

JIS

JAPANESE INDUSTRIAL STANDARD

Taper Pins

Ⓔ **JIS B 1352**—1988

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



JAPANESE INDUSTRIAL STANDARD

J I S

Taper Pins

B 1352-1988

1. Scope

This Japanese Industrial Standard specifies steel taper pins and stainless steel taper pins with a taper of $\frac{1}{50}$ for general use, hereinafter referred to respectively as the "steel pins" and "stainless pins".

When steel pins and stainless pins are called collectively in this Standard, they shall simply be called as the pins.

Remarks 1. The body of this Standard is in accordance with ISO 2339-1986 except the parts enclosed in double rectangles.

2. The shape, dimensions, overall accuracy of taper and surface roughness of the pin shall be specified in Appendix in case where they are not in accordance with ISO 2339.

2. Classification

The pins shall be classified in two classes as given in Table 1 according to the surface roughness of the taper part.

Table 1

Classes	Surface roughness ⁽¹⁾ of the taper part	Remark
A class	$R_a=0.8\mu\text{m}$	Taper pins manufactured mainly by the grinding.
B class	$R_a=3.2\mu\text{m}$	Taper pins manufactured mainly by the turning.

Note ⁽¹⁾ R_a shall be in accordance with the average roughness of the centre line specified in JIS B 0601.

3. Hardness

The hardness of pin shall be in accordance with Table 2.

Table 2

Division		Hardness	
		Vickers hardness	Rockwell hardness
Steel pin	Steel pins not conducted by heat treatment	HV 125 to 245	HRB 70 to HRC 21
	Steel pins treated by quenching and tempering	HV 255 to 327	HRC 23 to 33
Stainless pin		HV 208 to 280	HRB 93 to HRC 27

4. Shape and Dimensions

The shape and dimensions of pin shall be in accordance with Attached Table.

5. Appearance

The pin shall comply with the requirements of Table 1 in surface roughness of the taper part and in addition to it, be free from defects such as quenching cracks, burrs and flaws detrimental in use, nicks, rusts or the like.

6. Heat Treatment and Materials

The heat treatment and materials of the pins shall be in accordance with Table 3 as a rule.

Table 3

Division	Heat treatment	Materials
Steel pin	Not conducted	SUM 22 to SUM 24 L of JIS G 4804 or SGD 41-D of JIS G 3123 or S 43 C (2) to S 45 C (2) of JIS G 4051
	Quenching-tempering (3)	S 43 C to S 50 C of JIS G 4051
Stainless pin	Not conducted	SUS 303 of JIS G 4303

Notes (2) This material shall be treated by the normalizing before the use of it.

(3) The quenching • tempering may be omitted where the thermally refined steel is used.

7. Surface Treatment

The surface treatment of pin is not conducted generally. Provided that the corrosion prevention oil shall be applied at the time of supply in case of the steel pin.

Furthermore, where the plating and other surface treatments are required, the orderer shall specify.

8. Inspection

8.1 Hardness Inspection The hardness inspection of pin shall be conducted in accordance with the test method specified in JIS Z 2244 or JIS Z 2245 and the hardness of end part or taper part shall comply with the requirements of 3.

Furthermore, the hardness of pin may be in accordance with any one of Vickers hardness or Rockwell hardness but where the measured value of hardness is doubtful, the hardness of pin shall be determined by the Vickers hardness.

8.2 Shape • Dimension Inspection The shape • dimension inspection of pin shall be conducted by the direct measurement, the limit gauge or other method and the results shall comply with the requirements of the specification of 4.

8.3 Appearance Inspection The appearance inspection of pin shall be conducted by visual observation and the results shall comply with the requirements of the specification of 5. Provided that the surface roughness of taper part shall be tested by the measuring method of the surface roughness specified in JIS B 1071 or an alternative method.

8.4 Delivery Inspection The sampling inspection plan for the lot at the time of delivery shall be subjected to the agreement between the purchaser and the manufacturer.

9. Designation of Products

The designation of pin shall be in accordance with number of standard or title of standard, Class ⁽⁴⁾, nominal diameter × nominal length, material ⁽⁵⁾ and specified matters ⁽⁶⁾.

Notes (4) Class A may be taken as A and Class B may be taken as B.

