

JIS

JAPANESE INDUSTRIAL STANDARD

Gauges for Taper Pipe Threads

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1. Scope

This Japanese Industrial Standard specifies the taper thread gauge for pipe, hereinafter referred to as the "thread gauge", to be used for the dimensional inspection of the taper external thread for pipe (R), taper internal thread for pipe (Rc) and parallel internal thread for pipe (Rp), which are specified in JIS B 0203, hereinafter referred to as the "thread gauge", and the gauge to be used for the inspection, hereinafter referred to as the "inspection plug".

The general term for the thread gauge and inspection plug shall be called as "gauge". Furthermore, the gauge applying to the taper thread for pipe (PT) and parallel internal thread for pipe (PS), which are specified in JIS B 0203, shall be in accordance with Appendix.

Remark: Where the inspections of the major, and minor diameters of screw thread, flank, crest, form of root, out of roundness of pitch diameter, surface roughness and others are required, the measuring instruments excepting the gauges of this standard shall be used.

2. Class, Form, Dimensions, Permissible Deviation and Tolerance of Thread Gauge

The class of thread gauges shall be in accordance with Table 1 and those forms and dimensions shall be in accordance with Attached Table 1 and Attached Table 2, and those permissible deviations and tolerances shall be in accordance with Attached Table 4 and Attached Table 5.

Table 1. Classes of Screw Thread Gauges

Screw threads ridge to be inspected	Class of screw thread gauge	Applicable table
Taper external thread for pipe (R)	Taper thread ring gauge	Attached Table 1, Attached Table 4,
Taper internal thread for pipe (Rc)	Taper thread plug gauge	Attached Table 2, Attached Table 5
Taper parallel internal thread for pipe (Rp)		

3. Symbol, Form Dimensions Permissible Deviation and Tolerance of Inspection Plug

The symbol of the inspection plug for the taper thread ring gauge of the gauges shown in Table 1 shall be in accordance with Table 2. The form and dimensions shall be in accordance with Attached Table 3 and the permissible deviations and tolerance shall be in accordance with Attached Table 6.

Table 2. Symbol of Inspection Plug

Gauge to be inspection	Gauge to be used for the inspection	Symbol	Applicable Tables
Taper thread ring gauge	Inspection plug	CP	Attached Table 3, Attached Table 6

4. Material, Hardness and Surface Roughness

The material of gauge shall be SKS 3 specified in JIS G 4404 or equal or superior to this in quality. The hardness of the gauge part shall be not less than HV 660 (not less than HRC 58).

Furthermore, the surface roughness of gauge surface shall be 0.8 S as a rule.

5. Inspection Method of Gauge

The inspection method of gauge specified in this standard shall be in accordance with JIS B 0262.

6. Temperature Condition for Measurement

The numerical value of each dimension specified in this standard shall be at the temperature of 20°C.

7. Using Purpose and Using Method of the Screw Thread Gauge and Judgement of Acceptance or Rejection by the Screw Thread Gauge

The using purpose and using method of the gauge for screw thread, and the judgement of acceptance or rejection by the screw thread gauge shall be in accordance with the following:

- (1) Taper Thread Ring Gauge This is a gauge to test the interchangeability of screw thread synthetically in the range from the gauge diameter of taper external thread to the pipe end. The interchangeability is judged by the discrepancy in axial direction at the end of taper external thread pipe to the notch of gauge. The using method of this gauge is as follows: Screw the gauge in the external thread until it stops. If the end of taper external thread pipe is in the extent of the notch of gauge, regard that the taper external thread has passed the engagement inspection by the use of the taper thread ring gauge.
- (2) Taper Thread Plug Gauge This is a gauge to inspect the interchangeability of screw thread synthetically in the range of length equivalent to the reference length of taper external thread from the end of taper internal thread pipe or parallel internal thread pipe. The interchangeability is judged by the discrepancy in axial direction at the end of taper internal thread pipe or the end of parallel internal thread pipe. The using method of this gauge is as follows: Screw the gauge in the taper internal thread or the parallel internal thread until it stops. If the end of taper internal thread pipe or parallel internal thread pipe is in the range between the largest notch and the smallest notch of the gauge, regard that the taper internal thread or parallel internal thread has passed the engagement inspection by the use of the taper thread plug gauge.

- (3) Handling in Discordance of Judgement of Acceptance or Rejection by the Screw Thread Gauge from the Viewpoint of Dealings In judgement of acceptance or rejection by the use of screw thread gauge, where an discordance has occurred by the difference between the gauges to be used by the manufacturer side and the user side, if the gauge of the party, which has judged as acceptance, complies with the requirements of this specification (taking the allowable wear into consideration), that screw thread is handled as acceptance in the engagement inspection.

