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(JSCTA/JSA)

**Twist drills — Terms, definitions and
types**

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Reference number : JIS B 0171 : 2005 (E)

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Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by The Japan Small Cutting Tools' Association (JSCTA)/ Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14.

Consequently **JIS B 0171 : 1997** is replaced with this Standard.

This revision has been made based on **ISO 5419 : 1982** *Twist drills—Terms, definitions and types* for the purpose of making it easier to compare this Standard with International Standard; to prepare Japanese Industrial Standard conforming with International Standard; and to propose a draft of an International Standard which is based on Japanese Industrial Standard.

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In the event of any doubts arising as to the contents,
the original JIS is to be the final authority.

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Twist drills— Terms, definitions and types

Introduction This Japanese Industrial Standard has been prepared based on the first edition of **ISO 5419** *Twist drills—Terms, definitions and types* published in 1982 with some modifications of the technical contents of the original International Standard.

The portions given sidelines or dotted underlines are the matters in which the contents of the original International Standard have been modified. A list of modifications with the explanation is given in Annex 1 (informative).

1 Scope This Japanese Industrial Standard specifies the designation of drills ⁽¹⁾ to be used, in general, mainly for metal cutting, as well as the terms and definitions thereof.

Note ⁽¹⁾ Tools used mainly for drilling, having a major cutting edge at its point, and having a flute for discharging cutting chips on the body.

Remarks : The International Standard corresponding to this Standard is as follows.

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and **JIS** are IDT (identical), MOD (modified), and NEQ (not equivalent) according to **ISO/IEC Guide 21**.

ISO 5419 : 1982 *Twist drills—Terms, definitions and types* (MOD)

2 Classification The classification of the terms of the drills shall be as given in the following :

a) **Types of drills**

- 1) **Classification according to cutting point materials and surface treatment**
- 2) **Classification according to structure**
- 3) **Classification according to forms of shank**
- 4) **Classification according to functions or uses**
 - 4.1) **Classification according to helices of flute**
 - 4.2) **Classification according to sectional shapes perpendicular to axis of body**
 - 4.3) **Classification according to lengths**
 - 4.4) **Classification according to uses**

- b) **Elements of drill**
- c) **Angles of drill**
- d) **Precision of drills**
- e) **Damage of cutting point of drills**
- f) **Drills in general**

3 Designation of drills The drills shall be designated by combining the relevant terms in the order of the classification given in 2 a).

Further, drills in which high speed tool steel is used for the cutting point material ⁽²⁾, drills of solid ⁽³⁾, tipped, butt welded, built up or inserted in structure, drills of which flute ⁽⁴⁾ is of the right hand helix twist and drills of which length ⁽⁵⁾ is of regular length shall be designated by omitting these (the words given in parentheses of the following examples).

Notes ⁽²⁾ In the case of the drills used cemented carbide alloy for the cutting point material, the “alloy” shall be omitted to designate.

⁽³⁾ In the case of the drills used other than high speed tool steel for the cutting point material, the “solid” shall not be omitted.

⁽⁴⁾ In the case of the drills of which flute is of the right hand helix twist, “right hand helix twist” shall be omitted to designate.

⁽⁵⁾ In the case of the drills of which length is of regular length, “regular length” shall be omitted to designate.

Examples :

Designation	Cutting point material and surface treatment	Structure	Form of shank	Helix of flute	Cross sectional form perpendicular to the axis of body	Length	Use
Straight shank drill	(High speed tool steel)	(Solid)	Straight shank	(Right hand helix)	—	(Regular length drill)	—
Taper shank oil hole sub-land drill	(High speed tool steel)	(Solid)	Taper shank	(Right hand helix)	Combined with oil hole sub-land	—	Step drill
Cemented carbide solid straight shank straight fluted stepped drill	Cemented carbide (alloy)	Solid	Straight shank	Straight flute	—	—	Step drill
Cemented carbide titanium nitride coating taper shank core drill	Cemented carbide (alloy) titanium nitride coating	(Tipped)	Taper shank	(Right hand helix)	—	—	Core drill

4 Terms and definitions The terms and definitions of the drills shall in accordance with the following:

The quantitative symbols, units and English equivalent are given for information.

Remarks 1 As to those of which one part of terms are given in (), the letters in () may be omitted.

- 2 The writing in Roman letter in the “Reading” column indicates how to read the Japanese term.
- 3 The term expressed in boldface type in the definition column is specified in this Standard.
- 4 The diagram gives an example, and it is not that for expressing the shape and size.

Furthermore, the numerals in () in the diagram indicate the No. of term in this Standard.

