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SUMITOMO

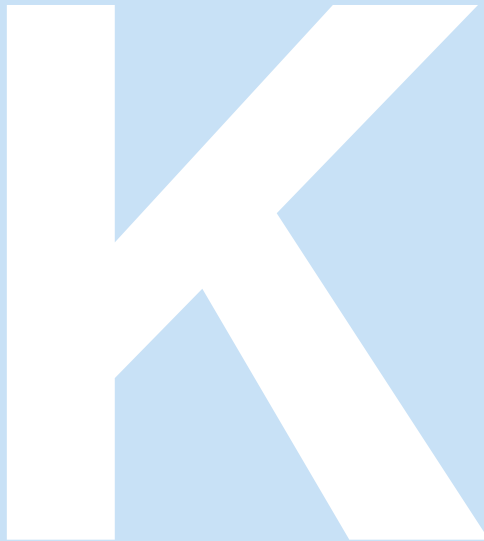
CARBIDE - CBN - DIAMOND

20|21

DRILLING TOOLS

Multi-Drills | Solid Type Drills | Flat Drills | Deep Hole Drills | Brazed Type Drills |
Replaceable Head Type Drills | Insert Type Drills

SUMITOMO
ELECTRIC
GROUP



Multi-Drills

K1-K72



Selection Guide	MULTI-DRILLS	K 2-5
Solid Type Drills	SDP ... U3/5/7 -HAK	K 6-11
	SDM ... U3/5 -HAK	K12-17
	MDW ... GS 2/4	K18-21
	MDS ... S/M K-HAK	K22-23
Flat MultiDrill	MDF	K24-31
Deep Hole Drills	MDW... XHG S / PHT	K32-33
for Steels	MDW ... XHG S	K34
for Aluminium	MDW ... XHT A	K35
Pilot Hole Drills	MDW ... PHT	K34-35
AURORA COAT Drills	MDW ... NHGS	K36-37
MINI-Drills	MLDH ... L/P	K38-39
	MDUS / MDSS	K40
SUMIDIA Coated Drills	MDS ... SDC	K41
Brazed Type Drills	KDS	K43
Series	KDS ... MAK	K44-45
	KDS ... LAK	K46-47
	KDS ... DAK	K48-49
	KDS ... FA	K50
Replaceable Head Type Drills	SMD	K51
Drill Holder	SMDH ... (D)	K52/57/59
Drill Head for Steels	SMDT ... D MTL	K53
for Stainless Steels	SMDT ... D MEL	K54-55
for Spot Facing	SMDT ... MFS	K56-57
Large Holes	SMDT ... MTL	K58-59
Insert Type Drills	WDX (2D, 3D, 4D, 5D)	K60-69
Eccentric Sleeve	WAS	K66
Plunge Drills	PDL (2D, 3D)	K70-72
Multi-Function Mills	PCT (3D, 5D)	K71-72

Multi-Drill Series



■ General Features

MultiDrill series is Sumitomo's original brand of high performance drills that have a special cutting edge design coupled with an advance carbide substrate.

The series has a comprehensive selection of diameters and drill lengths to cover a wide range of work materials and requirements, providing high efficiency, high precision and cost effectiveness.

■ Solid Carbide Type Multi-Drills Selection

	SDP ...	SDM ...	MDW ...	MDS ...	MDF ...	MDW ... 000			MLDH	MDUS / MDSS	MDS ...	
Type	...U3/5/7 -HAK (DIN)	...U3/5 -HAK (DIN)	GS 2/4	S/M/K-HAK (DIN)	...S2D, L2D ...H3D, H5D	... PHT	...XHGS ...XHTA	...NHGS	... P / L	-	... SDC	
Page	⇒ K 6-11	⇒ K 12-17	⇒ K18-21	⇒ K22-23	⇒ K24-31	⇒ K32-35		⇒ K36-37	⇒ K38-39	⇒ K40	⇒ K41	
Application	PK	PM	P	PMK	P	PMKN		N	PMK	PMKH	N	
Form	m7 drill DIN type		h8 drill cylindric	m7 drill DIN type	h8 drill cylindric		Extra long DIN type		Super Multi-Drill	Long Micro Drill	Mini Multi-Drill	Diamond Coated
Length (The ratio to øD)	3D/5D/7D	3D / 5D	2 / 4D	3D / 5D	S2D/ L2D	H3D/ H5D	3D	10D-30D	3D/5D/10D	5/12/20/30 D	10D	3D
Coolant holes	Yes		No	Yes	No	Yes	Yes		Yes	Yes	No	No
Coating	AlCrTiN		DEX (TiAlCr/TiSi)	TiAlN	PVD		TiAlN	-	DLC	TiAlN	TiAlN / ZX	SUMIDIA
Diameter range	3,0-16,0		2,0- 16,0	4,0-12,0	0,3- 20,0	3,0- 16,0	4,0- 8,0	3,0-12,0	3,0-16,0	0,8-2,0	0,03-1,0	2,0-10,0

Multi-Drill Series

Advantages

- Unique curved flute design with proven enhanced chip formation and removal, resulting in better hole accuracy.
- High speed and high efficient drilling is made possible with the combination of a special substrate with an advanced PVD coating. (10x tool life of HSS drills, 5x the efficiency)
- Wide selection range (Diameter: 0,03–65 mm, Drilling depths L/D: 2–30)
- Other diameters and length can be asked and offered



Brazed Carbide Type and Insert Type Multi-Drills Selection

	KDS ...000 ⇨ K43				SMD ... ⇨ K51, K56, K58			WDX ...00	PDL ...00	PCT ...00
Type	MAK	LAK	DAK	FA	 SMDT ... (D) MTL ⇨ K53, K59	WAS ...-... ⇨ K70				
Page	⇨ K44–45	⇨ K45–46	⇨ K48–49	⇨ K50	 SMDT ... D MEL ⇨ K54–55	⇨ K60–69		⇨ K70–72	⇨ K71–72	
					 SMDT ... MFS ⇨ K57					
					 SMDH ... M-3/5/8 ⇨ K52, K56					
					 SMDH ... M / L / D ⇨ K59					
										
Application	P M K S			K N	P M K			P M K N		
Form	h7 drill			h8 drill	SMDT type carbide head			Indexable insert drill	Straight flute insert drill	Insert mill
Length (The ratio to øD)	3D	5D	7D	10D	1.5D / 3D / 5D / 8D / 12D			2D / 3D / 4D / 5D	2D / 3D	3D / 5D
Coolant holes	Yes			Yes	Yes			Yes		
Coating	TiAlN			–	TiAlN			WDXT type insert		
Diameter range	9,5–40,5			8,0–30,5	12,0–42,5			3,0–65,0	16,0–40,0	



Multi-Drill Series Selection Guide

● According to Drill Types / Applications

Application		General		Special	
Solid Type	"Super Multi-Drill" MDS / MDW Type	m7 DIN Type "Super Multi-Drill" SDP...U HAK Type AlCrTiN coated general purpose drill with coolant holes Ø 3,0–16 mm L/D: 3, 5, 7 ⇒ K6–11	"Super Multi-Drill" MDW...GS Type DEX (TiAlCr/TiSi) coated general purpose drill without coolant holes Ø 2,0–16 mm L/D: –2, –4 ⇒ K18–21	—	
		m7 DIN Type "Super Multi-Drill" MDS...K-HAK Type TiAlN coated general purpose drill with coolant holes Ø 2,0–12 mm L/D: –2, –4 ⇒ K22–23	—		"Super Multi-Drill" MDS...D Type Hardened Steel Exotic Metals Ø 1,0–16,1 mm L/D: –3 (Stock in Japan)
Brazed Type	"Super Multi-Drill" KDS Type	"Super Multi-Drill" KDS...MAK Type General Purpose Drill Ø 12–26 mm L/D: –3 ⇒ K44–45	Long Type "Super Multi-Drill" KDS...LAK Type Deep Hole Drilling Ø 12–26 mm L/D: –5 ⇒ K46–47	—	
		—		Long Type "Super Multi-Drill" KDS...DAK Type Good Chip Removal Ø 9–22 mm L/D: –7 ⇒ K48–49	Extra Long Typ "Super Multi-Drill" KDS...FA Type For Cast Irons and Aluminium Alloys Ø 9–22 mm L/D: –7 ⇒ K50 Delivery on request

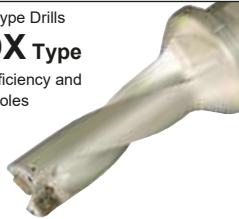
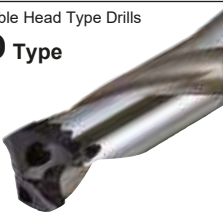

■ Recommended Cutting Conditions by Work Materials

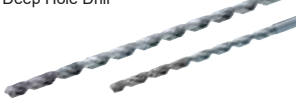
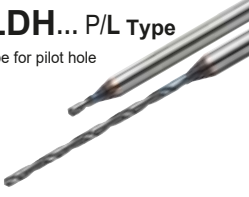


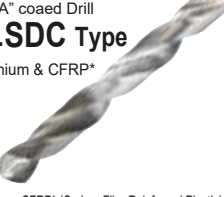
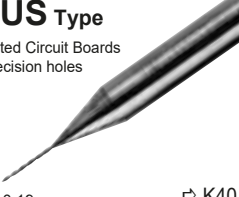
Drill		Work			
		Steel	Stainless Steel	Cast Iron	Non-ferrous Metals
Solid Type	SDP...U HAK MDW...GS	50 120 0,35 0,2	15 70 0,1 0,2	50 110 0,35 0,2	—
Brazed Type	KDS...AK (MAK/LAK/DAK)	50 90 0,35 0,15	35 50 0,15 0,25	60 100 0,35 0,2	—
	KDS...FA	—	—	30 70 0,5 0,2	60 150 0,5 0,2

 Cutting speed v_c (m/min)
 Feed f (mm/rev)


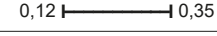

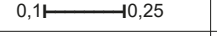

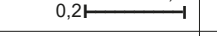
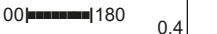
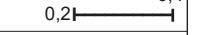

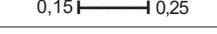

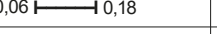

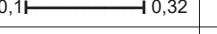

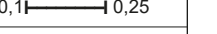
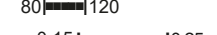
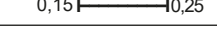
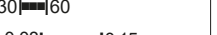
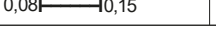

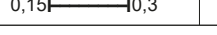

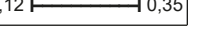
Multi-Drill Series Selection Guide



● According to Drill Types / Applications

Application	General ↔		Special
Indexable Drills	Insert Type Drills WDX Type High Efficiency and Deep Holes  Ø 13,0–65,0 mm L/D: 2, 3, 4, 5 ⇨ K60–69	Replaceable Head Type Drills SMD Type  Ø 12,0–42,5 mm L/D: 3, 5, 8 ⇨ K51–59	"Multi-Function" Types PDL & PCT Plunge Drills and Plunge Mills  Ø 16,0–40,0 mm L/D: 2, 3, 5 ⇨ K70–72

Application	Deep Hole	Very Small Hole	Precision Hole
Special Purpose Drills	"Super Long Multi-Drill" MDW...XHGS/XHTA Type New General Purpose Deep Hole Drill  Ø 4,0–12,0 mm L/D: 10/15/20/25/30 ⇨ K32–35	"Long Micro Drill" MLDH... P/L Type "P" type for pilot hole  Ø 0,8–2,0 mm L/D: 5/12/20/30 ⇨ K38–39	AURORA-Coat Drill MDW...NHGS Type For Aluminium Alloy  Ø 3,0–16,0 mm L/D: 3 / 5 / 10 ⇨ K36–37
	—	"Mini-MultiDrill" MDSS Type  Ø 0,20–1,00 mm L/D: 10 ⇨ K40	"SUMI-DIA" coated Drill MDS...SDC Type For Aluminium & CFRP*  CFRP* (Carbon Fibre Reinforced Plastic) Ø 2–10 mm L/D: –3 ⇨ K41
	—	"Micro Drill" MDUS Type For Printed Circuit Boards High precision holes  Ø 0,05–0,19 mm L/D: –8 ⇨ K40	—

■ Recommended Cutting Conditions by Work Materials

Drill \ Work	Steel	Stainless Steel	Cast Iron	Non-ferrous Metals
	SMD (Ø 20) 50  120 0,12  0,35	50  90 0,1  0,25	50  100 0,2  0,45	100  180 0,2  0,4
WDX (Ø 18) 100  220 0,15  0,25	80  180 0,06  0,18	120  200 0,1  0,32	100  200 0,1  0,25	
MDW...XHT (Ø 5) 80  120 0,15  0,25	30  60 0,08  0,15	50  90 0,15  0,3	80  160 0,12  0,35	

 Cutting speed v_c (m/min)
 Feed f (mm/rev)

SumiDrill Power Series SDP Type (DIN)

AlCrTiN Coated Solid Carbide Drills to DIN 6537

General Features

New designed double margin
Excellent hole accuracy

Shank

DIN 6535 HAK

Sumi-Power Coating

Excellent wear resistance
and anti-adhesion

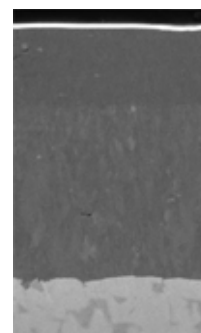
Elliptical flute design

Improved chip formation
and chip evacuation

Curved cutting edge,
optimized edge preparation

Low cutting force

Coating Structure



Improved anti-adhesion
AlCrTiN lubricant layer
coating with high Al content
improves friction condition.

High wear resistance
Tough and hard
AlCrTiN super multilayer

Substrate

Stock Size

Ø 3,0 – Ø 12,0
Increment 0,1 mm

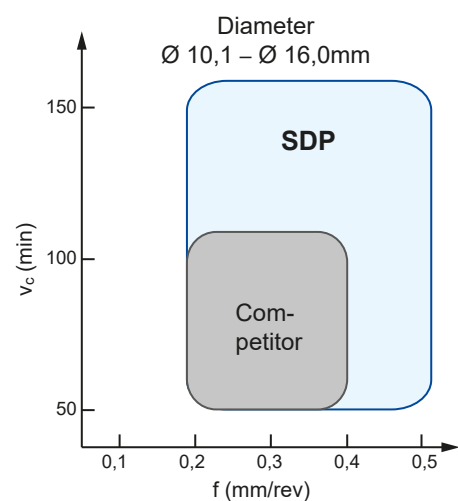
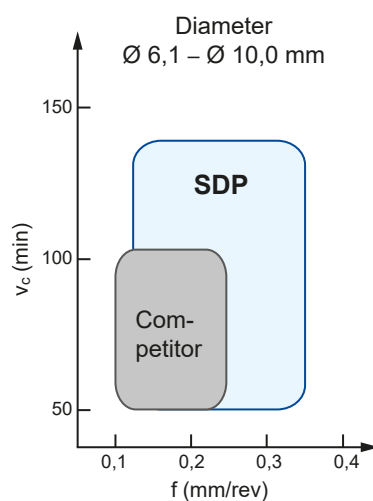
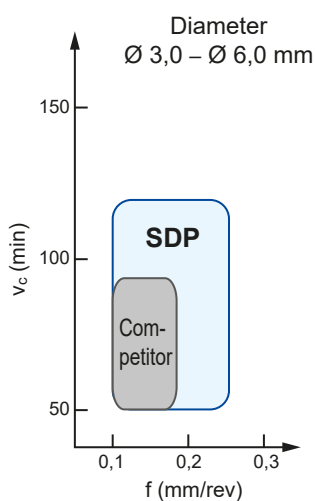
Ø 12,1 – Ø 16,0
Standard diameter





Advantages

- The specific and optimum solution for a wide range of application conditions
- Top performance parameters, maximum feed and stable long tool life
- Double margin design for high-precision holes
- Good balance of high wear resistance and toughness
- Curved cutting edge - ideal for removing chips
- Reliable and high productivity performance

Application Range



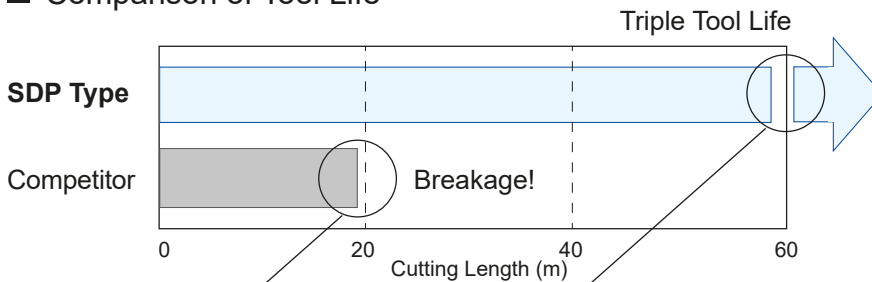
Maximum Feed Rate Result

Feed Rate (mm/rev)	0,30	0,40	0,50	0,55	0,60	0,65	0,70	0,75	0,80
SDP Type	OK	OK	OK	OK	OK		OK	OK	OK
Competitor	OK	 Breakage!							

Internal test conditions

Drill: Ø 4, L/D = 5
Work Material: Carbon Steel (C50)
Cutting Data: $v_c = 80$ m/rev, $a_p = 18$ mm

Comparison of Tool Life



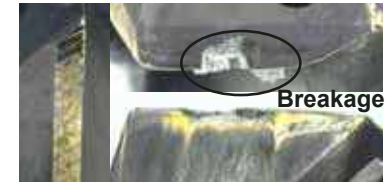
Drill: Ø 8, L/D = 5
Work Material: Carbon Steel (C50)
Cutting Data: $v_c = 80$ m/min, $f = 0,15$ mm/rev, $a_p = 38$ mm, Through hole, Internal coolant







SDP Type



Competitor



Excellent Hole Accuracy

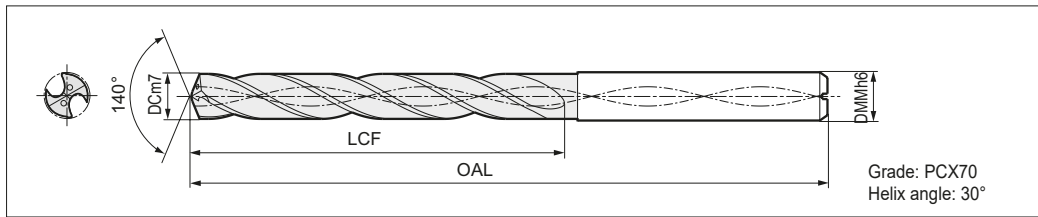
	Hole Accuracy	Chip Shape
SDP Type	 <p>Stable hole size</p> <p>Graph: Oversize (mm) vs Number of holes (0-1500). Entrance (red) and Bottom (blue) lines are stable around 0,010 mm. Range: 0,011 mm.</p>	<p>Compact cutting chips</p> 
Competitor	 <p>Unstable</p> <p>Graph: Oversize (mm) vs Number of holes (0-1500). Entrance (red) and Bottom (blue) lines fluctuate significantly. Range: 0,016 mm. Breakage! indicated at 1500 holes.</p>	<p>Longer cutting chips</p> 

Drill: Ø 8, L/D = 5
Workpiece: Carbon Steel (C50)
Cutting Data: $v_c = 80$ m/min, $f = 0,25$ mm/rev, $a_p = 24$ mm, Blind-hole, Internal coolant

SumiDrill Power Series SDP (DIN) Type

AlCrTiN Coated Solid Carbide Drills to DIN 6537

■ Solid Carbide Drill with Internal Coolant Supply, Ø 3,0–7,5 mm, 3D / 5D / 7D



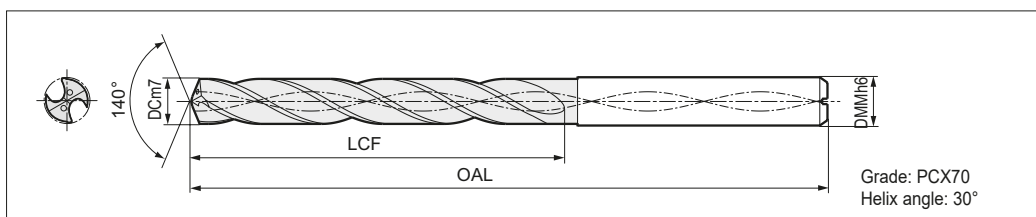
DC (mm)	DMM (mm)	Cat. No. (L/D) 3, 5, 7	3D Type			5D Type			7D Type									
			Stock	Dimensions (mm)		Stock	Dimensions (mm)		Stock	Dimensions (mm)								
			3	OAL	LCF	5	OAL	LCF	7	OAL	LCF							
3,0	6	SDP 0300 U □ HAK	●	62	17	●	66	24	●	70	29							
3,1		SDP 0310 U □ HAK	●			●												
3,2		SDP 0320 U □ HAK	●			●												
3,25		SDP 0325 U □ HAK	●			●												
3,3		SDP 0330 U □ HAK	●			●												
3,4		SDP 0340 U □ HAK	●			●												
3,5		SDP 0350 U □ HAK	●			●												
3,6		SDP 0360 U □ HAK	●			●												
3,7		SDP 0370 U □ HAK	●			●												
3,8		SDP 0380 U □ HAK	●			21			74			33	●	85	44			
3,9		SDP 0390 U □ HAK	●										●					
4,0		SDP 0400 U □ HAK	●										●					
4,1		SDP 0410 U □ HAK	●										●					
4,2		SDP 0420 U □ HAK	●										●					
4,3		SDP 0430 U □ HAK	●										●					
4,4		SDP 0440 U □ HAK	●										●					
4,5		SDP 0450 U □ HAK	●										●					
4,6		SDP 0460 U □ HAK	●	●														
4,65		SDP 0465 U □ HAK	●	●														
4,7		SDP 0470 U □ HAK	●	●														
4,8		SDP 0480 U □ HAK	●	66	82		41	●		90	49							
4,9		SDP 0490 U □ HAK	●					●										
5,0		SDP 0500 U □ HAK	●					●										
5,1		SDP 0510 U □ HAK	●					●										
5,2		SDP 0520 U □ HAK	●					●										
5,3		SDP 0530 U □ HAK	●					●										
5,4		SDP 0540 U □ HAK	●			●												
5,5		SDP 0550 U □ HAK	●			●												
5,55		SDP 0555 U □ HAK	●			●												
5,6		SDP 0560 U □ HAK	●			25		91	50			●	97	56				
5,7	SDP 0570 U □ HAK	●	●															
5,8	SDP 0580 U □ HAK	●	●															
5,9	SDP 0590 U □ HAK	●	●															
6,0	SDP 0600 U □ HAK	●	●															
6,1	SDP 0610 U □ HAK	●	79									91			50	●	106	65
6,2	SDP 0620 U □ HAK	●														●		
6,3	SDP 0630 U □ HAK	●														●		
6,4	SDP 0640 U □ HAK	●		●														
6,5	SDP 0650 U □ HAK	●		●														
6,6	SDP 0660 U □ HAK	●		●														
6,7	SDP 0670 U □ HAK	●		●														
6,8	SDP 0680 U □ HAK	●		●														
6,9	SDP 0690 U □ HAK	●		●														
7,0	SDP 0700 U □ HAK	●		●														
7,1	SDP 0710 U □ HAK	●		31	91		50			●	116					75		
7,2	SDP 0720 U □ HAK	●								●								
7,3	SDP 0730 U □ HAK	●				●												
7,4	SDP 0740 U □ HAK	●				●												
7,5	SDP 0750 U □ HAK	●				●												

※ Remarks:

□ Non-Stock Items will be required minimum order quantity for 30 pcs.

● = Euro stock
□ = Delivery on request

■ Solid Carbide Drill with Internal Coolant Supply, Ø 7,6–12,5 mm, 3D / 5D / 7D



DC (mm)	DMM (mm)	Cat. No. (L/D) 3, 5, 7	3D Type			5D Type			7D Type		
			Stock	Dimensions (mm)		Stock	Dimensions (mm)		Stock	Dimensions (mm)	
			3	OAL	LCF	5	OAL	LCF	7	OAL	LCF
7,6	8	SDP 0760 U □ HAK	●			●			●		
7,7		SDP 0770 U □ HAK	●			●			●		
7,8		SDP 0780 U □ HAK	●	79	37	●	91	50	●	116	75
7,9		SDP 0790 U □ HAK	●			●			●		
8,0		SDP 0800 U □ HAK	●			●			●		
8,1	10	SDP 0810 U □ HAK	●			●			●		
8,2		SDP 0820 U □ HAK	●			●			●		
8,3		SDP 0830 U □ HAK	●			●			□		
8,4		SDP 0840 U □ HAK	●			●			●		
8,5		SDP 0850 U □ HAK	●			●			●	131	85
8,6		SDP 0860 U □ HAK	●			●			●		
8,7		SDP 0870 U □ HAK	●			●			●		
8,8		SDP 0880 U □ HAK	●			●			●		
8,9		SDP 0890 U □ HAK	●			●			□		
9,0		SDP 0900 U □ HAK	●			●			●		
9,1		SDP 0910 U □ HAK	●	89	43	●	103	57	●		
9,2		SDP 0920 U □ HAK	●			●			●		
9,25		SDP 0925 U □ HAK	●			●			□		
9,3		SDP 0930 U □ HAK	●			●			●		
9,4		SDP 0940 U □ HAK	●			●			●		
9,5	SDP 0950 U □ HAK	●			●			●	139	93	
9,6	SDP 0960 U □ HAK	●			●			□			
9,7	SDP 0970 U □ HAK	●			●			●			
9,8	SDP 0980 U □ HAK	●			●			●			
9,9	SDP 0990 U □ HAK	●			●			●			
10,0	SDP 1000 U □ HAK	●			●			●			
10,1	12	SDP 1010 U □ HAK	●			●			□		
10,2		SDP 1020 U □ HAK	●			●			●		
10,3		SDP 1030 U □ HAK	●			●			□		
10,4		SDP 1040 U □ HAK	●			●			□		
10,5		SDP 1050 U □ HAK	●			●			●	155	104
10,6		SDP 1060 U □ HAK	●			●			□		
10,7		SDP 1070 U □ HAK	●			●			□		
10,8		SDP 1080 U □ HAK	●			●			●		
10,9		SDP 1090 U □ HAK	●			●			□		
11,0		SDP 1100 U □ HAK	●	102	51	●	118	67	●		
11,1		SDP 1110 U □ HAK	●			●			□		
11,2		SDP 1120 U □ HAK	●			●			●		
11,3		SDP 1130 U □ HAK	●			●			□		
11,4		SDP 1140 U □ HAK	●			●			□		
11,5		SDP 1150 U □ HAK	●			●			●	163	112
11,6	SDP 1160 U □ HAK	●			●			□			
11,7	SDP 1170 U □ HAK	●			●			□			
11,8	SDP 1180 U □ HAK	●			●			●			
11,9	SDP 1190 U □ HAK	●			●			□			
12,0	SDP 1200 U □ HAK	●			●			●			
12,1	14	SDP 1210 U □ HAK	□			□			□		
12,2		SDP 1220 U □ HAK	●			●			●		
12,3		SDP 1230 U □ HAK	□	107	56	□	124	73	□	182	131
12,4		SDP 1240 U □ HAK	□			□			□		
12,5		SDP 1250 U □ HAK	●			●			●		

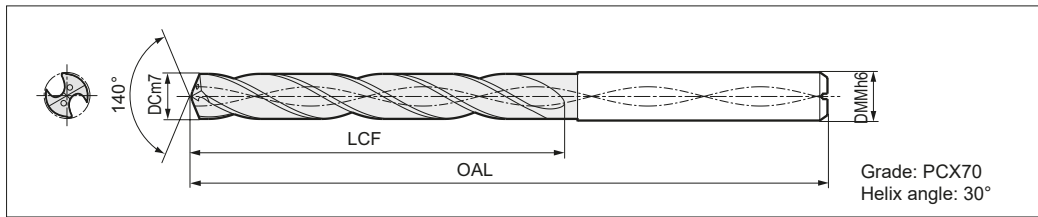
※ Remarks:

□ Non-Stock Items will be required minimum order quantity for 30 pcs.

SumiDrill Power Series SDP (DIN) Type

AlCrTiN Coated Solid Carbide Drills to DIN 6537

■ Solid Carbide Drill with Internal Coolant Supply, Ø 12,6–16,0 mm, 3D / 5D / 7D



DC (mm)	DMM (mm)	Cat. No. (L/D) 3, 5, 7	3D Type			5D Type			7D Type		
			Stock	Dimensions (mm)		Stock	Dimensions (mm)		Stock	Dimensions (mm)	
			3	OAL	LCF	5	OAL	LCF	7	OAL	LCF
12,6	14	SDP 1260 U □ HAK	□	107	56	□	124	73	□	182	131
12,7		SDP 1270 U □ HAK	□			□			□		
12,8		SDP 1280 U □ HAK	□			□			□		
12,9		SDP 1290 U □ HAK	□			□			□		
13,0		SDP 1300 U □ HAK	●			●			●		
13,1		SDP 1310 U □ HAK	□			□			□		
13,2		SDP 1320 U □ HAK	□			□			□		
13,3		SDP 1330 U □ HAK	□			□			□		
13,4		SDP 1340 U □ HAK	□			□			□		
13,5		SDP 1350 U □ HAK	●			●			●		
13,6		SDP 1360 U □ HAK	□			□			□		
13,7		SDP 1370 U □ HAK	●			●			●		
13,8		SDP 1380 U □ HAK	□			□			□		
13,9		SDP 1390 U □ HAK	□			□			□		
14,0	SDP 1400 U □ HAK	●	●	●							
14,1	16	SDP 1410 U □ HAK	□	115	60	□	133	78	□	204	149
14,2		SDP 1420 U □ HAK	●			●			●		
14,3		SDP 1430 U □ HAK	□			□			□		
14,4		SDP 1440 U □ HAK	□			□			□		
14,5		SDP 1450 U □ HAK	●			●			●		
14,6		SDP 1460 U □ HAK	□			□			□		
14,7		SDP 1470 U □ HAK	●			●			●		
14,8		SDP 1480 U □ HAK	□			□			□		
14,9		SDP 1490 U □ HAK	□			□			□		
15,0		SDP 1500 U □ HAK	●			●			●		
15,1		SDP 1510 U □ HAK	□			□			□		
15,2		SDP 1520 U □ HAK	●			●			●		
15,3		SDP 1530 U □ HAK	□			□			□		
15,4		SDP 1540 U □ HAK	□			□			□		
15,5		SDP 1550 U □ HAK	●			●			●		
15,6		SDP 1560 U □ HAK	□			□			□		
15,7	SDP 1570 U □ HAK	●	●	●							
15,8	SDP 1580 U □ HAK	□	□	□							
15,9	SDP 1590 U □ HAK	□	□	□							
16,0	SDP 1600 U □ HAK	●	●	●							

※ Remarks:

□ Non-Stock Items will be required minimum order quantity for 30 pcs.

● = Euro stock
□ = Delivery on request

Recommended Cutting Conditions

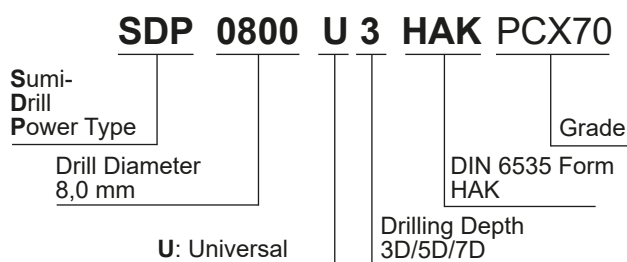
Material Group						SDP ____ U_HAK PCX70					
ISO 513	Work Material	Type/ Structure	R _m N/mm ²	Hardness HB30	Fitness	Ø 3,0–6,0 mm		Ø 6,1–10,0 mm		Ø 10,1–16,0 mm	
						v _c =m/min	Feed rate (mm/rev)	v _c =m/min	Feed rate (mm/rev)	v _c =m/min	Feed rate (mm/rev)
P	Carbon steel Cast steel	free cutting steel	420	125	◎	50–80–120	0,15–0,20–0,31	70–110–140	0,20–0,25–0,42	80–120–160	0,25–0,30–0,53
		construction steel	650	190	◎	50–80–120	0,15–0,20–0,31	70–110–140	0,20–0,25–0,42	80–120–160	0,25–0,30–0,53
		case-hardened steel	850	250	◎	50–80–120	0,15–0,20–0,31	70–110–140	0,20–0,25–0,42	80–120–160	0,25–0,30–0,53
		heat-treatable steel	750	270	◎	50–80–120	0,15–0,20–0,31	70–110–140	0,20–0,25–0,42	80–120–160	0,25–0,30–0,50
		spring steel	1000	300	◎	10–20–30	0,05–0,06–0,11	15–22–30	0,08–0,09–0,14	20–28–35	0,08–0,09–0,16
	Low alloy steel Cast steel	case-hardened steel	600	180	◎	50–70–90	0,10–0,14–0,24	60–80–110	0,15–0,20–0,32	70–100–120	0,20–0,25–0,40
		heat-treatable steel	930	275	◎	45–65–85	0,10–0,14–0,24	60–80–110	0,15–0,22–0,34	65–95–120	0,20–0,25–0,37
		bearing steel	1000	300	○	40–60–80	0,10–0,15–0,26	60–80–110	0,15–0,20–0,32	60–90–120	0,20–0,25–0,37
		nitriding steel cold work steel	1200	350	◎	35–55–75	0,10–0,15–0,26	55–75–110	0,15–0,22–0,32	55–80–110	0,20–0,27–0,38
	High alloy steel	tool steel	680	200	○	30–40–50	0,10–0,15–0,25	30–40–50	0,12–0,20–0,28	30–40–50	0,12–0,20–0,32
hot work steel		1100	325	○	20–30–40	0,10–0,12–0,23	20–30–40	0,12–0,15–0,27	20–30–40	0,14–0,18–0,32	
M	Stainless steel Cast steel	martensitic/ferritic	680	200	○	40–55–70	0,08–0,10–0,21	40–60–75	0,10–0,12–0,25	50–70–80	0,10–0,12–0,25
		martensitic	820	240	◎	30–45–60	0,08–0,10–0,20	40–60–70	0,10–0,12–0,24	50–60–80	0,10–0,12–0,24
		austenitic	600	180	◎	30–45–60	0,08–0,10–0,20	40–60–70	0,10–0,12–0,24	50–60–80	0,10–0,12–0,24
		Duplex	740	230	◎	30–45–60	0,06–0,08–0,18	40–60–70	0,08–0,10–0,23	50–60–80	0,10–0,10–0,23
K	Cast iron GG	ferritic/pearlitic		180	◎	50–70–90	0,15–0,20–0,36	60–80–100	0,20–0,25–0,40	70–100–120	0,25–0,30–0,42
		pearlitic		260	◎	40–60–80	0,15–0,20–0,36	50–70–90	0,20–0,25–0,40	60–80–100	0,25–0,30–0,42
	Cast iron GGG	ferritic		160	◎	50–70–90	0,15–0,18–0,31	60–80–100	0,20–0,25–0,40	70–100–120	0,25–0,30–0,42
		pearlitic		250	◎	40–60–80	0,15–0,18–0,31	50–70–90	0,20–0,25–0,40	70–80–100	0,25–0,30–0,42
S	Heat resisting alloys	Fe-based			○	10–20–30	0,08–0,09–0,13	15–22–32	0,08–0,10–0,15	20–28–35	0,10–0,12–0,19
		Ni / Co-based			○	10–20–30	0,08–0,09–0,13	15–22–32	0,08–0,10–0,15	20–28–35	0,10–0,12–0,19
	Titanium Titanium alloys	pure Titanium	430								
		Ti-Basis			○	10–20–30	0,05–0,06–0,12	15–22–32	0,08–0,09–0,17	20–28–35	0,08–0,09–0,17
N	Aluminium Al-wrought alloys	pure aluminium									
		wrought alloys									
	Aluminium Cast alloys	Si ≤ 12%									
		Si ≥ 12%			◎	70–90–100	0,15–0,20–0,25	80–100–120	0,20–0,25–0,30	100–120–140	0,25–0,30–0,35
		Al - Mg alloys									
Zinc die-cast	Zn alloys										
Copper alloys	Copper										
	Brass			○	80–100–120	0,15–0,20–0,25	110–130–180	0,20–0,25–0,30	160–180–200	0,25–0,30–0,35	
	Bronze										
H	Hardened steel	45 HRC			○	10–20–30	0,08–0,09–0,10	15–22–32	0,08–0,10–0,12	20–28–35	0,12–0,15–0,20
		55 HRC									
		60 HRC									
		> 60 HRC									

◎ Preferred choice

○ Suitable

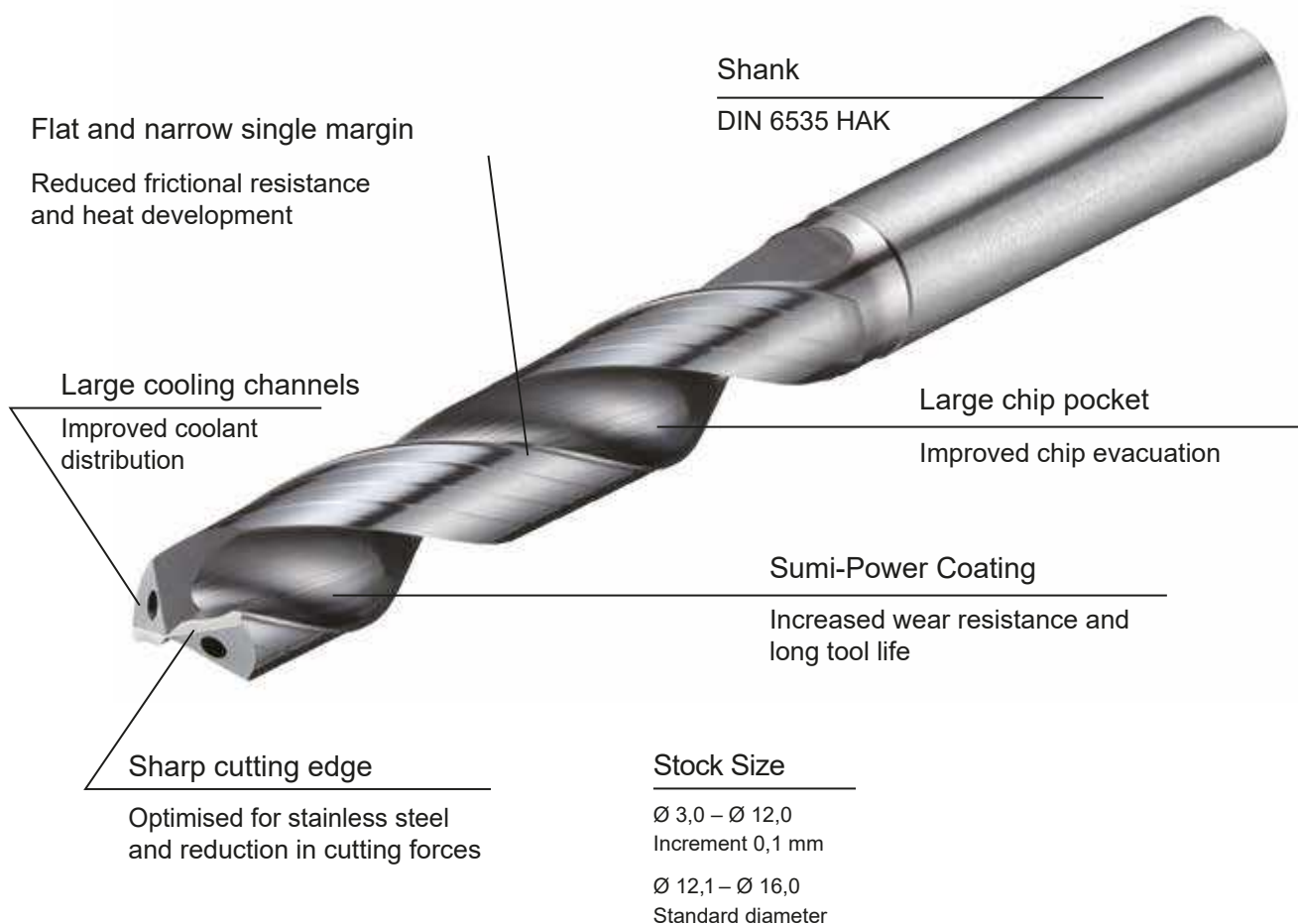
◎ Possible

SDP-Identification



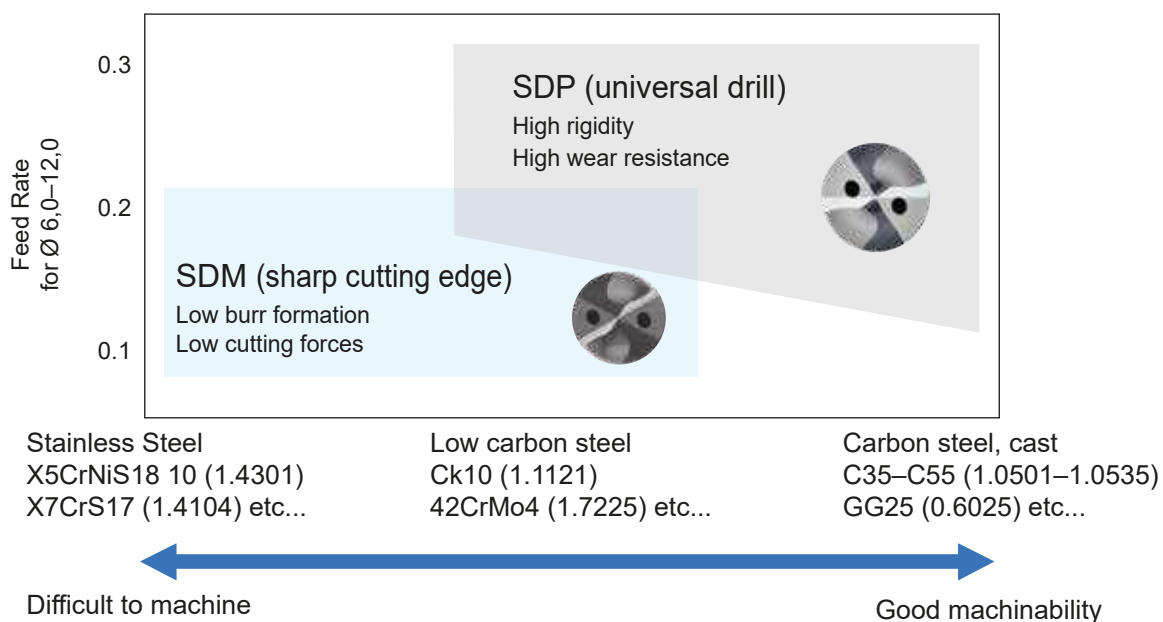
SumiDrill Power Series SDM Type

General Features



Advantages

- High process reliability in stainless steel and low carbon steel
- Can be used on low-performance machines! (→avoids overload!)
- High surface quality in the bore
- Sharp cutting edge
- High adhesion resistance by Sumi-Power Coating



SumiDrill Power Series SDM Type

■ Chip Control

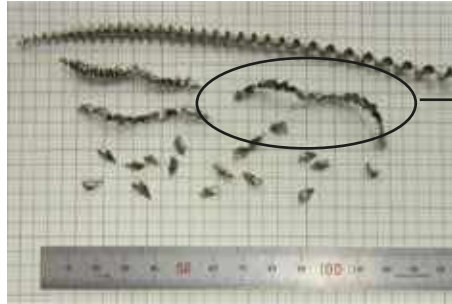
Drill:	Ø 8 mm, L/D = 5
Work Material:	X5CrNiS18 10 (1.4301)
Cutting Data:	$v_c=60\text{m/min}$, $f=0,10\text{mm/rev}$, $a_p=19\text{mm}$ Internal coolant (2,0MPa)

SDM



Short chips,
good chip evacuation

Competitor A



Partial long chips,
risk of tool breakage
by poor chip evacuation

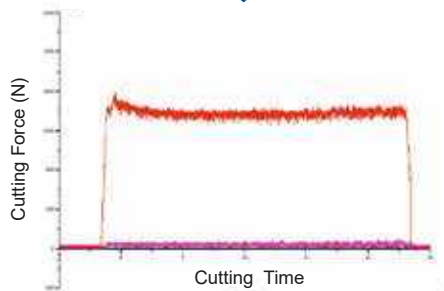


■ Optimal Cutting Forces

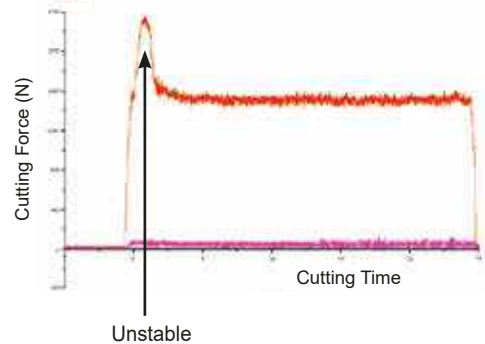
Drill:	Ø 8 mm, L/D = 5
Work Material:	X5CrNiS18 10 (1.4301)
Cutting Data:	$v_c=60\text{m/min}$, $f=0,20\text{mm/rev}$, $a_p=40\text{mm}$ Internal coolant (2,0MPa)

10 % lower than competitor A

SDM

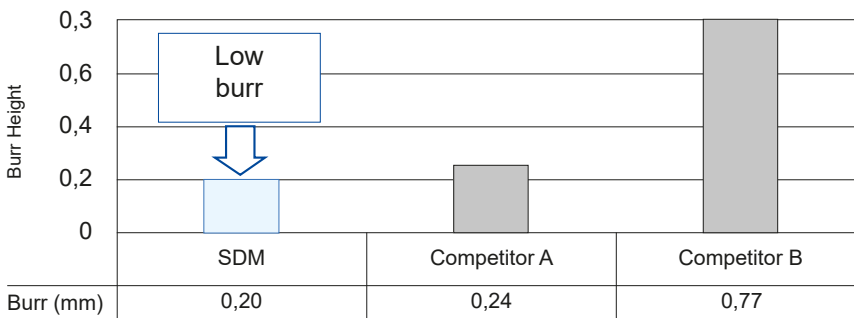


Competitor



■ Low Burr Formation

Drill:	Ø 8 mm, L/D = 5
Work Material:	X5CrNiS18 10 (1.4301)
Cutting Data:	$v_c=60\text{m/min}$, $f=0,20\text{mm/rev}$, $a_p=40\text{mm}$ Internal coolant (2,0MPa)



SDM



Competitor A



Competitor B



SumiDrill Power Series

SDM Type

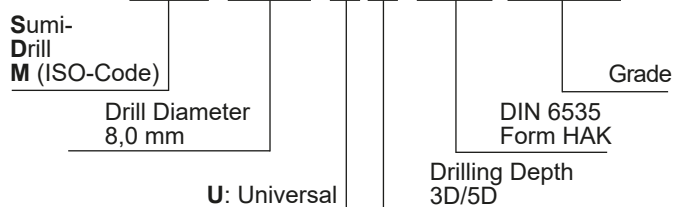
Recommended Cutting Conditions

Material Group					SDM ____ U_HAK PCX70						
ISO 513	Work Material	Type/Structure	R _m N/mm ²	Hardness HB30	Fitness	Ø 3,0–6,0 mm		Ø 6,1–10,0 mm		Ø 10,1–16,0 mm	
						v _c =m/min	Feed rate (mm/rev)	v _c =m/min	Feed rate (mm/rev)	v _c =m/min	Feed rate (mm/rev)
P	Carbon steel Cast steel	free cutting steel	420	125	○	80–100–120	0,08–0,11–0,14	80–100–120	0,10–0,15–0,20	80–100–120	0,20–0,25–0,30
		construction steel	650	190	○	80–100–120	0,08–0,11–0,14	80–100–120	0,10–0,15–0,20	80–100–120	0,20–0,25–0,30
		case-hardened steel	850	250	○	80–100–120	0,08–0,11–0,14	80–100–120	0,10–0,15–0,20	80–100–120	0,20–0,25–0,30
		heat-treatable steel	750	270	○	40–60–100	0,08–0,10–0,12	40–60–100	0,10–0,12–0,16	40–60–100	0,15–0,17–0,20
	spring steel	1000	300								
	Low alloy steel Cast steel	case-hardened steel	600	180	○	80–100–120	0,08–0,11–0,14	80–100–120	0,10–0,15–0,20	80–100–120	0,20–0,25–0,30
		heat-treatable steel	930	275	○	40–60–100	0,08–0,10–0,12	40–60–100	0,10–0,12–0,16	40–60–100	0,15–0,17–0,20
		bearing steel	1000	300							
		nitriding steel	1200	350							
	High alloy steel / Cast steel	tool steel	680	200	○	40–60–100	0,08–0,10–0,12	40–60–100	0,10–0,12–0,16	40–60–100	0,15–0,17–0,20
hot work steel		1100	325								
M	Stainless steel Cast steel	martensitic/ferritic	680	200	●	40–60–100	0,08–0,10–0,12	40–60–100	0,10–0,14–0,18	40–60–100	0,15–0,20–0,25
		martensitic/ferritic		>200	●	30–50–80	0,08–0,10–0,12	30–50–80	0,10–0,14–0,18	30–50–80	0,15–0,20–0,25
		martensitic	820	240	●	30–50–80	0,08–0,10–0,12	30–50–80	0,10–0,14–0,18	30–50–80	0,15–0,20–0,25
		austenitic	600	180	●	40–60–100	0,08–0,10–0,12	40–60–100	0,10–0,14–0,18	40–60–100	0,15–0,20–0,25
		austenitic		>200	●	30–50–80	0,08–0,10–0,12	30–50–80	0,10–0,14–0,18	30–50–80	0,15–0,20–0,25
		Duplex	740	230	●	30–45–70	0,08–0,10–0,12	30–45–70	0,10–0,14–0,18	30–45–70	0,15–0,20–0,25
		Precipitation hardened		≤450	●	30–45–70	0,08–0,10–0,12	30–45–70	0,10–0,14–0,18	30–45–70	0,15–0,20–0,25
K	Cast iron GG	ferritic/pearlitic		180							
		pearlitic		260							
	Cast iron GGG	ferritic		160							
		pearlitic		250							
S	Heat resisting alloys	Fe-based			○	20–30–40	0,06–0,08–0,10	20–30–40	0,08–0,10–0,12	20–30–40	0,10–0,12–0,15
		Ni / Co-based			○	20–30–40	0,06–0,08–0,10	20–30–40	0,08–0,10–0,12	20–30–40	0,10–0,12–0,15
	Titanium Titanium alloys	pure Titanium	430								
		Ti-Basis			○	20–30–40	0,06–0,08–0,10	20–30–40	0,08–0,10–0,12	20–30–40	0,10–0,12–0,15
N	Aluminium	pure aluminium									
		wrought alloys									
	Aluminium Cast alloys	Si ≤ 12%									
		Si ≥ 12%									
		Al - Mg alloys									
	Zinc die-cast	Zn alloys									
	Copper alloys	Copper									
Brass											
Bronze											
H	Hardened steel	45 HRC									
		55 HRC									
		60 HRC									
		> 60 HRC									