8. Using Purpose and Using Method of Inspection Plug and Judgement of Acceptance or Rejection by Inspection Plug

The using purpose and using method of inspection plug and the judgement of acceptance or rejection by inspection plug shall be carried out as follows:

- (1) In the Case of the Inspection of Newly Produced Taper Thread Ring Gauge
Use the inspection plug for the inspection of overall pitch diameter of the newly produced taper thread ring gauge and when screwing the inspection plug in the newly produced taper thread ring gauge firmly by hand, if the discrepancy between the end face of large diameter of the taper thread ring gauge and the end face of the notch of inspection plug is not larger than the numerical value of f shown in Attached Table 4, regard that the pitch diameter of that ring gauge has passed the inspection by the inspection plug.
- (2) In the Case of Inspecting the Wear Limit of the Taper Thread Ring Gauge
Use the inspection plug to confirm whether the pitch diameter of the taper thread ring gauge has exceeded the specified wear limit or not, and when screwing the inspection plug in the taper thread ring gauge firmly by hand, if the end face of notch of the inspection plug is screwed in less than the numerical value of w shown in Attached Table 4 to the end face of large diameter of the taper ring gauge, judge that the ring gauge has not exceeded the limit wear.

9. Designation

The designation of gauge shall be in accordance with the symbol⁽¹⁾ of gauge and the nominal designation of screw thread.

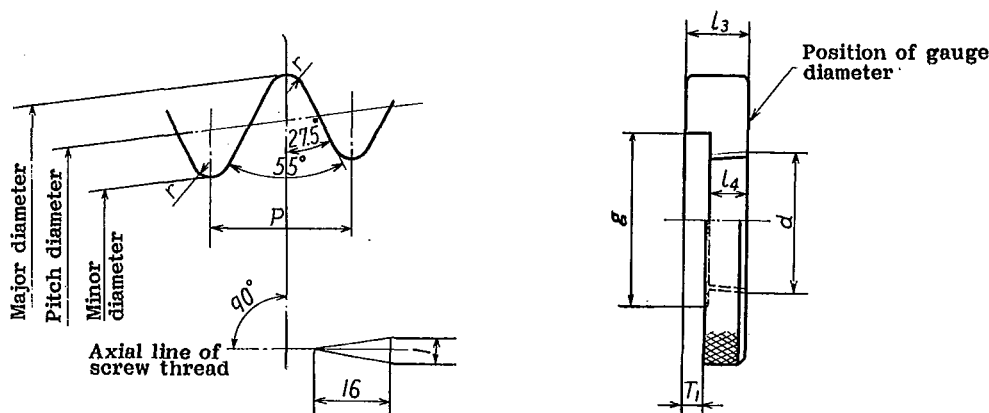
Note (1) The symbol of gauge applies to only the inspection plug.

Example: In the case of taper thread ring gauge	R 1 1/2
In the case of taper thread plug gauge	R _c 1 1/2,
In the case of inspection plug	R 1 1/2 CP

10. Marking

The gauge shall be marked at an appropriate part with the following information: designation of product, manufacturer's name or mark and manufacturing number. Provided that R may be taken as all of the symbols indicating the screw thread.

Attached Table 1. Form and Dimensions of Taper Thread Ring Gauge



Unit: mm

Nominal designation of screw thread to be inspected	Number of thread ridge (per 25.4 mm n)	Pitch P (Reference)	Roundness r	Dimensions ⁽²⁾ at the position of gauge diameter			Length of gauge l_3	Length of notch T_1	Thread length l_4	Diameter of recess of end face at the small diameter side g
				Major diameter d	Pitch diameter d_2	Minor diameter d_1				
R 1/16	28	0.907 1	0.125	7.723	7.142	6.561	4.876	1.814	2.948	9.5
R 1/8	28	0.907 1	0.125	9.728	9.147	8.566	4.876	1.814	2.948	11.5
R 1/4	19	1.336 8	0.184	13.157	12.301	11.445	7.353	2.674	4.345	15.5
R 3/8	19	1.336 8	0.184	16.662	15.806	14.950	7.687	2.674	4.345	19.0
R 1/2	14	1.814 3	0.249	20.955	19.793	18.631	9.979	3.628	5.896	23.5
R 3/4	14	1.814 3	0.249	26.441	25.279	24.117	11.339	3.628	5.896	29.0
R 1	11	2.309 1	0.317	33.249	31.770	30.291	12.700	4.618	7.504	36.0
R 1 1/4	11	2.309 1	0.317	41.910	40.431	38.952	15.009	4.618	7.504	44.5
R 1 1/2	11	2.309 1	0.317	47.803	46.324	44.845	15.009	4.618	7.504	50.5
R 2	11	2.309 1	0.317	59.614	58.135	56.656	18.184	4.618	8.659	62.0
R 2 1/2	11	2.309 1	0.317	75.184	73.705	72.226	20.926	6.927	10.390	77.5
R 3	11	2.309 1	0.317	87.884	86.405	84.926	24.101	6.927	10.390	90.5
R 4	11	2.309 1	0.317	113.030	111.551	110.072	28.864	6.927	11.545	115.5
R 5	11	2.309 1	0.317	138.430	136.951	135.472	32.039	6.927	12.700	141.0
R 6	11	2.309 1	0.317	163.830	162.351	160.872	32.039	6.927	12.700	166.5

Note (2) This dimension coincide with the numerical value of the gauge diameter of JIS B 0203.

Remarks 1. The root rounded part may have a properly recessed form not to contact with the crest radius of external thread to be inspected.

2. The incomplete thread ridge of both ends shall be removed by chamfering or within 1/4 revolution.