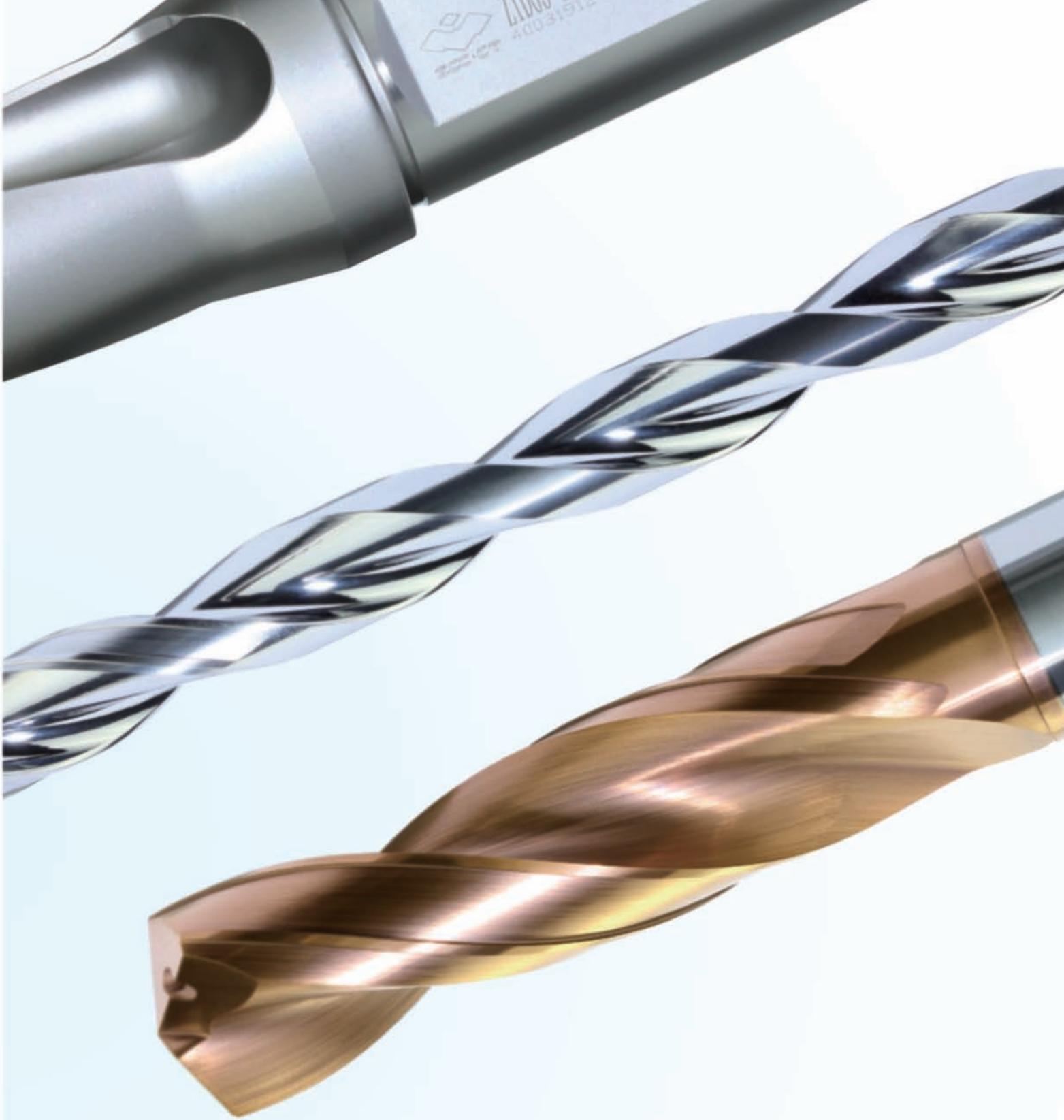

GD series
Twist Drills for
General Machining



Boring Tools

Drills
Reamers
Threading tools

ZSD

U drill new series

Boring Tools

C

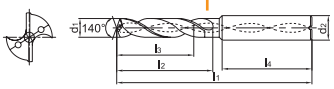
How to choose the right solid carbide drills

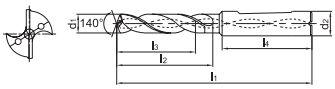
Shape

Product category

Shape size

ST series for machining of soft steel, stainless steel





- First choice for drilling soft steel and stainless steel.
- Sharp cutting edge can avoid build--up edge, suitable for drilling hole with high performance.

Drill diameter $d_1(m7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Recommended grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	
					$d_2(h_6)$	l_1	l_2	l_3	l_4	KDG303
3.0	3	Internal coolant	Straight shank	1534ST03C-0300	6	62	20	14	36	☆
	5			1536ST05C-0300	6	66	28	23	36	☆
	5		Whistle notch shank	1736ST05C-0300	6	66	28	23	36	☆
3.1	3		Straight shank	1534ST03C-0310	6	62	20	14	36	☆
	5			1536ST05C-0310	6	66	28	23	36	☆
	5		Whistle notch shank	1736ST05C-0310	6	66	28	23	36	☆
3.2	3		Straight shank	1534ST03C-0320	6	62	20	14	36	☆
	5			1536ST05C-0320	6	66	28	23	36	☆
	5		Whistle notch shank	1736ST05C-0320	6	66	28	23	36	☆
3.25	3		Straight shank	1534ST03C-0325	6	62	20	14	36	☆
	5			1536ST05C-0325	6	66	28	23	36	☆
	5		Whistle notch shank	1736ST05C-0325	6	66	28	23	36	☆
3.3	3		Straight shank	1534ST03C-0330	6	62	20	14	36	☆
	5			1536ST05C-0330	6	66	28	23	36	☆
	5		Whistle notch shank	1736ST05C-0330	6	66	28	23	36	☆
3.4	3		Straight shank	1534ST03C-0340	6	62	20	14	36	☆
	5			1536ST05C-0340	6	66	28	23	36	☆
	5		Whistle notch shank	1736ST05C-0340	6	66	28	23	36	☆
3.5	3		Straight shank	1534ST03C-0350	6	62	20	14	36	☆
	5			1536ST05C-0350	6	66	28	23	36	☆
	5		Whistle notch shank	1736ST05C-0350	6	66	28	23	36	☆

☆Recommended grade (produce according to order)

Applicable material table ◎Very suitable ○Suitable

Grade	Workpiece material										
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG303	◎	○				◎					○

Code key C6 | Cutting parameters C83 | Cutting parameters C87–C93 | Non-standard customization C94–C98

Specifications
Type, depth of drilling, cooling system, type of shank, basic dimensions and grade.

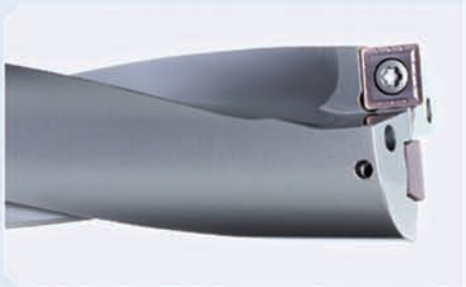
Applicable workpiece material range

Product features

Code key, cutting parameters, technical information, non-standard customization

BORING TOOL C

Drills



Drilling tools overview

Application	Type of drills	Type	Shape of drills	Coolant mode	Diameter range	Workpiece material							Page	
						P		M	K	N	S	H	Specification	Cutting parameters
						Soft steel	Common steel	Stainless steel	Cast iron	Non-ferrous metal	Heat resistant alloy	High hardness steel		
General machining	Twist drill	**GD03**		External cooling	Ø2-Ø25	○	◎	○	◎	○	○		C9-C44	C79-C80
		GD03C		Internal cooling	Ø3-Ø25	○	◎	○	◎	○	○			
		GD05		External cooling	Ø2-Ø25	○	◎	○	◎	○	○			
		GD05C		Internal cooling	Ø3-Ø25	○	◎	○	◎	○	○			
		GD08C		Internal cooling	Ø3-Ø18	○	◎	○	◎	○	○			
Deep drilling	Twist drill	**1588SL 12/20/30C**		Internal cooling	Ø3-Ø20	○	◎	○	◎	○	○		C48-C51	C81
Guide hole drilling	Twist drill	**1534SP**		Internal cooling	Ø3-Ø14	○	◎	○	◎	○	○		C52-C53	C82
For soft steel, stainless steel	Twist drill	**1534ST03C**		Internal cooling	Ø3-Ø20	◎	○	◎			○		C55-C67	C83
		1536ST05C		Internal cooling	Ø3-Ø20	◎	○	◎			○			
		1736ST05C		Internal cooling	Ø3-Ø20	◎	○	◎			○			
For aluminum, cast iron	Twist drill	**1105SC03**		External cooling	Ø2-Ø16				◎	◎			C68-71	C83
		1101SC05		External cooling	Ø2-Ø16				◎	◎				
	Three flute drill	**1165PA03**		External cooling	Ø3-Ø20			○	◎	◎	○		C72-C75	C84
	Straight flute drill	**1576PC05**		External cooling	Ø4-Ø20				◎	◎			C76-C77	C85
		1579PC15C		Internal cooling	Ø5-Ø14				◎	◎				
	Centering drill	**1143SC90**		External cooling	Ø5-Ø20				◎	◎			C78	C86
		1143SC120		External cooling	Ø5-Ø20				◎	◎				
Indexable drills series	U drill	**ZSD 02/03/04/05**		Internal cooling	Ø12-Ø50	◎	◎	◎	◎	○	○		C103-C114	C130-C129
		ZTD 02/03/04/05		Internal cooling	Ø13-Ø50	◎	◎	○	◎	○			C118-C121	C130-C129
Interchangeable head drills drilling series	Interchangeable head drills	**ZTK 015/03/04/08**		Internal cooling	Ø12-Ø25	○	◎	○	◎	◎			C132-C135	C151

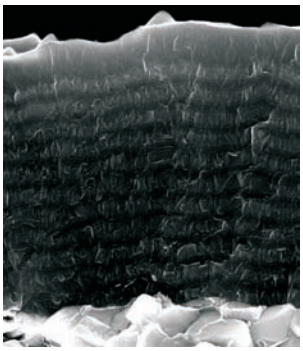
◎Very suitable ○Suitable

Grade introduction of solid carbide drills

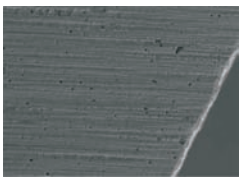
Coated grade

KDG3013

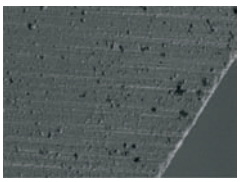
New AlCrN substrate composite coating, with excellent abrasion resistance and bonding resistance, improves the stability of the insert edge.
Unique coating after-treatment technology effectively reduces the cutting resistance for smoother chip evacuation and higher security.



AlCrN substrate composite coating



KDG3013

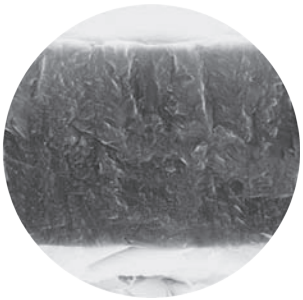


Conventional coating

KDG303

Ultra-fine carbide substrate with high strength, toughness and wear resistance, in combination with nano-structured nc-TiAlN coating aiming at optimizing drilling operations, makes sure the tools have very high toughness and hardness. Unique coating technology gives the tools smooth surface and excellent wear resistance, and outstanding thermal stability and chemical stability provide effective protection for the cutting edge.

Common TiAlN coating



nc-TiAlN coating

Uncoated grade

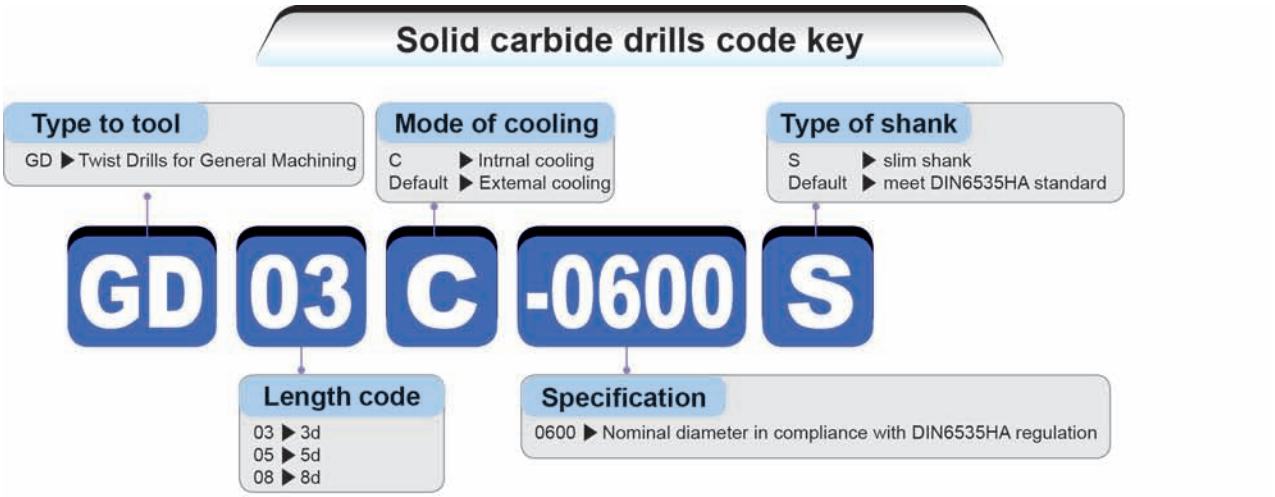
YK20F

Ultra-fine grain carbide substrate with high hardness, outstanding wear resistance, and long tool life.

YK30F

Ultra-fine carbide substrate with high strength, toughness and wear resistance gives the cutting edge perfect strength.

Solid carbide drills code key



Code	Description
1	As per DIN338
2	As per DIN1897
3	As per QJ/ZZQ(TO)01.001.002
4	As per DIN6537K
5	As per DIN6537K
6	As per DIN6537K
7	As per the rule ZZC-C in QJ/ZZQ(TO)01.001.002
8	As per the rule ZZC-D in QJ/ZZQ(TO)01.001.002
9	As per the rule ZZC-E in QJ/ZZQ(TO)01.001.002

Length code

Code	Description
SL	Deep twist drills
ST	Twist drill for soft steel, stainless steel
SC	Twist drill for AL alloy and cast iron
PA	Three flute drill for AL alloy and cast iron
PC	Straight flute drill for aluminum, cast iron

Geometry

Code	Description
1	Drills

Type to tool

Code	Description
C	Internal coolant
Default	External coolant

Mode of cooling

Type of shank

Code	Description
1	Straight shank
2	Square head straight shank as per DIN10
3	Double flattened straight shank as per DIN1809
5	Straight shank as per DIN6535HA
7	Whistle notch shank as per DIN6535HE
9	Tapered shank

Type of drill

Code	Description
0	Twist drill
3	Multiple functions twist drill
4	Centering drill
5	Step drill
7	Straight flute drill
8	Deep drill

Specification

Code	Description
0850	Nominal diameter of drill

Identification of drilling depth

Cutting depth shown when the tool is non-pilot drill	
Code	Description
03	(2~3) d
05	(4~5) d
08	(7~8) d
12	(12) d
15	(15) d
20	(20) d
30	(30) d

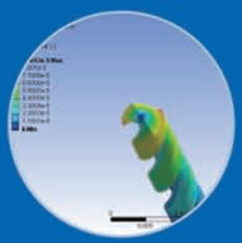
Point angle identification shown when tool is pilot drill	
Code	Description
90	pilot drill with 90° point angle
120	pilot drill with 120° point angle

GD series
Twist Drills for General Machining

Application range

Versatile, for high efficiency machining in a variety of material e.g. P(steel), M(stainless steel), K (Cast iron).

- **Linear cutting edge with high strength.**
  Optimized drill point structure for better cutting performance.

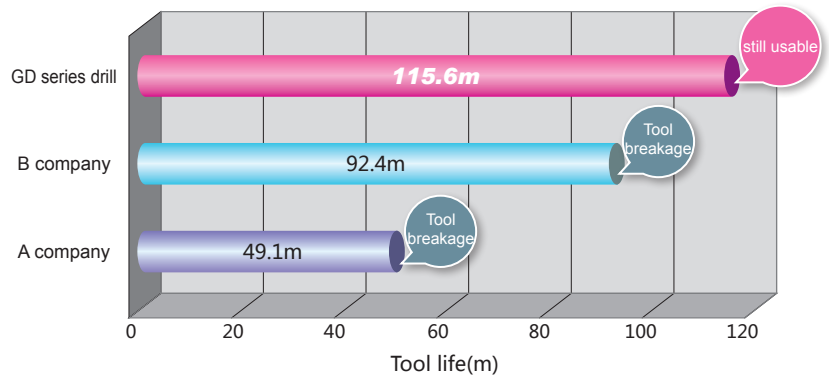


- **Simulation in combination with testing for superior overall performance.**

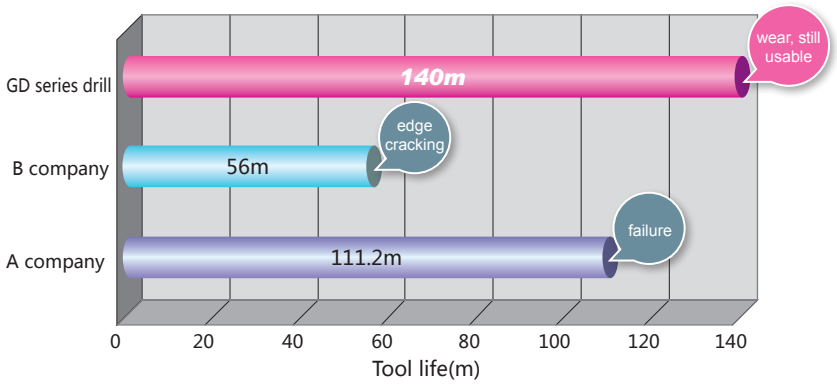
- **Professional after treatment for coating ensures low-resistance high-efficiency machining.**

- **Double edge-line design for improved machining stability.**

Long and stable tool life



tool：GD05C-0560
workpiece material：C70S6(HRC30)
Vc=100m/min； f= 0.15mm/r； H=27mm
cooling system：water soluble cooling

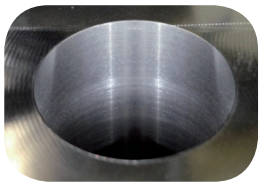


tool：GD05C-1000
workpiece material：45#steel(HB180)
Vc=150m/min； f=0.25mm/r； H=40mm
cooling system：water soluble cooling

outstanding machining precision

quality of hole wall:

tool：GD03C-0820
workpiece material: C70S6(HRC30)
Vc=120m/min；f=0.23mm/r；H=30mm；
cooling system: water soluble cooling



GD series drill

A company

excellent chip breaking performance

chip breaking performance:

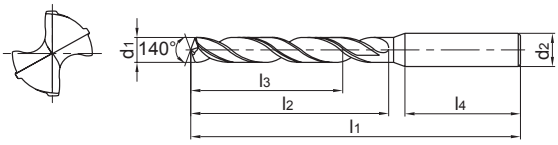
tool：GD05C-0600
workpiece material: 1Cr18Ni9Ti(HB180)
Vc=75m/min；f=0.2mm/r；H=30mm；
cooling system: water soluble cooling

GD series drill

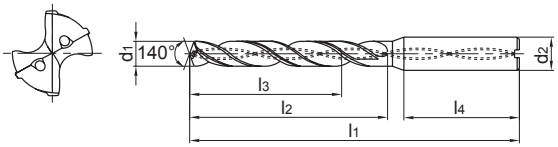
A company

GD series General machining

External coolant Straight shank



Internal coolant Straight shank



● Suitable for high efficiency drilling in a variety of materials e.g steel, stainless steel, cast iron.

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
2.0	3	External coolant	Straight shank	**GD03-0200S**	3	58	13	9	28		NO.2-64UNF	○
	5			**GD05-0200S**	3	58	18	14	28			○
	3			**GD03-0200**	4	58	13	9	28			●
	5			**GD05-0200**	4	58	18	14	28			●
2.1	3			**GD03-0210S**	3	58	13	9	28	NO.3-48UNC		○
	5			**GD05-0210S**	3	58	18	14	28			○
	3			**GD03-0210**	4	58	13	9	28			●
	5			**GD05-0210**	4	58	18	14	28			●
2.15	3			**GD03-0215S**	3	58	13	9	28	NO.3-56UNF		○
	5			**GD05-0215S**	3	58	18	14	28			○
	3			**GD03-0215**	4	58	13	9	28			●
	5			**GD05-0215**	4	58	18	14	28			●
2.2	3			**GD03-0220S**	3	58	13	9	28			○
	5			**GD05-0220S**	3	58	18	14	28			○
	3			**GD03-0220**	4	58	13	9	28			●
	5			**GD05-0220**	4	58	18	14	28			●
2.3	3			**GD03-0230S**	3	58	13	9	28			○
	5			**GD05-0230S**	3	58	18	14	28		M2.5×0.45	○
	3			**GD03-0230**	4	58	13	9	28		NO.3-56UNF	●
	5			**GD05-0230**	4	58	18	14	28			●

● Stock available ○ Make-to-order

Applicable material table

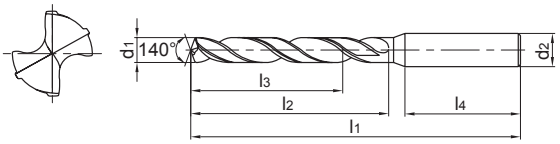
◎Very suitable ○Suitable

Grade	Workpiece material										
	Mild steel HB⩽180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG3013	○	◎	◎			○	◎	◎			○

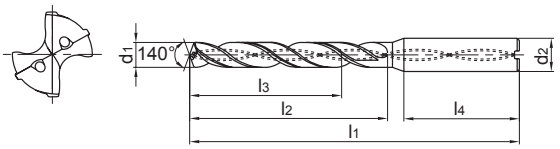
Code key C6
Cutting parameters C79–C80
Technical information C87–C93
Non-standard customization tools C94-C98

GD series General machining


External coolant Straight shank




Internal coolant Straight shank



● Suitable for high efficiency drilling in a variety of materials e.g steel, stainless steel, cast iron.

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
2.35	3	External coolant	Straight shank	GD03-0235S	3	58	17	12	28	NO.4-40UNC		○
	5			GD05-0235S	3	58	22	17	28			○
	3			GD03-0235	4	58	17	12	28			●
	5			GD05-0235	4	58	22	17	28			●
2.4	3			GD03-0240S	3	58	17	12	28	NO.4-48UNF		○
	5			GD05-0240S	3	58	22	17	28			○
	3			GD03-0240	4	58	17	12	28			●
	5			GD05-0240	4	58	22	17	28			●
2.5	3			GD03-0250S	3	58	17	12	28	M3×0.5		○
	5			GD05-0250S	3	58	22	17	28			○
	3			GD03-0250	4	58	17	12	28			●
	5			GD05-0250	4	58	22	17	28			●
2.55	3			GD03-0255S	3	58	17	12	28		NO.4-40UNC	○
	5			GD05-0255S	3	58	22	17	28			○
	3			GD03-0255	4	58	17	12	28			●
	5			GD05-0255	4	58	22	17	28			●
2.6	3			GD03-0260S	3	58	17	12	28		NO.4-48UNF	○
	5			GD05-0260S	3	58	22	17	28			○
	3			GD03-0260	4	58	17	12	28			●
	5			GD05-0260	4	58	22	17	28			●
2.65	3			GD03-0265S	3	58	17	12	28	NO.5-40UNC		○
	5			GD05-0265S	3	58	22	17	28			○
	3			GD03-0265	4	58	17	12	28			●
	5			GD05-0265	4	58	22	17	28			●
2.7	3			GD03-0270S	3	58	17	12	28	NO.5-44UNF		○
	5			GD05-0270S	3	58	22	17	28			○
	3			GD03-0270	4	58	17	12	28			●
	5			GD05-0270	4	58	22	17	28			●

● Stock available ○ Make-to-order

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
2.8	3	External coolant	Straight shank	GD03-0280S	3	58	17	12	28		M3×0.5	○
	5			GD05-0280S	3	58	22	17	28			○
	3			GD03-0280	4	58	17	12	28			●
	5			GD05-0280	4	58	22	17	28			●
2.85	3			GD03-0285S	3	58	17	12	28	NO.6-32UNC		○
	5			GD05-0285S	3	58	22	17	28			○
	3			GD03-0285	4	58	17	12	28			●
	5			GD05-0285	4	58	22	17	28			●
2.9	3			GD03-0290S	3	58	17	12	28			○
	5			GD05-0290S	3	58	22	17	28		NO.5-40UNC	○
	3			GD03-0290	4	58	17	12	28		NO.5-44UNF	●
	5			GD05-0290	4	58	22	17	28			●
2.95	3			GD03-0295S	3	58	17	12	28	NO.6-40UNF		○
	5			GD05-0295S	3	58	22	17	28			○
	3			GD03-0295	4	58	17	12	28			●
	5			GD05-0295	4	58	22	17	28			●
3.0	3			GD03-0300S	3	62	20	14	36			○
	5			GD05-0300S	3	66	28	23	36			○
	3	Internal coolant		GD03C-0300S	3	62	20	14	36			○
	5			GD05C-0300S	3	66	28	23	36			○
	3	External coolant		GD03-0300	6	62	20	14	36			●
	5			GD05-0300	6	66	28	23	36			●
	3	Internal coolant		GD03C-0300	6	62	20	14	36			●
	5			GD05C-0300	6	66	28	23	36			●
	8			GD08C-0300	6	72	34	29	36			
3.1	3	External coolant		GD03-0310S	4	62	20	14	36			●
	5			GD05-0310S	4	66	28	23	36			●
	3	Internal coolant		GD03C-0310S	4	62	20	14	36			●
	5			GD05C-0310S	4	66	28	23	36			●
	3	External coolant		GD03-0310	6	62	20	14	36			○
	5			GD05-0310	6	66	28	23	36			○
	3	Internal coolant		GD03C-0310	6	62	20	14	36			○
	5			GD05C-0310	6	66	28	23	36			○
	8			GD08C-0310	6	72	34	29	36			

Note: For drilling depth (l/d) of 8 ,namely GD08C series, tolerance of shank diameter is h_5.

● Stock available ○ Make-to-order

Applicable material table

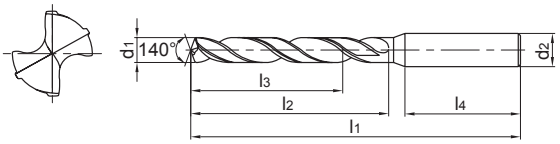
◎Very suitable ○Suitable

Grade	Workpiece material										
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG3013	○	◎	◎			○	◎	◎			○

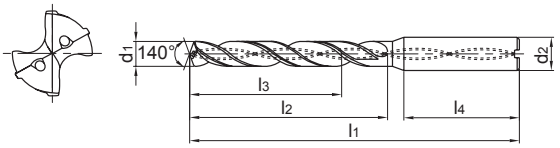
Code key C6
Cutting parameters C79–C80
Technical information C87–C93
Non-standard customization tools C94-C98

GD series General machining


External coolant Straight shank




Internal coolant Straight shank



● Suitable for high efficiency drilling in a variety of materials e.g steel, stainless steel, cast iron.

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
3.15	3	External coolant	Straight shank	GD03-0315S	4	62	20	14	36		NO.6-32UNC	●
	5			GD05-0315S	4	66	28	23	36			●
	3	Internal coolant		GD03C-0315S	4	62	20	14	36			●
	5			GD05C-0315S	4	66	28	23	36			●
	3	External coolant		GD03-0315	6	62	20	14	36			○
	5			GD05-0315	6	66	28	23	36			○
	3	Internal coolant		GD03C-0315	6	62	20	14	36			○
	5			GD05C-0315	6	66	28	23	36			○
3.2	3	External coolant		GD03-0320S	4	62	20	14	36		NO.6-40UNF	●
	5			GD05-0320S	4	66	28	23	36			●
	3	Internal coolant		GD03C-0320S	4	62	20	14	36			●
	5			GD05C-0320S	4	66	28	23	36			●
	3	External coolant		GD03-0320	6	62	20	14	36			○
	5			GD05-0320	6	66	28	23	36			○
	3	Internal coolant		GD03C-0320	6	62	20	14	36			○
	5			GD05C-0320	6	66	28	23	36			○
	8			GD08C-0320	6	72	34	29	36			○
3.25	3	External coolant		GD03-0325S	4	62	20	14	36			●
	5			GD05-0325S	4	66	28	23	36			●
	3	Internal coolant		GD03C-0325S	4	62	20	14	36			●
	5			GD05C-0325S	4	66	28	23	36			●
	3	External coolant		GD03-0325	6	62	20	14	36			○
	5			GD05-0325	6	66	28	23	36			○
	3	Internal coolant		GD03C-0325	6	62	20	14	36			○
	5			GD05C-0325	6	66	28	23	36			○

● Stock available ○ Make-to-order

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
3.3	3	External coolant	Straight shank	GD03-0330S	4	62	20	14	36	M4×0.7		●
	5			GD05-0330S	4	66	28	23	36			●
	3	Internal coolant		GD03C-0330S	4	62	20	14	36			●
	5			GD05C-0330S	4	66	28	23	36			●
	3	External coolant		GD03-0330	6	62	20	14	36			○
	5			GD05-0330	6	66	28	23	36			○
	3	Internal coolant		GD03C-0330	6	62	20	14	36			○
	5			GD05C-0330	6	66	28	23	36			○
	8			GD08C-0330	6	72	34	29	36			○
3.4	3	External coolant		GD03-0340S	4	62	20	14	36			●
	5			GD05-0340S	4	66	28	23	36			●
	3	Internal coolant		GD03C-0340S	4	62	20	14	36			●
	5			GD05C-0340S	4	66	28	23	36			●
	3	External coolant		GD03-0340	6	62	20	14	36			○
	5			GD05-0340	6	66	28	23	36			○
	3	Internal coolant		GD03C-0340	6	62	20	14	36			○
	5			GD05C-0340	6	66	28	23	36			○
	8			GD08C-0340	6	72	34	29	36			○
3.5	3	External coolant		GD03-0350S	4	62	20	14	36	M4×0.5 NO.8-32UNC NO.8-36UNF		●
	5			GD05-0350S	4	66	28	23	36			●
	3	Internal coolant		GD03C-0350S	4	62	20	14	36			●
	5			GD05C-0350S	4	66	28	23	36			●
	3	External coolant		GD03-0350	6	62	20	14	36			○
	5			GD05-0350	6	66	28	23	36			○
	3	Internal coolant		GD03C-0350	6	62	20	14	36			○
	5			GD05C-0350	6	66	28	23	36			○
	8			GD08C-0350	6	72	34	29	36			○
3.6	3	External coolant		GD03-0360S	4	62	20	14	36			●
	5			GD05-0360S	4	66	28	23	36			●
	3	Internal coolant		GD03C-0360S	4	62	20	14	36			●
	5			GD05C-0360S	4	66	28	23	36			●
	3	External coolant		GD03-0360	6	62	20	14	36			○
	5			GD05-0360	6	66	28	23	36			○
	3	Internal coolant		GD03C-0360	6	62	20	14	36			○
	5			GD05C-0360	6	66	28	23	36			○
	8			GD08C-0360	6	72	34	29	36			○

Note: For drilling depth (l/d) of 8 ,namely GD08C series, tolerance of shank diameter is h_5. ● Stock available ○ Make-to-order

Applicable material table

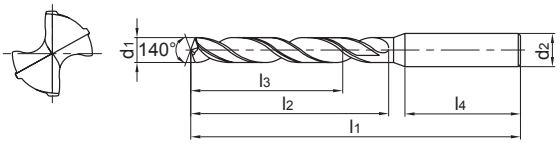
◎Very suitable ○Suitable

Grade	Workpiece material										
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG3013	○	◎	◎			○	◎	◎			○

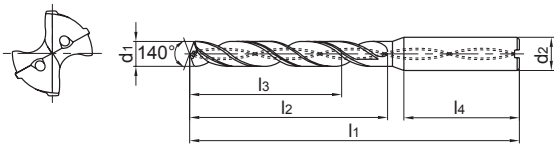
Code key C6
Cutting parameters C79–C80
Technical information C87–C93
Non-standard customization tools C94-C98

GD series General machining


External coolant Straight shank




Internal coolant Straight shank



● Suitable for high efficiency drilling in a variety of materials e.g steel, stainless steel, cast iron.

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
3.7	3	External coolant	Straight shank	GD03-0370S	4	62	20	14	36		M4×0.7	●
	5			GD05-0370S	4	66	28	23	36			●
	3	Internal coolant		GD03C-0370S	4	62	20	14	36			●
	5			GD05C-0370S	4	66	28	23	36			●
	3	External coolant		GD03-0370	6	62	20	14	36			○
	5			GD05-0370	6	66	28	23	36			○
	3	Internal coolant		GD03C-0370	6	62	20	14	36			○
	5			GD05C-0370	6	66	28	23	36			○
	8			GD08C-0370	6	72	34	29	36			○
3.8	3	External coolant		GD03-0380S	4	66	24	17	36		M4×0.5 NO.8-32UNC	●
	5			GD05-0380S	4	74	36	29	36			●
	3	Internal coolant		GD03C-0380S	4	66	24	17	36			●
	5			GD05C-0380S	4	74	36	29	36			●
	3	External coolant		GD03-0380	6	66	24	17	36			○
	5			GD05-0380	6	74	36	29	36			○
	3	Internal coolant		GD03C-0380	6	66	24	17	36			○
	5			GD05C-0380	6	74	36	29	36			○
	8			GD08C-0380	6	81	43	36	36			○
3.85	3	External coolant		GD03-0385S	4	66	24	17	36		NO.8-36UNF	●
	5			GD05-0385S	4	74	36	29	36			●
	3	Internal coolant		GD03C-0385S	4	66	24	17	36			●
	5			GD05C-0385S	4	74	36	29	36			●
	3	External coolant		GD03-0385	6	66	24	17	36			○
	5			GD05-0385	6	74	36	29	36			○
	3	Internal coolant		GD03C-0385	6	66	24	17	36			○
	5			GD05C-0385	6	74	36	29	36			○

● Stock available ○ Make-to-order

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
	3	External coolant		**GD03-0390S**	4	66	24	17	36			●
	5			**GD05-0390S**	4	74	36	29	36			●
	3	Internal coolant		**GD03C-0390S**	4	66	24	17	36			●
	5			**GD05C-0390S**	4	74	36	29	36			●
3.9	3	External coolant		**GD03-0390**	6	66	24	17	36	NO.10-24UNC		○
	5			**GD05-0390**	6	74	36	29	36			○
	3	Internal coolant		**GD03C-0390**	6	66	24	17	36			○
	5			**GD05C-0390**	6	74	36	29	36			○
	8			**GD08C-0390**	6	81	43	36	36			○
	3	External coolant		**GD03-0400S**	4	66	24	17	36			●
	5			**GD05-0400S**	4	74	36	29	36			●
	3	Internal coolant		**GD03C-0400S**	4	66	24	17	36			●
	5			**GD05C-0400S**	4	74	36	29	36			●
4.0	3	External coolant		**GD03-0400**	6	66	24	17	36			○
	5			**GD05-0400**	6	74	36	29	36			○
	3	Internal coolant		**GD03C-0400**	6	66	24	17	36			○
	5			**GD05C-0400**	6	74	36	29	36			○
	8		Straight shank	**GD08C-0400**	6	81	43	36	36			○
	3	External coolant		**GD03-0410S**	5	66	24	17	36			○
	5			**GD05-0410S**	5	74	36	29	36			○
	3	Internal coolant		**GD03C-0410S**	5	66	24	17	36			○
	5			**GD05C-0410S**	5	74	36	29	36			○
4.1	3	External coolant		**GD03-0410**	6	66	24	17	36	NO.10-32UNF		●
	5			**GD05-0410**	6	74	36	29	36			●
	3	Internal coolant		**GD03C-0410**	6	66	24	17	36			●
	5			**GD05C-0410**	6	74	36	29	36			●
	8			**GD08C-0410**	6	81	43	36	36			○
	3	External coolant		**GD03-0420S**	5	66	24	17	36			○
	5			**GD05-0420S**	5	74	36	29	36			○
	3	Internal coolant		**GD03C-0420S**	5	66	24	17	36			○
	5			**GD05C-0420S**	5	74	36	29	36			○
4.2	3	External coolant		**GD03-0420**	6	66	24	17	36	M5×0.8		●
	5			**GD05-0420**	6	74	36	29	36			●
	3	Internal coolant		**GD03C-0420**	6	66	24	17	36			●
	5			**GD05C-0420**	6	74	36	29	36			●
	8			**GD08C-0420**	6	81	43	36	36			○

Note: For drilling depth (l/d) of 8 ,namely GD08C series, tolerance of shank diameter is h_5.