● Preferred choice ○ Possible

SDM-Identification

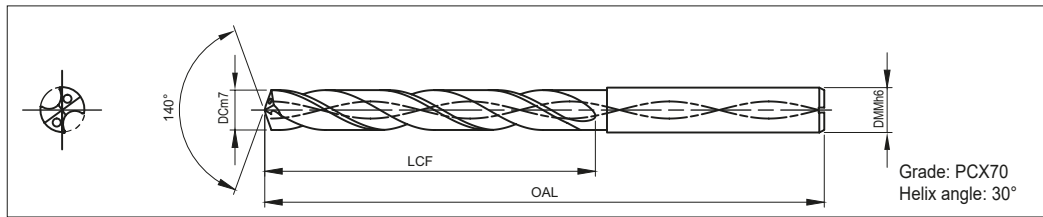
SDM 0800 U 3 HAK PCX70



● = Euro stock
□ = Delivery on request

SumiDrill Power Series SDM Type

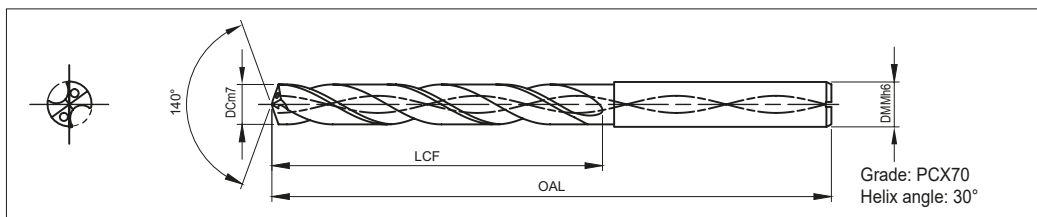
■ Solid Carbide Drill with Internal Coolant Supply, Ø 3,0–7,5 mm, 3D / 5D



DC (mm)	DMM (mm)	Cat. No. (L/D) 3/5	3D Type			5D Type						
			Stock	Dimensions (mm)		Stock	Dimensions (mm)					
				OAL	LCF		OAL	LCF				
3,0	6	SDM 0300 U □ HAK	●	62	17	●	66	24				
3,1		SDM 0310 U □ HAK	●									
3,2		SDM 0320 U □ HAK	●									
3,25		SDM 0325 U □ HAK	□									
3,3		SDM 0330 U □ HAK	●									
3,4		SDM 0340 U □ HAK	●									
3,5		SDM 0350 U □ HAK	●									
3,6		SDM 0360 U □ HAK	●									
3,7		SDM 0370 U □ HAK	●									
3,8		SDM 0380 U □ HAK	●			66			21	●	74	33
3,9		SDM 0390 U □ HAK	●									
4,0		SDM 0400 U □ HAK	●									
4,1		SDM 0410 U □ HAK	●									
4,2		SDM 0420 U □ HAK	●									
4,3		SDM 0430 U □ HAK	●									
4,4		SDM 0440 U □ HAK	●									
4,5		SDM 0450 U □ HAK	●									
4,6		SDM 0460 U □ HAK	●									
4,65	SDM 0465 U □ HAK	□										
4,7	SDM 0470 U □ HAK	●										
4,8	SDM 0480 U □ HAK	●	25	82	●		82	41				
4,9	SDM 0490 U □ HAK	●										
5,0	SDM 0500 U □ HAK	●										
5,1	SDM 0510 U □ HAK	●										
5,2	SDM 0520 U □ HAK	●										
5,3	SDM 0530 U □ HAK	●										
5,4	SDM 0540 U □ HAK	●										
5,5	SDM 0550 U □ HAK	●										
5,55	SDM 0555 U □ HAK	□										
5,6	SDM 0560 U □ HAK	●										
5,7	SDM 0570 U □ HAK	●										
5,8	SDM 0580 U □ HAK	●										
5,9	SDM 0590 U □ HAK	●			79	31			●	91	50	
6,0	SDM 0600 U □ HAK	●										
6,1	SDM 0610 U □ HAK	●										
6,2	SDM 0620 U □ HAK	●										
6,3	SDM 0630 U □ HAK	●										
6,4	SDM 0640 U □ HAK	●										
6,5	SDM 0650 U □ HAK	●										
6,6	SDM 0660 U □ HAK	●										
6,7	SDM 0670 U □ HAK	●										
6,8	SDM 0680 U □ HAK	●										
6,9	SDM 0690 U □ HAK	●										
7,0	SDM 0700 U □ HAK	●	37	●								
7,1	SDM 0710 U □ HAK	●										
7,2	SDM 0720 U □ HAK	●										
7,3	SDM 0730 U □ HAK	●										
7,4	SDM 0740 U □ HAK	●										
7,5	SDM 0750 U □ HAK	●										

SumiDrill Power Series SDM Type

■ Solid Carbide Drill with Internal Coolant Supply, Ø 7,6–12,0 mm, 3D / 5D

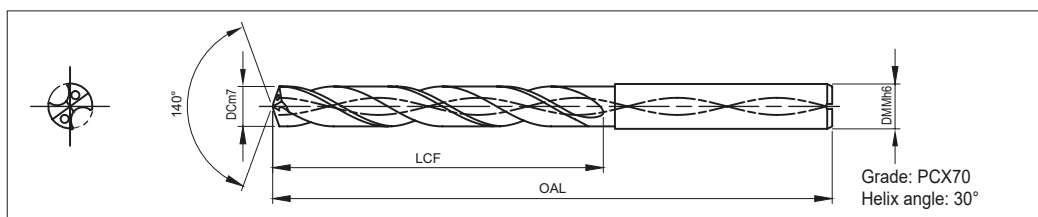


DC (mm)	DMM (mm)	Cat. No. (L/D) 3/5	3D Type			5D Type		
			Stock 3	Dimensions (mm)		Stock 5	Dimensions (mm)	
				OAL	LCF		OAL	LCF
7,6	8	SDM 0760 U □ HAK	●	79	37	●	91	50
7,7		SDM 0770 U □ HAK	●					
7,8		SDM 0780 U □ HAK	●					
7,9		SDM 0790 U □ HAK	●					
8,0		SDM 0800 U □ HAK	●					
8,1	10	SDM 0810 U □ HAK	●	89	43	●	103	57
8,2		SDM 0820 U □ HAK	●					
8,3		SDM 0830 U □ HAK	●					
8,4		SDM 0840 U □ HAK	●					
8,5		SDM 0850 U □ HAK	●					
8,6		SDM 0860 U □ HAK	●					
8,7		SDM 0870 U □ HAK	●					
8,8		SDM 0880 U □ HAK	●					
8,9		SDM 0890 U □ HAK	●					
9,0		SDM 0900 U □ HAK	●					
9,1		SDM 0910 U □ HAK	●					
9,2		SDM 0920 U □ HAK	●					
9,25		SDM 0925 U □ HAK	□					
9,3		SDM 0930 U □ HAK	●					
9,4		SDM 0940 U □ HAK	●					
9,5		SDM 0950 U □ HAK	●					
9,6		SDM 0960 U □ HAK	●					
9,7		SDM 0970 U □ HAK	●					
9,8		SDM 0980 U □ HAK	●					
9,9		SDM 0990 U □ HAK	●					
10,0	SDM 1000 U □ HAK	●						
10,1	12	SDM 1010 U □ HAK	●	102	51	●	118	67
10,2		SDM 1020 U □ HAK	●					
10,3		SDM 1030 U □ HAK	●					
10,4		SDM 1040 U □ HAK	●					
10,5		SDM 1050 U □ HAK	●					
10,6		SDM 1060 U □ HAK	●					
10,7		SDM 1070 U □ HAK	●					
10,8		SDM 1080 U □ HAK	●					
10,9		SDM 1090 U □ HAK	●					
11,0		SDM 1100 U □ HAK	●					
11,1		SDM 1110 U □ HAK	●					
11,2		SDM 1120 U □ HAK	●					
11,3		SDM 1130 U □ HAK	●					
11,4		SDM 1140 U □ HAK	●					
11,5		SDM 1150 U □ HAK	●					
11,6		SDM 1160 U □ HAK	●					
11,7		SDM 1170 U □ HAK	●					
11,8		SDM 1180 U □ HAK	●					
11,9		SDM 1190 U □ HAK	●					
12,0	SDM 1200 U □ HAK	●						

● = Euro stock
□ = Delivery on request

SumiDrill Power Series SDM Type

■ Solid Carbide Drill with Internal Coolant Supply, Ø 12,0–16,0 mm, 3D / 5D



DC (mm)	DMM (mm)	Cat. No. (L/D) 3/5	3D Type		5D Type			
			Stock 3	Dimensions (mm) OAL LCF	Stock 5	Dimensions (mm) OAL LCF		
12,1	14	SDM 1210 U □ HAK	□	107	56	□	124	73
12,2		SDM 1220 U □ HAK	□			□		
12,3		SDM 1230 U □ HAK	□			□		
12,4		SDM 1240 U □ HAK	□			□		
12,5		SDM 1250 U □ HAK	●			●		
12,6		SDM 1260 U □ HAK	□			□		
12,7		SDM 1270 U □ HAK	□			□		
12,8		SDM 1280 U □ HAK	□			□		
12,9		SDM 1290 U □ HAK	□			□		
13,0		SDM 1300 U □ HAK	●			●		
13,1		SDM 1310 U □ HAK	□			□		
13,2		SDM 1320 U □ HAK	□			□		
13,3		SDM 1330 U □ HAK	□			□		
13,4		SDM 1340 U □ HAK	□			□		
13,5		SDM 1350 U □ HAK	●			●		
13,6		SDM 1360 U □ HAK	□			□		
13,7		SDM 1370 U □ HAK	□			□		
13,8	SDM 1380 U □ HAK	□	□					
13,9	SDM 1390 U □ HAK	□	□					
14,0	SDM 1400 U □ HAK	●	●					
14,1	16	SDM 1410 U □ HAK	□	115	60	□	133	78
14,2		SDM 1420 U □ HAK	□			□		
14,3		SDM 1430 U □ HAK	□			□		
14,4		SDM 1440 U □ HAK	□			□		
14,5		SDM 1450 U □ HAK	●			●		
14,6		SDM 1460 U □ HAK	□			□		
14,7		SDM 1470 U □ HAK	□			□		
14,8		SDM 1480 U □ HAK	□			□		
14,9		SDM 1490 U □ HAK	□			□		
15,0		SDM 1500 U □ HAK	●			●		
15,1		SDM 1510 U □ HAK	□			□		
15,2		SDM 1520 U □ HAK	□			□		
15,3		SDM 1530 U □ HAK	□			□		
15,4		SDM 1540 U □ HAK	□			□		
15,5		SDM 1550 U □ HAK	●			●		
15,6		SDM 1560 U □ HAK	□			□		
15,7		SDM 1570 U □ HAK	□			□		
15,8	SDM 1580 U □ HAK	□	□					
15,9	SDM 1590 U □ HAK	□	□					
16,0	SDM 1600 U □ HAK	●	●					

Drill Coating

DEX Coating



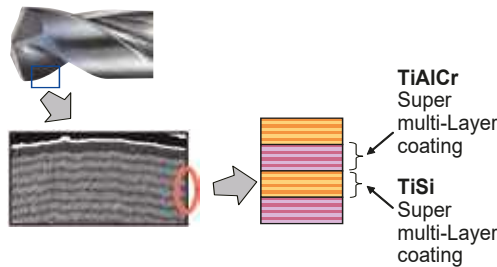
General Features

- Sumitomo Electric Hardmetal's next-generation drill coating utilises nano-coating technology to provide more than double the tool life of conventional coatings.
- Silicon and chrome improve usure, heat, and adhesion resistance.
- New super multi-layered structure offers significantly improved chip resistance (coating strength).

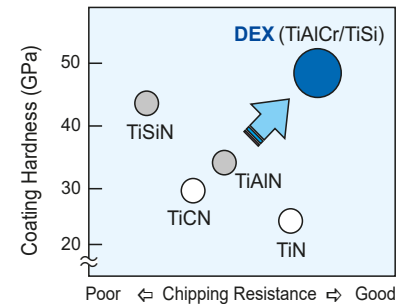
Characteristics

Coating Design

World's first combined super multi-layered coating is made from alternate layers of super multilayered substrates.



Characteristics of Films



DEX Coat Application Examples

MultiDrill GS Type Drilling Examples

Comparison of Usure Resistance		Comparison of Adhesion Resistance	
<p>Edge Usure Comparison for 70 m Drilling</p> <p>Shoulder and rake face feature improved usure resistance enabling long tool life.</p> <p>DEX Coating MultiDrill GS Type</p> <p>Concurrent A Drill</p>		<p>Edge Usure Comparison for 100 m Drilling</p> <p>Offers significantly improved fracture resistance to counter problems caused by shoulder and flute adhesion in soft steel drilling.</p> <p>DEX Coating MultiDrill GS Type</p> <p>Competitor B Drill</p>	
Tool:	MDW 0800 GS4	Tool:	MDW 0600 GS4
Work Material:	C50 (HB200)	Work Material:	15CrMo5 (HB120)
Cutting Conditions:	$v_c = 70$ m/min, $f = 0,25$ mm/rev, $a_p = 32$ mm External coolant (Water soluble)	Cutting Conditions:	$v_c = 60$ m/min, $f = 0,18$ mm/rev, $a_p = 18$ mm External coolant (Water soluble)

Long MultiDrill XHT Type Drilling Examples

<p>Reduced margin usure during deep hole MQL drilling increases number of regrinds.</p> <p>DEX Coating</p> <p>Conventional Coating</p>	
Tool:	MDW 0497 XHT20 (Ø 4,97 L/D = 29)
Work Material:	42CrMo4 (HB275) Crank Shaft
Cutting Conditions:	$v_c = 70$ m/min, $f = 0,23$ mm/rev, $a_p = 75$ mm MQL

MultiDrill SMD Type Drilling Examples

<p>Offers longer tool life with SEC MultiDrills as well.</p> <p>Number of holes</p> <p>DEX Coating: 1,150</p> <p>Conventional Coating: 800</p> <p>1,4x Life!</p>	
Tool:	SMDH 210 M (Ø 21,0)
Work Material:	36Mn5 (HB350) Construction Mashine Component
Cutting Conditions:	$v_c = 60$ m/min, $f = 0,25$ mm/rev, $a_p = 25$ mm Water soluble Coolant



General Features

Super MultiDrill GS types are solid carbide drills that employ a new flute design and wide chip pocket to achieve excellent chip management and evacuation. DEX coating enables stable and long tool life over a wide range of work materials and applications.

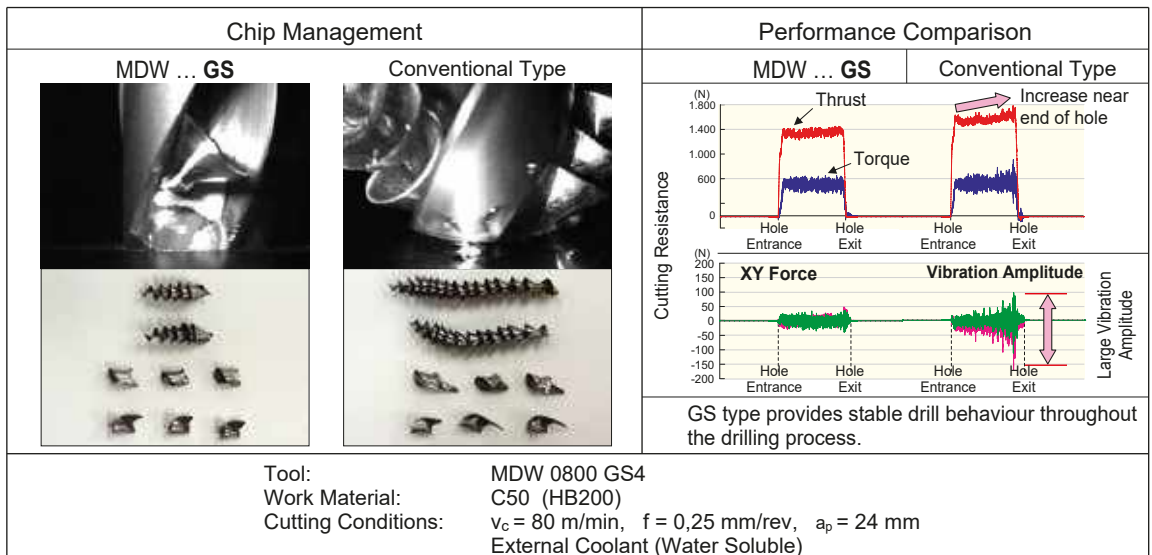
Characteristics and Applications

- Long tool life
New cutting edge design and special DEX coating provide long tool life with a wide variety of work materials.
- Stable chip evacuation
New flute shape significantly improves chip management and evacuation.
- Quiet cutting and stable cutting resistance
Stable drilling with little wobble even in small machine applications.
- Environmentally-friendly
Compatible with the MQL (Minimum Quantity Lubrication) system.

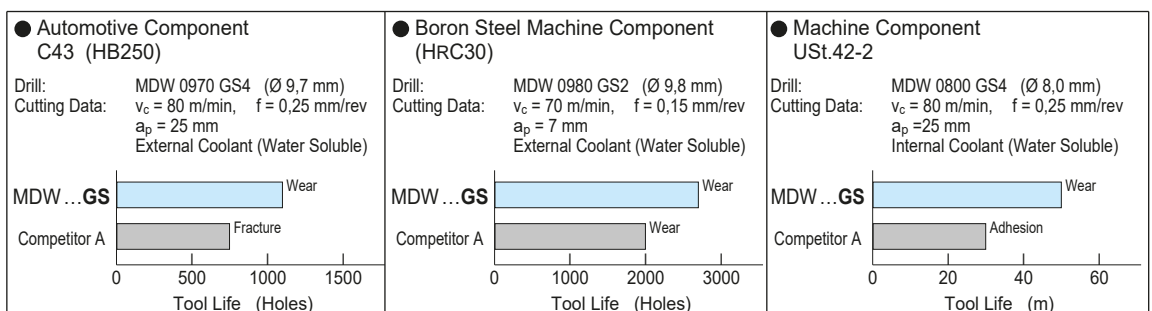
Series

Coolant Supply	Type	Diameter Range (mm)	Hole Depth (L/D)
External (GS Type)	MDW □□□□ GS2	Ø 0,8 – 16,0	-2
	MDW □□□□ GS4		-4

Performance



Application Examples

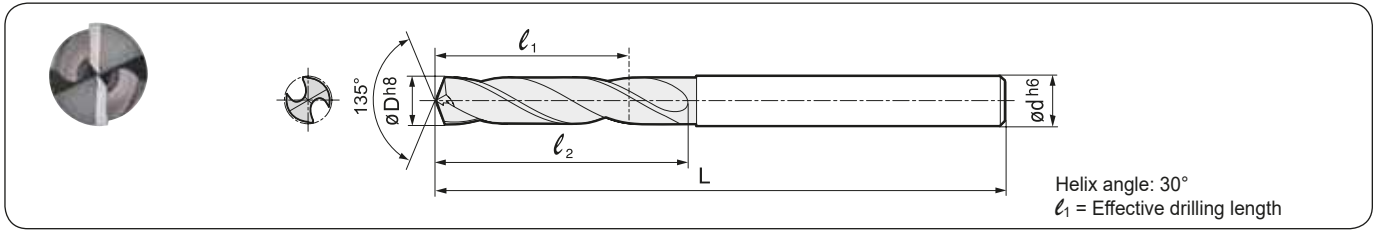


GS Type SUPER MULTI-DRILLS

MDW ... GS Type

Without Coolant Holes (2D/4D)

"Super Multi-Layer" DEX (TiAlCr/TiSi) Coated Solid Carbide Drills



● Diameter Ø 2,0–6,0 mm

Dimensions		Cat. No.	Short Type (2D)				Long Type (4D)							
DC	ød		Stock	Dimensions			Stock	Dimensions						
			2	L	ℓ ₁	ℓ ₂	4	L	ℓ ₁	ℓ ₂				
2,0	3,0	MDW 0200 GS□	●	45,4	6,0	8,4	○	49,4	13,0	15,4				
2,1	3,0	MDW 0210 GS□	○	45,6	6,0	8,4	○	49,6	13,0	15,4				
2,2		MDW 0220 GS□	○											
2,3		MDW 0230 GS□	○				7,3				10,5	○	14,5	17,5
2,4		MDW 0240 GS□	○											
2,5		MDW 0250 GS□	●											
2,6		MDW 0260 GS□	●											
2,7		MDW 0270 GS□	○											
2,8		MDW 0280 GS□	○				9,8				13,6	○	16,0	19,6
2,9		MDW 0290 GS□	○											
2,9		MDW 0300 GS□	○											
3,0	MDW 0310 GS□	○	54,8	17,0	21,8	○	60,8	23,0	27,8					
3,1	MDW 0320 GS□	○												
3,2	MDW 0330 GS□	○				15,5				19,7	○	20,5	24,7	
3,3	MDW 0340 GS□	○												
3,4	MDW 0350 GS□	○												
3,5	MDW 0360 GS□	○												
3,6	MDW 0370 GS□	○												
3,7	MDW 0380 GS□	○												
3,8	MDW 0390 GS□	○												
3,9	MDW 0400 GS□	○												
4,0	MDW 0410 GS□	○	62,0	20,0	26,0	○	77,0	33,0	39,0					
4,1	MDW 0420 GS□	○												
4,2	MDW 0430 GS□	○				18,5				23,9	○	25,5	31,9	
4,3	MDW 0440 GS□	○												
4,4	MDW 0450 GS□	○												
4,5	MDW 0460 GS□	○												
4,6	MDW 0470 GS□	○												
4,7	MDW 0480 GS□	○												
4,8	MDW 0490 GS□	○												
4,9	MDW 0500 GS□	○												
5,0	MDW 0510 GS□	○	66,2	21,0	28,2	○	82,2	35,0	42,2					
5,1	MDW 0520 GS□	○												
5,2	MDW 0530 GS□	○				19,5				26,1	○	33,5	40,1	
5,3	MDW 0540 GS□	○												
5,4	MDW 0550 GS□	○												
5,5	MDW 0560 GS□	○												
5,6	MDW 0570 GS□	○												
5,7	MDW 0580 GS□	○												
5,8	MDW 0590 GS□	○												
5,9	MDW 0600 GS□	○												

● Diameter Ø 6,1–10,0 mm

Dimensions		Cat. No.	Short Type (2D)				Long Type (4D)			
DC	ød		Stock	Dimensions			Stock	Dimensions		
			2	L	ℓ ₁	ℓ ₂	4	L	ℓ ₁	ℓ ₂
6,1	7,0	MDW 0610 GS□	○	24,5	32,3	○	74,5	26,1	34,5	84,3
6,2		MDW 0620 GS□	○							
6,3		MDW 0630 GS□	○							
6,4		MDW 0640 GS□	○							
6,5		MDW 0650 GS□	○							
6,6		MDW 0660 GS□	○							
6,7		MDW 0670 GS□	○							
6,8		MDW 0680 GS□	○							
6,9		MDW 0690 GS□	○							
6,9		MDW 0700 GS□	○							
7,0	MDW 0710 GS□	○	25,6	34,6	○	79,7	28,1	37,7	91,7	
7,1	MDW 0720 GS□	○								
7,2	MDW 0730 GS□	○								
7,3	MDW 0740 GS□	○								
7,4	MDW 0750 GS□	○								
7,5	MDW 0760 GS□	○								
7,6	MDW 0770 GS□	○								
7,7	MDW 0780 GS□	○								
7,8	MDW 0790 GS□	○								
7,9	MDW 0800 GS□	○								
8,0	MDW 0810 GS□	○	27,4	37,8	○	83,9	29,1	39,9	99,9	
8,1	MDW 0820 GS□	○								
8,2	MDW 0830 GS□	○								
8,3	MDW 0840 GS□	○								
8,4	MDW 0850 GS□	○								
8,5	MDW 0860 GS□	○								
8,6	MDW 0870 GS□	○								
8,7	MDW 0880 GS□	○								
8,8	MDW 0890 GS□	○								
8,9	MDW 0900 GS□	○								
9,0	MDW 0910 GS□	○	28,6	40,0	○	89,0	30,0	42,0	107,0	
9,1	MDW 0920 GS□	○								
9,2	MDW 0930 GS□	○								
9,3	MDW 0940 GS□	○								
9,4	MDW 0950 GS□	○								
9,5	MDW 0960 GS□	○								
9,6	MDW 0970 GS□	○								
9,7	MDW 0980 GS□	○								
9,8	MDW 0990 GS□	○								
9,9	MDW 1000 GS□	○								

■ Recommended Cutting Conditions for Multi-Drills GS Type

Diameter (mm)		Soft Steels (-200 HB)	General Steels (-300 HB)	Stainless Steels (-200 HB)	Grey Cast Irons	Ductile Cast Irons
-Ø 3	v _c	30-50-70	30-45-60	10-30-40	40-70-90	35-55-75
	f	0,12-0,20	0,10-0,20	0,06-0,12	0,15-0,30	0,12-0,20
-Ø 5	v _c	40-70-100	40-60-80	15-40-55	40-70-90	40-60-80
	f	0,15-0,25	0,15-0,25	0,08-0,15	0,15-0,30	0,15-0,25
-Ø 10	v _c	50-80-130	50-70-110	15-45-60	50-80-120	50-70-100
	f	0,20-0,35	0,20-0,35	0,10-0,20	0,20-0,35	0,20-0,35
-Ø 16	v _c	60-90-140	60-80-120	20-50-60	60-90-120	50-70-100
	f	0,25-0,35	0,25-0,35	0,10-0,20	0,25-0,35	0,25-0,35

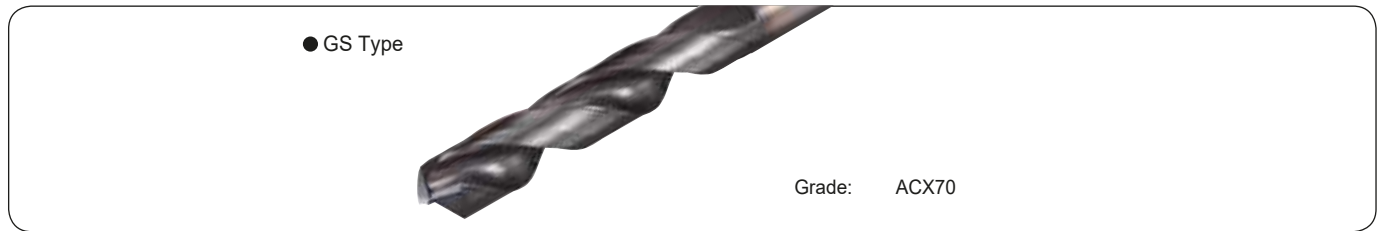
(v_c: Cutting Speed (m/min), f: Feed Rate (mm/rev)) (Min - Standard - Max)

● = Euro stock
○ = Japan stock

GS Type SUPER MULTI-DRILLS

MDW ... GS Type

GS Type for General Purpose Drilling of Steels



● Diameter Ø 10,1–13,0 mm (mm)

Dimensions		Cat. No.	Short Type (2D)				Long Type (4D)			
DC (mm)	ød		Stock	Dimensions			Stock	Dimensions		
			2	L	ℓ ₁	ℓ ₂	4	L	ℓ ₁	ℓ ₂
10,1	11,0	MDW 1010 GS□ ○	95,3	30,6	43,2	116,2	55,6	68,2	2, 4 ↘	
10,2		MDW 1020 GS□ ○								
10,3		MDW 1030 GS□ ○								
10,4		MDW 1040 GS□ ○								
10,5		MDW 1050 GS□ ○								
10,6		MDW 1060 GS□ ○								
10,7		MDW 1070 GS□ ○								
10,8		MDW 1080 GS□ ○								
10,9		MDW 1090 GS□ ○								
11,0		MDW 1100 GS□ ○								
11,1	12,0	MDW 1110 GS□ ○	102,5	33,6	47,4	123,5	59,6	73,4	2, 4 ↘	
11,2		MDW 1120 GS□ ○								
11,3		MDW 1130 GS□ ○								
11,4		MDW 1140 GS□ ○								
11,5		MDW 1150 GS□ ○								
11,6		MDW 1160 GS□ ○								
11,7		MDW 1170 GS□ ○								
11,8		MDW 1180 GS□ ○								
11,9		MDW 1190 GS□ ○								
12,0	MDW 1200 GS□ ○									
12,1	13,0	MDW 1210 GS□ ○	102,7	34,6	49,6	139,7	63,6	78,6	2, 4 ↘	
12,2		MDW 1220 GS□ ○								
12,3		MDW 1230 GS□ ○								
12,4		MDW 1240 GS□ ○								
12,5		MDW 1250 GS□ ○								
12,6		MDW 1260 GS□ ○								
12,7		MDW 1270 GS□ ○								
12,8		MDW 1280 GS□ ○								
12,9		MDW 1290 GS□ ○								
13,0	MDW 1300 GS□ ○									

● Diameter Ø 13,1–16,0 mm (mm)

Dimensions		Cat. No.	Short Type (2D)				Long Type (4D)										
DC (mm)	ød		Stock	Dimensions			Stock	Dimensions									
			2	L	ℓ ₁	ℓ ₂	4	L	ℓ ₁	ℓ ₂							
13,1	14,0	MDW 1310 GS□ ○	107,9	36,6	52,8	149,9	70,2	86,8	2, 4 ↘								
13,2		MDW 1320 GS□ ○															
13,3		MDW 1330 GS□ ○															
13,4		MDW 1340 GS□ ○															
13,5		MDW 1350 GS□ ○															
13,6		MDW 1360 GS□ ○															
13,7		MDW 1370 GS□ ○															
13,8		MDW 1380 GS□ ○															
13,9		MDW 1390 GS□ ○															
14,0		MDW 1400 GS□ ○															
14,1		15,0								MDW 1410 GS□ ○	111,1	37,6	55,0	156,1	74,6	92,0	2, 4 ↘
14,2										MDW 1420 GS□ ○							
14,3										MDW 1430 GS□ ○							
14,4										MDW 1440 GS□ ○							
14,5	MDW 1450 GS□ ○																
14,6	MDW 1460 GS□ ○																
14,7	MDW 1470 GS□ ○																
14,8	MDW 1480 GS□ ○																
14,9	MDW 1490 GS□ ○																
15,0	MDW 1500 GS□ ○																
15,1	16,0	MDW 1510 GS□ ○	115,5	37,6	56,2	169,3	78,6	97,2	2, 4 ↘								
15,2		MDW 1520 GS□ ○															
15,3		MDW 1530 GS□ ○															
15,4		MDW 1540 GS□ ○															
15,5		MDW 1550 GS□ ○															
15,6		MDW 1560 GS□ ○															
15,7		MDW 1570 GS□ ○															
15,8		MDW 1580 GS□ ○															
15,9		MDW 1590 GS□ ○															
16,0	MDW 1600 GS□ ○																

■ How to Order

Non-Stock Items will be required minimum order quantity for 6 pcs.
Please specify the Cat. No. For example, if the diameter of the drill is 10,2 mm, please indicate as follow.

E.g., **MDW 1020 GS 2/4, ACX70**
(Grade)

SUPER MULTI-DRILLS

Drill diameter **10,2 mm**

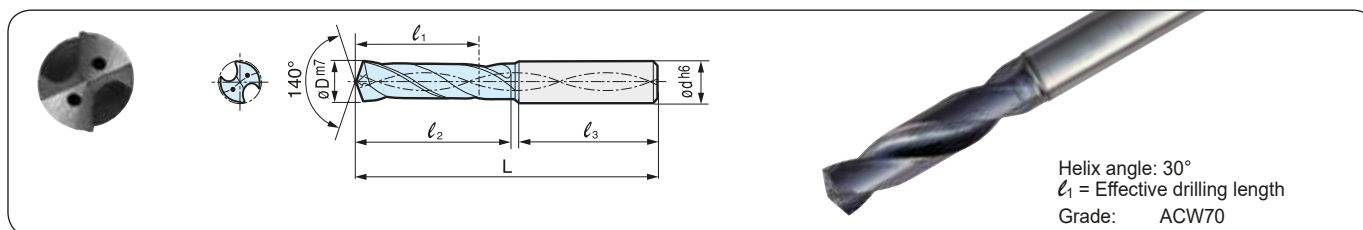
Drilling depth (The ratio to ØD): -2 / -4

GS type MULTI-DRILLS

K Type SUPER MULTI-DRILLS (DIN) MDS ... sk-HAK Type

Short Type

TiAlN Coated Solid Carbide Drills to DIN6537 (Ø-Tolerance: m7)



● Diameter Ø 4,0–8,0 mm

Dimensions (mm)			Cat. No.	DIN 6537 K (Short Type)			
ØD (mm)	Shank			Stock	Dimensions (mm)		
	ød	l ₃			SK-HAK	L	l ₁
4,0	6	36	MDS 040 SKHAK	●	66	17	24
4,1			MDS 041 SKHAK	□			
4,2			MDS 042 SKHAK	●			
4,3			MDS 043 SKHAK	□			
4,4			MDS 044 SKHAK	□			
4,5			MDS 045 SKHAK	●			
4,6			MDS 046 SKHAK	□			
4,7			MDS 047 SKHAK	□			
4,8			MDS 048 SKHAK	□			
4,9			MDS 049 SKHAK	□			
5,0	6	36	MDS 050 SKHAK	●	66	20	28
5,1			MDS 051 SKHAK	●			
5,2			MDS 052 SKHAK	□			
5,3			MDS 053 SKHAK	□			
5,4			MDS 054 SKHAK	□			
5,5			MDS 055 SKHAK	●			
5,6			MDS 056 SKHAK	□			
5,7			MDS 057 SKHAK	□			
5,8			MDS 058 SKHAK	□			
5,9			MDS 059 SKHAK	□			
6,0	MDS 060 SKHAK	●					
6,1	8	36	MDS 061 SKHAK	□	79	24	34
6,2			MDS 062 SKHAK	□			
6,3			MDS 063 SKHAK	□			
6,4			MDS 064 SKHAK	□			
6,5			MDS 065 SKHAK	●			
6,6			MDS 066 SKHAK	□			
6,7			MDS 067 SKHAK	□			
6,8			MDS 068 SKHAK	●			
6,9			MDS 069 SKHAK	□			
7,0			MDS 070 SKHAK	●			
7,1	8	36	MDS 071 SKHAK	□	79	29	41
7,2			MDS 072 SKHAK	□			
7,3			MDS 073 SKHAK	□			
7,4			MDS 074 SKHAK	□			
7,5			MDS 075 SKHAK	●			
7,6			MDS 076 SKHAK	□			
7,7			MDS 077 SKHAK	□			
7,8			MDS 078 SKHAK	□			
7,9			MDS 079 SKHAK	□			
8,0			MDS 080 SKHAK	●			

● Diameter Ø 8,1–12,0 mm

Dimensions (mm)			Cat. No.	DIN 6537 K (Short Type)			
ØD (mm)	Shank			Stock	Dimensions (mm)		
	ød	l ₃			SK-HAK	L	l ₁
8,1	10	40	MDS 081 SKHAK	□	89	35	47
8,2			MDS 082 SKHAK	□			
8,3			MDS 083 SKHAK	□			
8,4			MDS 084 SKHAK	□			
8,5			MDS 085 SKHAK	●			
8,6			MDS 086 SKHAK	□			
8,7			MDS 087 SKHAK	□			
8,8			MDS 088 SKHAK	□			
8,9			MDS 089 SKHAK	□			
9,0			MDS 090 SKHAK	●			
9,1	10	40	MDS 091 SKHAK	□	89	35	47
9,2			MDS 092 SKHAK	□			
9,3			MDS 093 SKHAK	□			
9,4			MDS 094 SKHAK	□			
9,5			MDS 095 SKHAK	●			
9,6			MDS 096 SKHAK	□			
9,7			MDS 097 SKHAK	□			
9,8			MDS 098 SKHAK	□			
9,9			MDS 099 SKHAK	□			
10,0			MDS 100 SKHAK	●			
10,1	12	45	MDS 101 SKHAK	□	102	40	55
10,2			MDS 102 SKHAK	□			
10,3			MDS 103 SKHAK	□			
10,4			MDS 104 SKHAK	□			
10,5			MDS 105 SKHAK	●			
10,6			MDS 106 SKHAK	□			
10,7			MDS 107 SKHAK	□			
10,8			MDS 108 SKHAK	□			
10,9			MDS 109 SKHAK	□			
11,0			MDS 110 SKHAK	●			
11,1	12	45	MDS 111 SKHAK	□	102	40	55
11,2			MDS 112 SKHAK	□			
11,3			MDS 113 SKHAK	□			
11,4			MDS 114 SKHAK	□			
11,5			MDS 115 SKHAK	●			
11,6			MDS 116 SKHAK	□			
11,7			MDS 117 SKHAK	□			
11,8			MDS 118 SKHAK	□			
11,9			MDS 119 SKHAK	□			
12,0			MDS 120 SKHAK	●			

■ Recommended Cutting Conditions for K-HAK Type Multi-Drills

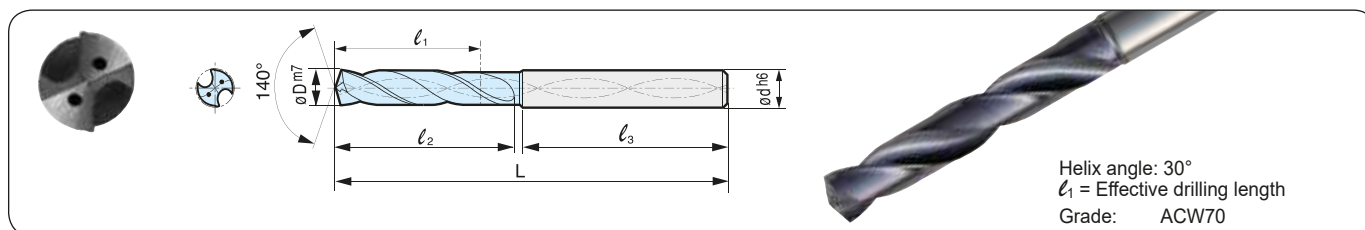
Diameter (mm)		Steels (<200 HB)	Steels (200–300 HB)	Alloy Steels (>200 HB)	Hardened Steels (45 HRC)	Stainless Steels (<200 HB)	Ductile Cast Irons	Grey Cast Irons	Titanium Alloys (Ti-6Al-4V)	Inconel (Inconel 718)
		–Ø 5	v _c	50–80–120	50–75–100	40–65–80	20–35–50	30–45–60	40–60–100	80–100–120
	f	0,15–0,25	0,15–0,25	0,10–0,20	0,08–0,10	0,10–0,20	0,15–0,25	0,15–0,30	0,08–0,10	0,05–0,08
–Ø 10	v _c	50–120–140	70–110–140	40–70–80	30–40–60	50–70–90	70–90–120	100–130–140	25–30–40	15–25–30
	f	0,20–0,35	0,20–0,35	0,10–0,25	0,10–0,15	0,10–0,25	0,20–0,35	0,20–0,35	0,08–0,12	0,08–0,10
–Ø 16	v _c	90–140–170	80–120–150	40–80–100	30–45–60	50–80–110	80–100–130	100–150–160	25–35–40	20–30–35
	f	0,25–0,35	0,25–0,35	0,15–0,30	0,12–0,20	0,15–0,30	0,25–0,35	0,25–0,40	0,10–0,15	0,08–0,10
–Ø 20	v _c	100–150–180	80–130–160	50–90–120	30–45–60	50–80–110	80–110–140	100–150–160	25–35–40	20–30–35
	f	0,30–0,40	0,25–0,40	0,15–0,30	0,15–0,25	0,15–0,30	0,25–0,40	0,25–0,40	0,10–0,15	0,08–0,10

(v_c: Cutting Speed (m/min), f: Feed Rate (mm/rev)) (Min – Standard – Max)

K Type SUPER MULTI-DRILLS (DIN) MDS ... MK-HAK Type

Long Type

TiAlN Coated Solid Carbide Drills to DIN6537 (Ø-Tolerance: m7)



● Diameter Ø 4,0–8,0 mm

Dimensions (mm)			Cat. No.	DIN 6537 L (Long Type)			
øD (mm)	Shank			MK-HAK	Dimensions (mm)		
	ød	l ₃			L	l ₁	l ₂
4,0	6	36	MDS 040 MKHAK	●	74	29	36
4,1			MDS 041 MKHAK	□			
4,2			MDS 042 MKHAK	●			
4,3			MDS 043 MKHAK	□			
4,4			MDS 044 MKHAK	□			
4,5			MDS 045 MKHAK	●			
4,6			MDS 046 MKHAK	□			
4,7			MDS 047 MKHAK	□			
4,8			MDS 048 MKHAK	□			
4,9			MDS 049 MKHAK	□			
5,0	MDS 050 MKHAK	●					
5,1	MDS 051 MKHAK	□					
5,2	MDS 052 MKHAK	□					
5,3	MDS 053 MKHAK	□					
5,4	MDS 054 MKHAK	□	82	35	44		
5,5	MDS 055 MKHAK	●					
5,6	MDS 056 MKHAK	□					
5,7	MDS 057 MKHAK	□					
5,8	MDS 058 MKHAK	□					
5,9	MDS 059 MKHAK	□					
6,0	MDS 060 MKHAK	●					
6,1	MDS 061 MKHAK	□					
6,2	MDS 062 MKHAK	□					
6,3	MDS 063 MKHAK	□					
6,4	MDS 064 MKHAK	□					
6,5	MDS 065 MKHAK	●					
6,6	MDS 066 MKHAK	□					
6,7	MDS 067 MKHAK	□					
6,8	MDS 068 MKHAK	●					
6,9	MDS 069 MKHAK	□					
7,0	MDS 070 MKHAK	●					
7,1	MDS 071 MKHAK	□					
7,2	MDS 072 MKHAK	□					
7,3	MDS 073 MKHAK	□					
7,4	MDS 074 MKHAK	□					
7,5	MDS 075 MKHAK	□	91	43	53		
7,6	MDS 076 MKHAK	□					
7,7	MDS 077 MKHAK	□					
7,8	MDS 078 MKHAK	□					
7,9	MDS 079 MKHAK	□					
8,0	MDS 080 MKHAK	●					

● Diameter Ø 8,1–12,0 mm

Dimensions (mm)			Cat. No.	DIN 6537 L (Long Type)			
øD (mm)	Shank			MK-HAK	Dimensions (mm)		
	ød	l ₃			L	l ₁	l ₂
8,1	10	40	MDS 081 MKHAK	□	103	49	61
8,2			MDS 082 MKHAK	□			
8,3			MDS 083 MKHAK	□			
8,4			MDS 084 MKHAK	□			
8,5			MDS 085 MKHAK	●			
8,6			MDS 086 MKHAK	□			
8,7			MDS 087 MKHAK	□			
8,8			MDS 088 MKHAK	□			
8,9			MDS 089 MKHAK	□			
9,0			MDS 090 MKHAK	●			
9,1	MDS 091 MKHAK	□					
9,2	MDS 092 MKHAK	□					
9,3	MDS 093 MKHAK	□					
9,4	MDS 094 MKHAK	□					
9,5	MDS 095 MKHAK	●	103	49	61		
9,6	MDS 096 MKHAK	□					
9,7	MDS 097 MKHAK	□					
9,8	MDS 098 MKHAK	□					
9,9	MDS 099 MKHAK	□					
10,0	MDS 100 MKHAK	●					
10,1	MDS 101 MKHAK	□					
10,2	MDS 102 MKHAK	●					
10,3	MDS 103 MKHAK	□					
10,4	MDS 104 MKHAK	□					
10,5	MDS 105 MKHAK	●					
10,6	MDS 106 MKHAK	□	118	56	71		
10,7	MDS 107 MKHAK	□					
10,8	MDS 108 MKHAK	□					
10,9	MDS 109 MKHAK	□					
11,0	MDS 110 MKHAK	●					
11,1	MDS 111 MKHAK	□					
11,2	MDS 112 MKHAK	□					
11,3	MDS 113 MKHAK	□					
11,4	MDS 114 MKHAK	□					
11,5	MDS 115 MKHAK	●					
11,6	MDS 116 MKHAK	□	118	56	71		
11,7	MDS 117 MKHAK	□					
11,8	MDS 118 MKHAK	□					
11,9	MDS 119 MKHAK	□					
12,0	MDS 120 MKHAK	●					

■ How to Order

Non-Stock Items will be required minimum order quantity for 6 pcs. Please specify the Cat. No. For example, if the diameter of the drill is 10,2 mm, please indicate as follow.

E.g., **MDS 102 MK-HAK**, (Grade) **ACW70**

Multi-Drill
Solid type

Drill diameter
10,2 mm

Cylindrical shank and spiral coolant holes to DIN6535 Form HAK

S : 3–3,5 D
M : –5 D



Flat MultiDrill MDF Type

Coated Carbide Drills for Spot Facing



General Features

The flat MultiDrill MDF type is a solid carbide drill that can be used for various purposes including high-efficiency spot facing and drilling in inclined and curved surfaces.



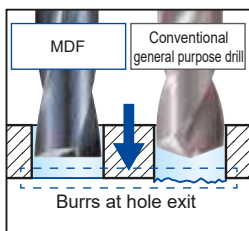
Advantages

- Can be used in a variety of drilling applications thanks to its point angle of 180°
Applicable to high-efficiency spot facing, drilling in non-horizontal surfaces such as inclined and cylindrical surfaces and interrupted drilling. It also reduces burrs at hole exits.
- Improved machining stability
Achieves high rigidity by employing RS THINNING, which ensures web thickness on the bottom face.
- Excellent chip evacuation performance
Achieves excellent chip evacuation thanks to its wide chip pocket and high-quality rake face shape.
- Excellent cutting edge strength
Achieves excellent cutting edge strength thanks to optimized cutting edge design.
- Expanded lineup of long type
An expanded lineup of long type drills with diameters between $\varnothing 3,0$ and $\varnothing 20,0$ mm that are capable of drilling with an overhang length up to $L/D = 10$.
- Expanded lineup of types with oil hole
Supports internal coolant. For deeper drilling (3D, 5D).

Improves drilling stability by ensuring web thickness.



Reduction of Burrs at Hole Exit



Work Material: 15CrMo5
Drill: MDF0500S2D ($\varnothing 5,0$ mm, 2D)
Cutting Conditions: $v_c = 65$ m/min, $f = 0,12$ mm/rev
 $H = 10$ mm, 150 holes, wet
Equipment: Vertical machining center

Reduces exit burrs by more than half compared to general-purpose drills

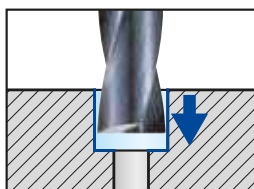


Burr height: 0,18 mm
Flat MultiDrill MDF type

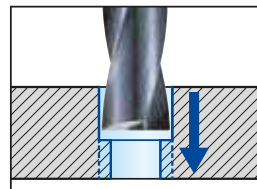


Burr height: 0,44 mm
Conventional general type

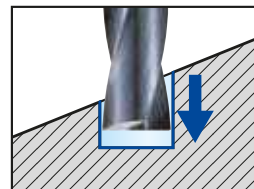
Applications



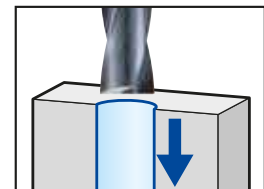
High-efficient spot facing



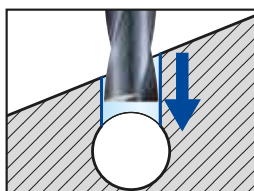
Hole expansion drilling



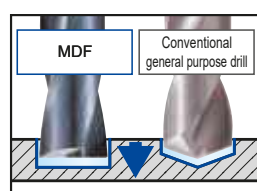
Drilling in non-horizontal surfaces (such as inclined and cylindrical)



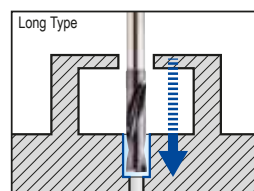
Interrupted drilling



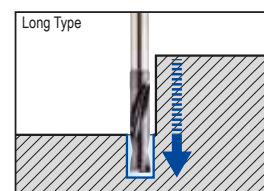
Cross drilling



Pre-tap hole drilling in thin sheets



Deep spot facing

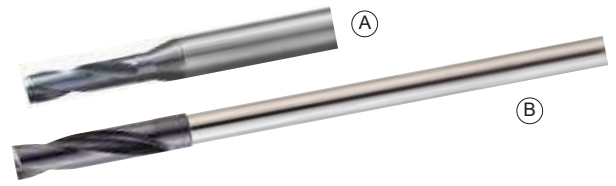


Avoiding interference with work materials

Long Type (L2D)

For flat base drilling in long overhang conditions, hole expansion, burr prevention.
For deep flat base drilling and to avoid interference with workpiece.
Drilling that uses the long shank type requires a guide hole of the same diameter or a centering hole larger than the tool diameter.