(5) The materials shall be in accordance with the material symbols specified in Japanese Industrial standard. Provided that the materials of the steel pin, which are free from heat treatment, may be marked with the symbol of St. Furthermore, the material of the steel pin treated by quenching and tempering shall be marked with symbol Q behind the symbol of that material. The case, where the thermally refined steel has been used, applies to this, as appropriate.

(6) The class of surface treatment, the symbol giving the allowable value of nominal diameter (d) and the like shall be shown as required.

Example:

JIS B 1352	A	6 × 30	S 45 C-Q	φ 6 f 8
<u>Taper pin</u>	<u>B class</u>	<u>6 × 30</u>	<u>St</u>	<u>Coat of phosphate</u>
(Number of standard or title of standard)	(Class)	(Nominal diameter × nominal length)	(Material Include the marking of quenching- tempering)	(Specified matters)

10. Marking on Package

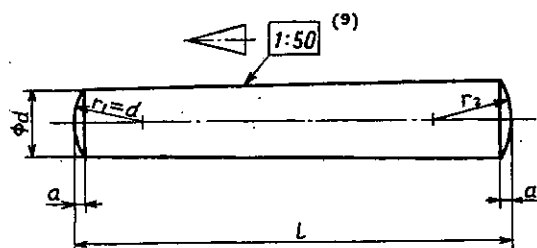
Each package of pin shall be marked with the following information:

- (1) Name
- (2) Class
- (3) Nominal diameter × nominal length
- (4) Materials ⁽⁷⁾
- (5) Quantity
- (6) Specified matters
- (7) Manufacturer's name or its abbreviation ⁽⁸⁾

Notes ⁽⁷⁾ The marking of materials shall be conducted like Note ⁽⁵⁾.
Provided that the material of steel pin treated with
quenching and tempering may be marked with (quenching)
in place of symbol Q [Example: S 45 C (quenching)].

- ⁽⁸⁾ A resistered trade mark shall be used for the abbreviation
as far as possible.

Attached Table. Shape • Dimension of Taper Pin



Note (9) 1:50 shows that the taper ratio of a basic cone is $\frac{1}{50}$.

Unit: mm

Nominal diameter		0.6	0.8	1	1.2	1.5	2	2.5	3	4	5	6	8	10	12	16	20	25	30	40	50
d	Basic size	0.6	0.8	1.0	1.2	1.5	2.0	2.5	3.0	4.0	5.0	6.0	8.0	10	12	16	20	25	30	40	50
	Tolerance (h10) ⁽¹⁰⁾	0				-0.040				0			-0.058		-0.070		-0.084		0		
a	Approx.	0.08	0.1	0.12	0.16	0.2	0.25	0.3	0.4	0.5	0.63	0.8	1	1.2	1.6	2	2.5	3	4	5	6.3
l																					
Nominal length	Minimum	Maximum																			
2	1.75	2.25																			
3	2.75	3.25																			
4	3.75	4.25																			
5	4.75	5.25																			
6	5.75	6.25																			
8	7.75	8.25																			
10	9.75	10.25																			
12	11.5	12.5																			
14	13.5	14.5																			
16	15.5	16.5																			
18	17.5	18.5																			
20	19.5	20.5																			
22	21.5	22.5																			
24	23.5	24.5																			
26	25.5	26.5																			
28	27.5	28.5																			
30	29.5	30.5																			
32	31.5	32.5																			
35	34.5	35.5																			
40	39.5	40.5																			
45	44.5	45.5																			
50	49.5	50.5																			
55	54.25	55.75																			
60	59.25	60.75																			
65	64.25	65.75																			
70	69.25	70.75																			
75	74.25	75.75																			
80	79.25	80.75																			
85	84.25	85.75																			
90	89.25	90.75																			
95	94.25	95.75																			
100	99.25	100.75																			
120	119.25	120.75																			
140	139.25	140.75																			
160	159.25	160.75																			
180	179.25	180.75																			
200	199.25	200.75																			

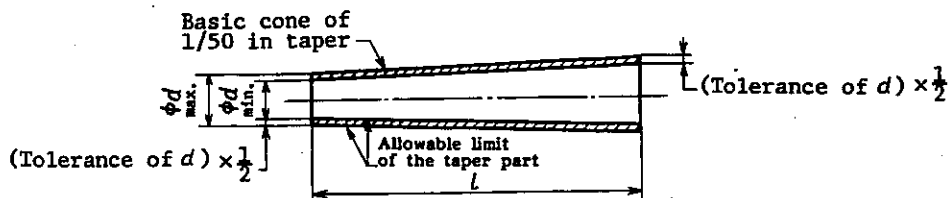
Note (10) The numerical value corresponding to h 10 shall be in accordance with JIS B 0401.