● Stock available ○ Make-to-order

Applicable material table

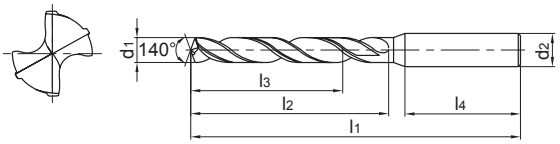
◎Very suitable ○Suitable

Grade	Workpiece material										
	Mild steel HB⩽180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG3013	○	◎	◎			○	◎	◎			○

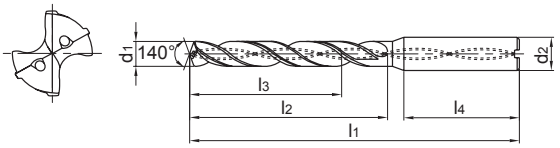
Code key C6
Cutting parameters C79–C80
Technical information C87–C93
Non-standard customization tools C94-C98

GD series General machining


External coolant Straight shank




Internal coolant Straight shank



● Suitable for high efficiency drilling in a variety of materials e.g steel, stainless steel, cast iron.

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
4.3	3	External coolant	Straight shank	GD03-0430S	5	66	24	17	36			○
	5			GD05-0430S	5	74	36	29	36			○
	3	Internal coolant		GD03C-0430S	5	66	24	17	36			○
	5			GD05C-0430S	5	74	36	29	36			○
	3	External coolant		GD03-0430	6	66	24	17	36			●
	5			GD05-0430	6	74	36	29	36			●
	3	Internal coolant		GD03C-0430	6	66	24	17	36			●
	5			GD05C-0430	6	74	36	29	36			●
	8			GD08C-0430	6	81	43	36	36			○
4.35	3	External coolant		GD03-0435S	5	66	24	17	36		NO.10-24UNC	○
	5			GD05-0435S	5	74	36	29	36			○
	3	Internal coolant		GD03C-0435S	5	66	24	17	36			○
	5			GD05C-0435S	5	74	36	29	36			○
	3	External coolant		GD03-0435	6	66	24	17	36			●
	5			GD05-0435	6	74	36	29	36			●
	3	Internal coolant		GD03C-0435	6	66	24	17	36			●
	5			GD05C-0435	6	74	36	29	36			●
4.4	3	External coolant		GD03-0440S	5	66	24	17	36			○
	5			GD05-0440S	5	74	36	29	36			○
	3	Internal coolant		GD03C-0440S	5	66	24	17	36			○
	5			GD05C-0440S	5	74	36	29	36			○
	3	External coolant		GD03-0440	6	66	24	17	36			●
	5			GD05-0440	6	74	36	29	36			●
	3	Internal coolant		GD03C-0440	6	66	24	17	36			●
	5			GD05C-0440	6	74	36	29	36			●
	8			GD08C-0440	6	81	43	36	36			○

● Stock available ○ Make-to-order

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
4.45	3	External coolant	Straight shank	GD03-0445S	5	66	24	17	36		NO.10-32UNF	○
	5			GD05-0445S	5	74	36	29	36			○
	3	Internal coolant		GD03C-0445S	5	66	24	17	36			○
	5			GD05C-0445S	5	74	36	29	36			○
	3	External coolant		GD03-0445	6	66	24	17	36			●
	5			GD05-0445	6	74	36	29	36			●
	3	Internal coolant		GD03C-0445	6	66	24	17	36			●
	5			GD05C-0445	6	74	36	29	36			●
4.5	3	External coolant		GD03-0450S	5	66	24	17	36	NO.12-24UNC M5×0.5		○
	5			GD05-0450S	5	74	36	29	36			○
	3	Internal coolant		GD03C-0450S	5	66	24	17	36			○
	5			GD05C-0450S	5	74	36	29	36			○
	3	External coolant		GD03-0450	6	66	24	17	36			●
	5			GD05-0450	6	74	36	29	36			●
	3	Internal coolant		GD03C-0450	6	66	24	17	36			●
	5			GD05C-0450	6	74	36	29	36			●
	8			GD08C-0450	6	81	43	36	36			○
4.6	3	External coolant		GD03-0460S	5	66	24	17	36			○
	5			GD05-0460S	5	74	36	29	36			○
	3	Internal coolant		GD03C-0460S	5	66	24	17	36			○
	5			GD05C-0460S	5	74	36	29	36			○
	3	External coolant		GD03-0460	6	66	24	17	36			●
	5			GD05-0460	6	74	36	29	36			●
	3	Internal coolant		GD03C-0460	6	66	24	17	36			●
	5			GD05C-0460	6	74	36	29	36			●
	8			GD08C-0460	6	81	43	36	36			○
4.65	3	External coolant		GD03-0465S	5	66	24	17	36		M5×0.8	○
	5			GD05-0465S	5	74	36	29	36			○
	3	Internal coolant		GD03C-0465S	5	66	24	17	36			○
	5			GD05C-0465S	5	74	36	29	36			○
	3	External coolant		GD03-0465	6	66	24	17	36			●
	5			GD05-0465	6	74	36	29	36			●
	3	Internal coolant		GD03C-0465	6	66	24	17	36			●
	5			GD05C-0465	6	74	36	29	36			●

Note: For drilling depth (l/d) of 8 ,namely GD08C series, tolerance of shank diameter is h_5. ● Stock available ○ Make-to-order

Applicable material table

◎Very suitable ○Suitable

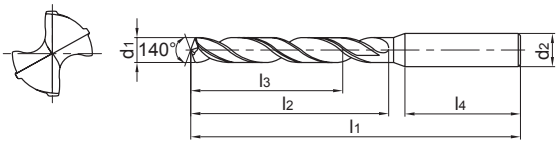
Grade	Workpiece material										
	Mild steel HB⩽180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG3013	○	◎	◎			○	◎	◎			○

Code key C6
Cutting parameters C79–C80
Technical information C87–C93
Non-standard customization tools C94-C98

GD series General machining

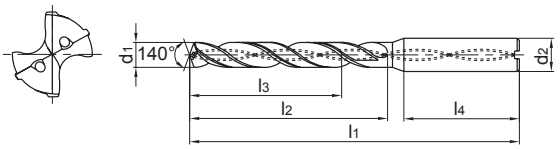

External coolant

Straight shank




Internal coolant

Straight shank



● Suitable for high efficiency drilling in a variety of materials e.g steel, stainless steel, cast iron.

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
	3	External coolant		**GD03-0470S**	5	66	24	17	36			○
	5			**GD05-0470S**	5	74	36	29	36			○
	3	Internal coolant		**GD03C-0470S**	5	66	24	17	36			○
	5			**GD05C-0470S**	5	74	36	29	36			○
4.7	3	External coolant		**GD03-0470**	6	66	24	17	36	NO.12-28UNF		●
	5			**GD05-0470**	6	74	36	29	36			●
	3	Internal coolant		**GD03C-0470**	6	66	24	17	36			●
	5			**GD05C-0470**	6	74	36	29	36			●
	8			**GD08C-0470**	6	81	43	36	36			○
	3	External coolant		**GD03-0480S**	5	66	28	20	36			○
	5			**GD05-0480S**	5	82	44	35	36			○
	3	Internal coolant		**GD03C-0480S**	5	66	28	20	36			○
	5			**GD05C-0480S**	5	82	44	35	36			○
4.8	3	External coolant	Straight shank	**GD03-0480**	6	66	28	20	36		M5×0.5	●
	5			**GD05-0480**	6	82	44	35	36			●
	3	Internal coolant		**GD03C-0480**	6	66	28	20	36			●
	5			**GD05C-0480**	6	82	44	35	36			●
	8			**GD08C-0480**	6	95	57	48	36			○
	3	External coolant		**GD03-0490S**	5	66	28	20	36			○
	5			**GD05-0490S**	5	82	44	35	36			○
	3	Internal coolant		**GD03C-0490S**	5	66	28	20	36			○
	5			**GD05C-0490S**	5	82	44	35	36			○
4.9	3	External coolant		**GD03-0490**	6	66	28	20	36			●
	5			**GD05-0490**	6	82	44	35	36			●
	3	Internal coolant		**GD03C-0490**	6	66	28	20	36			●
	5			**GD05C-0490**	6	82	44	35	36			●
	8			**GD08C-0490**	6	95	57	48	36			○

● Stock available ○ Make-to-order

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
5.0	3	External coolant	Straight shank	GD03-0500S	5	66	28	20	36	M6×1	NO.12-24UNC	○
	5			GD05-0500S	5	82	44	35	36			○
	3	Internal coolant		GD03C-0500S	5	66	28	20	36			○
	5			GD05C-0500S	5	82	44	35	36			○
	3	External coolant		GD03-0500	6	66	28	20	36			●
	5			GD05-0500	6	82	44	35	36			●
	3	Internal coolant		GD03C-0500	6	66	28	20	36			●
	5			GD05C-0500	6	82	44	35	36			●
	8			GD08C-0500	6	95	57	48	36			○
5.1	3	External coolant		GD03-0510	6	66	28	20	36	1/4-20UNC	NO.12-28UNF	●
	5			GD05-0510	6	82	44	35	36			●
	3	Internal coolant		GD03C-0510	6	66	28	20	36			●
	5			GD05C-0510	6	82	44	35	36			●
	8			GD08C-0510	6	95	57	48	36			○
5.2	3	External coolant		GD03-0520	6	66	28	20	36			●
	5			GD05-0520	6	82	44	35	36			●
	3	Internal coolant		GD03C-0520	6	66	28	20	36			●
	5			GD05C-0520	6	82	44	35	36			●
	8			GD08C-0520	6	95	57	48	36			○
5.25	3	External coolant		GD03-0525	6	66	28	20	36	M6×0.75		●
	5			GD05-0525	6	82	44	35	36			●
	3	Internal coolant		GD03C-0525	6	66	28	20	36			●
	5			GD05C-0525	6	82	44	35	36			●
5.3	3	External coolant		GD03-0530	6	66	28	20	36			●
	5			GD05-0530	6	82	44	35	36			●
	3	Internal coolant		GD03C-0530	6	66	28	20	36			●
	5			GD05C-0530	6	82	44	35	36			●
	8			GD08C-0530	6	95	57	48	36			○
5.4	3	External coolant		GD03-0540	6	66	28	20	36			●
	5			GD05-0540	6	82	44	35	36			●
	3	Internal coolant		GD03C-0540	6	66	28	20	36			●
	5			GD05C-0540	6	82	44	35	36			●
	8			GD08C-0540	6	95	57	48	36			○

Note: For drilling depth (l/d) of 8 ,namely GD08C series, tolerance of shank diameter is h_5.

● Stock available ○ Make-to-order

Applicable material table

◎Very suitable ○Suitable

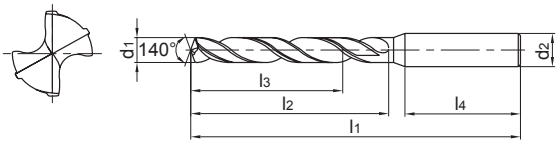
Grade	Workpiece material										
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG3013	○	◎	◎			○	◎	◎			○

Code key C6
Cutting parameters C79–C80
Technical information C87–C93
Non-standard customization tools C94-C98

GD series General machining

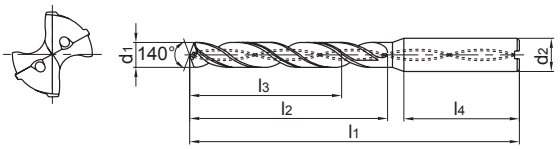

External coolant

Straight shank




Internal coolant

Straight shank



● Suitable for high efficiency drilling in a variety of materials e.g steel, stainless steel, cast iron.

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
5.5	3	External coolant	Straight shank	GD03-0550	6	66	28	20	36	1/4-28UNF		●
	5			GD05-0550	6	82	44	35	36			●
	3	Internal coolant		GD03C-0550	6	66	28	20	36			●
	5			GD05C-0550	6	82	44	35	36			●
	8			GD08C-0550	6	95	57	48	36			○
5.55	3	External coolant		GD03-0555	6	66	28	20	36			●
	5			GD05-0555	6	82	44	35	36			●
	3	Internal coolant		GD03C-0555	6	66	28	20	36			●
	5			GD05C-0555	6	82	44	35	36			●
5.6	3	External coolant		GD03-0560	6	66	28	20	36		M6×1	●
	5			GD05-0560	6	82	44	35	36			●
	3	Internal coolant		GD03C-0560	6	66	28	20	36			●
	5			GD05C-0560	6	82	44	35	36			●
	8			GD08C-0560	6	95	57	48	36			○
5.7	3	External coolant		GD03-0570	6	66	28	20	36		M6×0.75	●
	5			GD05-0570	6	82	44	35	36			●
	3	Internal coolant		GD03C-0570	6	66	28	20	36			●
	5			GD05C-0570	6	82	44	35	36			●
	8			GD08C-0570	6	95	57	48	36			○
5.75	3	External coolant		GD03-0575	6	66	28	20	36		1/4-20UNC	●
	5			GD05-0575	6	82	44	35	36			●
	3	Internal coolant		GD03C-0575	6	66	28	20	36			●
	5			GD05C-0575	6	82	44	35	36			●
5.8	3	External coolant		GD03-0580	6	66	28	20	36			●
	5			GD05-0580	6	82	44	35	36			●
	3	Internal coolant		GD03C-0580	6	66	28	20	36			●
	5			GD05C-0580	6	82	44	35	36			●
	8			GD08C-0580	6	95	57	48	36			○

● Stock available ○ Make-to-order

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
5.9	3	External coolant	Straight shank	GD03-0590	6	66	28	20	36			●
	5			GD05-0590	6	82	44	35	36			●
	3	Internal coolant		GD03C-0590	6	66	28	20	36			●
	5			GD05C-0590	6	82	44	35	36			●
	8			GD08C-0590	6	95	57	48	36			○
5.95	3	External coolant		GD03-0595	6	66	28	20	36		1/4-28UNF	●
	5			GD05-0595	6	82	44	35	36			●
	3	Internal coolant		GD03C-0595	6	66	28	20	36			●
	5			GD05C-0595	6	82	44	35	36			●
6.0	3	External coolant		GD03-0600	6	66	28	20	36	M7×1		●
	5			GD05-0600	6	82	44	35	36			●
	3	Internal coolant		GD03C-0600	6	66	28	20	36			●
	5			GD05C-0600	6	82	44	35	36			●
	8			GD08C-0600	6	95	57	48	36			○
6.1	3	External coolant		GD03-0610S	7	79	34	24	36			○
	5			GD05-0610S	7	91	53	43	36			○
	3	Internal coolant		GD03C-0610S	7	79	34	24	36			○
	5			GD05C-0610S	7	91	53	43	36			○
	3	External coolant		GD03-0610	8	79	34	24	36			●
	5			GD05-0610	8	91	53	43	36			●
	3	Internal coolant		GD03C-0610	8	79	34	24	36			●
	5			GD05C-0610	8	91	53	43	36			●
	8			GD08C-0610	8	114	76	66	36			○
6.2	3	External coolant		GD03-0620S	7	79	34	24	36			○
	5			GD05-0620S	7	91	53	43	36			○
	3	Internal coolant		GD03C-0620S	7	79	34	24	36			○
	5			GD05C-0620S	7	91	53	43	36			○
	3	External coolant		GD03-0620	8	79	34	24	36			●
	5			GD05-0620	8	91	53	43	36			●
	3	Internal coolant		GD03C-0620	8	79	34	24	36			●
	5			GD05C-0620	8	91	53	43	36			●
	8			GD08C-0620	8	114	76	66	36			○

Note: For drilling depth (l/d) of 8 ,namely GD08C series, tolerance of shank diameter is h_5. ● Stock available ○ Make-to-order

Applicable material table

◎Very suitable ○Suitable

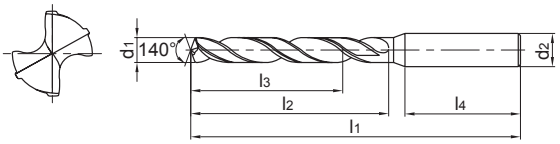
Grade	Workpiece material										
	Mild steel HB⩽180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG3013	○	◎	◎			○	◎	◎			○

Code key C6
Cutting parameters C79–C80
Technical information C87–C93
Non-standard customization tools C94-C98

GD series General machining

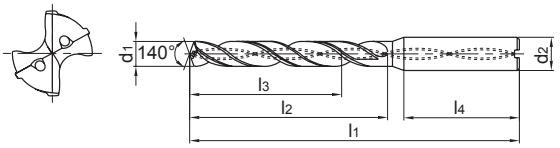

External coolant

Straight shank




Internal coolant

Straight shank



● Suitable for high efficiency drilling in a variety of materials e.g steel, stainless steel, cast iron.

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
6.3	3	External coolant	Straight shank	GD03-0630S	7	79	34	24	36			○
	5			GD05-0630S	7	91	53	43	36			○
	3	Internal coolant		GD03C-0630S	7	79	34	24	36			○
	5			GD05C-0630S	7	91	53	43	36			○
	3	External coolant		GD03-0630	8	79	34	24	36			●
	5			GD05-0630	8	91	53	43	36			●
	3	Internal coolant		GD03C-0630	8	79	34	24	36			●
	5			GD05C-0630	8	91	53	43	36			●
	8			GD08C-0630	8	114	76	66	36			○
6.4	3	External coolant		GD03-0640S	7	79	34	24	36			○
	5			GD05-0640S	7	91	53	43	36			○
	3	Internal coolant		GD03C-0640S	7	79	34	24	36			○
	5			GD05C-0640S	7	91	53	43	36			○
	3	External coolant		GD03-0640	8	79	34	24	36			●
	5			GD05-0640	8	91	53	43	36			●
	3	Internal coolant		GD03C-0640	8	79	34	24	36			●
	5			GD05C-0640	8	91	53	43	36			●
	8			GD08C-0640	8	114	76	66	36			○
6.5	3	External coolant		GD03-0650S	7	79	34	24	36			○
	5			GD05-0650S	7	91	53	43	36			○
	3	Internal coolant		GD03C-0650S	7	79	34	24	36			○
	5			GD05C-0650S	7	91	53	43	36			○
	3	External coolant		GD03-0650	8	79	34	24	36			●
	5			GD05-0650	8	91	53	43	36			●
	3	Internal coolant		GD03C-0650	8	79	34	24	36			●
	5			GD05C-0650	8	91	53	43	36			●
	8			GD08C-0650	8	114	76	66	36			○

● Stock available ○ Make-to-order

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
	3	External coolant		GD03-0660S	7	79	34	24	36			○
	5			GD05-0660S	7	91	53	43	36			○
	3	Internal coolant		GD03C-0660S	7	79	34	24	36			○
	5			GD05C-0660S	7	91	53	43	36			○
6.6	3	External coolant		GD03-0660	8	79	34	24	36	5/16-18UNC	M7×1	●
	5			GD05-0660	8	91	53	43	36			●
	3	Internal coolant		GD03C-0660	8	79	34	24	36			●
	5			GD05C-0660	8	91	53	43	36			●
	8			GD08C-0660	8	114	76	66	36			○
	3	External coolant		GD03-0670S	7	79	34	24	36			○
	5			GD05-0670S	7	91	53	43	36			○
	3	Internal coolant		GD03C-0670S	7	79	34	24	36			○
	5			GD05C-0670S	7	91	53	43	36			○
6.7	3	External coolant		GD03-0670	8	79	34	24	36			●
	5			GD05-0670	8	91	53	43	36			●
	3	Internal coolant		GD03C-0670	8	79	34	24	36			●
	5			GD05C-0670	8	91	53	43	36			●
	8			GD08C-0670	8	114	76	66	36			○
	3	External coolant		GD03-0675S	7	79	34	24	36			○
	5			GD05-0675S	7	91	53	43	36			○
	3	Internal coolant		GD03C-0675S	7	79	34	24	36			○
	5			GD05C-0675S	7	91	53	43	36			○
6.75	3	External coolant		GD03-0675	8	79	34	24	36	M8×1.25		●
	5			GD05-0675	8	91	53	43	36			●
	3	Internal coolant		GD03C-0675	8	79	34	24	36			●
	5			GD05C-0675	8	91	53	43	36			●
	3	External coolant		GD03-0680S	7	79	34	24	36			○
	5			GD05-0680S	7	91	53	43	36			○
	3	Internal coolant		GD03C-0680S	7	79	34	24	36			○
	5			GD05C-0680S	7	91	53	43	36			○
6.8	3	External coolant		GD03-0680	8	79	34	24	36			●
	5			GD05-0680	8	91	53	43	36			●
	3	Internal coolant		GD03C-0680	8	79	34	24	36			●
	5			GD05C-0680	8	91	53	43	36			●
	8			GD08C-0680	8	114	76	66	36			○

Note: For drilling depth (l/d) of 8 ,namely GD08C series, tolerance of shank diameter is h_5.

● Stock available ○ Make-to-order

Applicable material table

◎Very suitable ○Suitable

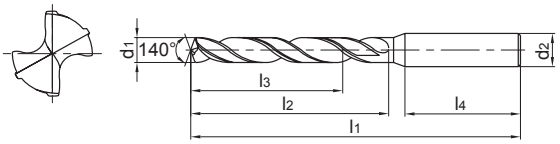
Grade	Workpiece material										
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG3013	○	◎	◎			○	◎	◎			○

Code key C6
Cutting parameters C79–C80
Technical information C87–C93
Non-standard customization tools C94-C98

GD series General machining

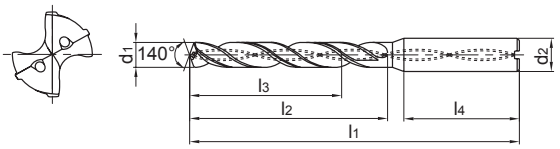

External coolant

Straight shank




Internal coolant

Straight shank



● Suitable for high efficiency drilling in a variety of materials e.g steel, stainless steel, cast iron.

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
	3	External coolant		**GD03-0690S**	7	79	34	24	36			○
	5			**GD05-0690S**	7	91	53	43	36			○
	3	Internal coolant		**GD03C-0690S**	7	79	34	24	36			○
	5			**GD05C-0690S**	7	91	53	43	36			○
6.9	3	External coolant		**GD03-0690**	8	79	34	24	36	5/16-24UNF		●
	5			**GD05-0690**	8	91	53	43	36			●
	3	Internal coolant		**GD03C-0690**	8	79	34	24	36			●
	5			**GD05C-0690**	8	91	53	43	36			●
	8			**GD08C-0690**	8	114	76	66	36			○
	3	External coolant		**GD03-0700S**	7	79	34	24	36			○
	5			**GD05-0700S**	7	91	53	43	36			○
	3	Internal coolant		**GD03C-0700S**	7	79	34	24	36			○
	5			**GD05C-0700S**	7	91	53	43	36			○
7.0	3	External coolant	Straight shank	**GD03-0700**	8	79	34	24	36	M8×1		●
	5			**GD05-0700**	8	91	53	43	36			●
	3	Internal coolant		**GD03C-0700**	8	79	34	24	36			●
	5			**GD05C-0700**	8	91	53	43	36			●
	8			**GD08C-0700**	8	116	76	66	36			○
	3	External coolant		**GD03-0710**	8	79	41	29	36			●
	5			**GD05-0710**	8	91	53	43	36			●
7.1	3	Internal coolant		**GD03C-0710**	8	79	41	29	36			●
	5			**GD05C-0710**	8	91	53	43	36			●
	8			**GD08C-0710**	8	116	76	66	36			○
	3	External coolant		**GD03-0720**	8	79	41	29	36			●
	5			**GD05-0720**	8	91	53	43	36			●
7.2	3	Internal coolant		**GD03C-0720**	8	79	41	29	36			●
	5			**GD05C-0720**	8	91	53	43	36			●
	8			**GD08C-0720**	8	116	76	66	36			○

● Stock available ○ Make-to-order

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
7.3	3	External coolant	Straight shank	GD03-0730	8	79	41	29	36		5/16-18UNC	●
	5			GD05-0730	8	91	53	43	36			●
	3	Internal coolant		GD03C-0730	8	79	41	29	36			●
	5			GD05C-0730	8	91	53	43	36			●
	8			GD08C-0730	8	116	76	66	36			○
7.4	3	External coolant		GD03-0740	8	79	41	29	36			●
	5			GD05-0740	8	91	53	43	36			●
	3	Internal coolant		GD03C-0740	8	79	41	29	36			●
	5			GD05C-0740	8	91	53	43	36			●
	8			GD08C-0740	8	116	76	66	36			○
7.45	3	External coolant		GD03-0745	8	79	41	29	36			●
	5			GD05-0745	8	91	53	43	36		M8×1.25	●
	3	Internal coolant		GD03C-0745	8	79	41	29	36		5/16-24UNF	●
	5			GD05C-0745	8	91	53	43	36			●
7.5	3	External coolant		GD03-0750	8	79	41	29	36			●
	5			GD05-0750	8	91	53	43	36			●
	3	Internal coolant		GD03C-0750	8	79	41	29	36			●
	5			GD05C-0750	8	91	53	43	36			●
	8			GD08C-0750	8	116	76	66	36			○
7.6	3	External coolant		GD03-0760	8	79	41	29	36			●
	5			GD05-0760	8	91	53	43	36			●
	3	Internal coolant		GD03C-0760	8	79	41	29	36		M8×1	●
	5			GD05C-0760	8	91	53	43	36			●
	8			GD08C-0760	8	116	76	66	36			○
7.7	3	External coolant		GD03-0770	8	79	41	29	36			●
	5			GD05-0770	8	91	53	43	36			●
	3	Internal coolant		GD03C-0770	8	79	41	29	36			●
	5			GD05C-0770	8	91	53	43	36			●
	8			GD08C-0770	8	116	76	66	36			○
7.8	3	External coolant		GD03-0780	8	79	41	29	36			●
	5			GD05-0780	8	91	53	43	36			●
	3	Internal coolant		GD03C-0780	8	79	41	29	36			●
	5			GD05C-0780	8	91	53	43	36			●
	8			GD08C-0780	8	116	76	66	36			○

Note: For drilling depth (l/d) of 8 ,namely GD08C series, tolerance of shank diameter is h_5. ● Stock available ○ Make-to-order

Applicable material table

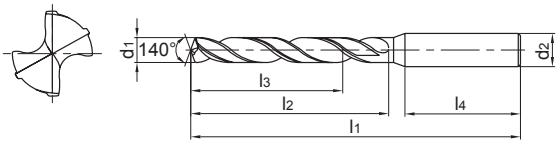
◎Very suitable ○Suitable

Grade	Workpiece material										
	Mild steel HB⩽180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG3013	○	◎	◎			○	◎	◎			○

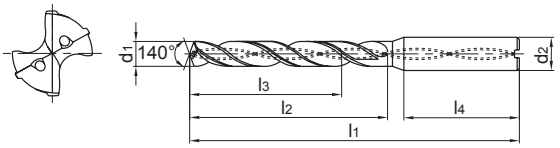
Code key C6
Cutting parameters C79–C80
Technical information C87–C93
Non-standard customization tools C94-C98

GD series General machining


External coolant Straight shank




Internal coolant Straight shank



● Suitable for high efficiency drilling in a variety of materials e.g steel, stainless steel, cast iron.

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
7.9	3	External coolant	Straight shank	GD03-0790	8	79	41	29	36			●
	5			GD05-0790	8	91	53	43	36			●
	3	Internal coolant		GD03C-0790	8	79	41	29	36			●
	5			GD05C-0790	8	91	53	43	36			●
	8			GD08C-0790	8	116	76	66	36			○
8.0	3	External coolant		GD03-0800	8	79	41	29	36	3/8-16UNC		●
	5			GD05-0800	8	91	53	43	36			●
	3	Internal coolant		GD03C-0800	8	79	41	29	36			●
	5			GD05C-0800	8	91	53	43	36			●
	8			GD08C-0800	8	116	76	66	36			○
8.1	3	External coolant		GD03-0810S	9	89	47	35	40			○
	5			GD05-0810S	9	103	61	49	40			○
	3	Internal coolant		GD03C-0810S	9	89	47	35	40			○
	5			GD05C-0810S	9	103	61	49	40			○
	3	External coolant		GD03-0810	10	89	47	35	40			●
	5			GD05-0810	10	103	61	49	40			●
	3	Internal coolant		GD03C-0810	10	89	47	35	40			●
	5			GD05C-0810	10	103	61	49	40			●
	8			GD08C-0810	10	142	95	83	40			○
8.2	3	External coolant		GD03-0820S	9	89	47	35	40			○
	5			GD05-0820S	9	103	61	49	40			○
	3	Internal coolant		GD03C-0820S	9	89	47	35	40			○
	5			GD05C-0820S	9	103	61	49	40			○
	3	External coolant		GD03-0820	10	89	47	35	40			●
	5			GD05-0820	10	103	61	49	40			●
	3	Internal coolant		GD03C-0820	10	89	47	35	40			●
	5			GD05C-0820	10	103	61	49	40			●
	8			GD08C-0820	10	142	95	83	40			○

● Stock available ○ Make-to-order

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
8.3	3	External coolant	Straight shank	GD03-0830S	9	89	47	35	40			○
	5			GD05-0830S	9	103	61	49	40			○
	3	Internal coolant		GD03C-0830S	9	89	47	35	40			○
	5			GD05C-0830S	9	103	61	49	40			○
	3	External coolant		GD03-0830	10	89	47	35	40			●
	5			GD05-0830	10	103	61	49	40			●
	3	Internal coolant		GD03C-0830	10	89	47	35	40			●
	5			GD05C-0830	10	103	61	49	40			●
	8			GD08C-0830	10	142	95	83	40			○
8.4	3	External coolant		GD03-0840S	9	89	47	35	40			○
	5			GD05-0840S	9	103	61	49	40			○
	3	Internal coolant		GD03C-0840S	9	89	47	35	40			○
	5			GD05C-0840S	9	103	61	49	40			○
	3	External coolant		GD03-0840	10	89	47	35	40			●
	5			GD05-0840	10	103	61	49	40			●
	3	Internal coolant		GD03C-0840	10	89	47	35	40			●
	5			GD05C-0840	10	103	61	49	40			●
	8			GD08C-0840	10	142	95	83	40			○
8.5	3	External coolant		GD03-0850S	9	89	47	35	40	M10×1.5 3/8-24UNF		○
	5			GD05-0850S	9	103	61	49	40			○
	3	Internal coolant		GD03C-0850S	9	89	47	35	40			○
	5			GD05C-0850S	9	103	61	49	40			○
	3	External coolant		GD03-0850	10	89	47	35	40			●
	5			GD05-0850	10	103	61	49	40			●
	3	Internal coolant		GD03C-0850	10	89	47	35	40			●
	5			GD05C-0850	10	103	61	49	40			●
	8			GD08C-0850	10	142	95	83	40			○
8.6	3	External coolant		GD03-0860S	9	89	47	35	40			○
	5			GD05-0860S	9	103	61	49	40			○
	3	Internal coolant		GD03C-0860S	9	89	47	35	40			○
	5			GD05C-0860S	9	103	61	49	40			○
	3	External coolant		GD03-0860	10	89	47	35	40			●
	5			GD05-0860	10	103	61	49	40			●
	3	Internal coolant		GD03C-0860	10	89	47	35	40			●
	5			GD05C-0860	10	103	61	49	40			●
	8			GD08C-0860	10	142	95	83	40			○

Note: For drilling depth (l/d) of 8 ,namely GD08C series, tolerance of shank diameter is h_5.

● Stock available ○ Make-to-order

Applicable material table

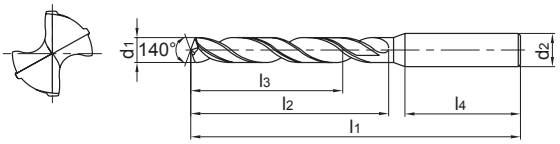
◎Very suitable ○Suitable

Grade	Workpiece material										
	Mild steel HB⩽180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG3013	○	◎	◎			○	◎	◎			○

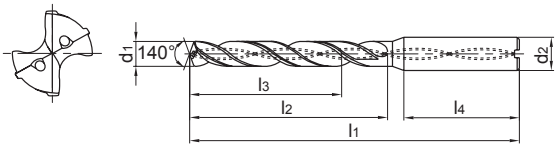
Code key C6
Cutting parameters C79–C80
Technical information C87–C93
Non-standard customization tools C94-C98

GD series General machining


External coolant Straight shank




Internal coolant Straight shank



● Suitable for high efficiency drilling in a variety of materials e.g steel, stainless steel, cast iron.