- Two types (A) $\varnothing DC < 6 \text{ mm}$ Stepped Shank Products
 (B) $\varnothing DC \geq 6 \text{ mm}$ Relief Shank Products

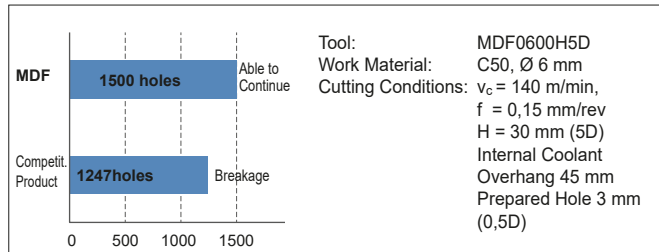


With Oil Hole (H3D Type / H5D Type)

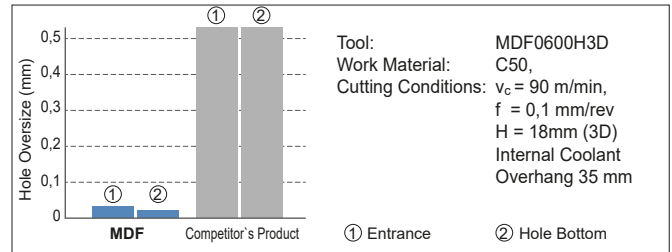
Support for internal coolant allows for deeper flat hole drilling.
Drilling that uses oil hole L/D = 5 requires a guide hole of the same diameter or a centering hole larger than the tool diameter.



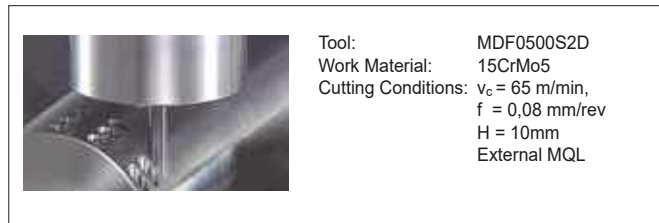
Deep Spot Facing



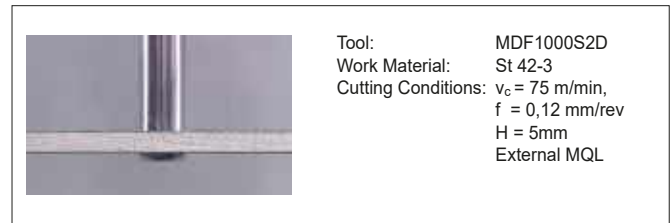
Long Overhang Spot Facing



Inclined Surface Drilling



Controlling Burrs and Chips when Withdrawn



Using Flat Drills, General-Purpose Drills and Endmills

Tool	Flat Drill MDF Type	General Purpose Drill GS/HGS Type	Endmill for Spot Facing GSX MILL Slot
Hole Bottom Shape	Convex Shape (180°) Nearly Flat (Concave Shape) 0-0,5°	Convex Shape (135°) Concave Shape	Concave Shape (2° - 3° concavity) Convex Shape (Cannot be used for prepared hole drilling.)
Drilling in horizontal surfaces	⊙ Feed rate approximately half of a general-purpose drill	⊙ Optimal	✗ Within 1D, limited to low feed rate Feed rate one-fifth or lower of a general-purpose drill
Drilling in non-horizontal surfaces	⊙ Optimal (within 2D is recommended)	✗ Unusable	⊙ Within 1D, limited to low feed rate Feed rate half or lower of a flat drill
Traversing	✗ Unusable	✗ Unusable	⊙ Optimal

Series

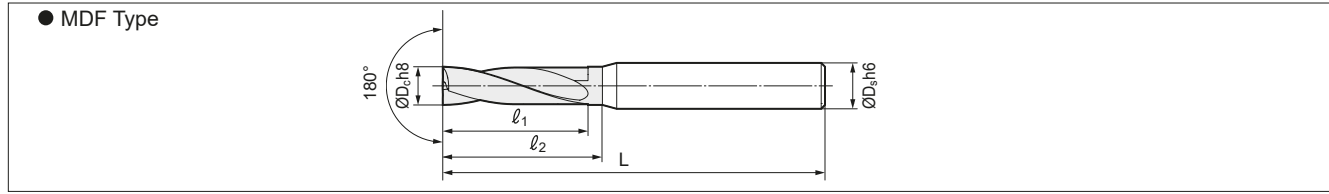
Application	Series	Diameter Range (mm)	Hole Depth (L/D)
External	MDF □□□□ S2D	$\varnothing 0,3 - 20,0$	$\leq 2,0$
	MDF □□□□ L2D	$\varnothing 0,3 - 20,0$	$\leq 2,0$
Internal	MDF □□□□ H3D	$\varnothing 0,3 - 16,0$	$\leq 3,0$
	MDF □□□□ H5D	$\varnothing 0,3 - 16,0$	$\leq 5,0$

Flat MultiDrill MDF Type

MDF S2D Type

External Coolant Supply (MDF S2D Type)

Carbon Steel	Alloy Steel	Tempered Steel	Hardened Steel	Stainless Steel	Cast Iron	Ductile Cast Iron	Aluminium Alloy
<0,28%	>0,28%	Steel	<45HRC	>45HRC	Steel	Cast Iron	Alloy



● Diameter Ø 0,3–7,0 mm

Diameter ØD _c (mm)	Shank ØD _s (mm)	Cat. No.	Stock	Dimensions (mm)		
				L	ℓ ₁	ℓ ₂
0,3*	3,0	MDF 0030S2D	○	40	1,0	1,3
0,4*		MDF 0040S2D	○		1,4	1,8
0,5	3,0	MDF 0050S2D	○	40	2,0	2,2
0,6		MDF 0060S2D	○		2,4	2,6
0,7		MDF 0070S2D	○		2,8	3,1
0,8		MDF 0080S2D	○		3,2	3,5
0,9		MDF 0090S2D	○		3,6	4,0
1,0	3,0	MDF 0100S2D	●	45	4,0	4,4
1,1		MDF 0110S2D	○		4,4	4,8
1,2		MDF 0120S2D	○		4,8	5,3
1,3		MDF 0130S2D	○		5,2	5,7
1,4		MDF 0140S2D	○		5,6	6,2
1,5		MDF 0150S2D	●		6,0	6,6
1,6	3,0	MDF 0160S2D	○	45	6,4	7,0
1,7		MDF 0170S2D	○		6,8	7,5
1,8		MDF 0180S2D	○		7,2	7,9
1,9		MDF 0190S2D	○		7,6	8,4
2,0	4,0	MDF 0200S2D	●	50	8,0	8,8
2,1		MDF 0210S2D	●		8,4	9,2
2,2		MDF 0220S2D	●		8,8	9,7
2,3		MDF 0230S2D	●		9,2	10,1
2,4		MDF 0240S2D	●		9,6	10,6
2,5		MDF 0250S2D	●		10,0	11,0
2,6		MDF 0260S2D	●		10,4	11,4
2,7	4,0	MDF 0270S2D	●	50	10,8	11,9
2,8		MDF 0280S2D	●		11,2	12,3
2,9		MDF 0290S2D	●		11,6	12,8
3,0	6,0	MDF 0300S2D	●	50	12,0	13,2
3,1		MDF 0310S2D	●		12,4	13,6
3,2		MDF 0320S2D	●		12,8	14,1
3,3		MDF 0330S2D	●		13,2	14,5
3,4		MDF 0340S2D	●		13,6	15,0
3,5		MDF 0350S2D	●		14,0	15,4
3,6		6,0	MDF 0360S2D		●	50
3,7	MDF 0370S2D		●	14,8	16,3	
3,8	MDF 0380S2D		●	15,2	16,7	
3,9	MDF 0390S2D		●	15,6	17,2	
4,0	MDF 0400S2D		●	16,0	17,6	
4,1	6,0	MDF 0410S2D	●	60	16,4	18,0
4,2		MDF 0420S2D	●		16,8	18,5
4,3		MDF 0430S2D	●		17,2	18,9
4,4		MDF 0440S2D	●		17,6	19,4
4,5		MDF 0450S2D	●		18,0	19,8
4,6	6,0	MDF 0460S2D	●	60	18,4	20,2
4,7		MDF 0470S2D	●		18,8	20,7
4,8		MDF 0480S2D	●		19,2	21,1
4,9		MDF 0490S2D	●		19,6	21,6
5,0		MDF 0500S2D	●		20,0	22,0
5,1	6,0	MDF 0510S2D	●	60	20,4	22,4
5,2		MDF 0520S2D	●		20,8	22,9
5,3		MDF 0530S2D	●		21,2	23,3
5,4		MDF 0540S2D	●		21,6	23,8
5,5		MDF 0550S2D	●		22,0	24,2
5,6	6,0	MDF 0560S2D	●	60	22,4	24,6
5,7		MDF 0570S2D	●		22,8	25,1
5,8		MDF 0580S2D	●		23,2	25,5
5,9		MDF 0590S2D	●		23,6	26,0
6,0		MDF 0600S2D	●		24,0	26,4
6,1	8,0	MDF 0610S2D	●	70	24,4	26,8
6,2		MDF 0620S2D	●		24,8	27,3
6,3		MDF 0630S2D	●		25,2	27,7
6,4		MDF 0640S2D	●		25,6	28,2
6,5		MDF 0650S2D	●		26,0	28,6
6,6	8,0	MDF 0660S2D	●	70	26,4	29,0
6,7		MDF 0670S2D	●		26,8	29,5
6,8		MDF 0680S2D	●		27,2	29,9
6,9		MDF 0690S2D	●		27,6	30,4
7,0		MDF 0700S2D	●		28,0	30,8

● Diameter Ø 7,1–20,0 mm

Diameter ØD _c (mm)	Shank ØD _s (mm)	Cat. No.	Stock	Dimensions (mm)		
				L	ℓ ₁	ℓ ₂
7,1	8,0	MDF 0710S2D	●	70	28,4	31,2
7,2		MDF 0720S2D	●		28,8	31,7
7,3		MDF 0730S2D	●		29,2	32,1
7,4		MDF 0740S2D	●		29,6	32,6
7,5		MDF 0750S2D	●		30,0	33,0
7,6		MDF 0760S2D	●		30,4	33,4
7,7	8,0	MDF 0770S2D	●	70	30,8	33,9
7,8		MDF 0780S2D	●		31,2	34,3
7,9		MDF 0790S2D	●		31,6	34,8
8,0		MDF 0800S2D	●		32,0	35,2
8,1	10,0	MDF 0810S2D	○	80	32,4	35,6
8,2		MDF 0820S2D	○		32,8	36,1
8,3		MDF 0830S2D	○		33,2	36,5
8,4		MDF 0840S2D	○		33,6	37,0
8,5		MDF 0850S2D	●		34,0	37,4
8,6		MDF 0860S2D	○		34,4	37,8
8,7		MDF 0870S2D	○		34,8	38,3
8,8		MDF 0880S2D	○		35,2	38,7
8,9	MDF 0890S2D	○	35,6	39,2		
9,0	MDF 0900S2D	●	36,0	39,6		
9,1	10,0	MDF 0910S2D	○	80	36,4	40,0
9,2		MDF 0920S2D	○		36,8	40,5
9,3		MDF 0930S2D	○		37,2	40,9
9,4		MDF 0940S2D	○		37,6	41,4
9,5		MDF 0950S2D	●		38,0	41,8
9,6		MDF 0960S2D	○		38,4	42,2
9,7		MDF 0970S2D	●		38,8	42,7
9,8		MDF 0980S2D	○		39,2	43,1
9,9		MDF 0990S2D	○		39,6	43,6
10,0		MDF 1000S2D	●		40,0	44,0
10,1	12,0	MDF 1010S2D	○	90	40,4	44,4
10,2		MDF 1020S2D	○		40,8	44,9
10,3		MDF 1030S2D	○		41,2	45,3
10,4		MDF 1040S2D	○		41,6	45,8
10,5		MDF 1050S2D	●		42,0	46,2
10,6	12,0	MDF 1060S2D	○	90	42,4	46,6
10,7		MDF 1070S2D	○		42,8	47,1
10,8		MDF 1080S2D	○		43,2	47,5
10,9		MDF 1090S2D	○		43,6	48,0
11,0		MDF 1100S2D	●		44,0	48,4
11,1	12,0	MDF 1110S2D	○	90	44,4	48,8
11,2		MDF 1120S2D	○		44,8	49,3
11,3		MDF 1130S2D	○		45,2	49,7
11,4		MDF 1140S2D	○		45,6	50,2
11,5		MDF 1150S2D	●		46,0	50,6
11,6	12,0	MDF 1160S2D	○	90	46,4	51,0
11,7		MDF 1170S2D	○		46,8	51,5
11,8		MDF 1180S2D	●		47,2	51,9
11,9		MDF 1190S2D	○		47,6	52,4
12,0		MDF 1200S2D	●		48,0	52,8
12,5	14,0	MDF 1250S2D	○	100	50,0	54,0
13,0		MDF 1300S2D	○		52,0	56,8
13,5		MDF 1350S2D	○		54,0	59,6
14,0	14,0	MDF 1400S2D	○	110	56,0	62,4
14,5		MDF 1450S2D	○		58,0	65,2
15,0	16,0	MDF 1500S2D	○	110	60,0	68,0
15,5		MDF 1550S2D	○		62,0	70,8
16,0		MDF 1600S2D	○		64,0	73,6
16,5	18,0	MDF 1650S2D	○	125	66,0	72,4
17,0		MDF 1700S2D	○		68,0	75,2
17,5		MDF 1750S2D	○		70,0	78,0
18,0		MDF 1800S2D	○		72,0	80,8
18,5	20,0	MDF 1850S2D	○	140	74,0	83,6
19,0		MDF 1900S2D	○		76,0	86,4
19,5		MDF 1950S2D	○		78,0	89,2
20,0		MDF 2000S2D	○		80,0	92,0

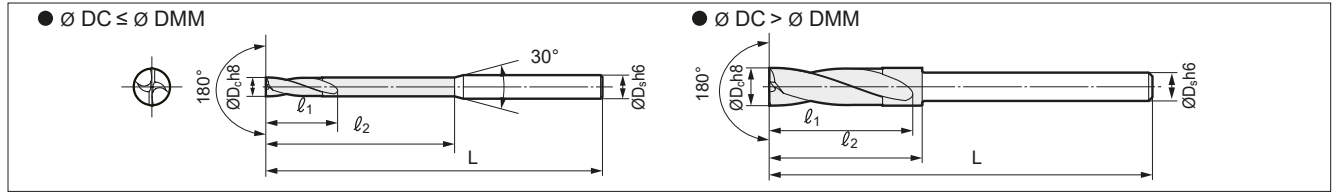
*RS Thinning is used for ØD_c ≥ 0,5mm.

Grade: ACF75

Carbon Steel	Alloy Steel	Tempered Steel	Hardened Steel	Stainless Steel	Cast Iron	Ductile Cast Iron	Aluminum Alloy
<0.28%	>0.28%	Steel	<45HRC	>45HRC	Steel	Iron	Alloy
○	○	○	○	○	○	○	○



External Coolant Supply (L2D Type, Long Type)



● Diameter \varnothing 3,0–9,5 mm

Diameter $\varnothing D_c$ (mm)	Shank $\varnothing D_s$ (mm)	Cat. No.	Stock	Dimensions (mm)				
				L	l_1	l_2		
3,0	6,0	MDF 0300L2D	○	100	13,5	30,0		
3,1		0310L2D	○		14,0	31,0		
3,2		0320L2D	○		14,4	32,0		
3,3		0330L2D	○		14,9	33,0		
3,4		0340L2D	○		15,3	34,0		
3,5		0350L2D	○		15,8	35,0		
3,6	6,0	MDF 0360L2D	○	100	16,2	36,0		
3,7		0370L2D	○		16,7	37,0		
3,8		0380L2D	○		17,1	38,0		
3,9		0390L2D	○		17,6	39,0		
4,0		0400L2D	○		18,0	40,0		
4,1		6,0	MDF 0410L2D		○	100	18,5	41,0
4,2	0420L2D		○	18,9	42,0			
4,3	0430L2D		○	19,4	43,0			
4,4	0440L2D		○	19,8	44,0			
4,5	0450L2D		○	20,3	45,0			
4,6	6,0		MDF 0460L2D	○	100		20,7	46,0
4,7		0470L2D	○	21,2		47,0		
4,8		0480L2D	○	21,6		48,0		
4,9		0490L2D	○	22,1		49,0		
5,0		0500L2D	○	22,5		50,0		
5,1		6,0	MDF 0510L2D	○		110	23,0	51,0
5,2	0520L2D		○	23,4	52,0			
5,3	0530L2D		○	23,9	53,0			
5,4	0540L2D		○	24,3	54,0			
5,5	0550L2D		○	24,8	55,0			
5,6	6,0		MDF 0560L2D	○	110		25,2	56,0
5,7		0570L2D	○	25,7		57,0		
5,8		0580L2D	○	26,1		58,0		
5,9		0590L2D	○	26,6		59,0		
6,0		MDF 0600L2DS5	○	110		27,0	30,0	
6,0		MDF 0600L2D	○	110		27,0	60,0	
6,1	6,0	MDF 0610L2D	○	120	27,5	30,5		
6,2		0620L2D	○		27,9	30,9		
6,3		0630L2D	○		28,4	31,4		
6,4		0640L2D	○		28,8	31,8		
6,5		0650L2D	○		29,3	32,3		
6,6		6,0	MDF 0660L2D		○	120	29,7	32,7
6,7	0670L2D		○	30,2	33,2			
6,8	0680L2D		○	30,6	33,6			
6,9	0690L2D		○	31,1	34,1			
7,0	0700L2D		○	31,5	34,5			
7,1	6,0		MDF 0710L2D	○	130		32,0	35,0
7,2		0720L2D	○	32,4		35,4		
7,3		0730L2D	○	32,9		35,9		
7,4		0740L2D	○	33,3		36,3		
7,5		0750L2D	○	33,8		36,8		
7,6		6,0	MDF 0760L2D	○		130	34,2	37,2
7,7	0770L2D		○	34,7	37,7			
7,8	0780L2D		○	35,1	38,1			
7,9	0790L2D		○	35,6	38,6			
8,0	6,0		MDF 0800L2DS6	○	130		36,0	39,0
8,0			MDF 0800L2D	○	130		36,0	80,0
8,1	8,0	MDF 0810L2D	○	140	36,5	39,5		
8,2		0820L2D	○		36,9	39,9		
8,3		0830L2D	○		37,4	40,4		
8,4		0840L2D	○		37,8	40,8		
8,5		0850L2D	○		38,3	41,3		
8,6		8,0	MDF 0860L2D		○	140	38,7	41,7
8,7	0870L2D		○	39,2	42,2			
8,8	0880L2D		○	39,6	42,6			
8,9	0890L2D		○	40,1	43,1			
9,0	0900L2D		○	40,5	43,5			
9,1	8,0		MDF 0910L2D	○	150		41,0	41,0
9,2		0920L2D	○	41,4		41,4		
9,3		0930L2D	○	41,9		41,9		
9,4		0940L2D	○	42,3		42,3		
9,5		0950L2D	○	42,8		42,8		

● Diameter \varnothing 9,6–20,0 mm

Diameter $\varnothing D_c$ (mm)	Shank $\varnothing D_s$ (mm)	Cat. No.	Stock	Dimensions (mm)			
				L	l_1	l_2	
9,6	8,0	MDF 0960L2D	○	150	43,2	46,2	
9,7		0970L2D	○		43,7	46,7	
9,8		0980L2D	○		44,1	47,1	
9,9		0990L2D	○		44,6	47,6	
10,0		MDF 1000L2DS8	○		150	45,0	48,0
10,0		MDF 1000L2D	○		150	45,0	100,0
10,1	10,0	MDF 1010L2D	○	160	45,5	48,5	
10,2		1020L2D	○		45,9	48,9	
10,3		1030L2D	○		46,4	49,4	
10,4		1040L2D	○		46,8	49,8	
10,5		1050L2D	○		47,3	50,3	
10,6		10,0	MDF 1060L2D		○	160	47,7
10,7	1070L2D		○	48,2	51,2		
10,8	1080L2D		○	48,6	51,6		
10,9	1090L2D		○	49,1	52,1		
11,0	1100L2D		○	49,5	52,5		
11,1	10,0		MDF 1110L2D	○	170		50,0
11,2		1120L2D	○	50,4		53,4	
11,3		1130L2D	○	50,9		53,9	
11,4		1140L2D	○	51,3		54,3	
11,5		1150L2D	○	51,8		54,8	
11,6		10,0	MDF 1160L2D	○		170	52,2
11,7	1170L2D		○	52,7	55,7		
11,8	1180L2D		○	53,1	56,1		
11,9	1190L2D		○	53,6	56,6		
12,0	MDF 1200L2DS10		○	170	54,0		57,0
12,0	MDF 1200L2D		○	170	54,0		120,0
12,5	12,0	MDF 1250L2D	○	180	56,3	59,3	
13,0		1300L2D	○		58,5	61,5	
13,5		1350L2D	○		190	60,8	63,8
14,0		MDF 1400L2DS12	○		190	63,0	66,0
14,0		MDF 1400L2D	○		190	63,0	140,0
14,5		14,0	MDF 1450L2D		○	200	65,3
15,0	1500L2D		○	67,5	70,5		
15,5	1550L2D		○	210	69,8		72,8
16,0	MDF 1600L2DS14		○	210	72,0		75,0
16,0	MDF 1600L2D		○	210	72,0		160,0
16,5	16,0		MDF 1650L2D	○	220		74,3
17,0		1700L2D	○	76,5		79,5	
17,5		1750L2D	○	230		78,8	81,8
18,0		MDF 1800L2DS16	○	230		81,0	84,0
18,0		MDF 1800L2D	○	230		81,0	180,0
18,5		18,0	MDF 1850L2D	○		240	83,3
19,0	1900L2D		○	85,5	88,5		
19,5	1950L2D		○	250	87,8		90,8
20,0	MDF 2000L2DS18		○	250	90,0		93,0
20,0	MDF 2000L2D		○	250	90,0		200,0

Grade: ACF75

Drilling that uses this tool requires a guide hole of the same diameter or a centering hole larger than the tool diameter.

Recommended Cutting Conditions

MDF S2D Type

- The recommended hole depth is 2 x DC. The depth shall be the depth from the highest point of the hole when drilling inclined surfaces.
- The recommended cutting conditions are those for drilling in flat horizontal surfaces.
- Adjust the feed rate according to the inclination angle when drilling in an inclined surface.
 - Set the feed rate at ≤ 70% when the inclination angle is ≤ 30°
 - Set the feed rate at ≤ 50% when the inclination angle is > 30°
- This product is a drilling tool. Do not use it for traversing or helical milling

(v_c: Cutting Speed m/min f: Feed Rate mm/rev)

Drill Diam. ØDC (mm)	Cutting Conditions	Soft Steel / General Steel (-250 HB)	Alloy Steel (-300 HB)	Hardened Steel (-50 HRC)	Stainless Steel (-200 HB)	Gray Cast Iron FC250	Ductile Cast Iron	Aluminium Alloy
-Ø 0,5	v _c	30-40-50	30-35-40	15-20-25	15-20-25	30-40-50	20-30-40	60-80-100
	f	0,004-0,005-0,006	0,004-0,005-0,006	0,001-0,002-0,003	0,003-0,004-0,005	0,004-0,005-0,006	0,001-0,003-0,005	0,003-0,005-0,007
-Ø 1,0	v _c	45-55-65	35-45-55	20-30-40	20-25-30	45-55-65	30-40-50	80-100-120
	f	0,01-0,03-0,05	0,01-0,03-0,05	0,002-0,006-0,01	0,005-0,007-0,01	0,01-0,03-0,05	0,005-0,01-0,015	0,01-0,02-0,03
-Ø 2,0	v _c	50-60-70	40-50-60	20-30-40	20-30-40	50-60-70	45-55-65	90-110-130
	f	0,02-0,04-0,06	0,02-0,04-0,06	0,01-0,018-0,025	0,01-0,015-0,02	0,02-0,04-0,06	0,015-0,03-0,045	0,03-0,05-0,07
-Ø 4,0	v _c	60-75-90	50-65-80	20-30-40	20-30-40	60-75-90	55-65-75	90-110-130
	f	0,06-0,08-0,10	0,05-0,08-0,10	0,01-0,02-0,03	0,01-0,02-0,03	0,06-0,08-0,10	0,04-0,06-0,08	0,06-0,08-0,10
-Ø 6,0	v _c	60-75-90	50-65-80	20-30-40	20-30-50	60-75-90	60-70-80	90-110-130
	f	0,05-0,10-0,15	0,05-0,10-0,15	0,04-0,06-0,08	0,03-0,04-0,05	0,05-0,10-0,15	0,06-0,09-0,12	0,05-0,10-0,15
-Ø 8,0	v _c	60-75-90	50-65-80	20-30-40	20-30-50	60-75-90	60-70-80	90-110-130
	f	0,10-0,15-0,20	0,10-0,15-0,20	0,06-0,08-0,10	0,04-0,06-0,08	0,10-0,15-0,20	0,10-0,12-0,15	0,10-0,15-0,20
-Ø 10,0	v _c	60-75-90	50-65-80	20-30-40	20-30-50	60-75-90	60-70-80	90-110-130
	f	0,12-0,17-0,22	0,12-0,17-0,22	0,08-0,10-0,12	0,06-0,08-0,10	0,12-0,17-0,22	0,12-0,15-0,18	0,12-0,17-0,22
-Ø 12,0	v _c	60-75-90	50-65-80	20-30-40	20-30-50	60-75-90	60-70-80	90-110-130
	f	0,15-0,20-0,25	0,15-0,20-0,25	0,12-0,15-0,18	0,08-0,10-0,12	0,15-0,20-0,25	0,15-0,18-0,20	0,15-0,20-0,25
-Ø 16,0	v _c	60-75-90	50-65-80	20-30-40	20-30-50	60-75-90	60-70-80	90-110-130
	f	0,20-0,25-0,30	0,20-0,25-0,30	0,14-0,17-0,20	0,10-0,15-0,20	0,17-0,22-0,27	0,15-0,20-0,25	0,20-0,25-0,30
-Ø 20,0	v _c	60-75-90	50-65-80	20-30-40	20-30-50	60-75-90	60-70-80	90-110-130
	f	0,25-0,30-0,35	0,25-0,30-0,35	0,16-0,19-0,22	0,15-0,20-0,25	0,25-0,30-0,35	0,20-0,25-0,30	0,25-0,30-0,35

Min. - Optimum - Max.

MDF L2D Type, Long Type

- Drilling that uses this tool requires a guide hole of the same diameter.
- The cutting conditions are the recommended conditions with a guide hole.
- The recommended hole depth is 5 x DC. The depth is measured from the highest point of the hole on drilling in inclined surfaces.
- This product is a drilling tool. Do not use it for traversing or helical milling.

(v_c: Cutting Speed m/min f: Feed Rate mm/rev)

Drill Diam. ØDC (mm)	Cutting Conditions	Soft Steel / General Steel (-250 HB)	Alloy Steel (-300 HB)	Hardened Steel (-50 HRC)	Stainless Steel (-200 HB)	Gray Cast Iron FC250	Ductile Cast Iron	Aluminium Alloy
-Ø 4,0	v _c	60-80-100	50-70-90	20-30-40	20-30-40	70-85-100	65-75-85	90-120-150
	f	0,06-0,08-0,10	0,05-0,08-0,10	0,01-0,02-0,03	0,01-0,02-0,03	0,06-0,08-0,10	0,04-0,06-0,08	0,06-0,08-0,10
-Ø 6,0	v _c	60-80-100	50-70-90	20-30-40	20-30-50	70-85-100	65-75-85	90-120-150
	f	0,05-0,10-0,15	0,05-0,10-0,15	0,04-0,06-0,08	0,03-0,04-0,05	0,05-0,10-0,15	0,06-0,09-0,12	0,05-0,10-0,15
-Ø 8,0	v _c	60-80-100	50-70-90	20-30-40	20-30-50	70-85-100	65-75-85	90-120-150
	f	0,10-0,15-0,20	0,10-0,15-0,20	0,06-0,08-0,10	0,04-0,06-0,08	0,10-0,15-0,20	0,10-0,12-0,15	0,10-0,15-0,20
-Ø 10,0	v _c	60-80-100	50-70-90	20-30-40	20-30-50	70-85-100	65-75-85	90-120-150
	f	0,15-0,20-0,25	0,15-0,20-0,25	0,08-0,10-0,12	0,06-0,08-0,10	0,15-0,20-0,25	0,12-0,15-0,18	0,15-0,20-0,25
-Ø 12,0	v _c	60-80-100	50-70-90	20-30-40	20-30-50	70-85-100	65-75-85	90-120-150
	f	0,20-0,25-0,30	0,20-0,25-0,30	0,12-0,15-0,18	0,08-0,10-0,12	0,17-0,22-0,27	0,15-0,20-0,25	0,20-0,25-0,30
-Ø 16,0	v _c	60-80-100	50-70-90	20-30-40	20-30-50	70-85-100	65-75-85	90-120-150
	f	0,20-0,25-0,30	0,20-0,25-0,30	0,14-0,17-0,20	0,10-0,15-0,20	0,20-0,25-0,30	0,20-0,25-0,30	0,25-0,30-0,35
-Ø 20,0	v _c	60-80-100	50-70-90	20-30-40	20-30-50	70-85-100	65-75-85	90-120-150
	f	0,25-0,30-0,35	0,25-0,30-0,35	0,16-0,19-0,22	0,15-0,20-0,25	0,30-0,35-0,40	0,25-0,30-0,35	0,35-0,40-0,45

Min. - Optimum - Max.

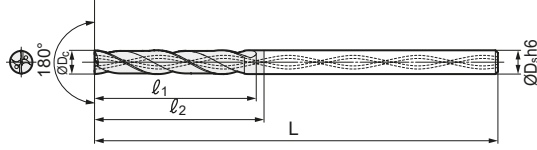
Flat MultiDrill MDF Type

Internal Coolant Supply (MDF H3D/H5D Type)

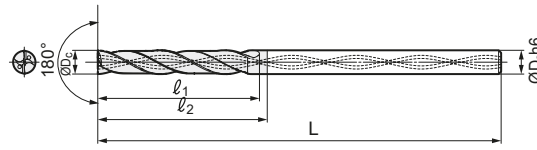
Carbon Steel	Alloy Steel	Tempered Steel	Hardened Steel	Stainless Steel	Cast Iron	Ductile Cast Iron	Aluminum Alloy
<0.28%	>0.28%	Steel	<45HRC	>45HRC	Steel	Cast Iron	Alloy



● MDF Type 3D Single Margin



● MDF Type 5D Double Margin



● Diameter Ø 3,0–6,0 mm

Diameter ØDc (mm)	Shank ØDs (mm)	Hole Depth (L/D)	Cat. No.	Stock	Dimensions (mm)		
					L	l ₁	l ₂
3,0	3	3	MDF 0300H3D	●	68	13,5	16,5
		5	0300H5D	●	78	20,1	23,1
3,1	4	3	MDF 0310H3D	○	72	14,0	17,0
		5	0310H5D	○	86	20,8	23,8
3,2	4	3	0320H3D	○	72	14,4	17,4
		5	0320H5D	○	86	21,4	24,4
3,3	4	3	0330H3D	○	72	14,9	17,9
		5	0330H5D	○	86	22,1	25,1
3,4	4	3	0340H3D	○	72	15,3	18,3
		5	0340H5D	○	86	22,8	25,8
3,5	4	3	0350H3D	●	72	15,8	18,8
		5	0350H5D	●	86	23,5	26,5
3,6	4	3	MDF 0360H3D	○	72	16,2	19,2
		5	0360H5D	○	86	24,1	27,1
3,7	4	3	0370H3D	○	72	16,7	19,7
		5	0370H5D	○	86	24,8	27,8
3,8	4	3	0380H3D	○	72	17,1	20,1
		5	0380H5D	○	86	25,5	28,5
3,9	4	3	0390H3D	○	72	17,6	20,6
		5	0390H5D	○	86	26,1	29,1
4,0	4	3	0400H3D	●	72	18,0	21,0
		5	0400H5D	●	86	26,8	29,8
4,1	5	3	MDF 0410H3D	○	80	18,5	21,5
		5	0410H5D	○	98	27,5	30,5
4,2	5	3	0420H3D	○	80	18,9	21,9
		5	0420H5D	○	98	28,1	31,1
4,3	5	3	0430H3D	○	80	19,4	22,4
		5	0430H5D	○	98	28,8	31,8
4,4	5	3	0440H3D	○	80	19,8	22,8
		5	0440H5D	○	98	29,5	32,5
4,5	5	3	0450H3D	●	80	20,3	23,3
		5	0450H5D	●	98	30,2	33,2
4,6	5	3	MDF 0460H3D	○	80	20,7	23,7
		5	0460H5D	○	98	30,8	33,8
4,7	5	3	0470H3D	○	80	21,2	24,2
		5	0470H5D	○	98	31,5	34,5
4,8	5	3	0480H3D	○	80	21,6	24,6
		5	0480H5D	○	98	32,2	35,2
4,9	5	3	0490H3D	○	80	22,1	25,1
		5	0490H5D	○	98	32,8	35,8
5,0	5	3	0500H3D	●	80	22,5	25,5
		5	0500H5D	●	98	33,5	36,5
5,1	6	3	MDF 0510H3D	○	82	23,0	26,0
		5	0510H5D	○	100	34,2	37,2
5,2	6	3	0520H3D	○	82	23,4	26,4
		5	0520H5D	○	100	34,8	37,8
5,3	6	3	0530H3D	○	82	23,9	26,9
		5	0530H5D	○	100	35,5	38,5
5,4	6	3	0540H3D	○	82	24,3	27,3
		5	0540H5D	○	100	36,2	39,2
5,5	6	3	0550H3D	●	82	24,8	27,8
		5	0550H5D	●	100	36,9	39,9
5,6	6	3	MDF 0560H3D	○	82	25,2	28,2
		5	0560H5D	○	100	37,5	40,5
5,7	6	3	0570H3D	○	82	25,7	28,7
		5	0570H5D	○	100	38,2	41,2
5,8	6	3	0580H3D	○	82	26,1	29,1
		5	0580H5D	○	100	38,9	41,9
5,9	6	3	0590H3D	○	82	26,6	29,6
		5	0590H5D	○	100	39,5	42,5
6,0	6	3	0600H3D	●	82	27,0	30,0
		5	0600H5D	●	100	40,2	43,2

● Diameter Ø 6,1–9,0 mm

Diameter ØDc (mm)	Shank ØDs (mm)	Hole Depth (L/D)	Cat. No.	Stock	Dimensions (mm)		
					L	l ₁	l ₂
6,1	7	3	MDF 0610H3D	○	88	27,5	30,5
		5	0610H5D	○	109	40,9	43,9
6,2	7	3	0620H3D	○	88	27,9	30,9
		5	0620H5D	○	109	41,5	44,5
6,3	7	3	0630H3D	○	88	28,4	31,4
		5	0630H5D	○	109	42,2	45,2
6,4	7	3	0640H3D	○	88	28,8	31,8
		5	0640H5D	○	109	42,9	45,9
6,5	7	3	0650H3D	●	88	29,3	32,3
		5	0650H5D	●	109	43,6	46,6
6,6	7	3	MDF 0660H3D	○	88	29,7	32,7
		5	0660H5D	○	109	44,2	47,2
6,7	7	3	0670H3D	○	88	30,2	33,2
		5	0670H5D	○	109	44,9	47,9
6,8	7	3	0680H3D	○	88	30,6	33,6
		5	0680H5D	○	109	45,6	48,6
6,9	7	3	0690H3D	○	88	31,1	34,1
		5	0690H5D	○	109	46,2	49,2
7,0	7	3	0700H3D	●	88	31,5	34,5
		5	0700H5D	●	109	46,9	49,9
7,1	8	3	MDF 0710H3D	○	94	32,0	35,0
		5	0710H5D	○	118	47,6	50,6
7,2	8	3	0720H3D	○	94	32,4	35,4
		5	0720H5D	○	118	48,2	51,2
7,3	8	3	0730H3D	○	94	32,9	35,9
		5	0730H5D	○	118	48,9	51,9
7,4	8	3	0740H3D	○	94	33,3	36,3
		5	0740H5D	○	118	49,6	52,6
7,5	8	3	0750H3D	●	94	33,8	36,8
		5	0750H5D	●	118	50,3	53,3
7,6	8	3	MDF 0760H3D	○	94	34,2	37,2
		5	0760H5D	○	118	50,9	53,9
7,7	8	3	0770H3D	○	94	34,7	37,7
		5	0770H5D	○	118	51,6	54,6
7,8	8	3	0780H3D	○	94	35,1	38,1
		5	0780H5D	○	118	52,3	55,3
7,9	8	3	0790H3D	○	94	35,6	38,6
		5	0790H5D	○	118	52,9	55,9
8,0	8	3	0800H3D	●	94	36,0	39,0
		5	0800H5D	●	118	53,6	56,6
8,1	9	3	MDF 0810H3D	○	100	36,5	39,5
		5	0810H5D	○	127	54,3	57,3
8,2	9	3	0820H3D	○	100	36,9	39,9
		5	0820H5D	○	127	54,9	57,9
8,3	9	3	0830H3D	○	100	37,4	40,4
		5	0830H5D	○	127	55,6	58,6
8,4	9	3	0840H3D	○	100	37,8	40,8
		5	0840H5D	○	127	56,3	59,3
8,5	9	3	0850H3D	●	100	38,3	41,3
		5	0850H5D	●	127	57,0	60,0
8,6	9	3	MDF 0860H3D	○	100	38,7	41,7
		5	0860H5D	○	127	57,6	60,6
8,7	9	3	0870H3D	○	100	39,2	42,2
		5	0870H5D	○	127	58,3	61,3
8,8	9	3	0880H3D	○	100	39,6	42,6
		5	0880H5D	○	127	59,0	62,0
8,9	9	3	0890H3D	○	100	40,1	43,1
		5	0890H5D	○	127	59,6	62,6
9,0	9	3	0900H3D	●	100	40,5	43,5
		5	0900H5D	●	127	60,3	63,3

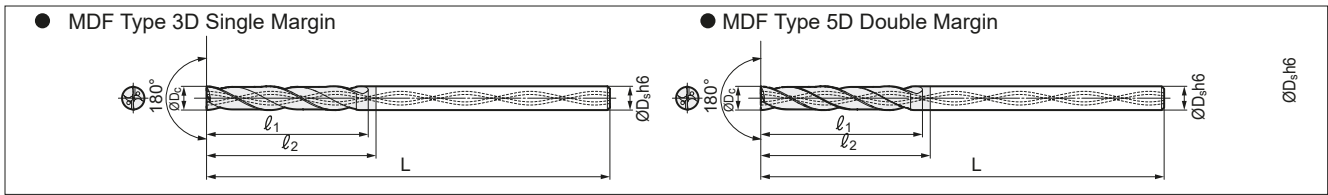
Grade: ACF75

Flat MultiDrill MDF Type

MDF Type with Oil Hole - H3D / H5D

Internal Coolant Supply (MDF H3D/H5D Type)

Carbon Steel	Alloy Steel	Tempered Steel	Hardened Steel	Stainless Steel	Cast Iron	Ductile Cast Iron	Aluminium Alloy
<0,28%	>0,28%	<45HRC	>45HRC				



● Diameter Ø 9,1–12,0 mm

Diameter ØDc (mm)	Shank ØDs (mm)	Hole Depth (L/D)	Cat. No.	Stock	Dimensions (mm)		
					L	l ₁	l ₂
9,1	10	3	MDF 0910H3D	○	106	41,0	44,0
		5	0910H5D	○	136	61,0	64,0
9,2	10	3	0920H3D	○	106	41,4	44,4
		5	0920H5D	○	136	61,6	64,6
9,3	10	3	0930H3D	○	106	41,9	44,9
		5	0930H5D	○	136	62,3	65,3
9,4	10	3	0940H3D	○	106	42,3	45,3
		5	0940H5D	○	136	63,0	66,0
9,5	10	3	0950H3D	●	106	42,8	45,8
		5	0950H5D	●	136	63,7	66,7
9,6	10	3	MDF 0960H3D	○	106	43,2	46,2
		5	0960H5D	○	136	64,3	67,3
9,7	10	3	0970H3D	○	106	43,7	46,7
		5	0970H5D	○	136	65,0	68,0
9,8	10	3	0980H3D	○	106	44,1	47,1
		5	0980H5D	○	136	65,7	68,7
9,9	10	3	0990H3D	○	106	44,6	47,6
		5	0990H5D	○	136	66,3	69,3
10,0	10	3	1000H3D	●	106	45,0	48,0
		5	1000H5D	●	136	67,0	70,0
10,1	11	3	MDF 1010H3D	○	116	45,5	48,5
		5	1010H5D	○	149	67,7	70,7
10,2	11	3	1020H3D	○	116	45,9	48,9
		5	1020H5D	○	149	68,3	71,3
10,3	11	3	1030H3D	○	116	46,4	49,4
		5	1030H5D	○	149	69,0	72,0
10,4	11	3	1040H3D	○	116	46,8	49,8
		5	1040H5D	○	149	69,7	72,7
10,5	11	3	1050H3D	●	116	47,3	50,3
		5	1050H5D	●	149	70,4	73,4
10,6	11	3	MDF 1060H3D	○	116	47,7	50,7
		5	1060H5D	○	149	71,0	74,0
10,7	11	3	1070H3D	○	116	48,2	51,2
		5	1070H5D	○	149	71,7	74,7
10,8	11	3	1080H3D	○	116	48,6	51,6
		5	1080H5D	○	149	72,4	75,4
10,9	11	3	1090H3D	○	116	49,1	52,1
		5	1090H5D	○	149	73,0	76,0
11,0	11	3	1100H3D	●	116	49,5	52,5
		5	1100H5D	●	149	73,7	76,7
11,1	12	3	MDF 1110H3D	○	122	50,0	53,0
		5	1110H5D	○	158	74,4	77,4
11,2	12	3	1120H3D	○	122	50,4	53,4
		5	1120H5D	○	158	75,0	78,0
11,3	12	3	1130H3D	○	122	50,9	53,9
		5	1130H5D	○	158	75,7	78,7
11,4	12	3	1140H3D	○	122	51,3	54,3
		5	1140H5D	○	158	76,4	79,4
11,5	12	3	1150H3D	●	122	51,8	54,8
		5	1150H5D	●	158	77,1	80,1
11,6	12	3	MDF 1160H3D	○	122	52,2	55,2
		5	1160H5D	○	158	77,7	80,7
11,7	12	3	1170H3D	○	122	52,7	55,7
		5	1170H5D	○	158	78,4	81,4
11,8	12	3	1180H3D	○	122	53,1	56,1
		5	1180H5D	○	158	79,1	82,1
11,9	12	3	1190H3D	○	122	53,6	56,6
		5	1190H5D	○	158	79,7	82,7
12,0	12	3	1200H3D	●	122	54,0	57,0
		5	1200H5D	●	158	80,4	83,4

● Diameter Ø 12,5–16,0 mm

Diameter ØDc (mm)	Shank ØDs (mm)	Hole Depth (L/D)	Cat. No.	Stock	Dimensions (mm)		
					L	l ₁	l ₂
12,5	13	3	MDF 1250H3D	○	128	56,3	59,3
		5	1250H5D	○	167	83,8	86,8
13,0	13	3	1300H3D	○	128	58,5	61,5
		5	1300H5D	○	167	87,1	90,1
13,5	14	3	MDF 1350H3D	○	134	60,8	63,8
		5	1350H5D	○	176	90,5	93,5
14,0	14	3	1400H3D	○	134	63,0	66,0
		5	1400H5D	○	176	93,8	96,8
14,5	15	3	MDF 1450H3D	○	140	65,3	68,3
		5	1450H5D	○	185	97,2	100,2
15,0	15	3	1500H3D	○	140	67,5	70,5
		5	1500H5D	○	185	100,5	103,5
15,5	16	3	MDF 1550H3D	○	146	69,8	72,8
		5	1550H5D	○	194	103,9	106,9
16,0	16	3	1600H3D	○	146	72,0	75,0
		5	1600H5D	○	194	107,2	110,2

Grade: ACF75

Recommended Cutting Conditions

● MDF H3D Type with Oil Hole

1. The recommended hole depth is 3 x DC. The depth is measured from the highest point of the hole on drilling in inclined surfaces.
2. The recommended cutting conditions are those for drilling on flat horizontal surfaces.
3. Adjust the feed rate according to the inclination angle when drilling in an inclined surface.
 - 3.1 Set the feed rate at ≤ 70 % when the inclination angle is ≤ 30°.
 - 3.2 Set the feed rate at ≤ 50 % when the inclination angle is > 30°.
4. This product is a drilling tool. Do not use it for traversing or helical milling.
5. A guide hole of the same diameter is recommended when drilling stainless steel.

(vc: Cutting Speed m/min f: Feed Rate mm/rev)

Drill Diam. ØDC(mm)	Cutting Conditions	Soft Steel / General Steel (~250 HB)	Alloy Steel (~300 HB)	Hardened Steel (~50 HRC)	Stainless Steel (~200 HB)	Gray Cast Iron FC250	Ductile Cast Iron	Aluminium Alloy
-Ø 4,0	vc	70-85-100	60-75-90	30-40-50	25-35-45	70-85-100	65-75-85	90-120-150
	f	0,06-0,08-0,10	0,05-0,08-0,10	0,01-0,02-0,03	0,01-0,02-0,03	0,06-0,08-0,10	0,04-0,06-0,08	0,06-0,08-0,10
-Ø 6,0	vc	70-85-100	60-75-90	30-40-50	25-35-45	70-85-100	70-80-90	90-120-150
	f	0,05-0,10-0,15	0,05-0,10-0,15	0,04-0,06-0,08	0,03-0,04-0,05	0,05-0,10-0,15	0,06-0,09-0,12	0,05-0,10-0,15
-Ø 8,0	vc	70-85-100	60-75-90	30-40-50	25-35-45	70-85-100	70-80-90	90-120-150
	f	0,10-0,15-0,20	0,10-0,15-0,20	0,06-0,08-0,10	0,04-0,06-0,08	0,10-0,15-0,20	0,10-0,12-0,15	0,10-0,15-0,20
-Ø 10,0	vc	70-85-100	60-75-90	30-40-50	25-35-45	70-85-100	70-80-90	90-120-150
	f	0,12-0,17-0,22	0,12-0,17-0,22	0,08-0,10-0,12	0,06-0,08-0,10	0,12-0,17-0,22	0,12-0,15-0,18	0,15-0,20-0,25
-Ø 12,0	vc	70-85-100	60-75-90	30-40-50	25-35-45	70-85-100	70-80-90	90-120-150
	f	0,15-0,20-0,25	0,15-0,20-0,25	0,12-0,15-0,18	0,08-0,10-0,12	0,15-0,20-0,25	0,15-0,18-0,20	0,20-0,25-0,30
-Ø 16,0	vc	70-85-100	60-75-90	30-40-50	25-35-45	70-85-100	70-80-90	90-120-150
	f	0,15-0,20-0,25	0,15-0,20-0,25	0,12-0,15-0,18	0,10-0,15-0,20	0,17-0,22-0,27	0,15-0,20-0,25	0,25-0,30-0,40

Min. - Optimum - Max.

● MDF H5D Type with Oil Hole

1. Drilling that uses this tool requires a guide hole of the same diameter.
2. The cutting conditions are the recommended conditions with a guide hole.
3. The recommended hole depth is 5 x DC. The depth is measured from the highest point of the hole on drilling in inclined surfaces.
4. This product is a drilling tool. Do not use it for traversing or helical milling.

(vc: Cutting Speed m/min f: Feed Rate mm/rev)

Drill Diam. ØDC(mm)	Cutting Conditions	Soft Steel / General Steel (~250 HB)	Alloy Steel (~300 HB)	Hardened Steel (~50 HRC)	Stainless Steel (~200 HB)	Gray Cast Iron FC250	Ductile Cast Iron	Aluminium Alloy
-Ø 4,0	vc	70-85-100	60-75-90	30-40-50	25-35-45	70-85-100	65-75-85	90-120-150
	f	0,06-0,08-0,10	0,05-0,08-0,10	0,01-0,02-0,03	0,01-0,02-0,03	0,06-0,08-0,10	0,04-0,06-0,08	0,06-0,08-0,10
-Ø 6,0	vc	70-85-100	60-75-90	30-40-50	25-35-45	70-85-100	65-75-85	90-120-150
	f	0,05-0,10-0,15	0,05-0,10-0,15	0,04-0,06-0,08	0,03-0,04-0,05	0,05-0,10-0,15	0,06-0,09-0,12	0,05-0,10-0,15
-Ø 8,0	vc	70-85-100	60-75-90	30-40-50	25-35-45	70-85-100	65-75-85	90-120-150
	f	0,10-0,15-0,20	0,10-0,15-0,20	0,06-0,08-0,10	0,04-0,06-0,08	0,10-0,15-0,20	0,10-0,12-0,15	0,10-0,15-0,20
-Ø 10,0	vc	70-85-100	60-75-90	30-40-50	25-35-45	70-85-100	65-75-85	90-120-150
	f	0,15-0,20-0,25	0,15-0,20-0,25	0,08-0,10-0,12	0,06-0,08-0,10	0,15-0,20-0,25	0,12-0,15-0,18	0,15-0,20-0,25
-Ø 12,0	vc	70-85-100	60-75-90	30-40-50	25-35-45	70-85-100	65-75-85	90-120-150
	f	0,20-0,25-0,30	0,20-0,25-0,30	0,12-0,15-0,18	0,08-0,10-0,12	0,17-0,22-0,27	0,15-0,20-0,25	0,20-0,25-0,30
-Ø 16,0	vc	70-85-100	60-75-90	30-40-50	25-35-45	70-85-100	65-75-85	90-120-150
	f	0,20-0,25-0,30	0,20-0,25-0,30	0,14-0,17-0,20	0,10-0,15-0,20	0,20-0,25-0,30	0,20-0,25-0,30	0,25-0,30-0,35

Min. - Optimum - Max.