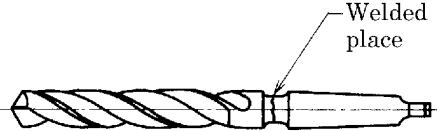
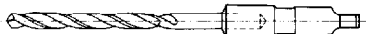
a) **Types of drills**

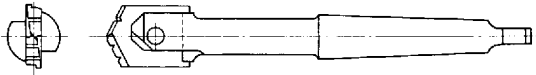
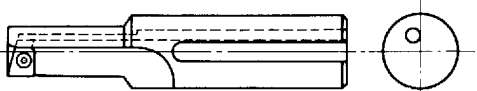
1) **Classification according to cutting point materials and surface treatment**

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
1001	高速度 (工具) 鋼ドリル	KÔSOKUDO (KÔGU) KÔDORIRU	drill using high speed tool steel for the material of cutting point	high speed (tool) steel drill
1002	超硬質 工具材料 ドリル	TYÔKÔSITU KÔGU ZAIKYÔ DORIRU	generic term of the drills using hard tool materials [cemented carbide alloy, cermet ceramic, boron nitride (BN) sintered compact, diamond, diamond sintered compact and the like] for the material of cutting points	hard tool material drill
1003	超硬 (合金) ドリル	TYÔKÔ (GÔKIN) DORIRU	drill using cemented carbide alloy (sintered material mainly composed of tungsten carbide) for the material of cutting point	carbide drill; cemented carbide drill
1004	コーティング ドリル	KÔTENGU DORIRU	drill using the tool material stuck chemically or physically with one layer or multi-layer of carbide, nitride, oxide, diamond or the like for the material of cutting point Remarks : As to the coating materials, there are titanium nitride, titanium carbide nitride, aluminum titanium nitride, diamond, etc.	coated drill
1005	窒化处理 ドリル	TIKKA SYORI DORIRU	drill using the tool material of which surface of material of cutting point has been nitrided	nitrided drill
1006	酸化処理 ドリル	SANKA SYORI DORIRU	drill using the tool material of which surface of material of cutting point has been oxidized	oxidized drill

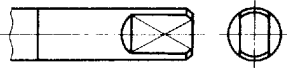
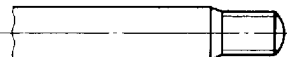
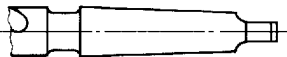
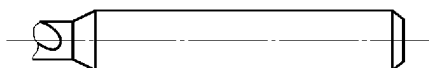
No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
1007	窒化酸化 処理ドリル	TIKKA SANKA SYORI DORIRU	drill using the tool material of which surface of material of cutting point has been nitrided and oxidized	nitrided and oxidized drill

2) Classification according to structure

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
1101	むくドリル	MUKU DORIRU	drill made of the material in which body and shank are united 	solid drill
1102	溶接ドリル	YŌSETU DORIRU	drill welded by butting the end face of body to that of shank 	butt welded drill, friction welded drill
1103	付刃ドリル	TUKEHA DORIRU	drill brazed by the tip of cemented carbide alloy and other materials as the major cutting edge 	tipped drill
1104	先むくドリル	SAKIMUKU DORIRU	drill of which a certain length of part from the tip of the body is brazed with solid tool materials 	top solid drill
1105	差込みドリル	SASIKOMI DORIRU	drill fixed by brazing or other method after inserting the body into the shank Information : This applies to that of smaller diameter comparatively. 	inserted drill

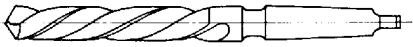
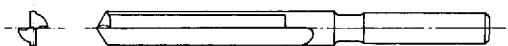
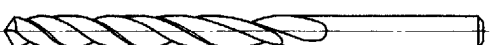
No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
1106	組立ドリル	KUMITATE DORIRU	drill in which not less than two parts have been mechanically assembled 	built up drill
1107	刃先交換式ドリル	HASAKI KÔKAN SIKI DORIRU	drill to which a throw-away tip has been fixed to a body mechanically 	indexable insert drill