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
8.7	3	External coolant	Straight shank	GD03-0870S	9	89	47	35	40			○
	5			GD05-0870S	9	103	61	49	40			○
	3	Internal coolant		GD03C-0870S	9	89	47	35	40			○
	5			GD05C-0870S	9	103	61	49	40			○
	3	External coolant		GD03-0870	10	89	47	35	40			●
	5			GD05-0870	10	103	61	49	40			●
	3	Internal coolant		GD03C-0870	10	89	47	35	40			●
	5			GD05C-0870	10	103	61	49	40			●
	8			GD08C-0870	10	142	95	83	40			○
8.75	3	External coolant		GD03-0875S	9	89	47	35	40	M10×1.25		○
	5			GD05-0875S	9	103	61	49	40			○
	3	Internal coolant		GD03C-0875S	9	89	47	35	40			○
	5			GD05C-0875S	9	103	61	49	40			○
	3	External coolant		GD03-0875	10	89	47	35	40			●
	5			GD05-0875	10	103	61	49	40			●
	3	Internal coolant		GD03C-0875	10	89	47	35	40			●
	5			GD05C-0875	10	103	61	49	40			●
8.8	3	External coolant		GD03-0880S	9	89	47	35	40		3/8-16UNC	○
	5			GD05-0880S	9	103	61	49	40			○
	3	Internal coolant		GD03C-0880S	9	89	47	35	40			○
	5			GD05C-0880S	9	103	61	49	40			○
	3	External coolant		GD03-0880	10	89	47	35	40			●
	5			GD05-0880	10	103	61	49	40			●
	3	Internal coolant		GD03C-0880	10	89	47	35	40			●
	5			GD05C-0880	10	103	61	49	40			●
	8			GD08C-0880	10	142	95	83	40			○

● Stock available ○ Make-to-order

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
8.9	3	External coolant	Straight shank	GD03-0890S	9	89	47	35	40			○
	5			GD05-0890S	9	103	61	49	40			○
	3	Internal coolant		GD03C-0890S	9	89	47	35	40			○
	5			GD05C-0890S	9	103	61	49	40			○
	3	External coolant		GD03-0890	10	89	47	35	40			●
	5			GD05-0890	10	103	61	49	40			●
	3	Internal coolant		GD03C-0890	10	89	47	35	40			●
	5			GD05C-0890	10	103	61	49	40			●
	8			GD08C-0890	10	142	95	83	40			○
9.0	3	External coolant		GD03-0900S	9	89	47	35	40	M10×1	3/8-24UNF	○
	5			GD05-0900S	9	103	61	49	40			○
	3	Internal coolant		GD03C-0900S	9	89	47	35	40			○
	5			GD05C-0900S	9	103	61	49	40			○
	3	External coolant		GD03-0900	10	89	47	35	40			●
	5			GD05-0900	10	103	61	49	40			●
	3	Internal coolant		GD03C-0900	10	89	47	35	40			●
	5			GD05C-0900	10	103	61	49	40			●
	8			GD08C-0900	10	142	95	83	40			○
9.1	3	External coolant		GD03-0910	10	89	47	35	40			●
	5			GD05-0910	10	103	61	49	40			●
	3	Internal coolant		GD03C-0910	10	89	47	35	40			●
	5			GD05C-0910	10	103	61	49	40			●
	8			GD08C-0910	10	142	95	83	40			○
9.2	3	External coolant		GD03-0920	10	89	47	35	40			●
	5			GD05-0920	10	103	61	49	40			●
	3	Internal coolant		GD03C-0920	10	89	47	35	40			●
	5			GD05C-0920	10	103	61	49	40			●
	8			GD08C-0920	10	142	95	83	40			○
9.3	3	External coolant		GD03-0930	10	89	47	35	40			●
	5			GD05-0930	10	103	61	49	40			●
	3	Internal coolant		GD03C-0930	10	89	47	35	40			●
	5			GD05C-0930	10	103	61	49	40			●
	8			GD08C-0930	10	142	95	83	40			○

Note: For drilling depth (l/d) of 8 ,namely GD08C series, tolerance of shank diameter is h_5.

● Stock available ○ Make-to-order

Applicable material table

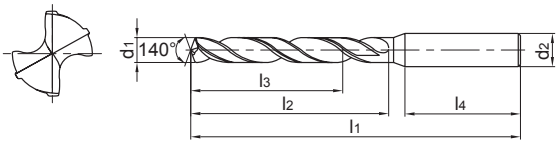
◎Very suitable ○Suitable

Grade	Workpiece material										
	Mild steel HB⩽180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG3013	○	◎	◎			○	◎	◎			○

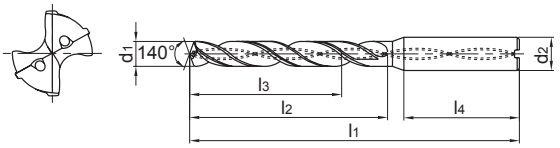
Code key C6
Cutting parameters C79–C80
Technical information C87–C93
Non-standard customization tools C94-C98

GD series General machining


External coolant Straight shank




Internal coolant Straight shank



● Suitable for high efficiency drilling in a variety of materials e.g steel, stainless steel, cast iron.

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
9.35	3	External coolant	Straight shank	GD03-0935	10	89	47	35	40		M10×1.5	●
	5			GD05-0935	10	103	61	49	40			●
	3	Internal coolant		GD03C-0935	10	89	47	35	40			●
	5			GD05C-0935	10	103	61	49	40			●
9.4	3	External coolant		GD03-0940	10	89	47	35	40	7/16-14UNC		●
	5			GD05-0940	10	103	61	49	40			●
	3	Internal coolant		GD03C-0940	10	89	47	35	40			●
	5			GD05C-0940	10	103	61	49	40			●
	8			GD08C-0940	10	142	95	83	40			○
9.45	3	External coolant		GD03-0945	10	89	47	35	40		M10×1.25	●
	5			GD05-0945	10	103	61	49	40			●
	3	Internal coolant		GD03C-0945	10	89	47	35	40			●
	5			GD05C-0945	10	103	61	49	40			●
9.5	3	External coolant		GD03-0950	10	89	47	35	40			●
	5			GD05-0950	10	103	61	49	40			●
	3	Internal coolant		GD03C-0950	10	89	47	35	40			●
	5			GD05C-0950	10	103	61	49	40			●
	8			GD08C-0950	10	142	95	83	40			○
9.6	3	External coolant		GD03-0960	10	89	47	35	40		M10×1	●
	5			GD05-0960	10	103	61	49	40			●
	3	Internal coolant		GD03C-0960	10	89	47	35	40			●
	5			GD05C-0960	10	103	61	49	40			●
	8			GD08C-0960	10	142	95	83	40			○
9.7	3	External coolant		GD03-0970	10	89	47	35	40			●
	5			GD05-0970	10	103	61	49	40			●
	3	Internal coolant		GD03C-0970	10	89	47	35	40			●
	5			GD05C-0970	10	103	61	49	40			●
	8			GD08C-0970	10	142	95	83	40			○

● Stock available ○ Make-to-order

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
9.8	3	External coolant	Straight shank	GD03-0980	10	89	47	35	40			●
	5			GD05-0980	10	103	61	49	40			●
	3	Internal coolant		GD03C-0980	10	89	47	35	40			●
	5			GD05C-0980	10	103	61	49	40			●
	8			GD08C-0980	10	142	95	83	40			○
9.9	3	External coolant		GD03-0990	10	89	47	35	40	7/16-20UNF		●
	5			GD05-0990	10	103	61	49	40			●
	3	Internal coolant		GD03C-0990	10	89	47	35	40			●
	5			GD05C-0990	10	103	61	49	40			●
	8			GD08C-0990	10	142	95	83	40			○
10.0	3	External coolant		GD03-1000	10	89	47	35	40			●
	5			GD05-1000	10	103	61	49	40			●
	3	Internal coolant		GD03C-1000	10	89	47	35	40			●
	5			GD05C-1000	10	103	61	49	40			●
	8			GD08C-1000	10	142	95	83	40			○
10.1	3	External coolant		GD03-1010S	11	102	55	40	45			○
	5			GD05-1010S	11	118	71	56	45			○
	3	Internal coolant		GD03C-1010S	11	102	55	40	45			○
	5			GD05C-1010S	11	118	71	56	45			○
	3	External coolant		GD03-1010	12	102	55	40	45			●
	5			GD05-1010	12	118	71	56	45			●
	3	Internal coolant		GD03C-1010	12	102	55	40	45			●
	5			GD05C-1010	12	118	71	56	45			●
	8			GD08C-1010	12	162	114	99	45			○
10.2	3	External coolant		GD03-1020S	11	102	55	40	45			○
	5			GD05-1020S	11	118	71	56	45			○
	3	Internal coolant		GD03C-1020S	11	102	55	40	45			○
	5			GD05C-1020S	11	118	71	56	45			○
	3	External coolant		GD03-1020	12	102	55	40	45			●
	5			GD05-1020	12	118	71	56	45			●
	3	Internal coolant		GD03C-1020	12	102	55	40	45			●
	5			GD05C-1020	12	118	71	56	45			●
	8			GD08C-1020	12	162	114	99	45			○

Note: For drilling depth (l/d) of 8 ,namely GD08C series, tolerance of shank diameter is h_5. ● Stock available ○ Make-to-order

Applicable material table

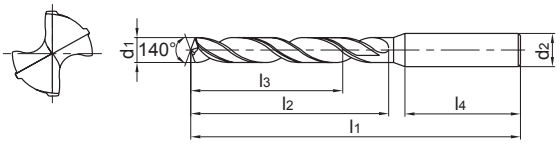
◎Very suitable ○Suitable

Grade	Workpiece material										
	Mild steel HB⩽180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG3013	○	◎	◎			○	◎	◎			○

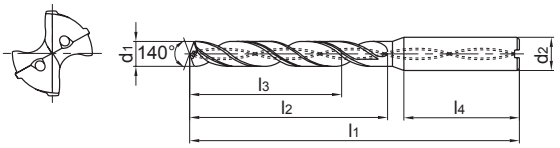
Code key C6
Cutting parameters C79–C80
Technical information C87–C93
Non-standard customization tools C94-C98

GD series General machining


External coolant Straight shank




Internal coolant Straight shank



● Suitable for high efficiency drilling in a variety of materials e.g steel, stainless steel, cast iron.

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
10.25	3	External coolant	Straight shank	GD03-1025S	11	102	55	40	45	M12×1.75		○
	5			GD05-1025S	11	118	71	56	45			○
	3	Internal coolant		GD03C-1025S	11	102	55	40	45			○
	5			GD05C-1025S	11	118	71	56	45			○
	3	External coolant		GD03-1025	12	102	55	40	45			●
	5			GD05-1025	12	118	71	56	45			●
	3	Internal coolant		GD03C-1025	12	102	55	40	45			●
	5			GD05C-1025	12	118	71	56	45			●
10.3	3	External coolant		GD03-1030S	11	102	55	40	45			○
	5			GD05-1030S	11	118	71	56	45			○
	3	Internal coolant		GD03C-1030S	11	102	55	40	45			○
	5			GD05C-1030S	11	118	71	56	45			○
	3	External coolant		GD03-1030	12	102	55	40	45		7/16-14UNC	●
	5			GD05-1030	12	118	71	56	45			●
	3	Internal coolant		GD03C-1030	12	102	55	40	45			●
	5			GD05C-1030	12	118	71	56	45			●
	8			GD08C-1030	12	162	114	99	45			○
10.4	3	External coolant		GD03-1040S	11	102	55	40	45			○
	5			GD05-1040S	11	118	71	56	45			○
	3	Internal coolant		GD03C-1040S	11	102	55	40	45			○
	5			GD05C-1040S	11	118	71	56	45			○
	3	External coolant		GD03-1040	12	102	55	40	45			●
	5			GD05-1040	12	118	71	56	45			●
	3	Internal coolant		GD03C-1040	12	102	55	40	45			●
	5			GD05C-1040	12	118	71	56	45			●
	8			GD08C-1040	12	162	114	99	45			○

● Stock available ○ Make-to-order

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
10.5	3	External coolant	Straight shank	GD03-1050S	11	102	55	40	45	M12×1.5	7/16-20UNF	○
	5			GD05-1050S	11	118	71	56	45			○
	3	Internal coolant		GD03C-1050S	11	102	55	40	45			○
	5			GD05C-1050S	11	118	71	56	45			○
	3	External coolant		GD03-1050	12	102	55	40	45			●
	5			GD05-1050	12	118	71	56	45			●
	3	Internal coolant		GD03C-1050	12	102	55	40	45			●
	5			GD05C-1050	12	118	71	56	45			●
	8			GD08C-1050	12	162	114	99	45			○
10.6	3	External coolant		GD03-1060S	11	102	55	40	45			○
	5			GD05-1060S	11	118	71	56	45			○
	3	Internal coolant		GD03C-1060S	11	102	55	40	45			○
	5			GD05C-1060S	11	118	71	56	45			○
	3	External coolant		GD03-1060	12	102	55	40	45			●
	5			GD05-1060	12	118	71	56	45			●
	3	Internal coolant		GD03C-1060	12	102	55	40	45			●
	5			GD05C-1060	12	118	71	56	45			●
	8			GD08C-1060	12	162	114	99	45			○
10.7	3	External coolant		GD03-1070S	11	102	55	40	45			○
	5			GD05-1070S	11	118	71	56	45			○
	3	Internal coolant		GD03C-1070S	11	102	55	40	45			○
	5			GD05C-1070S	11	118	71	56	45			○
	3	External coolant		GD03-1070	12	102	55	40	45			●
	5			GD05-1070	12	118	71	56	45			●
	3	Internal coolant		GD03C-1070	12	102	55	40	45			●
	5			GD05C-1070	12	118	71	56	45			●
	8			GD08C-1070	12	162	114	99	45			○
10.75	3	External coolant		GD03-1075S	11	102	55	40	45	M12×1.25		○
	5			GD05-1075S	11	118	71	56	45			○
	3	Internal coolant		GD03C-1075S	11	102	55	40	45			○
	5			GD05C-1075S	11	118	71	56	45			○
	3	External coolant		GD03-1075	12	102	55	40	45			●
	5			GD05-1075	12	118	71	56	45			●
	3	Internal coolant		GD03C-1075	12	102	55	40	45			●
	5			GD05C-1075	12	118	71	56	45			●

Note: For drilling depth (l/d) of 8 ,namely GD08C series, tolerance of shank diameter is h_5. ● Stock available ○ Make-to-order

Applicable material table

◎Very suitable ○Suitable

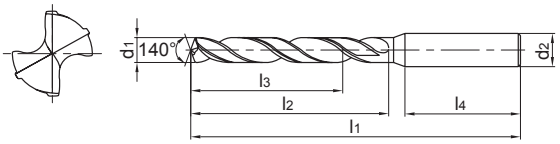
Grade	Workpiece material										
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG3013	○	◎	◎			○	◎	◎			○

Code key C6
Cutting parameters C79–C80
Technical information C87–C93
Non-standard customization tools C94-C98

GD series General machining

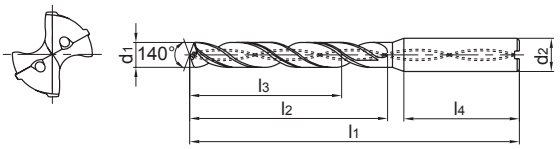

External coolant

Straight shank




Internal coolant

Straight shank



● Suitable for high efficiency drilling in a variety of materials e.g steel, stainless steel, cast iron.

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
	3	External coolant		**GD03-1080S**	11	102	55	40	45			○
	5			**GD05-1080S**	11	118	71	56	45			○
	3	Internal coolant		**GD03C-1080S**	11	102	55	40	45			○
	5			**GD05C-1080S**	11	118	71	56	45			○
10.8	3	External coolant		**GD03-1080**	12	102	55	40	45	1/2-13UNC		●
	5			**GD05-1080**	12	118	71	56	45			●
	3	Internal coolant		**GD03C-1080**	12	102	55	40	45			●
	5			**GD05C-1080**	12	118	71	56	45			●
	8			**GD08C-1080**	12	162	114	99	45			○
	3	External coolant		**GD03-1090S**	11	102	55	40	45			○
	5			**GD05-1090S**	11	118	71	56	45			○
	3	Internal coolant		**GD03C-1090S**	11	102	55	40	45			○
	5			**GD05C-1090S**	11	118	71	56	45			○
10.9	3	External coolant	Straight shank	**GD03-1090**	12	102	55	40	45			●
	5			**GD05-1090**	12	118	71	56	45			●
	3	Internal coolant		**GD03C-1090**	12	102	55	40	45			●
	5			**GD05C-1090**	12	118	71	56	45			●
	8			**GD08C-1090**	12	162	114	99	45			○
	3	External coolant		**GD03-1100S**	11	102	55	40	45			○
	5			**GD05-1100S**	11	118	71	56	45			○
	3	Internal coolant		**GD03C-1100S**	11	102	55	40	45			○
	5			**GD05C-1100S**	11	118	71	56	45			○
11.0	3	External coolant		**GD03-1100**	12	102	55	40	45			●
	5			**GD05-1100**	12	118	71	56	45			●
	3	Internal coolant		**GD03C-1100**	12	102	55	40	45			●
	5			**GD05C-1100**	12	118	71	56	45			●
	8			**GD08C-1100**	12	162	114	99	45			○

● Stock available ○ Make-to-order

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
11.1	3	External coolant	Straight shank	GD03-1110	12	102	55	40	45			●
	5			GD05-1110	12	118	71	56	45			●
	3	Internal coolant		GD03C-1110	12	102	55	40	45			●
	5			GD05C-1110	12	118	71	56	45			●
	8			GD08C-1110	12	162	114	99	45			○
11.2	3	External coolant		GD03-1120	12	102	55	40	45			●
	5			GD05-1120	12	118	71	56	45			●
	3	Internal coolant		GD03C-1120	12	102	55	40	45			●
	5			GD05C-1120	12	118	71	56	45			●
	8			GD08C-1120	12	162	114	99	45			○
11.25	3	External coolant		GD03-1125	12	102	55	40	45		M12×1.75	●
	5			GD05-1125	12	118	71	56	45			●
	3	Internal coolant		GD03C-1125	12	102	55	40	45			●
	5			GD05C-1125	12	118	71	56	45			●
11.3	3	External coolant		GD03-1130	12	102	55	40	45			●
	5			GD05-1130	12	118	71	56	45			●
	3	Internal coolant		GD03C-1130	12	102	55	40	45			●
	5			GD05C-1130	12	118	71	56	45			●
	8			GD08C-1130	12	162	114	99	45			○
11.35	3	External coolant		GD03-1135	12	102	55	40	45			●
	5			GD05-1135	12	118	71	56	45		M12×1.5	●
	3	Internal coolant		GD03C-1135	12	102	55	40	45			●
	5			GD05C-1135	12	118	71	56	45			●
11.4	3	External coolant		GD03-1140	12	102	55	40	45			●
	5			GD05-1140	12	118	71	56	45			●
	3	Internal coolant		GD03C-1140	12	102	55	40	45			●
	5			GD05C-1140	12	118	71	56	45			●
	8			GD08C-1140	12	162	114	99	45			○
11.45	3	External coolant		GD03-1145	12	102	55	40	45			●
	5			GD05-1145	12	118	71	56	45			●
	3	Internal coolant		GD03C-1145	12	102	55	40	45		M12×1.25	●
	5			GD05C-1145	12	118	71	56	45			●

Note: For drilling depth (l/d) of 8 ,namely GD08C series, tolerance of shank diameter is h_5. ● Stock available ○ Make-to-order

Applicable material table

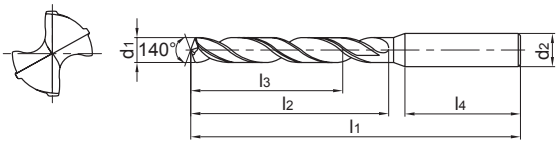
◎Very suitable ○Suitable

Grade	Workpiece material										
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG3013	○	◎	◎			○	◎	◎			○

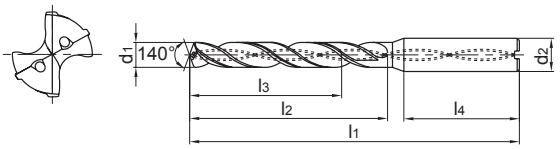
Code key C6
Cutting parameters C79–C80
Technical information C87–C93
Non-standard customization tools C94-C98

GD series General machining


External coolant Straight shank




Internal coolant Straight shank



● Suitable for high efficiency drilling in a variety of materials e.g steel, stainless steel, cast iron.

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
11.5	3	External coolant	Straight shank	GD03-1150	12	102	55	40	45	1/2-20UNF		●
	5			GD05-1150	12	118	71	56	45			●
	3	Internal coolant		GD03C-1150	12	102	55	40	45			●
	5			GD05C-1150	12	118	71	56	45			●
	8			GD08C-1150	12	162	114	99	45			○
11.6	3	External coolant		GD03-1160	12	102	55	40	45			●
	5			GD05-1160	12	118	71	56	45			●
	3	Internal coolant		GD03C-1160	12	102	55	40	45			●
	5			GD05C-1160	12	118	71	56	45			●
	8			GD08C-1160	12	162	114	99	45			○
11.7	3	External coolant		GD03-1170	12	102	55	40	45			●
	5			GD05-1170	12	118	71	56	45			●
	3	Internal coolant		GD03C-1170	12	102	55	40	45			●
	5			GD05C-1170	12	118	71	56	45			●
	8			GD08C-1170	12	162	114	99	45			○
11.8	3	External coolant		GD03-1180	12	102	55	40	45		1/2-13UNC	●
	5			GD05-1180	12	118	71	56	45			●
	3	Internal coolant		GD03C-1180	12	102	55	40	45			●
	5			GD05C-1180	12	118	71	56	45			●
	8			GD08C-1180	12	162	114	99	45			○
11.9	3	External coolant		GD03-1190	12	102	55	40	45			●
	5			GD05-1190	12	118	71	56	45			●
	3	Internal coolant		GD03C-1190	12	102	55	40	45			●
	5			GD05C-1190	12	118	71	56	45			●
	8			GD08C-1190	12	162	114	99	45			○
12.0	3	External coolant		GD03-1200	12	102	55	40	45			●
	5			GD05-1200	12	118	71	56	45			●
	3	Internal coolant		GD03C-1200	12	102	55	40	45	M14×2		●
	5			GD05C-1200	12	118	71	56	45			●
	8			GD08C-1200	12	162	114	99	45			○

● Stock available ○ Make-to-order

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
12.1	3	External coolant	Straight shank	GD03-1210	14	107	60	43	45		1/2-20UNF	●
	5			GD05-1210	14	124	77	60	45			●
	3	Internal coolant		GD03C-1210	14	107	60	43	45			●
	5			GD05C-1210	14	124	77	60	45			●
12.2	3	External coolant		GD03-1220	14	107	60	43	45	9/16-12UNC		●
	5			GD05-1220	14	124	77	60	45			●
	3	Internal coolant		GD03C-1220	14	107	60	43	45			●
	5			GD05C-1220	14	124	77	60	45			●
12.25	3	External coolant		GD03-1225	14	107	60	43	45			●
	5			GD05-1225	14	124	77	60	45			●
	3	Internal coolant		GD03C-1225	14	107	60	43	45			●
	5			GD05C-1225	14	124	77	60	45			●
12.3	3	External coolant		GD03-1230	14	107	60	43	45			●
	5			GD05-1230	14	124	77	60	45			●
	3	Internal coolant		GD03C-1230	14	107	60	43	45			●
	5			GD05C-1230	14	124	77	60	45			●
12.5	3	External coolant		GD03-1250	14	107	60	43	45	M14×1.5		●
	5			GD05-1250	14	124	77	60	45			●
	3	Internal coolant		GD03C-1250	14	107	60	43	45			●
	5			GD05C-1250	14	124	77	60	45			●
	8			GD08C-1250	14	178	133	116	45			○
12.7	3	External coolant		GD03-1270	14	107	60	43	45			●
	5			GD05-1270	14	124	77	60	45			●
	3	Internal coolant		GD03C-1270	14	107	60	43	45			●
	5			GD05C-1270	14	124	77	60	45			●
	8			GD08C-1270	14	178	133	116	45			○
12.75	3	External coolant		GD03-1275	14	107	60	43	45			●
	5			GD05-1275	14	124	77	60	45			●
	3	Internal coolant		GD03C-1275	14	107	60	43	45			●
	5			GD05C-1275	14	124	77	60	45			●
12.8	3	External coolant		GD03-1280	14	107	60	43	45			●
	5			GD05-1280	14	124	77	60	45			●
	3	Internal coolant		GD03C-1280	14	107	60	43	45			●
	5			GD05C-1280	14	124	77	60	45			●
	8			GD08C-1280	14	178	133	116	45			○

Note: For drilling depth (l/d) of 8 ,namely GD08C series, tolerance of shank diameter is h_5. ● Stock available ○ Make-to-order

Applicable material table

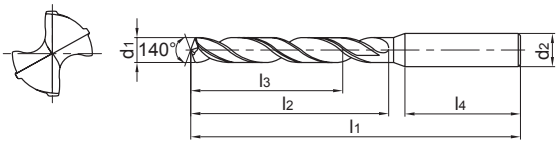
◎Very suitable ○Suitable

Grade	Workpiece material										
	Mild steel HB⩽180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG3013	○	◎	◎			○	◎	◎			○

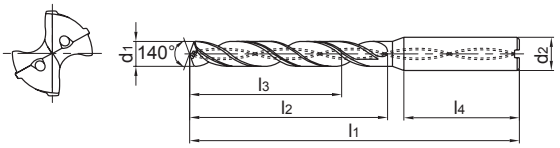
Code key C6
Cutting parameters C79–C80
Technical information C87–C93
Non-standard customization tools C94-C98

GD series General machining


External coolant Straight shank




Internal coolant Straight shank



● Suitable for high efficiency drilling in a variety of materials e.g steel, stainless steel, cast iron.

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
12.9	3	External coolant	Straight shank	GD03-1290	14	107	60	43	45	9/16-18UNF		●
	5			GD05-1290	14	124	77	60	45			●
	3	Internal coolant		GD03C-1290	14	107	60	43	45			●
	5			GD05C-1290	14	124	77	60	45			●
13.0	3	External coolant		GD03-1300	14	107	60	43	45			●
	5			GD05-1300	14	124	77	60	45			●
	3	Internal coolant		GD03C-1300	14	107	60	43	45			●
	5			GD05C-1300	14	124	77	60	45			●
	8			GD08C-1300	14	178	133	116	45			○
13.1	3	External coolant		GD03-1310	14	107	60	43	45		M14×2	●
	5			GD05-1310	14	124	77	60	45			●
	3	Internal coolant		GD03C-1310	14	107	60	43	45			●
	5			GD05C-1310	14	124	77	60	45			●
13.35	3	External coolant		GD03-1335	14	107	60	43	45			●
	5			GD05-1335	14	124	77	60	45		M14×1.5	●
	3	Internal coolant		GD03C-1335	14	107	60	43	45		9/16-12UNC	●
	5			GD05C-1335	14	124	77	60	45			●
13.5	3	External coolant		GD03-1350	14	107	60	43	45	5/8-11UNC		●
	5			GD05-1350	14	124	77	60	45			●
	3	Internal coolant		GD03C-1350	14	107	60	43	45			●
	5			GD05C-1350	14	124	77	60	45			●
	8			GD08C-1350	14	178	133	116	45			○
13.65	3	External coolant		GD03-1365	14	107	60	43	45		9/16-18UNF	●
	5			GD05-1365	14	124	77	60	45			●
	3	Internal coolant		GD03C-1365	14	107	60	43	45			●
	5			GD05C-1365	14	124	77	60	45			●

● Stock available ○ Make-to-order

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
13.8	3	External coolant	Straight shank	GD03-1380	14	107	60	43	45			●
	5			GD05-1380	14	124	77	60	45			●
	3	Internal coolant		GD03C-1380	14	107	60	43	45			●
	5			GD05C-1380	14	124	77	60	45			●
14.0	3	External coolant		GD03-1400	14	107	60	43	45	M16×2		●
	5			GD05-1400	14	124	77	60	45			●
	3	Internal coolant		GD03C-1400	14	107	60	43	45			●
	5			GD05C-1400	14	124	77	60	45			●
	8			GD08C-1400	14	178	133	116	45			○
14.25	3	External coolant		GD03-1425	16	115	65	45	48			●
	5			GD05-1425	16	133	83	63	48			●
	3	Internal coolant		GD03C-1425	16	115	65	45	48			●
	5			GD05C-1425	16	133	83	63	48			●
14.3	3	External coolant		GD03-1430	16	115	65	45	48			●
	5			GD05-1430	16	133	83	63	48			●
	3	Internal coolant		GD03C-1430	16	115	65	45	48			●
	5			GD05C-1430	16	133	83	63	48			●
14.5	3	External coolant		GD03-1450	16	115	65	45	48	M16×1.5 5/8-18UNF		●
	5			GD05-1450	16	133	83	63	48			●
	3	Internal coolant		GD03C-1450	16	115	65	45	48			●
	5			GD05C-1450	16	133	83	63	48			●
	8			GD08C-1450	16	204	152	132	48			○
14.75	3	External coolant		GD03-1475	16	115	65	45	48			●
	5			GD05-1475	16	133	83	63	48			●
	3	Internal coolant		GD03C-1475	16	115	65	45	48			●
	5			GD05C-1475	16	133	83	63	48			●
14.8	3	External coolant		GD03-1480	16	115	65	45	48		5/8-11UNC	●
	5			GD05-1480	16	133	83	63	48			●
	3	Internal coolant		GD03C-1480	16	115	65	45	48			●
	5			GD05C-1480	16	133	83	63	48			●
	8			GD08C-1480	16	204	152	132	48			○
15.0	3	External coolant		GD03-1500	16	115	65	45	48			●
	5			GD05-1500	16	133	83	63	48			●
	3	Internal coolant		GD03C-1500	16	115	65	45	48			●
	5			GD05C-1500	16	133	83	63	48			●
	8			GD08C-1500	16	204	152	132	48			○

Note: For drilling depth (l/d) of 8 ,namely GD08C series, tolerance of shank diameter is h_5.

● Stock available ○ Make-to-order

Applicable material table

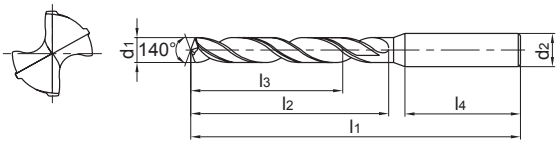
◎Very suitable ○Suitable

Grade	Workpiece material										
	Mild steel HB⩽180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG3013	○	◎	◎			○	◎	◎			○

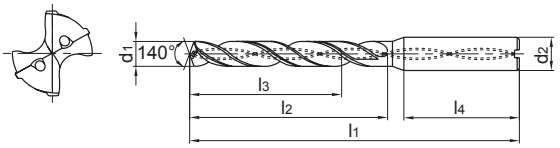
Code key C6
Cutting parameters C79–C80
Technical information C87–C93
Non-standard customization tools C94-C98

GD series General machining


External coolant Straight shank




Internal coolant Straight shank



● Suitable for high efficiency drilling in a variety of materials e.g steel, stainless steel, cast iron.

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
15.1	3	External coolant	Straight shank	GD03-1510	16	115	65	45	48		M16×2	●
	5			GD05-1510	16	133	83	63	48			●
	3	Internal coolant		GD03C-1510	16	115	65	45	48			●
	5			GD05C-1510	16	133	83	63	48			●
15.25	3	External coolant		GD03-1525	16	115	65	45	48		5/8-18UNF	●
	5			GD05-1525	16	133	83	63	48			●
	3	Internal coolant		GD03C-1525	16	115	65	45	48			●
	5			GD05C-1525	16	133	83	63	48			●
15.35	3	External coolant		GD03-1535	16	115	65	45	48		M16×1.5	●
	5			GD05-1535	16	133	83	63	48			●
	3	Internal coolant		GD03C-1535	16	115	65	45	48			●
	5			GD05C-1535	16	133	83	63	48			●
15.5	3	External coolant		GD03-1550	16	115	65	45	48	M18×2.5		●
	5			GD05-1550	16	133	83	63	48			●
	3	Internal coolant		GD03C-1550	16	115	65	45	48			●
	5			GD05C-1550	16	133	83	63	48			●
	8			GD08C-1550	16	204	152	132	48			○
15.8	3	External coolant		GD03-1580	16	115	65	45	48			●
	5			GD05-1580	16	133	83	63	48			●
	3	Internal coolant		GD03C-1580	16	115	65	45	48			●
	5			GD05C-1580	16	133	83	63	48			●
16.0	3	External coolant		GD03-1600	16	115	65	45	48	M18×2		●
	5			GD05-1600	16	133	83	63	48			●
	3	Internal coolant		GD03C-1600	16	115	65	45	48			●
	5			GD05C-1600	16	133	83	63	48			●
	8			GD08C-1600	16	204	152	132	48			○

● Stock available ○ Make-to-order

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
16.5	3	External coolant	Straight shank	GD03-1650	18	123	73	51	48	3/4-10UNC		●
	5			GD05-1650	18	143	93	71	48			●
	3	Internal coolant		GD03C-1650	18	123	73	51	48			●
	5			GD05C-1650	18	143	93	71	48			●
	8			GD08C-1650	18	223	171	149	48			○
16.75	3	External coolant		GD03-1675	18	123	73	51	48			●
	5			GD05-1675	18	143	93	71	48			●
	3	Internal coolant		GD03C-1675	18	123	73	51	48			●
	5			GD05C-1675	18	143	93	71	48			●
16.8	3	External coolant		GD03-1680	18	123	73	51	48		M18×2.5	●
	5			GD05-1680	18	143	93	71	48			●
	3	Internal coolant		GD03C-1680	18	123	73	51	48			●
	5			GD05C-1680	18	143	93	71	48			●
17.0	3	External coolant		GD03-1700	18	123	73	51	48			●
	5			GD05-1700	18	143	93	71	48			●
	3	Internal coolant		GD03C-1700	18	123	73	51	48			●
	5			GD05C-1700	18	143	93	71	48			●
	8			GD08C-1700	18	223	171	149	48			○
17.5	3	External coolant		GD03-1750	18	123	73	51	48	M20×2.5 3/4-16UNF		●
	5			GD05-1750	18	143	93	71	48			●
	3	Internal coolant		GD03C-1750	18	123	73	51	48			●
	5			GD05C-1750	18	143	93	71	48			●
	8			GD08C-1750	18	223	171	149	48			○
17.8	3	External coolant		GD03-1780	18	123	73	51	48			●
	5			GD05-1780	18	143	93	71	48			●
	3	Internal coolant		GD03C-1780	18	123	73	51	48			●
	5			GD05C-1780	18	143	93	71	48			●
17.9	3	External coolant		GD03-1790	18	123	73	51	48		3/4-10UNC	●
	5			GD05-1790	18	143	93	71	48			●
	3	Internal coolant		GD03C-1790	18	123	73	51	48			●
	5			GD05C-1790	18	143	93	71	48			●
18.0	3	External coolant		GD03-1800	18	123	73	51	48	M20×2		●
	5			GD05-1800	18	143	93	71	48			●
	3	Internal coolant		GD03C-1800	18	123	73	51	48			●
	5			GD05C-1800	18	143	93	71	48			●
	8			GD08C-1800	18	223	171	149	48			○

Note: For drilling depth (l/d) of 8 ,namely GD08C series, tolerance of shank diameter is h_5.

● Stock available ○ Make-to-order

Applicable material table

◎Very suitable ○Suitable

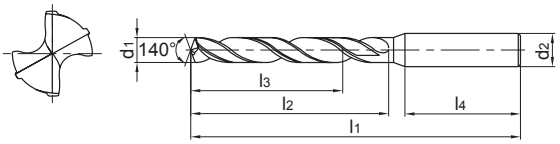
Grade	Workpiece material										
	Mild steel HB⩽180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG3013	○	◎	◎			○	◎	◎			○

Code key C6
Cutting parameters C79–C80
Technical information C87–C93
Non-standard customization tools C94-C98

GD series General machining

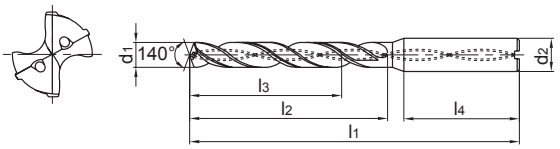

External coolant

Straight shank




Internal coolant

Straight shank



● Suitable for high efficiency drilling in a variety of materials e.g steel, stainless steel, cast iron.