Extra Long SUPER MULTI-DRILLS MDW ... XHGS/PHT

Solid Carbide Drills for Deep Hole Drilling



■ XGHS Series

Applications	Series	Diameter Range (mm)	Hole Depth (L/D)
Deep Hole Drilling	MDW□□□□XHGS12	Ø 3,0 – 12,0	-12
	MDW□□□□XHGS15	Ø 3,0 – 12,0	-15
	MDW□□□□XHGS20	Ø 3,0 – 12,0	-20
	MDW□□□□XHGS25	Ø 3,0 – 12,0	-25
	MDW□□□□XHGS30	Ø 3,0 – 10,0	-30
Pilot Hole Drilling	MDW□□□□PHT	Ø 3,0 – 12,0	-2

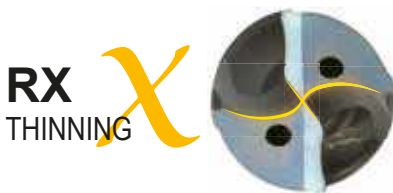
■ General Features

Super MultiDrill XHGS series is a next-generation drill for deep hole drilling, features stable chip control and improved strength to further enhance efficiency of deep hole drilling.

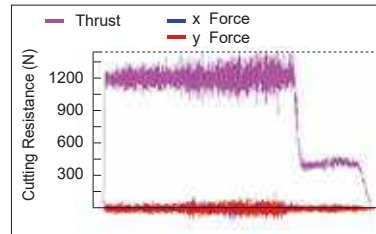
■ Characteristics and Applications

Low Cutting Resistance

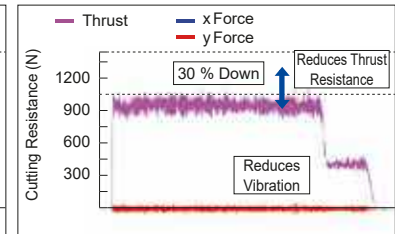
The application of a new special thinning shape „RX thinning“ reduces cutting resistance during high efficiency drilling.



Conventional Drill



XHGS Series



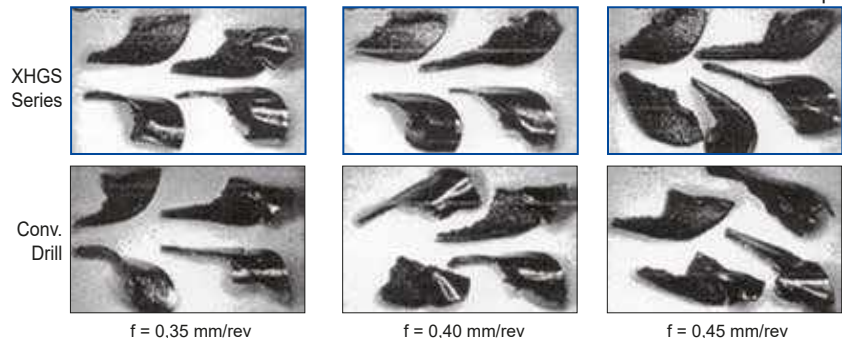
Work Material: C45
 Tools: MDW050XHT20 (conventional), MDW0500XHGS20 (Ø 5,0 mm, 20D)
 Cutting Cond.: $v_c = 80$ m/min, $f = 0,35$ mm/rev, (\Rightarrow at the time of entry penetration $f = 0,08$ mm/rev), $H = 90$ mm
 Coolant: MQL

Chip Control

New groove shape „J flute“ with improved chip control stability when drilling deep holes.



Consistent Chips



Work Material: C45
 Tools: MDW050XHT20 (conventional), MDW0500XHGS20 (Ø 5,0 mm, 20D)
 Cutting Cond.: $v_c = 80$ m/min, $H = 90$ mm
 Coolant: MQL

High Precision & Stability

The XHGS series provides excellent guide performance due to the unique design when compared to the conventional drill.



Recommended Cutting Conditions

Min. - Optimum - Max.

Drill Diameter DC (mm)	Cutting Conditions	Soft Steel (-200 HB)	General Steel (-250 HB)	Alloy Steel (-300 HB)	Hardened Steel (-40 HRC)	Cast Iron FC FCD
-Ø 3,0	v _c	50-60-80	60-80-100	40-55-70	30-40-50	40-55-70
	f	0,12-0,15-0,20	0,12-0,15-0,20	0,10-0,13-0,16	0,06-0,08-0,12	0,15-0,18-0,23
-Ø 5,0	v _c	50-60-80	60-80-100	50-60-70	30-45-55	50-60-70
	f	0,15-0,20-0,25	0,15-0,23-0,30	0,12-0,15-0,20	0,08-0,10-0,14	0,17-0,25-0,35
-Ø 10,0	v _c	50-70-90	60-80-110	50-65-80	30-50-60	50-65-80
	f	0,20-0,25-0,30	0,20-0,25-0,32	0,15-0,20-0,25	0,10-0,15-0,20	0,25-0,28-0,35
-Ø 12,0	v _c	60-80-100	60-90-120	50-65-80	40-55-70	50-65-80
	f	0,25-0,30-0,35	0,25-0,30-0,35	0,15-0,23-0,27	0,12-0,15-0,23	0,25-0,30-0,35

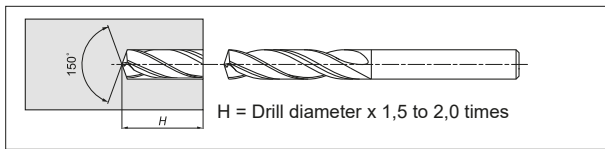
Note: Use lower speed when using MQL coolant and higher speed when using internal coolant.

V_c: Cutting speed (m/min), f: Feed Rate (mm/rev)

Recommended Drilling Method

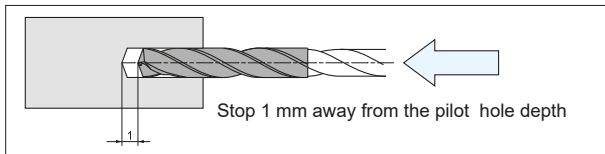
1. Drill a pilot hole using the dedicated PHT

Select the same nominal diameter for the dedicated pilot hole drill PHT type as the deep hole drill XHGS type. (The pilot drill diameter is designed +0,02 mm to +0,05 mm larger than the long drill diameter)



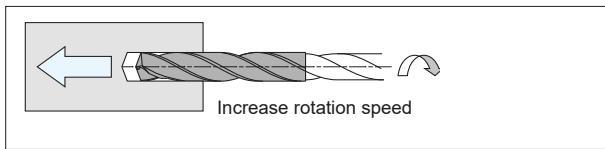
2. Enter the pilot hole at reduced cutting data

Rotation speed: 500 min⁻¹
Feed rate: 1000 to 2000 mm/min



Important:
DO NOT enter pilot hole at higher cutting data, this will cause damage to the drill.

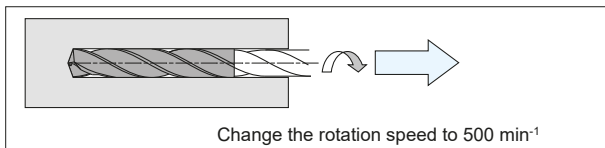
3. Increase rotation speed until the set cutting speed is reached, and start normal drilling operation



When using a NC machine, only begin drilling operation once full rotation speed is reached.

4. After drilling rotation speed is reduced and the drill is retracted from the work material

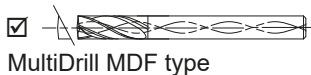
Rotation speed: 500 min⁻¹
Feed rate: 1.000 to 2.000 mm/min



Retracting a drill from the work material at a high rotation speed is dangerous as doing so may result in breakage due to run-out.

5. Other Notes

A flat base should be prepared when the surface for the pilot tool is slanted. Spot face using:



When the deep hole drill exits through an angle surface, decrease the feed rate to f = 0,05 mm/rev just before drilling through.

Coolant

1. Internal coolant supply

Use suitable coolant / emulsion

Pump pressure: Steel: 1,5 to 2,0 MPa (cooling effect increases at higher pressure, affecting chips/wear)
Cast iron & aluminium alloy: 4,0 to 6,0 MPa (priority on cooling)

2. Internal MQL

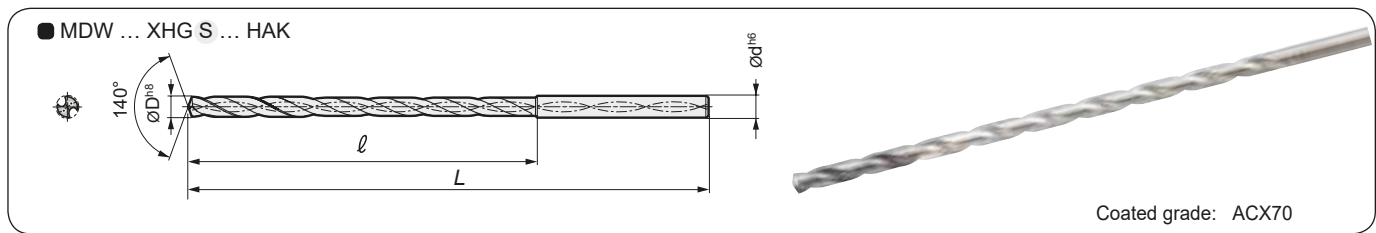
Airpressure: 0,5 MPa or higher

Discharge volume: It is recommended to set the maximum discharge volume possible on the machine.

*Consult the manufacturer before using with aluminium alloy.

Extra Long SUPER MULTI-DRILLS MDW ... XHGS/PHT Type

Solid Carbide Drills for Deep Hole Drilling



P ● MDW...XHGS Type for Deep Hole Drilling, Diameter \varnothing 3,0–12,0 mm (mm)

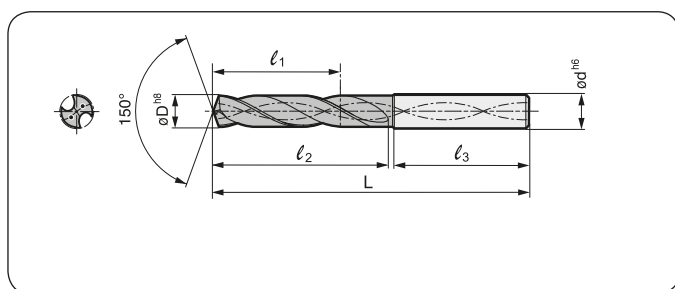
Dimensions		Cat. No. 12, 15, 20, 25, 30	For 12 x D		For 15 x D		For 20 x D		For 25 x D		For 30 x D						
			Stock	Dimensions		Stock	Dimensions		Stock	Dimensions		Stock	Dimensions				
				L	ℓ		L	ℓ		L	ℓ		L	ℓ	L	ℓ	
3,0	4,0	MDW 0300XHGS □□ HAK	●	85	57	●	94	66	●	109	81	●	124	96	●	139	111
3,5		0350XHGS □□ HAK	●	89	61	●	100	72	●	117	89	●	135	107	●	152	124
4,0		0400XHGS □□ HAK	●	95	67	●	107	79	●	127	99	●	147	119	●	167	139
4,5	5,0	MDW 0450XHGS □□ HAK	●	104	76	●	118	90	●	140	112	●	163	135	●	184	156
5,0		0500XHGS □□ HAK ^{5*}	●	108	80	●	123	95	●	148	120	●	173	145	●	198	170
5,0	6,0	MDW 0500XHGS □□ HAK	●	116	80	●	131	95	●	156	120	●	181	145	●	206	170
5,5		0550XHGS □□ HAK	●	124	88	●	141	105	●	168	132	●	196	160	●	223	187
6,0		0600XHGS □□ HAK	●	130	94	●	148	112	●	178	142	●	208	172	●	238	202
6,5	8,0	MDW 0650XHGS □□ HAK	●	138	102	●	158	122	●	190	154	●	223	187	●	255	219
6,8		0680XHGS □□ HAK	●	144	108	●	164	128	●	198	162	●	236	200	●	266	230
7,0		0700XHGS □□ HAK	●	145	109	●	166	130	●	201	165	●	236	200	●	271	235
7,5		0750XHGS □□ HAK	●	151	115	●	174	138	●	211	175	●	249	213	●	286	250
8,0		0800XHGS □□ HAK	●	157	121	●	181	145	●	221	185	●	261	225	●	301	265
8,5		MDW 0850XHGS □□ HAK	●	171	131	●	197	157	●	239	199	●	282	242	●	324	284
9,0	10,0	0900XHGS □□ HAK	●	177	137	●	204	164	●	249	209	●	294	254	●	339	299
9,5		0950XHGS □□ HAK	●	183	143	●	212	172	●	259	219	●	305	265	●	352	312
10,0		1000XHGS □□ HAK	●	187	147	●	217	177	●	267	227	●	317	277	●	367	327
10,5		MDW 1050XHGS □□ HAK	●	202	157	●	234	189	●	286	241	●	339	294	-	-	-
11,0	12,0	1100XHGS □□ HAK	●	208	163	●	241	196	●	296	251	●	351	306	-	-	-
11,5		1150XHGS □□ HAK	●	213	168	●	248	203	●	305	260	●	363	318	-	-	-
12,0		1200XHGS □□ HAK	●	219	174	●	255	210	●	315	270	●	375	330	-	-	-

(*) Cat. No. description: Drill- \varnothing = 5 mm, shank- \varnothing = 5 mm (E.g. for 20 x D: MDW050XHGS20HAK5)

Non-standard diameters and lengths on request (\varnothing 2,5–16,0 mm possible)



● MDW...PHT Type for Pilot Hole



■ How to Order

Non stock items – minimum order 6 pieces

Always specify the catalogue number and drill diameter as shown

- eg drill diameter 5,0 mm = MDW 050

E.g.,

MDW 050 X H G S 30 HAK ACX70 (Grade)

Super
MULTI-DRILL

DC = 5,0 mm

Extra long type

With spiral coolant holes

Shank type to DIN6535

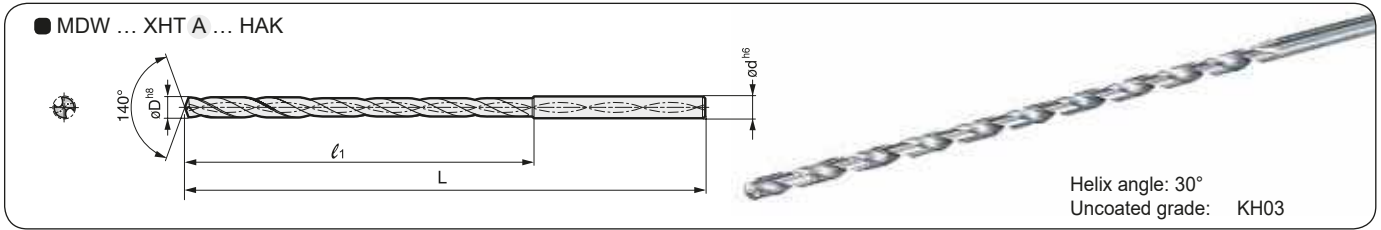
Drilling depth (L/D ratio)

Cutting edges for steel with double margin

Special shape (RX thinning) + J flute

Dimensions		Cat. No.	Stock	For Pilot Hole			
DC (mm)	$\varnothing d$ (mm)			L	ℓ_1	ℓ_2	ℓ_3
3,03	4,0	MDW 0303 PHT	●	52	9	22	28
3,53		0353 PHT	●	52	9	22	28
4,03	5,0	MDW 0403 PHT	●	59	12	29	28
4,53		0453 PHT	●	59	12	29	28
5,03	6,0	MDW 0503 PHT	●	71	15	33	36
5,53		0553 PHT	●	71	15	33	36
6,03	8,0	MDW 0603 PHT	●	76	18	38	36
6,53		0653 PHT	●	76	18	38	36
6,83		0683 PHT	●	76	18	38	36
7,03		0703 PHT	●	82	21	43	36
7,53		0753 PHT	●	82	21	43	36
8,03		10,0	MDW 0803 PHT	●	88	24	46
8,53	0853 PHT		●	88	24	46	40
9,03	0903 PHT		●	88	24	46	40
9,53	0953 PHT		●	88	24	46	40
10,03	12,0	MDW 1003 PHT	●	104	30	55	45
10,53		1053 PHT	●	104	30	55	45
11,03		1103 PHT	●	104	30	55	45
11,53		1153 PHT	●	104	30	55	45
12,03	14,0	MDW 1203 PHT	●	117	42	68	45

● = Euro stock



N ● MDW...XHT A Type for Aluminium and Copper Alloys

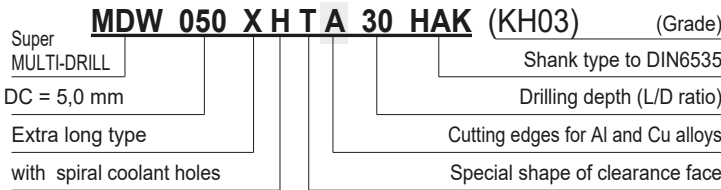
Dimensions		Cat. No. 20, 30	For 20 x D			For 30 x D		
DC (mm)	$\varnothing d$ (mm)		Stock	Dimensions		Stock	Dimensions	
			20	L	l_1	30	L	l_1
4,0	4,0	MDW 040XHT A□□ HAK	●	127	97	●	167	137
5,0	6,0	MDW 050XHT A□□ HAK	●	156	118	●	206	168
6,0		060XHT A□□ HAK	●	178	138	●	238	198
7,0	8,0	MDW 070XHT A□□ HAK	●	201	162	●	271	232
8,0		080XHT A□□ HAK	●	221	182	●	301	262
9,0	10,0	MDW 090XHT A□□ HAK	●	249	205	●	339	295
10,0		100XHT A□□ HAK	●	267	225	●	367	325

⇒ All Long Drill series include an allowance to accommodate regrinding!
 ⇒ Uncoated carbide grade: KH03

How to Order

Non stock items – minimum order 6 pieces
 Always specify the catalogue number and drill diameter as shown
 - eg drill diameter 5,0 mm = MDW 050

E.g.,

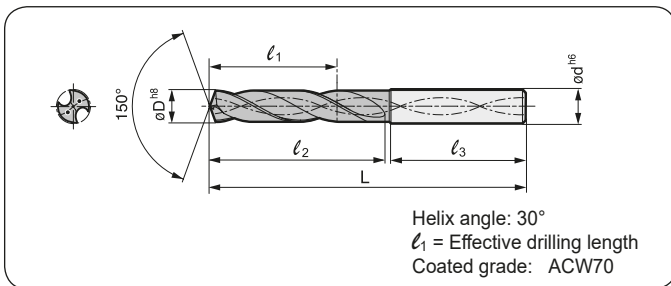


Recommended Cutting Conditions

V_c: Cutting speed (m/min), f: Feed Rate (mm/rev)

Drill Ø (mm)	Work material	
	Aluminium Alloy	
-Ø 5,0	V _c	80–160
	f	0,08–0,30
-Ø 6,0	V _c	80–160
	f	0,12–0,35
-Ø 8,0	V _c	80–180
	f	0,15–0,40
-Ø 10,0	V _c	80–180
	f	0,20–0,50
-Ø 12,0	V _c	80–180
	f	0,20–0,45

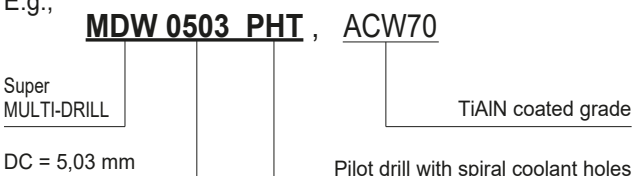
● MDW...PHT Type for Pilot Hole



How to Order

Non stock items – minimum order 6 pieces
 Always specify the catalogue number and drill diameter as shown -
 eg. drill diameter 5,03 mm = MDW 0503

E.g.,

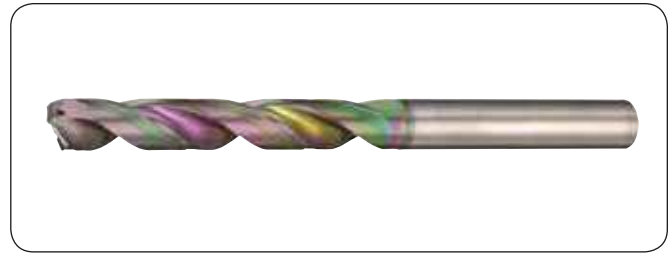


Dimensions		Cat. No.	Stock	For Pilot Hole			
DC (mm)	$\varnothing d$ (mm)			Dimensions (mm)			
				L	l_1	l_2	l_3
3,03	4,0	MDW 0303 PHT	●	52	9	22	28
3,53		0353 PHT	●	52	9	22	28
4,03	5,0	MDW 0403 PHT	●	59	12	29	28
4,53		0453 PHT	●	59	12	29	28
5,03	6,0	MDW 0503 PHT	●	71	15	33	36
5,53		0553 PHT	●	71	15	33	36
6,03	8,0	MDW 0603 PHT	●	76	18	38	36
6,53		0653 PHT	●	76	18	38	36
6,83		0683 PHT	●	76	18	38	36
7,03		0703 PHT	●	82	21	43	36
7,53		0753 PHT	●	82	21	43	36
8,03		10,0	MDW 0803 PHT	●	88	24	46
8,53	0853 PHT		●	88	24	46	40
9,03	0903 PHT		●	88	24	46	40
9,53	0953 PHT		●	88	24	46	40
10,03	12,0		MDW 1003 PHT	●	104	30	55
10,53		1053 PHT	●	104	30	55	45
11,03		1103 PHT	●	104	30	55	45
11,53		1153 PHT	●	104	30	55	45
12,03	14,0	MDW 1203 PHT	●	117	42	68	45

AURORA COAT SERIES MDW ... NHGS Type

DLC (Diamond Like Carbon) Coated Multi-Drills

With Coolant Holes (3D/5D/10D)



● Diameter Ø 3,0–8,0 mm

(mm)

Dimensions øD	ød	Cat. No. 3, 5, 10	3D Type		5D Type		10D Type									
			Stock	Dimensions	Stock	Dimensions	Stock	Dimensions								
			3	L	ℓ	5	L	ℓ	10	L	ℓ					
3,0	3,0	MDW 0300 NHGS□□	□	68,6	18,1	□	78,6	28,6	□	92,6	42,6					
3,1	4,0	MDW 0310 NHGS□□	□	72,8	□	□	86,8	□	□	106,8	□					
3,2		MDW 0320 NHGS□□	□													
3,3		MDW 0330 NHGS□□	□									20,7	□	32,7	□	49,7
3,4		MDW 0340 NHGS□□	□													
3,5		MDW 0350 NHGS□□	□													
3,6		MDW 0360 NHGS□□	□													
3,65		MDW 0365 NHGS□□	□													
3,66		MDW 0366 NHGS□□	□									23,3	□	36,8	□	56,8
3,7		MDW 0370 NHGS□□	□													
3,8		MDW 0380 NHGS□□	□													
3,9	MDW 0390 NHGS□□	□														
4,0	MDW 0400 NHGS□□	□														
4,1	5,0	MDW 0410 NHGS□□	□	81,0	□	□	99,0	□	□	125,0						
4,2		MDW 0420 NHGS□□	□													
4,3		MDW 0430 NHGS□□	□								25,9	□	40,9	□	63,9	
4,4		MDW 0440 NHGS□□	□													
4,5		MDW 0450 NHGS□□	□													
4,6		MDW 0460 NHGS□□	□													
4,7		MDW 0470 NHGS□□	□													
4,8		MDW 0480 NHGS□□	□								28,5	□	45,0	□	71,0	
4,9		MDW 0490 NHGS□□	□													
5,0		MDW 0500 NHGS□□	□													
5,1	6,0	MDW 0510 NHGS□□	□	83,2	□	□	101,2	□	□	137,2						
5,2		MDW 0520 NHGS□□	□													
5,3		MDW 0530 NHGS□□	□								28,6	□	45,1	□	88,1	
5,4		MDW 0540 NHGS□□	□													
5,5		MDW 0550 NHGS□□	□													
5,6		MDW 0560 NHGS□□	□													
5,7		MDW 0570 NHGS□□	□													
5,8		MDW 0580 NHGS□□	□								31,2	□	49,2	□	85,2	
5,9		MDW 0590 NHGS□□	□													
6,0		MDW 0600 NHGS□□	□													
6,1	7,0	MDW 0610 NHGS□□	□	89,5	□	□	110,5	□	□	152,5						
6,2		MDW 0620 NHGS□□	□													
6,3		MDW 0630 NHGS□□	□								33,8	□	53,3	□	92,3	
6,4		MDW 0640 NHGS□□	□													
6,5		MDW 0650 NHGS□□	□													
6,6		MDW 0660 NHGS□□	□													
6,7		MDW 0670 NHGS□□	□													
6,8		MDW 0680 NHGS□□	□								36,5	□	57,5	□	99,5	
6,9		MDW 0690 NHGS□□	□													
7,0		MDW 0700 NHGS□□	□													
7,1	8,0	MDW 0710 NHGS□□	□	95,7	□	□	119,7	□	□	167,7						
7,2		MDW 0720 NHGS□□	□													
7,3		MDW 0730 NHGS□□	□								39,1	□	61,6	□	116,6	
7,35		MDW 0735 NHGS□□	□													
7,4		MDW 0740 NHGS□□	□													
7,5		MDW 0750 NHGS□□	□													
7,6		MDW 0760 NHGS□□	□													
7,7		MDW 0770 NHGS□□	□													
7,8		MDW 0780 NHGS□□	□								41,7	□	65,7	□	113,7	
7,9		MDW 0790 NHGS□□	□													
8,0	MDW 0800 NHGS□□	□														

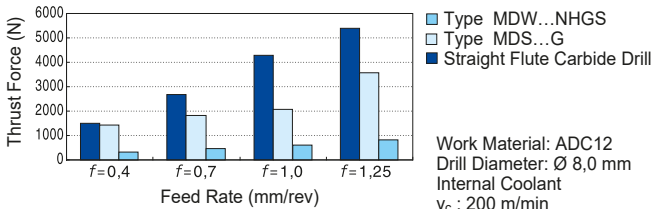
■ Characteristics

- High efficiency drilling
AURORA COAT and strong helix design reduces cutting forces and improves edge sharpness.
- Precision drilling
Special cutting edge design improves hole precision and quality.
- Longer tool life
With AURORA COAT coupled with the cutting edge design, long and stable tool life can be achieved.
- Deep hole (L/D = 20) drilling
Drills for deep hole drilling can be custom-made.
Production range: Ø 3,0–16,0 mm
total length: 50 times drill diameter (max. 290 mm)

■ Applicable Work Materials

- Aluminium Die Casting
- Aluminium Alloy
- Aluminium Alloy Casting
- Brass Casting
- Bronze Casting

■ Comparison of Cutting Force (Thrust Force)

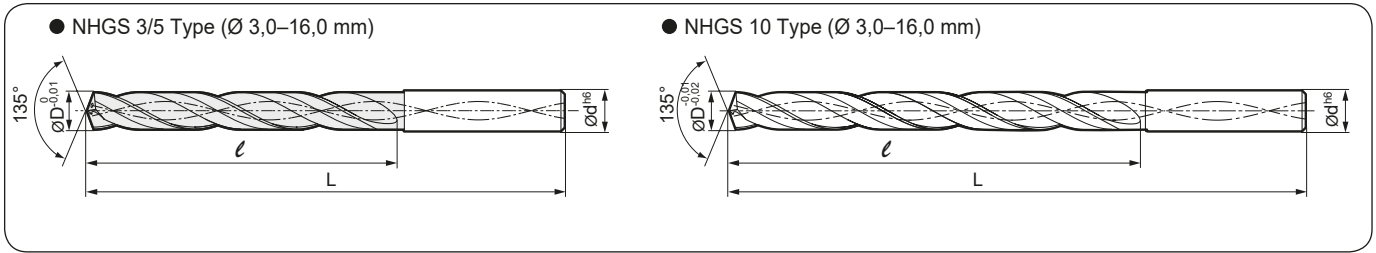


■ Recommended Cutting Conditions

Diameter (mm)		Aluminium Alloy	Aluminium Die Casting	Copper Alloy
-Ø 5	vc	80–160	80–180	80–160
	f	0,08–0,30	0,10–0,30	0,08–0,15
-Ø 10	vc	80–180	80–200	60–180
	f	0,10–0,30	0,10–0,35	0,10–0,20
-Ø 16	vc	80–200	80–200	80–200
	f	0,15–0,40	0,10–0,40	0,10–0,25

(vc : Cutting Speed (m/min), f : Feed rate (mm/rev), Min–Max)

AURORA Coated NHGS Type, Grade: DL1300



● Diameter Ø 8,1–13,0 mm (mm)

Dimensions		Cat. No.	3D Type		5D Type			10D Type							
ØD	Ød		Stock	Dimensions	Stock	Dimensions	Stock	Dimensions	Stock	Dimensions					
		3, 5, 10	3	L	5	L	ℓ	10	L	ℓ					
8,1	9,0	MDW 0810 NHGS□□			□										
8,2		MDW 0820 NHGS□□			□										
8,3		MDW 0830 NHGS□□		44,3	□		69,8			118,8					
8,4		MDW 0840 NHGS□□			□										
8,5		MDW 0850 NHGS□□	□	101,9	□	128,9	□	182,9							
8,6		MDW 0860 NHGS□□	□		□										
8,7		MDW 0870 NHGS□□			□										
8,8		MDW 0880 NHGS□□	□		46,9		□			73,9			127,9		
8,9		MDW 0890 NHGS□□					□								
9,0		MDW 0900 NHGS□□	□				□								
9,1	MDW 0910 NHGS□□				□										
9,2	MDW 0920 NHGS□□				□										
9,21	MDW 0921 NHGS□□	□	49,5		□		78,0			135,0					
9,3	MDW 0930 NHGS□□				□										
9,4	MDW 0940 NHGS□□	□			□										
9,5	MDW 0950 NHGS□□	□		108,0	□	138,0		□	198,0						
9,6	MDW 0960 NHGS□□				□										
9,7	MDW 0970 NHGS□□				□										
9,8	MDW 0980 NHGS□□				52,0			□				82,0	□		142,0
9,9	MDW 0990 NHGS□□							□							
10,0	MDW 1000 NHGS□□	□			□										
10,1	MDW 1010 NHGS□□				□										
10,2	MDW 1020 NHGS□□				□										
10,3	MDW 1030 NHGS□□	□	168,3		54,7		□	151,3		86,2		149,2			
10,4	MDW 1040 NHGS□□				□										
10,5	MDW 1050 NHGS□□	□			□										
10,6	MDW 1060 NHGS□□	□			□										
10,7	MDW 1070 NHGS□□				□										
10,8	MDW 1080 NHGS□□			57,3			90,3				156,3				
10,9	MDW 1090 NHGS□□				□										
11,0	MDW 1100 NHGS□□	□			□										
11,08	MDW 1108 NHGS□□	□			□										
11,1	MDW 1110 NHGS□□	□			□										
11,2	MDW 1120 NHGS□□	□	59,9	□	94,4		163,4								
11,3	MDW 1130 NHGS□□			□											
11,4	MDW 1140 NHGS□□	□				□									
11,5	MDW 1150 NHGS□□	□		124,5		□		160,5	□	232,5					
11,6	MDW 1160 NHGS□□					□									
11,7	MDW 1170 NHGS□□					□									
11,8	MDW 1180 NHGS□□					62,5						98,5			170,5
11,9	MDW 1190 NHGS□□								□						
12,0	MDW 1200 NHGS□□	□			□										
12,1	MDW 1210 NHGS□□	□			□										
12,2	MDW 1220 NHGS□□				□										
12,3	MDW 1230 NHGS□□	□	65,1		□	102,6			177,6						
12,4	MDW 1240 NHGS□□				□										
12,5	MDW 1250 NHGS□□	□			□										
12,6	MDW 1260 NHGS□□			130,7	□		169,7	□		247,7					
12,7	MDW 1270 NHGS□□				□										
12,8	MDW 1280 NHGS□□				□										
12,9	MDW 1290 NHGS□□				67,7							106,7			184,7
12,96	MDW 1296 NHGS□□	□						□							
13,0	MDW 1300 NHGS□□	□						□							

● Diameter Ø 13,1–16,0 mm (mm)

Dimensions		Cat. No.	3D Type		5D Type			10D Type								
ØD	Ød		Stock	Dimensions	Stock	Dimensions	Stock	Dimensions	Stock	Dimensions						
		3, 5, 10	3	L	ℓ	5	L	ℓ	10	L	ℓ					
13,1	14,0	MDW 1310 NHGS□□														
13,2		MDW 1320 NHGS□□														
13,3		MDW 1330 NHGS□□		70,8			110,8				191,8					
13,4		MDW 1340 NHGS□□														
13,5		MDW 1350 NHGS□□	□	136,9	□	178,9		262,9								
13,6		MDW 1360 NHGS□□			□											
13,7		MDW 1370 NHGS□□			□											
13,8		MDW 1380 NHGS□□			72,9					114,9			198,9			
13,9		MDW 1390 NHGS□□					□									
14,0		MDW 1400 NHGS□□	□				□									
14,1	MDW 1410 NHGS□□	□			□											
14,2	MDW 1420 NHGS□□				□											
14,3	MDW 1430 NHGS□□		75,5				119,0			206						
14,4	MDW 1440 NHGS□□				□											
14,5	MDW 1450 NHGS□□	□			□											
14,6	MDW 1460 NHGS□□			141,1		188,1			278,1							
14,7	MDW 1470 NHGS□□				□											
14,8	MDW 1480 NHGS□□				□											
14,9	MDW 1490 NHGS□□	□			78,1			□				123,1			213,1	
14,96	MDW 1496 NHGS□□	□						□								
15,0	MDW 1500 NHGS□□	□			□											
15,1	MDW 1510 NHGS□□				□											
15,2	MDW 1520 NHGS□□				□											
15,3	MDW 1530 NHGS□□		80,7				127,2			220,2						
15,4	MDW 1540 NHGS□□				□											
15,5	MDW 1550 NHGS□□	□			□											
15,6	MDW 1560 NHGS□□			149,3		197,3			293,3							
15,7	MDW 1570 NHGS□□				□											
15,8	MDW 1580 NHGS□□				83,3							131,3			227,3	
15,9	MDW 1590 NHGS□□							□								
16,0	MDW 1600 NHGS□□	□						□								

AURORA Coated NHGS Type, Grade: DL1300

■ How to Order

Non-Stock Items will be required minimum order quantity for 6 pcs.

Please specify the Cat. No.

For example, if the diameter of the drill is 10,3 mm and the ratio to ØD is 5, please indicate as follow.

E.g.,

MDW 1030 NHGS 5 , DL1300 (Grade)

Super MULTI-DRILL

DC = 10,3 mm

Applicable work materials with spiral coolant holes

Drilling depth (The ratio to ØD): -3 / -5 / -10

NHGS type Multi-Drills

Micro Long Drills

MLDH ...L/P Type



■ General Features

Micro Long Drills are oil-hole drills for high efficiency drilling that were developed for drilling deep, small-diameter holes. These next-generation, small-diameter hole drills feature improved strength - often a problem area with small-diameter drills.

■ Characteristics and Applications

- Deep-hole drilling
New groove shape ensures good drill rigidity and chip evacuation.
High efficiency drilling to depths of over 20 x drill diameter at over $v_f = 500$ mm/min (drill diameter 1,3 mm, X12CrS13 equivalent).
Optimal thinning and edge balance for stable chip control.
- Long tool life
Special coating provides long tool life with a wide variety of work materials.
Improved chip evacuation makes it possible to reduce spindle load fluctuation, ensuring stable tool life.

■ Series

Application	Type	Diameter Range (mm)	Hole Depth (L/D)
Guide Hole Drilling	MLDH □□□□ P	Ø 0,8 – 2,0	–2
Deep Hole Drilling	MLDH □□□□ L5	Ø 0,8 – 2,0	–5
	MLDH □□□□ L12	Ø 0,8 – 2,0	–12
	MLDH □□□□ L20	Ø 0,8 – 2,0	–20
	MLDH □□□□ L30	Ø 0,8 – 2,0	–30

■ Recommended Cutting Conditions

● MLDH ... P / L5

(v_c : Cutting Speed (m/min), f : Feed rate (mm/rev), Min - **Optimum** - Max)

Drill-Ø (mm)	Cutting Cond.	Soft Steel (-200 HB)	General Steel (200–250 HB)	Alloy Steel (250–300 HB)	Stainless Steel (-200 HB)	Cast Iron	Aluminium Alloy	Heat-Resistant Steels
-Ø 1,0	v_c	40–50–60	40–50–60	40–50–60	20–30–40	40–50–60	50–60–70	5–10–15
	f	0,01– 0,02 –0,03	0,01– 0,02 –0,03	0,01– 0,02 –0,03	0,01– 0,02 –0,03	0,02– 0,03 –0,04	0,03– 0,04 –0,06	0,005– 0,01 –0,02
-Ø 1,5	v_c	40–50–60	40–50–60	40–50–60	20–30–40	40–50–60	50–60–70	5–10–15
	f	0,04– 0,08 –0,12	0,04– 0,08 –0,12	0,04– 0,08 –0,12	0,02– 0,05 –0,10	0,04– 0,08 –0,12	0,05– 0,10 –0,15	0,01– 0,03 –0,05
-Ø 2,0	v_c	40–50–60	40–50–60	40–50–60	20–30–40	40–50–60	50–60–70	5–10–15
	f	0,06– 0,08 –0,12	0,06– 0,08 –0,12	0,06– 0,08 –0,12	0,04– 0,06 –0,10	0,06– 0,08 –0,12	0,08– 0,12 –0,15	0,01– 0,03 –0,05

● MLDH ... L12 / L20 / L30

(v_c : Cutting Speed (m/min), f : Feed rate (mm/rev), Min - **Optimum** - Max)

Drill-Ø (mm)	Cutting Cond.	Soft Steel (-200 HB)	General Steel (200–250 HB)	Alloy Steel (250–300 HB)	Stainless Steel (-200 HB)	Cast Iron	Aluminium Alloy	Heat-Resistant Steels
-Ø 1,0	v_c	40–50–60	40–50–60	40–50–60	20–30–40	40–50–60	50–60–70	5–10–15
	f	0,01– 0,02 –0,03	0,01– 0,02 –0,03	0,01– 0,02 –0,03	0,01– 0,02 –0,03	0,02– 0,03 –0,04	0,03– 0,04 –0,06	0,005– 0,01 –0,02
-Ø 1,5	v_c	40–50–60	40–50–60	40–50–60	20–30–40	40–50–60	50–60–70	5–10–15
	f	0,03– 0,05 –0,07	0,03– 0,05 –0,07	0,03– 0,05 –0,07	0,02– 0,04 –0,07	0,04– 0,07 –0,10	0,05– 0,08 –0,12	0,01– 0,02 –0,03
-Ø 2,0	v_c	40–50–60	40–50–60	40–50–60	20–30–40	40–50–60	50–60–70	5–10–15
	f	0,04– 0,06 –0,08	0,04– 0,06 –0,08	0,04– 0,06 –0,08	0,04– 0,06 –0,08	0,04– 0,07 –0,10	0,05– 0,08 –0,12	0,01– 0,02 –0,03

○ = Japan stock



MLDH-P

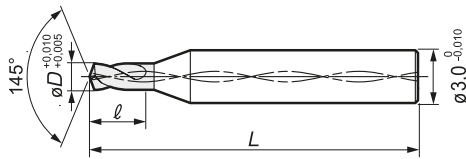


MLDH-L

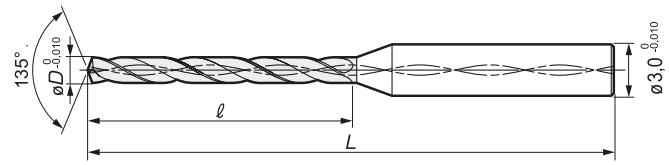
Micro Long Drills MLDH ...L/P Type

Internal Coolant Supply

● MLDH-P For Pilot Hole Drilling



● MLDH-L For Deep Hole Drilling



Stock

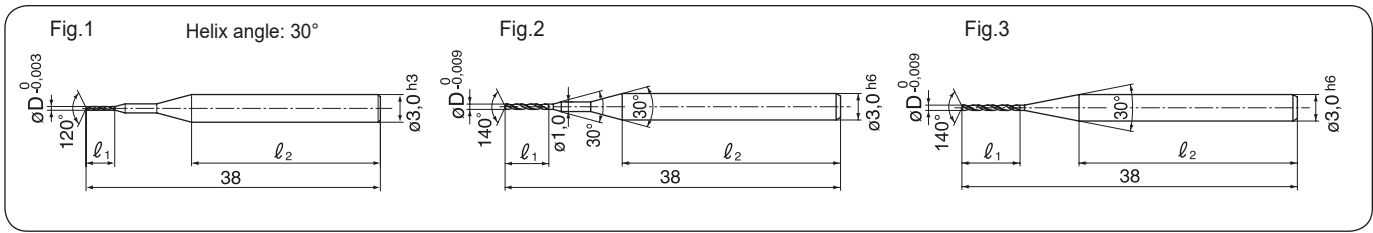
(mm)

ØD (mm)	P Type for Pilot Hole Drilling			L Type for Deep Hole Drilling																												
	Cat. No.	Stock	Dimensions		Cat. No. 5, 12, 20, 30	5x D		12x D		20x D		30x D																				
			L	ℓ		Stock [5]	Dimensions L ℓ	Stock [1][2]	Dimensions L ℓ	Stock [2][0]	Dimensions L ℓ	Stock [3][0]	Dimensions L ℓ																			
0,80	MLDH 0800P	○	45	3,2	MLDH 0800L□□	○	50	8	○	14	60	19	○	28																		
0,81	0810P	○			MLDH 0810L□□	○			○				○		○																	
0,82	MLDH 0820P	○			3,3	MLDH 0820L□□			○				9		55	15	21	21	○	○												
0,83	0830P	○				MLDH 0830L□□			○												○	○	○									
0,84	MLDH 0840P	○			3,4	MLDH 0840L□□			○				10		60	16	23	23	○	○												
0,85	0850P	○				MLDH 0850L□□			○												○	○	○									
0,86	0860P	○				MLDH 0860L□□			○												○	○	○									
0,87	MLDH 0870P	○			3,5	MLDH 0870L□□			○				11		65	17	24	24	○	○												
0,88	0880P	○				MLDH 0880L□□			○												○	○	○									
0,89	MLDH 0890P	○			45	3,6			MLDH 0890L□□				○		55	14	20	25	25	○	○											
0,90	0900P	○							MLDH 0900L□□				○									○	○	○								
0,91	0910P	○							3,7				MLDH 0910L□□									○	12	60	18	26	26	○	○			
0,92	MLDH 0920P	○											MLDH 0920L□□									○								○	○	○
0,93	0930P	○							3,8				MLDH 0930L□□									○	13	65	19	27	27	○	○			
0,94	MLDH 0940P	○											MLDH 0940L□□									○								○	○	○
0,95	0950P	○											MLDH 0950L□□									○								○	○	○
0,96	0960P	○							3,9				MLDH 0960L□□									○	14	70	20	28	28	○	○			
0,97	MLDH 0970P	○											MLDH 0970L□□									○								○	○	○
0,98	0980P	○											MLDH 0980L□□									○								○	○	○
0,99	MLDH 0990P	○	MLDH 0990L□□	○	○	○	○																									
1,00	1000P	○	50	4,0	MLDH 1000L□□	○	60	16	23	23	○	○																				
1,05	MLDH 1050P	○			MLDH 1050L□□	○							○	○	○																	
1,10	MLDH 1100P	○			4,2	MLDH 1100L□□							○	18	75	24	24	24	○	○												
1,15	MLDH 1150P	○				MLDH 1150L□□							○								○	○	○									
1,20	MLDH 1200P	○			4,4	MLDH 1200L□□							○	19	80	25	25	25	○	○												
1,25	MLDH 1250P	○				MLDH 1250L□□							○								○	○	○									
1,30	MLDH 1300P	○				MLDH 1300L□□							○								○	○	○									
1,35	MLDH 1350P	○			4,6	MLDH 1350L□□							○	20	85	26	26	26	○	○												
1,40	MLDH 1400P	○				MLDH 1400L□□							○								○	○	○									
1,45	MLDH 1450P	○				MLDH 1450L□□							○								○	○	○									
1,50	MLDH 1500P	○	MLDH 1500L□□	○		○	○	○																								
1,55	MLDH 1550P	○	4,8	MLDH 1550L□□	○	21	90	27	27	27	○	○																				
1,60	MLDH 1600P	○		MLDH 1600L□□	○								○	○	○																	
1,65	MLDH 1650P	○		MLDH 1650L□□	○								○	○	○																	
1,70	MLDH 1700P	○	5,0	MLDH 1700L□□	○	22	95	28	28	28	○	○																				
1,75	MLDH 1750P	○		MLDH 1750L□□	○								○	○	○																	
1,80	MLDH 1800P	○		MLDH 1800L□□	○								○	○	○																	
1,85	MLDH 1850P	○		MLDH 1850L□□	○								○	○	○																	
1,90	MLDH 1900P	○	5,2	MLDH 1900L□□	○	23	100	29	29	29	○	○																				
1,95	MLDH 1950P	○		MLDH 1950L□□	○								○	○	○																	
2,00	MLDH 2000P	○		MLDH 2000L□□	○								○	○	○																	

PVD Coated Grade: ACV70

Solid Carbide Micro / MINI-DRILLS

MDUS / MDSS Type



● Diameter Ø 0,03–0,19 mm

øD (mm)	Cat. No.	Stock	Dimensions		Fig.	Pcs./Pack- ing
			l ₁	l ₂		
0,030	MDUS 0030-30C	○	0,3		28	1
0,035	MDUS 0035-30C	○	0,4			
0,040	MDUS 0040-30C	○	0,4			
0,045	MDUS 0045-30C	○	0,5			
0,050	MDUS 0050-30C	○	0,5			
0,055	MDUS 0055-30C		0,6			
0,060	MDUS 0060-30C		0,6			
0,065	MDUS 0065-30C		0,7			
0,070	MDUS 0070-30C		0,7			
0,075	MDUS 0075-30C	○	0,8			
0,080	MDUS 0080-30C		0,8			
0,085	MDUS 0085-30C		1,0			
0,090	MDUS 0090-30C		1,0			
0,095	MDUS 0095-30C	○	1,0			
0,100	MDUS 0100-30C	○	1,0			
0,110	MDUS 0110-30C	○	1,2		1	
0,120	MDUS 0120-30C		1,2			
0,120	MDUS 0130-30C	○	1,2			
0,140	MDUS 0140-30C		1,5			
0,150	MDUS 0150-30C		1,5			
0,160	MDUS 0160-30C	○	1,8			
0,170	MDUS 0170-30C		1,8			
0,180	MDUS 0180-30C		1,8			
0,190	MDUS 0190-30C		1,9			

● Diameter Ø 0,20–0,59 mm

øD (mm)	Cat. No.	Stock	Dimensions		Fig.	Pcs./Pack- ing
			l ₁	l ₂		
0,20	MDSS 0020	□			2	2,5
0,21	MDSS 0021	□				
0,22	MDSS 0022	□				
0,23	MDSS 0023	□				
0,24	MDSS 0024	□				
0,25	MDSS 0025	□				
0,26	MDSS 0026	□				
0,27	MDSS 0027	□				
0,28	MDSS 0028	□				
0,29	MDSS 0029	□				
0,30	MDSS 0030	□			1	28
0,31	MDSS 0031	□				
0,32	MDSS 0032	□	3			
0,33	MDSS 0033	□	3			
0,34	MDSS 0034	□	3			
0,35	MDSS 0035	□	4			
0,36	MDSS 0036	□	4			
0,37	MDSS 0037	□	4			
0,38	MDSS 0038	□	4			
0,39	MDSS 0039	□	4			
0,40	MDSS 0040	□			3	27
0,41	MDSS 0041	□				
0,42	MDSS 0042	□				
0,43	MDSS 0043	□				
0,44	MDSS 0044	□	5			
0,45	MDSS 0045	□	5			
0,46	MDSS 0046	□	5			
0,47	MDSS 0047	□	5			
0,48	MDSS 0048	□	5			
0,49	MDSS 0049	□	5			
0,50	MDSS 0050	□			6	27
0,51	MDSS 0051	□				
0,52	MDSS 0052	□				
0,53	MDSS 0053	□				
0,54	MDSS 0054	□				
0,55	MDSS 0055	□				
0,56	MDSS 0056	□				
0,57	MDSS 0057	□				
0,58	MDSS 0058	□				
0,59	MDSS 0059	□				

● Diameter Ø 0,60–1,00 mm

øD (mm)	Cat. No.	Stock	Dimensions		Fig.	Pcs./Pack- ing
			l ₁	l ₂		
0,60	MDSS 0060	□			7	26
0,61	MDSS 0061	□				
0,62	MDSS 0062	□				
0,63	MDSS 0063	□				
0,64	MDSS 0064	□				
0,65	MDSS 0065	□				
0,66	MDSS 0066	□				
0,67	MDSS 0067	□				
0,68	MDSS 0068	□				
0,69	MDSS 0069	□				
0,70	MDSS 0070	□			9	24
0,71	MDSS 0071	□				
0,72	MDSS 0072	□				
0,73	MDSS 0073	□				
0,74	MDSS 0074	□				
0,75	MDSS 0075	□				
0,76	MDSS 0076	□				
0,77	MDSS 0077	□				
0,78	MDSS 0078	□				
0,79	MDSS 0079	□				
0,80	MDSS 0080	□			3	1
0,81	MDSS 0081	□				
0,82	MDSS 0082	□				
0,83	MDSS 0083	□				
0,84	MDSS 0084	□	10	23		
0,85	MDSS 0085	□	10	23		
0,86	MDSS 0086	□	10	23		
0,87	MDSS 0087	□	10	23		
0,88	MDSS 0088	□	10	23		
0,89	MDSS 0089	□	10	23		
0,90	MDSS 0090	□			11	22
0,91	MDSS 0091	□				
0,92	MDSS 0092	□				
0,93	MDSS 0093	□				
0,94	MDSS 0094	□				
0,95	MDSS 0095	□				
0,96	MDSS 0096	□				
0,97	MDSS 0097	□				
0,98	MDSS 0098	□				
0,99	MDSS 0099	□				
1,00	MDSS 0100	□	12	21		

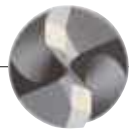


■ MDSS Recommended Cutting Conditions (Wet)

Work Cond.	Alloy Steel, Pre-hardened Steel			Die Steel, Tempered Steel (HRC 30–40)			Stainless Steel		
	Spindle (rpm)	Feed rate (mm/min)	Step-feed (mm)	Spindle (rpm)	Feed rate (mm/min)	Step-feed (mm)	Spindle (rpm)	Feed rate (mm/min)	Step-feed (mm)
Ø 0,2	26500	50	0,1D	21200	40	0,1D	10600	20	0,1D
Ø 0,3	26500	80		21200	60		10600	30	
Ø 0,4	25900	100		19900	80		9500	40	
Ø 0,5	25500	150		19100	110		9500	50	
Ø 1,0	15900	240		12700	190		5600	80	

- The above conditions are recommended under wet conditions, using water-soluble coolant.
- If machine noises and vibrations are present, please adjust the cutting conditions accordingly.
- If the machine cannot achieve the recommended spindle speed, please use the max. spindle speed available.

