

JIS

JAPANESE INDUSTRIAL STANDARD

Cylinder Gauges

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Cylinder Gauges

B 7515-1982

1. Scope

This Japanese Industrial Standard specifies the cylinder gauges with measuring range of 18 mm up to and including 400 mm.

The interchangeable rods and collars to be used for the cylinder gauges shall comply with Appendix.

Remark: The units and numerical values in { } in this standard are in accordance with the gravitational system of units, and are appended for reference only.

Applicable Standards:

JIS B 1501-Steel Balls for Ball Bearings

JIS B 7509-Dial Gauges Reading in 0.001 mm

JIS G 4401-Carbon Tool Steels

JIS G 4404-Alloy Tool Steels

JIS Z 8103-Glossary of Terms Used in Instrumentation

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2. Definitions

The terms used in this standard are as defined in JIS Z 8103 as well as in the following:

- (1) cylinder gauge A bore measuring instrument which reads the displacement of plunger mechanically transmitted at a right angle, with a gauge, such as a dial gauge, mounted on itself by making comparison with the standard of length.
- (2) effective measuring range The operating range of plunger within which the performance of the cylinder gauge is warranted. In general, it is the range from the origin, that is the position where the plunger is pushed in by 0.1 mm, to the position where the plunger is pushed in further by 1.2 mm.
- (3) wide range accuracy The difference in ordinate between the highest and lowest points in the error diagram within the effective measuring range when the plunger is pushed in (see Attached Figure).
- (4) adjacent error The difference in error between two positions 0.1 mm distant from each other within the effective measuring range when the plunger is pushed in (see Attached Figure).
- (5) repeated accuracy The difference between the maximum and minimum values, when measurements are repeated in any position within the effective measuring range, while the gauge is swung in a plane including the axes of the plunger and the barrel, inside the ring gauge, with the plunger and the interchangeable rod kept in contact with the inside wall.
- (6) error due to guide plate The difference in indication between when the guide plate is placed in contact with the ring gauge and when not.
- (7) standard indicator The indicator that is to be used when the performance of cylinder gauge is examined.
- (8) instrumental error of standard indicator The remainder of the reading of the standard indicator subtracted by the true value that the indicator should indicate, with the position into which the long pointer has moved 0.1 mm off its settling point while the spindle of the standard indicator is pushed in being taken as the origin.

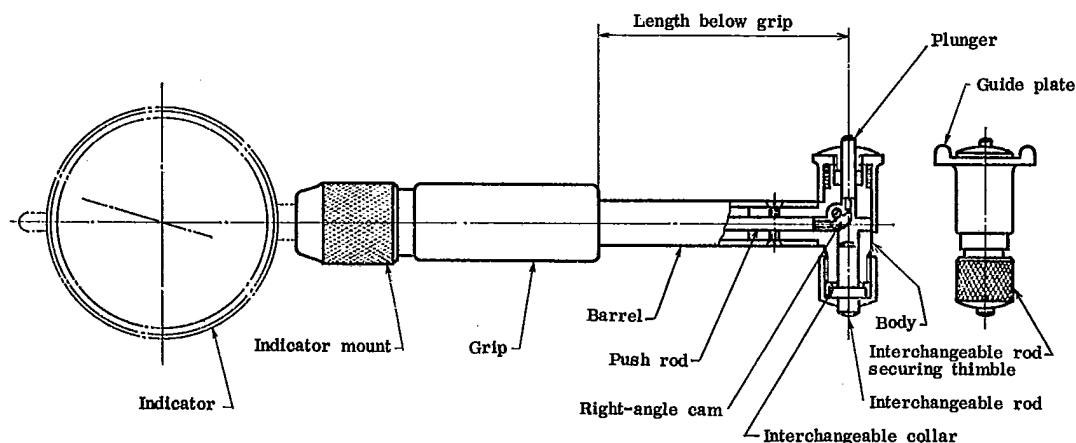
3. Grade

The cylinder gauges are classified into two grades, A and B, by the performance.

4. Names

The names of principal parts of the cylinder gauge are as given in Fig. 1.

Fig. 1. Names of Principal Parts



Remark: This drawing is intended not to show the standard of shape and dimensions but to give the names only.

5. Measuring Range

The measuring range and the length below grip of the cylinder gauge shall comply with Table 1, as a rule.

Table 1. Measuring Range

Unit: mm

Measuring range	Length below grip
18 to 35	50, 100, 150
35 to 60	
50 to 100	
100 to 160	150, 250, 400
160 to 250	
250 to 400	

6. Performance

The performance of the cylinder gauge shall comply with Table 2.

Table 2. Performance of Cylinder Gauge

Measuring range mm	Permissible value for wide range accuracy μm		Permissible value for adjacent error μm		Permissible value for repeated accuracy μm		Permissible value for error due to rotation of plunger (¹) μm		Permissible value for error due to guide plate μm		Measuring force N {gf}
	Grade A	Grade B	Grade A	Grade B	Grade A	Grade B	Grade A	Grade B	Grade A	Grade B	
18 to 35	5	10	2	4	2	3	2	4	1	2	4 max. {408}
35 to 60											
50 to 100											5 max. {510}
100 to 160											
160 to 250									2	3	6 max. {612}
250 to 400											

Note (¹) To be applied to the rotatable plunger.

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