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
18.3	3	External coolant	Straight shank	GD03-1830	20	131	79	55	50		3/4-16UNF	●
	5			GD05-1830	20	153	101	77	50			●
	3	Internal coolant		GD03C-1830	20	131	79	55	50			●
	5			GD05C-1830	20	153	101	77	50			●
18.5	3	External coolant		GD03-1850	20	131	79	55	50			●
	5			GD05-1850	20	153	101	77	50			●
	3	Internal coolant		GD03C-1850	20	131	79	55	50			●
	5			GD05C-1850	20	153	101	77	50			●
18.8	3	External coolant		GD03-1880	20	131	79	55	50		M20×2.5	●
	5			GD05-1880	20	153	101	77	50			●
	3	Internal coolant		GD03C-1880	20	131	79	55	50			●
	5			GD05C-1880	20	153	101	77	50			●
19.0	3	External coolant		GD03-1900	20	131	79	55	50			●
	5			GD05-1900	20	153	101	77	50			●
	3	Internal coolant		GD03C-1900	20	131	79	55	50			●
	5			GD05C-1900	20	153	101	77	50			●
19.5	3	External coolant		GD03-1950	20	131	79	55	50	M22×2.5 7/8-9UNC		●
	5			GD05-1950	20	153	101	77	50			●
	3	Internal coolant		GD03C-1950	20	131	79	55	50			●
	5			GD05C-1950	20	153	101	77	50			●
19.8	3	External coolant		GD03-1980	20	131	79	55	50			●
	5			GD05-1980	20	153	101	77	50			●
	3	Internal coolant		GD03C-1980	20	131	79	55	50			●
	5			GD05C-1980	20	153	101	77	50			●
20.0	3	External coolant		GD03-2000	20	131	79	55	50	M22×2		●
	5			GD05-2000	20	153	101	77	50			●
	3	Internal coolant		GD03C-2000	20	131	79	55	50			●
	5			GD05C-2000	20	153	101	77	50			●

● Stock available ○ Make-to-order

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
20.4	3	External coolant	Straight shank	GD03-2040	20	141	86	60	50	7/8-14UNF		○
	5			GD05-2040	20	167	112	85	50			○
	3	Internal coolant		GD03C-2040	20	141	86	60	50			○
	5			GD05C-2040	20	167	112	85	50			○
20.5	3	External coolant		GD03-2050	20	141	86	60	50			○
	5			GD05-2050	20	167	112	85	50			○
	3	Internal coolant		GD03C-2050	20	141	86	60	50			○
	5			GD05C-2050	20	167	112	85	50			○
21.0	3	External coolant		GD03-2100	20	141	86	60	50	M24×3	7/8-9UNC	○
	5			GD05-2100	20	167	112	85	50			○
	3	Internal coolant		GD03C-2100	20	141	86	60	50			○
	5			GD05C-2100	20	167	112	85	50			○
21.4	3	External coolant		GD03-2140	20	141	86	60	50		7/8-14UNF	○
	5			GD05-2140	20	167	112	85	50			○
	3	Internal coolant		GD03C-2140	20	141	86	60	50			○
	5			GD05C-2140	20	167	112	85	50			○
21.5	3	External coolant		GD03-2150	20	141	86	60	50			○
	5			GD05-2150	20	167	112	85	50			○
	3	Internal coolant		GD03C-2150	20	141	86	60	50			○
	5			GD05C-2150	20	167	112	85	50			○
22.0	3	External coolant		GD03-2200	20	141	86	60	50	M24×2		○
	5			GD05-2200	20	167	112	85	50			○
	3	Internal coolant		GD03C-2200	20	141	86	60	50			○
	5			GD05C-2200	20	167	112	85	50			○
22.25	3	External coolant		GD03-2225	25	153	95	65	56	1-8UNC		○
	5			GD05-2225	25	184	126	98	56			○
	3	Internal coolant		GD03C-2225	25	153	95	65	56			○
	5			GD05C-2225	25	184	126	98	56			○
22.5	3	External coolant		GD03-2250	25	153	95	65	56			○
	5			GD05-2250	25	184	126	98	56			○
	3	Internal coolant		GD03C-2250	25	153	95	65	56			○
	5			GD05C-2250	25	184	126	98	56			○
23.0	3	External coolant		GD03-2300	25	153	95	65	56	M25×2		○
	5			GD05-2300	25	184	126	98	56			○
	3	Internal coolant		GD03C-2300	25	153	95	65	56			○
	5			GD05C-2300	25	184	126	98	56			○

Note: For drilling depth (l/d) of 8 ,namely GD08C series, tolerance of shank diameter is h_5.

● Stock available ○ Make-to-order

Applicable material table

◎Very suitable ○Suitable

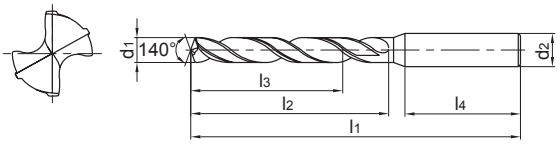
Grade	Workpiece material										
	Mild steel HB⩽180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG3013	○	◎	◎			○	◎	◎			○

Code key C6
Cutting parameters C79–C80
Technical information C87–C93
Non-standard customization tools C94-C98

GD series General machining

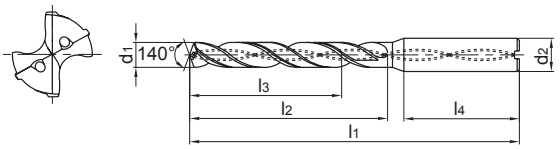

External coolant

Straight shank




Internal coolant

Straight shank



● Suitable for high efficiency drilling in a variety of materials e.g steel, stainless steel, cast iron.

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Suitable for thread		Grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	cutting taps / tread milling cutters	forming taps	KDG3013
					$d_2(h_6)$	l_1	l_2	l_3	l_4			
23.25	3	External coolant	Straight shank	GD03-2325	25	153	95	65	56	1-12UNF		○
	5			GD05-2325	25	184	126	98	56			○
	3	Internal coolant		GD03C-2325	25	153	95	65	56			○
	5			GD05C-2325	25	184	126	98	56			○
23.5	3	External coolant		GD03-2350	25	153	95	65	56			○
	5			GD05-2350	25	184	126	98	56			○
	3	Internal coolant		GD03C-2350	25	153	95	65	56			○
	5			GD05C-2350	25	184	126	98	56			○
24.0	3	External coolant		GD03-2400	25	153	95	65	56	M27×3	1-8UNC	○
	5			GD05-2400	25	184	126	98	56			○
	3	Internal coolant		GD03C-2400	25	153	95	65	56			○
	5			GD05C-2400	25	184	126	98	56			○
24.5	3	External coolant		GD03-2450	25	153	95	65	56		1-12UNF	○
	5			GD05-2450	25	184	126	98	56			○
	3	Internal coolant		GD03C-2450	25	153	95	65	56			○
	5			GD05C-2450	25	184	126	98	56			○
25.0	3	External coolant		GD03-2500	25	153	95	65	56	M27×2 11/8-7UNC		○
	5			GD05-2500	25	184	126	98	56			○
	3	Internal coolant		GD03C-2500	25	153	95	65	56			○
	5			GD05C-2500	25	184	126	98	56			○

Note: For drilling depth (l/d) of 8 ,namely GD08C series, tolerance of shank diameter is h_5. ● Stock available ○ Make-to-order

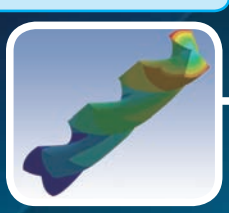
Applicable material table

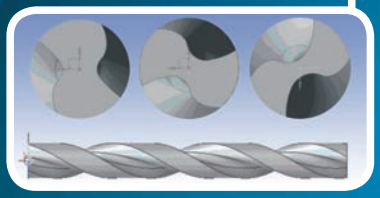
◎Very suitable ○Suitable

Grade	Workpiece material										
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG3013	○	◎	◎			○	◎	◎			○

Code key C6
Cutting parameters C79–C80
Technical information C87–C93
Non-standard customization tools C94-C98

Achieving the optimization of tool structure through analysis of simulated cutting.

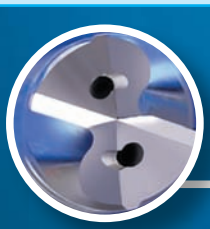




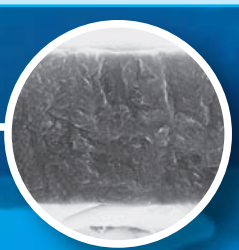
Design with change parameter helical flute, good rigidity and chip removal capability.

Double special guiding margin, more credible guiding and more stable machining.

Unique cutting edge design, good chip breaking capability even for sticky, softer materials, high versatility.



Special nano structure coating with better self lubricating capability and superb wear resistance.

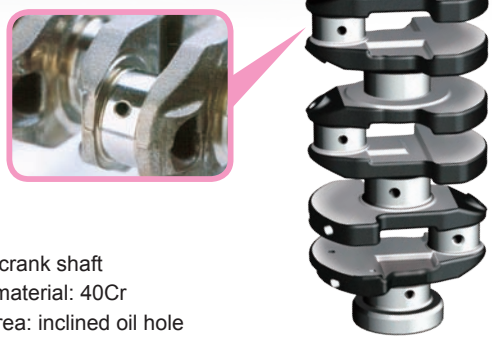


1588SL series

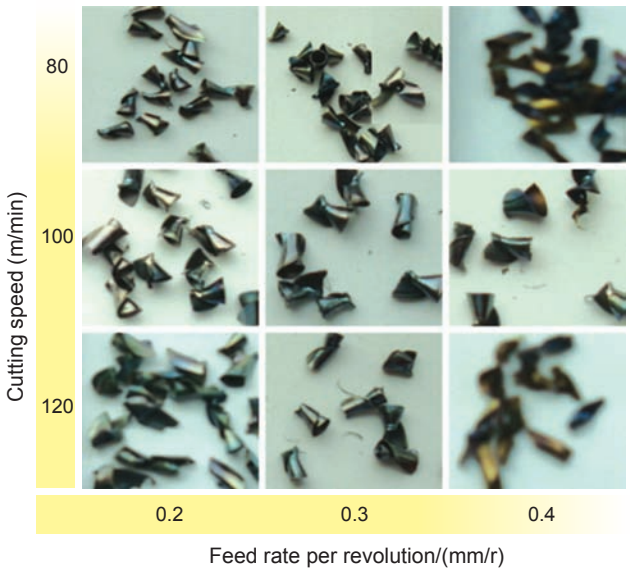
deep hole twist drills

1588SL series deep hole twist drills

Outstandingly chip breaking capability

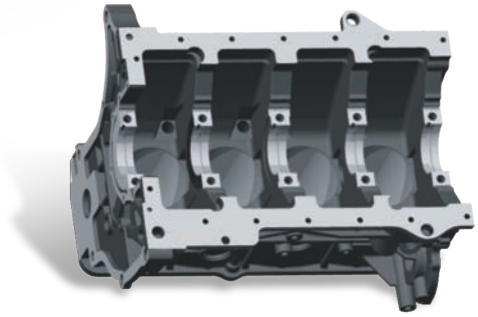


Work piece: crank shaft
Work piece material: 40Cr
Machining area: inclined oil hole
Tool type: 1588SL20C-0690/KDG303
Cutting parameters: V_c =80~120m/min
f_r=0.2~0.4mm/r
Cooling system: Water soluble liquid
Drilling depth: 105mm



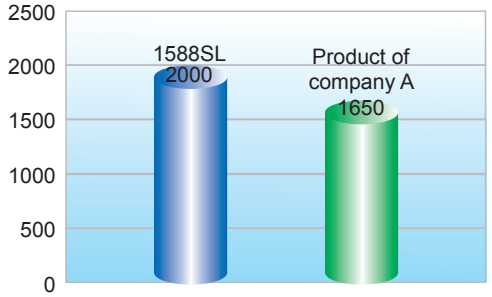
Good chip breaking capability and stable machining with different cutting speed and feed rate.

Extremely high efficiency and long tool life

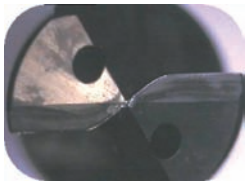


Work piece: cylinder
Work material: HT300
Machined area: crank shaft joint surface drilling
Drilling depth: 30mm
Tool type: 1588SL12C-0850/KDG303
Recommend parameters: Vc=80m/min f_r=0.2mm/r
Cooling system: water-soluble liquid

Comparison of tool life(number of machined holes)



Comparison of tool life(tool wear)



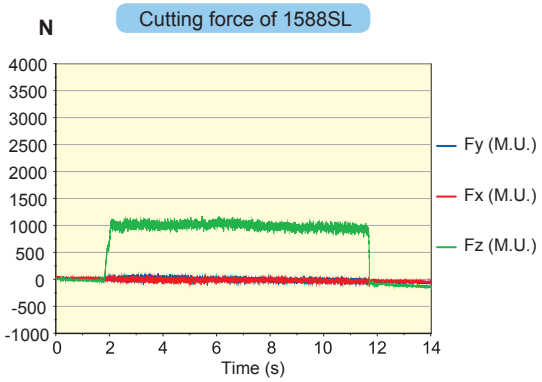
1588SL(regular wear)

Product of company A(falling)

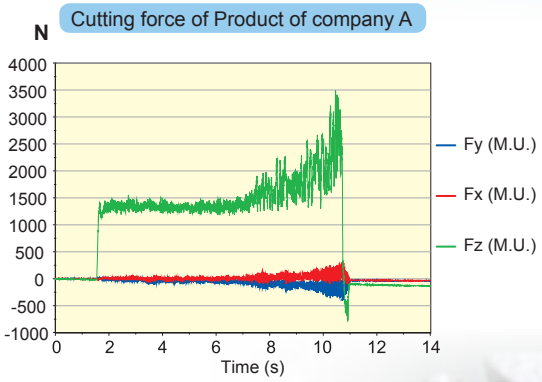
Good cutting performance

Tool type: 1588SL12C-0850/KDG303
Feed rate: 0.2mm/r Drilling depth: 72mm
Work material: 42CrMo(HB250)
Cooling system: Emulsified liquid
Cutting speed: 80m/min
Machine equipment: Vertical machining center

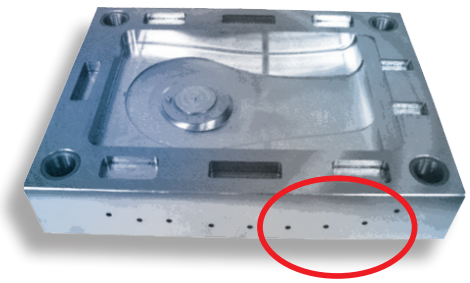
Cutting force of 1588SL



Cutting force of Product of company A

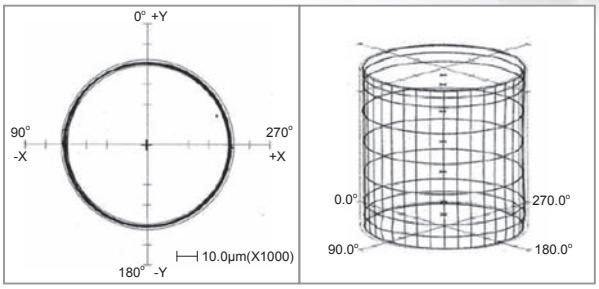


Stable machining precision

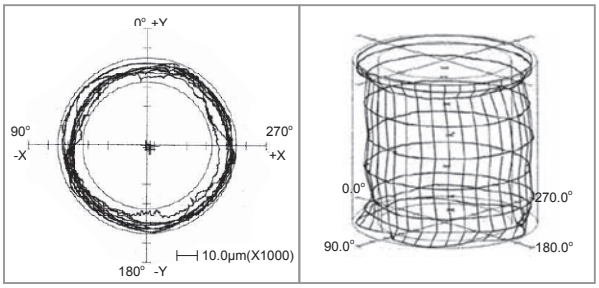


Workpiece: Die
Machined materials: 738H
Machined area: Hole of sidewall
Drilling depth: 70mm
Tool type: 1588SL12C-0600/KDG303
Recommended parameters: Vc=85m/min, f_r=0.2mm/r
Cooling system: Water-soluble liquid

Comparison of Machined Hole's Accuracy



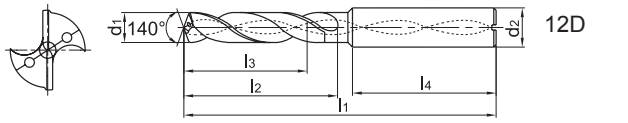
1588SL

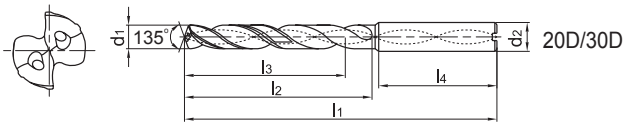


Product of company A

SL series Deep-hole machining

Internal coolant　　Straight shank





● Suitable for deep-hole drilling of steel，cast iron etc.

Drill diameter d1 12D(m7) 20D/30D(h7)	Drilling depth (l/d)	Type	Basic dimension(mm)				
			Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length
			d2(h5)	l1	l2	l3	l4
3.0	12	1588SL12C-0300	6	90	50	40	36
	20	1588SL20C-0300	6	110	70	62	36
	30	1588SL30C-0300	6	140	100	92	36
3.1	12	1588SL12C-0310	6	90	50	40	36
	20	1588SL20C-0310	6	123	83	72	36
	30	1588SL30C-0310	6	160	120	108	36
3.2	12	1588SL12C-0320	6	90	50	40	36
	20	1588SL20C-0320	6	123	83	72	36
	30	1588SL30C-0320	6	160	120	108	36
3.3	12	1588SL12C-0330	6	90	50	40	36
	20	1588SL20C-0330	6	123	83	72	36
	30	1588SL30C-0330	6	160	120	108	36
3.4	12	1588SL12C-0340	6	90	50	40	36
	20	1588SL20C-0340	6	123	83	72	36
	30	1588SL30C-0340	6	160	120	108	36
3.5	12	1588SL12C-0350	6	90	50	40	36
	20	1588SL20C-0350	6	123	83	72	36
	30	1588SL30C-0350	6	160	120	108	36
3.6	12	1588SL12C-0360	6	90	50	40	36
	20	1588SL20C-0360	6	136	96	84	36
	30	1588SL30C-0360	6	176	136	124	36
3.7	12	1588SL12C-0370	6	90	50	46	36
	20	1588SL20C-0370	6	136	96	84	36
	30	1588SL30C-0370	6	176	136	124	36
3.8	12	1588SL12C-0380	6	90	50	46	36
	20	1588SL20C-0380	6	136	96	84	36
	30	1588SL30C-0380	6	176	136	124	36
3.9	12	1588SL12C-0390	6	90	50	46	36
	20	1588SL20C-0390	6	136	96	84	36
	30	1588SL30C-0390	6	176	136	124	36
4.0	12	1588SL12C-0400	6	102	64	56	36
	20	1588SL20C-0400	6	136	96	84	36
	30	1588SL30C-0400	6	176	136	124	36
4.1	12	1588SL12C-0410	6	102	64	56	36
	20	1588SL20C-0410	6	148	108	96	36
	30	1588SL30C-0410	6	192	152	140	36

Drill diameter d1 12D(m7) 20D/30D(h7)	Drilling depth (l/d)	Type	Basic dimension(mm)				
			Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length
			d2(h5)	l1	l2	l3	l4
4.2	12	1588SL12C-0420	6	102	64	56	36
	20	1588SL20C-0420	6	148	108	96	36
	30	1588SL30C-0420	6	192	152	140	36
4.3	12	1588SL12C-0430	6	102	64	56	36
	20	1588SL20C-0430	6	148	108	96	36
	30	1588SL30C-0430	6	192	152	140	36
4.4	12	1588SL12C-0440	6	102	64	56	36
	20	1588SL20C-0440	6	148	108	96	36
	30	1588SL30C-0440	6	192	152	140	36
4.5	12	1588SL12C-0450	6	102	64	56	36
	20	1588SL20C-0450	6	148	108	96	36
	30	1588SL30C-0450	6	192	152	140	36
4.6	12	1588SL12C-0460	6	102	64	56	36
	20	1588SL20C-0460	6	158	118	106	36
	30	1588SL30C-0460	6	208	168	156	36
4.7	12	1588SL12C-0470	6	102	64	56	36
	20	1588SL20C-0470	6	158	118	106	36
	30	1588SL30C-0470	6	208	168	156	36
4.8	12	1588SL12C-0480	6	102	64	56	36
	20	1588SL20C-0480	6	158	118	106	36
	30	1588SL30C-0480	6	208	168	156	36
4.9	12	1588SL12C-0490	6	102	64	56	36
	20	1588SL20C-0490	6	158	118	106	36
	30	1588SL30C-0490	6	208	168	156	36
5.0	12	1588SL12C-0500	6	116	78	72	36
	20	1588SL20C-0500	6	158	118	106	36
	30	1588SL30C-0500	6	208	168	156	36
5.1	12	1588SL12C-0510	6	116	78	72	36
	20	1588SL20C-0510	6	168	128	116	36
	30	1588SL30C-0510	6	228	188	170	36
5.2	12	1588SL12C-0520	6	116	78	72	36
	20	1588SL20C-0520	6	168	128	116	36
	30	1588SL30C-0520	6	228	188	170	36
5.3	12	1588SL12C-0530	6	116	78	72	36
	20	1588SL20C-0530	6	168	128	116	36
	30	1588SL30C-0530	6	228	188	170	36

Drill diameter d_1 12D(m_7) 20D/30D(h_7)	Drilling depth (l/d)	Type	Basic dimension(mm)				
			Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length
			$d_2(h_5)$	l_1	l_2	l_3	l_4
5.4	12	**1588SL12C-0540**	6	116	78	72	36
	20	**1588SL20C-0540**	6	168	128	116	36
	30	**1588SL30C-0540**	6	228	188	170	36
5.5	12	**1588SL12C-0550**	6	116	78	72	36
	20	**1588SL20C-0550**	6	168	128	116	36
	30	**1588SL30C-0550**	6	228	188	170	36
5.6	12	**1588SL12C-0560**	6	116	78	72	36
	20	**1588SL20C-0560**	6	180	140	126	36
	30	**1588SL30C-0560**	6	240	200	182	36
5.7	12	**1588SL12C-0570**	6	116	78	72	36
	20	**1588SL20C-0570**	6	180	140	126	36
	30	**1588SL30C-0570**	6	240	200	182	36
5.8	12	**1588SL12C-0580**	6	116	78	72	36
	20	**1588SL20C-0580**	6	180	140	126	36
	30	**1588SL30C-0580**	6	240	200	182	36
5.9	12	**1588SL12C-0590**	6	116	78	72	36
	20	**1588SL20C-0590**	6	180	140	126	36
	30	**1588SL30C-0590**	6	240	200	182	36
6.0	12	**1588SL12C-0600**	6	116	78	72	36
	20	**1588SL20C-0600**	6	180	140	126	36
	30	**1588SL30C-0600**	6	240	200	182	36
6.1	12	**1588SL12C-0610**	8	131	93	84	36
	20	**1588SL20C-0610**	8	192	150	132	36
	30	**1588SL30C-0610**	8	260	220	202	36
6.2	12	**1588SL12C-0620**	8	131	93	84	36
	20	**1588SL20C-0620**	8	192	150	132	36
	30	**1588SL30C-0620**	8	260	220	202	36
6.3	12	**1588SL12C-0630**	8	131	93	84	36
	20	**1588SL20C-0630**	8	192	150	132	36
	30	**1588SL30C-0630**	8	260	220	202	36
6.4	12	**1588SL12C-0640**	8	131	93	84	36
	20	**1588SL20C-0640**	8	192	150	132	36
	30	**1588SL30C-0640**	8	260	220	202	36
6.5	12	**1588SL12C-0650**	8	131	93	84	36
	20	**1588SL20C-0650**	8	192	150	132	36
	30	**1588SL30C-0650**	8	260	220	202	36

Drill diameter d_1 12D(m_7) 20D/30D(h_7)	Drilling depth (l/d)	Type	Basic dimension(mm)				
			Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length
			$d_2(h_5)$	l_1	l_2	l_3	l_4
6.6	12	**1588SL12C-0660**	8	131	93	84	36
	20	**1588SL20C-0660**	8	202	162	144	36
	30	**1588SL30C-0660**	8	272	232	214	36
6.7	12	**1588SL12C-0670**	8	131	93	84	36
	20	**1588SL20C-0670**	8	202	162	144	36
	30	**1588SL30C-0670**	8	272	232	214	36
6.8	12	**1588SL12C-0680**	8	131	93	84	36
	20	**1588SL20C-0680**	8	202	162	144	36
	30	**1588SL30C-0680**	8	272	232	214	36
6.9	12	**1588SL12C-0690**	8	131	93	84	36
	20	**1588SL20C-0690**	8	202	162	144	36
	30	**1588SL30C-0690**	8	272	232	214	36
7.0	12	**1588SL12C-0700**	8	131	93	84	36
	20	**1588SL20C-0700**	8	202	162	144	36
	30	**1588SL30C-0700**	8	272	232	214	36
7.1	12	**1588SL12C-0710**	8	146	108	96	36
	20	**1588SL20C-0710**	8	213	173	155	36
	30	**1588SL30C-0710**	8	290	250	232	36
7.2	12	**1588SL12C-0720**	8	146	108	96	36
	20	**1588SL20C-0720**	8	213	173	155	36
	30	**1588SL30C-0720**	8	290	250	232	36
7.3	12	**1588SL12C-0730**	8	146	108	96	36
	20	**1588SL20C-0730**	8	213	173	155	36
	30	**1588SL30C-0730**	8	290	250	232	36
7.4	12	**1588SL12C-0740**	8	146	108	96	36
	20	**1588SL20C-0740**	8	213	173	155	36
	30	**1588SL30C-0740**	8	290	250	232	36
7.5	12	**1588SL12C-0750**	8	146	108	96	36
	20	**1588SL20C-0750**	8	213	173	155	36
	30	**1588SL30C-0750**	8	290	250	232	36
7.6	12	**1588SL12C-0760**	8	146	108	96	36
	20	**1588SL20C-0760**	8	223	183	165	36
	30	**1588SL30C-0760**	8	305	265	246	36
7.7	12	**1588SL12C-0770**	8	146	108	96	36
	20	**1588SL20C-0770**	8	223	183	165	36
	30	**1588SL30C-0770**	8	305	265	246	36

Applicable material table

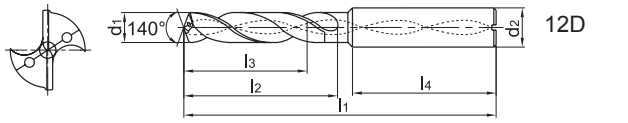
◎Very suitable ○Suitable

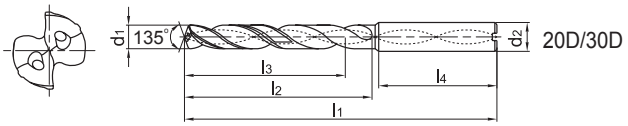
Grade	Workpiece material										
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG303	○	◎	◎			○	◎	◎	○		○

Code key C6
Cutting parameters C81
Technical information C80–C86
Non-standard customization tools C94-C98

SL series Deep-hole machining

Internal coolant　　Straight shank





● Suitable for deep-hole drilling of steel，cast iron etc.

Drill diameter d1 12D(m7) 20D/30D(h7)	Drilling depth (l/d)	Type	Basic dimension(mm)				
			Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length
			d2(h5)	l1	l2	l3	l4
7.8	12	1588SL12C-0780	8	146	108	96	36
	20	1588SL20C-0780	8	223	183	165	36
	30	1588SL30C-0780	8	305	265	246	36
7.9	12	1588SL12C-0790	8	146	108	96	36
	20	1588SL20C-0790	8	223	183	165	36
	30	1588SL30C-0790	8	305	265	246	36
8.0	12	1588SL12C-0800	8	146	108	96	36
	20	1588SL20C-0800	8	223	183	165	36
	30	1588SL30C-0800	8	305	265	246	36
8.1	12	1588SL12C-0810	10	162	120	108	40
	20	1588SL20C-0810	10	239	195	176	40
	30	1588SL30C-0810	10	330	285	265	40
8.2	12	1588SL12C-0820	10	162	120	108	40
	20	1588SL20C-0820	10	239	195	176	40
	30	1588SL30C-0820	10	330	285	265	40
8.3	12	1588SL12C-0830	10	162	120	108	40
	20	1588SL20C-0830	10	239	195	176	40
	30	1588SL30C-0830	10	330	285	265	40
8.4	12	1588SL12C-0840	10	162	120	108	40
	20	1588SL20C-0840	10	239	195	176	40
	30	1588SL30C-0840	10	330	285	265	40
8.5	12	1588SL12C-0850	10	162	120	108	40
	20	1588SL20C-0850	10	239	195	176	40
	30	1588SL30C-0850	10	330	285	265	40
8.6	12	1588SL12C-0860	10	162	120	108	40
	20	1588SL20C-0860	10	249	205	186	40
	30	1588SL30C-0860	10	340	295	275	40
8.7	12	1588SL12C-0870	10	162	120	108	40
	20	1588SL20C-0870	10	249	205	186	40
	30	1588SL30C-0870	10	340	295	275	40
8.8	12	1588SL12C-0880	10	162	120	108	40
	20	1588SL20C-0880	10	249	205	186	40
	30	1588SL30C-0880	10	340	295	275	40
8.9	12	1588SL12C-0890	10	162	120	108	40
	20	1588SL20C-0890	10	249	205	186	40
	30	1588SL30C-0890	10	340	295	275	40

Drill diameter d1 12D(m7) 20D/30D(h7)	Drilling depth (l/d)	Type	Basic dimension(mm)				
			Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length
			d2(h5)	l1	l2	l3	l4
9.0	12	1588SL12C-0900	10	162	120	108	40
	20	1588SL20C-0900	10	249	205	186	40
	30	1588SL30C-0900	10	340	295	275	40
9.1	12	1588SL12C-0910	10	174	132	120	40
	20	1588SL20C-0910	10	262	218	196	40
	30	1588SL30C-0910	10	360	315	292	40
9.2	12	1588SL12C-0920	10	174	132	120	40
	20	1588SL20C-0920	10	262	218	196	40
	30	1588SL30C-0920	10	360	315	292	40
9.3	12	1588SL12C-0930	10	174	132	120	40
	20	1588SL20C-0930	10	262	218	196	40
	30	1588SL30C-0930	10	360	315	292	40
9.4	12	1588SL12C-0940	10	174	132	120	40
	20	1588SL20C-0940	10	262	218	196	40
	30	1588SL30C-0940	10	360	315	292	40
9.5	12	1588SL12C-0950	10	174	132	120	40
	20	1588SL20C-0950	10	262	218	196	40
	30	1588SL30C-0950	10	360	315	292	40
9.6	12	1588SL12C-0960	10	174	132	120	40
	20	1588SL20C-0960	10	272	228	206	40
	30	1588SL30C-0960	10	372	328	305	40
9.7	12	1588SL12C-0970	10	174	132	120	40
	20	1588SL20C-0970	10	272	228	206	40
	30	1588SL30C-0970	10	372	328	305	40
9.8	12	1588SL12C-0980	10	174	132	120	40
	20	1588SL20C-0980	10	272	228	206	40
	30	1588SL30C-0980	10	372	328	305	40
9.9	12	1588SL12C-0990	10	174	132	120	40
	20	1588SL20C-0990	10	272	228	206	40
	30	1588SL30C-0990	10	372	328	305	40
10.0	12	1588SL12C-1000	10	174	132	120	40
	20	1588SL20C-1000	10	272	228	206	40
	30	1588SL30C-1000	10	372	328	305	40
10.1	12	1588SL12C-1010	12	204	156	144	45
	20	1588SL20C-1010	12	292	242	220	45

Drill diameter d_1 12D(m_7) 20D/30D(h_7)	Drilling depth (l/d)	Type	Basic dimension(mm)				
			Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length
			$d_2(h_5)$	l_1	l_2	l_3	l_4
10.2	12	**1588SL12C-1020**	12	204	156	144	45
	20	**1588SL20C-1020**	12	292	242	220	45
10.3	12	**1588SL12C-1030**	12	204	156	144	45
	20	**1588SL20C-1030**	12	292	242	220	45
10.4	12	**1588SL12C-1040**	12	204	156	144	45
	20	**1588SL20C-1040**	12	292	242	220	45
10.5	12	**1588SL12C-1050**	12	204	156	144	45
	20	**1588SL20C-1050**	12	292	242	220	45
10.6	12	**1588SL12C-1060**	12	204	156	144	45
	20	**1588SL20C-1060**	12	300	250	228	45
10.7	12	**1588SL12C-1070**	12	204	156	144	45
	20	**1588SL20C-1070**	12	300	250	228	45
10.8	12	**1588SL12C-1080**	12	204	156	144	45
	20	**1588SL20C-1080**	12	300	250	228	45
10.9	12	**1588SL12C-1090**	12	204	156	144	45
	20	**1588SL20C-1090**	12	300	250	228	45
11.0	12	**1588SL12C-1100**	12	204	156	144	45
	20	**1588SL20C-1100**	12	300	250	228	45
11.1	12	**1588SL12C-1110**	12	204	156	144	45
	20	**1588SL20C-1110**	12	315	265	240	45
11.2	12	**1588SL12C-1120**	12	204	156	144	45
	20	**1588SL20C-1120**	12	315	265	240	45
11.3	12	**1588SL12C-1130**	12	204	156	144	45
	20	**1588SL20C-1130**	12	315	265	240	45
11.4	12	**1588SL12C-1140**	12	204	156	144	45
	20	**1588SL20C-1140**	12	315	265	240	45
11.5	12	**1588SL12C-1150**	12	204	156	144	45
	20	**1588SL20C-1150**	12	315	265	240	45
11.6	12	**1588SL12C-1160**	12	204	156	144	45
	20	**1588SL20C-1160**	12	325	275	250	45

Drill diameter d_1 12D(m_7) 20D/30D(h_7)	Drilling depth (l/d)	Type	Basic dimension(mm)				
			Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length
			$d_2(h_5)$	l_1	l_2	l_3	l_4
11.7	12	**1588SL12C-1170**	12	204	156	144	45
	20	**1588SL20C-1170**	12	325	275	250	45
11.8	12	**1588SL12C-1180**	12	204	156	144	45
	20	**1588SL20C-1180**	12	325	275	250	45
11.9	12	**1588SL12C-1190**	12	204	156	144	45
	20	**1588SL20C-1190**	12	325	275	250	45
12.0	12	**1588SL12C-1200**	12	204	156	144	45
	20	**1588SL20C-1200**	12	325	275	250	45
12.5	12	**1588SL12C-1250**	14	230	182	168	45
	20	**1588SL20C-1250**	14	323	275	250	45
12.7	12	**1588SL12C-1270**	14	230	182	168	45
12.8	12	**1588SL12C-1280**	14	230	182	168	45
13.0	12	**1588SL12C-1300**	14	230	182	168	45
	20	**1588SL20C-1300**	14	338	290	265	45
13.5	12	**1588SL12C-1350**	14	230	182	168	45
	20	**1588SL20C-1350**	14	338	290	265	45
14.0	12	**1588SL12C-1400**	14	230	182	168	45
	20	**1588SL20C-1400**	14	367	318	290	45
14.5	12	**1588SL12C-1450**	16	260	208	194	48
15.0	12	**1588SL12C-1500**	16	260	208	194	48
15.5	12	**1588SL12C-1550**	16	260	208	194	48
16.0	12	**1588SL12C-1600**	16	260	208	194	48
16.5	12	**1588SL12C-1650**	18	286	234	218	48
17.0	12	**1588SL12C-1700**	18	286	234	218	48
17.5	12	**1588SL12C-1750**	18	286	234	218	48
18.0	12	**1588SL12C-1800**	18	286	234	218	48
18.5	12	**1588SL12C-1850**	20	310	258	240	48
19.0	12	**1588SL12C-1900**	20	310	258	240	48
19.5	12	**1588SL12C-1950**	20	310	258	240	48
20.0	12	**1588SL12C-2000**	20	310	258	240	48

Applicable material table

◎Very suitable ○Suitable

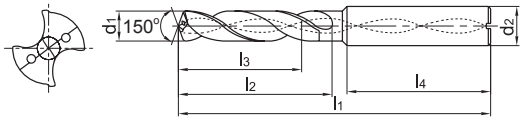
Grade	Workpiece material										
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG303	○	◎	◎			○	◎	◎	○		○

Code key C6
Cutting parameters C81
Technical information C80–C86
Non-standard customization tools C94-C98

