

JIS

JAPANESE INDUSTRIAL STANDARD

High Speed Steel Tipped Tools

JIS B 4152—1988

Translated and Published

by

Japanese Standards Association

Printed in Japan

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

JAPANESE INDUSTRIAL STANDARD

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High Speed Steel Tipped Tools

B 4152-1988

1. Scope

This Japanese Industrial Standard specifies the high speed steel tipped tools to be used mainly for cutting of metal, hereinafter referred to as the "turning tools".

2. Definitions

For the purpose of this Standard, the definitions given in JIS B 0107 apply.

3. Types

The types of turning tools shall be classified into 24 types according to the machine tools in which these are used, the shapes of portions adjacent to the cutting parts and the functions or the applications, and the types and names of the product shall be in accordance with Table 1.

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Table 1. Types

Type	Name of product	Machine tool
Type 10	Point nose straight tool	Lathe
Type 13 R	Right-hand knife tool	
Type 13 L	Left-hand knife tool	
Type 14 R	Right-hand side straight tool	
Type 14 L	Left-hand side straight tool	
Type 15 R	Right-hand straight tool	
Type 15 L	Left-hand straight tool	
Type 22	Spring finishing tool	
Type 31	Cutoff tool	
Type 32	Spring cutoff tool	
Type 40	Round nose boring tool	
Type 41	Rough boring tool	
Type 42	Finish boring tool	
Type 51	External threading tool	
Type 52	Internal threading tool	
Type 53	Spring threading tool	
Type 60	Point nose straight tool for planing	Planing machine
Type 62 R	Right-hand knife tool for planing	
Type 62 L	Left-hand knife tool for planing	
Type 63 R	Right-hand straight tool for planing	
Type 63 L	Left-hand straight tool for planing	
Type 64	Square nose straight tool for planing	
Type 65	Spring finishing tool for planing	
Type 66	Cutoff tool for planing	

4. Shapes and Dimensions

The shapes and dimensions of the turning tools shall be in accordance with Attached Tables 1 to 19.

5. Qualities

5.1 Appearance The turning tools shall be, in appearance, free from such defects as macro-streak flaws, cracks and harmful burrs, flaws, rust, bends, distortions and ill joints, and be excellent in finish.

5.2 Surface Roughness The surface roughness of the cutting parts of the turning tools, when tested in accordance with 7.1, shall be 3.2 a (12.5 S) specified in JIS B 0601.

5.3 Hardness The hardness of the cutting parts of the turning tools, when tested in accordance with 7.2, shall conform to Table 2.

Table 2. Hardness of Cutting Parts

Material of tip	Hardness
SKH 57	HRC 65 or over
SKH 4	HRC 64 or over
SKH 51	HRC 63 or over

5.4 Cutting Ability The cutting ability of the turning tools, when tested in accordance with 7.4, shall be excellent in sharpness.

6. Materials

6.1 The materials for the tips of the turning tools shall be SKH 57, SKH 4 and SKH 51 specified in JIS G 4403 or those equal to or superior to these in cutting ability in use.

6.2 The material for the shank of the turning tools shall be S 55 C or that equal or superior in performance.

7. Testing Methods

7.1 Surface Roughness The surface roughness of the turning tool shall be visually measured in contrast to the roughness comparison specimens specified in JIS B 0659.

7.2 Hardness The hardness of the cutting part of the turning tool shall be measured at the tip end and centre of rake face, in accordance with the testing method specified in JIS Z 2245 using the tester specified in JIS B 7726. However, in case the measurement by the Rockwell hardness tester is not practical, measurement may be carried out in accordance with the testing method specified in JIS Z 2251, using the tester specified in JIS B 7734.

Further, in the case where the measurement by the tester is difficult, a comparison measurement by means of files may also be carried out.