* Step feed is recommended for drilling of holes deeper than 3xD.



SUMIDIA Coated Drills SDC Type

MDS...SDC



General Features

SUMIDIA Coated SDC type drills for Carbon Fibre Reinforced Plastic (CFRP) employ Sumitomo Electric Hardmetal's proprietary multi-step point angle.

Combined with a diamond coating, this technology improves the quality of machined surfaces and extends tool life.

Characteristics and Applications

- Excellent drilled-hole quality
 - Sharp cutting edge shape reduces delamination of fibre layers and burrs.
 - Continuously changing point angle disperses load placed on cutting edge and prevents breakage.
- Long tool life
 - Use of high-strength diamond coating with excellent adhesion delivers high quality and long tool life.

Performance

Comparison of Machined Surface Finish

Excellent Machined Face Quality
(Prevents Delamination And Burrs)

	SDC	Concurrent A	Concurrent B	Concurrent C
Hole Entrance				
Hole Exit				

Tool: SUMIDIA coated drill SDC type, \varnothing 6,375
 Competitor A B C's drill \varnothing 6,35 & \varnothing 6,5
 Work Material: CFRP
 Cutting Conditions: $n = 6.000$ rpm, $f = 0,1$ mm/rev, $a_p = 28$ mm (Through)
 Dry

Tool Life Comparison

Effects of Diamond Coating

SDC type (After drilling 600 holes)	Competitor's product (After drilling 50 holes)
No delamination Low flank wear	More delamination from cutting edge to flank

Stable diamond layer adhesion prevents delamination.
 Excellent wear resistance enables high-quality drilling with long tool life.

Tool	SDC	Competitor A's Diamond Coated Drill	Carbide Drill
Hole	0-600	0-100	0-100

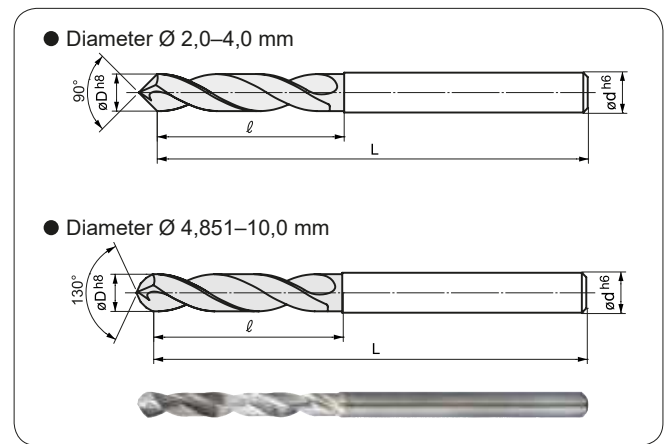
Tool: SUMIDIA coated drill SDC type, \varnothing 6,375
 Competitor A B C's drill \varnothing 6,35 & \varnothing 6,5
 Work Material: CFRP
 Cutting Conditions: $n = 6.000$ rpm, $f = 0,1$ mm/rev, $a_p = 28$ mm (Through)
 Dry

Series

Type	Diameter Range (mm)	Point angle	Hole Depth (l/d)
MDS□□□□□SDC3	\varnothing 2,0 – 4,0	90°	-3
	\varnothing 4,851 – 10,0	130°	

Grade	Coating	Structural Steel	Carbon Steel	Alloy Steel	Precipitated Steel	Tempered Die Steel	Hardened Steel	Stainless Steel	Ti Alloy / Heat Resistant Alloy	Cast Iron	Al Alloy	Cu Alloy	CFRP*
DCX20	SUMI-DIA						45-55 HRC	55-60 HRC	60-65 HRC				○

* CFRP (Carbon Fibre Reinforced Plastic)



Diameter \varnothing 2,0–10,0 mm

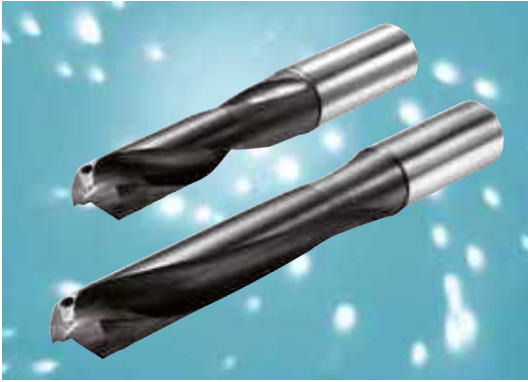
Dimensions		Cat. No.	3D Type		
DC (mm)	$\varnothing d$ (mm)		Stock	Dimensions	
				L	l
2,0	3,0	MDS 02000SDC3	○		12,5
		02489SDC3	○	49	15,0
		03000SDC3	○		17,5
3,3	3,3	MDS 03300SDC3	○		20,0
		04000SDC3	○	60	22,5
4,851	4,851	MDS 04851SDC3	○		27,5
		05000SDC3	○	76	
5,6	5,6	MDS 05600SDC3	○		30,0
		06000SDC3	○	81	
6,375	6,375	MDS 06375SDC3	○		32,5
		07000SDC3	○	83	35,0
7,938	7,938	MDS 07938SDC3	○		40,0
		08000SDC3	○	90	
9,0	9,0	MDS 09000SDC3	○		45,0
		09550SDC3	○	105	50,0
10,0	10,0	10000SDC3	○		

Recommended Cutting Conditions

$\varnothing D$	Work Cond.	CFRP Only (Dry Machining)		Stacked Plates of CFRP, Aluminium Alloys (Dry Machining)	
		v_c	f	v_c	f
- \varnothing 6,0	v_c	80–120–150		40–60–80	
	f	0,05–0,08–0,10		0,05–0,05–0,10	
- \varnothing 10,0	v_c	80–100–120		40–60–80	
	f	0,05–0,08–0,10		0,05–0,05–0,10	

(v_c : Cutting Speed (m/min), f: Feed rate (mm/rev), Min - Optimum - Max)

Brazed Carbide MULTI-DRILLS KDS Type



■ Description

The new AK type drill features an extra long carbide drill head, new cutting geometry, coolant holes and ultra hard TiAlN coating for reliable high productivity drilling.

- ## ■ Advantages
- General purpose drill for steels, stainless steels, cast irons
 - High productivity drilling even on deep holes up to 7 x D
 - Twice the tool life of conventionally coated drills
 - Self centering
 - Surface finish and tolerances comparable to solid carbide
 - Regrindable extra long carbide head halves drill replacement costs

■ Series

Type	Diameter range (mm)	Hole depth (L/D)	Remark
Short type (MAK Type)	Ø 9,5–40,5	-3	First choice general purpose drill
Long type (LAK Type)	Ø 9,5–40,5	-5	
Extra long type (DAK Type)	Ø 9,5–40,5	-7	Helix angle: 25° ---> 0°



Series

■ Performance

● High efficiency drilling	● Optimized drill geometry	● Comparison of cutting power (chip removal capability)
<p>Comparison of coating damage when high speed drilling</p> <p>TiAlN coated KDS...AK TiN coated type</p> <p>$v_c = 120$ m/min $v_c = 60$ m/min After 30 m cut length (600 holes)</p>	<p>Comparison of damage to drill margin After 40 min. cut length</p> <p>KDS...AK Competitor's drill</p>	<p>Cutting power (N)</p>
<p>Drill dia.: 18,0 mm Work material: C50 (HB230) $f = 0,3$ mm/rev $a_p = 50$ mm</p>	<p>Drill dia.: 18,0 mm Work material: C50 (HB230) $v_c = 50$ m/min $f = 0,25$ mm/rev $a_p = 38$ mm</p>	<p>Drill dia.: 18,0 mm $v_c = 50$ m/min Work material: C50 (HB230) $f = 0,3$ mm/rev $a_p = 90$ mm (L/D = 5)</p>

■ Application examples

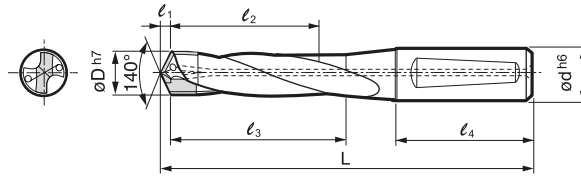
● Workpiece material	● Automotive parts	● Automotive parts
<ul style="list-style-type: none"> - General steel and alloy steel - Low carbon steel - Die steel - Stainless steel - Ductile cast iron - Grey cast iron 	<p>Work material: C50 (HB250)</p>	<p>Work material: 42CrMo4 (HB250)</p>
	<p>Drill: KDS 180 LAK (Ø 18,0 mm) Conditions: $v_c = 55$ m/min, $f = 0,25$ mm/rev $a_p = 70$ mm</p>	<p>Drill: KDS 250 MAK (Ø 25,0 mm) Conditions: $v_c = 60$ m/min, $f = 0,25$ mm/rev $a_p = 65$ mm</p>

Brazed Carbide MULTI-DRILLS

KDS ... MAK Type

Short Type (3 x D)

Brazed Carbide Drills with Coolant Holes



Helix angle: 20°
l₂ = Effective drilling length

● Diameter Ø 9,5–15,5 mm

Dimensions (mm)				Cat. No.	Short Series (3D)			
DC (mm)	Shank		Drill Head PL		Stock MAK	Dimensions (mm)		
	DCON	LS				OAL	LU	LUX
9,5~10,0	16	48	1,8	KDS 095 MAK	□	96,8	32	37
10,0~10,5				100 MAK	□			
~10,5				105 MAK	□			
10,6~11,0	16	48	2	KDS 106 MAK	□	102,0	35	40
11,0~11,5				110 MAK	□			
11,5~11,6				115 MAK	□			
11,6~11,7				KDS 116 MAK	□			
11,7~11,8				117 MAK	□			
11,8~11,9	118 MAK	□						
11,9~12,0	119 MAK	□						
12,0~12,1	16	48	2,2	120 MAK	□	107,2	38	44
12,1~12,2				121 MAK	□			
12,2~12,3				122 MAK	□			
12,3~12,4				123 MAK	□			
12,4~12,5				124 MAK	□			
12,5~12,6				125 MAK	□			
12,6~12,7				KDS 126 MAK	□			
12,7~12,8				127 MAK	□			
12,8~12,9	128 MAK	□						
12,9~13,0	129 MAK	□						
13,0~13,1	16	48	2,4	130 MAK	□	112,4	41	47
13,1~13,2				131 MAK	□			
13,2~13,3				132 MAK	□			
13,3~13,4				133 MAK	□			
13,4~13,5				134 MAK	□			
13,5~13,6				135 MAK	□			
13,6~13,7				KDS 136 MAK	□			
13,7~13,8	137 MAK	□						
13,8~13,9	138 MAK	□						
13,9~14,0	139 MAK	□						
14,0~14,1	16	48	2,5	140 MAK	□	117,5	44	51
14,1~14,2				141 MAK	□			
14,2~14,3				142 MAK	□			
14,3~14,4				143 MAK	□			
14,4~14,5				144 MAK	□			
14,5~14,6				145 MAK	□			
14,6~14,7				KDS 146 MAK	□			
14,7~14,8	147 MAK	□						
14,8~14,9	148 MAK	□						
14,9~15,0	148 MAK	□						
15,0~15,1	20	50	2,7	150 MAK	□	127,7	47	54
15,1~15,2				151 MAK	□			
15,2~15,3				152 MAK	□			
15,3~15,4				153 MAK	□			
15,4~15,5				154 MAK	□			
15,5~15,6				155 MAK	□			

● Diameter Ø 15,6–20,0 mm

Dimensions (mm)				Cat. No.	Short Series (3D)			
DC (mm)	Shank		Drill Head PL		Stock MAK	Dimensions (mm)		
	DCON	LS				OAL	LU	LUX
15,6~15,7	20	50	2,9	KDS 156 MAK	□	132,9	50	58
15,7~15,8				157 MAK	□			
15,8~15,9				158 MAK	□			
15,9~16,0				159 MAK	□			
16,0~16,1				160 MAK	□			
16,1~16,2				161 MAK	□			
16,2~16,3				162 MAK	□			
16,3~16,4				163 MAK	□			
16,4~16,5				164 MAK	□			
16,5~16,6				165 MAK	□			
16,6~16,7	20	50	3,1	KDS 166 MAK	□	138,1	53	61
16,7~16,8				167 MAK	□			
16,8~16,9				168 MAK	□			
16,9~17,0				169 MAK	□			
17,0~17,1				170 MAK	□			
17,1~17,2				171 MAK	□			
17,2~17,3				172 MAK	□			
17,3~17,4				173 MAK	□			
17,4~17,5	174 MAK	□						
17,5~17,6	175 MAK	□						
17,6~17,7	20	50	3,3	KDS 176 MAK	□	143,3	56	65
17,7~17,8				177 MAK	□			
17,8~17,9				178 MAK	□			
17,9~18,0				179 MAK	□			
18,0~18,1				180 MAK	□			
18,1~18,2				181 MAK	□			
18,2~18,3				182 MAK	□			
18,3~18,4				183 MAK	□			
18,4~18,5				184 MAK	□			
18,5~18,6				185 MAK	□			
18,6~18,7	25	56	3,5	KDS 186 MAK	□	158,5	59	68
18,7~18,8				187 MAK	□			
18,8~18,9				188 MAK	□			
18,9~19,0				189 MAK	□			
19,0~19,1				190 MAK	□			
19,1~19,2				191 MAK	□			
19,2~19,3				192 MAK	□			
19,3~19,4				193 MAK	□			
19,4~19,5	194 MAK	□						
19,5~19,6	195 MAK	□						
19,6~19,7	25	56	3,6	KDS 196 MAK	□	158,6	62	72
19,7~19,8				197 MAK	□			
19,8~19,9				198 MAK	□			
19,9~20,0				199 MAK	□			
20,0~20,1				200 MAK	□			
20,1~20,2				200 MAK	□			

■ Recommended Cutting Conditions

(v_c: Cutting Speed (m/min), f: Feed rate (mm/rev)) (Min – Standard – Max)

Diameter (mm)		Steels (<250 HB)	Steels (250–320 HB)	Hardened Steels (45 HRC)	Stainless Steels (<200 HB)	Ductile Cast Irons	Cast Irons	Aluminium Alloys	Titanium Alloys (Ti-6Al-4V)	Inconel (Inconel 718)
		–Ø 15	v _c	50–65–75	50–60–70	30–35–45	35–45–50	55–65–75	60–80–100	70–85–100
	f	0,15–0,3	0,15–0,3	0,1–0,2	0,1–0,2	0,15–0,3	0,2–0,3	0,25–0,35	0,1–0,15	0,08–0,1
–Ø 20	v _c	50–65–75	50–60–70	35–40–50	35–45–50	60–70–80	60–80–100	70–90–110	20–30–40	10–20–30
	f	0,15–0,35	0,15–0,35	0,15–0,25	0,15–0,25	0,15–0,35	0,2–0,35	0,25–0,4	0,1–0,15	0,08–0,1
–Ø 30,5	v _c	55–70–90	55–65–90	35–40–50	35–45–50	60–70–90	60–90–110	75–100–120	25–35–40	15–25–35
	f	0,2–0,4	0,2–0,4	0,15–0,25	0,15–0,25	0,2–0,4	0,25–0,4	0,3–0,4	0,1–0,2	0,08–0,12

If the drilling operation is completely satisfactory with the above condition and the rigidity of the machine is sufficient, the cutting data can be raised. For more guidance, please contact our technical representative.

□ = Delivery on request

Brazed Carbide MULTI-DRILLS KDS ... MAK Type

TiAlN Coated Brazed Carbide Multi-Drills for General Steels, Cast Iron & Ductile Cast Iron



Specification:

- Brazed carbide drill TiAlN coated (Grade: ACW30) with coolant holes
- Shank with whistle notch

● Diameter Ø 20,1–24,5 mm

Dimensions (mm)				Cat. No.	Short Series (3D)			
DC (mm)	Shank		Drill Head PL		Stock MAK	Dimensions (mm)		
	DCON	LS				OAL	LU	LUX
20,1	25	56	3,6	KDS 201 MAK	□	158,6	62	72
20,2				202 MAK	□			
20,3				203 MAK	□			
20,4				204 MAK	□			
20,5				205 MAK	□			
20,6	25	56	3,8	KDS 206 MAK	□	158,8	65	75
20,7				207 MAK	□			
20,8				208 MAK	□			
20,9				209 MAK	□			
21,0				210 MAK	□			
21,1				211 MAK	□			
21,2				212 MAK	□			
21,3				213 MAK	□			
21,4				214 MAK	□			
21,5				215 MAK	□			
21,6	25	56	4,0	KDS 216 MAK	□	164,0	68	79
21,7				217 MAK	□			
21,8				218 MAK	□			
21,9				219 MAK	□			
22,0				220 MAK	□			
22,1				221 MAK	□			
22,2				222 MAK	□			
22,3				223 MAK	□			
22,4				224 MAK	□			
22,5				225 MAK	□			
22,6	25	56	4,2	KDS 226 MAK	□	164,2	71	82
22,7				227 MAK	□			
22,8				228 MAK	□			
22,9				229 MAK	□			
23,0				230 MAK	□			
23,1				231 MAK	□			
23,2				232 MAK	□			
23,3				233 MAK	□			
23,4				234 MAK	□			
23,5				235 MAK	□			
23,6	32	60	4,4	KDS 236 MAK	□	174,4	74	86
23,7				237 MAK	□			
23,8				238 MAK	□			
23,9				239 MAK	□			
24,0				240 MAK	□			
24,1				241 MAK	□			
24,2				242 MAK	□			
24,3				243 MAK	□			
24,4				244 MAK	□			
24,5				245 MAK	□			

● Diameter Ø 24,6– 40,5 mm

Dimensions (mm)				Cat. No.	Short Series (3D)									
DC (mm)	Shank		Drill Head PL		Stock MAK	Dimensions (mm)								
	DCON	LS				OAL	LU	LUX						
24,6	32	60	4,5	KDS 246 MAK	□	174,5	76	88						
24,7				247 MAK	□									
24,8				248 MAK	□									
24,9				249 MAK	□									
25,0				250 MAK	□									
25,1				251 MAK	□									
25,2				252 MAK	□									
25,3				253 MAK	□									
25,4				254 MAK	□									
25,5				255 MAK	□									
25,6	32	60	4,7	KDS 256 MAK	□	179,9	79	92						
25,7				257 MAK	□									
25,8				258 MAK	□									
25,9				259 MAK	□									
26,0				260 MAK	□									
26,1				261 MAK	□									
26,5				265 MAK	□									
26,6				32	60				4,9	KDS 266 MAK	□	179,9	81	94
27,5										275 MAK	□			
27,6				32	60				5,1	KDS 276 MAK	□	185,1	83	97
28,5	285 MAK	□												
28,6	32	60	5,3	KDS 286 MAK	□	190,3	86	100						
29,5				295 MAK	□									
29,6	32	60	5,5	KDS 296 MAK	□	190,5	89	104						
30,5				305 MAK	□									
30,6	40	70	5,6	KDS 306 MAK	□	210,6	95	112						
31,5				315 MAK	□									
31,6	40	70	5,8	KDS 316 MAK	□	215,8	98	115						
32,5				325 MAK	□									
32,6	40	70	6,0	KDS 326 MAK	□	221,0	101	119						
33,5				335 MAK	□									
33,6	40	70	6,2	KDS 336 MAK	□	226,2	104	122						
34,5				345 MAK	□									
34,6	40	70	6,4	KDS 346 MAK	□	231,4	107	125						
35,5				355 MAK	□									
35,6	40	70	6,6	KDS 356 MAK	□	231,6	110	128						
36,5				365 MAK	□									
36,6	40	70	6,7	KDS 366 MAK	□	236,7	113	132						
37,5				375 MAK	□									
37,6	40	70	6,9	KDS 376 MAK	□	241,9	116	163						
38,5				385 MAK	□									
38,6	40	70	7,1	KDS 386 MAK	□	247,1	119	168						
39,5				395 MAK	□									
39,6	40	70	7,3	KDS 396 MAK	□	252,3	122	173						
40,5				405 MAK	□									

■ How to Order

Non-Stock Items will be required minimum order quantity for 6 pcs. Please specify the Cat. No. For example, if the diameter of the drill is 10,2 mm, please indicate as follow.

E.g., **KDS 102 MAK**, **ACW30** (Grade)

KDS series: Brazed carbide drill with coolant holes

Drill diameter
10,2 mm

AK: Brazed carbide and TiAlN coated drill

M : 3 x D

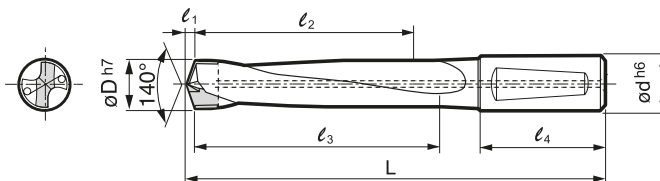


Brazed Carbide MULTI-DRILLS

KDS ... LAK Type

Long Type (5 x D)

Brazed Carbide Drills with Coolant Holes



Helix angle: 20° ---> 6°
l₂ = Effective drilling length

● Diameter Ø 9,5–15,5 mm

Dimensions (mm)				Cat. No.	Long Series (5D)			
DC (mm)	Shank		Drill Head PL		Stock LAK	Dimensions (mm)		
	DCON	LS				OAL	LU	LUX
9,5~	16	48	1,8	KDS 095 LAK	□	116,8	52	57
10,0				100 LAK	□			
~10,5				105 LAK	□			
10,6~	16	48	2	KDS 106 LAK	□	127,0	57	63
11,0				110 LAK	□			
~11,5				115 LAK	□			
11,6	16	48	2,2	KDS 116 LAK	□	132,2	63	69
11,7				117 LAK	□			
11,8				118 LAK	□			
11,9	16	48	2,4	119 LAK	□	142,4	67	74
12,0				120 LAK	□			
12,1				121 LAK	□			
12,2	16	48	2,5	122 LAK	□	147,5	73	80
12,3				123 LAK	□			
12,4				124 LAK	□			
12,5	16	48	2,7	125 LAK	□	157,7	77	85
12,6				126 LAK	□			
12,7				127 LAK	□			
12,8	20	50	2,9	128 LAK	□	167,9	83	91
12,9				129 LAK	□			
13,0				130 LAK	□			
13,1	20	50	3,1	131 LAK	□	173,1	87	96
13,2				132 LAK	□			
13,3				133 LAK	□			
13,4	20	50	3,3	134 LAK	□	178,3	93	102
13,5				135 LAK	□			
13,6				136 LAK	□			
13,7	25	56	3,5	137 LAK	□	193,5	97	107
13,8				138 LAK	□			
13,9				139 LAK	□			
14,0	25	56	3,6	140 LAK	□	198,6	103	113
14,1				141 LAK	□			
14,2				142 LAK	□			
14,3	25	56	3,6	143 LAK	□	198,6	103	113
14,4				144 LAK	□			
14,5				145 LAK	□			
14,6	25	56	3,6	146 LAK	□	198,6	103	113
14,7				147 LAK	□			
14,8				148 LAK	□			
14,9	25	56	3,6	149 LAK	□	198,6	103	113
15,0				150 LAK	□			
15,1				151 LAK	□			
15,2	25	56	3,6	152 LAK	□	198,6	103	113
15,3				153 LAK	□			
15,4				154 LAK	□			
15,5	25	56	3,6	155 LAK	□	198,6	103	113
15,6				156 LAK	□			
15,7				157 LAK	□			

● Diameter Ø 15,6–20,0 mm

Dimensions (mm)				Cat. No.	Long Series (5D)			
DC (mm)	Shank		Drill Head PL		Stock LAK	Dimensions (mm)		
	DCON	LS				OAL	LU	LUX
15,6	20	50	2,9	KDS 156 LAK	□	167,9	83	91
15,7				157 LAK	□			
15,8				158 LAK	□			
15,9	20	50	3,1	159 LAK	□	173,1	87	96
16,0				160 LAK	□			
16,1				161 LAK	□			
16,2	20	50	3,3	162 LAK	□	178,3	93	102
16,3				163 LAK	□			
16,4				164 LAK	□			
16,5	20	50	3,5	165 LAK	□	193,5	97	107
16,6				166 LAK	□			
16,7				167 LAK	□			
16,8	25	56	3,6	168 LAK	□	198,6	103	113
16,9				169 LAK	□			
17,0				170 LAK	□			
17,1	25	56	3,6	171 LAK	□	198,6	103	113
17,2				172 LAK	□			
17,3				173 LAK	□			
17,4	25	56	3,6	174 LAK	□	198,6	103	113
17,5				175 LAK	□			
17,6				176 LAK	□			
17,7	25	56	3,6	177 LAK	□	198,6	103	113
17,8				178 LAK	□			
17,9				179 LAK	□			
18,0	25	56	3,6	180 LAK	□	198,6	103	113
18,1				181 LAK	□			
18,2				182 LAK	□			
18,3	25	56	3,6	183 LAK	□	198,6	103	113
18,4				184 LAK	□			
18,5				185 LAK	□			
18,6	25	56	3,6	KDS 186 LAK	□	198,6	103	113
18,7				187 LAK	□			
18,8				188 LAK	□			
18,9	25	56	3,6	189 LAK	□	198,6	103	113
19,0				190 LAK	□			
19,1				191 LAK	□			
19,2	25	56	3,6	192 LAK	□	198,6	103	113
19,3				193 LAK	□			
19,4				194 LAK	□			
19,5	25	56	3,6	195 LAK	□	198,6	103	113
19,6				196 LAK	□			
19,7				197 LAK	□			
19,8	25	56	3,6	198 LAK	□	198,6	103	113
19,9				199 LAK	□			
20,0				200 LAK	□			

■ Recommended Cutting Conditions

(v_c: Cutting Speed (m/min), f: Feed rate (mm/rev)) (Min – Standard – Max)

Diameter (mm)		Steels (<250 HB)	Steels (250–320 HB)	Hardened Steels (45 HRC)	Stainless Steels (<200 HB)	Ductile Cast Irons	Cast Irons	Aluminium Alloys	Titanium Alloys (Ti-6Al-4V)	Inconel (Inconel 718)
		–Ø 15	v _c	50–65–75	50–60–70	30–35–45	35–45–50	55–65–75	60–80–100	70–85–100
	f	0,15–0,3	0,15–0,3	0,1–0,2	0,1–0,2	0,15–0,3	0,2–0,3	0,25–0,35	0,1–0,15	0,08–0,1
–Ø 20	v _c	50–65–75	50–60–70	35–40–50	35–45–50	60–70–80	60–80–100	70–90–110	20–30–40	10–20–30
	f	0,15–0,35	0,15–0,35	0,15–0,25	0,15–0,25	0,15–0,35	0,2–0,35	0,25–0,4	0,1–0,15	0,08–0,1
–Ø 30,5	v _c	55–70–90	55–65–90	35–40–50	35–45–50	60–70–90	60–90–110	75–100–120	25–35–40	15–25–35
	f	0,2–0,4	0,2–0,4	0,15–0,25	0,15–0,25	0,2–0,4	0,25–0,4	0,3–0,4	0,1–0,2	0,08–0,12

If the drilling operation is completely satisfactory with the above condition and the rigidity of the machine is sufficient, the cutting data can be raised. For more guidance, please contact our technical representative.

□ = Delivery on request

Brazed Carbide MULTI-DRILLS KDS ... LAK Type

TiAlN Coated Brazed Carbide Multi-Drills for General Steels, Cast Iron & Ductile Cast Iron



Specification:

- Brazed carbide drill TiAlN coated (Grade: ACW30) with coolant holes
- Shank with whistle notch

● Diameter Ø 20,1–24,5 mm

Dimensions (mm)				Cat. No.	Long Series (5D)			
DC (mm)	Shank		Drill Head PL		Stock LAK	Dimensions (mm)		
	DCON	LS				OAL	LU	LUX
20,1	25	56	3,6	KDS 201 LAK	□	198,6	103	113
20,2				202 LAK	□			
20,3				203 LAK	□			
20,4				204 LAK	□			
20,5				205 LAK	□			
20,6	25	56	3,8	KDS 206 LAK	□	198,8	107	118
20,7				207 LAK	□			
20,8				208 LAK	□			
20,9				209 LAK	□			
21,0				210 LAK	□			
21,1				211 LAK	□			
21,2				212 LAK	□			
21,3				213 LAK	□			
21,4				214 LAK	□			
21,5				215 LAK	□			
21,6	25	56	4,0	KDS 216 LAK	□	204,0	113	124
21,7				217 LAK	□			
21,8				218 LAK	□			
21,9				219 LAK	□			
22,0				220 LAK	□			
22,1				221 LAK	□			
22,2				222 LAK	□			
22,3				223 LAK	□			
22,4				224 LAK	□			
22,5				225 LAK	□			
22,6	25	56	4,2	KDS 226 LAK	□	214,2	117	129
22,7				227 LAK	□			
22,8				228 LAK	□			
22,9				229 LAK	□			
23,0				230 LAK	□			
23,1				231 LAK	□			
23,2				232 LAK	□			
23,3				233 LAK	□			
23,4				234 LAK	□			
23,5				235 LAK	□			
23,6	32	60	4,4	KDS 236 LAK	□	224,4	123	135
23,7				237 LAK	□			
23,8				238 LAK	□			
23,9				239 LAK	□			
24,0				240 LAK	□			
24,1				241 LAK	□			
24,2				242 LAK	□			
24,3				243 LAK	□			
24,4				244 LAK	□			
24,5				245 LAK	□			

● Diameter Ø 24,6–40,5 mm

Dimensions (mm)				Cat. No.	Long Series (5D)									
DC (mm)	Shank		Drill Head PL		Stock LAK	Dimensions (mm)								
	DCON	LS				OAL	LU	LUX						
24,6	32	60	4,5	KDS 246 LAK	□	229,5	127	140						
24,7				247 LAK	□									
24,8				248 LAK	□									
24,9				249 LAK	□									
25,0				250 LAK	□									
25,1				251 LAK	□									
25,2				252 LAK	□									
25,3				253 LAK	□									
25,4				254 LAK	□									
25,5				255 LAK	□									
25,6	32	60	4,7	KDS 256 LAK	□	234,7	133	146						
25,7				257 LAK	□									
25,8				258 LAK	□									
25,9				259 LAK	□									
26,0				260 LAK	□									
26,1				261 LAK	□									
-26,5				-265 LAK	□									
26,6				32	60				4,9	KDS 266 LAK	□	239,9	137	151
-27,5										-275 LAK	□			
27,6				32	60				5,1	KDS 276 LAK	□	245,1	143	157
-28,5	-285 LAK	□												
28,6	32	60	5,3	KDS 286 LAK	□	250,3	147	162						
-29,5				-295 LAK	□									
29,6	32	60	5,5	KDS 296 LAK	□	260,5	152	167						
-30,5				-305 LAK	□									
30,6	40	70	5,6	KDS 306 LAK	□	280,6	166	187						
-31,5				-315 LAK	□									
31,6	40	70	5,8	KDS 316 LAK	□	285,8	172	190						
-32,5				-325 LAK	□									
32,6	40	70	6,0	KDS 326 LAK	□	291,0	175	194						
-33,5				-335 LAK	□									
33,6	40	70	6,2	KDS 336 LAK	□	296,2	177	197						
-34,5				-345 LAK	□									
34,6	40	70	6,4	KDS 346 LAK	□	301,4	180	200						
-35,5				-355 LAK	□									
35,6	40	70	6,6	KDS 356 LAK	□	306,6	183	203						
-36,5				-365 LAK	□									
36,6	40	70	6,7	KDS 366 LAK	□	311,7	188	207						
-37,5				-375 LAK	□									
37,6	40	70	6,9	KDS 376 LAK	□	321,9	193	243						
-38,5				-385 LAK	□									
38,6	40	70	7,1	KDS 386 LAK	□	327,1	198	248						
-39,5				-395 LAK	□									
39,6	40	70	7,3	KDS 396 LAK	□	332,3	203	253						
-40,5				-405 LAK	□									

■ How to Order

Non-Stock Items will be required minimum order quantity for 6 pcs. Please specify the Cat. No.
For example, if the diameter of the drill is 10,2 mm, please indicate as follow.

E.g., **KDS 102 LAK**, **ACW30** (Grade)

KDS series: Brazed carbide drill with coolant holes

Drill diameter
10,2 mm

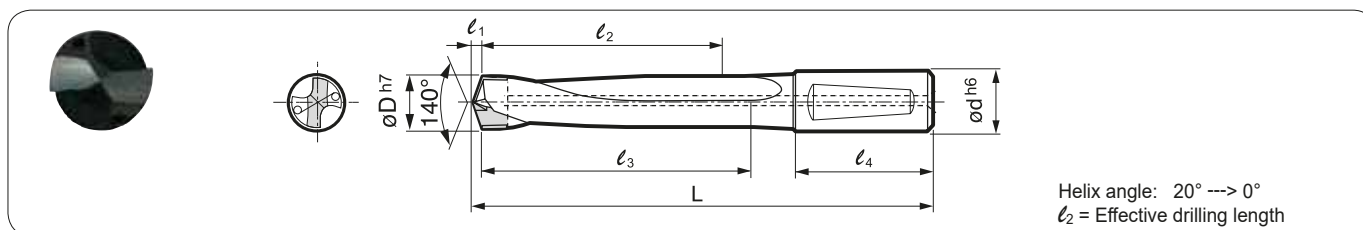
AK: Brazed carbide and TiAlN coated drill

L : 5 x D



Brazed Carbide MULTI-DRILLS KDS ... DAK Type

Extra Long Type (7 x D) Brazed Carbide Drills with Coolant Holes



● Diameter Ø 9,5–15,5 mm

Dimensions (mm)			Cat. No.	Extra Long Series (7D)				
DC (mm)	Shank			Drill Head	Stock	Dimensions (mm)		
	D CON	LS			PL	DAK	OAL	LU
9,5~	16	48	1,8	KDS 095 DAK	□	141,8	75	80
10,0				100 DAK	□			
~10,5				105 DAK	□			
10,6~	16	48	2	KDS 106 DAK	□	152,0	81	87
11,0				110 DAK	□			
~11,5				115 DAK	□			
11,6	16	48	2,2	KDS 116 DAK	□	162,2	91	97
11,7				117 DAK	□			
11,8				118 DAK	□			
11,9				119 DAK	□			
12,0				120 DAK	□			
12,1				121 DAK	□			
12,2				122 DAK	□			
12,3				123 DAK	□			
12,4	124 DAK	□						
12,5	125 DAK	□						
12,6	16	48	2,4	KDS 126 DAK	□	177,4	99	106
12,7				127 DAK	□			
12,8				128 DAK	□			
12,9				129 DAK	□			
13,0				130 DAK	□			
13,1				131 DAK	□			
13,2				132 DAK	□			
13,3				133 DAK	□			
13,4	134 DAK	□						
13,5	135 DAK	□						
13,6	16	48	2,5	KDS 136 DAK	□	182,5	106	113
13,7				137 DAK	□			
13,8				138 DAK	□			
13,9				139 DAK	□			
14,0				140 DAK	□			
14,1				141 DAK	□			
14,2				142 DAK	□			
14,3				143 DAK	□			
14,4	144 DAK	□						
14,5	145 DAK	□						
14,6	20	50	2,7	KDS 146 DAK	□	197,7	114	122
14,7				147 DAK	□			
14,8				148 DAK	□			
14,9				149 DAK	□			
15,0				150 DAK	□			
15,1				151 DAK	□			
15,2				152 DAK	□			
15,3				153 DAK	□			
15,4	154 DAK	□						
15,5	155 DAK	□						

● Diameter Ø 15,6–20,0 mm

Dimensions (mm)			Cat. No.	Extra Long Series (7D)				
DC (mm)	Shank			Drill Head	Stock	Dimensions (mm)		
	D CON	LS			PL	DAK	OAL	LU
15,6	20	50	2,9	KDS 156 DAK	□	207,9	121	129
15,7				157 DAK	□			
15,8				158 DAK	□			
15,9				159 DAK	□			
16,0				160 DAK	□			
16,1				161 DAK	□			
16,2				162 DAK	□			
16,3				163 DAK	□			
16,4	164 DAK	□						
16,5	165 DAK	□						
16,6	20	50	3,1	KDS 166 DAK	□	218,1	129	138
16,7				167 DAK	□			
16,8				168 DAK	□			
16,9				169 DAK	□			
17,0				170 DAK	□			
17,1				171 DAK	□			
17,2				172 DAK	□			
17,3				173 DAK	□			
17,4	174 DAK	□						
17,5	175 DAK	□						
17,6	20	50	3,3	KDS 176 DAK	□	223,3	136	145
17,7				177 DAK	□			
17,8				178 DAK	□			
17,9				179 DAK	□			
18,0				180 DAK	□			
18,1				181 DAK	□			
18,2				182 DAK	□			
18,3				183 DAK	□			
18,4	184 DAK	□						
18,5	185 DAK	□						
18,6	25	56	3,5	KDS 186 DAK	□	243,5	144	154
18,7				187 DAK	□			
18,8				188 DAK	□			
18,9				189 DAK	□			
19,0				190 DAK	□			
19,1				191 DAK	□			
19,2				192 DAK	□			
19,3				193 DAK	□			
19,4	194 DAK	□						
19,5	195 DAK	□						
19,6	25	56	3,6	KDS 196 DAK	□	248,6	151	161
19,7				197 DAK	□			
19,8				198 DAK	□			
19,9				199 DAK	□			
20,0				200 DAK	□			

■ Recommended Cutting Conditions

(v_c : Cutting Speed (m/min), f : Feed rate (mm/rev)) (Min – Standard – Max)

Diameter (mm)		Steels (<250 HB)	Steels (250–320 HB)	Die Steels (about 250 HB)	Ductile Cast Irons	Remarks
–Ø 15	v_c	40–65–90	40–60–90	40–50–70	50–70–100	To avoid the drill bending, which can cause breakage, please pre-drill or reduce the cutting conditions at the entrance of hole: RPM: 100–300 f: 0,05–0,08 mm/rev
	f	0,15–0,2–0,3	0,1–0,2–0,25	0,1–0,2–0,25	0,2–0,3–0,35	
–Ø 20	v_c	40–65–90	40–60–90	40–50–70	50–70–100	
	f	0,2–0,3–0,4	0,15–0,25–0,35	0,15–0,25–0,3	0,2–0,35–0,4	
–Ø 30,5	v_c	40–70–90	40–65–90	40–55–70	50–70–100	
	f	0,2–0,35–0,45	0,2–0,3–0,4	0,2–0,3–0,35	0,25–0,4–0,5	

□ = Delivery on request

Brazed Carbide MULTI-DRILLS KDS ... DAK Type

TiAlN Coated Brazed Carbide Multi-Drills for General Steels & Ductile Cast Iron



Specification:

- Brazed carbide drill TiAlN coated (Grade: ACW30) with coolant holes
- Shank with whistle notch

● Diameter Ø 20,1–24,5 mm

Dimensions (mm)				Cat. No.	Extra Long Series (7D)			
DC (mm)	Shank		Drill Head		Stock	Dimensions (mm)		
	DCON	LS				PL	DAK	OAL
20,1	25	56	3,6	KDS 201 DAK	□	248,6	151	161
20,2				202 DAK	□			
20,3				203 DAK	□			
20,4				204 DAK	□			
20,5				205 DAK	□			
20,6	25	56	3,8	KDS 206 DAK	□	248,8	155	166
20,7				207 DAK	□			
20,8				208 DAK	□			
20,9				209 DAK	□			
21,0				210 DAK	□			
21,1				211 DAK	□			
21,2				212 DAK	□			
21,3				213 DAK	□			
21,4				214 DAK	□			
21,5				215 DAK	□			
21,6	25	56	4,0	KDS 216 DAK	□	259,0	166	177
21,7				217 DAK	□			
21,8				218 DAK	□			
21,9				219 DAK	□			
22,0				220 DAK	□			
22,1				221 DAK	□			
22,2				222 DAK	□			
22,3				223 DAK	□			
22,4				224 DAK	□			
22,5				225 DAK	□			
22,6	25	56	4,2	KDS 226 DAK	□	274,2	174	186
22,7				227 DAK	□			
22,8				228 DAK	□			
22,9				229 DAK	□			
23,0				230 DAK	□			
23,1				231 DAK	□			
23,2				232 DAK	□			
23,3				233 DAK	□			
23,4				234 DAK	□			
23,5				235 DAK	□			
23,6	32	60	4,4	KDS 236 DAK	□	284,4	178	190
23,7				237 DAK	□			
23,8				238 DAK	□			
23,9				239 DAK	□			
24,0				240 DAK	□			
24,1				241 DAK	□			
24,2				242 DAK	□			
24,3				243 DAK	□			
24,4				244 DAK	□			
24,5				245 DAK	□			

● Diameter Ø 24,6–40,5 mm

Dimensions (mm)				Cat. No.	Extra Long Series (7D)									
DC (mm)	Shank		Drill Head		Stock	Dimensions (mm)								
	DCON	LS				PL	DAK	OAL	LU	LUX				
24,6	32	60	4,5	KDS 246 DAK	□	294,5	187	200						
24,7				247 DAK	□									
24,8				248 DAK	□									
24,9				249 DAK	□									
25,0				250 DAK	□									
25,1				251 DAK	□									
25,2				252 DAK	□									
25,3				253 DAK	□									
25,4				254 DAK	□									
25,5				255 DAK	□									
25,6	32	60	4,7	KDS 256 DAK	□	304,7	197	210						
25,7				257 DAK	□									
25,8				258 DAK	□									
25,9				259 DAK	□									
26,0				260 DAK	□									
26,1				261 DAK	□									
26,5				265 DAK	□									
26,6				32	60				4,9	KDS 266 DAK	□	309,9	201	215
27,5										275 DAK	□			
27,6				32	60				5,1	KDS 276 DAK	□	315,1	206	200
28,5	285 DAK	□												
28,6	32	60	5,3	KDS 286 DAK	□	325,3	215	230						
29,5				295 DAK	□									
29,6	32	60	5,5	KDS 296 DAK	□	335,5	225	240						
30,5				305 DAK	□									
30,6	40	70	5,6	KDS 306 DAK	□	350,6	229	245						
31,5				315 DAK	□									
31,6	40	70	5,8	KDS 316 DAK	□	360,8	234	250						
32,5				325 DAK	□									
32,6	40	70	6,0	KDS 326 DAK	□	371,0	243	260						
33,5				335 DAK	□									
33,6	40	70	6,2	KDS 336 DAK	□	381,2	253	270						
34,5				345 DAK	□									
34,6	40	70	6,4	KDS 346 DAK	□	391,4	257	275						
35,5				355 DAK	□									
35,6	40	70	6,6	KDS 356 DAK	□	396,6	262	280						
36,5				365 DAK	□									
36,6	40	70	6,7	KDS 366 DAK	□	406,7	271	290						
37,5				375 DAK	□									
37,6	40	70	6,9	KDS 376 DAK	□	416,9	292	338						
38,5				385 DAK	□									
38,6	40	70	7,1	KDS 386 DAK	□	422,1	296	343						
39,5				395 DAK	□									
39,6	40	70	7,3	KDS 396 DAK	□	427,3	300	348						
40,5				405 DAK	□									

■ How to Order

Non-Stock Items will be required minimum order quantity for 6 pcs. Please specify the Cat. No.
For example, if the diameter of the drill is 10,2 mm, please indicate as follow.

E.g., **KDS 102 DAK**, **ACW30** (Grade)

KDS series: Brazed carbide drill with coolant holes

Drill diameter
10,2 mm

AK: Brazed carbide and TiAlN coated drill

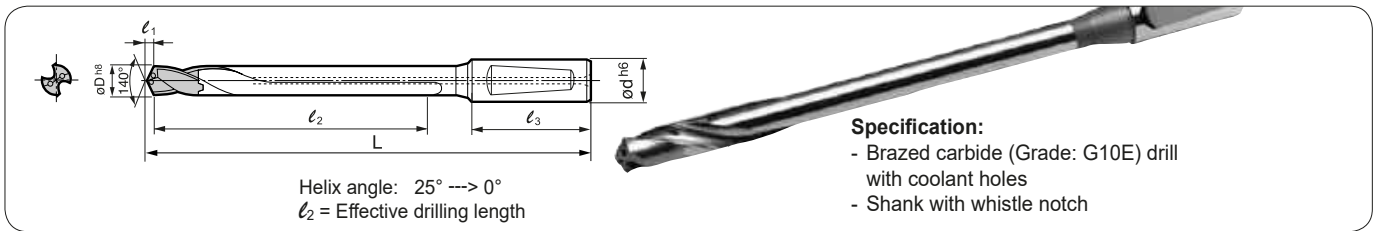
D : 7 x D



Brazed Carbide MULTI-DRILLS KDS ... FA Type

(Available on Request)

Extra Long Type (10 x D) Brazed Carbide Drills with Coolant Holes



● Diameter Ø 8,0–15,0 mm

Dimensions (mm)				Cat. No.	Extra Long Series (10D)		
DC (mm)	Shank		Drill Head		Stock	Dimensions (mm)	
	DCON	LS			PL	FA10	OAL
8,0	16	48	1,5	KDS 080 FA10	□	156,5	93
-8,5	16	48	1,5	-085 FA10	□	156,5	93
8,6	16	48	1,6	KDS 086 FA10	□	171,6	104
-9,5	16	48	1,6	-095 FA10	□	171,6	104
9,6	16	48	1,8	KDS 096 FA10	□	181,8	115
-10,5	16	48	1,8	-105 FA10	□	181,8	115
10,6	16	48	2,0	KDS 106 FA10	□	197,0	126
-11,5	16	48	2,0	-115 FA10	□	197,0	126
11,6	16	48	2,2	KDS 116 FA10	□	207,2	137
-12,5	16	48	2,2	-125 FA10	□	207,2	137
12,6	16	48	2,4	KDS 126 FA10	□	222,4	148
-13,5	16	48	2,4	-135 FA10	□	222,4	148
13,6	16	48	2,5	KDS 136 FA10	□	232,5	159
-14,5	16	48	2,5	-145 FA10	□	232,5	159
14,6	20	50	2,7	KDS 146 FA10	□	247,7	170
-15,5	20	50	2,7	-155 FA10	□	247,7	170
15,6	20	50	2,9	KDS 156 FA10	□	262,9	181
-16,5	20	50	2,9	-165 FA10	□	262,9	181
16,6	20	50	3,1	KDS 166 FA10	□	273,1	192
-17,5	20	50	3,1	-175 FA10	□	273,1	192
17,6	20	50	3,3	KDS 176 FA10	□	288,3	203
-18,5	20	50	3,3	-185 FA10	□	288,3	203
18,6	25	56	3,5	KDS 186 FA10	□	303,5	214
-19,5	25	56	3,5	-195 FA10	□	303,5	214

● Diameter Ø 15,1–19,5 mm

Dimensions (mm)				Cat. No.	Extra Long Series (10D)		
DC (mm)	Shank		Drill Head		Stock	Dimensions (mm)	
	DCON	LS			PL	FA10	OAL
19,6	25	56	3,6	KDS 196 FA10	□	318,6	225
-20,5	25	56	3,6	-205 FA10	□	318,6	225
20,6	25	56	3,8	KDS 206 FA10	□	328,8	236
-21,5	25	56	3,8	-215 FA10	□	328,8	236
21,6	25	56	4,0	KDS 216 FA10	□	344,0	247
-22,5	25	56	4,0	-225 FA10	□	344,0	247
22,6	25	56	4,2	KDS 226 FA10	□	354,2	258
-23,5	25	56	4,2	-235 FA10	□	354,2	258
23,6	32	60	4,4	KDS 236 FA10	□	374,4	269
-24,5	32	60	4,4	-245 FA10	□	374,4	269
24,6	32	60	4,5	KDS 246 FA10	□	384,5	280
-25,5	32	60	4,5	-255 FA10	□	384,5	280
25,6	32	60	4,7	KDS 256 FA10	□	399,7	291
-26,5	32	60	4,7	-265 FA10	□	399,7	291
26,6	32	60	4,9	KDS 266 FA10	□	409,9	302
-27,5	32	60	4,9	-275 FA10	□	409,9	302
27,6	32	60	5,1	KDS 276 FA10	□	425,1	313
-28,5	32	60	5,1	-285 FA10	□	425,1	313
28,6	32	60	5,3	KDS 286 FA10	□	435,3	324
-29,5	32	60	5,3	-295 FA10	□	435,3	324
29,6	32	60	5,5	KDS 296 FA10	□	450,5	335
-30,5	32	60	5,5	-305 FA10	□	450,5	335

Brazed Carbide Multi-Drills for Cast Irons and Aluminium Alloys

■ How to Order

Non-Stock Items will be required minimum order quantity for 6 pcs. Please specify the Cat. No. For example, if the diameter of the drill is 10,2 mm, please indicate as follow.