1534SP series Guide-hole machining

Internal coolant

Straight shank



Drill diameter $d_1(h_7)$	Drilling depth (l/d)	Type	Basic dimension(mm)				
			Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length
			$d_2(h_5)$	l_1	l_2	l_3	l_4
3.03	3	**1534SP03C-0303**	6	62	20	14	36
3.13	3	**1534SP03C-0313**	6	62	20	14	36
3.23	3	**1534SP03C-0323**	6	62	20	14	36
3.33	3	**1534SP03C-0333**	6	62	20	14	36
3.43	3	**1534SP03C-0343**	6	62	20	14	36
3.53	3	**1534SP03C-0353**	6	62	20	14	36
3.63	3	**1534SP03C-0363**	6	62	20	14	36
3.73	3	**1534SP03C-0373**	6	62	20	14	36
3.83	3	**1534SP03C-0383**	6	66	24	17	36
3.93	3	**1534SP03C-0393**	6	66	24	17	36
4.03	3	**1534SP03C-0403**	6	66	24	17	36
4.13	3	**1534SP03C-0413**	6	66	24	17	36
4.23	3	**1534SP03C-0423**	6	66	24	17	36
4.33	3	**1534SP03C-0433**	6	66	24	17	36
4.43	3	**1534SP03C-0443**	6	66	24	17	36
4.53	3	**1534SP03C-0453**	6	66	24	17	36
4.63	3	**1534SP03C-0463**	6	66	24	17	36
4.73	3	**1534SP03C-0473**	6	66	24	17	36
4.83	3	**1534SP03C-0483**	6	66	28	20	36
4.93	3	**1534SP03C-0493**	6	66	28	20	36
5.03	3	**1534SP03C-0503**	6	66	28	20	36
5.13	3	**1534SP03C-0513**	6	66	28	20	36
5.23	3	**1534SP03C-0523**	6	66	28	20	36
5.33	3	**1534SP03C-0533**	6	66	28	20	36
5.43	3	**1534SP03C-0543**	6	66	28	20	36
5.53	3	**1534SP03C-0553**	6	66	28	20	36
5.63	3	**1534SP03C-0563**	6	66	28	20	36
5.73	3	**1534SP03C-0573**	6	66	28	20	36
5.83	3	**1534SP03C-0583**	6	66	28	20	36
5.93	3	**1534SP03C-0593**	6	66	28	20	36
6.03	3	**1534SP03C-0603**	6	66	28	20	36
6.13	3	**1534SP03C-0613**	8	79	34	24	36
6.23	3	**1534SP03C-0623**	8	79	34	24	36
6.33	3	**1534SP03C-0633**	8	79	34	24	36
6.43	3	**1534SP03C-0643**	8	79	34	24	36
6.53	3	**1534SP03C-0653**	8	79	34	24	36

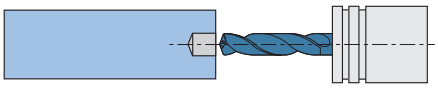
Drill diameter $d_1(h_7)$	Drilling depth (l/d)	Type	Basic dimension(mm)				
			Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length
			$d_2(h_5)$	l_1	l_2	l_3	l_4
6.63	3	**1534SP03C-0663**	8	79	34	24	36
6.73	3	**1534SP03C-0673**	8	79	34	24	36
6.83	3	**1534SP03C-0683**	8	79	34	24	36
6.93	3	**1534SP03C-0693**	8	79	34	24	36
7.03	3	**1534SP03C-0703**	8	79	34	24	36
7.13	3	**1534SP03C-0713**	8	79	41	29	36
7.23	3	**1534SP03C-0723**	8	79	41	29	36
7.33	3	**1534SP03C-0733**	8	79	41	29	36
7.43	3	**1534SP03C-0743**	8	79	41	29	36
7.53	3	**1534SP03C-0753**	8	79	41	29	36
7.63	3	**1534SP03C-0763**	8	79	41	29	36
7.73	3	**1534SP03C-0773**	8	79	41	29	36
7.83	3	**1534SP03C-0783**	8	79	41	29	36
7.93	3	**1534SP03C-0793**	8	79	41	29	36
8.03	3	**1534SP03C-0803**	8	79	41	29	36
8.13	3	**1534SP03C-0813**	10	89	47	35	40
8.23	3	**1534SP03C-0823**	10	89	47	35	40
8.33	3	**1534SP03C-0833**	10	89	47	35	40
8.43	3	**1534SP03C-0843**	10	89	47	35	40
8.53	3	**1534SP03C-0853**	10	89	47	35	40
8.63	3	**1534SP03C-0863**	10	89	47	35	40
8.73	3	**1534SP03C-0873**	10	89	47	35	40
8.83	3	**1534SP03C-0883**	10	89	47	35	40
8.93	3	**1534SP03C-0893**	10	89	47	35	40
9.03	3	**1534SP03C-0903**	10	89	47	35	40
9.13	3	**1534SP03C-0913**	10	89	47	35	40
9.23	3	**1534SP03C-0923**	10	89	47	35	40
9.33	3	**1534SP03C-0933**	10	89	47	35	40
9.43	3	**1534SP03C-0943**	10	89	47	35	40
9.53	3	**1534SP03C-0953**	10	89	47	35	40
9.63	3	**1534SP03C-0963**	10	89	47	35	40
9.73	3	**1534SP03C-0973**	10	89	47	35	40
9.83	3	**1534SP03C-0983**	10	89	47	35	40
9.93	3	**1534SP03C-0993**	10	89	47	35	40
10.03	3	**1534SP03C-1003**	10	89	47	35	40
10.13	3	**1534SP03C-1013**	12	102	55	40	45

Drill diameter $d_1(h_7)$	Drilling depth (l/d)	Type	Basic dimension(mm)				
			Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length
			$d_2(h_5)$	l_1	l_2	l_3	l_4
10.23	3	**1534SP03C-1023**	12	102	55	40	45
10.33	3	**1534SP03C-1033**	12	102	55	40	45
10.43	3	**1534SP03C-1043**	12	102	55	40	45
10.53	3	**1534SP03C-1053**	12	102	55	40	45
10.63	3	**1534SP03C-1063**	12	102	55	40	45
10.73	3	**1534SP03C-1073**	12	102	55	40	45
10.83	3	**1534SP03C-1083**	12	102	55	40	45
10.93	3	**1534SP03C-1093**	12	102	55	40	45
11.03	3	**1534SP03C-1103**	12	102	55	40	45
11.13	3	**1534SP03C-1113**	12	102	55	40	45
11.23	3	**1534SP03C-1123**	12	102	55	40	45
11.33	3	**1534SP03C-1133**	12	102	55	40	45
11.43	3	**1534SP03C-1143**	12	102	55	40	45

Drill diameter $d_1(h_7)$	Drilling depth (l/d)	Type	Basic dimension(mm)				
			Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length
			$d_2(h_5)$	l_1	l_2	l_3	l_4
11.53	3	**1534SP03C-1153**	12	102	55	40	45
11.63	3	**1534SP03C-1163**	12	102	55	40	45
11.73	3	**1534SP03C-1173**	12	102	55	40	45
11.83	3	**1534SP03C-1183**	12	102	55	40	45
11.93	3	**1534SP03C-1193**	12	102	55	40	45
12.03	3	**1534SP03C-1203**	12	102	55	40	45
12.53	3	**1534SP03C-1253**	14	107	60	43	45
12.73	3	**1534SP03C-1273**	14	107	60	43	45
12.83	3	**1534SP03C-1283**	14	107	60	43	45
13.03	3	**1534SP03C-1303**	14	107	60	43	45
13.53	3	**1534SP03C-1353**	14	107	60	43	45
14.03	3	**1534SP03C-1403**	14	107	60	43	45

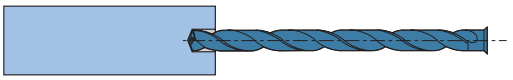
Recommended Machining Method of SL series Deep-hole Drills

1.Hole-guided Machining



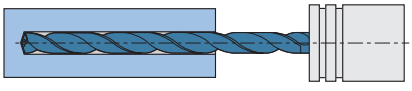
- ◆Apex angle of drills used for hole-guided machining has to be greater than the apex angle of deep-hole drills.
- ◆Diameter of drills used for hole-guided machining has to be respectively greater than the diameter of deep-hole drills. Generally the diameter range of deep-hole drills is between 0 and positive 0.1.
- ◆Generally the depth of pre-drilling hole is 1-3D (D is the diameter of pre-drilling holes). Also, it basically needs to ensure the accuracy of pre-drilling holes at the same time.

2.Deep-hole Machining (Inserting into the Pre-drilling Holes)



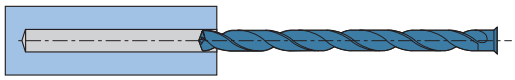
- ◆lower speed should be applied in the process of inserting deep-hole drills into the pre-drilling holes.
- ◆Insert deep hole drill to the location 1-3mm away from the bottom of pre-drilling holes (Please make sure that the parts of drilling point are entirely inserted).

3.Deep-hole Machining (Beginning machining, to the end)



- ◆Non-stopped machining with fixed speed and feed rates. (Completed at one time, not a “Step-by-Step” machining).

4.Deep-hole Machining (Retract from hole)



- ◆Reduce speed located 1-2mm away from hole bottom at the end of machining.
- ◆Quickly secedes the deep-hole drills back to the location where it begins to machine.
- ◆Retract under the same conditions of inserting pre-drilling holes.

Applicable material table

◎Very suitable ○Suitable

Grade	Workpiece material										
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG303	○	◎	◎			○	◎	◎	○		○

Code key C6
Cutting parameters C82
Technical information C87–C93
Non-standard customization tools C94-C98

ST machining of soft steel and stainless steel series twist drill

ST series drills with superior performance will solve the difficulties in machining of high-elongation materials such as soft steel, stainless steel, etc.

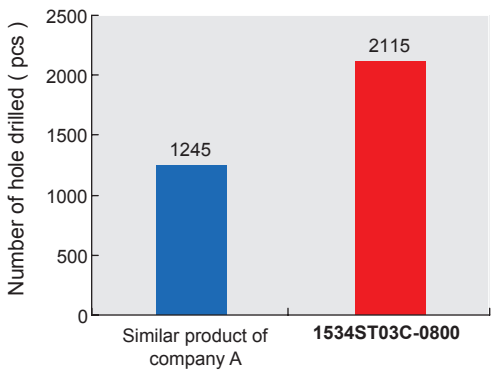
Optimized drill point design with strengthened chisel edge and ensures easy and fast cutting and excellent chip breaking.

Nano-structured TiAlN coating, outstanding wear resistance and heat resistance.

Special chipbreaker with large chip pocket ensures good chip evacuation and smooth drilling.

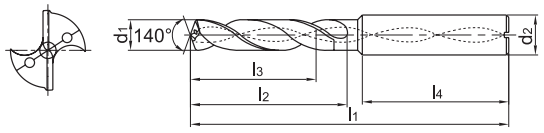
Application of st series twist drills

Tool type: 1534ST03C-0800
Workpiece material: 1Cr18Ni9Ti
Cooling system: oil water emulsion(internal cooling)
Cutting speed: Vc=85m/min
Feed rate: fr=0.16mm/r
Drilling depth: 24mm(blind hole)

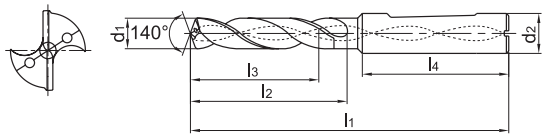


ST series for machining of soft steel, stainless steel


Internal coolant Straight shank




Internal coolant Whistle notch shank



- First choice for drilling soft steel and stainless steel.
- Sharp cutting edge can avoid build--up edge, suitable for drilling hole with high performance.

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Recommended grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	
					$d_2(h_6)$	l_1	l_2	l_3	l_4	KDG303
3.0	3	Internal coolant	Straight shank	**1534ST03C-0300**	6	62	20	14	36	☆
	5			**1536ST05C-0300**	6	66	28	23	36	☆
	5		Whistle notch shank	**1736ST05C-0300**	6	66	28	23	36	☆
3.1	3		Straight shank	**1534ST03C-0310**	6	62	20	14	36	☆
	5			**1536ST05C-0310**	6	66	28	23	36	☆
	5		Whistle notch shank	**1736ST05C-0310**	6	66	28	23	36	☆
3.2	3		Straight shank	**1534ST03C-0320**	6	62	20	14	36	☆
	5			**1536ST05C-0320**	6	66	28	23	36	☆
	5		Whistle notch shank	**1736ST05C-0320**	6	66	28	23	36	☆
3.25	3		Straight shank	**1534ST03C-0325**	6	62	20	14	36	☆
	5			**1536ST05C-0325**	6	66	28	23	36	☆
	5		Whistle notch shank	**1736ST05C-0325**	6	66	28	23	36	☆
3.3	3		Straight shank	**1534ST03C-0330**	6	62	20	14	36	☆
	5			**1536ST05C-0330**	6	66	28	23	36	☆
	5		Whistle notch shank	**1736ST05C-0330**	6	66	28	23	36	☆
3.4	3		Straight shank	**1534ST03C-0340**	6	62	20	14	36	☆
	5			**1536ST05C-0340**	6	66	28	23	36	☆
	5		Whistle notch shank	**1736ST05C-0340**	6	66	28	23	36	☆
3.5	3		Straight shank	**1534ST03C-0350**	6	62	20	14	36	☆
	5			**1536ST05C-0350**	6	66	28	23	36	☆
	5		Whistle notch shank	**1736ST05C-0350**	6	66	28	23	36	☆

☆Recommended grade (produce according to order)

Applicable material table

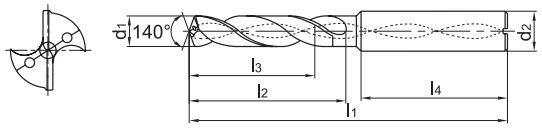
◎Very suitable ○Suitable

Grade	Workpiece material										
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG303	◎	○				◎					○

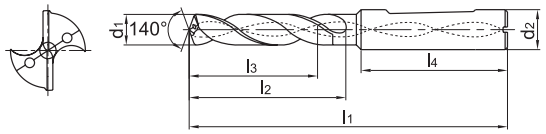
Code key C6
Cutting parameters C83
Technical information C87–C93
Non-standard customization tools C94-C98

ST series for machining of soft steel, stainless steel


Internal coolant Straight shank




Internal coolant Whistle notch shank



- First choice for drilling soft steel and stainless steel.
- Sharp cutting edge can avoid build--up edge, suitable for drilling hole with high performance.

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Recommended grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	
					$d_2(h_6)$	l_1	l_2	l_3	l_4	KDG303
3.6	3	Internal coolant	Straight shank	1534ST03C-0360	6	62	20	14	36	☆
	5			1536ST05C-0360	6	66	28	23	36	☆
	5		Whistle notch shank	1736ST05C-0360	6	66	28	23	36	☆
3.7	3		Straight shank	1534ST03C-0370	6	62	20	14	36	☆
	5			1536ST05C-0370	6	66	28	23	36	☆
	5		Whistle notch shank	1736ST05C-0370	6	66	28	23	36	☆
3.8	3		Straight shank	1534ST03C-0380	6	66	24	17	36	☆
	5			1536ST05C-0380	6	74	36	29	36	☆
	5		Whistle notch shank	1736ST05C-0380	6	74	36	29	36	☆
3.9	3		Straight shank	1534ST03C-0390	6	66	24	17	36	☆
	5			1536ST05C-0390	6	74	36	29	36	☆
	5		Whistle notch shank	1736ST05C-0390	6	74	36	29	36	☆
4.0	3		Straight shank	1534ST03C-0400	6	66	24	17	36	☆
	5			1536ST05C-0400	6	74	36	29	36	☆
	5		Whistle notch shank	1736ST05C-0400	6	74	36	29	36	☆
4.1	3		Straight shank	1534ST03C-0410	6	66	24	17	36	☆
	5			1536ST05C-0410	6	74	36	29	36	☆
	5		Whistle notch shank	1736ST05C-0410	6	74	36	29	36	☆
4.2	3		Straight shank	1534ST03C-0420	6	66	24	17	36	☆
	5			1536ST05C-0420	6	74	36	29	36	☆
	5		Whistle notch shank	1736ST05C-0420	6	74	36	29	36	☆
4.3	3		Straight shank	1534ST03C-0430	6	66	24	17	36	☆
	5			1536ST05C-0430	6	74	36	29	36	☆
	5		Whistle notch shank	1736ST05C-0430	6	74	36	29	36	☆
4.4	3		Straight shank	1534ST03C-0440	6	66	24	17	36	☆
	5			1536ST05C-0440	6	74	36	29	36	☆
	5		Whistle notch shank	1736ST05C-0440	6	74	36	29	36	☆
4.5	3		Straight shank	1534ST03C-0450	6	66	24	17	36	☆
	5			1536ST05C-0450	6	74	36	29	36	☆
	5		Whistle notch shank	1736ST05C-0450	6	74	36	29	36	☆

☆Recommended grade (produce according to order)

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Recommended grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	
					$d_2(h_6)$	l_1	l_2	l_3	l_4	KDG303
4.6	3	Internal coolant	Straight shank	1534ST03C-0460	6	66	24	17	36	☆
	5			1536ST05C-0460	6	74	36	29	36	☆
	5		Whistle notch shank	1736ST05C-0460	6	74	36	29	36	☆
4.65	3		Straight shank	1534ST03C-0465	6	66	24	17	36	☆
	5			1536ST05C-0465	6	74	36	29	36	☆
	5		Whistle notch shank	1736ST05C-0465	6	74	36	29	36	☆
4.7	3		Straight shank	1534ST03C-0470	6	66	24	17	36	☆
	5			1536ST05C-0470	6	74	36	29	36	☆
	5		Whistle notch shank	1736ST05C-0470	6	74	36	29	36	☆
4.8	3		Straight shank	1534ST03C-0480	6	66	28	20	36	☆
	5			1536ST05C-0480	6	82	44	35	36	☆
	5		Whistle notch shank	1736ST05C-0480	6	82	44	35	36	☆
4.9	3		Straight shank	1534ST03C-0490	6	66	28	20	36	☆
	5			1536ST05C-0490	6	82	44	35	36	☆
	5		Whistle notch shank	1736ST05C-0490	6	82	44	35	36	☆
5.0	3		Straight shank	1534ST03C-0500	6	66	28	20	36	☆
	5			1536ST05C-0500	6	82	44	35	36	☆
	5		Whistle notch shank	1736ST05C-0500	6	82	44	35	36	☆
5.1	3		Straight shank	1534ST03C-0510	6	66	28	20	36	☆
	5			1536ST05C-0510	6	82	44	35	36	☆
	5		Whistle notch shank	1736ST05C-0510	6	82	44	35	36	☆
5.2	3		Straight shank	1534ST03C-0520	6	66	28	20	36	☆
	5			1536ST05C-0520	6	82	44	35	36	☆
	5		Whistle notch shank	1736ST05C-0520	6	82	44	35	36	☆
5.3	3		Straight shank	1534ST03C-0530	6	66	28	20	36	☆
	5			1536ST05C-0530	6	82	44	35	36	☆
	5		Whistle notch shank	1736ST05C-0530	6	82	44	35	36	☆
5.4	3		Straight shank	1534ST03C-0540	6	66	28	20	36	☆
	5			1536ST05C-0540	6	82	44	35	36	☆
	5		Whistle notch shank	1736ST05C-0540	6	82	44	35	36	☆
5.5	3		Straight shank	1534ST03C-0550	6	66	28	20	36	☆
	5			1536ST05C-0550	6	82	44	35	36	☆
	5		Whistle notch shank	1736ST05C-0550	6	82	44	35	36	☆

☆Recommended grade (produce according to order)

Applicable material table

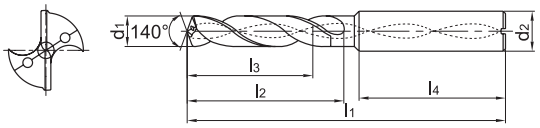
◎Very suitable ○Suitable

Grade	Workpiece material										
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG303	◎	○				◎					○

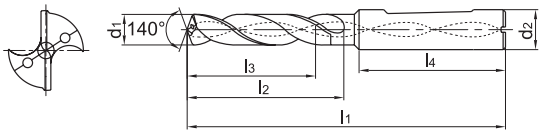
Code key C6
Cutting parameters C83
Technical information C87–C93
Non-standard customization tools C94-C98

ST series for machining of soft steel, stainless steel


Internal coolant Straight shank




Internal coolant Whistle notch shank



- First choice for drilling soft steel and stainless steel.
- Sharp cutting edge can avoid build--up edge, suitable for drilling hole with high performance.

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Recommended grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	
					$d_2(h_6)$	l_1	l_2	l_3	l_4	KDG303
5.55	3	Internal coolant	Straight shank	1534ST03C-0555	6	66	28	20	36	☆
	5			1536ST05C-0555	6	82	44	35	36	☆
	5		Whistle notch shank	1736ST05C-0555	6	82	44	35	36	☆
5.6	3		Straight shank	1534ST03C-0560	6	66	28	20	36	☆
	5			1536ST05C-0560	6	82	44	35	36	☆
	5		Whistle notch shank	1736ST05C-0560	6	82	44	35	36	☆
5.7	3		Straight shank	1534ST03C-0570	6	66	28	20	36	☆
	5			1536ST05C-0570	6	82	44	35	36	☆
	5		Whistle notch shank	1736ST05C-0570	6	82	44	35	36	☆
5.8	3		Straight shank	1534ST03C-0580	6	66	28	20	36	☆
	5			1536ST05C-0580	6	82	44	35	36	☆
	5		Whistle notch shank	1736ST05C-0580	6	82	44	35	36	☆
5.9	3		Straight shank	1534ST03C-0590	6	66	28	20	36	☆
	5			1536ST05C-0590	6	82	44	35	36	☆
	5		Whistle notch shank	1736ST05C-0590	6	82	44	35	36	☆
6.0	3		Straight shank	1534ST03C-0600	6	66	28	20	36	☆
	5			1536ST05C-0600	6	82	44	35	36	☆
	5		Whistle notch shank	1736ST05C-0600	6	82	44	35	36	☆
6.1	3		Straight shank	1534ST03C-0610	8	79	34	24	36	☆
	5			1536ST05C-0610	8	91	53	43	36	☆
	5		Whistle notch shank	1736ST05C-0610	8	91	53	43	36	☆
6.2	3		Straight shank	1534ST03C-0620	8	79	34	24	36	☆
	5			1536ST05C-0620	8	91	53	43	36	☆
	5		Whistle notch shank	1736ST05C-0620	8	91	53	43	36	☆
6.3	3		Straight shank	1534ST03C-0630	8	79	34	24	36	☆
	5			1536ST05C-0630	8	91	53	43	36	☆
	5		Whistle notch shank	1736ST05C-0630	8	91	53	43	36	☆
6.4	3		Straight shank	1534ST03C-0640	8	79	34	24	36	☆
	5			1536ST05C-0640	8	91	53	43	36	☆
	5		Whistle notch shank	1736ST05C-0640	8	91	53	43	36	☆

☆Recommended grade (produce according to order)

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Recommended grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	
					$d_2(h_6)$	l_1	l_2	l_3	l_4	KDG303
6.5	3	Internal coolant	Straight shank	1534ST03C-0650	8	79	34	24	36	☆
	5			1536ST05C-0650	8	91	53	43	36	☆
	5		Whistle notch shank	1736ST05C-0650	8	91	53	43	36	☆
6.6	3		Straight shank	1534ST03C-0660	8	79	34	24	36	☆
	5			1536ST05C-0660	8	91	53	43	36	☆
	5		Whistle notch shank	1736ST05C-0660	8	91	53	43	36	☆
6.7	3		Straight shank	1534ST03C-0670	8	79	34	24	36	☆
	5			1536ST05C-0670	8	91	53	43	36	☆
	5		Whistle notch shank	1736ST05C-0670	8	91	53	43	36	☆
6.75	3		Straight shank	1534ST03C-0675	8	79	34	24	36	☆
	5			1536ST05C-0675	8	91	53	43	36	☆
	5		Whistle notch shank	1736ST05C-0675	8	91	53	43	36	☆
6.9	3		Straight shank	1534ST03C-0690	8	79	34	24	36	☆
	5			1536ST05C-0690	8	91	53	43	36	☆
	5		Whistle notch shank	1736ST05C-0690	8	91	53	43	36	☆
7.0	3		Straight shank	1534ST03C-0700	8	79	34	24	36	☆
	5			1536ST05C-0700	8	91	53	43	36	☆
	5		Whistle notch shank	1736ST05C-0700	8	91	53	43	36	☆
7.1	3		Straight shank	1534ST03C-0710	8	79	41	29	36	☆
	5			1536ST05C-0710	8	91	53	43	36	☆
	5		Whistle notch shank	1736ST05C-0710	8	91	53	43	36	☆
7.2	3		Straight shank	1534ST03C-0720	8	79	41	29	36	☆
	5			1536ST05C-0720	8	91	53	43	36	☆
	5		Whistle notch shank	1736ST05C-0720	8	91	53	43	36	☆
7.3	3		Straight shank	1534ST03C-0730	8	79	41	29	36	☆
	5			1536ST05C-0730	8	91	53	43	36	☆
	5		Whistle notch shank	1736ST05C-0730	8	91	53	43	36	☆
7.4	3		Straight shank	1534ST03C-0740	8	79	41	29	36	☆
	5			1536ST05C-0740	8	91	53	43	36	☆
	5		Whistle notch shank	1736ST05C-0740	8	91	53	43	36	☆
7.5	3		Straight shank	1534ST03C-0750	8	79	41	29	36	☆
	5			1536ST05C-0750	8	91	53	43	36	☆
	5		Whistle notch shank	1736ST05C-0750	8	91	53	43	36	☆

☆Recommended grade (produce according to order)

Applicable material table

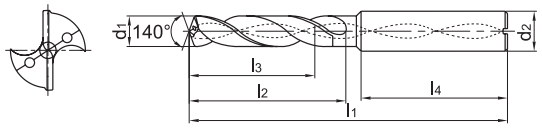
◎Very suitable ○Suitable

Grade	Workpiece material										
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG303	◎	○				◎					○

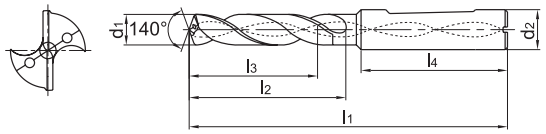
Code key C6
Cutting parameters C83
Technical information C87–C93
Non-standard customization tools C94-C98

ST series for machining of soft steel, stainless steel


Internal coolant Straight shank




Internal coolant Whistle notch shank



- First choice for drilling soft steel and stainless steel.
- Sharp cutting edge can avoid build--up edge, suitable for drilling hole with high performance.

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Recommended grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	
					$d_2(h_6)$	l_1	l_2	l_3	l_4	KDG303
7.6	3	Internal coolant	Straight shank	1534ST03C-0760	8	79	41	29	36	☆
	5			1536ST05C-0760	8	91	53	43	36	☆
	5		Whistle notch shank	1736ST05C-0760	8	91	53	43	36	☆
7.7	3		Straight shank	1534ST03C-0770	8	79	41	29	36	☆
	5			1536ST05C-0770	8	91	53	43	36	☆
	5		Whistle notch shank	1736ST05C-0770	8	91	53	43	36	☆
7.8	3		Straight shank	1534ST03C-0780	8	79	41	29	36	☆
	5			1536ST05C-0780	8	91	53	43	36	☆
	5		Whistle notch shank	1736ST05C-0780	8	91	53	43	36	☆
7.9	3		Straight shank	1534ST03C-0790	8	79	41	29	36	☆
	5			1536ST05C-0790	8	91	53	43	36	☆
	5		Whistle notch shank	1736ST05C-0790	8	91	53	43	36	☆
8.0	3		Straight shank	1534ST03C-0800	8	79	41	29	36	☆
	5			1536ST05C-0800	8	91	53	43	36	☆
	5		Whistle notch shank	1736ST05C-0800	8	91	53	43	36	☆
8.1	3		Straight shank	1534ST03C-0810	10	89	47	35	40	☆
	5			1536ST05C-0810	10	103	61	49	40	☆
	5		Whistle notch shank	1736ST05C-0810	10	103	61	49	40	☆
8.2	3		Straight shank	1534ST03C-0820	10	89	47	35	40	☆
	5			1536ST05C-0820	10	103	61	49	40	☆
	5		Whistle notch shank	1736ST05C-0820	10	103	61	49	40	☆
8.3	3		Straight shank	1534ST03C-0830	10	89	47	35	40	☆
	5			1536ST05C-0830	10	103	61	49	40	☆
	5		Whistle notch shank	1736ST05C-0830	10	103	61	49	40	☆
8.4	3		Straight shank	1534ST03C-0840	10	89	47	35	40	☆
	5			1536ST05C-0840	10	103	61	49	40	☆
	5		Whistle notch shank	1736ST05C-0840	10	103	61	49	40	☆
8.5	3		Straight shank	1534ST03C-0850	10	89	47	35	40	☆
	5			1536ST05C-0850	10	103	61	49	40	☆
	5		Whistle notch shank	1736ST05C-0850	10	103	61	49	40	☆

☆Recommended grade (produce according to order)

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Recommended grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	
					$d_2(h_6)$	l_1	l_2	l_3	l_4	KDG303
8.6	3	Internal coolant	Straight shank	1534ST03C-0860	10	89	47	35	40	☆
	5			1536ST05C-0860	10	103	61	49	40	☆
	5		Whistle notch shank	1736ST05C-0860	10	103	61	49	40	☆
8.7	3		Straight shank	1534ST03C-0870	10	89	47	35	40	☆
	5			1536ST05C-0870	10	103	61	49	40	☆
	5		Whistle notch shank	1736ST05C-0870	10	103	61	49	40	☆
8.8	3		Straight shank	1534ST03C-0880	10	89	47	35	40	☆
	5			1536ST05C-0880	10	103	61	49	40	☆
	5		Whistle notch shank	1736ST05C-0880	10	103	61	49	40	☆
8.9	3		Straight shank	1534ST03C-0890	10	89	47	35	40	☆
	5			1536ST05C-0890	10	103	61	49	40	☆
	5		Whistle notch shank	1736ST05C-0890	10	103	61	49	40	☆
9.0	3		Straight shank	1534ST03C-0900	10	89	47	35	40	☆
	5			1536ST05C-0900	10	103	61	49	40	☆
	5		Whistle notch shank	1736ST05C-0900	10	103	61	49	40	☆
9.1	3		Straight shank	1534ST03C-0910	10	89	47	35	40	☆
	5			1536ST05C-0910	10	103	61	49	40	☆
	5		Whistle notch shank	1736ST05C-0910	10	103	61	49	40	☆
9.3	3		Straight shank	1534ST03C-0930	10	89	47	35	40	☆
	5			1536ST05C-0930	10	103	61	49	40	☆
	5		Whistle notch shank	1736ST05C-0930	10	103	61	49	40	☆
9.4	3		Straight shank	1534ST03C-0940	10	89	47	35	40	☆
	5			1536ST05C-0940	10	103	61	49	40	☆
	5		Whistle notch shank	1736ST05C-0940	10	103	61	49	40	☆
9.5	3		Straight shank	1534ST03C-0950	10	89	47	35	40	☆
	5			1536ST05C-0950	10	103	61	49	40	☆
	5		Whistle notch shank	1736ST05C-0950	10	103	61	49	40	☆
9.6	3		Straight shank	1534ST03C-0960	10	89	47	35	40	☆
	5			1536ST05C-0960	10	103	61	49	40	☆
	5		Whistle notch shank	1736ST05C-0960	10	103	61	49	40	☆
9.7	3		Straight shank	1534ST03C-0970	10	89	47	35	40	☆
	5			1536ST05C-0970	10	103	61	49	40	☆
	5		Whistle notch shank	1736ST05C-0970	10	103	61	49	40	☆

☆Recommended grade (produce according to order)

Applicable material table

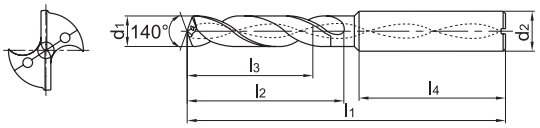
◎Very suitable ○Suitable

Grade	Workpiece material										
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG303	◎	○				◎					○

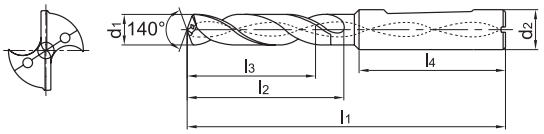
Code key C6
Cutting parameters C83
Technical information C87–C93
Non-standard customization tools C94-C98

ST series for machining of soft steel, stainless steel

Internal coolant Straight shank



Internal coolant Whistle notch shank



- First choice for drilling soft steel and stainless steel.
- Sharp cutting edge can avoid build--up edge, suitable for drilling hole with high performance.