3) Classification according to forms of shank

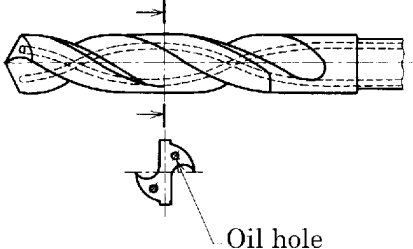
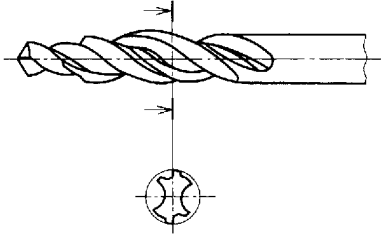
No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
1201	ストレートシャンクドリル	SUTORÊTO SYANKU DORIRU	drill of which shank is cylindrical Information : See JIS B 4301, JIS B 4305 and JIS B 4307. 	straight shank drill, parallel shank drill
1202	タング付きストレートシャンクドリル	TANGUTUKI SUTORÊTO SYANKU DORIRU	straight shank drill provided with tenon at the shank 	straight shank drill with tenon drive
1203	ねじ付きストレートシャンクドリル	NEZITUKI SUTORÊTO SYANKU DORIRU	straight shank drill having the threaded shank part 	threaded straight shank drill
1204	(モールス)テーパシャンクドリル	(MÔRUSU) TÊPA SYANKU DORIRU	drill of which shank is of morse taper Information : See JIS B 4003, JIS B 4302 and JIS B 4306. 	Morse taper shank drill
1205	ねじ付きモールステーパシャンクドリル	NEZITUKI MÔRUSU TÊPA SYANKU DORIRU	morse taper shank drill having the threaded shank part 	threaded Morse taper shank drill
1206	ミーリングシャンクドリル	MÎRINGU SYANKU DORIRU	drill of which the shank diameter is the same as the shank diameter of end mill, and which is used with milling chuck Information : See JIS B 4314. 	drill with milling cutter cylindrical shank

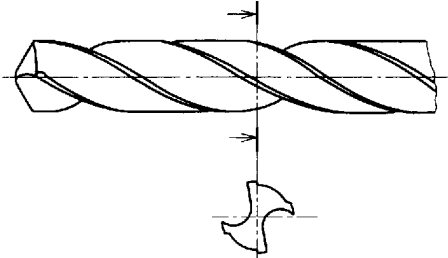
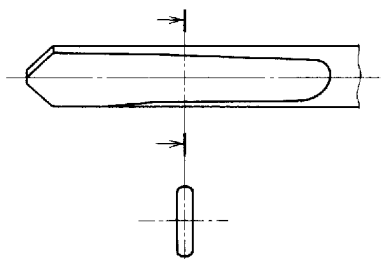
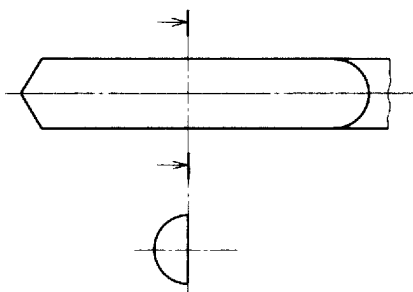
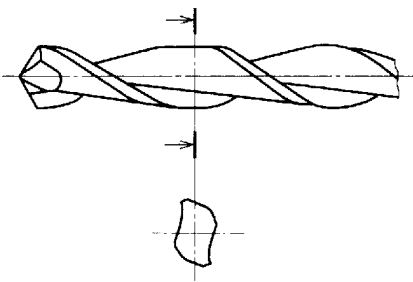
4) Classification according to functions or uses

4.1) Classification according to helices of flute

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
1301	右ねじれ ドリル	MIGI NEZIRE DORIRU	drill of which flute is of the right hand helix twist 	right hand helix twist drill
1302	左ねじれ ドリル	HIDARI NEZIRE DORIRU	drill of which flute is of the left hand helix twist 	left hand helix twist drill
1303	直刃ドリル	TYOKUBA DORIRU	drill free from twist of flute 	straight fluted drill
1304	不等リード ドリル	HUTÔ RÎDO DORIRU	drill variable in lead of flute 	variable lead twist drill

4.2) Classification according to sectional shapes perpendicular to axis of body

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
1401	油穴付き ドリル	ABURA ANATUKI DORIRU	drill having oil hole in the body 	drill with oil hole
1402	複溝ドリル	HUKUMIZO DORIRU	drill having the leading edges of not less than two drill diameters 	subland drill

No.	Term (Japanese character)	Reading	Definition	English equivalent (informative)
1403	ダブルマージンドリル	DABURU MĀGIN DORIRU	drill having two margins at one land 	double margin drill
1404	フラットドリル	HURRATO DORIRU	straight fluted drill having a plate-like cutting point 	flat drill
1405	半月形ドリル	HANGETU GATA DORIRU	drill having one major cutting edge of gun barrel form Information : This is used mainly for the drilling work of brass. 	gun barrel drill
1406	平溝ドリル	HIRAMIZO DORIRU	drill thick in web thickness and thin in width of fluted land Information : This is used mainly for deep hole working. 	—