

JIS

JAPANESE INDUSTRIAL STANDARD

Dial Test Indicators (Lever Type)

JIS B 7533—1990

Translated and Published

by

Japanese Standards Association

In the event of any doubt arising,
the original Standard in Japanese is to be final authority.

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B 7533-1990

1. Scope

This Japanese Industrial Standard specifies lever type dial test indicators having a scale interval of 0.01 mm and measuring ranges of 0.5 mm, 0.8 mm, and 1 mm and those having a scale interval of 0.002 mm and measuring ranges of 0.2 mm and 0.28 mm (hereafter referred to as the "dial gauges").

Remark: The units and numerical values given in { } in this Standard are based on the traditional units and are appended for informative reference.

2. Definition

The definitions of the terms used in this standard shall be as shown below except as specified in JIS Z 8103.

- (1) lever type dial test indicator A measuring instrument in which the motion of a measuring probe forming part of the lever is transmitted mechanically to the terminal pointer as a revolving motion and this pointer indicates the quantity of movement of the measuring probe on a circular dial plate.
- (2) wide-range forward accuracy The difference between the maximum and minimum value of the ordinate on the error diagram (see Attached Fig. 1) covering the entire measuring range in the advancing direction when the measuring probe is operated.
- (3) neighboring error The largest value of the difference between the errors at two positions 0.1 mm apart in the case of 0.01 mm scale interval, or 0.02 mm apart in the case of 0.002 mm scale interval, in the entire measuring range in the advancing direction when the probe is operated (see Attached Fig. 1).

Applicable Standards:

JIS B 1501-Steel Balls for Ball Bearings

JIS B 7506-Gauge Blocks

JIS G 4404-Alloy Tool Steels

JIS H 5501-Cemented Carbide Alloy of Tip

JIS Z 8103-Glossary of Terms Used in Instrumentation

Reference Standards:

JIS B 7503-Dial Gauges Reading in 0.01 mm

JIS B 7509-Dial Gauges Reading in 0.001 mm

- (4) narrow-range neighboring error The largest value of the difference between the errors at two positions apart by one scale division in the error diagram for the first 10 scale divisions (narrow range) in the measuring range in the advancing direction when the measuring probe is operated (see Attached Fig. 2).
- (5) backward error The largest value of the difference between indicated values for the same measured quantity when the measuring probe is operated in the advancing and backward directions.
- (6) repeatability The largest difference in the indicated value when the same dimension is measured repeatedly in the following manners of operation at any position in the measuring range.
- The measuring probe is applied at various speeds to a plane as resistant to deformation as possible.
 - A parallel-surfaced flat plate contacted with the measuring probe is moved in any direction in a plane parallel to the center line of the measuring probe.

3. Classification and Symbols

Dial gauges shall be classified into the change lever type which changes the measuring direction by a change lever and the automatic change type which makes changes automatically according to the measuring direction, with their subtypes and symbols as shown in Table 1.

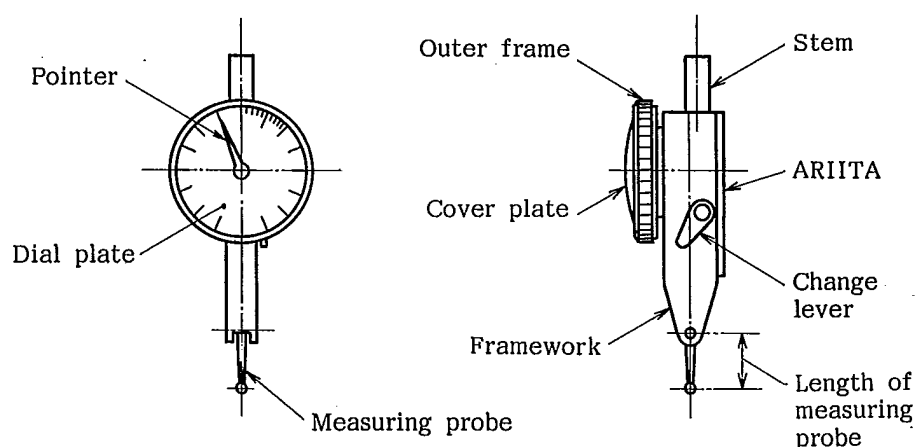
Table 1. Classification and Symbols

Classification		Symbol
Change lever type (M)	Longitudinal type (T)	MT
	Horizontal type (Y)	MY
	Vertical type (S)	MS
Automatic change type (A)	Longitudinal type (T)	AT
	Horizontal type (Y)	AY
	Vertical type (S)	AS

4. Part Names

The names of the main parts of dial gauges shall be as shown in Fig. 1.

Fig. 1. Names of Main Parts



Remark: This drawing shows the names of respective parts and is not intended for showing the standards of shape and construction.

5. Performance

5.1 Indication Accuracy The permissible deviations indicating the accuracy of indication of dial gauges shall be as shown in Table 2.

Table 2. Permissible Deviations for Accuracy of Indication

Unit: μm

Scale interval mm	Measuring range mm	Wide-range forward accuracy	Neighboring error	Narrow-range neighboring error ⁽¹⁾	Repeatability	Backward error
0.01	0.5	5	5	3	3	3
	0.8	8				
	1.0	10				4 ⁽²⁾
0.002	0.2	3	2	1	1	2
	0.28					

Notes ⁽¹⁾ To be applied only where specified by the customer.

⁽²⁾ To be applied to products with measuring probes exceeding 35 mm in length.

Remark: The values in this table shows the values at 20°C.

5.2 Measuring Force The maximum measuring force in the forward direction of dial gauges shall not exceed 0.5 N {50 gf}.

The difference between the maximum and minimum value of measuring force in the same direction shall not exceed 0.2 N {20 gf}.

Further, the measuring force shall desirably be as small as possible.