E.g., **KDS 102 FA 10 ,G10E** (Grade)

KDS series: Brazed carbide drill with coolant holes

Drill diameter
10,2 mm

10: Effective drilling length

FA: Extra long type brazed carbide drill with special flutes (Helix angle: 25° ⇄ 0°)



■ Recommended Cutting Conditions

(v_c : Cutting Speed (m/min), f : Feed rate (mm/rev)) (Min – Standard – Max)

Diameter (mm)	Cast Irons	Aluminium Alloys	Remarks
-Ø 12	30–55–60	50–70–90	To avoid the drill bending, which can cause breakage, please pre-drill or reduce the cutting conditions at the entrance of hole; RPM: 100–300, f : 0,05–0,08 mm/rev.
	0,1–0,2–0,25	0,1–0,2–0,3	
-Ø 20	40–60–70	60–70–100	Higher feed rates and deep holes require high coolant pressure. Cutting fluid : Water soluble oil Cutting fluid pressure : 4–10 bar
	0,2–0,3–0,4	0,3–0,35–0,5	
-Ø 30	40–60–70	70–100–150	
	0,3–0,4–0,5	0,3–0,4–0,5	

□ = Delivery on request

Replaceable Head Type MULTI-DRILLS SMD Type

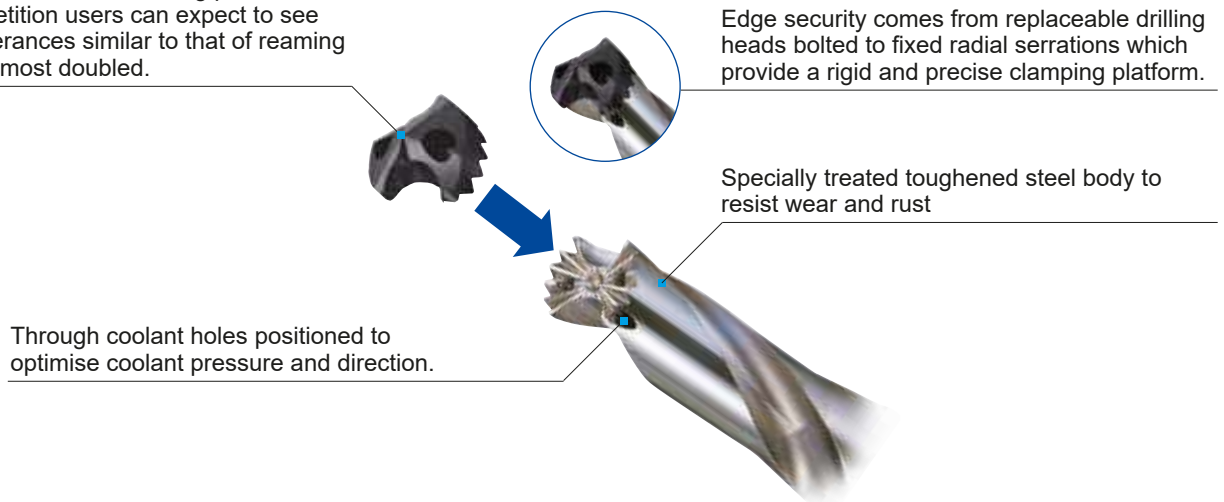
General Features

Fast accurate and ideal for drilling steels, this newly developed drill from SUMITOMO gives similar hole accuracy to that of regrindable drills renowned within the industry as being the ultimate hole making tool.

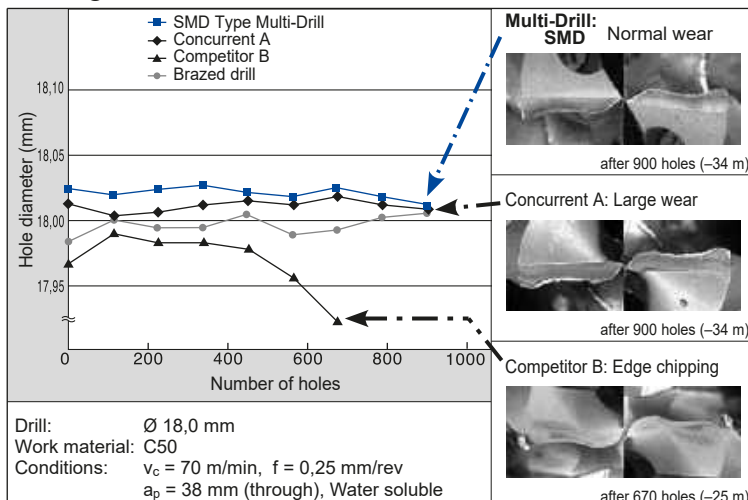


- ## Advantages
- Available in diameters ranging from 12,0–42,5 mm
 - Drilling Depths 1,5–12 x Diameter
 - Optimised heat dissipation via precisely located coolant holes
 - Maximised rigidity from newly developed clamping system
 - High performance drilling of precision holes from solid
 - 3 different types of head for general and smooth cutting (MTL type, MEL type) and new MFS type for drilling in non-flat surfaces.

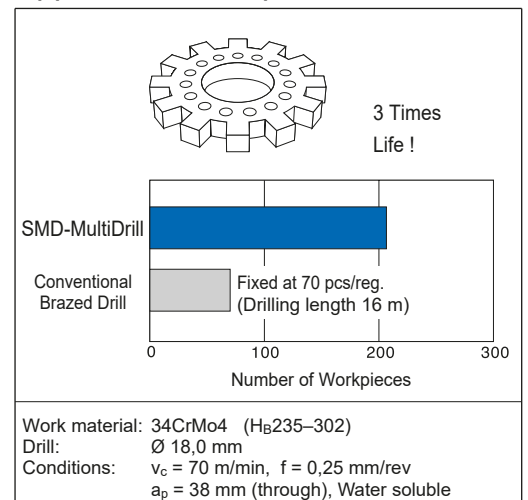
The newly developed tungsten carbide substrate with its ultra hard smooth coating proved that against competition users can expect to see holes with tolerances similar to that of reaming and tool life almost doubled.



Drilling Precision



Application Example

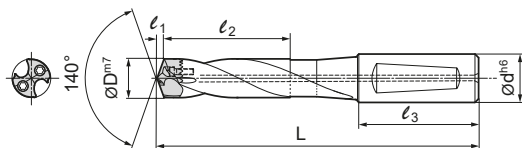


Replaceable Head Type Drill Holder

SMDH Type

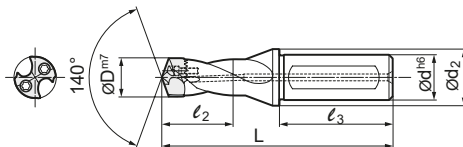
● Holder 3D / 5D / 8D

Shank Type:
Whistle notch type



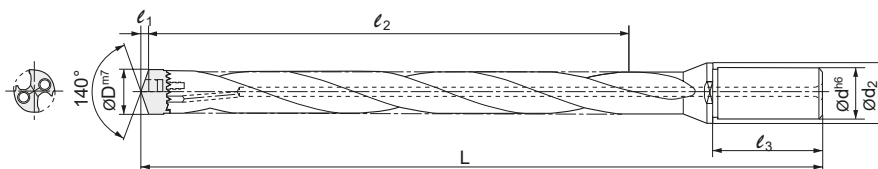
● Holder 1,5D

Shank Type:
Weldon type



● Holder 12D

Shank Type:
Cylindrical type



l_2 = Effective drilling length

■ Holder

(mm)

Dimensions				Series (1,5D)				Series (3D)			Series (5D)			Series (8D)			Series (12D)				Related Drill Heads DMTL / DMEL		
Drill Head	Shank	Cat. No.	Stock	Dimensions			Stock	Dimensions		Stock	Dimensions		Stock	Dimensions		Stock	Dimensions						
Ø D	l ₁			Ø d	l ₃	S		L	l ₂		Ø d ₂	M3		L	l ₂		M5	L	l ₂	M8		L	l ₂
12,0	2,2	SMDH 120 □ □ □ □	●	91	25,5	20	●	107,2	43,5	●	132,2	68,5											1200–1249
12,5	2,3		●	91	25,5	20	●	107,3	43,5	●	132,3	68,5										1250–1299	
13,0	2,4		●	92	27,5	20	●	112,4	46,5	●	142,4	73,5										1300–1349	
14,0	2,5		●	96	31,5	20	●	119,0	52,5	●	149,0	81,5	●	194,0	124,5	●	238,5	168,5	20				1350–1450
15,0	2,7	SMDH 150 □ □ □ □	●	100	32,0	25	●	129,2	55,0	●	159,2	86,0	●	204,2	133,0	●	253,0	180,0	25				1451–1550
16,0	2,9		●	103	35,0	25	●	134,4	59,0	●	169,4	92,0	●	214,4	141,0	●	265,5	192,0	25				1551–1650
17,0	3,1		●	105	35,5	25	●	139,6	62,5	●	174,6	97,5	●	224,6	150,5	●	278,1	203,5	25				1651–1750
18,0	3,3		●	107	39,7	25	●	144,8	66,5	●	179,8	103,5	●	229,8	158,5	●	290,5	215,5	25				1751–1850
19,0	3,5	SMDH 190 □ □ □ □	●	115	40,5	30	●	160,1	69,5	●	195,0	108,5	●	255,0	167,5	●	309,1	228,5	30				1851–1950
20,0	3,6		●	118	43,0	30	●	160,1	73,0	●	200,1	114,0	●	265,1	175,0	●	321,4	240,0	30				1951–2050
21,0	3,8		●	119	44,0	30	●	160,3	76,0	●	200,3	119,0	●	270,3	184,0	●	333,9	252,0	30				2051–2150
22,0	4,0		●	121	47,0	30	●	165,1	80,0	●	205,1	125,0	●	275,1	192,0	●	347,0	264,0	30				2151–2280
23,0	4,2	SMDH 230 □ □ □ □	●	122	46,5	30	●	164,8	82,5	●	214,8	129,5	●	284,8	200,5	●	359,0	275,5	30				2281–2380
24,0	4,4		●	129	49,5	37	●	174,6	86,5	●	224,6	135,5	●	299,6	208,5	●	376,1	284,5	37				2381–2480
25,0	4,6		●	129	49,0	37	●	174,6	88,0	●	229,6	140,0	●	304,6	217,0	●	388,4	300,0	37				2481–2580
26,0	4,7		●	132	52,0	37	●	179,7	92,0	●	234,7	146,0	●	314,7	225,0								2581–2680
27,0	4,9	SMDH 270 □ □ □ □	●	133	53,0	37	●	179,9	94,0	●	239,9	151,0	●	324,9	234,0								2681–2780
28,0	5,1		●	135	54,5	37	●	185,1	96,5	●	245,1	156,5	●	330,1	241,5								2781–2880
29,0	5,3		●	136	55,5	37	●	190,3	99,5	●	250,3	161,5	●	340,3	250,5								2881–2980
30,0	5,5		●	139	58,5	37	●	190,5	104,5	●	260,5	167,5	●	350,5	259,5								2981–3050

Drill order description example: SMDH210M3, drill heads ⇨ K59/H60

■ Recommended Torque

Screw		Applicable Insert
	(N·m)	
BXD 02208 IP	0,8–1,0	SMDT 1200 – 1550 D M □ L
BXD 02509 IP	0,9–1,2	SMDT 1551 – 1850 D M □ L
BXD 03011 IP	1,8–2,4	SMDT 1851 – 2150 D M □ L
BXD 03512 IP	2,8–3,7	SMDT 2151 – 2480 D M □ L
BXD 04014 IP	4,1–5,5	SMDT 2481 – 2780 D M □ L
BXD 04515 IP	5,0–6,6	SMDT 2781 – 3050 D M □ L

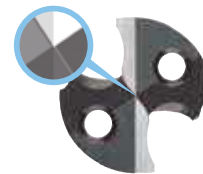
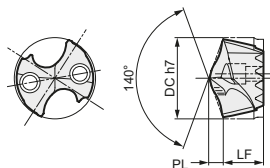
■ Spare Parts

Screw	Wrench	Applicable Holder
BXD 02208 IP	TRDR 08 IP	SMDT 120 – 150 M □
BXD 02509 IP	TRDR 10 IP	SMDT 160 – 180 M □
BXD 03011 IP	TRDR 15 IP	SMDT 190 – 210 M □
BXD 03512 IP	TRDR 15 IP	SMDT 220 – 240 M □
BXD 04014 IP	TRDR 20 IP	SMDT 250 – 270 M □
BXD 04515 IP	TRDR 25 IP	SMDT 280 – 300 M □



PVD coated grade: **ACX70**

Type MTL



■ Drill Head (Insert)

● Ø 12,0–15,3 mm

DC (mm)	Cat. No.	Stock	PL	LF
12,0	SMDT 1200 D MTL	●	2,2	6,9
12,1	1210 D MTL	●	2,2	
12,2	1220 D MTL	●	2,2	
12,3	1230 D MTL	●	2,2	
12,4	1240 D MTL	●	2,3	
12,5	SMDT 1250 D MTL	●	2,3	7,1
12,6	1260 D MTL	●	2,3	
12,7	1270 D MTL	●	2,3	
12,8	1280 D MTL	●	2,3	
12,9	1290 D MTL	●	2,3	
13,0	SMDT 1300 D MTL	●	2,4	7,3
13,1	1310 D MTL	●	2,4	
13,2	1320 D MTL	●	2,4	
13,3	1330 D MTL	●	2,4	
13,4	1340 D MTL	●	2,4	
13,5	SMDT 1350 D MTL	●	2,5	7,8
13,6	1360 D MTL	●	2,5	
13,7	1370 D MTL	●	2,5	
13,8	1380 D MTL	●	2,5	
13,9	1390 D MTL	●	2,5	
14,0	1400 D MTL	●	2,5	
14,1	1410 D MTL	●	2,6	
14,2	1420 D MTL	●	2,6	
14,3	1430 D MTL	●	2,6	
14,4	1440 D MTL	●	2,6	
14,5	1450 D MTL	●	2,6	
14,6	SMDT 1460 D MTL	●	2,7	8,3
14,7	1470 D MTL	●	2,7	
14,8	1480 D MTL	●	2,7	
14,9	1490 D MTL	●	2,7	
15,0	1500 D MTL	●	2,7	
15,1	1510 D MTL	●	2,7	
15,2	1520 D MTL	●	2,8	
15,3	1530 D MTL	●	2,8	

● Ø 15,4–18,7 mm

DC (mm)	Cat. No.	Stock	PL	LF
15,4	SMDT 1540 D MTL	●	2,8	8,3
15,5	1550 D MTL	●	2,8	
15,6	SMDT 1560 D MTL	●	2,8	8,7
15,7	1570 D MTL	●	2,9	
15,8	1580 D MTL	●	2,9	
15,9	1590 D MTL	●	2,9	
16,0	1600 D MTL	●	2,9	
16,1	1610 D MTL	●	2,9	
16,2	1620 D MTL	●	2,9	
16,3	1630 D MTL	●	3,0	
16,4	1640 D MTL	●	3,0	
16,5	1650 D MTL	●	3,0	
16,6	SMDT 1660 D MTL	●	3,0	9,2
16,7	1670 D MTL	●	3,0	
16,8	1680 D MTL	●	3,1	
16,9	1690 D MTL	●	3,1	
17,0	1700 D MTL	●	3,1	
17,1	1710 D MTL	●	3,1	
17,2	1720 D MTL	●	3,1	
17,3	1730 D MTL	●	3,1	
17,4	1740 D MTL	●	3,2	
17,5	1750 D MTL	●	3,2	
17,6	SMDT 1760 D MTL	●	3,2	9,6
17,7	1770 D MTL	●	3,2	
17,8	1780 D MTL	●	3,2	
17,9	1790 D MTL	●	3,3	
18,0	1800 D MTL	●	3,3	
18,1	1810 D MTL	●	3,3	
18,2	1820 D MTL	●	3,3	
18,3	1830 D MTL	●	3,3	
18,4	1840 D MTL	●	3,3	
18,5	1850 D MTL	●	3,4	
18,6	SMDT 1860 D MTL	●	3,4	10,1
18,7	1870 D MTL	●	3,4	

● Ø 18,8–30,5 mm

DC (mm)	Cat. No.	Stock	PL	LF	
18,8	SMDT 1880 D MTL	●	3,4	10,1	
18,9	1890 D MTL	●	3,4		
19,0	1900 D MTL	●	3,5		
19,1	1910 D MTL	●	3,5		
19,2	1920 D MTL	●	3,5		
19,3	1930 D MTL	●	3,5		
19,4	1940 D MTL	●	3,5		
19,5	1950 D MTL	●	3,5		
19,6	SMDT 1960 D MTL	●	3,6		10,5
19,7	1970 D MTL	●	3,6		
19,8	1980 D MTL	●	3,6		
19,9	1990 D MTL	●	3,6		
20,0	2000 D MTL	●	3,6		
20,5	SMDT 2050 D MTL	●	3,7	11,0	
21,0	SMDT 2100 D MTL	●	3,8		
21,5	2150 D MTL	●	3,9	11,0	
22,0	SMDT 2200 D MTL	●	4,0		
22,5	2250 D MTL	●	4,1	11,0	
23,0	SMDT 2300 D MTL	●	4,2		
23,5	2350 D MTL	●	4,3	11,0	
24,0	SMDT 2400 D MTL	●	4,4		
24,5	2450 D MTL	●	4,5	11,3	
25,0	SMDT 2500 D MTL	●	4,5		
25,5	2550 D MTL	●	4,6	11,7	
26,0	SMDT 2600 D MTL	●	4,7		
26,5	2650 D MTL	●	4,8	12,2	
27,0	SMDT 2700 D MTL	●	4,9		
27,5	2750 D MTL	●	5,0	12,6	
28,0	SMDT 2800 D MTL	●	5,1		
28,5	2850 D MTL	●	5,2	13,1	
29,0	SMDT 2900 D MTL	●	5,3		
29,5	2950 D MTL	●	5,4	13,5	
30,0	SMDT 3000 D MTL	●	5,5		
30,5	3050 D MTL	●	5,6		

■ Recommended Cutting Conditions

● For using 3 x D and 5 x D type drills

Work material Drill Ø (mm)		General steel (HB250–320)	Harden steel (HRC45)	Nodular cast iron
		~ 16,0	v_c	70 – 100 – 120
	f	0,15 – 0,2 – 0,3	0,1 – 0,15 – 0,2	0,2 – 0,25 – 0,3
~ 20,0	v_c	70 – 100 – 120	40 – 70 – 90	50 – 70 – 90
	f	0,15 – 0,25 – 0,35	0,15 – 0,2 – 0,25	0,2 – 0,25 – 0,35
~ 30,8	v_c	70 – 100 – 120	40 – 60 – 90	50 – 70 – 90
	f	0,2 – 0,25 – 0,35	0,15 – 0,2 – 0,25	0,25 – 0,3 – 0,35

Note: High cutting performance is enhanced when using a high quality machine and rigid set up.

● For using 8 x D and 12 x D type drills

Work material Drill Ø (mm)		General steel (HB250–320)	Harden steel (HRC45)	Nodular cast iron
		~ 16,0	v_c	50 – 70 – 80
	f	0,15 – 0,2 – 0,3	0,1 – 0,15 – 0,2	0,2 – 0,25 – 0,3
~ 20,0	v_c	50 – 70 – 80	30 – 50 – 70	40 – 60 – 80
	f	0,15 – 0,25 – 0,35	0,15 – 0,2 – 0,25	0,2 – 0,25 – 0,35
~ 25,0 (12D) ~ 30,5 (8D)	v_c	50 – 70 – 80	30 – 50 – 70	40 – 60 – 80
	f	0,2 – 0,25 – 0,35	0,15 – 0,2 – 0,25	0,25 – 0,3 – 0,35

[v_c : Cutting Speed (m/min), f : Feed rate (mm/rev), Min - Optimum - Max]

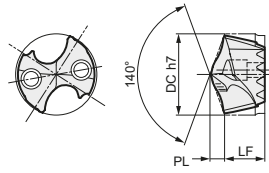
Regrindable Drill Head Insert SMDT... D MEL Type

MEL Type for Smooth Cutting

(Soft Steel, Stainless Steel, Grey Cast Iron)

PVD coated grade: **ACX80**

Type MEL



■ Drill Head (Insert)

● Ø 12,0–15,3 mm

DC (mm)	Cat. No.	Stock	PL	LF
12,0	SMDT 1200 D MEL	●	2,2	6,9
12,1	1210 D MEL	●	2,2	
12,2	1220 D MEL	●	2,2	
12,3	1230 D MEL	●	2,2	
12,4	1240 D MEL	●	2,3	
12,5	SMDT 1250 D MEL	●	2,3	7,1
12,6	1260 D MEL	●	2,3	
12,7	1270 D MEL	●	2,3	
12,8	1280 D MEL	●	2,3	
12,9	1290 D MEL	●	2,3	
13,0	SMDT 1300 D MEL	●	2,4	7,3
13,1	1310 D MEL	●	2,4	
13,2	1320 D MEL	●	2,4	
13,3	1330 D MEL	●	2,4	
13,4	1340 D MEL	●	2,4	
13,5	SMDT 1350 D MEL	●	2,5	7,8
13,6	1360 D MEL	●	2,5	
13,7	1370 D MEL	●	2,5	
13,8	1380 D MEL	●	2,5	
13,9	1390 D MEL	●	2,5	
14,0	1400 D MEL	●	2,5	
14,1	1410 D MEL	●	2,6	
14,2	1420 D MEL	●	2,6	
14,3	1430 D MEL	●	2,6	
14,4	1440 D MEL	●	2,6	
14,5	1450 D MEL	●	2,6	
14,6	SMDT 1460 D MEL	●	2,7	8,3
14,7	1470 D MEL	●	2,7	
14,8	1480 D MEL	●	2,7	
14,9	1490 D MEL	●	2,7	
15,0	1500 D MEL	●	2,7	
15,1	1510 D MEL	●	2,7	
15,2	1520 D MEL	●	2,8	
15,3	1530 D MEL	●	2,8	

● Ø 15,4–18,7 mm

DC (mm)	Cat. No.	Stock	PL	LF
15,4	SMDT 1540 D MEL	●	2,8	8,3
15,5	1550 D MEL	●	2,8	
15,6	SMDT 1560 D MEL	●	2,8	
15,7	1570 D MEL	●	2,9	8,7
15,8	1580 D MEL	●	2,9	
15,9	1590 D MEL	●	2,9	
16,0	1600 D MEL	●	2,9	
16,1	1610 D MEL	●	2,9	
16,2	1620 D MEL	●	2,9	
16,3	1630 D MEL	●	3,0	
16,4	1640 D MEL	●	3,0	
16,5	1650 D MEL	●	3,0	
16,6	SMDT 1660 D MEL	●	3,0	
16,7	1670 D MEL	●	3,0	
16,8	1680 D MEL	●	3,1	
16,9	1690 D MEL	●	3,1	
17,0	1700 D MEL	●	3,1	
17,1	1710 D MEL	●	3,1	
17,2	1720 D MEL	●	3,1	
17,3	1730 D MEL	●	3,1	
17,4	1740 D MEL	●	3,2	
17,5	1750 D MEL	●	3,2	
17,6	SMDT 1760 D MEL	●	3,2	9,6
17,7	1770 D MEL	●	3,2	
17,8	1780 D MEL	●	3,2	
17,9	1790 D MEL	●	3,3	
18,0	1800 D MEL	●	3,3	
18,1	1810 D MEL	●	3,3	
18,2	1820 D MEL	●	3,3	
18,3	1830 D MEL	●	3,3	
18,4	1840 D MEL	●	3,3	
18,5	1850 D MEL	●	3,4	
18,6	SMDT 1860 D MEL	●	3,4	10,1
18,7	1870 D MEL	●	3,4	

● Ø 18,8–30,5 mm

DC (mm)	Cat. No.	Stock	PL	LF	
18,8	SMDT 1880 D MEL	●	3,4	10,1	
18,9	1890 D MEL	●	3,4		
19,0	1900 D MEL	●	3,5		
19,1	1910 D MEL	●	3,5		
19,2	1920 D MEL	●	3,5		
19,3	1930 D MEL	●	3,5		
19,4	1940 D MEL	●	3,5		
19,5	1950 D MEL	●	3,5		
19,6	SMDT 1960 D MEL	●	3,6		10,5
19,7	1970 D MEL	●	3,6		
19,8	1980 D MEL	●	3,6		
19,9	1990 D MEL	●	3,6		
20,0	2000 D MEL	●	3,6		
20,5	SMDT 2050 D MEL	●	3,7		
21,0	SMDT 2100 D MEL	●	3,8	11,0	
21,5	2150 D MEL	●	3,9		
22,0	SMDT 2200 D MEL	●	4,0	11,0	
22,5	2250 D MEL	●	4,1		
23,0	SMDT 2300 D MEL	●	4,2	11,0	
23,5	2350 D MEL	●	4,3		
24,0	SMDT 2400 D MEL	●	4,4	11,0	
24,5	2450 D MEL	●	4,5		
25,0	SMDT 2500 D MEL	●	4,5	11,3	
25,5	2550 D MEL	●	4,6		
26,0	SMDT 2600 D MEL	●	4,7	11,7	
26,5	2650 D MEL	●	4,8		
27,0	SMDT 2700 D MEL	●	4,9	12,2	
27,5	2750 D MEL	●	5,0		
28,0	SMDT 2800 D MEL	●	5,1	12,6	
28,5	2850 D MEL	●	5,2		
29,0	SMDT 2900 D MEL	●	5,3	13,1	
29,5	2950 D MEL	●	5,4		
30,0	SMDT 3000 D MEL	●	5,5	13,5	
30,5	3050 D MEL	●	5,6		

■ Recommended Cutting Conditions

● For using 3 x D and 5 x D type drills

Work material Drill Ø (mm)	Soft steel (-HB250)		Stainless steel (-HB200)		Grey cast iron	
	v _c	f	v _c	f	v _c	f
~ 16,0	v _c	80 – 100 – 120	50 – 60 – 80	50 – 70 – 90		
	f	0,15 – 0,2 – 0,35	0,1 – 0,15 – 0,2	0,2 – 0,25 – 0,3		
~ 20,0	v _c	80 – 100 – 120	60 – 70 – 90	60 – 80 – 100		
	f	0,15 – 0,25 – 0,35	0,15 – 0,2 – 0,25	0,25 – 0,3 – 0,35		
~ 30,8	v _c	80 – 100 – 120	60 – 70 – 90	60 – 80 – 100		
	f	0,2 – 0,3 – 0,35	0,15 – 0,2 – 0,25	0,2 – 0,35 – 0,40		

Note: High cutting performance is enhanced when using a high quality machine and rigid set up.

● For using 8 x D and 12 x D type drills

Work material Drill Ø (mm)	Soft steel (-HB250)		Stainless steel (-HB200)		Grey cast iron	
	v _c	f	v _c	f	v _c	f
~ 16,0	v _c	50 – 70 – 80	40 – 50 – 60	40 – 60 – 80		
	f	0,15 – 0,2 – 0,35	0,1 – 0,15 – 0,2	0,2 – 0,25 – 0,3		
~ 20,0	v _c	50 – 70 – 80	40 – 60 – 70	50 – 70 – 90		
	f	0,15 – 0,25 – 0,35	0,15 – 0,2 – 0,25	0,25 – 0,3 – 0,35		
~ 25,0 (12D) ~ 30,5 (8D)	v _c	60 – 70 – 80	40 – 60 – 70	50 – 70 – 90		
	f	0,2 – 0,3 – 0,35	0,15 – 0,2 – 0,25	0,2 – 0,35 – 0,4		

[v_c : Cutting Speed (m/min), f : Feed rate (mm/rev), Min - Optimum - Max]

● = Euro stock

Regrindable Drill Head Insert SMDT... MEL Type

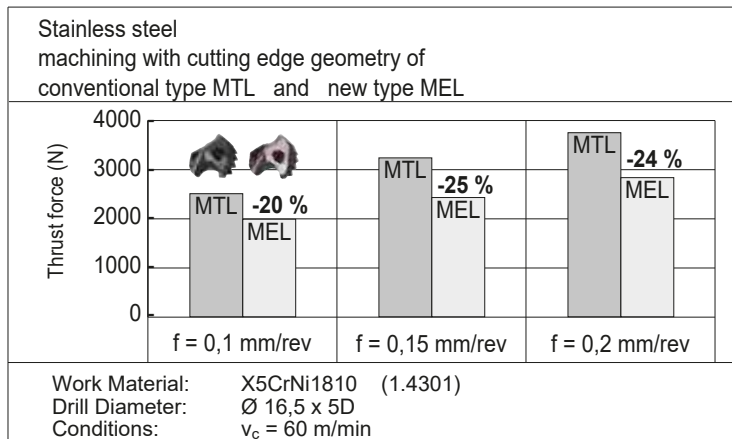
Advantages

- Replaceable and regrindable drill head
- New design decreases cutting force by 25 %
- Ideal for stainless steels - soft steels etc
- Excellent tool life when drilling cast iron
- Improves drilling performance on low powered machines
- Increases productivity

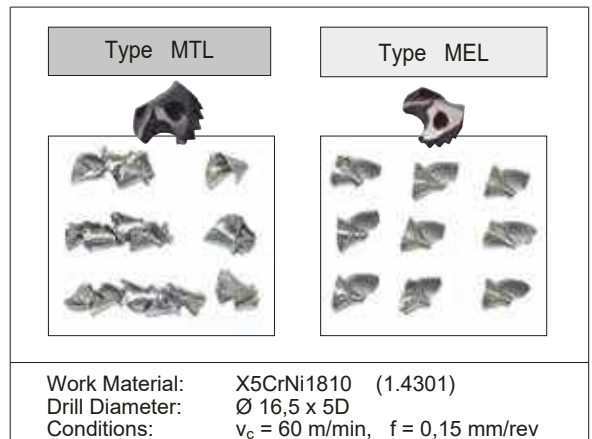


Performance (Stainless steel machining)

Comparison of cutting force

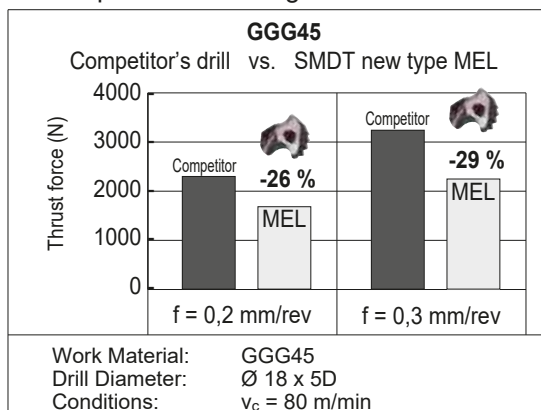


Chip comparison

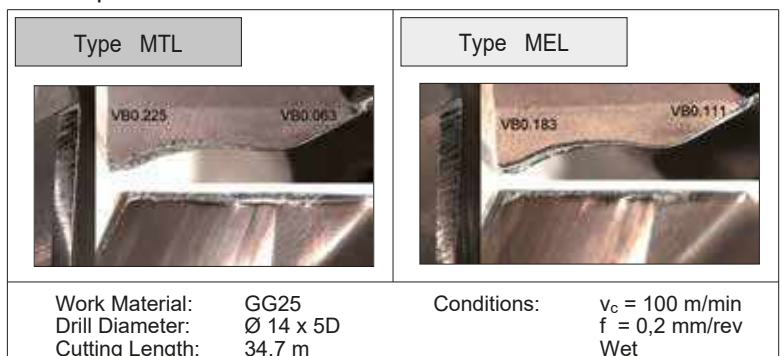


Performance (Cast iron machining)

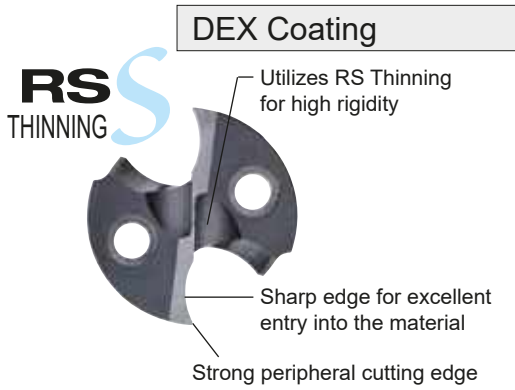
Comparison of cutting force



Comparison of wear resistance



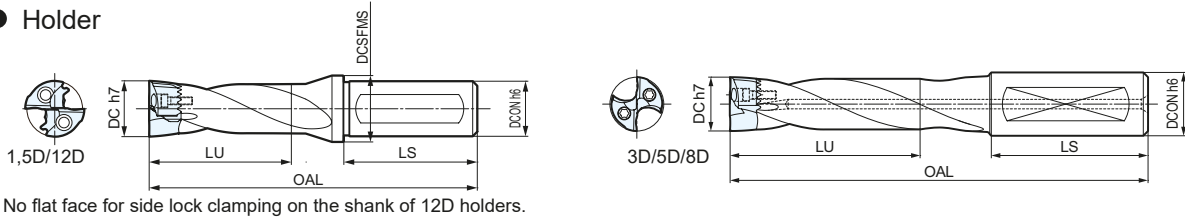
MFS Type Ideal for Drilling in Non-Flat Surfaces and Less Burr



Advantages

- **Various Drilling Operations Thanks to a Point Angle of 180°**
Applicable to high-efficiency spot facing, drilling in non-flat surfaces such as inclined and cylindrical surfaces and interrupted drilling. Also reduces burrs at the hole exit.
- **Improves Machining Stability**
Achieves high rigidity by employing RS Thinning, which ensures thick web at the bottom.

Holder



No flat face for side lock clamping on the shank of 12D holders.

Holder

Dimensions			Cat. No.	Series (1,5D)			Series (3D)			Series (5D)			Series (8D)			Series (12D)			Related Drill Heads MFS			
Drill Head	Shank			Stock	Dimensions		Stock	Dimensions		Stock	Dimensions		Stock	Dimensions		Stock	Dimensions					
DC	DCON	LS		S	OAL	LU	DCSFMS	M3	OAL	LU	M5	OAL	LU	M8	OAL	LU	12D	OAL		LU	DCSFMS	
12,0	16	48	SMDH 120 □□	●	91	25,5	20	●	107,2	43,5	●	132,2	68,5								1200-1249	
12,5			SMDH 125 □□	●	91	25,5	20	●	107,3	43,5	●	132,3	68,5									1250-1299
13,0			SMDH 130 □□	●	92	27,5	20	●	112,4	46,5	●	142,4	73,5									1300-1349
14,0			SMDH 140 □□□	●	96	31,5	20	●	119,0	52,5	●	149,0	81,5	●	194,0	124,5	●	238,5	168,5	20		
15,0	20	50	SMDH 150 □□□	●	100	32,0	25	●	129,2	55,0	●	159,2	86,0	●	204,2	133,0	●	253,0	180,0	25		1451-1550
16,0			SMDH 160 □□□	●	103	35,0	25	●	134,4	59,0	●	169,4	92,0	●	214,4	141,0	●	265,5	192,0	25		1551-1650
17,0			SMDH 170 □□□	●	105	35,5	25	●	139,6	62,5	●	174,6	97,5	●	224,6	150,5	●	278,1	203,5	25		1651-1750
18,0			SMDH 180 □□□	●	107	39,7	25	●	144,8	66,5	●	179,8	103,5	●	229,8	158,5	●	290,5	215,5	25		1751-1850
19,0	25	56	SMDH 190 □□□	●	115	40,5	30	●	160,1	69,5	●	195,0	108,5	●	255,0	167,5	●	309,1	228,5	30		1851-1950
20,0			SMDH 200 □□□	●	118	43,0	30	●	160,1	73,0	●	200,1	114,0	●	265,1	175,0	●	321,4	240,0	30		1951-2050
21,0			SMDH 210 □□□	●	119	44,0	30	●	160,3	76,0	●	200,3	119,0	●	270,3	184,0	●	333,9	252,0	30		2051-2150
22,0			SMDH 220 □□□	●	121	47,0	30	●	165,1	80,0	●	205,1	125,0	●	275,1	192,0	●	347,0	264,0	30		2151-2280
23,0	SMDH 230 □□□	●	122	46,5	30	●	164,8	82,5	●	214,8	129,5	●	284,8	200,5	●	359,0	275,5	30		2281-2380		
24,0	32	60	SMDH 240 □□□	●	129	49,5	37	●	174,6	86,5	●	224,6	135,5	●	299,6	208,5	●	376,1	284,5	37		2381-2480
25,0			SMDH 250 □□□	●	129	49,0	37	●	174,6	88,0	●	229,6	140,0	●	304,6	217,0	●	388,4	300,0	37		2481-2580
26,0			SMDH 260 □□	●	132	52,0	37	●	179,7	92,0	●	234,7	146,0	●	314,7	225,0						2581-2680
27,0			SMDH 270 □□	●	133	53,0	37	●	179,9	94,0	●	239,9	151,0	●	324,9	234,0						2681-2780
28,0			SMDH 280 □□	●	135	54,5	37	●	185,1	96,5	●	245,1	156,5	●	330,1	241,5						2781-2880
29,0			SMDH 290 □□	●	136	55,5	37	●	190,3	99,5	●	250,3	161,5	●	340,3	250,5						2881-2980
30,0			SMDH 300 □□	●	139	58,5	37	●	190,5	104,5	●	260,5	167,5	●	350,5	259,5						2981-3050

Drill order description example: SMDH210M3, drill heads ⇨ K63

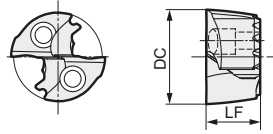
Recommended Torque

Screw		Applicable Insert
	(N·m)	
BXD 02208 IP	0,8-1,0	SMDT 1200 - 1550 MFS
BXD 02509 IP	0,9-1,2	SMDT 1551 - 1850 MFS
BXD 03011 IP	1,8-2,4	SMDT 1851 - 2150 MFS
BXD 03512 IP	2,8-3,7	SMDT 2151 - 2480 MFS
BXD 04014 IP	4,1-5,5	SMDT 2481 - 2780 MFS
BXD 04515 IP	5,0-6,6	SMDT 2781 - 3050 MFS

Spare Parts

Screw	Wrench	Applicable Holder
BXD 02208 IP	TRDR 08 IP	SMDT 120 - 150 □□
BXD 02509 IP	TRDR 10 IP	SMDT 160 - 180 □□
BXD 03011 IP	TRDR 15 IP	SMDT 190 - 210 □□
BXD 03512 IP	TRDR 15 IP	SMDT 220 - 240 □□
BXD 04014 IP	TRDR 20 IP	SMDT 250 - 270 □□
BXD 04515 IP	TRDR 25 IP	SMDT 280 - 300 □□

Type MFS



PVD coated grade: **ACX70**

■ Drill Head (Insert)

● \varnothing 12,0 ~ 21,5 mm

DC (mm)	Cat. No.	Stock	LF (mm)	Applicable Holders
12,0	SMDT 1200 MFS	●	7,1	SMDH120 □□
12,5	SMDT 1250 MFS	●	7,2	SMDH125 □□
13,0	SMDT 1300 MFS	●	7,5	SMDH130 □□
13,5	SMDT 1350 MFS	●		
14,0	SMDT 1400 MFS	●	7,9	SMDH140 □□
14,5	SMDT 1450 MFS	●		
15,0	SMDT 1500 MFS	●	8,3	SMDH150 □□
15,5	SMDT 1550 MFS	●		
16,0	SMDT 1600 MFS	●	8,8	SMDH160 □□
16,5	SMDT 1650 MFS	●		
17,0	SMDT 1700 MFS	●	9,3	SMDH170 □□
17,5	SMDT 1750 MFS	●		
18,0	SMDT 1800 MFS	●	9,8	SMDH180 □□
18,5	SMDT 1850 MFS	●		
19,0	SMDT 1900 MFS	●	10,2	SMDH190 □□
19,5	SMDT 1950 MFS	●		
20,0	SMDT 2000 MFS	●	10,7	SMDH200 □□
20,5	SMDT 2050 MFS	●		
21,0	SMDT 2100 MFS	●	11,2	SMDH210 □□
21,5	SMDT 2150 MFS	●		

● \varnothing 22,0 ~ 30,0 mm

DC (mm)	Cat. No.	Stock	LF (mm)	Applicable Holders
22,0	SMDT 2200 MFS	●	11,2	SMDH220 □□
22,5	SMDT 2250 MFS	●		
23,0	SMDT 2300 MFS	●	11,2	SMDH230 □□
23,5	SMDT 2350 MFS	●		
24,0	SMDT 2400 MFS	●	11,3	SMDH240 □□
24,5	SMDT 2450 MFS	●		
25,0	SMDT 2500 MFS	●	11,7	SMDH250 □□
25,5	SMDT 2550 MFS	●		
26,0	SMDT 2600 MFS	●	12,2	SMDH260 □□
26,5	SMDT 2650 MFS	●		
27,0	SMDT 2700 MFS	●	12,7	SMDH270 □□
27,5	SMDT 2750 MFS	●		
28,0	SMDT 2800 MFS	●	13,2	SMDH280 □□
28,5	SMDT 2850 MFS	●		
29,0	SMDT 2900 MFS	●	13,6	SMDH290 □□
29,5	SMDT 2950 MFS	●		
30,0	SMDT 3000 MFS	●	14,1	SMDH300 □□

■ MFS Type Head Important Notes

Application	No Guide Hole (Solid Workpiece Hole Drilling)	With Guide Hole	Flat Finishing of Hole Bottom
	<p>Flat Surface Non-Flat Surface</p>	<p>Guide Holes</p>	
1,5D Holder	○	○ (Guide Hole not required)	○
3D-12D Holder	X	X	○

■ Recommended Cutting Conditions

v_c : Cutting speed (m/min)
f: Feed rate (mm/rev)

Work Material		Soft Steel (<250 HB)	General Steel (250-320HB)	Hardened Steel (45HRC)	Stainless Steel (<200 HB)	Gray Cast Iron	Ductile Cast Iron	Aluminum Alloy (*)
Drill Diameter DC (mm)	Cutting Conditions	Min.-Optimum-Max.	Min.-Optimum-Max.	Min.-Optimum-Max.	Min.-Optimum-Max.	Min.-Optimum-Max.	Min.-Optimum-Max.	Min.-Optimum-Max.
- \varnothing 16,0	v_c	60-100-120	70-100-120	40-60-90	50-60-80	50-70-90	50-60-80	200-240-260
	f	0,15-0,20-0,35	0,15-0,20-0,30	0,10-0,15-0,20	0,10-0,15-0,20	0,20-0,25-0,30	0,20-0,25-0,30	0,35-0,45-0,55
- \varnothing 20,0	v_c	80-100-120	70-100-120	40-60-90	60-70-90	60-80-100	50-70-90	200-240-260
	f	0,15-0,25-0,35	0,15-0,25-0,35	0,15-0,20-0,25	0,15-0,20-0,25	0,20-0,30-0,35	0,20-0,25-0,35	0,35-0,50-0,60
- \varnothing 30,8	v_c	80-100-120	70-100-120	40-60-90	60-70-90	60-80-100	50-70-90	200-240-260
	f	0,20-0,30-0,35	0,20-0,25-0,35	0,15-0,20-0,25	0,15-0,20-0,25	0,20-0,30-0,40	0,25-0,30-0,35	0,35-0,50-0,60

Note: The recommended hole depth is 2 x DC. The depth is measured from the highest point of the hole when drilling on inclined surfaces. The recommended cutting conditions above are for drilling on flat horizontal surfaces. Adjust the feed rate according to the inclination angle when drilling on an inclined surface. Set the feed rate at 70 % or lower when inclination angle is 30° or less. Set the feed rate at 50 % or lower when the inclination angle is larger than 30°. This product is a drilling tool. Do not use it for traverse or helical milling.

(*) Inquire about drills specifically for aluminum alloy.

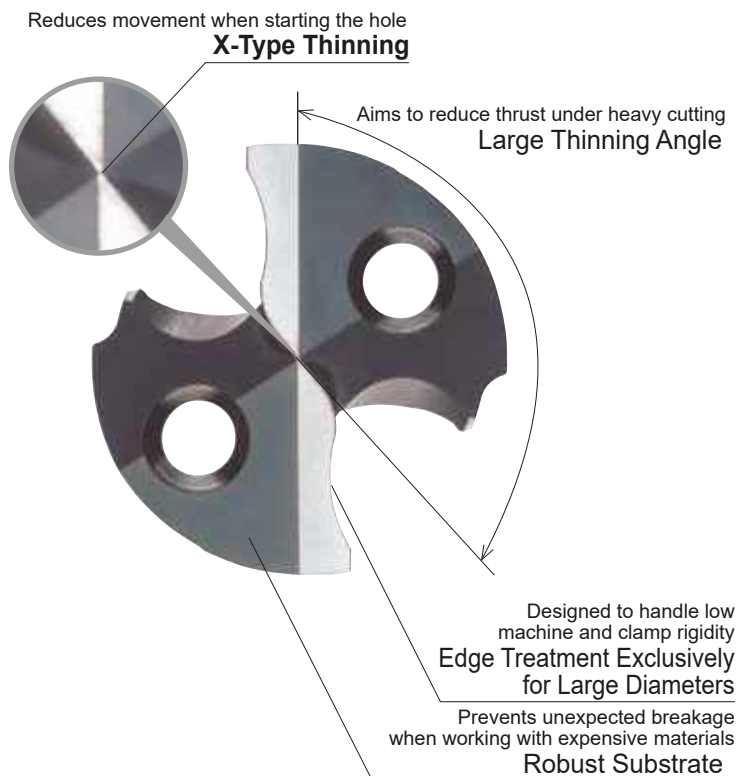
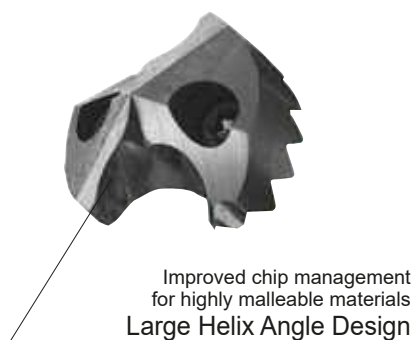
Replaceable Head Type MULTI-DRILLS SMD Type

Large Hole MTL Type

For Large Holes



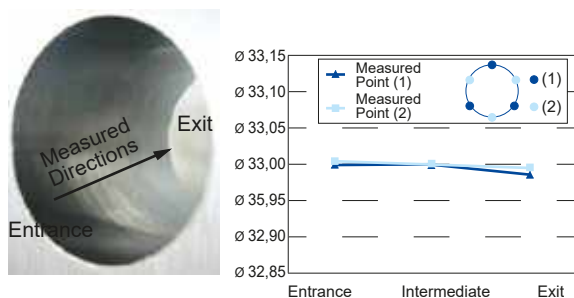
Tool edge design ideal for malleable material used for large casings, etc.
Edge design suitable for malleable material commonly used for large hole drilling.



■ Machined Surface Accuracy

Work Material: St 52-3 (Base substrate for construction use)
Drill Size: Ø 33,0 mm x 5D
Cutting Conditions: $v_c = 120$ m/min, $f = 0,25$ mm/rev
Cutting Environment: Emulsion Type

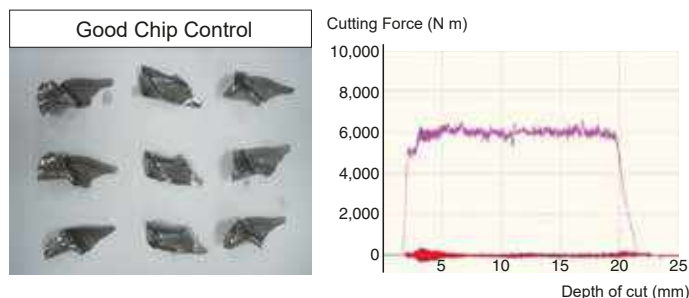
High drilling accuracy with large diameters



■ Cutting Force Comparison (Thrust)

Work Material: St 42-2 (Laminated plates)
Drill Size: Ø 37,5 mm x 5D
Cutting Conditions: $v_c = 90$ m/min, $f = 0,35$ mm/rev
Cutting Environment: Emulsion Type

Stable even when machining laminated plates



■ Recommended Cutting Conditions

v_c =Cutting Speed (m/min) f =Feed Rate (mm/rev)

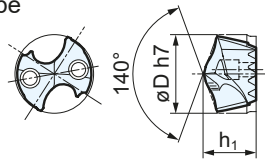
Work Material	Recommended Head Drill Ø (mm)	Cutt. Conditions	Soft Steel (-250 HB)	General Steel (250-320 HB)	Hardened Steel (45 HRC)	Stainless Steel (-200 HB)	Grey Cast Iron	Ductile Cast Iron
			MTL Type	MTL Type	MTL Type	MTL Type	MTL Type	MTL Type
-36,5		v_c	60-120 (40-80)	60-120 (40-80)	40-80 (30-60)	40-80 (30-60)	50-100 (40-90)	50-90 (40-70)
		f	0,25-0,4	0,2-0,35	0,15-0,3	0,15-0,25	0,25-0,45	0,25-0,35
-42,5		v_c	60-120 (40-80)	60-120 (40-80)	40-80 (30-60)	40-80 (30-60)	50-100 (40-90)	50-90 (40-70)
		f	0,25-0,4	0,2-0,35	0,15-0,3	0,15-0,25	0,25-0,45	0,25-0,35

Note: Where machining and work clamp rigidity are good, conditions may be increased up to the maximum.
For 8D drills, please use feed rates stated within the (). Before drilling 8D holes, a guide hole of similar diameter must be made.

