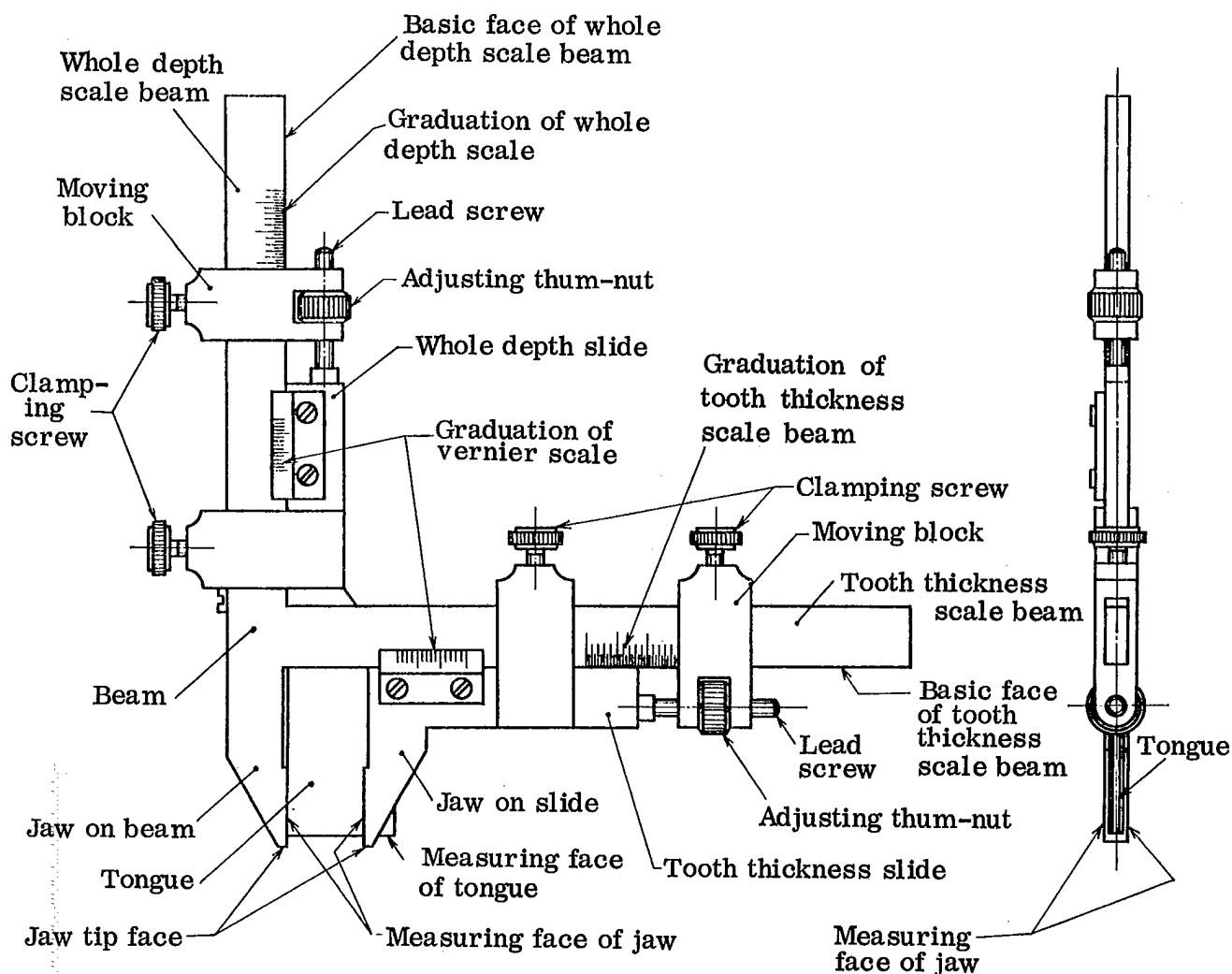
The terms used in this standard are as defined in JIS Z 8103 and, in addition, in the following:

- (1) gear tooth vernier calliper A vernier calliper composed of a tooth thickness scale beam and whole depth scale beam, which are at right angles to each other and solid in one body (see Fig. 1).
- (2) vernier A scale for reading the main scale to a fraction of a division, of which the graduation is obtained by dividing $(n-1)$ divisions of main scale into n divisions.
- (3) instrumental error The residual value of the reading obtained by tooth thickness scale or whole depth scale subtracted by the true value the scale should read.
- (4) resultant instrumental error An error resulting from the composition of the instrumental errors of tooth thickness scale and whole depth scale, and is the residual value of tooth thickness reading, when the vernier calliper is holding a cylinder of known diameter between jaws, with the whole depth scale adjusted to the theoretical value of whole depth, subtracted by the theoretical value of tooth thickness.
- (5) overall error In a measurement using a vernier calliper, the overall error involving all the errors resulting from various causes.

3. Names

The names of principal parts of the vernier calliper shall be as given in Fig. 1.

Fig. 1. Names of Principal Parts



Remark: This drawing is intended not to show the standards of shape and construction but to show the names only.

4. Nominal Size and Maximum Measuring Length

The nominal size and the maximum measuring length of vernier callipers shall, as a rule, as given in Table 1.

Table 1. Nominal Size and Maximum Measuring Length

Unit: mm

Nominal size	Max. measuring length		Reference
	Tooth thickness scale	Whole depth scale	Applicable module
30	30	20	1.25 to 19
60	60	40	2 to 38

5. Performance

5.1 Tolerance on Instrumental Error The tolerance on instrumental errors of tooth thickness scale and of whole depth scale of the vernier callipers and the tolerance on resultant errors of vernier callipers shall be as specified in Table 2.

Table 2. Tolerance on Instrumental Error

Unit: mm

Measuring length	Instrumental error of tooth thickness scale	Instrumental error of whole depth scale	Resultant instrumental error of vernier calliper
0	± 0.02	± 0.02	—
Over 0, up to and including 30			± 0.04
Over 30, up to and including 60			

Remark: The values given in this table are referred to 20°C temperature.