Remarks 1. The length (l) advisable for the nominal diameter of pin shall be within the frame of thick line. Provided that where l other than this Table is required, the orderer shall specify it.

Furthermore, the nominal length of over 200 mm are divided in 20 mm length.

2. Where the tolerance other than h 10 corresponding to the diameter (d) at the smaller end is required, the orderer specify it. Provided that the tolerance shall be in accordance with JIS B 0401.
3. The allowable limit of taper part shall be in accordance with two cones being correct geometrically, which are determined by the tolerance given to d , basic cone of 1/50 in taper and length (l) (see the lower Figure).

Figure (Case where the position of tolerance of d is h)



4. The tolerance of this Table shall be applied to the pin before conducting the surface treatment.

Appendix. Taper Pin Being not in Accordance with ISO 2339

1. Scope

This Japanese Industrial Standard specifies the steel taper pin and the stainless steel taper pin, which are not in accordance with ISO 2339 in shape, dimensions, overall accuracy of taper and surface roughness of taper pin among $\frac{1}{50}$ steel taper pin, hereinafter referred to as the "steel pin", and stainless steel taper pin, hereinafter referred to as the "stainless pin", which are used generally.

Furthermore, where the steel pin and the stainless pin are named generally in this Standard, they are called pin simply.

Remark: The pins specified in this Appendix conform to JIS B 1352-1975 and in order to secure the internationality, the shape, dimension of pin, overall accuracy of taper and the surface roughness of taper part should be in accordance with the specifications of the body.

Furthermore, this Appendix shall be abrogated in the future.

2. Tolerance Class

The tolerance class of pins shall be divided into class 1 and class 2 according to the tolerance of taper.

3. Hardness

The hardness of pins shall be in accordance with Table 2 of the body.

Furthermore, the hardness of Table 2 shall apply independently of the parts enclosed in double rectangles.

4. Shape, Dimensions and Overall Accuracy of Taper

The shape and dimensions of pin shall be in accordance with Appendix Attached Table. Provided that the overall accuracy of taper shall be in accordance with the following Appendix Table.

Appendix Table

Division of length (l) mm	Tolerance of taper	
	Class 1	Class 2
12 and under	$\pm \frac{7}{10\,000}$	$\pm \frac{14}{10\,000}$
Over 12 to 25 incl.	$\pm \frac{5}{10\,000}$	$\pm \frac{9}{10\,000}$
Over 25 to 50 incl.	$\pm \frac{3}{10\,000}$	$\pm \frac{6}{10\,000}$
Over 50	$\pm \frac{3}{10\,000}$	$\pm \frac{5}{10\,000}$

5. Appearance

Each pin shall be free from defects such as quenching cracks, burrs, flaws harmful to use, nicks, rusts and the like and the surface roughness of taper part of class 1 pin shall be 3.2 S of JIS B 0601 and that of taper part of class 2 pin shall be 6.3 S.

6. Heat Treatment and Materials

The heat treatment and material of pin shall be in accordance with Table 3 of the body as a rule.

Furthermore, the heat treatment and materials of Table 3 shall apply independently of the parts enclosed in double rectangles.

7. Surface Treatment

The surface treatment of pin shall be in accordance with 7. of the body.

8. Inspection

The inspection of pin shall be in accordance with the following: Provided that the sampling inspection plan at the time of lot inspection shall be subjected to the agreement between the purchaser and the manufacturer.

- (1) Hardness Test The hardness test shall be conducted by the method specified in 8.1 of the body and the hardness of the end part or the taper part of pin shall comply with the requirements of the specifications of 3.
- (2) Inspection of Shape • Dimensions and Taper The inspection of shape • dimensions and taper shall be conducted by the method specified in 8.2 of the body and the results shall comply with the requirements of the specifications of 4.
- (3) Visual Inspection The visual inspection shall be conducted by the method specified in 8.3 of the body and the results shall comply with the requirements of the specifications of 5.