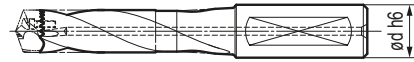
Regrindable Drill Head Insert SMDT... MTL Type

For Large Holes

● Indexable Head MTL Type



● Toolholder

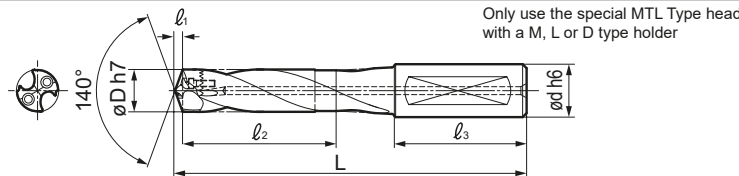


■ Drill Head (\varnothing 31,0–42,5 mm), Grade MTL Type - ACX80

■ Holders M (3D), L (5D), D (8D)

Drill Diameter $\varnothing D$	Heads			Toolholder					
	MTL Type		h_1	M (3D)		L (5D)		D (8D)	
	Cat. No.	Stock		Cat. No.	Stock	Cat. No.	Stock	Cat. No.	Stock
31,0	SMDT 3100 MTL	○	15,2	SMDH 320 M	○	SMDH 320 L	○	SMDH 320 D	○
31,5	SMDT 3150 MTL	□							
32,0	SMDT 3200 MTL	○							
32,5	SMDT 3250 MTL	□	15,2	SMDH 335 M	○	SMDH 335 L	○	SMDH 335 D	○
33,0	SMDT 3300 MTL	○							
33,5	SMDT 3350 MTL	□							
34,0	SMDT 3400 MTL	○	16,6	SMDH 350 M	○	SMDH 350 L	○	SMDH 350 D	○
34,5	SMDT 3450 MTL	□							
35,0	SMDT 3500 MTL	○							
35,5	SMDT 3550 MTL	□	16,4	SMDH 365 M	○	SMDH 365 L	○	SMDH 365 D	○
36,0	SMDT 3600 MTL	○							
36,5	SMDT 3650 MTL	□							
37,0	SMDT 3700 MTL	○	18,1	SMDH 380 M	○	SMDH 380 L	○	SMDH 380 D	○
37,5	SMDT 3750 MTL	○							
38,0	SMDT 3800 MTL	○							
38,5	SMDT 3850 MTL	□	17,8	SMDH 395 M	○	SMDH 395 L	○	SMDH 395 D	○
39,0	SMDT 3900 MTL	○							
39,5	SMDT 3950 MTL	□							
40,0	SMDT 4000 MTL	○	19,5	SMDH 410 M	○	SMDH 410 L	○	SMDH 410 D	○
40,5	SMDT 4050 MTL	○							
41,0	SMDT 4100 MTL	○							
41,5	SMDT 4150 MTL	□	19,3	SMDH 425 M	○	SMDH 425 L	○	SMDH 425 D	○
42,0	SMDT 4200 MTL	○							
42,5	SMDT 4250 MTL	□							

● Mounted Figure



Dimensions (mm)		M (3D)		L (5D)		D (8D)		Shank		Cap Screw	Wrench	N·m
Drill Head		Dimensions (mm)		Dimensions (mm)		Dimensions (mm)		Dimensions (mm)				
$\varnothing D$	l_1	l_2	L	l_2	L	l_2	L	l_3	$\varnothing d$			
31,0	5,7	97,9	200,7	163	265,7	257,9	360,7	60	32,0	BXD04515IP	TRDR25IP	5–6,6
31,5												
32,0												
32,5	6,0	103,3	206,0	171,5	276,0	273,3	376,0	60	32,0			
33,0												
33,5												
34,0	6,3	106,8	221,3	182	296,3	287	401,3	70	40,0	BX0515	HD040	7,2
34,5												
35,0												
35,5	6,6	112,3	226,6	187,5	301,6	297,3	411,6	70	40,0			
36,0												
36,5												
37,0	6,8	115,8	231,8	195,8	311,8	310,8	426,8	70	40,0			
37,5												
38,0												
38,5	7,1	121,3	237,1	206,3	322,1	321,3	437,1	70	40,0			
39,0												
39,5												
40,0	7,4	129,8	252,4	209,8	332,4	334,8	457,4	70	40,0			
40,5												
41,0												
41,5	7,6	135,3	257,6	220,3	342,6	345,3	467,6	70	40,0			
42,0												
42,5												

Indexable Insert Type "SumiDrill" WDX Type

ECONOMICAL - FAST - ACCURATE - RIGID

High Feed Drilling - 4 Edge Inserts



General Features

The newly designed WDX drill features indexable inserts with 4 cutting edges and a range of optimised chipbreakers; light (L) - general purpose (G) - heavy (H) for rapid chip removal.

The balanced cut design maximises feed rates and accuracy whilst the super ZX ultra hard coated inserts double the tool life.

Advantages

Rigid - Economical - Multi-function

Drills - Bores - External Turns
Diameter range 13,0-55,0 mm
Drilling depth -2D, -3D, -4D, -5D

Excellent chip control

Wide application suitability - choose from 3 styles of chipbreaker



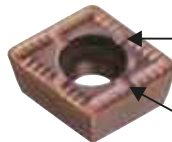
L Type

- Excellent chip control under low feed rate conditions
- Excellent hole accuracy
- Excellent surface finish



G Type

- General purpose chipbreaker
- Excellent chip control
- Low cutting force
- Low / medium feed rates



H Type

- Strong cutting edge at higher feed rates
- Stable machining - eliminates vibration and noise

Additional grooves for optimised swarf control



Outer cutting edge Inner cutting edge
Inner cutting edge Outer cutting edge

One insert style for both pockets

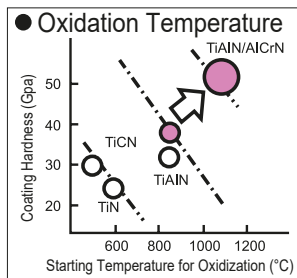
4 Edge insert provides both Inner and Outer cutting edges
Newly designed insert style simplifies insert management.

Ultra hard Super ZX inserts double tool life

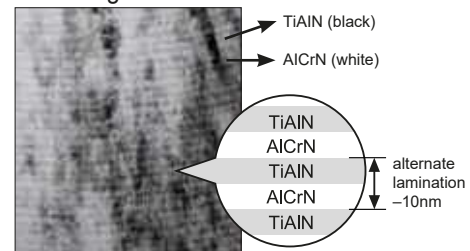
ACP300 for steels - stainless steels - difficult to cut materials
ACK300 for cast irons

Features of Super ZX Coating

- Super-multi layered coating with ultra-thin (nanometer) layers of TiAlN and AlCrN, alternately stacked up to 1.000 layers.
- 40 % increase in coating hardness and 200 % increase in oxidation temperature as compared with conventional grades



Coating Structure



"AURORA" Coating DLC (Diamond Like Carbon)

Coated Grade **DL1500** for Aluminium

G Type



Super smooth surface and low coefficient of friction

Achieving beautiful finishing on Aluminium and non-ferrous metallals with its high resistance to build-up edge.

Peripheral Insert		Central Insert	
DL1500	ACK300	DL1500	ACK300

Multi-Drills

K60

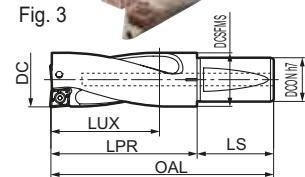
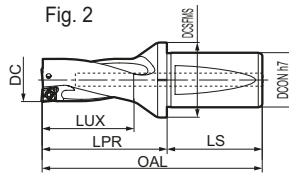
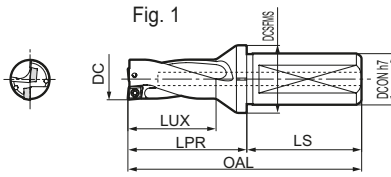
● = Euro stock
○ = Japan stock

Recommended Tightening Torque (N·m)

Indexable Insert Type "SumiDrill" WDX Type (2D)



Max. Depth: 2D



Holder

DC (mm)	Cat. No.	Stock	Dimensions (mm)						Applicable Insert	Fig.
			OAL	LUX	LPR	DCON	DCS/MS	LS		
13,0	WDX 130D2S20	●	88	29	44				WDX 042004	1
13,5	WDX 135D2S20	●	89	30	45					
14,0	WDX 140D2S20	●	90	31	46	20	28	44		
14,5	WDX 145D2S20	●	91	32	47					
15,0	WDX 150D2S20	●	92	33	48					
15,5	WDX 155D2S20	●	93	34	49					
16,0	WDX 160D2S20	●	94	35	50	20	30	44		
16,5	WDX 165D2S20	●	95	36	51					
17,0	WDX 170D2S20	●	96	37	52					
17,5	WDX 175D2S25	●	109	38	53	25	32	56		
18,0	WDX 180D2S25	●	110	39	54					
18,5	WDX 185D2S25	●	111	40	55					
19,0	WDX 190D2S25	●	112	41	56					
19,5	WDX 195D2S25	●	113	42	57					
20,0	WDX 200D2S25	●	114	43	58					
20,5	WDX 205D2S25	●	115	44	59	25	33	56		
21,0	WDX 210D2S25	●	116	45	60					
21,5	WDX 215D2S25	●	117	46	61					
22,0	WDX 220D2S25	●	118	47	62					
22,5	WDX 225D2S25	●	119	48	63					
23,0	WDX 230D2S25	●	123	49	67					
23,5	WDX 235D2S25	●	124	50	68					
24,0	WDX 240D2S25	●	125	51	69	25	37	56		
24,5	WDX 245D2S25	●	126	52	70					
25,0	WDX 250D2S25	●	127	53	71					
25,5	WDX 255D2S32	●	134	54	74					
26,0	WDX 260D2S32	●	135	55	75					
26,5	WDX 265D2S32	●	136	56	76					
27,0	WDX 270D2S32	●	137	57	77	32	41	60		
27,5	WDX 275D2S32	●	138	58	78					
28,0	WDX 280D2S32	●	139	59	79					
28,5	WDX 285D2S32	●	140	60	80					
29,0	WDX 290D2S32	●	143	62	83	32	50	60		
29,5	WDX 295D2S32	●	144	63	84					
30,0	WDX 300D2S40	●	158	64	88					
31,0	WDX 310D2S40	●	160	66	90					
32,0	WDX 320D2S40	●	162	68	92					
33,0	WDX 330D2S40	●	164	70	94	40	54	70		
34,0	WDX 340D2S40	●	166	72	96					
35,0	WDX 350D2S40	●	168	74	98					
36,0	WDX 360D2S40	●	170	76	100					
37,0	WDX 370D2S40	●	179	79	109					
38,0	WDX 380D2S40	●	181	81	111					
39,0	WDX 390D2S40	●	183	83	113					
40,0	WDX 400D2S40	●	185	85	115					
41,0	WDX 410D2S40	●	187	87	117	40	49,5	70		
42,0	WDX 420D2S40	●	189	89	119					
43,0	WDX 430D2S40	●	191	91	121					
44,0	WDX 440D2S40	●	193	93	123					
45,0	WDX 450D2S40	●	195	95	125					
46,0	WDX 460D2S40	●	197	97	127					
47,0	WDX 470D2S40	●	199	99	129					
48,0	WDX 480D2S40	●	201	101	131					
49,0	WDX 490D2S40	●	203	103	133					
50,0	WDX 500D2S40	●	205	105	135	40		70		
51,0	WDX 510D2S40	●	207	107	137					
52,0	WDX 520D2S40	●	209	109	139					
53,0	WDX 530D2S40	●	211	111	141					
54,0	WDX 540D2S40	●	213	113	143					
55,0	WDX 550D2S40	●	215	115	145					
56,0	WDX 560D2S40	○	222	120	152					
57,0	WDX 570D2S40	○	224	122	154					
58,0	WDX 580D2S40	○	226	124	156					
59,0	WDX 590D2S40	○	228	126	158					
60,0	WDX 600D2S40	○	230	128	160	40		70		
61,0	WDX 610D2S40	○	232	130	162					
62,0	WDX 620D2S40	○	234	132	164					
63,0	WDX 630D2S40	○	236	134	166					
64,0	WDX 640D2S40	○	238	136	168					
65,0	WDX 650D2S40	○	240	138	170					

Inserts

Cat. No.	Coated				Fig.	Dimensions (mm)			Applicable Holder	
	ACP100	ACP300	ACK300	DL1500		W1	Thickness	RE		
WDX 042004-L	○	●	●	●	4				WDX 130 ~ 150	
WDX 042004-G	●	●	●	●	5	4,2	2,0	0,4		
WDX 042004-H	○	●	●	●	6					
WDX 052504-L	○	●	●	●	4					WDX 155 ~ 180
WDX 052504-G	●	●	●	●	5	5,0	2,5	0,4		
WDX 052504-H	○	●	●	●	6					
WDX 063006-L	●	●	●	●	4				WDX 185 ~ 225	
WDX 063006-G	●	●	●	●	5	6,0	3,0	0,6		
WDX 063006-H	○	●	●	●	6					
WDX 073506-L	●	●	●	●	4					WDX 230 ~ 285
WDX 073506-G	●	●	●	●	5	7,5	3,5	0,6		
WDX 073506-H	●	●	●	●	6					
WDX 094008-L	●	●	●	●	4				WDX 290 ~ 360	
WDX 094008-G	●	●	●	●	5	9,6	4,0	0,8		
WDX 094008-H	●	●	●	●	6					
WDX 125012-L	●	●	●	●	4					WDX 370 ~ 450
WDX 125012-G	●	●	●	●	5	12,4	5,0	1,2		
WDX 125012-H	●	●	●	●	6					
WDX 156012-L	●	●	●	●	4				WDX 460 ~ 550	
WDX 156012-G	●	●	●	●	5	15,2	6,0	1,2		
WDX 156012-H	●	●	●	●	6					
WDX 186012-G	●	●	●	●	5	18,0	6,0	1,2		

Spare Parts

Screw	Wrench	Wrench	Applicable Holders	(N·m)
BFTX 01604 N	TRX 06	—	WDX 130D_S20 – 150D_S20	0,3
BFTX 0204 N	TRX 06	—	WDX 155D_S20 – 180D_S25	0,5
BFTX 02206	—	TRX 07	WDX 185D_S25 – 225D_S25	1,0
BFTX 02506 N	—	TRX 08	WDX 230D_S25 – 285D_S32	1,5
BFTX 03584	—	TRX 15	WDX 290D_S32 – 360D_S40	3,5
BFTX 0511 N	—	TRX 20	WDX 370D_S40 – 450D_S40	5,0
BFTX 0615 N	—	TRX 25	WDX 460D_S40 – 550D_S40	7,5

Identification of Drill Body

WDX 200 D2 S25

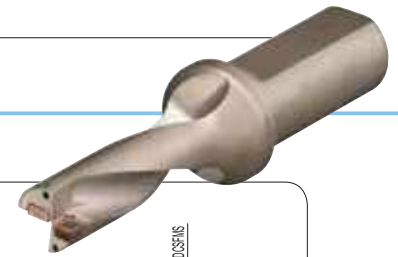
Drill Diameter (Ø 20,0 mm) Flute Length L/D (2 x D) Shank Size (Ø 25,0 mm)

Identification of Indexable Insert

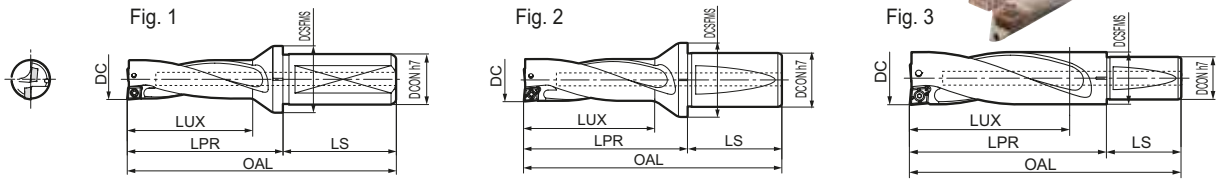
WDX 06 30 06 -G

Width Across Flats (6,0 mm) Thickness (3,0 mm) Breaker Type Corner Radius (0,6 mm)

Indexable Insert Type "SumiDrill" WDX Type (3D)



Max. Depth: 3 D



Holder

DC (mm)	Cat. No.	Stock	Dimensions (mm)					Applicable Insert	Fig.
			OAL	LUX	LPR	DCON	DCSFMS		
13,0	WDX 130D3S20	●	101,0	42,0	57,0	20	28	44	WDX 042004
13,5	WDX 135D3S20	●	102,5	43,5	58,5				
14,0	WDX 140D3S20	●	104,0	45,0	60,0	20	30	44	WDX 052504
14,5	WDX 145D3S20	●	105,5	46,5	61,5				
15,0	WDX 150D3S20	●	107,0	58,0	63,0	20	30	44	WDX 052504
15,5	WDX 155D3S20	●	108,5	49,5	64,5				
16,0	WDX 160D3S20	●	110,0	51,0	66,0	20	30	44	WDX 052504
16,5	WDX 165D3S20	●	111,5	52,5	67,5				
17,0	WDX 170D3S20	●	113,0	54,0	69,0	25	32	56	WDX 063006
17,5	WDX 175D3S25	●	126,5	55,5	70,5				
18,0	WDX 180D3S25	●	128,0	57,0	72,0	25	33	56	WDX 063006
18,5	WDX 185D3S25	●	129,5	58,5	73,5				
19,0	WDX 190D3S25	●	131,0	60,0	75,0	25	37	56	WDX 073506
19,5	WDX 195D3S25	●	132,5	61,5	76,5				
20,0	WDX 200D3S25	●	134,0	63,0	78,0	25	37	56	WDX 073506
20,5	WDX 205D3S25	●	135,5	64,5	79,5				
21,0	WDX 210D3S25	●	137,0	66,0	81,0	32	41	60	WDX 125012
21,5	WDX 215D3S25	●	138,5	67,5	82,5				
22,0	WDX 220D3S25	●	140,0	69,0	84,0	32	50	60	WDX 125012
22,5	WDX 225D3S25	●	141,5	70,5	85,5				
23,0	WDX 230D3S25	●	146,0	72,0	90,0	40	54	70	WDX 156012
23,5	WDX 235D3S25	●	147,5	73,5	91,5				
24,0	WDX 240D3S25	●	149,0	75,0	93,0	40	54	70	WDX 156012
24,5	WDX 245D3S25	●	150,5	76,5	94,5				
25,0	WDX 250D3S25	●	152,0	78,0	96,0	40	49,5	70	WDX 156012
25,5	WDX 255D3S32	●	159,5	79,5	97,5				
26,0	WDX 260D3S32	●	161,0	81,0	101,0	40	49,5	70	WDX 156012
26,5	WDX 265D3S32	●	162,5	82,5	102,5				
27,0	WDX 270D3S32	●	164,0	84,0	104,0	40	49,5	70	WDX 156012
27,5	WDX 275D3S32	●	165,5	85,5	105,5				
28,0	WDX 280D3S32	●	167,0	87,0	107,0	40	49,5	70	WDX 156012
28,5	WDX 285D3S32	●	168,5	88,5	108,5				
29,0	WDX 290D3S32	●	172,0	91,0	112,0	40	49,5	70	WDX 156012
29,5	WDX 295D3S32	●	173,5	92,5	113,5				
30,0	WDX 300D3S40	●	188,0	94,0	118,0	40	49,5	70	WDX 156012
31,0	WDX 310D3S40	●	191,0	97,0	121,0				
32,0	WDX 320D3S40	●	194,0	100,0	124,0	40	49,5	70	WDX 156012
33,0	WDX 330D3S40	●	197,0	103,0	127,0				
34,0	WDX 340D3S40	●	200,0	106,0	130,0	40	49,5	70	WDX 156012
35,0	WDX 350D3S40	●	203,0	109,0	133,0				
36,0	WDX 360D3S40	●	206,0	112,0	136,0	40	49,5	70	WDX 156012
37,0	WDX 370D3S40	●	216,0	116,0	146,0				
38,0	WDX 380D3S40	●	219,0	119,0	149,0	40	49,5	70	WDX 156012
39,0	WDX 390D3S40	●	222,0	122,0	152,0				
40,0	WDX 400D3S40	●	225,0	125,0	155,0	40	49,5	70	WDX 156012
41,0	WDX 410D3S40	●	228,0	128,0	158,0				
42,0	WDX 420D3S40	●	231,0	131,0	161,0	40	49,5	70	WDX 156012
43,0	WDX 430D3S40	●	234,0	134,0	164,0				
44,0	WDX 440D3S40	●	237,0	137,0	167,0	40	49,5	70	WDX 156012
45,0	WDX 450D3S40	●	240,0	140,0	170,0				
46,0	WDX 460D3S40	●	243,0	143,0	173,0	40	49,5	70	WDX 156012
47,0	WDX 470D3S40	●	246,0	146,0	176,0				
48,0	WDX 480D3S40	●	249,0	149,0	179,0	40	49,5	70	WDX 156012
49,0	WDX 490D3S40	●	252,0	152,0	182,0				
50,0	WDX 500D3S40	●	255,0	155,0	185,0	40	49,5	70	WDX 156012
51,0	WDX 510D3S40	●	258,0	158,0	188,0				
52,0	WDX 520D3S40	●	261,0	161,0	191,0	40	49,5	70	WDX 156012
53,0	WDX 530D3S40	●	264,0	164,0	194,0				
54,0	WDX 540D3S40	●	267,0	167,0	197,0	40	49,5	70	WDX 156012
55,0	WDX 550D3S40	●	270,0	170,0	200,0				
56,0	WDX 560D3S40	○	278,0	176,0	208,0	40	49,5	70	WDX 156012
57,0	WDX 570D3S40	○	281,0	179,0	211,0				
58,0	WDX 580D3S40	○	284,0	182,0	214,0	40	49,5	70	WDX 156012
59,0	WDX 590D3S40	○	287,0	185,0	217,0				
60,0	WDX 600D3S40	○	290,0	188,0	220,0	40	49,5	70	WDX 156012
61,0	WDX 610D3S40	○	293,0	191,0	223,0				
62,0	WDX 620D3S40	○	296,0	194,0	226,0	40	49,5	70	WDX 156012
63,0	WDX 630D3S40	○	299,0	197,0	229,0				
64,0	WDX 640D3S40	○	302,0	200,0	232,0	40	49,5	70	WDX 156012
65,0	WDX 650D3S40	○	305,0	203,0	235,0				

Inserts

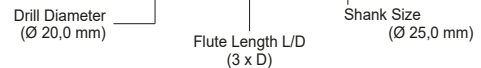
Cat. No.	Coated				Fig.	Dimensions (mm)			Applicable Holder
	ACP100	ACP300	ACK300	DL1500		W1	Thickness	RE	
WDX 042004-L	○	●	●	●	4	4,2	2,0	0,4	WDX 130 ~ 150
WDX 042004-G	●	●	●	●	5				
WDX 042004-H	○	●	●	●	6				
WDX 052504-L	○	●	●	●	4	5,0	2,5	0,4	WDX 155 ~ 180
WDX 052504-G	●	●	●	●	5				
WDX 052504-H	○	●	●	●	6				
WDX 063006-L	●	●	●	●	4	6,0	3,0	0,6	WDX 185 ~ 225
WDX 063006-G	●	●	●	●	5				
WDX 063006-H	○	●	●	●	6				
WDX 073506-L	●	●	●	●	4	7,5	3,5	0,6	WDX 230 ~ 285
WDX 073506-G	●	●	●	●	5				
WDX 073506-H	●	●	●	●	6				
WDX 094008-L	●	●	●	●	4	9,6	4,0	0,8	WDX 290 ~ 360
WDX 094008-G	●	●	●	●	5				
WDX 094008-H	●	●	●	●	6				
WDX 125012-L	●	●	●	●	4	12,4	5,0	1,2	WDX 370 ~ 450
WDX 125012-G	●	●	●	●	5				
WDX 125012-H	●	●	●	●	6				
WDX 156012-L	●	●	●	●	4	15,2	6,0	1,2	WDX 460 ~ 550
WDX 156012-G	●	●	●	●	5				
WDX 156012-H	●	●	●	●	6				
WDX 186012-G	●	●	●	●	5	18,0	6,0	1,2	WDX 560 ~ 650

Spare Parts

Screw	Wrench	Wrench	Applicable Holders	(N·m)
BFTX 01604 N	TRX 06	—	WDX 130D_S20 – 150D_S20	0,3
BFTX 0204 N	TRX 06	—	WDX 155D_S20 – 180D_S25	0,5
BFTX 02206	—	TRX 07	WDX 185D_S25 – 225D_S25	1,0
BFTX 02506 N	—	TRX 08	WDX 230D_S25 – 285D_S32	1,5
BFTX 03584	—	TRX 15	WDX 290D_S32 – 360D_S40	3,5
BFTX 0511 N	—	TRX 20	WDX 370D_S40 – 450D_S40	5,0
BFTX 0615 N	—	TRX 25	WDX 460D_S40 – 550D_S40	7,5

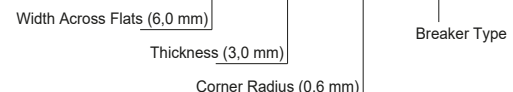
Identification of Drill Body

WDX 200 D3 S25



Identification of Indexable Insert

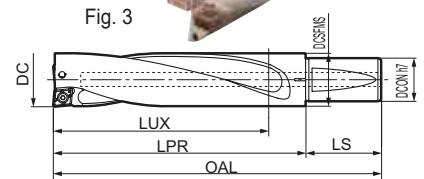
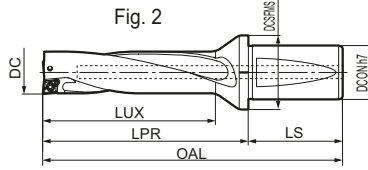
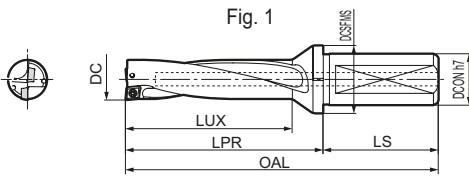
WDX 06 30 06 -G



Indexable Insert Type "SumiDrill" WDX Type (4D)



Max. Depth: 4 D



Holder

DC (mm)	Cat. No.	Stock	Dimensions (mm)						Applicable Insert	Fig.
			OAL	LUX	LPR	DCON1/7	DCSFMS	LS		
13,0	WDX 130D4S20	●	114	55	70				WDX 042004	1
13,5	WDX 135D4S20	●	116	57	72					
14,0	WDX 140D4S20	●	118	59	74	20	28	44		
14,5	WDX 145D4S20	●	120	61	76					
15,0	WDX 150D4S20	●	122	63	78					
15,5	WDX 155D4S20	●	124	65	80					
16,0	WDX 160D4S20	●	126	67	82	20	30	44		
16,5	WDX 165D4S20	●	128	69	84					
17,0	WDX 170D4S20	●	130	71	86					
17,5	WDX 175D4S25	●	144	73	88	25	32	56		
18,0	WDX 180D4S25	●	146	75	90					
18,5	WDX 185D4S25	●	148	77	92					
19,0	WDX 190D4S25	●	150	79	94					
19,5	WDX 195D4S25	●	152	81	96					
20,0	WDX 200D4S25	●	154	83	98					
20,5	WDX 205D4S25	●	156	85	100	25	33	56		
21,0	WDX 210D4S25	●	158	87	102					
21,5	WDX 215D4S25	●	160	89	104					
22,0	WDX 220D4S25	●	162	91	106					
22,5	WDX 225D4S25	●	164	93	108					
23,0	WDX 230D4S25	●	169	95	113					
23,5	WDX 235D4S25	●	171	97	115					
24,0	WDX 240D4S25	●	173	99	117	25	37	56		
24,5	WDX 245D4S25	●	175	101	119					
25,0	WDX 250D4S25	●	177	103	121					
25,5	WDX 255D4S32	●	185	105	125					
26,0	WDX 260D4S32	●	187	107	127					
26,5	WDX 265D4S32	●	189	109	129					
27,0	WDX 270D4S32	●	191	111	131	32	41	60		
27,5	WDX 275D4S32	●	193	113	133					
28,0	WDX 280D4S32	●	195	115	135					
28,5	WDX 285D4S32	●	197	117	137					
29,0	WDX 290D4S32	●	201	120	141	32	50	60		
29,5	WDX 295D4S32	●	203	122	143					
30,0	WDX 300D4S40	●	218	124	148					
31,0	WDX 310D4S40	●	222	128	152					
32,0	WDX 320D4S40	●	226	132	156					
33,0	WDX 330D4S40	●	230	136	160	40	54	70		
34,0	WDX 340D4S40	●	234	140	164					
35,0	WDX 350D4S40	●	238	144	168					
36,0	WDX 360D4S40	●	242	148	172					
37,0	WDX 370D4S40	●	253	153	183					
38,0	WDX 380D4S40	●	257	157	187					
39,0	WDX 390D4S40	●	261	161	191					
40,0	WDX 400D4S40	●	265	165	195					
41,0	WDX 410D4S40	●	269	169	199	40	49,5	70		
42,0	WDX 420D4S40	●	273	173	203					
43,0	WDX 430D4S40	●	277	177	207					
44,0	WDX 440D4S40	●	281	181	211					
45,0	WDX 450D4S40	●	285	185	215					
46,0	WDX 460D4S40	●	289	189	219					
47,0	WDX 470D4S40	●	293	193	223					
48,0	WDX 480D4S40	●	297	197	227					
49,0	WDX 490D4S40	●	301	201	231					
50,0	WDX 500D4S40	●	305	205	235					
51,0	WDX 510D4S40	●	309	209	239	40	70	WDX 156012		
52,0	WDX 520D4S40	●	313	213	243		50,5			
53,0	WDX 530D4S40	●	317	217	247		51,5			
54,0	WDX 540D4S40	●	321	221	251		52,5			
55,0	WDX 550D4S40	●	325	225	255		53,5			
56,0	WDX 560D4S40	○	334	232	264		54			
57,0	WDX 570D4S40	○	338	236	268		55			
58,0	WDX 580D4S40	○	342	240	272	40	56	70		
59,0	WDX 590D4S40	○	346	244	276		57			
60,0	WDX 600D4S40	○	350	248	280		58			

Inserts

Cat. No.	Coated				Fig.	Dimensions (mm)			Applicable Holder
	ACP100	ACP300	ACK300	DL1500		W1	Thickness	RE	
WDX 042004-L	○	●	●	●	4				WDX 130 ~ 150
WDX 042004-G	○	●	●	●	5	4,2	2,0	0,4	
WDX 042004-H	○	●	●	●	6				
WDX 052504-L	○	●	●	●	4				WDX 155 ~ 180
WDX 052504-G	●	●	●	●	5	5,0	2,5	0,4	
WDX 052504-H	○	●	●	●	6				
WDX 063006-L	●	●	●	●	4				WDX 185 ~ 225
WDX 063006-G	●	●	●	●	5	6,0	3,0	0,6	
WDX 063006-H	○	●	●	●	6				
WDX 073506-L	●	●	●	●	4				WDX 230 ~ 285
WDX 073506-G	●	●	●	●	5	7,5	3,5	0,6	
WDX 073506-H	●	●	●	●	6				
WDX 094008-L	●	●	●	●	4				WDX 290 ~ 360
WDX 094008-G	●	●	●	●	5	9,6	4,0	0,8	
WDX 094008-H	●	●	●	●	6				
WDX 125012-L	●	●	●	●	4				WDX 370 ~ 450
WDX 125012-G	●	●	●	●	5	12,4	5,0	1,2	
WDX 125012-H	●	●	●	●	6				
WDX 156012-L	●	●	●	●	4				WDX 460 ~ 550
WDX 156012-G	●	●	●	●	5	15,2	6,0	1,2	
WDX 156012-H	●	●	●	●	6				
WDX 186012-G	●	●	●	●	5	18,0	6,0	1,2	WDX 560 ~ 650

Spare Parts

Screw	Wrench	Wrench	Applicable Holders	(N·m)
BFTX 01604 N	TRX 06	—	WDX 130D_S20 – 150D_S20	0,3
BFTX 0204 N	TRX 06	—	WDX 155D_S20 – 180D_S25	0,5
BFTX 02206	—	TRX 07	WDX 185D_S25 – 225D_S25	1,0
BFTX 02506 N	—	TRX 08	WDX 230D_S25 – 285D_S32	1,5
BFTX 03584	—	TRX 15	WDX 290D_S32 – 360D_S40	3,5
BFTX 0511 N	—	TRX 20	WDX 370D_S40 – 450D_S40	5,0
BFTX 0615 N	—	TRX 25	WDX 460D_S40 – 550D_S40	7,5

Identification of Drill Body

WDX 200 D4 S25

Drill Diameter (Ø 20,0 mm) | Flute Length L/D (4 x D) | Shank Size (Ø 25,0 mm)

Identification of Indexable Insert

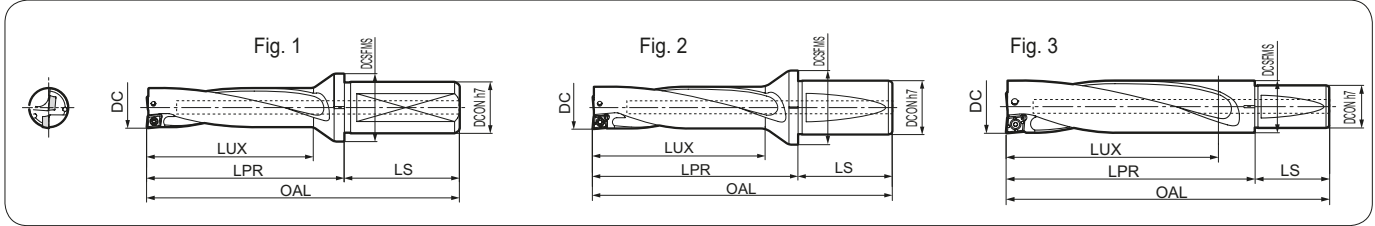
WDX 06 30 06 -G

Width Across Flats (6,0 mm) | Thickness (3,0 mm) | Corner Radius (0,6 mm) | Breaker Type

Indexable Insert Type "SumiDrill" WDX Type (5D)



Max. Depth: 5 D



Holder

DC (mm)	Cat. No.	Stock	Dimensions (mm)							Applicable Insert	Fig.
			OAL	LUX	LPR	DCON	DCSFMS	LS			
13,0	WDX 130D5S20	●	127,0	68,0	83,0						
13,5	WDX 135D5S20	●	129,5	70,5	85,5						
14,0	WDX 140D5S20	●	132,0	73,0	88,0	20	28	44	WDXT 042004		
14,5	WDX 145D5S20	●	134,5	75,5	90,5						
15,0	WDX 150D5S20	●	137,0	78,0	93,0						
15,5	WDX 155D5S20	●	139,5	80,5	95,5						
16,0	WDX 160D5S20	●	142,0	83,0	98,0	20	30	44	WDXT 052504		
16,5	WDX 165D5S20	●	144,5	85,5	100,5						
17,0	WDX 170D5S20	●	147,0	88,0	103,0						
17,5	WDX 175D5S20	●	161,5	90,5	105,5	25	32	56			
18,0	WDX 180D5S25	●	164,0	93,0	108,0						
18,5	WDX 185D5S25	●	166,5	95,5	110,5						
19,0	WDX 190D5S25	●	169,0	98,0	113,0						
19,5	WDX 195D5S25	●	171,5	100,5	115,5						
20,0	WDX 200D5S25	●	174,0	103,0	118,0						
20,5	WDX 205D5S25	●	176,5	105,5	120,5	25	33	56	WDXT 063006		
21,0	WDX 210D5S25	●	179,0	108,0	123,0						
21,5	WDX 215D5S25	●	181,5	110,5	125,5						
22,0	WDX 220D5S25	●	184,0	113,0	128,0						
22,5	WDX 225D5S25	●	186,5	115,5	130,5						
23,0	WDX 230D5S25	●	192,0	118,0	136,0						
23,5	WDX 235D5S25	●	194,5	120,5	138,5						
24,0	WDX 240D5S25	●	197,0	123,0	141,0	25	37	56	WDXT 073506		
24,5	WDX 245D5S25	●	199,5	125,5	143,5						
25,0	WDX 250D5S25	●	202,0	128,0	146,0						
26,0	WDX 260D5S32	●	213,0	133,0	153,0						
27,0	WDX 270D5S32	●	218,0	138,0	158,0	32	41	60			
28,0	WDX 280D5S32	●	223,0	143,0	163,0						
29,0	WDX 290D5S32	●	230,0	149,0	170,0	32	50	60			
30,0	WDX 300D5S40	●	248,0	154,0	178,0						
31,0	WDX 310D5S40	●	253,0	159,0	183,0						
32,0	WDX 320D5S40	●	258,0	164,0	188,0						
33,0	WDX 330D5S40	●	263,0	169,0	193,0	40	54	70	WDXT 094008		
34,0	WDX 340D5S40	●	268,0	174,0	198,0						
35,0	WDX 350D5S40	●	273,0	179,0	203,0						
36,0	WDX 360D5S40	●	278,0	184,0	208,0						
37,0	WDX 370D5S40	○	290,0	190,0	220,0						
38,0	WDX 380D5S40	○	295,0	195,0	225,0						
39,0	WDX 390D5S40	○	300,0	200,0	230,0						
40,0	WDX 400D5S40	○	305,0	205,0	235,0						
41,0	WDX 410D5S40	○	310,0	210,0	240,0	40	49,5	70	WDXT 125012		
42,0	WDX 420D5S40	○	315,0	215,0	245,0						
43,0	WDX 430D5S40	○	320,0	220,0	250,0						
44,0	WDX 440D5S40	○	325,0	225,0	255,0						
45,0	WDX 450D5S40	○	330,0	230,0	260,0						
46,0	WDX 460D5S40	○	335,0	235,0	265,0						
47,0	WDX 470D5S40	○	340,0	240,0	270,0						
48,0	WDX 480D5S40	○	345,0	245,0	275,0						
49,0	WDX 490D5S40	○	350,0	250,0	280,0						
50,0	WDX 500D5S40	○	355,0	255,0	285,0	40		70	WDXT 156012		
51,0	WDX 510D5S40	○	360,0	260,0	290,0						
52,0	WDX 520D5S40	○	365,0	265,0	295,0						
53,0	WDX 530D5S40	○	370,0	270,0	300,0						
54,0	WDX 540D5S40	○	375,0	275,0	305,0						
55,0	WDX 550D5S40	○	380,0	280,0	310,0						

Inserts

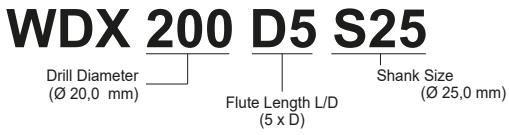
Cat. No.	Coated				Fig.	Dimensions (mm)			Applicable Holder
	ACP100	ACP300	ACK300	DL1500		W1	Thickness	RE	
WDXT 042004-L	○	●	●	●	4				
WDXT 042004-G	●	●	●	●	5	4,2	2,0	0,4	WDX 130 ~ 150
WDXT 042004-H	○	●	●	●	6				
WDXT 052504-L	○	●	●	●	4				
WDXT 052504-G	●	●	●	●	5	5,0	2,5	0,4	WDX 155 ~ 180
WDXT 052504-H	○	●	●	●	6				
WDXT 063006-L	●	●	●	●	4				
WDXT 063006-G	●	●	●	●	5	6,0	3,0	0,6	WDX 185 ~ 225
WDXT 063006-H	○	●	●	●	6				
WDXT 073506-L	●	●	●	●	4				
WDXT 073506-G	●	●	●	●	5	7,5	3,5	0,6	WDX 230 ~ 285
WDXT 073506-H	●	●	●	●	6				
WDXT 094008-L	●	●	●	●	4				
WDXT 094008-G	●	●	●	●	5	9,6	4,0	0,8	WDX 290 ~ 360
WDXT 094008-H	●	●	●	●	6				
WDXT 125012-L	●	●	●	●	4				
WDXT 125012-G	●	●	●	●	5	12,4	5,0	1,2	WDX 370 ~ 450
WDXT 125012-H	●	●	●	●	6				
WDXT 156012-L	●	●	●	●	4				
WDXT 156012-G	●	●	●	●	5	15,2	6,0	1,2	WDX 460 ~ 550
WDXT 156012-H	●	●	●	●	6				

Spare Parts

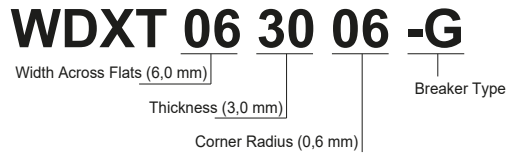
Screw	Wrench	Wrench	Applicable Holders	N·m
BFTX 01604 N	TRX 06	—	WDX 130D_S20 – 150D_S20	0,3
BFTX 0204 N	TRX 06	—	WDX 155D_S20 – 180D_S25	0,5
BFTX 02206	—	TRX 07	WDX 185D_S25 – 225D_S25	1,0
BFTX 02506 N	—	TRX 08	WDX 230D_S25 – 285D_S32	1,5
BFTX 03584	—	TRX 15	WDX 290D_S32 – 360D_S40	3,5
BFTX 0511 N	—	TRX 20	WDX 370D_S40 – 450D_S40	5,0
BFTX 0615 N	—	TRX 25	WDX 460D_S40 – 550D_S40	7,5

Identification Details

Drill Body

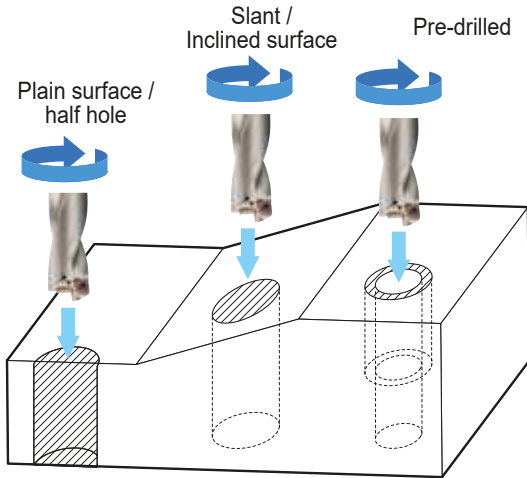


Indexable Insert



Multi-Purpose Functionality

● Applications for machining centre



Recommended conditions - reduce feed rate to 70 %

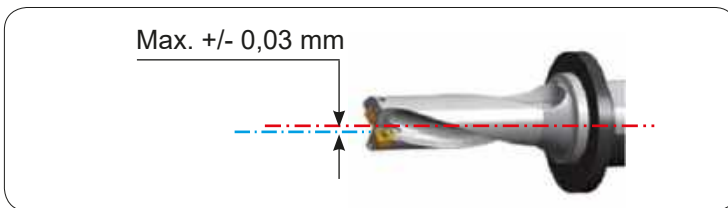
● Hole profile

	Drill Diameter (mm)	a (mm)
	Ø13,0–18,0	0,4
	Ø18,5–28,5	0,6
	Ø29,0–36,0	0,8
	Ø37,0–55,0	1,2

Applications for Lathes

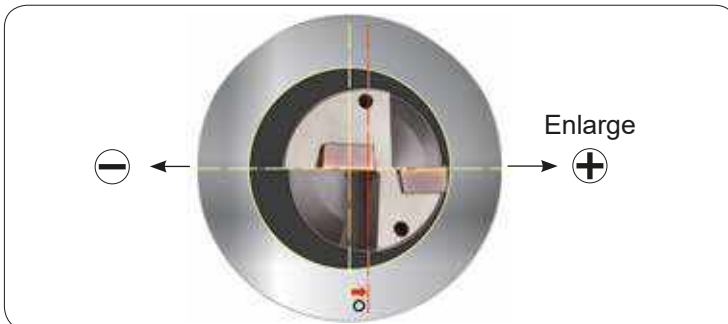
● Setting Instruction

Ensure the face of the drill flange is hard against the face of the tool holder.
Align the centreline of the drill to the centreline of the lathes Y axis



Drilling Over Holes

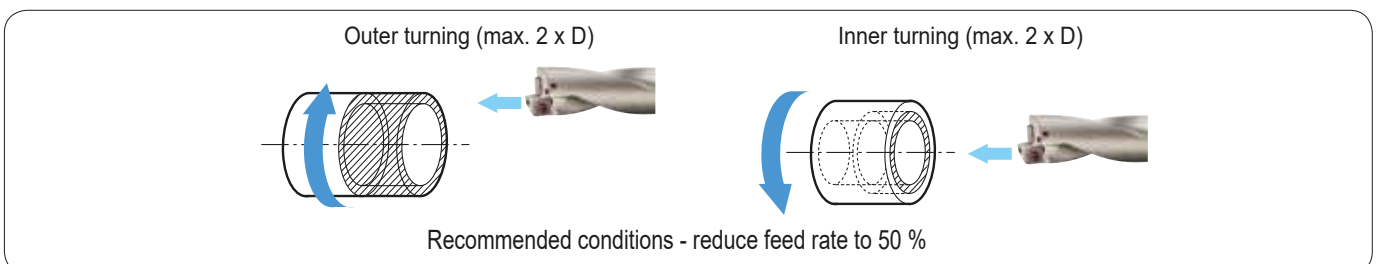
Offset the lathes X axis within the maximum amount stated in the table



Drill description	Max. Offset (mm)	Drill description	Max. Offset (mm)
WDX130...	0,35	WDX280...	0,15
WDX135...	0,30	WDX285...	0,10
WDX140...	0,25	WDX290...	1,00
WDX145...	0,20	WDX295...	0,95
WDX150...	0,15	WDX300...	0,90
WDX155...	0,40	WDX310...	0,80
WDX160...	0,40	WDX320...	0,70
WDX165...	0,35	WDX330...	0,55
WDX170...	0,30	WDX340...	0,45
WDX175...	0,25	WDX350...	0,35
WDX180...	0,20	WDX360...	0,20
WDX185...	0,50	WDX370...	1,00
WDX190...	0,45	WDX380...	1,00
WDX195...	0,40	WDX390...	0,90
WDX200...	0,30	WDX400...	0,80
WDX205...	0,30	WDX410...	0,70
WDX210...	0,20	WDX420...	0,60
WDX215...	0,15	WDX430...	0,50
WDX220...	0,10	WDX440...	0,50
WDX225...	0,06	WDX450...	0,40
WDX230...	0,70	WDX460...	1,50
WDX235...	0,70	WDX470...	1,40
WDX240...	0,60	WDX480...	1,30
WDX245...	0,50	WDX490...	1,20
WDX250...	0,50	WDX500...	1,10
WDX255...	0,45	WDX510...	1,00
WDX260...	0,40	WDX520...	0,90
WDX265...	0,35	WDX530...	0,80
WDX270...	0,25	WDX540...	0,60
WDX275...	0,20	WDX550...	0,50

Recommended conditions - reduce feed rate to 30 %

Turning by lathes

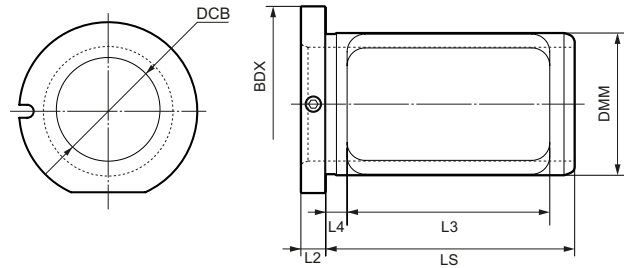


Recommended conditions - reduce feed rate to 50 %

WDX Type

Eccentric Sleeve WAS Type

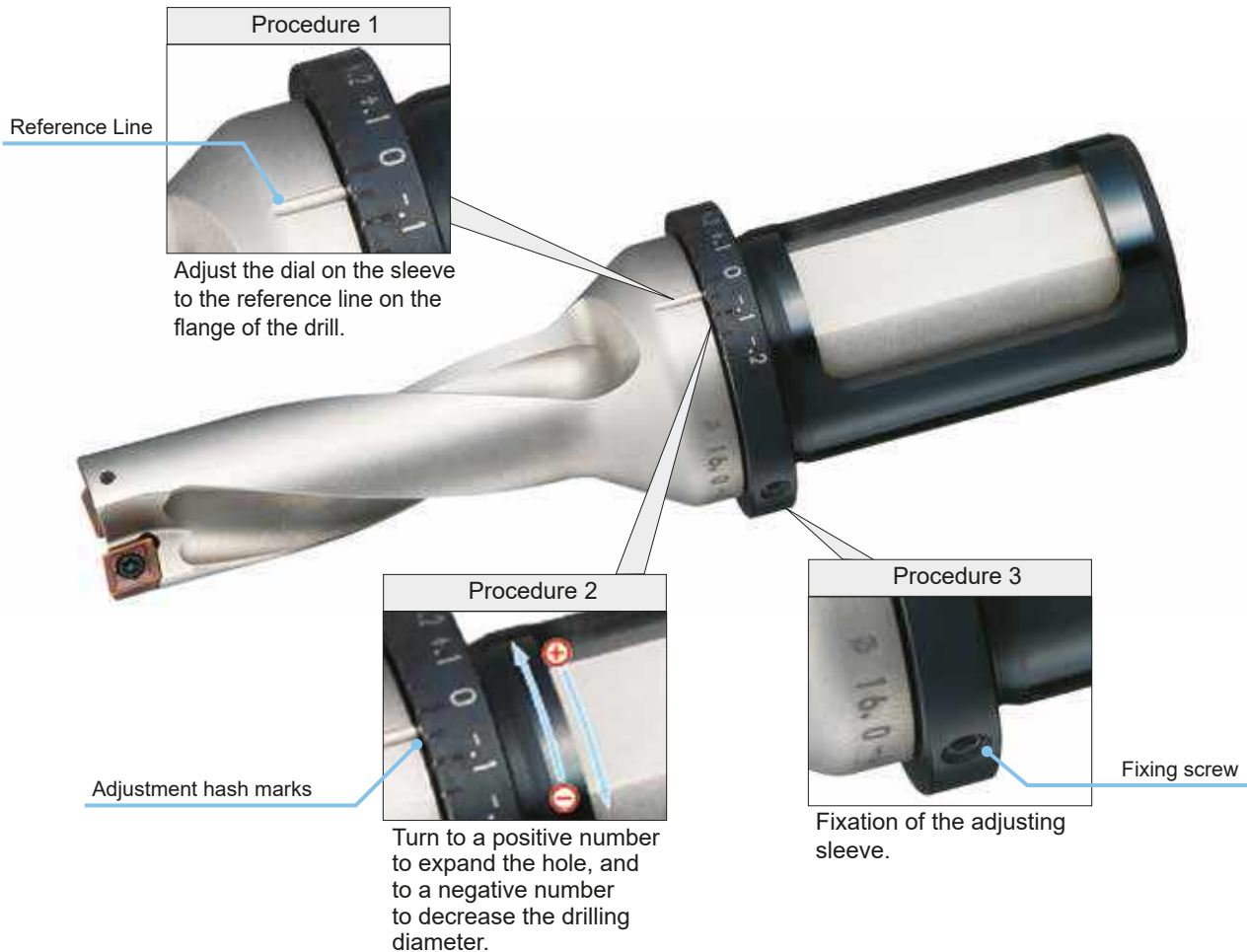
The Eccentric Sleeve WAS Type, exclusively designed for "SumiDrill" WDX Type, provides up to $\pm 0,3$ mm of hole size adjustment.