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Recommended grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	
					$d_2(h_6)$	l_1	l_2	l_3	l_4	KDG303
9.8	3	Internal coolant	Straight shank	1534ST03C-0980	10	89	47	35	40	☆
	5			1536ST05C-0980	10	103	61	49	40	☆
	5		Whistle notch shank	1736ST05C-0980	10	103	61	49	40	☆
9.9	3		Straight shank	1534ST03C-0990	10	89	47	35	40	☆
	5			1536ST05C-0990	10	103	61	49	40	☆
	5		Whistle notch shank	1736ST05C-0990	10	103	61	49	40	☆
10.0	3		Straight shank	1534ST03C-1000	10	89	47	35	40	☆
	5			1536ST05C-1000	10	103	61	49	40	☆
	5		Whistle notch shank	1736ST05C-1000	10	103	61	49	40	☆
10.1	3		Straight shank	1534ST03C-1010	12	102	55	40	45	☆
	5			1536ST05C-1010	12	118	71	56	45	☆
	5		Whistle notch shank	1736ST05C-1010	12	118	71	56	45	☆
10.25	3		Straight shank	1534ST03C-1025	12	102	55	40	45	☆
	5			1536ST05C-1025	12	118	71	56	45	☆
	5		Whistle notch shank	1736ST05C-1025	12	118	71	56	45	☆
10.3	3		Straight shank	1534ST03C-1030	12	102	55	40	45	☆
	5			1536ST05C-1030	12	118	71	56	45	☆
	5		Whistle notch shank	1736ST05C-1030	12	118	71	56	45	☆
10.4	3		Straight shank	1534ST03C-1040	12	102	55	40	45	☆
	5			1536ST05C-1040	12	118	71	56	45	☆
	5		Whistle notch shank	1736ST05C-1040	12	118	71	56	45	☆
10.5	3		Straight shank	1534ST03C-1050	12	102	55	40	45	☆
	5			1536ST05C-1050	12	118	71	56	45	☆
	5		Whistle notch shank	1736ST05C-1050	12	118	71	56	45	☆
10.6	3		Straight shank	1534ST03C-1060	12	102	55	40	45	☆
	5			1536ST05C-1060	12	118	71	56	45	☆
	5		Whistle notch shank	1736ST05C-1060	12	118	71	56	45	☆
10.7	3		Straight shank	1534ST03C-1070	12	102	55	40	45	☆
	5			1536ST05C-1070	12	118	71	56	45	☆
	5		Whistle notch shank	1736ST05C-1070	12	118	71	56	45	☆

☆Recommended grade (produce according to order)

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Recommended grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	
					$d_2(h_6)$	l_1	l_2	l_3	l_4	KDG303
10.8	3	Internal coolant	Straight shank	1534ST03C-1080	12	102	55	40	45	☆
	5			1536ST05C-1080	12	118	71	56	45	☆
	5		Whistle notch shank	1736ST05C-1080	12	118	71	56	45	☆
10.9	3		Straight shank	1534ST03C-1090	12	102	55	40	45	☆
	5			1536ST05C-1090	12	118	71	56	45	☆
	5		Whistle notch shank	1736ST05C-1090	12	118	71	56	45	☆
11.0	3		Straight shank	1534ST03C-1100	12	102	55	40	45	☆
	5			1536ST05C-1100	12	118	71	56	45	☆
	5		Whistle notch shank	1736ST05C-1100	12	118	71	56	45	☆
11.1	3		Straight shank	1534ST03C-1110	12	102	55	40	45	☆
	5			1536ST05C-1110	12	118	71	56	45	☆
	5		Whistle notch shank	1736ST05C-1110	12	118	71	56	45	☆
11.2	3		Straight shank	1534ST03C-1120	12	102	55	40	45	☆
	5			1536ST05C-1120	12	118	71	56	45	☆
	5		Whistle notch shank	1736ST05C-1120	12	118	71	56	45	☆
11.3	3		Straight shank	1534ST03C-1130	12	102	55	40	45	☆
	5			1536ST05C-1130	12	118	71	56	45	☆
	5		Whistle notch shank	1736ST05C-1130	12	118	71	56	45	☆
11.4	3		Straight shank	1534ST03C-1140	12	102	55	40	45	☆
	5			1536ST05C-1140	12	118	71	56	45	☆
	5		Whistle notch shank	1736ST05C-1140	12	118	71	56	45	☆
11.5	3		Straight shank	1534ST03C-1150	12	102	55	40	45	☆
	5			1536ST05C-1150	12	118	71	56	45	☆
	5		Whistle notch shank	1736ST05C-1150	12	118	71	56	45	☆
11.6	3		Straight shank	1534ST03C-1160	12	102	55	40	45	☆
	5			1536ST05C-1160	12	118	71	56	45	☆
	5		Whistle notch shank	1736ST05C-1160	12	118	71	56	45	☆
11.7	3		Straight shank	1534ST03C-1170	12	102	55	40	45	☆
	5			1536ST05C-1170	12	118	71	56	45	☆
	5		Whistle notch shank	1736ST05C-1170	12	118	71	56	45	☆
11.8	3		Straight shank	1534ST03C-1180	12	102	55	40	45	☆
	5			1536ST05C-1180	12	118	71	56	45	☆
	5		Whistle notch shank	1736ST05C-1180	12	118	71	56	45	☆

☆Recommended grade (produce according to order)

Applicable material table

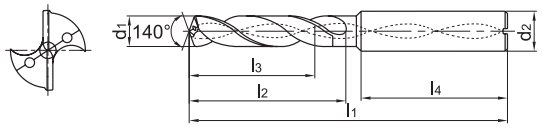
◎Very suitable ○Suitable

Grade	Workpiece material										
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG303	◎	○				◎					○

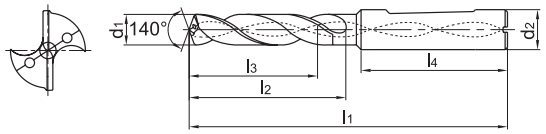
Code key C6
Cutting parameters C83
Technical information C87–C93
Non-standard customization tools C94-C98

ST series for machining of soft steel, stainless steel


Internal coolant — Straight shank




Internal coolant — Whistle notch shank



- First choice for drilling soft steel and stainless steel.
- Sharp cutting edge can avoid build--up edge, suitable for drilling hole with high performance.

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Recommended grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	
					$d_2(h_6)$	l_1	l_2	l_3	l_4	KDG303
11.9	3	Internal coolant	Straight shank	1534ST03C-1190	12	102	55	40	45	☆
	5			1536ST05C-1190	12	118	71	56	45	☆
	5		Whistle notch shank	1736ST05C-1190	12	118	71	56	45	☆
12.0	3		Straight shank	1534ST03C-1200	12	102	55	40	45	☆
	5			1536ST05C-1200	12	118	71	56	45	☆
	5		Whistle notch shank	1736ST05C-1200	12	118	71	56	45	☆
12.25	3		Straight shank	1534ST03C-1225	14	107	60	43	45	☆
	5			1536ST05C-1225	14	124	77	60	45	☆
	5		Whistle notch shank	1736ST05C-1225	14	124	77	60	45	☆
12.3	3		Straight shank	1534ST03C-1230	14	107	60	43	45	☆
	5			1536ST05C-1230	14	124	77	60	45	☆
	5		Whistle notch shank	1736ST05C-1230	14	124	77	60	45	☆
12.5	3		Straight shank	1534ST03C-1250	14	107	60	43	45	☆
	5			1536ST05C-1250	14	124	77	60	45	☆
	5		Whistle notch shank	1736ST05C-1250	14	124	77	60	45	☆
12.7	3		Straight shank	1534ST03C-1270	14	107	60	43	45	☆
	5			1536ST05C-1270	14	124	77	60	45	☆
	5		Whistle notch shank	1736ST05C-1270	14	124	77	60	45	☆
12.75	3		Straight shank	1534ST03C-1275	14	107	60	43	45	☆
	5			1536ST05C-1275	14	124	77	60	45	☆
	5		Whistle notch shank	1736ST05C-1275	14	124	77	60	45	☆
12.8	3		Straight shank	1534ST03C-1280	14	107	60	43	45	☆
	5			1536ST05C-1280	14	124	77	60	45	☆
	5		Whistle notch shank	1736ST05C-1280	14	124	77	60	45	☆
13.0	3		Straight shank	1534ST03C-1300	14	107	60	43	45	☆
	5			1536ST05C-1300	14	124	77	60	45	☆
	5		Whistle notch shank	1736ST05C-1300	14	124	77	60	45	☆
13.1	3		Straight shank	1534ST03C-1310	14	107	60	43	45	☆
	5			1536ST05C-1310	14	124	77	60	45	☆
	5		Whistle notch shank	1736ST05C-1310	14	124	77	60	45	☆

☆Recommended grade (produce according to order)

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Recommended grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	
					$d_2(h_6)$	l_1	l_2	l_3	l_4	KDG303
13.5	3	Internal coolant	Straight shank	1534ST03C-1350	14	107	60	43	45	☆
	5			1536ST05C-1350	14	124	77	60	45	☆
	5		Whistle notch shank	1736ST05C-1350	14	124	77	60	45	☆
13.8	3		Straight shank	1534ST03C-1380	14	107	60	43	45	☆
	5			1536ST05C-1380	14	124	77	60	45	☆
	5		Whistle notch shank	1736ST05C-1380	14	124	77	60	45	☆
14.0	3		Straight shank	1534ST03C-1400	14	107	60	43	45	☆
	5			1536ST05C-1400	14	124	77	60	45	☆
	5		Whistle notch shank	1736ST05C-1400	14	124	77	60	45	☆
14.25	3		Straight shank	1534ST03C-1425	16	115	65	45	48	☆
	5			1536ST05C-1425	16	133	83	63	48	☆
	5		Whistle notch shank	1736ST05C-1425	16	133	83	63	48	☆
14.3	3		Straight shank	1534ST03C-1430	16	115	65	45	48	☆
	5			1536ST05C-1430	16	133	83	63	48	☆
	5		Whistle notch shank	1736ST05C-1430	16	133	83	63	48	☆
14.5	3		Straight shank	1534ST03C-1450	16	115	65	45	48	☆
	5			1536ST05C-1450	16	133	83	63	48	☆
	5		Whistle notch shank	1736ST05C-1450	16	133	83	63	48	☆
14.75	3		Straight shank	1534ST03C-1475	16	115	65	45	48	☆
	5			1536ST05C-1475	16	133	83	63	48	☆
	5		Whistle notch shank	1736ST05C-1475	16	133	83	63	48	☆
14.8	3		Straight shank	1534ST03C-1480	16	115	65	45	48	☆
	5			1536ST05C-1480	16	133	83	63	48	☆
	5		Whistle notch shank	1736ST05C-1480	16	133	83	63	48	☆
15.0	3		Straight shank	1534ST03C-1500	16	115	65	45	48	☆
	5			1536ST05C-1500	16	133	83	63	48	☆
	5		Whistle notch shank	1736ST05C-1500	16	133	83	63	48	☆
15.1	3		Straight shank	1534ST03C-1510	16	115	65	45	48	☆
	5			1536ST05C-1510	16	133	83	63	48	☆
	5		Whistle notch shank	1736ST05C-1510	16	133	83	63	48	☆
15.5	3		Straight shank	1534ST03C-1550	16	115	65	45	48	☆
	5			1536ST05C-1550	16	133	83	63	48	☆
	5		Whistle notch shank	1736ST05C-1550	16	133	83	63	48	☆

☆Recommended grade (produce according to order)

Applicable material table

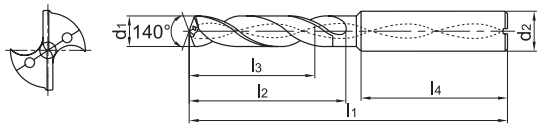
◎Very suitable ○Suitable

Grade	Workpiece material										
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG303	◎	○				◎					○

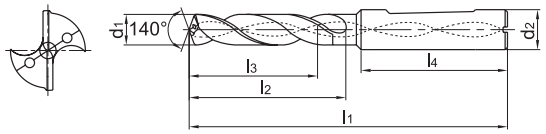
Code key C6
Cutting parameters C83
Technical information C87–C93
Non-standard customization tools C94-C98

ST series for machining of soft steel, stainless steel


Internal coolant Straight shank




Internal coolant Whistle notch shank



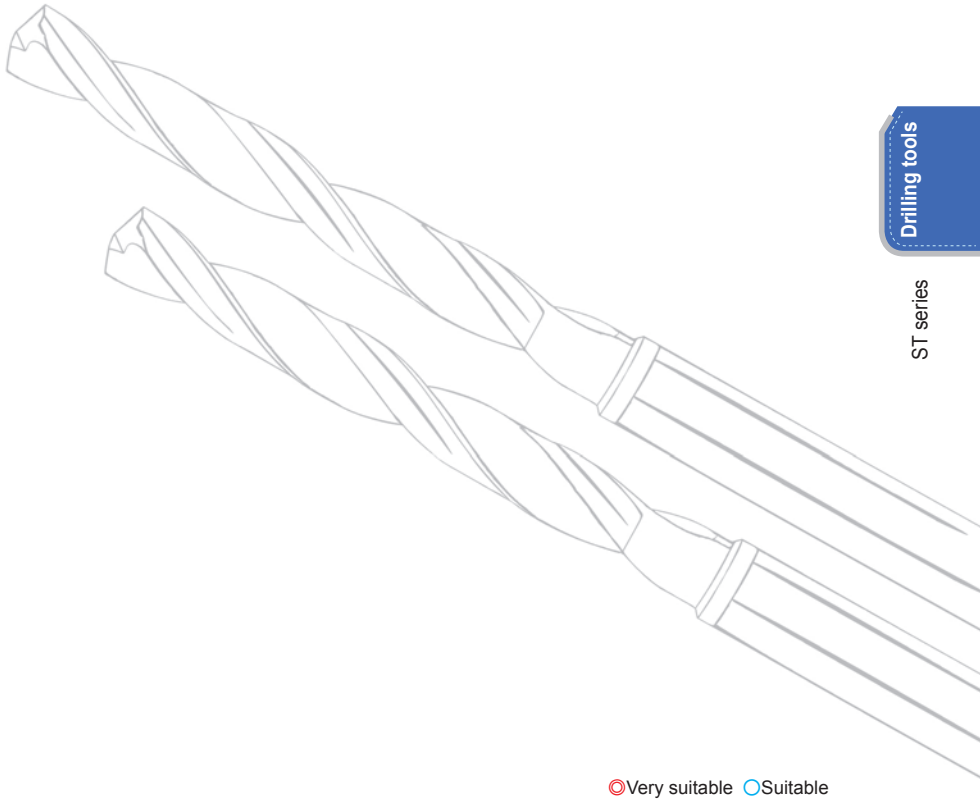
- First choice for drilling soft steel and stainless steel.
- Sharp cutting edge can avoid build--up edge, suitable for drilling hole with high performance.

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Recommended grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	
					$d_2(h_6)$	l_1	l_2	l_3	l_4	KDG303
15.8	3	Internal coolant	Straight shank	1534ST03C-1580	16	115	65	45	48	☆
	5			1536ST05C-1580	16	133	83	63	48	☆
	5		Whistle notch shank	1736ST05C-1580	16	133	83	63	48	☆
16.0	3		Straight shank	1534ST03C-1600	16	115	65	45	48	☆
	5			1536ST05C-1600	16	133	83	63	48	☆
	5		Whistle notch shank	1736ST05C-1600	16	133	83	63	48	☆
16.5	3		Straight shank	1534ST03C-1650	18	123	73	51	48	☆
	5			1536ST05C-1650	18	143	93	71	48	☆
	5		Whistle notch shank	1736ST05C-1650	18	143	93	71	48	☆
16.75	3		Straight shank	1534ST03C-1675	18	123	73	51	48	☆
	5			1536ST05C-1675	18	143	93	71	48	☆
	5		Whistle notch shank	1736ST05C-1675	18	143	93	71	48	☆
16.8	3		Straight shank	1534ST03C-1680	18	123	73	51	48	☆
	5			1536ST05C-1680	18	143	93	71	48	☆
	5		Whistle notch shank	1736ST05C-1680	18	143	93	71	48	☆
17.0	3		Straight shank	1534ST03C-1700	18	123	73	51	48	☆
	5			1536ST05C-1700	18	143	93	71	48	☆
	5		Whistle notch shank	1736ST05C-1700	18	143	93	71	48	☆
17.5	3		Straight shank	1534ST03C-1750	18	123	73	51	48	☆
	5			1536ST05C-1750	18	143	93	71	48	☆
	5		Whistle notch shank	1736ST05C-1750	18	143	93	71	48	☆
17.8	3		Straight shank	1534ST03C-1780	18	123	73	51	48	☆
	5			1536ST05C-1780	18	143	93	71	48	☆
	5		Whistle notch shank	1736ST05C-1780	18	143	93	71	48	☆
18.0	3		Straight shank	1534ST03C-1800	18	123	73	51	48	☆
	5			1536ST05C-1800	18	143	93	71	48	☆
	5		Whistle notch shank	1736ST05C-1800	18	143	93	71	48	☆
18.5	3		Straight shank	1534ST03C-1850	20	131	79	55	50	☆
	5			1536ST05C-1850	20	153	101	77	50	☆
	5		Whistle notch shank	1736ST05C-1850	20	153	101	77	50	☆

☆Recommended grade (produce according to order)

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Recommended grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	
					$d_2(h_6)$	l_1	l_2	l_3	l_4	KDG303
18.8	3	Internal coolant	Straight shank	**1534ST03C-1880**	20	131	79	55	50	☆
	5			**1536ST05C-1880**	20	153	101	77	50	☆
	5		Whistle notch shank	**1736ST05C-1880**	20	153	101	77	50	☆
19.0	3		Straight shank	**1534ST03C-1900**	20	131	79	55	50	☆
	5			**1536ST05C-1900**	20	153	101	77	50	☆
	5		Whistle notch shank	**1736ST05C-1900**	20	153	101	77	50	☆
19.5	3		Straight shank	**1534ST03C-1950**	20	131	79	55	50	☆
	5			**1536ST05C-1950**	20	153	101	77	50	☆
	5		Whistle notch shank	**1736ST05C-1950**	20	153	101	77	50	☆
19.8	3		Straight shank	**1534ST03C-1980**	20	131	79	55	50	☆
	5			**1536ST05C-1980**	20	153	101	77	50	☆
	5		Whistle notch shank	**1736ST05C-1980**	20	153	101	77	50	☆
20.0	3		Straight shank	**1534ST03C-2000**	20	131	79	55	50	☆
	5			**1536ST05C-2000**	20	153	101	77	50	☆
	5		Whistle notch shank	**1736ST05C-2000**	20	153	101	77	50	☆

☆Recommended grade (produce according to order)



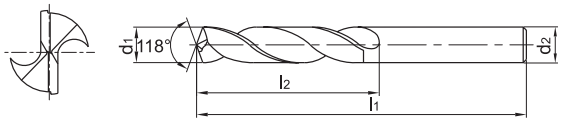
Applicable material table

◎Very suitable ○Suitable

Grade	Workpiece material										
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG303	◎	○				◎					○

Code key C6
Cutting parameters C83
Technical information C87–C93
Non-standard customization tools C94-C98

SC series(twist drill) for machining of cast iron, Al alloy



- For materials with short chips such as cast iron, silicon-aluminum alloy, etc.
- Cutting edge and shank with same diameter.

Drill diameter $d_1(h_8)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)			Recommended grade
					Shank diameter	Overall length	Flute length	
					$d_2(h_7)$	l_1	l_2	YK20F
2.0	3	External coolant	Straight shank	**1105SC03-0200**	2.0	38	12	☆
	5			**1101SC05-0200**	2.0	49	24	☆
2.5	3			**1105SC03-0250**	2.5	43	14	☆
	5			**1101SC05-0250**	2.5	57	30	☆
2.8	3			**1105SC03-0280**	2.8	46	16	☆
	5			**1101SC05-0280**	2.8	61	33	☆
3.0	3			**1105SC03-0300**	3.0	46	16	☆
	5			**1101SC05-0300**	3.0	61	33	☆
3.1	3			**1105SC03-0310**	3.1	49	18	☆
3.2	3			**1105SC03-0320**	3.2	49	18	☆
3.3	3			**1105SC03-0330**	3.3	49	18	☆
3.4	3			**1105SC03-0340**	3.4	52	20	☆
3.5	3			**1105SC03-0350**	3.5	52	20	☆
	5			**1101SC05-0350**	3.5	70	39	☆
3.6	3			**1105SC03-0360**	3.6	52	20	☆
3.7	3			**1105SC03-0370**	3.7	52	20	☆
3.8	3			**1105SC03-0380**	3.8	55	22	☆
	5			**1101SC05-0380**	3.8	75	43	☆
3.9	3			**1105SC03-0390**	3.9	55	22	☆
4.0	3			**1105SC03-0400**	4.0	55	22	☆
	5			**1101SC05-0400**	4.0	75	43	☆
4.1	3			**1105SC03-0410**	4.1	55	22	☆
4.2	3			**1105SC03-0420**	4.2	55	22	☆
	5			**1101SC05-0420**	4.2	75	43	☆
4.3	3			**1105SC03-0430**	4.3	58	24	☆
4.4	3			**1105SC03-0440**	4.4	58	24	☆
4.5	3			**1105SC03-0450**	4.5	58	24	☆
	5			**1101SC05-0450**	4.5	80	47	☆
4.6	3			**1105SC03-0460**	4.6	58	24	☆
4.7	3			**1105SC03-0470**	4.7	58	24	☆
4.8	3			**1105SC03-0480**	4.8	62	26	☆
	5			**1101SC05-0480**	4.8	86	52	☆

☆Recommended grade (produce according to order)

Drill diameter $d_1(h_8)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)			Recommended grade
					Shank diameter	Overall length	Flute length	
					$d_2(h_7)$	l_1	l_2	YK20F
4.9	3	External coolant	Straight shank	**1105SC03-0490**	4.9	62	26	☆
5.0	3			**1105SC03-0500**	5.0	62	26	☆
	5			**1101SC05-0500**	5.0	86	52	☆
5.1	3			**1105SC03-0510**	5.1	62	26	☆
5.2	3			**1105SC03-0520**	5.2	62	26	☆
5.3	3			**1105SC03-0530**	5.3	62	26	☆
5.4	3			**1105SC03-0540**	5.4	66	28	☆
5.5	3			**1105SC03-0550**	5.5	66	28	☆
	5			**1101SC05-0550**	5.5	93	57	☆
5.6	3			**1105SC03-0560**	5.6	66	28	☆
5.7	3			**1105SC03-0570**	5.7	66	28	☆
5.8	3			**1105SC03-0580**	5.8	66	28	☆
	5			**1101SC05-0580**	5.8	93	57	☆
5.9	3			**1105SC03-0590**	5.9	66	28	☆
6.0	3			**1105SC03-0600**	6.0	66	28	☆
	5			**1101SC05-0600**	6.0	93	57	☆
6.1	3			**1105SC03-0610**	6.1	70	31	☆
6.2	3			**1105SC03-0620**	6.2	70	31	☆
6.3	3			**1105SC03-0630**	6.3	70	31	☆
6.4	3			**1105SC03-0640**	6.4	70	31	☆
6.5	3			**1105SC03-0650**	6.5	70	31	☆
	5			**1101SC05-0650**	6.5	101	63	☆
6.6	3			**1105SC03-0660**	6.6	70	31	☆
6.7	3			**1105SC03-0670**	6.7	70	31	☆
6.8	3			**1105SC03-0680**	6.8	74	34	☆
	5			**1101SC05-0680**	6.8	109	69	☆
6.9	3			**1105SC03-0690**	6.9	74	34	☆
7.0	3			**1105SC03-0700**	7.0	74	34	☆
	5			**1101SC05-0700**	7.0	109	69	☆
7.1	3			**1105SC03-0710**	7.1	74	34	☆
7.2	3			**1105SC03-0720**	7.2	74	34	☆
7.3	3			**1105SC03-0730**	7.3	74	34	☆
7.4	3			**1105SC03-0740**	7.4	74	34	☆

☆Recommended grade (produce according to order)

Applicable material table

◎Very suitable ○Suitable

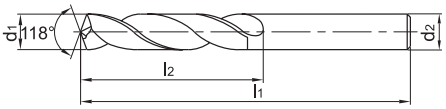
Grade	Workpiece material										
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
YK20F							◎	○	◎		

Code key C6
Cutting parameters C83
Technical information C87–C93
Non-standard customization tools C94-C98

SC series(twist drill) for machining of cast iron, Al alloy


External coolant


Straight shank



- For materials with short chips such as cast iron, silicon-aluminum alloy, etc.
- Cutting edge and shank with same diameter.

Drill diameter $d_1(h_8)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)			Recommended grade
					Shank diameter	Overall length	Flute length	
					$d_2(h_7)$	l_1	l_2	YK20F
7.5	3	External coolant	Straight shank	**1105SC03-0750**	7.5	74	34	☆
	5			**1101SC05-0750**	7.5	109	69	☆
7.6	3			**1105SC03-0760**	7.6	79	37	☆
7.7	3			**1105SC03-0770**	7.7	79	37	☆
7.8	3			**1105SC03-0780**	7.8	79	37	☆
	5			**1101SC05-0780**	7.8	117	75	☆
7.9	3			**1105SC03-0790**	7.9	79	37	☆
8.0	3			**1105SC03-0800**	8.0	79	37	☆
	5			**1101SC05-0800**	8.0	117	75	☆
8.1	3			**1105SC03-0810**	8.1	79	37	☆
8.2	3			**1105SC03-0820**	8.2	79	37	☆
8.3	3			**1105SC03-0830**	8.3	79	37	☆
8.4	3			**1105SC03-0840**	8.4	79	37	☆
8.5	3			**1105SC03-0850**	8.5	79	37	☆
	5			**1101SC05-0850**	8.5	117	75	☆
8.6	3			**1105SC03-0860**	8.6	84	40	☆
8.7	3			**1105SC03-0870**	8.7	84	40	☆
8.8	3			**1105SC03-0880**	8.8	84	40	☆
	5			**1101SC05-0880**	8.8	125	81	☆
8.9	3			**1105SC03-0890**	8.9	84	40	☆
9.0	3			**1105SC03-0900**	9.0	84	40	☆
	5			**1101SC05-0900**	9.0	125	81	☆
9.1	3			**1105SC03-0910**	9.1	84	40	☆
9.2	3			**1105SC03-0920**	9.2	84	40	☆
9.3	3			**1105SC03-0930**	9.3	84	40	☆
9.4	3			**1105SC03-0940**	9.4	84	40	☆
9.5	3			**1105SC03-0950**	9.5	84	40	☆
	5			**1101SC05-0950**	9.5	125	81	☆
9.6	3			**1105SC03-0960**	9.6	89	43	☆
9.7	3			**1105SC03-0970**	9.7	89	43	☆
9.8	3			**1105SC03-0980**	9.8	89	43	☆
	5			**1101SC05-0980**	9.8	133	87	☆
9.9	3			**1105SC03-0990**	9.9	89	43	☆

☆Recommended grade (produce according to order)

Drill diameter $d_1(h_8)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)			Recommended grade
					Shank diameter	Overall length	Flute length	
					$d_2(h_7)$	l_1	l_2	YK20F
10.0	3	External coolant	Straight shank	**1105SC03-1000**	10.0	89	43	☆
	5			**1101SC05-1000**	10.0	133	87	☆
10.1	3			**1105SC03-1010**	10.1	89	43	☆
10.2	3			**1105SC03-1020**	10.2	89	43	☆
10.4	3			**1105SC03-1040**	10.4	89	43	☆
10.5	3			**1105SC03-1050**	10.5	89	43	☆
	5			**1101SC05-1050**	10.5	133	87	☆
10.7	3			**1105SC03-1070**	10.7	95	47	☆
10.8	3			**1105SC03-1080**	10.8	95	47	☆
	5			**1101SC05-1080**	10.8	142	94	☆
11.0	3			**1105SC03-1100**	11.0	95	47	☆
	5			**1101SC05-1100**	11.0	142	94	☆
11.5	3			**1105SC03-1150**	11.5	95	47	☆
	5			**1101SC05-1150**	11.5	142	94	☆
12.0	3			**1105SC03-1200**	12.0	102	51	☆
	5			**1101SC05-1200**	12.0	151	101	☆
12.5	3			**1105SC03-1250**	12.5	102	51	☆
	5			**1101SC05-1250**	12.5	151	101	☆
12.8	3			**1105SC03-1280**	12.8	102	51	☆
13.0	3			**1105SC03-1300**	13.0	102	51	☆
	5			**1101SC05-1300**	13.0	151	101	☆
13.1	3			**1105SC03-1310**	13.1	102	51	☆
13.5	3			**1105SC03-1350**	13.5	107	54	☆
	5			**1101SC05-1350**	13.5	160	108	☆
14.0	3			**1105SC03-1400**	14.0	107	54	☆
	5			**1101SC05-1400**	14.0	160	108	☆
14.3	3			**1105SC03-1430**	14.3	111	56	☆
14.5	3			**1105SC03-1450**	14.5	111	56	☆
	5			**1101SC05-1450**	14.5	169	114	☆
15.0	3			**1105SC03-1500**	15.0	111	56	☆
	5			**1101SC05-1500**	15.0	169	114	☆
15.5	5			**1101SC05-1550**	15.5	178	120	☆
16.0	3			**1105SC03-1600**	16.0	115	58	☆
	5			**1101SC05-1600**	16.0	178	120	☆

☆Recommended grade (produce according to order)

Applicable material table

◎Very suitable ○Suitable

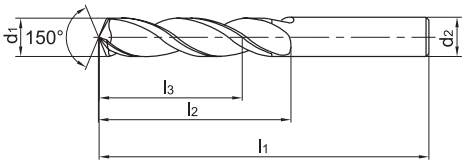
Grade	Workpiece material										
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
YK20F							◎	○	◎		

Code key C6
Cutting parameters C83
Technical information C87–C93
Non-standard customization tools C94-C98

PA series(three flute drill) for maching of cast iron, AL alloy

External coolant

Straight shank



- Suitable for drilling solid workpieces such as cast iron and AL alloy.
- Three-flute construction for high feed rates and excellent centering capability.
- High machining reliability, suitable for harsh working conditions, such as intermittent cutting, etc.

Drill diameter $d_1(h_8)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)				Recommended grade	
					Shank diameter	Overall length	Flute length	Recommended drilling depth	KDG303	YK30F
					$d_2(h_7)$	l_1	l_2	l_3		
3.0	3	External coolant	Straight shank	**1165PA03-0300**	3.0	46	16	12	☆	☆
3.1	3			**1165PA03-0310**	3.1	49	18	14	☆	☆
3.2	3			**1165PA03-0320**	3.2	49	18	14	☆	☆
3.3	3			**1165PA03-0330**	3.3	49	18	14	☆	☆
3.4	3			**1165PA03-0340**	3.4	52	20	15	☆	☆
3.5	3			**1165PA03-0350**	3.5	52	20	15	☆	☆
3.6	3			**1165PA03-0360**	3.6	52	20	15	☆	☆
3.7	3			**1165PA03-0370**	3.7	52	20	15	☆	☆
3.8	3			**1165PA03-0380**	3.8	55	22	17	☆	☆
3.9	3			**1165PA03-0390**	3.9	55	22	17	☆	☆
4.0	3			**1165PA03-0400**	4.0	55	22	17	☆	☆
4.1	3			**1165PA03-0410**	4.1	55	22	17	☆	☆
4.2	3			**1165PA03-0420**	4.2	55	22	17	☆	☆
4.3	3			**1165PA03-0430**	4.3	58	24	18	☆	☆
4.4	3			**1165PA03-0440**	4.4	58	24	18	☆	☆
4.5	3			**1165PA03-0450**	4.5	58	24	18	☆	☆
4.6	3			**1165PA03-0460**	4.6	58	24	18	☆	☆
4.7	3			**1165PA03-0470**	4.7	58	24	18	☆	☆
4.8	3			**1165PA03-0480**	4.8	62	26	20	☆	☆
4.9	3			**1165PA03-0490**	4.9	62	26	20	☆	☆
5.0	3			**1165PA03-0500**	5.0	62	26	20	☆	☆
5.1	3			**1165PA03-0510**	5.1	62	26	20	☆	☆
5.2	3			**1165PA03-0520**	5.2	62	26	20	☆	☆
5.3	3			**1165PA03-0530**	5.3	62	26	20	☆	☆
5.4	3			**1165PA03-0540**	5.4	66	28	21	☆	☆
5.5	3			**1165PA03-0550**	5.5	66	28	21	☆	☆
5.6	3			**1165PA03-0560**	5.6	66	28	21	☆	☆
5.7	3			**1165PA03-0570**	5.7	66	28	21	☆	☆
5.8	3			**1165PA03-0580**	5.8	66	28	21	☆	☆

☆Recommended grade (produce according to order)

Drill diameter $d_1(h_8)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)				Recommended grade	
					Shank diameter	Overall length	Flute length	Recommended drilling depth	KDG303	YK30F
					$d_2(h_7)$	l_1	l_2	l_3		
5.9	3	External coolant	Straight shank	**1165PA03-0590**	5.9	66	28	21	☆	☆
6.0	3			**1165PA03-0600**	6.0	66	28	21	☆	☆
6.1	3			**1165PA03-0610**	6.1	70	31	23	☆	☆
6.2	3			**1165PA03-0620**	6.2	70	31	23	☆	☆
6.3	3			**1165PA03-0630**	6.3	70	31	23	☆	☆
6.4	3			**1165PA03-0640**	6.4	70	31	23	☆	☆
6.5	3			**1165PA03-0650**	6.5	70	31	23	☆	☆
6.6	3			**1165PA03-0660**	6.6	70	31	23	☆	☆
6.7	3			**1165PA03-0670**	6.7	70	31	23	☆	☆
6.8	3			**1165PA03-0680**	6.8	74	34	25	☆	☆
6.9	3			**1165PA03-0690**	6.9	74	34	25	☆	☆
7.0	3			**1165PA03-0700**	7.0	74	34	25	☆	☆
7.1	3			**1165PA03-0710**	7.1	74	34	25	☆	☆
7.2	3			**1165PA03-0720**	7.2	74	34	25	☆	☆
7.3	3			**1165PA03-0730**	7.3	74	34	25	☆	☆
7.4	3			**1165PA03-0740**	7.4	74	34	25	☆	☆
7.5	3			**1165PA03-0750**	7.5	74	34	25	☆	☆
7.6	3			**1165PA03-0760**	7.6	79	37	27	☆	☆
7.7	3			**1165PA03-0770**	7.7	79	37	27	☆	☆
7.8	3			**1165PA03-0780**	7.8	79	37	27	☆	☆
7.9	3			**1165PA03-0790**	7.9	79	37	27	☆	☆
8.0	3			**1165PA03-0800**	8.0	79	37	27	☆	☆
8.1	3			**1165PA03-0810**	8.1	79	37	27	☆	☆
8.2	3			**1165PA03-0820**	8.2	79	37	27	☆	☆
8.3	3			**1165PA03-0830**	8.3	79	37	27	☆	☆
8.4	3			**1165PA03-0840**	8.4	79	37	27	☆	☆
8.5	3			**1165PA03-0850**	8.5	79	37	27	☆	☆
8.6	3			**1165PA03-0860**	8.6	84	40	29	☆	☆
8.7	3			**1165PA03-0870**	8.7	84	40	29	☆	☆

☆Recommended grade (produce according to order)

Applicable material table

◎Very suitable ○Suitable

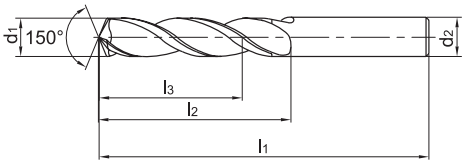
Grade	Workpiece material										
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG303						○	◎	○	◎		○
YK30F						○	◎	○	◎		○

Code key C6
Cutting parameters C84
Technical information C87–C93
Non-standard customization tools C94-C98

PA series(three flute drill) for maching of cast iron, AL alloy

External coolant

Straight shank



- Suitable for drilling solid workpieces such as cast iron and AL alloy.
- Three-flute construction for high feed rates and excellent centering capability.
- High machining reliability, suitable for harsh working conditions, such as intermittent cutting, etc.

