

JIS

JAPANESE INDUSTRIAL STANDARD

Test Bars

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by

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1. Scope

This Japanese Industrial Standard specifies the test bars used for the static precision tests which involve the examination of the parallelism, squareness, run-out of rotary shaft, etc. mainly of machine tools and measuring instruments, in particular, the cylindrical test bars with taper shank and test bars between centres.

Remark: The test bars with taper shanks and test bars between centres are generically termed test bars.

2. Types, Taper Numbers and Grades

The test bars are divided into test bars with taper shank and test bars between centre hole, and their types, taper numbers and grades are as given in Table 1.

Table 1

Division	Type	Taper No.	Grade
Test bar with taper shank	Test bar with Morse taper (MT)	0	—
		1	
		2	
		3	
		4	
		5	
		6	
	Test bar with metric 1/20 taper	80	—
		100	
	Test bar with 7/24 taper	30	—
		40	
		45	
		50	
Test bar between centre hole	Test bar between centres	—	Grade 1 ⁽¹⁾
			Grade 2

Note (1) Grade 1 test bars between centres applies to one having a diameter of 40 mm or under.

3. Quality

3.1 Test Bars with Taper Shank The quality of test bars with taper shank shall comply with Table 2. However, the effective measuring length and allowance therefore according to the taper numbers of taper shank shall comply with Table 3.

Table 2. Quality of Test Bars with Taper Shanks

No.	Item	Effective measuring length mm	Permissible value μm
1	Roundness	150 max.	0.8
		200 min.	1
2	Cylindricity	150 max.	2
		200 min.	3
3	Run-out ⁽²⁾	150 max.	2
		200 min.	3
4	Taper of taper shank	—	Conformity with the ring gauge ⁽³⁾ shall be not less than 75 %
5	Surface roughness	150 max.	1.6S
		200 min.	3.2S
6	Hardness	—	Not less than HV 660 or HRC 58

Notes ⁽²⁾ This run-out implies the run-out of taper shank from the cylindrical part.

⁽³⁾ The accuracy of the ring gauges for metric 1/20 taper and for 7/24 taper shall be not less than JIS B 3301.

Table 3. Effective Measuring Length and Allowance for Length According to Taper Number

Unit: mm

Type of taper shank	Taper No.	Effective measuring length	Allowance for length	
			Fixed end	Free end
Morse taper	0	75	20	5
	1			
	2	150	25	10
	3	200		
	4	300		
	5			
	6			
Metric 1/20 taper	80	300	25	10
	100			
7/24 taper	30	200	25	10
	40	300		
	45			
	50			

Remark: The allowance for length on the fixed end is defined as the dimension from the position of dimension D_1 of taper shank, and that at the free end is defined as the dimension excluding the undercut part (the part shown in dot-and-dash lines in Fig. 1).

3.2 Test Bars between Centres The quality of test bars between centres shall comply with Table 4.

Table 4. Quality of Test Bars between Centres

No.	Item	Length L	Permissible value μm	
			Grade 1	Grade 2
1	Roundness	250 max.	0.4	0.8
		(315)	—	1
		400		
		(500)		
		630		1.5
		(800)		
		1000		
		(1250)		1.8
		1600		
2	Cylindricity	250 max.	1	2
		(315)	—	3
		400		
		(500)		
		630		4
		(800)		
		1000		
		(1250)		5
		1600		
3	Run-out	250 max.	1	2
		(315)	—	4
		400		
		(500)		
		630		7
		(800)		
		1000		
		(1250)		10
		1600		
4	Surface roughness	250 max.	0.8 S	1.6 S
		(315) min.	—	3.2 S
5	Hardness	—	Not less than HV 660 or HRC 58	

- Remarks 1. The length L , given in parentheses should not be used as far as possible.
2. At both ends of cylindrical part, the dimensions below are considered as the allowance for measuring range.