9. Designation of Products

The designation of pins shall be in accordance with number of standard or title of standard, tolerance class, nominal diameter × nominal length and material ⁽¹⁾. Provided that matters to be mentioned specially shall be appended behind it.

Note ⁽¹⁾ The materials shall be in accordance with the material symbol specified in the Japanese Industrial Standard.

Furthermore, the material of steel pin treated with quenching • tempering shall be marked with symbol Q behind that symbol.

Where the thermal refining steel is used, its designation shall be in accordance with this, as appropriate.

Example:

JIS B 1352	Class 1	6 × 70	S 45 C-Q	Coat of phosphate
<u>Taper pin</u>	<u>Class 2</u>	<u>.6 × 70</u>	<u>SUS 303</u>	
(Number of standard or title of standard)	(Tolerance class)	(Nominal diameter × nominal length)	(Material Include the marking of quenching and tempering.)	(Specified matters)

10. Marking of Package

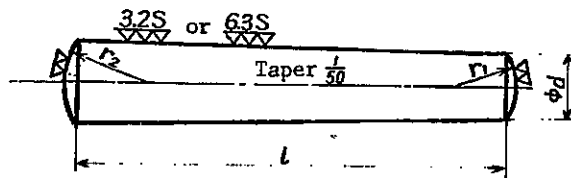
Each package of pins shall be marked with the following information.

- (1) Title of standard
- (2) Tolerance class
- (3) Nominal diameter × nominal length
- (4) Materials ⁽²⁾
- (5) Quantity-specified matters
- (6) Manufacturer's name or its abbreviation ⁽³⁾

Notes ⁽²⁾ The marking of materials shall be dealt with like Note ⁽¹⁾.
Provided that the material of steel pin heat-treated by
quenching . tempering may be taken as (quenching) in
place of the symbol Q. [Example: S 45 C (quenching)].

⁽³⁾ The trade mark shall be used for the abbreviation as far
as possible.

Appendix Attached Table. Shape • Dimension of Taper Pin



Unit: mm

Nominal diameter	0.6	0.8	1	1.2	1.6	2	2.5	3	4	5	6	8	10	13	16	20	25	30	40	50
Basic size	0.6	0.8	1	1.2	1.6	2	2.5	3	4	5	6	8	10	13	16	20	25	30	40	50
Tolerance	+0.018 0				+0.025 0					+0.030 0			+0.036 0		+0.043 0		+0.052 0		+0.062 0	
Nominal length (l) and its tolerance	4																			
	5																			
	6	±0.25																		
	8		±0.25																	
	10			±0.25																
	12				±0.25															
	14					±0.25														
	16						±0.25													
	18							±0.25												
	20								±0.25											
	22									±0.25										
	25										±0.25									
	28											±0.5								
	32												±0.5							
	36													±0.5						
	40														±0.5					
	45															±0.5				
	50																±0.5			
	56																	±1		
	63																		±1	
	70																			±1
	80																			
	90																			
	100																			
	110																			
	125																			
	140																			
	160																			
	180																			
	200																			
	225																			
	250																			
	280																			

- Remarks 1. The length (l) shall be within the frame of thick lines and the numerical values within the frame show the tolerance. Provided that where the l other than this Table is required especially, the order shall specify it.
2. The finish symbol in the Figure is in accordance with Appendix of JIS B 0031.
3. The roundness (r_1 and r_2) of the end part shall be made nearly equal to the diameters of both ends.
4. The tolerance of taper shall be in accordance with Appendix Table.
5. The tolerance of this Table shall apply to the pin before conduction of surface treatment.

Applicable Standards:

JIS B 0031-Method of Indicating Surface Texture on Drawings

JIS B 0401-System of Limits and Fits

JIS B 0601-Definitions and Designation of Surface Roughness

JIS B 1071-Method of Verification for Size and Geometry of Threaded Fasteners

JIS G 3123-Cold Finished Carbon and Alloy Steel Bars

JIS G 4051-Carbon Steels for Machine Structural Use

JIS G 4303-Stainless Steel Bars

JIS G 4804-Free Cutting Carbon Steels

JIS Z 2244-Method of Vickers Hardness Test

JIS Z 2245-Method of Rockwell and Rockwell Superficial Hardness Test

Corresponding International Standard:

ISO 2339-1986 Taper pins, unhardened

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