Drill diameter $d_1(h_8)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)				Recommended grade	
					Shank diameter $d_2(h_7)$	Overall length l_1	Flute length l_2	Recommended drilling depth l_3	KDG303	YK30F
8.8	3	External coolant	Straight shank	**1165PA03-0880**	8.8	84	40	29	☆	☆
8.9	3			**1165PA03-0890**	8.9	84	40	29	☆	☆
9.0	3			**1165PA03-0900**	9.0	84	40	29	☆	☆
9.1	3			**1165PA03-0910**	9.1	84	40	29	☆	☆
9.2	3			**1165PA03-0920**	9.2	84	40	29	☆	☆
9.3	3			**1165PA03-0930**	9.3	84	40	29	☆	☆
9.4	3			**1165PA03-0940**	9.4	84	40	29	☆	☆
9.5	3			**1165PA03-0950**	9.5	84	40	29	☆	☆
9.6	3			**1165PA03-0960**	9.6	89	43	31	☆	☆
9.7	3			**1165PA03-0970**	9.7	89	43	31	☆	☆
9.8	3			**1165PA03-0980**	9.8	89	43	31	☆	☆
9.9	3			**1165PA03-0990**	9.9	89	43	31	☆	☆
10.0	3			**1165PA03-1000**	10.0	89	43	31	☆	☆
10.1	3			**1165PA03-1010**	10.1	89	43	31	☆	☆
10.2	3			**1165PA03-1020**	10.2	89	43	31	☆	☆
10.3	3			**1165PA03-1030**	10.3	89	43	31	☆	☆
10.5	3			**1165PA03-1050**	10.5	89	43	31	☆	☆
11.0	3			**1165PA03-1100**	11.0	95	47	33	☆	☆
11.2	3			**1165PA03-1120**	11.2	95	47	33	☆	☆
11.5	3			**1165PA03-1150**	11.5	95	47	33	☆	☆
11.8	3			**1165PA03-1180**	11.8	95	47	33	☆	☆
12.0	3			**1165PA03-1200**	12.0	102	51	35	☆	☆
12.1	3			**1165PA03-1210**	12.1	102	51	35	☆	☆
12.5	3			**1165PA03-1250**	12.5	102	51	35	☆	☆
13.0	3			**1165PA03-1300**	13.0	102	51	35	☆	☆
13.5	3			**1165PA03-1350**	13.5	107	54	37	☆	☆
14.0	3			**1165PA03-1400**	14.0	107	54	37	☆	☆
14.5	3			**1165PA03-1450**	14.5	111	56	38	☆	☆
15.0	3			**1165PA03-1500**	15.0	111	56	38	☆	☆

☆Recommended grade (produce according to order)

Drill diameter $d_1(h_8)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)				Recommended grade	
					Shank diameter	Overall length	Flute length	Recommended drilling depth	KDG303	YK30F
					$d_2(h_7)$	l_1	l_2	l_3		
15.5	3	External coolant	Straight shank	**1165PA03-1550**	15.5	115	58	38	☆	☆
16.0	3			**1165PA03-1600**	16.0	115	58	38	☆	☆
16.5	3			**1165PA03-1650**	16.5	119	60	39	☆	☆
17.0	3			**1165PA03-1700**	17.0	119	60	39	☆	☆
17.5	3			**1165PA03-1750**	17.5	123	62	40	☆	☆
18.0	3			**1165PA03-1800**	18.0	123	62	40	☆	☆
18.5	3			**1165PA03-1850**	18.5	127	64	41	☆	☆
19.0	3			**1165PA03-1900**	19.0	127	64	41	☆	☆
19.5	3			**1165PA03-1950**	19.5	131	66	42	☆	☆
20.0	3			**1165PA03-2000**	20.0	131	66	42	☆	☆

☆Recommended grade (produce according to order)

Applicable material table

◎Very suitable ○Suitable

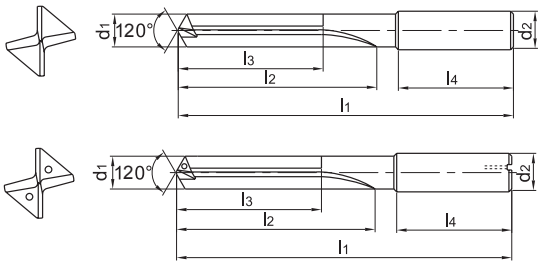
Grade	Workpiece material										
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
KDG303						○	◎	○	◎		○
YK30F						○	◎	○	◎		○

Code key C6
Cutting parameters C84
Technical information C87–C93
Non-standard customization tools C94-C98

PC series(straight flute drill) for machining of cast iron , Al alloy


External coolant Straight shank


Internal coolant Straight shank



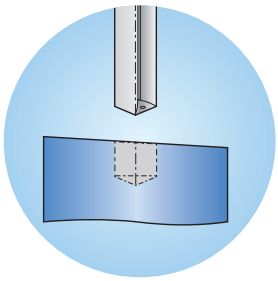
- For materials with short chips such as cast iron, silicon-aluminum alloy, etc.
- Excellent self centering capability, able to machine with high efficiency, the hole precision up to H7.
- High positional accuracy, high linearity and good surface finish can be obtained in the hole drilled.

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Recommended grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	
					$d_2(h_6)$	l_1	l_2	l_3	l_4	YK20F
4.0	5	External coolant	Straight shank	**1576PC05-0400**	6.0	74	36	29	36	☆
4.2	5			**1576PC05-0420**	6.0	74	36	29	36	☆
5.0	5			**1576PC05-0500**	6.0	82	44	35	36	☆
	15	Internal coolant		**1579PC15C-0500**	6.0	145	105	96	36	☆
6.0	5	External coolant		**1576PC05-0600**	6.0	82	44	35	36	☆
	15	Internal coolant		**1579PC15C-0600**	6.0	145	105	96	36	☆
6.75	5	External coolant		**1576PC05-0675**	8.0	91	53	43	36	☆
7.0	5			**1576PC05-0700**	8.0	91	53	43	36	☆
8.0	5			**1576PC05-0800**	8.0	91	53	43	36	☆
	15	Internal coolant		**1579PC15C-0800**	8.0	180	137	127	36	☆
8.5	5	External coolant		**1576PC05-0850**	10.0	103	61	49	40	☆
9.0	5			**1576PC05-0900**	10.0	103	61	49	40	☆
	15	Internal coolant		**1579PC15C-0900**	10.0	217	170	158	40	☆
10.0	5	External coolant		**1576PC05-1000**	10.0	103	61	49	40	☆
	15	Internal coolant		**1579PC15C-1000**	10.0	217	170	158	40	☆
10.25	5	External coolant		**1576PC05-1025**	12.0	118	71	56	45	☆
11.0	5			**1576PC05-1100**	12.0	118	71	56	45	☆
	15	Internal coolant		**1579PC15C-1100**	12.0	258	205	190	45	☆
12.0	5	External coolant		**1576PC05-1200**	12.0	118	71	56	45	☆
	15	Internal coolant		**1579PC15C-1200**	12.0	258	205	190	45	☆
13.0	5	External coolant		**1576PC05-1300**	14.0	124	77	60	45	☆
14.0	5			**1576PC05-1400**	14.0	124	77	60	45	☆
	15	Internal coolant		**1579PC15C-1400**	14.0	290	236	219	45	☆
15.0	5	External coolant		**1576PC05-1500**	16.0	133	83	63	48	☆
15.5	5			**1576PC05-1550**	16.0	133	83	63	48	☆

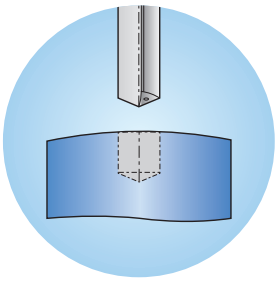
☆Recommended grade (produce according to order)

Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)					Recommended grade
					Shank diameter	Overall length	Flute length	Recommended drilling depth	Shank length	
					$d_2(h_6)$	l_1	l_2	l_3	l_4	YK20F
16.0	5	External coolant	Straight shank	**1576PC05-1600**	16.0	133	83	63	48	☆
17.0	5			**1576PC05-1700**	18.0	143	93	71	48	☆
17.5	5			**1576PC05-1750**	18.0	143	93	71	48	☆
18.0	5			**1576PC05-1800**	18.0	143	93	71	48	☆
19.5	5			**1576PC05-1950**	20.0	153	101	77	50	☆
20.0	5			**1576PC05-2000**	20.0	153	101	77	50	☆

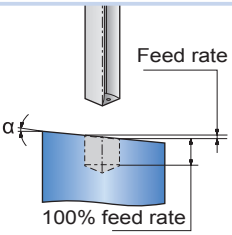
☆Recommended grade (produce according to order)



Inclined face drilling

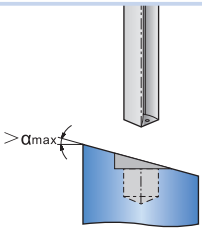


Curved face drilling



When drilling inclined face or curved face, feed rate should be reduced as recommended.

Inclined angle α	Max. feed rate
1°	80%
2°	50%
3°	30%



Surface with a large inclined angle should be pre-treated. Face milling should be conducted before drilling.

Applicable material table

◎Very suitable ○Suitable

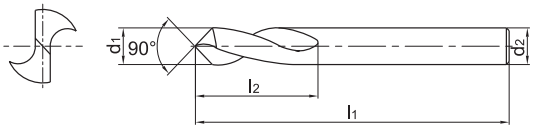
Grade	Workpiece material										
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
YK20F							◎	○	◎		

Code key C6
Cutting parameters C85
Technical information C87–C93
Non-standard customization tools C94-C98

SC series(centering drill) for machining of cast iron, AL alloy

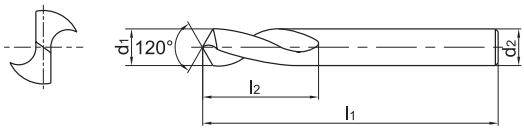

External coolant


Straight shank




External coolant

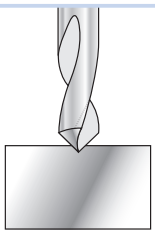

Straight shank

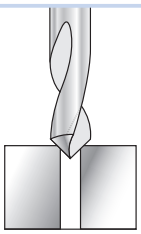


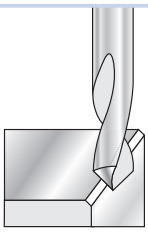
- Suitable for punching center holes and chamfering on CNC machines.
- Compared to conventional center drilling tools, centering drills are more stable and can be easily centered on sloping surfaces.

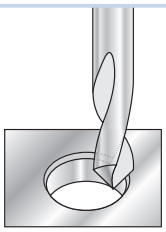
Drill diameter $d_1(m_7)$	Drilling depth (l/d)	Cooling mode	Shank type	Type	Basic dimension(mm)			Recommended grade
					Shank diameter	Overall length	Flute length	
					$d_2(h_6)$	l_1	l_2	YK20F
5	90°	External coolant	Straight shank	1143SC90-0500	5.00	62	10	☆
	120°			1143SC120-0500	5.00	62	10	☆
6	90°			1143SC90-0600	6.00	66	15	☆
	120°			1143SC120-0600	6.00	66	15	☆
8	90°			1143SC90-0800	8.00	79	17	☆
	120°			1143SC120-0800	8.00	79	17	☆
10	90°			1143SC90-1000	10.00	89	20	☆
	120°			1143SC120-1000	10.00	89	20	☆
12	90°			1143SC90-1200	12.00	102	25	☆
	120°			1143SC120-1200	12.00	102	25	☆
14	90°			1143SC90-1400	14.00	107	30	☆
	120°			1143SC120-1400	14.00	107	30	☆
16	90°			1143SC90-1600	16.00	115	35	☆
	120°			1143SC120-1600	16.00	115	35	☆
20	90°			1143SC90-2000	20.00	131	40	☆
	120°			1143SC120-2000	20.00	131	40	☆

☆Recommended grade (produce according to order)


Centering drilling machining


Hole chamfering machining


Chamfering machining


Hole chamfering machining

Applicable material table

◎Very suitable ○Suitable

Grade	Workpiece material										
	Mild steel HB≤180	Carbon steel, Alloy steel	Pre-hardened steel, Hardened steel			Stainless steel	Cast iron	Nodular cast iron	Aluminum alloy	Copper alloy	Heat resistant alloy
			~40HRC	~50HRC	~60HRC						
YK20F							◎	○	◎		

Code key C6
Cutting parameters C86
Technical information C87–C93
Non-standard customization tools C94-C98

GD series twist drills(external coolant)

3D 5D

workpiece material	Mild steel HB≤180		Carbon steel, alloy steel ~30HRC		Pre-hardened steel ~40HRC		Stainless steel		Cast iron		Nodular cast iron		Heat resistant alloy	
Cutting speed	60~120m/min		60~120m/min		40~70m/min		25~40m/min		60~120m/min		50~100m/min		15~25m/min	
Diameter (mm)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)
2	14000	0.06~0.08	14000	0.06~0.08	9500	0.06~0.08	5500	0.02~0.05	14000	0.06~0.08	11000	0.06~0.08	3200	0.02~0.04
3	9500	0.09~0.12	9500	0.09~0.12	6300	0.09~0.12	3700	0.03~0.07	9500	0.09~0.12	7400	0.09~0.12	2100	0.03~0.06
4	7000	0.10~0.15	7000	0.10~0.15	4700	0.10~0.15	2700	0.04~0.08	7000	0.10~0.15	5600	0.10~0.15	1600	0.04~0.07
5	5700	0.12~0.18	5700	0.12~0.18	3800	0.12~0.18	2200	0.05~0.10	5700	0.12~0.18	4500	0.12~0.18	1250	0.05~0.09
6	4700	0.14~0.20	4700	0.14~0.20	3100	0.14~0.20	1850	0.06~0.12	4700	0.14~0.20	3700	0.14~0.20	1050	0.06~0.11
8	3600	0.16~0.24	3600	0.16~0.24	2400	0.16~0.24	1400	0.08~0.16	3600	0.16~0.24	2800	0.16~0.24	800	0.08~0.14
10	2800	0.18~0.27	2800	0.18~0.27	1900	0.18~0.27	1100	0.10~0.18	2800	0.18~0.27	2200	0.18~0.27	600	0.10~0.16
12	2400	0.20~0.30	2400	0.20~0.30	1600	0.20~0.30	930	0.12~0.20	2400	0.20~0.30	1900	0.20~0.30	500	0.12~0.18
14	2100	0.22~0.35	2100	0.22~0.35	1400	0.22~0.35	800	0.13~0.22	2100	0.22~0.35	1600	0.22~0.35	450	0.13~0.20
16	1800	0.25~0.36	1800	0.25~0.36	1200	0.25~0.36	700	0.14~0.25	1800	0.25~0.36	1400	0.25~0.36	400	0.14~0.23
18	1600	0.28~0.38	1600	0.28~0.38	1100	0.28~0.38	620	0.15~0.28	1600	0.28~0.38	1200	0.28~0.38	350	0.15~0.25
20	1400	0.30~0.40	1400	0.30~0.40	950	0.30~0.40	550	0.16~0.30	1400	0.30~0.40	1100	0.30~0.40	320	0.16~0.28
25	1500	0.32~0.42	1500	0.32~0.42	900	0.32~0.42	700	0.17~0.32	1500	0.32~0.42	1100	0.32~0.42	250	0.17~0.3

1. When the tool is used for the first time, please do a test cutting with 90% of the cutting speed or 85% of the feed rate stated above. As cutting conditions become stable, gradually increase the cutting speed and feed rate.
2. The cutting conditions above are applicable for drilling with emulsion.
3. When clamping drill, please use a collet without any defect or dust, and keep the radial run-out of drill under 0.02mm.
4. These conditions above are applicable for cutting depth under 5D.

Recommended cutting parameters

GD series twist drills(internal coolant) 3D 5D

workpiece material	Mild steel HB≤180		Carbon steel, alloy steel ~30HRC		Pre-hardened steel ~40HRC		Stainless steel		Cast iron		Nodular cast iron		Heat resistant alloy	
Cutting speed	80~150m/min		80~150m/min		50~80m/min		50~80m/min		80~150m/min		60~120m/min		15~25m/min	
Diameter (mm)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)
3	12700	0.09~0.12	12700	0.09~0.12	7400	0.09~0.12	6300	0.03~0.07	12700	0.09~0.12	9500	0.09~0.12	2100	0.03~0.06
4	9600	0.10~0.15	9600	0.10~0.15	5600	0.10~0.15	4700	0.04~0.08	9600	0.10~0.15	7000	0.10~0.15	1600	0.04~0.07
5	7600	0.12~0.18	7600	0.12~0.18	4500	0.12~0.18	3800	0.05~0.10	7600	0.12~0.18	5700	0.12~0.18	1250	0.05~0.09
6	6400	0.14~0.20	6400	0.14~0.20	3700	0.14~0.20	3200	0.06~0.12	6400	0.14~0.20	4700	0.14~0.20	1050	0.06~0.11
8	4800	0.16~0.24	4800	0.16~0.24	2800	0.16~0.24	2400	0.08~0.16	4800	0.16~0.24	3600	0.16~0.24	800	0.08~0.14
10	3800	0.18~0.27	3800	0.18~0.27	2200	0.18~0.27	1900	0.10~0.18	3800	0.18~0.27	2800	0.18~0.27	600	0.10~0.16
12	3200	0.20~0.30	3200	0.20~0.30	1900	0.20~0.30	1600	0.12~0.20	3200	0.20~0.30	2400	0.20~0.30	500	0.12~0.18
14	2700	0.22~0.35	2700	0.22~0.35	1600	0.22~0.35	1350	0.13~0.22	2700	0.22~0.35	2100	0.22~0.35	450	0.13~0.20
16	2400	0.25~0.36	2400	0.25~0.36	1400	0.25~0.36	1200	0.14~0.25	2400	0.25~0.36	1800	0.25~0.36	400	0.14~0.23
18	2100	0.28~0.38	2100	0.28~0.38	1200	0.28~0.38	1050	0.15~0.28	2100	0.28~0.38	1600	0.28~0.38	350	0.15~0.25
20	1900	0.30~0.40	1900	0.30~0.40	1100	0.30~0.40	950	0.16~0.30	1900	0.30~0.40	1400	0.30~0.40	320	0.16~0.28
25	1500	0.32~0.42	1500	0.32~0.42	900	0.32~0.42	700	0.17~0.32	1500	0.32~0.42	1100	0.32~0.42	250	0.17~0.3

1. When the tool is used for the first time, please do a test cutting with 90% of the cutting speed or 85% of the feed rate stated above. As cutting conditions become stable, gradually increase the cutting speed and feed rate.
2. The cutting conditions above are applicable for drilling with emulsion.
3. When clamping drill, please use a collet without any defect or dust, and keep the radial run-out of drill under 0.02mm.
4. These conditions above are applicable for cutting depth under 5D.

GD series twist drills(internal coolant) 8D

Workpiece material	Mild steel HB≤180		Carbon steel, alloy steel ~30HRC		Pre-hardened steel ~40HRC		Stainless steel		Cast iron		Nodular cast iron		Heat resistant alloy	
Cutting speed	80~150m/min		80~150m/min		50~80m/min		40~60m/min		80~150m/min		60~120m/min		15~25m/min	
Diameter (mm)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)
3	12700	0.06~0.10	12700	0.06~0.10	7400	0.06~0.10	5300	0.03~0.07	12700	0.06~0.10	9500	0.06~0.10	2100	0.03~0.06
4	9600	0.08~0.12	9600	0.08~0.12	5600	0.08~0.12	4000	0.04~0.08	9600	0.08~0.12	7000	0.08~0.12	1600	0.04~0.07
5	7600	0.10~0.14	7600	0.10~0.14	4500	0.10~0.14	3200	0.05~0.10	7600	0.10~0.14	5700	0.10~0.14	1250	0.05~0.09
6	6400	0.11~0.16	6400	0.11~0.16	3700	0.11~0.16	2700	0.06~0.12	6400	0.11~0.16	4700	0.11~0.16	1050	0.06~0.11
8	4800	0.13~0.19	4800	0.13~0.19	2800	0.13~0.19	2000	0.08~0.16	4800	0.13~0.19	3600	0.13~0.19	800	0.08~0.14
10	3800	0.14~0.22	3800	0.14~0.22	2200	0.14~0.22	1600	0.10~0.18	3800	0.14~0.22	2800	0.14~0.22	600	0.10~0.16
12	3200	0.16~0.24	3200	0.16~0.24	1900	0.16~0.24	1300	0.12~0.20	3200	0.16~0.24	2400	0.16~0.24	500	0.12~0.18
14	2700	0.18~0.28	2700	0.18~0.28	1600	0.18~0.28	1100	0.13~0.22	2700	0.18~0.28	2100	0.18~0.28	450	0.13~0.20
16	2400	0.20~0.29	2400	0.20~0.29	1400	0.20~0.29	1000	0.14~0.25	2400	0.20~0.29	1800	0.20~0.29	400	0.14~0.23
18	2100	0.24~0.32	2100	0.24~0.32	1200	0.24~0.32	880	0.15~0.28	2100	0.24~0.32	1600	0.24~0.32	350	0.15~0.25

1. When the tool is used for the first time, please do a test cutting with 90% of the cutting speed or 85% of the feed rate stated above. As cutting conditions become stable, gradually increase the cutting speed and feed rate.
2. The cutting conditions above are applicable for drilling with emulsion.
3. When clamping drill, please use a collet without any defect or dust, and keep the radial run-out of drill under 0.02mm.
4. These conditions above are applicable for cutting depth under 8D.

SL series deep twist drills(internal coolant) 12D

workpiece material	Mild steel HB≤180		Carbon steel, alloy steel ~30HRC		Pre-hardened steel ~40HRC		Stainless steel		Cast iron		Nodular cast iron		Aluminum alloy		Heat resistant alloy	
Cutting speed	60~120m/min		60~120m/min		50~80m/min		40~60m/min		80~150m/min		60~120m/min		100~180m/min		10~20m/min	
Diameter (mm)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)
3	10600	0.06~0.1	10600	0.06~0.1	7400	0.06~0.1	5300	0.03~0.07	12700	0.06~0.1	9500	0.06~0.1	15000	0.09~0.12	2100	0.03~0.06
4	8000	0.08~0.12	8000	0.08~0.12	5600	0.08~0.12	4000	0.04~0.08	96000	0.08~0.12	7000	0.08~0.12	11000	0.10~0.15	1600	0.04~0.07
5	6400	0.10~0.14	6400	0.10~0.14	4500	0.10~0.14	3200	0.05~0.10	7600	0.10~0.14	5700	0.10~0.14	9000	0.10~0.15	1250	0.05~0.9
6	5300	0.11~0.16	5300	0.11~0.16	3700	0.11~0.16	2700	0.06~0.12	6400	0.11~0.16	4700	0.11~0.16	7400	0.11~0.16	1050	0.06~0.11
8	4000	0.13~0.19	4000	0.13~0.19	2800	0.13~0.19	2000	0.08~0.16	4800	0.13~0.19	3600	0.13~0.19	5600	0.13~0.19	800	0.08~0.14
10	3200	0.14~0.22	3200	0.14~0.22	2200	0.14~0.22	1600	0.10~0.18	3800	0.14~0.22	2800	0.14~0.22	4500	0.14~0.22	600	0.10~0.16
12	2700	0.16~0.24	2700	0.16~0.24	1900	0.16~0.24	1300	0.12~0.20	3200	0.16~0.24	2400	0.16~0.24	3700	0.16~0.24	500	0.12~0.18
14	2300	0.18~0.28	2300	0.18~0.28	1600	0.18~0.28	1100	0.13~0.22	2700	0.18~0.28	2100	0.18~0.28	3200	0.18~0.28	450	0.13~0.20
16	2100	0.20~0.30	2100	0.20~0.30	1400	0.20~0.30	1050	0.14~0.25	2100	0.20~0.30	1800	0.20~0.30	2800	0.25~0.36	400	0.14~0.23
18	1800	0.22~0.32	1800	0.22~0.32	1200	0.22~0.32	950	0.15~0.28	1800	0.22~0.32	1600	0.22~0.32	2500	0.28~0.38	350	0.15~0.25
20	1600	0.25~0.35	1600	0.25~0.35	1100	0.25~0.35	800	0.16~0.30	1600	0.25~0.35	1400	0.25~0.35	2300	0.30~0.40	320	0.16~0.28

1. When the tool is used for the first time, please do a test cutting with 90% of the cutting speed or 85% of the feed rate stated above. As cutting conditions become stable, gradually increase the cutting speed and feed rate.
2. The cutting conditions above are applicable for drilling with emulsion.
3. When clamping drill, please use a collet without any defect or dust, and keep the radial run-out of drill under 0.02mm.

SL series deep twist drills(internal coolant) 20D 30D

workpiece material	Mild steel HB≤180		Carbon steel, alloy steel ~30HRC		Pre-hardened steel ~40HRC		Stainless steel		Cast iron		Nodular cast iron		Aluminum alloy		Heat resistant alloy	
Cutting speed	70~90m/min		50~80m/min		40~60m/min		40~60m/min		50~80m/min		60~80m/min		100~180m/min		8~15m/min	
Diameter (mm)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)
3	8250	0.06~0.1	7650	0.06~0.1	5200	0.06~0.1	4750	0.03~0.07	7100	0.06~0.1	7600	0.06~0.1	12750	0.09~0.12	1350	0.03~0.06
4	6250	0.08~0.12	5750	0.08~0.12	3900	0.08~0.12	3600	0.04~0.08	5400	0.08~0.12	5600	0.08~0.12	9350	0.10~0.15	1050	0.04~0.07
5	5000	0.10~0.14	4600	0.10~0.14	3150	0.10~0.14	2900	0.05~0.10	4250	0.10~0.14	4550	0.10~0.14	7650	0.10~0.15	800	0.05~0.09
6	4150	0.11~0.16	3800	0.11~0.16	2600	0.11~0.16	2450	0.06~0.12	3600	0.11~0.16	3750	0.11~0.16	6300	0.11~0.16	700	0.06~0.11
8	3100	0.13~0.19	2900	0.13~0.19	1950	0.13~0.19	1800	0.08~0.16	2700	0.13~0.19	2900	0.13~0.19	4750	0.13~0.19	500	0.08~0.14
10	2500	0.14~0.22	2300	0.14~0.22	1550	0.14~0.22	1450	0.10~0.18	2150	0.14~0.22	2250	0.14~0.22	3850	0.14~0.22	400	0.10~0.16
12	2100	0.16~0.24	1950	0.16~0.24	1350	0.16~0.24	1150	0.12~0.20	1800	0.16~0.24	1900	0.16~0.24	3150	0.16~0.24	350	0.12~0.18~
14	1800	0.18~0.28	1650	0.18~0.28	1100	0.18~0.28	1000	0.13~0.22	1500	0.18~0.28	1700	0.18~0.28	2700	0.18~0.28	300	0.13~0.20

1. When the tool is used for the first time, please do a test cutting with 90% of the cutting speed or 85% of the feed rate stated above. As cutting conditions become stable, gradually increase the cutting speed and feed rate.
2. The cutting conditions above are applicable for drilling with emulsion.
3. When clamping drill, please use a collet without any defect or dust, and keep the radial run-out of drill under 0.02mm.

SP series twist drills(internal coolant) 3D

workpiece material	Mild steel HB≤180		Carbon steel, alloy steel ~30HRC		Pre-hardened steel ~40HRC		Stainless steel		Cast iron		Nodular cast iron		Aluminum alloy		Heat resistant alloy	
Cutting speed	80~150m/min		80~150m/min		50~80m/min		50~80m/min		80~150m/min		60~120m/min		100~180m/min		15~25m/min	
Diameter (mm)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)
3	12700	0.09~0.12	12700	0.09~0.12	7400	0.09~0.12	6300	0.03~0.07	12700	0.09~0.12	9500	0.09~0.12	15000	0.09~0.12	2100	0.03~0.06
4	9600	0.10~0.15	9600	0.10~0.15	5600	0.10~0.15	4700	0.04~0.08	9600	0.10~0.15	7000	0.10~0.15	11100	0.10~0.15	1600	0.04~0.07
5	7600	0.12~0.18	7600	0.12~0.18	4500	0.12~0.18	3800	0.05~0.10	7600	0.12~0.18	5700	0.12~0.18	9000	0.12~0.18	1250	0.05~0.09
6	6400	0.14~0.20	6400	0.14~0.20	3700	0.14~0.20	3200	0.06~0.12	6400	0.14~0.20	4700	0.14~0.20	7400	0.14~0.20	1050	0.06~0.11
8	4800	0.16~0.24	4800	0.16~0.24	2800	0.16~0.24	2400	0.08~0.16	4800	0.16~0.24	3600	0.16~0.24	5600	0.16~0.24	800	0.08~0.14
10	3800	0.18~0.27	3800	0.18~0.27	2200	0.18~0.27	1900	0.10~0.18	3800	0.18~0.27	2800	0.18~0.27	4500	0.18~0.27	600	0.10~0.16
12	3200	0.20~0.30	3200	0.20~0.30	1900	0.20~0.30	1600	0.12~0.20	3200	0.20~0.30	2400	0.20~0.30	3700	0.20~0.30	500	0.12~0.18
14	2700	0.22~0.35	2700	0.22~0.35	1600	0.22~0.35	1350	0.13~0.22	2700	0.22~0.35	2100	0.22~0.35	3200	0.22~0.35	450	0.13~0.20

1. When the tool is used for the first time, please do a test cutting with 90% of the cutting speed or 85% of the feed rate stated above. As cuting conditions become stable, gradually increase the cutting speed and feed rate.
2. The cutting conditions above are applicable for drilling with emulsion.
3. When clamping drill, please use a collet without any defect or dust, and keep the radial run-out of drill under 0.02mm.
4. These conditions above are applicable for cutting depth under 3D.

ST series twist drills(internal coolant) 3D 5D

Workpiece material	Mild steel HB≤180		Carbon steel, alloy steel ~30HRC		Stainless steel					
					Austenite		Martensite		Ferrite	
Cutting speed	80~150m/min		80~150m/min		40~80 m/min		50~100 m/min		60~120 m/min	
Diameter (mm)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)
3	12700	0.09~0.12	12700	0.09~0.12	6300	0.03~0.07	7400	0.03~0.07	9000	0.03~0.07
4	9600	0.10~0.15	9600	0.10~0.15	4700	0.04~0.08	5600	0.04~0.08	6700	0.04~0.08
5	7600	0.12~0.18	7600	0.12~0.18	3800	0.05~0.10	4500	0.05~0.10	5400	0.05~0.10
6	6400	0.14~0.20	6400	0.14~0.20	3200	0.06~0.12	3700	0.06~0.12	4500	0.06~0.12
8	4800	0.16~0.24	4800	0.16~0.24	2400	0.08~0.16	2800	0.08~0.16	3400	0.08~0.16
10	3800	0.18~0.27	3800	0.18~0.27	1900	0.10~0.18	2200	0.10~0.18	2700	0.10~0.18
12	3200	0.20~0.30	3200	0.20~0.30	1600	0.12~0.20	1900	0.12~0.20	2300	0.12~0.20
14	2700	0.22~0.35	2700	0.22~0.35	1350	0.13~0.22	1600	0.13~0.22	1900	0.13~0.22
16	2400	0.25~0.36	2400	0.25~0.36	1200	0.14~0.25	1400	0.14~0.25	1700	0.14~0.25
18	2100	0.28~0.38	2100	0.28~0.38	1050	0.15~0.28	1200	0.15~0.28	1500	0.15~0.28
20	1900	0.30~0.40	1900	0.30~0.40	950	0.16~0.30	1100	0.16~0.30	1350	0.16~0.30

1. When the tool is used for the first time, please do a test cutting with 90% of the cutting speed or 85% of the feed rate stated above. As cutting conditions become stable, gradually increase the cutting speed and feed rate.
2. The cutting conditions above are applicable for drilling with emulsion.
3. When clamping drill, please use a collet without any defect or dust, and keep the radial run-out of drill under 0.02mm.
4. These conditions above are applicable for cutting depth under 5D.

SC series twist drills(external coolant) 3D 5D

Workpiece material	Cast iron		Nodular cast iron		Silicon aluminium alloy				Aluminum alloy	
					Si⩽10%		Si＞10%			
Cutting speed	50~80m/min		40~70m/min		100~180m/min		80~140m/min		120~200m/min	
Diameter (mm)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)
2	9550	0.06~ 0.08	8000	0.06~ 0.08	20000	0.07~0.16	18000	0.07~0.16	24000	0.07~0.16
3	6400	0.09~ 0.12	5300	0.09~ 0.12	15000	0.09~0.18	12700	0.09~0.18	16000	0.09~0.18
4	4800	0.10~ 0.15	4000	0.10~ 0.15	11000	0.10~0.22	9600	0.10~0.22	12000	0.10~0.22
5	3800	0.12~ 0.18	3200	0.12~ 0.18	9000	0.12~0.25	7600	0.12~0.25	10000	0.12~0.25
6	3100	0.14~ 0.20	2700	0.14~ 0.20	7400	0.14~0.28	6400	0.14~0.28	8500	0.14~0.28
8	2400	0.16~ 0.24	2000	0.16~ 0.24	5600	0.18~0.32	4800	0.18~0.32	6400	0.18~0.32
10	1900	0.18~ 0.27	1600	0.18~ 0.27	4500	0.22~0.36	3800	0.22~0.36	5000	0.22~0.36
12	1600	0.20~ 0.30	1300	0.20~ 0.30	3700	0.25~0.40	3200	0.25~0.40	4200	0.25~0.40
14	1350	0.22~ 0.35	1150	0.22~ 0.35	3200	0.27~0.44	2700	0.27~0.44	3600	0.27~0.44
16	1200	0.25~ 0.36	1000	0.25~ 0.36	2800	0.32~0.48	2400	0.32~0.48	3200	0.32~0.48

1. When the tool is used for the first time, please do a test cutting with 90% of the cutting speed or 85% of the feed rate stated above. As cutting conditions become stable, gradually increase the cutting speed and feed rate.
2. The cutting conditions above are applicable for drilling with emulsion.
3. When clamping drill, please use a collet without any defect or dust, and keep the radial run-out of drill under 0.02mm.
4. These conditions above are applicable for cutting depth under 5D.

Recommended cutting parameters

PA series coated 3 flutes drill(external coolant) 3D

Workpiece material	Cast iron		Nodular cast iron		Silicon aluminium alloy Si≤10%		Silicon aluminium alloy Si>10%		Aluminum alloy		Heat resistant alloy	
Cutting speed	60~120m/min		50~100m/min		100~180m/min		80~140m/min		120~200m/min		20~40m/min	
Diameter (mm)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)
3	9500	0.09~0.12	7400	0.09~0.12	14000	0.07~0.16	12700	0.07~0.16	16000	0.07~0.16	3200	0.03~0.06
4	7000	0.10~0.15	5600	0.10~0.15	10000	0.09~0.18	9600	0.09~0.18	12000	0.09~0.18	2400	0.04~0.07
5	5700	0.12~0.18	4500	0.12~0.18	9000	0.10~0.22	7600	0.10~0.22	10000	0.10~0.22	1900	0.05~0.09
6	4700	0.14~0.20	3700	0.14~0.20	7400	0.12~0.25	6400	0.12~0.25	8500	0.12~0.25	1600	0.06~0.11
8	3600	0.16~0.24	2800	0.16~0.24	5600	0.14~0.28	4800	0.14~0.28	6400	0.14~0.28	1200	0.08~0.14
10	2800	0.18~0.27	2200	0.18~0.27	4500	0.18~0.32	3800	0.18~0.32	5000	0.18~0.32	950	0.10~0.16
12	2400	0.20~0.30	1900	0.20~0.30	3700	0.22~0.36	3200	0.22~0.36	4200	0.22~0.36	800	0.12~0.18
14	2100	0.22~0.35	1600	0.22~0.35	3200	0.25~0.40	2700	0.25~0.40	3600	0.25~0.40	700	0.13~0.20
16	1800	0.25~0.36	1400	0.25~0.36	2800	0.27~0.44	2400	0.27~0.44	3200	0.27~0.44	600	0.14~0.23
18	1600	0.28~0.38	1200	0.28~0.38	2500	0.32~0.48	2100	0.32~0.48	2800	0.32~0.48	530	0.15~0.25
20	1400	0.30~0.40	1100	0.30~0.40	2300	0.36~0.54	1900	0.36~0.54	2550	0.36~0.54	480	0.16~0.28

1. When the tool is used for the first time, please do a test cutting with 90% of the cutting speed or 85% of the feed rate stated above. As cuting conditions become stable, gradually increase the cutting speed and feed rate.
2. The cutting conditions above are applicable for drilling with emulsion.
3. When clamping drill, please use a collet without any defect or dust, and keep the radial run-out of drill under 0.02mm.
4. These conditions above are applicable for cutting depth under 3D.