■ Dimensions

Cat. No.	Stock	DCB	DMM	BDX	LS	L2	L3	L4	Diameter Adjustment Range (max.)
WAS 2025-48	●	20	25	33	43	5	32	5	+0,3 – -0,2
WAS 2532-60	●	25	32	42	60	7	46	6	+0,3 – -0,3
WAS 3240-70	●	32	40	55	70	7	57	6	+0,3 – -0,3
WAS 4050-85	●	40	50	60	70	7	54	6	+0,3 – -0,3

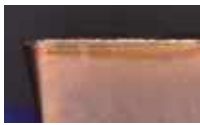



■ Diameter Adjustment





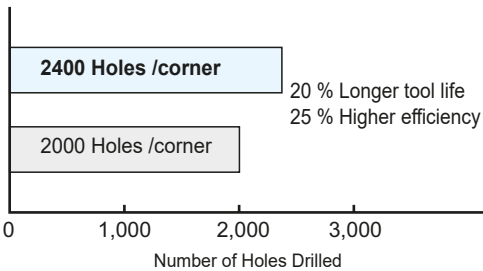
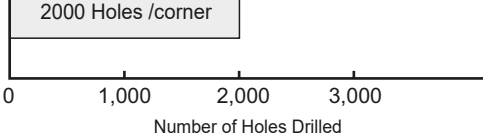
Note 1: The dial is for reference purposes. Always measure the actual drilling diameter and adjust accordingly.
 Note 2: Not usable with collet chuck type holders. Only use with a side-locking holder like Weldon.


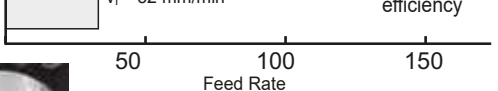
Indexable Insert Type "SumiDrill" WDX Type


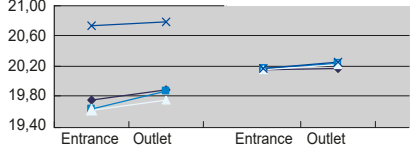
Application Examples



"SumiDrill" WDX type	Normal wear	Good chip control
		
Competitor	Breakage	Long chips
		
Drill Body:	Automotive Component (SUS304) WDX220D2S25	
Drill Insert:	WDXT063006-L (ACP300)	
Conditions:	$v_c = 125$ m/min, $f = 0,07$ mm/rev, $H = 5$ mm, through, Wet	
Insert breakage was eliminated with improved chip control and better surface finish.		

"SumiDrill" WDX type	Good chip form
	
Competitor	Entangled chips
	
Drill Body:	Structural Steel WDX190D4S25
Drill Insert:	WDXT063006-L (ACP300)
Conditions:	$v_c = 100$ m/min, $f = 0,06$ mm/rev, $H = 40$ mm, through, Wet
Eliminated the problem of entangled chips.	

"SumiDrill" WDX type	2400 Holes /corner	20 % Longer tool life 25 % Higher efficiency
		
Competitor	2000 Holes /corner	
		
Drill Body:	Machine Component (SCM440) WDX220D3S25	
Drill Insert:	WDXT063006-G (ACP300)	
Conditions (Sumitomo):	$v_c = 157$ m/min, $f = 0,19$ mm/rev, $H = 19$ mm, through, Wet	
Conditions (Comp.):	$v_c = 157$ m/min, $f = 0,15$ mm/rev, $H = 19$ mm, through, Wet	
Good chip control even under high efficiency conditions. Better stability through lower cutting force, resulting in 25 % higher efficiency and 20 % higher tool life.		

"SumiDrill" WDX type	$v_f = 32$ mm/min	4 Times higher efficiency
		
Competitor	$v_f = 32$ mm/min	
		
Drill Body:	Plate (S48C) WDX600D3S40	
Drill Insert:	WDXT186012-G (ACP300)	
Conditions (Sumitomo):	$v_c = 150$ m/min, $f = 0,16$ mm/rev, $H = 60$ mm, through, Wet	
Conditions (Comp.):	$v_c = 30$ m/min, $f = 0,20$ mm/rev, $H = 60$ mm, through, Wet	
Stable drilling performance. 4 times higher efficiency.		

Competitor		Good surface and hole tolerance.
		
Drill Body:	Automotive Component (SCM415) WDX200D5S25	
Drill Insert:	WDXT063006-G (ACP300)	
Conditions:	$v_c = 185$ m/min, $f = 0,12$ mm/rev, $H = 87$ mm, through, Wet	
Good surface roughness. Stable hole diameter.		

"SumiDrill" WDX type	Normal flank wear
	
Competitor	Breakage
	
Drill Body:	Bearing Component for Windmill (42CrMo) WDX330D5S40
Drill Insert:	WDXT094008-L (ACP300)
Conditions:	$v_c = 146$ m/min, $f = 0,10$ mm/rev, $H = 158$ mm, through, Wet
WDX shows stable drilling performance, no cutting edge breakage.	

Indexable Insert Type "SumiDrill" WDX Type

Recommended Cutting Conditions

Recommended Cutting Conditions (2D)

[min. - optimal - max.]

Material Group		Hardness (HB)	Chip breaker & Grade	Feed rate (mm/rev)					
ISO	Work material			Vc (m/min)	Ø 13,0–18,0	Ø 18,5–29,0	Ø 29,5–36,0	Ø 37,0–55,0	Ø 56,0–65,0
P	Carbon steel	125	L ACP300	150–220–250	0,04–0,08–0,12	0,04–0,08–0,12	0,04–0,08–0,13	0,05–0,10–0,15	0,06–0,11–0,17
		190	G ACP300	150–220–250	0,08–0,13–0,24	0,08–0,13–0,24	0,08–0,14–0,26	0,09–0,16–0,29	0,10–0,17–0,32
		250	G ACP300	125–170–230	0,06–0,11–0,18	0,06–0,11–0,18	0,06–0,12–0,19	0,07–0,13–0,22	0,08–0,14–0,24
		270	G ACP300	125–170–230	0,08–0,13–0,22	0,08–0,14–0,24	0,08–0,14–0,23	0,09–0,16–0,26	0,10–0,17–0,29
		300	G ACP300	100–130–170	0,06–0,11–0,17	0,06–0,12–0,18	0,06–0,12–0,18	0,07–0,13–0,20	0,08–0,14–0,22
	Low alloyed steel	180	L ACP300	150–180–220	0,05–0,08–0,14	0,05–0,08–0,14	0,05–0,08–0,16	0,06–0,09–0,17	0,07–0,10–0,19
		275	G ACP300	125–150–200	0,06–0,11–0,17	0,06–0,11–0,17	0,06–0,12–0,18	0,07–0,13–0,20	0,08–0,14–0,22
		300	G ACP300	100–140–170	0,06–0,11–0,17	0,06–0,11–0,17	0,06–0,12–0,18	0,07–0,13–0,20	0,08–0,14–0,22
	High alloyed steel	350	G ACP300	80–120–150	0,06–0,11–0,17	0,06–0,11–0,17	0,06–0,12–0,18	0,07–0,13–0,20	0,08–0,14–0,22
		200	G ACP300	100–150–200	0,08–0,13–0,24	0,08–0,13–0,24	0,08–0,14–0,26	0,09–0,16–0,29	0,10–0,17–0,32
M	Stainless steel, martensitic / ferritic, martensitic / tempered austenitic / quenched austenitic / ferritic (Duplex)	200	L/G ACP300	100–150–200	0,06–0,11–0,18	0,06–0,11–0,18	0,06–0,12–0,19	0,07–0,13–0,22	0,08–0,14–0,24
		240	L/G ACP300	90–120–150	0,06–0,11–0,18	0,06–0,11–0,18	0,06–0,12–0,19	0,07–0,13–0,22	0,08–0,14–0,24
		180	L/G ACP300	100–150–200	0,04–0,08–0,18	0,06–0,11–0,18	0,06–0,12–0,19	0,07–0,13–0,22	0,08–0,14–0,24
		230	L/G ACP300	80–120–150	0,04–0,08–0,18	0,06–0,11–0,18	0,06–0,12–0,19	0,07–0,13–0,22	0,08–0,14–0,24
		160	H ACP300	90–120–150	0,09–0,20–0,32	0,10–0,22–0,36	0,11–0,24–0,39	0,12–0,26–0,44	0,13–0,29–0,48
K	Cast iron (GG)	180	H ACK300	120–160–200	0,09–0,20–0,32	0,10–0,22–0,36	0,11–0,24–0,39	0,12–0,26–0,44	0,13–0,29–0,48
		260	H ACK300	120–160–200	0,09–0,20–0,32	0,10–0,22–0,36	0,11–0,24–0,39	0,12–0,26–0,44	0,13–0,29–0,48
	Nodular cast iron (GGG)	160	H ACK300	90–120–250	0,09–0,20–0,32	0,10–0,22–0,36	0,11–0,24–0,39	0,12–0,26–0,44	0,13–0,29–0,48
S	Heat resistant alloy	200	L/G ACP300	25–50–70	0,06–0,11–0,18	0,06–0,11–0,18	0,06–0,12–0,19	0,07–0,13–0,22	0,08–0,14–0,24
		200	L/G ACP300	25–50–70	0,06–0,11–0,18	0,06–0,11–0,18	0,06–0,12–0,19	0,07–0,13–0,22	0,08–0,14–0,24
N	Aluminium alloy		G DL1500	200–260–320	0,06–0,11–0,17	0,06–0,11–0,17	0,06–0,12–0,18	0,07–0,13–0,20	0,08–0,14–0,22
			G DL1500	180–230–280	0,06–0,11–0,17	0,06–0,11–0,17	0,06–0,12–0,18	0,07–0,13–0,20	0,08–0,14–0,22

Recommended Cutting Conditions (3D)

[min. - optimal - max.]

Material Group		Hardness (HB)	Chip breaker & Grade	Feed rate (mm/rev)					
ISO	Work material			Vc (m/min)	Ø 13,0–18,0	Ø 18,5–29,0	Ø 29,5–36,0	Ø 37,0–55,0	Ø 56,0–65,0
P	Carbon steel	125	L ACP300	150–220–250	0,04–0,07–0,1	0,04–0,07–0,10	0,04–0,08–0,11	0,05–0,09–0,12	0,06–0,10–0,13
		190	G ACP300	150–220–250	0,08–0,12–0,2	0,08–0,12–0,20	0,08–0,13–0,22	0,09–0,14–0,24	0,10–0,16–0,27
		250	G ACP300	125–170–230	0,06–0,10–0,15	0,06–0,10–0,15	0,06–0,11–0,16	0,07–0,12–0,18	0,08–0,13–0,20
		270	G ACP300	125–170–230	0,08–0,12–0,18	0,08–0,12–0,18	0,08–0,13–0,19	0,09–0,14–0,22	0,10–0,16–0,24
		300	G ACP300	100–130–170	0,06–0,10–0,14	0,06–0,10–0,14	0,06–0,11–0,15	0,07–0,12–0,17	0,08–0,13–0,19
	Low alloyed steel	180	L ACP300	150–180–220	0,05–0,07–0,12	0,05–0,07–0,12	0,05–0,08–0,13	0,06–0,08–0,15	0,07–0,09–0,16
		275	G ACP300	125–150–200	0,06–0,10–0,14	0,06–0,10–0,14	0,06–0,11–0,15	0,07–0,12–0,17	0,08–0,13–0,19
		300	G ACP300	100–140–170	0,06–0,10–0,14	0,06–0,10–0,14	0,06–0,11–0,15	0,07–0,12–0,17	0,08–0,13–0,19
	High alloyed steel	350	G ACP300	80–120–150	0,06–0,10–0,14	0,06–0,10–0,14	0,06–0,11–0,15	0,07–0,12–0,17	0,08–0,13–0,19
		200	G ACP300	100–150–200	0,08–0,12–0,2	0,08–0,12–0,20	0,08–0,13–0,22	0,09–0,14–0,24	0,10–0,16–0,27
M	Stainless steel, martensitic / ferritic, martensitic / tempered austenitic / quenched austenitic / ferritic (Duplex)	200	L/G ACP300	100–150–200	0,06–0,10–0,15	0,06–0,10–0,15	0,06–0,11–0,16	0,07–0,12–0,18	0,08–0,13–0,20
		240	L/G ACP300	90–120–150	0,06–0,10–0,15	0,06–0,10–0,15	0,06–0,11–0,16	0,07–0,12–0,18	0,08–0,13–0,20
		180	L/G ACP300	100–150–200	0,04–0,10–0,15	0,06–0,10–0,15	0,06–0,11–0,16	0,07–0,12–0,18	0,08–0,13–0,20
		230	L/G ACP300	80–120–150	0,04–0,10–0,15	0,06–0,10–0,15	0,06–0,11–0,16	0,07–0,12–0,18	0,08–0,13–0,20
		160	H ACP300	90–120–150	0,09–0,18–0,27	0,10–0,20–0,30	0,11–0,22–0,32	0,12–0,24–0,36	0,13–0,26–0,40
K	Cast iron (GG)	180	H ACK300	120–160–200	0,09–0,18–0,27	0,10–0,20–0,30	0,11–0,22–0,32	0,12–0,24–0,36	0,13–0,26–0,40
		260	H ACK300	120–160–200	0,09–0,18–0,27	0,10–0,20–0,30	0,11–0,22–0,32	0,12–0,24–0,36	0,13–0,26–0,40
	Nodular cast iron (GGG)	160	H ACK300	90–120–250	0,09–0,18–0,27	0,10–0,20–0,30	0,11–0,22–0,32	0,12–0,24–0,36	0,13–0,26–0,40
S	Heat resistant alloy	200	L/G ACP300	25–50–70	0,06–0,10–0,15	0,06–0,10–0,15	0,06–0,11–0,16	0,07–0,12–0,18	0,08–0,13–0,20
		200	L/G ACP300	25–50–70	0,06–0,10–0,15	0,06–0,10–0,15	0,06–0,11–0,16	0,07–0,12–0,18	0,08–0,13–0,20
N	Aluminium alloy		G DL1500	200–260–320	0,06–0,11–0,17	0,06–0,11–0,17	0,06–0,12–0,18	0,07–0,13–0,20	0,08–0,14–0,22
			G DL1500	180–230–280	0,06–0,11–0,17	0,06–0,11–0,17	0,06–0,12–0,18	0,07–0,13–0,20	0,08–0,14–0,22

Recommended Cutting Conditions (4D)

[min. - optimal - max.]

Material Group		Hardness (HRC)	Chip breaker & Grade	Cutting Speed Vc (m/min)	Feed rate (mm/rev)				
ISO	Work material				Ø 13,0-18,0	Ø 18,5-29,0	Ø 29,5-36,0	Ø 37,0-55,0	Ø 56,0-65,0
P	Carbon steel	125	L ACP300	150-220-250	0,04-0,07-0,09	0,04-0,07-0,09	0,04-0,07-0,09	0,05-0,08-0,10	0,05-0,08-0,10
		190	G ACP300	150-220-250	0,08-0,11-0,17	0,08-0,11-0,17	0,08-0,12-0,18	0,09-0,14-0,21	0,09-0,14-0,21
		250	G ACP300	125-170-230	0,06-0,10-0,13	0,06-0,10-0,13	0,06-0,10-0,14	0,07-0,11-0,15	0,07-0,11-0,15
		270	G ACP300	125-170-230	0,08-0,11-0,15	0,08-0,11-0,15	0,08-0,12-0,17	0,09-0,14-0,19	0,09-0,14-0,19
		300	G ACP300	100-130-170	0,06-0,10-0,12	0,06-0,10-0,12	0,06-0,10-0,13	0,07-0,11-0,14	0,07-0,11-0,14
	Low alloyed steel	180	L ACP300	150-180-220	0,05-0,07-0,10	0,05-0,07-0,10	0,05-0,07-0,11	0,06-0,08-0,12	0,06-0,08-0,12
		275	G ACP300	125-150-200	0,06-0,10-0,12	0,06-0,10-0,12	0,06-0,10-0,13	0,07-0,11-0,14	0,07-0,11-0,14
		300	G ACP300	100-140-170	0,06-0,10-0,12	0,06-0,10-0,12	0,06-0,10-0,13	0,07-0,11-0,14	0,07-0,11-0,14
		350	G ACP300	80-120-150	0,06-0,10-0,12	0,06-0,10-0,12	0,06-0,10-0,13	0,07-0,11-0,14	0,07-0,11-0,14
		200	G ACP300	100-150-200	0,08-0,11-0,17	0,08-0,11-0,17	0,08-0,12-0,18	0,09-0,14-0,21	0,09-0,14-0,21
High alloyed steel	325	G ACP300	80-120-160	0,06-0,10-0,13	0,06-0,10-0,13	0,06-0,10-0,14	0,07-0,11-0,15	0,07-0,11-0,15	
	200	L/G ACP300	100-150-200	0,06-0,10-0,13	0,06-0,10-0,13	0,06-0,10-0,14	0,07-0,11-0,15	0,07-0,11-0,15	
M	Stainless steel, martensitic / ferritic martensitic / tempered austenitic / quenched austenitic / ferritic (Duplex)	240	L/G ACP300	90-120-150	0,06-0,10-0,13	0,06-0,10-0,13	0,06-0,10-0,14	0,07-0,11-0,15	0,07-0,11-0,15
		180	L/G ACP300	100-150-200	0,04-0,10-0,13	0,06-0,10-0,13	0,06-0,10-0,14	0,09-0,14-0,21	0,09-0,14-0,21
		230	L/G ACP300	80-120-150	0,04-0,10-0,13	0,06-0,10-0,13	0,06-0,10-0,14	0,07-0,11-0,15	0,07-0,11-0,15
		180	L/G ACP300	100-150-200	0,04-0,10-0,13	0,06-0,10-0,13	0,06-0,10-0,14	0,09-0,14-0,21	0,09-0,14-0,21
K	Cast iron (GG)	180	H ACK300	120-160-200	0,09-0,17-0,23	0,10-0,19-0,26	0,11-0,21-0,28	0,12-0,23-0,31	0,12-0,23-0,31
		260	H ACK300	120-160-200	0,09-0,17-0,23	0,10-0,19-0,26	0,11-0,21-0,28	0,12-0,23-0,31	0,12-0,23-0,31
	Nodular cast iron (GGG)	160	H ACK300	90-120-150	0,09-0,17-0,23	0,10-0,19-0,26	0,11-0,21-0,28	0,12-0,23-0,31	0,12-0,23-0,31
		250	H ACK300	90-120-150	0,09-0,17-0,23	0,10-0,19-0,26	0,11-0,21-0,28	0,12-0,23-0,31	0,12-0,23-0,31
S	Heat resistant alloy	200	L/G ACP300	25-50-70	0,06-0,10-0,13	0,06-0,10-0,13	0,06-0,10-0,14	0,07-0,11-0,15	0,07-0,11-0,15
N	Aluminium alloy		G DL1500	200-260-320	0,05-0,10-0,15	0,05-0,10-0,15	0,06-0,11-0,16	0,06-0,12-0,18	0,07-0,13-0,20
	Copper alloy		G DL1500	180-230-280	0,05-0,10-0,15	0,05-0,10-0,15	0,06-0,11-0,16	0,06-0,12-0,18	0,07-0,13-0,20

Recommended Cutting Conditions (5D)

[min. - optimal - max.]

Material Group		Hardness (HRC)	Chip breaker & Grade	Cutting Speed Vc (m/min)	Feed rate (mm/rev)				
ISO	Work material				Ø 13,0-18,0	Ø 18,5-29,0	Ø 29,5-36,0	Ø 37,0-55,0	Ø 56,0-65,0
P	Carbon steel	125	L ACP300	150-220-250	0,04-0,06-0,09	0,04-0,06-0,08	0,04-0,06-0,08	0,05-0,07-0,09	
		190	G ACP300	150-220-250	0,07-0,10-0,15	0,07-0,10-0,15	0,08-0,11-0,17	0,09-0,12-0,19	
		250	G ACP300	125-170-230	0,05-0,09-0,11	0,05-0,09-0,11	0,06-0,09-0,12	0,06-0,10-0,14	
		270	G ACP300	125-170-230	0,07-0,10-0,14	0,07-0,10-0,14	0,08-0,11-0,15	0,09-0,12-0,17	
		300	G ACP300	100-130-170	0,05-0,09-0,11	0,05-0,09-0,11	0,06-0,09-0,12	0,06-0,10-0,13	
	Low alloyed steel	180	L ACP300	150-180-220	0,05-0,06-0,09	0,05-0,06-0,09	0,05-0,06-0,10	0,05-0,07-0,11	
		275	G ACP300	125-150-200	0,05-0,09-0,11	0,05-0,09-0,11	0,06-0,09-0,12	0,06-0,10-0,13	
		300	G ACP300	100-140-170	0,05-0,09-0,11	0,05-0,09-0,11	0,06-0,09-0,12	0,06-0,10-0,13	
		350	G ACP300	80-120-150	0,05-0,09-0,11	0,05-0,09-0,11	0,06-0,09-0,12	0,06-0,10-0,13	
		200	G ACP300	100-150-200	0,07-0,10-0,15	0,07-0,10-0,15	0,08-0,11-0,17	0,09-0,12-0,19	
High alloyed steel	325	G ACP300	80-120-160	0,05-0,09-0,11	0,06-0,09-0,11	0,06-0,09-0,12	0,06-0,10-0,14		
	200	L/G ACP300	100-150-200	0,05-0,09-0,11	0,05-0,09-0,11	0,06-0,09-0,12	0,06-0,10-0,14		
M	Stainless steel, martensitic / ferritic martensitic / tempered austenitic / quenched austenitic / ferritic (Duplex)	240	L/G ACP300	90-120-150	0,05-0,09-0,11	0,05-0,09-0,11	0,06-0,09-0,12	0,06-0,10-0,14	
		180	L/G ACP300	100-150-200	0,05-0,09-0,11	0,05-0,09-0,11	0,06-0,09-0,12	0,06-0,10-0,14	
		230	L/G ACP300	80-120-150	0,05-0,09-0,11	0,05-0,09-0,11	0,06-0,09-0,12	0,07-0,12-0,18	
		180	L/G ACP300	100-150-200	0,05-0,09-0,11	0,05-0,09-0,11	0,06-0,09-0,12	0,06-0,10-0,14	
K	Cast iron (GG)	180	H ACK300	120-160-200	0,08-0,15-0,21	0,09-0,17-0,23	0,09-0,18-0,25	0,11-0,20-0,28	
		260	H ACK300	120-160-200	0,08-0,15-0,21	0,09-0,17-0,23	0,09-0,18-0,25	0,11-0,20-0,28	
	Nodular cast iron (GGG)	160	H ACK300	90-120-150	0,08-0,15-0,21	0,09-0,17-0,23	0,09-0,18-0,25	0,11-0,20-0,28	
		250	H ACK300	90-120-150	0,08-0,15-0,21	0,09-0,17-0,23	0,09-0,18-0,25	0,11-0,20-0,28	
S	Heat resistant alloy	200	L/G ACP300	25-50-70	0,05-0,09-0,11	0,05-0,09-0,11	0,06-0,09-0,12	0,06-0,10-0,14	
N	Aluminium alloy		G DL1500	200-260-320	0,05-0,10-0,15	0,05-0,10-0,15	0,06-0,11-0,16	0,06-0,12-0,18	
	Copper alloy		G DL1500	180-230-280	0,05-0,10-0,15	0,05-0,10-0,15	0,06-0,11-0,16	0,06-0,12-0,18	



Indexable Plunge Drill / Plunge Mill

PDL Type / PCT Type

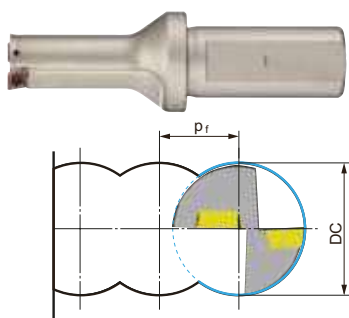


Description

The tool cuts in the Z axis direction where tool rigidity is highest, allowing high efficiency roughing for aeronautic components and dies with long tool overhang must be used to machine deep holes and pockets.

- Characteristics**
 - The flat cutting edge design produces near-flat bottom profiles to reduce depth of cut variation during finishing.
 - All sizes come with an air hole for supplying coolant internally to improve chip evacuation.
 - Durable body with special surface treatment offers improved tool life and reliability.
 - The tools use SumiDrill WDX type inserts for handling a wide range of work materials, from steel to non-ferrous metals and exotic alloys.

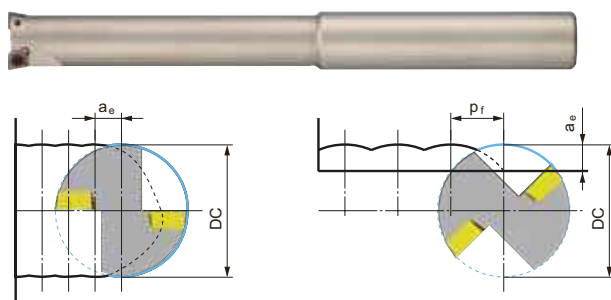
- The PDL type has a central insert making it possible to make radial cuts beyond the tool's radius, pitch feed cutting, and drilling. (Pocket milling, etc.)



Keep the value of P_f for PDL type tools to less than 70 % of the tool diameter (DC).



- Although the PCT type has limited radial cutting ability, the tool has many effective teeth enabling it to perform high feed cutting. (Medium finishing of corners, hole expansion, deep grooving, etc.)



Keep the value of P_f for PCT type tools to less than 50 % of the tool diameter (DC).

For a_e refer to the dimension under "a_e max" in the stock / dimensions tables titled "Holders Max, Depth: 3D/5D".



Application examples

PDL Pocketing
Work Material: Ti Alloy

Tool: PDL400D2S40 (Ø 40)
Insert: WDXT125012-G
Grade: ACK300

Cutting Conditions:
 $v_c = 40$ m/min
 $f = 0,07$ mm/rev
($v_f = 22,3$ mm/min)
 $P_f = 25$ mm

PCT Corner Finishing
Work Material: Ti Alloy

Tool: PCT320D3S32 (Ø 32)
PCT250D3S25 (Ø 25)
PCT200D3S20 (Ø 20)
Grade: ACK300

Insert: WDXT094008-G
WDXT073506-G
WDXT063006-G

Cutting Conditions:
 $v_c = 50$ m/min
 $f_t = 0,08$ mm/tooth
($v_f = 80-127$ mm/min)
 $a_e = 3,2-6,5$ mm

PCT Grooving
Work Material: Ti Alloy

Tool: PCT320D5S32 (Ø 32)
Insert: WDXT094008-G
Grade: ACK300

Cutting Conditions:
 $v_c = 40$ m/min
 $f_t = 0,07$ mm/tooth
($v_f = 56$ mm/min)
 $P_f = 5,0$ mm

PDL Drilling
Work Material: X4 CrNiMo 17 12 2

Tool: PDL200D3S25 (Ø 20)
Insert: WDXT063006-G
Grade: ACP300

Cutting Conditions:
 $v_c = 180$ m/min
 $f = 0,10$ mm/rev
($v_f = 286$ mm/min)
DC = 20 mm

PCT Aeronautic Components
Work Material: X5 CrNi 18 10

Tool: PCT320D3S32 (Ø 32)
Insert: WDXT094008-G
Grade: ACP300

Cutting Conditions:
 $v_c = 180$ m/min
 $f_t = 0,15$ mm/tooth
($v_f = 537$ mm/min)
 $a_e = 7,0$ mm, $P_f = 5,0$ mm

PCT Machine Components
Work Material: 34 Cr Ni 4

Tool: PCT200D5S20 (Ø 20)
Insert: WDXT063006-G
Grade: ACK300

Cutting Conditions:
 $v_c = 150$ m/min
 $f_t = 0,15$ mm/tooth
($v_f = 716$ mm/min)
 $a_e = 3,5$ mm

Indexable Plunge Drill PDL Type (2D, 3D)



2D	3D	Carbon Steel, Alloy Steel	Tempered Steel	Hardened Steel	Stainless Steel	Ti Alloy	Heat Resistant Alloy	Cast Iron	Ductile Cast Iron	Al Alloy	Cu Alloy	Composite CFRP*
		C<0.28% C>0.28%		HRC<45 HRC>45								
w												

Fig 1

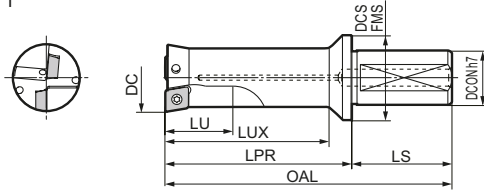
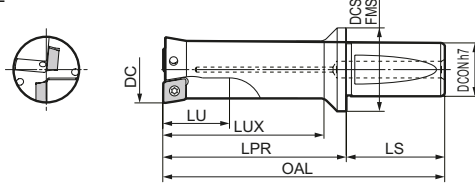


Fig 2



Holder (Max ap: 2D)

Cat. No.	Stock	Dimensions (mm)							Applicable Insert	Fig.	
		DC	OAL	LU	LUX	LPR	LS	DCON			DCSFMS
PDL 160D2S20	●	16,0	94	32	35	50	44	20	28	WDXT052504	1
200D2S25	●	20,0	114	40	43	58	56	25	33	WDXT063006	
250D2S25	●	25,0	127	50	53	71	56	25	37	WDXT073506	
PDL 320D2S40	●	32,0	162	64	68	92	70	40	54	WDXT094008	2
400D2S40	●	40,0	185	80	85	115	70	40	54	WDXT125012	

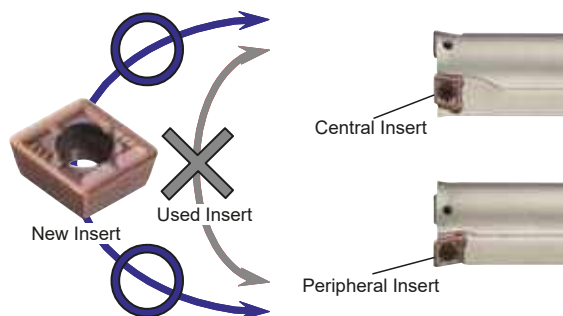
Holder (Max ap: 3D)

Cat. No.	Stock	Dimensions (mm)							Applicable Insert	Fig.	
		DC	OAL	LU	LUX	LPR	LS	DCON			DCSFMS
PDL 160D3S20	●	16,0	110	48	51	66	44	20	28	WDXT052504	1
200D3S25	●	20,0	134	60	63	78	56	25	33	WDXT063006	
250D3S25	●	25,0	152	75	78	96	56	25	37	WDXT073506	
PDL 320D3S40	●	32,0	194	96	100	124	70	40	54	WDXT094008	2
400D3S40	●	40,0	225	120	125	155	70	40	54	WDXT125012	

Spare Parts

Screw	Wrench	Wrench		Applicable Holders
			(N.m)	
BFTX0204N	TRX06	-	0,5	PDL 160 D2 S20, PDL 160 D3 S20 PCT 160 D3 S16, PCT 160 D5 S16
BFTY02206	-	TRD07	1,0	PDL 200 D2 S25, PDL 200 D3 S25 PCT 200 D3 S20, PCT 200 D5 S20
BFTX02506N	-	TRD08	1,5	PDL 250 D2 S25, PDL 250 D3 S25 PCT 250 D3 S25, PCT 250 D5 S25
BFTX03584	-	TRD15	3,5	PDL 320 D2 S40, PDL 320 D3 S40 PCT 320 D3 S32, PCT 320 D5 S32
BFTX0511N	-	TRD20	5,0	PDL 400 D2 S40, PDL 400 D3 S40 PCT 400 D3 S42, PCT 400 D5 S42

Notes about Mounting Inserts



PDL type: Inserts can be used on either the centre or the outside.
 Inserts used on the outside cannot be used in the centre. Similarly, inserts used in the centre cannot be used on the outside.
 PCT type: 2 corners can be used only for the outer inserts.

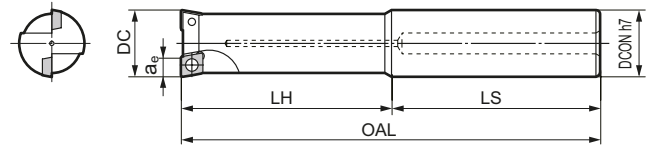
Indexable Plunge Mill PCT Type (3D, 5D)



3D	5D	Carbon Steel, Alloy Steel	Tempered Steel	Hardened Steel	Stainless Steel	Ti Alloy	Heat Resistant Alloy	Cast Iron	Ductile Cast Iron	Al Alloy	Cu Alloy	Composite CFRP*
		C<0.28% C>0.28%		HRC<45 HRC>45								
w												

* CFRP (Carbon Fibre Reinforced Plastic)

Fig 3



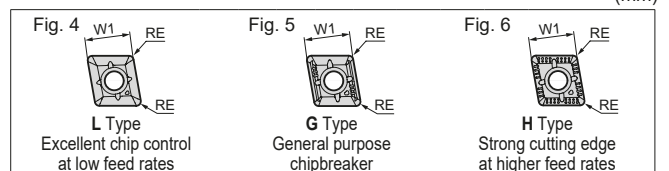
Holder (Max ap: 3D)

Cat. No.	Stock	Dimensions (mm)						No. of teeth	Applicable Insert	Fig.
		DC	a _e max	OAL	LH	LS	DCON			
PCT 160D3S16	●	16,0	4,0	123	53	70	16	2	WDXT052504	3
200D3S20	●	20,0	5,0	145	65	80	20	2	WDXT063006	
250D3S25	●	25,0	6,5	160	80	80	25	2	WDXT073506	
320D3S32	●	32,0	8,5	191	101	90	32	2	WDXT094008	
400D3S42	●	40,0	11,0	225	125	100	42	3	WDXT125012	

Holder (Max ap: 5D)

Cat. No.	Stock	Dimensions (mm)						No. of teeth	Applicable Insert	Fig.
		øD	a _e max	OAL	LH	LS	DCON			
PCT 160D5S16	●	16,0	4,0	155	85	70	16	2	WDXT052504	3
200D5S20	●	20,0	5,0	185	105	80	20	2	WDXT063006	
250D5S25	●	25,0	6,5	210	130	80	25	2	WDXT073506	
320D5S32	●	32,0	8,5	255	165	90	32	2	WDXT094008	
400D5S42	●	40,0	11,0	305	205	100	42	3	WDXT125012	

Inserts



Application	Coated				Fig.	Dimensions (mm)			Applicable Holder
	ACP100	ACP300	ACK300	DL1500		W1	Thickness	RE	
High Speed / Light Cutting									N
General Purpose		M							
Roughing		PM	K						
Cat. No.	ACP100	ACP300	ACK300	DL1500	Fig.	W1	Thickness	RE	Applicable Holder
WDXT 052504-L	○	●	●	●	4				PDL160D2S20 PDL160D3S20 PCT160D3S16 PCT160D5S16
052504-G	●	●	●	●	5	5,0	2,5	0,4	
052504-H	○	●	●	●	6				
WDXT 063006-L	●	●	●	●	4				PDL200D2S25 PDL200D3S25 PCT200D3S20 PCT200D5S20
063006-G	●	●	●	●	5	6,0	3,0	0,6	
063006-H	○	●	●	●	6				
WDXT 073506-L	●	●	●	●	4				PDL250D2S25 PDL250D3S25 PCT250D3S25 PCT250D5S25
073506-G	●	●	●	●	5	7,5	3,5	0,6	
073506-H	●	●	●	●	6				
WDXT 094008-L	●	●	●	●	4				PDL320D2S40 PDL320D3S40 PCT320D3S32 PCT320D5S32
094008-G	●	●	●	●	5	9,6	4,0	0,8	
094008-H	●	●	●	●	6				
WDXT 125012-L	●	●	●	●	4				PDL400D2S40 PDL400D3S40 PCT400D3S42 PCT400D5S42
125012-G	●	●	●	●	5	12,4	5,0	1,2	
125012-H	●	●	●	●	6				

Identification Details

PCT, PDL Type

PCT 250 D3 S25

Tool Diameter (ø 25,0) | Max Depth L/D (3D) | Shank Size (ø 25,0)

PCT, PDL Type Insert Identification

WDXT 07 35 06 -G

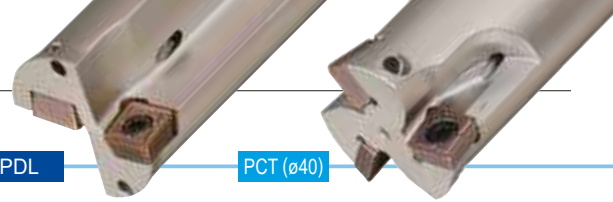
Width Across Flats (7,5) | Thickness x 10 (3,5) | Corner Radius x 10 (R0,6) | Breaker Type

Recommended Cutting Conditions

PDL Type / PCT Type

PDL

PCT (ø40)



Recommended Cutting Conditions (2D)

[min. - optimal - max.]

Material Group		Hardness (HB)	Chip breaker & Grade	Cutting Speed				PDL Type: f (mm/rev)			
ISO	Work material			Vc (m/min)	Ø 16,0	Ø 20,0–25,0	Ø 32,0	Ø 40,0			
P	Carbon steel	125	G ACP300	120–180–240	0,05–0,08–0,10	0,05–0,08–0,10	0,05–0,08–0,11	0,05–0,08–0,12			
		125	L ACP300	130–170–220	0,04–0,08–0,12	0,04–0,08–0,12	0,04–0,08–0,13	0,05–0,10–0,15			
		190	G ACP300	100–150–200	0,08–0,13–0,24	0,08–0,13–0,24	0,08–0,14–0,26	0,09–0,16–0,29			
		250	G ACP300	80–120–160	0,06–0,11–0,18	0,06–0,11–0,18	0,06–0,12–0,19	0,07–0,13–0,22			
		270	G ACP300	100–130–160	0,08–0,13–0,22	0,08–0,13–0,22	0,08–0,14–0,23	0,09–0,16–0,26			
	Low alloyed steel	300	G ACP300	70–100–140	0,06–0,11–0,17	0,06–0,11–0,17	0,06–0,12–0,18	0,07–0,13–0,20			
		180	L ACP300	100–140–180	0,05–0,08–0,14	0,05–0,08–0,14	0,05–0,08–0,16	0,06–0,09–0,17			
		275	G ACP300	80–120–160	0,06–0,11–0,17	0,06–0,11–0,17	0,06–0,12–0,18	0,07–0,13–0,20			
		300	G ACP300	75–110–140	0,06–0,11–0,17	0,06–0,11–0,17	0,06–0,12–0,18	0,07–0,13–0,20			
		350	G ACP300	60–85–110	0,06–0,11–0,17	0,06–0,11–0,17	0,06–0,12–0,18	0,07–0,13–0,20			
High alloyed steel	200	G ACP300	100–130–160	0,08–0,13–0,24	0,08–0,13–0,24	0,08–0,14–0,26	0,09–0,16–0,29				
	325	G ACP300	80–100–120	0,06–0,11–0,18	0,06–0,11–0,18	0,06–0,12–0,19	0,07–0,13–0,22				
M	Stainless steel, martensitic / ferritic, martensitic / tempered, austenitic / quenched, austenitic / ferritic (Duplex)	200	G ACP300	100–140–180	0,06–0,11–0,18	0,06–0,11–0,18	0,06–0,12–0,19	0,07–0,13–0,22			
		240	G ACP300	90–120–150	0,06–0,11–0,18	0,06–0,11–0,18	0,06–0,12–0,19	0,07–0,13–0,22			
		180	G ACP300	100–140–180	0,06–0,08–0,18	0,06–0,11–0,18	0,06–0,12–0,19	0,07–0,13–0,22			
		230	G ACP300	80–120–150	0,04–0,08–0,18	0,06–0,11–0,18	0,06–0,12–0,19	0,07–0,13–0,22			
K	Cast iron (GG)	180	H ACK300	120–160–200	0,09–0,20–0,32	0,10–0,22–0,36	0,11–0,24–0,39	0,12–0,26–0,44			
		260	H ACP300	90–120–150	0,09–0,20–0,32	0,10–0,22–0,36	0,11–0,24–0,39	0,12–0,26–0,44			
S	Heat resistant alloy	200	G ACP300	25–50–70	0,06–0,11–0,18	0,06–0,11–0,18	0,06–0,12–0,19	0,07–0,13–0,22			
		200	G ACP300	25–50–70	0,06–0,11–0,18	0,06–0,11–0,18	0,06–0,12–0,19	0,07–0,13–0,22			
N	Aluminium alloy		G DL1500	200–260–320	0,06–0,11–0,17	0,06–0,11–0,17	0,06–0,12–0,18	0,07–0,13–0,20			
			G DL1500	180–230–280	0,06–0,11–0,17	0,06–0,11–0,17	0,06–0,12–0,18	0,07–0,13–0,20			

Recommended Cutting Conditions (3D)

[min. - optimal - max.]

Material Group		Hardness (HB)	Chip breaker & Grade	Cutting Speed				PDL Type: f (mm/rev) / PCT Type: f _t (mm/tooth)			
ISO	Work material			Vc (m/min)	Ø 16,0	Ø 20,0–25,0	Ø 32,0	Ø 40,0			
P	Carbon steel	125	G ACP300	120–180–240	0,05–0,07–0,10	0,05–0,07–0,10	0,05–0,08–0,11	0,05–0,08–0,12			
		125	L ACP300	130–170–220	0,04–0,07–0,10	0,04–0,07–0,10	0,04–0,08–0,11	0,05–0,09–0,12			
		190	G ACP300	100–150–200	0,08–0,12–0,20	0,08–0,12–0,20	0,08–0,13–0,22	0,09–0,14–0,24			
		250	G ACP300	80–120–160	0,06–0,10–0,15	0,06–0,10–0,15	0,06–0,11–0,16	0,07–0,12–0,18			
		270	G ACP300	100–130–160	0,08–0,12–0,18	0,08–0,12–0,18	0,08–0,13–0,19	0,09–0,14–0,22			
	Low alloyed steel	300	G ACP300	70–100–140	0,06–0,10–0,14	0,06–0,10–0,14	0,06–0,11–0,15	0,07–0,12–0,17			
		180	L ACP300	100–140–180	0,05–0,07–0,12	0,05–0,07–0,12	0,05–0,07–0,13	0,06–0,07–0,15			
		275	G ACP300	80–120–160	0,06–0,10–0,14	0,06–0,10–0,14	0,06–0,11–0,15	0,07–0,12–0,17			
		300	G ACP300	75–110–140	0,06–0,10–0,14	0,06–0,10–0,14	0,06–0,11–0,15	0,07–0,12–0,17			
		350	G ACP300	60–85–110	0,06–0,10–0,14	0,06–0,10–0,14	0,06–0,11–0,15	0,07–0,12–0,17			
High alloyed steel	200	G ACP300	100–130–160	0,08–0,12–0,20	0,08–0,12–0,20	0,08–0,13–0,22	0,09–0,14–0,24				
	325	G ACP300	80–100–120	0,06–0,10–0,15	0,06–0,10–0,15	0,06–0,11–0,16	0,07–0,12–0,18				
M	Stainless steel, martensitic / ferritic, martensitic / tempered, austenitic / quenched, austenitic / ferritic (Duplex)	200	G ACP300	100–140–180	0,06–0,10–0,15	0,06–0,10–0,15	0,06–0,11–0,16	0,07–0,12–0,18			
		240	G ACP300	90–120–150	0,06–0,10–0,15	0,06–0,10–0,15	0,06–0,11–0,16	0,07–0,12–0,18			
		180	G ACP300	100–140–180	0,06–0,10–0,15	0,06–0,10–0,15	0,06–0,11–0,16	0,07–0,12–0,18			
		230	G ACP300	80–120–150	0,04–0,10–0,15	0,06–0,10–0,15	0,06–0,11–0,16	0,07–0,12–0,18			
K	Cast iron (GG)	180	H ACK300	120–160–200	0,09–0,18–0,27	0,10–0,20–0,30	0,11–0,22–0,32	0,12–0,24–0,36			
		260	H ACP300	90–120–150	0,09–0,18–0,27	0,10–0,20–0,30	0,11–0,22–0,32	0,12–0,24–0,36			
S	Heat resistant alloy	200	G ACP300	25–50–70	0,06–0,10–0,15	0,06–0,10–0,15	0,06–0,11–0,16	0,07–0,12–0,18			
		200	G ACP300	25–50–70	0,06–0,10–0,15	0,06–0,10–0,15	0,06–0,11–0,16	0,07–0,12–0,18			
N	Aluminium alloy		G DL1500	200–260–320	0,06–0,11–0,17	0,06–0,11–0,17	0,06–0,12–0,18	0,07–0,13–0,20			
			G DL1500	180–230–280	0,06–0,11–0,17	0,06–0,11–0,17	0,06–0,12–0,18	0,07–0,13–0,20			

Recommended Cutting Conditions (5D)

[min. - optimal - max.]

Material Group		Hardness (HB)	Chip breaker & Grade	Cutting Speed				PCT Type: f _t (mm/tooth)			
ISO	Work material			Vc (m/min)	Ø 16,0	Ø 20,0–25,0	Ø 32,0	Ø 40,0			
P	Carbon steel	125	G ACP300	120–180–240	0,05–0,06–0,09	0,05–0,06–0,09	0,05–0,06–0,09	0,05–0,07–0,09			
		125	L ACP300	130–170–220	0,04–0,06–0,08	0,04–0,06–0,08	0,04–0,06–0,08	0,05–0,07–0,09			
		190	G ACP300	100–150–200	0,07–0,10–0,15	0,07–0,10–0,15	0,08–0,11–0,17	0,09–0,12–0,19			
		250	G ACP300	80–120–160	0,05–0,09–0,11	0,05–0,09–0,11	0,06–0,09–0,12	0,06–0,10–0,14			
		270	G ACP300	100–130–160	0,07–0,10–0,14	0,07–0,10–0,14	0,08–0,11–0,15	0,09–0,12–0,17			
	Low alloyed steel	300	G ACP300	70–100–140	0,05–0,09–0,11	0,05–0,09–0,11	0,06–0,09–0,12	0,06–0,10–0,13			
		180	L ACP300	100–140–180	0,05–0,06–0,09	0,05–0,06–0,09	0,05–0,06–0,10	0,05–0,07–0,11			
		275	G ACP300	80–120–160	0,05–0,09–0,11	0,05–0,09–0,11	0,06–0,09–0,12	0,06–0,10–0,13			
		300	G ACP300	75–110–140	0,05–0,09–0,11	0,05–0,09–0,11	0,06–0,09–0,12	0,06–0,10–0,13			
		350	G ACP300	60–85–110	0,05–0,09–0,11	0,05–0,09–0,11	0,06–0,09–0,12	0,06–0,10–0,13			
High alloyed steel	200	G ACP300	100–130–160	0,07–0,10–0,15	0,07–0,10–0,15	0,08–0,11–0,17	0,09–0,12–0,19				
	325	G ACP300	80–100–120	0,05–0,09–0,11	0,05–0,09–0,11	0,06–0,09–0,12	0,06–0,10–0,14				
M	Stainless steel, martensitic / ferritic, martensitic / tempered, austenitic / quenched, austenitic / ferritic (Duplex)	200	G ACP300	100–140–180	0,05–0,09–0,11	0,05–0,09–0,11	0,06–0,09–0,12	0,06–0,10–0,14			
		240	G ACP300	90–120–150	0,05–0,09–0,11	0,05–0,09–0,11	0,06–0,09–0,12	0,06–0,10–0,14			
		180	G ACP300	100–140–180	0,05–0,09–0,11	0,05–0,09–0,11	0,06–0,09–0,12	0,06–0,10–0,14			
		230	G ACP300	80–120–150	0,05–0,09–0,11	0,05–0,09–0,11	0,06–0,09–0,12	0,06–0,10–0,14			
K	Cast iron (GG)	180	H ACK300	120–160–200	0,08–0,15–0,21	0,09–0,17–0,23	0,09–0,18–0,25	0,11–0,20–0,28			
		260	H ACP300	90–120–150	0,08–0,15–0,21	0,09–0,17–0,23	0,09–0,18–0,25	0,11–0,20–0,28			
S	Heat resistant alloy	200	G ACP300	25–50–70	0,05–0,09–0,11	0,05–0,09–0,11	0,06–0,09–0,12	0,06–0,10–0,14			
		200	G ACP300	25–50–70	0,05–0,09–0,11	0,05–0,09–0,11	0,06–0,09–0,12	0,06–0,10–0,14			
N	Aluminium alloy		G DL1500	200–260–320	0,05–0,10–0,15	0,05–0,10–0,15	0,06–0,11–0,16	0,06–0,12–0,18			
			G DL1500	180–230–280	0,05–0,10–0,15	0,05–0,10–0,15	0,06–0,11–0,16	0,06–0,12–0,18			

Multi-Drills