7.3 Dimensions The dimensions of the turning tools shall be measured in accordance with Table 3.

Table 3

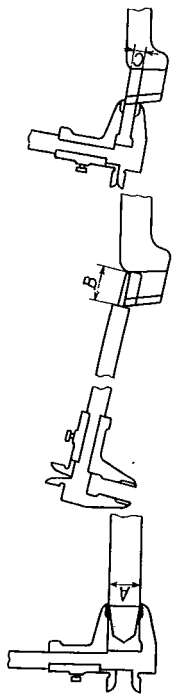
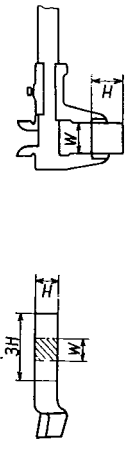
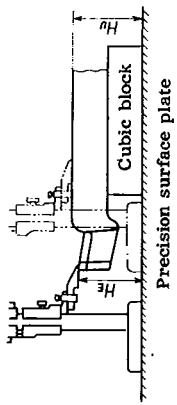
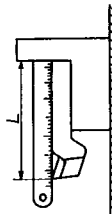
No.	Item	Measuring method	Rough sketch for measurement	Measuring instruments
1	Lengths A , B and C of sides of tip part	Measure the lengths A , B and C of sides of the tip with a metal ruler or vernier callipers.		Metal ruler specified in JIS B 7516 and vernier calliper specified in JIS B 7507
2	Height H and width W of shank	Measure height H and width W with vernier callipers at a position within 3 times height W from the end face of the shank.		Vernier calliper specified in JIS B 7507
3	Height of cutting edge	For turning use Put a tool on a cubic block sitting on a precision surface plate. Measure the height H_0 of the upper face of shank and that H_E of the cutting edge with a height gauge, and obtain the difference between these two heights. $H_0 - H_E \geq 0$		Cast iron precision surface plate grade 1 specified in JIS B 7513 Height gauge specified in JIS B 7517 Cubic block Tolerance value of parallelism of the cubic block shall be 0.01 mm per 25 mm.

Table 3 (Continued)

No.	Item	Measuring method	Rough sketch for measurement	Measuring instruments
3	(Continued)	For planing use Put a tool on a cubic block sitting on a precision surface plate. Measure the height H_B of the block and that H_E of the cutting edge with a height gauge, and obtain the difference between these two heights. $H_B - H_E \geq 0$		
4	Offset E	Put a tool with its main flank facing up on a cubic block sitting on a precision surface plate. Measure the height H_2 of the main cutting edge and that H_1 of side face of the tool, and obtain the difference between these two heights. $E = H_2 - H_1$		

Table 3 (Continued)

No.	Item	Measuring method	Rough sketch for measurement	Measuring instruments
5	Length L	Measure the longest portion L between the tip end and the end face of the shank in parallel with the axis of the tool with a metal ruler or vernier calliper.		Metal ruler specified in JIS B 7516 Vernier calliper specified in JIS B 7507

Remarks 1. The lengths A and B of sides of the tip part shall be measured in parallel with the rake face.
The length C shall be measured vertically to the rake face.

2. The methods and instruments for measurements are given for example.

7.4 Cutting Ability The cutting ability of the turning tool shall be examined in accordance with the testing method specified in JIS B 4012.

8. Inspection

Inspection shall be carried out on the shape and dimensions, appearance, surface roughness, hardness and cutting ability, and the results shall conform to the requirements of 4., 5.1 to 5.4 respectively.

9. Designation

The turning tool shall be designated by the Standard number or title of Standard, type, nominal designation and material symbol of tip.

Example: JIS B 4152 13 R 20 SKH 57

High speed steel tipped tool 13 R 20 SKH 57

10. Marking

10.1 Marking on Product The turning tool shall be marked with the following information, on the side face of the shank, written laterally. However, in the case where the marking on the product is difficult, it may be marked on the package.

- | | |
|---|----------|
| | Example: |
| (1) Type and nominal designation | 13 R-20 |
| (2) Material symbol ⁽¹⁾ of tip | SKH 57 |
| (3) Manufacturer's name or its abbreviation | |

Note (1) The tip material which has the cutting ability of the steel specified in JIS G 4403 or equal to or superior to this may be marked as follows, as a symbol denoting a material equivalent to this.

Example: HS 57

10.2 Marking on Package The turning tool shall be marked with the title of Standard and the information specified in 10.1 on the package.