PA series non-coated 3 flutes drill(external coolant) 3D

Workpiece material	Cast iron		Nodular cast iron		Silicon aluminium alloy Si≤10%		Silicon aluminium alloy Si>10%		Aluminum alloy		Heat resistant alloy	
Cutting speed	50~100m/min		40~70m/min		80~160m/min		60~120m/min		100~180m/min		15~25m/min	
Diameter (mm)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)
3	7400	0.09~0.12	5300	0.09~0.12	12700	0.07~0.16	10000	0.07~0.16	15000	0.07~0.16	2100	0.03~0.06
4	5600	0.10~0.15	4000	0.10~0.15	9600	0.09~0.18	8000	0.09~0.18	11000	0.09~0.18	1600	0.04~0.07
5	4500	0.12~0.18	3200	0.12~0.18	7600	0.10~0.22	6300	0.10~0.22	9000	0.10~0.22	1250	0.05~0.09
6	3700	0.14~0.20	2700	0.14~0.20	6400	0.12~0.25	5300	0.12~0.25	7400	0.12~0.25	1050	0.06~0.11
8	2800	0.16~0.24	2000	0.16~0.24	4800	0.14~0.28	4000	0.14~0.28	5600	0.14~0.28	800	0.08~0.14
10	2200	0.18~0.27	1600	0.18~0.27	3800	0.18~0.32	3200	0.18~0.32	4500	0.18~0.32	600	0.10~0.16
12	1900	0.20~0.30	1300	0.20~0.30	3200	0.22~0.36	2700	0.22~0.36	3700	0.22~0.36	500	0.12~0.18
14	1600	0.22~0.35	1100	0.22~0.35	2700	0.25~0.40	2300	0.25~0.40	3200	0.25~0.40	450	0.13~0.20
16	1400	0.25~0.36	1000	0.25~0.36	2400	0.27~0.44	2000	0.27~0.44	2800	0.27~0.44	400	0.14~0.23
18	1200	0.28~0.38	880	0.28~0.38	2100	0.32~0.48	1800	0.32~0.48	2500	0.32~0.48	350	0.15~0.25
20	1100	0.30~0.40	800	0.30~0.40	1900	0.36~0.54	1600	0.36~0.54	2300	0.36~0.54	320	0.16~0.28

1. When the tool is used for the first time, please do a test cutting with 90% of the cutting speed or 85% of the feed rate stated above. As cuting conditions become stable, gradually increase the cutting speed and feed rate.
2. The cutting conditions above are applicable for drilling with emulsion.
3. When clamping drill, please use a collet without any defect or dust, and keep the radial run-out of drill under 0.02mm.
4. These conditions above are applicable for cutting depth under 3D.

PC series straight flute drill(external coolant) 5D

Workpiece material	Cast iron		Nodular cast iron		Silicon aluminium alloy				Aluminum alloy	
					Si≤10%		Si＞10%			
Cutting speed	60~120m/min		50~100m/min		100~200m/min		80~160m/min		120~220m/min	
Diameter (mm)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)
4	7000	0.10~ 0.15	5600	0.10~ 0.15	11000	0.12~ 0.20	9600	0.12~ 0.20	12000	0.12~ 0.20
5	5700	0.12~ 0.18	4500	0.12~ 0.18	9000	0.14~ 0.26	7600	0.14~ 0.26	10000	0.14~ 0.26
6	4700	0.14~ 0.20	3700	0.14~ 0.20	7400	0.16~ 0.28	6400	0.16~ 0.28	8500	0.16~ 0.28
8	3600	0.16~ 0.24	2800	0.16~ 0.24	5500	0.18~ 0.30	4800	0.18~ 0.30	6400	0.18~ 0.30
10	2800	0.18~ 0.27	2200	0.18~ 0.27	4500	0.20~ 0.32	3800	0.20~ 0.32	5000	0.20~ 0.32
12	2400	0.20~ 0.30	1900	0.20~ 0.30	3700	0.24~ 0.36	3200	0.24~ 0.36	4200	0.24~ 0.36
14	2100	0.22~ 0.35	1600	0.22~ 0.35	3200	0.28~ 0.44	2700	0.28~ 0.44	3600	0.28~ 0.44
16	1800	0.25~ 0.36	1400	0.25~ 0.36	2800	0.30~ 0.48	2400	0.30~ 0.48	3200	0.30~ 0.48
18	1600	0.28~0.38	1200	0.28~ 0.38	2500	0.34~ 0.52	2100	0.34~ 0.52	3000	0.34~ 0.52
20	1400	0.30~0.40	1100	0.30~ 0.40	2300	0.40~ 0.63	1900	0.40~ 0.63	2500	0.40~ 0.63

1. When the tool is used for the first time, please do a test cutting with 90% of the cutting speed or 85% of the feed rate stated above. As cutting conditions become stable, gradually increase the cutting speed and feed rate.
2. The cutting conditions above are applicable for drilling with emulsion.
3. When clamping drill, please use a collet without any defect or dust, and keep the radial run-out of drill under 0.02mm.
4. These conditions above are applicable for cutting depth under 5D.

PC series straight flute drill(internal coolant) 15D

Workpiece material	Cast iron		Nodular cast iron		Silicon aluminium alloy				Aluminum alloy	
					Si≤10%		Si＞10%			
Cutting speed	60~120m/min		50~100m/min		100~200m/min		80~160m/min		120~220m/min	
Diameter (mm)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)
5	5700	0.08~ 0.14	4500	0.08~ 0.14	9000	0.09~ 0.18	7600	0.09~ 0.18	10000	0.09~ 0.18
6	4700	0.10~ 0.16	3700	0.10~ 0.16	7400	0.12~ 0.20	6400	0.12~ 0.20	8500	0.12~ 0.20
8	3600	0.12~ 0.20	2800	0.12~ 0.20	5500	0.12~ 0.24	4800	0.12~ 0.24	6400	0.12~ 0.24
10	2800	0.14~ 0.23	2200	0.14~ 0.23	4500	0.16~ 0.28	3800	0.16~ 0.28	5000	0.16~ 0.28
12	2400	0.16~ 0.26	1900	0.16~ 0.26	3700	0.18~ 0.32	3200	0.18~ 0.32	4200	0.18~ 0.32
14	2100	0.18~ 0.32	1600	0.18~ 0.32	3200	0.20~ 0.36	2700	0.20~ 0.36	3600	0.20~ 0.36

1. When the tool is used for the first time, please do a test cutting with 90% of the cutting speed or 85% of the feed rate stated above. As cutting conditions become stable, gradually increase the cutting speed and feed rate.
2. The cutting conditions above are applicable for drilling with emulsion.
3. When clamping drill, please use a collet without any defect or dust, and keep the radial run-out of drill under 0.02mm.
4. These conditions above are applicable for cutting depth under 15D.

SC series centering drill(external coolant)

Centering drilling

Workpiece material	Cast iron		Nodular cast iron		Silicon aluminium alloy				Aluminum alloy	
					Si≤10%		Si＞10%			
Cutting speed	60~120m/min		50~100m/min		100~180m/min		80~140m/min		120~200m/min	
Diameter (mm)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)
5	6400	0.09~0.14	5100	0.09~0.14	9000	0.12~0.25	7600	0.12~0.25	10000	0.12~0.25
6	5300	0.12~0.16	4200	0.12~0.16	7400	0.14~0.28	6400	0.14~0.28	8500	0.14~0.28
8	4000	0.13~0.20	3200	0.13~0.20	5600	0.18~0.32	4800	0.18~0.32	6400	0.18~0.32
10	3200	0.17~0.25	2500	0.17~0.25	4500	0.22~0.36	3800	0.22~0.36	5000	0.22~0.36
12	2700	0.20~0.30	2100	0.20~0.30	3700	0.25~0.40	3200	0.25~0.40	4200	0.25~0.40
14	2400	0.22~0.32	1800	0.22~0.32	3200	0.27~0.44	2700	0.27~0.44	3600	0.27~0.44
16	2000	0.24~0.34	1600	0.24~0.34	2800	0.32~0.48	2400	0.32~0.48	3200	0.32~0.48
20	1600	0.28~0. 40	1300	0.28~0. 40	2300	0.40~0.60	1900	0.40~0.60	2550	0.40~0.60

1. The cutting datas above are suitable for centering drilling machining.
2. When the tool is used for the first time, please do a test cutting with 90% of the cutting speed or 85% of the feed rate stated above. As cuting conditions become stable, gradually increase the cutting speed and feed rate.
3. The cutting conditions above are applicable for drilling with emulsion.
4. When centering on bevels and toroidal surfaces, please reduce the feed speed.
5. When clamping drill, please use a collet without any defect or dust, and keep the radial run-out of drill under 0.02mm.

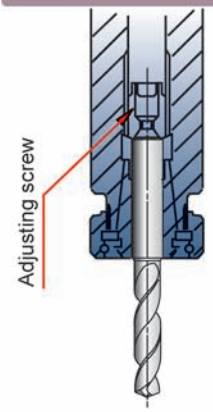
Chamfering

Workpiece material	Cast iron		Nodular cast iron		Silicon aluminium alloy				Aluminum alloy	
					Si≤10%		Si＞10%			
Cutting speed	90~180m/min		70~150m/min		150~270m/min		120~210m/min		180~300m/min	
Diameter (mm)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)	Rotating speed (min^{-1})	Feed rate (mm/r)
5	9600	0.09~0.20	7600	0.09~0.20	13500	0.12~0.30	11500	0.12~0.30	15000	0.12~0.30
6	8000	0.12~0.22	6400	0.12~0.22	11100	0.14~0.34	9600	0.14~0.34	12700	0.14~0.34
8	6000	0.13~0.28	4800	0.13~0.28	8400	0.18~0.40	7200	0.18~0.40	9600	0.18~0.40
10	4800	0.17~0.32	3800	0.17~0.32	6800	0.22~0.44	5700	0.22~0.44	7600	0.22~0.44
12	4000	0.20~0.38	3200	0.20~0.38	5600	0.25~0.50	4800	0.25~0.50	6400	0.25~0.50
14	3600	0.22~0.42	2700	0.22~0.42	4800	0.27~0.56	4000	0.27~0.56	5400	0.27~0.56
16	3000	0.24~0.46	2400	0.24~0.46	4200	0.32~0.60	3600	0.32~0.60	4800	0.32~0.60
20	2400	0.28~0.58	1900	0.28~0.58	3500	0.40~0.76	2850	0.40~0.76	3800	0.40~0.76

1. When the tool is used for the first time, please do a test cutting with 90% of the cutting speed or 85% of the feed rate stated above. As cuting conditions become stable, gradually increase the cutting speed and feed rate.
2. The cutting datas above are suitable for chamfering machining.
3. The cutting conditions above are applicable for drilling with emulsion.
4. When clamping drill, please use a collet without any defect or dust, and keep the radial run-out of drill under 0.02mm.

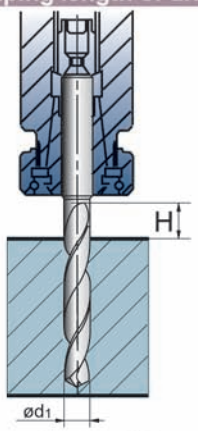
Application guide of drills

Drill clampling



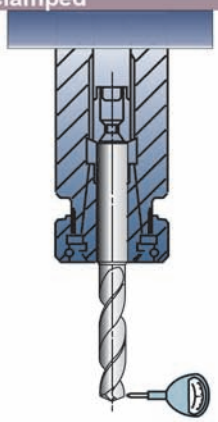
Guarantee tight clamping by using thrust bearing type collet chuck.

How to define the clamping length of drill



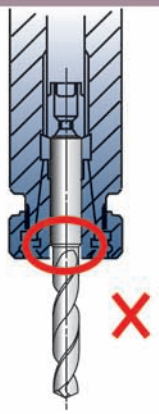
Ensure the size of H is over 1.5d1

Radial run-out of drill clamped



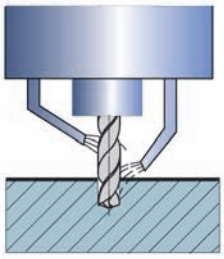
The Radial Run-out should be under 0.02mm.

Wrong drill clamping



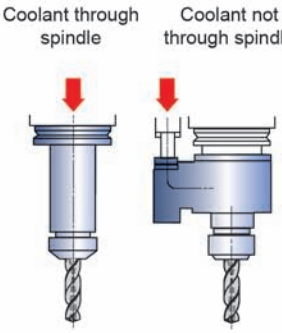
Do not clamp on the drill flutes.

Correct coolant method



The coolant liquid should be injected to the end and the middle of drill as shown in the figure.

Internal cooling: coolant supply method



coolant pressure is about 0.5~1MPa
(coolant pressure is 2~3MPa when the diameter is less than Ø5 mm)
Coolant volume is 1.5~4L/min.

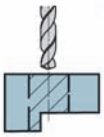
Cautions on coolant use

When using internal coolant

①The little chip particles and dust will cause jamming in the oil hole. A fine mesh filter should be used to prevent such jamming, especially for small-diameter drills.

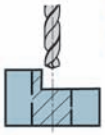
②Dirt and dust particles will adhere to the oil hole and lead to unsmooth coolant flow. Coolant change as early as possible is recommended.

Cautions on interrupted cutting



Can be drilled

Reduce the feed rate when drilling interrupted part.

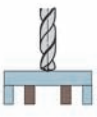


Pre-machining prior to drilling

Countersink with end mill prior to drilling.

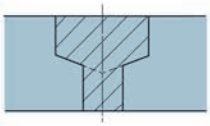
Correct method for thin workpiece

Bending occurs



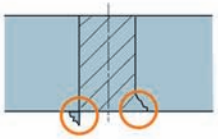
Add a supporter

Drilling method of stepped holes



①Divided to two drilling processes.
②Drill the larger diameter hole firstly.
※Multiple step and chamfer drill can be produced by us.

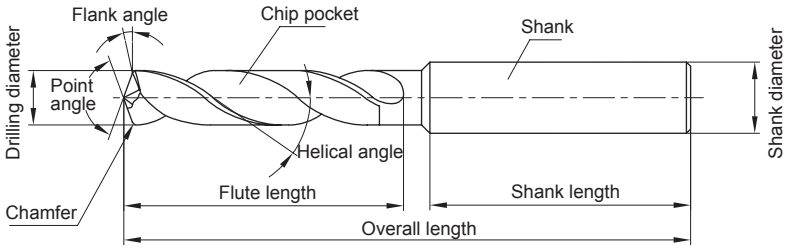
Burrs and workpiece chippings on exit

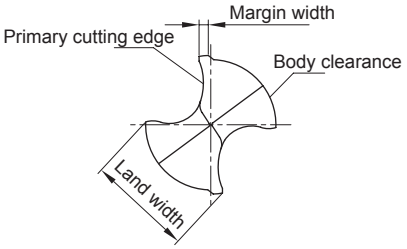


①Reduce the feed rate when approaching the exit.
②Machine chamfers at the point of exit.
③Change the point angle.

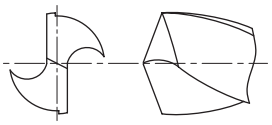
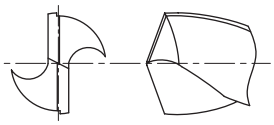
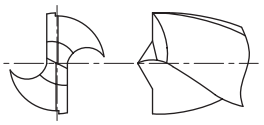
Parts terminology of drill

Terminology of drill





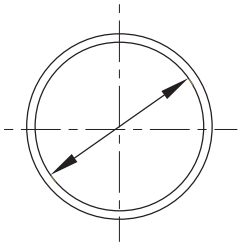
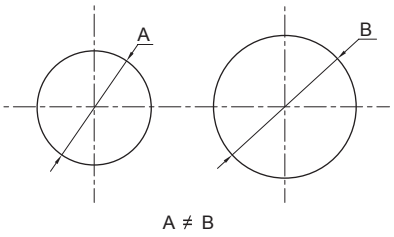
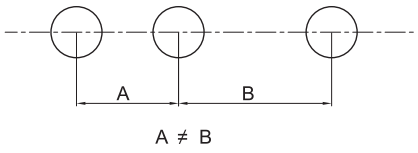
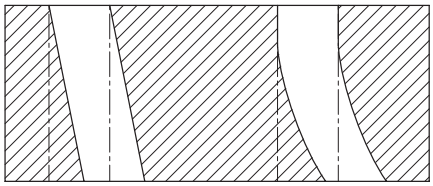
Representative cutting edge shapes

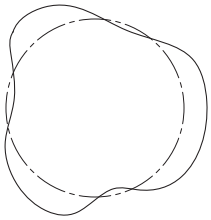
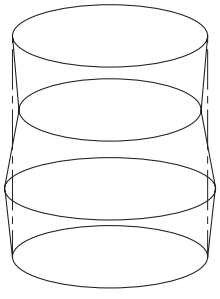
Shape	 (Conical)	 (Dual face)	 (Candler)
Features	● The flank face is conical and the clearance angel increases toward the center of drill. ● Wide applications, commonly used for both soft and hard materials	● Flank face with dual flats to facilitate cutting and initial entering. ● Often used for small-diameter drills.	● Two-stage point angle with perfect centering capability, less burr generated when drilling hole. ● First choice for drilling thin plate.

Structure specification and cutting characteristics

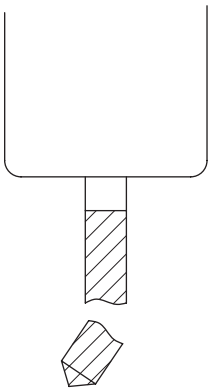
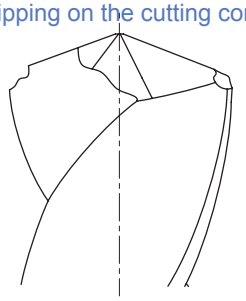
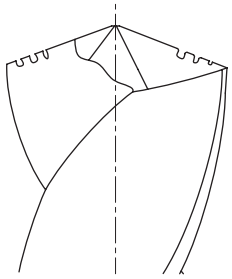
Chip pocket	The function of chip pocket is to remove the chips out of the hole. The larger the cross-sectional area is, the easier for chips to be evacuated.
Helical angle	The helical angle is the inclined angle of flute at the axial direction of a drill. It varies according to the different position of cutting edge. It decreases greatly from the peripheral toward the center. High hardness material Small ← Helical angle → Large Soft material
Flute length	It is determined by depth of hole, guide bushing length and regrinding allowance. The longer the flute is, the lower the drill rigidity is, which greatly affects tool life. So it is recommended to minimize the flute length as much as possible when other requirements are met. The minimal flute length generally is depth of hole plus 1.5 times of the hole diameter.
Point angle	Generally 118°, set differently as per various applications. Soft easy-to-cut material Small ← Point angle → Large for hard materials or high-efficiency machining
Core	It is an important factor that influence the rigidity and chip control of a drill. It is set according to applications. Low axial cutting force Low rigidity Easy-to-cut materials } thin ← core → Thick { Large axial cutting force High rigidity For machining of high hardness materials, cross hole drilling etc.
Margin	As a drill guide during drilling process. The margin width need to take the hole friction into consideration. Low friction with hole wall, poor guiding performance small ← margin width → large Good guiding performance, high friction with hole wall
Back taper	In order to decrease the friction with inside wall of the drilled hole, there is a slight back taper from tool nose to shank. The degree is usually represented by the quantity decreasing in the diameter per 100 mm flute length.
Body clearance	It is the part formed on the clearance face after margin, mainly to reduce the friction between inside wall of hole and drill peripheral.

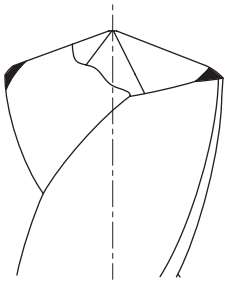
Common problems and solutions for drilling

	Problem	Cause	Solution
Hole	Oversize holes 	Poor clamping Large run-out around spindle	Select the holder and chuck with high precision Calibrating spindle Check and adjust after clamping drill
		Non-symmetric point angle Large run-out Chisel edge is off center	Regrind drill Check the precision after regrinding
	Irregular hole size 	Non-symmetric point angle Large run-out Chisel edge is off center Excessive margin abrasion	Select the holder and chuck with high precision Calibrating the spindle Check and adjust after clamping drill
		Poor clamping Large spindle run-out Workpiece is not firmly held	Select the holder and chuck with high precision Calibrating spindle Check and adjust after clamping drill
		Feed rate is too high	Reduce the feed speed
		Coolant provide is not enough	Change the coolant supply method, or increase coolant volume
	Low position accuracy 	Poor re-positioning precision of spindle Poor clamping Large run-out with spindle	Improve the re-positioning precision of machine Select the holder and chuck with high precision Calibrating the spindle Check and adjust after clamping drill
		The feed direction is not vertical to the workpiece surface	Adjust the feed direction vertical to the workpiece
		Top center not align with the spindle center (lathe)	Check and adjust alignment carefully before drilling
	Bad linearity Bad perpendicularity 	Excessive tool abrasion	Regrind
		Poor center hole accuracy	Increase the position accuracy of hole
		Non-symmetric point angle Large run-out Chisel edge is off center	Regrind drill Check the precision after regrinding
		Insufficient drill rigidity	Increase drill rigidity
		Uneven workpiece surface Top center does not align with the spindle center (lathe)	The workpiece must be horizontal or pre-machined to horizontal before drilling Pre-drill a center hole

	Problem	Cause	Solution
Hole	Poor roundness 	Non-symmetric point angle Large drill run-out Chisel edge is off center	Regrind drill Check the precision after regrinding
		Poor clamping Large spindle run-out Workpiece is not firmly held	Select the holder and chuck with high precision Calibrating the spindle Check run-out and adjust after clamping drill
		Clearance angle is too large	Regrind drill
		Insufficient drill rigidity	Increase drill rigidity
	Poor workpiece surface quality	Incorrect regrinding	Regrind calibration
		Insufficient coolant or unsuitable coolant type	Change coolant supply method, increase coolant volume Select the cutting oil with good lubricating property
		Poor clamping Large spindle run-out	Select the holder and chuck with high precision Calibrating the spindle
		Feed rate is too high	Decrease the feed rate
		Excessive abrasion on cutting edge Excessive build-up on margin	Regrind drill Select a coated drill
		Chip jamming	Select a suitable drill (considering flute geometry , helical angle etc) Change the cutting method (adjust feed rate, use step feed etc)
	Poor cylindricity 	Non-symmetric point angle Large drill run-out Chisel edge is off center Excessive margin abrasion	Regrind drill Check the precision after regrinding
		Feed speed is too low	Increase the feed speed

Common problems and solutions for drilling

	Problem	Cause	Solution
Drill	Drill breakage 	Bend ,distortion and slippage of machine and workpiece	Increase the rigidity of drill, machine, workpiece and clamping rigidity
		Clearance angle is too small	Regrind and calibrate
		Feed rate is too high	Decrease the feed rate
		Excessive drill abrasion	Regrind drill
		Chip jamming	Select a suitable drill (considering flute geometry , helical angle etc) Change the cutting method (adjust feed rate, use step feed etc)
		Difficult entering the workpiece	Increase the rigidity of drill and machine Increase rigidity of workpiece and clamping. Select the drill with a sharp point for easy entry Pre-drill a centre hole Adjust the level of workpiece or pre-machined to horizontal before drilling Use guide bushing or bushing plate
	Chipping on the cutting corner 	Unsuitable drill material	Select the suitable drill material
		Hard lump on the workpiece	Analyse the workpiece or select a suitable workpiece Change the cutting parameters(cutting speed , feed rate or machining method)
		Feed rate is too high	Reduce feed rate
		Insufficient coolant	Change coolant supply method, increase coolant volume
	Breakage 	Poor clamping Large spindle run-out	Select the holder and chuck with high precision Calibrating the spindle
		Cutting speed and feed speed are too high	Reduce the cutting speed and feed speed.
		Clearance angle is too large	Regrind and calibrate
		Unsuitable drill material	Select the suitable drill material

	Problem	Cause	Solution
Drill	Abnormal abrasion on cutting corner 	Regrinding delay	Regrind in time
		Drill point does not align with the spindle center (lathe)	Check and adjust alignment carefully before drilling
		Cutting speed is too high	Reduce cutting speed
		Cutting edge shape is inappropriate	Select appropriate cutting edge shape
		Unsuitable drill material	Select suitable drill material
		Incorrect coolant type	Change coolant
	Abrasion and chipping on chisel edge	Feed speed is too high	Reduce feed speed.
		Cutting edge shape is inappropriate	Select appropriate cutting edge shap
		Unsuitable drill material	Select suitable drill material
		Clearance angle is too small	Regrind drill
	Breakage on margin	The size of guide bushing or drill bushing is too large	Select another bush with correct size
	Margin build-up	Excessive abrasion on cutting edge generates high heat	Regrind drill
		Insufficient coolant	Change coolant supply method, increase coolant volume
		Incorrect coolant type	Change coolant
		Workpiece material is too soft	Change drill or machining method
	High vibration	Clearance angle is too large	Regrind drill
		Drill rigidity is not enough	Increase drill rigidity
	Chips roll around the drill	Long chips Chip removal is not fluent	Change the drill and adjust machining method and cutting parameters
	One-side abrasion	Drill point does not align with the spindle center (lathe)	Check and adjust the alignment carefully before drilling
		Poor clamping	Fix drill carefully, control the radial run-out

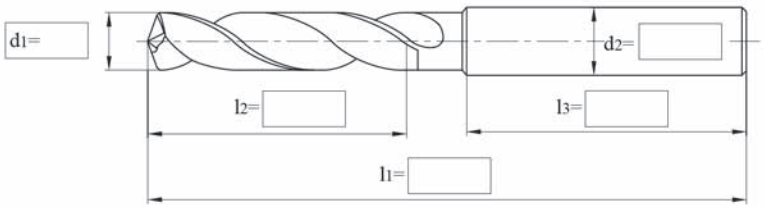
Company name:	ZCC·CT Huanghe Southern Road, Tianyuan Zone, Zhuzhou. Hunan province
Fax:	Fax: 0731-22882721 22885420 22887878
Tel:	
E-MAIL:	Zip code: 412007 E-mail:zccct@zccct.com

When the diameter specification or length specification on the catalog does not meet your needs, we provide more professional, more precise non-standard customization, you just need to easily choose the series you need.

Diameter Range	External coolant	Ø2.0~Ø20.0mm
	Internal coolant	Ø3.0~Ø20.0mm

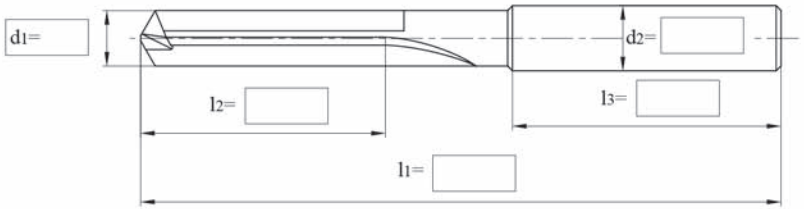
Coolant type
☐ External coolant
☐ Internal coolant

A. Twist drill



Twist drill bit series selection	
☐ GD series	☐ ST series
☐ SL series	☐ SC series

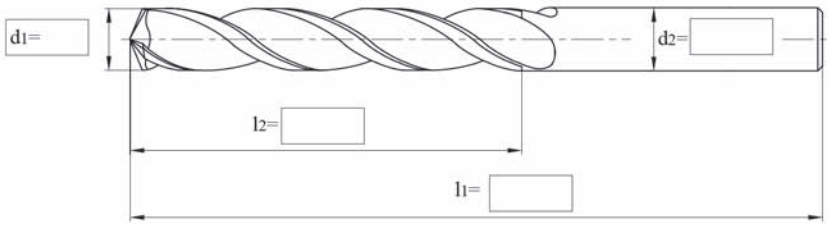
B. Straight groove drill



Straight groove drill bit series selection:

☐ PC series

C. Three flute drill



Three flute drill bit series selection:

☐ PA series

Note:

Order Quantity:	PCS	Expected delivery date:
Quotation:		Confirmation:
		Date:

Company name:	ZCC·CT
Fax:	Huanghe Southern Road, Tianyuan Zone, Zhuzhou. Hunan province
Tel:	Fax: 0731-22882721 22885420 22887878
E-MAIL:	Zip code: 412007 E-mail:zccct@zccct.com

Hole information and workpiece material

Size of processed hole= mm

Tolerance of processed hole=

Depth of processed hole= mm

☐ Carbon Steel ☐ Alloy Steel ☐ Pre-hardened steel ☐ Hardened steel ☐ Stainless Steel

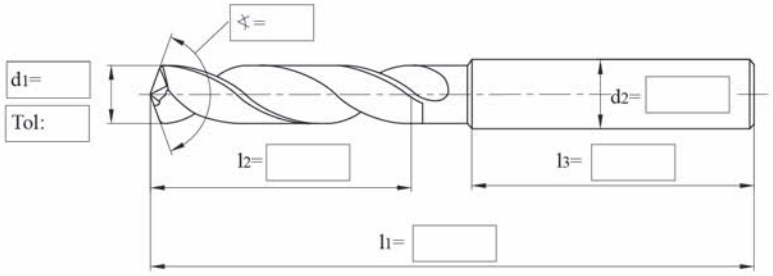
☐ Grey cast iron ☐ Ductile Iron ☐ Copper Alloy ☐ Aluminum alloy ☐ Titanium alloy ☐ Heat-resistant alloys

Material grade to be processed:

Tensile strength= N/mm^2

Hardness= Units:(HRC,HB,etc.)

Tool Information



DIN6535 Shank form

☐ Form HA

☐ Form HB

☐ Form HE

☐ Ordinary straight handle

☐ With flat tail handle DIN 1809

☐ Morse Taper Shank MT ☐

Special shapes

Coolant type	
Internal coolant	
External coolant	

Coating	
Coated	☐
Non-Coated	☐

Note:

Order Quantity: PCS	Expected delivery date:
Quotation:	Confirmation:
	Date:

Special non-standard tool customization(step twist drill)

Company name:	ZCC-CT
Fax:	Huanghe Southern Road, Tianyuan Zone, Zhuzhou. Hunan province
Tel:	Fax: 0731-22882721 22885420 22887878
E-MAIL:	Zip code: 412007 E-mail:zccct@zccct.com

Hole information and workpiece material

Hole shape to be machined: ☐ ☐

Small hole size= mm

Small hole tolerance=

Large hole size= mm

Large hole tolerance=

Depth of hole to be machined= mm

☐ Carbon Steel ☐ Alloy Steel ☐ Pre-hardened steel ☐ Hardened steel ☐ Stainless Steel

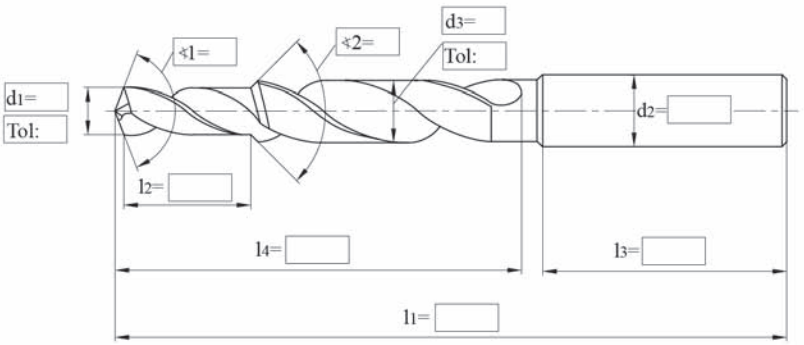
☐ Grey cast iron ☐ Ductile Iron ☐ Copper Alloy ☐ Aluminum alloy ☐ Titanium alloy ☐ Heat-resistant alloys

Material grade to be processed:

Tensile strength= N/mm^2

Hardness= Units:(HRC,HB,etc.)

Tool Information



DIN6535

Shank form

☐ Form HA

☐ Form HB

☐ Form HE

☐ Ordinary straight handle

☐ With flat tail handle DIN1809

☐ Morse Taper Shank MT ☐

Special shapes

Coolant type	
Internal coolant	
External coolant	

Coating	
Coated	☐
Non-Coated	☐

Note:

Order Quantity:	PCS	Expected delivery date:
Quotation:		Confirmation:
		Date:

Special non-standard tool customization(stepped straight groove drill)

Company name:	ZCC·CT
Fax:	Huanghe Southern Road, Tianyuan Zone, Zhuzhou. Hunan province
Tel:	Fax: 0731-22882721 22885420 22887878
E-MAIL:	Zip code: 412007 E-mail:zccct@zccct.com

Hole information and workpiece material

Size of processed hole= mm

Tolerance of processed hole=

Depth of processed hole= mm

Straight groove drills are widely used for cutting short cutting materials, from cast iron, common aluminum alloys, to high silicon aluminum alloys.

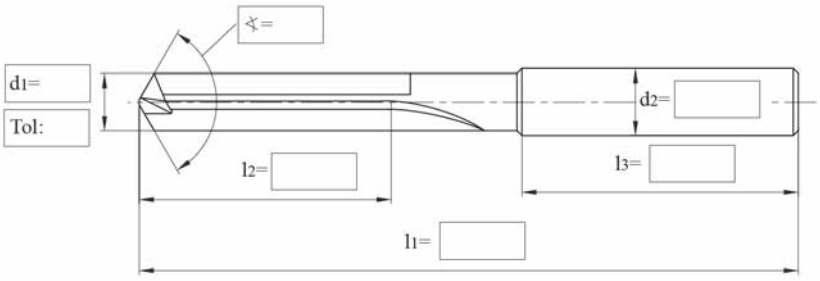
Material grade to be processed:

- ☐ Grey cast iron
- ☐ Ductile Iron
- ☐ Aluminum alloy
- ☐ Silicon Aluminum Alloy Si<10%
- ☐ Silicon Aluminum Alloy Si≥10%

Tensile strength= N/mm^2

Hardness= Units:(HRC,HB,etc.)

Tool Information



Coolant type	
Internal coolant	
External coolant	

Coating	
Coated	☐
Non-Coated	☐

DIN6535 Shank form

- ☐ Form HA
- ☐ Form HB
- ☐ Form HE
- ☐ Ordinary straight handle
- ☐ With flat tail handle DIN 1809
- ☐ Morse Taper Shank MT ☐
- Special shapes

Note:

Order Quantity:	PCS	Expected delivery date:
Quotation:		Confirmation:
		Date:

Special non-standard tool customization(stepped straight groove drill)

Company name:	ZCC·CT Huanghe Southern Road, Tianyuan Zone, Zhuzhou. Hunan province
Fax:	Fax: 0731-22882721 22885420 22887878
Tel:	Zip code: 412007 E-mail:zccct@zccct.com
E-MAIL:	

Hole information and workpiece material

Hole shape to be machined: ☐ ☐

Small hole size= mm

Small hole tolerance=

Large hole size= mm

Large hole tolerance=

Depth of hole to be machined= mm

Straight groove drills are widely used for cutting short cutting materials, from cast iron, common aluminum alloys, to high silicon aluminum alloys.

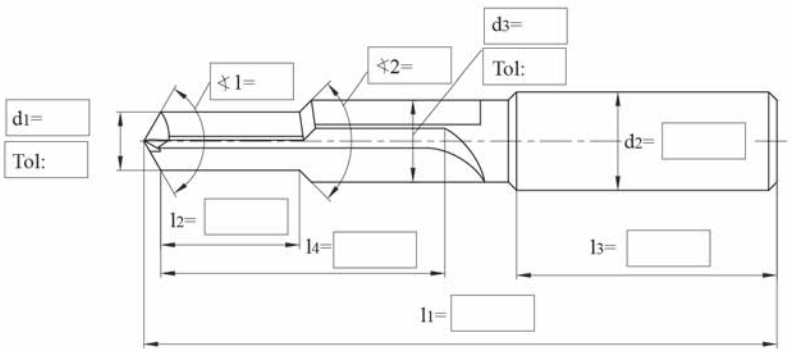
☐ Grey cast iron
☐ Ductile Iron
☐ Aluminum alloy
☐ Silicon Aluminum Alloy Si<10%
☐ Silicon Aluminum Alloy Si≥10%

Material grade to be processed:

Tensile strength= N/mm²

Hardness= Units:(HRC,HB,etc.)

Tool Information



DIN6535

Shank form

☐ Form HA
☐ Form HB
☐ Form HE
☐ Ordinary straight handle
☐ With flat tail handle DIN 1809
☐ Morse Taper Shank MT ☐
Special shapes

Coolant type	
Internal coolant	
External coolant	

Coating	
Coated	☐
Non-Coated	☐

Note:

Order Quantity:	PCS	Expected delivery date:
Quotation:		Confirmation:
		Date: